Avaya

Reference Guide

AVAYA C460

MULTILAYER MODULAR SWITCH

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Chapter 1

Using the CLI

This chapter describes the Avaya C460 CLI architecture and conventions, and provides instructions for accessing the Avaya C460 for configuration purposes.

The configuration procedure involves establishing a Telnet session or a serial connection and then using the Avaya C460's internal CLI. For details on establishing a connection, see the User's Guide that accompanies the switch.

The CLI is command-line driven and does not have any menus. To activate a configuration option, you must type the desired command at the prompt and press **Enter**.

You can also configure your Avaya C460 using the C460 Manager with its graphical user interface. For details, see the "Device Manager" chapter in the User's Guide that accompanies the switch and the Avaya MSNM C460 Device Manager User's Guide on the Documentation and Utilities CD.

CLI Architecture

The C460 supports both Layer 2 switching and Layer 3 switching.
The C460 CLI includes two CLI entities to support this functionality.

- The Switch CLI entity is used to manage Layer 2 switching.
- The Router CLI entity is used to manage Layer 3 switching.

To switch between the entities, use the **`session`** command. For details, see "Avaya C460 Sessions" below.

Configuration of the **`password`** commands and **`community`** commands in one entity is automatically attributed to the other entity in the switch.

Conventions Used

- Mandatory keywords are in the **`computer bold`** font.
- Information displayed on screen is displayed in `computer` font.
- Variables that you supply are in pointed brackets <>.
- Optional keywords are in square brackets [].
- Alternative but mandatory keywords are grouped in braces {} and separated by a vertical bar |.
- Lists of parameters from which you should choose are enclosed in square brackets [ ] and separated by a vertical bar |.
- If you enter an alphanumeric string of two words or more, enclose the string in inverted commas.

CLI Help

- To display all commands available in a context type a question mark.
- To display all commands starting with a certain string, type the first few letters followed by a question mark.
- To get help containing all commands parameters with their legal values as well as its syntax and an example:
  - type a question mark at the end of command or at the stage where it is unique, *or*
  - type "help" followed by the command
- Use the Tab key to complete an unambiguous command.

Command Line Prompt

Four factors affect the command line prompt:

- Host name of the CLI entity - the host name is used as the prefix of the command prompt.
- Module Number - counting from the top and used as part of the prefix. In this document the Module number in the prompt is generic and is represented by "N".
- Security level - used as the suffix of the prompt (Refer to "Security Levels" on page 9.)
- Application context - used as body of the prompt, this part is not mandatory.

Example:

Host name of the router is London
Router is module number three
Application context is OSPF

The command line prompt looks as follows:

```
London-1(configure router:ospf)#
```

The command prompt is *not* hierarchical in structure. If you wish to use several commands, each beginning with the same keyword, you must retype all parts of the command each time. For example, if after you want to set the system contact and the system name you must type both **`set system contact`** and **`set system name`**. However, you can use command abbreviations.

Navigation, Cursor Movement and Shortcuts

The CLI contains a simple text editor with these functions:

Table 1.1 Navigation, Cursor Movement and Shortcuts

Keyboard	Functions
Backspace	Deletes the previous character
Up arrow/Down arrow	Scrolls back and forward through the command history buffer
Left arrow/Right arrow	Moves the cursor left or right
Tab	Completes the abbreviated command. Type the minimum number of characters unique to the command. An exception is the Reset System command which you must type in full.
Enter	Executes a single-line command
“ “	If you type a name with quotation marks, the marks are ignored.

Command Syntax

Commands are not case-sensitive. That is, uppercase and lowercase characters may be interchanged freely.

Command Abbreviations

All commands and parameters in the CLI can be truncated to an abbreviation of any length, as long as the abbreviation is not ambiguous. For example, `version` can be abbreviated `ver`.

For ambiguous commands, type the beginning letters on the command line and then use the Tab key to toggle through all the possible commands beginning with these letters.

Universal Commands

Universal commands are commands that can be issued anywhere in the hierarchical tree.

Retstatus command

Use the `retstatus` command to show whether the last CLI command you performed was successful. It displays the return status of the previous command.

The syntax for this command is: **`retstatus`**

Example::

```
C460-1# set port negotiation 2/4 disable
Link negotiation protocol disabled on port 2/4.
C460-1# retstatus
Succeeded
```

Tree command

The `tree` command displays the commands that are available at your current location in the CLI hierarchy.

The syntax for this command is: **`tree`**

Output Example:

Example:

```
C460-1# tree
terminal
width
length
```

terminal width

Use the `terminal width` command to set the terminal width of the terminal display.

The syntax for this command is:

`terminal width` `[<character>]`

character	none - Displays the current width in characters. `number - Set the new screen width in characters`

Example:

```
C460-1> terminal width 80
terminal width: 80
```

terminal length

Use the `terminal length command` to set the length of the terminal display.

The syntax for this command is:

`terminal length` `[<screen-length>]`

screen-length	none - Displays the current length in lines. number - Set the new screen length in lines.

Example:

```
C460-1> terminal length 25
```

clear screen

Use the `clear screen` command to clear the current terminal display.

The syntax for this command is:

`clear screen`

Example:

```
C460-1> clear screen
                 Welcome to C460
                SW version 1.0.0
C460-1>
```

Avaya C460 Sessions

You can use sessions to switch between C460 Supervisor modules or to switch between Layer 2 and Layer 3 commands in the C460 CLI.

To switch between C460 modules use the command:
session [<mod_num>] <mode>.

The <mod_num> is the number of the module in the chassis, counting from the top down. The <mode> can be either **switch** or **router**. When Module Number is not specified, the command switches between the modes in the local module. Use **switch** mode to configure layer 2 commands. Use **router** mode to configure routing commands.

Example:

To configure router parameters in the module that you are currently logged into, type the following command:

session router.

ⓘ When you use the **session** command the security level stays the same.

Security Levels

There are four security access levels (modes) – User, Privileged, Configure and Supervisor.

- The User mode is a general access level used to show system parameter values.
- The Privileged mode is used by site personnel to access switch configuration options.
- The Configure mode is used by site personnel for Layer 3 configuration.
- The Supervisor mode is used to define user names, passwords, and access levels of up to 10 local users.

A login name and password are always required to access the CLI and the commands. The login names and passwords, and security levels are established using the `username` command.

Switching between the entities, does not effect the security level since security levels are established specifically for each user. For example, if the operator with a privileged security level in the Switch entity switches to the Router entity the privileged security level is retained.

Entering the Supervisor Level

The Supervisor level is the level in which you first enter Cajun Campus CLI and establish user names for up to 10 local users. When you enter the Supervisor level, you are asked for a Login name. Type **`root`** as the Login name and the default password **`root`** (in lowercase letters):

```
                 Welcome to C460
                SW version 1.0.0
Login: root
Password:****
Password accepted.
C460-1(super)#
```

Defining new users

Define new users and access levels using the **`username`** command in Supervisor Level.

Exiting the Supervisor Level

To exit the Supervisor level, type the command **`exit`**.

Entering the CLI

To enter the CLI, enter your username and password. Your access level is indicated in the prompt as follows:

The User level prompt is shown below:

```
C460-1>
```

The Privileged level prompt is shown below:

```
C460-1#
```

The Configure level prompt for Layer 3 configuration is shown below:

```
C460(configure)#
```

The Supervisor level prompt is shown below:

```
C460(super)#
```

Entering the Technician Level

This level is can only be accessed from the Privileged and Supervisor levels not from the User level.

ⓘ This feature is for use by Avaya Technical Support only.

Getting Help

On-line help may be obtained at any time by typing a question mark (**?**), or the word **help** on the command line or by pressing the **F1** key. To obtain help for a specific command, type the command followed by a space and a question mark.

Example:

```
C460-1> show ?
C460-1> help show
```

Command Syntax

Commands are not case-sensitive. That is, uppercase and lowercase characters may be interchanged freely.

Command Abbreviations

All commands and parameters in the CLI can be truncated to an abbreviation of any length, as long as the abbreviation is not ambiguous. For example, **version** can be abbreviated **ver**.

For ambiguous commands, type the beginning letters on the command line and then use the TAB key to toggle through all the possible commands beginning with these letters.

Router Configuration Contexts

You can either use the general C460 commands available from the `Router(configure)# prompt` or you can enter one of two router configuration context modes:

- Router interface context:
  This allows you to define parameters individually for each interface. To enter this context, type **`interface <interface_name>`**
  The prompt changes to **`Router>(config-if:<interface_name>)#`**
- Router protocol context:
  This allows you to define parameters for a specific routing protocol (RIP, OSPF, and VRRP). To enter this context, type **`router <protocol_name>`**
  The prompt changes to **`Router>(configure router:protocol_name)#`**

To exit these context modes, type the command **`exit`**.

Chapter 2

Avaya C460 CLI Commands

This chapter describes all the C460 CLI commands and parameters in alphabetical order.

access list

See "ip access-list"

area

User level: read-write, admin.

ⓘ You can only access this command in Router-OSPF mode.
Type **`router ospf`** at the command prompt to enter Router -OSPF mode if necessary.

Use the `area` command to configure the area ID of the router.

Use the `no area` command to delete the area ID of the router (set it to 0) and remove the stub definition.

The default area is **0.0.0.0**.

ⓘ You cannot define a stub area when OSPF is redistributing other protocols or when the Area ID is 0.0.0.0.

The syntax for this command is:

`[no] area` `<area id> [<stub>]`

area id	IP address
stub	Stub

Example:

```
Router-1 (configure router:ospf) # area 192.168.49.1
Router-1 (configure router:ospf) # area 192.168.49.1 stub
```

arp

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `arp` command to add a permanent entry to the Address Resolution Protocol (ARP) cache.

Use the `no arp` command to remove an entry, either static entry or dynamically learned.

The syntax for this command is:

[no] arp <ip-address> <mac-address>

ip-address	IP address, in dotted decimal format, of the station
mac-address	MAC address of the local data link

Example:

To add a permanent entry for station 192.168.7.8 to the ARP cache:

```
C460-1(configure)# arp 192.168.7.8 00:40:0d:8c:2a:01
```

Example:

To remove an entry to the ARP cache for the station 192.168.13.76:

```
C460-1(configure)# no arp 192.168.13.76
```

arp timeout

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `arp timeout` command to set the amount of time that an entry remains in the ARP cache.

Use the `no arp timeout` command to restore the default value, 14,400.

The syntax for this command is:

[no] arp timeout <seconds>

seconds	The amount of time, in seconds, that an entry remains in the arp cache.

Example:

To set the arp timeout to one hour:

```
C460-1(configure)# arp timeout 3600
```

To restore the default arp timeout:

```
C460-1(configure)# no arp timeout
```

banner login

Use the `banner login` command to enter the login banner configuration mode.
Use the `no banner login` command to set the login banner to the default value.

ⓘ Delete the current banner using the `no banner login` command before creating a new banner, .

The syntax for this command is:

[no] banner login

Example:

```
C460-1(super)# banner login
C460-1(super)#
```

banner login line

See "line"

banner post-login

Use the `banner post-login` command to enter the *post-login* configuration mode.
Use the `no banner post-login` command to set the post-login banner to the default value.

ⓘ Before creating a new banner, delete the current banner using the no banner post-login command.

The syntax for this command is:

[no] banner post-login

Example:

```
C460-1(super)# banner post-login
C460-1(super)#
```

banner post-login line

See "line"

clear arp-cache

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `clear arp-cache` command to delete dynamic entries from the ARP cache and the IP route cache.

The syntax for this command is:

clear arp cache[<vlan>|<ip addr>[<mask>]]

vlan	VLAN string (up to 16 characters
ip addr	IP address
mask	IP mask

Example:

```
C460-1(configure)# clear arp-cache
Flushing all arp entries
Flushed 100 ARP entries
Done!
```

clear cam

User level: read-write, admin.

Use the `clear cam` command to delete all entries from the CAM table.

The syntax for this command is:

`clear cam`

Example:

```
C460-1# clear cam

CAM table cleared.
```

clear dot1x config

User level: privileged, supervisor.

Use the `clear dot1x config` command to disable dot1x on all ports and return values to the default settings..

The syntax for this command is:

`clear dot1x config`

Example:

```
C460-1(super)# clear dot1x config

Original Configuration was Restored
```

clear dynamic vlans

User level: read-write, admin.

Use the `clear dynamic vlans` command to clear dynamically learned VLANs. Only the VLANs learned by the switch from incoming traffic are cleared using this command.

The syntax for this command is:

`clear dynamic vlans`

Example:

```
C460-1# clear dynamic vlans
This command will delete all the vlans that were
dynamically learned by the device - do you want to continue
(Y/N)? y

Dynamic vlans were deleted from device tables
```

clear event-log

User level: read-write, admin.

Use the `clear event-log` command to delete the log file of a Supervisor module.

The syntax for this command is:

clear event-log [<module_number>]

spv_num (Optional)	Number of Supervisor Module (1 to 2)

Example:

```
C460-1# clear event-log

*** Clearing the reset file ***
 - do you want to continue (Y/N)? y
C460-1#
```

clear fragment

User level: read-write, admin.

Use the `clear fragment command` to restore fragment action database defaults and free all waiting fragments.

The syntax for this command is:

`clear fragment`

Example:

```
Router-1# clear fragment

Done!
```

clear interface

User level: read-write, admin.

Use the `clear interface` command to clear the inband or outband interface from the NVRAM.

The syntax for this command is:

`clear interface` `[outband | inband]`

outband	Clears the outband interface
inband	Disables the inband interface

Example:

```
C460-1# clear interface outband
Interface outband Cleared.
You must reset the device in order for the change to take
effect.
```

clear ip route

User level: read-write, admin.

Use the `clear ip route` command to delete IP routing table entries.

The syntax for this command is:

`clear ip route` `<destination> <mask>`

destination	IP address of the network, or specific host to be added
mask	IP address of the router

Example:

```
C460-1# clear ip route 134.12.3.0 255.255.255.0
Route deleted.
```

clear ip route (Layer 3)

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **`configure`** at the command prompt to enter configure mode.

Use the clear ip route command to delete all the dynamic routing entries from the Routing Table.

The syntax for this command is:

clear ip route * | <ip-addr> [<ip-mask>]

ip-addr	IP address
ip-mask	IP mask address

Example:

```
C460-1(configure)# clear ip route 192.168.49.1
255.255.255.0
```

clear ip traffic

User level: read-write, admin.

Use the `clear ip traffic` command to clear the ip traffic statistics counters.

The syntax for this command is:

`clear ip traffic`

Example:

```
Router-1# clear ip traffic
```

clear log

User level: read-write, admin.

Use the clear log command to

clear port mirror

User level: read-write, admin.

Use the `clear port mirror` command to cancel port mirroring.

The syntax for this command is:

clear port mirror <source module>/<source port>/<dest module>/<dest port>

source module	Source module number

source port	Source port number
dest module	Destination module number
dest port	Destination port number

Example:

```
C460-1# clear port mirror 9/2/10/4
this command will delete the port mirror entry
 - do you want to continue (Y/N)?  y
Mirroring packets from port 9/2 to port 10/4 is cleared
```

clear port static-vlan

User level: read-write, admin.

Use the `clear port static-vlan` command to delete VLANs statically configured on a port.

The syntax for this command is:

clear port static-vlan [module/port range][vlan num]

module/port range	Port range
vlan num	The VLAN to unbind from the port

Example:

```
C460-1# clear port static-vlan 3/10 5
VLAN 5 is unbound from port 3/10
```

clear radius authentication server

User level: read-write, admin.

Removes a primary or secondary RADIUS authentication server.

The syntax for this command is:

clear radius authentication server[{primary|secondary}]

primary	Remove primary RADIUS server
secondary	Remove secondary RADIUS server

Example:

```
C460-1(super)# clear radius authentication server secondary
```

clear rmon2 statistics

User level: read-write, admin.

Use the clear rmon2 statistics command to delete rmon2 (AnyLayer SMON) statistics.

The syntax for this command is:

```
clear rmon2 statistics
```

Example:

```
Router-1# clear rmon2 statistics
Done!
```

clear screen

User level: read-only, read-write, admin.

Use the `clear screen` command to clear the screen.

The syntax for this command is:

```
clear screen
```

clear snmp trap

User level: read-write, admin.

Use the `clear snmp trap` command to clear an entry from the SNMP trap receiver table.

The syntax for this command is:

`clear snmp trap` `{<rcvr_addr>|all}`

rcvr_addr	IP address or IP alias of the trap receiver (the SNMP management station) to clear
all	Keyword that specifies every entry in the SNMP trap receiver table

Example:

```
C460-1# clear snmp trap 192.168.173.42
SNMP trap deleted.
```

clear system-log

User level: read-write, admin.

Use the `clear system-log` command to delete the log file of a Supervisor Module.

The syntax for this command is:

clear system-log [<module_number>]

spv_num (Optional)	Number of Supervisor Module (1 to 2)

Example:

```
C460-1# clear system-log

*** Clearing the reset file ***
 - do you want to continue (Y/N)? y
C460-1#
```

clear timezone

User level: read-write, admin.

Use the `clear timezone` command to reset the time zone to its default value UTC (Coordinated Universal Time)

The syntax for this command is:

clear timezone

Example:

```
C460-1# clear timezone
Timezone name and offset cleared.
```

clear vlan

User level: read-write, admin.

Use the `clear vlan` command to delete an existing VLAN and return ports from this VLAN to the default VLAN #1. When you clear a VLAN, all ports assigned to that VLAN are assigned to the default VLAN #1.

The syntax for this command is:

clear vlan <vlan-id>[**name** <vlan_name>]

vlan_id	VLAN number
vlan_name	VLAN name

If you wish to enter a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

Example:

```
C460-1#  clear vlan 100
This command will assign all ports on vlan 100 to their
default in the entire management domain - do you want to
continue (Y/N)?  y
VLAN 100 deletion successful
```

clear vlan (Layer 3)

User level: read-write, admin.

ⓘ If you are at the “read-write” user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `clear vlan` command to delete a Router layer 2 interface.

The syntax for this command is:

clear vlan [<ifIndex>] | [**name** <ifname>]

ifIndex	Interface Index
ifname	Interface name (used in layer 3 protocols)

Example:

```
C460-1(configure)# clear vlan 2 name vlan2
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

configure

User level: read-write, admin.

Use the `configure` command to enter configure mode.

The syntax for this command is:

`configure`

Example:

```
C460-1(super)# configure
C460-1(configure)#
```

copy l2-config tftp

User level: read-write, admin.

Use the `copy l2-config tftp` command to upload the Layer 2 parameters from the current NVRAM running configuration to a file via TFTP.

- To use this command, you need to have an active tftp server and to create a file into which to download the data.
- If Avaya MultiService Network Manager is running, you do not require an additional TFTP server.

The syntax for this command is:

`copy l2-config tftp` `<filename> <ip>`

filename	file name (including *full* path)
ip	IP address of the host

Example:

```
C460-1# copy l2-config tftp c:\C460\config 149.49.152.36
```

copy running-config startup-config

User level: privileged, supervisor.

Use the `copy running-config startup-config` command to copy the active policy configuration to the startup configuration file in the NVRAM.

The syntax for this command is:

```
copy running-config startup-config
```

Example:

```
C460-1# copy running-config startup-config
```

1 copy running-config tftp

User level: privileged, supervisor.

Use the `copy running-config tftp` command to upload the policy configuration to a TFTP server.

The syntax for this command is:

```
copy running-config tftp <filename> <ip>
```

filename	Destination file name in the tftp server (full path).
ip	The ip address of the tftp server.

Example (for Windows):

```
C460-1# copy running-config tftp c:\c460\startup.cfg
149.49.100.41
```

Example: (for Unix):

```
C460-1# copy running-config tftp /folder/c460/startup.cfg
149.49.100.41
```

copy startup-config tftp

User level: privileged, supervisor.

Use the `copy startup-config tftp` command to download a policy configuration from a TFTP server.

The syntax for this command is:

```
copy startup-config tftp <filename> <ip>
```

filename	Destination file name in the tftp server (full path).
ip	The ip address of the tftp server.

Example (for Windows):

```
Router-1# copy startup-config tftp c:\c460\startup.cfg
149.49.100.41
```

Example: (for Unix):

```
C460-1# copy startup-config tftp /folder/c460/startup.cfg
149.49.100.41
```

copy tftp EW_archive

User level: read-write, admin.

Use the `copy tftp EW-archive` command to download the C460 Manager application into the switch via TFTP.

- To use this command, you need to have an active TFTP server and to create a file into which to download the data.
- If Avaya MultiService Network Manager is running, you do not require an additional TFTP server..

The syntax for this command is:

copy tftp EW_archive <filename> <ip>

filename	C460 Manager image file name (full path)
ip	The IP address of the host

Example:

```
C460-1# copy tftp EW-archive c:\C460\switch1.cfg
192.168.49.10
```

copy tftp l2-config

User level: read-write, admin.

Use the `copy tftp l2-config` command to update the Layer 2 parameters in the current NVRAM running configuration from a file via TFTP.

- To use this command, you need to have an active tftp server and to create a file into which to download the data.
- If Avaya MultiService Network Manager is running, you do not require an additional TFTP server.

The syntax for this command is:

copy tftp l2-config <filename> <ip>

filename	file name (including *full* path)
ip	IP address of the host

Example:

```
C460-1# copy tftp l2-config c:\C460\backup 149.49.152.36
Beginning download operation ...
This operation may take a few minutes...
Please refrain from any other operation during this time.
*********************************************************************
* If you are currently running the C460 Device Manager application, *
* it is recommended to exit from it before performing configuration *
* download operations.                                              *
*********************************************************************
```

copy tftp startup-config

User level: read-write, admin.

Use the `copy tftp startup-config` command to copy the C460 configuration from the saved TFTP file to the Startup Configuration NVRAM.

The syntax for this command is:

copy tftp startup-config <filename> <ip>

filename	file name (full path)
ip	The ip address of the host

Example:

```
Router-1> copy tftp startup-config c:\C460\router1.cfg
192.168.49.10
```

copy tftp SW_imageA

User level: read-write, admin.

Use the `copy tftp SW_imageA` command to update the software image in Bank A of all the Supervisor Modules installed in the switch.

- To use this command, you need to have an active tftp server and to create a file into which to download the data.
- If Avaya MultiService Network Manager is running, you do not require an

additional TFTP server.

copy tftp SW_imageA <filename> <ip>

filename	file name (including *full* path)
ip	IP address of the host

Example:

```
C460-1# copy tftp SW_imageA c:\imgA.bin 149.49.36.200
Beginning download operation ...
This operation may take a few minutes...
Please refrain from any other operation during this time.
**********************************************************************
* If you are currently running the C460 Device Manager application, *
* it is recommended to exit from it before performing configuration *
* download operations.                                               *
**********************************************************************
```

copy tftp SW_imageB

User level: read-write, admin.

Use the `copy tftp SW_imageB` command to updates the software image in Bank B of all the Supervisor Modules installed in the switch. To use this command, you need to have an active TFTP server, and to create a file into which to download the data. If MSNM is running, an additional tftp server is not required.

copy tftp SW_imageB <filename> <ip>

filename	file name (including *full* path)
ip	IP address of the host

Example:

```
C460-1# copy tftp SW_imageB c:\imgB.bin 149.49.36.200
Beginning download operation ...
This operation may take a few minutes...
Please refrain from any other operation during this time.
**********************************************************************
* If you are currently running the C460 Device Manager application, *
* it is recommended to exit from it before performing configuration *
* download operations.                                               *
**********************************************************************
```

default-metric

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **`interface [name]`** at the command prompt to enter interface mode if necessary.

Use the `default metric` command to set the interface RIP route metric.

Use the `no default metric` command to restore the default value.

The default metric is **1**.

The syntax for this command is:

`[no] default-metric` `<rip interface metric>`

rip interface metric	The interface RIP route metric value. The range is 1 to 15.

Example:

```
Router-1(configure-if:marketing) # default metric 10
Done!
```

default-metric (OSPF)

User level: read-write, admin.

ⓘ You can only access this command in the OSPF context
Type **`router ospf`** at the command prompt to enter interface mode if necessary.

Use the `default metric` command to set the interface OSPF route metric.

Use the `no default metric` command to restore the default value.

The default metric is **1**.

The syntax for this command is:

`[no] default-metric` `<number>`

number	The interface RIP route metric value. The range is 1 to 15.

Example:

```
Router-1 (configure router:ospf) # default metric 10
Done!
```

default-metric (RIP)

User level: read-write, admin.

ⓘ You can only access this command in the RIP context
Type **`router rip`** at the command prompt to enter interface mode if necessary.

Use the `default metric` command to set the interface RIP route metric.

Use the `no default metric` command to restore the default value.

The default metric is **1**.

The syntax for this command is:

`[no] default-metric` <number>

number	The interface RIP route metric value. The range is 1 to 15.

Example:

```
Router-1 (configure router:rip) # default metric 10
Done!
```

disable interface

User level: read-write, admin.

Use the `disable interface` command to disables the inband or outband interface.

The syntax for this command is:

`disable interface` [outband | inband]

outband	Disables the outband interface
inband	Disables the inband interface

Example:

```
C460-1# disable interface outband
You must reset the device in order for the change to take
effect.
```

enable interface

User level: read-write, admin.

Use the `enable interface` command to enable the inband and outband interfaces.

The syntax for this command is:

en[able] interface {outband | inband}

outband	Enables the outband interface
inband	Enables the inband interface

Example:

```
C460-1# en interface inband
This command will RESET the device
*** Reset *** - do you want to continue (Y/N)? Y

Attaching network interface lo0... done.


                 Welcome to C460
                SW version 1.0.1


Login:
```

enable vlan commands

User level: read-write, admin.

- You can only access this command in interface mode. Type **interface [name]** at the command prompt to enter interface mode.
- Use the `enable vlans commands` command before configuring VLAN-oriented parameters, when there is more than one interface on the same VLAN.

The syntax for this command is:

enable vlan commands

Example:

```
Router-1(config-if:marketing)#enable vlan commands
```

erase startup-config

User level: read-write, admin.

Use the `erase startup-config` command to clear the startup configuration.

The syntax for this command is:

`erase startup-config`

Example:

```
C460-1# erase startup-config
```

fragment chain

Use the `fragment chain` command to set the maximum number of fragments that can comprise a single IP packet destined to the router.

Use the `no fragment chain` command to set the fragment chain to the default value (64).

ⓘ The router does not perform reassembly of packets in transit.

The syntax for this command is:

`[no] fragment chain <chain-limit>`

chain-limit	The maximum number of fragments that can comprise a single IP packet, from 2 to 2048. The default is 64.

Example:

```
C460-1# fragment chain 10
```

fragment size

Use the **`fragment size`** command to set the maximum number of fragmented IP packets, destined to the router, to reassemble at any given time. Use the **`no`** form of this command to set the fragment size to the default value (100).

ⓘ The router does not perform reassembly of packets in transit.

The syntax for this command is:

`[no] fragment size` `<database-limit>`

database-limit	The maximum number of packets undergoing re-assembly at any given time, from 0 to 200. The default is 100.

Example:

```
Router-1# fragment size 150
```

fragment timeout

Use the **`fragment timeout`** command to set the maximum number of seconds to reassemble a fragmented IP packet destined to the router. Use the **`no`** form of this command to set the fragment timeout to the default value (10).

ⓘ The router does not perform reassembly of packets in transit.

The syntax for this command is:

```
[no] fragment timeout <timeout>
```

timeout	The maximum number of seconds to re-assemble an IP packet, from 5 to 120. The default is 10.

Example:

```
Router-1# fragment timeout 30
```

get time

Use the `get time` command to retrieve the time from the network.

The syntax for this command is:

```
get time
```

Example:

```
C460-1> get time
Time is being acquired from server 0.0.0.0
Time has been acquired from the network.
```

hostname

User level: read-write, admin.

Use the `hostname` command to change the Command Line Interface (CLI) prompt. The current module number always appears at the end of the prompt.

Use the `no hostname` command to return the CLI prompt to its default.

The syntax for this command is:

[no] hostname [<hostname_string>]

hostname_string	• none – displays current hostname • string – the string to be used as the hostname (up to 20 characters).

Example:

```
C460-1# hostname
Session hostname is 'C460'
```

```
C460-1# hostname "gregory"
C460-1(super)#
```

If you wish to enter a name which includes spaces, you must enclose the entire name in quotation marks, for example "new york".

hostname (Layer 3)

User level: read-write, admin.

Changes the system prompt used for the router. This command does not change the system prompt of the switch.

To change the system prompt of the switch, use the `host name` command in the Layer 2 tree.

The syntax for this command is:

[no] hostname [<hostname_string>]

hostname_string	The string to be used as the hostname (up to 20 characters). If you do not enter a string, the current hostname is displayed.

Example:

```
Router-1> hostname Marketing
Marketing-1 #
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example "new york".

interface

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **`configure`** at the command prompt to enter configure mode.

