

# show interfaces loopback

To display information about the loopback interface, use the **show interfaces loopback** command in privileged EXEC mode.

**show interfaces loopback** [*number*] [**accounting**]

Syntax Description	
<i>number</i>	(Optional) Port number on the selected interface.
<b>accounting</b>	(Optional) Displays the number of packets of each protocol type that have been sent through the interface.

Command Modes	
	Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.

## Examples

The following is sample output from the **show interfaces loopback** command:

```
Router# show interfaces loopback 0

Loopback0 is up, line protocol is up
  Hardware is Loopback
  MTU 1500 bytes, BW 1 Kbit, DLY 50 usec, rely 255/255, load 1/255
  Encapsulation UNKNOWN, loopback not set, keepalive set (10 sec)
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Output queue 0/0, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer
      Received 0 broadcasts, 0 runts, 0 giants
        0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
          0 packets output, 0 bytes, 0 underruns
            0 output errors, 0 collisions, 0 interface resets, 0 restarts
```

The following is sample output when the **accounting** keyword is included:

```
Router# show interfaces loopback 0 accounting

Loopback0
          Protocol    Pkts In   Chars In   Pkts Out   Chars Out
No traffic sent or received on this interface.
```

Table 25 describes significant fields shown in the displays.

**Table 25** *show interfaces loopback Field Descriptions*

Field	Description
Loopback is {up   down   administratively down}	Indicates whether the interface hardware is currently active (whether carrier detect is present), is currently inactive, or has been taken down by an administrator.
line protocol is {up   down   administratively down}	Indicates whether the software processes that handle the line protocol consider the line usable (that is, whether keepalives are successful).
Hardware	Hardware is Loopback.
MTU	Maximum transmission unit of the interface.
BW	Bandwidth of the interface in kilobits per second.
DLY	Delay of the interface in microseconds.
rely	Reliability of the interface as a fraction of 255 (255/255 is 100 percent reliability), calculated as an exponential average over 5 minutes.
load	Load on the interface as a fraction of 255 (255/255 is completely saturated), calculated as an exponential average over 5 minutes.
Encapsulation	Encapsulation method assigned to interface.
loopback	Indicates whether loopback is set and type of loopback test.
keepalive	Indicates whether keepalives are set or not.
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface and processed locally on the router. Useful for knowing when a dead interface failed. This counter is updated only when packets are process switched, not when packets are fast switched.
output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by an interface. This counter is updated only when packets are process switched, not when packets are fast switched.
output hang	Number of hours, minutes, and seconds (or never) since the interface was last reset because of a transmission that took too long. When the number of hours in any of the “last” fields exceeds 24 hours, the number of days and hours is printed. If that field overflows, asterisks are printed.
Last clearing	Time at which the counters that measure cumulative statistics (such as number of bytes transmitted and received) shown in this report were last reset to zero. Note that variables that might affect routing (for example, load and reliability) are not cleared when the counters are cleared.  *** indicates the elapsed time is too large to be displayed.  0:00:00 indicates the counters were cleared more than $2^{31}$ ms (and less than $2^{32}$ ms) ago.
Output queue, drops; Input queue, drops	Number of packets in output and input queues. Each number is followed by a slash, the maximum size of the queue, and the number of packets dropped because of a full queue.

**Table 25** *show interfaces loopback Field Descriptions (continued)*

Field	Description
Five minute input rate, Five minute output rate	Average number of bits and packets transmitted per second in the last 5 minutes.
packets input	Total number of error-free packets received by the system.
bytes input	Total number of bytes, including data and MAC encapsulation, in the error-free packets received by the system.
no buffer	Number of received packets discarded because there was no buffer space in the main system. Compare with ignored count. Broadcast storms on Ethernet networks and bursts of noise on serial lines are often responsible for no input buffer events.
broadcasts	Total number of broadcast or multicast packets received by the interface.
runts	Number of packets that are discarded because they are smaller than the minimum packet size of the medium.
giants	Number of packets that are discarded because they exceed the maximum packet size of the medium.
input errors	Sum of all errors that prevented the receipt of datagrams on the interface being examined. This may not balance with the sum of the enumerated output errors, because some datagrams may have more than one error and others may have errors that do not fall into any of the specifically tabulated categories.
CRC	Cyclic redundancy checksum generated by the originating LAN station or far-end device does not match the checksum calculated from the data received. On a LAN, this usually indicates noise or transmission problems on the LAN interface or the LAN bus itself. A high number of CRCs is usually the result of collisions or a station transmitting bad data. On a serial link, CRCs usually indicate noise, gain hits, or other transmission problems on the data link. CRC errors are also reported when a far-end abort occurs, and when the idle flag pattern is corrupted. This makes it possible to get CRC errors even when there is no data traffic.
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets. On a serial line, this is usually the result of noise or other transmission problems.
overrun	Number of times the serial receiver hardware was unable to hand received data to a hardware buffer because the input rate exceeded the receiver's ability to handle the data.
ignored	Number of received packets ignored by the interface because the interface hardware ran low on internal buffers. These buffers are different than the system buffers mentioned previously in the buffer description. Broadcast storms and bursts of noise can cause the ignored count to be increased.
abort	Number of packets whose receipt was aborted.
packets output	Total number of messages transmitted by the system.

**Table 25** *show interfaces loopback Field Descriptions (continued)*

Field	Description
bytes output	Total number of bytes, including data and MAC encapsulation, transmitted by the system.
underruns	Number of times that the far-end transmitter has been running faster than the near-end router's receiver can handle. This may never happen (be reported) on some interfaces.
output errors	Sum of all errors that prevented the final transmission of datagrams out of the interface being examined. Note that this may not balance with the sum of the enumerated output errors, as some datagrams may have more than one error, and others may have errors that do not fall into any of the specifically tabulated categories.
collisions	Loopback interface does not have collisions.
interface resets	Number of times an interface has been completely reset. This can happen if packets queued for transmission were not sent within several seconds time. On a serial line, this can be caused by a malfunctioning modem that is not supplying the transmit clock signal, or by a cable problem. If the system notices that the carrier detect line of a serial interface is up, but the line protocol is down, it periodically resets the interface in an effort to restart it. Interface resets can also occur when an interface is looped back or shut down.
restarts	Number of times the controller was restarted because of errors.
Protocol	Protocol that is operating on the interface.
Pkts In	Number of packets received for that protocol.
Chars In	Number of characters received for that protocol.
Pkts Out	Number of packets transmitted for that protocol.
Chars Out	Number of characters transmitted for that protocol.

# show interfaces port-channel

To display the information about the Fast EtherChannel on Cisco 7200 series routers, Cisco 7500 series routers, and Cisco 7000 series routers with the RSP7000 and RSP7000CI, use the **show interfaces port-channel** command in user EXEC and privileged EXEC mode.

**show interfaces port-channel** [*channel-number*]

<b>Syntax Description</b>	<i>channel-number</i> (Optional) Port channel number. Range is 1 to 4.						
<b>Command Modes</b>	User EXEC Privileged EXEC						
<b>Command History</b>	<table border="1"> <thead> <tr> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Release</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Modification</th> </tr> </thead> <tbody> <tr> <td style="border-bottom: 1px solid black;">11.1 CA</td> <td style="border-bottom: 1px solid black;">This command was introduced.</td> </tr> <tr> <td style="border-bottom: 1px solid black;">12.1(5)T</td> <td style="border-bottom: 1px solid black;">This command was integrated into Cisco IOS Release 12.1(5)T.</td> </tr> </tbody> </table>	Release	Modification	11.1 CA	This command was introduced.	12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
Release	Modification						
11.1 CA	This command was introduced.						
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.						

## Examples

The following is sample output from the **show interfaces port-channel** command:

```
Router# show interfaces port-channel 1

Port-channell is up, line protocol is up
  Hardware is FEChannel, address is 0000.0ca8.6220 (bia 0000.0000.0000)
  MTU 1500 bytes, BW 400000 Kbit, DLY 100 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive not set, fdx
  ARP type: ARPA, ARP Timeout 04:00:00
    No. of active members in this channel: 4
      Member 0 : Fast Ethernet1/0/0
      Member 1 : Fast Ethernet1/1/0
      Member 2 : Fast Ethernet4/0/0
      Member 3 : Fast Ethernet4/1/0
  Last input 01:22:13, output never, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    223 packets input, 11462 bytes, 0 no buffer
    Received 1 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 watchdog, 0 multicast
    0 input packets with dribble condition detected
    192 packets output, 13232 bytes, 0 underruns
    0 output errors, 0 collisions, 0 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out
```

Table 26 describes significant fields shown in the display.

**Table 26** *show interfaces port-channel (Fast EtherChannel) Field Descriptions*

Field	Description
Port-channel1 is up, line protocol is up	Indicates if the interface hardware is currently active and can transmit and receive or if it has been taken down by an administrator.
Hardware is	Hardware type (Fast EtherChannel).
address is	Address being used by the interface.
MTU	Maximum transmission unit of the interface.
BW	Bandwidth of the interface in kilobits per second.
DLY	Delay of the interface in microseconds.
rely	Reliability of the interface as a fraction of 255 (255/255 is 100 percent reliability), calculated as an exponential average over 5 minutes.
load	Load on the interface as a fraction of 255 (255/255 is completely saturated), calculated as an exponential average over 5 minutes. The calculation uses the value from the <b>bandwidth</b> interface configuration command.
Encapsulation	Encapsulation method assigned to the interface.
loopback	Indicates if loopbacks are set.
keepalive	Indicates if keepalives are set.
fdx	Indicates the interface is operating in full-duplex mode.
ARA type	ARP type on the interface.
ARP timeout	Number of hours, minutes, and seconds an ARP cache entry will stay in the cache.
No. of active members in this channel: 4	Number of Fast Ethernet interfaces that are currently active (not down) and part of the Fast EtherChannel group.
Member 0: Fast Ethernet1/0/0	Specific Fast Ethernet interface that is part of the Fast EtherChannel group.
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface and processed locally on the router. Useful for knowing when a dead interface failed. This counter is updated only when packets are process switched, not when packets are fast switched.
output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by an interface. This counter is updated only when packets are process switched, not when packets are fast switched.
output hang	Number of hours, minutes, and seconds (or never) since the interface was last reset because of a transmission that took too long. When the number of hours in any of the “last” fields exceeds 24 hours, the number of days and hours is printed. If that field overflows, asterisks are printed.

