Appendix B
Command Line Interface Commands

This chapter provides detailed descriptions of all the CLI commands.

A table of contents for all CLI commands, arranged alphabetically by CLI level, is found starting on page B-23.

For step-by-step instructions on how to install key features of the system, please refer to Chapters 7-14 of this manual. Please refer to the manual table of contents to determine the appropriate chapter for the feature that is to be configured.

Using the CLI

The CLI is a text-based interface that is used to configure and monitor HP routing switches. The CLI can be accessed via either a direct serial connection to a routing switch or via a Telnet session.

The CLI has two basic types of commands: **EXEC** and **CONFIG**. There are multiple levels of commands under these two groups as shown in **Figure B.1.**

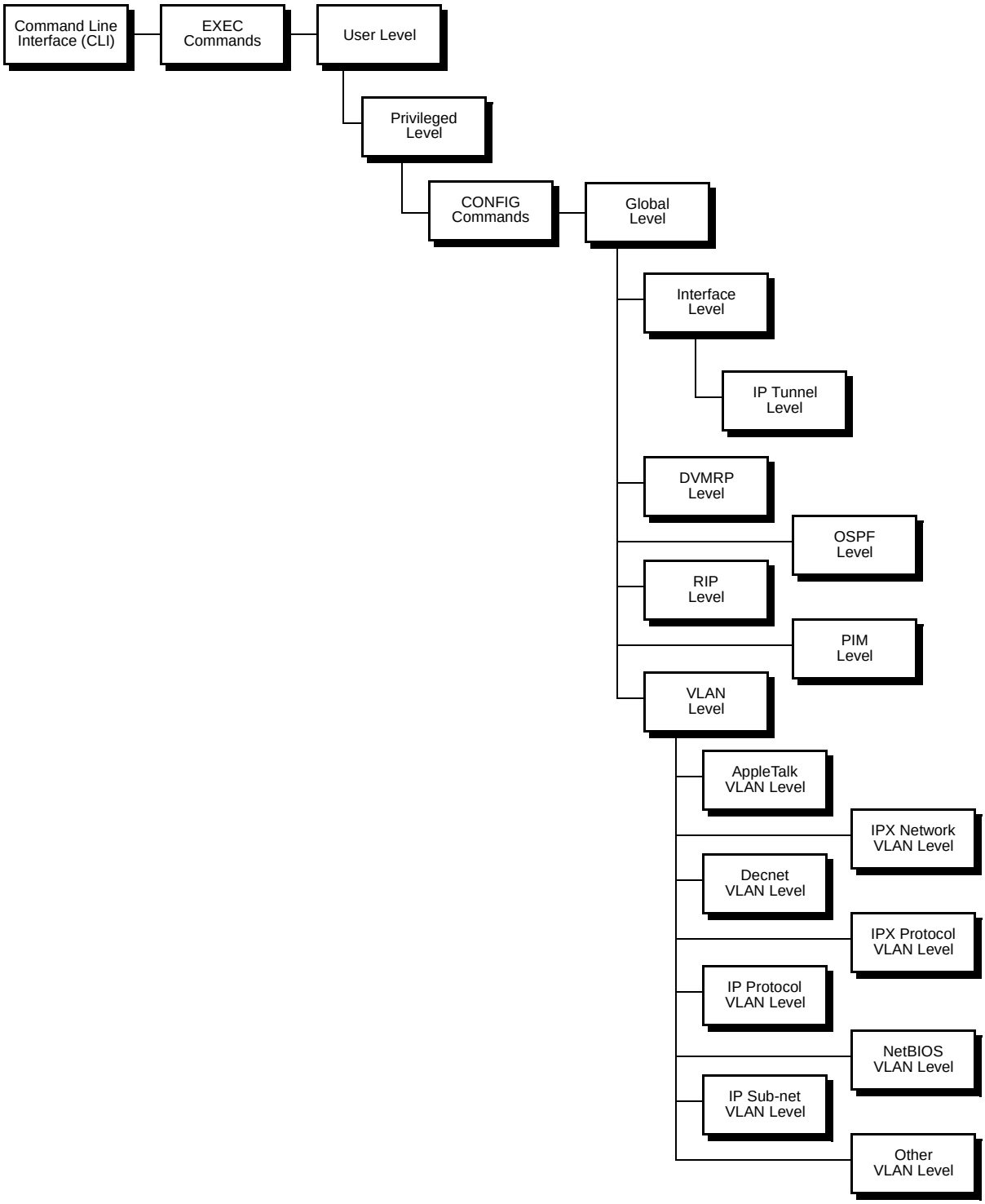

Figure B.1 CLI hierarchy of commands

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 a user has access to when connected to the routing switch via CLI. At this level, a user can view basic system information and verify connectivity but cannot make any changes to the routing switch configuration. To make changes to the configuration base, a user must move to other levels of the CLI hierarchy. This is accomplished by the user level command, ***enable*** at initial log-on. Once entered correctly, the user will then have access to the Privileged Level.

User Level

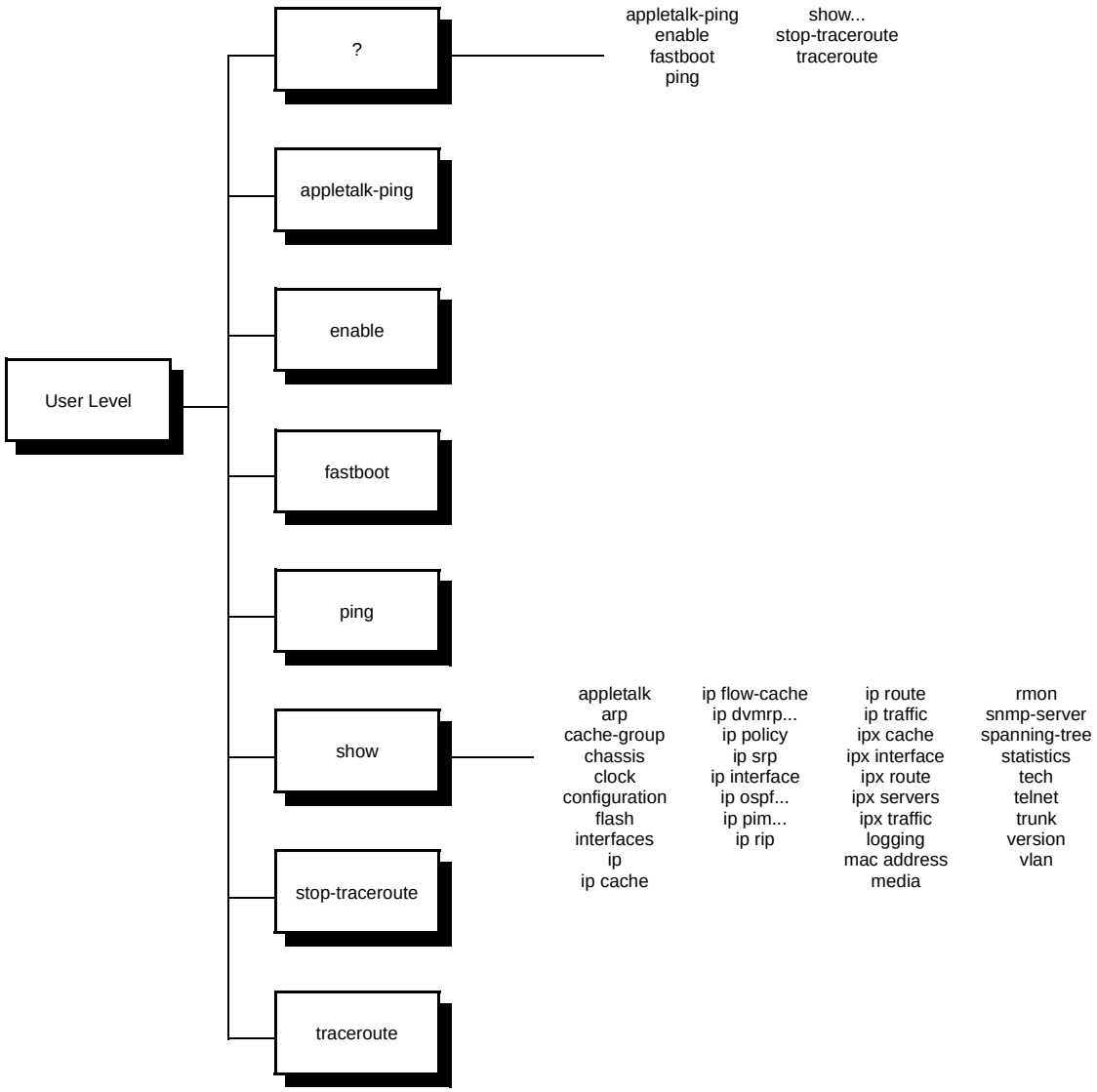

Figure B.2 Command options of the user EXEC level

Privileged Level

The Privileged Level EXEC commands as seen in **Figure B.3**, primarily enable the user to transfer and store routing switch software images and configuration files between the network and the system; and review its configuration.

The user reaches this level by entering ***enable <password>*** at the user EXEC level.

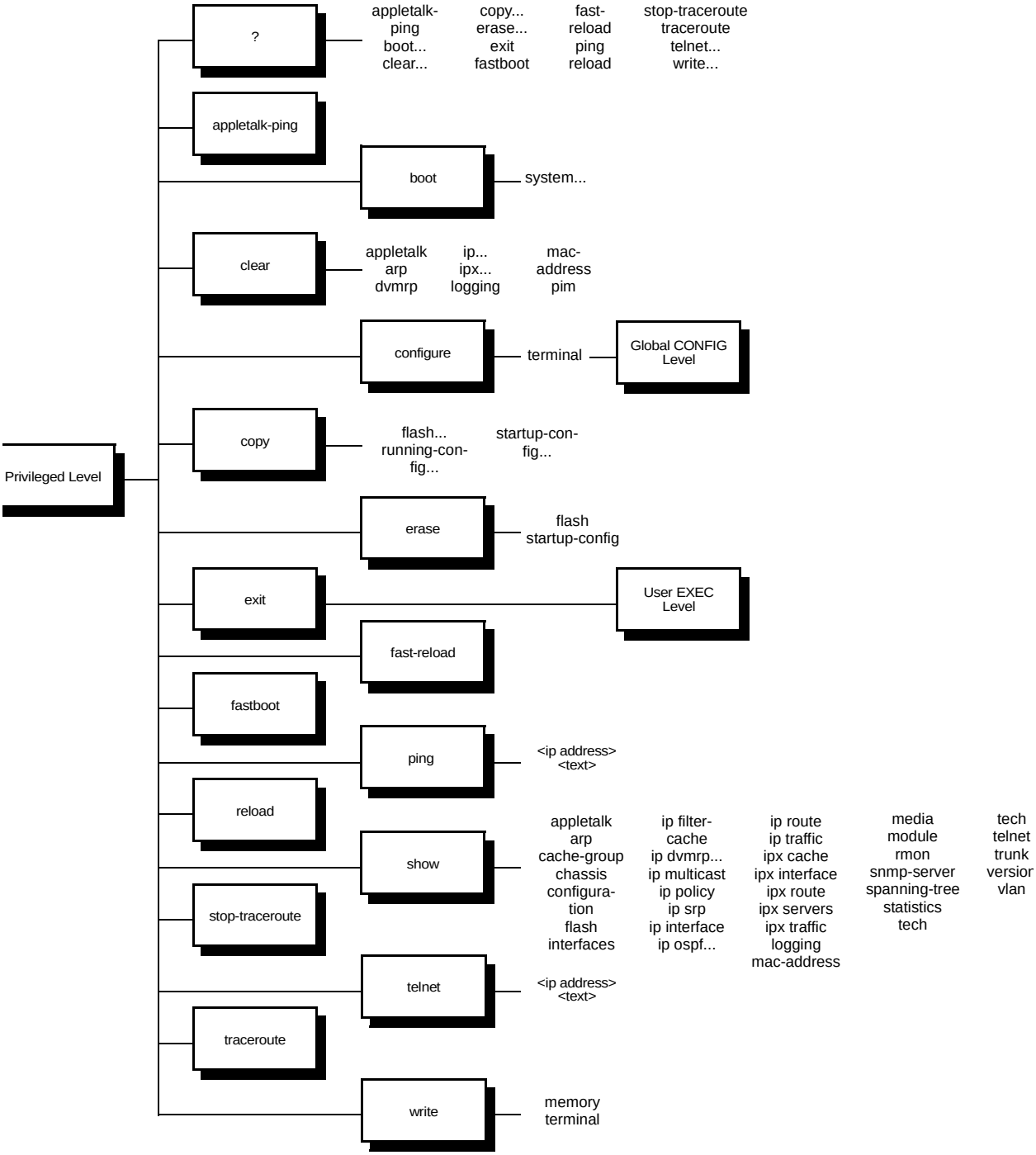

Figure B.3 Command options for the privileged EXEC level

CONFIG Commands

There are eight different levels of CONFIG command structure–global, interface, IP tunnel, VLAN, and four router levels–DVMRP, OSPF, PIM and RIP.

CONFIG commands are focused at modifying the configuration of an HP routing switch.

Global Level

The global level is the first level of the CONFIG command structure as seen in **Figures B.4, B.5** and **B.6**. It allows the user to globally apply or modify parameters for ports on the routing switch.

The user reaches this level by entering ***configure terminal*** at the privileged EXEC level.

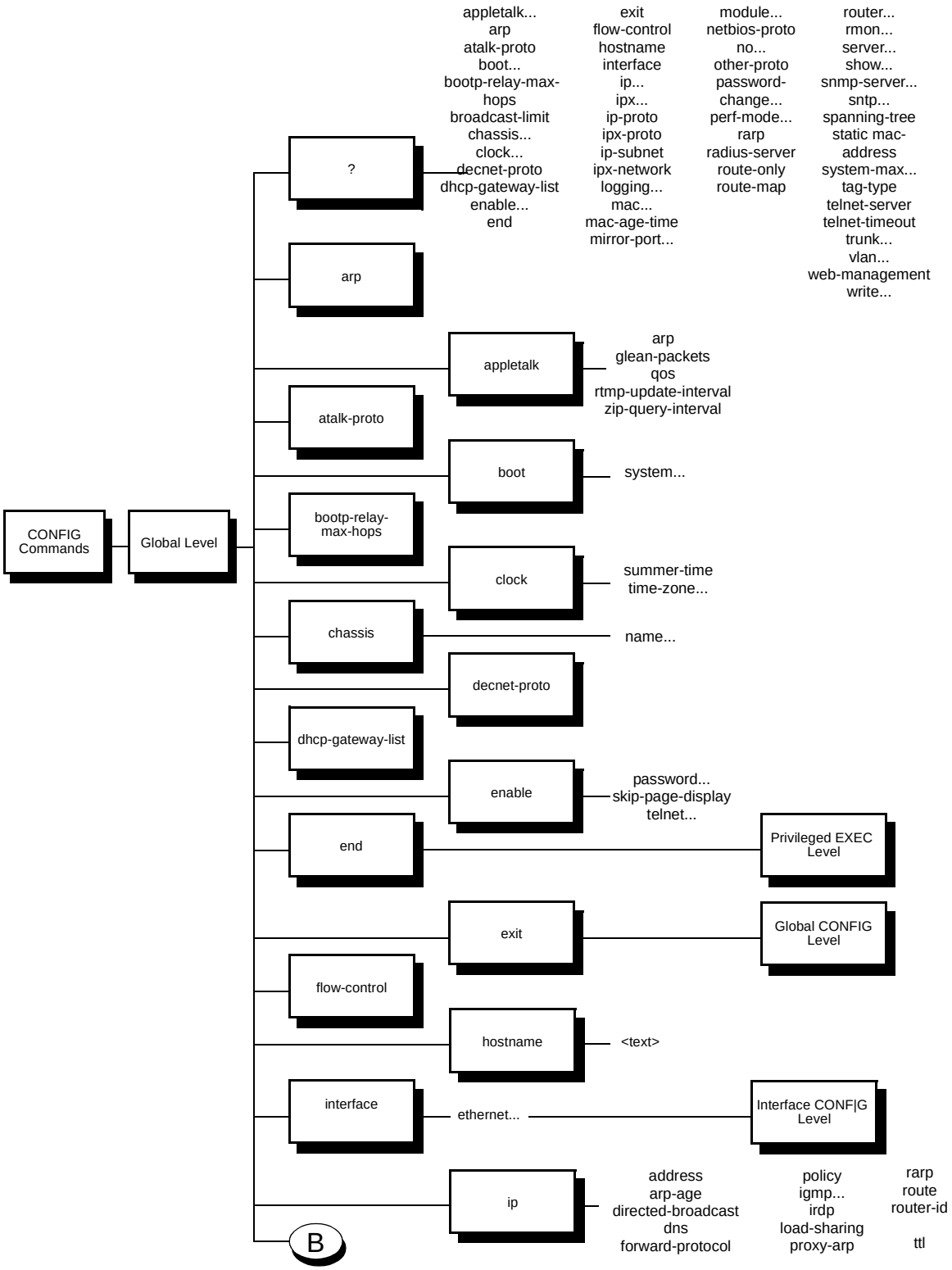

Figure B.4 Command options of the global CONFIG level (1 of 3)

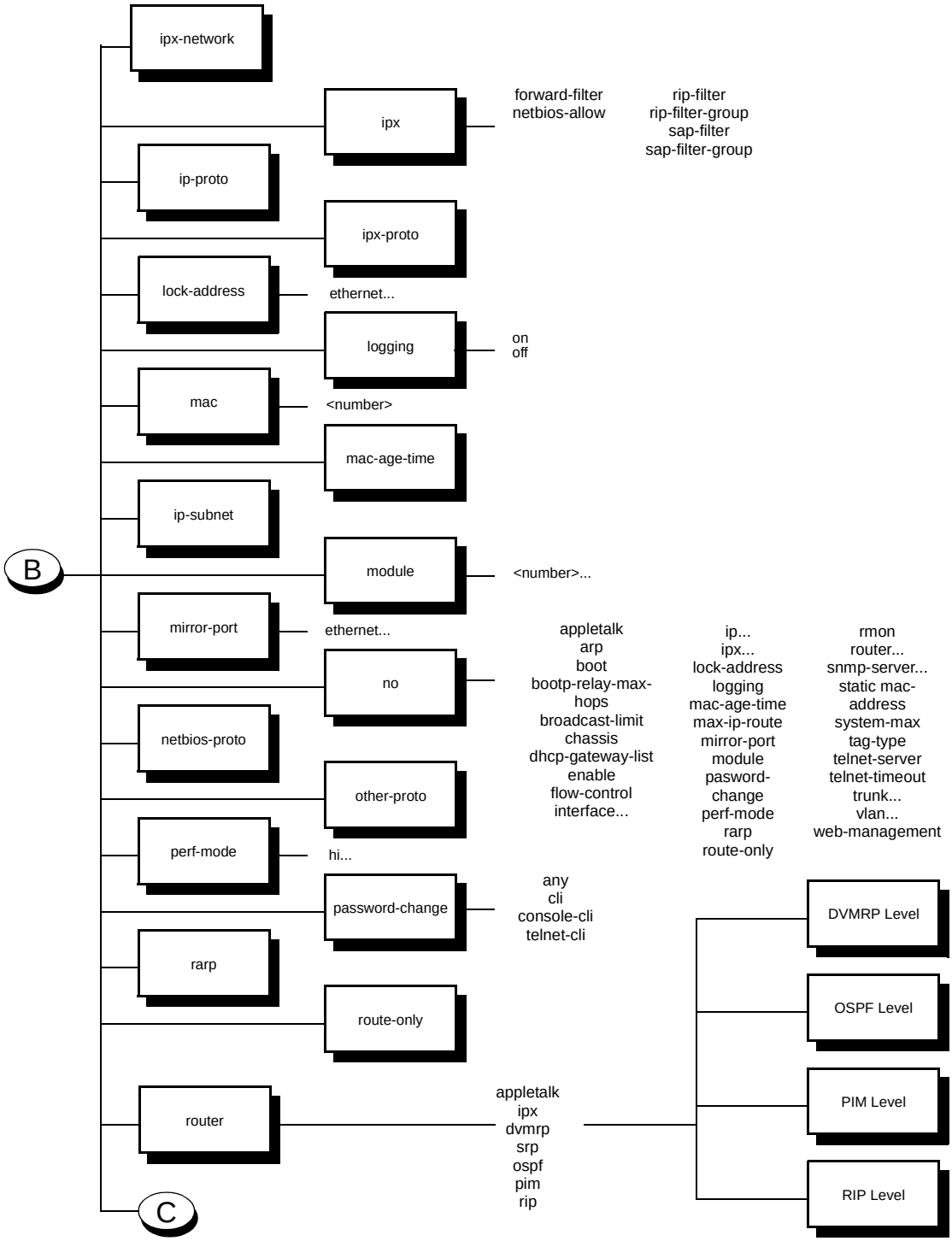

Figure B.5 Command options of the global CONFIG level (2 of 3)

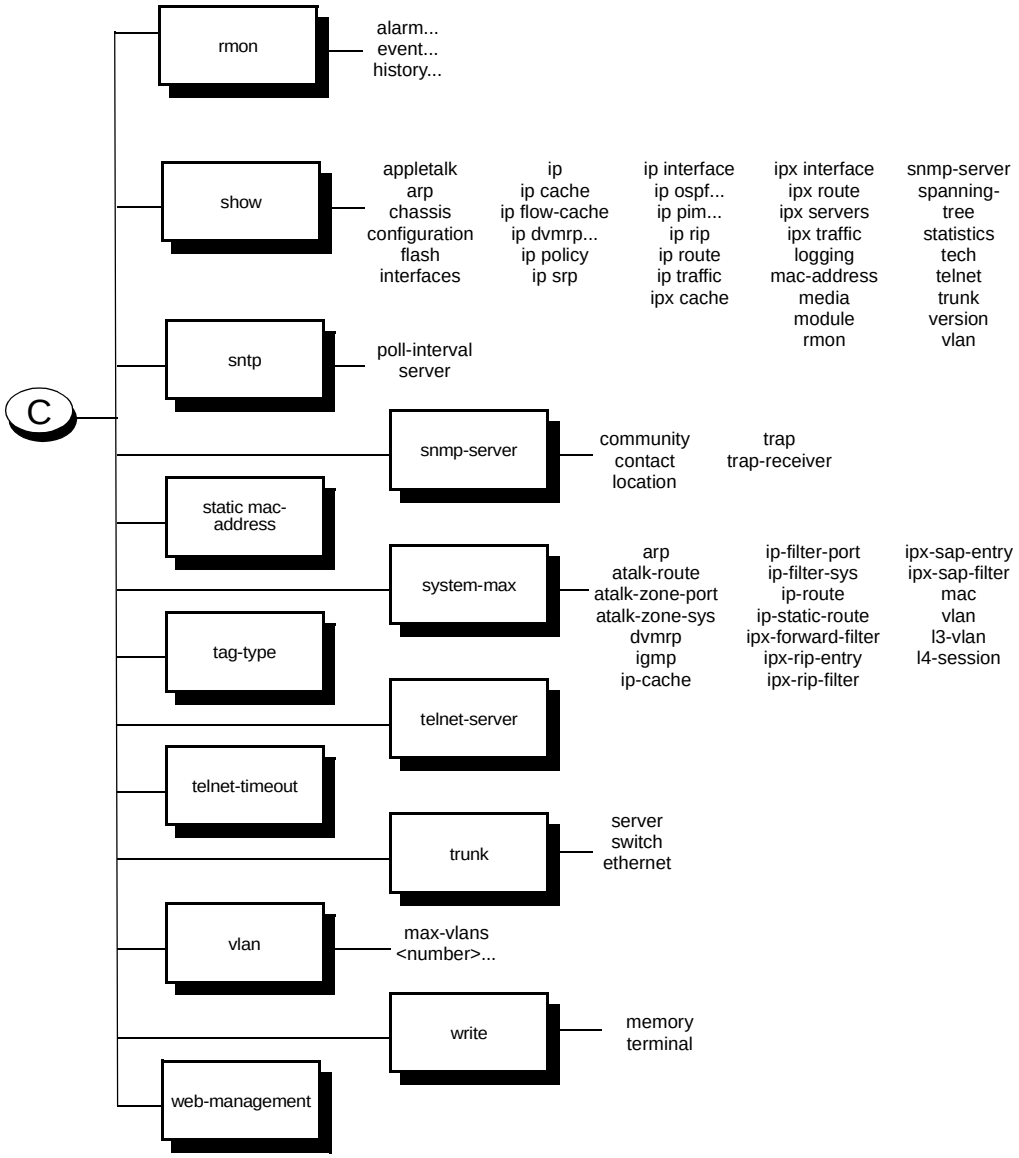

Figure B.6 Command options of the global CONFIG level (3 of 3)

Interface Level

The interface level allows the user to assign or modify specific port parameters on a port-by-port basis. A summary of all possible commands is seen in **Figure B.7**.

The user reaches this level by entering ***interface ethernet <port | slot/port>*** at the global level.

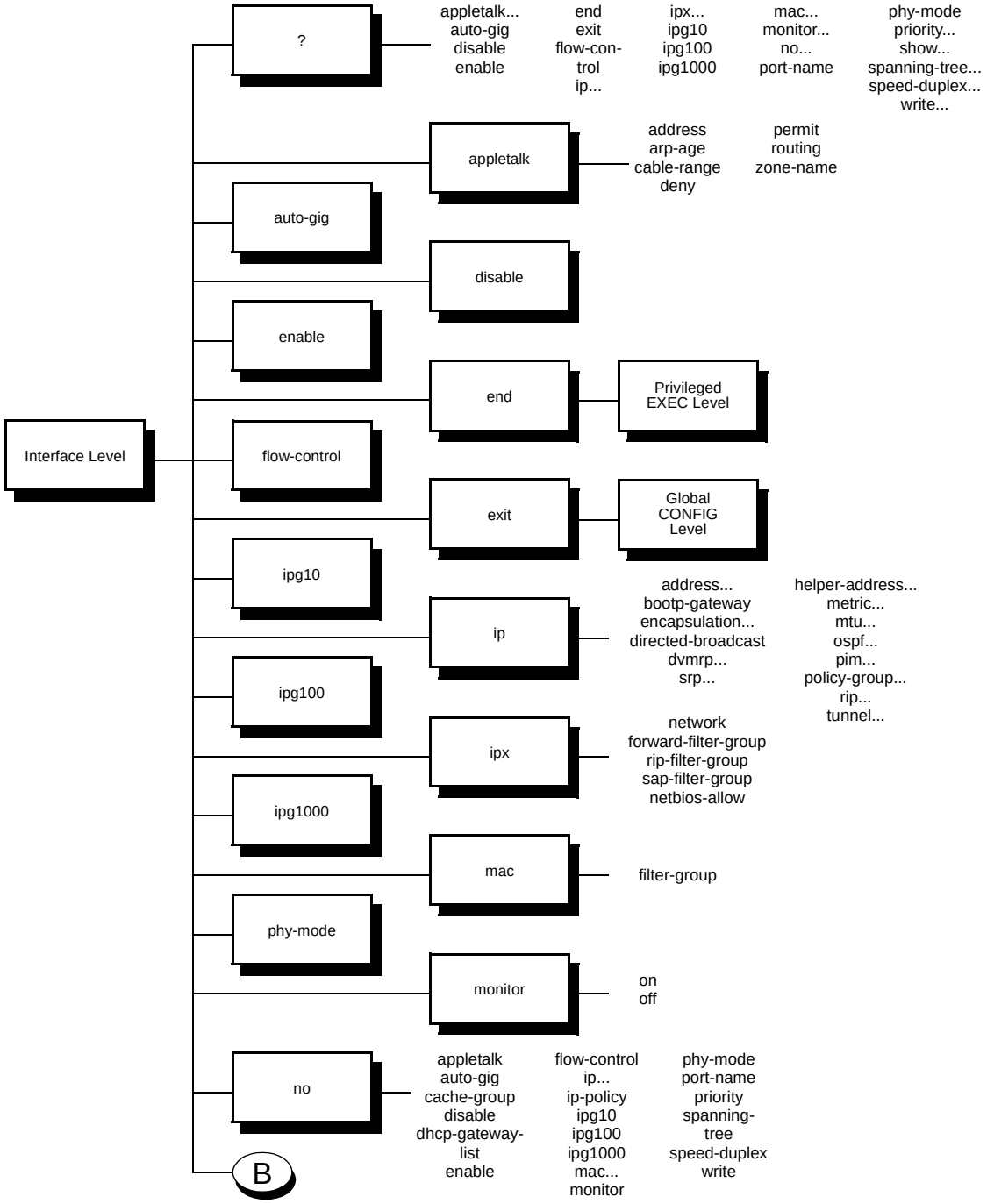

Figure B.7 Command options of the interface CONFIG level (1 of 2)

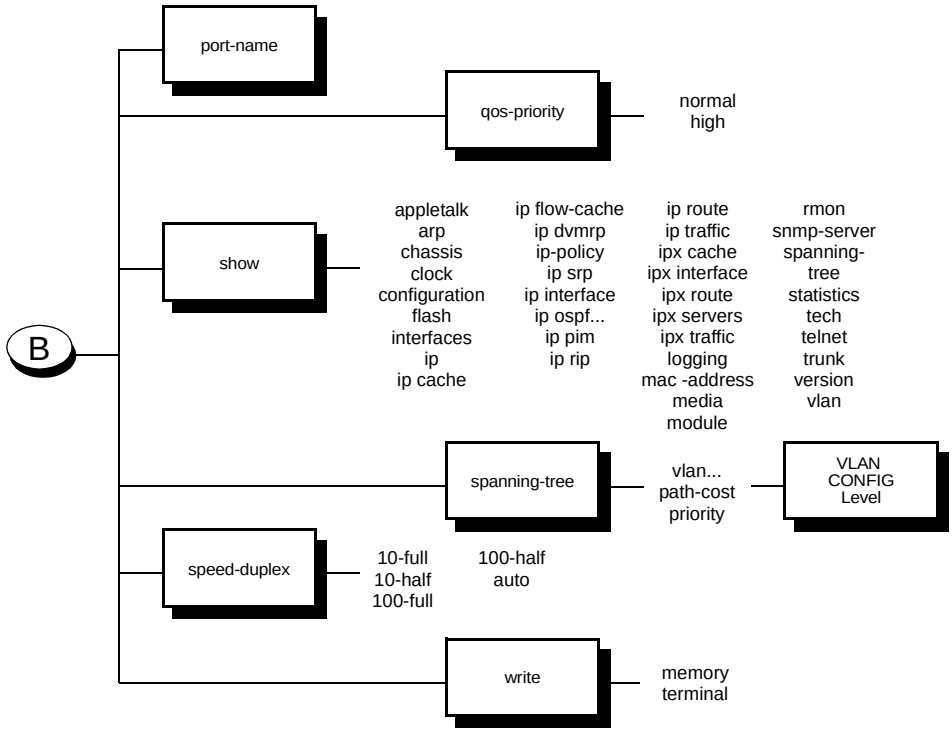

Figure B.8 Command options of the interface CONFIG level (2 of 2)

IP Tunnel Level

The IP tunnel level allows the user to define parameters for IP-in-IP tunnels to pass data through non-DVMRP and non-PIM IP multicast routers.

The user reaches this level by entering the ***ip tunnel…*** command at the interface CONFIG level.

