

# Using the Command Line Interface

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## 2.1 Commonly Used Commands

This section documents the Cisco Broadband Operating System (CBOS) commands and command arguments that manage the Cisco 67x. CBOS runs in two modes: **exec** and **enable**. The table below lists the commands for each mode.

**Table 2-1 Cisco Broadband Operating System Commands**

Exec Mode	Enable Mode
help/?	help/?
ping	quit/exit
quit/exit	ping
reboot	reboot
show	set
traceroute	show
enable	traceroute
stats	write
	exec
	stats

## 2.1.1 help

To get help information on a particular command.

**help command-name**

You can also do:

**? command-name**

### Syntax Description

**command-name** Specifies the command.

### Command Modes

Exec and Enable

### Examples

```
help stats  
or  
? stats
```

## 2.1.2 ping

To send one or more echo ICMP (Internet Control Message Protocol) request message(s) to another host for a reply.

```
ping ip-address [-t | -n number] [-w seconds] [-i ]
```

### Syntax Description

<i>ip-address</i>	Specifies the destination IP address to be pinged.
<b>-t</b>	Specifies to ping host IP continuously until the user interrupts. On a PC, press the Enter key to stop the <b>ping</b> command.
<b>-n number</b>	Specifies the number of pings to send to host.
<b>-w number</b>	Specifies the amount of time (in seconds) to wait for response.
<b>-i number</b>	Specifies the Time to Live.

### Command Modes

Exec and Enable

### Example

The following example pings IP address 208.203.234.26 three times.

```
ping 208.203.234.26 -n 3
```

The following example pings IP address 208.203.234.26 indefinitely allowing for a 3 second wait response until the command string times itself out.

```
ping 208.203.234.26 -t -w 3
```

### 2.1.3 quit/exit

To quit or exit CBOS.

**quit | exit**

#### Syntax Description

This command has no keywords or arguments.

#### Command Modes

Exec and Enable

#### Example

The following examples quit CBOS.

```
quit  
exit
```

## 2.1.4 reboot

To reboot CBOS.

**reboot**

### Syntax Description

This command has no keywords or arguments.

### Command Modes

Exec and Enable

### Example

The following example reboots CBOS.

```
reboot
```

## 2.1.5 set bridging

To enable and disable bridging options.

```
set bridging {enabled | disabled | users interface number-of-users | rfc1483 |  
management | ppp}
```

### Syntax Description

<b>enabled</b>	Enables bridging.
<b>disabled</b>	Disables bridging .
<b>users</b> <i>interface number-of-users</i>	Specifies the maximum number of users for a specific port. The port is defined by the variable <i>interface</i> . The number of users is defined by the variable <i>number-of-users</i> .
<b>rfc1483</b>	Specifies the protocol to be used for bridging is for RFC1483 MAC.
<b>management</b>	Specifies that bridging is for the management VC.
<b>ppp</b>	Specifies that bridging is in PPP-BCP mode.

### Command Mode

Enable

### Usage Guidelines

The rules that govern the **set bridging** command are:

- Bridging and routing do not operate simultaneously.
- The commands **enabled** and **disabled** are required commands for RFC, management and PPP only.
- The commands listed below do not work in non-managed bridge mode.
  - **ping**
  - **route** (and setting static routes)
  - **rip** related commands (**set** and **show**)
  - **filter** related commands (**set** and **show**)
  - **traceroute** command
  - **Telnet** server
  - **TFTP** server
  - **Web** interface

---

**Note** You must reboot to enable bridging options.

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### Examples

The following examples contain a sequence of commands for setting up bridging.

```
set bridging rfc1483 enabled
set bridging ppp enabled
```

## 2.1.6 set broadcast forwarding

To set forwarding of broadcast packets.

**set broadcast forwarding {enabled | disabled}**

### Syntax Description

**enabled**                      Activates broadcast packet forwarding.

**disabled**                     Deactivates broadcast packet forwarding.

### Command Mode

Enable

### Example

The following example enables broadcast packet forwarding:

```
set broadcast forwarding enabled
```



## 2.1.7 set dhcp

To activate, deactivate, or configure Dynamic Host Configuration Protocol (DHCP) functionality.

### set dhcp

```
{client {enabled | disabled | interface interface-name} |
server {enabled | disabled | pool pool-number {dns | sdns | gateway | ip | irc | nntp
| pop3 | smtp | web | wins | swims} ip-address}} | {lease seconds | netmask mask | size
pool-size | enabled | disabled} |
{relay {enabled | disabled}}
```

### Syntax Description

<b>enabled</b>	Activates a specific DHCP functionality, either client, server, or relay.
<b>disabled</b>	Deactivates a specifies DHCP functionality, either client, server, or relay.
<b>client</b>	Specifies to configure client settings.
<b>interface</b> <i>interface-name</i>	Specifies to configure physical and logical interface settings.
<b>server</b>	Specifies to configure server settings.
<b>pool</b> <i>pool-number</i>	Manually modifies a DHCP server pool entry and specifies the number of the pool to modify. <i>Pool-number</i> is a number between 0 and 19.
<b>dns</b> <i>ip-address</i>	Sets the DNS address for all requests sent out of this pool. If <i>ip-address</i> is set to 0.0.0.0, no DNS information is sent out. If you add a pool after setting DNS, you must reset DNS for the new pool.