**Table 26** *show interfaces port-channel (Fast EtherChannel) Field Descriptions (continued)*

Field	Description
last clearing	Time at which the counters that measure cumulative statistics (such as number of bytes transmitted and received) shown in this report were last reset to zero. Variables that might affect routing (for example, load and reliability) are not cleared when the counters are cleared.  *** indicates the elapsed time is too large to be displayed.  0:00:00 indicates the counters were cleared more than $2^{31}$ ms (and less than $2^{32}$ ms) ago.
Queueing strategy	First-in, first-out queueing strategy (other queueing strategies you might see are priority-list, custom-list, and weighted fair).
Output queue, drops input queue, drops	Number of packets in output and input queues. Each number is followed by a slash, the maximum size of the queue, and the number of packets dropped because a queue was full.
5 minute input rate 5 minute output rate	Average number of bits and packets received or transmitted per second in the last 5 minutes.
packets input	Total number of error-free packets received by the system.
bytes (input)	Total number of bytes, including data and MAC encapsulation, in the error-free packets received by the system.
no buffer	Number of received packets discarded because there was no buffer space in the main system. Compare with ignored count. Broadcast storms on Ethernets and bursts of noise on serial lines are often responsible for no input buffer events.
broadcasts	Total number of broadcast or multicast packets received by the interface.
runts	Number of packets that are discarded because they are smaller than the minimum packet size of the medium.
giants	Number of packets that are discarded because they exceed the maximum packet size of the medium.
input errors	Total number of no buffer, runts, giants, CRCs, frame, overrun, ignored, and abort counts. Other input-related errors can also increment the count, so that this sum might not balance with the other counts.
CRC	Cyclic redundancy checksum generated by the originating LAN station or far-end device does not match the checksum calculated from the data received. On a LAN, this usually indicates noise or transmission problems on the LAN interface or the LAN bus itself. A high number of CRCs is usually the result of collisions or a station transmitting bad data. On a serial link, CRCs usually indicate noise, gain hits or other transmission problems on the data link.
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets. On a serial line, this is usually the result of noise or other transmission problems.
overrun	Number of times the serial receiver hardware was unable to hand received data to a hardware buffer because the input rate exceeded the receiver's ability to handle the data.

**Table 26** *show interfaces port-channel (Fast EtherChannel) Field Descriptions (continued)*

Field	Description
ignored	Number of received packets ignored by the interface because the interface hardware ran low on internal buffers. These buffers are different than the system buffers mentioned previously in the buffer description. Broadcast storms and bursts of noise can cause the ignored count to be incremented.
abort	Illegal sequence of ones bit on the interface.
watchdog	Number of times watchdog receive timer expired. It happens when receiving a packet with length greater than 2048.
multicast	Number of multicast packets received.
input packets with dribble condition detected	Dribble bit error indicates that a frame is slightly too long. This frame error counter is incremented just for informational purposes; the router accepts the frame.
packets output	Total number of messages transmitted by the system.
bytes (output)	Total number of bytes, including data and MAC encapsulation, transmitted by the system.
underruns	Number of times that the far-end transmitter has been running faster than the near-end router's receiver can handle.
output errors	Sum of all errors that prevented the final transmission of datagrams out of the interface being examined. Note that this might not balance with the sum of the enumerated output errors, as some datagrams can have more than one error, and others can have errors that do not fall into any of the specifically tabulated categories.
collisions	Number of messages retransmitted because of an Ethernet collision. A packet that collides is counted only once in output packets.
interface resets	Number of times an interface has been completely reset. This can happen if packets queued for transmission were not sent within a certain interval. If the system notices that the carrier detect line of an interface is up, but the line protocol is down, it periodically resets the interface in an effort to restart it. Interface resets can also occur when an unrecoverable interface processor error occurred, or when an interface is looped back or shut down.
babbles	The transmit jabber timer expired.
late collision	Number of late collisions. Late collision happens when a collision occurs after transmitting the preamble. The most common cause of late collisions is that your Ethernet cable segments are too long for the speed at which you are transmitting.
deferred	Deferred indicates that the chip had to defer while ready to transmit a frame because the carrier was asserted.
lost carrier	Number of times the carrier was lost during transmission.
no carrier	Number of times the carrier was not present during the transmission.

**Table 26** *show interfaces port-channel (Fast EtherChannel) Field Descriptions (continued)*

Field	Description
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.
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.

**Related Commands**

Command	Description
<b>interface multilink</b>	Specifies a Fast EtherChannel and enters interface configuration mode.

# show interfaces pos

To display information about the Packet OC-3 interface in Cisco 7500 series routers, use the **show interfaces pos** command in user EXEC and privileged EXEC mode.

Cisco 7000 and 7500 Series with VIPs

```
show interfaces pos [slot/port-adapter/port]
```

Syntax Description		
	<i>slot</i>	(Optional) Number of the slot being configured. Refer to the appropriate hardware manual for slot and port information.
	<i>port-adapter</i>	(Optional) Number of the port adapter being configured. Refer to the appropriate hardware manual for information about port adapter compatibility.
	<i>port</i>	(Optional) Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.

Command Modes	
	User EXEC
	Privileged EXEC

Command History	Release	Modification
	11.2	The <b>show interface posi</b> command was introduced.
	11.3	The name of the command was modified <b>show interface posi</b> to <b>show interfaces pos</b> and the sample output was updated.

**Examples** The following is sample output from the **show interfaces pos** command on a Cisco 7513 router with one Packet OC-3 Interface Processor (POSIP):

```
Router# show interfaces pos 2/0/0

POS2/0/0 is up, line protocol is up
  Hardware is cyBus Packet over Sonet
  Description: PRI-T1 net to zippy (4K) to Pac-Bell
  Internet address is 1.1.1.1/27
  MTU 4470 bytes, BW 1000 Kbit, DLY 40000 usec, rely 255/255, load 1/255
  Encapsulation HDLC, loopback not set, keepalive set (3 sec)
  Last input 00:00:00, output 00:00:00, output hang never
  Last clearing of "show interface" counters 00:23:09
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 1 packets/sec
  5 minute output rate 1000 bits/sec, 1 packets/sec
    1046 packets input, 54437 bytes, 0 no buffer
    Received 485 broadcasts, 0 runts, 0 giants, 0 parity
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    4013 packets output, 1357412 bytes, 0 underruns
    0 output errors, 0 applique, 0 interface resets
    0 output buffer failures, 0 output buffers swapped out
    0 carrier transitions
```

Table 27 describes the significant fields shown in the display.

**Table 27** *show interfaces pos Field Descriptions*

Field	Description
POS2/0/0 is up, line protocol is up	Indicates whether the interface hardware is currently active and can transmit and receive or whether it has been taken down by an administrator.
Hardware is cyBus Packet over Sonet	Hardware type.
Internet address is	Internet address and subnet mask.
MTU	Maximum transmission unit of the interface.
BW	Bandwidth of the interface in kilobits per second.
DLY	Delay of the interface in microseconds.
rely	Reliability of the interface as a fraction of 255 (255/255 is 100 percent reliability), calculated as an exponential average over 5 minutes.
load	Load on the interface as a fraction of 255 (255/255 is completely saturated), calculated as an exponential average over 5 minutes. The calculation uses the value from the <b>bandwidth</b> interface configuration command.
Encapsulation	Encapsulation method assigned to interface.
loopback	Indicates whether loopbacks are set.
keepalive	Indicates whether keepalives are set.
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface and processed locally on the router. Useful for knowing when a dead interface failed. This counter is updated only when packets are process switched, not when packets are fast switched.
(Last) output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by an interface. This counter is updated only when packets are process switched, not when packets are fast switched.
(Last) output hang	Number of hours, minutes, and seconds (or never) since the interface was last reset because of a transmission that took too long. When the number of hours in any of the “last” fields exceeds 24 hours, the number of days and hours is printed. If that field overflows, asterisks are printed.
Last clearing	Time at which the counters that measure cumulative statistics (such as number of bytes transmitted and received) shown in this report were last reset to zero. Note that variables that might affect routing (for example, load and reliability) are not cleared when the counters are cleared.  *** indicates the elapsed time is too large to be displayed.  0:00:00 indicates the counters were cleared more than $2^{31}$ ms (and less than $2^{32}$ ms) ago.

**Table 27** *show interfaces pos Field Descriptions (continued)*

Field	Description
Queueing strategy	First-in, first-out queueing strategy (other queueing strategies you might see are priority-list, custom-list, and weighted fair).
Output queue, drops input queue, drops	Number of packets in output and input queues. Each number is followed by a slash, the maximum size of the queue, and the number of packets dropped because a queue was full.
5 minute input rate 5 minute output rate	Average number of bits and packets received or transmitted per second in the last 5 minutes.
packets input	Total number of error-free packets received by the system.
bytes (input)	Total number of bytes, including data and MAC encapsulation, in the error-free packets received by the system.
no buffer	Number of received packets discarded because there was no buffer space in the main system. Compare with ignored count. Broadcast storms on Ethernets and bursts of noise on serial lines are often responsible for no input buffer events.
broadcasts	Total number of broadcast or multicast packets received by the interface.
runts	Number of packets that are discarded because they are smaller than the minimum packet size of the medium.
giants	Number of packets that are discarded because they exceed the maximum packet size of the medium.
parity	Report of the parity errors on the interface.
input errors	Total number of no buffer, runts, giants, CRCs, frame, overrun, ignored, and abort counts. Other input-related errors can also increment the count, so that this sum might not balance with the other counts.
CRC	Cyclic redundancy checksum generated by the originating LAN station or far-end device does not match the checksum calculated from the data received. On a LAN, this usually indicates noise or transmission problems on the LAN interface or the LAN bus itself. A high number of CRCs is usually the result of collisions or a station transmitting bad data. On a serial link, CRCs usually indicate noise, gain hits or other transmission problems on the data link.
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets. On a serial line, this is usually the result of noise or other transmission problems.
overrun	Number of times the serial receiver hardware was unable to hand received data to a hardware buffer because the input rate exceeded the receiver's ability to handle the data.
ignored	Number of received packets ignored by the interface because the interface hardware ran low on internal buffers. These buffers are different than the system buffers mentioned previously in the buffer description. Broadcast storms and bursts of noise can cause the ignored count to be incremented.