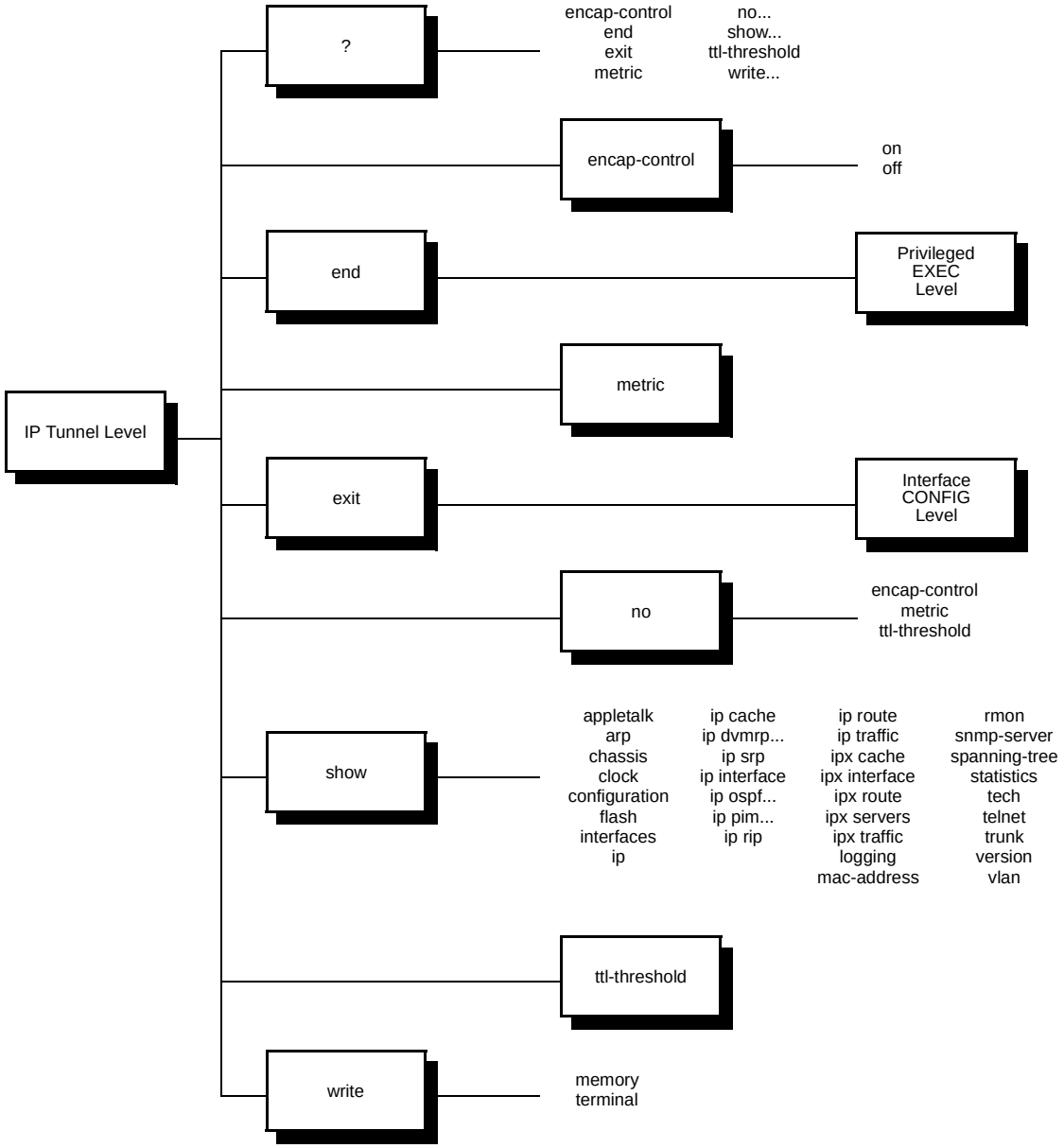

Figure B.9 Command options of the IP tunnel level

Router DVMRP Level

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

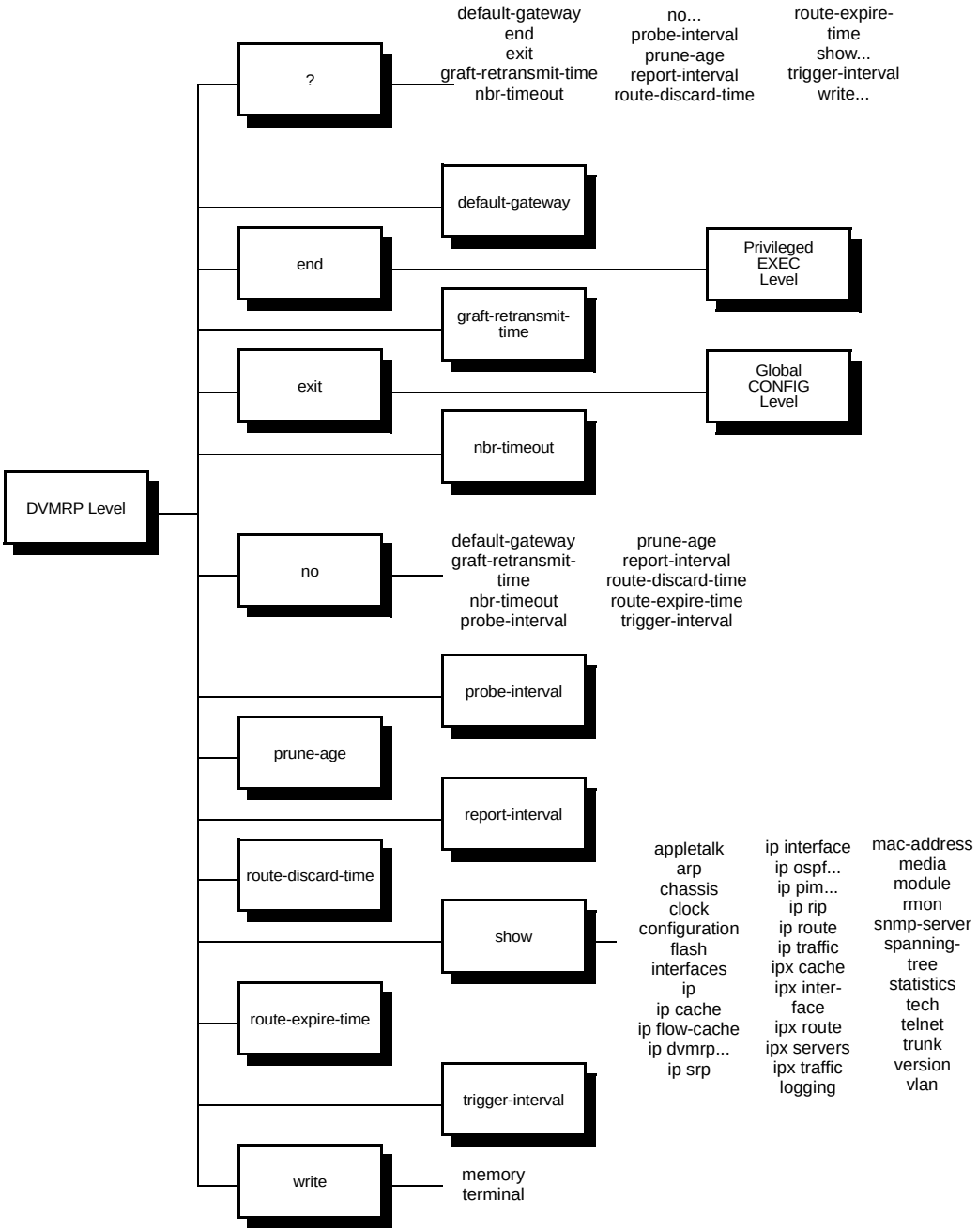

Figure B.10 Command options of the DVMRP router level

Router OSPF Level

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

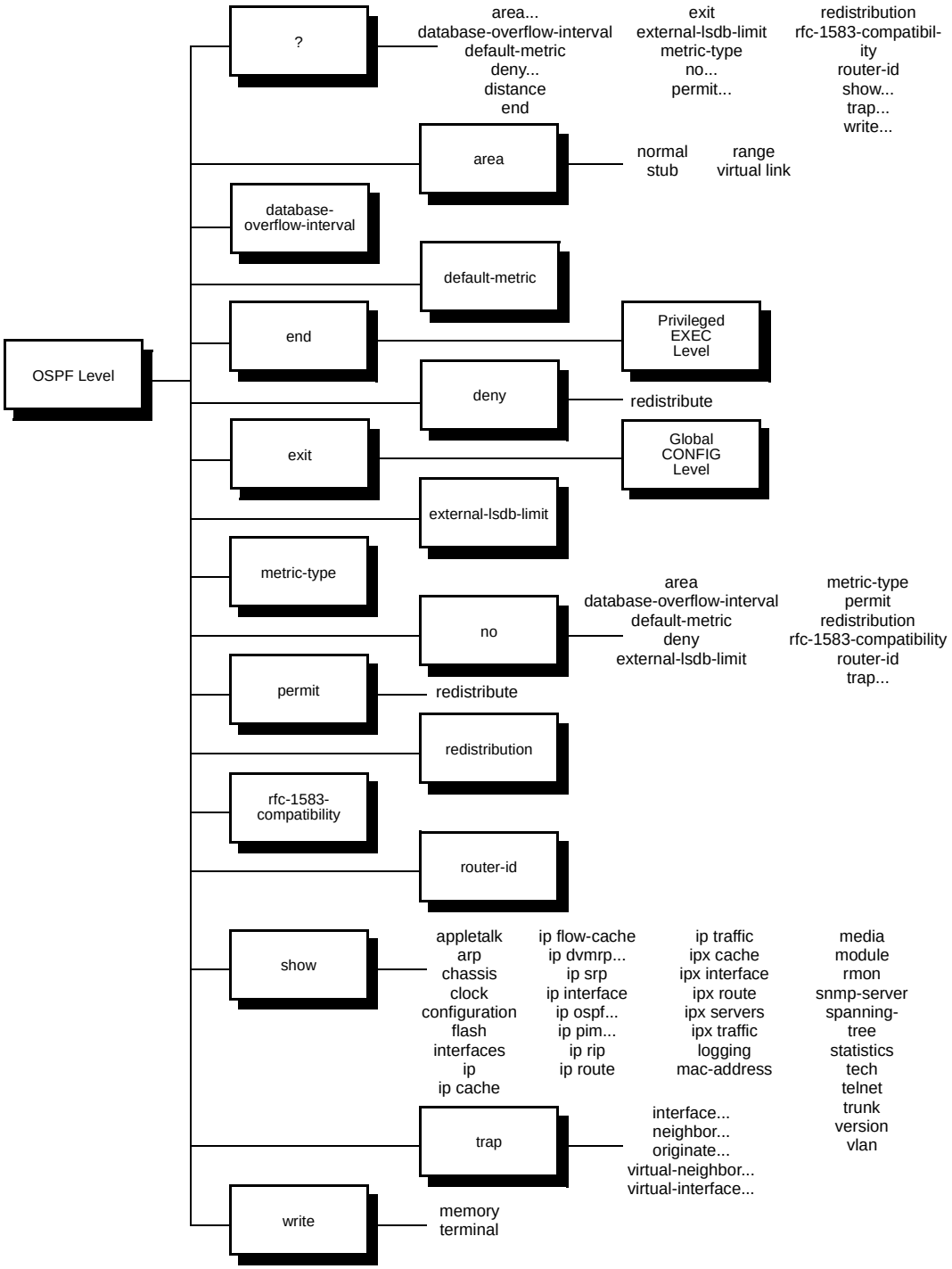

Figure B.11 Command options of the OSPF router level

Router PIM Level

The PIM level allows the user to configure parameters for the Protocol Independent Multicast (PIM) routing protocol.

The user reaches this level by entering the ***router pim*** command at the global CONFIG level.

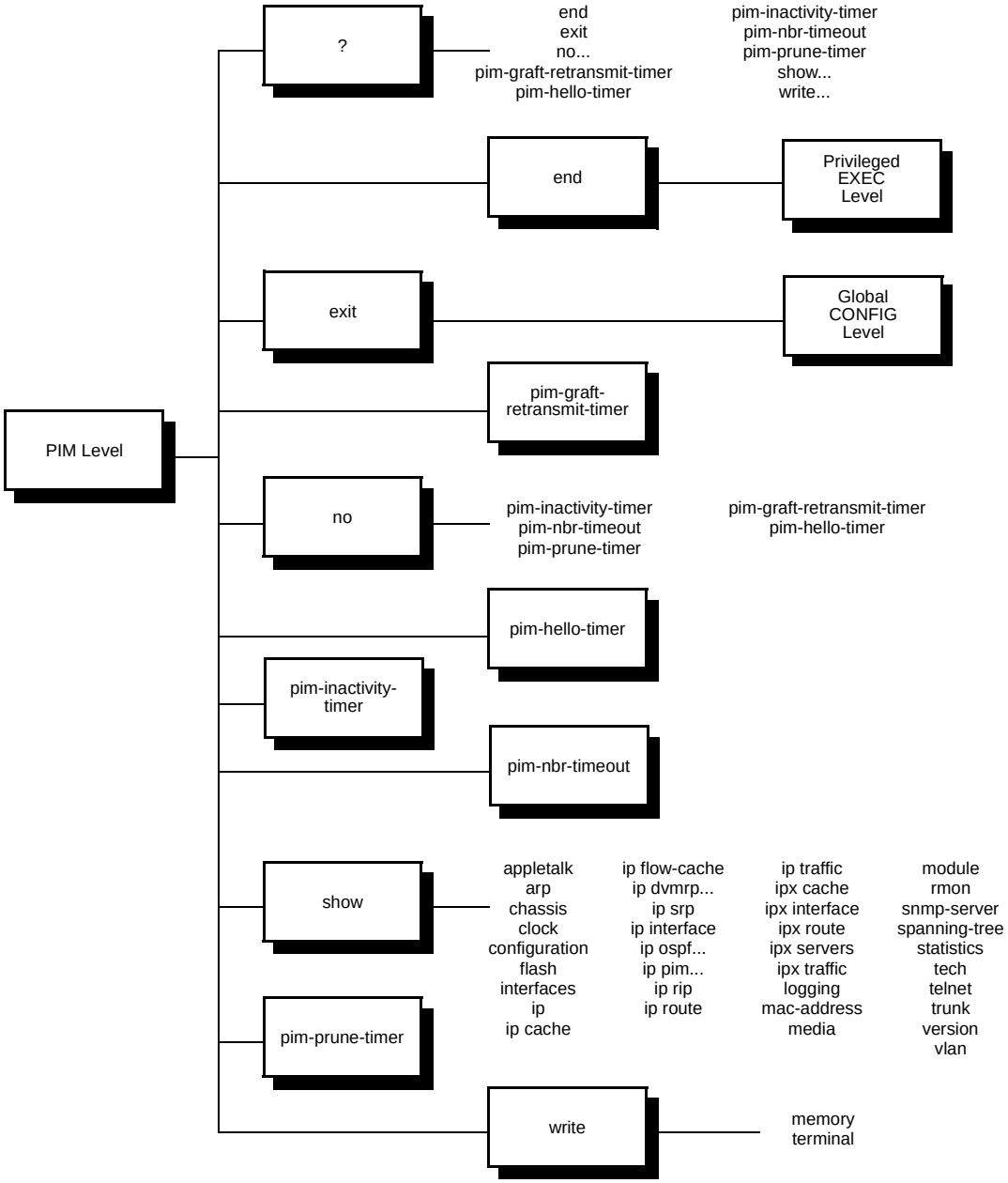

Figure B.12 Command options of the PIM router level

Router RIP Level

The RIP level allows the user to configure parameters for the RIP routing protocol.

The user reaches this level by entering the ***router rip*** command at the global CONFIG level.

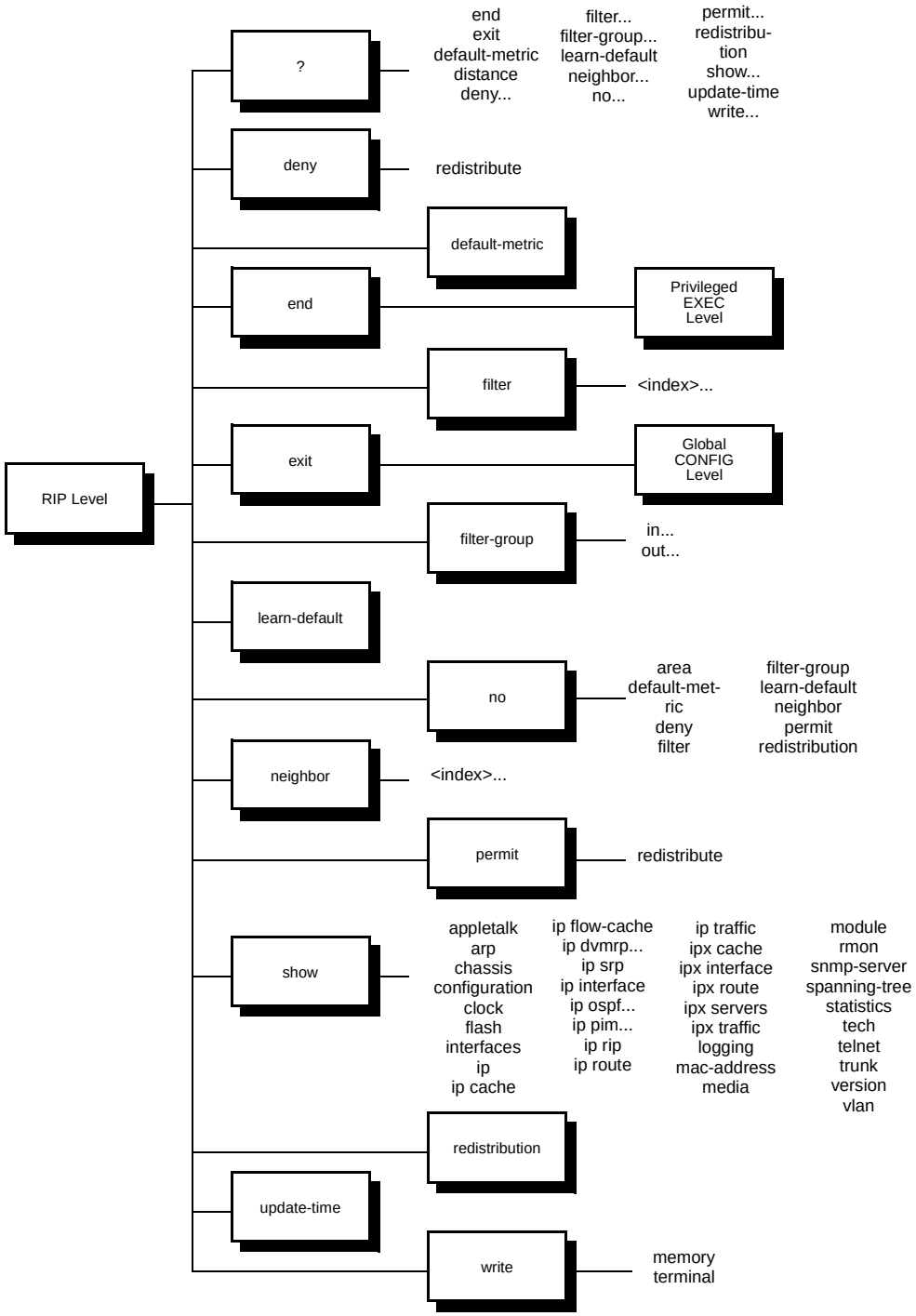

Figure B.13 Command options of the RIP router level

VLAN Level

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

The user reaches this level by entering the ***vlan 1*** command at the Global CONFIG Level.

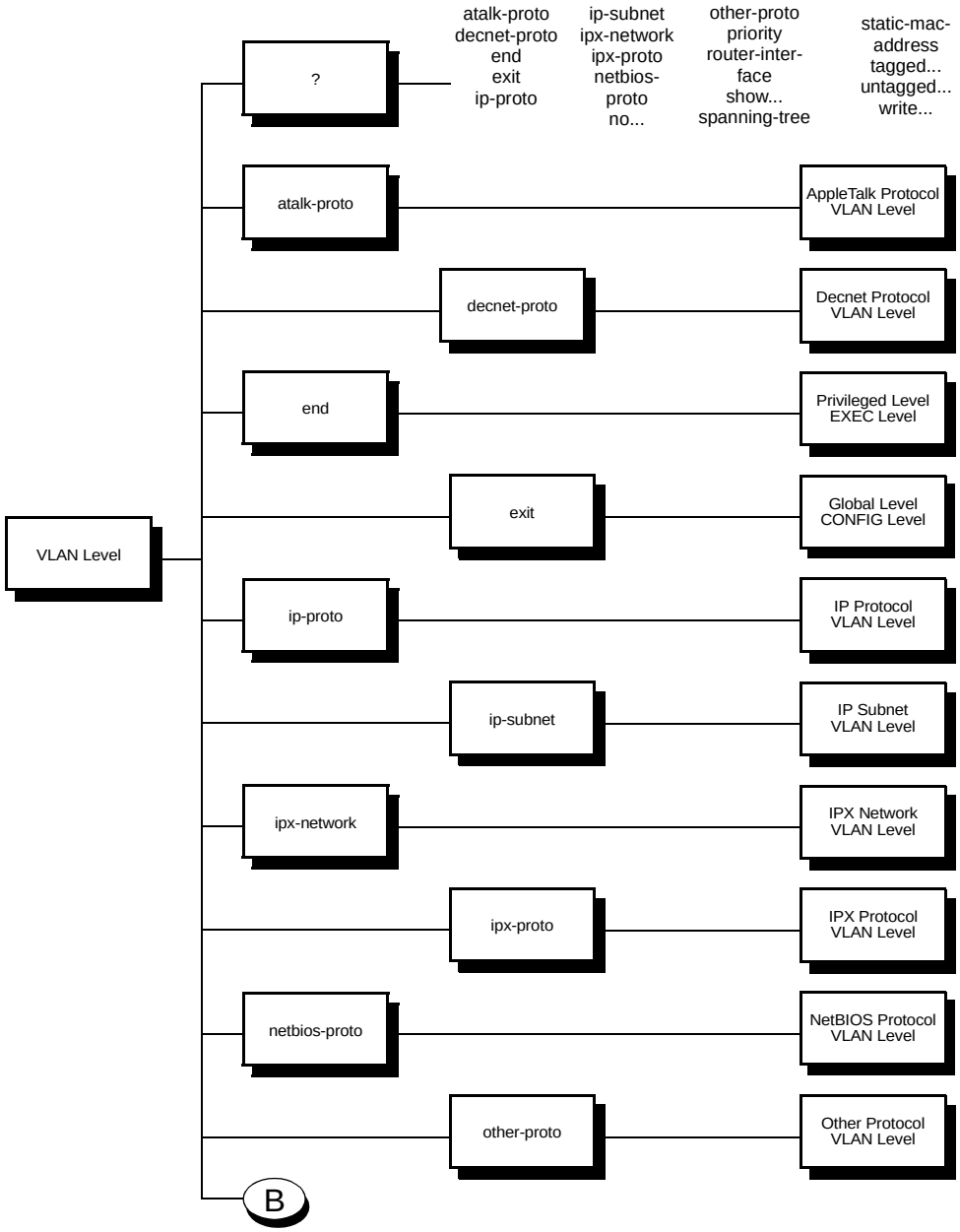

Figure B.14 Command options of the VLAN level (1 of 2)

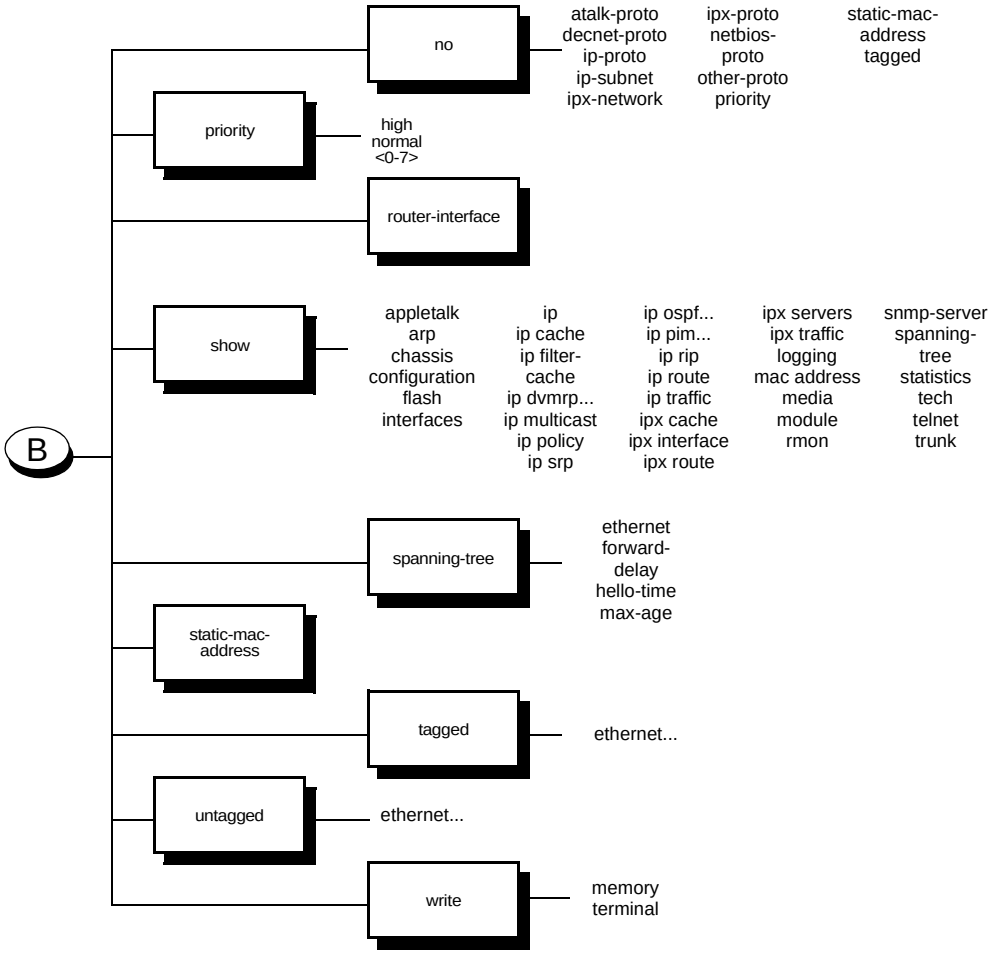

Figure B.15 Command options of the VLAN level (2 of 2)

Accessing the CLI

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

NOTE: When accessing via Telnet, you will be prompted for a password. By default, the password required would be the password assigned for general access by the user at initial setup. The user also has the option of assigning a separate password for Telnet access with the ***enable telnet password <password>*** command found at the Global Level.

NOTE: At initial log on, all the user needs to do is type in ***enable*** at the prompt. The user only needs to enter a password after a permanent password is entered at Global CONFIG Level of the CLI.

Once connectivity to the routing switch is established, the user will see the following prompt:

```
HP9300>
```

At this prompt, the user is at the user level of the CLI EXEC command structure.

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

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

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

NOTE: The look of the CLI prompt will change at each level of the CONFIG command structure, to easily identify the current level. A summary of the look of each prompt is noted below:

```
HP9300>    User Level EXEC Command
HP9300#    Privileged Level EXEC Command
HP9300(config)#Global Level   CONFIG Command
HP9300(config-if-5/1)#Interface Level CONFIG Command
HP9300(config-if-tunnel)#IP Tunnel Level CONFIG Command
HP9300(config-dvmrp-router)#DVMRP Level CONFIG Command
HP9300(config-ospf-router)#OSPF Level CONFIG Command
HP9300(config-rip-router)#RIP Level CONFIG Command
HP9300(config-pim-router)#PIM Level CONFIG Command
HP9300(config-vlan-1)#VLAN Port-based Level CONFIG Command
HP9300(config-vlan-atalk-proto)#VLAN Protocol Level CONFIG Command
```

Navigating between Command Levels

To reach other CLI command levels, the user needs to enter certain commands. At each level there is a launch command that allows the user to either move up or down to the next level. The CLI hierarchy and the launch commands for each level are noted in **Figure B.16**.

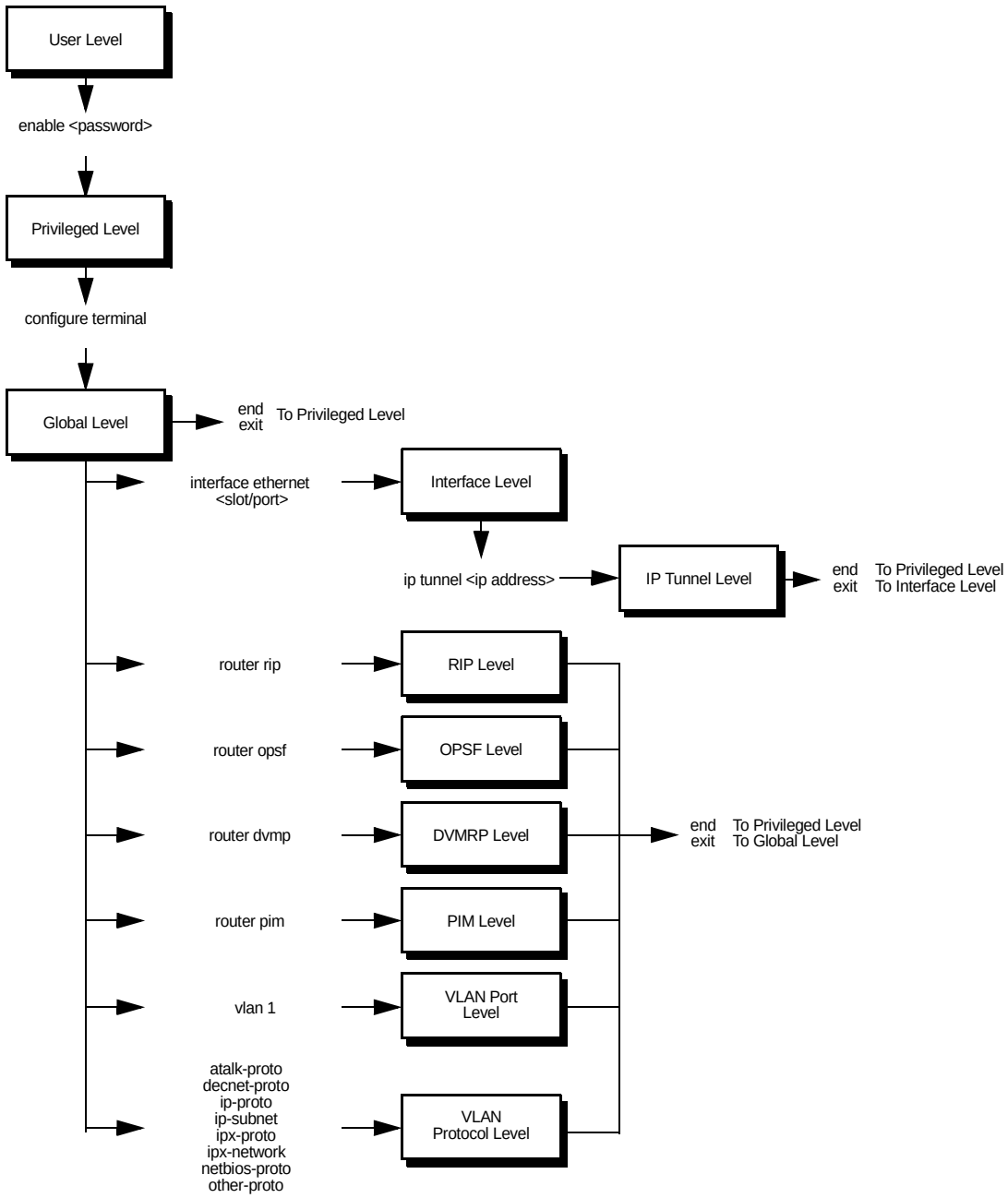

Figure B.16 Summary of the CLI launch commands

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. To better understand this structure, a few CLI command examples are explained below.

EXAMPLE:

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

Whenever an item is bracketed with **"< >"** symbols, the information requested is **required**.

