Global Interface Commands

This module describes the global command line interface (CLI) commands for configuring interfaces on the Cisco NCS 6000 Series Router.

bandwidth (global)

To configure the bandwidth of an interface, use the **bandwidth** command in interface configuration mode.

bandwidth *rate*

Syntax Description

rate	Amount of bandwidth to be allocated on the interface, in Kilobits per second (kbps). Range is from 0 through 4294967295.

Command Default

The default bandwidth depends on the interface type.

Command Modes

Interface configuration

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Note To obtain the default bandwidth for a specific interface, use the **show interfaces** command after you first bring up the interface. The default interface bandwidth is displayed in the **show interfaces** command output.

Task ID

Task ID	Operations
interface	execute
basic-services	read, write

Examples

This example shows how to configure the bandwidth on a Gigabit Ethernet interface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router# interface GigabitEthernet 0/4/1/0
```

```
RP/0/RP0/CPU0:router# bandwidth 4000000
```

Related Commands

Command	Description
interface (global)	Configures an interface or creates or configures a virtual interface.
shutdown (global), on page 26	Disables an interface (forces an interface to be administratively down).

clear interface

To clear interface statistics or packet counters, use the **clear interface** command in EXEC mode.

clear interface *type interface-path-id*

Syntax Description

type	Interface type. For more information, use the question mark (**?**) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.

Command Default

No default behavior or values

Command Modes

XR EXEC

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

For the *interface-path-id* argument, use these guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
- If specifying a virtual interface, the number range varies, depending on interface type.

Task ID

Task ID	Operations
interface	execute
basic-services	read, write

Examples

This example shows how to use the **clear interface** command to clear the loopback interface 2:

```
RP/0/RP0/CPU0:router# clear interface loopback 2
```

Related Commands

Command	Description
interface (global)	Configures an interface or creates or configures a virtual interface.
shutdown (global), on page 26	Disables an interface (forces an interface to be administratively down).

dampening

To limit propagation of transient or frequently changing interface states on Interface Manager (IM) clients, turn on event dampening by using the **dampening** command in interface configuration mode. To turn dampening off, use the **no** form of this command.

dampening [*half-life* [*reuse suppress max-suppress-time*]]

no dampening [*half-life* [*reuse suppress max-suppress-time*]]

Syntax Description

half-life	(Optional) Time (in minutes) after which a penalty is decreased. Once the interface has been assigned a penalty, the penalty is decreased by half after the half-life period. The process of reducing the penalty happens every 5 seconds. The range of the half-life period is 1 to 45 minutes. The default is 1 minute.
reuse	(Optional) Penalty value below which a stable interface is unsuppressed. Range is from 1 through 20000. Default value is 750.
suppress	(Optional) Limit at which an interface is suppressed when its penalty exceeds that limit. Range is from 1 through 20000, and must be greater than the reuse threshold. The default value is 2000.
max-suppress-time	(Optional) Maximum time (in minutes) that an interface can be suppressed. This value effectively acts as a ceiling that the penalty value cannot exceed. Default value is four times the half-life period.

Command Default

Dampening is turned off by default. When you use the **dampening** command, the following default values are enabled for any optional parameters that you do not enter:

- *half-life*: 1 minute
- *reuse*: 750
- *suppress*: 2000
- *max-suppress-time*: Four times the half-life

Command Modes

Interface configuration

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Event dampening suppresses a constantly unstable interface until it remains stable for a period of time. Enabling dampening on an interface that already has dampening configured has the effect of resetting the penalty associated with that interface to zero. The reuse threshold must always be less than the suppress threshold.

Consider the following guidelines when configuring event dampening:

- Configuring dampening on both a subinterface and its parent is usually unnecessary because their states are almost always the same and dampening would be triggered at the same time on each interface.
- If all subinterfaces require dampening, then apply dampening to the main interface only. Applying configuration to large numbers of subinterfaces requires an abundance of memory and increases the time required to process the configuration during boot and failover.
- When dampening is enabled, an interface has a penalty value associated with it. The value starts at 0 and is increased by 1000 whenever the underlying state of the interface changes from up to down.
- The penalty value decreases exponentially while the interface state is stable. If the penalty value exceeds a configured suppress threshold, then the state of the interface is suppressed and IM will not notify upper layers of further state transitions. The suppressed state remains until the penalty value decreases past a configured reuse threshold.

Task ID

Task ID	Operations
interface	read, write

Examples

This example shows how to enable dampening with default values on an interface:

```
RP/0/RP0/CPU0:router(config)# interface POS 0/4/0/0
RP/0/RP0/CPU0:router(config-if))# dampening
```

Related Commands

Command	Description
show im dampening, on page 11	Displays the state of all interfaces on which dampening has been configured.

mtu

To adjust the maximum transmission unit (MTU) value for packets on the interface, use the **mtu** command in interface configuration mode. To return the interface to the default MTU for the interface type, use the **no** form of this command.

mtu *bytes*

no mtu

Syntax Description

bytes	Maximum number of bytes in a Layer 2 frame. Range is from 64 through 65535.

Command Default

The default MTU for each interface is as follows:

- Ethernet—1514 bytes
- POS—4474 bytes
- Tunnel—1500 bytes
- Loopback—1514 bytes
- ATM—4470 bytes

Command Modes

Interface configuration

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **mtu** command to set a specific MTU value for an interface, or use the **no mtu** command to return the interface to the default MTU value for that interface type. The MTU value can be increased or decreased using the **mtu** command, subject to minimum and maximum MTU limits for the interface type.

If the MTU value is not configured, then each interface will have a default MTU value that is specific to the interface type. The default MTU value is generally the largest Layer 2 frame size possible for the interface type.

The default/configured MTU value on an atm interface includes the L2 header.

The MTU size consists of L2 header that includes either SNAP(8bytes)/MUX(0)/NLPID(2) header or the AAL5 SDU. The AAL5 SDU includes the L3 datagram and the optional Logical Link Control/Subnetwork Access Protocol (LLC/SNAP) header.

The Ethernet interface is the Layer 3 datagram plus 14 bytes. For ATM main interface, the MTU is L3 datagram + 0 bytes.

For ATM L3 sub interface, mtu is as follows:

- SNAP - L3 datagram + 8 bytes
- NLPID - L3 datagram + 2 bytes
- MUX - L3datagram + 0 bytes
- When no pvc is configured under sub interface - L3datagram + 0 bytes

Note All serial links in a Multilink Point-to-Point Protocol (MLPPP) bundle or a Multilink Frame Relay (MFR) bundle inherit the default MTU value from the multilink bundle. If a serial interface has a nondefault MTU value, the Cisco IOS XR software blocks that serial interface from being added to an MLPPP or MFR bundle. Therefore, you must not configure the MTU value on a serial interface until you have added that serial interface to an MLPPP or MFR bundle.

You can use the **show interfaces** command to determine if the MTU value has been changed. The **show interfaces** command output displays the MTU size for each interface in the MTU (byte) field.

Note You can use the **show interfaces** command to determine if the MTU value has been changed. The **show interfaces** command output displays the MTU size for each interface in the MTU (byte) field. Note that the MTU size that is displayed includes the Layer 2 header bytes used for each encapsulation type.

Note Changing the MTU on an interface triggers a change on the protocols and capsulations configured on that interface, although some protocol-specific configurations can override the interface MTU. For example, specifically changing the interface MTU configuration does not affect the IP MTU configuration, but may affect the resulting MTU on that node.

Task ID

Task ID	Operations
interface	read, write

Examples

In the following example, the MTU value for all interfaces is verified. The MTU value is shown in the next-to-last column:

```
RP/0/RP0/CPU0:router# show interfaces all brief

                Intf        Intf         LineP              Encap  MTU       BW
                Name        State        State               Type (byte)    (Kbps)
```

```
--------------------------------------------------------------------------------
                Nu0           up           up                Null  1500   Unknown
           PO6/0/0/0          up           up                HDLC  4474   2488320
           PO6/0/0/1          up           up                HDLC  4474   2488320
           PO6/0/0/2    admin-down   admin-down              HDLC  4474   2488320
           PO6/0/0/3    admin-down   admin-down              HDLC  4474   2488320
      Mg0//CPU0/0           up           up               ARPA  1514    100000

RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface POS 6/0/0/0
RP/0/RP0/CPU0:router(config-if)# mtu 1000
```

After the **mtu** command is used to decrease the MTU Layer 2 frame size for the POS interface on 6/0/0/0 to 1000 bytes, the **show interfaces all brief** command is used again to verify that the MTU Layer 2 frame size has been changed:

```
RP/0/RP0/CPU0:router# show interfaces all brief

                Intf        Intf         LineP              Encap  MTU       BW
                Name        State        State               Type (byte)    (Kbps)
--------------------------------------------------------------------------------
                Nu0           up           up                Null  1500   Unknown
           PO6/0/0/0          up           up                HDLC  1000   2488320
           PO6/0/0/1          up           up                HDLC  4474   2488320
           PO6/0/0/2    admin-down   admin-down              HDLC  4474   2488320
           PO6/0/0/3    admin-down   admin-down              HDLC  4474   2488320
Mg0//CPU0/0             up           up               ARPA  1514    100000
```

Related Commands

Command	Description
shutdown (global), on page 26	Disables an interface (forces an interface to be administratively down).

show im dampening

To display the state of all interfaces on which dampening has been configured, use the **show im dampening** command in EXEC mode.

show im dampening [**interface** *type*| **ifhandle** *handle*]

Syntax Description

interface *type*	(Optional) Interface type. For more information, use the question mark (**?**) online help function.
ifhandle *handle*	(Optional) Identifies the caps node whose Interface Manager (IM) dampening information you want to display.

Command Default

If you do not specify an interface, then the system displays brief details about all dampened interfaces.

Command Modes

XR EXEC

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

If you do not specify an interface, then the system displays brief details about all dampened interfaces.

The physical hardware (layer 1) is not the only part of an interface that can change state. L2 keepalive failure event is one of the many instances that can have a similar impact on routing protocols despite the underlying interface state staying UP. To take account of such events, when dampening is configured on an interface, it is applied independently to every layer. They all use the same parameters as the interface but they have their own penalty value which is incremented when that layer changes state.

Capsulations that may be dampened in this way include these:

- L2 basecaps, such as HDLC and PPP, which may flap if keepalives are not received due to events such as intermittent packet loss.
- L3 capsulations (for example ipv4, ipv6). These may be brought down if another link has a conflicting IP address configured.
- Other locations where negotiation takes place with a peer router, as in the case of PPP control protocols such as IPCP. If the negotiation fails, then the caps is brought down.

Task ID

Task ID	Operations
interface	read

Examples

The following example shows the output from the **show im dampening** command issued with default values:

```
RP/0/RP0/CPU0:router(config)# interface POS 0/4/0/3
RP/0/RP0/CPU0:router(config-if)# no shutdown
RP/0/RP0/CPU0:router(config-if)# dampening
RP/0/RP0/CPU0:router# show im dampening

Interface               Proto              Caps               Penalty Suppressed

---------               -----              ----               ----------------
POS0/4/0/3              0                  0                  0       NO

RP/0/RP0/CPU0:router# show im dampening interface POS 0/4/0/3

POS0/4/0/3 (0x05000d00)
Dampening enabled: penalty 0, not suppressed
  underlying state: Up
  half_life: 1        reuse:             750
  suppress:  3000     max-suppress-time: 4
  restart-penalty:   0

RP/0/RP0/CPU0:router# show interfaces POS 0/4/0/3

POS0/4/0/3 is up, line protocol is down
  Dampening enabled: penalty 0, not suppressed
    half_life: 1        reuse:             750
    suppress:  3000     max-suppress-time: 4
    restart-penalty:  0
  Hardware is Packet-over-SONET
  Description: ensoft-gsr5 POS 4\2
  Internet address is Unknown
  MTU 4474 bytes, BW 155520 Kbit
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation HDLC, crc 16, controller loopback not set, keepalive set (10 sec)
  Last clearing of "show interface" counters never
  30 second input rate 0 bits/sec, 0 packets/sec
  30 second output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 total input drops
     0 drops for unrecognized upper-level protocol
     Received 0 broadcast packets, 0 multicast packets
              0 runts, 0 giants, 0 throttles, 0 parity
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     48 packets output, 1504 bytes, 0 total output drops
     Output 0 broadcast packets, 0 multicast packets
     0 output errors, 0 underruns, 0 applique, 0 resets
     0 output buffer failures, 0 output buffers swapped out
```

This sample output shows a POS interface with PPP basecaps and IPCP. The subsequent output for **show im dampening interface <ifname>** contains a table of any capsulations which have their own penalty as shown below:

```
RP/0/RP0/CPU0:router# show im dampening

Interface                 Protocol           Capsulation          Pen   Sup
------------------------- ------------------ -------------------- ----- ---
GigabitEthernet0/0/0/0                                            629 NO
```