Table 27 *show interfaces pos* Field Descriptions (continued)

Field	Description
abort	Illegal sequence of one bits on the interface.
packets output	Total number of messages transmitted by the system.
bytes (output)	Total number of bytes, including data and MAC encapsulation, transmitted by the system.
underruns	Number of times that the far-end transmitter has been running faster than the near-end router's receiver can handle.
output errors	Sum of all errors that prevented the final transmission of datagrams out of the interface being examined. Note that this might not balance with the sum of the enumerated output errors, as some datagrams can have more than one error, and others can have errors that do not fall into any of the specifically tabulated categories.
applique	Indicates an unrecoverable error has occurred on the POSIP applique. The system then invokes an interface reset.
interface resets	Number of times an interface has been completely reset. This can happen if packets queued for transmission were not sent within a certain interval. If the system notices that the carrier detect line of an interface is up, but the line protocol is down, it periodically resets the interface in an effort to restart it. Interface resets can also occur when an unrecoverable interface processor error occurred, or when an interface is looped back or shut down.
carrier transitions	Number of times the carrier detect signal of the interface has changed state.

## Related Commands

Command	Description
<b>interface</b>	Configures an interface type and enters interface configuration mode.

## show interfaces serial

To display information about a serial interface, use the **show interfaces serial** command in privileged EXEC mode. When using Frame Relay encapsulation, use the **show interfaces serial** command in user EXEC or privileged EXEC mode to display information about the multicast data-link connection identifier (DLCI), the DLCIs used on the interface, and the DLCI used for the Local Management Interface (LMI).

### Cisco 4000 Series

```
show interfaces serial [number[:channel-group]] [accounting]
```

### Cisco 7000 and Cisco 7500 Series with the RSP7000, RSP7000CI, or Ports on VIPs

```
show interfaces serial [slot/port-adapter/port]
```

### Cisco 7500 Series

```
show interfaces serial [slot/port[:channel-group]] [accounting]
```

### Cisco 7500 Series with a CT3IP

```
show interfaces serial [slot/port-adapter/port][:t1-channel] [accounting | crb]
```

### Cisco AS5350 and Cisco AS5400 Universal Gateways

```
show interfaces serial slot/port
```

### Cisco AS5800 Access Servers

```
show interfaces serial dial-shelf[slot/t3-port:t1-num:chan-group]
```

Syntax	Description
<i>number</i>	(Optional) Number of the port being displayed.
<i>:channel-group</i>	(Optional) On the Cisco 4000 series with a Network Management Processor (NPM) or the Cisco 7500 series routers with a MultiChannel Interface Processor (MIP), specifies the T1 channel-group number in the range of 0 to 23 defined with the <b>channel-group</b> controller configuration command.
<b>accounting</b>	(Optional) Displays the number of packets of each protocol type that have been sent through the interface.
<i>slot</i>	(Optional) Number of the slot being displayed. Refer to the appropriate hardware manual for slot and port information.
<i>/port</i>	(Optional) Number of the port being displayed. Refer to the appropriate hardware manual for slot and port information.
<i>/port-adapter</i>	(Optional) Number of the port adapter being displayed. Refer to the appropriate hardware manual for information about port adapter compatibility.

<i>:t1-channel</i>	(Optional) T1 channel number. For the CT3IP, the T1 channel is a number between 1 and 28.  T1 channels on the CT3IP are numbered 1 to 28 rather than the more traditional zero-based scheme (0 to 27) used with other Cisco products. This scheme ensures consistency with telco numbering schemes for T1 channels within channelized T3 equipment.
<b>crb</b>	(Optional) Displays interface routing and bridging information.
<i>dial-shelf</i>	Dial shelf chassis in the Cisco AS5800 access server that contains the CT3 interface card.
<i>slot</i>	Location of the CT3 interface card in the dial shelf chassis.
<i>t3-port</i>	T3 port number. The only valid value is 0.
<i>:t1-num</i>	T1 time slot in the T3 line. The value can be from 1 to 28.
<i>:chan-group</i>	Channel group identifier.

**Command Modes**

User EXEC (when Frame Relay encapsulation is used)  
Privileged EXEC

**Command History**

Release	Modification
10.0	This command was introduced on the Cisco 4000 series routers.
11.0	This command was implemented on the Cisco 7000 series routers.
11.1 CA	This command was modified to include sample output for the PA-2JT2, PA-E3, and PA-T3 serial port adapters.
11.3	This command was modified to include the CT3IP.
12.0(3)T	This command was implemented on the Cisco AS5800 access servers.
12.0(4)T	This command was modified to include enhanced display information for dialer bound interfaces.
12.2(11)T	This command was implemented on the Cisco AS5350 and Cisco AS5400.
12.2(13)T	This command was modified to display information about Frame Relay interface queueing and fragmentation.

**Usage Guidelines****Frame Relay**

Use this command to determine the status of the Frame Relay link. This display also indicates Layer 2 status if switched virtual circuits (SVCs) are configured.

**Channel Groups as Virtual Serial Interfaces**

To find out about channel groups configured as virtual serial interfaces, to verify that the router has High-Level Data Link Control (HDLC) encapsulation on the interface, and to verify that the interface sees the loopback, use the **show interfaces serial** command in privileged EXEC mode.

## Examples

## Example of Synchronous Serial Interface

The following is sample output from the **show interfaces serial** command for a synchronous serial interface:

```
Router# show interfaces serial

Serial 0 is up, line protocol is up
  Hardware is MCI Serial
  Internet address is 192.168.10.203, subnet mask is 255.255.255.0
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation HDLC, loopback not set, keepalive set (10 sec)
  Last input 0:00:07, output 0:00:00, output hang never
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
    16263 packets input, 1347238 bytes, 0 no buffer
    Received 13983 broadcasts, 0 runts, 0 giants
    2 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 2 abort
  1 carrier transitions

    22146 packets output, 2383680 bytes, 0 underruns
    0 output errors, 0 collisions, 2 interface resets, 0 restarts
```

Table 28 describes significant fields shown in the display.

**Table 28** *show interfaces serial Field Descriptions—Synchronous Serial Interface*

Field	Description
Serial ... is {up   down} ... is administratively down	Indicates whether the interface hardware is currently active (whether carrier detect is present), is currently inactive, or has been taken down by an administrator.
line protocol is {up   down}	Indicates whether the software processes that handle the line protocol consider the line usable (that is, whether keepalives are successful) or whether the line has been taken down by an administrator.
Hardware is	Specifies the hardware type.
Internet address is	Specifies the Internet address and subnet mask.
MTU	Maximum transmission unit of the interface.
BW	Indicates the value of the bandwidth parameter that has been configured for the interface (in kbps). If the interface is attached to a serial line with a line speed that does not match the default (1536 or 1544 kbps for T1 and 56 kbps for a standard synchronous serial line), use the <b>bandwidth</b> command to specify the correct line speed for this serial line.
DLY	Delay of the interface, in microseconds.
rely	Reliability of the interface as a fraction of 255 (255/255 is 100 percent reliability), calculated as an exponential average over 5 minutes.
load	Load on the interface as a fraction of 255 (255/255 is completely saturated), calculated as an exponential average over 5 minutes.
Encapsulation	Encapsulation method assigned to interface.
loopback	Indicates whether or not loopback is set.
keepalive	Indicates whether or not keepalives are set.

**Table 28** *show interfaces serial Field Descriptions—Synchronous Serial Interface (continued)*

Field	Description
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface and processed locally on the router. Useful for knowing when a dead interface failed. This counter is updated only when packets are process-switched, not when packets are fast-switched.
Last output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by an interface. This counter is updated only when packets are process-switched, not when packets are fast-switched.
output hang	Number of hours, minutes, and seconds (or never) since the interface was last reset because of a transmission that took too long. When the number of hours in any of the “last” fields exceeds 24 hours, the number of days and hours is printed. If that field overflows, asterisks are printed.
Output queue, drops input queue, drops	Number of packets in output and input queues. Each number is followed by a slash, the maximum size of the queue, and the number of packets dropped because of a full queue.
5 minute input rate 5 minute output rate	Average number of bits and packets transmitted per second in the last 5 minutes.  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 will be within two percent of the instantaneous rate of a uniform stream of traffic over that period.
packets input	Total number of error-free packets received by the system.
bytes	Total number of bytes, including data and MAC encapsulation, in the error-free packets received by the system.
no buffer	Number of received packets discarded because there was no buffer space in the main system. Compare with ignored count. Broadcast storms on Ethernet networks and bursts of noise on serial lines are often responsible for no input buffer events.
Received... broadcasts	Total number of broadcast or multicast packets received by the interface.
runts	Number of packets that are discarded because they are smaller than the minimum packet size of the medium.
giants	Number of packets that are discarded because they exceed the maximum packet size of the medium.
input errors	Total number of no buffer, runts, giants, CRCs, frame, overrun, ignored, and abort counts. Other input-related errors can also increment the count, so that this sum might not balance with the other counts.
CRC	Cyclic redundancy checksum generated by the originating station or far-end device does not match the checksum calculated from the data received. On a serial link, CRCs usually indicate noise, gain hits, or other transmission problems on the data link.