<b>sdns</b> <i>ip-address</i>	Sets the secondary DNS address. If <i>ip-address</i> is set to 0.0.0.0, no SDNS information is sent out. If you add a pool after setting SDNS, you must reset SDNS for the new pool.
<b>gateway</b>	Sets the gateway address for all requests sent out of this pool. If <i>gw-address</i> is set to 0.0.0.0, no gateway information is sent out. If you add a pool after setting the gateway, you must reset the gateway for the new pool.
<b>ip</b> <i>ip-address</i>	Sets the initial IP address for the pool specified.
<b>irc</b> <i>ip-address</i>	Sets the IP address of the IRC Server.
<b>nntp</b> <i>ip-address</i>	Sets the IP address of the News Server.
<b>pop3</b> <i>ip-address</i>	Sets the IP address of the POP Mail Server.
<b>smtp</b> <i>ip-address</i>	Sets the IP address of the Mail Server.
<b>web</b> <i>ip-address</i>	Sets the IP address of the Web Server.
<b>wins</b> <i>ip-address</i>	Sets the primary wins server address.
<b>swins</b> <i>ip-address</i>	Sets the secondary wins server address.
<b>lease</b> <i>seconds</i>	Sets the lease time of clients in seconds.
<b>netmask</b> <i>ip-address</i>	Sets the subnet mask for all requests sent out of this pool.
<b>size</b> <i>pool-size</i>	Sets the size of the allocation pool. Note: Your pool size can never be set to higher than your local subnet mask that you are handing out for the pool.
<b>relay</b>	Sets the DHCP host server up as a relay agent to pass DHCP IP address assignments to the client system.

## Command Mode

Enable

## Example

The following example enables the DHCP client:

```
set dhcp client enabled
```

The following example sends all DHCP client requests out through the logical wan0-1 port.

```
set dhcp client interface wan0-1
```

You must do the following before you can use a logical wan port:

```
set interface wan0-0 close
set interface maxvcs 4
write
```

Reboot your system after you enter the commands shown above.

The following example enables the DHCP server functionality:

```
set dhcp server enabled
```

The following command adds pool 0 with a specific IP address.

```
set dhcp server pool 0 ip 192.168.0.100 enabled
```

The following example enables the DHCP relay agent:

```
set dhcp relay enabled
```

## 2.1.8 set download

To download a new router image or new router configuration image.

**set download {code | data}**

### Syntax Description

<b>code</b>	Begins an XMODEM download of a new router image file.
<b>data</b>	Begins an XMODEM download of a new router configuration image file.

### Command Mode

Enable

### Example

The following example begins an XMODEM download of a new router configuration image file.

```
set download data
```

## 2.1.9 set errors

To enable IP packet dumping.

```
set errors [client {enabled | disabled} | combo {enabled | disabled} | module
{rfc1483 | none} | debug {enabled | disabled}] | clear
```

### Syntax Description

<b>client</b> {enabled   disabled}	Enables IP packet dumping for the client from which the command was invoked.  enabled - Enables packet dumping. disabled - Disables packet dumping.
<b>combo</b> {enabled   disabled}	Enables both the <b>debug</b> and the <b>client</b> modes simultaneously.  enabled - Enables packet dumping. disabled - Disables packet dumping.
<b>module</b> {rfc1483   none}	Enables IP packet dumping only for the RFC1483 module.  rfc1483 - Defines the RFC1483 module. none - Disables packet dumping for the RFC1483 module
<b>debug</b> {enabled   disabled}	Sets IP packet dumping utility to display errors to the system display.  enabled - Enables debug error display. disabled -Disables debug error display.
<b>clear</b>	Clears any errors from NVRAM.

### Command Mode

Enable

### Example

The following example enables IP packet dumping for the RFC1483 module.

```
set error module rfc1483
```

The following example clears errors.

```
set errors clear
```

## 2.1.10 set filter

To specify and modify IP filtering conventions for the Cisco 67x.

```
set filter {code on | off} [deny | allow {interface | all src-ip src-mask dest-ip dest-mask}  
port number]
```

### Syntax Description

<i>code</i>	Enter the numbered filter number to be modified. Valid filter code values are 0 through 9.
<b>on   off</b>	Enables or disables the filter.
<b>deny   allow</b>	Specifies whether the filter is to allow or deny packets that match the filter's address and mask.
<i>interface   all</i>	Displays the Interface on which to apply the filter. This can be a particular interface such as eth0 or wan0-x or all interfaces.
<i>src-ip</i>	Enter the source IP address for packets.
<i>src-mask</i>	Enter the mask to be applied to source IP address. This allows the filter to match a group of incoming IP addresses.
<i>dest-ip</i>	Enter the destination IP address of outgoing packets.
<i>dest-mask</i>	Enter the mask to be applied to destination IP address. This allows the filter to match a group of outgoing IP addresses.

**port number** Displays the TCP/UDP port number to block.

### Command Mode

Enable

### Usage Guidelines

The **set filter** command is used to specify IP filtering conventions. The Cisco 67x has 10 filters that can be applied to TCP and UDP packets passing through the router's interfaces. Enabled filters are applied to packets in sequential order according to filter number.

The rules that govern the **filter** command are:

- The minimum parameters required for the **set filter** command are the filter code and the enabled/disable flag.
- Source and destination IP address and masks must both be present on the command line when the **deny** | **allow** flag is present.
- A *source-address* and *source-mask* of 0.0.0.0 and 0.0.0.0 are used to always match a packet for the filter. Likewise, an address/mask of 255.255.255.255/255.255.255.255 is used to never match a packet.
- Filters are applied to the Ethernet interface (eth0) by default. Include the *interface* variable on the command line to specify another interface, or **all** to specify all interfaces in the router.
- Changes made to the filters will become effective immediately. Packet filtering can be globally suspended and resumed with the **set filter** command.
- All filter related commands (**set** and **show**) are disabled when in bridge mode.