Whenever an item is bracketed with **"[ ]"** symbols**,** the information requested is **optional**.

Whenever two or more options are separated by a vertical bar, " **|** ", the user must enter one of the options as part of the command.

EXAMPLE:

trunk <switch | server> ethernet *means enter either* switch ethernet *or* server ethernet

For example, the command structure above **requires** that either ***switch*** or ***server*** be entered as part of the command.

To get a quick display of available options at a CLI level, the user can simply enter a question mark (?) at the prompt, and a summary list of possible commands will be listed, as seen below:

EXAMPLE: To view all available commands at the user level, enter the following:

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

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

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

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

Syntax Shortcuts

Commands and parameters 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 would be ***cop tftp*** and ***con tftp*** respectively. In this case, ***co*** would not properly distinguish the two commands.

Saving Configuration Changes

The user can make configuration changes while the 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 the user to make configuration changes to the operating or running configuration of the 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 the user wants to make the changes permanent, he or she will have to save the changes to flash via the ***write memory*** command. By saving the configuration changes to flash, this will become the configuration that is initiated and run at system boot.

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 chapter (chapters 7-14) and in the CLI commands of this appendix.

Modifying Boot Sequence

The user can specify the preferred initial boot source and boot sequence in the **startup-config** file. If upon boot, the user-specified boot source and sequence fails, then by default the routing switch will attempt to load the software image from a different source. The following sources will be tried one at a time, in the order noted, until a software load is successful.

- flash primary
- flash secondary
- bootp

Should the image not load successfully from the above sources, the boot will prompt the user to enter alternative locations from which to load an image, as listed below:

- boot system bootp
- boot system flash primary
- boot system flash secondary
- boot system tftp

Summary of CLI Commands

The following sections provide a detailed overview of the CLI commands available categorized by CLI level. Each section is arranged in alphabetical order.

In assigning some parameters, the user may need to negotiate between different levels of the CLI. Please refer to the **Navigating between Command Levels** section of this chapter for reference.

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NOTE: The interface and IP tunnel parameters for DVMPR are configured at the Interface and IP Tunnel levels, respectively. Please refer to those sections of this appendix for specific examples.

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show ip ospf general	B-150

show ip ospf interface B-150
show ip ospf link state B-151
show ip ospf neighbor B-151
show ip ospf trap B-152
show ip ospf virtual link B-152
show ip ospf virtual neighbor B-153
show ip pim flowcache B-153
show ip pim group B-153
show ip pim interface B-154
show ip pim mcache B-154
show ip pim nbr B-154
show ip pim prune B-155
show ip pim traffic B-155
show ip policy B-155
show ip rip B-156
show ip route B-156
show ip traffic B-157
show ipx B-157
show ipx cache B-158
show ipx interface B-158
show ipx route B-158
show ipx servers B-159
show ipx traffic B-159
show logging B-160
show mac-address B-161
show mac-address statistics B-162
show media B-162
show module B-163
show rmon alarm B-163
show rmon event B-163
show rmon history B-164
show snmp-server B-165
show span B-166
show span vlan B-166

show statistics B-168
show tech B-169
show telnet B-170
show trunk B-170
show version B-170
show vlan B-170

EXEC Commands - User Level

appletalk-ping

Verifies connectivity to an AppleTalk network and node.

EXAMPLE: To verify connectivity to node 50 on network 100 the user would enter the following:

```
HP9300> appletalk-ping 100.50
```

Syntax: appletalk-ping

Possible values: N/A

Default value: N/A

enable

At initial startup, this command is entered by the user to access the privileged EXEC level of the CLI and subsequent access to all other levels of the CLI via the proper launch commands.

The user can assign a permanent password with the ***enable password…*** command at the global level of the CONFIG command structure. To reach the global level the user would enter ***configure terminal***. Until a password is assigned, the user only has access to the user level.

EXAMPLE:

```
HP9300> enable
```

Syntax: enable

Possible values: N/A

Default value: No system default

enable <password>

Once a password is defined for the routing switch, the user must enter this command along with the defined password to access the privileged EXEC Level of the CLI.

Three levels of password access can be assigned at the global CONFIG level.

To assign a password, the user should use the ***enable password…*** command at the global CONFIG level.

EXAMPLE:

```
HP9300> en whatever
HP9300#
```

Syntax: enable <password>

Possible values: Up to 32 alphanumeric characters can be assigned as the password.

Default value: N/A

fastboot…

By default, this option is turned off, to provide a three-second pause to allow a user to break into the boot prompt, if necessary. Use ***fastboot on*** to turn this option on and eliminate the three-second pause. To turn this feature off later, the user would enter the command, ***fastboot off.*** Fastboot changes will be saved automatically but will not become active until after a system reset.

To execute an immediate reload of the boot code from the console without a three-second delay, the user can enter the ***fast reload*** command. The ***fast reload*** command is found at the privileged level.

EXAMPLE:

```
HP9300> fastboot on
```

NOTE: If the user has forgotten the password and the fastboot command is active (***fastboot on***), the user will need to disable fastboot (***fastboot off***) at the User Level of the CLI and then enter the commands listed below to regain access to the system. Recovery from a lost password requires direct access to the serial port and a system reset of the HP routing switch.

To recover from a lost password:

1. Start a terminal session.
2. Reboot the system.
3. At the initial boot prompt at system startup enter '***b***' to initiate boot monitor mode.
4. Enter ***no password*** at the prompt. This command cannot be abbreviated.
5. Enter ***boot system flash primary***. This will cause the device to bypass the system password check.
6. Assign a new password upon entry into the device console.

Syntax: fastboot [on | off]

Possible values: N/A

ping

Verifies connectivity to an HP routing switch or other device. The command performs an echo test to confirm connectivity to an identified device.

EXAMPLE:

```
HP9300> ping 192.22.2.33
```

Syntax: ping <ip address>

Possible values: Valid IP address

Default value: N/A

show…

Displays a variety of configuration and statistical information about the routing switch. The following show commands are available at the user EXEC level:

- show appletalk
- show arp
- show cache-group
- show chassis
- show configuration
- show flash
- show interfaces
- show ip
- show ip cache
- show ip filter-cache
- show ip dvmrp...
- show ip multicast
- show ip policy
- show ip srp

- show ip interface
- show ip ospf...
- show ip pim
- show ip rip
- show ip route
- show ip traffic
- show ipx cache
- show ipx interface
- show ipx route
- show ipx servers
- show ipx traffic
- show logging
- show mac-address
- show module
- show rmon
- show snmp-server
- show spanning-tree
- show statistics
- show tech
- show telnet
- show trunk
- show version
- show vlan

NOTE: To see a description of the commands listed above, refer to the **All Levels** section of this appendix.

NOTE: The command summary listed above is a complete listing of all commands that are found across all platforms. Some commands may not be available on all platforms.

stop-traceroute

Stops an initiated trace on an HP routing switch.

EXAMPLE:

```
HP9300> stop-traceroute
```

Syntax: stop-traceroute

Possible values: N/A

Default value: N/A

traceroute

Allows the user to trace the path from the current HP routing switch to a host address.

EXAMPLE:

```
HP9300> trace-route 192.33.4.7 minttl 5 maxttl 5 timeout 5
```

Syntax: trace-route <host IP address> [minttl <value> maxttl <value> timeout <value>]

Possible and default values:

Minttl -minimum TTL (hops) value: Possible values are 1 to 255. Default value is 1 second.

Maxttl- maximum TTL (hops) value: Possible values are 1 to 255. Default value is 30 seconds.

Timeout: Possible values are 1 to 120. Default value is 2 seconds.

EXEC Commands – Privileged Level

appletalk-ping

Verifies connectivity to an AppleTalk network and node.

EXAMPLE: To verify connectivity to node 50 on network 100 the user would enter the following:

```
HP9300> appletalk-ping 100.50
```

Syntax: appletalk-ping

Possible values: N/A

Default value: N/A

boot system bootp

Initiates a system boot from a BootP server. The user can specify the preferred initial boot source and boot sequence in the startup-config file. If upon boot, the user-specified boot source and sequence fails, then by default, the HP routing switch will attempt to load the software image from a different source. The following sources will be tried one at a time, in the order noted, until a software load is successful.

- flash primary
- flash secondary
- bootp

Should the image not load successfully from the above sources, the boot will prompt the user to enter alternative locations from which to load an image:

- boot system bootp
- boot system flash primary
- boot system flash secondary
- boot system tftp

EXAMPLE:

```
HP9300# boot sys bootp
```

Syntax: boot system bootp

Possible values: N/A

Default value: N/A

boot system flash primary

Initiates a system boot from the primary software image stored in flash.

EXAMPLE:

```
HP9300(config)# boot sys fl pri
```

Syntax: boot system flash primary

Possible values: N/A

Default value: N/A

boot system flash secondary

Initiates a system boot from the secondary software image stored in flash.

EXAMPLE:

```
HP9300(config)# boot sys fl sec
```

Syntax: boot system flash secondary

Possible values: N/A

Default value: N/A

boot system tftp

Initiates a system boot of the software image from a TFTP server.

EXAMPLE:

```
HP9300(config)# boot sys tftp 192.22.33.44 current.img
```

Syntax: boot system tftp <ip address> <filename>

Possible values: N/A

Default value: N/A

NOTE: Before entering the TFTP boot command, the user must first assign an **IP address**, **IP mask** and **default gateway** (if applicable) at the boot prompt as shown.

EXAMPLE:

```
boot>ip address 192.22.33.44 255.255.255.0
```

```
boot>ip default-gateway 192.22.33.1
```

The user would then proceed with the ***boot system tftp…*** command.

clear appletalk arp

Erases all data currently resident in the AppleTalk ARP table, as displayed by the ***show appletalk arp*** command.

EXAMPLE:

```
HP9300# clear appletalk arp
```

Syntax: clear appletalk arp

Possible values: N/A

Default value: N/A

clear appletalk cache

Erases all learned data from non-local networks that is currently resident in the AppleTalk cache (forwarding table), as displayed by the ***show appletalk cache*** command.

EXAMPLE: To remove all non-local entries from the AppleTalk cache, the user would enter the following:

```
HP9300# clear appletalk cache
```

NOTE: Local routes are indicated by zeros in a ***show appletalk cache*** display. All entries not marked with 0.0 or 0000.0000.0000 will be erased.

Syntax: clear appletalk cache

Possible values: N/A

Default value: N/A

clear appletalk route

Erases all learned routes and zones (i.e. non-local routes and zones) currently resident in the AppleTalk routing table, as displayed by the ***show appletalk route*** command.

EXAMPLE: To remove all non-local entries from the AppleTalk routing table, the user would enter the following:

```
HP9300# clear appletalk route
```

NOTE: Local routes are indicated by zeros as seen in the ***show appletalk route*** display. All entries not marked with 0.0 or 0000.0000.0000 will be erased.

Syntax: clear appletalk route

Possible values: N/A

Default value: N/A

clear appletalk traffic

Erases all RTMP, ZIP, AEP, DDP and AARP statistics for the router. A summary of the statistics to be erased, can be seen by entering the ***show appletalk traffic*** command.

EXAMPLE:

```
HP9300# clear appletalk traffic
```

Syntax: clear appletalk traffic

Possible values: N/A

Default value: N/A

clear arp

Removes all data from the ARP cache.

EXAMPLE:

```
HP9300# clear arp
```

Syntax: clear arp

Possible values: N/A

Default value: N/A

clear dvmrp cache

Erases all DVMRP forwarding entries.

EXAMPLE:

```
HP9300# clear dvmrp cache
```

Syntax: clear dvmrp cache

Possible values: N/A

Default value: N/A

clear dvmrp flow

Erases all information in the DVMRP flow cache, specifically source, group and forwarding index information.

EXAMPLE:

```
HP9300# clear dvmrp flow
```

Syntax: clear dvmrp

Possible values: N/A

Default value: N/A

clear dvmrp route

Erases all DVMRP routing information that DVMRP exchanges with its peers.

EXAMPLE:

```
HP9300# clear dvmrp route
```

Syntax: clear dvmrp

Possible values: N/A

Default value: N/A

clear ip cache

Removes all entries from the IP cache.

EXAMPLE:

```
HP9300# cl ip cache
```

Syntax: clear ip cache

Possible values: N/A

Default value: N/A

clear ip route

Clears all IP routes from memory.

EXAMPLE:

```
HP9300# cl ip ro
```

Syntax: clear ip route

Possible values: N/A

Default value: N/A

clear ipx cache

Clears all entries in the IPX cache.

EXAMPLE:

```
HP9300# cl ipx ca
```

Syntax: clear ipx cache

Possible values: N/A

Default value: N/A

clear ipx route

Clears all IPX routes and servers from memory.

EXAMPLE:

```
HP9300# cl ipx rou
```

Syntax: clear ipx route

Possible values: N/A

Default value: N/A

clear logging

Removes all entries from the SNMP event log.

EXAMPLE:

```
HP9300# cl logging
```

Syntax: clear logging

Possible values: N/A

Default value: N/A

clear mac-address

Removes all static MAC address entries from the address table.

EXAMPLE:

```
HP9300# cl mac-address
```

Syntax: clear mac-address

Possible values: N/A

Default value: N/A

clear pim cache

Erases all forwarding entries from the PIM cache.

EXAMPLE:

```
HP9300# cl pim
```

Syntax: clear pim

Possible values: N/A

Default value: N/A

clear pim flow

Erases all information in the PIM flow cache.

EXAMPLE:

```
HP9300# cl pim
```

Syntax: clear pim

Possible values: N/A

Default value: N/A

clear statistics

Resets all port statistic counters to zero. This command is a hidden CLI command.

EXAMPLE:

```
HP9300# cl statistics
```

Syntax: clear statistics

Possible values: N/A

Default value: N/A

clock

The system clock can be set for a routing switch. This command allows the user to set the time and date. The time zone must be set using the ***clock time-zone...*** command at the global CONFIG level.

NOTE: Clock settings are not saved over power cycles; however, the user can configure the system to reference a SNTP server at power up. This server will then automatically download the correct time reference for the network. For more details on this capability, reference the ***sntp*** command at the privileged EXEC level and the ***sntp poll-interval*** and ***sntp server*** commands at the global CONFG level.

EXAMPLE:

```
HP9300# clock set 10:15:05 10-15-98
```

Syntax: [no] clock set <hh:mm:ss> <mm-dd-yy | mm-dd-yyyy>

Possible values: N/A

Default value: N/A

configure terminal

Launches the user to the global CONFIG level.

EXAMPLE:

```
HP9300# conf term
HP9300(config)#
```

Syntax: configure terminal

Possible values: N/A

Default value: N/A

copy flash flash…

Copies a software image between the primary and secondary flash storage locations.

EXAMPLE: The user wants to copy the software image stored in the primary flash into the secondary storage location. To do so, the user would enter the following command.

```
HP9300# copy flash flash secondary
```

If the user wanted to copy the image from the secondary flash to the primary flash, the user would enter the following command.

```
HP9300# copy flash flash primary
```

In the ***copy flash flash…***command, the first ‘flash’ refers to the origin of the image and the second flash, in the command, points to the destination flash. Note that in the command above, when ‘primary’ is entered, the system automatically knows that the origin flash is the secondary flash location.

Syntax: copy flash flash [primary | secondary]

Possible values: N/A

Default value: N/A

copy flash tftp

Uploads a copy of the primary or secondary software image to a TFTP server.

EXAMPLE:

```
HP9300# copy flash tftp 192.22.33.4 test.img secondary
```

Syntax: copy flash tftp <ip address> <filename> <primary|secondary>

Possible values: TFTP IP address, filename, primary or secondary

Default value: No system default

copy running-config tftp

Uploads a copy of the running configuration file from the router to a designated TFTP server.

EXAMPLE:

```
HP9300# copy startup-config tftp 192.22.3.44 new.cfg
```

Syntax: copy running-config tftp <ip address> <filename>

Possible values: TFTP IP address, filename

Default value: No system default

copy startup-config tftp

Uploads a copy of the startup configuration file from the router to a designated TFTP server.

EXAMPLE:

```
HP9300# copy startup-config tftp 192.22.3.44 new.cfg
```

Syntax: copy startup-config tftp <ip address> <filename>

Possible values: TFTP IP address, filename

Default value: No system default

copy tftp flash

Downloads a copy of an HP routing switch software image from a TFTP server into the system flash in the primary or secondary storage location.

EXAMPLE:

```
HP9300# copy tftp flash 192.22.33.4 test.img primary
```

To download into the secondary storage location you would enter the command listed below instead:

```
HP9300# copy tftp flash 192.22.33.4 test.img secondary
```

Syntax: copy tftp flash <ip address> <filename> <primary|secondary>

Possible values: IP address, filename, primary or secondary

Default value: N/A

copy tftp startup-config

Downloads a copy of a configuration file from a TFTP server into the startup configuration file of the routing switch. To activate this configuration file, the user would need to reload (reset) the system.

EXAMPLE:

```
HP9300# copy tftp startup-config 192.22.33.4 new.cfg
```

Syntax: copy tftp startup-config <ip address> <filename>

Possible values: TFTP IP address, filename

Default value: no system default

erase flash primary

Erases the image stored in primary flash.

EXAMPLE:

```
HP9300# er f pri
```

Syntax: erase flash primary

Possible values: N/A

Default value: N/A

erase flash secondary

Erases the image stored in secondary flash.

EXAMPLE:

```
HP9300# er f sec
```

Syntax: erase flash secondary

Possible values: N/A

Default value: N/A

erase startup-config

Erases the configuration stored in the startup-config file.

EXAMPLE:

```
HP9300# er start
```

Syntax: erase startup-config

Possible values: N/A

Default value: N/A

exit

Moves activity up one level from the current level. In this case, activity will be moved to the user level.

EXAMPLE:

To move from the privileged level, back to the user level, the user would enter the following:

```
HP9300# exit
HP9300>
```

Syntax: exit

Possible values: N/A

Default value: N/A

fastboot…

Provides a configurable option to speed up the system startup time. By default, this option is turned off, providing a three-second pause to allow a user to break into the boot prompt, if necessary. Use ***fastboot on*** to turn this option on and eliminate the three-second pause. To turn this feature off later, the user would enter the command, ***fastboot off***. Fastboot changes will be saved automatically but will not become active until after a system reset.

To execute an immediate reload from the console of the boot code without a three-second delay, the user can enter the ***fast reload*** command.

EXAMPLE:

```
HP9300# fastboot on
```

Syntax: fastboot [on|off]

Possible values: on or off

Default value: N/A

NOTE: If the user has forgotten the password and the fastboot command is active (***fastboot on***), the user will need to disable fastboot (***fastboot off***) at the User Level of the CLI and then enter the commands listed below to regain access to the system. Recovery from a lost password requires direct access to the serial port and a system reset of the HP routing switch.

To recover from a lost password:

1. Start a terminal session.
2. Reboot the system.
3. At the initial boot prompt at system startup enter '***b***' to initiate boot monitor mode.
4. Enter ***no password*** at the prompt. This command cannot be abbreviated.
5. Enter ***boot system flash primary***. This will cause the device to bypass the system password check.
6. Assign a new password upon entry into the device console.

---

fast-reload

Initiates an immediate fast boot. Fastboot requires a boot flash image version of 02.00.06 or later to be operational. The user can use the CLI command ***show flash*** to check the boot image version number.

NOTE: Fast reload is a hidden command of the privileged level of the CLI.

EXAMPLE:

```
HP9300# fast-reload
```

Syntax: fast-reload

Possible values: N/A

Default value: Disabled

ping

This command performs an echo test to confirm connectivity to an identified device. The IP address or hostname of the target device is entered. The user can also request multiple pings be performed by a specific count or time period as seen in the syntax summary below.

EXAMPLE:

```
HP9300> ping 192.22.2.33
```

Syntax: ping <ip address> <hostname> [count <num>] [timeout <msec>] [ttl <num>] [size <byte>] [no-fragment] [quiet] [verify] [data <1-to-4 byte hex#>]

Possible values: Valid IP address, Hostname

Default value: N/A

reload

Initiates a system reset. All configuration changes made since the last reset or start of the routing switch will be saved to the startup configuration file.

EXAMPLE:

```
HP9300# reload
```

Syntax: reload

Possible values: 'Reload' must be typed in its entirety.

Default value: N/A

show…

Displays a variety of configuration and statistical information about the routing switch. The following show commands are available at the privileged EXEC level:

- show appletalk
- show arp
- show cache-group
- show chassis
- show configuration
- show flash
- show interfaces
- show ip
- show ip cache
- show ip filter-cache
- show ip dvmrp...
- show ip srp
- show ip interface
- show ip multicast
- show ip policy
- show ip ospf...
- show ip pim
- show ip rip
- show ip route
- show ip traffic
- show ipx cache
- show ipx interface
- show ipx route
- show ipx servers
- show ipx traffic
- show logging
- show mac-address
- show module
- show rmon
- show snmp-server
- show spanning-tree
- show statistics
- show tech
- show telnet

- show trunk
- show version
- show vlan

NOTE: To see a description of the commands listed above, refer to the **All Levels** section of this appendix.

NOTE: The command summary listed above is a complete listing of all commands that are found across all platforms. Some commands may not be available on all platforms.

sntp

Enables the SNTP function on an HP routing switch. This will allow a system to automatically retrieve clock references from a designated SNTP server in the network.

The user defines the SNTP server using the ***sntp server...*** command found at the global CONFIG level. The user can also define how often the clock references are validated between the HP routing switch and the SNTP server by using the ***sntp poll-interval*** command found at the global CONFIG level.

NOTE: The user should configure the ***clock time-zone*** parameter before configuring a SNTP server.

EXAMPLE:

```
HP9300# sntp
```

Syntax: sntp

Possible values: N/A

Default value: N/A

stop-traceroute

Stops an initiated trace on an HP routing switch.

EXAMPLE:

```
HP9300# stop-trace-route
```

Syntax: stop-trace-route

Possible values: N/A

Default value: N/A

telnet

Allows a Telnet connection to a remote routing switch via the console. Up to five access Telnet sessions can be supported on an HP routing switch at one time. Write access via Telnet is limited to one session and only one outgoing Telnet sessions is supported on a routing switch at one time.

To see the number of open Telnet sessions at any time, enter the command ***show telnet.***

EXAMPLE:

```
HP9300# telnet 208.96.6.101
```

Syntax: telnet <ip address | hostname>

Possible values: N/A

Default value: N/A

traceroute

Allows the user to trace the path from the current HP routing switch to a host address.

EXAMPLE:

```
HP9300> trace-route 192.33.4.7 minttl 5 maxttl 5 timeout 5
```

Syntax: trace-route <host IP address> [minttl <value> maxttl <value> timeout <value>]

Possible and default values:

- Minttl -minimum TTL (hops) value: Possible values are 1 to 255. Default value is 1 second.
- Maxttl- maximum TTL (hops) value: Possible values are 1 to 255. Default value is 30 seconds.
- Timeout: Possible values are 1 to 120. Default value is 2 seconds.

write memory

Saves the running-time configuration into the startup-config file.

EXAMPLE:

```
HP9300# wr mem
```

Syntax: write memory

Possible values: N/A

Default value: N/A

write terminal

Displays the running-configuration on the terminal screen.

EXAMPLE:

```
HP9300# wr t
```

Syntax: write terminal

Possible values: N/A

Default value: N/A

CONFIG Commands - Global Level

appletalk arp-retransmit-count

Allows the user to modify the maximum number of times that a packet will be sent out for ARP cache informational updates. The packet will be sent out to the maximum amount defined, until the information is received.

If no response is received before the count number expires, no additional packets will be sent.

EXAMPLE: To modify the number of times packet requests will be sent out for ARP updates from the default value of 2 to 8, the user would enter the following:

```
HP9300(config)# appletalk arp retransmit-count 8
```

Syntax: appletalk arp retransmit-count <value>

Possible values: 1 to 10

Default value: 2

appletalk arp-retransmit-interval

Allows the user to modify the interval between the transmission of ARP packets.

EXAMPLE: To modify the retransmission interval from the default value of 1 to 15 seconds, the user would enter the following:

```
HP9300(config)# appletalk arp retransmit-interval 15
```

Syntax: appletalk arp retransmit-interval <value>

Possible values:1 to 120 seconds

Default value: 1

appletalk glean-packets

When the glean packet parameter is enabled on an AppleTalk router, it will try to learn the MAC address from the packet versus sending out an ARP request.

EXAMPLE: To enable glean packets on an AppleTalk router, the user would enter the following:

```
HP9300(config)# appletalk glean-packets
```

Syntax: appletalk glean-packets

Possible values: enabled or disabled

Default value: disabled

appletalk qos socket

The user can use the QoS socket parameter to assign a higher priority to specific AppleTalk sockets. Possible values are between 0 and 7. The default value for all sockets is normal priority or zero.

EXAMPLE: To assign a high priority to socket 123, the user would enter the following:

```
HP9300(config)# appletalk qos socket 123 priority 1
```

Syntax: appletalk qos socket < 0-7>

Possible values: 0-7

Default value: 0

appletalk rtmp-update-interval

Allows the user to modify how often RTMP updates are sent out on AppleTalk interfaces.

EXAMPLE: To change the value to 50 seconds from a default value of 10 seconds, the user would enter the following:

```
HP9300(config)# appletalk rtmp-update-interval 50
```

Syntax: appletalk qos socket < 0 | 1 >

Possible values: 1 to 3600 seconds

Default value: 10 seconds

appletalk zip-query-interval

Allows the user to modify how often ZIP query messages are retransmitted.

EXAMPLE: To change the ZIP query interval to 30 seconds from a default value of 10 seconds, the user would enter the following:

```
HP9300 (config)# appletalk zip-query-interval 30
```

Syntax: appletalk zip-query-interval < value >

Possible values: 1 to 1000 seconds

Default value: 10 seconds

arp…

Enters a static IP ARP entry for static routes on an HP routing switch.

EXAMPLE:

```
HP9300(config)# arp 1 192.53.4.2 1245.7654.2348 e2
```

Syntax: arp <number> <ip address> <mac address> ethernet <port>

Possible values: Up to 16,000 entries can be defined.

Default value: N/A

atalk-proto

Creates an AppleTalk protocol VLAN on an HP routing switch. When first assigned, all ports are assumed by default to be members of the VLAN. VLAN membership can be modified using the ***dynamic, static*** or ***exclude*** commands.

EXAMPLE: To create an AppleTalk Protocol VLAN with permanent port membership of 9 and 13 and no dynamic ports, the user would enter the following commands.

```
HP9300(config)# atalk-proto
HP9300(config-atalk-proto)# static e9 e13
HP9300(config-atalk-proto)# no dynamic
HP9300(config-atalk-proto)# exit
```

Syntax: atalk-proto

Possible values: N/A

Default value: N/A

boot system bootp

Initiates a system boot from a BootP server. The user can specify the preferred initial boot source and boot sequence in the **startup-config** file. If upon boot, the user-specified boot source and sequence fails then by default, the routing switch will attempt to load the software image from a different source. The following sources will be tried one at a time, in the order noted, until a software load is successful.

- flash primary
- flash secondary
- bootp

Should the image not load successfully from the above sources, the boot will prompt the user to enter alternative locations from which to load an image:

- boot system bootp
- boot system flash primary
- boot system flash secondary
- boot system tftp

EXAMPLE:

```
HP9300(config)# boot sys bootp
```

Syntax: boot system bootp

Possible values: N/A

Default value: N/A

boot system flash primary

Initiates a system boot of the primary software image stored in flash.

EXAMPLE:

```
HP9300(config)# boot sys fl pri
```

Syntax: boot system flash primary

Possible values: N/A

Default value: N/A

boot system flash secondary

Initiates a system boot of the secondary software image stored in flash.

EXAMPLE:

```
HP9300(config)# boot sys fl sec
```

Syntax: boot system flash secondary

Possible values: N/A

Default value: N/A

boot system tftp

Initiates a system boot of the software image from a TFTP server.

EXAMPLE:

```
HP9300(config)# boot sys tftp 192.22.33.44 current.img
```

NOTE: Before entering the TFTP boot command, the user must first assign an **IP address**, **IP mask** and **default gateway** (if applicable) at the boot prompt as shown.

EXAMPLE:

```
boot>ip address 192.22.33.44 255.255.255.0
boot>ip default-gateway 192.22.33.1
```

The user would then proceed with the ***boot system tftp…*** command.

Syntax: boot system tftp <ip address> <filename>

Possible values: N/A

Default value: N/A

NOTE: Please refer to **Chapter 3** of this manual for more information regarding software and configuration file transfers and updates.

bootp-relay-max-hops

Defines the maximum number of hops that a BootP request will be allowed to traverse before being dropped.

EXAMPLE:

```
HP9300(config)# bootp-relay-max-hops 5
```

Syntax: bootp-relay-max-hops <value>

Possible values: 1 to 15

Default value: 4

chassis name

This command is used to name HP 9304M and HPO 9308M systems.

EXAMPLE: To change the name of an HP 9304M to RouterNYC from the system default, the user would enter the following:

```
HP9300(config)# chassis name routernyc
Routernyc(config)#
```

Syntax: chassis name <text>

Possible values: Up to 32 alphanumeric characters can be assigned to hostname text string.

Default value: HP9300

clock summer-time

This command will automatically activate and deactivate daylight savings time for the relevant time zones.

EXAMPLE:

```
HP9300# clock summer-time
```

Syntax: clock summer-time

Possible values: N/A

Default value: N/A

clock time-zone

Allows the user to define the time zone of the clock. This parameter is used in conjunction with the ***clock set*** command or for timestamps obtained from a SNTP server. The ***clock set...***command is configured at the privileged EXEC level of the CLI.

NOTE: This clock command should be set before all others to ensure accuracy of the clock settings.

NOTE: For those time zones that recognize daylight savings time, the ***clock summer-time*** command will also need to be defined.

NOTE: Clock settings are not saved over power cycles; however, the user can configure the system to reference a SNTP server at power up. This server will then automatically download the correct time reference for the network. The local routing switch will then adjust the time according to its time zone setting. For more details on setting up a SNTP reference clock, refer to the ***sntp*** command at the privileged EXEC level and the ***sntp poll-interval*** and ***sntp server*** commands at the global CONFG level.

EXAMPLE:

```
HP9300# clock time-zone us eastern
```

Syntax: clock time-zone <gmt | us> <time zone>

Possible values: The following time zones can be entered for US or GMT:

US time zones: alaska, aleution, arizona, central, east-indiana, eastern, hawaii, michigan, mountain, pacific, samoa

GMT time zones: gmt+12, gmt+11, gmt+10...fmt+01, gmt+00, gmt-01...gmt-10, gmt-11, gmt-12

Default value: gmt + 00

decnet-proto

Creates a Decnet protocol VLAN on an HP routing switch. All ports will by default be assigned to the VLAN when initially created. VLAN Membership can be modified using the ***dynamic, static*** or ***exclude*** commands.

EXAMPLE: To create a Decnet protocol VLAN with permanent port membership of 15 and 16 with port 17 as a dynamic member port (on module 1), the user would enter the following commands.

```
HP9300 (config)# decnet-proto
HP9300 (config-decnet-proto)# static e 1/15 to 1/16
HP9300 (config-decnet-proto)# exclude e 1/1 to 1/14 e 1/18
```

Syntax: decnet-proto

Possible values: N/A

Default value: N/A

enable password

Three levels of passwords can be assigned to provide a range of access point for various users within the network.

The three levels are:

- Super user: This user has unlimited access to all levels of the CLI. This level is generally reserved for system administration. The super user is also the only user that can assign a password access level to another user.
- Configure Port: This user has the ability to configure interface parameters only. The user can also view any show commands.
- Read only: A user with this password level is only able to view show commands. No configuration is allowed with this password access type.