**Table 28** *show interfaces serial Field Descriptions—Synchronous Serial Interface (continued)*

Field	Description
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets. On a serial line, this is usually the result of noise or other transmission problems.
overrun	Number of times the serial receiver hardware was unable to hand received data to a hardware buffer because the input rate exceeded the receiver's ability to handle the data.
ignored	Number of received packets ignored by the interface because the interface hardware ran low on internal buffers. Broadcast storms and bursts of noise can cause the ignored count to be increased.
abort	Illegal sequence of one bits on a serial interface. This usually indicates a clocking problem between the serial interface and the data link equipment.
carrier transitions	Number of times the carrier detect signal of a serial interface has changed state. For example, if data carrier detect (DCD) goes down and comes up, the carrier transition counter will increment two times. Indicates modem or line problems if the carrier detect line is changing state often.
packets output	Total number of messages transmitted by the system.
bytes output	Total number of bytes, including data and MAC encapsulation, transmitted by the system.
underruns	Number of times that the transmitter has been running faster than the router can handle. This might never be reported on some interfaces.
output errors	Sum of all errors that prevented the final transmission of datagrams out of the interface from being examined. Note that this might not balance with the sum of the enumerated output errors because some datagrams can have more than one error, and others can have errors that do not fall into any of the specifically tabulated categories.
collisions	Number of messages retransmitted because of an Ethernet collision. Some collisions are normal. However, if your collision rate climbs to around 4 or 5 percent, you should consider verifying that there is no faulty equipment on the segment and/or moving some existing stations to a new segment. A packet that collides is counted only once in output packets.
interface resets	Number of times an interface has been completely reset. This can happen if packets queued for transmission were not sent within several seconds' time. On a serial line, this can be caused by a malfunctioning modem that is not supplying the transmit clock signal or by a cable problem. If the system notices that the carrier detect line of a serial interface is up, but the line protocol is down, it periodically resets the interface in an effort to restart it. Interface resets can also occur when an interface is looped back or shut down.
restarts	Number of times the controller was restarted because of errors.
alarm indications, remote alarms, rx LOF, rx LOS	Number of CSU/DSU alarms and number of occurrences of receive loss of frame and receive loss of signal.
BER inactive, NELR inactive, FELR inactive	Status of G.703-E1 counters for bit-error rate (BER) alarm, near-end loop remote (NELR), and far-end loop remote (FELR). Note that you cannot set the NELR or FELR.

### Example of PA-2JT2 Serial Interface

The following is sample output from the **show interfaces serial** command for a PA-2JT2 serial interface:

```
Router# show interfaces serial 3/0/0

Serial3/0/0 is up, line protocol is up
  Hardware is cyBus Serial
  Internet address is 10.0.0.1/8
  MTU 1500 bytes, BW 6312 Kbit, DLY 20000 usec, rely 255/255, load 26/255
  Encapsulation HDLC, loopback not set, keepalive not set
  Last input 00:04:31, output 00:04:31, output hang never
  Last clearing of "show interface" counters 00:06:07
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 162000 bits/sec, 8 packets/sec
  5 minute output rate 162000 bits/sec, 8 packets/sec
    20005 packets input, 20080520 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    20005 packets output, 20080520 bytes, 0 underruns
    0 output errors, 0 collisions, 0 interface resets
    0 output buffer failures, 0 output buffers swapped out
    0 carrier transitions
    0 cv errors, 0 crc5 errors, 0 frame errors
    rxLOS inactive, rxLOF inactive, rxPAIS inactive
    rxAIS inactive, rxRAI inactive, rxHBER inactive
```

[Table 29](#) describes significant fields shown in the display that are different from the fields described in [Table 28 on page 236](#).

**Table 29** *show interfaces serial Field Descriptions—PA-2JT2*

Field	Description
Last clearing of "show interface" counters	Time the counters were last cleared.
Queueing strategy	First-in, first-out queueing strategy (other queueing strategies that you might see are priority-list, custom-list, and weighted fair).
output buffer failures	Number of "no resource" errors received on the output.
output buffers swapped out	Number of packets swapped to DRAM.
carrier transitions	Number of times the carrier detect signal of a serial interface has changed state. For example, if data carrier detect (DCD) goes down and comes up, the carrier transition counter will increment two times. Indicates modem or line problems if the carrier detect line is changing state often.
cv errors	B8ZS/B6ZS (zero suppression) coding violation counter.
crc5 errors	CRC-5 error counter.
frame errors	Framing error counter.
rxLOS	Receive loss of signal alarm. Values are active or inactive.
rxLOF	Receive loss of frame alarm. Values are active or inactive.
rxPAIS	Receive loss of payload alarm indication signal (AIS). Values are active or inactive.
rxAIS	Receive loss of physical AIS. Values are active or inactive.

**Table 29** *show interfaces serial Field Descriptions—PA-2JT2 (continued)*

Field	Description
rxRAI	Receive remote AIS. Values are active or inactive.
rxHBER	Receive high bit-error rate alarm. Values are active or inactive.

**Example of PA-E3 Serial Port Adapter**

The following is sample output from the **show interfaces serial** command for a PA-E3 serial port adapter installed in chassis slot 2:

```
Router# show interfaces serial 2/0

Serial2/0 is up, line protocol is up
  Hardware is M1T-E3 pa
  Internet address is 172.17.1.1/24
  MTU 4470 bytes, BW 34010 Kbit, DLY 200 usec, rely 128/255, load 1/255
  Encapsulation HDLC, loopback not set, keepalive not set
  Last input 1w0d, output 00:00:48, output hang never
  Last clearing of "show interface" counters 1w0d
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    20 packets input, 2080 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants, 0 parity
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    11472 packets output, 3824748 bytes, 0 underruns
    0 output errors, 0 applique, 0 interface resets
    0 output buffer failures, 0 output buffers swapped out
    0 carrier transitions
  rxLOS inactive, rxLOF inactive, rxAIS inactive
  txAIS inactive, rxRAI inactive, txRAI inactive
```

[Table 30](#) describes significant fields shown in the display that are different from the fields described in [Table 28 on page 236](#).

**Table 30** *show interfaces serial Field Descriptions—PA-E3*

Field	Description
Last clearing of "show interface" counters	Time the counters were last cleared.
Queueing strategy	First-in, first-out queueing strategy (other queueing strategies that you might see are priority-list, custom-list, and weighted fair).
parity	Number of the parity errors on the interface.
applique	Indicates that an unrecoverable error has occurred on the E3 applique. The router then invokes an interface reset.
output buffer failures	Number of "no resource" errors received on the output.
output buffers swapped out	Number of packets swapped to DRAM.

**Table 30** *show interfaces serial Field Descriptions—PA-E3 (continued)*

Field	Description
rxLOS, rxLOF, rxAIS	Receive loss of signal, loss of frame, and alarm indication signal status. Values are inactive or active.
txAIS, rxRAI, txRAI	Transmit alarm indication signal, receive remote alarm indicator, and transmit remote alarm indicator status. Values are inactive or active. When the router receives an LOS, LOF, or AIS, the txRAI is active. When the remote router receives an LOS, LOF, or AIS, the rxRAI is active.

**Example of 1-Port PA-T3 Serial Port Adapter Installed in a VIP2**

The following is sample output from the **show interfaces serial** command for a 1-port PA-T3 serial port adapter installed in a VIP2 in chassis slot 1, in port adapter slot 0:

```
Router# show interfaces serial 1/0/0

Serial1/0/0 is up, line protocol is up
  Hardware is cyBus PODS3 Serial
  Internet address is 172.18.1.1/24
  MTU 4470 bytes, BW 44736 Kbit, DLY 200 usec, rely 255/255, load 1/255
  Encapsulation HDLC, loopback not set, keepalive set (10 sec)
  Last input 00:00:05, output 00:00:02, output hang never
  Last clearing of "show interface" counters 5d02h
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 27269 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    79039 packets input, 14195344 bytes, 0 no buffer
    Received 84506 broadcasts, 0 runts, 0 giants
      0 parity
    9574 input errors, 6714 CRC, 0 frame, 1 overrun, 0 ignored, 2859 abort
    62472 packets output, 13751644 bytes, 0 underruns
    0 output errors, 0 applique, 10 interface resets
    0 output buffer failures, 0 output buffers swapped out
    16 carrier transitions
  rxLOS inactive, rxLOF inactive, rxAIS inactive
  txAIS inactive, rxRAI inactive, txRAI inactive
```

[Table 31](#) describes significant fields shown in the display that are different from the fields described in [Table 28 on page 236](#).

**Table 31** *show interfaces serial Field Descriptions—PA-T3*

Field	Description
Last clearing of "show interface" counters	Time the counters were last cleared.
Queueing strategy	First-in, first-out queueing strategy (other queueing strategies that you might see are priority-list, custom-list, and weighted fair).
parity	Number of the parity errors on the interface.
applique	Indicates that an unrecoverable error has occurred on the T3 applique. The router then invokes an interface reset.
output buffer failures	Number of "no resource" errors received on the output.

**Table 31** *show interfaces serial Field Descriptions—PA-T3 (continued)*

Field	Description
output buffers swapped out	Number of packets swapped to DRAM.
rxLOS, rxLOF, rxAIS	Receive loss of signal, loss of frame, and alarm indication signal status. Values are inactive or active.
txAIS, rxRAI, txRAI	Transmit alarm indication signal, receive remote alarm indicator, and transmit remote alarm indicator status. Values are inactive or active. When the router receives an LOS, LOF, or AIS, the txRAI is active. When the remote router receives an LOS, LOF, or AIS, the rxRAI is active.