```
GigabitEthernet0/0/0/1                                                  2389 YES
POS0/2/0/0                                                                 0 NO
POS0/2/0/0                  <base>            ppp                          0 NO
POS0/2/0/0                  ipv4              ipcp                         0 NO

RP/0/RP0/CPU0:router# show im dampening interface TenGigaE 0/1/0/0

TenGigE 0/1/0/0 (0x01180020)
Dampening enabled: Penalty 1625, SUPPRESSED (42 secs remaining)
  Underlying state: Down
  half-life: 1        reuse:             1000
  suppress:  1500     max-suppress-time: 4
  restart-penalty:  0

Protocol       Capsulation        Pen   Suppression              U-L State
-------------- ------------------ ----- -------------------- -------------
 ipv6           ipv6               1625  YES    42s  remaining        Down
```

Note When dampening is configured on an interface it is also applied independently to all capsulations on that interface. For example, the ppp or hdlc basecaps state can flap even while the interface stays up and if keepalives fail. The **show im dampening interface** command contains one line for each such capsulation as well as the interface itself as shown for the POS interface in the previous example.

Table 1: show im dampening Field Descriptions

Field	Description
Dampening	Indicates the dampening state and penalty value: not suppressed, suppressed.
underlying state	Underlying state of the interface: up, down, administratively down (if an interface has been configured to be “shutdown”).
half_life	This is the time (in minutes) at which the penalty on the interface would be half that of the original penalty (of 1000) when the interface transitions from UP to DOWN. It ranges from 1 to 45 minutes and the default is 1 minute.
reuse	Penalty value below which a stable interface is unsuppressed. It ranges from 1 to 20000 and the default value is 750.
suppress	Limit at which an unstable interface is suppressed when the penalty value exceeds the suppress value. It ranges from 1 to 20000 and the default value is 2000.
max-suppress-time	Maximum time (in minutes) that an interface can be suppressed. The default is 4 minutes.
restart-penalty	Penalty assigned to the interface when it flaps.

Related Commands

Command	Description
dampening, on page 6	Turns on event dampening.
shutdown (global), on page 26	Disables an interface (forces an interface to be administratively down).

show interfaces

To display statistics for all interfaces configured on the router or for a specific node, use the **show interfaces** command in EXEC mode.

show interfaces [*type interface-path-id*| **all**| **local**| **location** *node-id*] [**accounting**| **brief**| **description**| **detail**| **summary**]

Syntax Description

type	(Optional) Specifies the type of interface for which you want to display statistics. For more information, use the question mark (**?**) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
all	(Optional) Displays interface information for all interfaces This is the default.
local	(Optional) Displays interface information for all interfaces in the local card.
location *node-id*	(Optional) Displays information about all interfaces on the specified node. The *node-id* argument is entered in the *rack/slot/module* notation.
accounting	(Optional) Displays the number of packets of each protocol type that have been sent through the interface.
brief	(Optional) Displays brief information of each interface (one line per interface).

description	(Optional) Displays the status, protocol, and description of each interface (one line per interface).
detail	(Optional) Displays detailed information about each interface. This is the default.
summary	(Optional) Displays a summary of interface information by interface type.

Command Default

No default behavior or values

Command Modes

XR EXEC

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
- If specifying a virtual interface, the number range varies, depending on interface type.

The **show interfaces** command displays statistics for the network interfaces. The resulting display shows the interface processors in slot order.

For example, if you type the **show interfaces** command without an interface type, you receive information for all the interfaces installed in the networking device. Only by specifying the interface *type*, *slot*, and *port* arguments can you display information for a particular interface.

If you enter a **show interfaces** command for an interface type that has been removed from the networking device, an error message is displayed: “Interface not found.”

The output displayed depends on the network for which an interface has been configured.

Note The 5-minute input and output rates should be used only as an approximation of traffic per second during a given 5-minute period. These rates are exponentially weighted averages with a time constant of 5 minutes. A period of four time constants must pass before the average is within 2 percent of the instantaneous rate of a uniform stream of traffic over that period.

Task ID

Task ID	Operations
interface	read

Examples

The following example shows the output from the **show interfaces** command. The output displayed depends on the type and number of interface cards in the networking device.

