KGS-2422-B

Industrial Command Line Interface

(ICLI)

for console & Telnet

Operation Manual

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For more information, contact:

United States KTI Networks Inc.
P.O. BOX 631008
Houston, Texas 77263-1008

Phone: 713-2663891
Fax: 713-2663893
E-mail: kti@ktinet.com
URL: http://www.ktinet.com/

International Fax: 886-2-26983873
E-mail: kti@ktinet.com.tw
URL: http://www.ktinet.com.tw/

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1. Introduction

1.1 Command Modes

You use ICLI (Industrial Command Line Interface) to access the software embedded in your Gigabit Ethernet switches. Because the ICLI is divided into many different modes, the commands available to you at any given time depend on the mode you are currently in. Entering a question mark (?) at the ICLI prompt allows you to obtain a list of commands available for each command mode.

The table below illustrates how to access and exit various command modes of the software.

Command Mode	Access Method	Prompt	Exit Method
EXEC (Limited commands)	Login Username: Password:	#	logout command
Privileged EXEC (All commands)	enable command	#	disable command
Global Configuration	configure terminal command	(config)#	exit command end command **Ctrl-Z**
Port Interface Configuration	interface command	(config-if)#	exit command to return to Global Configuration mode end command or **Ctrl-Z** to return to Privileged EXEC mode
VLAN Interface Configuration	interface command	(config-if-vlan)#	exit command to return to Global Configuration mode end command or **Ctrl-Z** to return to Privileged EXEC mode

1.2 Getting Help

To get help specific to a command mode, a command, a keyword, or an argument, use one of the following commands:

Command	**Purpose**
help	A brief of command information under the command mode
Abbreviated-command-entry?	Provides a list of commands that begin with a particular character string. (No space between command and “?”.)
Abbreviated-command-entry<Tab>	Completes a partial command name

?	List all commands available for the current command mode.
command ?	Lists the keywords or parameters that you must enter next on the command line. (Space between command and question mark.)

1.3 Finding Command Options

The following table shows examples how to find command options:

Command	Description
`# configure terminal` `(config)#`	Enter the command to enter global configuration mode. You are in global configuration mode when the prompt changes to (config)#.
`(config)# <Tab>`	List the available command names in global configuration mode.
`(config)# ?`	List the available commands and brief description in global configuration mode.

`(config)# interface ?`
`*  All switches or All ports`
`GigabitEthernet 1 Gigabit Ethernet Port`
`vlan  VLAN interface configurations`
	Enter the command to select target interfaces. The available interfaces are: *, GigabitEthernet, and vlan.

`(config)# interface *` `(config-if)#`	Enter the command to enter interface configuration mode for all switched ports. You are in port interface configuration mode when the prompt changes to (config-if)#.

`(config)# interface GigabitEthernet ?`
`<port_type_list>  Port list in 1/1-24`
`(config)# interface GigabitEthernet 1/1-8`
`(config-if)#`
	Enter the command to enter port interface configuration mode for the selected switched port range.
	1/ : The switch number (the only one)
	n-m : Port range from Port #n to Port #m
	You are in port interface configuration mode when the prompt changes to (config-if)#.

`(config-if)# <Tab>`
`access-list  aggregation  do  ...`
`duplex  end  ...`
	List the available command names in port interface configuration mode.

...	
(config-if)# ? access-list Access list aggregation Create an aggregation do To run exec commands in config mode ...	List the available commands and brief description in port interface configuration mode.
(config)# interface vlan ? <vlan_list> List of VLAN interface numbers, 1~4095 (config)# interface vlan 2 (config-if-vlan)#	Enter the command to enter vlan interface configuration mode for the selected vlan range. n : VLAN n n-m : VLAN n to VLAN m You are in vlan interface configuration mode when the prompt changes to (config-if-vlan)#.
(config-if-vlan)# <Tab> do end exit help ip ipv6 no	List the available command names in vlan interface configuration mode.
(config-if-vlan)# ? Do To run exec commands in config mode End Go back to EXEC mode Exit Exit from current mode Help Description of the interactive help system ...	List the available commands and brief description in vlan interface configuration mode.

1.4 Ethernet Interface Naming

An Ethernet interface (“port”) is identified by three pieces of information:

- Its type: FastEthernet, GigabitEthernet, 2.5GigabitEthernet, 5GigabitEthernet, 10GigabitEthernet
- The switch it belongs to. For non-stacking systems this value is always 1. The switch referred in this guide is non-stacking system.
- The port number within the type and switch; the numbering starts with 1 for each type, so a switch may have e.g. both GigabitEthernet 1/1 and 2.5GigabitEthernet 1/1

Many ICLI commands accept a list of interfaces. In its simplest form such a list is a sequence of (type, switch ID, port) information separated by whitespace, e.g.: ‘GigabitEthernet 1/3 10GigabitEthernet 1/5’.

The switch ID and the port numbers can be listed either as single numbers, as lists or as sequences. A list is a comma-separated set of single port numbers or sequences, whereas a sequence is of the form: *from-to*.

Examples:

Syntax	Description
GigabitEthernet 1/5	Single gigabit port number 5 on switch 1
GigabitEthernet 1/2,4,10-12	Gigabit ports 2, 4, 10, 11, 12 on switch 1
*	All ports of all types on all switches
type *	All pots of the specified *type* on all switches

2. Terminal Editing

2.1 Using the Keyboard

The ICLI provides a rich set of eys to assist the user while working with the command line. The functionality is divided into:

- Basic line editing
- Command history
- Context-sensitive help
- Pagination

2.2 Basic Line Editing Keys

Basic line editing allows the input of characters to form a command line, while also allowing cursor movement and insertion/deletion of characters and words. The available editing functions and keys are:

Key	Operation
Left / Right	Move one character left/right
Home / Ctrl-A	Move to start of line
End / Ctrl-E	Move to end of line
Del / Ctrl-D	Delete character at cursor
Backspace / Ctrl-H	Delete character to the left of cursor
Ctrl-N	Delete the entire current line
Ctrl-U / Ctrl-X	Delete all characters to the left of the cursor
Ctrl-K	Delete all characters under the cursor and right
Ctrl-W	Delete from cursor to start of word on the left
TAB	Complete word at end-of-line

2.3 Command History Keys

A session maintains a non-persistent command history of previously entered command lines. The history can be up to 32 lines long; once full, a new line will push the oldest entry out.

Key	Operation
Up / Ctrl-P	Previous line in command history
Down	Next line in command history

2.4 Context-sensitive Help Keys

The ICLI implements several hundred commands ranging from the very simple to the very complex. It is therefore imperative that the user can be assisted in entering syntactically correct commands as well as discovering relevant commands. These objectives are supported by the context sensitive help features.

Key	Operation
?	Show next possible input and description
? ? / Ctrl-Q	Show syntax of possible command(s)
TAB	Show next possible input without descripio o expand current word fully if it is unambiguous

The context-sensitive help only displays commands that are accessible at the current session privilege level.

2.5 Pagination Cobntrol Keys

Pagination appears each time execution of a command causes output of more lines than what has been configured as terminal length. A typical example is the output from ‘show running-config’. After the first several lines have been output, the pagination prompt is presented:

Key	Operation
Enter	Display next line of output
Space	Display next page of output
G	Display remainder of output without more pagination
Q / Ctrl-C	Discard remainder of output
Any other key	Display next page of output. Note that certain terminal keys (arrows, Home, End, etc.) may appear as multiple characters to the ICLI, leading to multiple pages being output in quick succession.

2.6 Other Special Keys

One additional key is defined as a convenience. It allows the immediate return from any sub-mode to exec mode.

Key	Operation
Ctrl-Z	Return directly to Exec mode

2.7 Terminal Parameters

Each login to the system via the serial console or via telnet or ssh, creates a session. The session is initialized with settings that are configurable from the 'line' configuration sub-mode, but most of them can also be changed from exec mode while the session is active. Such changes are not persistent, however, and are lost when the session is terminated. The table below lists the available settings and the modes where each can be configured.

Setting	Modess	Description
editing	Exec, Line	Enable/disable command line scrolling
exec-banner	Line	Enable/disable display of the Exec banner (configured with 'banner exec ...')
exec-timeout	Exec, Line	Inactivity timer; automatically log out after a period of inactivity. A value of zero disables automatic logout
history	Exec, Line	Length of command history buffer
length	Exec, Line	Terminal length in lines, used for pagination. Zero disables pagination
location	Line	A line of text that describes the terminal location, e.g. "Server room"
motd-banner	Line	Enable/disable display of Message-Of-The-Day banner (configured with 'banner motd ...')
privilege	Line	Assign default privilege level
width	Exec, Line	Terminal width in characters, used for pagination

2.8 Using Banner

The system provides three different banners; text that is output as messages to the user:

- The Message Of The Day banner (MOTD), displayed upon connection to the system, or when a console login attempt has timed out
- The Login banner, displayed before the first "Username:" login prompt
- The Exec banner, displayed upon successful login

All of the above are configured in a similar manner, using the 'banner' command:

```
banner [ motd ] banner
banner exec banner
banner login banner
```

The banner text can be either a single line or multiple lines. The first character of the text defines a delimiter

character; the actual text of the banner then follows and ends at the first appearance of the delimiter character. Neither of the delimiters are included in the actual text.

3. Working with Configuration Files

There are four kinds of configuration files:

- ‘`running-config`’, a virtual file containing the currently running system configuration
- ‘`startup-config`’, containing the boot-time configuration. When configuration is changed it must be copied to ‘startup-config’ in order to be applied at the next boot
- ‘`default-config`’, read-only and used when configuration is restored to defaults, i.e. also if ‘startup-config’ is missing. It contains product-specific customizations to the default settings of the device
- User-defined configuration files, of which there can exist up to two. These are typically used for backups or variants of ‘startup-config’

All of these except ‘running-config’ are stored in the flash: file system. The available operations are:

`copy` *`source destination`*

The source and destination can be one of:

- `running-config`
- `startup-config` (or `flash:startup-config`)
- `flash:`*`filename`*
- `tftp://server[:port]/path-to-file`

3.1 Reverting to Default Configuration

It is possible to reset the total system configuration to defaults in two ways:

- Deleting ‘`startup-config`’ and rebooting
- Instructing the software to discard current configuration and reset to defaults without rebooting

Deleting ‘`startup-config`’ doesn’t change ‘running-config’ until the system is rebooted, at which time defaults are loaded.

Conversely, discarding the current configuration does indeed affect ‘`running-config`’ but does not touch ‘`startup-config`’. An explicit ‘copy running-config startup-config’ is necessary to make the change

persistent. Rebooting and resetting configuration to defaults is accomplished with the ‘reload’ command:

```
reload cold
reload defaults [keep-ip]
```

The first form reboots the system. If the system is stacking, a specific switch can be rebooted as well by supplying its switch ID.

The second form loads configuration defaults. If the ‘`keep-ip`’ keyword is given then the system attempts to keep the most relevant parts of the VLAN 1 IP setup in order to maintain management connectivity: The IP address setup and the active default route.

Note: There is no guarantee, however, that the bove is sufficient. It depends on the actual network properties and the system’s total IP configuration. In some cases it may be preferable to explicitly un-configure the system using ‘`no`’ commands, or prepare a suitable configuration and download it to the system’s ‘startup-config’ and reboot.

4. Working with Software Images

The system can store up to two software images that are stored in FLASH. The image selected for bootup is termed the Active image, while the other is termed the Alternate image. It is possible to swap the Active and Alternative image, and it is possible to upgrade to a new Active image. A swap simply switches the Active/Alternate designation on each image and reboots the system. A firmware upgrade performs these steps:

- Download new firmware using TFTP and verify suitability for the system
- Overwrite the current Alternate image with the newy downloaded image
- Swap Active/Alternate and reboot

The result is that the old Active build becomes Alternate, and the newly downloaded image Active. The relevant commands are:

```
show version
firmware swap
firmware upgrade tftp://server[:port/path_to_file
```

‘`show version`’ lists various details about the system, including the images in FLASH.