### Examples

The following example blocks all web access.

```
set filter 0 on deny all 0.0.0.0 0.0.0.0 0.0.0.0 port 80
```

The following example blocks all telnet access from the 192.168.0.25 network.

```
set filter 1 on deny all 192.168.0.0 255.255.255.0 0.0.0.0 0.0.0.0 port 23
```

The following example accepts telnet access from the host 192.168.0.25.

```
set filter 2 on allow all 192.168.0.25 255.255.255.255 0.0.0.0 0.0.0.0  
port 23
```

The following example blocks all FTP access on a wan port.

```
set filter 3 on deny wan0-1 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 port 21
```

The following example turns off the first filter.

```
set filter 0 off
```

The following example activates all enabled filters.

```
set filter on
```

---

**Note** Press enter only after entering all command parameters. A command may appear on two lines here for readability.

---

## 2.1.11 set interface

To configure settings for physical and virtual interfaces.

### set interface

```

eth0 {address ip-address | mask netmask | down | up | speed {10 | 100} |
vip {1 | 2 | 3 | 4} {ip ip-address | mask netmask} |
wan0 {baud rate | count {1 | 2 | 4 | 8} | doh {enabled | disabled} |
maxvcs {1 | 2 | 3 | 4} | rate {up | down | down:baud} rate-number | auto} | [remote]
| retrain | scramble {enabled | disabled} | stay} |
wan0-x {close | destination ip-address | disabled | enabled | mask netmask | open |
rate rate-value | VCI vci-number | VPI vpi-number}

```

### Syntax Description

<b>enabled</b>	Enables a command or functionality.
<b>disabled</b>	Disables a command or functionality.
<b>eth0</b>	Specifies to set or check values for the Ethernet interface.
<b>address</b> <i>ip-address</i>	Specifies the destination IP address for the Ethernet interface.
<b>mask</b> <i>netmask</i>	Specifies the netmask address for the Ethernet interface.
<b>down</b>	Disables the interface.
<b>up</b>	Enables the interface.
<b>speed</b>	Specifies the link speed given as [ <b>10</b>   <b>100</b>   <b>auto</b> ].
<b>vipx</b>	Specifies to set or check values for a virtual Ethernet interface.
<b>ip</b> <i>ip address</i>	Specifies the destination IP address for the virtual interface.

---

<b>mask</b> <i>netmask</i>	Specifies the netmask address for the virtual interface.
<b>wan0</b>	Specifies to set or check values for the wan0 interface.
<b>baud</b> <i>rate</i>	Sets the ADSL baud rate.
<b>count</b>	Sets the VPI count.
<b>doh</b>	Specifies to turn the Digital Off-Hook functionality off or on.
<b>maxvcs</b>	Sets the maximum number of virtual connections (VCs).
<b>rate</b>	Sets line rates.
<b>up</b> <i>rate-number</i>	Sets upstream ADSL line rate.
<b>down</b> <i>rate-number</i>	Sets downstream ADSL line rate.
<b>down:baud</b> <i>rate-number</i>	Sets downstream line rate and baud rate.
<b>auto</b>	Sets auto-negotiation mode for this device.
<b>retrain</b>	Retrains the ADSL line.
<b>scramble</b>	Enables or disables ATM cell scrambling.
<b>stay</b>	Sets stay-trained mode; ADSL line will not retrain.
<b>wan0-x</b>	Specifies to set or check values for the wan0-x interface.
<b>close</b>	Closes the virtual connection.
<b>destination</b> <i>ip-address</i>	Sets the IP address.
<b>mask</b> <i>netmask</i>	Sets the netmask.
<b>open</b>	Opens the virtual connection.

<b>rate</b> <i>rate-value</i>	Sets the scalarate - the transmitted data rate in 64Kbps increments up to a maximum of the current line rate.
<b>VCI</b> <i>vci-number</i>	Sets the number of the virtual channel identifier.
<b>VPI</b> <i>vpi-number</i>	Sets the number of the virtual path identifier.

### Command Mode

Enable

### Usage Guidelines

Since the Cisco 67x only has one physical port for the Ethernet port, the default value is always 0 as in *eth0*.

Use this command only when you have a serial connection with Cisco 67x. If you use this command when you are communicating over an Ethernet LAN, you will lose the connection to Cisco 67x. If you forget and issue this command over the LAN, you can reset Cisco 67x by switching the Cisco 67x OFF and then turning the power back ON.

### Example

The following example assigns the Ethernet interface an IP address.

```
set interface eth0 address 198.162.55.5
```

The following example sets the maximum number of VCs to two.

```
set interface wan0 maxvcs 2
```

The following examples open or close the wan0-0 port.

```
set interface wan0-0 open  
set interface wan0-0 close
```

The following example sets the ScalaRate of the wan0-0 port.

```
set interface wan0-0 rate 1088
```

The following example sets a VPI address for the wan0-0 port to equal 1, which is in the valid range for VPI addresses.

```
set interface wan0-0 vpi 1
```

The following example sets the VCI address for the wan0-0 port to equal 1, which is in the valid range for VCI addresses.

```
set interface wan0-0 vci 1
```

---

**Note** The ScalaRate only affects the transmitted data rate. On the Cisco 67x only the upstream rate is affected.

---

### Usage Guidelines

The Cisco 67x has a total number of four VCs (wan0-1 through wan 0-3). Configure only the total number of actual VCs terminated to optimize the performance of the Cisco 67x. Close the wan-x port before making any changes to the port.