```
RP/0/RP0/CPU0:router# show interfaces tenGigE 0/0/0/1

TenGigE0/0/0/1 is administratively down, line protocol is administratively down
  Hardware is TenGigE, address is 0800.4539.d909 (bia 0800.4539.d909)
  Description: user defined string
  Internet address is Unknown
  MTU 1514 bytes, BW 10000000 Kbit
     reliability 255/255, txload 0/255, rxload 0/255
  Encapsulation ARPA,
  Full-duplex, 10000Mb/s, LR
  output flow control is off, input flow control is off
  loopback not set
  ARP type ARPA, ARP timeout 01:00:00
  Last clearing of "show interface" counters never
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 total input drops
     0 drops for unrecognized upper-level protocol
     Received 0 broadcast packets, 0 multicast packets
              0 runts, 0 giants, 0 throttles, 0 parity
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     0 packets output, 0 bytes, 0 total output drops
     Output 0 broadcast packets, 0 multicast packets
     0 output errors, 0 underruns, 0 applique, 0 resets
     0 output buffer failures, 0 output buffers swapped out
     0 carrier transitions
```

In the following sample output, instance 1 is specified on a Packet-over-SONET/SDH (POS) card:

```
RP/0/RP0/CPU0:router# show interfaces POS 0/1/0/1

POS0/1/0/1 is administratively down, line protocol is administratively down
  Hardware is Packet over SONET
  Internet address is n.n.n.n/n
  MTU 4474 bytes, BW 9953280 Kbit
     reliability 255/255, txload 0/255, rxload 0/255
  Encapsulation HDLC, crc 32, controller loopback not set, keepalive not set
  Last clearing of "show interface" counters never
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 total input drops
     0 drops for unrecognized upper-level protocol
     Received 0 broadcast packets, 0 multicast packets
              0 runts, 0 giants, 0 throttles, 0 parity
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
```

```
     0 packets output, 0 bytes, 0 total output drops
     Output 0 broadcast packets, 0 multicast packets
     0 output errors, 0 underruns, 0 applique, 0 resets
     0 output buffer failures, 0 output buffers swapped out
```

The following example shows sample output for ATM subinterface 0/4/2/0/1.1:

```
RP/0/RP0/CPU0:router# show interfaces ATM0/4/2/0/1.1

ATM0/4/2/0/1.1 is up, line protocol is up
  Interface state transitions: 1
  Hardware is ATM network sub-interface(s)
  Description: Connected to PE22_C12406 ATM 0/4/0/0/1.1
  Internet address is 10.212.4.21/24
  MTU 4486 bytes, BW 1544 Kbit
     reliability Unknown, txload Unknown, rxload Unknown
  Encapsulation AAL5/SNAP, controller loopback not set,
  Last clearing of "show interface" counters Unknown
  Datarate information unavailable.
  Interface counters unavailable.
```

The following example shows bundle member links whose link interface status is “err-disable” and line protocol state is “admin-down” after the bundle interface has been administratively shut down using the **shutdown** command:

```
RP/0/RP0/CPU0:router# show interfaces brief

Thu May  6 06:30:55.797 DST

               Intf       Intf        LineP              Encap  MTU        BW
               Name       State       State               Type (byte)    (Kbps)
--------------------------------------------------------------------------------
               BE16  admin-down  admin-down               ARPA  9216    1000000
          BE16.160          up          up        802.1Q VLAN  9220    1000000
          BE16.161          up          up        802.1Q VLAN  9220    1000000
          BE16.162          up          up        802.1Q VLAN  9220    1000000
          BE16.163          up          up        802.1Q VLAN  9220    1000000
               Lo0          up          up           Loopback  1500    Unknown
               Nu0          up          up               Null  1500    Unknown
            tt44190          up          up             TUNNEL  1500    Unknown
            tt44192          up          up             TUNNEL  1500    Unknown
            tt44194          up          up             TUNNEL  1500    Unknown
            tt44196          up          up             TUNNEL  1500    Unknown