5. Commands in EXEC Mode

```
# ?
    clear            Reset functions
    cls              Clear screen
    configure        Enter configuration mode
    copy             Copy from source to destination
    debug            Debugging functions
    delete           Delete one file in flash: file system
    dir              Directory of all files in flash: file system
    do               To run exec commands in config mode
    dot1x            IEEE Standard for port-based Network Access Control
    exit             Exit from EXEC mode
    firmware         Firmware upgrade/swap
    help             Description of the interactive help system
    ip               IPv4 commands
    logout           Exit from EXEC mode
    more             Display file
    no               Negate a command or set its defaults
    ping             Send ICMP echo messages
    reload           Reload system.
    send             Send a message to other tty lines
    show             Show running system information
    terminal         Set terminal line parameters
```

5.1 clear Command

Options

```
# clear ?
    access           Access management
    access-list      Access list
    dot1x            IEEE Standard for port-based Network Access Control
    ip               Interface Internet Protocol config commands
    ipv6             IPv6 configuration commands
    lacp             Clear LACP statistics
    lldp             Clears LLDP statistics.
```

```
  logging          Syslog
  mac              MAC Address Table
  mvr              Multicast VLAN Registration configuration
  sflow            Statistics flow.
  spanning-tree    STP Bridge
  statistics       Clear statistics for one or more given interfaces
```

Syntax

```
clear access management statistics
clear access-list ace statistics
clear dot1x statistics [ interface ( <port_type> [ <v_port_type_list> ] ) ]
clear ip arp
clear ip dhcp detailed statistics { server | client | snooping | relay | helper
    | all } [ interface ( <port_type> [ <in_port_list> ] ) ]
clear ip dhcp relay statistics
clear ip dhcp server binding <ip>
clear ip dhcp server binding { automatic | manual | expired }
clear ip dhcp server statistics
clear ip dhcp snooping statistics [ interface ( <port_type> [ <in_port_list> ] ) ]
clear ip igmp snooping [ vlan <v_vlan_list> ] statistics
clear ip statistics [ system ] [ interface vlan <v_vlan_list> ] [ icmp ]
    [ icmp-msg <type> ]
clear ipv6 mld snooping [ vlan <v_vlan_list> ] statistics
clear ipv6 neighbors
clear ipv6 statistics [ system ] [ interface vlan <v_vlan_list> ] [ icmp ]
    [ icmp-msg <type> ]
clear lacp statistics
clear lldp statistics
clear logging [ info ] [ warning ] [ error ] [ switch <switch_list> ]
clear mac address-table
clear mvr [ vlan <v_vlan_list> | name <mvr_name> ] statistics
clear sflow statistics { receiver [ <receiver_index_list> ] | samplers
    [ interface [ <samplers_list> ] ( <port_type> [ <v_port_type_list> ] ) ] }
clear spanning-tree { { statistics [ interface ( <port_type>
    [ <v_port_type_list> ] ) ] } | { detected-protocols [ interface ( <port_type>
    [ <v_port_type_list_1> ] ) ] } }
clear statistics [ interface ] ( <port_type> [ <v_port_type_list> ] )
```

5.2 cls command

```
Options
# cls ?
   <1-100000>   Set number of new lines
   <cr>         Clear screen

Syntax
# cls ?
cls [ <n> ]
```

5.3 configure Command

To enter global configuration mode or to configure the system from the RAM memory, use the `configure terminal` privileged EXEC command.

Use this command to enter global configuration mode. Note that commands in this mode are written to the running configuration file as soon as you enter them (using the Enter key or Carriage Return).

After you enter the configure command, the system prompt changes from `#` to `(config)#`, indicating that the switch is in global configuration mode.

```
# Configure terminal
(config)#
```

5.4 copy Command

To copy any file from a source to a destination, use the copy EXEC command.

```
Syntax
# copy ?
copy { startup-config | running-config | <source_path> } { startup-config | runn
ing-config | <destination_path> } [ syntax-check ]

Keywords
running-config: Currently running configuration file in system
startup-config: Startup configuration file in flash used during system boot-up
```

Parameters

<source_path>: flash:filename (file in system flash) | tftp://server/path-and-filename (file on TFTP server)

<destination_path>: flash:filename | tftp://server/path-and-filename

5.5 debug Command

Options

```
# debug ?
   ip       Interface Internet Protocol config commands
   prompt   Set prompt for testing
```

Syntax

```
# debug ?
debug ip dhcp helper frame information
debug prompt <debug_prompt>
```

5.6 delete Command

To delete a file from the system flash memory, use the delete EXEC command.

Option

```
# delete ?
   <Path:word>    Name of file or directory to delete
```

Syntax

```
delete <path>
```

5.7 dir Command

Option

```
# dir ?
   |        Output modifiers
   <cr>     display current directory
```

Syntax

```
# dir ?
```

```
dir
```

5.8 do Command

```
Options
# do line ?
    LINE    Exec Command
    <cr>

Syntax
do <command>
# do
```

5.9 dot1x Command

To perform authentication for the specified interfaces, enter dot1x EXEC command, IEEE Standard for port-based Network Access Control command.

```
Description
# dot1x ?
    initialize    Force re-authentication immediately

Syntax
dot1x initialize [ interface ( <port_type> [ <plist> ] ) ]

Parameters
<port_type>     GigabitEthernet (1 Gigabit Ethernet Port)
<plist>         Port list
```

5.10 exit Command

Use the exit command in EXEC mode to exit the active CLI connection (log off the switch). Or use the exit command to exit different configuration modes.

```
Description
# exit ?
    <cr>     Exit from current mode
```

Syntax

Exit

Example: Exit privilege EXEC mode to logoff the switch

```
# exit
```

Example: Exit user EXEC mode to logoff the switch

```
> exit
```

Example: Exit global configuration mode to privilege EXEC mode

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

Example: Exit interface configuration mode to global configuration mode

```
(config-if)# exit
(config)#
```

5.11 firmware Command

Two firmware images are embedded in the system. The active image is the one used during system boot-up. The alternative one is the previous active image after it was upgraded by the current active image.

Options

```
# firmware ?
    swap      Swap between Active and Alternate firmware image.
    upgrade    Firmware upgrade
```

Syntax

```
firmware swap
firmware upgrade <tftpserver_path_file>
```

Parameter

```
<tftpserver_path_file>: firmware file located in tftp server
```

5.12 help Command

Help may be requested at any point in a command by entering a question mark '?'. If nothing matches, the help list will be empty and you must backup until entering a '?' shows the available options.

Two styles of help are provided:

1. Full help is available when you are ready to enter a command argument (e.g. 'show ?') and describes each possible argument.
2. Partial help is provided when an abbreviated argument is entered and you want to know what arguments match the input (e.g. 'show pr?'.)

5.13 ip Command

To enable DHCP client for the specified VLAN interface, use the ip EXEC command.

Option

```
# ip ?
   dhcp   Dhcp commands
```

Syntax

```
ip dhcp retry interface vlan <vlan_id>
```

5.14 logout Command

To exit the active CLI session in EXEC mode, use the logout EXEC command.

Syntax

```
logout
```

Example:

```
# logout
```

Example:

```
> logout
```

5.15 more Command

To display a file, use the more EXEC command.

Option

```
# more ?
   <Path>   File in FLASH or on TFTP server
```

Syntax

```
more <path>
```

Parameter

```
<path>: flash:filename or tftp://server[:port]/path-to-file
```

5.16 no Command

To disable specific functions or return to default values, use the no EXEC command.

Options

```
# no ?
    debug            Debugging functions
    port-security    Port security (psec limit)
    terminal         Set terminal line parameters
# no terminal ?
    editing          No command line editing feature
    exec-timeout     No the EXEC timeout
    history          No the command history function
    length           Default number of lines on a screen
    width            Default width of the display terminal
```

Syntax

```
no debug prompt
no port-security shutdown [ interface ( <port_type> [ <v_port_type_list> ] ) ]
no terminal editing
no terminal exec-timeout
no terminal history size
no terminal length
no terminal width
```

5.17 ping Command

To ping an ICMP device, use the ping EXEC command.

Options

```
# ping ?
    ip      IP (ICMP) echo
    ipv6    IPv6 (ICMPv6) echo
```

Syntax

```
ping ip <v_ip_addr> [ repeat <count> ] [ size <size> ] [ interval <seconds> ]
ping ipv6 <v_ipv6_addr> [ repeat <count> ] [ size <size> ] [ interval <seconds> ]
    [ interface vlan <v_vlan_id> ]
```

Parameters

<v_ip_addr>: Target IP address

<count>: The number of ping packets that will be sent to the destination address. The default is 5 packets.

<size>: The size of the ping packet (in bytes). The default is 100 bytes.

<seconds>: The timeout interval. The default is 2 seconds.

5.18 reload Command

To reboot the system or reload the default configuration without rebooting, use the reload EXEC command.

Options

```
# reload ?
   cold         Reload cold.
   defaults     Reload defaults without rebooting.
```

Syntax

```
reload { cold | { defaults [ keep-ip ] }
```

5.19 send Command

To send messages to one or all terminal lines, use the send EXEC command.

Options

```
# send ?
   *            All tty lines
   <0~16>       Send a message to multiple lines
   console      Primary terminal line
   vty          Virtual terminal
```

Syntax

```
send { * | <session_list> | console 0 | vty <vty_list> } <message>
```

5.20 show Command

To show current system configuration and status, use the show EXEC command.

Options

```
# show ?
    aaa              Login methods
    access           Access management
    access-list      Access list
    aggregation      Aggregation port configuration
    clock            Configure time-of-day clock
    dot1x            IEEE Standard for port-based Network Access Control
    green-ethernet   Green ethernet (Power reduction)
    history          Display the session command history
    interface        Interface status and configuration
    ip               Internet Protocol
    ipmc             IPv4/IPv6 multicast configuration
    ipv6             IPv6 configuration commands
    lacp             LACP configuration/status
    line             TTY line information
    lldp             Display LLDP neighbors information.
    logging          Syslog
    loop-protect     Loop protection configuration
    mac              Mac Address Table information
    mvr              Multicast VLAN Registration configuration
    ntp              Configure NTP
    platform         Platform specific information
    port-security
    privilege        Display command privilege
    pvlan            PVLAN configuration
    qos              Quality of Service
    radius-server    RADIUS configuration
    rmon             RMON statistics
    running-config   Show running system information
    sflow            Statistics flow.
    snmp             Display SNMP configurations
    spanning-tree    STP Bridge
    switchport       Display switching mode characteristics
    tacacs-server    TACACS+ configuration
```

```
    terminal          Display terminal configuration parameters
    upnp              Display UPnP configurations
    users             Display information about terminal lines
    version           System hardware and software status
    vlan              VLAN status
    voice             Voice appliance attributes
    web               Web
```

Syntax

```
show aaa
show access management [ statistics | <access_id_list> ]
show access-list [ interface [ ( <port_type> [ <v_port_type_list> ] ) ] ]
    [ rate-limiter [ <rate_limiter_list> ] ] [ ace statistics [ <ace_list> ] ]
show access-list ace-status [ static ] [ link-oam ] [ loop-protect ] [ dhcp ]
    [ ptp ] [ upnp ] [ arp-inspection ] [ evc ] [ mep ] [ ipmc ] [ ip-source-guard ]
    [ ip-mgmt ] [ conflicts ] [ switch <switch_list> ]
show aggregation [ mode ]
show clock
show clock detail
show dot1x statistics { eapol | radius | all } [ interface ( <port_type>
    [ <v_port_type_list> ] ) ]
show dot1x status [ interface ( <port_type> [ <v_port_type_list> ] ) ] [ brief ]
show green-ethernet [ interface ( <port_type> [ <port_list> ] ) ]
show green-ethernet eee [ interface ( <port_type> [ <port_list> ] ) ]
show green-ethernet energy-detect [ interface ( <port_type> [ <port_list> ] ) ]
show green-ethernet short-reach [ interface ( <port_type> [ <port_list> ] ) ]
show history
show interface ( <port_type> [ <in_port_list> ] ) switchport
    [ access | trunk | hybrid ]
show interface ( <port_type> [ <v_port_type_list> ] ) capabilities
show interface ( <port_type> [ <v_port_type_list> ] ) statistics
    [ { packets | bytes | errors | discards | filtered |
    { priority [ <priority_v_0_to_7> ] } } ] [ { up | down } ]
show interface ( <port_type> [ <v_port_type_list> ] ) status
show interface vlan [ <vlist> ]
show ip arp
show ip arp inspection [ interface ( <port_type> [ <in_port_type_list> ] ) |
```

```
    vla <in_vlan_list> ]
show ip arp inspection entry [ dhcp-snooping | static ] [ interface (
    <port_type> [ <in_port_type_list> ] ) ]
show ip dhcp detailed statistics { server | client | snooping | relay |
    normal-forward | combined } [ interface ( <port_type> [ <in_port_list> ] ) ]
show ip dhcp excluded-address
show ip dhcp pool [ <pool_name> ]
show ip dhcp relay [ statistics ]
show ip dhcp server
show ip dhcp server binding <ip>
show ip dhcp server binding [ state { allocated | committed | expired } ]
    [ type { automatic | manual | expired } ]
show ip dhcp server declined-ip
show ip dhcp server declined-ip <declined_ip>
show ip dhcp server statistics
show ip dhcp snooping [ interface ( <port_type> [ <in_port_list> ] ) ]
show ip dhcp snooping table
show ip http server secure status
show ip igmp snooping [ vlan <v_vlan_list> ] [ group-database [ interface
    ( <port_type> [ <v_port_type_list> ] ) ] [ sfm-information ] ] [ detail ]
show ip igmp snooping mrouter [ detail ]
show ip interface brief
show ip name-server
show ip route
show ip source binding [ dhcp-snooping | static ] [ interface ( <port_type>
    [ <in_port_type_list> ] ) ]
show ip ssh
show ip statistics [ system ] [ interface vlan <v_vlan_list> ] [ icmp ]
    [ icmp-msg <type> ]
show ip verify source [ interface ( <port_type> [ <in_port_type_list> ] ) ]
show ipmc profile [ <profile_name> ] [ detail ]
show ipmc range [ <entry_name> ]
show ipv6 interface [ vlan <v_vlan_list> { brief | statistics } ]
show ipv6 mld snooping [ vlan <v_vlan_list> ] [ group-database [ interface
    ( <port_type> [ <v_port_type_list> ] ) ] [ sfm-information ] ] [ detail ]
show ipv6 mld snooping mrouter [ detail ]
show ipv6 neighbor [ interface vlan <v_vlan_list> ]
```

```
show ipv6 route [ interface vlan <v_vlan_list> ]
show ipv6 statistics [ system ] [ interface vlan <v_vlan_list> ] [ icmp ]
    [ icmp-msg <type> ]
show lacp { internal | statistics | system-id | neighbour }
show line [ alive ]
show lldp eee [ interface ( <port_type> [ <v_port_type_list> ] ) ]
show lldp med media-vlan-policy [ <v_0_to_31> ]
show lldp med remote-device [ interface ( <port_type> [ <port_list> ] ) ]
show lldp neighbors [ interface ( <port_type> [ <v_port_type_list> ] ) ]
show lldp statistics [ interface ( <port_type> [ <v_port_type_list> ] ) ]
show logging <log_id> [ switch <switch_list> ]
show logging [ info ] [ warning ] [ error ] [ switch <switch_list> ]
show loop-protect [ interface ( <port_type> [ <plist> ] ) ]
show mac address-table [ conf | static | aging-time | { { learning | count }
    [ interface ( <port_type> [ <v_port_type_list> ] ) ] } | { address <v_mac_addr>
    [ vlan <v_vlan_id> ] } | vlan <v_vlan_id_1> | interface ( <port_type>
    [ <v_port_type_list_1> ] ) ]
show mvr [ vlan <v_vlan_list> | name <mvr_name> ] [ group-database [ interface
    ( <port_type> [ <v_port_type_list> ] ) ] [ sfm-information ] ] [ detail ]
show ntp status
show platform phy [ interface ( <port_type> [ <v_port_type_list> ] ) ]
show platform phy failover
show platform phy id [ interface ( <port_type> [ <v_port_type_list> ] ) ]
show platform phy instance
show platform phy status [ interface ( <port_type> [ <v_port_type_list> ] ) ]
show port-security port [ interface ( <port_type> [ <v_port_type_list> ] ) ]
show port-security switch [ interface ( <port_type> [ <v_port_type_list> ] ) ]
show privilege
show pvlan [ <pvlan_list> ]
show pvlan isolation [ interface ( <port_type> [ <plist> ] ) ]
show qos [ { interface [ ( <port_type> [ <port> ] ) ] } | wred | { maps
    [ dscp-cos ] [ dscp-ingress-translation ] [ dscp-classify ] [ cos-dscp ]
    [ dscp-egress-translation ] } | storm | { qce [ <qce> ] } ]
show radius-server [ statistics ]
show rmon alarm [ <id_list> ]
show rmon event [ <id_list> ]
show rmon history [ <id_list> ]
```

```
show rmon statistics [ <id_list> ]
show running-config [ all-defaults ]
show running-config feature <feature_name> [ all-defaults ]
show running-config interface ( <port_type> [ <list> ] ) [ all-defaults ]
show running-config interface vlan <list> [ all-defaults ]
show running-config line { console | vty } <list> [ all-defaults ]
show running-config vlan <list> [ all-defaults ]
show sflow
show sflow statistics { receiver [ <rcvr_idx_list> ] | samplers [ interface
    [ <samplers_list> ] ( <port_type> [ <v_port_type_list> ] ) ] }
show snmp
show snmp access [ <group_name> { v1 | v2c | v3 | any } { auth | noauth | priv } ]
show snmp community v3 [ <community> ]
show snmp host [ <conf_name> ] [ system ] [ switch ] [ interface ] [ aaa ]
show snmp mib context
show snmp mib ifmib ifIndex
show snmp security-to-group [ { v1 | v2c | v3 } <security_name> ]
show snmp user [ <username> <engineID> ]
show snmp view [ <view_name> <oid_subtree> ]
show spanning-tree [ summary | active | { interface ( <port_type>
    [ <v_port_type_list> ] ) } | { detailed [ interface ( <port_type>
    [ <v_port_type_list_1> ] ) ] } | { mst [ configuration | { <instance>
    [ interface ( <port_type> [ <v_port_type_list_2> ] ) ] } ] } ]
show switchport forbidden [ { vlan <vid> } | { name <name> } ]
show tacacs-server
show terminal
show upnp
show users [ myself ]
show version
show vlan [ id <vlan_list> | name <name> | brief ]
show vlan ip-subnet [ id <subnet_id> ]
show vlan mac [ address <mac_addr> ]
show vlan protocol [ eth2 { <etype> | arp | ip | ipx | at } ]
    [ snap { <oui> | rfc-1042 | snap-8021h } <pid> ] [ llc <dsap> <ssap> ]
show vlan status [ interface ( <port_type> [ <plist> ] ) ]
    [ combined | admin | nas | mvr | voice-vlan | mstp | erps | vcl | evc | gvrp
    | all | conflicts ]
```

```
show voice vlan [ oui <oui> | interface ( <port_type> [ <port_list> ] ) ]
show web privilege group [ <group_name> ] level
```