Use the `interface` command to create and enter the Interface Configuration Mode.

Use the `no interface` command to delete a specific IP interface.

The syntax for this command is:

`[no] interface` `<interface name>`

interface name	String (up to 32 characters)

Example:

```
C460-1(configure)# interface marketing
Done!
Router-1(config-if:marketing)#
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example "new york".

ip access-default-action

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode if necessary.

Use the `ip access-default-action` command to set the default action for a specific policy list.

The syntax for this command is:

ip access-default-action <policy-list-number> <default-action>

<policy-list-number>	integer (100 to 149)
<default-action>	default-action-deny | default-action-permit

Example:

```
C460-1(configure)# access-default-action 101 default-
action-deny
```

ip access-group

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode if necessary.

Use the `ip access-group` command to activate a specific policy list.

Use the `no ip access-group command` to deactivate the policy list.

The syntax for this command is:

[no] ip access-group <policy-list-number>[<default-action>]

<priority-list-number>	integer (100 to 149) 0 is the default list
<default-action>	default-action-deny | default-action-permit

Example:

```
C460-1(configure)# ip access-group 101
```

ip access-list

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **`configure`** at the command prompt to enter configure mode if necessary.

Use the `ip access list` command to create a specific policy rule. The access list contains several of these rules: each rule pertains to the source IP address, the destination IP address, the protocol, the protocol ports (if relevant), and to the ACK bit (if relevant).

Use the `no ip access list` command to delete a specific rule.

The syntax for this command is:

```
[no] ip access-list <policy-list-number> <access-list-index>
<action> <protocol> {<source-ip> <source-wildcard> | any |
host <source-ip>}[<operator> <port> [<port]]
{<destination-ip> <destination-wildcard> | any |
host <destination-ip>}[<operator> <port> [<port>]]
[established] [precedence]
```

<access-list-number>	integer (100 to 149) 0 is the default list
<access-list-index>	integer (1 to 254)
<command>	permit | deny | deny-and-notify | fwd0-7 | composite op name
<protocol>	ip | tcp | udp | integer (1 to 255)
<source-ip>	ip network
<source-wildcard>	ip network wildcard
<operator>	eq | lt | gt | range
<port>	integer (1 to 65535)
<destination-ip>	ip network
<destination-wildcard>	ip network wildcard
<precedence>	mandatory | optional]

Example:

```
C460-1(configure)# ip access-list 101 23 deny ip any
1.2.0.0 0.0.255.255
```

ip access-list-cookie

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode if necessary.

Use the `ip access-list-cookie` command to set the list cookie for a specific policy list.

The syntax for this command is:

ip access-list-cookie <policy-list-number> <cookie>

<policy-list-number>	integer (100 to 149)
<cookie>	integer

Example:

```
C460-1(configure)# ip access-list-cookie 101 12345
```

ip access-list-copy

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode if necessary.

Use the `ip access-list-copy` command to copy a configured source policy list to a destination policy list.

The syntax for this command is:

ip access-list-copy <source-list> <destination-list>

<source-list>	integer (100 to 149) 0 is the default list
<destination-list>	integer (100 to 149)

Example:

```
C460-1(configure)# ip access-list-copy 100 101
```

ip access-list-dscp name

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode if necessary.

Use the `ip access-list-dscp name` command to set a name for a dscp entry.

The syntax for this command is:

ip access-list-dscp name `<policy-list-number> <dscp> <name>`

<policy-list-number>	integer (100 to 149)
dscp	DSCP entry (0 to 63)
<name>	entry name

Example:

```
C460-1(configure)# ip access-list-name 101 16 special
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example "new york".

ip access-list-dscp operation

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode if necessary.

Use the `ip access-list-dscp operation` command to set a DSCP to CoS mapping.

ⓘ The C460 performs the mapping for only those frames than match an ACL rule with a "permit" action.

The syntax for this command is:

`ip access-list-dscp operation <policy-list-number> <dscp>`

<action>

policy-list-number	A valid id number for a policy list currently defined for the module (100 - 149)
dscp	Range of dscp. For example: • 0 to 63 • <low-dscp>-<high-dscp> <low-dscp>-<low-dscp>: apply the map to all packets with DSCP from <low-dscp> to <high-dscp>.
action	• permit: do nothing, let the packet pass: • deny: drop the packet • deny-and-notify: drop the packet and send an SNMP trap • fwd0, fwd1fwd7: Set the frame COS field to 0,7

Example:

```
C460-1(configure)# ip access-list-dscp operation 101 0-63
permit
C460-1(configure)# ip access-list-dscp operation 101 62
fwd5
```

ip access-list-dscp precedence

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode if necessary.

Use the `ip access-list-dscp precedence` command to ?

The syntax for this command is:

ip access-list-dscp precedence <policy-list-number> <dscp> <precendence>

policy-list-number	A valid id number for a policy list currently defined for the module (100 to 149)
dscp	DSCP entry (0 to 63)
precedence	???? mandatory optional

Example:

```
C460-1(configure)# ip access-list-dscp precedence
C460-1(configure)#
```

ip access-list-dscp trust

User level: read-write, admin.

Use the `ip access-list-dscp trust` command to decide which original frame fields influence the selection of packet priority.

The syntax for this command is:

```
ip access-list-dscp trust <policy-list-number>
{untrusted|trust-cos |trust-dscp}
```

policy-list-number	A valid id number for a policy list currently defined for the module (100 to 149)
untrusted	Forward the packet with priority 0
trust-cos	Forward the packet with its original 802.1p priority (default)
trust-dscp	Forward the packet with the maximum priority between 802.1p and the priority obtained from the DSCP-CoS mapping table

Example:

```
C460-1(configure)# ip access-list-dscp trust 100 trust-dscp
Done!
```

ip access-list-name

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `ip access-list-name` command to set a name for a policy list.

The syntax for this command is:

ip access-list-name <policy-list-number> <name>

<policy-list-number>	integer (100 to 149)

<name>	list name

Example:

```
C460-1(configure)# ip access-list-name 101 morning
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

ip access-list-owner

User level: read-write, admin.

ⓘ If you are at the “read-write” user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `ip access-list-owner` command to set the owner for a specific policy list.

The syntax for this command is:

ip access-list-owner <policy-list-number> <owner>

<policy-list-number>	integer (100 to 149)
<owner>	list owner

Example:

```
Router-1> ip access-list-owner 101 admin
Done!
```

ip address

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **interface [name]** at the command prompt to enter interface mode.

Use the `ip address` command to assign an IP address and mask to an interface.

The syntax for this command is:

ip address <ip-address> <mask> [<admin-state>]

ip address	The IP address assigned to the interface.

mask	Mask for the associated IP subnet
admin-state	The administration status – either Up or Down

Example:

To assign the IP address 192.168.22.33 with mask 255.255.255.0 to the interface "marketing":

```
Router-1(config-if:marketing)# ip address 192.168.22.33
255.255.255.0
Done!
```

ip admin-state

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **interface [name]** at the command prompt to enter interface mode.

Use the `admin-state` command to set the administrative state of an IP interface. The default state is **up**.

The syntax for this command is:

ip admin-state <up/down>

up/down	Administrative state of the interface: • up (active) • down (inactive).

Example:

```
Router-1(config-if:marketing)# ip admin-state up
```

ip bootp-dhcp network

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **interface [name]** at the command prompt to enter Interface mode if necessary.

Use the `ip bootp-dhcp network` command to select the network from which the bootp/dhcp server shall allocate an address. You only need to run this command is required only when there are multiple interfaces over the VLAN.

Use the `no ip bootp-dhcp network` command to restore the default value.

The syntax for this command is:

[no] ip bootp-dhcp network <ip-address>

ip-address	The IP address of the network.

Example:

To select the network 192.168.169.0 as the network from which an address shall be allocated for bootp/dhcp requests:

```
Router-1(configure-if:marketing) # ip bootp-dhcp network
192.168.169.0
Done!
```

ip bootp-dhcp relay

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `ip bootp-dhcp` command to enable relaying of bootp and dhcp requests to the bootp/dhcp server.

Use the `no ip bootp-dhcp` command to disable bootp/dhcp relay.

The default state is disabled.

The syntax for this command is:

`[no] ip bootp-dhcp relay`

Example:

To enable relaying of BOOTP and DHCP requests:

```
C460-1(configure)# ip bootp-dhcp relay
Done!
```

To disable relaying of bootp and dhcp requests:

```
C460-1(configure)# no ip bootp-dhcp relay
Done!
```

ip bootp-dhcp server

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **`interface [name]`** at the command prompt to enter Interface mode if necessary.

Use the `ip bootp-dhcp server` command to add a bootp/dhcp server to handle bootp/dhcp requests received by this interface.

Use the `no ip bootp-dhcp server` command to remove the server. A maximum of two servers can be added to a single interface.

The syntax for this command is:

`ip bootp-dhcp server` `<ip-address>`

ip-address	The IP address of the server.

Example:

To add station 192.168.37.46 as a bootp/dhcp server to handle bootp/dhcp requests arriving at the interface “marketing”:

```
Router-1(configure-if:marketing) # ip bootp-dhcp server
192.168.37.46
Done!
```

ip broadcast-address

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **`interface [name]`** at the command prompt to enter interface mode.

Use the `ip broadcast` command to update the interface broadcast address. The Broadcast address must be filled in with 0s or 1s.

The syntax for this command is:

`ip broadcast-address` `<bc addr>`

bc addr	The broadcast IP address

Example:

```
Router-1(config-if:marketing)#ip broadcast address
192.168.255.255
```

ip default-gateway

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **`configure`** at the command prompt to enter configure mode.

Use the `ip default-gateway` command to define a default gateway (router).

Use the `no ip default gateway` command to remove the default gateway.

The syntax for this command is:

`[no] ip default-gateway` `<ip-address>[<cost>][<preference>]`

ip-address	The IP address of the router.
cost	The path cost. The default is 1
preference	Preference, either High or Low. Default is Low.

Example:

To define the router at address 192.168.37.1 as the default gateway:

```
C460-1(configure)# ip default-gateway 192.168.37.1
```

ip directed-broadcast

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **`interface [name]`** at the command prompt to enter interface mode.

Use the `ip directed-broadcast` command to enable net-directed broadcast forwarding.

Use the `no ip directed-broadcast` command to disables net-directed broadcasts on an interface.

The syntax for this command is:

`[no] ip directed-broadcast`

Example:

```
Router-1(config-if:marketing)# ip directed broadcast
```

ip icmp-errors

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `icmp-error` command to turn ICMP error messages on.

Use the `no icmp-error` command to turn ICMP error messages off.

The syntax for this command is:

[no] ip icmp-errors

Example:

To turn the ICMP error messages on:

```
C460-1(configure)# ip icmp-errors
Done!
```

ip max-arp-entries

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `ip max-arp-entries` command to set the maximum number of ARP cache entries allowed in the ARP cache.

Use the `no ip max-arp-entries` command to restore the default value of 4096. This command takes effect only after start-up.

The syntax for this command is:

[no] ip max-arp-entries <value>

value	The space available for the IP address table. When you decrease the number of entries, it may cause the table to be relearned more frequently. If you do not enter a value, then the current ARP Cache size is shown.

Example:

To set the maximum number of ARP cache entries to 8000:

```
C460-1(configure)# ip max-arp-entries 8000
```

To restore the maximum number of ARP cache entries to its default:

```
C460-1(configure)# no ip max-arp-entries
```

ip max-route-entries

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

The `ip max-route-entries` command exists for compatibility with Avaya™ P580. There is no limitation on the size of the routing table, except for the amount of available memory.

Use the `no ip max-route-entries` command to remove the limitation.

The syntax for this command is:

[no] ip max-route-entries <value>

value	number of entries

Example:

```
C460-1(configure)# ip max-route-entries 4000
```

ip netbios-rebroadcast

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **interface [name]** at the command prompt to enter interface mode.

Use the `ip netbios-rebroadcast` command to set the NETBIOS rebroadcasts mode on an interface.

Use the `no ip netbios-rebroadcast` command to disable NETBIOS rebroadcasts on an interface.

The syntax for this command is:

[no] ip netbios-rebroadcast <mode>

The possible values of `mode` are:

both	Netbios packets received on the interface rebroadcasted to other interfaces and netbios packets received on other interfaces are rebroadcasted into this interface.
disable	Netbios packets are not rebroadcasted into or out of this interface.

Example:

To enable rebroadcasting of netbios packets received by and sent from the interface "marketing":

```
Router-1(config-if:marketing)# ip netbios-rebroadcast both
```

ip netmask-format

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **`configure`** at the command prompt to enter configure mode.

Use the `ip netmask-format` command to specify the format of netmasks in the `show` command output.

Use the `no ip netmask-format` command to restores the default format which is a dotted decimal.

The syntax for this command is:

`[no] ip netmask-format` `<mask-format>`

The possible mask formats are:

bitcount	Addresses are followed by a slash and the total number of bits in the netmask. For example 17
decimal	The network masks are in dotted decimal notation. For example, 255.255.255.0.
hexadecimal	The network masks are in hexadecimal format as indicated by the leading 0X. For example, 0XFFFFFF00.

Example:

To display netmasks in decimal format:

```
C460-1(configure)# ip netmask-format bitcount decimal
Done!
```

ip ospf authentication-key

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **interface [name]** at the command prompt to enter Interface mode if necessary.

Use the `ip ospf authentication-key` command to configure the interface authentication password.

Use the `no ip ospf authentication-key` command to remove the OSPF password.

The syntax for this command is:

[no] ip ospf authentication-key <key>

key	string (up to 8 characters)

Example:

```
Router-1(configure-if:marketing) # ip ospf authentication-
key my_pass
```

ip ospf cost

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **interface [name]** at the command prompt to enter Interface mode if necessary.

Use the `ip ospf` command to configure interface metric.

Use the `no ip ospf cost` command to set the cost to its default. The default is 1.

The syntax for this command is:

[no] ip ospf cost <cost>

cost	integer

Example:

```
Router-1(configure-if:marketing) # ip ospf cost 10
Done!
```

ip ospf dead-interval

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **`interface [name]`** at the command prompt to enter Interface mode if necessary.

Use the `ip ospf dead-interval` command to configure the interval before declaring the neighbor as dead.

Use `no ospf dead-interval` to set the dead-interval to its default value of **40**.

The syntax for this command is:

`[no] ip ospf dead-interval` `<seconds>`

seconds	Time in seconds (integer value)

Example:

```
Router-1(configure-if:marketing) # ip ospf dead-interval 15
```

ip ospf hello-interval

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **`interface [name]`** at the command prompt to enter Interface mode if necessary.

Use this command to specify the time interval between hello's the router sends.

Use `no ip ospf hello-interval` to set the hello-interval to its default.

The default is **10**.

The syntax for this command is:

`[no] ip ospf hello-interval` `<seconds>`

seconds	integer

Example:

```
Router-1(configure-if:marketing) # ip ospf hello-interval 5
Done!
```

ip ospf priority

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **`interface [name]`** at the command prompt to enter Interface mode if necessary.

Use the `ip ospf priority` command to configure interface priority used in DR election.

Use the `no ip ospf priority` to set the OSPF priority to its default value.

The default is 1.

The syntax for this command is:

`[no] ip ospf priority` `<priority>`

priority	integer

Example:

```
Router-1(configure-if:marketing) # ip ospf priority 17
Done!
```

ip ospf router-id

User level: read-write, admin.

ⓘ You can only access this command in Router-OSPF mode.
Type **`router ospf`** at the command prompt to enter Router -OSPF mode if necessary.

Use the `ip ospf router-id` command to configure the router identity.

Use the `no ip ospf router-id` command to return the router identity to its default (lowest IP interface that exists).

The syntax for this command is:

`[no] ip ospf router-id` `<router id>`

router id	IP address

Example:

```
Router-1> ip ospf router-id 192.168.49.1
```

ip proxy-arp

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **interface [name]** at the command prompt to enter interface mode.

Use the `ip proxy-arp` command to enables proxy ARP on an interface.

Use the `no ip proxy-arp` command to disable proxy ARP on an interface.

The syntax for this command is:

```
[no] ip proxy-arp
```

Example:

To disable proxy ARP on interface marketing:

```
Router-1(config-if:marketing)#no ip proxy arp
```

ip redirects

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **interface [name]** at the command prompt to enter interface mode if necessary.

Use the `ip redirects` command to enables the sending of redirect messages on the interface.

Use the `no ip redirects` command to disable the redirect messages. By default, sending of redirect messages on the interface is enabled.

The syntax for this command is:

```
[no] ip redirects
```

Example:

```
Router-1(config-if:marketing)#ip redirects
```

ip rip authentication key

User level: read-write, admin.

ⓘ You can only access this command in interface mode.

Type **interface [name]** at the command prompt to enter interface mode if necessary.

Use the `ip rip authentication key` command to set the authentication string used on the interface.

Use the `no ip rip authentication key` command to clear the password.

The syntax for this command is:

[no] ip rip authentication key `<password>`

`password`	The authentication string for the interface. Up to 16 characters are allowed.

Example:

To set the authentication string used on the interface "marketing" to be "hush-hush".

```
Router-1(configure-if:marketing) # ip rip authentication
key hush-hush
```

ip rip authentication mode

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **interface [name]** at the command prompt to enter interface mode if necessary.

Use the `ip rip authentication` command to specify the type of authentication used in RIP Version 2 packets.

Use the `no ip rip authentication` command to restore the default value of none.

The syntax for this command is: **[no] ip rip authentication mode** `[simple|none]`

simple|none	The authentication type used in RIP Version 2 packets: • simple - clear text authentication. • none - no authentication.

Example:

To specify simple authentication to be used in RIP Version 2 packets on the interface

"marketing".

```
Router-1(configure-if:marketing) # ip rip authentication
mode simple
```

ip rip default-route-mode

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **interface [name]** at the command prompt to enter interface mode if necessary.

Use the `ip rip default-route-mode` command to enable learning of the default route received by the RIP protocol. The default state is talk-listen.

The syntax for this command is:

ip rip default-route-mode <mode>

The possible default route modes on an interface are:

talk-listen	Set RIP to send and receive default route updates on the interface.
talk-only	Set RIP to send but not receive default route updates on the interface.

Example:

```
Router-1(configure-if:marketing) # ip rip default-route-
mode talk listen
Done!
```

ip rip poison-reverse

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **interface [name]** at the command prompt to enter interface mode if necessary.

Use the `ip rip poison-reverse` command to enable split-horizon with poison-reverse on an interface.

Use the `no ip poison-reverse` command to disable the poison-reverse mechanism.

The split-horizon technique prevents information about routes from exiting the router interface through which the information was received. This prevents routing

loops.

Poison reverse updates explicitly indicate that a network or subnet is unreachable rather than implying they are not reachable. Poison reverse updates are sent to defeat large routing loops.

The syntax for this command is:

`[no] ip rip poison-reverse`

Example:

```
Router-1(configure-if:marketing) # ip rip poison-reverse
Done!
```

ip rip rip-version

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **`interface [name]`** at the command prompt to enter interface mode if necessary.

Use the `ip rip rip-version` command to specify the RIP version running on the interface basis.

The syntax for this command is:

`ip rip rip-version` `[1][2]`

The possible versions of the RIP packets received and sent on an interface are:

[1]	RIP Version 1 packets
[2]	RIP Version 2 packets.

Example:

To specify that RIP version 2 should be running on the basis of the interface "marketing":

```
Router-1(configure-if:marketing) # ip rip rip-version 2
Done!
```

ip rip send-receive-mode

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **`interface [name]`** at the command prompt to enter interface mode if

necessary.

Use the `ip rip send-receive` command to set the RIP Send and Receive mode on an interface. The default state is **talk-listen**.

The syntax for this command is:

`ip rip send-receive-mode` `<mode>[<default route metric>]`

mode	`talk-listen` - Set RIP to receive and transmit updates on the interface. `talkdefault-listen` - Set RIP to receive updates on the interface and send only a default route.
default route metric	Integer value

Example:

To set the RIP Send and Receive mode on the interface "marketing" to be listen-only:

```
Router-1(configure-if:marketing) # ip rip send-receive-mode
talk listen
Done!
```

ip rip split-horizon

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **`interface [name]`** at the command prompt to enter interface mode if necessary.

Use the `ip rip split-horizon` command to enable split-horizon mechanism. Use the `no ip rip split-horizon` command to disable the split-horizon.

By default split-horizon is enabled.

The split-horizon technique prevents information about routes from exiting the router interface through which the information was received. This prevents routing loops.

The syntax for this command is:

`[no] ip rip split-horizon`

Example:

```
Router-1(configure-if:marketing) # no ip rip split-horizon
Done!
```

ip route

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `ip route` command to establish a static route.

Use the `no ip route` command to remove a static route.

The syntax for this command is:

[no] ip route <ip-address> <mask> <next-hop> [<next-hop>] [<next-hop>] [<cost>] [<preference>]

ip-address	The IP address of the network
mask	Mask of the static route
next-hop	The next hop address in the network
cost	The path cost. The default is 1
preference	Preference, either High or Low. Default is Low.

Example:

To define the router 192.168.33.38 as the next hop for the network 192.168.33.0 with mask 255.255.255.0:

```
C460-1(configure)# ip route 192.168.33.0 255.255.255.0
10.10.10.10
```

ip routing

User level: read-write, admin.

ⓘ You can only access this command in configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `ip routing` command to enable IP routing.

Use the `no ip routing` command to disable the IP routing process in the device. By default, IP routing is enabled.

The syntax for this command is:

`[no] ip routing`

Example:

```
C460-1(configure)# ip routing
Done!
```

ip routing-mode

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **`interface [name]`** at the command prompt to enter interface mode if necessary.

Use the `ip routing-mode` command to set the IP routing mode of the interface. In RT-MGMT mode, the interface functions as a routing interface. In RT_PRIMARY_MGMT mode, the interface function as both a routing interface and the primary management interface.

The IP address used in MSNM is the primary management interface IP address. Only one interface can be in RT_PRIMARY_MGMT mode. If no interface is configured to RT_PRIMARY_MGMT, the IP address used in MSNM is selected randomly.

The syntax for this command is:

`ip routing-mode` `<mode>`

mode	RT_MGMT or RT_PRIMARY_MGMT mode

Example:

```
Router-1(config-if:marketing)#ip routing-mode
RT_PRIMARY_MGMT
```

ip simulate

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **`configure`** at the command prompt to enter configure mode.

Use the `ip simulate` command to check the policy for a simulated packet. The command contains the addressed list number, and the packet parameters.

The syntax for this command is:

`ip simulate` `<access-list-number> [<priority>] [<dscp-value>]<source> <destination> [<protocol> [<source port> <destination port> [<established>]]]`

access-list-number	integer (100 to 149)
priority	fwd0 | fwd1 | ... | fwd7
dspc value	dscp0 | dscp1 | ... | dscp63
source	source ip address
destination	destination ip address
protocol	ip | tcp | udp | integer (1 to 255)
source port	integer (1 to 65535)
destination port	integer (1 to 65535)
established	value of TCP established bit

Example:

```
C460-1(configure)# ip simulate 100 192.67.85.12
193.76.54.25
```

ip vlan/ip vlan name

User level: read-write, admin.

ⓘ You can only access this command in interface mode.
Type **`interface [name]`** at the command prompt to enter interface mode.

Use the `ip vlan` and `ip vlan name` commands to specify the VLAN on which an IP interface resides. You can specify either the VLAN ID using the `ip vlan` command or the VLAN name using the `ip vlan name` command.

The `no ip vlan` or `no ip vlan name` command to reset the IP interface to the

default VLAN.

The syntax for this command is:

[no] ip vlan <vlan-id>

Example:

To specify VLAN developmental as the VLAN used by interface “products”:

```
Router-1(config-if:marketing)# ip vlan name development
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

ip vrrp

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **interface [name]** at the command prompt to enter Interface mode if necessary.

Use the `ip vrrp` command to create a virtual router on the interface.

Use the `no ip vrrp` command to delete a virtual router.

The syntax for this command is:

[no] ip vrrp <vr-id>

vr-id	Virtual Router ID (1-255)

Example:

```
Router-1(configure-if:marketing) # ip vrrp 1
Done!
```

ip vrrp address

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **interface [name]** at the command prompt to enter Interface mode if necessary.

Use the `ip vrrp address` command to assign an IP address to the virtual router.

Use the `no ip vrrp address` command to remove an IP address from a virtual router.

The syntax for this command is:

[no] ip vrrp <vr-id> **address** <ip-address>

vr-id	Virtual Router ID (1-255)
ip-address	The IP address to be assigned to the virtual router.

Example:

To assign address 10.0.1.2 to virtual router 1:

```
Router-1(configure-if:marketing) # ip vrrp 1 address
10.0.1.2
Done!
```

ip vrrp auth-key

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **interface [name]** at the command prompt to enter Interface mode if necessary.

Use the `ip vrrp auth-key` command to set the virtual router simple password authentication for the virtual router ID.

Use the `no ip vrrp auth-key` command to disable simple password authentication for the virtual router instance.

The syntax for this command is:

[no] ip vrrp <vr-id> **auth-key** <key-string>

vr-id	Virtual Router ID (1-255)
key-string	Simple password string.

ip vrrp override addr owner

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **interface [name]** at the command prompt to enter Interface mode if necessary.

Use the `ip vrrp override addr owner` command to accept packets addressed to the IP address(es) associated with the virtual router, such as ICMP, SNMP, and TELNET (if it is not the IP address owner).

Use the `no ip vrrp override addr owner` command to discard these packets.

The syntax for this command is:

[no] ip vrrp <vr-id> **override addr owner**

vr-id	Virtual Router ID (1-255)

Example:

```
Router-1(configure-if:marketing) # ip vrrp 1 override addr
owner
Done!
```

ip vrrp preempt

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **interface [name]** at the command prompt to enter Interface mode if necessary.

Use the `ip vrrp preempt` command to configure the router to preempt a lower priority master for the virtual router ID.

Use the `no ip vrrp preempt` command to disable preemption for the virtual router instance.

By default, preemption is enabled.

The syntax for this command is:

[no] ip vrrp <vr-id> **preempt**

vr-id	Virtual Router ID (1-255)

Example:

```
Router-1(configure-if:marketing) # ip vrrp 1 preempt
Done!
```

ip vrrp primary

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **interface [name]** at the command prompt to enter Interface mode if necessary.

Use the `ip vrrp primary` command to set the primary address that shall be used as the source address of VRRP packets for the virtual router ID.

Use the `no ip vrrp primary` command to return to the default primary address

for the virtual router instance.

By default, the primary address is selected automatically by the device.

The syntax for this command is:

[no] ip vrrp <vr-id> **primary** <ip-address>

vr-id	Virtual Router ID (1-255)
ip-address	Primary IP address of the virtual router. This address should be one of the router addresses on the VLAN.

Example:

```
Router-1(configure-if:marketing) # ip vrrp 1 primary
192.168.66.23
Done!
```

ip vrrp priority

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **interface [name]** at the command prompt to enter Interface mode if necessary.

Use the `ip vrrp priority` command to set the virtual router priority value used when selecting a master router.

Use the `no ip vrrp priority` command to restore the default value.

The syntax for this command is:

[no] ip vrrp <vr-id> **priority** <pri-value>

vr-id	Virtual Router ID (1-255)
pri-value	The priority value. The range is 1-254.

Example:

To set the priority value for virtual router 1 to 10:

```
Router-1(configure-if:marketing) # ip vrrp 1 priority 10
Done!
```

Example:

To set the virtual router simple password for virtual router 1 to abcd:

```
Router-1(configure-if:marketing) # ip vrrp 1 auth-key abcd
Done!
```

ip vrrp timer

User level: read-write, admin.

ⓘ You can only access this command in Interface mode.
Type **`interface [name]`** at the command prompt to enter Interface mode if necessary.

Use the `ip vrrp timer` command to set the virtual router advertisement timer value (in seconds) for the virtual router ID.

Use `no ip vrrp timer` command to restore the default value.

The syntax for this command is: **`[no] ip vrrp`** `<vr-id>` **`timer`** `<value>`

vr-id	Virtual Router ID (1-255)
value	The advertisement transmit time (seconds).

Example:

To set the virtual router advertisement timer value for virtual router 3 to 2:

```
Router-1(configure-if:marketing) # ip vrrp 3 timer 2
Done!
```

line

ⓘ You can only access this command from the banner or post-login banner context.

Use the `line` command to add a line to the banner or post-login banner message.