          Gi0/1/0/0  admin-down  admin-down               ARPA  1514    1000000
          Gi0/1/0/1  admin-down  admin-down               ARPA  1514    1000000
          Gi0/1/0/2          up          up               ARPA  9014    1000000
          Gi0/1/0/3          up          up               ARPA  9014    1000000
      Gi0/1/0/3.160          up          up        802.1Q VLAN  9022    1000000
      Gi0/1/0/3.161          up          up        802.1Q VLAN  9018    1000000
      Gi0/1/0/3.185          up          up        802.1Q VLAN  9022    1000000
      Gi0/1/0/3.189          up          up        802.1Q VLAN  9022    1000000
      Gi0/1/0/3.215          up          up        802.1Q VLAN  9022    1000000
          Gi0/1/0/4  admin-down  admin-down               ARPA  1514    1000000
          Gi0/1/0/5  admin-down  admin-down               ARPA  1514    1000000
          Gi0/1/0/6  admin-down  admin-down               ARPA  1514    1000000
          Gi0/1/0/7          up          up               ARPA  9014    1000000
      Gi0/1/0/7.185          up          up        802.1Q VLAN  9022    1000000
      Gi0/1/0/7.187          up          up        802.1Q VLAN  9014    1000000
      Gi0/1/0/7.189          up          up        802.1Q VLAN  9022    1000000
      Gi0/1/0/7.210          up          up        802.1Q VLAN  9022    1000000
      Gi0/1/0/7.211          up          up        802.1Q VLAN  9022    1000000
      Gi0/1/0/7.215          up          up        802.1Q VLAN  9022    1000000
          Gi0/1/0/8          up          up               ARPA  9014    1000000
          Gi0/1/0/9  admin-down  admin-down               ARPA  1514    1000000
         Gi0/1/0/10  admin-down  admin-down               ARPA  1514    1000000
         Gi0/1/0/11  admin-down  admin-down               ARPA  1514    1000000
         Gi0/1/0/12          up          up               ARPA  9216    1000000
         Gi0/1/0/13  admin-down  admin-down               ARPA  1514    1000000
         Gi0/1/0/14  admin-down  admin-down               ARPA  1514    1000000
```