5.21 terminal Command

Options

```
# terminal ?
   editing          Enable command line editing
   exec-timeout     Set the EXEC timeout in minutes 0 ~ 1440
   help             Description of the interactive help system
   history          Control the command history function
   length           Set number of lines on a screen
   width            Set width of the display terminal
```

Syntax

```
terminal editing
terminal exec-timeout <min> [ <sec> ]
terminal help
terminal history size <history_size>
terminal length <lines>
terminal width <width>
```

Parameters

<min>: 0-1440
<history_size>: 0-32 (0 - disable)
<lines>: Number of lines on screen, 0 or 3-512 (0 for no pausing)
<width>: Number of characters on a screen line, 0 or 40-512 (0 for unlimited width)

6. Global Configuration Commands

To enter global configuration mode, use the configure terminal command.

Commands

```
# configure terminal
(config)# ?
   aaa              Authentication, Authorization and Accounting
   access           Access management
   access-list      Access list
   aggregation      Aggregation mode
   banner           Define a login banner
   clock            Configure time-of-day clock
   default          Set a command to its defaults
   do               To run exec commands in config mode
   dot1x            IEEE Standard for port-based Network Access Control
   enable           Modify enable password parameters
   end              Go back to EXEC mode
   exit             Exit from current mode
   gvrp             Enable GVRP feature
   help             Description of the interactive help system
   hostname         Set system's network name
   interface        Select an interface to configure
   ip               Internet Protocol
   ipmc             IPv4/IPv6 multicast configuration
   ipv6             IPv6 configuration commands
   lacp             LACP settings
   line             Configure a terminal line
   lldp             LLDP configurations.
   line             Configure a terminal line
   lldp             LLDP configurations.
   logging          Syslog
   loop-protect     Loop protection configuration
   mac              MAC table entries/configuration
   monitor          Set monitor configuration.
   mvr              Multicast VLAN Registration configuration
   no               Negate a command or set its defaults
```

```
   ntp              Configure NTP
   port-security    Enable/disable port security globally.
   privilege        Command privilege parameters
   qos              Quality of Service
   radius-server    Configure RADIUS
   rmon             Remote Monitoring
   sflow            Statistics flow.
   snmp-server      Set SNMP server's configurations
   spanning-tree    Spanning Tree protocol
   tacacs-server    Configure TACACS+
   upnp             Set UPnP's configurations
   username         Establish User Name Authentication
   vlan             VLAN commands
   voice            Voice appliance attributes
   web              Web
```

6.1 aaa command

Description

```
(config)# aaa ?
   authentication   Authentication
```

Syntax

```
aaa authentication login { console | telnet | ssh | http } { { local | radius |
    tacacs } [ { local | radius | tacacs } [ { local | radius | tacacs } ] ] }
```

keywords

```
console     Configure Console
http        Configure HTTP
ssh         Configure SSH
telnet      Configure Telnet
local       Use local database for authentication
radius      Use RADIUS for authentication
tacacs      Use TACACS+ for authentication
```

6.2 access command

Description

```
(config)# access ?
   management       Access management configuration
```

Syntax

```
access management
access management <access_id> <access_vid> <start_addr> [ to <end_addr> ]
    { [ web ] [ snmp ] [ telnet ] | all } (null)
```

Parameters

```
<AccessId : 1-16>: ID of access management entry
<AccessVid : 1-4095>: The VLAN ID for the access management entry
<AddrRangeStart : ipv4_addr>: Start IPv4 address
<AddrRangeStart : ipv6_addr>: Start IPv6 address
<AddrRangeEnd : ipv4_addr>: End IPv4 address
<AddrRangeEnd : ipv6_addr>: End IPv6 address
```

Keywords

```
all     All services
snmp    SNMP service
telnet  TELNET/SSH service
to      End address of the range
web     Web service
```

6.3 access-list Command

Option

```
(config)# access-list ace ?
    <AceId : 1-512>     ACE ID
    update              Update an existing ACE
```

Option

```
 (config)# access-list rate-limiter ?
   <RateLimiterList : 1~16>     Rate limiter ID
   pps                          Packets per second
```

6.4 aggregation Command

Options

```
(config)# agg ?
aggregation mode { [ smac ] [ dmac ] [ ip ] [ port ] }*1
```

Keywords

```
   dmac    Destination MAC affects the distribution
   ip      IP address affects the distribution
   port    IP port affects the distribution
   smac    Source MAC affects the distribution
```

6.5 banner Command

Options

```
(config)# banner ?
   exec    Set EXEC process creation banner
   login   Set login banner
   motd    Set Message of the Day banner
```

Syntax

```
banner [ exec | login | motd ] [ <banner> | line ]
```

Parameters

```
<banner>: c banner-text c, where 'c' is a delimiting character
line: Enter TEXT message.  End with the character 'l'
```

Example to set banner “Good Day” when entering EXEC mode

```
(config)# banner exec c Goog Day c
```

Example to set banner “Good Day” using LINE

```
(config)# banner exec LINE
Enter TEXT message.  End with the character 'L'.
Good Day L
(config)#
```

6.6 clock Command

Options

```
(config)# clock ?
   summer-time      Configure summer (daylight savings) time
   timezone         Configure time zone
```

Syntax

```
clock summer-time <word16> date [ <start_month_var> <start_date_var>
    <start_year_var> <start_hour_var> <end_month_var> <end_date_var> <end_year_var>
    <end_hour_var> [ <offset_var> ] ]
clock summer-time <word16> recurring [ <start_week_var> <start_day_var>
    <start_month_var> <start_hour_var> <end_week_var> <end_day_var> <end_month_var>
    <end_hour_var> [ <offset_var> ] ]
clock timezone <word_var> <hour_var> [ <minute_var> ]
```

6.7 default Command

Option

```
(config)# default ?
   access-list    Access list
```

Syntax

```
default access-list rate-limiter [ <rate_limiter_list> ]
```

Parameter

```
<RateLimiterId : 1-16>    Rate limiter ID
```

6.8 do Command

To perform EXEC command in global configuration mode, use the do command.

Option

```
(config)# do ?
   LINE    Exec Command
```

Syntax

```
do <command>
```

6.9 dot1x Command

Options

```
(config)# dot1x ?
   authentication       Authentication
   feature              Globally enables/disables a dot1x feature functionality
   guest-vlan           Guest VLAN
   max-reauth-req       The number of times a Request Identity EAPOL frame
                        is sent without response before considering entering
                        the Guest VLAN
   re-authentication    Set Re-authentication state
   system-auth-control  Set the global NAS state
   timeout              timeout
```

Syntax

```
dot1x authentication timer inactivity <v_10_to_100000>
dot1x authentication timer re-authenticate <v_1_to_3600>
dot1x feature { [ guest-vlan ] [ radius-qos ] [ radius-vlan ] }*1
dot1x guest-vlan <value>
dot1x guest-vlan supplicant
dot1x max-reauth-req <value>
dot1x re-authentication
dot1x system-auth-control
dot1x timeout quiet-period <v_10_to_1000000>
dot1x timeout tx-period <v_1_to_65535>
```

Keywords & Parameters

```
   timer                timer
   inactivity           Time in seconds between check for activity on successfully
                        authenticated MAC addresses.
   re-authenticate      The period between re-authentication attempts in seconds
   guest-vlan           Globally enables/disables state of guest-vlan
   radius-qos           Globally enables/disables state of RADIUS-assigned QoS.
   radius-vlan          Globally enables/disables state of RADIUS-assigned VLAN.
   <1-4095>             Guest VLAN ID used when entering the Guest VLAN.
    supplicant          The switch remembers if an EAPOL frame has been received on
                        the port for the life-time of the port. Once the switch
                        considers whether to enter the Guest VLAN, it will first check
```

```
                    if this option is enabled or disabled.
```

6.10 enable Command

```
Opions
(config)# enable ?
   password     Assign the privileged level clear password
   secret       Assign the privileged level secret

Syntax
enable password [ level <priv> ] <password>
enable secret { 0 | 5 } [ level <priv> ] <password>

Parameters
   <password>   The UNENCRYPTED (cleartext) password
   level        Set exec level password
   <priv>       0 - 15
   0            Specifies an UNENCRYPTED password will follow
   5            Specifies an ENCRYPTED secret will follow
```

6.11 end Command

To exit global configuration mode to EXEC mode, use the end command.

```
Syntax
end

Example:
(config)# end
#
```

6.12 exit Command

To exit global configuration mode to EXEC mode, use the exit command.

```
Syntax
exit
```

Example:

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

6.13 gvrp Command

Options

```
(config)# gvrp ?
   max-vlans    Number of simultaneous VLANs that GVRP can control
   time         Configure GARP protocol timer parameters. IEEE 802.1D-2004,
                clause 12.11.
```

Syntax

```
gvrp max-vlans <maxvlans>
gvrp time { [ join-time <jointime> ] [ leave-time <leavetime> ]
    [ leave-all-time <leavealltime> ] }*1
```

Parameters

```
   <maxvlans>       1-4095
   join-time        Set GARP protocol parameter JoinTime. See IEEE
                    802.1D-2004, clause 12.11
   leave-all-time   Set GARP protocol parameter LeaveAllTime. See IEEE
                    802.1D-2004, clause 12.11
   leave-time       Set GARP protocol parameter LeaveTime. See IEEE
                    802.1D-2004, clause 12.11
```

6.14 help Command

Help may be requested at any point in a command by entering a question mark '?'. If nothing matches, the help list will be empty and you must backup until entering a '?' shows the available options.