The syntax for this command is:

`line` `<number> [string]`

number	Line number in the banner (1 to 24)
string	String to be displayed at the given line number (up to 80 characters)

Example:

```
C460-1(super)# line 5 "C460 CLI"
Done!
```

network (RIP)

User level: read-write, admin.

ⓘ You can only access this command in router-RIP mode.
Type **router rip** at the command prompt to enter router-RIP mode if necessary.

Use the `network` command to specify a list of networks on which the RIP is running.

Use the `no network` command to remove an entry.

The syntax for this command is:

[no] network <ip-address> [<wildcard-mask>]

ip addr	The IP address of the network of directly connected networks
wildcard-mask	Wildcard mask address. Exists for compatibility with P550.

Example:

To specify that RIP will be used on all interfaces connected to the network 192.168.37.0:

```
Router-1 (configure router:rip) # network 192.168.37.0
Done!
```

network (OSPF)

User level: read-write, admin.

ⓘ You can only access this command in Router-OSPF mode.
Type **router ospf** at the command prompt to enter Router -OSPF mode if necessary.

Use the `network` command to enable OSPF in this network.

Use the `no network` command to disable OSPF in this network.

The default is **disabled**.

The syntax for this command is:

network <net addr> [<wildcard-mask> [area <area id>]]

net addr	IP address
wildcard-mask	Wildcard mask address
area id	Area ID. This parameter exists for compatibility with P550.

Example:

```
Router-1 (configure router:ospf) # network 192.168.0.0
Router-1 (configure router:ospf) # area 192.168.0.0
0.0.255.255 area 0.0.0.0
```

no rmon alarm

User level: read-write, admin.

Use the `no rmon history` command to delete an existing RMON alarm entry.

The syntax for this command is:

no rmon alarm <Alarm Index>

Alarm Index	History index defined using `rmon alarm` command or C460 Manager.

```
C460-1# no rmon alarm 1026
```

no rmon event

User level: read-write, admin.

Use the `no rmon event` command to delete an existing RMON event entry.

The syntax for this command is:

no rmon event <Event Index>

Event Index	History index defined using `rmon event` command or C460 Manager.

```
C460-1# no rmon event 1054
```

no rmon history

User level: read-write, admin.

Use the `no rmon history` command to delete an existing RMON history entry.

The syntax for this command is:

`no rmon history` `<History Index>`

History Index	*User level: read-only, read-write, admin.History index defined using* `rmon history` *command or RMON management tool*

Example:

```
C460-1# no rmon history 1026
```

no username

User level: admin.

Use the `no username` command to remove a local user account.

The syntax for this command is:

`no username` `<name>`

name	User name

Example:

```
C460-1(super)# no username john
User account removed.
```

If you wish to delete a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

ⓘ You cannot delete the default user account “root”.

nvram initialize

User level: read-write, admin.

Use the `nvram initialize` command to reset the configuration parameters to their factory defaults on the Active and Standby Supervisor modules.

The syntax for this command is:

nvram initialize {switch | all}

switch	Resets all the switch information (Layer 2 only).
all	Resets all parameters including routing parameters in the switch.

Example:

```
C460-1# nvram initialize
This command will restore factory defaults, and can
disconnect your telnet session
*** Reset *** - do you want to continue (Y/N)? y
Connection closed by foreign host
```

ⓘ The nvram initialize command does not alter the Active/Standby status of the Supervisor modules.

passive-interface

User level: read-write, admin.

ⓘ You can only access this command in Router-OSPF mode.
Type **router ospf** at the command prompt to enter Router -OSPF mode if necessary.

Use the `passive interface` command to allow interfaces to be flooded into the OSPF domain as OSPF routes and not external routes.

Use the `no passive interface` command to disble the flooding.

ⓘ An interface becomes passive only if you use the `network` command to enable OSPF to run on the interface.

The syntax for this command is:

`passive-interface <interface-name/net addr>`

interface-name / net addr	Name of interface or IP address.

Example:

```
Router-1# passive-interface FastEthernet 1.10
```

ping

User level: read-only, read-write, admin.

Use the `ping` command to send ICMP echo request packets to another node on the network.

The syntax for this command is:

`ping` `[host]`

host	Host IP address/Internet address of route destination. If you do not specify a host IP, then the last host IP is used.

Example: to ping the IP number 149.49.48.1:

```
C460-1> ping 149.49.48.1

149.49.48.1 is alive
```

ping (Layer 3)

User level: user, privileged, supervisor

Use the `ping` command to send ICMP echo request packets to another node on the network.

The syntax for this command is:

`ping <host> [<interval> [<size> [<timeout> [<source address>]]]]`

host	Host IP address/Internet address of route destination. If missing then the last host IP is used.
interval	Interval between ping commands in seconds (1 to 256)
size	Size of packet in bytes (22 to 66500)
timeout	Timeout in seconds (1 to 10)
source address	IP address of one of the router interfaces

Example: to ping the IP number 149.49.48.1 three times:

```
Router-1> ping 149.49.48.1 3

PING 149.49.48.1: 56 data bytes
64 bytes from 149.49.48.1: icmp_seq=0. time=0. ms
64 bytes from 149.49.48.1: icmp_seq=1. time=0. ms
64 bytes from 149.49.48.1: icmp_seq=2. time=0. ms

----149.49.48.1 PING Statistics----
3 packets transmitted, 3 packets received, 0% packet loss
round-trip (ms)  min/avg/max = 0/0/0
```

redistribute (OSPF)

User level: read-write, admin.

ⓘ You can only access this command in Router-OSPF mode.
Type **`router ospf`** at the command prompt to enter Router -OSPF mode if necessary.

Use the `redistribute` command to redistribute routing information from other protocols into OSPF.

Use the `no redistribute` command disables redistribution by OSPF.

The syntax for this command is:

`[no] redistribute` `<protocol>`

protocol	[static | ospf]

Example:

```
Router-1 (configure router:ospf) # redistribute static
```

redistribute (RIP)

User level: read-write, admin.

ⓘ You can only access this command in router-RIP mode.
Type **`router rip`** at the command prompt to enter router-RIP mode if necessary.

Use the `redistribute` command to redistribute routing information from other protocols into RIP.

Use the `no redistribute` command to disable redistribution by RIP.

The default is disabled.

The syntax for this command is:

[no] redistribute <protocol>

protocol	Either Static or OSPF

Example:

```
Router-1 (configure router:rip) # redistribute ospf
Done!
```

reset

User level: read-only, read-write, admin.

Use the `reset` command to restart the system or an individual Supervisor module.

The syntax for this command is:

reset [chassis | spvs | 1 | 2]

chassis	• Reset the entire chassis, including the Supervisor and I/O Modules • Reset the hardware • Causes disruption to traffic of 10 to 20 seconds
spvs	• Reset both the Supervisor modules • Minimal disruption to the traffic
1	Reset Supervisor module in slot 1
2	Reset Supervisor module in slot 2

ⓘ If the Supervisor modules are in Active/Standby configuration, resetting the active supervisor will cause the standby supervisor to take over and become active.

ⓘ The reset command does not work during configuration saving.

```
C460-1# reset 1
This command will reset the Active SPV
*** Reset *** - do you want to continue (Y/N)? y
Reseting Active SPV...
```

```
C460-1(super)# reset chassis
This command will reset the chassis
*** Reset *** - do you want to continue (Y/N)? y

Reseting chassis...
C460-1(super)#









Avaya C460 Boot
Creation date: Jan  6 2003, 18:29:57


Press any key to stop auto-boot...
 0
auto-booting...

Bank B is OK.
SW runs from bank B

.....
.....................................................
.....................
.................................................

                 Welcome to C460
                SW version 1.0.5


Login:
```

rmon alarm

User level: read-write, admin.

Use the `rmon alarm` command to create a new RMON alarm entry.

The syntax for this command is:

`rmon alarm` `<Alarm Number> <variable> <interval> <sampletype>` **`rising-threshold`** `<rising threshold> <rising event>` **`falling-threshold`** `<falling threshold> <falling event> <startup alarm> <owner>`

alarm number	This is the alarm index number of this entry (it is advisable to use the same interface number as your alarm index number.)
variable	This is the MIB variable which will be sampled by the alarm entry.
interval	The interval between 2 samples.
sample type	This can be set to either delta (the difference between 2 samples) or an absolute value.
rising threshold	This sets the upper threshold for the alarm entry.
rising event	The RMON event entry that will be notified if the upper threshold is passed.
falling threshold	This sets the lower threshold for the alarm entry.
falling event	The RMON event entry that will be notified if the lower threshold is passed.
startup alarm	The instances in which the alarm will be activated. The possible parameters are: Rising, Falling, risingOrfalling.
owner	Owner name string.

Example:

```
C460-1# rmon alarm 1026 1.3.6.1.2.1.16.1.1.1.5.1026 60
delta rising-threshold 10000 1054 falling-threshold 10 1054
risingOrFalling gregory
alarm 1026 was created successfully
```

rmon event

User level: read-write, admin.

Use the `rmon event` command to create an RMON event entry.

The syntax for this command is:

`rmon event` `<Event Number> <type>` **`description`** `<description>` **`owner`** `<owner>`

event number	This is the event index number of this entry.
type	The type of the event. The possible parameters are: • trap • log • logAndTrap • none
description	A user description of this event
owner	Owner name string

Example:

```
C460-1#  rmon event 1054 logAndTrap description "event for
monitoring gregory's computer" owner gregory
event 1054 was created successfully
```

rmon history

User level: read-write, admin.

Use the rmon history command to create an RMON history entry.

The syntax for this command is:

`rmon history` `<history index> [<module>[</port>]]` **`interval`** `<interval>` **`buckets`** `<number of buckets>` **`owner`** `<owner name>`

history_index	This is the history index number of this entry (it is advisable to use the same interface number as your history index number).
module/port	The switch number/the port number.
interval	The interval between two samples.
number of buckets	The number of buckets defined.

owner name The owner name string.

Example:

```
C460-1# rmon history 1026 1026 3/2 30 buckets 20 owner amir
history 1026 was created successfully
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

rmon2 protocol-dir

User level: privileged, supervisor.

ⓘ If you are at the ”privileged” level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode if necessary.

Use the `rmon2 protocol-dir` to add a protocol to the protocol directory.

Use the `no rmon protocol-dir` command to remove a protocol from the protocol directory.

The syntax for this command is:

```
rmon2 protocol-dir UDP|TCP <Port #> [<description> [<owner>]]
```

Example:

```
Router-1# rmon2 protocol-dir UDP 345
Router-1# rmon2 protocol-dir UDP 345 "my description"
Router-1# rmon2 protocol-dir UDP 345 "description" "I am
the owner"
Done!
```

If you wish to enter a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

rmon2 protocol-dist

User level: privileged, supervisor.

ⓘ If you are at the ”privileged” level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode if necessary.

Use the `rmon2 protocol-dist` to enable the RMON2 Protocol Distribution

application.
Use the `no rmon2 protocol-dist` command to disable the application.

The syntax for this command is:
`[no] rmon2 protocol-dist`

Example:

```
Router-1# rmon2 protocol-dist
Done!
```

router ospf

User level: read-write, admin.

Use the `router ospf` command to enable the OSPF protocol on the system.
Use the `no router ospf` command to disable the OSPF one the system.
The default is disabled.

The syntax for this command is:
[no] router ospf

Example:

```
Router-1 (super) # router ospf
Done!
```

router rip

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the `router rip` command to configure the Routing Information Protocol (RIP). Use the `no router rip` command to disable RIP.
The default state is disabled.

The syntax for this command is:
`[no] router rip`
Example:

To enable the RIP protocol:

```
C460-1(configure)# router rip
Done!
```

router vrrp

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **configure** at the command prompt to enter configure mode.

Use the command to enable VRRP routing globally.

Use the `no router vrrp` command to disable VRRP routing.

The syntax for this command is:

```
[no] router vrrp
```

Example:

```
C460-1(configure)# router vrrp
Done!
```

session

User level: read-only, read-write, admin.

Displays existing sessions or to opens a session with a specific Supervisor Module in the chassis.

The syntax for this command is:

session `[[module_number>] {switch | router}]`

module	The Supervisor module number (1 to 2).
switch|router (Optional)	• The entity to which you want to open a session. • If you do not specify this parameter, you will get the default entity of the specific module: • switch - Layer 2 entity of the module. • router - Routing entity

Example:

```
C460-1> session router
Router-1 (super) #
```

ⓘ The security level stays the same when you use the session command.

set allowed managers

User level: read-write, admin.

Use the `set allowed managers` command to enables or disable the Allowed Managers feature.

When this feature is enabled, only those stations whose IP addresses are listed in the Allowed Managers table can access the device over Telnet, SNMP, or HTTP.

The syntax for this command is:

`set allowed managers [enabled|disabled]`

Example:

```
C460-1(super)# set allowed managers enabled
Managers are enabled
```

set allowed managers ip

User level: read-write, admin.

Use the `set allowed manager ip` command to add or remove an IP address from the Allowed Managers table. The Allowed Managers table can contain up to twenty IP addresses.

The syntax for this command is:

`set allowed managers ip` `[add | delete][IP address]`

add	Add specified IP address to the Allowed Managers table
delete	Deletes specified IP address from the Allowed Managers table
IP address	IP address to be added or remove

Example:

```
C460-1(super)# set allowed managers ip add 149.49.32.134
Ip was added to the table
```

set arp-aging-interval

User level: read-write, admin.

Use the `set arp-aging interval` command to set the ARP table aging interval for gateways' entries in the agent ARP table.

The MAC value for the default gateway of the agent in the ARP table, is deleted at the end of every aging interval. The default value is 10 minutes.

The syntax for this command is:

`set arp-aging-interval` `<value>`

value	The number representing the interval, from 0-10 minutes.

Example:

```
C460-1# set arp-aging-interval 10
ARP table aging interval for gateways was set to 10
minutes.
```

set arp-tx-interval

User level: read-write, admin.

Sets the keep-alive frames sending interval. Setting the interval to 0 disables the transmission of the keep-alive frames.

The syntax for this command is:

`set arp-tx-interval` `<inband|outband> <value>`

inband|outband	• Inband – inband interface • Outband – outband interface
value	The interval in seconds. (0-3600)

Example:

```
C460-1# set arp-tx-interval 15
ARP tx interval was set to 15 seconds.
```

set boot bank

User level: read-write, admin.

Use the `set boot bank` command to set the system boot bank (for the active Supervisor Module).

`The syntax for this command is:`

`set boot bank` `<value>`

value	• bank-a – set the boot bank to A • bank-b – set the boot bank to B

Example:

```
C460-1# set boot bank A
boot bank is A
```

set broadcast storm control

User level: read-write, admin.

Use the `set broadcast storm control` command to enable or disable broadcast storm control.

The syntax for this command is:

`set broadcast storm control` `<enable|disable>`

enable	Enable broadcast storm control
disable	Disable broadcast storm control

Example:

```
C460-1# set broadcast storm enable

Done!
```

set broadcast storm control threshold

User level: read-write, admin.

Use the `set broadcast storm control threshold` command to set the broadcast storm control threshold.

The syntax for this command is:

`set broadcast storm control threshold` `<threshold>`

threshold	In pps (packets per second) from 10 to 144,000 pps The default value is 500

Example:

```
C460-1# set broadcast storm control threshold 1000

Done!
```

set device-mode

User level: read-write, admin.

Use the `set device-mode` command to set the switch mode – Layer 2 or Router (Layers 2 and 3).

The syntax for this command is:

`set device-mode` `<mode>`

mode	• Router – switch operates at Layers 2 and 3. • layer2 – switch operates at Layer 2.

Example:

```
C460-1(super)# set device-mode Router
This command will RESET the switch****
Reset **** do you want to continue (Y/N) ?

Done!
```

ⓘ You need to install the appropriate license before you can set the device mode to Router.

set device-mode (Layer 3)

User level: read-write, admin.

Use the `set device-mode` command to change the basic mode of operation of the C460 switch between Router and Layer 2 modes.

The syntax for this command is:

`set device-mode` `<mode>`

mode	Router | Layer2

Example:

```
Router-1> set device-mode Layer2
This command will RESET the device
*** Reset *** - do you want to continue (Y/N)? y
```

set dot1x max-req

User level: supervisor

Use the `set dot1x max-req` command to set maximum number of times the port tries to retransmit requests to the Authenticated Station before the session is terminated.

The syntax for this command is:

`set dot1x max-req` `<count>`

count	Number of attempts (1 to 10)

Example:

```
C460-1(super)# set dot1x max-req 3
```

set dot1x quiet-period

User level: supervisor

Use the `set dot1x quiet-period` command to set the minimal time between authentication attempts.

The syntax for this command is:

`set dot1x quiet-period` `<Seconds>`

Seconds	Number of seconds – 0 to 65535

Example:

```
C460-1(super)# set dot1x quiet-period 90
Done!
```

set dot1x re-authperiod

User level: supervisor

Use the `set dot1x re-authperiod` command to set the idle time between re-authentication attempts.

The syntax for this command is:

`set dot1x re-authperiod` `<Seconds>`

Seconds	Idle time in seconds (0 to 65535)

Example:

```
C460-1(super)# set dot1x re-authperiod 90
Done!
```

set dot1x server-timeout

User level: supervisor

Use the `set dot1x server-timeout` command to set the server retransmission timeout period for all ports. This is the maximum time that the port will wait for a reply from the Authentication Server.

The syntax for this command is:

`set dot1x server-timeout <Seconds>`

Seconds	Timeout in seconds (0 to 65535)

Example:

```
C460-1(super)# set dot1x server-timeout 90
```

set dot1x supp-timeout

User level: supervisor

Use the `set dot1x supp-timeout` command to set the maximum time that the switch will wait for a reply from the Authenticated Station before the session is terminated.

The syntax for this command is:

set dot1x supp-timeout <Seconds>

Seconds Timeout in seconds (0 to 65535)

Example:

```
C460-1(super)# set dot1x supp-timeout 90
```

set dot1x system-auth-control disable

User level: supervisor

Use the `set dot1x system-auth-control disable` command to globally disable the PBNAC (802.1x) feature.

The syntax for this command is:

`set dot1x system-auth-control disable`

Example:

```
C460-1(super)# set dot1x system-auth-control disable
dot1x system-auth-control disabled
```

set dot1x system-auth-control enable

User level: supervisor

Use the `set dot1x system-auth-control enable` command to globally enable the PBNAC (802.1x) feature.

The syntax for this command is:

`set dot1x system-auth-control enable`

Examples:

- When a RADIUS server is defined:

```
C460-1(super)# set dot1x system-auth-control enable
dot1x system-auth-control enabled
```

- When a RADIUS server is *not* defined:

```
C460-1(super)# set dot1x system-auth-control enable
*** Warning : Authentication server ( RADIUS ) is disabled/
not-exist and so,
*** no authentication can be made
dot1x system-auth-control enabled
```

set dot1x tx-period

User level: supervisor

Use the `set dot1x tx-period` command to set the time interval between attempts to access the Authenticated Station.

The syntax for this command is:

Example:`set dot1x tx-period <Seconds>`

Seconds	Interval in seconds

```
C460-1(super)# set dot1x tx-period 90
Done!
```

set icmp-redirect

User level: read-write, admin.

Use the set icmp-redirect CLI command to accept or reject incoming ICMP-redirect requests.

The syntax for this command is:

`set icmp-redirect {accept|reject}`

Accept	Accept inoming ICMP-redirect requests
Reject	Reject incoming ICMP-redirect requests

Example:

```
C460-1# set icmp-redirect accept
Done!
```

set inband vlan

User level: read-write, admin.

Use the `set inband vlan` command to set the inband management VLAN.

The syntax for this command is:

`set inband vlan` `<vlan_num>`

vlan_num	The number of the VLAN.

Example:

```
C460-1# set inband vlan 1

Management VLAN number set to 1
```

set intelligent-multicast

User level: read-write, admin.

Use the `set intelligent-multicast` command to enable or disable the IP-multicast filtering application.

The syntax for this command is:

`set intelligent-multicast` `{enable|disable}`

Example:

```
C460-1# set intelligent-multicast enable
Done!
```

set intelligent-multicast client port pruning time

User level: read-write, admin.

Use the `set intelligent-multicast client port pruning time` command to set the aging time for client ports.

The syntax for this command is:

`set intelligent-multicast client-port-pruning time` `<time>`

seconds	The time in seconds.

Example:

```
C460-1# set intelligent-multicast client-port-pruning-time
40
Done!
```

set intelligent-multicast group-filtering delay time

User level: read-write, admin.

Use the `set intelligent-multicast group-filtering delay time` command to set group filtering time delays.

The syntax for this command is:

set intelligent-multicast group-filtering-delay time <seconds>

seconds	The time in seconds.

Example:

```
C460-1# set intelligent-multicast group-filtering-delay
time 40
Done!
```

set intelligent-multicast router port pruning time

User level: read-write, admin.

Use the `set intelligent-multicast router port pruning time` command to set aging time for router ports.

The syntax for this command is:

set intelligent-multicast router-port-pruning time <seconds>

seconds	The time in seconds.

Example:

```
C460-1# set intelligent-multicast router-port-pruning-time
40
Done!
```

set interface inband

User level: read-write, admin.

Use the `set interface inband` command to configure the inband interface on the Supervisor Module.

The syntax for this command is:

`set interface inband` `<vlan> <ip_addr> <netmask>`

vlan	The number of the VLAN to be assigned to the interface
ip_addr	IP address
netmask	Subnet mask

Example:

To configure the inband interface on VLAN 1, IP address 1.1.1.1 and netmask 255.255.255.0:

```
C460-1# set interface inband 1 1.1.1.1 255.255.255.0
This command will RESET the device
*** Reset *** - do you want to continue (Y/N)? y
```

set interface outband

User level: read-write, admin.

Use the `set interface outband` command to configure the outband interface on the supervisor Module.

The syntax for this command is:

`set interface outband` `<ip_addr> <netmask>`

ip_addr	IP address
netmask	Subnet mask

Example:

To configure the outband interface on VLAN 1, IP address 149.49.75.174 and netmask 255.255.255.24

```
C460-1# set interface outband 149.49.75.174 24
Interface outband IP address set.
You must reset the device in order for the change to take
effect.
```

set interface ppp

User level: read-write, admin.

Use the `set interface ppp` command to configure the C460 Supervisor Module PPP interface IP parameters, exit modem mode, disconnect the PPP session, or reset the connected modem.

You must configure an IP address and net-mask for the C460 before you can establish a PPP connection. The IP address is a dummy address that is shared between two peers, and must be taken from a subnet that is different from the agent's IP sub-net.

The syntax for this command is:

set interface ppp <ip_addr> <net-mask>

ip_addr	IP address used by the C460 Supervisor Module to connect via its PPP interface
net-mask	Subnet mask used by the C460 Supervisor Module to connect via its PPP interface

Example:

```
C460-1# set interface ppp 149.49.34.125 24
Interface ppp ip address set
```

set interface ppp enable/disable/off/reset

User level: read-write, admin.

You can also use the `set interface ppp` command to enter modem mode, enter terminal mode, disconnect the PPP session or to reset the connected modem.

The syntax for this command is:

set interface ppp {enable|enable-always|disable|off|reset}

enable	Enable PPP and enter modem mode.
enable-always	Enter modem mode every time that the proprietary modem cable is plugged into the console port.
disable	Disable PPP and enter terminal mode
off	Disconnect the active PPP session.
reset	Reset the connected modem.

Example:

```
C460-1# set interface ppp reset
PPP has reset the connected modem.
```

Example:

```
C460-1# set interface ppp enable
Entering the Modem mode within 60 seconds...
Please check that the proprietary modem cable is plugged
into the console port
```

Example:

```
C460-1# set interface ppp disable
Entering the Terminal mode immediately
```

set ip route

User level: read-write, admin.

Use the `set ip route` command to adds a route to the IP routing table. You can configure from 1 to 10 default static gateways for a C460 switch.

The syntax for this command is:

set ip route <destination> <netmask> <gateway>

destination	IP address of the network, or specific host to be added
netmask	Subnet mask
gateway	IP address of the router

Example:

This example shows how to add a default route to the IP routing table:

```
C460-1# set ip route 0.0.0.0 24 192.168.1.1
destination = 0.0.0.0  mask = 255.255.255.0 gateway = 192.168.1.1
done!
```

set license

User level: read-write, admin.

Use the `set license` command to activate a licensed feature on a specific C460 chassis.

For a full description of the Feature License and the installation procedure please refer to the Installation Guide provided with the Feature License.

The syntax for this command is:

`set license` `[license] [featureName]`

license	The license number
featureName	The name of the feature, currently either `smon` or `routing`. The default feature is smon.

Example:

```
C460-1# set license 026  9b8  216  908  dea  f4d layer-3

Layer-3 Features had been enabled on this chassis.
```

set logout

User level: read-write, admin.

Use the `set logout` command to set the time in minutes until the system automatically disconnects an idle session.

The syntax for this command is:

`set logout` `[timeout in minutes]`

timeout in minutes	Time until the system automatically disconnects an idle session. • Setting the value to 0 disables the automatic disconnection of idle sessions • The default value is 15 minutes.

Example:

To set the time until the system disconnects an idle session automatically to 20 minutes:

```
C460-1# set logout 20
Sessions will be automatically logged out after 20 minutes
of idle time.
```

set mac-aging

User level: privileged, supervisor.

ⓘ This command is available on the P330-ML switches only.

Use the `set mac-aging` command to enable or disable the MAC aging function.

The syntax for this command is:

set mac-aging <status>

status	enable / disable

Examples:

```
C460-1# set mac-aging enable
mac aging is enabled.
```

```
C460-1# set mac-aging disable
mac aging is disabled.
```

set mac-aging-time

User level: privileged, supervisor.

ⓘ This command is available on the P330-ML switches only.

Use the `set mac-aging-time` command to set the MAC aging time in minutes. This is the time after which unused MAC addresses in the MAC table are erased.

The syntax for this command is:

Set mac-aging-time <aging-time>

aging-time	Aging time in minutes (1 to 3600; default =5).

Example:

```
C460-1# set mac-aging-time 5
mac aging time is set to 5 minutes.
```

ⓘ The entered value is the aging-time lower bound. The actual aging-time might be up to three minutes longer.

set outband duplex

User level: read-write, admin.

Use the `set outband duplex` command to configure the duplex type of the Ethernet Console port.

You can configure the Ethernet Console interface to either full duplex or half duplex.

The duplex status of a port in auto-negotiation mode is determined by auto-negotiation and an error message is generated if you attempt to set the transmission type of auto-negotiation Fast Ethernet ports to half- or full-duplex mode.

The syntax for this command is:

`set outband duplex` `{full | half}`

Full	Sets full-duplex transmission.
Half	Sets half-duplex transmission

Example:

```
C460-1# set outband duplex full
Ethernet Console interface set to full-duplex.
```

set outband negotiation

User level: read-write, admin.

Use the `set outbound negotiation` command to enable or disable the link negotiation protocol on the Ethernet console port.

This command applies to the specific supervisor module where you execute it.

- When negotiation is enabled, the speed and duplex of the outband Ethernet port is determined by auto-negotiation.
- If negotiation is disabled, you can set the speed and duplex of the outband Ethernet port.

The syntax for this command is:

set outband negotiation {enable | disable}

enable	Enable link negotiation protocol.
disable	Disable link negotiation protocol.

Example:

```
C460-1# set outband negotiation enable
Auto-negotiation for outband port set successfully
```

set outband speed

User level: read-write, admin.

Use the `set outband speed` command to configure the speed of Ethernet Console port.

In auto negotiation mode, the port's speed is determined by auto negotiation. If you attempt to set the speed when auto negotiation is enabled, the following message is displayed "`Auto negotiation is Enable, can not set the speed mode.`"

The syntax for this command is:

set outband speed <speed>

speed	• 10MB • 100MB

Example:

```
C460-1# set outband speed 100MB
Speed for outband port set successfully
```

set policy type

User level: read-write, admin.

Use the `set policy type` command to set whether the C460 switch enforces the active policy-list on all packets or only on routed packets (in "device-mode router").

The syntax for this command is:

```
set policy type  <value> all | router
```

value	all - apply policy to all packets entering the C460 through Fast Ethernet ports router - apply policy on routed packets only

Example:

```
Router-1# set policy type all
```

set port auto-negotiation-flowcontrol-advertisement

User level: read-write, admin.

Use the `set port auto-negotiation-flowcontrol-advertisement` command to set the flowcontrol advertisement for a Gigabit port when performing autonegotiation.

The syntax for this command is:

set port auto-negotiation-flowcontrol-advertisement `<module>/<port> [mode]`

module	Number of the module (3-6).
port	Number of the port on the module. If you do not specify a number, all the ports on the module are set. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
mode	• no-flowcontrol – the port will advertise no pause capabilities. • asym-tx-only – the port will advertise asymmetric Tx pause capabilities only. • sym-only – the port will advertise symmetric pause capabilities only. • sym-and-asym-rx – the port will advertise both symmetric and asymmetric Rx pause capabilities.

Example:

```
C460-1# set port auto-negotiation-flowcontrol-advertisement
2/5 asym-tx-only

Port 2/5 pause capabilities was set
```

set port channel

User level: read-write, admin.

Enables or disables a Link Aggregation Group (LAG) interface on the switch. LAG creation requires a LAG name to be specified. There is no default name.

You can also add or remove a port from an existing LAG. All ports in the LAG are configured with the parameters of the first port that is added to the LAG. These parameters include port administrative status, speed, duplex, autonegotiation mode, VLAN ID, tagging mode, binding mode, and priority level. When adding a port to an existing LAG, the user must type the same LAG-name (or no LAG-name),

otherwise you will get an error message.

ⓘ When adding a port to an existing LAG, type the same LAG name, otherwise you will create a new LAG.

The syntax for this command is:

set port channel <port_list> {value} [name]

port_list	A list of ports to be aggregated in the format module/port
value	• on – enable a channel for the specified module port • off – disable a channel for the specified module port
name (Optional)	channel name

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

Example:

```
C460-1#  set port channel 4/6,18 on server2
Port 4/6 channel mode set to on
Port 4/18 was added to channel
```

set port classification

User level: read-write, admin.

Use the `set port classification` command to set the port classification to either regular or valuable. Any change in the Spanning Tree state from Forwarding for a valuable port will erase all learnt MAC addresses in the switch.

The syntax for this command is:

set port classification [module/port] {regular | valuable}

module port	module/port range
regular | valuable	port classification

Example:

```
C460-1# set port classification 2/19 valuable
Port 2/19 classification has been changed.
```

set port disable

User level: read-write, admin.

Use the `set port disable` command to disable a port or range of ports.

The syntax for this command is:

`set port disable` `[module>/<port]`

module	Number of the module (3-6). If you do not specify a number, the ports on all the modules are shown.
port	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

```
C460-1# set port disable 4/1

Port 4/1 disabled.
```

set port dot1x initialize

User level: admin.

Use the `set port dot1x initialize` command to initialize port dot1x.

The syntax for this command is:

`set port dot1x initialize <module/port>`

module/ port	Module and port number. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

```
C460-1(super)# set port dot1x initialize 2/3

port 1/2 dot1x was initialized
```

set port dot1x max-req

User level: admin.

Use the `set port dot1x max-req` command to set the maximal number of times the port tries to retransmit requests to the Authenticated Station before the session is terminated.

The syntax for this command is:

`set port dot1x max-req <module/port> <count>`

module/ port	Module and port number. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
count	Number of attempts – 1 to 10

Example:

```
C460-1(super)# set port dot1x max-req 1/2 5
```

set port dot1x port-control

User level: admin.

Use the `set port dot1x port-control` command to set the dot1x parameter per port.

The syntax for this command is:

`set port dot1x port-control <module/port> <mode>`

module/ port	Module and port number. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
mode	• force-unauthorize - the port is always is blocking state • auto - forwarding/blocking depends on authorization outcome • force-authorize - the port is always in forwarding state

Example:

```
C460-1(super)# set port dot1x port-control 2/3 force-
authorize

port 1/2 control was set to force-authorize
```

set port dot1x quiet-period

User level: admin.

Use the `set port dot1x quiet-period` command to set the 802.1x quiet period per port.

The syntax for this command is:

`set port dot1x quiet-period <module/port> <seconds>`

module/ port	Module and port number. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
seconds	Quiet period in seconds – 0 to 65535

Example:

```
C460-1(super)# set port dot1x quiet-period 4/2 300
```

set port dot1x re-authenticate

User level: admin.

Use the `set port dot1x re-authenticate` command to set the port to re-authenticate.

The syntax for this command is:

`set port dot1x re-authenticate <module/port>`

module/ port	Module and port number. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

```
C460-1(super)# set port dot1x re-authenticate 1/2
port 1/2 is not in authenticating process
```

set port dot1x re-authentication

User level: admin.

Use the `set port dot1x re-authentication` command to set the re-authentication mode per port.

The syntax for this command is:

`set port dot1x re-authentication <module/port> <mode>`

module/ port	Module and port number You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
mode	• enable • disable

Example:

```
C460-1(super)# set port dot1x re-authentication 1/2 enable
port 1/2 re-authenticate was set to enable
```

set port dot1x re-authperiod

User level: admin.

Use the `set port dot1x re-authperiod` command to set the the idle time between re-authentication attempts before the session is terminated.

The syntax for this command is:

`set port dot1x re-authperiod <module/port> <seconds>`

module/ port	Module and port number You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
seconds	Idle time in seconds – 0 to 65535

Example:

```
C460-1(super)# set port dot1x re-authperiod 1/2 400
```

set port dot1x server-timeout

User level: admin.

Use the `set port dot1x server-timeout` command to set the time to wait for a reply from the Authentication Server before the session is terminated.

The syntax for this command is:

`set port dot1x server-timeout <module/port> <seconds>`

module/ port	Module and port number You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
seconds	Timeout in seconds – 0 to 65535

Example:

```
C460-1(super)# set port dot1x server timeout 1/2 400
```

set port dot1x supp-timeout

User level: admin.

Use the `set port dot1x supp-timeout` command to set the time for the port to wait for a reply from the Authentication Server before the session is terminated.

The syntax for this command is:

`set port dot1x supp-timeout <module/port> <seconds>`

module/ port	Module and port number. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
seconds	Timeout in seconds – 0 to 65535

Example:

```
C460-1(super)# set port dot1x supp-timeout 1/2 400
```

set port dot1x tx-period

User level: admin.

Use the `set port dot1x tx-period` command to set the time interval between attempts to access the Authenticated Station.

The syntax for this command is:

`set port dot1x tx-period <module/port> <seconds>`

module/ port	Module and port number You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

seconds Time interval in seconds — 0-65535

Example:

```
C460-1(super)# set port dot1x quiet-period 1/2 5000
```

set port duplex

User level: read-write, admin.

Use the `set port duplex` command to configure the duplex type of an Ethernet or Fast Ethernet port or range of ports.You can configure Ethernet and Fast Ethernet interfaces to either full duplex or half duplex.

The duplex status of a port in auto-negotiation mode is determined by auto-negotiation. An error message is generated if you attempt to set the transmission type of auto negotiation Fast Ethernet ports to half- or full-duplex mode.

The syntax for this command is:

set port duplex <module>/<port> [value]

module	Number of the module (3-6). If you do not specify a number, the ports on all the modules are shown.
port	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
value	• full – set full-duplex transmission • half – set half-duplex transmission

Example:

To set port 1 on module 4 to full duplex:

```
C460-1# set port duplex 4/1 full

Port 4/1 set to full-duplex.
```

set port edge admin state

User level: read-write, admin.

Use the `set port edge admin state` command to set the port as an RSTP edge-port or non-edge-port.

The syntax for this command is:

`set port edge admin state <module/port> <admin state>`

module	Number of the module (3-6).
port	Number of the port on the module. If you do not specify a number, all the the admin state for all ports on the module is set. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
admin state	You can set the port admin state to: • edge-port • non-edge-port.

Examples:

```
C460-1# set port edge admin state 3/1 edge-port

port 3/1 edge admin state is set to edge-port
```

```
C460-1# set port edge admin state 3/1 non-edge-port

port 3/1 edge admin state is set to non-edge-port
```

set port enable

User level: read-write, admin.

Use the `set port enable` command to enable a port or a range of ports.

The syntax for this command is:

`set port enable` [module/port]

module	Number of the module (3-6).
port	Number of the port on the module. If you do not specify a number, all the ports on the module are enabled. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

```
C460-1# set port enable 4/1

Port 4/1 enabled.
```

set port flowcontrol

User level: read-write, admin.

Use the `set port flowcontrol` command to set the send/receive mode for flow-control frames (IEEE 802.3x or proprietary) for a full duplex port. Each direction (send or receive) can be configured separately.

The syntax for this command is:

`set port flowcontrol` `[direction] <module/port> [value]`

direction	• receive – determines whether the port can receive administrative status from a remote device. *Available only for Gigabit Ethernet modules with negotiation set to off.* • send – determines whether the local port can send administrative status to a remote device. *Available only for Gigabit Ethernet modules with negotiation set to off.* • all – send and receive (symmetric flow control).
module	Number of the module.
port	Number of the port on the module.
value	• off – used with receive to turn off an attached device's ability to send flow-control packets to a local port. Used with send to turn off the local port's ability to send administrative status to a remote device. • on – used with receive to require that a local port receive administrative status from a remote device. Used with send, the local port sends administrative status to a remote device.

Example:

```
C460-1# set port flowcontrol receive 5/1 on

Port 5/1 flow control receive administration status set to on
(port will require far end to send flowcontrol)

C460-1# set port flowcontrol send 5/1 off

Port 5/1 flow control send administration status set to off
(port will send flowcontrol to far end)
```

set port level

User level: read-write, admin.

Use the `set port level` command to set the priority level of a port or range of ports on the switching bus. Packets traveling through a port set at normal priority should be served only after packets traveling through a port set at high priority are served.

The syntax for this command is:

`set port level` `<module>/<port> [value]`

module	Number of the module (3-6).
port	Number of the port on the module. If you do not specify a number, the level for all the ports on the module is set. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
value	Priority level (0-7)

Example:

```
C460-1# set port level 3/1 5
Port 3/1 level set to 5
```

set port mirror

User level: read-write, admin.

Use the `set port mirror` command to define a port mirroring pair in the switch.

The syntax for this command is:

`set port mirror source-port` `<module>/<port>` **`mirror-port`** `<module>/<port>` **`direction`** `{<direction>`

module	Number of the module (3-6).
port	Number of the port on the module.
always	Keyword to activate the port mirroring entry
disable	Keyword to change the status of the port mirroring entry to “not active”
direction	• rx – copy only incoming traffic • both– copy both incoming and outgoing traffic

Example:

```
C460-1# set port mirror source-port 3/9 mirror-port 4/10
direction both
Mirroring both Rx and Tx packets from port 3/9 to port 4/10
is enabled
```

set port name

User level: read-write, admin.

Use the `set port name` command to configure a name for a port. If you do not specify a name, the port name remains blank.

The syntax for this command is:

set port name <module>/<port> [value]

module	Number of the module (3-6).
port	Number of the port on the module. If you do not specify a number, the same name is set for all the ports on the module. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
value	Name (up to 16 characters)

Example:

```
C460-1# set port name 4/21 arthur

Port 4/21 name set.
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

set port negotiation

User level: read-write, admin.

Use the `set port negotiation` command to enable or disable the link negotiation protocol on the specified port. This command applies to Fast Ethernet or Gigabit Ethernet ports.

When negotiation is enabled, the speed and duplex of the Fast Ethernet ports are determined by auto-negotiation.

If negotiation is disabled, the user can set the speed and duplex of the Fast Ethernet

ports.

The syntax for this command is:

set port negotiation <module>/<port> {enable|disable}

module	Number of the module (3-6). If you do not specify a number, the ports on all the modules are configured.
port	Number of the port on the module. If you do not specify a number, the negotiation is set for all the ports on the module. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
enable	Enable port negotiation protocol
disable	Disable port negotiation protocol

Example:

To disable autonegotiation on port 1, module 4:

```
C460-1# set port negotiation 4/1 disable
Link negotiation protocol disabled on port 4/1.
```

set port point-to-point admin status

User level: read-write, admin.

Use the `set port point-to-point admin status` command to set the port RSTP point-to-point admin status.

The syntax for this command is:

`set port point-to-point admin status <module/port> <admin status>`

module	Number of the module (3-6). If you do not specify a number, the ports on all the modules are configured.
port	Number of the port on the module. If you do not specify a number, the negotiation is set for all the ports on the module. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
admin status	force-true - treat this port as if it is connected point-to-point force-false - treat this port as if it is connected to shared media auto - try to automaticaly detect the connection type of the port

Example:

```
C460-1# set port point-to-point admin status 1/1 force-true
port 1/1 point to point admin status is set to force-true
```

set port powerinline

User level: read-write, admin.

Use the `set port powerinline` command to enable or disable the load detection process on the port.

The syntax for this command is:

set port powerinline <module_number/port_number> {enable | disable}

module	Number of the module (3-6).
port	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
enable	Enable load detection on the port
disable	Disable load detection on the port

Example:

To enable PoE on ports 1 to 3 of module three:

```
C460-1# set port powerinline 3/1-3 enable
Load detection process on ports 3/1-3 is enabled
```

set port powerinline priority

User level: read-write, admin.

Use the `set port powerinline priority` command to set the priority level for powering the port.

The syntax for this command is:

set port powerinline <module_number/port_number> <priority>

module	Number of the module (3-6).

port	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
priority	The priority level for powering the port: • Critical • High • Low

Example:

To enable PoE on ports 1 to 3 of module three to High:

```
C460-1# set port powerinline 3/1-3 high
Load detection process on ports 3/1-3 was set to High
```

set port redundancy

User level: read-write, admin.

Use the `set port redundancy` command to globally enables or disable the redundancy pairs you have defined. Using this command will not delete existing redundancy entries.

ⓘ Disable Spanning Tree before you can enable redundancy.

The syntax for this command is:

`set port redundancy` `{enable|disable}`

Example:

```
C460-1# set port redundancy enable
All redundancy schemes are now enabled
```

set port redundancy on/off

User level: read-write, admin.

Use the set port redundancy command to defines or remove redundancy pairs. The link can be any port that does not belong to a LAG, or a LAG interface. Ensure that there is no redundancy scheme already defined on any of the links.

The syntax for this command is:

set port redundancy <module>/<prim_port> <module>/<second_port> {on/off} [<redundancy_name>]

prim_port	Primary port of the redundancy scheme
second_port	Secondary port of the redundancy scheme
redundancy_name (Optional)	Name for the redundancy scheme

Example:

```
C460-1# set port redundancy 3/7 4/12 on red1
red1: Port 2/12 is redundant to port 1/7.

Port redundancy is active - entry is effective immediately
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

set port redundancy-intervals

User level: read-write, admin.

Use the set port redundancy-intervals command to configures the two time constants that determine redundancy switchover parameters:

- “Min Time-between-switchovers” is the minimum interval between switchover of each pair.
- “Switchback-interval” is the period the primary port link has to be “up” before the system switches back.
  If the switchback interval is zero, the system never switches back. If it is one, switchback occurs immediately after the primary port link returns.

The syntax for this command is:

set port redundancy-intervals <min-time-between-switchovers> <switchback-interval> | none

min-time-between-switchovers	The minimum time between redundancy switchovers for each pair (in milliseconds).
switchback-interval	The period the primary port link has to be "up" before the system switches back (in milliseconds). • If switchback interval is zero, the system never switches back • If it is one, switchback occurs immediately after the primary port link returns
none	The system switches bank only if the secondary link fails.

Example:

```
C460-1# set port redundancy-intervals 100 20
Done!
```

set port spantree

User level: read-write, admin.

Use the `set port spantree` command to enable or disable the spanning tree mode for specific switch ports.

The syntax for this command is:

set port spantree {enable|disable} [module/port]

enable|disable	Enables or disables the spanning tree mode for the specified ports.
Module	Module number
Port	Port number

Example:

```
C460-1# set port spantree enable 3/1
port 3/1 was enabled on spantree
```

set port spantree cost

User level: read-write, admin.

Use the `set port spantree cost` command to set the cost of a port. This value defines which port will be allowed to forward traffic if two ports with different costs cause a loop.

The syntax for this command is:

`set port spantree cost` `[module/port] [value]`

module	Number of the module (3-6).
port	Number of the port on the module. If you do not specify a number, the port spantree cost is set for all the ports on the module. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
value	Number representing the cost. The cost level is set from 1 to 65535. A lower cost (lower value) specifies precedence of a port to forward traffic.

Example:

```
C460-1> set port spantree cost 4/2 4096
port 4/2 spantree cost is 4096
```

set port spantree force-protocol-migration

User level: read-write, admin.

Use the `set port spantree force-protocol-migration` command to set the port as an RSTP port (and not as common STA port). It forces the port to send a rapid spanning tree BPDU.

The syntax for this command is:

`set port spantree force-protocol-migration <module/port>`

module	Number of the module (3-6).
port	Number of the port on the module. If you do not specify a number, the port spantree force protocol migration is set for all the ports on the module. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

```
C460-1# set port spantree force-protocol-migration 1/1
port 1/1 is forced to send a Rapid spanning tree BPDU
```

set port spantree priority

User level: read-write, admin.

Use the `set port spantree` command to set the Spanning Tree priority level of a port. This value defines the priority of a port to be blocked in case two ports with the same costs cause a loop.

The syntax for this command is:

set port spantree priority [module/port] [value]

module/port	Module number/port number.
value	Number representing the priority of the port. The priority level is from 0 to 255, with 0 indicating high priority and 255 indicating low priority. A port with a lower priority will be blocked.

Example:

```
C460-1# set port spantree priority 3/4 128
port 3/4 spantree priority is 128
```

set port speed

User level: read-write, admin.

Use the `set port speed` command to configure the speed of a port or range of ports.

In auto-negotiation mode, the port's speed is determined by auto negotiation. An error message is generated if you attempt to set the speed when auto negotiation is enabled

The syntax for this command is:

set port speed <module>/<port> <10MB|100MB|1GB>

module	Number of the module (3-6).

port	Number of the port on the module. If you do not specify a number, the speed is set for all the ports on the module. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

To configure port 1 on module 4 to 100 Mbps

```
C460-1# set port speed 4/1 100MB

Port 4/1 speed set to 100Mbps.
```

set port static-vlan

User level: read-write, admin.

Use the `set port static-vlan` command to assign static VLANs to ports.

The syntax for this command is:

`set port static-vlan` `[module/port range] [vlan num]`

module	Number of the module (3-6).
port	Number of the port on the module. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
vlan range	vlan to bind to port

Example:

```
C460-1# set port static-vlan 3/4-6 2
VLAN 2 is bound to port 3/4
VLAN 2 is bound to port 3/5
VLAN 2 is bound to port 3/6
```

set port trap

User level: read-write, admin.

Use the `set port trap` command to enable or disable generic SNMP uplink or downlink traps from a port.

The syntax for this command is:

set port trap <module>/<port> {enable|disable}

module	Number of the module (3-6).
port	Number of the port on the module. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
enable	Enable uplink/downlink traps
disable	Disable uplink/downlink traps

Example:

```
C460-1# set port trap 3/2 enable

Port 3/2 up/down trap enabled.
```

set port vlan

User level: read-write, admin.

Use the `set port vlan` command to set the port VLAN ID (PVID). If adding a new VLAN, the VLAN number must be within the range.

ⓘ You need to define a vlan before setting a port VLAN ID.

The syntax for this command is:

set port vlan <vlan_num> <module>/<port>

vlan_num	Number identifying the VLAN.
module	The module number
port	Number of the port on the module. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

```
C460-1# set port vlan 2 3/5

VLAN 2 modified.
VLAN Mod/Ports
---- --------------------------
   2 3/5
```

set port vlan-binding-mode

User level: read-write, admin.

Use the `set port vlan-binding-mode` command to define the binding method used by ports.

The syntax for this command is:

`set port vlan-binding-mode` `[port_list] [value]`

port list	Switches and ports to bundle (format: module/port)
value	• static – the port supports only the VLAN as configured per port • bind-to-configured – the port supports the VLANs configured on the device • bind-to-all – the port support the whole range of VLANs on the device

Example:

```
C460-1# set port vlan-binding-mode 5/5-9 static
Set Port vlan binding method:5/5
Set Port vlan binding method:5/6
Set Port vlan binding method:5/7
Set Port vlan binding method:5/8
Set Port vlan binding method:5/9
```

set power redundancy

User level: read-write, admin.

Use the `set power redundancy` command to enable or disable PSU (power supply) redundancy.

The syntax for this command is:

`set power redundancy <mode>`

enable	Enable power redundancy
disable	Disable power redundancy

Example:

```
C460-1# set power redundancy enable
```

set powerinline budget

User level: read-write, admin.

Use the the `set powerinline budget` command to recalculate and reapply the PoE budget.

The syntax for this command is:

`set powerinline budget`

Example:

```
C460-1# set powerinline budget
Powerinline budget was reinitialized
```

set ppp authentication incoming

User level: read-write, admin.

Use the `set ppp authentication` command to define the authentication method used for a PPP server or client session.

The syntax for this command is:

`set ppp authentication incoming` `{pap|chap|none}`

pap	PAP authentication method
chap	CHAP authentication method
none	No authentication

Example:

```
C460-1# set ppp authentication incoming chap
PPP requires CHAP authentication for incoming sessions.
```

set ppp baud-rate

User level: read-write, admin.

Use the `set ppp baud-rate` command to define the baud rate used in PPP sessions.

ⓘ You mujst set the peer baud rate to the same value as the host.

The syntax for this command is:

set ppp baud-rate <9600|19200|38400>

Example:

```
C460-1# set ppp baud-rate 38400
ppp baud rate was set to 38400
```

set ppp chap-secret

User level: admin.

Use the `set ppp chap-secret` command to configure the "shared secret" used in PPP sessions with CHAP authentication. The chap-secret is not transferable via the configuration upload/download mechanism.

The syntax for this command is:

set ppp chap-secret <chap-secret>

chap-secret	The shared secret, 4 to 32 characters.

Example:

```
C460-1(super)# set ppp chap secret hush
PPP shared secret for CHAP authentication is set
```

set ppp incoming timeout

User level: read-write, admin.

Use the `set ppp incoming timeout` command to set the number of minutes until the system automatically disconnects an idle PPP incoming session.

The syntax for this command is:

set ppp incoming timeout <time>

time	The timeout in minutes

Example:

```
C460-1# set ppp incoming timeout 15
PPP incoming session will automatically disconnect after 15
minutes of idle time
```

qset radius authentication enable/disable

User level: read-write, admin.

Enables or disables RADIUS authentication for the C460 switch.

The syntax for this command is:

set radius authentication {enable | disable}

enable	Enable RADIUS authentication
disable	Disable RADIUS authentication (default)

Example:

```
C460-1(super)# set radius authentication enable
```

set radius authentication retry-number

User level: read-write, admin.

Sets the number of times an access request is sent when there is no response.

The syntax for this command is:

set radius authentication retry-number <number>

number	Number of retries

Example:

```
C460-1(super)# set radius authentication retry-number 3
```

set radius authentication retry-time

User level: read-write, admin.

Sets the time to wait before re-sending an access request.

The syntax for this command is:

set radius authentication retry-time <time>

time	Retry time in seconds

Example:

```
C460-1(super)# set radius authentication retry-time 5
```

set radius authentication secret

User level: read-write, admin.

Use the `set radius authentication secret` command to enable secret authentication for the P330 unit.

The syntax for this command is:

set radius authentication secret <string>

string	text password

Example:

```
C460-1(super)# set radius authentication secret hush
```

set radius authentication server

User level: read-write, admin.

Sets the IP address (and shared secret) of the primary or secondary RADIUS Authentication server.

The syntax for this command is:

set radius authentication server <ip-addr> {primary | secondary}

ip-addr	IP address of the RADIUS authentication server
primary	default - Primary authentication server

secondary	Secondary authentication server

Example:

```
C460-1(super)# set radius authentication server
192.40.12.36 primary
```

set radius authentication udp-port

User level: read-write, admin.

Sets the RFC 2138-approved UDP port number.

Normally, the UDP port number should be set to its default value of 1812. Some early implementations of the RADIUS server used port number 1645.

The syntax for this command is:

set radius authentication udp-port <number>

Example:

```
C460-1(super)# set radius authentication udp-port number
1645
```

set slot power admin

User level: read-write, admin.

Use the `set slot power` command to power up or power down a slot. If there is a module in the slot, then the command will reset the device.

The syntax for this command is:

set slot power admin <slot> <status>

Slot	Slot number
Status	• Up – power up the module • Down – power down the nodule

Example: 1 – if the slot is empty:

```
C460-1> set slot power admin 4 up
slot 4 power is enabled
C460-1> set slot power admin 4 down
slot 4 power is disabled
```

Example: 2 – if there is a module in the slot::

```
C460-1> set slot power admin 4 up
This command will RESET the device
*** Reset *** - do you want to continue (Y/N)? Y

Module in slot 4 is shutting down.
Attaching network interface lo0... done.


                Welcome to C460
               SW version 1.0.1


Login:
C460-1> set slot power admin 4 up
This command will RESET the device
*** Reset *** - do you want to continue (Y/N)? Y

Module in slot 4 is turning on
    Welcome to C460
               SW version 1.0.1


Login:
```

set slot power priority

User level: read-write, admin.

Use the `set slot power priority` command to configure the power priority for a slot.

The syntax for this command is:

set slot power priority <slot> <level>

Slot	Slot number: • 3 to 6 • all
level	• critical • high • low

Example:

```
C460-1# set slot power priority 3 high

Slot 3 is set to power priority high
```

set snmp community

User level: read-write, admin.

Use the `set snmp community` command to set or modify the switch's SNMP community strings.

The syntax for this command is:

set snmp community <read-only | read-write | trap> [community string]

Example:

```
C460-1# set snmp community read-only read
SNMP read-only community string set
```

set snmp retries

User level: read-write, admin.

Use the `set snmp retries` command to set the number of retries initiated by the C460 Manager when it tries to send SNMP messages to the switch.

The syntax for this command is:

set snmp retries <number>

number	Number of retries

Example:

```
C460-1# set snmp retries 10
SNMP retries is set to 10
```

set snmp timeout

User level: read-write, admin.

Use the `set snmp timeout` command to set the SNMP timeout in seconds. This command is useful for access using the C460 Manager.

The syntax for this command is:

set snmp timeout <number>

number	Timeout in seconds

Example:

```
C460-1# set snmp timeout 2000
the SNMP Timeout is set to 2000
```

set snmp trap

User level: read-write, admin.

Use the `set snmp trap` command to add an entry into the SNMP trap receiver table and to enable or disable the different SNMP traps for a specific receiver.

First add the `rcvr_addr` and then enable/disable the different traps for it.

The syntax for this command is:

set snmp trap <rcvr_addr>

set snmp trap <rcvr_addr> {enable|disable} {all|config|fault|...}

enable	Activate SNMP traps
disable	Deactivate SNMP traps
all	(Optional) Specify all trap types
config	(Optional) Specify the ConfigChange trap from the TRAP-MIB.
fault	(Optional) Specify the Fault trap from the TRAP-MIB.
rcvr_addr	IP address or IP alias of the system to receive SNMP traps

Example:

To enable SNMP ConfigChange traps to a specific manager:

```
C460-1# set snmp trap 192.168.173.42 enable config
SNMP config change traps enabled.
```

Example:

To enable all traps to a specific manager:

```
C460-1# set snmp trap 192.168.173.42 enable all
SNMP all traps enabled.
```

Example:

To disable SNMP config traps to a specific manager:

```
C460-1# set snmp trap 192.168.173.42 disable config
SNMP config traps disabled.
```

Example:

To add an entry in the SNMP trap receiver table with default:

```
C460-1# set snmp trap 192.168.173.42
SNMP trap receiver added.
```

set snmp trap auth

User level: read-write, admin.

Use the `set snmp trap auth` command to enables or disable the sending of SNMP traps upon SNMP authentication failure.

The syntax for this command is:

`set snmp trap` `{enable|disable}` **`auth`**

Example:

```
C460-1# set snmp trap enable auth
Authentication trap enabled
```

set spantree default-path-cost

User level: privileged, supervisor.

Use the `set spantree default-path-cost` command to set the version of the spanning tree default path costs that are to be used by this bridge.

The syntax for this command is:

```
set spantree default-path-cost <path-cost>
```

path-cost	• common-spanning-tree - compatible with IEEE802.1D standard • rapid-spanning-tree - compatible with IEEE802.1W standard

Example:

```
C460-1# set spantree default-path-cost rapid-spanning-tree
Spanning tree default path costs is set to rapid spanning
tree.
```

set spantree enable/disable

User level: read-write, admin.

Use the `set spantree` command to enable or disable the spanning-tree algorithm for the switch.

ⓘ When you disable STP, blocking ports are disabled in order to prevent loops in the network. As a result, you need to wait 30 seconds before disabling STP if you reset the switch, enable STP, or insert a new station.

The syntax for this command is:

```
set spantree {enable|disable}
```

Example:

```
C460-1# set spantree enable
bridge spanning tree enabled.