```
      Gi0/1/0/15  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/16          up          up                ARPA  9216    1000000
      Gi0/1/0/17          up          up                ARPA  1514    1000000
      Gi0/1/0/18          up          up                ARPA  9216    1000000
      Gi0/1/0/19          up          up                ARPA  9014    1000000
 Gi0/1/0/19.2127          up          up         802.1Q VLAN  9022    1000000
 Gi0/1/0/19.2130          up          up         802.1Q VLAN  9022    1000000
      Gi0/1/0/20          up          up                ARPA  9014    1000000
 Gi0/1/0/20.2125          up          up         802.1Q VLAN  9022    1000000
      Gi0/1/0/21  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/22  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/23          up          up                ARPA  9216    1000000
      Gi0/1/0/24  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/25  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/26  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/27          up          up                ARPA  1514    1000000
      Gi0/1/0/28  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/29  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/30          up          up                ARPA  9014    1000000
  Gi0/1/0/30.215          up          up         802.1Q VLAN  9018    1000000
      Gi0/1/0/31          up          up                ARPA  9014    1000000
      Gi0/1/0/32  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/33  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/34  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/35  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/36  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/37  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/38  admin-down  admin-down                ARPA  1514    1000000
      Gi0/1/0/39  admin-down  admin-down                ARPA  1514    1000000
       Te0/4/0/0  err-disable admin-down                ARPA  1514   10000000
       Te0/4/0/1  err-disable admin-down                ARPA  1514   10000000
       Te0/4/0/2  err-disable admin-down                ARPA  1514   10000000
       Te0/4/0/3  err-disable admin-down                ARPA  1514   10000000
       Te0/4/0/4  err-disable admin-down                ARPA  1514   10000000
       Te0/4/0/5  err-disable admin-down                ARPA  1514   10000000
       Te0/4/0/6  err-disable admin-down                ARPA  1514   10000000
       Te0/4/0/7  err-disable admin-down                ARPA  1514   10000000
       Te0/6/0/0  admin-down  admin-down                ARPA  1514   10000000
       Te0/6/0/1  admin-down  admin-down                ARPA  1514   10000000
       Te0/6/0/2  admin-down  admin-down                ARPA  1514   10000000
       Te0/6/0/3  admin-down  admin-down                ARPA  1514   10000000
```

Table 2: show interfaces Field Descriptions

Field	Description
Interface name	Displays the name of the current interface. For example, POS0/1/0/1.
Interface state	Displays the state of the interface. For example, the interface is in the administratively up state.
Interface state transitions	Displays the number of times since the last reload that the interface transitioned from the administratively up state to the administrative down state and from the administratively down state to the administratively up state.

Field	Description
line protocol state	Displays the state of the Layer 2 line protocol. This field may be different from the interface state if, for example, a keepalive failure has brought down the Layer 2. **Note** The line protocol state is not the same as the protocol state displayed in the **show ip interfaces** command, because it is the state of Layer 2 (media) rather than Layer 3 (IP protocol).
Hardware	Displays the current hardware type.
Internet address is *n.n.n.n/n*	Displays the Layer 2 address (MAC address for Ethernet interfaces). **Note** Enter the **mac-address** command to configure the hardware address.
bia	Displays the burned-in address (BIA) for the interface. The BIA is the default L2 (MAC) address for the interface. **Note** The BIA is not configurable.
description	Displays the user-defined string that is associated with the interface. **Note** Enter the **description** command to configure the description associated with the interface.
Internet Address	Displays the Layer 3 (IP) address for the interface. **Note** Enter the **ipv4 address** command to configure the internet address for the interface.
MTU	Displays the maximum transmission unit (MTU) for the interface. The MTU is the maximum packet size that can be transmitted over the interface. **Note** The MTU field indicates the interface MTU. Enter the **mtu** command to configure a lower MTU value at the Layer 3 level.
BW	Displays the bandwidth of the interface in kbps.
reliability	Displays the proportion of packets that are not dropped and do not have errors. **Note** The reliability is shown as a fraction of 255.

Field	Description
txload	Indicates the traffic flowing out of the interface as a proportion of the bandwidth. **Note** The txload is shown as a fraction of 255.
rxload	Indicates the traffic flowing into the interface as a proportion of the bandwidth. **Note** The rxload is shown as a fraction of 255.
Encapsulation	Layer 2 encapsulation installed on the interface.
CRC	Indicates the length of the cyclic redundancy check (CRC), in bytes. **Note** The CRC is not present for all interface types. **Note** Enter the **pos crc** command to configure the CRC.
loopback or controller loopback	Indicates whether the hardware has been configured to be looped back. **Note** Enter the **loopback** command to configure the loopback or controller loopback.
keepalive	Displays the configured keepalive value, in seconds. **Note** Enter the **keepalive** command to configure the value of the keepalive field. **Note** The *keepalive* field may not be present if it is not applicable to the interface type.
Duplexity	Displays the duplexity of the link. **Note** This field is present only for shared media. **Note** For some interface types, you can configure the duplexity by entering the **full-duplex** and **half-duplex** commands.
Speed	Speed and bandwidth of the link in Mbps. This field is present only when other parts of the media info line are also displayed (see duplexity and media type).
Media Type	Media type of the interface.
output flow control	Whether output flow control is enabled on the interface.
input flow control	See output flow control.

Field	Description
ARP type	Address Resolution Protocol (ARP) type used on the interface. This value is not displayed on interface types that do not use ARP.
ARP timeout	ARP timeout in *hours*:*mins*:*secs*. This value is configurable using the **arp timeout** command.
Last clearing of counters	Time since the following counters were last cleared using the **clear counters** exec command in *hours*:*mins*:*secs*.