Two styles of help are provided:

1. Full help is available when you are ready to enter a command argument (e.g. 'show ?') and describes each possible argument.
2. Partial help is provided when an abbreviated argument is entered and you want to know what arguments match the input (e.g. 'show pr?'.)

6.15 hostname Command

To specify or modify the host name for the switch, use the hostname global configuration command. The factory-assigned default host name is null.

Option

```
(config)# hostname ?
   WORD   This system's network name
```

Syntax

```
hostname <hostname>
```

6.16 interface Command

To enter interface configuration mode, use the interface command. The target interfaces include the switched ports and VLANs. For Gigabit Ethernet port interface the prompt is changed to `(config-if)#`. For VLAN interface the prompt is changed to `(config-if-vlan)#`. The available commands for the interface configuration mode are described in Chapter 4.

Options

```
(config)# interface ?
   *                  All switched ports
   GigabitEthernet    1 switched Port
   vlan               VLAN interface configurations
```

Syntax

```
interface ( <port_type> [ <plist> ] )
interface vlan <vlist>
```

Example

```
(config)# interface GigabitEthernet 1
(config-if)#
```

Example

```
(config)# interface vlan 1
(config-if-vlan)#
```

6.17 ip Commands

The optional commands are:

```
(config)# ip ?
   arp              Address Resolution Protocol
   dhcp             Dynamic Host Configuration Protocol
   dns              Domain Name System
   helper-address   DHCP relay server
   http             Hypertext Transfer Protocol
   igmp             Internet Group Management Protocol
   name-server      Domain Name System
   route            Add IP route
   routing          Enable routing for IPv4 and IPv6
   source           Source command
   ssh              Secure Shell
   verify           Verify command
```

6.18 ip arp Command

Syntax

```
(config)# ip arp ?
ip arp inspection
ip arp inspection entry interface <port_type> <in_port_type_id> <vlan_var> <mac_var>
    <ipv4_var>
ip arp inspection translate [ interface <port_type> <in_port_type_id> <vlan_var>
    <mac_var> <ipv4_var> ]
ip arp inspection vlan <in_vlan_list>
ip arp inspection vlan <in_vlan_list> logging { deny | permit | all }
```

Parameters

```
   <port_type>      GigabitEthernet (1 Gigabit Ethernet Port)
   <port_type_id>   Port ID in 1/1-24
   <vlan_id>        Select a VLAN id to configure
   <mac_var>        Select a MAC address to configure
   <ipv4_var>       Select an IP Address to configure
   <in_vlan_list>   arp inspection vlan list
   all              log all entries
   deny             log denied entries
   permit           log permitted entries
```

6.19 ip dhcp Command

Syntax

```
ip dhcp excluded-address <low_ip> [ <high_ip> ]
ip dhcp pool <pool_name>
ip dhcp relay
ip dhcp relay information option
ip dhcp relay information policy { drop | keep | replace }
ip dhcp server
ip dhcp snooping
```

Parameters

excluded-address	Prevent DHCP from assigning certain addresses
pool	Configure DHCP address pools
relay	DHCP relay agent configuration
server	Enable DHCP server
snooping	DHCP snooping
<low_ip>	A.B.C.D format, Low IP address
<pool_name>	Pool name in 32 characters
information	DHCP information option(Option 82)
option	DHCP option
policy	Policy for handling the receiving DHCP packet already include the information option
drop	Drop the package when receive a DHCP message that already contains relay information
keep	Keep the original relay information when receive a DHCP message that already contains it
replace	Replace the original relay information when receive a DHCP message that already contains it

6.20 ip dns Command

Option

```
(config)# ip dns ?
   proxy    DNS proxy service
```

Syntax

```
ip dns proxy
```

6.21 ip helper-address Command

```
(config)# ip helper-address ?
   <Ip : ipv4_ucast>    IP address of the DHCP relay server
```

Syntax

```
ip helper-address <v_ipv4_ucast>
```

6.22 ip http Command

Options

```
ip http secure-redirect
ip http secure-server
```

Keywords

```
   secure-redirect      Secure HTTP web redirection
   secure-server        Secure HTTP web server
```

6.23 ip igmp Command

Syntax

```
ip igmp host-proxy [ leave-proxy ]
ip igmp snooping
ip igmp snooping vlan <v_vlan_list>
ip igmp ssm-range <v_ipv4_mcast> <ipv4_prefix_length>
ip igmp unknown-flooding
```

Parameters

```
   host-proxy           IGMP proxy configuration
   leave-proxy          IGMP proxy for leave configuration
   snooping             Snooping IGMP
   <v_vlan_list>        VLAN identifier(s): VID
   ssm-range            IPv4 address range of Source Specific Multicast
   <ipv4_mcast>         Valid IPv4 multicast address
```

```
   unknown-flooding     Flooding unregistered IPv4 multicast traffic
   <ipv4_prefix_length> Prefix length ranges from 4 to 32
```

6.24 ip name-server Command

Syntax

```
ip name-server { <v_ipv4_ucast> | dhcp [ interface vlan <v_vlan_id> ] }
```

Parameters

```
   <ipv4_ucast>     A valid IPv4 unicast address
   dhcp             Dynamic Host Configuration Protocol
   interface vlan   vlan interface
   <vlan_id>        VLAN identifier(s): VID
```

6.25 ip route Command

Syntax

```
ip route <v_ipv4_addr> <v_ipv4_netmask> <v_ipv4_gw>
```

Parameters

```
  <ipv4_addr>       Network
  <ipv4_netmask>    Subnet mask
  <ipv4_gw>         Default gateway
```

6.26 ip routing Command

To enable Layer 3 IP switching function, use ip routing command.

Syntax

```
ip routing
```

6.27 ip source Command

Option

```
(config)# ip source ?
   interface    ip source binding entry interface config
```

Syntax

```
ip source binding interface <port_type> <in_port_type_id> <vlan_var> <ipv4_var>
    <mask_var>
```

Parameters

interface	ip source binding entry interface config
<port_type>	GigabitEthernet, 1 Gigabit Ethernet Port
<in_port_type_id>	Port ID in 1/1-24
<vlan_var>	Select a VLAN id to configure
<ipv4_var>	Select an IP Address to configure
<mask_var>	Select the subnet mask

6.28 ip ssh

To enable secure shell, ssh, use the ip ssh command.

Syntax

```
ip ssh
```

6.29 ip verify source Command

Syantax

```
ip verify source
ip verify source translate
```

6.30 ipmc Command

Options

```
(config)# ipmc ?
   profile    IPMC profile configuration
   range      A range of IPv4/IPv6 multicast addresses for the profile
```

Syntax

```
ipmc profile
ipmc profile <profile_name>
ipmc range <entry_name> { <v_ipv4_mcast> [ <v_ipv4_mcast_1> ] | <v_ipv6_mcast>
    [ <v_ipv6_mcast_1> ] }
```

Parameters

< profile_name>	Profile name in 16 char's
<entry_name >	Range entry name in 16 char's
<ipv4_mcast>	Valid IPv4 multicast address
<ipv6_mcast>	Valid IPv6 multicast address

6.31 ipv6 Command

Options

```
(config)# ipv6 ?
   mld     Multicasat Listener Discovery
   route   Configure static routes
```

Syntax

```
ipv6 mld host-proxy [ leave-proxy ]
ipv6 mld snooping
ipv6 mld snooping vlan <v_vlan_list>
ipv6 mld ssm-range <v_ipv6_mcast> <ipv6_prefix_length>
ipv6 mld unknown-flooding
ipv6 route <v_ipv6_subnet> { <v_ipv6_ucast> | interface vlan <v_vlan_id>
    <v_ipv6_addr> }
```

Parameters

host-proxy	MLD proxy configuration
snooping	Snooping MLD
ssm-range	IPv6 address range of Source Specific Multicast
unknown-flooding	Flooding unregistered IPv6 multicast traffic
leave-proxy	MLD proxy for leave configuration
<vlan_list>	VLAN identifier(s): VID
<ipv6_mcast>	Valid IPv6 multicast address
<ipv6_prefix_length>	IPv6 prefix x:x::y/z, X:X:X:X::X/<0-128>
<v_ipv6_subnet>	IPv6 subnet mask
<v_vlan_id>	VID
<v_ipv6_addr>	Valid IPv6 multicast address

6.32 lacp Command

Option

```
(config)# lacp ?
   system-priority    System priority
```

Syntax

```
(config)# lacp ?
lacp system-priority <v_1_to_65535>
```

6.33 line Command

Options

```
(config)# line ?
   <0~16>     List of line numbers
   console    Console terminal line
   vty        Virtual terminal
```

Syntax

```
line { <0~16> | console 0 | vty <0~15> }
```

6.34 lldp Command

Options

```
(config)# lldp ?
   holdtime             Sets LLDP hold time (The neighbor switch will
                        discarded the LLDP information after "hold time"
                        multiplied with "timer" seconds ).
   med                  Media Endpoint Discovery.
   reinit               LLDP tx reinitialization delay in seconds.
   timer                Sets LLDP TX interval (The time between each LLDP
                        frame transmitted in seconds).
   transmission-delay   Sets LLDP transmision-delay.  LLDP transmission delay
                        (the amount of time that the transmission of LLDP
                        frames will delayed after LLDP configuration
                        has changed) in seconds.)
```

Syntax

```
lldp holdtime <val>
lldp med datum { wgs84 | nad83-navd88 | nad83-mllw }
lldp med fast <v_1_to_10>
lldp med location-tlv altitude { meters | floors } <v_word11>
lldp med location-tlv civic-addr { country | state | county | city | district
    | block | street | leading-street-direction | trailing-street-suffix
    | street-suffix | house-no | house-no-suffix | landmark | additional-info | name
    | zip-code  | building | apartment | floor | room-number | place-type
    | postal-community-name
    | p-o-box | additional-code } <v_string250>
lldp med location-tlv elin-addr <v_word25>
lldp med location-tlv latitude { north | south } <v_word8>
lldp med location-tlv longitude { west | east } <v_word9>
lldp med media-vlan-policy <policy_index> { voice | voice-signaling
    | guest-voice-signaling | guest-voice | softphone-voice | video-conferencing
    |  streaming-video  |  video-signaling  }  {  tagged  <v_vlan_id>  |  untagged  }
    [ l2-priority <v_0_to_7> ] [ dscp <v_0_to_63> ]
lldp reinit <val>
lldp timer <val>
lldp transmission-delay <val>
```

6.35 logging Command

Options

```
(config)# logging ?
   host     host
   level    level
   on       Enable syslog server
```

Syntax

```
logging host <hostname>
logging level { info | warning | error }
logging on
```

Parameters

```
   <hostname>   Domain name of the log server
   error        Error
```

```
    info          Information
    warning       Warning
```

6.36 loop-protect Command

Options

```
(config)# loop-protect ?
    shutdown-time    Loop protection shutdown time interval
    transmit-time    Loop protection transmit time interval
    <cr>
```

Syntax

```
(config)# loop-protect ?
loop-protect
loop-protect shutdown-time <t>
loop-protect transmit-time <t>
```

Parameters

```
    <0-604800>   Shutdown time in second
    <1-10>       Transmit time in second
```

6.37 mac address-table Command

```
(config)# mac ?
    address-table    MAC table entries/configuration
```

Syntax

```
mac address-table aging-time <v_0_10_to_1000000>
mac address-table static <v_mac_addr> vlan <v_vlan_id> interface ( <port_type>
    [ <v_port_type_list> ] )
```

Parameters

```
    <0,10-1000000>   Aging time in seconds, 0 disables aging
    <mac_addr>       48 bit MAC address: xx:xx:xx:xx:xx:xx
```

6.38 monitor Command

Options

```
(config)# monitor ?
   destination      The destination port. That is the port that traffic should
                    be mirrored to.
   source           The source port(s). That is the ports to be mirrored to the
                    destination port.
```

Syntax

```
monitor destination interface <port_type> <in_port_type>
monitor source { { interface ( <port_type> [ <v_port_type_list> ] ) } }
    { both | rx | tx }
```

Parameters

```
   interface        Interface to mirror traffic to.
   interface        Interface to be mirrored to.
   *                All ports
   GigabitEthernet  1 Gigabit Ethernet Port
   both             Setting source port to both will mirror both ingress and
                    egress traffic.
   rx               Setting source port to rx will mirror ingress traffic.
   tx               Setting source port to tx will mirror egress traffic.
```

6.39 mvr Command

Options

```
(config)# mvr ?
   name    MVR multicast name
   vlan    MVR multicast vlan
   <cr>
```

Syntax

```
mvr
mvr name <mvr_name> channel <profile_name>
mvr name <mvr_name> frame priority <cos_priority>
mvr name <mvr_name> frame tagged
mvr name <mvr_name> igmp-address <v_ipv4_ucast>
```

```
mvr name <mvr_name> last-member-query-interval <ipmc_lmqi>
mvr name <mvr_name> mode { dynamic | compatible }
mvr vlan <v_vlan_list> [ name <mvr_name> ]
mvr vlan <v_vlan_list> channel <profile_name>
mvr vlan <v_vlan_list> frame priority <cos_priority>
mvr vlan <v_vlan_list> frame tagged
mvr vlan <v_vlan_list> igmp-address <v_ipv4_ucast>
mvr vlan <v_vlan_list> last-member-query-interval <ipmc_lmqi>
mvr vlan <v_vlan_list> mode { dynamic | compatible }
```