C460-1# set spantree disable
bridge spanning tree disabled.
```

set spantree forward-delay

User level: read-write, admin.

Use the `set spantree forward-delay` command to set the bridge forward delay time parameter.

The syntax for this command is:

```
set spantree forward-delay <time>
```

forward - delay	The time that is used when transferring the port to forwarding state. Value range is 4-30 and must exceed Bridge Max Age/2. Recomended value is 15 seconds.

Example:

```
C460-1# set spantree forward-delay 15
bridge forward delay set to 15.
```

set spantree hello-time

User level: read-write, admin.

Use the `set spantree hello-time` command to set the bridge hello time parameter.

The syntax for this command is:

```
set spantree hello-time <time>
```

hello-time	The time interval (in seconds) between the generation of configuration BPDUs by the Root. Value ranges between 1 to 10 and must not exceed (Bridge-Max-Age/2) - 1. The recommended value is 2 sec.

Example:

```
C460-1# set spantree hello-time 2
bridge hello time set to 2.
```

set spantree max-age

User level: read-write, admin.

Use the `set spantree max-age` command to set the bridge spanning tree max age parameter.

The syntax for this command is:

```
set spantree max-age <seconds>
```

max-age	The max age time in seconds to keep message information before it is discarded. Value ranges between 6 to 40; value must be between 2 X (Bridge-Hello-Time + 1) and 2 X (Bridge-Forward-Delay - 1). Recommended value is 20 sec.

Example:

```
C460-1# set spantree max-age 20
bridge max age is set to 20.
```

set spantree priority

User level: read-write, admin.

Use the `set spantree priority` command to set the bridge priority for STP.

The syntax for this command is:

```
set spantree priority <bridge_priority>
```

bridge_priority	Number representing the priority of the bridge with a priority level from 0 to 65535. 0 indicates high priority and 65535 indicates low priority.

Example:

```
C460-1# set spantree priority 4096

Bridge priority set to 4096.
```

set spantree tx-hold-count

User level: read-write, admin.

Use the `set spantree tx-hold-count` command to limit the maximum number of BPDUs transmitted during a hello-time period.

The syntax for this command is:

```
set spantree tx-hold-count <rate>
```

rate	Value between 1 to 10; recommended value is 3

Example:

```
C460-1# set spantree tx-hold-count 3
tx hold count is set to 3.
```

set spantree version

User level: read-write, admin.

Use the `set spantree version` command to set the rapid spanning tree state machine to work as "STP compatible".

The syntax for this command is:

`set spantree version <version>`

version	common-spanning-tree — compatible with ieee802.1D standard. rapid-spanning-tree — compatible with ieee802.1W standard

Example:

```
C460-1# set spantree version rapid-spanning-tree
Spanning tree version is set to rapid spanning tree.
```

set system contact

User level: read-only, read-write, admin.

Use the `set system contact` command to set the mib2 system contact MIB variable.

The syntax for this command is:

`set system contact` `[string]`

string	• The contact name string should be typed inside inverted commas. • The name is cleared if you leave this field blank.

Example:

```
C460-1(super)# set system contact "gregory kohll"
*** Set system contact ***

system contact set
```

set system location

User level: read-only, read-write, admin.

Use the `set system location` command to set the mib2 system location MIB variable

The syntax for this command is:

`set system location` `[string]`

string	• The location name string should be typed inside inverted commas. • The location is cleared if you leave this field blank.

Example:

```
C460-1# set system location "tech-support"
*** Set system location ***

system location set
```

If you wish to enter a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

set system name

User level: read-write, admin.

Use the `set system name` command to set the mib2 system name MIB variable.

The syntax for this command is:

`set system name` `[string]`

string	• The system name string should be typed inside inverted commas. • The name is cleared if you leave this field blank.

Example:

```
C460-1# set system name "C460-1"
*** Set system name ***

system name set
```

If you wish to enter a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

set time client

User level: read-write, admin.

Use the `set time client` command to enable or disable the periodic network time acquisition by the switch from the network time server (SNTP or TIME protocol).

The syntax for this command is:

`set time client` `{enable|disable}`

enable	Enable periodic network time acquisition
disable	Disable periodic network time acquisition

Example:

```
C460-1# set time client enable
Time client mode enabled
```

set time protocol

User level: read-write, admin.

Use the `set time protocol` command to set the protocol for use in the system as either SNTP protocol or TIME protocol.

The syntax for this command is:

`set time protocol` `[sntp-protocol|time-protocol]`

sntp-protocol	Use the SNTP protocol
time-protocol	Use the TIME protocol

Example:

```
C460-1> set time protocol sntp-protocol
The protocol has been set to SNTP protocol

C460-1>  set time protocol time-protocol
The protocol has been set to TIME protocol
```

set time server

User level: read-write, admin.

Use the `set time server` command to set the TIME server address.

The syntax for this command is:

`set time server` `<ip address>`

ip address	IP address of the TIME server.

Example:

```
C460-1# set time server 192.49.53.68
The Server Ip has been set to 192.49.53.68
```

set timezone

User level: read-write, admin.

Use the `set timezone` command to assign a timezone name and sets the time difference of the device relative to the Coordinated Universal Time (UTC / GMT).

The minutes parameter can only be set to 30.

The syntax for this command is:

`set timezone` `<zone-name> [-]<hours>[:30]`

zone-name	Three-character name of time zone, for example, EST, GMT
hours	The difference between the time zone and GMT

Example:

```
C460-1# set timezone EST -5
Timezone set to "EST", offset from UTC is -5 hours.
```

set trunk

User level: read-write, admin.

Use the `set trunk` command to configure the VLAN tagging mode of a port.

`set trunk` `<module/port> [value]`

module	Number of the module (3-6).
port	Number of the port on the module. If you do not specify a number, the vlan tagging mode is set for all the ports on the module. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
value	• off – forces the port to become a non-tagging port and persuade the neighboring port to become a non-tagging port. The port becomes a non-tagging port even if the neighbor port does not agree to become a non-tagging port. • dot1q – specifies an IEEE 802.1Q tagging on a Fast Ethernet or Gigabit Ethernet port.

Example:

```
C460-1#  set trunk 3/3 dot1q
Dot1Q VLAN tagging set on port 3/3.
```

set vlan

User level: read-write, admin.

Use the `set vlan` command to configure VLANs.

The syntax for this command is:

`set vlan` `<vlan-id> [name <vlan-name>]`

vlan-id	vlan number
vlan-name	vlan name

Example:

```
C460-1# set vlan 3 name gregory
VLAN id 3, vlan-name gregory created.
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

set vlan (Layer 3)

User level: read-write, admin.

ⓘ If you are at the “read-write” user level, you can only access this command in Configure mode.
Type **`configure`** at the command prompt to enter configure mode.

Use the `set vlan` command to create a router Layer 2 interface.

The syntax for this command is:

`set vlan` `<vlan-id>` **`name`** `<vlan-name>`

vlan-id	Interface Index
vlan-name	Interface name (used in layer 3 protocols)

Example:

```
C460-1(configure)# set vlan 2 name vlan2
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

set web aux-files-url

User level: read-write, admin.

Use the `set web aux-files-url` command to allow the Device Manager to automatically locate the URL of the Web server containing the Device Manager help files and Java plug-in.

Tip: Ensure that the Web server is always accessible to prevent potential delays to Web access to the device.

The syntax for this command is:

`set web aux-files-url` `<//IP address/directory name>`

Example:

```
C460-1# set web aux-files-url //192.168.47.25/emweb-aux-
files
```

If you wish to define a directory name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

set welcome message

User level: read-write, admin.

Use the `set welcome message` command to set a welcome message to appear after a reboot or after opening a new session (see `session` command) in the stack.

The syntax for this command is:

```
set welcome message [string]
```

string	• string - the string to be used as the welcome message. • blank **-** Restores the default string.

Example:

```
C460-1# set welcome message avaya
The new welcome string is “avaya”
```

If you wish to define a string which includes spaces, you must enclose the entire string in quotation marks, e.g. "new york".

show access lists

User level: user, privileged, supervisor

Use the `show access lists` command to display all the current policy lists.

The syntax for this command is:

```
show access-lists [<policy-list-number>]
```

policy-list-number	The policy list number (integer from 100 to 199; 0 is th default list).

Example:

```
Router-1> show access-lists
The current policy source is local

default List (0) parameters
List Owner : other
List 0 is valid
default action for list 0 is permit
```

show allowed managers status

User level: read-only, read-write, admin.

Use the `show allowed managers` status command to display the activation status of the Allowed Managers feature.

The syntax for this command is:

show allowed managers status

Example:

```
C460-1(super)# show allowed managers status

Managers are disabled.
```

show allowed managers table

User level: read-only, read-write, admin.

Use the `show allowed managers table` to display the list of the twenty possible allowed managers IP addresses.

The syntax for this command is:

`show allowed managers table`

Example:

```
C460-1(super)# show allowed managers table
1 ) 149.49.32.134
2 ) Not Used
3 ) Not Used
4 ) Not Used
5 ) Not Used
6 ) Not Used
7 ) Not Used
8 ) Not Used
9 ) Not Used
10) Not Used
11) Not Used
12) Not Used
13) Not Used
14) Not Used
15) Not Used
16) Not Used
17) Not Used
18) Not Used
19) Not Used
20) Not Used
```

show arp-aging-interval

User level: read-only, read-write, admin.

Use the `show arp-aging-interval` command to display the ARP table aging interval for gateway entries.

The syntax for this command is:

`show arp-aging-interval`

Example:

```
C460-1> show arp-aging-interval
ARP table aging interval for gateways was set to 10
minutes.
```

show arp-tx-interval

User level: read-only, read-write, admin.

Use the `show arp-tx-interval` command to display the keep-alive frames transmission interval.

The syntax for this command is:

`show arp-tx-interval`

Example:

```
C460-1> show arp-tx-interval

ARP tx interval for inband interface is set to 5 seconds.


ARP tx interval for outband interface is set to 5 seconds.
```

show banner login

User level: read-only, read-write, admin.

Use the show banner login command to display the message shown before a login.

The syntax for this command is:

`show banner login`

Example:

```
C460-1> show banner login

                 Welcome to C460
                SW version 2.0.2
```

show banner post-login

User level: read-only, read-write, admin.

Use the show banner login command to display the message shown after a successful login.

The syntax for this command is:

`show banner post-login`

Example:

```
C460-1> show banner post-login

                 Welcome to C460
                SW version 2.0.2
```

show boot bank

User level: read-only, read-write, admin.

Use the `show boot bank` command to display the system boot bank.

`The syntax for this command is:`

`show boot bank`

Example:

```
C460-1> show boot bank
SPV 1 boot bank is A
```

show broadcast storm control

User level: read-only, read-write, admin.

Use the broadcast storm control command to display broadcast storm status and settings.

The syntax for this command is:

show broadcast storm control

Example:

```
C460-1> show broadcast storm control
Broadcast          Threshold
Storm Control
----------------   ------------
disable            500
```

show cam

User level: read-only, read-write, admin.

Use the `show cam` command to display the CAM table entries for a specific module and port.

ⓘ MACs associated with LAGs appear under the LAG ID, not under the LAG port.

By Module and Port

The syntax for this command is:

show cam [module[/port]]

mac-addr	MAC address
module (Optional)	Number of the module (3-6). If you do not specify a number, all modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all ports on the specified module are shown.

Example:

```
C460-1> show cam
Total Matching CAM Entries Displayed = 128

Dest MAC/Route Dest vlan Destination Ports
------------------- ---- -----------------
 08:00:20:c6:98:5f    1     3/33
 08:00:20:c4:c8:51    1     3/33
 00:00:3b:80:49:7c    1     3/33
 00:00:5e:00:01:01    1     3/33
 00:00:5e:00:01:02    1     3/33
 00:01:02:de:96:2f    1     3/33
 00:02:2d:47:18:67    1     3/33
 00:02:2d:48:18:29    1     3/33
 00:02:55:5b:b1:e1    1     3/33
 00:02:b3:07:92:4f    1     3/33
 00:02:b3:23:94:4d    1     3/33
 00:02:b3:23:a0:d3    1     3/33
 00:02:b3:23:ca:f2    1     3/33
 00:02:b3:23:ce:02    1     3/33
 00:02:b3:2d:2a:69    1     3/33
 00:03:47:6d:e2:68    1     3/33
 00:03:47:6d:e2:b9    1     3/33
 00:04:0d:00:56:78    1     3/33
--type q to quit or space key to continue--
Dest MAC/Route Dest vlan Destination Ports
------------------- ---- -----------------
 00:04:0d:00:56:85    1     3/33
 00:04:0d:01:81:8c    1     3/33
 00:04:0d:01:b0:00    1     3/33
...
```

show cam mac

User level: read-only, read-write, admin.

Use the `show cam mac` command to display a specific mac/vlan in the CAM CAM table.

The syntax for this command is:

show cam mac <mac> <vlan>

mac-addr	MAC address
vlan	VLAN identity

Example:

```
C460-1> show cam mac 00-00-81-01-23-45
Dest MAC/Route        Destination Ports  vlan
--------------        -----------------  -----
00-00-81-01-23-45     2/9                 1
00-00-81-01-23-46     2/9                 1
Total Matching CAM Entries = 2
```

show cam vlan

User level: read-only, read-write, admin.

Use the `show cam vlan` command to display all MAC entries for a specific VLAN in the CAM.

The syntax for this command is:

show cam vlan <vlan>

vlan	VLAN identity

Example:

```
C460-1> show cam vlan 3
Dest MAC/Route Dest vlan Destination Ports
------------------ ---- -----------------
Total Matching CAM Entries = 2
```

show chassis-identity

User level: read-only, read-write, admin.

Use the `show module-identity` command to display the identifier(s) required for requesting license keys for this chassis.

The syntax for this command is:

`show chassis-identity`

Example:

```
C460-1> show chassis-identity
Chassis Identity
----------------
53333335
```

show copy status

User level: read-only, read-write, admin.

Use the `show copy status` command to show the status of the local configuration copy operation.

The syntax for this command is:

`show copy status`

Example:

```
C460-1> show copy status
Module #1
===========
Module           : 1
Source file      : .router-startup
Destination file : .router-running
Host             : -
Running state    : Idle
Failure display  : (null)
Last warning     : No-warning
```

show cpu load

User level: read-only, read-write, admin.

Use the `show cpu load` command to show the current CPU utilization.

The syntax for this command is:

show cpu load

Example:

```
C460-1> show cpu load
The current CPU utilization is 1%
```

show cs

User level: read-only, read-write, admin.

Use the `show cs` command to show the version numbers of the C460 chassis and installed components.

The syntax for this command is:

show cs

Example:

```
C460-1> show cs

Chassis : 1.0
Fans    : 1.0
Psu_1   : 1.0
Psu_2   :
Psu_3   : 1.0

Slot  Type                        C/S
----  --------------------------  --------
1     M460ML-SPV                  1.0
2     M460ML-SPV                  1.0
3     M4612ML-G                   1.0
4     M4648ML-T-2G-PWR            1.0
5     M4648ML-T-PWR               1.0
6     M4648ML-T-2G                1.0
```

show device-mode

User level: read-only, read-write, admin.

Use this command to display the switch operational mode (Layer 2 or Layer 3).

The syntax for this command is:

show device-mode

Example:

```
C460-1> show device-mode
Device mode is Router
```

show dot1x

User level: user, privileged, supervisor

Use the `show dot1x` command to display the system dot1x capabilities, protocol version, and timer values.

The syntax for this command is:

`show dot1x`

Example:

```
C460-1> show dot1x mode
PAE Capabilities             Authenticator Only
Protocol Version             1
system-auth-control          disabled
*** Warning : Authentication server ( RADIUS ) is disabled/not-exist and so
***            no authentication can be made
```

show dot1x statistics

User level: read-only, read-write, admin.

Use the `show dot1x statistics` command to display Rx and Tx EAPOL and EAP statistics.

The syntax for this command is:

`show dot1x statistics`

Example:

```
C460-1> show dot1x statistics
Rx: EAPOL     EAPOL     EAPOL     EAPOL     EAP       EAP       EAP
    Total     Start     Logoff    Invalid   Resp/Id   Resp      LenError
   --------  --------  --------  --------  --------  --------  --------
          0         0         0         0         0         0         0

Tx: EAPOL     EAP       EAP
    Total     Req/Id    Req
   --------  --------  --------
          0         0         0
```

show dynamic vlans

Use the `show dynamic vlans` command to display automatically learned VLANs..

The syntax for this command is:

show dynamic vlans

```
Router-1> show dynamic vlans
VLAN NAME         VLAN ID VLAN MAC
----------------- ------- -----------------
Default                 1 02:e0:3b:1d:f9:01
```

show environment fans

User level: read-only, read-write, admin.

Use the `show environment fans` command to display the current fans status for the switch.

The syntax for this command is:

show environment fans

Example:

```
C460-1> show environment fans
Mode: regular
Total working fans: 9
```

Mode
- Boost
- Regular

Total working fans	• 9 • 8 • less than 8
Fans not installed	• No fan tray installed

show environment power

User level: read-only, read-write, admin.

Use the `show environment power` command to display the current power configuration for the switch, the total power available to the system, and amount of power currently in use.

- ⓘ The "Main Power" includes *two* supervisor modules and the fan module, irrespective of the number of supervisor modules installed.
- ⓘ The "Main Draw" column shows the demand for an I/O module whether its slot is enabled or not.

The syntax for this command is:

`show environment power`

Example:

```
C460 > show environment power
 PSUs Configuration Admin: redundancy
 PSUs Configuration State: no redundancy (2 active PSU(s))

 Power  Available  Drawn  Remaining
 -----  ---------  -----  ---------
 Main        411W   411W         0W
 PoE        1589W     0W      1489W

                                                  Main  PoE     PoE
Slot  Module Type         Active  Enabled  Priority Draw  Budget  Draw  Fault

----  ---------------     ------  -------  -------- ----  ------  ----  -----

   1 M460ML-SPV             Y       Y    critical  68W

   2 M460ML-SPV             Y       Y    critical  68W

   3 M4612ML-G              Y       Y    low       59W

   4 M4648ML-T-2G-PWR       Y       Y    high      48W     720W  100W

   5 M4648ML-T-PWR          Y       Y    low       48W     720W    0W

   6 M4648ML-T-2G           Y       Y    low       70W


* Fans power consumption: 45(W)
```

show erase status

User level: user, privileged, supervisor

Use the `show erase status` command to view the status of the erase configuration operation.

The syntax for this command is:

`show erase status`

show event-log

User level: read-only, read-write, admin.

Displays the encrypted event log file.

The syntax for this command is:

`show event-log`

show event-log (Layer 3)

User level: read-only, read-write, admin.

Displays the encrypted event log file.

The syntax for this command is:

`show event log`

show fragment

User level: read-only, read-write, admin.

Use the `show fragment` command to display information regarding fragmented IP packets that are destined to the router.

ⓘ The router does not perform reassembly of packets in transit.

This command displays the following information:

Size	Maximum number of packets set by the `fragment size` command
Chain	Maximum number of fragments for a single packet set by the `fragment chain` command.
Timeout	Maximum number of seconds set by the fragment timeout command.
Queue	Number of packets currently awaiting reassembly.
Assemble	Number of packets successfully reassembled
Fail	Number of packets which failed to be reassembled

Overflow	Number of packets which overflowed the fragment database.

The syntax for this command is:

```
show fragment
```

Example:

```
Router-1> show fragment
Max number of concurrently reassembled packets is 100
Max number of fragments per packet is 64
Fragment timeout is 10 sec
Number of packets waiting to be reassembled is 0
Number of successfully reassembled packets is 11954
Number of packets which failed to be reassembled is 0
Number of packets which overflowed the database is 0
```

show icmp-redirect

User level: read-only, read-write, admin.

Use the show icmp-redirect command to display whether ICMP-redirects are accepted or rejected.

The syntax for this command is:

```
show icmp-redirect
```

Example:

```
C460-1> show icmp-redirect
icmp-redirect is accepted
```

show image version

User level: read-only, read-write, admin.

See show spv

show intelligent-multicast

User level: read-only, read-write, admin.

Use the `show intelligent-multicast` command to display the intelligent multicast configuration.

The syntax for this command is:

show intelligent-multicast

Example:

```
C460-1> show intelligent-multicast
Intelligent-multicast configuration:
-----------------------------------
intelligent-multicast state ---------------------- Disabled
Intelligent-multicast client-port-pruning time ---      600[Sec]
Intelligent-multicast router-port-pruning time ---     1800[Sec]
intelligent-multicast group-filtering-delay time -       10[Sec]
```

show interface

User level: read-only, read-write, admin.

Use the `show interface` command to display information on network interfaces.

The syntax for this command is:

show interface

Example:

```
C460-1> show interface
 Interface Name       Status       VLAN    IP address         Netmask
----------------  --------------  ----  ---------------  ---------------
inband            disabled        1     135.64.200.105   255.255.255.0
ppp               disabled        N/A   0.0.0.0          0.0.0.0
outband           enabled         N/A   135.64.200.105   255.255.255.255
```

show ip access-group

User level: privileged, supervisor.

Use the `show ip access-group` command to display the active policy-list number.

The syntax for this command is:

`show ip access-group`

Example:

```
C460-1# show ip access group
access-group 101
```

show ip access-list-dscp

User level: user, privileged, supervisor

Use the `show ip access-list-dscp` command to display the DSCP to CoS map of a policy-list.

The syntax for this command is:

`show ip access-list-dscp <policy-list-number>`

policy-list-number	A valid id number for a policy list currently defined for the module (100..199, 0 - default list)
dscp	dscp entry (0 - 63)

Example:

```
C460-1> show ip access-list-dscp 101
Trust configuration is trust-cos
DSCP     Action           Precedence     Name
---- ------------------- ---------- ------------
0    fwd0                mandatory  DSCP#0
1    fwd0                mandatory  DSCP#1
2    fwd0                mandatory  DSCP#2
3    fwd0                mandatory  DSCP#3
4    fwd0                mandatory  DSCP#4
5    fwd0                mandatory  DSCP#5
6    fwd0                mandatory  DSCP#6
7    fwd0                mandatory  DSCP#7
8    fwd1                mandatory  DSCP#8
9    fwd1                mandatory  DSCP#9
10   fwd1                mandatory  DSCP#10
11   fwd1                mandatory  DSCP#11
```

show ip access-lists

User level: read-only, read-write, admin.

Use the `show ip access lists` command to display all the current policy lists.

The syntax for this command is:

`show ip access-lists[<policy-list-number>]`

policy-list-number	The policy list number (integer from 100 to 199)

Example:

```
C460-1> show ip access-lists
ip access-list 100 10 deny-and-notify tcp
  192.168.55.0      0.0.0.255       range  5000  6000
  any range  7000  8000
ip access-list 100 30 deny udp
  any
  any
  optional
ip access-list 100 35 deny ip
  any
  any
ip access-list 100 55 fwd7 tcp
  host 192.168.3.4          eq    33333
  host 10.6.7.8
default action for list 100 is permit
```

show ip access-list-summary

User level: user, privileged, supervisor

Use the show `ip access-list-summary` command to display a summary of policy lists.

The syntax for this command is:

`show ip access-list-summary`

Example:

```
C460-1> show ip access-list-summary
The policy lists summary:
default List (0)
```

show ip arp

User level: read-only, read-write, admin.

Use the `show ip arp` command to display the Address Resolution Protocol (ARP) cache.

The syntax for this command is:

`show ip arp` `[<if-name> | <vlan> | <ip addr> | <ip-mask> static]`

if-name	Interface name (string up to 32 chars)

vlan	VLAN NAME (string up to 16 chars) or VLAN ID (number)
ip-addr	The IP address of the station(s)
ip-mask	The ip mask of the routes.
static	Display static ip ARP information.

Example:

```
show ip arp                              Display all ARP mapping
show ip arp marketing                   Display interface ARP mapping
show ip arp 192.168.49.1                Display one host ARP mapping
show ip arp 192.168.49.1 255.255.255.0 Display range of ARP mapping
show ip arp marketing_vlan              Display vlan ARP mapping
show ip arp static                      Display static ARP mapping
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

show ip icmp

User level: read-only, read-write, admin.

Use the `show icmp ip` command to display the status of ICMP error messages.

The syntax for this command is:

`show ip icmp`

Example:

```
Router-1> show ip icmp

ICMP error messages status is ENABLE
```

show ip interface

User level: read-only, read-write, admin.

Use the `show ip interface` command to display information for an IP interface.

The syntax for this command is:

`show ip interface` `[<interface-name>]|<ip-address>|<vlan>]`

interface-name	The name of the interface whose information you want to display.
ip-address	The IP address of the interface whose information you want to display.
vlan	The name or ID of the VLAN over which there are interfaces you want to display.

Example:

```
Router-1> show ip interface
Showing 2 Interfaces
mgmt is administratively up
 On vlan Default
 Internet address is 10.49.54.14   , subnet mask is
255.255.255.0
 Broadcast address is 10.49.54.255
 Directed broadcast forwarding is disabled
 Proxy ARP is disabled

baba is administratively down
 On vlan v2
 Internet address is 192.168.0.14     , subnet mask is
255.255.0.0
 Broadcast address is 192.168.255.255
 Directed broadcast forwarding is disabled
 Proxy ARP is disabled
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

show ip interface brief

User level: read-only, read-write, admin.

Use the `show ip interface brief` command to display brief information for an IP interface.

The syntax for this command is:

```
show ip interface brief [<interface> | <vlan> | <IP addr>]
```

interface	The name of the interface whose information you want to display - a string of up to 32 characters.
vlan	The name or ID of the VLAN over which there are interfaces you want to display - a string of up to 32 characters.
IP addr	The IP address of the interface whose information you want to display.

Example:

```
Router-1> show ip interface brief
Showing 1 Interfaces
      Interface          Address           Mask              Status
-------------------- --------------- --------------- --------------------
net                  149.49.54.56    255.255.255.0   up
```

show ip ospf

User level: read-only, read-write, admin.

Use the `show ip opsf` command to displays general information about OSPF routing.

The syntax for this command is:

```
show ip ospf
```

Example:

```
Router-1> show ip ospf
```

show ip ospf database

User level: read-only, read-write, admin.

Use the `show ip ospf database` command to display lists of information related to the OSPF database for a specific router.

The syntax for this command is:

show ip ospf database
`[{asbr-summary|router|network|network-summary|external}]`

asbr-summary	Displays information only about the autonomous system boundary router summary LSAs. Optional.
external	Displays information only about the external LSAa. Optional.
network	Displays information only about the network LSAa. Optional.
network-summary	Displays information only about the network LSAa summary. Optional
router	Displays information only about the router LSAs. Optional.

Example:

```
Router-1 (super) # show ip ospf interface
```

show ip ospf interface

User level: read-only, read-write, admin.

Displays the OSPF-related interface information.

The syntax for this command is:

show ip ospf interface `[<interface-name>]`

interface-name	The OSPF interface name.

Example:

```
Router-1> show ip ospf interface
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

show ip ospf neighbor

User level: read-only, read-write, admin.

Displays OSPF-neighbor information on a per-interface basis.

The syntax for this command is: **show ip ospf neighbor** [<interface-name>] [<neighbor-id>]

interface-name	The OSPF interface name.
neighbor-id	Neighbor ID.