EXAMPLE:

```
HP9300(config)# enable super-user-password Alexis
HP9300(config)# enable read-only-password Jim
HP9300(config)# enable port-config-password Bill
```

Syntax: enable <super-user-password | read-only-password | port-config-password <text>

Possible values: Up to 32 alphanumeric characters can be assigned in the text field.

Default value: No system default

enable skip-page-display

Removes the stop page display characteristic for the ***write terminal*** command. For example, by default, when a user enters the command ***write terminal*** the full configuration will generally involve more than a single page display. A user will be prompted to enter the return key to view the next page of information. When this command is enabled, this page-by-page prompting will be removed and the entire display will roll on the screen until the end is reached.

To re-enable the stop page display characteristic, the user should enter the ***no enable skip-page-display.***

EXAMPLE: To remove the page-by-page display of configuration information, enter the following:

```
HP9300(config)# enable skip-page-display
```

Syntax: enable skip-page-display

Possible values: N/A

Default value: Disabled

enable telnet password…

Allows the user to assign a password for Telnet session access. To close a Telnet session, the user should enter ***logout***.

EXAMPLE:

```
HP9300(config)# enable telnet password secretsalso
```

Syntax: enable telnet password <text>

Possible values: Up to 32 alphanumeric characters can be assigned as the password.

Default value: No system default.

end

Moves activity to the privileged EXEC level from any level of the CLI, with the exception of the user level.

EXAMPLE: To move to the privileged level, the user would enter the following from any level of the CLI.

```
HP9300(config)# end
HP9300#
```

Syntax: end

Possible values: N/A

Default value: N/A

exit

Moves activity up one level from the current level. In this case, activity will be moved to the privileged level.

EXAMPLE:

To move from the global level, back to the privileged level, the user would enter the following:

```
HP9300(config)# exit
HP9300#
```

Syntax: exit

Possible values: N/A

Default value: N/A

flow-control

Allows the user to turn flow control (802.3x) for full-duplex ports on or off (no). By default, flow control is on. To turn the feature off, the user would enter the command ***no flow-control***.

EXAMPLE:

```
HP9300(config)# no flow-control
```

To turn the feature back on later, the user would enter the command:

```
HP9300(config)# flow-control
```

Syntax: [no] flow-control

Possible values: N/A

Default value: on

interface ethernet

Accesses the interface CONFIG level of the CLI. The user can define a physical or virtual interface (ve) at this level.

To reach the interface level for a specific interface to make configuration changes, e.g. port 1 on module 2, the user would enter the following:

```
HP9300(config)# inter e 2/1
HP9300(config-if-2/1)#
```

Syntax: interface <ethernet | ve> <slot/port number>

Possible values: N/A

Default value: N/A

ip arp-age

Defines how long an ARP entry will be resident in the ARP cache before it is aged out.

EXAMPLE:

```
HP9300(config)# ip arp-age 20
```

Syntax: ip arp-age

Possible values: 0 to 240 minutes

Default value: 10 minutes

ip dns domain-name

This command is used to define a domain name for a range of addresses on the HP routing switch. This will eliminate the need for a user to type in the domain name. It will automatically be appended to the hostname.

EXAMPLE:

```
HP9300(config)# ip dns-domain-name newyork.com
```

Syntax: ip dns domain-name

Possible values: N/A

Default value: N/A

ip dns server-address

Up to four DNS servers can be defined for each DNS entry. The first entry serves as the primary default address (207.95.6.199). Should a query to the primary address fail to be resolved after three attempts, the next gateway address will be queried for three times as well. This process will continue for each defined gateway address until a query is resolved. The order in which the default gateway addresses are polled is tied to the order in which they are entered when initially defined as shown in the example.

EXAMPLE:

```
HP9300(config)# ip dns server-address 207.95.6.199 205.96.7.1
208.95.7.25 201.98.7.15
```

Syntax: ip dns server-address <ip address>

Possible values: N/A

Default value: N/A

ip filter

Enables IP filtering on an HP routing switch. When filtering on TCP and UDP, the items shown in brackets [ ] in the syntax description, must also be supplied, i.e. operator, port number.

Possible values:

icmp

igmp

igrp

ospf

tcp

udp

Possible operator values:

eq	equals
gt	greater than
lt	less than

neq not equal to

Possible port numbers:

bgp

ftp

pop3

smtp

telnet

www

<protocol number>

EXAMPLES:

```
HP9300(config)# ip filter 1 permit any any tcp eq ftp
```

-OR- if entering specific ip addresses…

```
HP9300(config)# ip filter 1 permit 192.38.5.54 255.255.255.0 195.38.5.53
255.255.255.0 tcp eq ftp
```

Syntax: ip filter <index> <permit|deny> <any> OR <source ip address> <source mask> <destination ip > <destination mask> [protocol type] [operator] [port number]

Possible values: N/A

Default value: N/A

ip forward-protocol

This command is used in conjunction with the UDP helper feature to define the type of application traffic (port number socket) that is being forwarded to the server.

EXAMPLE:

```
HP9300 (config)# ip-forward-protocol udp snmp-trap
```

Syntax: ip forward-protocol udp <UDP application type>

Possible values:

The following port socket options are defined:

number	echo	snmp-trap
bootpc	mobile-ip	tacacs
bootps	netbios-dgm	talk
discard	netbios-ns	
dnsix	ntp	
tftp	snmp	

In addition, the user can specify any UDP application by using the number option listed above.

Default value: By default, when an IP helper address is configured on an interface, UDP broadcast forwarding is enabled for the following UDP packets: bootps, domain, tftp, time, netbios-dgm, netbios-ns and tacacs.

ip igmp group-membership-time

Defines how long a group will remain on an interface in the absence of a group report, if DVMRP is enabled on the router.

This feature is automatically activated when the DVMRP routing protocol is enabled on the router.

EXAMPLE:

```
HP9300(config)# ip igmp group-membership-time 240
```

Syntax: ip igmp group-membership-time <value>

Possible values: 1 to 7,200 seconds

Default value: 140 seconds

ip igmp query-interval

Defines how often the router will query an interface for group membership.

This feature is automatically activated when the DVMRP routing protocol is enabled on the router. DVMRP must be enabled for this command to be operational.

EXAMPLE:

```
HP9300(config)# ip igmp query 120
```

Syntax: ip igmp query-interval <value>

Possible values: 1 to 3,600 seconds

Default value: 60 seconds

ip irdp

Enables a router to advertise its network IP addresses to the network. The router will also answer queries. IRDP stands for ICMP router discovery protocol (IRDP).

EXAMPLE:

```
HP9300(config)# ip irdp
```

Syntax: ip irdp

Possible values: On, off

Default value: On

ip load-sharing

Allows traffic being sent from one router to another to be sent across multiple paths of equal cost for faster transmission when using OSPF routing.

OSPF routing must be enabled on the router for this command to operate.

EXAMPLE:

```
HP9300(config)# ip load
HP9300(config)# exit
```

Syntax: ip load-sharing

Possible values: on, off

Default value: on

ip-proto

This command creates an IP protocol VLAN on a routing switch.

No ports are dynamically assigned to an IP protocol VLAN. VLAN port membership must be assigned using the ***static*** command, as shown in the example below. Because no dynamic port assignment is made for IP Protocol VLANs, there is no need to exclude any ports, only specify membership with the ***static*** command.

An IP protocol and IP sub-net VLAN cannot operate simultaneously on an HP routing switch. This restriction is also true for IPX and IPX network VLANs. If the user had previously defined an IP sub-net VLAN on the system, he or she would need to delete it before an IP protocol VLAN could be created.

EXAMPLE:

To assign ports 1, 2, 6 and 8 (on module 3) to an IP protocol VLAN, enter the following:

```
HP9300(config)# ip-proto
HP9300(config-ip-proto)# static e 3/1 to 3/2 e 3/6 e 3/8
```

Syntax: ip-proto

Possible values: N/A

Default value: N/A

ip proxy-arp

Allows a router to act as a proxy for devices on its interfaces, in responding to ARP requests.

EXAMPLE:

```
HP9300(config)# ip proxy
```

Syntax: ip proxy-arp

Possible values: On or off

Default value: On

ip rarp

Enables Reverse Addressing Resolution Protocol (RARP) and allows the routing switch to assign IP addresses for hosts based on their MAC address. A router will check the user-configured RARP table for an IP match to a MAC address sent from a host. If resident, the router will answer back with the IP address.

EXAMPLE:

```
HP9300(config)# ip rarp
```

Syntax: ip rarp

Possible values: N/A

Default value: N/A

ip route

Allows the user to configure static IP routes for an HP routing switch.

EXAMPLE:

```
HP9300(config)# ip route 1 192.0.0.0 255.0.0.0 195.1.1.1
```

NOTE: The user can also assign the default router as the destination by entering 0.0.0.0 0.0.0.0.

Syntax: ip route <routenumber> <ip address> <ip mask> <ip address>

Possible values: Route number (1 to 16), IP address and mask of destination, Next hop router IP address

Default value: N/A

ip-subnet

Creates an IP sub-net protocol VLAN on a routing switch. This allows the user to provide additional granularity than that of an IP protocol VLAN, by allowing broadcast domains to be partitioned by sub-net. As with the IP protocol VLAN, port membership can be modified using the ***static*** commands. In creating an IP sub-net VLAN, an IP address is used as an identifier.

No ports are dynamically assigned to an IP sub-net VLAN. VLAN port membership must be assigned using the ***static*** command, as shown in the example below. Because no dynamic port assignments are made for IP sub-net VLANs, there is no need to exclude any ports, only specify membership with the ***static*** command.

NOTE: An IP Protocol and IP sub-net VLAN cannot operate simultaneously on an HP routing switch. This restriction is also true for IPX and IPX network VLANs. If the user had previously defined an IP protocol VLAN on the system, he or she would need to delete it before an IP sub-net VLAN could be created.

EXAMPLE: To create an IP sub-net of IP address 192.75.3.0 with permanent port membership of 1 and 2 on module 4, the user would enter the following commands.

```
HP9300 (config)# ip-subnet 192.75.3.0 255.255.255.0
HP9300 (config-ip-subnet)# static e 4/1 to 4/2
HP9300 (config-ip-subnet)# exit
```

Syntax: ip-subnet <ip address> <ip mask>

Possible values: N/A

Default value: N/A

ip ttl

Sets the maximum time that a packet will live on the network.

EXAMPLE:

```
HP9300(config)# ip ttl 25
HP9300(config)# exit
HP9300# write mem
```

Syntax: ip ttl <value>

Possible values: 1 to 255 hops

Default value: 64 hops

ipx forward-filter

Defines forward filters for IPX routes.

IPX must be enabled and a network number and frame type defined for each IPX interface, for this command to be operational.

EXAMPLE:

```
HP9300(config)# ipx forward-filter 2 permit 1110005 451 11101050 120 any
```

Syntax: ipx forward-filter <index> <permit|deny> <source network number | any> <source node number | any> <destination network number | any> <destination node number | any> <destination socket number | any>

Possible values: up to 32 forward filters

Default value: N/A

ipx-network

Creates an IPX network protocol VLAN on a routing switch. This allows the user to provide additional granularity than that of the IPX protocol VLAN, by partitioning the broadcast domains by IPX network number. The frame type must also be specified when creating the IPX network VLAN.

On a router, no ports are dynamically assigned to an IPX network VLAN. VLAN port membership must be assigned using the ***static*** command, as shown in the example below. Because no dynamic port assignment is made for IPX network VLANs on a router, there is no need to exclude any ports, only specify membership with the ***static*** command.

NOTE: An IPX protocol and IPX network VLAN cannot operate simultaneously on an HP routing switch. This restriction is also true for IP and IP sub-net VLANs. If the user had previously defined an IPX protocol VLAN on the system, he or she would need to delete it before an IPX network VLAN could be created.

EXAMPLE: To create an IPX network VLAN with a network number of 500 and frame type of 802.2 with permanent port membership of 10 and 14 on module 5, the user would enter the following commands.

```
HP9300(config)# ipx-network 500 ethernet_802.2
HP9300(config-ipx-proto)# static e 5/10 e 5/14
HP9300(config-ipx-proto)# exit
```

Syntax: ipx-network <ipx network number> <frame encapsulation type> <netbios-allow | netbios-disallow>

Possible values: Frame encapsulation type values: ethernet_ii, ethernet_802.2, ethernet_802.3, or ethernet_snap

Default value: N/A

ipx netbios-allow

Enables NetBIOS broadcasts (type 20) to be routed over IPX. IPX must be enabled on the router and a network number and frame type defined for each IPX interface.

EXAMPLE:

```
HP9300(config)# ipx netbios-allow
```

Syntax: ipx netbios-allow

Possible values: N/A

Default value: disabled

ipx-proto

This command creates an IPX protocol VLAN on a routing switch. No ports are dynamically assigned to an IPX protocol VLAN. VLAN port membership must be assigned using the ***static*** command, as shown in the example below.

NOTE: An IPX protocol and IPX network VLAN cannot operate simultaneously on an HP routing switch. This restriction is also true for IP and IP sub-net VLANs. If the user had previously defined an IPX network VLAN on the system, he or she would need to deleted it before an IPX protocol VLAN could be created.

EXAMPLE: To assign ports 1, 2, 6 and 8 of module 4 to an IPX protocol, enter the following:

```
HP9300 (config)# ipx-proto
HP9300 (config-ipx-proto)# static e 4/1 to 4/2 e 4/6 e 4/8
HP9300 (config-ipx-proto)# exit
```

Syntax: ipx-proto

Possible values: N/A

Default value: N/A

ipx rip-filter

Defines IPX/RIP filters for the router. IPX must be enabled on the router for this command to be operational.

EXAMPLE:

```
HP9300(config)# ipx rip-filter 2 permit 11005000 fffff00
```

-OR-

```
HP9300(config)# ipx rip-filter 2 permit any any
```

Syntax: ipx rip-filter <index> <permit|deny> <network number | any> <network mask | any>

Possible values: Up to 32 RIP filters can be defined for a router

Default value: N/A

ipx rip-filter-group

Allows a group of filters to be applied globally to all IPX interfaces, via the Global Level, or individually to an IPX interface via the Interface Level. The filter can be applied to either incoming or outgoing traffic.

EXAMPLE: To apply previously defined filters 1, 2, 3 and 10 to all incoming IPX RIP routes across all interfaces, the user would enter the following command:

```
HP9300(config)# ipx rip-filter-group in 1 2 3 10
```

To apply filters on an individual interface (e.g. interface 2 on module 6) basis versus globally, the user would enter the following:

```
HP9300(config)# int e 6/2
```

```
HP9300 (config-if-6/2)# ipx rip-filter-group in 1 2 3 10
```

Syntax: ipx rip-filter-group <in|out> <index>

Possible values: in or out, filter Ids

Default value: disabled

ipx sap-filter

Defines IPX/SAP filters for all IPX interfaces on the router. The IPX network number and frame type must be defined for the interfaces for this command to be operational.

EXAMPLE:

```
HP9300(config)# ipx sap-filter 5 permit any server1
```

-OR-

```
HP9300(config)# ipx sap-filter 5 permit 0004 any
```

Syntax: ipx sap-filter <index> <permit|deny> <server type | any> <server name | any>

Possible values: Filter IDs

Default value: Disabled

ipx sap-filter-group

Allows a group of defined IPX/SAP filters to be applied either globally (via the Global Level) or individually (via the Interface Level) to IPX interfaces on the router.

The filter can be applied to either incoming or outgoing traffic.

EXAMPLE: To apply previously defined filters 2, 3 and 10 to all incoming IPX SAP server traffic across all interfaces, the user should enter the following command:

```
HP9300(config)# ipx sap-filter-group in 2 3 10
```

To apply filters on an individual interface (e.g. interface 2 on module 6) basis versus globally, the user would enter the following:

```
HP9300(config)# int e 6/2
HP9300 (config-if)# ipx sap-filter-group in 2 3 10
```

Syntax: ipx sap-filter-group <in|out> <index>

Possible values: in or out, defined filter indexes

Default value: N/A

lock-address ethernet

Allows a user to limit the number of devices that have access to a specific port. The parameter, **address count**, will only allow that value of learned addresses to have access to the port. Access violations will be reported as a SNMP trap.

EXAMPLE:

```
HP9300(config)#lock e 5/2 addr 15
HP9300(config-if-5/2)# end
HP9300# write memory
```

Syntax: lock-address ethernet <port number> [addr-count <number>]

Possible values: Address count: 1 to 2,048

Default value: Address count: 8

logging

The user can save SNMP traps locally to an event log on the routing switch by turning this feature on.

EXAMPLE: To enable logging of SNMP traps to a locally saved event log, the user would enter the following:

```
HP9300(config)# logging on
```

Syntax: logging <on | off>

Possible values: On, off

Default value: Disabled (off)

mac-age-time

Sets the aging period for all address entries in the routing switch address table.

EXAMPLE:

```
HP9300(config)# mac-age 600
```

Syntax: mac-age-time <value>

Possible values: 0 to 65,535 seconds

Default value: 300 seconds

mac filter

This allows the user to filter on MAC addresses.

EXAMPLE:

```
HP9300(config)# mac filter 2 deny 3565.3475.3676 any etype eq 806
```

Syntax: mac filter <index> <permit|deny> <any | H.H.H> <any | H.H.H> <etype | IIc | snap> <operator> <frame type>

Possible values:

- operator types are: eq, gt, lt, neq
- frame type should be represented by a hex number (e.g. the hex number for ARP is 806).

Default value: N/A

mac-filter-group

This command allows a user to globally assign a defined MAC filter.

EXAMPLE: To assign MAC filter 1 to all ports, the user would enter:

```
HP9300(config)# mac-filter-group 1
```

Syntax: mac-filter-group <index>

Possible values: N/A

Default value: N/A

mirror-port ethernet

Enables and assigns a specific port to operate as a mirror port for other ports on a routing switch. Once enabled, a user can connect an external traffic analyzer to the port for traffic analysis.

The user also needs to enable the ***monitor*** command on a port for it to be mirrored by this port.

EXAMPLE 1: To assign port 1 (module 7) as the mirror port and port 5 (module 7) as the port to be monitored, the user would enter the following:

```
HP9300(config)# mirror-port e 7/1
HP9300(config)# interface e 7/5
HP9300(config-if-7/5)# monitor on
```

Syntax: mirror-port ethernet <slot/port number>

Possible values: N/A

Default value: Undefined

netbios-proto

This command creates a NetBIOS protocol VLAN on an HP routing switch. All ports of the system are assumed, by default, to be members of the VLAN when initially created. VLAN Membership can be modified using the ***dynamic***, ***static*** or ***exclude*** commands.

EXAMPLE: To create a NetBIOS Protocol VLAN with permanent port membership of 4 and 5 and ports 8 through 12 as dynamic member ports, the user would enter the following commands. Assume all ports are members of module 2.

```
HP9300 (config)# netbios-proto
HP9300 (config-netbios-proto)# static e 2/4 e 2/5
HP9300 (config-netbios-proto)# exclude e 2/1 to 2/3 e 2/6 e 2/7 e 2/13 to 2/18
HP9300 (config-netbios-proto)# exit
```

Syntax: netbios-proto

Possible values: N/A

Default value: N/A

no

This command is used to disable many commands. To do so, the user places the word ***no*** before the command. The global level commands that can be disabled or removed in this manner are listed below:

- no appletalk...
- no arp...
- no boot...
- no bootp-relay-max-hops
- no broadcast-limit
- no chassis...
- no dhcp-gateway-list
- no enable...
- no hostname...
- no flow-control
- no interface...
- no ip...
- no ipx...
- no lock-address...
- no logging
- no mac-age-time...
- no max-ip-route...
- no mirror-port...
- no module...
- no password-change...
- no perf-mode
- no rarp
- no route-only

- no rmon...
- no router...
- no snmp-server...
- no static-mac-address...
- no system-max...
- no tag-type...
- no telnet-server...
- no telnet-timeout...
- no trunk...
- no vlan...
- no web-management...

other-proto

Creates an Other protocol VLAN on the system. All ports of the routing switch are by default dynamically assigned to the newly created VLAN. VLAN Membership can be modified using the ***dynamic***, ***static*** or ***exclude*** commands.

The user might use this option to define a protocol-based VLAN for protocols that are not specified as supported protocol VLANs on a routing switch, or do not require dedicated, separate broadcast domains.

EXAMPLE: Ports 13 through 16 (module 8) represent protocols Decnet and AppleTalk. The user has no need to separate traffic by protocol into separate broadcast domains, so he or she creates an Other Protocol VLAN with just those ports as members.

```
HP9300 (config)# other-proto
HP9300 (config-other-proto)# static e 8/13 to 8/16
HP9300 (config-other-proto)# exclude e 8/1 to 8/12
HP9300 (config-other-proto)# exit
```

Syntax: other-proto

Possible values: N/A

Default value: N/A

password-change

This command allows the system administrator to define those access points from which the system password can be defined. Options are ***serial-port-only***, ***telnet-only*** or ***any***. 'Any' would allow the password to be modified from a serial port or Telnet session.

EXAMPLE: To allow password changes from a serial port connection only, the system administrator would enter the following command:

```
HP9300(config)# password-change serial-port only
```

Syntax: password-change <any | serial-port-only | telnet-only>

Possible values: any, serial-port-only or telnet-only

Default value: None

perf-mode

This command allows the user to define the performance mode as 'high' to allow flow control to activate at an earlier stage, when heavy congestion exists on the network. This feature must be saved to memory and the system reset before it becomes active.

EXAMPLE:

```
HP9300(config)# perf-mode hi
```

Syntax: perf-mode <normal | hi>

Possible values: hi

Default value: normal

ping

The command performs an echo test to confirm connectivity to an identified device.

EXAMPLE:

```
HP9300(config)# ping 192.22.2.33
```

Syntax: ping <ip address | name>

Possible values: valid IP address

Default value: N/A

rarp

Enters a static IP RARP entry for static routes on an HP routing switch.

EXAMPLE:

```
HP9300(config)# rarp 1 1245.7654.2348 192.53.4.2
HP9300(config)# exit
HP9300# write mem
```

Syntax: rarp <number> <mac address>.<ip address> ethernet <slot/port>

Possible values: Up to 16 static RARP entries can be assigned

Default value: N/A

rmon alarm

The RMON alarm command defines what MIB objects are monitored, what type of thresholds will be monitored (falling, rising or both), the value of those thresholds and the sample type (absolute or delta).

An alarm event will be reported each time that a threshold is exceeded. The alarm entry also defines what action (event) to take should the threshold be exceeded.

A sample CLI alarm entry and its syntax is shown below:

EXAMPLE:

```
HP9300(config)# rmon alarm 1 ifInOctets.6 10 delta rising-threshold 100 1 falling
threshold 50 1 owner nyc02
```

Syntax: rmon alarm <entry number> <MIB object.interface number> <sampling time> <sample type> <threshold type> <threshold value> <event number> <threshold type> <threshold value> <event number> owner <text>

Possible values:

- Threshold type: rising-threshold or falling threshold
- Sample type: delta or absolute

Default value: N/A

rmon event

There are two elements to the RMON event group 4, the event control table and the event log table.

The event control table defines the action to be taken when an alarm is reported. Defined events can be found by entering the CLI command, ***show event***.

The event log table collects and stores reported events for retrieval by an RMON application.

EXAMPLE:

```
HP9300(config)# rmon event 1 description ‘testing a longer string’ log-and-trap
public owner nyc02
```

Syntax: rmon event <event entry> description <text string> <log | trap | log -and-trap> owner <RMON station>

Possible values: N/A

Default value: N/A

rmon history

All active ports by default will generate two RMON history (group 2) control data entries. Should a port become inactive then the two entries will automatically be deleted.

The two history entries that will be generated per system by default are:

- a sampling of statistics every 30 seconds, and
- a sampling of statistics every 30 minutes.

The user can modify how many of these historical entries are saved in an event log (buckets) as well as how often these intervals are taken. The station (owner) that collects these entries can also be defined.

To review the control data entry for each port, the user can enter the ***show rmon history*** command.

EXAMPLE:

```
HP9300(config)# rmon history 1 interface 5/1 buckets 10 interval 10 owner nyc02
```

Syntax: rmon history <entry number> interface <slot/port> buckets <number> interval <sampling interval> owner <text string>

Possible values: Buckets: 1 to 50 entries.

Default value: N/A

route-only

Disables Layer 2 switching on an HP routing switch.

EXAMPLE:

```
HP9300(config)# route-only
HP9300(config)# exit
HP9300# write mem
HP9300# reload
```

Syntax: route-only

Possible values: N/A

Default value: Enabled

router appletalk

This is a launch command that allows the user to move to the AppleTalk configuration level of the Command Line Interface (CLI).

EXAMPLE:

```
HP9300(config)# router appletalk
HP9300(config-atalk-router)# end
HP9300# write mem
HP9300# end
HP9300# reload
```

NOTE: The user must reset the system when AppleTalk is first enabled on the router via the ***router appletalk*** command. If the user has previously reset the system and defined AppleTalk interface(s), and the interface configuration represents an addition, then no reset of the system is required.

Syntax: router appletalk

Possible values: N/A

Default value: Disabled

router dvmrp

This is a launch command that allows the user to move to the DVMRP configuration level.

EXAMPLE:

```
HP9300(config)# router dvmrp
HP9300(config-dvmrp-router)#
```

Syntax: router dvmrp

Possible values: N/A

Default value: Disabled

router srp

This is a launch command that enables the SRP feature. SRP allows redundant paths to be assigned. Parameters for SRP are set via the interface level command, ***ip srp address <ip address>...***

EXAMPLE: To enable SRP on the router, enter the following:

```
HP9300(config)# router srp
```

Possible values: N/A

Default value: Disabled

router ipx

Activates IPX routing on a router.

EXAMPLE:

```
HP9300(config)# router ipx
```

Syntax: router ipx

Possible values: N/A

Default value: Disabled

router ospf

Activates OSPF routing on an HP routing switch and launches the user to the OSPF configuration level.

EXAMPLE:

```
HP9300(config)# router ospf
HP9300(config-ospf-router)#
```

Syntax: router ospf

Possible values: N/A

Default value: Disabled

router pim

Activates PIM multicast on a router.

EXAMPLE:

```
HP9300 (config)# router pim
HP9300(config-pim-router)#
```

Syntax: router pim

Possible values: N/A

Default value: Disabled

router rip

Activates RIP routing on a router and launches the user to that configuration level to assign or modify RIP parameters.

EXAMPLE:

```
HP9300(config)# router rip
HP9300(config-rip-router)#
```

Syntax: router rip

Possible values: N/A

Default value: Disabled

show…

Displays a variety of configuration and statistical information about the routing switch. The following show commands are available at the privileged EXEC level:

- show appletalk
- show arp
- show cache-group
- show chassis
- show configuration
- show flash
- show interfaces
- show ip
- show ip cache
- show ip filter-cache
- show ip dvmrp...

- show ip srp
- show ip interface
- show ip multicast
- show ip policy
- show ip ospf...
- show ip pim
- show ip rip
- show ip route
- show ip traffic
- show ipx cache
- show ipx interface
- show ipx route
- show ipx servers
- show ipx traffic
- show logging
- show mac-address
- show media
- show module
- show rmon
- show snmp-server
- show spanning-tree
- show statistics
- show tech
- show telnet
- show trunk
- show version
- show vlan

NOTE: To see a description of the commands listed above, refer to the **All Levels** section of this appendix.

NOTE: The command summary listed above is a complete listing of all commands that are found across all platforms. Some commands may not be available on all platforms.

snmp-server community

Assigns a SNMP community string for the system. It will register to the configuration file, a user-specified network community string and an access type of either:

- read-only (ro, i.e. public), or
- read-write (rw, private).

EXAMPLE:

```
HP9300(config)# snmp-server community planet1 ro
```

Syntax: snmp-server community <string> <ro|rw>

Possible values: Up to 32 alphanumeric characters for the community string.

Default value: No system default.

snmp-server contact

Identifies a system contact. The user can designate a contact name for the routing switch and save it in the configuration file for later reference. The user can later access contact information via the ***show snmp-server*** command.

EXAMPLE:

```
HP9300(config)# snmp-server contact Jack London

HP9300(config)# end

HP9300(config)# write memory
```

Syntax: snmp-server contact <text>

Possible values: Up to 32 alphanumeric characters for the system contact text string

Default value: N/A

snmp-server location

Identifies a system location for the routing switch. This information is saved in the configuration file for later reference. The user can later access system location information via the ***show snmp-server*** command.

EXAMPLE:

```
HP9300(config)# snmp-server location oakcabldg519

HP9300(config)# end

HP9300(config)# write memory
```

Syntax: snmp-server location <text>

Possible values: Up to 32 alphanumeric characters for the snmp-server location text string

Default value: N/A

snmp-server trap

When the command is preceded with the word ‘no’, the command is used to stop certain traps from being generated by a system. The following SNMP Traps are collected by default: authentication key, cold-start, link-up, link-down, new-root, topology-change, power-supply-failure and locked-address-violation.

EXAMPLE: To stop reporting incidences of links that are down, the user would enter the following commands:

```
HP9300(config)# no snmp-server trap link-down
HP9300(config)# end
HP9300(config)# write memory
```

Syntax: [no] snmp-server trap <trap>

Possible values: trap type (i.e. cold-start, new-root, etc.)

Default value: All of the following SNMP traps are enabled and will be generated by default for a system: authentication key, cold-start, link-up, link-down, new-root, topology-change, power-supply-failure and locked-address-violation

snmp-server trap-receiver

Assigns or removes a station as SNMP trap receiver. To assign the trap receiver, the user would use the command, ***snmp-server trap-receiver***. To later remove the trap receiver feature, the user would enter ***no snmp-server trap-receiver***.

EXAMPLE: To disable a station as a SNMP trap receiver, the user would enter the following:

```
HP9300(config)# no snmp-server trap-receiver 192.22.3.33 public
```

Syntax: [no] snmp-server trap-receiver <ip address> <communitystring>

Possible values: IP address of trap receiver station, community string

Default value: no system default

sntp poll-interval

This parameter sets how often clock updates are requested from a SNTP server.

EXAMPLE: To configure the routing switch to poll for clock updates from a SNTP server every 15 minutes, the user would enter:

```
HP9300(config)# sntp poll-interval 900
```

Syntax: sntp poll-interval <1-65535>

Possible values: 1 to 65535 seconds

Default value: 1800 seconds

sntp server

This command allows the user to define the SNTP server that will be used for clock synchronization for the HP routing switch. The user can either enter the SNTP server’s IP address or its hostname.

Up to three SNTP server entries can be defined.

EXAMPLE: To define the SNTP server (IP address 208.99.8.95) that will be polled by the routing switch for time updates, the user would enter:

```
HP9300(config)# sntp server
```

Syntax: sntp server <ip address | hostname>

Possible values:

Default value: No system default

spanning-tree

Enables or disables (no) Spanning Tree on the routing switch. This change can be viewed by the ***show spanning tree*** command. This feature is disabled by default.

To enable spanning tree, the user would enter the following:

```
HP9300(config)# span tree
HP9300(config)# end
HP9300(config)# write memory
```

To later disable spanning tree, the user would enter the following:

```
HP9300(config)# no span
HP9300(config)# end
HP9300(config)# write memory
```

Syntax: [no] spanning-tree

Possible values: N/A

Default value: Disabled

spanning-tree <parameter>

Spanning Tree bridge and port parameters are configurable via one CLI command. When no port-based VLANs are active on the system, spanning tree parameters are set at the Global CONFIG Level.

When port-based VLANs are active on the system, spanning tree protocol bridge and port parameters can be configured globally at the VLAN Level. Additionally, the user can disable or enable STP on an interface basis.

NOTE: If VLANs are active on a routing switch, spanning-tree will not be seen as an option at the Global CONFIG Level of the CLI but will be an option of the VLAN Level.