Parameters

<mvr_name>	Word16, MVR multicast VLAN name
channel	MVR channel configuration
frame	MVR control frame in TX
priority	Interface CoS priority
tagged	Tagged IGMP/MLD frames will be sent
igmp-address	MVR address configuration used in IGMP
<ipmc_lmqi>	0 - 31744 tenths of seconds
last-member-query-interval	Last Member Query Interval in tenths of seconds
mode	MVR mode of operation
compatible	Compatible MVR operation mode
dynamic	Dynamic MVR operation mode
<vlan_list>	MVR multicast VLAN list

6.40 no Command

Options

```
(config)# no ?
```

aaa	Authentication, Authorization and Accounting
access	Access management
access-list	Access list
aggregation	Aggregation mode
banner	Define a login banner
clock	Configure time-of-day clock
dot1x	IEEE Standard for port-based Network Access Control
enable	Modify enable password parameters
gvrp	Enable GVRP feature

```
   hostname          Set system's network name
   interface         Select an interface to configure
   ip                Internet Protocol
   ipmc              IPv4/IPv6 multicast configuration
   ipv6              IPv6 configuration commands
   lacp              LACP settings
   lldp              LLDP configurations.
   logging           Syslog
   loop-protect      Loop protection configuration
   mac               MAC table entries/configuration
   monitor           Set monitor configuration.
   mvr               Multicast VLAN Registration configuration
   ntp               Configure NTP
   port-security     Enable/disable port security globally.
   privilege         Command privilege parameters
   qos               Quality of Service
   radius-server     Configure RADIUS
   rmon              Remote Monitoring
   sflow             Statistics flow.
   snmp-server       Enable SNMP server
   spanning-tree     STP Bridge
   tacacs-server     Configure TACACS+
   upnp              Set UPnP's configurations
   username          Establish User Name Authentication
   vlan              Vlan commands
   voice             Voice appliance attributes
   web               Web
```

6.41 ntp Command

Options

```
(config)# ntp ?
   server       Configure NTP server
   <cr>         Enable ntp function
```

Syntax

```
ntp
```

```
ntp server <index_var> ip-address { <ipv4_var> | <ipv6_var> | <name_var> }
```

Parameters

<index_var>	<1-5> index number
<hostname>	domain name
<ipv4_ucast>	ipv4 address
<ipv6_ucast>	ipv6 address

6.42 port-security Command

Options

```
(config)# port-s ?
   aging    Enable/disable port security aging.
   <cr>
```

Syntax

```
port-security
port-security aging
port-security aging time <v_10_to_10000000>
```

6.43 privilege Command

Options

```
(config)# pri ?
   config-vlan          VLAN Configuration Mode
   configure            Global configuration mode
   dhcp-pool            DHCP Pool Configuration Mode
   exec                 Exec mode
   if-vlan              VLAN Interface Mode
   interface            Port List Interface Mode
   ipmc-profile         IPMC Profile Mode
   line                 Line configuration mode
   rfc2544-profile      RFC2544 Profile Mode
   snmps-host           SNMP Server Host Mode
   stp-aggr             STP Aggregation Mode
```

Syntax

```
(config)# pri ?
privilege { exec | configure | config-vlan | line | interface | if-vlan
    | ipmc-profile | snmps-host | stp-aggr | dhcp-pool | rfc2544-profile }
    level <privilege> <cmd>
```

Parameter

<privilege>	Privilege level
<cmd>	LINE, Initial valid words and literals of the command to modify, in 128 char's

6.44 qos Command

Options

```
(config)# qos ?
   map    Global QoS Map/Table
   wred   Weighted Random Early Discard
(config)# qos map ?
   cos-dscp                    Map for cos to dscp
   dscp-classify               Map for dscp classify enable
   dscp-cos                    Map for dscp to cos
   dscp-egress-translation     Map for dscp egress translation
   dscp-ingress-translation    Map for dscp ingress translation
```

Syntax

```
qos map cos-dscp <cos> dscp { <dscp_num> | { be | af11 | af12 | af13
    | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3
    | cs4 | cs5 | cs6 | cs7 | ef | va } }
qos map dscp-classify { <dscp_num> | { be | af11 | af12 | af13 | af21 | af22
    | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4 | cs5
    | cs6 | cs7 | ef | va } }
qos map dscp-cos { <dscp_num> | { be | af11 | af12 | af13 | af21 | af22 | af23
    | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6
    | cs7 | ef | va } } cos <cos> dpl <dpl>
qos map dscp-egress-translation { <dscp_num> | { be | af11 | af12 | af13 | af21
    | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4
    | cs5 | cs6 | cs7 | ef | va } } <dpl> to { <dscp_num_tr> | { be | af11 | af12
    | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2
```

```
    | cs3 | cs4 | cs5 | cs6 | cs7 | ef | va } }
qos map dscp-ingress-translation { <dscp_num> | { be | af11 | af12 | af13 | af21
    | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3 | cs4
    | cs5 | cs6 | cs7 | ef | va } } to { <dscp_num_tr> | { be | af11 | af12 | af13
    | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | cs1 | cs2 | cs3
    | cs4 | cs5 | cs6 | cs7 | ef | va } }
qos wred queue <queue> min-th <min_th> mdp-1 <mdp_1> mdp-2 <mdp_2> mdp-3 <mdp_3>
```

Parameters

<Cos : 0~7>	Specific class of service or range
dscp	Specify DSCP
<DscpNum : 0-63>	Specific DSCP
af11	Assured Forwarding PHB AF11(DSCP 10)
af12	Assured Forwarding PHB AF12(DSCP 12)
af13	Assured Forwarding PHB AF13(DSCP 14)
af21	Assured Forwarding PHB AF21(DSCP 18)
af22	Assured Forwarding PHB AF22(DSCP 20)
af23	Assured Forwarding PHB AF23(DSCP 22)
af31	Assured Forwarding PHB AF31(DSCP 26)
af32	Assured Forwarding PHB AF32(DSCP 28)
af33	Assured Forwarding PHB AF33(DSCP 30)
af41	Assured Forwarding PHB AF41(DSCP 34)
af42	Assured Forwarding PHB AF42(DSCP 36)
af43	Assured Forwarding PHB AF43(DSCP 38)
be	Default PHB(DSCP 0) for best effort traffic
cs1	Class Selector PHB CS1 precedence 1(DSCP 8)
cs2	Class Selector PHB CS2 precedence 2(DSCP 16)
cs3	Class Selector PHB CS3 precedence 3(DSCP 24)
cs4	Class Selector PHB CS4 precedence 4(DSCP 32)
cs5	Class Selector PHB CS5 precedence 5(DSCP 40)
cs6	Class Selector PHB CS6 precedence 6(DSCP 48)
cs7	Class Selector PHB CS7 precedence 7(DSCP 56)
ef	Expedited Forwarding PHB(DSCP 46)
va	Voice Admit PHB(DSCP 44)
<Queue : 0~5>	Specific queue or range
min-th	Specify minimum threshold
<MinTh : 0-100>	Specific minimum threshold in percent

```
   mdp-1                Specify drop probability for drop precedence level 1
   <Mdp1 : 0-100>       Specific drop probability in percent
   mdp-2                Specify drop probability for drop precedence level 1
   <Mdp2 : 0-100>       Specific drop probability in percent
   mdp-3                Specify drop probability for drop precedence level 1
   <Mdp3 : 0-100>       Specific drop probability in percent
```

6.45 radius-server Command

Options

```
(config)# rad ?
   attribute
   deadtime     Time to stop using a RADIUS server that doesn't respond
   host         Specify a RADIUS server
   key          Set RADIUS encryption key
   retransmit    Specify the number of retries to active server
   timeout      Time to wait for a RADIUS server to reply
```

Syntax

```
radius-server attribute 32 <id>
radius-server attribute 4 <ipv4>
radius-server attribute 95 <ipv6>
radius-server deadtime <minutes>
radius-server host <host_name> [ auth-port <auth_port> ] [ acct-port <acct_port>
 ] [ timeout <seconds> ] [ retransmit <retries> ] [ key <key> ]
radius-server key <key>
radius-server retransmit <retries>
radius-server timeout <seconds>
```

Parameters

```
   <HostName : word1-255>    Hostname or IP address
   acct-port                 UDP port for RADIUS accounting server
   auth-port                 UDP port for RADIUS authentication server
   key                       Server specific key (overrides default)
   retransmit                Specify the number of retries to active server (overrides
                             default)
   timeout                   Time to wait for this RADIUS server to reply (overrides
```

```
                          default)
   <Key : line1-63>       The shared key
   <Retries : 1-1000>     Number of retries for a transaction
```

6.46 rmon Command

Options

```
(config)# rmon ?
   alarm   Configure an RMON alarm
   event   Configure an RMON event
```

Syntax

```
rmon alarm <id> <oid_str> <interval> { absolute | delta } rising-threshold
    <rising_threshold> [ <rising_event_id> ] falling-threshold <falling_threshold>
    [ <falling_event_id> ] { [ rising | falling | both ] }
rmon alarm <id> { ifInOctets | ifInUcastPkts | ifInNUcastPkts | ifInDiscards
    | ifInErrors | ifInUnknownProtos | ifOutOctets | ifOutUcastPkts | ifOutNUcastPkts
    | ifOutDiscards | ifOutErrors } <ifIndex> <interval> { absolute | delta }
    rising-threshold <rising_threshold> [ <rising_event_id> ] falling-threshold
    <falling_threshold> [ <falling_event_id> ] { [ rising | falling | both ] }
rmon event <id> [ log ] [ trap <community> ] { [ description <description> ] }
```

Parameters

```
   <1-65535>           Alarm entry ID
   <oid_str>           WORD, MIB object to monitor
   <1-2147483647>      Sample interval
   absolute            Test each sample directly
   delta               Test delta between samples
   rising-threshold    Configure the rising threshold
                       <-2147483648-2147483647> rising threshold value
   <0-65535>           Event to fire on rising threshold crossing
   falling-threshold   Configure the falling threshold
                       <-2147483648-2147483647> falling threshold value
   <0-65535>           Event to fire on falling threshold crossing
   both                Trigger alarm when the first value is larger than the rising
                       threshold or less than the falling threshold (default)
   falling             Trigger alarm when the first value is less than the falling
```

```
                        threshold
   rising               Trigger alarm when the first value is larger than the rising
                        threshold
   ifInDiscards         The number of inbound packets that are discarded even
                        the packets are normal
   ifInErrors           The number of inbound packets that contained errors
                        preventing them from being deliverable to a
                        higher-layer protocol
   ifInNUcastPkts       The number of broad-cast and multi-cast packets
                        delivered to a higher-layer protocol
   ifInOctets           The total number of octets received on the interface,
                        including framing characters
   ifInUcastPkts        The number of uni-cast packets delivered to a
                        higher-layer protocol
   ifInUnknownProtos    The number of the inbound packets that were discarded
                        because of the unknown or un-support protocol
   ifOutDiscards        The number of outbound packets that are discarded
                        event the packets is normal
   ifOutErrors          The The number of outbound packets that could not be
                        transmitted because of errors
   ifOutNUcastPkts      The number of broad-cast and multi-cast packets that
                        request to transmit
   ifOutOctets          The number of octets transmitted out of the interface
                        , including framing characters
   ifOutUcastPkts       The number of uni-cast packets that request to transmit
   <1-65535>            Event entry ID
   description          Specify a description of the event
   log                  Generate RMON log when the event fires
   trap                 Generate SNMP trap when the event fires
   <community>          WORD, SNMP community string
   <description>        LINE, Event description
```

6.47 sflow Command

Options

```
(config)# sflow ?
   agent-ip             The agent IP address used as agent-address in UDP
```

```
                        datagrams. Defaults to IPv4 loopback address.
   collector-address    Collector address
   collector-port       Collector UDP port
   max-datagram-size    Maximum datagram size.
   timeout              Receiver timeout measured in seconds. The switch
                        decrements the timeout once per second, and as long as
                        it is non-zero, the receiver receives samples. Once
                        the timeout reaches 0, the receiver and all its
                        configuration is reset to defaults.
```

Syntax

```
sflow agent-ip { ipv4 <v_ipv4_addr> | ipv6 <v_ipv6_addr> }
sflow collector-address [ <host_name> ]
sflow collector-port <collector_port>
sflow max-datagram-size <datagram_size>
sflow timeout [ receiver <rcvr_idx_list> ] <timeout>
```

Parameters

```
   IPv4 address or IPv6 address or hostname
                        IPv4 address or IPv6 address or
                        hostname identifying the
                        collector receiver
   <collector_port>     1-65535, Port number
   <datagram_size>      200-1468 bytes
   <timeout>            0-2147483647 seconds
```

6.48 snmp-server Command

Options

```
(config)# snmp-server ?
   access               access configuration
   community            Set the SNMP community
   contact              Set the SNMP server's contact string
   engine-id            Set SNMP engine ID
   host                 Set SNMP host's configurations
   location             Set the SNMP server's location string
   security-to-group    Security-to-group configuration
```

```
    trap                Set trap's configurations
    user                Set the SNMPv3 user's configurations
    version             Set the SNMP server's version
    view                MIB view configuration
```

Syntax

```
snmp-server access <group_name> model { v1 | v2c | v3 | any }
    level { auth | noauth | priv } [ read <view_name> ] [ write <write_name> ]
snmp-server community v2c <comm> [ ro | rw ]
snmp-server community v3 <v3_comm> [ <v_ipv4_addr> <v_ipv4_netmask> ]
snmp-server contact <v_line255>
snmp-server engine-id local <engineID>
snmp-server host <conf_name>
snmp-server location <v_line255>
snmp-server security-to-group model { v1 | v2c | v3 } name <security_name>
    group <group_name>
snmp-server trap
snmp-server user <username> engine-id <engineID> [ { md5 <md5_passwd>
    | sha <sha_passwd> } [ priv { des | aes } <priv_passwd> ] ]
snmp-server version { v1 | v2c | v3 }
snmp-server view <view_name> <oid_subtree> { include | exclude }
```