The Cisco 67x supports user configuration of VPI/VCI address mapping. The Cisco 67x ships with one VC enabled. Its VPI/VCI address is 1/1. When changing the VPI/VCI address space mapping, it is important to understand that adding VPI space decreases VCI space. For example, if the VPI count is one, 255 possible VCI values are available for the single VPI. If the VPI count is eight, the number of possible VCI values is reduced to 31 VCIs for each of the eight VPIs.

When changing the VPI count values, you must ensure that VPI and VCI port assignments are consistent with the VPI count mode selected. For instance, when changing the VPI count from four to one, you must change the VPI port assignment to zero (0) on all wan0-x ports previously assigned to values other than 0, since 0 is the only valid VPI when the VPI count is 1.

The valid ranges for VPI and VCI addresses are shown in the following table:

**Table 2-2 Valid VPI and VCI Address Ranges**

<b>VPI &lt;count&gt;</b>	<b>VPI Range</b>	<b>VCI Range</b>
1	0	0..255
2	0..1	0..127
4	0..3	0..63
8	0..7	0..31

## 2.1.12 set multicast

To enable multicast proxy support.

```
set multicast {forwarding enabled | disabled}
```

### Syntax Description

<b>enabled</b>	Enables multicast proxy support.
<b>disabled</b>	Disables multicast proxy support.

### Command Mode

Enable

### Example

The following example enables multicast proxy support.

```
set multicast forwarding enabled
```

### 2.1.13 set nat

To enable or disable Network Address Translation (NAT) functionality.

```
set nat {enabled | disabled | timeout {icmp | udp | tcp idle | tcp negotiation | other} value | outside ip ip-address |  
entry add {inside-ip inside-port outside-ip outside-port protocol} |  
entry delete { all | [inside-ip] [outside-ip] [protocol] }
```

#### Syntax Description

<b>enabled</b>	Activates NAT functionality.
<b>disabled</b>	Deactivates NAT functionality. The default setting for this command is <b>disabled</b> .
<b>timeout</b>	Sets the timeout value for the protocols listed below.
<b>icmp</b>	Specifies the ICMP protocol. Default = 60 seconds
<b>udp</b>	Specifies the UDP protocol. Default = 120 seconds
<b>tcp</b>	Specifies the TCP protocol.
<b>idle</b>	Specifies the timeout value to set for the data transfer portion after connection setup. Used for the TCP protocol only. Default = 24 hours
<b>negotiation</b>	Specifies the timeout value to set during TCP setup and tear down. Used for the TCP protocol only. Default = 60 seconds
<b>fragmentation</b>	Specifies how long to maintain 'out-of-order' fragments before the <b>set nat timeout</b> command terminates. Default = 60 seconds
<i>value</i>	Specifies the timeout value. Expressed in seconds less than or equal to 65000.



<b>outside ip</b> <i>ip-address</i>	To set the global outside network address to be used for translation.
<b>entry add</b>	To add a static entry to a NAT table. <ul style="list-style-type: none"> <li>Follow the sequence exactly as shown in the example below when entering your command string.</li> </ul>
<b>inside</b> <i>inside-ip</i>	Specifies the IP address of the inside, private or SOHO network.
<b>inside</b> <i>inside-port</i>	Specifies the port number of the inside network port.
<b>outside</b> <i>outside-ip</i>	Specifies the IP address of the outside, public or Service Provider's network.
<b>outside</b> <i>outside-port</i>	Specifies the port number of the inside network port.
<i>protocol</i>	Specifies the protocols to use. Select between: <b>udp</b> , <b>tcp</b> , <b>icmp</b> .
<b>entry delete</b>	To delete NAT table entries.
<b>all</b>	Deletes all entries from the NAT table.
<b>inside</b> <i>ip-inside</i>	Deletes all matching entries with the specified inside IP address (shown as <i>ip</i> ) from the NAT table.
<b>outside</b> <i>outside-ip</i>	Deletes all matching entries with the specified outside IP address (shown as <i>ip</i> ) from the NAT table.
<i>port</i>	Defines the port associated with the IP address to delete from NAT.
<i>protocol</i>	Specifies the protocols to use. Select between: <b>udp</b> , <b>tcp</b> , <b>icmp</b> .

**Command Mode**

Enable

### Usage Guidelines

To ensure that **PPP** assigns an address for translation, you must issue the following commands:

```
set ppp wan0-0 ipcp 0.0.0.0
write NVRAM
```

### Examples

The following example disables NAT.

```
set nat disabled
```

The following examples show various timeout values that you can set:

```
set nat timeout icmp 60
set nat timeout tcp idle 84
set nat timeout tcp negotiation 60
set nat timeout udp 60
set nat timeout fragmentation 60
```

The following example adds an entry to the NAT table that routes external requests destined for IP address 192.168.0.100 on port 322 to the internal station at IP address 10.10.10.100 on port 211.

```
set nat entry add 10.10.10.100 211 192.168.0.100 322 tcp
```

---

**Note** You must use the precise sequence, as defined in the Syntax Description listing below, when you enter your command string.

---

The following command deletes all of the NAT table entries.

```
set nat entry delete all
```

The following command deletes a specific NAT entry. You must enter the port number when deleting a specific NAT entry. Refer to the syntax example at the top of this page.

```
set nat entry delete 10.10.10.100 111 outside 192.168.0.100 10000 udp
```

The following command deletes all entries that match a specific inside address.

```
set nat entry delete inside 1.1.1.1
```

The following command deletes all entries that match a specific outside address.

```
set nat entry delete outside 2.2.2.2
```

---

**Note** Do not use the following command for normal setup. In normal setup, either DHCP or IPCP acquires the global outside network address for the 67x.