All bridge and port parameters have default values and do not need to be modified unless required to match network needs. Additionally, all values will be globally applied to the routing switch. By default this feature is enabled on switches and disabled on routers.

The user can modify the following STP Parameters:

1. Modify bridge parameters—forward delay, maximum age, hello time and priority
2. Modify port parameters—priority and path cost

EXAMPLE: The user wants to enable spanning tree on a system in which no port-based VLANs are active and change the hello-time from the default value of 2 to 8 seconds. Additionally, the user wants to change the path and priority costs for port 5 only. The user would enter the following commands.

```
HP9300 (config)# span hello-time 8
HP9300 (config)# span ethernet 5 path-cost 15 priority 64
```

Syntax: span [ethernet <portnumber> path-cost <value> priority <value>] forward-delay <value> hello-time <value> maximum-age <time> priority <value>

Possible values: see below

Bridge Parameters:

- Forward-delay: Possible values: 4 to 30 seconds. Default is 15 seconds.
- Max-age: Possible values: 6 to 40 seconds. Default is 20 seconds.
- Hello-time: Possible values: 1-10 seconds. Default is 2 seconds.
- Priority: Possible values: 1-65,535. Default is 32,678

Port Parameters:

- Path: Possible values: 1-65,535. Default: Auto

NOTE: The default value 'Auto' means that the port will adjust the default value automatically based on the port speed. The default value is based on the following formula:

  - Half-duplex ports: 1000/port speed
  - Full-duplex ports: (1000/port speed)/2
- Priority: possible values are 0-255. Default is 128

static mac-address

Defines a static MAC addresses on an individual port to ensure it is not aged out.

EXAMPLE:

```
HP9300(config)# static 1145.5563.67FF e 5/12 7
```

Syntax: static <mac address> ethernet <slot/port> [priority <0-7>]

Possible values: MAC address

Default value: N/A

system-max

This command allows the user to modify the default settings for a number of parameters

EXAMPLE:

```
HP9300(config)# system-max
```

Syntax: system-max <parameter> <value>

Possible values: See summary below:

CLI command	Parameter	Maximum value	Default value
system-max mac	MAC address	32,000	16,000
system-max vlan	Port VLANs	4096 Port VLANs	8 port VLANs
system-max l3-vlans	Layer 3 VLANs	128	32
system-max l4 session	Layer 4 sessions	4096	512
system-max arp	ARP entries	16,000	4,000
system-max ip cache	IP cache size	32,000	8,000
system-max ip-route	IP routes	220,000	OSPF: 40,000 RIP 40,000
system-max ip-route-sys	IP route filters	512	64/system
system-max ip-route-port	IP route filters	512	32 per interface
system-max ip-static-route	Static routes	64	16
system-max igmp	IGMP	1,024	255
system-max dvmrp	DVMRP routes	16,000	2,048
system-max ipx-sap-entry	IPX/SAP entries	8,192	4,096
system-max ipx-rip-entry	IPX/RIP entries	8,192	2,048
system-max ipx-sap-filter	IPX/SAP filters	128	32
system-max ipx-rip-filter	IPX/RIP filters	128	32
system-max forward-filter	IPX fwd filters	128	32
system-max atalk-route	AppleTalk routes	1024/sys; 255/if	512
system-max atalk-zone-sys	AppleTalk zones	1,536	255/sys; 64/if

tag-type

This parameter is used to define the value that will be sent out on a packet to indicate it as tagged VLAN port. The 802.1Q standard recognizes the value of 8100 for this purpose. Other values can be assigned to this parameter but are not recommended.

EXAMPLE:

```
HP9300(config)# tag-type 8100
```

Syntax: tag-type <value>

Possible values: 1-65535

Default value: 8100

telnet-server

This command is used to enable or disable Telnet access to an HP routing switch. By default, Telnet access is allowed on a system.

EXAMPLE: To disable Telnet access to a routing switch, the user would enter the following:

```
HP9300(config)# no telnet-server
```

Syntax: [no] telnet-server

Possible values: Enabled or disabled

Default value: Enabled

telnet-timeout

This parameter defines how long a Telnet session can remain idle before it is timed-out.

EXAMPLE:

```
HP9300(config)# telnet-timeout
```

Syntax: telnet-timeout <0-240>

Possible values: 0 to 240 seconds

Default value: 0 seconds

trunk <switch | server> ethernet

This command allows a user to add a trunk group to a routing switch or server for high-speed connections.

EXAMPLE: To assign ports 1, 2 and 3 (module 1) to a trunk group on the system, enter the following command:

```
HP9300(config)# trunk switch e 1/1 to 1/3
```

A trunk group must then also be configured on the connecting HP routing switch at the other end of the trunk group. The term switch is used to refer to the HP routing switch.

If you are going to connect to a server, then enter the following command:

```
HP9300(config)# trunk server e 1/1 to 1/3
```

This will connect a trunk group of ports 1, 2 and 3 of module 1 to a server.

Summary of Trunk Group Rules

- Up to four trunk groups may be assigned.HP9300
- Trunk group port assignment should always start with the lead port, i.e. 1, 5, 9, 13,17, or 24.
- Port assignment must be contiguous
- Ports cannot be assigned across multiple trunk group boundaries, e.g. ports 4 and 5 cannot be in the same trunk group
- All of the trunk group member properties must match the lead port of the trunk group with respect to the following parameters:
  - Port tag type (untagged or tagged port)
  - Port speed and duplexHP9300
  - QoS priority

Syntax: trunk <server|switch> ethernet <slot/port> to <slot/port>

Possible values: Varied

Default value: Disabled

vlan max-vlans

Allows the user to assign a set number of VLANs to be supported on a routing switch. This allows the user to set a smaller value than the default to preserve memory on the system.

EXAMPLE:

```
HP9300 (config)# vlan max-vlans 200
```

Syntax: vlan max-vlans <value>

Possible values: 1 to 4,096

Default value: 8

web-management

This command is used to enable or disable the web management interface on a routing switch. By default this feature is enabled on a system.

EXAMPLE: To disable the web management interface on a routing switches, the user would enter the following:

```
HP9300(config)# no web-management
```

Syntax: [no] web-management

Possible values: Enabled, Disabled

Default value: Enabled

write memory

Saves the running-time configuration into the startup-config file.

EXAMPLE:

```
HP9300# wr mem
```

Syntax: write memory

Possible values: N/A

Default value: N/A

write terminal

Displays the running-configuration of the routing switch on the terminal screen.

EXAMPLE:

```
HP9300# wr term
```

Syntax: write terminal

Possible values: N/A

Default value: N/A

CONFIG Commands – Interface Level

appletalk address

This command is used to assign AppleTalk addresses to a seed router.

EXAMPLE: To assign an AppleTalk address of 10.5 to interface 3, module 2 the user would enter the following:

```
HP9300(config)# int e 2/3
HP9300(config-if-2/3)# appletalk address 10.5
```

Syntax: appletalk address <node.network>

Possible values: N/A

Default value: N/A

appletalk arp-age

This defines how long an AppleTalk ARP entry will remain active before being aged out.

EXAMPLE:

```
HP9300(config)# int e 2/3
HP9300(config-if-2/3)# appletalk arp-age 115
```

Syntax: appletalk arp-age <1-240>

Possible values: 1 to 240 minutes

Default value: 10 minutes

appletalk cable-range

This command is used to assign network numbers (cable range) to an AppleTalk seed router.

EXAMPLE: To support network numbers between 10 and 50 on interface 3 (module 2):

```
HP9300(config)# int e 2/3
HP9300(config-if-2/3)# appletalk cable-range 10 - 50
```

Syntax: appletalk cable-range <network number | network number - network number>

Possible values: N/A

Default value: N/A

appletalk deny...

This command is used to restrict access to an AppleTalk zone.

EXAMPLE: To deny Marketing (found on interface 2/1) and Field Service (found on interface e 2/3) zones access to the Finance server, the user would enter the following:

```
HP9300(config)# int e 2/1
HP9300(config-if-2/1)# appletalk deny zone finance
HP9300(config)# int e 2/3
HP9300(config-if-2/3)# appletalk deny zone finance
```

Syntax: appletalk deny zone <zone name>

Possible values: N/A

Default value: N/A

appletalk permit...

This command is used to allow access to an AppleTalk zone.

EXAMPLE: To allow Marketing (found on interface 2/1) and Field Service (found on interface e 2/3) zones access to the Finance server, the user would enter the following:

```
HP9300(config)# int e 2/1
HP9300(config-if-2/1)# appletalk permit zone finance
HP9300(config)# int e 2/3
HP9300(config-if-2/3)# appletalk permit zone finance
```

Syntax: appletalk permit zone <zone name>

Possible values: N/A

Default value: N/A

appletalk routing

This command is used to enable AppleTalk routing on a seed router.

The user can also use this command, when preceded by no (***no appletalk routing***) to disable routing on an interface. Routing is disabled when the user needs to make configuration changes to the seed router. After all the changes are made, the user then re-enables routing on the interface using the ***appletalk routing*** command.

EXAMPLE: To enable AppleTalk routing on interface 2/1, the user would enter the following:

```
HP9300(config)# int e 2/1
HP9300(config-if-2/1)# appletalk routing
HP9300(config)# int e 2/3
HP9300(config-if-2/3)# appletalk permit zone finance
```

Syntax: [no] appletalk routing

Possible values: N/A

Default value: N/A

appletalk zone-name

This command is used to assign AppleTalk zones to a seed router.

EXAMPLE: To assign Marketing and Sales zones to interface 2/1, the user would enter the following:

```
HP9300(config)# int e 2/1
HP9300(config-if-2/1)# appletalk zone sales
HP9300(config-if-2/1)# appletalk zone marketing
```

Syntax: appletalk zone-name <zone name>

Possible values: N/A

Default value: N/A

auto-gig

Enables auto-negotiating on a gigabit interface in accordance with the flow control specification 802.3X. Both sides of the circuit need to be configured with this feature.

EXAMPLE:

```
HP9300(config)# int e 1/4
HP9300(config-if-1/4)# auto-gig
```

Syntax: auto-gig

Possible values: on or off

Default value: disabled

disable

Disables a specific port.

EXAMPLE:

```
HP9300(config)# interface e 1/5
HP9300(config-if-1/5)# disable
```

Syntax: disable

Possible values: N/A

Default value: N/A

enable

Enables a specific port. All ports are enabled at initial startup. This command is only necessary if a port has been disabled, as all ports are by default enabled at system startup.

EXAMPLE:

```
HP9300(config)# interface e 1/5
HP9300(config-if-1/5)# enable
```

Syntax: enable

Possible values: N/A

Default value: All ports are enabled at system startup.

end

Moves activity to the privileged level from any level of the CLI with the exception of the users level.

EXAMPLE: To move to the privileged level, the user would enter the following:

```
HP9300(config-if-5/3)# end
HP9300#
```

Syntax: end

Possible values: N/A

Default value: N/A

exit

Moves activity up one level from the current level of the CLI. This command is available at all levels.

EXAMPLE: To move from the interface level, back to the global level, the user would enter the following:

```
HP9300(config-if-4/3)# exit
HP9300(config)#
```

Syntax: exit

Possible values: N/A

Default value: N/A

flow-control

Allows the user to turn flow control (802.3x) for full-duplex ports on or off (no). Flow control is configured on, by default.

EXAMPLE: To turn the feature off, the user would enter the following:

```
HP9300 (config)# int e 4/5
HP9300 (config-if-4/5)# no flow control
```

To turn the feature on after being turned off, the user would enter the following:

```
HP9300 (config-if-4/5)# flow-control
```

Syntax: [no] flow-control

Possible values: N/A

Default value: on

ip address

Assigns interface (sub-net) addresses to router interfaces. Up to eight IP addresses (multi-homing) can be supported on HP routing switches.

EXAMPLE:

```
HP9300(config)# int e 2/3
HP9300(config-if-2/3)# ip address 192.55.6.54 255.255.0.0
```

Syntax: ip address <ip address> <ip mask> [secondary]

Possible values: Valid IP address

Default value: N/A

ip dvmrp advertise local

Enables (on) or disables (off) advertisement of a local route on an interface with DVMRP enabled. DVMRP must be enabled on the router for this command to be operational.

EXAMPLE:

```
HP9300(config)# int e 1/4
HP9300(config-if-1/4)# ip dvmrp advertise-local on
```

Syntax: advertise-local <on | off>

Possible values: on, off

Default value: off

ip dvmrp metric

Sets the default metric for a directly connected interface, when operating with DVMRP multicast.

EXAMPLE:

```
HP9300(config)# interface 3/5
HP9300(config-if-3/5)# ip dvmrp metric 10
```

Syntax: ip dvmrp metric <value>

Possible values: 1 to 31 hops

Default value: 1 hop

ip dvmrp ttl-threshold

Specifies how long a packet is considered viable on an interface configured for DVMRP multicast.

EXAMPLE: To modify the default TTL value for interface 1 that is configured to operate with DVMRP, enter the following:

```
HP9300(config)# int e 1/4
HP9300(config-if-1/4)# ip dvmrp ttl 60
```

Syntax: ttl-threshold <value>

Possible values: 1 to 254

Default value: 1

ip dvmrp encapsulation

Enables IP encapsulation and defines the type of encapsulation to be used on a given port.

EXAMPLE:

```
HP9300(config)# int e 1/6
HP9300(config-if-1/6)# ip dvmrp encap ethernet-2
```

Syntax: ip encapsulation <ethernet-2 | snap>

Possible values: ethernet-2, snap

Default value: ethernet-2

ip filter-group

Assigns an IP filter group to an interface and defines whether or not those filters are to be applied to either incoming or outgoing routes or both. Filters must already be defined and resident in the router's filter table for this command to be operational.

EXAMPLE: To assign filters 2, 3 and 4 to interface 1 (module 4), the user would enter the following:

```
HP9300(config)# int e 4/1
HP9300(config-if-4/1)# ip filter gr in 2 3 4
```

Syntax: ip filter-group <in | out> <filter number> [filter number]

Possible values: defined filter numbers. Individual or multiple filters can be defined at a time as seen in the command example above.

Default value: N/A

ip srp address preference

Modifies the priority for a router interface configured for SRP operation. The router in the network with the highest value will be the **active (master)** router.

SRP must be active on the router for this command to be operational. SRP is enabled at the global CONFIG level.

EXAMPLE: To modify the preference (priority) of a router interface, the user would enter the following command:

```
HP9300(config)# inter e 6/1
HP9300(config-if-6/1)# ip srp add 192.33.52.5 pref 200
```

Syntax: ip srp address <ip address> preference <value>

Possible values: 1 to 255

Default value: 60

ip srp address track-port

Assigns a track port for use by the SRP protocol. The **track port** feature is used to track the status of those ports that provide redundant paths. Should a change in state—up or down, occur, the track port will detect this and the priority of the SRP Group Interface will be increased or decreased.

SRP must be active on the router for this command to be operational. SRP is enabled at the global CONFIG level.

EXAMPLE:

```
HP9300(config)# inter e 2/1
HP9300(config-if-2/1)# ip srp add 192.33.52.5 track 1
```

Syntax: ip srp address <ip address> track-port <port>

Possible values: Range is determine by port capacity of the routing switch module

Default value: Disabled

ip srp address vir-rtr-ip

Defines the virtual router and its address for the specified interface. The virtual router IP address needs to be configured on at least one router in the SRP group.

NOTE: The virtual router is what arbitrates the redundant path management under the SRP protocol.

SRP must be active on the router for this command to be operational. SRP is enabled at the global CONFIG level.

Syntax: ip srp address <ip address> vir-rtr-ip <ip address>

NOTE: The virtual IP router must belong to the same sub-net and SRP group as the defined SRP interface.

EXAMPLE:

```
HP9300(config)# inter e 1/5
HP9300(config-if-1/5)# ip srp add 192.33.52.5 vir-rtr-ip 195.45.5.1
```

Possible values: N/ A

Default value: 0.0.0.0

ip srp address vir-rtr-ip other-rtr-ip

Defines the partner router interface address. SRP must be active on the router for this command to be operational.

EXAMPLE:

```
HP9300(config)# inter e 1/3
HP9300(config-if-1/3)# ip srp add 192.33.52.5 vir-rtr-ip 195.45.5.1 other-rtr-ip
195.55.2.1
```

Syntax: ip srp address <ip address> vir-rtr-ip <ip address> other-rtr-ip <ip address>

Possible values: N/A

Default value: 0.0.0.0

ip srp <ip address> keep-alive-time

The ***keep-alive-time*** parameter allows the user to modify how often the SRP hello message will be sent on a router's interface on which the keep alive time is being configured.

NOTE: The ***keep-alive-time*** value must be set to the same value on both the active and standby router when both routers are connected to the same sub-net.

EXAMPLE:

```
HP9300 (config)# int 3/2
HP9300 (config-if-3/2)# ip srp 192.55.4.3 keep-alive-time 15
```

Syntax: ip srp <ip address> keep-alive-time <value>

Possible values: 1 to 120 seconds

Default value: 3 seconds

ip srp <ip address> router-dead-time

The ***router-dead-time*** parameter allows the user to define the period of time (hold time) that the standby router will wait before determining the active router unavailable (dead). When the configured period of time expires, the standby router will become active.

NOTE: The ***router-dead-time value*** must be set to the same value on both the active and standby router when both routers are connected to the same sub-net.

EXAMPLE:

```
HP9300 (config)# int 4/2

HP9300 (config-if-4/2)# ip srp 192.55.4.3 router-dead-time 30
```

Syntax: ip srp <ip address> router-dead-time <value>

Possible values: 3 to 255

Default value: 9 seconds

ip helper-address

HP routing switches support the relay of UDP/DHCP packets to a destination for a specific application (e.g. bootps, domain, tftp), when the destination server is not on the local LAN segment.

To aid in relaying packets to a specific application on a server (e.g. bootps, bootpc, domain, TFTP, NetBIOS, time) on a remote network, the router is configured with the destination address of the remote server.

To enter the address of the remote server, the user would enter the commands below. Note that the interface entered is the interface on which the originating host is attached. The value '1' seen in the example, is the identifier of that UDP address. The valid range for identifiers for each interface is between 1 to 4.

EXAMPLE: To support relaying of UDP/DHCP packets to a remote server with an IP address of 207.95.7.6, the user would enter the following:

```
HP9300 (config)# interface e 5/2

HP9300 (config-if-5/2)# ip helper-address 1 207.95.7.6
```

Syntax: ip helper-address < value> <ip address>

Possible values: 1, 2, 3 or 4

Default value: N/A

ip metric

Defines the cost applied to all IP routes by default.

EXAMPLE:

```
HP9300(config)# int e 3/1

HP9300(config-if-3/1)# ip metric 15
```

Syntax: ip metric <value>

Possible values: 1 to 16

Default value: 1

ip mtu

Defines the maximum transmission unit (size) for IP packets on a given router interface.

EXAMPLE:

To change the MTU for an interface (e.g. port 5 on module 4) to 1000, the user would enter:

```
HP9300(config)# int e 4/5
HP9300(config-if-4/5)#ip mtu 1000
```

syntax: ip mtu <572-1500> (Ethernet SNAP); ip mtu <572-1492> (Ethernet II);

Possible values: Ethernet type: 572 to 1500; SNAP type: 572 to 1492

Default value: Ethernet type: 1500; SNAP type: 1492

ip ospf area

Assigns interfaces to an OSPF area. OSPF must be active on the router and reference the area IP address to which the router will be attached, for this command to be operational. OSPF is enabled at the global CONFIG level.

EXAMPLE: To assign interface (port) 1, module 5, of an HP routing switch to area ID, 192.45.1.0, the user would enter the following commands:

```
HP9300(config)# int e 5/1
HP9300(config-if-5/1)# ip ospf area 192.45.1.0
```

NOTE: Each port supports eight interfaces. All eight interfaces can be assigned to a port at one time via this command.

Syntax: ip ospf area <ip address>

Possible values: N/A

Default value: N/A

ip ospf authentication-key

Assigns a password for managed interface access when operating with OPSF.

OSPF must be active, and the areas to which the router will be attached assigned on the router, for this command to be operational.

EXAMPLE: To assign an authentication key (password) of 'passkey' for access to interface 1 (module 4), the user would enter the following:

```
HP9300(config)# int e 4/1
HP9300(config-if-4/1)# ip ospf authentication-key passkey
HP9300 (config-if-4/1)# end
HP9300# write memory
```

Syntax: ip ospf authentication-key <password>

Possible values: Up to 8 alphanumeric characters.

Default*:* None.

ip ospf cost

Represents the cost that will be advertised for an interface for various types of service e.g. low delay, high bandwidth (10^8/ Interface Speed) or link reliability.

The user would use this command to assign higher or lower costs than the default. This allows the user to bias traffic to or from links. The higher the cost on the link, the less desirable the path.

EXAMPLE: To assign a cost of 10 to interface 8 (module 2), the user would enter the following:

```
HP9300 (config)# int e 2/8
HP9300 (config-if-2/8)# ip ospf cost 10
```

Possible values: 1 to 65,535

Default: 1 for 100 or 1000 Mbps links; 10 for 10Mbps links

ip ospf dead-interval

Defines the number of seconds that a neighbor OSPF router will wait for receipt of a hello packet, before declaring the router down.

EXAMPLE: To change the dead interval time for interface 5 (module 3) from the default of 40 seconds, the user would enter the following:

```
HP9300(config)# int e 3/5
HP9300(config-if-3/5)# ip ospf dead-interval
```

Syntax: ip ospf dead-interval <value>

Possible values: 1-65,535 seconds.

Default: 40 seconds

ip ospf hello-interval

Defines the length of time between the transmission of OSPF hello packets.

EXAMPLE: To change the hello interval for interface 5 to 20 seconds from the default value of 10 seconds, the user would enter the following:

```
HP9300(config)# int e 3/5
HP9300(config-if-3/5)# ip ospf hello-interval 20
```

Syntax: ip ospf hello-interval <value>

Possible values: 1-65,535 seconds.

Default: 10 seconds

ip ospf priority

Indicates the priority of an interface. It is used to select the designated router. The higher the number, the greater the priority. In the case of equal priority, the router with the highest IP Address will be the designated router. A value of zero signifies that the router is not eligible to become the designated router on its network.

EXAMPLE: To modify the priority of interface 5 (module 2) to 15 from the default of 1 second the user would enter the following:

```
HP9300(config)# int e 2/5
HP9300(config-if-2/5)# ip ospf priority 15
```

Syntax: ip ospf priority <value>

Possible values: 1 to 255.

Default: 1 second

ip ospf retransmit-interval

Defines the time between retransmits of link state advertisements to router adjacencies for an interface.

EXAMPLE: To modify the retransmit interval of interface 5 (module 2) to 15 from the default of 5 seconds, the user would enter the following:

```
HP9300(config)# int e 2/5
HP9300(config-if-2/5)# ip ospf retransmit-interval 15
```

Syntax: ip ospf retransmit-interval <value>

Possible values: 0 to 3600 seconds

Default: 5 seconds

ip ospf transit delay

Indicates the time it takes to transmit Link State Update packets on an interface.

EXAMPLE: To modify the transit delay of interface 5 (module 2) to 10, from the default of 1 second, the user would enter the following:

```
HP9300(config)# int e 2/5
HP9300(config-if-2/5)# ip ospf transit-delay 10
```

Syntax: ip ospf retransmit-interval <value>

Possible values: 0 to 3600 seconds

Default: 1 second

ip rip

Sets the RIP type on all interfaces that will route RIP. The type of RIP routes accepted are

RIP version 1 only, RIP version 2 only or RIP v1-compatible-v2.

RIP must be active and the redistribution table set (via the permit and deny commands) for this command to be operational. RIP is enabled at the Global CONFIG Level.

EXAMPLE: To modify the RIP type for interface 1 (module 4), to version 1 only, the user should enter the following:

```
HP9300(config)# int e 4/1
HP9300(config-if-4/1)# ip rip v1-only
HP9300 (config-if-4/1)# end
HP9300# write memory
```

Syntax: ip rip <v1-only | v1-compatible-v2 | v2-only>

Possible values: v1-only, v1-compatible-v2, v2-only

Default value: v2-only

ip rip poison-reverse

Enables poison-reverse on the RIP routing protocol to prevent routing loops and slow convergence within the network.

For this command to be operational, RIP must be enabled and active on the router, and the RIP type configured.

EXAMPLE:

```
HP9300(config)# int e 4/1

HP9300(config-if-4/1)# ip rip poison-reverse
```

Syntax: ip rip poison-reverse

Possible values: N/A

Default value: enabled

ip tunnel

This is a launch command that moves activity to the IP tunnel CONFIG level. It allows the user to define an IP in IP tunnel for a specific interface. The requested IP address is the end point of the tunnel (the destination interface). IP tunnels must be defined for PIM and DVMRP multicast traffic that will be passing through routers that are not IP multicast capable.

For this command to be operational, PIM or DVMRP must be enabled on the router. IP tunneling must also be enabled and defined on the destination router interface.

EXAMPLE:

```
HP9300(config)# inter e 3/1

HP9300(config-if-3/1)# ip tun 192.33.65.4

HP9300(config-if-tunnel)# ip tun 192.33.65.4

HP9300(config-if-tunnel)# end

HP9300 # write mem
```

Syntax: ip tunnel <ip address>

Possible values: valid ip address

Default value: N/A

ipg10

This command allows users to modify the inter-packet gap (delay) between packets on a 10Mbps Ethernet segment. By default, the delay between packets will be 12 bytes or 9.6 microseconds.

The user would only use this command to adjust the inter-packet gap to match older adapters that do not meet the default IPG requirements for Ethernet.

In determining the value to enter in the CLI command, the user should note that one byte equals .8 microseconds for packets on a 10Mbps segment, so the following equation could be used:

IPG10 = 9.6 microseconds + (value *.8), where value is the number of bytes by which you want to increase the inter-packet gap.

EXAMPLE: To increase the delay between packets by 3.2 microseconds, the user would first enter the port to be modified and then enter the value of 4 (4*.8 =3.2 microseconds).

```
HP9300 (config)# int e 4/4

HP9300 (config-if-4/4)# ipg10 4
```

Syntax: ipg10 <value>

Possible values: 0 to 100 bytes

Default value: 12 bytes or ipg10 0

NOTE: Entering the value of 0 within the ***ipg10***, ***ipg100*** and ***ipg1000*** commands restore the inter-packet gap (IPG) to the default of 12 bytes.

---

ipg100

This command allows users to modify the inter-packet gap (delay) between packets on a 100Mbps Ethernet segment on a port-by-port basis. By default, the delay between packets will be 12 bytes or 0.96 microseconds.

The user would only use this command to adjust the inter-packet gap to match that of older adapters that do not meet the default IPG requirements for Fast Ethernet.

In determining the value to enter in the CLI command, the user should note that one byte equals .08 microseconds for packets on a 100Mbps segment, so the following equation could be used:

IPG100 = 0.96 microseconds + (value *.08), where value is the number of bytes by which you want to increase the inter-packet gap.

EXAMPLE: To increase the delay between packets by 3.2 microseconds, the user would first enter the port to be modified and then enter the value of 40(40*.08 =3.2 microseconds)

```
HP9300 (config)# int e 3/4

HP9300 (config-if-3/4)# ipg100 40
```

Syntax: ipg100 <value>

Possible values: 0 to 100

Default value: 12 bytes or ipg100 0

ipg1000

This command allows users to modify the inter-packet gap (delay) between packets on a 1000Mbps Gigabit Ethernet segment on a port-by-port basis. By default, the delay between packets will be 12 bytes or .096 microseconds.

The user would only use this command to adjust the inter-packet gap to match that of older adapters that do not meet the default IPG requirements for Gigabit Ethernet.

In determining the value to enter in the CLI command, the user should note that one byte equals .008 microseconds for packets on a 1000Mbps segment, so the following equation could be used:

IPG1000 =.096 microseconds + (value *.008), where value is the number of bytes by which you want to increase the inter-packet gap.

EXAMPLE: To increase the delay between packets by.32 microseconds, the user would first enter the port to be modified and then enter the value of 40(40*.008 =.32 microseconds)

```
HP9300 (config)# int e 3/4
HP9300 (config-if-4)# ipg1000 40
```

Syntax: ipg1000 <value>

Possible values: 1 to 100

Default value: 12 bytes or ipg1000 0

ipx forward-filter-group

Allows a group of defined forward filters to be applied to an IPX interface. The filter can be applied to either **in**coming or **out**going traffic.

Prior to using this command, the user first must enable IPX on the router via the ***router ipx*** command.

EXAMPLE:

```
HP9300(config)# int e 4/1
HP9300(config-if-4/1)# ipx forward-filter-group in 2 3 5
```

Syntax: ipx forward-filter-group <in|out> <index>

Possible values: in or out, defined filter indexes

Default value: N/A

ipx netbios-allow

Enables NetBIOS broadcasts (type 20) to be routed over IPX. IPX must be enabled on the router and a network number and frame type defined for each IPX interface.

EXAMPLE: To enable NetBIOS allow on an interface (e.g. module 5, port 2), the user would enter the following:

```
HP9300(config)# int e 5/2
HP9300(config-if-5/2)# ipx netbios-allow
```

Syntax: ipx netbios-allow

Possible values: N/A

Default value: disabled

ipx network

Assigns network numbers and frame types for each IPX interface. This is the second step in using IPX on the router. Prior to using this command, the user first must enable IPX on the router via the ***router ipx*** command.

EXAMPLE:

```
HP9300(config)# int e 3/2
HP9300(config-if-3/2)# ipx network 11110055 ethernet_snap
```

NOTE: Other frame types supported:

ethernet_802.2

ethernet_802.3

ethernet_ii

Syntax: ipx network <network number> <frame type>

Possible values: network number, frame type

Default value: N/A

ipx rip-filter-group

Allows a group of RIP filters to be applied to an IPX interface. The filter can be applied to either incoming or outgoing traffic.

EXAMPLE: To apply filters 1, 2 3, and 10 to an individual interface (e.g. interface 2, module 2) basis, the user would enter the following:

```
HP9300(config)# int e 2/2
HP9300 (config-if-2/2)# ipx rip-filter-group in 1 2 3 10
```

Syntax: ipx rip-filter-group <in|out> <index>

Possible values: in or out, defined filter indexes

Default value: disabled

ipx sap-filter-group

Allows a group of defined IPX/SAP filters to be applied to IPX interfaces. The filter can be applied to either incoming or outgoing traffic.

EXAMPLE: To apply filters 2, 3, and 5 to an individual interface (e.g. interface 2, module 3) basis, the user would enter the following:

```
HP9300(config)# int e 3/2
HP9300 (config-if-3/2)# ipx sap-filter-group in 2 3 5
```

Syntax: ipx sap-filter-group <in|out> <index>

Possible values: in or out, defined filter indexes

Default value: N/A

monitor

This allows a user to select a port to be diagnosed by a designated mirror port. A user can configure incoming, outgoing or both incoming and outgoing traffic to be monitored on the port.

EXAMPLE: To monitor both incoming and outgoing traffic on interface 5, module 5:

```
HP9300(config)# interface e 5/5
HP9300(config-if-5)# monitor both
```

Syntax: monitor <input | output | both >

Possible values: N/A

Default value: Disabled

no

This command is used to disable many commands. To do so, the user places the word ***no*** before the command. The interface level commands that can be disabled or removed in this manner are listed below:

- no appletalk...
- no auto-gig
- no cache-group
- no disable...
- no dhcp-gateway list
- enable
- no chassis...
- no flow-control
- no interface
- no ip-policy
- no ipg10
- no ipg100
- no ipg1000
- no monitor
- no phy-mode
- no port-name
- no qos-priority
- no spanning-tree
- no speed-duplex

phy-mode

If a port on an HP routing switch is to be attached to a Bay Networks™ 28000 switch, this command should be enabled at the Interface Level as shown below.