Example:

```
Router-1> show ip ospf neighbor
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

show ip protocols

The syntax for this command is:

show ip protocols [<protocol>]

protocol (Optional)	RIP | OSPF.

Example:

```
Router-1 (super) # show ip protocols
Routing Protocol is "rip"
  Sending updates every 30 seconds, next due in 0 seconds
  Invalid after 180 seconds, flushd after 300
  Redistributing: rip
  Default version control: rip version 1
    Interface                       Version   Key
  Routing for Networks:
  Routing Information Sources:
    Gateway                 Last Update
```

show ip reverse-arp

User level: read-only, read-write, admin.

Use the show `ip reverse-arp command` to display the IP address of a host, based on a known MAC address.

The syntax for this command is:

show ip reverse-arp <mac addr> [<match len>]

mac addr	MAC address
match len	The number of bytes in the address to match

Example:

```
Router-1> sh ip reverse-arp 00:10:a4:98:97:e0

Showing 1 rows

Address          MAC Address           I/F         Type      TTL
---------------- ----------------- ----------- --------   --------
149.49.70.68     00:10:a4:98:97:e0   e-70        Dynamic   14355
```

show ip route

User level: read-only, read-write, admin.

Use the `show ip route` command to display IP routing table entries.

The syntax for this command is:

show ip route

Example:

```
C460-1> show ip route
Network           Mask              Next-Hop           Interface    Source
----------------  ----------------  -----------------  -----------  ------
-
149.49.50.0        255.255.255.0      149.49.50.233      inband       LOCAL

0.0.0.0            0.0.0.0            149.49.50.1        inband      STATIC
```

show ip route (Layer 3)

User level: read-only, read-write, admin.

Use the `show ip route` command to display information about the IP unicast

routing table.

The syntax for this command is:

show ip route

```
Router-1> show ip route
Network           Mask              Next-Hop           Interface    Source
----------------  ----------------  ----------------   -----------  ------
149.49.77.0        255.255.255.0      149.49.77.70       inband      LOCAL

0.0.0.0            0.0.0.0            149.49.77.1        inband     STATIC
```

show ip route best-match

User level: read-only, read-write, admin.

Use the `show ip route best-match` command to display a routing table for a destination address.

The syntax for this command is:

show ip route best-match <dst addr>

dst addr	IP address

Example:

```
Router-1> show ip route best-match 199.93.0.0
Searching for: 199.93.0.0
Showing 1 rows
Network         Mask            Interface   Next-Hop    Cost TTL  Source
--------------- ----------------------------------------------  -----
199.93.0.0      255.255.0.0    e-135new     135.64.76.1  1   n/a  STAT-HI
```

show ip route static

User level: read-write, admin.

Use the `show ip static route` command to display the static routes.

The syntax for this command is:

show ip route static [<ip addr> [<mask>]]

ip-address	The IP address of the routes
mask	The ip mask of the routes.

Example:

```
Router-1> sh ip route static
Showing 34 rows
Network         Mask          Interface   Next-Hop    Cost  PrefActive
-------------   ------------------------------------------------------
10.0.8.0        255.255.255.0e-36         149.49.36.11 1     high Yes
135.0.0.0       255.0.0.0     e-135new    135.64.76.11     high Yes
135.64.0.0      255.255.0.0   e-135       135.87.164.1 1     high No
149.49.0.0      255.255.0.0   zevel10.10.254.2531lowYes
149.49.2.0      255.255.255.0n/av-Route-FW1highYes
```

show ip route summary

User level: read-only, read-write, admin.

Use the `show ip route summary` command to display the number of routes known to the switch.

The syntax for this command is:

`show ip route summary`

Example:

```
Router-1> sh ip route summary
IP Route Summary:
Current number of routes: 69
```

show ip traffic

User level: read-only, read-write, admin.

Use the `show ip traffic` command to display the IP traffic statistics counters.

The syntax for this command is:

`show ip traffic`

Example:

```
Router-1> show ip traffic
IP statistics:

        Received:
        1365359 total, 45659 local destination
        0 bad hop count, 0 packet header errors
        0 unknown protocol, 136786 address errors
        1182914 discarded

        Fragments:
        0 reassembled, 0 timeouts
        0 couldn't reassemble, 0 fragmented

        Sent:
        19442 generated, 0 forwarded
        0 no route, 0 discarded
ICMP statistics:
       Received:
        881 total, 3 ICMP errors
        0 unreachables, 0 time exceeded
        0 parameter, 0 quench
        861 echo, 17 echo reply
        0 timestamps request, 0 timestamp reply
--type q to quit or space key to continue--
        0 mask requests, 0 mask replies

        0 redirects

        Sent:
        1311 total, 0 ICMP errors
        433 unreachables, 0 time exceeded
        0 parameter, 0 quench
        17 echo, 861 echo reply
        0 timestamps request, 0 timestamp reply
        0 mask requests, 0 mask replies
        0 redirects
```

```
OSPF statistics:
        Received:
        25783 total, 0 checksum errors
        0 hello, 0 database desc
        0 link state req, 0 link state updates
        0 link state acks

        Sent:
        0 total

ARP statistics:
--type q to quit or space key to continue--
        Received:
        2191321 requests, 778439 replies

        Sent:
        443 requests, 340 replies (0 proxy)

DHCP  statistics:
          Requests: 0 , Replies: 0

BOOTP statistics:
          Requests: 0 , Replies: 0
```

show ip unicast cache

User level: read-only, read-write, admin.

Use the `show ip unicast cache` command to list the entries in the hardware unicast cache database.

The syntax for this command is:

`show ip unicast cache` `[<ip addr>]`

ip addr	IP address.

Example:

```
Router-1> show ip unicast cache
Showing 6 Sessions.
IP Address          NH MAC         NH VLAN
===========         ========       =======
192.168.1.1         29.2.1.1        5
192.168.2.1         29.2.2.1        5
192.168.2.2         29.2.2.2        5
192.168.2.3         29.2.2.3        5
192.168.2.4         29.2.2.4        5
192.168.2.5         29.2.2.5        5
```

show ip unicast cache networks

User level: read-only, read-write, admin.

Displays summary of networks handled by the hardware unicast cache database.

The syntax for this command is:

show ip unicast cache networks [<net addr> <net mask>]

net addr	The IP address of the network.
net mask	The mask IP address.

Example:

```
Router-1> show ip unicast cache networks
Showing 7 rows (5 networks)

Network         Mask Next Hop(s)     Total Hosts
=============== ==== =============== ===========
10.0.0.0          16 10.2.0.2               996
71.0.0.0          16 0.0.0.0                  1
130.0.0.0          8 192.168.0.130         1124
190.0.0.0         24 10.2.0.2               250
                     192.168.0.130
191.0.0.0         24 10.2.0.2               250
                     192.168.0.130
                                           -----
                                    Total: 2621
```

show ip unicast cache networks detailed

User level: read-only, read-write, admin.

Use the show `ip unicast cache networks detailed` command to list the networks and hosts that are handled by the hardware unicast cache database.

The syntax for this command is:

show ip unicast cache networks detailed`[<net addr> <net mask>]`

net addr	The IP address of the network.
net mask	The mask IP address.

Example:

```
Router-1>  show ip unicast cache networks detailed
192.168.6.0 24
Showing 3 rows
NetworkMask     IP Address
============    ==================
192.168.6.0     24 192.168.6.40
                   192.168.6.53
                   192.168.6.64
```

show ip unicast cache nextHop

User level: read-write, admin.

Use the `show ip unicast cache nextHop` command to list the routers that are used as next-hop routers.

The syntax for this command is:

show ip unicast cache nextHop

Example:

```
Router-1> show ip unicast cache nextHop
Showing 2 rows
Next Hop
========
192.168.4.1
192.168.5.1
```

show ip unicast cache summary

User level: read-only, read-write, admin.

Use the `show` command to display the number of host networks and next-hops in the module's unicast cache.

The syntax for this command is:

`show ip unicast cache summary`

Example:

```
Router-1> show ip unicast cache summary
Cache Summary
===============
Hosts     :     71
Networks  :     24
Next-Hops :     37
```

show ip vrrp

User level: read-only, read-write, admin.

Use the `show vrrp` command to display VRRP information.

The syntax for this command is:

show ip vrrp [<vlan> [router-id <vr-id>]][detail]

vlan	Filter by VLAN.
router-id	Filter by virtual router ID (1-255)
vr-id	The virtual router ID.
detail	Provide detailed information.

Example:

```
Router-1> show ip vrrp
VRRP is globally enabled
VLAN    VRID  IP Address      PriTimer   State       Since
------  ------------------------------------------------
 1       1    192.168.66.23   255 1      MASTER  00:00:00
 1       2    192.168.66.24   100 1      BACKUP  00:00:00
```

show ip vrrp detail

User level: read-only, read-write, admin.

Use the `show ip vrrp detail` command to display full VRRP-related information

The syntax for this command is:

`show ip vrrp detail`

detail	Show full detail information

Example:

```
Router-1> show ip vrrp detail
VRRP is globally enabled
Virtual Router on VLAN:                          1
    Router-id:                                   1
    State:                                       MASTER
    Priority:                                    255
    Advertisement Interval:                      1
    Last State Change:                           00:00:00
    Override Address Ownership Rule: No
    Authentication Type:                         None
    Authentication Key:                          ""
    Master IP Address                            192.168.66.23
    Has 1 IP addresses
    IP addresses:
      192.168.66.23
    Primary IP Address:                          192.168.66.23
    Primary IP Address was chosen by default
    Preemption Mode:          enabled
    # of times Master:                                      2
    # of received Advertisements:                          0
    # of transmitted Advertisements:                       20
    # of received Advertisements with Security Violations: 0
Virtual Router on VLAN:       1
    Router-id:                2
    State:                    BACKUP
    Priority:                 100
    Advertisement Interval:   1
    Last State Change:        00:00:00
    Override Address Ownership Rule: No
    Authentication Type:      None
    Authentication Key:       ""
    Master IP Address         0.0.0.0
    Has 1 IP addresses
    IP addresses:
      192.168.66.24
    Primary IP Address:       192.168.66.23
    Primary IP Address was chosen by default
    Preemption Mode:          enabled
    # of times Master:                                      1
    # of received Advertisements:                          0
    # of transmitted Advertisements:                       13
    # of received Advertisements with Security Violations: 0
```

show l2-config

User level: read-write, admin.

Use the `show l2-config` command to display comprehensive Layer 2 configuration information.

The syntax for this command is:

`show l2-config`

Example:

```
C460-1> show l2-config

!#############################################################################
!#                      C H A S S I S   I N F O
!#############################################################################
!#
!# Upload time:                  UPTIME: 0:05:44.533
!#
!# System description:           Avaya Inc.- C460ML-SW Multi-layer Switch
!#
!# Inband MAC address:           00-04-0d-17-20-00
!#
!# Outband MAC address:          00-04-0d-17-20-fe
!#
!# Inband IP address, netmask:   149.49.50.233 255.255.255.0
!#
!# Outband IP address, netmask: 0.0.0.0 0.0.0.0
!#
!# Active SPV position:          1
!#
!# Number of blades:             2
!#
!# Backplane CS:                 0.3
!#
--type q to quit or space key to continue--
!# Backplane Serial #:           0000019
!#
```

```
!#############################################################################
!#                           S P V   I N F O
!#############################################################################
!#
!# Slot #:                       1
!#
!# SPV state:                    Active
!#
!# Blade type:                   M460ML-SPV
!#
!# Blade-CS:                     0.2
!#
!# Serial #:                     0000009
!#
!# SW versions - bank A, B:      1.0.5, 1.0.5
!#
!# Embedded Web SW version:      1.0.10
!#
!#############################################################################
!#                           S P V   I N F O
!#############################################################################
--type q to quit or space key to continue--
!#
!# Slot #:                       2
!#
!# SPV in slot # 2 is not present

!#############################################################################
!#                         I O B L A D E   I N F O
!#############################################################################
!#
!# Slot # 3 is empty
!#
!#############################################################################
!#                         I O B L A D E   I N F O
!#############################################################################
!#
!# Slot # 4 is empty
!#
!#
```

```
!##############################################################################
!#                        I O B L A D E   I N F O
!##############################################################################
!#
!# Slot #:                        5
!#
!# Blade type:                    M4612ML-G
--type q to quit or space key to continue--
!#
!# Blade-CS:                      0.1
!#
!# Serial #:                      0000114
!#
!# Number of ports:               12
!#

!##############################################################################
!#                        I O B L A D E   I N F O
!##############################################################################
!#
!# Slot # 6 is empty
!#
!##############################################################################
!#
!# set spanning tree mode.
!#
set spantree enable
set spantree priority 32768
!#
!# Set ARP-to-myself parameters
!#
set arp-tx-interval inband 5
--type q to quit or space key to continue--
set arp-tx-interval outband 5
!#
!# The snmp community strings
!#
set snmp community read-only "public"
set snmp community read-write "public"
set snmp community trap "public"
set system location ""
set system name ""
set system contact ""
set logout 0
```

```
!#
!#Set vlan table management parameters
!#
set vlan 1 name V1
!#
!# Set the interface of the device
!#
!# set interface  inband 1    149.49.50.233        255.255.255.0
!#
!#Set PPP management parameters
!#
!#set interface ppp 0.0.0.0 0.0.0.0
--type q to quit or space key to continue--


!#set interface ppp disable
set ppp authentication incoming none
set ppp incoming timeout 0
set ppp baud-rate 38400
!#

!# Set Rmon History entries
!#
!#
!# Set Rmon Alarms
!#
!#
!# Set Rmon Events
!#
!#
!#Set embedded web management parameters
!#
set snmp retries 3
set snmp timeout 2000
set web aux-files-url "www.avaya.com"
!#
!#Set radius management parameters
!#
set radius authentication disable
--type q to quit or space key to continue--
set radius authentication server 0.0.0.0 primary
set radius authentication server 0.0.0.0 secondary
set radius authentication retry-number 4
set radius authentication retry-time 5
set radius authentication udp-port 1812
!#
```

```
!# set intelligent-multicast parameters
!#
set intelligent-multicast disable
set intelligent-multicast client-port-pruning time 600
set intelligent-multicast router-port-pruning time 1800
set intelligent-multicast group-filtering-delay time 10
!#******* broadcast storm configuration *********
set broadcast storm control threshold 0
set broadcast storm control disable

!#*********************************************************
!#
!#     LINK AGGREGATION GROUP.
!#
!#THERE IS NO LINK AGGREGATION GROUP.
!#
!#
!#
--type q to quit or space key to continue--

!#  SPANNING TREE PER PORT CONFIGURATION.
!#
set port spantree cost 5/1 4
set port spantree cost 5/2 4
set port spantree cost 5/3 4
set port spantree cost 5/4 4
set port spantree cost 5/5 4
set port spantree cost 5/6 4
set port spantree cost 5/7 4
set port spantree cost 5/8 4
set port spantree cost 5/9 4
set port spantree cost 5/10 4
set port spantree cost 5/11 4
set port spantree cost 5/12 4
!#
!#
```

```
!#*************** port 5/1 configuration *****************
!# Port type:         Tranceiver Not Present
!# Link status:        no link
!# STA status:        Disabled
!#*******************************************************
set port disable 5/1
set port auto-negotiation-flowcontrol-advertisement 5/1 no-flowcontrol
--type q to quit or space key to continue--
set port negotiation 5/1 enable
set port level 5/1 0
set trunk 5/1 off
set port vlan 1 5/1
set port name 5/1 "NO NAME"
set port trap 5/1 enable
set port classuable
set port enable 5/1

!#*************** port 5/2 configuration *****************
!# Port type:         Tranceiver Not Present
!# Link status:        no link
!# STA status:        Disabled
!#*******************************************************
set port disable 5/2
set port auto-negotiation-flowcontrol-advertisement 5/2 no-flowcontrol
set port negotiation 5/2 enable
set port level 5/2 0
set trunk 5/2 off
set port vlan 1 5/2
set port name 5/2 "NO NAME"
set port trap 5/2 enable
set port classification 5/2 valuable
--type q to quit or space key to continue--
set port enable 5/2
```

```
!#*************** port 5/3 configuration *****************
!# Port type:         Tranceiver Not Present
!# Link status:        no link
!# STA status:        Disabled
!#*********************************************************
set port disable 5/3
set port auto-negotiation-flowcontrol-advertisement 5/3 no-flowcontrol
set port negotiation 5/3 enable
set port level 5/3 0
set trunk 5/3 off
set port vlan 1 5/3
set port name 5/3 "NO NAME"
set port trap 5/3 enable
set port classification 5/3 valuable
set port enable 5/3

!#*************** port 5/4 configuration *****************
!# Port type:         Tranceiver Not Present
!# Link status:        no link
!# STA status:        Disabled
!#*********************************************************
--type q to quit or space key to continue--
set port disable 5/4
set port auto-negotiation-flowcontrol-advertisement 5/4 no-flowcontrol
set port negotiation 5/4 enable
set port level 5/4 0
set trunk 5/4 off
set port vlan 1 5/4
set port name 5/4 "NO NAME"
set port trap 5/4 enable
set port classification 5/4 valuable
set port enable 5/4


!#*************** port 5/5 configuration *****************
!# Port type:         Tranceiver Not Present
!# Link status:        no link
!# STA status:        Disabled
!#*********************************************************
set port disable 5/5
set port auto-negotiation-flowcontrol-advertisement 5/5 no-flowcontrol
set port negotiation 5/5 enable
set port level 5/5 0
set trunk 5/5 off
set port vlan 1 5/5
set port name 5/5 "NO NAME"
--type q to quit or space key to continue--
set port trap 5/5 enable
set port classification 5/5 valuable
set port enable 5/5
```

```
!#*************** port 5/6 configuration *****************
!# Port type:         Tranceiver Not Present
!# Link status:        no link
!# STA status:        Disabled
!#*********************************************************
set port disable 5/6
set port auto-negotiation-flowcontrol-advertisement 5/6 no-flowcontrol
set port negotiation 5/6 enable
set port level 5/6 0
set trunk 5/6 off
set port vlan 1 5/6
set port name 5/6 "NO NAME"
set port trap 5/6 enable
set port classification 5/6 valuable
set port enable 5/6


!#*************** port 5/7 configuration *****************
!# Port type:         Tranceiver Not Present
!# Link status:        no link
--type q to quit or space key to continue--
!# STA status:        Disabled
!#*********************************************************
set port disable 5/7
set port auto-negotiation-flowcontrol-advertisement 5/7 no-flowcontrol
set port negotiation 5/7 enable
set port level 5/7 0
set trunk 5/7 off
set port vlan 1 5/7
set port name 5/7 "NO NAME"
set port trap 5/7 enable
set port classification 5/7 valuable
set port enable 5/7


!#*************** port 5/8 configuration *****************
!# Port type:         Tranceiver Not Present
!# Link status:        no link
!# STA status:        Disabled
!#*********************************************************
set port disable 5/8
set port auto-negotiation-flowcontrol-advertisement 5/8 no-flowcontrol
set port negotiation 5/8 enable
set port level 5/8 0
set trunk 5/8 off
--type q to quit or space key to continue--
set port vlan 1 5/8
set port name 5/8 "NO NAME"
set port trap 5/8 enable
set port classification 5/8 valuable
set port enable 5/8
```

```
!#*************** port 5/9 configuration *****************
!# Port type:         Tranceiver Not Present
!# Link status:        no link
!# STA status:        Disabled
!#*********************************************************
set port disable 5/9
set port auto-negotiation-flowcontrol-advertisement 5/9 no-flowcontrol
set port negotiation 5/9 enable
set port level 5/9 0
set trunk 5/9 off
set port vlan 1 5/9
set port name 5/9 "NO NAME"
set port trap 5/9 enable
set port classification 5/9 valuable
set port enable 5/9


!#*************** port 5/10 configuration *****************
--type q to quit or space key to continue--
!# Port type:         Tranceiver Not Present
!# Link status:        no link
!# STA status:        Disabled
!#*********************************************************
set port disable 5/10
set port auto-negotiation-flowcontrol-advertisement 5/10 no-flowcontrol
set port negotiation 5/10 enable
set port level 5/10 0
set trunk 5/10 off
set port vlan 1 5/10
set port name 5/10 "NO NAME"
set port trap 5/10 enable
set port classification 5/10 valuable
set port enable 5/10


!#*************** port 5/11 configuration *****************
!# Port type:         Tranceiver Not Present
!# Link status:        no link
!# STA status:        Disabled
!#*********************************************************
set port disable 5/11
set port auto-negotiation-flowcontrol-advertisement 5/11 no-flowcontrol
set port negotiation 5/11 enable
--type q to quit or space key to continue--
set port level 5/11 0
set trunk 5/11 off
set port vlan 1 5/11
set port name 5/11 "NO NAME"
set port trap 5/11 enable
set port classification 5/11 valuable
set port enable 5/11
```

```
!#*************** port 5/12 configuration *****************
!# Port type:          Tranceiver Not Present
!# Link status:         no link
!# STA status:         Disabled
!#*********************************************************
set port disable 5/12
set port auto-negotiation-flowcontrol-advertisement 5/12 no-flowcontrol
set port negotiation 5/12 enable
set port level 5/12 0
set trunk 5/12 off
set port vlan 1 5/12
set port name 5/12 "NO NAME"
set port trap 5/12 enable
set port classification 5/12 valuable
set port enable 5/12


!#
!#Set port redundancy
!#
set port redundancy enable
set port redundancy-intervals 1 none
!#
!#Set vlan table management parameters
!#
set port vlan-binding-mode 5/1 static
set port vlan-binding-mode 5/2 static
set port vlan-binding-mode 5/3 static
set port vlan-binding-mode 5/4 static
set port vlan-binding-mode 5/5 static
set port vlan-binding-mode 5/6 static
set port vlan-binding-mode 5/7 static
set port vlan-binding-mode 5/8 static
set port vlan-binding-mode 5/9 static
set port vlan-binding-mode 5/10 static
set port vlan-binding-mode 5/11 static
set port vlan-binding-mode 5/12 static
C460-1#
```

show license

User level: read-only, read-write, admin.

Use the `show license` command to display the current licenses installed on the chassis

The syntax for this command is:

`show license`

Example:

```
C460-1> show license
Application              License Key              State      level
--------------    ----------------------------- ------------ -------
smon              0000 0000 0000 0000 0000 0000 unlicensed     0
routing           000  000  000  000  000  000  licensed       10
```

show logout

User level: read-only, read-write, admin.

Use the `show timeout` command to display the amount of time the CLI remains idle before timing out in minutes.

If the result is 0, there is no timeout limit. The default is 15 minutes.

The syntax for this command is:

`show logout`

Example:

```
C460-1> show logout
CLI timeout is 10 minutes
```

show mac-aging

User level: user, privileged, supervisor

Use the `show mac-aging` command to display the current status of the MAC aging function.

The syntax for this command is:

`show mac-aging`

Example:

```
C460-1> show mac-aging
mac aging application is disabled
```

show mac-aging-time

User level: user, privileged, supervisor

Use the `show mac-aging-time` command to display the MAC aging time in minutes.

The syntax for this command is:

`show mac-aging-time`

Example:

```
C460-1> show mac-aging-time
MAC aging time is 5 (min.)
```

ⓘ The displayed value is the aging-time lower bound. The actual aging-time can be up to 2 minutes longer.

show module

User level: read-only, read-write, admin.

Use the `show module` command to display module status and information.

The syntax for this command is:

`show module`

Example:

```
C460-1> show module
Mod        Type         C/S     S/N      Status
---- ----------------- ----  --------  ------
0    C460-CH             1.0   0000008  N/A
1    M460ML-SPV          1.0   0000003  Active
2    M460ML-SPV          1.0   0000017  Standby
3    M4612ML-G           1.0   0000004  Normal
4    M4648ML-T-2G-PWR    1.0   0000016  Normal
5    M4648ML-T-PWR       1.0   0000029  Normal
6    M4648ML-T-2G        1.0   0000797  Normal
PSU1 MPS4610-AC                         Active
PSU2 MPS4610-AC          1/0   0000011  Active
PSU3                                    Empty
Fan  M460-FAN                           OK
```

Output Fields

Mod	Module (slot) number
Type	Module type
C/S	Hardware Configuration Symbol of the module
S/N	Serial number of the module
Status	Status of the module or slot: *Supervisor Module* • Active • Standby • Halted • Unknown • Empty

I/O Module

- Normal
- Not enough power
- Power disabled
- Empty

show outband

User level: read-only, read-write, admin.

Use the `show outband` command to displays the Ethernet Console port status.

This command applies to the specific supervisor module where you execute it.

The syntax for this command is:

`show outband`

Example:

```
C460-1> show outband

Status:             Connected
Auto-negotiation:   Enable
Duplex:             Half-Duplex
Speed:              100 MBit/sec
```

show policy type

User level: read-only, read-write, admin.

Use the `show policy type` command to show whether the module enforces the active policy-list on all packets or only on routed packets (for modules in 'device-mode router').

The syntax for this command is:

`show policy type`

Example:

```
Router-1# show policy type

Policy type is router
```

show port

User level: read-only, read-write, admin.

Use the `show port` command to display port status on I/O modules.

The syntax for this command is:

`show port` `[<module>[/port]]`

module (Optional)	Number of the module (3-6). If you do not specify a number, the ports on all the modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example to display the status for port 4 on switch 3:

```
C460-1> show port 3/4
Port   Name            Status    Vlan Level  Neg     Dup. Spd. Type
------ --------------- --------- ---- ------ ------- ---- ---- -----------------
 3/4   NO NAME         no link   1     0     enable  half 10M  10/100BaseTx Port
```

Show Port Output Fields

Field	Description
Port	Switch and port number
Name	Name of port
Status	Status of the port (connected, faulty, disabled)
Vlan	VLAN ID of the port
Level	Priority level of the port (0-7)
Neg	The autonegotiation status of the port (enabled, disabled)
Dup	Duplex setting for the port (full, half)
Speed	Speed setting for the port (10, 100, 1000)
Type	Port type, for example: 10/100BASE-TX, GBIC_SX, GBIC_LX, GBIC_not present, GBIC_unknown

show port auto-negotiation-flowcontrol-advertisement

User level: read-write, admin.

Use the `show port auto-negotiation-flowcontrol-advertisement` command to display the flowcontrol advertisement for a Gigabit port used to perform auto-negotiation.

The syntax for this command is:

`set auto-negotiation-flowcontrol-advertisement` `[module/port] [mode]`

module (Optional)	Number of the module (3-6). If you do not specify a number, the ports on all the modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
mode	no-flowcontrol, asym-tx-only, sym-only or sym-and-asym-rx

Example:

```
C460-1> show port auto-negotiation-flowcontrol-
advertisement 4/49

Port 4/49 pause capabilities was set
```

show port channel

User level: read-only, read-write, admin.

Use the `show port channel` command to display Link Aggregation Group (LAG) information for a specific switch or port.

The syntax for this command is:

`show port channel` `[<module>[/<port>]] [info]`

module (Optional)	Number of the module (3-6). If you do not specify a number, the modules on all the switch are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

info Displays full information on the port

Example:

```
C460-1> show port channel
Port  Channel Status     Channel Name and Id
----  ---------------    -------------------
3/1   off
3/2   off
3/3   on                 server1
3/4   on                 server1
3/13  off
C460-1> show port channel 3/3 info
Port   Speed  Duplex  Vlan  Port      Trunk    Vlan
                            Priority  status   Binding
------ ------ ------- ----- --------- -------- --------
 3/3   10     half    1     0         off      static
```

show port classification

User level: read-write, admin.

Use the `show port classification` command to display a port's classification.

The syntax for this command is:

show port classification [module/[port]]

module	Number of the module (3-6). If you do not specify a number, the ports on all the modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

```
C460-1> show port classification 4/8
Port   Port Classification
------ ---------------------
4/8    regular

C460-1> show port classification 4/9
Port   Port Classification
------ ---------------------
4/9    valuable
```

show port dot1x

User level: read-only, read-write, admin.

Use the `show port dot1x` command to display all the configurable values associated with the authenticator port access entity (PAE) and backend authenticator.

The syntax for this command is:

```
show dot1x [mod]/[port]
```

mod (Optional)	Number of the module.
port (Optional)	Number of the port on the module, or range of ports.

Example:

```
C460-1> show port dot1x 3/3
Port   Auth     BEnd   Port     Port   Re   Quiet ReAuth Server Supp   Tx    Max
Number State    State  Control  Status Auth Priod Priod  Tmeout Tmeout Priod Req
------ -------- ------ -------- ------ ---- ----- ------ ------ ------ ----- ---
1/3   Init     Init   Auto     Unauth Disa    60   3600     30     30    30   2
```

module	Number of the module (3-6). If you do not specify a number, the ports on all the modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.
Auth State	The Port Access Entity state. Possible states include: • Initialize • Disconnected • Connecting • Authenticating • Authenticated • Aborting • Held • ForceAuth • ForceUnauth

BEnd Stat	The current state od the Backend Authentication state machine. Possible states include: • Request • Response • Success • Fail • Timeout • Idle • Init
Port Control	Port control type. Valid values include: • force-authorized • force-unauthorized • auto.
Port Status	The current value of the controlled port status. Possible states include: • Authorized • Unauthorized
Re Auth	The state of reauthentication on the port. Possible states include: • Enabled - The port connection is reauthenticated after the reAuthPeriod. • Disabled - The port connection is not reauthenticated. The reAuthPeriod is ignored.
Quiet Period	The amount of time, in seconds, between sending authentication requests.
ReAuth Period	The time, in seconds, after which the port connection should be reauthenticated.
Server Tmout	The amount of time, in seconds, the P330 waits for a response from the RADIUS server.
Supp Tmeout	The amount of time, in seconds, before resending authentication requests.
Tx Priod	The amount of time, in seconds, in which an authentication request must be answered.

Max Req	The maximum number of times a request for authentication is sent before timing out.

show port dot1x statistics

User level: read-only, read-write, admin.

Use the `show port dot1x statistics` command to display all the port dot1x statistics.

The syntax for this command is:

```
show dot1x statistics [mod]/[port]
```

module	Number of the module (3-6). If you do not specify a number, the ports on all the modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