---

The following example sets the outside IP address to 192.168.0.100.

```
set nat outside ip 192.168.0.100
```

## 2.1.14 set nvram

To configure NVRAM settings.

```
set nvram {erase | add parameter | del parameter}
```

### Syntax Description

<b>erase</b>	Erases current configuration.
<b>add</b> <i>parameter</i>	Adds parameter manually to NVRAM.
<b>del</b> <i>parameter</i>	Removes parameter manually from NVRAM.

### Command Mode

Enable

### Example

The following example erases NVRAM.

```
set nvram erase
```

## 2.1.15 set ppp

To configure PPP parameters and statistics.

```
set ppp {restart {on|enabled|off|disabled}} | wan0-x {llc {enabled | disabled} |
radius {enabled | disabled} | pap {enabled | disabled} | mru units | retry number |
magicnum hexnumber | ipcp {ip-adr | clear} | dms ip-address | login pap-login |
password pap-password | debug {enabled | disabled | syslog} | subnet ip-address |
wins ip-address}
```

### Syntax Description

<b>restart</b>	Reinitiates the PPP session
<b>on   enabled</b>	Allows auto restart of ADSL link after idle
<b>off   disabled</b>	Disallows auto restart of ADSL link after idle
<b>wan0-x</b>	Specifies the wan0-x port. Wan ports are numbered consecutively 0-3.
<b>pap {enabled   disabled}</b>	Enables or disables PPP PAP passwords.
<b>llc {enabled   disabled}</b>	Enables or disables LLC encapsulation.
<b>mru</b> <i>mru-units</i>	Enter the Maximum Receive Units.
<b>radius</b>	Sets RADIUS for authentication.
<b>enabled   disabled</b>	Enables or disables RADIUS.
<b>retry</b> <i>retry-number</i>	Enter a maximum retry count on authentication.
<b>magicnum</b> <i>hex-magic</i>	Enter a valid hexadecimal number.
<b>ipcp</b> <i>ip-address</i>	Enter the IP address of the destination router.
<b>dns</b> <i>ip-address</i>	Enables automatic negotiation of the primary or secondary DNS IP address
<b>login</b> <i>pap-login</i>	Enter PAP authentication login name.

<b>password</b> <i>pap-pass</i>	Enter PAP authentication password.
<b>debug</b>	Sets PPP trace output debug facility.
<b>on   off   syslog</b>	Enables or disables the PPP debug facility or enables the <b>syslog</b> daemon.

### Command Mode

Enable

### Examples

The following example sets the Maximum Receive Units.:

```
set ppp wan0-0 mru 10
```

The following example sets the Maximum Retry Counts on PPP authentication.

```
set ppp wan0-0 retry 5
```

The following example sets the PPP Magic Number.

```
set ppp wan0-0 magicnum 16
```

The following example sets the PAP authentication name.

```
set ppp wan0-0 login bjones
```

The following example sets the PAP authentication password.

```
set ppp wan0-0 password 78A55Q
```

## 2.1.16 set prompt

To set a different prompt for the CBOS command line.

**set prompt** *new-prompt-name*

### Syntax Description

*new-prompt-name* Specifies the new name of the CBOS prompt.

### Command Mode

Enable

### Example

The following example resets the CBOS prompt.

```
set prompt cisco67x
```

## 2.1.17 set radius

To configure RADIUS security and accounting settings.

```
set radius {enabled | disabled | remote ip-address | port port-number | acctport
udp-port-number | secret password | test [acct] login password}
```

### Syntax Description

<b>enabled</b>   <b>disabled</b>	Activates or deactivates the application.
<b>remote</b> <i>ip-address</i>	Enter IP address for the remote RADIUS server.
<b>port</b> <i>port-number</i>	View the Cisco default port setting as defined by the variable <i>port-number</i> .
<b>acctport</b> <i>udp-port-number</i>	View the Cisco accounting port setting as defined by the variable <i>udp port number</i> .
<b>secret</b> <i>password</i>	Enter Shared Secret password as defined by the variable <i>password</i> .
<b>test</b>	Enables you to send a test the RADIUS serve security and account settings. See <b>Examples</b> .
<i>login</i>	Specifies the login name to use when logging into the RADIUS server.
<i>password</i>	Specifies the password to use when logging into the RADIUS server.
<b>acct</b>	Tests RADIUS accounting.



## Command Mode

Enable

## Examples

The following example enables RADIUS.:

```
set radius enabled
```

The following example sets the IP address of the remote RADIUS server.

```
set radius remote ip-address
```

The following example tests for login user id on the RADIUS server; where `username` is the name of the user who has login permissions and `password` is the user's password to the RADIUS server.

```
set radius test acct username password
```

The following example tests security on the RADIUS server; where `username` is the name of the user who has login permissions and `password` is the user's password to the RADIUS server.

```
set radius test username password
```

## 2.1.18 set rip

The **set rip** command automatically adds routes to your stream. It can also provide MD5 authentication when the **v2** argument is selected. The **v1** argument provides non-authenticated transmissions.

The usage example below has been separated into three parts for ease of readability. The keywords **eth0** and **wanx-x** use identical keywords and argument variables.