This command helps the HP routing switch to adjust to interoperability requirements of the 28000.

EXAMPLE:

```
HP9300 (config)# int e 6/3
HP9300 (config-if-6/3)# phy-mode 28k
```

Syntax: phy-mode <28k>

Possible values: 28k

Default value: Option is turned off.phy-mode

port-name

Assignment of a name to an interface provides additional identification for a segment on the network.

EXAMPLE:

```
HP9300(config)# interface e 5/1
HP9300(config-if-5/1)# port-name marketing
```

Syntax: port-name <text>

Possible values: N/A

Default value: N/A

show…

Displays a variety of configuration and statistical information about the routing switch. The following show commands are available at the interface CONFIG level:

- show appletalk
- show arp
- show cache-group
- show chassis
- show configuration
- show flash
- show interfaces
- show ip
- show ip cache
- show ip filter-cache
- show ip dvmrp...
- show ip srp
- show ip interface
- show ip multicast
- show ip-policy
- show ip ospf...
- show ip pim
- show ip rip

- show ip route
- show ip traffic
- show ipx cache
- show ipx interface
- show ipx route
- show ipx servers
- show ipx traffic
- show logging
- show mac-address
- show rmon
- show snmp-server
- show spanning-tree
- show statistics
- show tech
- show telnet
- show trunk
- show version
- show vlan

NOTE: To see a description of the commands listed above, refer to the **All Levels** section of this appendix.

The command summary listed above is a complete listing of all commands that are found across all platforms. Some commands may not be available on all platforms.

speed-duplex

Modifies port speed and duplex. It defines the speed and duplex mode for a 10BaseT and 100BaseTx ports.

Gigabit (1000BaseSX and 1000BaseLX) and 100BaseFX ports operate at a fixed speed and mode (full-duplex) and cannot be modified.

EXAMPLE:

```
HP9300(config)# interface e 5/8
HP9300(config-if-5/8)# speed-duplex 10-full
```

Syntax: speed-duplex <speed-duplex>

Possible values: 10-full, 10-half, 100-full, 100-half, auto

Default value: 10/100 autosense

spanning-tree

Spanning tree can be disabled or enabled on an interface basis.

EXAMPLE 1: To disable spanning tree on physical port 5/4 of a system with no VLANs operating, the user would enter the following:

```
HP9300 (config)# interface ethernet 5/4
HP9300 (config-if-5/4) no spanning-tree
```

EXAMPLE 2: To disable spanning tree on physical port 4 of a system within VLAN 2, the user would enter the following:

```
HP9300 (config)# vlan 2
HP9300 (config-vlan-2) no spanning-tree
```

Syntax: spanning-tree

Possible values: N/A

Default value: Disabled

CONFIG Commands – IP Tunnel Level

encap-control

Enables or disables encapsulation of PIM or DVMRP control messages such as probe, route report, etc. using IP-IN-IP encapsulation on an IP Tunnel.

EXAMPLE:

```
HP9300(config-if-5/4)# ip tunnel 192.3.45.6
HP9300(config-if-dvmrp-tunnel)# encap on
```

Syntax: encap-control <on | off>

Possible values: on, off

Default value: off

end

Moves activity to the privileged EXEC level from any level of the CLI, with the exception of the user level.

EXAMPLE: To move to the privileged level, the user would enter the following from any level of the CLI.

```
HP9300(config)# end
HP9300#
```

Syntax: end

Possible values: N/A

Default value: N/A

exit

Moves activity up one level from the current level. In this case, activity will be moved to the interface level.

EXAMPLE:

```
HP9300(config-of-4/5-tunnel)# exit
HP9300 (config-if-4/5)#
```

Syntax: exit

Possible values: N/A

Default value: N/A

metric

Sets the metric for an IP tunnel for use with either the PIM or DVMRP multicast protocol.

NOTE: A higher metric should be assigned to an IP tunnel than that of the interface, to ensure that the IP tunnel path takes precedence.

EXAMPLE: To define an IP tunnel metric (cost) of 15, the user would enter the following:

```
HP9300(config)# interface 5/2
HP9300(config-if-5/2)# ip tunnel 192.45.3.2 pim
HP9300(config-if-pim-tunnel)# metric 15
```

Syntax: metric <1-255>

Possible values: 1-255

Default value: N/A

no

This command is used to disable many commands. To do so, the user places the word ***no*** before the command. The IP tunnel level commands that can be disabled or removed in this manner are listed below:

- no encap-control...
- no metric
- no ttl-threshold

show…

Displays a variety of configuration and statistical information about the routing switch. The following show commands are available at the IP tunnel CONFIG level:

- show appletalk
- show arp
- show chassis
- show configuration
- show flash
- show interfaces
- show ip
- show ip cache
- show ip dvmrp...
- show ip srp
- show ip interface
- show ip ospf...
- show ip pim
- show ip rip
- show ip route
- show ip traffic
- show ipx cache
- show ipx interface
- show ipx route
- show ipx servers
- show ipx traffic
- show logging
- show mac-address
- show rmon
- show snmp-server
- show spanning-tree
- show statistics
- show tech
- show telnet
- show trunk

- show version
- show vlan

NOTE: To see a description of the commands listed above, refer to the **All Levels** section of this appendix.

The command summary listed above is a complete listing of all commands that are found across all platforms. Some commands may not be available on all platforms.

ttl-threshold

Specifies how long a packet is considered viable on an IP Tunnel link.

EXAMPLE:

```
HP9300(config-if-3/4)# ip tunnel
HP9300(config-if-3/4-tunnel)# ttl 60
```

Syntax: ttl-threshold <value>

Possible values: 1 to 254

Default value: 1

write memory

Saves the running-time configuration into the startup-config file.

EXAMPLE:

```
HP9300# wr mem
```

Syntax: write memory

Possible values: N/A

Default value: N/A

write terminal

Displays the running-configuration of the HP routing switch on the terminal screen.

EXAMPLE:

```
HP9300# wr term
```

Syntax: write terminal

Possible values: N/A

Default value: N/A

CONFIG Commands – DVMRP Router Level

default-gateway

Defines the default gateway for DVMRP IP multicast routing. If designated as the default gateway, the router must be on a directly connected network for this command to be operational.

EXAMPLE:

```
HP9300(config)# router dvmrp
HP9300(config-dvmrp-router)# default-gateway 192.35.4.1
```

Syntax: default-gateway <ip address>

Possible values: valid ip address

Default value: no system default

end

Moves activity to the privileged EXEC level from any level of the CLI, with the exception of the user level.

EXAMPLE: To move to the privileged level, the user would enter the following from any level of the CLI.

```
HP9300(config-dvmrp-router)# end
HP9300#
```

Syntax: end

Possible values: N/A

Default value: N/A

exit

Moves activity up one level from the current level. In this case, activity will be moved to the global level.

EXAMPLE:

```
HP9300(config-dvmrp-router)# exit
HP9300 (config)#
```

Syntax: exit

Possible values: N/A

Default value: N/A

graft-retransmit-time

Defines the initial period of time that a DVMRP router sending a graft message, will wait for a graft acknowledgment from an upstream router, before re-transmitting that message.

Subsequent re-transmissions will be sent at an interval of twice that of the preceding interval.

DVMRP must be enabled on the router for this command to be operational.

EXAMPLE:

```
HP9300(config)# router dvmrp
HP9300(config-dvmrp-router)# graft 120
```

Syntax: graft-retransmit-time <value>

Possible values: 5 to 3600 seconds

Default value: 10 seconds

nbr-timeout

Sets neighbor timeout value. Specifies the period of time that a router will wait before it defines an attached DVMRP neighbor router, as down.

DVMRP must be enabled on the router for this command to be operational.

EXAMPLE:

```
HP9300(config)# router dvmrp
HP9300(config-dvmrp-router)# nbr 100
```

Syntax: nbr-timeout <value>

Possible values: 40 to 8000 seconds

Default value: 40 seconds

no

This command is used to disable many commands. To do so, the user places the word ***no*** before the command. The DVMRP level commands that can be disabled or removed in this manner are listed below:

- no default-gateway...
- no graft-retransmit-time
- no nbr-timeout
- no probe-interval
- no prune age
- no report-interval
- no route-discard-time
- no route-expire-time
- no trigger-interval

probe-interval

Defines how often neighbor probe messages are sent to the **ALL-DVMRP-ROUTERS** IP multicast group address. A router's probe message lists those neighbor DVMRP routers from which it has received probes.

DVMRP must be enabled on the router for this command to be operational.

EXAMPLE:

```
HP9300(config)# router dvmrp
HP9300(config-dvmrp-router)# probe 10
```

Syntax: probe-interval <value>

Possible values: 5 to 30 seconds

Default value: 10 seconds

prune-age

Defines how long a prune state will remain in effect for a source-routed multicast tree. After the prune age period expires, flooding will resume.

DVMRP must be enabled on the router for this command to be operational.

EXAMPLE:

```
HP9300 (config)# router dvmrp
HP9300 (config-dvmrp-router)# prune 25
```

Syntax: prune-age <value>

Possible values: 20 to 3600 seconds

Default value: 180 seconds

report-interval

Defines how often routers will propagate their complete routing tables to other neighbor DVMRP routers.

DVMRP must be enabled on the router for this command to be operational.

EXAMPLE:

```
HP9300(config)# router dvmrp
HP9300(config-dvmrp-router)# report 100
```

Syntax: report-interval <value>

Possible values: 10 to 2000 seconds

Default value: 60 seconds

route-discard

Defines the period of time before a route is deleted on a DVMRP router.

DVMRP must be enabled on the router for this command to be operational.

EXAMPLE:

```
HP9300(config)# router dvmrp
HP9300(config-dvmrp-router)# route d 50
```

Syntax: route-discard <value>

Possible values: 40 to 8000 seconds

Default value: 340 seconds

route-expire

Defines how long a route is considered valid without the next route update.

DVMRP must be enabled on the router for this command to be operational.

EXAMPLE:

```
HP9300(config)# router dvmrp
HP9300(config-dvmrp-router)# route-exp 50
```

Syntax: route-expire <value>

Possible values: 20 to 4000 seconds

Default value: 200 seconds

show…

Displays a variety of configuration and statistical information about the routing switch. The following show commands are available at the DVMRP router level:

- show appletalk
- show arp
- show chassis
- show configuration
- show flash
- show interfaces
- show ip
- show ip flow-cache
- show ip dvmrp...
- show ip srp
- show ip interface
- show ip ospf...
- show ip pim
- show ip rip
- show ip route
- show ip traffic
- show ipx cache
- show ipx interface
- show ipx route
- show ipx servers
- show ipx traffic
- show logging
- show mac-address
- show rmon
- show snmp-server
- show spanning-tree
- show statistics
- show tech
- show telnet
- show trunk
- show version
- show vlan

NOTE: To see a description of the commands listed above, refer to the **All Levels** section of this appendix.

trigger interval

Defines how often trigger updates, which reflect changes in the network topology, are sent. Changes in a network topology could be a router comes up or goes down or changes its metric.

DVMRP must be enabled on the router for this command to be operational.

EXAMPLE:

```
HP9300(config)# router dvmrp
HP9300(config-router)# trig 25
```

Syntax: trigger interval <value>

Possible values: 5 to 30 seconds

Default value: 5

write memory

Saves the running-time configuration into the startup-config file.

EXAMPLE:

```
HP9300# wr mem
```

Syntax: write memory

Possible values: N/A

Default value: N/A

write terminal

Displays the running-configuration of the HP routing switch on the terminal screen.

EXAMPLE:

```
HP9300# wr term
```

Syntax: write terminal

Possible values: N/A

Default value: N/A

CONFIG Commands – OSPF Router Level

area...

Assigns an area ID value to which the router will be attached. Area membership is assigned via the Interface Level command, ***ip ospf address <areaID>***.

When an area is defined as **normal**, all external routes will be advertised into the area.

When an area is defined as **stub**, external routes will not be advertised into the area.

NOTE: The user can assign one area per router port, so if the router has 8 ports, 8 areas are supported on that router.

By default, the OSPF feature is disabled. OSPF must be enabled and active on the router for this command to be operational.

EXAMPLE 1: To define a normal area, enter the following commands:

```
HP9300(config)# router ospf
HP9300(config-ospf-router)# area 192.53.0.0 normal
```

EXAMPLE 2: To define an area as a stub area, enter the following commands:

```
HP9300(config)# router ospf
HP9300(config-ospf-router)# area 192.53.0.0 stub 1
```

Syntax: area <ip address> <normal | stub <cost> >

Possible values: Area ID: Valid IP address; Stub cost: 1 to 16777215

Default value: N/A

area range

Assigns representative values to a range of IP addresses within an area, so that only those reference range addresses are advertised to the network versus all of the addresses within that range. Up to four ranges can be assigned per area. **Range assignment is optional**.

EXAMPLE:

```
HP9300(config)# router ospf
HP9300(config-ospf-router)# area 192.53.0.0 range 193.45.0.0 255.255.0.0
```

Syntax: area <ip address> range <ip address> <ip mask>

Possible values: area id (ip address), ip address and ip mask

Default value: N/A

area virtual-link

Provides an **area-border router** a logical connection to the backbone area (0.0.0.0) when a physical connection to the backbone area does not exist.

The ***area < ip address>*** represents the shared area of the two area border routers—the one with a physical connection to the backbone and the router that requires a logical connection to the backbone. The defined area serves as the connection point between the two routers.

The ***virtual-link < ip address>*** is the **Router ID** of the router physically connected to the backbone, when assigned from the router interface requiring a logical connection. When assigning the parameters from the router with the physical connection, the router ID is the IP address of the router requiring a logical connection to the backbone.

NOTE: When establishing an **area virtual link,** it must be configured on both of the routers, i.e. both ends of the virtual link.

By default, the OSPF feature is disabled. OSPF must be enabled and active on the router for this command to be operational. In addition, the neighbor area border router that has a physical connection to the backbone and the common area, must have connections to both the neighbor area border router and the area border router requiring a logical connection.

EXAMPLE: To define the virtual link for area 195.22.0.0, enter the following:

```
HP9300(config)# router ospf
HP9300(config-ospf-router)# area 195.22.0.0 virt 201.44.53.44
```

Other parameters that can be modified with this command, as seen in the syntax, are summarized below:

Authentication-key: A password used to validate action

Dead-interval: The number of seconds that a neighbor router will wait for a hello packet from the current router, before declaring the router down

Hello-interval: The length of time between the transmission of hello packets.

Retransmit-interval: The time between retransmits of link state advertisements to router adjacencies for this interface.

Transit-delay: The time it takes to transmit Link State Update packets on this interface

Syntax: area <ip address> virtual-link <ip address> [authentication-key|dead-interval|hello-interval|retransmit-interval|transmit-delay> <value>]

Possible values:

Default values:

authentication-key:	Up to 8 alphanumeric characters	None
dead-interval:	1-65535 seconds	40 seconds
hello-interval:	1-65535	10 seconds
retransmit-interval:	0-3600 seconds.	5 seconds
transit-delay:	0-3600	1

database-overflow-interval

Configures how often a router will check to see if the OSPF external link state database overflow condition has been eliminated by removal of entries originated on the router.

If the configured value of the data-base-overflow-interval is zero, then the router will never leave the database overflow condition. The default value for the database overflow interval is zero.

EXAMPLE:

```
HP9300(config-ospf-router)# data-base-overflow-interval 60
```

Syntax: database-overflow-interval <value>

Possible values: 0 to 86,400 seconds

Default value: 0

end

Moves activity to the privileged EXEC level from any level of the CLI, with the exception of the user level.

EXAMPLE: To move to the privileged level, the user would enter the following from any level of the CLI.

```
HP9300(config-ospf-router)# end
HP9300#
```

Syntax: end

Possible values: N/A

Default value: N/A

exit

Moves activity up one level from the current level. In this case, activity will be moved to the global level.

EXAMPLE:

```
HP9300(config-ospf-router)# exit
HP9300 (config)#
```

Syntax: exit

Possible values: N/A

Default value: N/A

external-lsdb-limit

Provides compliance with RFC 1765 in the handling of OSPF external link state database overflow. HP routing switches, by default, support 2000 IP OSPF external link state advertisements before a database overflow condition exists.

EXAMPLE: To decrease this value to 1500 seconds, the user would enter the following:

```
HP9300(config-ospf-router)# external-lsdb-limit 1500
```

Syntax: database-external-lsdb-interval <value>

Possible values: 0 to 2000

Default value: 2000

default-metric

Sets the global default-metric value that will be adopted by all external routes imported into OSPF.

EXAMPLE: To set default metric of 1000 that will be applied to all external routes imported into OSPF, enter the following command.

```
HP9300(config)# router ospf
HP9300(config-ospf-router)# def 1000
```

Syntax: default-metric <value>

Possible values: 1 to 16,777,215

Default value: 10

deny redistribute

Defines the route(s) upon which you do not want to perform OSPF redistribution.

EXAMPLE: To deny redistribution on incoming routes received from the 192.95.0.0 network, please enter the following:

```
HP9300(config-ospf-router)# deny redis all 2 192.95.0.0 255.255.0.0
```

Syntax: deny redistribute <value> <all|rip|static> <address <ip address> <ip address> [match-metric<value>|set-metric <value>]

Possible values: see below

Default value: N/A

all	apply redistribution to all route types
rip	apply redistribution to RIP routes only
static	apply redistribution to the static route only
ip address	network and sub-net addresses
match-metric	applies redistribution only to those incoming routes that match a specific metric value; Possible values: are between 1-15
set-metric	OSPF metric value that will be applied to all routes imported into OSPF

NOTE: If a **set-metric** value is not set via the set-metric parameter, then the value configured for the global parameter default-metric will be applied.

metric-type

Specifies the type of OSPF metric to be used for routes imported into OSPF. Type 2 specifies a big metric (3 bytes). Type 1 specifies a small metric (2 bytes).

EXAMPLE:

```
HP9300 (config-ospf-router)# metric-type type1
```

Syntax: metric-type<type1 | type2>

Possible values: type1, type2

Default value: type2

no

This command is used to disable many commands. To do so, the user places the word ***no*** before the command. The OSPF level commands that can be disabled or removed in this manner are listed below:

- no area...
- no database-overflow-interval
- no default-metric
- no deny...
- no external-lsdb-limit
- no metric-type
- no permit

- no redistribution
- no rfc-1583-compatibility
- no router-id
- no trap

permit redistribute

Defines the route types upon which you want to perform OSPF redistribution.

OSPF must be enabled and active for this command to be operational. OSPF is disabled by default.

EXAMPLE:

```
HP9300(config-ospf-router)# permit redis rip 1 address 192.147.72.0 255.255.255.0
```

Syntax: permit redistribute <value> <all|rip|static> <address> <ip address> <ip address> [match-metric<value>|set-metric <value>]

Possible values:

all:	apply redistribution to all route types
rip:	apply redistribution to RIP routes only
static:	apply redistribution to the static route only
ip address:	network and sub-net addresses
match-metric:	match a specific metric value; Possible values: are between 1-16777215
set-metric:	OSPF metric value that will be applied to all routes imported into OSPF

Default value: N/A

redistribution

Enables the OSPF route function, redistribution on the router. When enabled, OSPF will import external routes (RIP or Static Routes) into the OSPF domain. The router will behave as an Autonomous System Boundary Router (ASBR).

EXAMPLE:

```
HP9300(config-ospf-router)# redistribution
```

Syntax: redistribution

Possible values: N/A

Default value: disabled

rfc-1583-compatibility

HP routing switches are configured by default to be compliant with RFC 1583 OSPF V2 specification. Routers can also be configured to operate with the latest OSPF standard, RFC 2178, by entering the ***no rfc1583-compatibility*** command.

EXAMPLE:

```
HP9300(config-ospf-router)# rfc-1583-compatibility
```

Syntax: [no] rfc-1583-compatibility

Possible values: N/A

Default value: Disabled

router-id

The parameter is used to assign a router ID to an OSPF area. A number or IP address can be assigned as the router ID.

EXAMPLE:

```
HP9300(config-ospf-router)# router id 222
```

Syntax: router-id <ip address | number>

Possible values: N/A

Default value: Disabled

show…

Displays a variety of configuration and statistical information about the routing switch. The following show commands are available at the DVMRP router level:

- show appletalk
- show arp
- show chassis
- show configuration
- show flash
- show interfaces
- show ip
- show ip flow-cache
- show ip dvmrp...
- show ip srp
- show ip interface
- show ip ospf...
- show ip pim
- show ip rip
- show ip route
- show ip traffic
- show ipx cache
- show ipx interface
- show ipx route
- show ipx servers
- show ipx traffic
- show logging
- show mac-address
- show rmon
- show snmp-server
- show spanning-tree
- show statistics
- show tech

- show telnet
- show trunk
- show version
- show vlan

NOTE: To see a description of the commands listed above, refer to the **All Levels** section of this appendix. Some commands may not be available on all platforms.

trap

Generation of OSPF traps is enabled, by default, on the router when OSPF is enabled. To disable all traps, the user would use the global level CONFIG command, ***no snmp-server trap ospf***.

To stop a specific OSPF trap from being collected, the user would use the CLI command, ***no trap <trap>***.

EXAMPLE: To stop changes in the state of neighbors being generated by a router, the user would enter the following command:

```
HP9300 (config-ospf-router)# no trap neighbor-state-change-trap
```

To reinstate the command, the user would just enter the command,

```
HP9300 (config-ospf-router)# trap neighbor-state-change-trap
```

Syntax: [no] trap <trap>

Possible values: see below: traps are from RFC 1850

Default value: All traps are active when OSPF is enabled.

interface-state-change-trap	[MIB object: OspfIfstateChange]
virtual-interface-state-change-trap	[MIB Object: OspfVirtIfStateChange
neighbor-state-change-trap	[MIB object:ospfNbrStateChange]
virtual-neighbor-state-change-trap	[MIB object: ospfVirtNbrStateChange]
interface-config-error-trap	[MIB object: ospfIfConfigError]
virtual-interface-config-error-trap	MIB object: ospfIfConfigError]
interface-authentication-failure-trap	[MIB object: ospfIfAuthFailure]
virtual-interface-authentication-failure-trap	[MIB object: ospfVirtIfAuthFailure]
interface-receive-bad-packet-trap	[MIB object: ospfIfrxBadPacket]
virtual-interface-receive-bad-packet-trap	[MIB object: ospfVirtIfRxBadPacket]
interface-retransmit-packet-trap	[MIB object: ospfTxRetransmit]
virtual-interface-retransmit-packet-trap	[MIB object: ospfVirtIfTxRetransmit]
originate-lsa-trap	[MIB object: ospfOriginateLsa]
originate-maxage-lsa-trap	[MIB object: ospfMaxAgeLsa]
link-state-database-overflow-trap	[MIB object: ospfLsdbOverflow]
link-state-database-approaching-overflow-trap	[MIB object: ospfLsdbApproachingOverflow]

write memory

Saves the running-time configuration into the startup-config file.

EXAMPLE:

```
HP9300# wr mem
```

Syntax: write memory

Possible values: N/A

Default value: N/A

write terminal

Displays the running-configuration of the HP routing switch on the terminal screen.

EXAMPLE:

```
HP9300# wr term
```

Syntax: write terminal

Possible values: N/A

Default value: N/A

CONFIG Commands – PIM Router Level

end

Moves activity to the privileged EXEC level from any level of the CLI, with the exception of the user level.

EXAMPLE: To move to the privileged level, the user would enter the following from any level of the CLI.

```
HP9300(config-pim-router)# end
HP9300#
```

Syntax: end

Possible values: N/A

Default value: N/A

exit

Moves activity up one level from the current level. In this case, activity will be moved to the global level.

EXAMPLE:

```
HP9300(config-pim-router)# exit
HP9300(config)#
```

Syntax: exit

Possible values: N/A

Default value: N/A

no

This command is used to disable many commands. To do so, the user places the word ***no*** before the command. The PIM level commands that can be disabled or removed in this manner are listed below:

- no pim-inactivity-timer...
- no pim-nbr-timeout...
- no pim-prune-timer...
- no pim-graft-retransmit-timer...
- no pim-hello-timer...

pim-graft-retransmit-timer

Defines the interval between the transmission of graft messages.

A graft message is sent by a router to cancel a prune state. When a router receives a graft message it will respond with a Graft Ack message. If this Graft Ack message is lost, the router that sent the graft message, resends it. The interval between the transmission of the first and subsequent graft message is what is configurable with the PIM graft retransmit timer.

EXAMPLE: To change the graft retransmit timer from the default of 180 to 90 seconds, enter the following:

```
HP9300 (config)# router pim
HP9300 (config-pim-router)# pim-graft-retransmit-timer 90
```

Syntax: pim-graft-retransmit-timer <value>

Possible values: 10 to 3600 seconds

Default value: 180 seconds

pim-hello-timer

Defines the time interval at which periodic hellos are sent out on all interfaces of a PIM capable router. Routers use hello messages to inform neighboring routers of their presence.

EXAMPLE: To apply a PIM Hello Timer of 120 seconds to all ports on the router operating with PIM, enter the following:

```
HP9300 (config)# router pim
HP9300 (config-pim-router)# pim-hello-timer 120
```

Syntax: pim-hello-timer <value>

Possible values: 10 to 3600 seconds

Default value: 60 seconds

pim-inactivity-timer

A forwarding entry is deleted if it is not used to send multicast packets. The PIM inactivity timer defines the time interval after which an inactive forwarding entry is deleted.

EXAMPLE: To apply a PIM inactivity timer of 90 seconds to all ports on the router operating with PIM, enter the following:

```
HP9300 (config)# router pim
HP9300 (config-pim-router)# pim-inactivity-timer 90
```

Syntax: pim-inactivity-timer <value>

Possible values: 10 to 3600 seconds

Default value: 180 seconds

pim-nbr-timeout

If a neighboring PIM router stops sending out PIM Hello messages, the router will eventually discover that the neighbor is not present. Neighbor timeout is the interval after which a PIM capable router will consider a neighbor to not be present.

EXAMPLE: To apply a PIM neighbor timeout value of 360 seconds to all ports on the router operating with PIM, enter the following:

```
HP9300 (config)# router pim
HP9300 (config-pim-router)# pim-nbr-timeout 360
```

Syntax: pim-nbr-timeout <value>

Possible values: 60 to 8000 seconds.

Default value: 180 seconds

pim-prune-timer

This parameter is used to define how long an HP routing switch will maintain a prune state for a forwarding entry.

The first received multicast interface is forwarded to all other PIM interfaces on the router. If there is no presence of groups on that interface, the leaf node will send a prune message upstream and store a prune state. This prune state will travel up the tree and install a prune state.

A prune state is maintained until the prune timer expires or a graft message is received for the forwarding entry.

EXAMPLE: To apply a PIM prune timer of 90 seconds to all ports on the router operating with PIM, enter the following:

An example on how to configure the PIM Prune Timer value for all ports is shown below.

```
HP9300 (config)# router pim
HP9300 (config-pim-router)# pim-prune-timer 90
```

Syntax: pim-prune-timer <value>

Possible values: 10 to 3600 seconds. **Default value:** 180 seconds

show…

Displays a variety of configuration and statistical information about the routing switch. The following show commands are available at the DVMRP router level:

- show appletalk
- show arp
- show chassis
- show configuration
- show flash
- show interfaces
- show ip
- show ip flow-cache
- show ip dvmrp...
- show ip srp
- show ip interface
- show ip ospf...
- show ip pim
- show ip rip
- show ip route
- show ip traffic
- show ipx cache
- show ipx interface
- show ipx route
- show ipx servers
- show ipx traffic
- show logging
- show mac-address
- show rmon

- show snmp-server
- show spanning-tree
- show statistics
- show tech
- show telnet
- show trunk
- show version
- show vlan

NOTE: To see a description of the commands listed above, refer to the **All Levels** section of this appendix. The command summary listed above is a complete listing of all commands that are found across all platforms. Some commands may not be available on all platforms.

write memory

Saves the running-time configuration into the startup-config file.

EXAMPLE:

```
HP9300# wr mem
```

Syntax: write memory

Possible values: N/A

Default value: N/A

write terminal

Displays the running-configuration of the HP routing switch on the terminal screen.

EXAMPLE:

```
HP9300# wr term
```

Syntax: write terminal

Possible values: N/A

Default value: N/A

CONFIG Commands – IP/RIP Router Level

default-metric

Defines the global default-metric value that will be assigned to all external routes imported into RIP for redistribution.

RIP must be active on the router for this command to be operational.

EXAMPLE: To assign a default metric on 4 to all routes imported as RIP, enter the following:

```
HP9300(config)# router rip
HP9300(config-rip-router)# def 4
```

Syntax: default-metric <value>

Possible values: 1 to 15

Default value: 1

deny redistribute

Defines the route types upon which you **do not** want to perform RIP redistribution.

RIP must be active on the router for this command to be operational. RIP is enabled by default.

EXAMPLE: To deny redistribution on all incoming routes received from the 207.92.0.0 network, enter the following:

```
HP9300(config)# router rip
HP9300(config-rip-router)# deny redis 2 all 207.92.0.0 255.255.0.0
```

Syntax: deny redistribute <index> <all|ospf|static> address <ip address> <ip address> [match-metric<value>|set-metric <value>]

Possible values:

all	apply redistribution to all route types
ospf	apply redistribution to OSPF routes only
static	apply redistribution to the static route only
ip address	apply redistribution to a specific network and sub-net address
match-metric	apply redistribution to those routes with a specific metric value; possible *v*alues are between 1-15
set-metric:	N/A to deny redistribution command

Default value: N/A

end

Moves activity to the privileged EXEC level from any level of the CLI, with the exception of the user level.

EXAMPLE: To move to the privileged level, the user would enter the following from any level of the CLI.

```
HP9300(config-rip-router)# end
HP9300#
```

Syntax: end

Possible values: N/A

Default value: N/A

exit

Moves activity up one level from the current level. In this case, activity will be moved to the global level.

EXAMPLE:

```
HP9300(config-rip-router)# exit
HP9300(config)#
```

Syntax: exit

Possible values: N/A

Default value: N/A

filter

Defines which IP/RIP network numbers the router will learn from the RIP protocol and store in its IP routing table. Once RIP filters are defined, the user can assign these filters to individual interfaces with the filter group command at the Interface Level of CLI.

To define an IP/RIP filter, the user must first enable RIP on the router via the ***router rip*** command and launch the user into the **RIP Router Level** of the CLI.

NOTE: A filter defines for inbound routes what routes it will permit to be stored in its IP routing table. For outbound routes, the filter defines what routes are allowed to be advertised through a given interface. A user can also specify all routes by using the value, **any**, instead of specifying a specific route.

An IP address and mask define a route.

EXAMPLE: To define filters with respect to network traffic from 192.53.41, 192.53.5.1, 192.53.6.1 and 192.53.7.1, the user would enter the following:

```
HP9300 (config)# router rip
HP9300 (config-rip-router)# filter 1 permit 192.53.4.1 255.255.255.0
HP9300 (config-rip-router)# filter 2 permit 192.53.5.1 255.255.255.0
HP9300 (config-rip-router)# filter 3 permit 192.53.6.1 255.255.255.0
HP9300 (config-rip-router)# filter 4 deny 192.53.7.1 255.255.255.0
```

Syntax: filter <filter ID> <permit | deny> <ip address | any> <ip mask | any>

Possible values: Filter ID: 1 to 64

Default value: N/A

filter-group

This command is used to assign a group of defined RIP filters on either a global or interface basis. Assignments to interfaces are done at the interface level of the CLI.

EXAMPLE:

```
HP9300 (config)# router rip
HP9300 (config-rip-router)# filter-group out 1 3 6 9
```

Syntax: `filter-group <in|out> <1-64> [<1-64]`

Possible values: 1 to 64 (filter index value)

Default value: N/A

learn-default

This feature allows a routing switch to learn and advertise default IP/RIP routes. This command can be applied on a global or interface basis. This example shows the feature enabled at the global level.