**Example of CT3IP Serial Interface**

The following is sample output from the **show interfaces serial** command for the CT3IP serial interface:

```
Router# show interfaces serial 3/0/0:25

Serial3/0/0:25 is up, line protocol is up
  Hardware is cyBus T3
  Internet address is 10.25.25.2/24
  MTU 1500 bytes, BW 1536 Kbit, DLY 20000 usec, rely 255/255, load 12/255
  Encapsulation HDLC, loopback not set, keepalive not set
  Last input 00:19:01, output 00:11:49, output hang never
  Last clearing of "show interface" counters 00:19:39
  Input queue: 0/75/0 (size/max/drops); Total output drops: 0
  Queueing strategy: weighted fair
  Output queue: 0/64/0 (size/threshold/drops)
    Conversations 0/1 (active/max active)
    Reserved Conversations 0/0 (allocated/max allocated)
  5 minute input rate 69000 bits/sec, 90 packets/sec
  5 minute output rate 71000 bits/sec, 90 packets/sec
    762350 packets input, 79284400 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants
    150 input errors, 0 CRC, 0 frame, 150 overrun, 0 ignored, 0 abort
    763213 packets output, 80900472 bytes, 0 underruns
    0 output errors, 0 collisions, 0 interface resets
    0 output buffer failures, 0 output buffers swapped out
    0 carrier transitions no alarm present
  Timeslot(s) Used:1-24, Transmitter delay is 0 flags, transmit queue length 5
  non-inverted data
```

[Table 32](#) describes significant fields relevant to the CT3IP shown in the display that are different from the fields described in [Table 28](#) on page 236.

**Table 32** *show interfaces serial Field Descriptions—CT3IP*

Field	Description
Timeslot(s) Used	Number of time slots assigned to the T1 channel.
Transmitter delay	Number of idle flags inserted between each HDLC frame.
transmit queue length	Number of packets allowed in the transmit queue.
non-inverted data	Indicates whether or not the interface is configured for inverted data.

### Example of an HDLC Synchronous Serial Interface on a Cisco 7500 Series Router

The following is sample output from the **show interfaces serial** command for an HDLC synchronous serial interface on a Cisco 7500 series router:

```
Router# show interfaces serial 1/0

Serial1/0 is up, line protocol is up
  Hardware is cxBus Serial
  Internet address is 172.19.190.203, subnet mask is 255.255.255.0
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation HDLC, loopback not set, keepalive set (10 sec)
  Last input 0:00:07, output 0:00:00, output hang never
  Last clearing of "show interface" counters 2w4d
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
    16263 packets input, 1347238 bytes, 0 no buffer
    Received 13983 broadcasts, 0 runts, 0 giants
    2 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 2 abort
    22146 packets output, 2383680 bytes, 0 underruns
    0 output errors, 0 collisions, 2 interface resets, 0 restarts
    1 carrier transitions
```

[Table 28 on page 236](#) describes significant fields shown in the display.

### Example of HDLC Encapsulation

The following example displays High-Level Data Link Control (HDLC) encapsulation on serial interface 0:

```
Router# show interfaces serial 0

Serial0 is up, line protocol is up (looped)
  Hardware is HD64570
  Internet address is 10.1.1.1, subnet mask is 255.255.255.0
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation HDLC, loopback set, keepalive set (10 sec)
```

[Table 28 on page 236](#) describes significant fields shown in the display.

### Example of a G.703 Interface with Framing

The following is sample output from the **show interfaces serial** command for a G.703 interface on which framing is enabled:

```
Router# show interfaces serial 2/3

Serial2/3 is up, line protocol is up
  Hardware is cxBus Serial
  Internet address is 10.4.4.1, subnet mask is 255.255.255.0
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation HDLC, loopback not set, keepalive not set
  Last input 0:00:21, output 0:00:21, output hang never
  Last clearing of "show interface" counters never
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
    53 packets input, 7810 bytes, 0 no buffer
    Received 53 broadcasts, 0 runts, 0 giants
    2 input errors, 2 CRC, 0 frame, 0 overrun, 0 ignored, 2 abort
    56 packets output, 8218 bytes, 0 underruns
    0 output errors, 0 collisions, 2 interface resets, 0 restarts
    1 carrier transitions
```

```

2 alarm indications, 333 remote alarms, 332 rx LOF, 0 rx LOS
RTS up, CTS up, DTR up, DCD up, DSR up
BER inactive, NELR inactive, FELR inactive

```

Table 28 on page 236 describes significant fields shown in the display.

### Example with Frame Relay Encapsulation

When using Frame Relay encapsulation, use the **show interfaces serial** command to display information on the multicast data-link connection identifier (DLCI), the DLCI of the interface, and the DLCI used for the local management interface (LMI).

The multicast DLCI and the local DLCI can be set using the **frame-relay multicast-dlci** and **frame-relay local-dlci** configuration commands. The status information is taken from the LMI, when active.

The following is sample output from the **show interfaces serial** command when Frame Relay encapsulation and LMI are enabled:

```

Router# show interfaces serial

Serial 2 is up, line protocol is up
  Hardware type is MCI Serial
  Internet address is 172.20.122.1, subnet mask is 255.255.255.0
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation FRAME-RELAY, loopback not set, keepalive set (10 sec)
  multicast DLCI 1022, status defined, active
  source DLCI 20, status defined, active
  LMI DLCI 1023, LMI sent 10, LMI stat recvd 10, LMI upd recvd 2
  Last input 7:21:29, output 0:00:37, output hang never
  Output queue 0/100, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
    47 packets input, 2656 bytes, 0 no buffer
    Received 5 broadcasts, 0 runts, 0 giants
    5 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 57 abort
    518 packets output, 391205 bytes
    0 output errors, 0 collisions, 0 interface resets, 0 restarts
    1 carrier transitions

```

In this display, the multicast DLCI has been changed to 1022 using the **frame-relay multicast-dlci** interface configuration command.

The display shows the statistics for the LMI as the number of status inquiry messages sent (LMI sent), the number of status messages received (LMI recvd), and the number of status updates received (upd recvd). Refer to the *Frame Relay Interface* specification for additional explanations of this output.

### Example with Frame Relay Queuing and Fragmentation at the Interface

The following is sample output from the **show interfaces serial** command when low-latency queuing and FRF.12 end-to-end fragmentation are configured on a Frame Relay interface:

```

Router# show interfaces serial 3/2

Serial3/2 is up, line protocol is up
  Hardware is M4T
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation FRAME-RELAY, crc 16, loopback not set
  Keepalive set (10 sec)
  LMI enq sent 0, LMI stat recvd 0, LMI upd recvd 0, DTE LMI up
  LMI enq recvd 0, LMI stat sent 0, LMI upd sent 0
  LMI DLCI 1023 LMI type is CISCO frame relay DTE

```

```

Fragmentation type: end-to-end, size 80, PQ interleaves 0
Broadcast queue 0/64, broadcasts sent/dropped 0/0, interface broadcasts 0
Last input 2d15h, output 2d15h, output hang never
Last clearing of "show interface" counters 00:01:31
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
  Conversations 0/0/256 (active/max active/max total)
  Reserved Conversations 0/0 (allocated/max allocated)
  Available Bandwidth 1094 kilobits/sec
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 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  0 packets output, 0 bytes, 0 underruns
  0 output errors, 0 collisions, 1 interface resets
  0 output buffer failures, 0 output buffers swapped out
  1 carrier transitions      DCD=up  DSR=up  DTR=up  RTS=up  CTS=up

```

Table 33 describes significant fields shown in the display that are different from the fields described in Table 28 on page 236.

**Table 33** *show interfaces serial Field Descriptions—Frame Relay Interface Queueing and Fragmentation*

Field	Description
txload	Interface load in the transmit direction.
rxload	Interface load in the receive direction.
crc	Length the cyclic redundancy check (CRC) used on the interface.
LMI enq sent	Number of Frame Relay status inquiry messages sent.
LMI stat rcvcd	Number of Frame Relay status request messages received.
LMI upd rcvcd	Number of single PVC asynchronous status messages received.
DTE LMI up	LMI peers are synchronized.
LMI enq rcvcd	Number of Frame Relay status inquiry messages received.
LMI stat sent	Number of Frame Relay status request messages sent.
LMI upd sent	Number of single PVC asynchronous status messages sent.
Fragmentation type	Type of fragmentation: end-to-end, Cisco, or VoFR
size	Fragmentation size.
PQ interleaves	Number of priority queue frames that have interleaved data fragments.
Broadcast queue	Number on queue/queue depth.
broadcasts sent/dropped	Number of broadcasts sent and dropped.
interface broadcasts	Number of broadcasts sent on interface.
Input queue	size—Current size of the input queue. max—Maximum size of the queue. drops—Number of messages discarded. flushes—Number of times that data on queue has been discarded.
Queueing strategy	Type of queueing configured on the interface.

**Table 33** *show interfaces serial Field Descriptions—Frame Relay Interface Queueing and Fragmentation (continued)*

Field	Description
Output queue	size—Current size of the output queue. max total—Maximum number of frames that can be queued. threshold—Congestive-discard threshold. Number of messages in the queue after which new messages for high-bandwidth conversations are dropped. drops—Number of dropped messages.
Conversations	active—Number of currently active conversations. max active—Maximum number of conversations that have ever occurred at one time. max total—Maximum number of active conversations allowed.
throttles	Number of times the receiver on the port was disabled, possibly because of processor or buffer overload.
output buffer failures	Number of “no resource” errors received on the output.
output buffers swapped out	Number of packets swapped to DRAM.