Parameters

```
    <group_name>    Group Name : word32
    model           security model
    any             any security model
    v1              v1 security model
    v2c             v2c security model
    v3              v3 security model
    auth            authNoPriv Security Level
    noauth          noAuthNoPriv Security Level
    priv            authPriv Security Level
    <view_name>     word255, read view name
    read            specify a read view for the group
    write           specify a write view for the group
    <write_name>    word255, write view name
    <comm.>         word255, Community name
```

```
   ro                Read only
   rw                Read write
   <v3_comm>         word32, Community name
   <v_ipv4_addr>     IPv4 address
   <v_line255>       line string
   local             Set SNMP local engine ID
   <engineID>        word10-32, local engine ID
    <conf_name>      Name of the host configuration
   <security_name>   word32, security user name
   <user_name>       word32, Username
   engine-id         engine ID
   md5               Set MD5 protocol
   sha               Set SHA protocol
   <md5_passwd>      word8-32, MD5 password
   priv              Set Privacy
   aes               Set AES protocol
   des               Set DES protocol
   <pri_passwd>      word8-32, Set privacy password
   group             security group
   <group_name>      word32, security group name
   <oid_subtree>     word255, MIB view OID
   exclude           Excluded type from the view
   include           Ixcluded type from the view
```

6.49 spanning-tree Command

Options

```
(config)# spanning-tree ?
   aggregation       Aggregation mode
   edge              Edge ports
   mode              STP protocol mode
   mst               STP bridge instance
   recovery          The error recovery timeout
   transmit          BPDUs to transmit
```

Syntax

```
spanning-tree aggregation
```

```
spanning-tree edge bpdu-filter
spanning-tree edge bpdu-guard
spanning-tree mode { stp | rstp | mstp }
spanning-tree mst <instance> priority <prio>
spanning-tree mst <instance> vlan <v_vlan_list>
spanning-tree mst forward-time <fwdtime>
spanning-tree mst max-age <maxage> [ forward-time <fwdtime> ]
spanning-tree mst max-hops <maxhops>
spanning-tree mst name <name> revision <v_0_to_65535>
spanning-tree recovery interval <interval>
spanning-tree transmit hold-count <holdcount>

Parameters
   bpdu-filter      Enable BPDU filter (stop BPDU tx/rx)
   bpdu-guard       Enable BPDU guard
   mstp             Multiple Spanning Tree (802.1s)
   rstp             Rabid Spanning Tree (802.1w)
   stp              802.1D Spanning Tree
   <instance>       instance  0-7 (CIST=0, MST2=1...)
   forward-time     Delay between port states
   max-age          Max bridge age before timeout
   max-hops         MSTP bridge max hop count
   name             Name keyword
   priority         Priority of the instance
   vlan             VLAN keyword
   priority         Priority of the instance
   vlan             VLAN keyword
   <prio>           0-61440, Range in seconds
   <vlan_list>      Range of VLANs
   <fwdtime>        4-30, Range in seconds
   <maxage>         6-40, Range in seconds
   <maxhops>        6-40, Hop count range
   <name>           word32, Name of the bridge
   revision         Revision keyword
   <0-65535>        Revision number
   <interval>       30-86400, Range in seconds
   hold-count       Max number of transmit BPDUs per sec
```

```
   <holdcount>      1-10 per sec, 6 is default
```

6.50 tacacs-server Command

Options

```
(config)# tacacs-server ?
   deadtime     Time to stop using a TACACS+ server that doesn't respond
   host         Specify a TACACS+ server
   key          Set TACACS+ encryption key
   timeout      Time to wait for a TACACS+ server to reply
```

Syntax

```
tacacs-server deadtime <minutes>
tacacs-server host <host_name> [ port <port> ] [ timeout <seconds> ]
    [ key <key> ]
tacacs-server key <key>
tacacs-server timeout <seconds>
```

Parameters

```
   <minutes>        1-1440, Time in minutes
   <host_name>      word1-255, Hostname or IP address
   key              Server specific key (overrides default)
   port             TCP port for TACACS+ server
   timeout          Time to wait for this TACACS+ server to reply (overrides default)
   <key>            line1-63, The shared key
```

6.51 upnp Command

Options

```
(config)# upnp ?
   advertising-duration     Set advertising duration
   ttl                      Set TTL value
```

Syntax

```
upnp advertising-duration <v_100_to_86400>
upnp ttl <v_1_to_255>
```

6.52 username Command

Syntax

```
username <username> privilege <priv> password encrypted <encry_password>
username <username> privilege <priv> password none
username <username> privilege <priv> password unencrypted <password>
```

Parameters

<username>	word31, User name allows letters, numbers and underscores
privilege	Set user privilege level
password	Specify the password for the user
encrypted	Specifies an ENCRYPTED password will follow
none	NULL password
unencrypted	Specifies an UNENCRYPTED password will follow
<encry_password>	word4-44, The ENCRYPTED (hidden) user password. Notice the ENCRYPTED password will be decoded by system internally. You cannot directly use it as same as the Plain Text and it is not human-readable text normally.
<password>	line31, The UNENCRYPTED (Plain Text) user password. Any printable characters including space is accepted. Notice that you have no chance to get the Plain Text password after this command. The system will always display the ENCRYPTED password.

6.53 vlan Command

Options

```
(config)# vlan ?
   <vlan_list>      ISL VLAN IDs 1~4095
   ethertype        Ether type for Custom S-ports
   protocol         Protocol-based VLAN commands
```

Syntax

```
vlan <vlist>
vlan ethertype s-custom-port <etype>
vlan protocol { { eth2 { <etype> | arp | ip | ipx | at } } | { snap
    { <oui> | rfc-1042 | snap-8021h } <pid> } | { llc <dsap> <ssap> } } group <grp_id>
```

Parameters

```
   s-custom-port        Custom S-ports configuration
   <etype>              Ethertype (Range: 0x0600-0xffff)
   eth2                 Ethernet-based VLAN commands
   llc                  LLC-based VLAN group
   snap                 SNAP-based VLAN group
   arp                  Ether Type is ARP
   at                   Ether Type is AppleTalk
   ip                   Ether Type is IP
   ipx                  Ether Type is IPX
   <oui>                0x0-0xffffff, SNAP OUI (Range 0x000000 - 0XFFFFFF)
   rfc-1042             SNAP OUI is rfc-1042
   snap-8021h           SNAP OUI is 8021h
   <dsap>               0x0-0xff, DSAP (Range: 0x00 - 0xFF)
   <ssap>               0x0-0xff, SSAP (Range: 0x00 - 0xFF)
   group                Protocol-based VLAN group commands
   <grp_id> word16>     Group Name (Range: 1 - 16 characters)
```

6.54 voice Command

Options

```
(config)# voice ?
   vlan     Vlan for voice traffic
   <cr>     enable
```

Syntax

```
voice vlan
voice vlan aging-time <aging_time>
voice vlan class { <traffic_class> }
voice vlan oui <oui> [ description <description> ]
voice vlan vid <vid>
```

Parameters

```
   aging-time       Set secure learning aging time
   <aging_time>     10-10000000, Aging time, 10-10000000 seconds
   class            Set traffic class
   <traffic_class>  0-7, Traffic class value
```

```
    oui             OUI configuration
    <oui>           xx:xx:xx
    description     Set description for the OUI
    <description>   line32, Description line
    vid             Set VLAN ID
    <vlan_id>       VLAN ID, 1-4095
```

6.55 web Command

Syntax

```
(config)# web ?
web privilege group <group_name> level { [ cro <cro> ] [ crw <crw> ]
    [ sro <sro> ] [ srw <srw> ] }*1
```

Parameters

```
    group           Web privilege group
    <group_name>    Valid words are 'Aggregation' 'DHCP' 'Debug' 'Dhcp_Client'
                    'Diagnostics' 'EEE' 'Green_Ethernet' 'IP2'
                    'IPMC_Snooping' 'LACP' 'LLDP' 'Loop_Protect' 'MAC_Table' 'MVR'
                    'Maintenance' 'Mirroring' 'NTP' 'Ports' 'Private_VLANs' 'QoS'
                    'RPC' 'Security' 'Spanning_Tree' 'System' 'Timer' 'UPnP' 'VCL'
                    'VLANs' 'Voice_VLAN' 'XXRP' 'sFlow'
    level           Web privilege group level
    cro             Configuration Read-only level
    <cro>           0-15
    crw             Configuration Read-write level
    <crw>           0-15
    sro             Status/Statistics Read-only level
    <sro>           0-15
    srw             Status/Statistics Read-write level
    <srw>           0-15
```

7. Port Interface Configuration Commands

```
# configure terminal
(config)# interface ?
```

```
*               All ports
GigabitEthernet 1 Gigabit Ethernet Port, 1/1 ~ 1/24
vlan            VLAN interface configurations
```

7.1 Port Interface Configuration

To enter port interface configuration mode, use configuration interface command.

Example to configure all ports:

```
(config)# interface *
(config-if)#
```

Example to configure the port #1:

```
(config)# interface GigabitEthernet 1/1
(config-if)#
```

Available commands

```
access-list         Access list
aggregation         Create an aggregation
do                  To run exec commands in config mode
dot1x               IEEE Standard for port-based Network Access Control
duplex              Interface duplex
end                 Go back to EXEC mode
excessive-restart   Restart backoff algorithm after 16 collisions (No
                    excessive-restart means discard frame after 16 collisions)
exit                Exit from current mode
flowcontrol         Traffic flow control.
green-ethernet      Green ethernet (Power reduction)
gvrp                Enable GVRP on port(s)
gvrp                Enable GVRP on port(s)
ip                  Internet Protocol
ipv6                IPv6 configuration commands
lacp                Enable LACP on this interface
lldp                LLDP configurations.
loop-protect        Loop protection configuration on port
mac                 MAC keyword
media-type          Media type.
mtu                 Maximum transmission unit
```

```
   mvr                 Multicast VLAN Registration configuration
   no                  Negate a command or set its defaults
   port-security       Enable/disable port security per interface.
   pvlan               Private VLAN
   qos                 Quality of Service
   rmon                Configure Remote Monitoring on an interface
   sflow               Statistics flow.
   shutdown            Shutdown of the interface.
   snmp-server         Set SNMP server's configurations
   spanning-tree       Spanning Tree protocol
   speed               Configures interface speed. If you use 10, 100, or
                       1000 keywords with the auto keyword the port will only
                       advertise the specified speeds.
   switchport          Switching mode characteristics
```

7.2 (config-if)# access-list

Options

```
(config-if)# access-list ?
   action           Access list action
   logging          Logging frame information. Note: The logging feature only
                    works when the packet length is less than 1518 (without
                    VLAN tags) and the System Log memory size and logging rate
                    is limited.
   policy           Policy
   port-state       Re-enable shutdown port that was shutdown by access-list
                    module
   rate-limiter     Rate limiter
   redirect         Redirect frame to specific port
   shutdown         Shutdown incoming port. The shutdown feature only works
                    when the packet length is less than 1518 (without VLAN tags).
```

Syntax

```
access-list action { permit | deny }
access-list logging
access-list policy <policy_id>
access-list port-state
access-list rate-limiter <rate_limiter_id>
```

```
access-list shutdown
access-list { redirect } interface { <port_type> <port_type_id> }

Parameters
   deny                 Deny
   permit               Permit
   <policy_id>          0-255, Policy ID
  <rate_limiter_id>     1-16, Rate limiter ID
```

7.3 (config-if)# aggregation

```
Option
(config-if)# aggregation ?
   group    Create an aggregation group

Syntax
aggregation group <v_uint>

Parameter
   <uint>    The aggregation group id
```

7.4 (config-if)# do

```
(config-if)# do ?
   LINE    execute Exec Command
Syntax
do <command>
```

7.5 (config-if)# dot1x

```
Options
(config-if)# dot1x ?
   guest-vlan           Enables/disables guest VLAN
   port-control         Sets the port security state.
   radius-qos           Enables/disables per-port state of RADIUS-assigned QoS.
   radius-vlan          Enables/disables per-port state of RADIUS-assigned VLAN.
```

```
   re-authenticate      Refresh (restart) 802.1X authentication process.
```

Syntax

```
dot1x guest-vlan
dot1x port-control { force-authorized | force-unauthorized | auto | single |
    multi | mac-based }
dot1x radius-qos
dot1x radius-vlan
dot1x re-authenticate
```

Parameters

```
   auto                 Port-based 802.1X Authentication
   force-authorized     Port access is allowed
   force-unauthorized   Port access is not allowed
   mac-based            Switch authenticates on behalf of the client
   multi                Multiple Host 802.1X Authentication
   single               Single Host 802.1X Authentication
```

7.6 (config-if)# duplex

Options

```
(config-if)# duplex ?
   auto   Auto negotiation of duplex mode.
   full   Forced full duplex.
   half   Forced half duplex.
```

Syntax

```
duplex { half | full | auto [ half | full ] }
```

7.7 (config-if)# end

To exit interface configuration mode and go back to EXEC mode, use end command.

Example:

```
(config-if)# end
#
```

7.8 (config-if)# excessive-restart

To enable Restart backoff algorithm after 16 collisions, use excessive-restart command. (No excessive-restart means discard frame after 16 collisions)

Example:

```
(config-if)# excessive-restart
(config-if)#
```

7.9 (config-if)# exit

To exit interface configuration mode and go back to global configuration mode, use exit command.