EXAMPLE:

```
HP9300 (config-rip-router)# learn-default
```

Syntax: learn-default

Possible values: N/A

Default value: N/A

neighbor

This command is used to specify those routers from which a router will receive RIP routes.

In the example below, no RIP routes will be learned from any neighbor router. By default, RIP routes will be learned from all neighbors.

EXAMPLE: To configure a router so that no RIP routes are learned from its neighbor routers, enter the following:

```
HP9300(config)# router rip
HP9300(config-rip-router)# neighbor 1 deny any
```

Syntax: neighbor <number> <permit|deny> <ip address|any>

Possible values: 1 to 64

Default value: N/A

no

This command is used to disable many commands. To do so, the user places the word ***no*** before the command. The RIP level commands that can be disabled or removed in this manner are listed below:

- no default-metric...
- no deny...
- no filter...
- no filter-group...
- no learn-default...
- no neighbor...
- no permit...
- no redistribution

permit redistribute

Allows the user to define the route types upon which you do want to perform RIP redistribution.

EXAMPLE: To allow (permit) redistribution of all routes received from network 192.147.72.0, enter the following:

```
HP9300(config)# router rip
HP9300(config-router)# permit redis 1 all 192.147.72.0 255.255.255.0
```

Syntax: permit redistribute <index> <all|ospf|static> address <ip address> <ip address>|match-metric<value>|set-metric <value>

Possible values:

all	Apply redistribution to all route types
ospf	Apply redistribution to OSPF routes only
static	Apply redistribution to the static route only
ip address	Apply redistribution to a specific network and sub-net address
match-metric	Apply redistribution to those routes with a specific metric value; Possible values are between 1-15
set-metric	Sets the RIP metric value that will be applied to those routes imported into RIP

Default value: N/A

redistribution

This command enables the RIP route function redistribution on a router. When enabled, RIP will import external routes (OSPF or Static Routes) into the RIP domain. This should be done prior to setting up the redistribution table via the permit and deny commands.

EXAMPLE: To enable RIP redistribution on the router, enter the following within the Router RIP Level.

```
HP9300(config)# router rip
HP9300(config-rip-router)# redistribution
```

Syntax: redistribution

Possible values: N/A

Default value: disabled

show…

Displays a variety of configuration and statistical information about the routing switch. The following show commands are available at the DVMRP router level:

- show appletalk
- show arp
- show chassis
- show configuration
- show flash
- show interfaces
- show ip
- show ip flow-cache

- show ip dvmrp...
- show ip srp
- show ip interface
- show ip ospf...
- show ip pim
- show ip rip
- show ip route
- show ip traffic
- show ipx cache
- show ipx interface
- show ipx route
- show ipx servers
- show ipx traffic
- show logging
- show mac-address
- show rmon
- show snmp-server
- show spanning-tree
- show statistics
- show tech
- show telnet
- show trunk
- show version
- show vlan

update-time

Sets the time interval that will exist between the transmission of regular RIP response packets. This parameter is set to 30 seconds by default. RIP must be enabled and active on the router for this command to be operational.

EXAMPLE: To modify the default update time value to 120 seconds, enter the following:

```
HP9300(config)# router rip
HP9300(config-rip-router)# update 120
```

Syntax: update-time <value>

Possible values: 1 to 1,000 seconds

Default value: 30 seconds

write memory

Saves the running-time configuration into the startup-config file.

EXAMPLE:

```
HP9300# wr mem
```

Syntax: write memory

Possible values: N/A

Default value: N/A

write terminal

Displays the running-configuration of the HP routing switch on the terminal screen.

EXAMPLE:

```
HP9300# wr term
```

Syntax: write terminal

Possible values: N/A

Default value: N/A

CONFIG Commands – VLAN Level

atalk-proto

This command creates an AppleTalk protocol VLAN within a routing switch port-based VLAN when entered at the VLAN Level. All ports are assumed by default to be members of the VLAN when initially created. Protocol VLAN membership can be modified using the ***dynamic***, ***static*** or ***exclude*** commands.

EXAMPLE: To create an AppleTalk Protocol VLAN with permanent port membership of 9 and 13 (module 3) and no dynamic ports within an already defined port-based VLAN 2, the user would enter the following commands.

```
HP9300 (config)# vlan 2
HP9300 (config-vlan-2)# atalk-proto
HP9300 (config-vlan-atalk-proto)# static e 3/9 e 3/13
HP9300 (config-vlan-atalk-proto) no dynamic
```

Syntax: atalk-proto

Possible values: N/A

Default value: N/A

decnet-proto

This command creates a Decnet protocol VLAN within a routing switch port-based VLAN, when entered at the VLAN Level. All ports are assumed by default to be members of the VLAN when initially created. Protocol VLAN membership can be modified using the ***dynamic***, ***static*** or ***exclude*** commands.

EXAMPLE: To create a Decnet protocol VLAN with permanent port membership of 15 and 16 with port 17 as dynamic member port (module 3), within VLAN 5, the user would enter the following commands.

```
HP9300(config)# vlan 5
HP9300(config-vlan-5)# decnet-proto
HP9300(config-vlan-decnet-proto)# exclude e 3/1 to 3/14 e 3/18
```

Syntax: decnet-proto

Possible values: N/A

Default value: N/A

end

Moves activity to the privileged EXEC level from any level of the CLI, with the exception of the user level.

EXAMPLE: To move to the privileged level, the user would enter the following from any level of the CLI.

```
HP9300(config-vlan-decnet-proto)# end
HP9300#
```

Syntax: end

Possible values: N/A

Default value: N/A

exit

Moves activity up one level from the current level. In this case, activity will be moved to the port-based VLAN level if configuring a protocol VLAN. If configuring a port-based VLAN, activity would be moved to the global level.

EXAMPLE:

```
HP9300(config-vlan-decnet-proto)# exit
HP9300(config)#
```

Syntax: exit

Possible values: N/A

Default value: N/A

ip-proto

This command creates an IP protocol VLAN within a port-based VLAN, when entered at the VLAN Level.

When configuring on a router, ports must be added to the VLAN with the ***static*** command. Ports are not dynamically allocated to IP protocol VLANs.

EXAMPLE: To assign ports 1, 2, 6 and 8 (module 3) to an IP protocol VLAN within VLAN 7, enter the following:

```
HP9300 (config)# vlan 7
HP9300 (config-vlan-7)# ip-proto
HP9300 (config-vlan-ip-proto)# static e 3/1 to 3/2 e 3/6 e 3/8
```

NOTE: An IP protocol and IP sub-net VLAN cannot both be configured to operate on an HP routing switch at the same time. This restriction is also true for IPX and IPX network VLANs.

Syntax: ip-proto

Possible values: N/A

Default value: N/A

ip-subnet

This command creates an IP sub-net protocol VLAN within a port-based VLAN, when entered at the VLAN Level. This allows the user to define additional granularity than that of an IP protocol VLAN, by partitioning the broadcast domains by sub-net. In creating an IP sub-net VLAN, an IP address is used as identifier.

When configuring on a router, ports must be added to the VLAN with the ***static*** command. Ports are not dynamically allocated to IP sub-net VLANs.

EXAMPLE: To create an IP sub-net of IP address 192.75.3.0 with permanent port membership of 1 and 2 (module 2), within VLAN 10, the user would enter the following commands.

```
HP9300 (config)# vlan 10
HP9300 (config-vlan-10)# ip-subnet 192.75.3.0 255.255.255.0
HP9300 (config-vlan-ip-subnet)# static e 2/1 to 2/2
```

NOTE: An IP protocol and IP sub-net VLAN cannot both be configured to operate simultaneously. This restriction is also true for IPX and IPX Network VLANs.

Syntax: ip-subnet <ip address> <ip mask>

Possible values: N/A

Default value: N/A

ipx-network

This command creates an IPX network VLAN within a port-based VLAN, when entered at the VLAN Level. This allows the user to define additional granularity than that of the IPX protocol VLAN, by partitioning the broadcast domains by IPX network number. In creating an IPX network VLAN, an IPX network number is used as identifier. The frame type must also be specified.

When configuring on a router, ports must be added to the VLAN with the ***static*** command. Ports are not dynamically allocated to IPX network VLANs.

EXAMPLE: To create an IPX network VLAN with a network number of 500 and frame type of 802.2 with permanent port membership of 10 and 14 (module 1) within port-based VLAN 15, the user would enter the following commands.

```
HP9300 (config)# vlan 15
HP9300 (config-vlan-15)# ipx-network 500 ethernet_802.2
HP9300 (config-vlan-ipx-proto)# static e 1/10 e 1/14
```

Syntax: ipx-network<ipx network number> <frame type>

NOTE: An IPX network and IPX protocol VLAN cannot both be configured to operate simultaneously. This restriction is also true for IP protocol and IP sub-net VLANs.

Possible values: Frame type: ethernet_ii, ethernet_802.2, ethernet_802.3, ethernet_snap

Default value: N/A

ipx-proto

This command creates an IPX protocol VLAN within a port-based VLAN, when entered at the VLAN Level.

When configuring on a router, ports must be added to the VLAN with the ***static*** command. Ports are not dynamically allocated to IPX protocol VLANs.

EXAMPLE: To assign ports 1, 2, 6 and 8 (module 2) to an IPX protocol VLAN within port-based VLAN 22, the user would enter the following:

```
HP9300 (config)# vlan 22
HP9300 (config-vlan-22)# ipx-proto
HP9300 (config-vlan-ipx-proto)# static e 2/1 to 2/2 e 2/6 e 2/8
```

NOTE: An IPX protocol and IPX network VLAN cannot both be configured to operate simultaneously. This restriction is also true for IP and IP sub-net VLANs.

Syntax: ipx-proto

Possible values: N/A

Default value: N/A

netbios-proto

This command creates a NetBIOS protocol VLAN within a port-based VLAN, when entered at the VLAN Level.

All ports are dynamically allocated to a NetBIOS VLAN when it is created. VLAN Membership can be modified using the ***dynamic***, ***static*** or ***exclude*** commands.

EXAMPLE: To create a NetBIOS Protocol VLAN with permanent port membership of 4 and 5 and ports 8 through 12 as dynamic member ports (module 2), within port-based VLAN 25, the user would enter the following commands.

```
HP9300(config)# vlan 25
HP9300(config-vlan-25)# netbios-proto
HP9300(config-vlan-netbios-proto)# static e 2/4 e 2/5
HP9300(config- vlan-netbios-proto)# exclude e 2/1 to 2/3 e 2/6 e 2/7 e 2/13 to 2/18
```

Syntax: netbios-proto

Possible values: N/A

Default value: N/A

no

This command is used to disable many commands. To do so, the user places the word ***no*** before the command. The VLAN level commands that can be disabled or removed in this manner are listed below:

- no atalk-proto...
- no decnet-proto...
- no ip-proto...
- no ipx-proto...
- no ip-subnet...
- no ipx-network...
- no netbios-proto...
- no other-proto...
- no priority
- no spanning-tree
- no static-mac-address
- no tagged...
- no untagged...

other-proto

This command creates an other-protocol VLAN within a port-based VLAN, when entered at the VLAN Level.

All ports of the routing switch are by default dynamically assigned to a newly created other protocol VLAN. VLAN Membership can be modified using the ***dynamic***, ***static*** or ***exclude*** commands.

The user might use this option to define a protocol-based VLAN for protocols that do not require a singular protocol broadcast domain or are not currently supported on the routing switch.

EXAMPLE: On a 16 port system ports 13 through 16 represent protocols Decnet and AppleTalk. The user has no need to separate traffic by protocol into separate broadcast domains, so he or she creates an other-protocol VLAN, with just those ports as members, within port-based VLAN 50.

```
HP9300 (config)# vlan 50
HP9300 (config-vlan-50)# other-proto
HP9300 (config-vlan-other-proto)# static e13 to 16
HP9300 (config-vlan-other-proto)# exclude e1 to 12
```

Syntax: other-proto

Possible values: N/A

Default value: N/A

priority

This assigns a higher priority to a VLAN so that in times of congestion, it will receive precedence over other transmissions. Up to eight levels of priority can be assigned to a VLAN.

EXAMPLE:

```
HP9300(config)# vlan 25
HP9300(config-vlan-25)# priority 5
```

Syntax: priority <0-7>

Possible values: N/A

Default value: N/A

router-interface

Defining a router interface for a VLAN allows traffic to be routed between VLANs.

EXAMPLE: To configure a router interface for an IP sub-net VLAN, the user would enter the following:

```
HP9300(config)# ip-subnet 192.75.3.0 255.255.255.0
HP9300(config-ip-subnet)# static e 5/1 to 5/3
HP9300(config-ip-subnet)# router-interface ve 3
```

NOTE: Once a router interface is assigned to a VLAN, it must be assigned an IP address at the interface level.

Syntax: router-interface ve <slot/port>

Possible values: N/A

Default value: N/A

show…

Displays a variety of configuration and statistical information about the routing switch. The following show commands are available at the VLAN level:

- show appletalk
- show arp
- show chassis
- show configuration
- show flash
- show interfaces
- show ip
- show ip flow-cache
- show ip dvmrp...
- show ip srp
- show ip interface
- show ip ospf...
- show ip pim
- show ip rip
- show ip route
- show ip traffic
- show ipx cache
- show ipx interface
- show ipx route
- show ipx servers
- show ipx traffic
- show logging
- show mac-address
- show rmon
- show snmp-server
- show spanning-tree
- show statistics
- show tech
- show telnet
- show trunk
- show version
- show vlan

spanning-tree

Spanning Tree bridge and port parameters are configurable via one command set at the global level for VLANs.

NOTE: When port-based VLANs are not operating on the system, spanning tree is set on a system level at the Global CONFIG Level.

EXAMPLE: The user wants to change the hello-time value of VLAN 3 from the default value. Additionally, the user wants to change the path and priority costs for port 5, a member of VLAN 3. The user would enter the following commands:

```
HP9300(config)# vlan 3
HP9300(config-vlan-3)# span hello-time 8
HP9300(config)# span ethernet 5 path-cost 15 priority 64
```

NOTE: The user does not need to configure values for the spanning tree parameters. All parameters have default values as noted below. Additionally, all values will be globally applied to all ports on the system or port-based VLAN for which they are defined.

To configure a specific path-cost or priority value for a given Ethernet port, the user would enter those values using the key words found in the brackets [ ] shown in the syntax summary below. If the user does not wish to specify any specific values for any given Ethernet port, this portion of the command is not required.

Syntax: spanning-tree [ethernet <portnumber> path-cost <value> priority <value>] forward-delay <value> hello-time <value> maximum-age <time> priority <value>

Bridge STP Parameters (applied to all ports within a VLAN)

- Forward Delay: the period of time a bridge will wait (the listen and learn period) before forwarding data packets. Possible values: 4 to 30 seconds. Default is 15.
- Maximum Age: the interval a bridge will wait for receipt of a hello packet before initiating a topology change. Possible values: 6 to 40 seconds. Default is 20.
- Hello Time: the interval of time between each configuration BPDU sent by the root bridge. *Possible values: 1-*10 seconds. Default is 2.
- Priority: a parameter used to identify the root bridge in a network. The bridge with the lowest value has the highest priority and is the root. Possible values: 0-255. Default is 128

Port Parameters (applied to a specified port within a VLAN)

- Path Cost: a parameter used to assign a higher or lower path cost to a port. Possible values: 1 to 65535. Default is (1000/Port Speed) for Half-Duplex ports and is (1000/Port Speed)/2 for Full-Duplex ports.
- Priority: value determines when a port will be rerouted in relation to other ports. Possible values: 0 to 255. Default is 128.

static-mac-address

This command allows users to define a static MAC addresses for a port on a routing switch to ensure the device is not aged out. When defining the MAC address entry, the user can also define the port's priority.

EXAMPLE: To enter a static MAC address entry for port 5 (module 4), that is also resident in port-based VLAN 4, enter the following:

```
HP9300 (config)# vlan 4
HP9300 (config-vlan-4)# static-mac-address 023.876.735 ethernet 4/5 7
```

Syntax: static-mac-address <ethernetaddress> ethernet <port | slot/port> [priority <0-7>]

Possible values: see above.

Default value: N/A

tagged

Once a port-based VLAN is created, port membership for that VLAN must be defined. To assign a port to a port-based VLAN, either the ***tagged*** or ***untagged*** command is used. When a port is tagged, it can be a member of multiple port-based VLANs.

When a port is tagged, it allows communication among the different VLANs to which it is assigned. A common use for this might be to place an email server that multiple groups may need access to on a tagged port, that in turn, is resident in all VLANs that members need access to the server.

EXAMPLE: A user wants to make port 5 (module 5), a member of port-based VLAN 4, a tagged port, the user would enter the following:

```
HP9300 (config)# vlan 4
HP9300 (config-vlan-4)# tagged ethernet 5/5
```

Syntax: tagged ethernet <port | slot/port> [to <port | slot/port> ethernet <slot/port>]

Possible values: see above.

Default value: N/A

untagged

Once a port-based VLAN is created, port membership for that VLAN must be defined. To assign a port to a port-based VLAN, either the ***tagged*** or ***untagged*** command is used. When a port is 'untagged' it can only be a member of one VLAN.

EXAMPLE: A user wants to assign all ports on a 16 port router except port 5 (module 3) as untagged to a VLAN.

To assign ports 1-4 and 6-16 to VLAN 4, the user would enter the following:

```
HP9300 (config)# vlan 4
HP9300 (config-vlan-4)# untagged ethernet 3/1 to 3/4 e 3/6 to 3/16
```

Syntax: untagged ethernet <slot/port> [to <slot/port> ethernet <slot/port>]

Possible values: see above.

Default value: N/A

write memory

Saves the running-time configuration into the startup-config file.

EXAMPLE:

```
HP9300# wr mem
```

Syntax: write memory

Possible values: N/A

Default value: N/A

write terminal

Displays the running-configuration of the HP routing switch on the terminal screen.

EXAMPLE:

```
HP9300# wr term
```

Syntax: write terminal

Possible values: N/A

Default value: N/A

Commands - All Levels

The following commands are found at all levels of the CLI for HP routing switches, except where noted. For simplicity, they are summarized in this section as well in the individual sections.

end

Moves activity to the privileged EXEC level of the CLI from any level of the CLI with the exception of the users level.

EXAMPLE: To move to the privileged level, the user would enter the following from any level of the CLI.

```
HP9300(config)# end
HP9300#
```

Syntax: end

Possible values: N/A

Default value: N/A

exit

Moves activity up one level from the current level of the CLI. This command is available at all levels.

EXAMPLE: To move from the IP Tunnel level, back to the Interface Level, the user would enter the following:

```
HP9300(config-if-tunnel)# exit
HP9300(config-if)#
```

Syntax: exit

Possible values: N/A

Default value: N/A

show arp

Displays the ARP cache of the routing switch.

EXAMPLE:

```
HP9300# show arp
Total number of ARP entries: 5
     IP Address          MAC Address         Type        Age     Port
1     207.95.6.102        0800.5afc.ea21      Dynamic     0         6
2     207.95.6.18         00a0.24d2.04ed      Dynamic     3         6
3     207.95.6.54         00a0.24ab.cd2b      Dynamic     0         6
4     207.95.6.101        0800.207c.a7fa      Dynamic     0         6
5     207.95.6.211        00c0.2638.ac9c      Dynamic     0         6
```

Syntax: show arp

Possible values: N/A

Default value: N/A

show appletalk arp

Displays the ARP Table for the AppleTalk routing protocol.

EXAMPLE:

```
Index     Node Address     Mac Address      Port
1         10.30            00e0.5200.0000   1
```

Syntax: show appletalk arp

Possible values: N/A

Default value: N/A

show appletalk cache

Displays the forwarding table for the AppleTalk routing protocol. The user can clear this cache by entering the CLI command, ***clear appletalk cache***.

EXAMPLE:

```
HP9300> show appletalk cache
Total number of cache entries: 8
D:Dynamic  P:Permanent  F:Forward  U:Us  W:Wait ARP  K:Drop
     Destination       Next Hop      MAC              Type  Fid Vlan
1    6499.193          6300.22       0000.c541.bc71   DF    9    1
2    6401.0            6300.22       0000.c541.bc71   DF    9    1
3    6300.177          0.0           0000.0000.0000   PU    0
4    6300.22           0.0           0000.c541.bc71   DF    9    1
5    450.0             0.0           0000.0000.0000   PU    0
6    400.0             0.0           0000.0000.0000   PU    0
7    6300.0            0.0           0000.0000.0000   PU    0
8    450.177           0.0           0000.0000.0000   PU    0
```

Syntax: show appletalk cache

Possible values: N/A

Default value: N/A

show appletalk globals

Displays the global configuration parameters for the AppleTalk routing protocol.

EXAMPLE:

```
HP9300>show appletalk globals
AppleTalk Routing Global Settings:
enabled: Routing
disabled: Glean Packets
rtmp-update-interval: 10
zip-query-interval:10, arp-retransmit-interval: 1, arp-retransmit-count: 2
QOS Priority 0 Sockets: 1 - 254
QOS Priority 1 Sockets: None
```

Syntax: show appletalk globals

show appletalk interface [ethernet <slot/port>]

Displays the AppleTalk configuration for an individual interface or all interfaces.

EXAMPLE: To view the configuration for all interfaces, the user would enter ***show appletalk interface***, as shown in the example below. To view the configuration of a specific interface the user would enter ***show appletalk interface ethernet <port>*.**

```
HP9300>show appletalk interface
Interface Ethernet 15
  port state: UP
  routing: Enabled
  operation mode:Seed Router
  address: 100.50,  cable-range: 100 - 100 arp-age 10
  Zone Filter List:
  Action: Permit  Zone name: sales, no RTMP Filtering
  Additional Zones Action: Permit, No RTMP Filtering
Interface Ethernet 16
  port state: DOWN
routing: Disabled
  operation mode:Routing not enabled.
  address: 200.50,  cable-range: 200 - 400 arp-age 10
  Zone Filter List:  No zone filters are configured.
Interface Ve 3
  members: ethe 1 to 3
  active: ethe 1
  port state: UP
  routing: Enabled
  operation mode: Seed Router
  address: 200.50,  cable-range: 200 - 200 arp-age 10
  Zone List:
  Finance
  Zone Filter List:  No zone filters are configured.
```

Syntax: show appletalk interface [ethernet <slot/port>]

Possible values: N/A

Default value: N/A

show appletalk route

Displays the AppleTalk routing table.

Up to 512 route entries will be stored in the routing table for a system with 32 MB of memory. Up to 128 entries are supported on a router with 8 MB of memory.

The user can clear learned routes stored in the routing table by entering the ***clear appletalk route*** command.

EXAMPLE:

```
HP9300>show appletalk route
Index     Cable Range     Next Hop     Distance     State     Port
1         6300  - 6400    0.0          0            0         2
2         6401  - 6500    6300.22      1            0         2
3         400   - 499     0.0          0            0         1
4         500   - 599     450.10       1            0         1
5         600   - 699     450.10       2            0         1
6         200   - 300     450.10       2            0         1
7         1000  - 1100    450.10       2            0         1
8         1200  - 1299    450.10       2            0         1
9         7000  - 8000    450.10       1            0         1
```

NOTE: Please note the following regarding the information displayed in the AppleTalk routing table:

Index: Identifies the entry.

Cable Range: Shows the network numbers to which the route information applies.

Next Hop: Notes the address of the next hop router to which packets for that destination will be sent.

Distance: Indicates the number of hops away that the destination is from this router

State: Indicates the state of the entry. The possible states that may display in this field are listed below with the numerical value that will appear in the table:

Good route: 0

Suspect route: 2

Bad Route: 4

Port: References the port number upon which the next hop router is found.

Syntax: show appletalk route

Possible values: N/A

Default value: N/A

show appletalk traffic

Displays statistical information for RTMP, ZIP, AEP, DDP and AARP packets.

EXAMPLE:

```
HP9300>show appletalk traffic
RTMP Statistics:
  Received: 16038, Transmitted: 16032, Filtered: 0
ZIP Statistics:
  Query Received:16, Transmitted:6, GZL Received: 2, Transmitted: 1
NetInfo Statistics:
  Received: 10   , Reply:8
AEP Statistics:
  Request Received: 0, Request Transmitted: 0
  Reply Received: 0,   Reply Transmitted: 0
DDP Statistics:
  Received: 55468,  Transmitted: 55445,  Forwarded: 39372
  In-Delivered: 16092, Dropped-No-Route:0, Dropped-Bad-Hop-Counts: 0
  Dropped-Other-Reasons: 0
AARP Statistics:
Received: 14, Transmitted: 22
```

NOTE: Please note the following regarding the information displayed in the AppleTalk traffic table:

RTMP Statistics: Provides a count of all RTMP packets received, transmitted and filtered on the router.

ZIP statistics: References a count of requests for zone information (Recv. Query) the system receives as well as a count of those ZIP queries made to other routers (Query, Transmitted). The 'Recv GZL' count references those Get Zone List requests received from other routers and the 'Transmitted' field represents those GZL requests transmitted to other routers.

NetInfo Statistics: The received and reply values of this field refer to the number of zone and network number requests made and received by the router.

AEP Statistics: Provides a count of those AppleTalk Echo Protocol (pings) requests received, transmitted and a count of the replies received or transmitted.

DDP Statistics: Displays the total count of those DDP packets transmitted, received and forwarded from the router; those packets received and forwarded up the AppleTalk protocol stack (in-delivered) and those packets dropped due to an unknown route (no-route), exceeded maximum hop count or dropped due to unknown MAC address (other-reasons).

AARP Statistics: Displays the total count of those AARP packets received and transmitted by the router.

Syntax: show appletalk traffic

Possible values: N/A

Default value: N/A

show appletalk zone

Displays the network numbers and zones learned on the network. The user can clear all information stored in the zone table by entering the ***clear appletalk route*** command.

EXAMPLE:

```
HP9300>show appletalk zone
Index       Cable   Range      Zonename
1           6300   - 6400      QA
2           6300   - 6400      QARouter
3           6401   - 6500      QA1
4           6401   - 6500      QALab2
5           400    - 499       account
6           1200   - 1299      sales
7           1000   - 1100      engineering
8           1000   - 1100      HPnetwork
9           1000   - 1100      HPnetworks1
10          200    - 300       marketing
11          600    - 699       management
12          500    - 599       gigabit
13          7000   - 8000      gatethernet0
```

Syntax: show appletalk zone

Possible values: N/A

Default value: N/A

show chassis

Displays the presence and status of power supplies and fans in the chassis.

EXAMPLE:

```
HP9300# show chassis
power supply 0 ok
power supply 1 not present
fan 0 ok
fan 1 ok
fan 2 ok
fan 3 ok
power supply 2 ok
power supply 3 not present
```

Syntax: show chassis

Possible values: N/A

Default value: N/A

show configuration

Lists the operating configuration of the routing switch. This command allows the user to check configuration changes before saving them to flash.

EXAMPLE:

```
HP9300# show configuration
```

Syntax: show configuration

Possible values: N/A

Default value: N/A

show flash

Displays the version of the software image saved in the primary and secondary flash of the routing switch.routing switch

EXAMPLE:

```
HP9300# show flash
```

Syntax: show flash

Possible values: N/A

Default value: N/A

show interfaces

Displays all port interfaces of the HP routing switch and their state, duplex mode, STP state, priority and MAC address.

EXAMPLE:

```
HP9300# show interfaces
```

Syntax: show interfaces

Possible values: N/A

Default value: N/A

show ip

This command displays the global parameters for IP–specifically, IP TTL, ARP age values as well as all protocols and IP features enabled on the router. It will also display all active filters.

EXAMPLE:

```
HP9300# show ip
Global Settings
  ttl: 64, arp-age: 10
  enabled: IRDP  Proxy-ARP  RARP  RIP  OSPF  DVMRP
  disabled: BOOTP-Relay  Load-Sharing
```

Syntax: show ip

Possible values: N/A

Default value: N/A

show ip cache

Displays the IP host table showing indexes to MAC addresses and the IP address of the next hop for HP routing switches.

EXAMPLE:

```
HP9300# show ip cache

Total number of cache entries: 243

D:Dynamic  P:Permanent  F:Forward  U:Us  C:Complex Filter

W:Wait ARP  I:ICMP Deny  K:Drop  R:Fragment  S:Snap Encap

      IP Address       Next Hop      MAC             Type  Fid 1     207.95.95.1
0.0.0.0       0000.0000.0000   PU    0

2     111.111.100.111  0.0.0.0       0000.0000.0000   PU    0

3     207.95.45.1      0.0.0.0       0000.0000.0000   PU    0

4     207.195.1.255    0.0.0.0       0000.0000.0000   PU    0

5     207.95.133.255   0.0.0.0       0000.0000.0000   PU    0

. . .  [entries 6-242 not shown]

243   207.95.42.1      0.0.0.0       0000.0000.0000   PU    0
```

Syntax: show ip cache

Possible values: N/A

Default value: N/A

show ip dvmrp

Displays the **global** and **interface** settings for DVMRP on an HP routing switch.

EXAMPLE:

```
HP9300# show ip dvmrp

Global Settings

  prune age: 180, neighbor timeout: 40

  probe interval: 10, report interval: 60

  route expire interval: 200, route discard interval: 340

  triggered update interval: 5, graft retransmit interval: 10

Interface Ethernet 1

TTL Threshold: 1 Metric: 1

Local Address: 192.094.005.001

[. . . ]

Interface Ethernet 1/6

TTL Threshold: 1 Metric: 1

Local Address: 193.095.016.001
```

Syntax: show ip dvmrp

Possible values: N/A

Default value: N/A

show ip dvmrp graft

Displays active dvmrp grafts. Information shown is **port, source network, group address, neighbor router** and **age** for an HP routing switch configured for DVMRP operation.

EXAMPLE:

```
HP9300# show ip dvmrp graft
```

Syntax: show ip dvmrp graft

Possible values: N/A

Default value: N/A

show ip dvmrp group

Displays network address, mask and gateway and associated IP multicast group membership and port for an HP routing switch configured for DVMRP operation.

EXAMPLE:

```
HP9300# show ip dvmrp group
```

Syntax: show ip dvmrp group

Possible values: N/A

Default value: N/A

show ip dvmrp interface

Displays the **interface** DVMRP settings, **ttl threshold** and **metric** for all sub-nets (interfaces) for an HP routing switch configured for DVMRP operation.

EXAMPLE:

```
HP9300# show ip dvmrp interface

Interface Ethernet 1

TTL Threshold: 1 Metric: 1 Enabled: Querier
```

Syntax: show ip dvmrp interface

Possible values: N/A

Default value: N/A

show ip dvmrp mcache

Displays the DVMRP multicast cache for an HP routing switch configured for DVMRP operation.

EXAMPLE:

```
HP9300# show ip dvmrp mcache

F:Fast S:Slow P:Prune L:Leaf

      SourceNet      GroupAddress    Type  PortMask & PruneMask

 1 207.095.002.000   226.000.000.019   P 15   F15.      P12

 2 207.095.002.000   226.000.000.021   P 15   F15.      P12
```

Syntax: show ip dvmrp mcache

Possible values: N/A

Default value: N/A

show ip dvmrp nbr

Displays all neighbor DVMRP routers and the port on which they are on, for HP routing switches configured for DVMRP operation.

EXAMPLE:

```
HP9300# show ip dvmrp nbr
Port   Neighbor          GenId      Age  UpTime
 11    207.095.018.001  -12198       40      900
Port   Neighbor          GenId      Age  UpTime
 12    207.095.009.040       0       40      900
Port   Neighbor          GenId      Age  UpTime
 14    207.095.008.030       0       40      130
```

Syntax: show ip dvmrp nbr

Possible values: N/A

Default value: N/A

show ip dvmrp prune

Displays active prunes on the network for an HP routing switch configured for DVMRP operation.