#### Example with ANSI LMI

For a serial interface with the ANSI Local Management Interface (LMI) enabled, use the **show interfaces serial** command to determine the LMI type implemented. The following is sample output from the **show interfaces serial** command for a serial interface with the ANSI LMI enabled:

```
Router# show interfaces serial

Serial 1 is up, line protocol is up
  Hardware is MCI Serial
  Internet address is 172.18.121.1, subnet mask is 255.255.255.0
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation FRAME-RELAY, loopback not set, keepalive set
  LMI DLCI 0, LMI sent 10, LMI stat recvd 10
  LMI type is ANSI Annex D
  Last input 0:00:00, output 0:00:00, output hang never
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops

  Five minute input rate 0 bits/sec, 1 packets/sec
  Five minute output rate 1000 bits/sec, 1 packets/sec
    261 packets input, 13212 bytes, 0 no buffer
    Received 33 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    238 packets output, 14751 bytes, 0 underruns
    0 output errors, 0 collisions, 0 interface resets, 0 restarts
```

Notice that the **show interfaces serial** output for a serial interface with ANSI LMI shown in this display is very similar to that for encapsulation set to Frame Relay, as shown in the previous display. [Table 34](#) describes the few differences that exist.

**Table 34** *show interfaces serial Field Descriptions—ANSI LMI*

Field	Description
LMI DLCI 0	Identifies the DLCI used by the LMI for this interface. The default is 1023.
LMI sent 10	Number of LMI packets that the router sent.
LMI type is ANSI Annex D	Indicates that the interface is configured for the ANSI-adopted Frame Relay specification T1.617 Annex D.

**Example with LAPB Encapsulation**

Use the **show interfaces serial** command to display operation statistics for an interface that uses Link Access Procedure, Balanced (LAPB) encapsulation. The following is partial sample output from the **show interfaces serial** command for a serial interface that uses LAPB encapsulation:

```
Router# show interfaces serial 1

LAPB state is SABMSENT, T1 3000, N1 12056, N2 20, k7, Protocol ip
VS 0, VR 0, RCNT 0, Remote VR 0, Retransmissions 2
IFRAMEs 0/0 RNRs 0/0 REJs 0/0 SABMs 3/0 FRMRs 0/0 DISCs 0/0
```

[Table 35](#) shows the fields relevant to all LAPB connections.

**Table 35** *show interfaces serial Field Descriptions—LAPB*

Field	Description
LAPB state is	State of the LAPB protocol.
T1 3000, N1 12056, ...	Current parameter settings.
Protocol	Protocol encapsulated on a LAPB link; this field is not present on interfaces configured for multiprotocol LAPB or X.25 encapsulations.
VS	Modulo 8 frame number of the next outgoing information frame.
VR	Modulo 8 frame number of the next information frame expected to be received.
RCNT	Number of received information frames that have not yet been acknowledged.
Remote VR	Number of the next information frame that the remote device expects to receive.
Retransmissions	Count of current retransmissions because of expiration of T1.
Window is closed	No more frames can be transmitted until some outstanding frames have been acknowledged. This message should be displayed only temporarily.
IFRAMEs	Count of information frames in the form of sent/received.
RNRs	Count of Receiver Not Ready frames in the form of sent/received.
REJs	Count of Reject frames in the form of sent/received.
SABMs	Count of Set Asynchronous Balanced Mode commands in the form of sent/received.
FRMRs	Count of Frame Reject frames in the form of sent/received.
DISCs	Count of Disconnect commands in the form of sent/received.

```
Router# show interfaces serial 1
```

Table 36 show the fields relevant to PPP connections.

**Table 36** *show interfaces serial Field Descriptions—PPP Encapsulation*

Field	Description
lcp state	Link Control Protocol.
ncp ipcp state	Network Control Protocol Internet Protocol Control Protocol.
ncp osicp state	Network Control Protocol OSI (CLNS) Control Protocol.
ncp ipxcp state	Network Control Protocol IPX (Novell) Control Protocol.
ncp deccp state	Network Control Protocol DECnet Control Protocol.
ncp bridgecp state	Network Control Protocol Bridging Control Protocol.
ncp atalkcp state	Network Control Protocol AppleTalk Control Protocol.

### Example with SDLC Connections

Use the **show interfaces serial** command to display the Synchronous Data Link Control (SDLC) information for a given SDLC interface. The following is sample output from the **show interfaces serial** command for an SDLC primary interface that supports the SDLLC function:

```
Router# show interfaces serial

Serial 0 is up, line protocol is up
Hardware is MCI Serial
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
Encapsulation SDLC-PRIMARY, loopback not set
  Timers (msec): poll pause 100 fair poll 500. Poll limit 1
  [T1 3000, N1 12016, N2 20, K 7] timer: 56608 Last polled device: none
  SDLLC [ma: 0000.0C01.14--, ring: 7 bridge: 1, target ring: 10
    largest token ring frame 2052]
SDLC addr C1 state is CONNECT
  VS 6, VR 3, RCNT 0, Remote VR 6, Current retransmit count 0
  Hold queue: 0/12 IFRAMES 77/22 RNRs 0/0 SNRMs 1/0 DISCs 0/0
  Poll: clear, Poll count: 0, chain: p: C1 n: C1
  SDLLC [largest SDLC frame: 265, XID: disabled]
Last input 00:00:02, output 00:00:01, output hang never
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
Five minute input rate 517 bits/sec, 30 packets/sec
Five minute output rate 672 bits/sec, 20 packets/sec
  357 packets input, 28382 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  926 packets output, 77274 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets, 0 restarts
  2 carrier transitions
```

Table 37 shows the fields relevant to all SDLC connections.

**Table 37** *show interfaces serial Field Descriptions—SDLC Enabled*

Field	Description
Timers (msec): poll pause, fair poll, Poll limit	Current values of these timers for the primary SDLC interface.
T1, N1, N2, K	Values for these parameters for the primary SDLC interface.

Table 38 shows other data given for each SDLC secondary interface configured to be attached to the serial interface.

**Table 38** SDLC Secondary Interface Descriptions

Field	Description
addr	Address of this SDLC secondary interface.
state is	Current state of this connection, which is one of the following: <ul style="list-style-type: none"> <li>DISCONNECT—No communication is being attempted to this secondary.</li> <li>CONNECT—A normal connect state exists between this router and this secondary.</li> <li>DISCSENT—This router has sent a disconnect request to this secondary and is awaiting its response.</li> <li>SNRMSENT—This router has sent a connect request (SNRM) to this secondary and is awaiting its response.</li> <li>THEMBUSY—This secondary has told this router that it is temporarily unable to receive any more information frames.</li> <li>USBUSY—This router has told this secondary that it is temporarily unable to receive any more information frames.</li> <li>BOTHBUSY—Both sides have told each other that they are temporarily unable to receive any more information frames.</li> <li>ERROR—This router has detected an error and is waiting for a response from the secondary acknowledging this.</li> </ul>
VS	Sequence number of the next information frame that this station sends.
VR	Sequence number of the next information frame from this secondary that this station expects to receive.
Remote VR	Last frame transmitted by this station that has been acknowledged by the other station.
Current retransmit count:	Number of times the current I-frame or sequence of I-frames has been retransmitted.
Hold Queue	Number of frames in hold queue and maximum size of hold queue.
IFRAMEs, RNRs, SNRMs, DISCs	Sent/received count for these frames.
Poll	“Set” if this router has a poll outstanding to the secondary; “clear” if it does not.
Poll Count	Number of polls in a row that have been given to this secondary at this time.
Chain	Shows the previous (p) and next (n) secondary address on this interface in the <i>round robin loop</i> of polled devices.

### Example with SDLLC

Use the **show interfaces serial** command to display the SDLLC statistics for SDLLC-configured interfaces. The following is sample output from the **show interfaces serial** command for a serial interface configured for SDLLC:

```
Router# show interfaces serial

Serial 0 is up, line protocol is up
Hardware is MCI Serial
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
Encapsulation SDLC-PRIMARY, loopback not set
Timers (msec): poll pause 100 fair poll 500. Poll limit 1
[T1 3000, N1 12016, N2 20, K 7] timer: 56608 Last polled device: none
SDLLC [ma: 0000.0C01.14--, ring: 7 bridge: 1, target ring: 10
largest token ring frame 2052]
SDLC addr C1 state is CONNECT
VS 6, VR 3, RCNT 0, Remote VR 6, Current retransmit count 0
Hold queue: 0/12 IFRAMES 77/22 RNRs 0/0 SNRMs 1/0 DISCs 0/0
Poll: clear, Poll count: 0, chain: p: C1 n: C1
SDLLC [largest SDLC frame: 265, XID: disabled]
Last input 00:00:02, output 00:00:01, output hang never
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
Five minute input rate 517 bits/sec, 30 packets/sec
Five minute output rate 672 bits/sec, 20 packets/sec
357 packets input, 28382 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
926 packets output, 77274 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets, 0 restarts
6608 Last polled device: none
SDLLC [ma: 0000.0C01.14--, ring: 7 brid2 carrier transitions
```

Most of the output shown in the display is generic to all SDLC-encapsulated interfaces and is described in the *Cisco IOS Bridging and IBM Networking Command Reference, Volume 2 of 2: IBM Networking*. [Table 39](#) shows the parameters specific to SDLLC.

**Table 39** SDLLC Parameter Descriptions

Field	Description
SDLLC ma	Lists the MAC address configured for this interface. The last byte is shown as "--" to indicate that it is filled in with the SDLC address of the connection.
ring, bridge, target ring	Lists the parameters as configured by the <b>sdllc traddr</b> command.
largest token ring frame	Shows the largest Token Ring frame that is accepted on the Logical Link control, type 2 (LLC2) side of the connection.
largest SDLC frame	Shows the largest SDLC frame that is accepted and will be generated on the SDLC side of the connection.
XID	Enabled or disabled: Shows whether XID processing is enabled on the SDLC side of the connection. If enabled, it will show the XID value for this address.