```
C460-1> show port statistics 1/1
Port   Tx_Req/Id  Tx_Req    Tx_Total   Rx_Start  Rx_Logff  Rx_Resp/Id  Rx_Resp
------ ---------  --------  ---------  --------  --------  ----------  ---------
1/1       2         5          0         0         0           0          0
Port   Rx_Invalid  Rx_Len_Err  Rx_Total   Last_Rx_Frm_Ver  Last_Rx_Frm_Src_Mac
------ ----------  ----------  ---------  ---------------  -------------------
1/1        0           0          0             0          1d-80-00-00-00-00
```

show port edge state

User level: read-only, read-write, admin.

Use the `show port edge state` command to show a port's edge admin and operational RSTP state.

ⓘ A port can be set to admin state of edge port, but if a BPDU is received on this port the oper state is changed to non-edge state.

The syntax for this command is:

`show port edge state <module/port>`

module	Number of the module (3-6). If you do not specify a number, the ports on all the modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

```
C460-1> show port edge state
Port      admin state     oper state
-------   -------------   -------------
1/1       edge-port       edge-port
1/2       non-edge-port   non-edge-port
```

show port flowcontrol

User level: read-only, read-write, admin.

Use the `show port flowcontrol` command to display per-port status information related to flow control.

The syntax for this command is:

`show port flowcontrol` `[<module>[/<port>]]`

module (Optional)	Number of the module (3-6). If you do not specify a number, all modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all ports on the specified module are shown.

Example:

```
C460-1> show port flowcontrol 3/4
Port   Send-Flowcontrol Receive-Flowcontrol
       Admin Oper       Admin Oper
------ ----- ----       ----- ----
 3/4   off   off        off   off
```

Output Fields

Field	Description
Port	Module and port number
Send-Flowcontrol-Admin	Send flow-control administration. Possible settings: • ON indicates that the local port is allowed to send flow control frames to the far end. • OFF indicates that the local port is *not* allowed to send flow control frames to the far end.
Send-Flowcontrol-Oper	Send flow-control operation mode. Possible modes: • ON indicates that the local port will send flow control frames to the far end. • OFF indicates that the local port will *not* send flow control frames to the far end.
Receive-Flowcontrol-Admin	Receive flow-control administration. Possible settings: • ON indicates that the local port will act upon flow control indications if received from the far end. • OFF indicates that the local port will discard flow control frames if received from the far end.
Receive-Flowcontrol-Oper	Receive flow-control operation mode. Possible modes: • ON indicates that the local port will act upon flow control indications received from the far end. • OFF indicates that the local port will discard flow control frames received from the far end.

show port mirror

User level: read-only, read-write, admin.

Use the show port mirror command to display mirroring information for the switch.

The syntax for this command is:

show port mirror

Example:

```
C460-1> show port mirror
port mirroring
--------------
Mirroring both Rx and Tx packets from port 3/2 to port 4/4
is enabled

C460-1> show port mirror
port mirroring
--------------
No ports are mirrored
```

show port point-to-point status

User level: read-only, read-write, admin.

Use the `show port point-to-point status` command to show the port's point-to-point admin and operational RSTP status.

The syntax for this command is:

`show port point-to-point status <module/port>`

module (Optional)	Number of the module (3-6). If you do not specify a number, all modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all ports on the specified module are shown.

Example:

```
C460-1> show port point-to-point status
Port     point-to-point admin state    point-to-point oper state
-------  ----------------------------  -------------------------
 1/1      auto                          point to point connection
 1/2      auto                          point to point connection
 1/3      auto                          point to point connection
 1/4      auto                          point to point connection
 1/5      auto                          point to point connection
 1/6      auto                          point to point connection
 1/7      auto                          point to point connection
```

show port redundancy

User level: read-only, read-write, admin.

Use the `show port redundancy` command to display information about software port redundancy schemes defined for the switch.

The syntax for this command is:

`show port redundancy`

Example:

```
C460-1> show port redundancy
Redundancy Name     Primary Port        Secondary Port      Status
-----------------   --------------      ----------------    --------
gregory               3/48                  3/47            secondary
amir                  3/46                  3/45            secondary
lior                   3/1                   3/2             primary
arie                  3/34                  3/33            secondary

Minimum Time between Switchovers: 1
Switchback interval: 3
```

show port trap

User level: read-only, read-write, admin.

Use the `show port trap` command to display information on SNMP generic link up/down traps sent for a specific port.

The syntax for this command is:

`show port trap` `[<module>[/<port>]]`

module (Optional)	Number of the module (3-6). If you do not specify a number, the ports on all the modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

```
C460-1> show port trap 4/1
Port 4/1 up/down trap is disabled
```

show port vlan-binding-mode

User level: read-only, read-write, admin.

Use the `show port-vlan-binding` command to display port vlan binding mode information.

The syntax for this command is:

show port vlan-binding-mode [module[/port]]

module	Number of the module (3-6). If you do not specify a number, the ports on all the modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example:

```
C460-1> show port vlan-binding-mode
port 2/1 is statically bound
port 2/2 is statically bound
port 2/3 is statically bound
port 2/4 is statically bound
port 2/5 is statically bound
port 2/6 is statically bound
port 2/7 is statically bound
port 2/8 is statically bound
port 2/9 is statically bound
port 2/10 is statically bound
```

show powerinline

User level: read-only, read-write, admin.

Use the `show powerinline` command display the port powerinline configuration.

The syntax for this command is:

show powerinline <module_number [/port_number]>

module (optional)	Number of the module (3-6). If you do not specify a number, the ports on all the modules are configured.

port (optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4.

Example to show PoE configuration on I/O module 3:

```
C460-1> show powerinline 3
Port      Inline                Powering
          Operational           Priority
          Status
------    ------------------    ---------
 3/1      Fault                 Low
 3/2      Fault                 Low
 3/3      Fault                 Low
 3/4      Searching             Low
 3/5      Searching             Low
 3/6      Searching             Low
 3/7      Searching             Low
```

Output fields:

Field	Description
Inline operational status	• Disabled – Detection process in administratively disabled • Searching – No PD connected • Delivering power – Valid PD connected and power delivered on the port • Fault – Invalid PD connected
Powering Priority	• Critical • High • Low

show powerinline budget

User level: read-only, read-write, admin.

Use the `show powerinline budget` command to display the PoE budget distribution for modules in the switch. The budget assigned for the module includes power for PoE ports and power required for module basic PoE operation.

The syntax for this command is:

`show powerinline budget`

Example:

```
C460-1> show powerinline budget

 Slot  Module Type                    Budget  Demand
 ----  --------------------------  ------  ------
    3  M4612ML-G                      N/A     N/A
    4  M4648ML-T-2G-PWR              720W     12W
    5  M4648ML-T-PWR                 720W    156W
    6  M4648ML-T-2G                   N/A     N/A
```

show ppp authentication

User level: read-only, read-write, admin.

Use the `show ppp authentication` command to display the authentication method used for PPP sessions.

The syntax for this command is:

`show ppp authentication`

Example:

```
C460-1> show ppp authentication

PPP Authentication Parameters:
------------------------------
Incoming:       CHAP
```

show ppp baud-rate

User level: read-only, read-write, admin.

Use the `show ppp baud-rate` command to display the ppp baud-rate.

The syntax for this command is:

`show ppp baud-rate`

Example:

```
C460-1> show ppp baud-rate
PPP baud rate is 38400
```

show ppp configuration

User level: read-only, read-write, admin.

Use the `show ppp configuration` command to display the ppp configuration.

The syntax for this command is:

`show ppp configuration`

Example:

```
C460-1> show ppp configuration
PPP baud rate is 38400
PPP incoming timeout is 15 minutes
PPP Authentication Parameters:
------------------------------
Incoming:       None
```

show ppp incoming timeout

User level: read-only, read-write, admin.

Use this `show ppp incoming timeout` command to display the amount of time in minutes that a PPP session can remain idle before being automatically disconnected.

The syntax for this command is:

`show ppp incoming timeout`

Example:

```
C460-1> show ppp incoming timeout
PPP incoming timeout is 15 minutes
```

show ppp session

User level: read-only, read-write, admin.

Use the `show ppp session` command to display PPP parameters and statistics of an active PPP session.

The syntax for this command is:

`show ppp session`

Example:

```
C460-1> show ppp session
```

show radius authentication

User level: read-only, read-write, admin.

Use the `show radius authentication` command to display all RADIUS authentication configurations.

The syntax for this command is:

`show radius authentication`

Example:

```
C460-1> show radius authentication
RADIUS authentication parameters:
---------------------------------
Mode:                   Enabled
Primary-server:         192.168.42.252
Secondary-server:       192.168.48.134
Retry-number:           4
Retry-time:             5
UDP-port:               1645
Shared-secret:          sodot
```

show rmon alarm

User level: read-only, read-write, admin.

Use the `show rmon alarm` command to display the parameters set for a specific alarm entry that was set using the `rmon alarm` command on Page 75 or using the C460 Manager.

The syntax for this command is:

`show rmon alarm` `[<Alarm Index>]`

Alarm Index	History index defined using `rmon alarm` command or the C460 Manager.

Example:

```
C460-1> show rmon alarm 1026

alarm

alarm 1026 is active, owned by amir
Monitors ifEntry.1.1026 every 60 seconds
Taking delta samples, last value was 1712
Rising threshold is 10000, assigned to event # 1054
Falling threshold is 10, assigned to event # 1054
On startup enable rising or_falling alarms.
```

show rmon event

User level: read-only, read-write, admin.

Use the `show rmon event` command to show the parameters of an Event entry defined by the `rmon event` command on Page 76 or using the C460 Manager.

The syntax for this command is:

show rmon event [<Event Index>]

Alarm Index	History index defined using `rmon event` command or the C460 Manager

Example:

```
C460-1> show rmon event 1026

event

Event 1054 is active, owned by amir
Description is event for monitoring amir's co
Event firing causes log and trap to community public,last
fired 0:0:0
```

show rmon history

User level: read-only, read-write, admin.

Use the `show rmon history` command to display the most recent RMON history log for a given History Index. The history index is defined using the `rmon history` command on 76 or using an RMON management tool.

The syntax for this command is:

`show rmon history` `[<History Index>]`

History Index	History index defined using `rmon history` command or RMON management tool

Example:

```
C460-1> show rmon history 1026
history
Entry 1026 is active, owned by amir
Monitors ifEntry.1.1026 every 30 seconds
Requested # of time intervals, ie buckets, is 20
Granted # of time intervals, ie buckets, is 20
Sample # 1 began measuring at 2:53:9
Received 62545 octets, 642 packets,
391 broadcast and 145 multicast packets,
0 undersize and 0 oversize packets,
0 fragments and 0 jabbers,
0 CRC alignment errors and 0 collisions,
# of dropped packet events (due to a lack of resources): 0
Network utilization is estimated at 0
```

show rmon statistics

User level: read-only, read-write, admin.

Use the `show rmon statistics` command to show the Received Packet RMON statistics counters for a certain interface number according to the MIB-2 interface table numbering scheme.

The syntax for this command is:

`show rmon statistics` `<module/port>`

module/port	Range of ports

Example:

```
C460-1> show rmon statistics
Statistics for switch is active,owned by Monitor
Monitors ifEntry.1.1026 which has
Received 26375085 octets, 222536 packets,
154821 broadcast and 53909 multicast packets,
0 undersize and 0 oversize packets,
0 fragments and 0 jabbers,
1 CRC alignment errors and 0 collisions,
# of dropped packet events (due to a lack of resources): 0
# of packets received of length (in octets):
64:94530, 65-127:85124, 128-255:25896,
256-511:10440, 512-1023:6057, 1024-1518:489
```

show rmon2 dscp-stats

User level: read-only, read-write, admin.

Use the `show rmon2 dscp-stats` command to display the DSCP distribution (routed traffic only) for the RMON2 application.

The syntax for this command is:

`show rmon2 dscp-stats`

Example:

```
Router-1> show rmon2 dscp-stats

DSCP Value  Total Packets   Total Octets    Utilization
----------  --------------  --------------  -----------
         3         7620262       487696768       59.99%
         7         5080185       325131840       40.00%
----------  --------------  --------------  -----------
     Total        12700447       812828608       99.99%
```

show rmon2 protocol-dir

User level: read-only, read-write, admin.

Use the `show rmon2 protocol-dir` command to display the protocols in the TCP/UDP protocols list.

The syntax for this command is:

```
show rmon2 protocol-dir [UDP|TCP <Port #>]
```

UDP	UDP protocol
TCP	TCP protocol
Port #	Port

Example:

```
Router-1> show rmon2 protocol-dir

Protocol Description                Owner
---------------------------------  ----------------------------
FTP-data over TCP/IP (Port 20)
Telnet over TCP/IP (Port 23)
SMTP over TCP/IP (Port 25)
HTTP over TCP/IP (Port 80)
1111 tcp                           CLI_User on local device
2222 tcp                           CLI_User on local device
SNMP-trap over UDP/IP (Port 162)
```

show rmon2 protocol-dist

User level: read-only, read-write, admin.

Use the `show rmon2 protocol-dist` command to display the RMON2 protocol distribution information.

The syntax for this command is:

```
show rmon2 protocol-dist [UDP|TCP <Port #>]
```

UDP	UDP protocol
TCP	TCP protocol
Port #	Port

Example:

```
Router-1> show rmon2 protocol-dist

           Protocol                 Total Packets   Total Octets   Utilization
---------------------------------  --------------  --------------  -----------
ICMP                                         316                        0.17%
OSPF                                        5033                        2.77%
VRRP                                           0                        0.00%
RIP                                            0                        0.00%
Other                                     176031                       97.06%
Total IP control                          181380                      100.00%
---------------------------------  --------------  --------------  -----------
FTP-data over TCP/IP (Port 20)                 0               0        0.00%
Telnet over TCP/IP (Port 23)                   0               0        0.00%
SMTP over TCP/IP (Port 25)                     0               0        0.00%
HTTP over TCP/IP (Port 80)                     0               0        0.00%
1111 tcp                                 7587263       485584832       59.99%
2222 tcp                                 5058185       323723840       40.00%
SNMP-trap over UDP/IP (Port 162)               0               0        0.00%
Other                                          0               0        0.00%
Total IP routed                         12645448       809308672      100.00%
---------------------------------  --------------  --------------  -----------
Total IP                                12826828
ARP Protocol                              530811
```

show rmon2 state

User level: read-only, read-write, admin.

Use the `show rmon2 state` command to display the status of the rmon2 application.

The syntax for this command is:

`show rmon2 state`

Example:

```
Router-1> show rmon2 state

RMON2 15 in MATRIX state
```

show running-config

User level: read-only, read-write, admin.

Use the show running-config command to display the current router configuration information.

The syntax for this command is:

```
show running-config
```

Example:

```
Router-1> show running-config
Router-1>
! Avaya Inc.- C460ML Multi-layer Switch - Router configuration
! version 2.0.2
ip access-list-name 100 "list #100"
 ip access-list-owner 100 "egotlieb@135.64.102.64"
 ip access-list 100    1 permit ip   any any
 ip access-list 100    2 fwd3 udp  any eq 68 any eq 67
!
set vlan       2 name "vlan2"
no rmon2 protocol-dir TCP 20

no rmon2 protocol-dir TCP 23
no rmon2 protocol-dir TCP 25
no rmon2 protocol-dir TCP 80
no rmon2 protocol-dir TCP 110
no rmon2 protocol-dir UDP 161
no rmon2 protocol-dir UDP 162
rmon2 protocol-dir TCP 1111 "1111--TCP"
rmon2 protocol-dir TCP 2222 "2222--TCP"
!
interface "11"
 ip vlan name "Default"
 ip address 11.11.11.1      255.255.255.0
!
--type q to quit or space key to continue--
interface "12"
 ip vlan name "vlan2"
 ip address 12.12.12.1      255.255.255.0
!
interface "78"
 ip vlan name "Default"
 ip address 149.49.78.71    255.255.255.0
!
ip default-gateway 149.49.78.1     1 low
```

show secure current

User level: read-write, admin.

Use the `show secure current` command to list the IP addresses of managers currently connected to the switch.

The syntax for this command is:

`show secure current`

Example:

```
C460-1# show secure current
   IP Address                Time Since Last Request(In Sec)
  --------------            ------------------------------------
    135.64.100.205              7
    149.49.77.13                13
    149.49.77.7                 2
C460-1#
```

show snmp

User level: read-only, read-write, admin.

Use the `show snmp` command to display SNMP information.

The syntax for this command is:

`show snmp`

Example:

```
C460-1> show snmp
Authentication trap disabled
Community-Access     Community-String
-----------------    ----------------
read-only            public
read-write           public
trap                 public

Trap-Rec-Address     Status       Traps Configured
----------------     --------     ----------------
192.138.40.59        Enabled      config
                                  fault
                                  trafic_threshold
                                  module_De-Enrollment
                                  module_Enrollment
                                delete_SW_redundancy_entry
                                  create_SW_redundancy_entry
                                  temperature_warning
                                  general_threshold
                                  cam_change
                                  duplicate_ip
                                ip_vlan_violation
                                link_aggregation_connection_fault
                                  link_aggregation_connection_return
                                  link_aggregation_partial_fault
                                  link_aggregation_partial_return
                                  link_aggregation_auto_neg_fault
                                  link_aggregation_auto_neg_fault_return
                                  delete_lag
                                  create_new_lag
                                  active_policy_list_change
                                  policy_access_control_violation
                                  PSU_module_fault
                                  PSU_module_fault_return
                                  fans_module_fault
                                  fans_module_fault_return
```

show snmp retries

User level: read-only, read-write, admin.

Use the `show snmp retries` command to display the number of retries initiated by the C460 Manager when it tries to send SNMP messages to the device.

The syntax for this command is:

`show snmp retries`

Example:

```
C460-1> show snmp retries
the SNMP Retries Number is 3
```

show snmp timeout

User level: read-only, read-write, admin.

Use the `show snmp timeout` command to display the default SNMP timeout in seconds.

ⓘ This command is useful for access using the Device Manager.

The syntax for this command is:

`show snmp timeout`

Example:

```
C460-1> show snmp timeout
the SNMP Timeout is 2000
```

show spantree

User level: read-only, read-write, admin.

Use then `show spantree` command to display spanning-tree information.

The syntax for this command is:

`show spantree` `[<module>[/<port>]]`

module (Optional)	Number of the module. If you do not specify a number, all modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4

Example:

```
C460-1> show spantree
Spanning tree enabled
Designated Root:  00-40-0d-88-06-c8
Designated Root Priority: 32768
Designated Root Cost: 20
Designated Root Port: 1/1
Root Max Age: 20   Hello Time: 2

Bridge ID MAC ADDR: 00-40-0d-92-04-b4
Bridge ID priority: 32768

Port   State         Cost       Priority
------ ------------- ---------- ------------
4 /1   Forwarding    20         128
4 /2   not-connected 20         128
4 /3   LAG-member    20         128
4 /4   LAG-member    20         128
4 /5   not-connected 20         128
4 /6   not-connected 20         128
4 /8   not-connected 20         128
4 /9   not-connected 20         128
4 /10  not-connected 20         128
4 /11  not-connected 20         128
--type q to quit or space key to continue--
4 /12  not-connected 20         128
4 /13  not-connected 20         128
4 /14  not-connected 20         128
4 /15  not-connected 20         128
4 /16  not-connected 20         128
4 /17  not-connected 20         128
4 /18  not-connected 20         128
4 /19  not-connected 20         128
4 /20  not-connected 20         128
4 /21  not-connected 20         128
4 /22  not-connected 20         128
4 /23  not-connected 20         128
4 /24  not-connected 20         128 ...
4/100
```

Output fields:

Field	Description
Spanning tree	Spanning-Tree Protocol status (enabled or disabled).
Designated root	MAC address of the designated spanning-tree root bridge
Designated Root Priority	Priority of the designated root bridge.
Designated Root Cost	Total path cost to reach the root.
Designated Root Port	Port through which the root bridge can be reached (shown only on non root bridges)
Root Max Age	Amount of time a BPDU packet should be considered valid
Hello Time	Number of times the root bridge sends BPDUs
Bridge ID MAC ADDR	Bridge MAC address used in the sent BPDUs
Bridge ID Priority	Bridge Priority
Port	Port number
Port-State	Spanning-tree port state (disabled, inactive, not-connected, blocking, listening, learning, forwarding, bridging, or type-pvid-inconsistent)
Cost	Cost associated with the port
Priority	Priority associated with the port

show spv

User level: read-only, read-write, admin.

Use the `show spv` command to display the following information about supervisor modules:

- Chassis MAC address
- SPV status – active, standby, halted.
- Indication whether the SPV's are synchronized.
- Software version of the two image banks.

The syntax for this command is:

`show spv`

Example:

```
C460-1> show spv

Chassis In-band  MAC address : 00.04.0D.17.A4.00
Chassis Out-band MAC address : 00.04.0D.17.A4.FE
Chassis Serial number        : 4552086
Chassis CS                   : 1.0

                      SPV 1                  SPV 2
              ------------------------------------------------
Mode          |  Standby              |  Active               |
Synchronized  |  Yes                  |  Yes                  |
EmWeb version |  2.0.2                |  2.0.2                |
Bank A version|  2.0.2                |  2.0.2                |
Bank B version|  2.0.2                |  2.0.2                |
Preferred Bank|  Bank A               |  Bank A               |
Serial Number |  4559466              |  4559417              |
C/S Number    |  1.0                  |  1.0                  |
Running Version|  2.0.2                |  2.0.2                |
Booted From   |  Bank A               |  Bank A               |
              ------------------------------------------------
```

show startup-config

User level: read-only, read-write, admin.

Use the `show startup-config` command to display the router startup configuration.

Example:

`show startup-config`

Example:

```
Router-1> show startup-config
Router-1>
! Avaya Inc.- C460ML Multi-layer Switch - Router configuration
! version 2.0.2
ip access-list-name 100 "list #100"
 ip access-list-owner 100 "egotlieb@135.64.102.64"
 ip access-list 100    1 permit ip   any any
 ip access-list 100    2 fwd3 udp  any eq 68 any eq 67
!
set vlan       2 name "vlan2"
no rmon2 protocol-dir TCP 20

no rmon2 protocol-dir TCP 23
no rmon2 protocol-dir TCP 25
no rmon2 protocol-dir TCP 80
no rmon2 protocol-dir TCP 110
no rmon2 protocol-dir UDP 161
no rmon2 protocol-dir UDP 162
rmon2 protocol-dir TCP 1111 "1111--TCP"
rmon2 protocol-dir TCP 2222 "2222--TCP"
!
interface "11"
 ip vlan name "Default"
 ip address 11.11.11.1      255.255.255.0
!
--type q to quit or space key to continue--
interface "12"
 ip vlan name "vlan2"
 ip address 12.12.12.1      255.255.255.0
!
interface "78"
 ip vlan name "Default"
 ip address 149.49.78.71    255.255.255.0
!
ip default-gateway 149.49.78.1     1 low
```

show system

User level: read-only, read-write, admin.

Use the `show system` command to display the uptime, system name, location, contact person and MAC addresses.

The syntax for this command is:

show system

Example:

```
C460-1> show system
Uptime d,h:m:s
------------------------
0,2:40:55

System Name             System Location           System Contact
---------------------  ------------------------------------------------
C460_version-1.0.0      Technical Writing         Gregory Kohll

In-band MAC address     Out-band MAC address
-------------------     --------------------
02 e0 3b 1d f9 00       02 e0 3b 1d fa 00
```

show system-log

User level: read-only, read-write, admin.

Displays the encrypted event log file.

The syntax for this command is:

show system log

The syntax for this command is:

show system-log [[slot]]

slot	Slot number (1 to 2)

Example:

```
C460-1> show system-log
C460-1(super)# sh system-log
--type q to quit or space key to continue--

 *** UpTime : 0:37:19 ***

 *** MODULE : 1 ***

System log file:

H+n.AgDwZZioHgDZZZZ.(ioHgD3D3wD"bZZ.onD<ZZ2oAgDN~N}ZZAojgD
3Z
gKgjiDZ!htllol ?glgi
H+n.AgDwZZioHgDZZZZ.(ioHgD3D3wD@QZZ.onD3ZZ2oAgDlxi!hn95{s:
!ZZAojgDb@3Z
gKgjiDZoNs}E=ZH~YL{}Z?}s}=
H+n.AgDwZZioHgDZZZZ.(ioHgD0D0TD0<ZZ.onD3ZZ2oAgDt((9(~;}EHN
/:!ZZAojgD03Q3Z
gKgjiDZlWL=Z~''ZM~YL{}Z<Z?}s}=Z
H+n.AgDwZZioHgDZZZZ.(ioHgD3D33D33ZZ.onDwZZ2oAgDN~N}ZZAojgD
3Z
gKgjiDZ(+xg?.( ?glgi
H+n.AgDwZZioHgDZZZZ.(ioHgD3DwwD_TZZ.onD00@ZZ2oAgDsPsAzR:5Z
ZAojgD0"wTZ
gKgjiDZnY>z5YZRLEZj~Z?}^YOZnnKo!n9ojig??i(i9\t.ln)3PBP1Zng
Ko!g9g??+?9tnn?gll]3PQ
333330
H+n.AgDwZZioHgDZZZZ.(ioHgD3D"wD@3ZZ.onD__"ZZ2oAgDl(K9E}YLN
Y^N=:!ZZAojgD<b<Z
gKgjiDZj};Zl=^NYROZN}z/WR~E

H+n.AgDwZZioHgDZZZZ.(ioHgD3D33D33ZZ.onDwZZ2oAgDN~N}ZZAojgD
3Z
gKgjiDZ(+xg?.( ?glgi
H+n.AgDwZZioHgDZZZZ.(ioHgD3D33D"wZZ.onDQZZ2oAgD!Ao9E}s}=9s
Os=}M:!ZZAojgDw<_Z
gKgjiDZ!AoZE}s}=ZsOs=}MZ-Zs}=ZY}'^L{=s:
Neighbor SPV is not present
```

show system-log (Layer 3)

User level: read-only, read-write, admin.

Displays the encrypted event log file.

The syntax for this command is:

show system-log [[slot]]

slot	Slot number (1 to 2)

show tftp download software status

User level: read-only, read-write, admin.

Use the `show tftp download software status` commands to display the status of the current TFTP Device Manager S/W (Embedded Web) download process into the device.

The syntax for this command is:

show tftp download software status [<mod_num>]

Example:

```
C460-1> show tftp download software status
C460-1> Module #1
C460-1> ===========
C460-1> Module           : 1
C460-1> Source file      : d:\p340sw\gt-ml\3.5.18\p340.web
C460-1> Destination file : EW_Archive
C460-1> Host             : 149.49.70.61
C460-1> Running state    : Writing ...
C460-1> Failure display  : (null)
C460-1> Last warning     : No-warning
```

show tftp upload status

User level: read-only, read-write, admin.

Use the `show tftp download status` and `show tftp upload status` commands to display the status of the current TFTP configuration file copy process into/from the device.

The syntax for this command is:

show tftp {download|upload} **status** [<mod_num>]

Example:

```
C460-1> show tftp upload status 1
Module           : 1
Source file      : C460-config
Destination file : c:\conf.cfg
Host             : 149.49.36.200
Running state    : Executing
Failure display  : (null)
Last warning     : No-warning
```

show time

User level: read-only, read-write, admin.

Use the `show time` command to display the current C460 time and timezone.

The syntax for this command is:

show time

Example:

```
C460-1> show time
10:32:34 27 JAN 2000 GMT
```

show time parameters

User level: read-only, read-write, admin.

Use the `show time parameters` command to display the time status and parameters.

The syntax for this command is:

show time parameters

Example:

```
C460-1> show time parameters
Client status: Enabled
Current time : L:00:57:19 01 JAN 1970 GMT
Timezone set to 'GMT', offset from UTC is 0 hours
Time-Server  : 0.0.0.0  (I.e. broadcast address)
Time acquired from Time-Server: 0.0.0.0
Time protocol set to          : TIME protcol
```

show timezone

User level: read-only, read-write, admin.

Use the `show timezone` command to display the current C460 time zone.

The syntax for this command is:

`show timezone`

Example:

```
C460-1> show timezone
Timezone set to 'GMT', offset from UTC is 0 hours
```

show trunk

User level: read-only, read-write, admin.

Use the `show trunk` command to display VLAN tagging information for the switch.

The syntax for this command is:

`show trunk` `[<module>[/<port>-<port]]`

module (Optional)	Number of the module. If you do not specify a number, all modules are shown.
port (Optional)	Number of the port on the module. If you do not specify a number, all the ports on the module are shown. You can also specify a range of ports separated by a dash, for example, 4/5-13 for ports 5 to 13 on module 4

Example:

```
C460-1> show trunk 4/1
Port   Mode   Binding mode                Native vlan
-----  -----  --------------------        -----------
41/1   off    statically bound               1
41/2   dot1q  statically bound                2
```

Output Fields:

Field	Description
Port	Switch and port number(s)

Mode	Tag status of the port (dot1q - dot1Q tagging mode, off - clear mode).
Binding mode	Binding mode of the port
Native VLAN	Number of the Port VLAN ID (the VLAN to which received untagged traffic will be assigned).

show username

User level: admin.

Use the `show username` command to display the local user accounts.

The syntax for this command is:

`show username`

Example:

```
C460-1(super)# show username
        User account                        password              access-
type
------------------------------  --------------------------------   ------
--
root                              *****                             admin
gkohl1                           *****                            read-only
readwrite                        *****                           read-write
```

show vlan

User level: read-only, read-write, admin.

Use the `show vlan` command to display the VLANs configured in the switch.

The syntax for this command is:

`show vlan`

Example:

```
C460-1> show vlan
          VLAN ID Vlan-name
          ------- --------------------------------
          1       v1
          5       V5
          10      V10
          15      V15
          20      V20
          25      V25
```

show vlan (Layer 3)

User level: read-only, read-write, admin.

Use the `show vlan` command to display router Layer 2 interfaces.

The syntax for this command is:

show vlan

Example:

```
Router-1> show vlan
VLAN NAME        VLAN ID VLAN MAC
---------------- ------- -----------------
Default                1 02:e0:3b:1d:f9:01
```

show web aux-files-url

User level: read-only, read-write, admin.

Displays the URL/directory from where the switch can access the Device Management auxiliary files (for example help files).

The syntax for this command is:

show web aux-files-url

Example:

```
C460-1> show web aux-files-url
the web aux-files-url is 149.49.36.212/C460test
```

sync spv

User level: read-write, admin.

Use the `sync spv` command to synchronize the following between an Active Supervisor Module and Halted Supervisor Module:

- Boot bank
- Firmware images
- Device manager image

ⓘ You can only execute this command from the active Supervisor Module CLI.

The syntax for this command is:

sync spv

The synchronization may take up to 90 seconds to complete.

Example:

```
C460-1(super)# sync spv
This command may overwrite the neighbor SPV software and
reset it
*** Confirmation *** - do you want to continue (Y/N)? y
Copying Bank A to the neighbor SPV ...
Copying Bank A to the neighbor SPV done
Copying Bank B to the neighbor SPV ...
Copying Bank B to the neighbor SPV done
Copying Embedded Web image to the neighbor SPV ...
Copying Embedded Web image to the neighbor SPV done
Setting boot bank of the neighbor SPV ...
Setting boot bank of the neighbor SPV done
Setting chassis sync on for the neighbor SPV...
Setting chassis sync on for the neighbor SPV done
SPVs are resetting.
Please wait till the process is finished. The SPVs will be
synchronized after the reset is completed
```

ⓘ The configuration is synchronized after you perform a reset.

tech

Use the `tech` command to enter tech mode. This command is reserved for service personnel use only.

terminal length

User level: read-only, read-write, admin.

Use the `terminal length` command to set the length of the terminal display in lines.

The syntax for this command is:

`terminal length [<screen-length>]`

screen-length	• Blank (no value) – display the current length of the screen. • Number – set the screen length

Example:

```
C460-1> terminal length
terminal length: 25 (auto-detected)
C460-1> terminal length 40
C460-1> terminal length
C460-1> terminal width: 40 (user-configured)
```

terminal width

User level: read-only, read-write, admin.

Use the `terminal width` command to set the width of the terminal display in characters.

The syntax for this command is:

`terminal width [<characters>]`

characters	• Blank (no value) – display the current width of the screen. • Number – set the screen width

Example:

```
C460-1> terminal width
terminal width 80 (auto-detected)
C460-1> terminal width 60
C460-1> terminal width
terminal width 60 (user-configured)
```

timers basic

User level: privileged, supervisor.

ⓘ You can only access these commands in the Router-RIP context.
Type **`router rip`** at the command prompt to enter the Router-RIP context if necessary.

Use the `timers basic` command to configure the route timer.

Use the `no timers basic` command to restore the timers to their default values.

Example:

```
Router-N(configure router:rip)# timers basic 30 180
```

The syntax for this command is:

`timers basic <update><invalid>`

`update`	RIP update timer in seconds (minimum = 30; default = 30)
`invalid`	RIP invalid route timer in seconds (minimum =30; default = 180)

ⓘ The Invalid Route Timer value must be larger than the Update Timer value. It is recommended that it be at least three times greater.
In any configuration all adjacent routers must have the same values for each of the timer parameters. It is possible to have different values for the timers on two adjacent routers, provided the Invalid Timer value is at least three times greater on one of the routers than the Update Timer value on the other router.

Example:

```
Router-N(configure router:rip)# timers basic 30 180
```

Use the `timers basic` command to configure the route timer.

Use the `no timers basic` command to restore the timers to their default values.

The syntax for this command is:

`timers basic <update><invalid>`

`update`	RIP update timer in seconds (minimum = 30; default = 30)

`invalid`	RIP invalid route timer in seconds (minimum =30; default = 180)

ⓘ The Invalid Route Timer value must be larger than the Update Timer value. It is recommended that it be at least three times greater.
In any configuration all adjacent routers must have the same values for each of the timer parameters. It is possible to have different values for the timers on two adjacent routers, provided the Invalid Timer value is at least three times greater on one of the routers than the Update Timer value on the other router.

Example:

```
Router-1 (configure router:rip) # timers basic 30 180
```

timers ospf

User level: read-write, admin.

ⓘ You can only access this command in Router-OSPF mode.
Type **`router ospf`** at the command prompt to enter Router-OSPF mode if necessary.

Use the `timers spf` command to set the delay between runs of OSPF SPF calculation.

Use the `no timers spf` command to restore the default (3 seconds).

The syntax for this command is:

`[no] timers spf` `<spf-holdtime>`

spf-holdtime	The time in seconds of the delay between runs of OSPF's SPF calculation.

Example:

```
Router-1 (configure router:ospf) # timers spf 5
Done!
```

traceroute

User level: read-only, read-write, admin.

Provides a trace route utility.

The syntax for this command is:

`traceroute` `<host>`

`host`	IP address.

Example:

```
Router-1> traceroute 192.168.50.13
```

tree

User level: read-only, read-write, admin.

Use the `tree` command to display a list of CLI commands available at the current user level.

The syntax for this command is:

`tree [<depth>]`

depth	Depth of CLI commands displayed

Example:

```
C460-1> tree 1
session
terminal width
terminal length
clear screen
show logout
show time
show timezone
show snmp
show intelligent-multicast
show port
show trunk
show spantree
show vlan
show spv
show cam
show powerinline
show icmp-redirect
show interface
show outband
show device-mode
show access-lists
show system
show module
--type q to quit or space key to continue--
```

username

User level: admin.

Adds a local user account.

ⓘ By default there is only a single user account, named 'root', with password 'root', which access the administrator level. You cannot delete this basic user account, nor modify its access level, but can modify its basic password.

The syntax for this command is:

username <name> **password** <passwd> **access-type** {read-only|read-write|admin}

name	New user name (minimum four characters)
passwd	User's password (minimum four characters)

access-type	Access type definition - read only, read-write or administrator

Example:

```
C460-1(super)# username john password johnny access-type
read-write
User account added.

C460-1(super)# username root password secret access-type
read-write
ERROR: User account root has always an administrator access
type.

C460-1(super)# username root password secret access-type
admin
User account modified.
```

If you wish to define a name which includes spaces, you must enclose the entire name in quotation marks, for example “new york”.

validate-group

User level: read-write, admin.

Use the `validate-group` command to verify that all the rules in a policy list are valid.

ⓘ If there is a configuration problem with a specific rule, or with a number of rules, detailed error messages will be given.

The syntax for this command is:

validate-group <policy-list-number>[quiet]

quiet	does not display error messages

Example:

```
Router-1(configure)# validate-group 101
List 101 is valid
```

ⓘ The validation process may take some time to complete.

validate policy-list

User level: read-write, admin.

ⓘ If you are at the "read-write" user level, you can only access this command in Configure mode.
Type **`configure`** at the command prompt to enter configure mode.

Use the `validate policy-list` command to verify that all the rules in a priority list are valid.

ⓘ If there is a configuration problem with a specific rule, or with a number of rules, detailed error messages will be given.

The syntax for this command is:

`validate policy-list` `<policy-list-number>[quiet]`

quiet	does not display error messages

Example:

```
C460-1(configure)# validate policy-list 101
```

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Glossary

100BASE-TX

100-Mbps baseband Fast Ethernet specification based on the IEEE 802.3 standard. 100BaseTX uses two pairs of either UTP (Unshielded Twisted Pair) or STP (Single Twisted Pair) wiring. One pair is used to receive data; the other is used to transmit data.

10BASE-T

10-Mbps baseband Ethernet specification based on the IEEE 802.3 standard. 10BaseT uses two pairs of UTP (Unshielded Twisted Pair) wiring. One pair is used to receive data; the other is used to transmit data.

Address Resolution

Conversion of an IP address into a corresponding physical address. This is usually done using ARP (Address Resolution Protocol).

Agent (Network Agent)

A special control module that interfaces between the network manager and the managed devices, using the MIB as a management terms dictionary. Network Agents relay device events and execute instructions via embedded software.

Alarm

An audible or visible warning signal alerting designated management stations that a significant event has occurred on the network.

ARP

Address Resolution Protocol. A TCP/IP protocol used to convert an IP address into a physical address, such as an Ethernet address. The sender broadcasts an ARP request onto the TCP/IP network. The host whose IP address matches the requested address then replies with its physical hardware address.

Backbone

A high-bandwidth connection between switches. A backbone link normally operates in Full Duplex Mode, sending packets in both directions simultaneously.

Beacon Frame

Refer to **Beaconing**.

Beaconing

An error detection mechanism in Token Ring networks. When a station detects a serious network problem, it sends a Beacon Frame. The Beacon Frame defines a failure domain that includes the station reporting the failure, its nearest active upstream neighbor, and everything in between. Beaconing initiates a process in which the nodes in the failure domain perform diagnostics and attempt to reconfigure the network around the failed areas.

BGP

Border Gateway Protocol. An Internet protocol that enables groups of routers to share routing information so that efficient, loop-free routes can be established.

BOOTP

Bootstrap Protocol. An Internet protocol that enables a diskless workstation to discover its own IP address, the IP address of a BOOTP server on the network, and a file to be loaded into memory to boot the machine. This enables the workstation to boot without a hard or floppy disk drive.

BPDU

Bridge Protocol Data Unit. A packet that is transmitted at configurable intervals to exchange information among bridges in the network. Among other things, BPDUs inform the bridges of the topology of the network and detect loops and topology changes.

Broadcasting

A common method of information transmission in which a packet is sent to every port on the network.

Bridge

A device connecting two networks using similar protocols. A bridge filters and forwards data between the networks according to their destination addresses.

Burst

A transmission of data at a faster rate than normal. Data bursts can be carried out in several ways. A burst is always limited in time and can take place only under special conditions.

Bus

A transmission path or channel. A bus is typically an electrical connection with one or more conductors, where all attached devices receive all transmissions at the same time.

BUS

Broadcast and Unknown Server. A multicast server used in ELANs that is used to forward multicast and broadcast traffic to the appropriate clients.

CAM

Content Address Memory. A list kept by each port containing the addresses of all network elements connected to the port. CAM is accessed according to its contents, not its memory address.

Chassis View

Avaya Inc.'s Network Management System's graphic depiction of a network device.

Client

A computer system or process that requests a service from another computer system or process (a "server"). Typically, a client is an application that runs on a personal computer or workstation and relies on a server to perform some operations.

Collision

In Ethernet, a collision occurs as the result of two nodes transmitting simultaneously. The frames from each device impact and are damaged from the impact.

CRC

Cyclic Redundancy Check. A data transmission error-checking technique in which the frame recipient calculates a remainder by dividing frame contents by a prime binary divisor and compares the calculated remainder to a value stored in the frame by the sending node.

CSMA/CD

Carrier Sense Multiple Access with Collision Detection. A multi-user network allocation procedure in which every station can receive the transmissions of all others. Each station waits for the network to be idle before transmitting and each station can detect collisions by other stations.

Data Link Layer

Layer 2 of the OSI reference model. The Data Link Layer is responsible for physical addressing, network topology, line discipline, error notification, ordered delivery of frames, and flow control.

DHCP

Dynamic Host Configuration Protocol. A protocol for assigning dynamic IP addresses to network devices. With dynamic addressing, a device can have a

different IP address every time it connects to the network. In some systems, the device's IP address can even change while it is still connected. DHCP also supports a mix of static and dynamic IP addresses.

Domain

A group of computers and devices on a network that are administered as a unit with common rules and procedures.

Dot1Q

Standard for VLAN tagging under the IEEE 802.1Q VLAN standard.

DRU

Domain Resource Unit. The unit of measure of resources available in a Avaya M770 Device DomainX.

Duplex Mode

The state of the device with regard to simultaneous transmission and reception of information. In Full Duplex Mode, the device or circuit permits simultaneous transmission and reception. (This is also known as bisynchronous communication.) In Half Duplex Mode, the device or circuit does not permit simultaneous transmission and reception. (This is also known as asynchronous communication.)

End System

An end-user device on a network. Also used to denote a non-routing host or node in an OSI network.

ESI

End System Identifier. A portion of a network address that identifies the end system.

Ethernet

One of the most widely implemented LAN standards, Ethernet is standardized as IEEE 802.3. Ethernet uses the CSMA/CD access method to handle simultaneous demands and supports data transfer rates of 10 Mbps. A newer version of Ethernet, called 100Base-T (or Fast Ethernet), supports data transfer rates of 100 Mbps. The newest version, Gigabit Ethernet, supports data rates of 1 Gigabit per second.

FCS

Frame Check Sequence. A field added to a frame for error-control purposes.

FDDI

Fiber Distributed Data Interface. A set of ANSI protocols for sending digital data over fiber optic cable. FDDI networks are token-passing networks, and support data rates of up to 100 Mbps. FDDI networks are typically used as backbones for wide-

area networks.

FDX

Full Duplex. A circuit or device permitting simultaneous data transmission between sending and receiving stations. For more information, refer to Duplex Mode on page 244.

Flow Control

Avaya's devices use a proprietary form of flow control that enables one endpoint to inform another endpoint that it should refrain from sending additional packets. The flow control mechanism avoids packet loss. Flow control is used in Full Duplex Mode.

Fragment

Ethernet packet shorter than 576 bits (usually the result of a collision).

Frame

A logical grouping of information sent as a Data Link Layer unit over a transmission medium. The word Frame often refers to the header and trailer, used for synchronization and error control, that surround the user data contained in the unit.

FTP

File Transfer Protocol. An application protocol, part of the TCP/IP protocol stack, used for transferring files between network nodes.

Full Duplex (FDX)

A circuit or device permitting simultaneous data transmission between sending and receiving stations. Duplex Mode on page 244.

Half Duplex (HDX)

A circuit or device permitting data transmission in only one direction at a time between sending and receiving stations. For more information, refer to Duplex Mode on page 244.

HDX

Half Duplex. A circuit or device permitting data transmission in only one direction at a time between sending and receiving stations. For more information, refer to Duplex Mode on page 244.

Hop

Passage of a data packet between two network nodes (for example, between two routers).

Host

A computer, attached to a network, that provides services to another computer beyond simply storing and forwarding information.

HTTP

Hyper Text Transmission Protocol. The protocol used between clients and servers on the World Wide Web for transmission of HTML documents.

Hub

A common connection point for devices in a network. Hubs are commonly used to connect segments of a LAN.

IANA

Internet Assigned Numbers Authority. The organization responsible for assigning new Internet-wide IP addresses.

ICMP

Internet Control Message Protocol. An extension to the Internet Protocol (IP). ICMP supports packets containing error, control, and informational messages.

IEEE

Institute of Electrical and Electronics Engineers. Among other things, the IEEE develops standards for the computer and electronics industry. In particular, the IEEE 802 LAN standards are widely followed.

IEEE 802.3

IEEE standard for Ethernet LANs.

IEEE 802.5

IEEE standard for Token Ring LANs.

IMAP

Internet Message Access Protocol. A protocol for retrieving E-mail messages. IMAP uses SMTP for communication between the E-mail client and server.

In-Band

Transmission of auxiliary information, such as management messages, using the same frequencies or channels normally used for information transfer.

Internet Protocol

Refer to IP on page 247 and TCP/IP on page 254.

Internet

A collection of networks and gateways that use the TCP/IP suite of protocols. An internet is two or more networks connected by an internal or external router. The word “internet” is a generic term. “The Internet” is the world’s largest internet.

Interswitch Link (ISL)

Interswitch Link. An Avaya proprietary mechanism to tag packets with VLAN and priority information across the backbone. This allows two Avaya devices to act as a single logical entity.

IP

The protocol that governs packet forwarding within the TCP/IP standards developed and used on the Internet. Refer to TCP/IP on page 254.

IP Address

A 32-bit address assigned to hosts using TCP/IP. An IP address is written as 4 octets separated by periods (dotted decimal format). Each address consists of a network number, an optional subnetwork number, and a host number. The network and subnetwork numbers together are used for routing, while the host number is used to address an individual host within the network or subnetwork. A subnet mask is used to extract network and subnetwork information from the IP address.

IPX

Internetwork Packet Exchange. A network layer protocol used for transferring data from servers to workstations. IPX is primarily used in Novell NetWare operating systems.

ISL

Interswitch Link. An Avaya proprietary mechanism to tag packets with VLAN and priority information across the backbone. This allows two Avaya devices to act as a single logical entity.

ISO

International Standards Organization. A voluntary organization founded in 1946, responsible for creating international standards in many areas, including computers and communications.

Jabber

An error condition in which a network device continually transmits random, meaningless data onto the network. In IEEE 802.3, Jabber refers to a data packet, the length of which exceeds the maximum length prescribed in the standard.

LAG

Link Aggregation Groups (LAGs) provide a method of creating a high-bandwidth link. A LAG consists of a group of ports acting as a single logical port. All ports participating must have the same configuration.

LAN

Local Area Network. A high-speed, low-error data network that spans a limited area. LANs connect workstations, peripherals, terminals, and other devices in a single building or other geographically limited area.

Link-State Protocols

A series of routing protocols, such as OSPF, which permit routers to exchange information about the accessibility of other networks and the cost or metric to reach the other networks.

LSA

Link-State Advertisement. A broadcast packet, used by Link-State Protocols, that contains information about neighbors and path costs. LSAs are used by receiving routers to maintain their routing tables.

MAC Address

Media Access Control Address. The MAC Address is a hardware address that uniquely identifies each node of a network.

MAC Layer

In IEEE 802 networks, the MAC layer is a sublayer of the Data Link Control (DLC) layer. The MAC layer interfaces directly with the network media. Each different type of network media therefore requires a different MAC layer.

MAC List

A list of MAC Addresses of devices that are allowed to access the network through the selected port. Each port can have a MAC List. If the port's security option is enabled, no device can access the port unless the device's address is on the port's MAC List.

MAN

Metropolitan Area Network. A data communications network designed for a town or city. Usually characterized by high-speed connections using fiber optical cable or other digital media.

MIB

Management Information Base. A database of network management information that can be monitored by a Network Management System. Both SNMP and RMON

use standardized MIB formats that enable any SNMP and RMON tool to monitor any device defined by a MIB.

Module

A self-contained communications unit that may be used in combination with other units. Examples include individual Avaya P330 units and cards that slot into the Avaya P580/P882 Device.

Multicasting

A method of information transmission in which copies of the packet are delivered to multiple ports, but only a subset of all possible destinations.

NAS

Network Access Server. A network device that allows access to a network (e.g., the Avaya C460).

Netmask

A portion of an IP address that identifies the bits that denote the network number.

Network

A collection of computers, printers, routers, switches, and other devices that can communicate with each other over some transmission medium. A network can consist all or in part of subnetworks.

Network Agent

A special control module that interfaces between the network manager and the managed devices, using the MIB as a management terms dictionary. Network Agents relay device events and execute instructions via embedded software.

Network Mask

A portion of an IP address that identifies the bits that denote the network number.

NMS

Network Management Station. A station that is responsible for managing all or part of a network. An NMS communicates with Network Agents to help keep track of network statistics and resources.

Node

A point of interconnection to a network or a junction of two or more lines in a network. A node can be a computer or some other device, such as a printer. Every node has a unique network address.

NSAP

Network Service Access Point. An ISO-specified network address.

OID

Object Identifier. Used in SNMP to identify managed objects. In the SNMP Manager/Agent Network Management Paradigm, each managed object must be identified by a unique OID.

OSI

Open Systems Interconnection reference model. A model for network communications consisting of seven layers that describe what happens when computers communicate with one another.

OSPF

Open Shortest Path First. A routing protocol featuring least-cost routing, multipath routing, and load balancing.

Out-of-Band

Transmission of auxiliary information, such as management messages, using frequencies or channels outside the frequencies or channels normally used for information transfer. Out-of-band signaling is often used for error reporting in situations in which in-band signaling can be affected by whatever problems the network might be experiencing.

Packet

Logical grouping of information that includes a header containing control information and usually user data. Packets are most often used to refer to application layer data units.

PING

Packet Internet Groper. Determines whether a specific IP address is accessible by sending a packet to the specified address and waiting for a reply.

Plus Tagging

A proprietary Avaya tagging mechanism that enables extended VLAN capabilities.

POP

Post Office Protocol. Used to retrieve E-mail from a mail server. Most E-mail applications use the POP protocol, although some can use the newer IMAP (Internet Message Access Protocol). POP3, unlike earlier versions, can be used with or without SMTP.

Port

A physical port is a connecting component that allows a microprocessor to communicate with a compatible peripheral. A port is identified by a port number.

Protocol

A set of rules and conventions that governs how devices exchange data, especially across a network. Low level protocols define the electrical and physical standards to be observed, bit- and byte-ordering, the transmission, error detection, and correction of the bit stream. High level protocols deal with data formatting, including message syntax, terminal to computer dialogue, character sets, message sequencing, etc.

Protocol Stack

A layered set of protocols which work together to provide a set of network functions. Each intermediate layer uses the layer below it to provide a service to the layer above.

PSTN

Public Switched Telephone Network. The collection of interconnected systems operated by the various telephone companies and administrations around the world.

PVC

Permanent Virtual Circuit. A permanent, virtual connection established by the network management between an origin and a destination.

QoS

Quality of Service. A measure of performance for a transmission system that reflects the system's transmission quality and service availability.

Query

The process of extracting information from a database and presenting it for use.

RADIUS

Remote Authentication Dial-In User Service (RFC 2138). A protocol for carrying authentication, authorization, and configuration information between a Network Access Server and a shared Authentication Server.

Redundancy

A duplication of devices, services, or connections so that in the event of a failure, the redundant device, service, or connection can take over for the one that failed.

Repeater

A device that automatically amplifies, restores, or reshapes signals distorted by transmission loss.

RIP

Routing Information Protocol. Specifies how routers exchange routing table information. RIP is gradually being replaced by a newer protocol called OSPF (Open Shortest Path First).

RMON

Remote Monitoring. A network management standard that allows network information to be gathered at a single workstation. In contrast to the Standard MIB which gathers network data from a single type of Management Information Base (MIB), RMON defines nine additional MIBs that provide a much richer set of data about network usage. For RMON to work, network devices, such as hubs and switches, must be designed to support it.

For more information refer to .

Router

A software and hardware connection between two or more networks, usually of similar design, that permits traffic to be routed from one network to another on the basis of the intended destinations of that traffic. A router located in a server is called an internal router; a router located in a workstation is called an external router.

Routing Table

A table stored in a router or other internetworking device that keeps track of routes to particular network destinations and, in some cases, metrics associated with those routes.

SAP

Service Advertising Protocol. A protocol used to identify the services and addresses of servers attached to the network. The responses are used to update a table in the router known as the Server Information Table. SAP is primarily used in Novell NetWare operating systems in conjunction with IPX.

Segmentation

Segmentation is a common solution to LAN bandwidth limitations. The LAN is divided into separate LAN segments using bridges and routers. If segmented correctly, most network traffic will remain within a single segment, enjoying the full 10 Mbps bandwidth. Hubs and switches are used to connect each segment to the rest of the LAN.

Side-Band

Transmission of auxiliary information, such as management messages, by means of a direct connection that bypasses the frequencies and channels normally used for information transfer. Unlike out-of-band transmission, side-band transmission does not require a modem.

SLIP

Serial Line Internet Protocol. SLIP is the standard protocol for point-to-point serial connections, using a variation of TCP/IP.

SMON

Switch Monitoring, Avaya's proprietary switch monitoring technology. SMON extends the RMON standard to provide additional tools and features for monitoring in the switch environment. SMON enables a global view of traffic for all switches on the network, an overall view of traffic passing through a specific switch, detailed data of the hosts transmitting packets or cells through a switch, an analysis of traffic passing through each port connected to a switch, and a view of traffic between various hosts connected to a switch.

SMTP

Simple Mail Transfer Protocol. Used to send E-mail messages between servers. Also used to send messages from a mail client to a mail server.

SNAP

SubNetwork Access Protocol. Internet protocol that operates between a network entity in the subnetwork and a network entity in the end system. SNAP specifies a standard method of encapsulating IP datagrams and ARP messages on IEEE networks.

SNMP

Simple Network Management Protocol. Protocol for communications between remote network management stations (like a management umbrella console) and managed network elements (such as Avaya Inc.'s devices). The management umbrella uses SNMP for network management and can manage all SNMP devices.

Socket

An addressable entity within a node connected to an AppleTalk network. Sockets are owned by software processes known as socket clients. An AppleTalk socket is similar in concept to a TCP/IP port.

Spanning Tree Protocol

Refer to STA on page 253.

STA

Spanning Tree Algorithm. The algorithm used by the Spanning Tree Protocol to create a spanning tree. The Spanning Tree Protocol (STP) is a bridge protocol that uses the STA to enable a learning bridge to dynamically work around loops in a network topology by creating a spanning tree. Bridges exchange BPDU messages with other bridges to detect loops, and then remove the loops by shutting down

selected bridge interfaces.

Stack

A layered set of protocols which work together to provide a set of network functions. Each intermediate layer uses the layer below it to provide a service to the layer above.

Standalone Mode

An option to separate a module from the other modules in a device so that its bus is independent. This may be desirable, for example, if one module has exceptionally heavy traffic that might affect other modules.

Subnet

Short for subnetwork. A subnet is a portion of a network that shares a common address component. On TCP/IP networks, a subnet includes all devices whose IP addresses have the same prefix. For example, all devices with IP addresses that start with 133.100.100 are part of the same subnet.

Subnet Mask

A 32-bit address mask used in IP to indicate the bits of an IP address that are being used for the subnet address.

Switch

A device that filters and forwards packets between LAN segments. Switches operate at the Data Link Layer of the OSI reference model and support any packet protocol.

Switch Monitoring

Refer to SMON on page 253.

TCP/IP

Transmission Control Protocol/Internet Protocol. Common name for the suite of protocols used to connect hosts on the Internet. TCP/IP uses several protocols, of which TCP and IP are the main ones.

Telnet

A terminal emulation protocol for TCP/IP networks. Telnet is used for remote terminal connection, enabling users to log in to remote systems and use these resources as if they were connected to a local system.

TFTP

Trivial File Transfer Protocol. A simple form of File Transfer Protocol, using User Datagram Protocol (UDP) and providing no security features. TFTP is often used by servers to boot diskless workstations, X-terminals, and routers.

Transceiver

A device that both transmits and receives analog or digital signals. Usually used to describe the LAN component that applies signals onto the network wire and detects signals passing through the wire.

Trap

Message sent by an SNMP agent to an NMS, console, or terminal to indicate the occurrence of a significant event, such as a specifically defined condition or a threshold that was reached. Similar to an alarm.

Tree View

A resizeable window containing a hierarchical representation of the modules and ports of the device.

UDP

User Datagram Protocol. Connectionless transport layer protocol in the TCP/IP protocol stack. UDP is a simple protocol that exchanges datagrams without acknowledgments or guaranteed delivery, requiring that error processing and retransmission be handled by other protocols.

Unicast

A single packet sent to a single network destination.

Virtual Connection

A connection established between end-users (source and destination), where packets are forwarded along the same path and bandwidth is not permanently allocated until it is used.

Virtual Path

A group of virtual channels that can support multiple virtual circuits.

VSA

Vendor-Specific Attribute. RADIUS supports attributes of which one, the VSA, supports vendor-specific attributes. This allows vendors to create custom RADIUS attributes.