EXAMPLE:

```
HP9300# show ip dvmrp prune
Port  SourceNetwork    GroupAddress      NbrRouter       Age UpTime
 11    207.095.002.000  226.000.000.027   207.095.018.001   180  0
 11    207.095.002.000  226.000.000.026   207.095.018.001   180  0
 11    207.095.002.000  226.000.000.025   207.095.018.001   180  0
```

Syntax: show ip dvmrp prune

Possible values: N/A

Default value: N/A

show ip dvmrp route

Displays network address, mask and gateway and associated IP multicast group membership and ports for an HP routing switch with DVMRP configured..

EXAMPLE:

```
HP9300# show ip dvmrp route
```

Syntax: show ip dvmrp route

Possible values: N/A

Default value: N/A

show ip dvmrp traffic

Displays all active DVMRP traffic on an HP routing switch.

EXAMPLE:

```
HP9300# show ip dvmrp traffic
Port  Probe                                        Graft          Prune
[Rx  Tx Discard] [Rx Tx Discard] [Rx  Tx Discard]
10     0     95   0     0     0   0     0     0       0
12    95     95   0     0     0   0    21     0       0
13    95     95   0     0     9   0     0     72      0
Tot  195    285   0     0     9   0    21     72      0
```

Syntax: show ip dvmrp traffic

Possible values: N/A

Default value: N/A

show ip srp

Displays the current settings of SRP on an HP routing switch.

EXAMPLE:

```
HP9300# show ip srp
SRP Interfaces currently defined:
Ethernet Interface: 1
ip srp ip address 192.147.200.165
ip srp virtual router ip address 192.147.200.100
ip srp other router ip address 192.147.200.170
ip srp state  Active
ip srp preference level 50
ip srp track port 3
ip srp keep alive time 15
ip srp router dead interval 30
```

Syntax: show ip srp

Possible values: N/A

Default value: N/A

show ip interface

Displays interface configuration details for all interfaces or a specified interface on an HP routing switch.

EXAMPLE 1: To view all IP interfaces and their configuration on a router, enter the following:

```
HP9300# show ip interface
```

EXAMPLE 2: To view a specific interface configuration, in this case interface 5, enter the following:

```
HP9300# show ip interface e5
```

Syntax: show ip interface [ethernet <port>]

Possible values: N/A

Default value: N/A

show ip ospf area

Displays for all active OSPF areas, the following information:

- type of area—stub or normal
- cost (for stub area only)
- number of times the SPF (shortest path first) calculation is performed for the area
- number of area borders within the area
- number of AS boundary routers within the area
- number of link state advertisements (LSA) in the link state database of the area
- sum of LSA checksums in the area

EXAMPLE:

```
HP9300# show ip ospf area
Indx  Area      Type  Cost  SPFR ABR ASBR LSA Chksum(Hex)
1   0.0.0.0     normal  0    1     0     0   1   0000781f
2  192.147.60.0 normal  0    1     0     0   1   0000fee6
3  192.147.80.0 stub    1    1     0     0   2   000181cd
```

Syntax: show ip ospf area

Possible values: N/A

Default value: N/A

show ip ospf area <area ID>

Displays for the specified OSPF area the following information:

- type of area—stub or normal
- cost (for stub area only)
- number of times the SPF (shortest path first) calculation is performed for the area
- number of area borders within the area
- number of AS boundary routers within the area
- number of link state advertisements (LSA) in the link state database of the area
- sum of LSA checksums in the area

EXAMPLE:

```
HP9300# show ip ospf area 192.147.60.0
Indx  Area      Type  Cost  SPFR ABR ASBR LSA Chksum(Hex)
2  192.147.60.0 normal  0    1     0     0   1   0000fee6
```

Syntax: show ip ospf area <area ID>

Possible values: N/A

Default value: N/A

show ip ospf config

Displays global and interface run time configuration details for OSPF on an HP routing switch

EXAMPLE:

```
HP9300# show ip ospf config
Router OSPF: Enabled
Redistribution: Disabled
default OSPF Metric: 10
OSPF Area currently defined:
Area-ID          Area-Type Cost
0.0.0.0          normal    0
OSPF Interfaces currently defined:
Ethernet Interface: 5/1
ip ospf cost 1
ip ospf dead-interval 40
ip ospf hello-interval 10
ip ospf priority 1
ip ospf retransmit-interval 5
ip ospf transmit-delay 1
ip ospf area 0.0.0.0
Ethernet Interface: 5/2
ip ospf cost 1
ip ospf dead-interval 40
ip ospf hello-interval 10
ip ospf priority 1
ip ospf retransmit-interval 5
ip ospf transmit-delay 1
ip ospf area 0.0.0.0
```

Syntax: show ip ospf config

Possible values: N/A

Default value: N/A

show ip ospf external link state

Displays information about external link state advertisements stored in the database. The status option of the command, provides a detailed summary of the information. The advertisement option of the command, displays the encoded data stream of the same information that is forwarded to neighbor routers.

EXAMPLE:

```
HP9300# show ip ospf ext status
HP9300# show ip ospf ext advertise
```

Syntax: show ip ospf external-link-state [status] [advertise]

Possible values: N/A

Default value: N/A

show ip ospf general

Displays global status information about OSPF for an HP routing switch, specifically:

- count of external Link State Advertisements (LSA)
- sum of external LSA checksums
- number of new LSAs originated by the router
- number of new LSAs received by the router

EXAMPLE:

```
HP9300# show ip ospf gen
External LSA Counter          0
External LSA Checksum Sum     0000
Originate New LSA Counter     4
Rx New LSA Counter            4
```

Syntax: show ip ospf general

Possible values: N/A

Default value: N/A

show ip ospf interface

Displays information about all or a specific OSPF interface.

The following information is provided:

- OSPF interface parameters
- state of the interface
- IP address of the designated router
- IP address of the backup designated router

EXAMPLE:

```
HP9300# show ip ospf interface
Indx Port   IP Address   Area ID    OSPF Mode   Priority
1    1       2.0.0.1      0.0.0.0   enabled       1
Transit(sec)  Retrans(sec) Hello(sec) Dead(sec)   cost
     1          5            10          40        1
Type        D. Router    Backup D. Router events  state
broadcast    2.0.0.1     2.0.0.2    1            DRouter
Authentication-Key: None
```

Syntax: show ip ospf interface [ip address]

Possible values: N/A

Default value: N/A

show ip ospf link state

Displays the router, network, summary and summary ASBR link state advertisements. **Status** will display a detailed summary and **advertise** will display a short form.

EXAMPLE:

```
HP9300# show ip ospf link-state status
Index: 1  Area ID: 0.0.0.0
Age(sec) Type     LS ID    Router     Seq(hex) Chksum(hex)
565     Summary  192.147.200.0   192.147.80.3  80000001   781f
```

Syntax: show ip ospf link state [status] [advertise]

Possible values: N/A

Default value: N/A

show ip ospf neighbor

Displays information about all neighbor routers or a specific neighbor router.

The following information will be shown for an HP routing switch:

- neighbor router ID
- neighbor IP address
- neighbor state
- number of times the neighbor state was changed
- count of packets retransmitted to the neighbor router

EXAMPLE:

```
HP9300# show ip ospf neighbor
```

Syntax: show ip ospf neighbor [value]

Possible values: N/A

Default value: N/A

show ip ospf trap

Displays the list of all OSPF traps and their current state of enabled or disabled.

EXAMPLE:

```
HP9300 (config)# show ip ospf trap
Interface State Change Trap:Enabled
Virtual Interface State Change Trap:Enabled
Neighbor State Change Trap:Enabled
Virtual Neighbor State Change TrapEnabled
Interface Configuration Error Trap:Enabled
Virtual Interface Configuration Error Trap:Enabled
Interface Authentication Failure Trap:Enabled
Virtual Interface Authentication Failure Trap:Enabled
Interface Receive Bad Packet Trap:Enabled
Virtual Interface Receive Bad Packet Trap:Enabled
Interface Retransmit Packet Trap:Enabled
Virtual Interface Retransmit Packet Trap:Enabled
Originate LSA Trap: Enabled
Originate MaxAge LSA Trap:Enabled
Originate MaxAge LSA Trap:Enabled
Link State Database Overflow TrapEnabled
Link State Database Approaching Overflow TrapEnabled
```

Syntax: show ip ospf trap

Possible values: N/A

Default value: N/A

show ip ospf virtual link

Displays transit area, router ID and transit specifics for a specific index on an HP routing switch.

EXAMPLE:

```
HP9300# show ip ospf virtual-link 1
Indx Transit Area   Router ID       Transit(sec) Retrans(sec) Hello(sec)
1    192.147.60.0   192.147.180.30   1                                    5   10
Dead(sec)      events           state        Authentication-Key
40             0                down         None
```

Syntax: show ip ospf virtual-link <value>

Possible values: N/A

Default value: N/A

show ip ospf virtual neighbor

Displays the virtual neighbor value for the specified index on an HP routing switch.

EXAMPLE:

```
HP9300# show ip ospf virtual-neighbor 3
```

Syntax: show ip ospf virtual-neighbor <value>

Possible values: N/A

Default value: N/A

show ip pim flowcache

Displays all active PIM flows for an HP routing switch. A flow is a cached forwarding entry.

EXAMPLE:

```
HP9300 (config)# show ip pim flowcache
Source               Group        Parent
207.95.5.155      239.255.0.1      16
207.95.5.155      224.2.230.64     16
```

Syntax: show ip pim flowcache

Possible values: N/A

Default value: N/A

show ip pim group

Displays all active PIM groups by interface–both physical and virtual, for an HP routing switch. Physical ports will be displayed as numerals only. Virtual interfaces will be preceded with a ‘v’ as in the example below.

EXAMPLE:

```
HP9300 (config)# show ip pim group
Index   Group                                   Port
1               224.2.230.64                    v01
2               239.255.0.1                     v01
```

Syntax: show ip pim group

Possible values: N/A

Default value: N/A

show ip pim interface

Lists all active interfaces configured for an HP routing switch.

EXAMPLE:

```
HP9300 (config) #sh ip pim interface
Interface Ethernet 1
TTL Threshold: 1, Enabled
Local Address: 207.95.18.20
Interface Ethernet 3
TTL Threshold: 1, Enabled
Local Address: 207.95.5.1
```

Syntax: show ip pim interface

Possible values: N/A

Default value: N/A

show ip pim mcache

Displays all forwarding entries for an HP routing switch with PIM enabled.

In the example below, the source, group pair is defined for ports 2 and 3 as listed in hex under the PortMask column.

EXAMPLE:

```
HP9300 (config)# show ip pim mcache
F:Fast P:Prune
SourceNet      Group       veMask     PortMask
                               Hex           Hex
207.95.5.0    239.255.0.1   0000     00000006
207.95.5.0    224.2.230.64  0000     00000006
```

Syntax: show ip pim mcache

Possible values: N/A

Default value: N/A

show ip pim nbr

Displays all PIM neighbor routers for physical, virtual and tunnel interfaces.

Port numbers preceded by a ‘T’ are tunnel interfaces, ‘E’ refers to physical interfaces and ‘VE’ refers to routed interfaces within a VLAN.

EXAMPLE:

```
HP9300 (config)# show ip pim nbr
Port    Neighbor      Holdtime       Age   UpTime
T16   207.95.7.20       180          0       32220
```

Syntax: show ip pim nbr

Possible values: N/A

Default value: N/A

show ip pim prune

Shows those prune states that are active on an HP routing switch with PIM enabled.

Port numbers preceded by a ‘T’ are tunnel interfaces, ‘E’ refers to physical interfaces and ‘VE’ refers to routed interfaces within a VLAN.

EXAMPLE:

```
HP9300 (config)# show ip pim nbr
Port      SourceNet     Group          Nbr               Age
T16       207.95.5.0    239.255.0.2    207.95.6.10       0
```

Syntax: show ip pim prune

Possible values: N/A

Default value: N/A

show ip pim traffic

Displays are active PIM interfaces and their statistics for an HP routing switch.

Port numbers preceded by a ‘T’ are tunnel interfaces, ‘E’ refers to physical interfaces and ‘VE’ refers to routed interfaces within a VLAN.

EXAMPLE:

```
HP9300 (config)# show ip pim traffic
Port      Hello    Join       Prune         Graft         Assert
          [Rx Tx]      [Rx Tx]      [Rx  Tx]     [Rx  Tx]     [Rx  Tx]
e5        0  2         0  0         0  0         0  0         0  0
t1        538  540     0  0         3 775        0  4         0  0
ve1       0  541       0  0         0  0         0  0         0  0
ve3       0  541       0  0         0  0         0  0         0  0
Total     538  2163    0  0         33 775       0  4         0  0
```

Syntax: show ip pim traffic

show ip policy

Displays the configured global and local session policies defined via the ***ip policy*** command.

EXAMPLE:

```
Index           Priority     Protocol     Socket       Type
  1             high         tcp          pop3         global
  2             high         udp          dns          global
```

Syntax: show ip policy

Possible values: N/A

Default value: N/A

show ip rip

Displays the IP/RIP Filters defined for an HP routing switch and its neighbor router.

EXAMPLE:

```
HP9300 (config)# show ip rip
RIP Route Filter Table
Index                   Action       Route IP Address          Sub-net Mask
1                       Permit              192.58.5.3          255.255.255.0
RIP Neighbor Filter Table
Index                   Action              Neighbor IP address
1                       Permit              195.98.7.2
```

Syntax: show ip rip

Possible values: N/A

Default value: N/A

show ip route

Displays active IP routes on an HP routing switch.

EXAMPLE:

```
HP9300# show ip ro
Total number of IP routes: 1
D:Directly-Connected  O:OSPF  R:RIP  S:Static
   Network Address  NetMask       Gateway  Port Cost Type
1  192.147.200.0    255.255.255.0  0.0.0.0   5  1     D
```

Syntax: show ip route

Possible values: N/A

Default value: N/A

show ip traffic

Displays IP (ICMP, UDP, TCP, and RIP) traffic statistics for an HP routing switch.

EXAMPLE:

```
HP9300# show ip traffic
IP Statistics
  464 received, 2267 sent, 0 forwarded
  0 filtered, 0 fragmented, 0 reassembled, 0 bad header
  0 no route, 0 unknown proto, 0 no buffer, 0 other errors
ICMP Statistics
Received:
  0 total, 0 errors, 0 unreachable, 0 time exceed
0 parameter, 0 source sequence, 0 redirect, 0 echo,
  0 echo reply, 0 timestamp, 0 timestamp rely, 0 addr mask
  0 addr mask reply, 0 irdp advertisement, 0 irdp solicitation
Sent:
  54 total, 0 errors, 0 unreachable, 0 time exceed
  0 parameter, 0 source sequence, 0 redirect, 0 echo,
  0 echo reply, 0 timestamp, 0 timestamp rely, 0 addr mask
  0 addr mask reply, 54 irdp advertisement, 0 irdp solicitation
```

NOTE: This example is an EXCERPT not a complete display.

Syntax: show ip traffic

Possible values: N/A

Default value: N/A

show ipx

Displays IPX global parameters for a routing switch.

EXAMPLE:

```
HP9300# show ipx
Global Settings
IPX Routing Mode: Enabled
IPX NetBIOS (type 20): Disallowed
```

Syntax: show ipx

Possible values: N/A

Default value: N/A

show ipx cache

Displays summary by port, network number, forwarding (Next Hop Router), MAC address, out filter status and frame type for an HP routing switch.

EXAMPLE:

```
HP9300# show ipx cache

Total number of IPX cache entries 3

Forwarding

Index  Network   Router      Out-Filter  Frame-Type    Port

1     11110007  0000.0000.0000  off      ethernet_802.3    7

2     11110005  0000.0000.0000  off      ethernet_802.3    5

3     32D564FA  00a0.24bf.89ca  off      ethernet_802.3    5
```

Syntax: show ipx cache

Possible values: N/A

Default value: N/A

show ipx interface

Lists network number, MAC address, and port state and frame type for all interfaces or a specific IPX interface on an HP routing switch.

To display data on all interfaces, just enter the command ***show ipx interface***.

EXAMPLE: To display data for interface 5, enter the following:

```
HP9300# show ipx interface e5

Interface Ethernet 5

MAC address: 00e0.5200.020f  Port state: UP

IPX network: 11110005  Frame type: ethernet_802.3
```

Syntax: show ipx interface <ethernet> <number>

Possible values: N/A

Default value: N/A

show ipx route

Displays active IPX routes noting hop, tick and port for an HP routing switch.

EXAMPLE:

```
HP9300# show ipx route

Total number of IPX route entries 3

Forwarding

Index   Network   Router         Hops  Ticks Port 1      11110007  0000.0000.0000
0     1     7

2       32D564FA  00a0.24bf.89ca     1     2     5

3       11110005  0000.0000.0000     0     1     5
```

Syntax: show ipx route

Possible values: N/A

Default value: N/A

show ipx servers

Displays IPX servers defined for an HP routing switch.

EXAMPLE:

```
HP9300# show ipx servers
Total number of IPX server entries 3
Index  Network   Node            Socket    Type      Hops
1      32D564FA  0000.0000.0001   0005     026B        1
         Server-name: HPD
2      32D564FA  0000.0000.0001   4006     0278        1
         Server-name: HPM
3      32D564FA  0000.0000.0001   0451     0004        1
         Server-name: HP-MPR2
```

Syntax: show ipx servers

Possible values: N/A

Default value: N/A

show ipx traffic

Displays a port summary of total IPX packets forwarded. It also breaks down the packets by transmit and receive. Totals for dropped and filter packets are also shown.

EXAMPLE:

```
HP9300# show ipx traffic
Dropped              Filtered
Port  Forward  Receive  Transmit  Receive  Transmit   Receive  Transmit
  5    46         36        8          2       0         0         0
  7     0          0        6          0       0         0         0
Tot    46         36       14          2       0         0         0
```

Syntax: show ipx traffic

Possible values: N/A

Default value: N/A

show logging

Displays the SNMP event log.

EXAMPLE:

```
HP9300# show logging
Syslog logging: enabled (0 messages dropped, 0 flushes, 0 overruns)
    Buffer logging: level ACDMEINW, 7 messages logged
    level code: A=alert C=critical D=debugging M=emergency E=error
                I=informational N=notification W=warning
Log Buffer (50 entries):

at 0 days 0 hours 1 minutes 3 seconds, level informational
Bridge is new root, vlan 1, root ID 800000e052801400
at 0 days 0 hours 0 minutes 47 seconds, level informational
Bridge root changed, vlan 1, new root ID 800000e052000f2b, root port 1/1
at 0 days 0 hours 0 minutes 31 seconds, level informational
Bridge topology change, vlan 23, port 5/20, changed state to forwarding
at 0 days 0 hours 0 minutes 29 seconds, level informational
Bridge topology change, vlan 1, port 1/1, changed state to forwarding
at 0 days 0 hours 0 minutes 2 seconds, level informational
Cold start
at 0 days 0 hours 0 minutes 2 seconds, level informational
Interface Ethernet 5/20, changed state to up
at 0 days 0 hours 0 minutes 0 seconds, level informational
Interface Ethernet 1/1, changed state to up
```

Syntax: show logging

Possible values: N/A

Default value: N/A

show mac-address

Displays all MAC addresses on an HP routing switch.

EXAMPLE: To display all MAC addresses on a routing switch, enter the following:

```
HP9300(config)#show mac-address
Total entries from all ports = 75
       MAC     Port   Age CamF CIDX0 CIDX1 CIDX2 CIDX3 CIDX4 CIDX5
0000.0300.0000  10  17293 00H     0     0     0     0     0     0
0060.089f.8086   1     12 0bH    23    15     0     6     0     0
0060.9709.914b  16   2130 00H     0     0     0     0     0     0
00a0.249a.0163  16    130 00H     0     0     0     0     0     0
0060.979d.41a5  11    475 00H     0     0     0     0     0     0
00a0.24c5.01d1  11      0 0cH     0     0    20    14     0     0
0060.979d.41df  11    570 00H     0     0     0     0     0     0
0060.9759.4226  16    240 00H     0     0     0     0     0     0
0060.9759.4235  16    130 00H     0     0     0     0     0     0
0800.208f.725b   2    135 00H     0     0     0     0     0     0
0060.9759.4264  16      0 0aH     0    14     0    21     0     0
00a0.24c5.02a1  16     15 09H     5     0     0    33     0     0
0000.c02c.a2bf   7     11 03H    27     5     0     0     0     0
00a0.24c5.02f8   4    135 00H     0     0     0     0     0     0
00a0.24c5.02fc   6      0 06H     0     8    31     0     0     0
0800.207e.c312   2      2 0dH    25     0    24    13     0     0
0800.208f.5331   2    135 00H     0     0     0     0     0     0
00e0.5200.0385  10   5160 00H     0     0     0     0     0     0
00e0.5200.0388  10  35420 00H     0     0     0     0     0     0
0000.f820.a3ad   3  11239 00H     0     0     0     0     0     0
0000.c06f.d3be   3    135 00H     0     0     0     0     0     0
--More--, next page: Space/Return key, quit: Control-c
```

NOTE: The information displayed in columns with headings, **CamF**, and **CIDX0** through **CIDX5**, is not relevant for day-to-day management of the routing switches by the user. The information is used by engineering and technical support staff for debug purposes.

Syntax: show mac-address <ethernet> <portnumber>

Possible values: N/A

Default value: N/A

show mac-address statistics

Displays the total number of MAC addresses currently active on an HP routing switch. This command serves as a numerical summary of the detailed summary provided by the command ***show mac-addresses***.

For each port, the number of learned MAC addresses is displayed.

EXAMPLE:

```
HP9300 (config)# show mac-address-statistics
Total entries  = 41
Port     1     2     3     4     5     6     7     8     9
   0     6    11     1     1     1     2     1     1
Port     10     11      12    13    14    15    16
                    0      3       1      3     1     1     8
```

Syntax: show mac-address-statistics

Possible values: N/A

Default value: N/A

show media

This command shows the type of ports active on a chassis system.

EXAMPLE:

```
HP9300 (config)# show media
1/1:SX 1/2:SX 1/3:SX 1/4:SX
2/1:SX 2/2:SX 2/3:SX 2/4:SX 2/5:SX 2/6:SX 2/7:SX 2/8:SX
3/1:SX 3/2:SX 3/3:SX 3/4:SX 3/5:SX 3/6:SX 3/7:SX 3/8:SX
4/1:SX 4/2:SX 4/3:SX 4/4:SX 4/5:SX 4/6:SX 4/7:SX 4/8:SX

6/1:SX 6/2:SX 6/3:SX 6/4:SX 6/5:SX 6/6:SX 6/7:SX 6/8:SX
7/1:SX 7/2:SX 7/3:SX 7/4:SX 7/5:SX 7/6:SX 7/7:SX 7/8:SX
8/1:SX 8/2:SX 8/3:SX 8/4:SX 8/5:SX 8/6:SX 8/7:SX 8/8:SX
```

Syntax: show media

Possible values: N/A

Default value: N/A

show module

This command shows the type of modules installed on a chassis system.

EXAMPLE:

```
HP9300# show module
     Logical Module                        Physical Module
(S1) 8 Port Gig Management Module      8 Port Gig Management Module
(S2) 8 Port Gig Module                 8 Port Gig Module
(S3) 8 Port Gig Module                 8 Port Gig Module
(S4) 8 Port Gig Module                 8 Port Gig Module
(S5) 24 Port Copper Module             24 Port Copper Module
(S6) 8 Port Gig Module                 8 Port Gig Module
(S7) 8 Port Gig Module                 8 Port Gig Module
(S8) 8 Port Gig Module                 8 Port Gig Module
```

Syntax: show module

Possible values: N/A

Default value: N/A

show rmon alarm

This command will display any reported RMON alarms for the system.

EXAMPLE:

```
HP9300# show rmon alarm
Alarm table is empty
```

Syntax: show rmon alarm

Possible values: N/A

Default value: N/A

show rmon event

This command will display any reported RMON events for the system.

EXAMPLE:

```
HP9300# show rmon event
Event table is empty
```

Syntax: show rmon event

Possible values: N/A

Default value: N/A

show rmon history

This command will display the RMON history for the system.

EXAMPLE:

```
HP9300# show rmon history
History 1 is active, owned by monitor
 Monitors interface 1/1 (ifIndex 1) every 30 seconds
 25 buckets were granted to store statistics

History 2 is active, owned by monitor
 Monitors interface 1/1 (ifIndex 1) every 1800 seconds
 25 buckets were granted to store statistics

History 3 is active, owned by monitor
 Monitors interface 5/20 (ifIndex 148) every 30 seconds
 25 buckets were granted to store statistics

History 4 is active, owned by monitor
 Monitors interface 5/20 (ifIndex 148) every 1800 seconds
 25 buckets were granted to store statistics
```

Syntax: show rmon history

Possible values: N/A

Default value: N/A

show snmp-server

Lists system administrative information—contact name, system location, community strings and traps enabled for an HP routing switch.

EXAMPLE:

```
HP9300# show snmp-server
Contact: Jack Spratt
     Location: HMB x1031
Community(ro): public
Community(rw): private
Traps
           Cold start: Enable
           Link up: Enable
           Link down: Enable
           Authentication: Enable
          [ ..........]
            L4 switch standby: Enable
 Total Trap-Receiver Entries: 4
Trap-Receiver IP Address       Community
     1        207.95.6.211
     2        207.95.5.21
```

Syntax: show snmp-server

Possible values: N/A

Default value: N/A

show span

Displays spanning tree statistics for an HP routing switch such as root cost, root port and priority.

EXAMPLE:

```
HP9300# show span
Global STP Parameters:
VLAN Root             Root Root Prio Max He- Ho- Fwd Last     Chg  Bridge
 ID   ID              Cost Port rity Age llo ld  dly Chang    cnt  Address
                             Hex  sec sec sec sec sec
   1 800000e052801400 0    Root 8000 20  2   2   15  0        1    00e052801400

Port STP Parameters:

VLAN Port Prio Path State      Fwd    Design Design           Design
 ID  Num  rity Cost            Trans  Cost   Root             Bridge
          Hex
   1 1/1  80   1    FORWARDING 1      0      800000e052801400 800000e052801400
   1 1/2  80   0    DISABLED   0      0      0000000000000000 0000000000000000
   1 2/1  80   0    DISABLED   0      0      0000000000000000 0000000000000000
   1 2/3  80   0    DISABLED   0      0      0000000000000000 0000000000000000
   1 2/5  80   0    DISABLED   0      0      0000000000000000 0000000000000000
```

Syntax: show spanning-tree

Possible values: N/A

Default value: N/A

show span vlan

Displays global and port STP for a given VLAN for an HP routing switch.

EXAMPLE:

```
HP9300# show span vlan 2
Global Bridge Parameters:
VLAN Root   Root   Root    Prio    Max  He-  Ho-  Fwd   Last   Chg  Bridge
 ID  ID     Cost   Port    rity    Age  llo  ld   dly   Chang  cnt  Address
                              Hex    sec    sec   sec
2   800000e0520002f5  0     Root  8000   20      2     2     15     0   0
00e0520002f5
Port STP Parameters:
VLAN  Port  Prio  Path State     Fwd         Design   Design    Design
 ID   Num   rity   Cost          Trans        Cost    Root     Bridge
           Hex
    2        1      0080    0                DISABLED         0
0000000000000000    0000000000000000
   2         2      0080    0                DISABLED         0
0000000000000000    0000000000000000
   2         3      0080    0                DISABLED         0
0000000000000000    0000000000000000
   2         4      0080    0                DISABLED         0
0000000000000000    0000000000000000
   2         5      0080    0                DISABLED         0
0000000000000000    0000000000000000
```

Syntax: show span vlan <vlanID>

Possible values: N/A

Default value: N/A

show statistics

Displays port statistics for an HP routing switch (transmit, receive, collisions, errors).

EXAMPLE:

```
HP9300# show statistics
       Buffer Manager           Queue
  [Pkt Receive Pkt Transmit]
          0             0
   Port Counters:  Packets         Collisions              Errors
Port    [Receive  Transmit] [Receive Transmit]  [Align     FCS   Giant  Short]
1/1        15935       5443        0          0       0       0       0       0
1/2            0          0        0          0       0       0       0       0
1/3            0          0        0          0       0       0       0       0
1/4            0          0        0          0       0       0       0       0
2/1            0          0        0          0       0       0       0       0
2/2            0          0        0          0       0       0       0       0
2/3            0          0        0          0       0       0       0       0
2/4            0          0        0          0       0       0       0       0
2/5            0          0        0          0       0       0       0       0
2/6            0          0        0          0       0       0       0       0
2/7            0          0        0          0       0       0       0       0
2/8            0          0        0          0       0       0       0       0
```

Syntax: show statistics

Possible values: N/A

Default value: N/A

show tech

Shows technical details to the user for assistance in troubleshooting issues when working with technical support. The information show is a sub-set of all the available information.

EXAMPLE:

```
HP9300# show tech
show tech
  SW: Version 4.2.00T41 Copyright (c) 1996-1998 HP
      Compiled on Oct 13 1998 at 22:54:22 labeled as S0420012
  HW: Chassis HP9300
==========================================================================
SL 1: 8 Port Gig Module
 2048 KB BRAM, SMC version 1, ICBM version 20
  384 KB PRAM(256K+128K) and 2048*8 CAM entries for DMA  4, version 0206
  384 KB PRAM(256K+128K) and shared CAM entries for DMA  5, version 0206
  384 KB PRAM(256K+128K) and 2048*8 CAM entries for DMA  6, version 0206
  384 KB PRAM(256K+128K) and shared CAM entries for DMA  7, version 0206
==========================================================================
  240 MHz Power PC processor 603 (revision 7) 66 MHz bus
  128 KB boot flash memory
 4096 KB code flash memory
  256 KB SRAM
32756 KB DRAM
The system uptime is 1 hours 18 minutes 20 seconds
HP9300 Port Link State     Dupl Speed Trunk Tag Priori MAC
1/1  Up   Forward   Full 1G    None  No  level0 00e0.5280.1400 1/1
[. . . . . .]
 The system had been up for 422 minutes
General Registers:
04208278 0425f358 0421c200 00009030 00000000 00000000 000000ff 044b94e8
[. . . . . .]
```

Syntax: show tech

Possible values: N/A

Default value: N/A

show telnet

Shows the IP address of the station with the active Telnet session. Up to five read access Telnet sessions can now be supported on the HP routing switch at one time. Write access via Telnet is limited to one session.

EXAMPLE:

```
HP9300# show telnet
Telnet connection: Yes
client IP address: 207.95.6.18
Telnet connection:  No
Telnet connection:  No
Telnet connection:  No
Telnet connection:  No
```

Syntax: show telnet

Possible values: N/A

Default value: N/A

show trunk

Displays trunk groups and their port membership.

EXAMPLE:

```
HP9300 (config-if)# show trunk
Configured trunks:
Trunk Group     Ports
1               1     2     3
Operational trunks:
Trunk Group     Ports               Duplex       Speed        Tag       Priority
1               1     2     3     Full         100M         No        High
```

Syntax: show trunk

Possible values: N/A

Default value: N/A

show version

Lists software, hardware and firmware details for an HP routing switch.

EXAMPLE:

```
HP9300# sh ver
```

Syntax: show version

Possible values: N/A

Default value: N/A

show vlan

Displays all VLANs configured on the system, their member ports, assigned priority and STP status. To view a specific VLAN, the user would enter ***VLAN ID*** after the ***show vlan*** command.

EXAMPLE:

```
HP9300 (config)# show vlan
```

Syntax: show vlan, show vlan <vlanID>

Possible values: N/A

Default value: N/A