### Example with X.25

The following is partial sample output from the **show interfaces serial** command for a serial X.25 interface:

```
Router# show interfaces serial 1
```

```

X25 address 000000010100, state R1, modulo 8, idle 0, timer 0, nvc 1
  Window size: input 2, output 2, Packet size: input 128, output 128
  Timers: T20 180, T21 200, T22 180, T23 180, TH 0
  Channels: Incoming-only none, Two-way 1-1024, Outgoing-only none
(configuration on RESTART: modulo 8,
  Window size: input 2 output 2, Packet size: input 128, output 128
  Channels: Incoming-only none, Two-way 5-1024, Outgoing-only none)
RESTARTs 3/2 CALLs 1000+2/1294+190/0+0/ DIAGs 0/0

```

The stability of the X.25 protocol requires that some parameters not be changed without a restart of the protocol. Any change to these parameters is held until a restart is sent or received. If any of these parameters changes, information about the router configuration at restart will be displayed as well as the values that are currently in effect.

Table 40 describes significant fields shown in the display.

**Table 40** *show interfaces serial Field Descriptions—X.25 Enabled*

Field	Description
X25 address	Address used to originate and accept calls.
state	State of the interface. Possible values follow: <ul style="list-style-type: none"> <li>• R1 is the normal ready state.</li> <li>• R2 is the DTE restarting state.</li> <li>• R3 is the DCE restarting state.</li> </ul> If the state is R2 or R3, the interface is awaiting acknowledgment of a Restart packet.
modulo	Modulo value; determines the packet sequence numbering scheme used.
idle	Number of minutes for which the Cisco IOS software waits before closing idle virtual circuits that it originated or accepted.
timer	Value of the interface timer, which is zero unless the interface state is R2 or R3.
nvc	Default maximum number of simultaneous virtual circuits permitted to and from a single host for a particular protocol.
Window size: input, output	Default window sizes (in packets) for the interface. The <b>x25 facility</b> interface configuration command can be used to override these default values for the switched virtual circuits originated by the router.
Packet size: input, output	Default maximum packet sizes (in bytes) for the interface. The <b>x25 facility</b> interface configuration command can be used to override these default values for the switched virtual circuits originated by the router.
Timers:	Values of the X.25 timers: <ul style="list-style-type: none"> <li>• T10 through T13 for a DCE device</li> <li>• T20 through T23 for a DTE device</li> </ul>

**Table 40** *show interfaces serial Field Descriptions—X.25 Enabled (continued)*

Field	Description
TH	Packet acknowledgment threshold (in packets). This value determines how many packets are received before an explicit acknowledgment is sent. The default value (0) sends an explicit acknowledgment only when the incoming window is full.
Channels: Incoming-only, Two-way, Outgoing-only	Displays the virtual circuit ranges for this interface.
RESTARTs	Shows Restart packet statistics for the interface using the format Sent/Received.
CALLs	Successful calls sent + failed calls/calls received + calls failed/calls forwarded + calls failed. Calls forwarded are counted as calls sent.
DIAGs	Diagnostic messages sent and received.

**Example with Accounting Option**

The following example illustrates the **show interfaces serial** command with the **accounting** option on a Cisco 7500 series routers:

```
Router# show interfaces serial 1/0 accounting
```

```
Serial1/0
  Protocol    Pkts In   Chars In   Pkts Out   Chars Out
    IP             7344     4787842     1803     1535774
  Appletalk    33345     4797459     12781     1089695
    DEC MOP           0           0         127       9779
    ARP              7           420        39       2340
```

[Table 41](#) describes the fields shown in the display.

**Table 41** *show interfaces serial Field Descriptions—Accounting*

Field	Description
Protocol	Protocol that is operating on the interface.
Pkts In	Number of packets received for that protocol.
Chars In	Number of characters received for that protocol.
Pkts Out	Number of packets transmitted for that protocol.
Chars Out	Number of characters transmitted for that protocol.

**Example with Cisco AS5800 Access Server**

The following example shows the activity that occurred on the serial interface in shelf 1, slot 4, port 0 for time slot 2 in group 23:

```
Router# show interfaces serial 1/4/0:2:23

Serial1/4/0:2:23 is up, line protocol is up (spoofing)
Hardware is DS-T1
MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec, rely 255/255, load 1/255
Encapsulation HDLC, loopback not set
Last input 00:00:01, output 00:00:01, output hang never
Last clearing of "show interface" counters 22:24:30
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec

5 minute output rate 0 bits/sec, 0 packets/sec
 5274 packets input, 20122 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
 5274 packets output, 30836 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets
  0 output buffer failures, 0 output buffers swapped out
  2 carrier transitions no alarm present
Timeslot(s) Used:24, subrate: 64Kb/s, transmit delay is 0 flags
```

[Table 42](#) describes the significant fields shown in the display that are different from the fields described in [Table 28 on page 236](#).

**Table 42** *show interfaces serial Command Field Descriptions—Cisco AS5800*

Field	Description
Last clearing of “show interface” counters	Time at which the counters that measure cumulative statistics (such as number of bytes transmitted and received) were last reset to zero.
Queueing strategy	Displays the type of queueing configured for this interface. In the example output, the type of queueing configured is FIFO.
throttles	Number of times that the receiver on the port was disabled, possibly because of buffer or processor overload.
output buffer failures	Number of times that the output buffer has failed.
output buffer swapped out	Number of times that the output buffer has been swapped out.
Timeslot(s) Used	Number of time slots assigned to the T1 channel.

*Table 42 show interfaces serial Command Field Descriptions—Cisco AS5800 (continued)*

Field	Description
subrate	Bandwidth of each time slot.
transmit delay is ...	Number of idle flags inserted between each frame.

**Related Commands**

Command	Description
<a href="#">show controllers serial</a>	Displays information about the virtual serial interface.

# show interfaces tokenring

To display information about the Token Ring interface and the state of source route bridging, use the **show interfaces tokenring** command in privileged EXEC mode.

**show interfaces tokenring** *unit* [**accounting**]

Cisco 7200 and 7500 Series

**show interfaces tokenring** *slot/port* [**accounting**]

Cisco 7500 Series with Ports on VIPs

**show interfaces tokenring** [*slot/port-adapter/port*]

Syntax Description	
<i>unit</i>	Must match the interface port line number.
<b>accounting</b>	(Optional) Displays the number of packets of each protocol type that have been sent through the interface.
<i>slot</i>	On the Cisco 7000 series routers, slot location of the interface processor. On the Cisco 7000, the value can be 0, 1, 2, 3, or 4. On the Cisco 7010, value can be 0, 1, or 2.  On the Cisco 7200 series routers, slot location of the port adapter; the value can be 1, 2, 3, 4, 5, or 6.
<i>port</i>	Port number on the interface. On the Cisco 7000 series routers this argument is required, and the values can be 0, 1, 2, or 3.  (Optional) For the VIP this argument is optional, and the port value can be 0, 1, 2, or 3 for 4-port Token Ring interfaces.  On the Cisco 7200 series routers, the number depends on the type of port adapter installed.
<i>port-adapter</i>	(Optional) On the Cisco 7000 series and Cisco 7500 series routers, specifies the ports on a VIP. The value can be 0 or 1.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.
	11.3(3)T	The information was modified to include the PA-4R-FDX full-duplex Token Ring port adapter.

**Usage Guidelines** If you do not provide values for the arguments *slot* and *port*, the command will display statistics for all the network interfaces. The optional keyword **accounting** displays the number of packets of each protocol type that have been sent through the interface.

**Examples**

The following is sample output from the **show interfaces tokenring** command:

```
Router# show interfaces tokenring

TokenRing 0 is up, line protocol is up
Hardware is 16/4 Token Ring, address is 5500.2000.dc27 (bia 0000.3000.072b)
  Internet address is 131.136.230.203, subnet mask is 255.255.255.0
  MTU 8136 bytes, BW 16000 Kbit, DLY 630 usec, rely 255/255, load 1/255
  Encapsulation SNAP, loopback not set, keepalive set (10 sec)
  ARP type: SNAP, ARP Timeout 4:00:00
  Ring speed: 16 Mbps
  Single ring node, Source Route Bridge capable
  Group Address: 0x00000000, Functional Address: 0x60840000
  Last input 0:00:01, output 0:00:01, output hang never
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
  16339 packets input, 1496515 bytes, 0 no buffer
    Received 9895 broadcasts, 0 runts, 0 giants
      0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    32648 packets output, 9738303 bytes, 0 underruns
  0 output errors, 0 collisions, 2 interface resets, 0 restarts
    5 transitions
```

[Table 43](#) describes the significant fields shown in the displays.

**Table 43** *show interfaces tokenring Field Descriptions*

Field	Description
Token Ring is {up   down}	Interface is either currently active and inserted into ring (up) or inactive and not inserted (down).  On the Cisco 7500 series routers, gives the interface processor type, slot number, and port number.
Token Ring is Reset	Hardware error has occurred.
Token Ring is Initializing	Hardware is up, in the process of inserting the ring.
Token Ring is Administratively Down	Hardware has been taken down by an administrator.
line protocol is {up   down   administratively down}	Indicates whether the software processes that handle the line protocol believe the interface is usable (that is, whether keepalives are successful).
Hardware	Hardware type. "Hardware is Token Ring" indicates that the board is a CSC-R board. "Hardware is 16/4 Token Ring" indicates that the board is a CSC-R16 board. Also shows the address of the interface.
Internet address	Lists the Internet address followed by subnet mask.
MTU	Maximum transmission unit of the interface.
BW	Bandwidth of the interface in kilobits per second.
DLY	Delay of the interface in microseconds.
rely	Reliability of the interface as a fraction of 255 (255/255 is 100 percent reliability), calculated as an exponential average over 5 minutes.
load	Load on the interface as a fraction of 255 (255/255 is completely saturated), calculated as an exponential average over 5 minutes.