Example:

```
(config-if)# exit
(config)#
```

7.10 (config-if)# flowcontrol

Options

```
(config-if)# flowcontrol ?
   off      Disable flow control.
   on       Enable flow control.
```

Syntax

```
flowcontrol { on | off }
```

7.11 (config-if)# green-ethernet

Options

```
 (config-if)# green-ethernet ?
   eee              Powering down of PHYs when there is no traffic.
   energy-detect    Enable power saving for ports with no link partner.
   short-reach      Enable power saving for ports which is connect to link
                    partner with short cable.
```

Syntax

```
green-ethernet eee
green-ethernet energy-detect
```

```
green-ethernet short-reach
```

7.12 (config-if)# gvrp

To enable GVRP on the interface port(s), use gvrp command.

Example:

```
(config-if)# gvrp
(config-if)#
```

7.13 (config-if)# ip

Options

```
(config-if)# ip ?
   arp      Address Resolution Protocol
   dhcp     Dynamic Host Configuration Protocol
   igmp     Internet Group Management Protocol
   verify   verify command
```

Syntax

```
ip arp inspection check-vlan
ip arp inspection logging { deny | permit | all }
ip arp inspection trust
ip dhcp snooping trust
ip igmp snooping filter <profile_name>
ip igmp snooping immediate-leave
ip igmp snooping max-groups <throttling>
ip igmp snooping mrouter
ip verify source
ip verify source limit <cnt_var>
```

Parameters

```
   inspection       ARP inspection
   check-vlan       ARP inspection VLAN mode config
   logging          ARP inspection logging mode config
   trust            ARP inspection trust config
   filter           Access control on IGMP multicast group registration
   immediate-leave  Immediate leave configuration
```

```
   max-groups       IGMP group throttling configuration
   mrouter          Multicast router port configuration
   <profile_name>   word16, Profile name in 16 char's
   <throttling>     1-10, Maximun number of IGMP group registration
   source           verify source
   limit            limit command
   <cnt_var>        0-2, the number of limit
```

7.14 (config-if)# ipv6 mld

Syntax

```
ipv6 mld snooping filter <profile_name>
ipv6 mld snooping immediate-leave
ipv6 mld snooping max-groups <throttling>
ipv6 mld snooping mrouter
```

Parameters

```
   filter               Access control on MLD multicast group registration
   immediate-leave      Immediate leave configuration
   max-groups           MLD group throttling configuration
   mrouter              Multicast router port configuration
   <profile_name>       word16, Profile name in 16 char's
   <throttling>         1-10, Maximun number of IGMP group registration
```

7.15 (config-if)# lacp

Options

```
(config-if)# lacp ?
   key              Key of the LACP aggregation
   port-priority    LACP priority of the port
   role             Active / Passive (speak if spoken to) role
   timeout          The period between BPDU transmissions
   <cr>             enable
```

Syntax

```
lacp
lacp key { <v_1_to_65535> | auto }
```

```
lacp port-priority <v_1_to_65535>
lacp role { active | passive }
lacp timeout { fast | slow }
```

Parameters

<v_1_to_65535>	Key value
auto	Choose a key based on port speed
<v_1_to_65535>	Priority value, lower means higher priority
active	Transmit LACP BPDUs continously
passive	Wait for neighbour LACP BPDUs before transmitting
fast	Transmit BPDU each second (fast timeout)
slow	Transmit BPDU each 30th second (slow timeout)

7.16 (config-if)# lldp

Options

```
(config-if)# lldp ?
   cdp-aware    Configures if the interface shall be CDP aware (CDP discovery
                information is added to the LLDP neighbor table)
   med          Media Endpoint Discovery.
   receive      Enable/Disable decoding of received LLDP frames.
   tlv-select   Which optional TLVs to transmit.
   transmit     Enable/Disabled transmision of LLDP frames.
```

Syntax

```
lldp cdp-aware
lldp med media-vlan policy-list <v_range_list>
lldp med transmit-tlv [ capabilities ] [ location ] [ network-policy ]
lldp receive
lldp tlv-select { management-address | port-description | system-capabilities
    | system-description | system-name }
lldp transmit
```

Parameters

media-vlan	Media VLAN assigment.
transmit-tlv	LLDP-MED Location Type Length Value parameter.
policy-list	Assignment of policies.

```
   <v_range_list>       policies list e.g. 1,2, Policies to assign to the interface.
   capabilities         Enable transmission of the optional capabilities TLV.
   location             Enable transmission of the optional location TLV.
   network-policy       Enable transmission of the optional network-policy TLV.
   management-address   Enable/Disable transmission of management address.
   port-description     Enable/Disable transmission of port description.
   system-capabilities  Enable/Disable transmission of system capabilities.
   system-description   Enable/Disable transmission of system description.
   system-name          Enable/Disable transmission of system name.
```

7.17 (config-if)# loop-protect

```
(config-if)# loop-protect ?
   action       Action if loop detected
   tx-mode      Actively generate PDUs
   <cr>         enable
```

Syntax

```
loop-protect
loop-protect action { [ shutdown ] [ log ] }*1
loop-protect tx-mode
```

Parameters

```
   log          Generate log
   shutdown     Shutdown port
```

7.18 (config-if)# mac

Option

```
(config-if)# mac ?
   address-table    MAC table configuration
```

Syntax

```
mac address-table learning [ secure ]
```

Parameters

```
  learning      Port learning mode
```

```
   secure       Port Secure mode
   <cr>         enable
```

7.19 (config-if)# media-type

Options

```
(config-if)# media-type ?
   rj45    rj45 interface (copper interface).
   fiber   fiber interface
   dual    Dual media interface (cu & fiber interface).
```

Syntax

```
media-type { rj45 | fiber | dual }
```

7.20 (config-if)# mtu

Options

```
(config-if)# mtu ?
   1518-10056    Maximum frame size in bytes.
```

Syntax

```
mtu <max_length>
```

7.21 (config-if)# mvr

Options

```
(config-if)# mvr ?
   immediate-leave      Immediate leave configuration
   name                 MVR multicast name
   vlan                 MVR multicast vlan
```

Syntax

```
mvr immediate-leave
mvr name <mvr_name> type { source | receiver }
mvr vlan <v_vlan_list> type { source | receiver }
```

Parameters

```
<mvr_name>   word16, MVR multicast VLAN name
type         MVR port role configuration
receiver     MVR receiver port
source       MVR source port
<vlan_list>  MVR multicast VLAN list, ex. 1,2,..
type         MVR port role configuration
receiver     MVR receiver port
source       MVR source port
```

7.22 (config-if)# no

Options

```
(config-if)# no ?
   access-list          Access list
   aggregation          Aggregation keyword
   dot1x                IEEE Standard for port-based Network Access Control
   duplex               Set duplex to default.
   excessive-restart    Restart backoff algorithm after 16 collisions (No
                        excessive-restart means discard frame after 16
                        collisions)
   flowcontrol          Configure flow control.
   green-ethernet       Green ethernet (Power reduction)
   gvrp                 Enable GVRP on port(s)
   ip                   Internet Protocol
   ipv6                 IPv6 configuration commands
   lacp                 Enable LACP on this interface
   lldp                 LLDP configurations.
   loop-protect         Loop protection configuration on port
   mac                  MAC keyword
   media-type           Set media type to default (dual for dual-media
                        interfaces, rj45 for interfaces only supporting rj45,
                        fiber for interfaces only supporting sfp).
   mtu                  Maximum transmission unit
   mvr                  Multicast VLAN Registration configuration
   port-security        Enable/disable port security per interface.
   pvlan                Private VLAN
```

```
    qos                 Quality of Service
    rmon                Configure Remote Monitoring on an interface
    sflow               Statistics flow.
    shutdown            Shutdown of the interface.
    snmp-server         Set SNMP server's configurations
    spanning-tree       Enable/disable STP on this interface
    speed               Configure speed to default.
    switchport          Switching mode characteristics
```

Syntax

```
no access-list logging
no access-list policy
no access-list port-state
no access-list rate-limiter
no access-list shutdown
no access-list { redirect | port-copy }
no aggregation group
no dot1x guest-vlan
no dot1x port-control
no dot1x radius-qos
no dot1x radius-vlan
no duplex
no excessive-restart
no flowcontrol
no green-ethernet eee
no green-ethernet energy-detect
no green-ethernet short-reach
no gvrp
no ip arp inspection check-vlan
no ip arp inspection logging
no ip arp inspection trust
no ip dhcp snooping trust
no ip igmp snooping filter
no ip igmp snooping immediate-leave
no ip igmp snooping max-groups
no ip igmp snooping mrouter
no ip verify source
```

```
no ip verify source limit
no ipv6 mld snooping filter
no ipv6 mld snooping immediate-leave
no ipv6 mld snooping max-groups
no ipv6 mld snooping mrouter
no lacp
no lacp key { <v_1_to_65535> | auto }
no lacp port-priority <v_1_to_65535>
no lacp role { active | passive }
no lacp timeout { fast | slow }
no lldp cdp-aware
no lldp med media-vlan policy-list [ <v_range_list> ]
no lldp med transmit-tlv [ capabilities ] [ location ] [ network-policy ]
no lldp receive
no lldp tlv-select { management-address | port-description | system-capabilities
    | system-description | system-name }
no lldp transmit
no loop-protect
no loop-protect action
no loop-protect tx-mode
no mac address-table learning [ secure ]
no media-type
no mtu
no mvr immediate-leave
no mvr name <mvr_name> type
no mvr vlan <v_vlan_list> type
no port-security
no port-security maximum
no port-security violation
no pvlan isolation
no qos cos
no qos dpl
no qos dscp-classify
no qos dscp-remark
no qos dscp-translate
no qos map cos-tag cos <cos> dpl <dpl>
no qos policer
```

```
no qos queue-shaper queue <queue>
no qos shaper
no qos storm { unicast | broadcast | unknown }
no qos tag-remark
no qos trust dscp
no qos wrr
no rmon collection history <id>
no rmon collection stats <id>
no sflow [ <sampler_idx_list> ]
no sflow counter-poll-interval [ <sampler_idx_list> ]
no sflow max-sampling-size [ sampler <sampler_idx_list> ]
no shutdown
no snmp-server host <conf_name> traps
no spanning-tree
no spanning-tree auto-edge
no spanning-tree bpdu-guard
no spanning-tree edge
no spanning-tree link-type
no spanning-tree mst <instance> cost
no spanning-tree mst <instance> port-priority
no spanning-tree restricted-role
no spanning-tree restricted-tcn
no speed
no switchport access vlan
no switchport forbidden vlan
no switchport hybrid acceptable-frame-type
no switchport hybrid allowed vlan
no switchport hybrid egress-tag
no switchport hybrid ingress-filtering
no switchport hybrid native vlan
no switchport hybrid port-type
no switchport mode
no switchport trunk allowed vlan
no switchport trunk native vlan
no switchport trunk vlan tag native
no switchport vlan ip-subnet id <vce_id_list>
no switchport vlan mac <mac_addr> vlan <vid>
```

```
no switchport vlan protocol group <grp_id> vlan <vid>
no switchport voice vlan discovery-protocol
no switchport voice vlan mode
no switchport voice vlan security
```

7.23 (config-if)# port-security

Options

```
(config-if)# port-security ?
   maximum      Miximum number of MAC addresses that can be learned on this
                set of interfaces.
   violation    The action involved with exceeding the limit.
   <cr>         Enable
```

Syntax

```
port-security
port-security maximum [ <v_1_to_1024> ]
port-security violation { protect | trap | trap-shutdown | shutdown }
```

Parameters

```
   <v_1_to_1024>    Number of addresses
   protect          Don't do anything
   shutdown         Shutdown the port
   trap             Send an SNMP trap
   trap-shutdown    Send an SNMP trap and shutdown the port
```

7.24 (config-if)# pvlan

Option

```
(config-if)# pvlan ?
   isolation    Port isolation
```

Syntax

```
pvlan isolation
```

7.25 (config-if)# qos

Options

```
(config-if)# qos ?
   cos              Class of service configuration
   dpl              Drop precedence level configuration
   dscp-classify    DSCP ingress classification
   dscp-remark      DSCP egress remarking
   dscp-translate   DSCP ingress translation
   map              QoS Map/Table configuration
   policer          Policer configuration
   queue-shaper     Queue shaper configuration
   shaper           Shaper configuration
   storm            Storm policer
   tag-remark       Tag remarking configuration
   trust            Trust configuration
   wrr              Weighted round robin configuration
```

Syntax

```
qos cos <cos>
qos dpl <dpl>
qos dscp-classify { zero | selected | any }
qos dscp-remark { rewrite | remap | remap-dp }
qos dscp-translate
qos map cos-tag cos <cos> dpl <dpl> pcp <pcp> dei <dei>
qos policer <rate> [ fps ] [ flowcontrol ]
qos queue-shaper queue <queue> <rate> [ excess ]
qos shaper <rate>
qos storm { unicast | broadcast | unknown } <rate> [ fps ]
qos tag-remark { pcp <pcp> dei <dei> | mapped }
qos trust dscp
qos wrr <w0> <w1> <w2> <w3> <w4> <w5>
```