To configure RIP settings.

```
set rip {enabled | disabled | aging aging-value | deltimedout {enabled | disabled} |
garbage garbage-value | update update-value} | {eth0 | wanx-x} {announce {default
| host | self | static} | delexpired | holdown | splithorizon | poisonreverse | summarize
| learn {default | host | sender} {enabled | disabled}} | {authentication {disabled |
text | md5} | keyid keyid-name | receive {disabled | v1compatible | v1 | v2} | rollover
value | send {requests {disabled | v1 | both | v2} | responses {enabled | disabled}}}
```

### Syntax Description

<b>enabled</b>	Enables the <b>set rip</b> command.
<b>disabled</b>	Disables the <b>set rip</b> command.
<b>deltimedout</b> <i>timeout-value</i>	Delete RIP2 time-outed entries. Expressed in seconds.
<b>enabled</b>	Enables the <b>deltimedout</b> keyword.
<b>disabled</b>	Disables the <b>deltimedout</b> keyword.
<b>aging</b>	Route aging timeout value (default is 180 seconds).
<b>garbage</b>	Route garbage collection timeout value (default is 120 seconds).
<b>update</b>	Update time interval (default is 30 seconds).

**eth0** *ip-address* Enter IP address for a LAN interface. The address is defined by the variable *eth-address*.

**wanx-x** *ip-address* Enter IP address for a WAN interface. The address is defined by the variable *wan-address*.

**The Remainder of This List Consists of Keywords and Keyword Arguments in Common to Both eth0 and wanx-x Commands**

**announce** Announces routes.

**default {enabled | disabled}** Announces default route.

**host {enabled | disabled}** Announces host routes.

**self {enabled | disabled}** Announces self as default router.

**static {enabled | disabled}** Announces static routes.

**authentication** Sets RIP authentication.

**disabled | test | md5** **disabled** - Disables the **set rip** command.  
**text** - Tests the authentication mode.  
**md5** - Enables encrypted authentication.

**delexpired {enabled | disabled}** Auto deletes expired key.

**keyid** *keyname* Authentication active key id.

**holddown {enabled | disabled}** Sets Route holddown.

**splithorizon** Sets split horizon.

**{enabled | disabled}** Turns the split horizon mode on or off.

**learn** Learns routes.

**default {enabled | disabled}** Sets default route.

**host {enabled | disabled}** Sets host routes.

**password** *password* Sets a plain text password. The maximum number is 16 characters.

---

<b>poisonreverse</b>	Reverse RIP poison.
<b>enabled   disabled</b>	Turns <b>poisonreverse</b> command on or off.
<b>receive</b>	Sets the <b>receive</b> command.
<b>disabled   v1compatible   v1   v2</b>	<b>disabled</b> - Disables the <b>receive</b> keyword. <b>v1 compatible</b> - Specifies v1 compatibility (non-authentication mode) with other systems. <b>v1</b> - Specifies non-authentication mode. <b>v2</b> - Specifies encrypted authentication mode.
<b>rollover</b> <i>time-period</i>	Period in advance to start rollover.
<b>send</b>	Sets the <b>send</b> command.
<b>requests</b>	Sets RIP requests.
<b>disabled   v1   both   v2</b>	<b>disabled</b> - Disables the <b>receive</b> keyword. <b>v1</b> - Specifies non-authentication mode. <b>both</b> - Specifies both <b>v1</b> and <b>v2</b> modes. <b>v2</b> - Specifies authentication mode.
<b>responses</b>	Sets RIP responses.
<b>enabled   disabled</b>	Turns RIP responses on or off.
<b>summarize</b>	Sets RIP summary.
<b>enabled   disabled</b>	Enables or disables the <b>summary</b> keyword.
Command Mode	
Enable	

### Example

The following example disables all requests.

```
set rip eth0 send requests disabled
```

The following example disables all responses from **rip**.

```
set rip eth0 send responses disabled
```

The following examples sets **rip** to receive only V1-compatible messages.

```
set rip eth0 receive v1compatible
```

The following example enables **rip** to learn the default IP address path.

```
set rip eth0 learn default enabled
```

## 2.1.19 set route

To build a routing table by manually adding or deleting entries in a routing table.

```
set route {default target | add {ip address gw address [mask netmask] [metric hops]}  
| delete address}
```

### Syntax Description

<b>default</b> <i>target</i>	Sets a default route to an IP address or a WAN interface.
<b>delete</b> <i>ip-address</i>	Deletes an existing route.
<b>add</b>	Adds a new route.
<b>ip</b> <i>address</i>	Specifies the IP address of the host you are trying to reach. The IP host address is specified by the keyword argument variable, <i>address</i> .
<b>gw</b> <i>address</i>	Specifies the IP address of an external gateway. Data is sent through the external gateway to the destination address. Therefore, this address must be the address of a gateway physically linked to your network. The gateway address is specified by the keyword argument variable, <i>address</i> .
<b>mask</b> <i>netmask</i>	Specifies the netmask of the host you are trying to reach.
<b>metric</b> <i>hops</i>	Specifies the distance in hops between the destination address and the gateway. The default value is 1. This value is required when you add a route.

## Command Mode

Enable

## Examples

The following example shows how to add a route without specifying a netmask or metric.

```
set route add ip 192.9.9.1 gateway 192.168.10.250
```

The following example shows how to delete a route.

```
set route delete 192.168.10.1
```

The following example shows how to add a route specifying a netmask and a gateway.

```
set route add ip 192.10.10.0 mask 255.255.255.0  
gateway 208.203.245.228
```

The following example shows how to add a default route.

```
set route default 208.203.245.228
```

The following example shows how to add a route add a route specifying a netmask, gateway and a metric.

```
set route add ip 192.10.10.0 mask 255.255.255.0  
gateway 208.203.245.228 metric 1
```

---

**Note** Press **Enter** only after entering all command parameters. Command examples appear on two lines for readability.