5 minute input rate	Average number of bits and packets received per second in the last 5 minutes. If the interface is not in promiscuous mode, it senses network traffic that it sends and receives (rather than all network traffic). **Note** The 5-minute period referenced in the command output is a load interval that is configurable under the interface. The default value is 5 minutes. **Note** The 5-minute input should be used only as an approximation of traffic per second during a given 5-minute period. This rate is exponentially weighted average with a time constant of 5 minutes. A period of four time constants must pass before the average is within two percent of the instantaneous rate of a uniform stream of traffic over that period.
5 minute output rate	Average number of bits and packets transmitted per second in the last 5 minutes. If the interface is not in promiscuous mode, it senses network traffic that it sends and receives (rather than all network traffic). **Note** The 5-minute period referenced in the command output is a load interval that is configurable under the interface. The default value is 5 minutes. **Note** The 5-minute output should be used only as an approximation of traffic per second during a given 5-minute period. This rate is exponentially weighted average with a time constant of 5 minutes. A period of four time constants must pass before the average is within two percent of the instantaneous rate of a uniform stream of traffic over that period.
packets input	Number of packets received on the interface that were successfully delivered to higher layers.

Field	Description
bytes input	Total number of bytes successfully received on the interface
total input drops	Total number of packets that were dropped after they were received. This includes packets that were dropped due to configured quality of service (QoS) or access control list (ACL) policies. QoS drops include policer drops, WRED drops, and tail drops. This does not include drops due to unknown Layer 3 protocol.
drops for unrecognized upper-level protocol	Total number of packets that could not be delivered because the necessary protocol was not configured on the interface.
Received broadcast packets	Total number of Layer 2 broadcast packets received on the interface. This is a subset of the total input packet count.
Received multicast packets	Total number of Layer 2 multicast packets received on the interface. This is a subset of the total input packet count.
runts	Number of received packets that were too small to be handled. This is a subset of the input errors count.
giants	Number of received packets that were too large to be handled. This is a subset of the input errors count.
throttles	Number of packets dropped due to throttling (because the input queue was full).
parity	Number of packets dropped because the parity check failed.
input errors	Total number of received packets that contain errors and hence cannot be delivered. Compare this to total input drops, which counts packets that were not delivered despite containing no errors.
CRC	Number of packets that failed the CRC check.
frame	Number of packets with bad framing bytes.
overrun	Number of overrun errors experienced by the interface. Overruns represent the number of times that the receiver hardware is unable to send received data to a hardware buffer because the input rate exceeds the receiver's ability to handle the data.

Field	Description
ignored	Total number of ignored packet errors. Ignored packets are those that are discarded because the interface hardware does not have enough internal buffers. Broadcast storms and bursts of noise can result in an increased number of ignored packets.
abort	Total number of abort errors on the interface.
packets output	Number of packets received on the interface that were successfully delivered to higher layers.
bytes output	Total number of bytes successfully received on the interface.
total output drops	Number of packets that were dropped before being transmitted. This includes packets that were dropped due to configured quality of service (QoS), (policer drops, WRED drops, and tail drops).
Received broadcast packets	Number of Layer 2 broadcast packets transmitted on the interface. This is a subset of the total input packet count.
Received multicast packets	Total number of Layer 2 multicast packets transmitted on the interface. This is a subset of the total input packet count.
output errors	Number of times that the receiver hardware was unable to handle received data to a hardware buffer because the input rate exceeded the receiver's ability to handle the data.
underruns	Number of underrun errors experienced by the interface. Underruns represent the number of times that the hardware is unable to transmit data to a hardware buffer because the output rate exceeds the transmitter’s ability to handle the data.
applique	Number of applique errors.
resets	Number of times that the hardware has been reset. The triggers and effects of this event are hardware-specifc.
output buffer failures	Number of times that a packet was not output from the output hold queue because of a shortage of MEMD shared memory.

Field	Description
output buffers swapped out	Number of packets stored in main memory when the output queue is full; swapping buffers to main memory prevents packets from being dropped when output is congested. The number is high when traffic is bursty.
carrier transitions	Number of times the carrier detect (CD) signal of a serial interface has changed state.

Related Commands

Command	Description
show controller interface	Displays information that is specific to the interface hardware statistics for all interfaces configured on the networking device.

shutdown (global)

To disable an interface (to force an interface to be administratively down), use the **shutdown** command in interface configuration mode. To enable an interface that has been shut down, use the **no** form of this command.

shutdown

no shutdown

Syntax Description

This command has no keywords or arguments.

Command Default

The interface is enabled by default and is disabled only when shutdown is configured.

Note When you add an interface to the system, or when all the configuration for an interface is lost or deleted, the interface is put in the shutdown state by the system adding the interface.

Command Modes

Interface configuration

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **shutdown** command to move the state of an interface to administratively down, which stops traffic flowing through the interface. This state does not stop other action from happening on the interface such as changes in configuration, protocols, capsulations, and so forth.

The **shutdown** command also marks the interface as unavailable. To check whether the state of an interface is down, use the **show interfaces** command in EXEC mode, which displays the current state of the interface. An interface that has been shut down is shown as administratively down in the display from the **show interfaces** command.

Task ID

Task ID	Operations
interface	read, write

Examples

In the following example, POS interface 0/4/0/2 is turned off:

```
RP/0/RP0/CPU0:router(config)# interface POS 0/4/0/2
RP/0/RP0/CPU0:router(config-if)# shutdown
```

Related Commands

Command	Description
show interfaces, on page 15	Displays statistics for all interfaces configured on the router or on a specific node.
show ip interface	Displays IPv4 interface status and configuration.