Parameters

```
   <cos>        0-7, Specific class of service
   <dpl>        0-1, Specific drop precedence level
   any          Classify to new DSCP always
   selected     Classify to new DSCP if classify is enabled for specific DSCP
```

```
                value in global dscp-classify map
   zero         Classify to new DSCP if DSCP is 0
   remap        Rewrite DSCP field using classified DSCP remapped through global
                dscp-egress-translation map
   rewrite      Rewrite DSCP field with classified DSCP value (no translation)
   cos          Specify class of service
   <pcp>        0-7, Specific PCP
   <dei>        0-1, Specific DEI
   <rate>       100-13200000, Policer rate (default kbps)
   <queue>      0~7, Specific queue or range
   <rate>       100-13200000, Shaper rate in kbps
   excess       Allow use of excess bandwidth
   <rate>       100-13200000, Shaper rate in kbps
   broadcast    Police broadcast frames
   unicast      Police unicast frames
   unknown      Police unknown (flooded) frames
   fps          Rate is fps
   flowcontrol  Enable flow control
   mapped       Used mapped values (cos,dpl -> pcp,dei)
   dscp         DSCP value
   <W0>         1-100, Weight for queue 0
   <W1>         1-100, Weight for queue 1
   <W2>         1-100, Weight for queue 2
   <W3>         1-100, Weight for queue 3
   <W4>         1-100, Weight for queue 4
   <W5>         1-100, Weight for queue 5
```

7.26 (config-if)# rmon

Option

```
(config-if)# rmon ?
   collection   Configure Remote Monitoring Collection on an interface
```

Syntax

```
rmon collection history <id> [ buckets <buckets> ] [ interval <interval> ]
rmon collection stats <id>
```

Parameters

```
history      Configure history
<id>         1-65535, History entry ID
buckets      Requested buckets of intervals. Default is 50 buckets
<1-65535>    Requested buckets of intervals
interval     Interval to sample data for each bucket. Default is 1800
             seconds
<1-3600>     Interval in seconds to sample data for each bucket
stats        Configure statistics
<1-65535>    Statistics entry ID
```

7.27 (config-if)# sflow

Options

```
(config-if)# sflow ?
   counter-poll-interval    The interval - in seconds - between counter poller
                            samples.
   max-sampling-size        Specifies the maximum number of bytes to transmit
                            per flow sample.
   sampling-rate            Specifies the statistical sampling rate. The
                            sample rate is specified as N to sample 1/Nth of
                            the packets n the monitored flows. There are no
                            restrictions on the value, but the switch will
                            adjust it to the closest possible sampling rate.
   <cr>                     enable
```

Syntax

```
sflow
sflow counter-poll-interval [ <poll_interval> ]
sflow max-sampling-size [ <max_sampling_size> ]
sflow sampling-rate [ <sampling_rate> ]
```

Parameters

```
   <sampling_rate>      1-4294967295, Sampling rate
   <max_sampling_size>  14-200, bytes
```

7.28 (config-if)# shutdown

Option

```
(config-if)# shutdown
```

Syntax

```
shutdown
```

7.29 (config-if)# snmp-server

Option

```
(config-if)# snmp-server ?
   host    Set SNMP host's configurations
```

Syntax

```
snmp-server host <conf_name> traps [ linkup ] [ linkdown ] [ lldp ]
```

Parameters

```
   <conf_name>      word32, Name of the host configuration
   traps            Enable traps
   linkdown         Link down event
   linkup           Link up event
   lldp             LLDP event
```

7.30 (config-if)# spanning-tree

Options

```
(config-if)# spanning-tree ?
   auto-edge            Auto detect edge status
   bpdu-guard           Enable/disable BPDU guard
   edge                 Edge port
   link-type            Port link-type
   mst                  STP bridge instance
   restricted-role      Port role is restricted (never root port)
   restricted-tcn       Restrict topology change notifications
   <cr>                 Eanble
```

Syntax

```
spanning-tree
spanning-tree auto-edge
spanning-tree bpdu-guard
spanning-tree edge
spanning-tree link-type { point-to-point | shared | auto }
spanning-tree mst <instance> cost { <cost> | auto }
spanning-tree mst <instance> port-priority <prio>
spanning-tree restricted-role
spanning-tree restricted-tcn
```

Parameters

auto	Auto detect
point-to-point	Forced to point-to-point
shared	Forced to Shared
<instance>	instance 0-7 (CIST=0, MST2=1...)
cost	STP Cost of this port
<cost>	1-200000000, Cost range
auto	Use auto cost
port-priority	STP priority of this port
<prio>	0-240, Range (lower higher priority)

7.31 (config-if)# speed

Options

```
(config-if)# speed ?
   10       10Mbps
   100      100Mbps
   1000     1Gbps
   auto     Auto negotiation
```

Syntax

```
speed { 10g | 2500 | 1000 | 100 | 10 | auto { [ 10 ] [ 100 ] [ 1000 ] } }
```

7.32 (config-if)# switchport

Options

```
(config-if)# switchport ?
```

```
  access       Set access mode characteristics of the interface
  forbidden    Adds or removes forbidden VLANs from the current list of
               forbidden VLANs
  hybrid       Change PVID for hybrid port
  mode         Set mode of the interface
  trunk        Change PVID for trunk port
  vlan         VLAN commands
  voice        Voice appliance attributes
```

Syntax

```
switchport access vlan <pvid>
switchport forbidden vlan { add | remove } <vlan_list>
switchport hybrid acceptable-frame-type { all | tagged | untagged }
switchport hybrid allowed vlan { all | none | [ add | remove | except ] <vlan_li
st> }
switchport hybrid egress-tag { none | all [ except-native ] }
switchport hybrid ingress-filtering
switchport hybrid native vlan <pvid>
switchport hybrid port-type { unaware | c-port | s-port | s-custom-port }
switchport mode { access | trunk | hybrid }
switchport trunk allowed vlan
    { all | none | [ add | remove | except ] <vlan_list> }
switchport trunk native vlan <pvid>
switchport trunk vlan tag native
switchport vlan ip-subnet id <vce_id> <ipv4> vlan <vid>
switchport vlan mac <mac_addr> vlan <vid>
switchport vlan protocol group <grp_id> vlan <vid>
switchport voice vlan discovery-protocol { oui | lldp | both }
switchport voice vlan mode { auto | force | disable }
switchport voice vlan security
```

Parameters

```
  vlan                    Set VLAN when interface is in access mode
  <pvid>                  VLAN ID of the VLAN when this port is in access mode
  vlan                    Add or modify VLAN entry in forbidden table.
  add                     Add to existing list.
  remove                  Remove from existing list.
```

```
<vlan_list>              VLAN IDs
acceptable-frame-type    Set acceptable frame type on a port
all                      Allow all frames
tagged                   Allow only tagged frames
untagged                 Allow only untagged frames
allowed                  Set allowed VLAN characteristics when interface is
                         in hybrid mode
vlan                     Set allowed VLANs when interface is in hybrid mode
<vlan_list>              VLAN IDs of the allowed VLANs when this port is in hybrid
                         mode
add                      Add VLANs to the current list
all                      All VLANs
except                   All VLANs except the following
none                     No VLANs
remove                   Remove VLANs from the current list
egress-tag               Egress VLAN tagging configuration
none                     No egress tagging
all                      Tag all frames
except-native            Tag all frames except frames classified to native VLAN
                         of the hybrid port
ingress-filtering        VLAN Ingress filter configuration
native                   Set native VLAN
port-type                Set port type
```

8. VLAN Interface Configuration Commands

```
# configure terminal
(config)# interface ?
   *               All ports
   GigabitEthernet  1 Gigabit Ethernet Port, 1/1 ~ 1/24
   vlan             VLAN interface configurations
```

8.1 VLAN Interface Configuration

To enter vlan interface configuration mode, use configuration interface command.

Example to configure all ports:

```
(config)# interface *
(config-if)#
```

Example to configure the VLAN 1:

```
(config)# interface vlan 1
(config-if-vlan)#
```

Available commands

```
(config-if-vlan)# ?
   do       To run exec commands in config mode
   end      Go back to EXEC mode
   exit     Exit from current mode
   help     Description of the interactive help system
   ip       Interface Internet Protocol config commands
   ipv6     IPv6 configuration commands
   no       Negate a command or set its defaults
```

8.2 (config-if-vlan)# do

```
(config-if-vlan)# do ?
   LINE    execute Exec Command
```

Syntax

```
do <command>
```

8.3 (config-if-vlan)# end

To exit interface configuration mode and go back to EXEC mode, use end command.

Example:

```
(config-if-vlan)# end
#
```

8.4 (config-if-vlan)# exit

To exit vlan interface configuration mode and go back to global configuration mode, use exit command.

Example:

```
(config-if-vlan)# exit
(config)#
```

8.5 (config-if-vlan)# help

Help may be requested at any point in a command by entering a question mark '?'. If nothing matches, the help list will be empty and you must backup until entering a '?' shows the available options.

Two styles of help are provided:

1. Full help is available when you are ready to enter a command argument (e.g. 'show ?') and describes each possible argument.
2. Partial help is provided when an abbreviated argument is entered and you want to know what arguments match the input (e.g. 'show pr?'.)

8.6 (config-if-vlan)# ip

Options

```
(config-if-vlan)# ip ?
   address      Address configuraton
   dhcp         Configure DHCP server parameters
   igmp         Internet Group Management Protocol
```

Syntax

```
ip address { { <address> <netmask> } | { dhcp [ fallback <fallback_address>
```

```
    <fallback_netmask> [ timeout <fallback_timeout> ] ] } }
ip dhcp server
ip igmp snooping
ip igmp snooping compatibility { auto | v1 | v2 | v3 }
ip igmp snooping last-member-query-interval <ipmc_lmqi>
ip igmp snooping priority <cos_priority>
ip igmp snooping querier { election | address <v_ipv4_ucast> }
ip igmp snooping query-interval <ipmc_qi>
ip igmp snooping query-max-response-time <ipmc_qri>
ip igmp snooping robustness-variable <ipmc_rv>
ip igmp snooping unsolicited-report-interval <ipmc_uri>
```

Parameters

<address>	IP address
<netmask>	IP netmask
dhcp	Enable DHCP
fallback	DHCP fallback settings
<fallback_address>	DHCP fallback address
<fallback_netmask>	DHCP fallback netmask
<fallback_timeout>	DHCP fallback timeout in seconds
compatibility	Interface compatibility
auto	Compatible with IGMPv1/IGMPv2/IGMPv3
v1	Forced IGMPv1
v2	Forced IGMPv2
v3	Forced IGMPv3
last-member-query-interval	Last Member Query Interval in tenths of seconds
<ipmc_lmqi>	0 - 31744 tenths of seconds
priority	Interface CoS priority
<cos_priority>	0-7, CoS priority ranges from 0 to 7
querier	IGMP Querier configuration
address	IGMP Querier address configuration
election	Act as an IGMP Querier to join Querier-Election
query-interval	Query Interval in seconds
<ipmc_qi>	1 - 31744 seconds
query-max-response-time	Query Response Interval in tenths of seconds
<ipmc_qri>	0 - 31744 tenths of seconds

```
   robustness-variable          Robustness Variable
   <ipmc_rv>                    Packet loss tolerance count from 1 to 255
   unsolicited-report-interval  Unsolicited Report Interval in seconds
   <ipmc_uri>                   0 - 31744 seconds
```

8.7 (config-if-vlan)# ipv6

Options

```
(config-if-vlan)# ipv6 ?
   address      Configure the IPv6 address of an interface
   mld          Multicasat Listener Discovery
```

Syntax

```
ipv6 address <subnet>
ipv6 mld snooping
ipv6 mld snooping compatibility { auto | v1 | v2 }
ipv6 mld snooping last-member-query-interval <ipmc_lmqi>
ipv6 mld snooping priority <cos_priority>
ipv6 mld snooping querier election
ipv6 mld snooping query-interval <ipmc_qi>
ipv6 mld snooping query-max-response-time <ipmc_qri>
ipv6 mld snooping robustness-variable <ipmc_rv>
ipv6 mld snooping unsolicited-report-interval <ipmc_uri>
```

Parameters

```
   X:X:X:X::X/<0-128>           IPv6 prefix x:x::y/z
   auto                         Compatible with MLDv1/MLDv2
   v1                           Forced MLDv1
   v2                           Forced MLDv2
   last-member-query-interval   Last Member Query Interval in tenths of seconds
   <ipmc_lmqi>                  0 - 31744 tenths of seconds
   priority                     Interface CoS priority
   <cos_priority>               0-7, CoS priority ranges from 0 to 7
   querier                      IGMP Querier configuration
   address                      IGMP Querier address configuration
   election                     Act as an IGMP Querier to join Querier-Election
   query-interval               Query Interval in seconds
```

```
<ipmc_qi>                    1 - 31744 seconds
query-max-response-time      Query Response Interval in tenths of seconds
<ipmc_qri>                   0 - 31744 tenths of seconds

robustness-variable          Robustness Variable
<ipmc_rv>                    Packet loss tolerance count from 1 to 255
unsolicited-report-interval  Unsolicited Report Interval in seconds
<ipmc_uri>                   0 - 31744 seconds
```

8.8 (config-if-vlan)# no

To disable a specific function or restore default setting, use no command.

Options

```
no ip address
no ip dhcp server
no ip igmp snooping
no ip igmp snooping compatibility
no ip igmp snooping last-member-query-interval
no ip igmp snooping priority
no ip igmp snooping querier { election | address }
no ip igmp snooping query-interval
no ip igmp snooping query-max-response-time
no ip igmp snooping robustness-variable
no ip igmp snooping unsolicited-report-interval
no ipv6 address [ <ipv6_subnet> ]
no ipv6 mld snooping
no ipv6 mld snooping compatibility
no ipv6 mld snooping last-member-query-interval
no ipv6 mld snooping priority
no ipv6 mld snooping querier election
no ipv6 mld snooping query-interval
no ipv6 mld snooping query-max-response-time
no ipv6 mld snooping robustness-variable
no ipv6 mld snooping unsolicited-report-interval
```