---

## 2.1.20 set serial

To configure serial port settings.

**set serial timeout** {*timeout-value* **more** *lines-number*}

### Syntax Description

<b>timeout</b> <i>timeout-value</i>	Sets the value in seconds to disconnect the serial connection. The value must be less than or equal to 65334.
<b>more</b> <i>lines-number</i>	Sets the number of lines for the <b>more</b> output. Enter a numeric value of <b>'0'</b> to disable this command.

### Command Mode

Enable

### Example

The following example set the timeout value for the serial port.

```
set serial timeout 50000
```



## 2.1.21 set snmp

To configure SNMP settings.

**set snmp** **enabled** | **disabled** | **remote** *remote-address* | **traps** *host-address*

### Syntax Description

<b>disabled</b>	Disabled SNMP settings
<b>enabled</b>	Enables SNMP settings.
<b>remote</b> <i>remote-address</i>	Specifies the IP address for the remote location running SNMP.
<b>traps</b> <i>host-address</i>	Sets the IP address of the host on which to trap SNMP messages.

### Command Mode

Enable

### Example

The following command uses hypothetical IP addresses to demonstrate the use of **set snmp**.

```
set snmp remote 198.162.2.57
set snmp traps 198.162.2.50
```

## 2.1.22 set syslog

To invoke the Syslog application and its options.

```
set syslog {disabled | enabled | port port-number | remote remote-address | test test-string}
```

### Syntax Description

<b>disabled</b>	Disables the Syslog application.
<b>enabled</b>	Enables the Syslog application.
<b>port</b> <i>port-number</i>	Specifies the Syslog port number.
<b>remote</b> <i>remote-address</i>	Specifies the remote IP address of the Syslog server.
<b>test</b> <i>test-string</i>	Sends a test message to the Syslog server

### Syntax Description

This command has no arguments or keywords.

### Command Mode

Enable

### Example

The following command disables the Syslog application.

```
set syslog disabled
```

The following example sets the IP address for the remote Syslog server.

```
set syslog port 232
```

The following example sets the IP address for the remote Syslog server.

```
set syslog remote 198.162.5.3
```

The following example sends the message “Testing syslog” to the Syslog server.

```
set syslog test Testing syslog
```

### 2.1.23 set telnet

To configure the **telnet** daemon settings.

```
set telnet {enabled | disabled | remote ip-address | timeout # | port udp-port-number}
```

#### Syntax Description

<b>enabled</b>	Enables Telnet functionality.
<b>disabled</b>	Disables Telnet functionality.
<b>remote</b> <i>ip-address</i>	Specifies the IP address for the remote location running the Telnet server.
<b>timeout</b> #	Specifies the timeout value, in seconds, for a Telnet connection.
<b>port</b> <i>udp-port-number</i>	Specifies the Telnet port number.

#### Command Mode

Enable

#### Example

The following example sets the remote address for the Telnet application.

```
set telnet remote 1.1.1.1
```

The following example sets the number of seconds for the Telnet connection to timeout.

```
set telnet timeout 300
```

## 2.1.24 set tftp

To configure the TFTP settings.

```
set tftp {enabled | disabled | remote ip-address | port udp-port-number}
```

### Syntax Description

<b>enabled</b>	Enables TFTP functionality
<b>disabled</b>	Disables TFTP functionality.
<b>remote</b> <i>ip-address</i>	Specifies the IP address for the remote location running the TFTP server.
<b>port</b> <i>udp-port-number</i>	Specifies the TFTP port number.

### Command Mode

Enable

### Example

The following example sets the remote address for the TFTP application.

```
set tftp remote 198.162.58.23
```

## 2.1.25 set timeout

To configure timeout settings.

**set timeout** {*idle seconds* | *session seconds* | *reset seconds*}

### Syntax Description

<b>idle</b> <i>seconds</i>	Enter number of seconds to disconnect after idle.
<b>session</b> <i>seconds</i>	Enter number of seconds to disconnect after session uptime.
<b>reset</b> <i>seconds</i>	Enter number of seconds to wait to reopen connection.

### Command Mode

Enable

### Example

The following example sets the timeout values for the idle timeout.

```
set timeout idle 60
```

## 2.1.26 set web

To configure web server settings.

```
set web remote ip-address port tcp-port-number enabled | disabled
```

### Syntax Description

<b>remote</b> <i>ip-address</i>	Specifies the IP address of the web server.
<b>port</b> <i>tcp-port-number</i>	Specifies the web server port number.
<b>enabled</b>	Turns on the web server.
<b>disabled</b>	Turns off the web server.

### Command Mode

Enable

### Example

The following example sets the web server IP address to 192.168.0.100.

```
set web 192.168.0.100
```

## 2.1.27 show

To display statistics on a particular application or interface.

```
show {arp | broadcast | dhcp {client | relay | server {pool {number | all} | leased} |
errors | filter | interface [interface-name] | multicast | nat [timeout [all | icmp | ipd |
tcp | fragmentation]] | nvram | nvram# | ppp | radius | rarp | rates | rfc1483 | rip
{status | eth0 | wan0-x} | rout | running | running# | serial | snmp | syslog | telnet |
tftp | timeout | uptime | version | web}
```

### Syntax Description

<b>arp</b>	Displays ARP Table.
<b>dhcp {client   server [pool 0   allocated] }</b>	Displays whether the dhcp client, server, or server pool 0 is enabled. The <b>allocated</b> argument shows which addresses are currently leased.
<b>errors</b>	Displays list of errors that have occurred.
<b>filter</b>	Displays IP Filters.
interface <b>wan0</b>	Displays transmit power and remote transmit power statistics.
<b>nat</b>	Displays whether NAT is enabled and NAT entries (if any).
<b>nat timeout {all   icmp   udp   tcp   fragmentation }</b>	Displays timeout values for specified protocols or all protocols in NAT. The keyword <b>fragmentation</b> specifies the duration of time to maintain 'out-of-order' fragments.
<b>nvram</b>	Displays the configuration file located in NVRAM.



---

<b>nvrाम#</b>	Displays written configuration file in NVRAM without any comments you may have entered in the configuration file.
<b>ppp</b>	Displays PPP Parameters and Statistics.
<b>radius</b>	Displays RADIUS security and accounting settings.
<b>rarp</b>	Displays RARP Table.
<b>rates</b>	Displays list of possible scalar ATM line rate settings.
<b>rfc1483</b>	Displays RFC1483 Bridging Parameters and Statistics.
<b>rip {status   eth0   wan0-x}</b>	Displays RIP settings and status on specified interfaces.
<b>running</b>	Displays configuration settings that are currently running, but not saved to NVRAM through the <b>write</b> command.
<b>running#</b>	Displays configuration settings that are currently running without comments, but not saved to NVRAM through the <b>write</b> command.
<b>serial</b>	Displays serial port setting.
<b>snmp</b>	Displays SNMP configuration settings.
<b>syslog</b>	Displays syslog settings.
<b>telnet</b>	Displays telnet daemon settings.
<b>tftp</b>	Displays tftp settings.

<b>timeout</b>	Displays Idle and Session timeout settings.
<b>uptime</b>	Displays uptime.
<b>web</b>	Displays Web Server settings.

### Command Mode

Exec and Enable

### Examples

The following example displays an application's configuration settings.

```
show tftp
show syslog
show radius
```

The following example displays the status of IP filters.

```
show filter
```

The following example displays web browser status.

```
show web
```

The following example displays possible ATM line rates at prescribed baud rates.

```
show rates
```

The following example displays error reports.

```
show errors
```

## 2.1.28 stats

To show operating statistics.

```
stats {bridging {eth0 | wan0-x} | dhcp | eth0 | ip {eth0 | general | rip | vipx | wan0-x}
| nat | ppp | radius | serial | snmp | syslog | telnet | tftp | wan0 |
wan0-x | web}
```

### Syntax Description

<b>ip</b>	Displays IP statistics.
<b>general</b>	Displays general statistics on the WAN interface.
<b>rip</b>	Displays RIP statistics on the WAN interface.
<b>eth0</b>	Displays eth0 statistics on the WAN interface.
<b>wan0-x</b>	Displays wan0-x statistics on a VC.
<b>vip x</b>	Displays virtual interface statistics.
<b>bridging</b>	Displays statistics on bridging.
<b>eth0</b>	Displays statistics on the Ethernet interface.
<b>wan0</b>	Displays statistics on the Wan interface.
<b>wan0-x</b>	Displays statistics on a VC.
<b>telnet</b>	Displays statistics on telnet.
<b>syslog</b>	Displays statistics on syslog.
<b>tftp</b>	Displays statistics on tftp.
<b>web</b>	Displays statistics on web.
<b>ppp</b>	Displays ppp statistics.
<b>serial</b>	Displays statistics on the serial port.
<b>radius</b>	Displays statistics on RADIUS.

<b>snmp</b>	Displays statistics on SNMP.
<b>nat</b>	Displays NAT statistics.
<b>dhcp</b>	Displays DHCP statistics.
<b>wan0</b>	Displays wan0 statistics.
<b>wan0-x</b>	Displays wan0-x statistics.

### Command Mode

Exec and Enable

### Example

The following command displays the statistics for the Ethernet interface:

```
stats ip eth0
```

The following command enables MAC address dumping in bridging mode:

```
stats bridging eth0
```

The following command enables MAC address dumping on the wan0-o port:

```
stats bridging wan0-0
```

## 2.1.29 traceroute

To trace the routes that a data packet takes until it reaches its destination IP address. The **traceroute** command traces routes along the network, listing all hops and gateways, until it reaches the specified IP address.

```
traceroute ip-address [-m number-of-hops] [-w wait-time]  
[-p udp-port-number]
```

### Syntax Description

<i>ip-address</i>	Specifies the final destination IP address.
<b>-m</b> <i>number-of-hops</i>	Sets the Max Time to Live by specifying the number of hops to the trace. Most systems use a default of 64 TTL. Please refer to the appropriate system documentation for your system's default.
<b>-w</b> <i>wait-time</i>	Specifies the amount of time, in seconds, to wait for response.
<b>-p</b> <i>udp-port-number</i>	Specifies the UDP port number on which to use the trace facility.

### Command Mode

Exec and Enable

### Example

The following command traces the route for IP address 208.192.56.1. The example uses all arguments and assigns a server from which to originate the command string.

```
traceroute 208.192.56.1 -m 64 -w 5 -p 198.162.2.1
```

### 2.1.30 write

To write configuration changes to NVRAM.

**write**

#### Syntax Description

This command has no arguments or keywords.

#### Command Mode

Enable

#### Example

The following command writes all configuration changes you make to NVRAM.

```
write
```