**Table 43** *show interfaces tokenring Field Descriptions (continued)*

Field	Description
Encapsulation	Encapsulation method assigned to interface.
loopback	Indicates whether loopback is set or not.
keepalive	Indicates whether keepalives are set or not.
ARP type:	Type of Address Resolution Protocol assigned.
Ring speed:	Speed of Token Ring—4 or 16 Mbps.
{ Single ring   multiring node }	Indicates whether a node is enabled to collect and use source routing information (RIF) for routable Token Ring protocols.
Group Address:	Interface's group address, if any. The group address is a multicast address; any number of interfaces on the ring may share the same group address. Each interface may have at most one group address.
Functional Address:	Bit-significant group address. Each "on" bit represents a function performed by the station.
Ethernet Transit OUI:	The Organizational Unique Identifier (OUI) code to be used in the encapsulation of Ethernet Type II frames across Token Ring backbone networks.
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface and processed locally on the router. Useful for knowing when a dead interface failed. This counter is updated only when packets are process switched, not when packets are fast switched.
output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by an interface. This counter is updated only when packets are process switched, not when packets are fast switched.
output hang	Number of hours, minutes, and seconds (or never) since the interface was last reset because of a transmission that took too long. When the number of hours in any of the "last" fields exceeds 24 hours, the number of days and hours is printed. If that field overflows, asterisks are printed.
Last clearing	Time at which the counters that measure cumulative statistics (such as number of bytes transmitted and received) shown in this report were last reset to zero. Note that variables that might affect routing (for example, load and reliability) are not cleared when the counters are cleared.  *** indicates the elapsed time is too large to be displayed.  0:00:00 indicates the counters were cleared more than $2^{31}$ ms (and less than $2^{32}$ ms) ago.
Output queue, drops Input queue, drops	Number of packets in output and input queues. Each number is followed by a slash, the maximum size of the queue, and the number of packets dropped because of a full queue.

Table 43 *show interfaces tokenring Field Descriptions (continued)*

Field	Description
Five minute input rate, Five minute output rate	Average number of bits and packets transmitted per second in the last 5 minutes.  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 will be within two percent of the instantaneous rate of a uniform stream of traffic over that period.
packets input	Total number of error-free packets received by the system.
bytes input	Total number of bytes, including data and MAC encapsulation, in the error-free packets received by the system.
no buffer	Number of received packets discarded because there was no buffer space in the main system. Compare with ignored count. Broadcast storms on Ethernet networks and bursts of noise on serial lines are often responsible for no input buffer events.
broadcasts	Total number of broadcast or multicast packets received by the interface.
runts	Number of packets that are discarded because they are smaller than the minimum packet size of the medium.
giants	Number of packets that are discarded because they exceed the of them medium maximum packet size.
CRC	Cyclic redundancy checksum generated by the originating LAN station or far-end device does not match the checksum calculated from the data received. On a LAN, this usually indicates noise or transmission problems on the LAN interface or the LAN bus itself. A high number of CRCs is usually the result of a station transmitting bad data.
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets.
overrun	Number of times the serial receiver hardware was unable to hand received data to a hardware buffer because the input rate exceeded the receiver's ability to handle the data.
ignored	Number of received packets ignored by the interface because the interface hardware ran low on internal buffers. These buffers are different than the system buffers mentioned previously in the buffer description. Broadcast storms and bursts of noise can cause the ignored count to be increased.
packets output	Total number of messages transmitted by the system.
bytes output	Total number of bytes, including data and MAC encapsulation, transmitted by the system.
underruns	Number of times that the far-end transmitter has been running faster than the near-end router's receiver can handle. This may never be reported on some interfaces.

**Table 43** *show interfaces tokenring Field Descriptions (continued)*

Field	Description
output errors	Sum of all errors that prevented the final transmission of datagrams out of the interface being examined. Note that this may not balance with the sum of the enumerated output errors, as some datagrams may have more than one error, and others may have errors that do not fall into any of the specifically tabulated categories.
collisions	Since a Token Ring cannot have collisions, this statistic is nonzero only if an unusual event occurred when frames were being queued or dequeued by the system software.
interface resets	Number of times an interface has been reset. The interface may be reset by the administrator or automatically when an internal error occurs.
restarts	Should always be zero for Token Ring interfaces.
transitions	Number of times the ring made a transition from up to down, or vice versa. A large number of transitions indicates a problem with the ring or the interface.

The following is sample output from the **show interfaces tokenring** command on a Cisco 7500 series routers:

```
Router# show interfaces tokenring 2/0

TokenRing2/0 is administratively down, line protocol is down
  Hardware is cxBus Token Ring, address is 0000.3040.8b4a (bia 0000.3040.8b4a)
  MTU 8136 bytes, BW 16000 Kbit, DLY 630 usec, rely 255/255, load 1/255
  Encapsulation SNAP, loopback not set, keepalive set (10 sec)
  ARP type: SNAP, ARP Timeout 4:00:00
  Ring speed: 0 Mbps
  Single ring node, Source Route Transparent Bridge capable
  Ethernet Transit OUI: 0x0000F8
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets, 0 restarts
    1 transitions
```

The following example on the Cisco 7500 series routers includes the **accounting** option. When you use the accounting option, only the accounting statistics are displayed.

```
Router# show interfaces tokenring 2/0 accounting

TokenRing2/0
  Protocol  Pkts In  Chars In  Pkts Out  Chars Out
    IP      7344    4787842   1803     1535774
  Appletalk 33345   4797459   12781    1089695
    DEC MOP      0         0        127       9779
    ARP         7         420        39       2340
```

The following is sample output from the **show interfaces tokenring** command on a Cisco 7000 series router:

```
Router# show interfaces tokenring 2/0

TokenRing2/0 is administratively down, line protocol is down
  Hardware is cxBus Token Ring, address is 0000.3040.8b4a (bia 0000.3040.8b4a)
  MTU 8136 bytes, BW 16000 Kbit, DLY 630 usec, rely 255/255, load 1/255
  Encapsulation SNAP, loopback not set, keepalive set (10 sec)
  ARP type: SNAP, ARP Timeout 4:00:00
  Ring speed: 0 Mbps
  Single ring node, Source Route Transparent Bridge capable
  Ethernet Transit OUI: 0x0000F8
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets, 0 restarts
    1 transitions
```

The following example on a Cisco 7000 series router includes the **accounting** option. When you use the accounting option, only the accounting statistics are displayed.

```
Router# show interfaces tokenring 2/0 accounting

TokenRing2/0
  Protocol      Pkts In   Chars In   Pkts Out   Chars Out
    IP          7344     4787842    1803      1535774
  Appletalk     33345    4797459    12781     1089695
    DEC MOP         0         0         127       9779
    ARP             7         420        39       2340
```

# show interfaces tunnel

To list tunnel interface information, use the **show interfaces tunnel** command in privileged EXEC mode.

**show interfaces tunnel** *number* [**accounting**]

Syntax Description	<i>number</i>	Port line number.
	<b>accounting</b>	(Optional) Displays the number of packets of each protocol type that have been sent through the interface.

Command Modes	Privileged EXEC
---------------	-----------------

Command History	Release	Modification
	10.0	This command was introduced.

## Examples

The following is sample output from the **show interface tunnel** command:

```
Router# show interfaces tunnel 4

Tunnel4 is up, line protocol is down
  Hardware is Routing Tunnel
  MTU 1500 bytes, BW 9 Kbit, DLY 500000 usec, rely 255/255, load 1/255
  Encapsulation TUNNEL, loopback not set, keepalive set (10 sec)
  Tunnel source 0.0.0.0, destination 0.0.0.0
  Tunnel protocol/transport GRE/IP, key disabled, sequencing disabled
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Output queue 0/0, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 0 interface resets, 0 restarts
```

Table 44 describes significant fields shown in the display.

**Table 44** *show interfaces tunnel Field Descriptions*

Field	Description
Tunnel is {up   down}	Interface is currently active and inserted into ring (up) or inactive and not inserted (down).  On the Cisco 7500 series routers, gives the interface processor type, slot number, and port number.
line protocol is {up   down   administratively down}	Shows line protocol up if a valid route is available to the tunnel destination. Shows line protocol down if no route is available, or if the route would be recursive.
Hardware	Specifies the hardware type.
MTU	Maximum transmission unit of the interface.
BW	Bandwidth of the interface in kilobits per second.
DLY	Delay of the interface in microseconds.
rely	Reliability of the interface as a fraction of 255 (255/255 is 100 percent reliability), calculated as an exponential average over 5 minutes.
load	Load on the interface as a fraction of 255 (255/255 is completely saturated), calculated as an exponential average over 5 minutes.
Encapsulation	Encapsulation method is always TUNNEL for tunnels.
loopback	Indicates whether loopback is set or not.
keepalive	Indicates whether keepalives are set or not.
Tunnel source	IP address used as the source address for packets in the tunnel.
destination	IP address of the host destination.
Tunnel protocol	Tunnel transport protocol (the protocol the tunnel is using). This is based on the <b>tunnel mode</b> command, which defaults to GRE.
key	ID key for the tunnel interface, unless disabled.
sequencing	Indicates whether the tunnel interface drops datagrams that arrive out of order. Can be disabled.
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface and processed locally on the router. Useful for knowing when a dead interface failed. This counter is updated only when packets are process switched, not when packets are fast switched.
output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by an interface. This counter is updated only when packets are process switched, not when packets are fast switched.
output hang	Number of hours, minutes, and seconds (or never) since the interface was last reset because of a transmission that took too long. When the number of hours in any of the “last” fields exceeds 24 hours, the number of days and hours is printed. If that field overflows, asterisks are printed.

Table 44 show interfaces tunnel Field Descriptions (continued)

Field	Description
Last clearing	Time at which the counters that measure cumulative statistics (such as number of bytes transmitted and received) shown in this report were last reset to zero. Note that variables that might affect routing (for example, load and reliability) are not cleared when the counters are cleared.  *** indicates the elapsed time is too large to be displayed.  0:00:00 indicates the counters were cleared more than $2^{31}$ ms (and less than $2^{32}$ ms) ago.
Output queue, drops Input queue, drops	Number of packets in output and input queues. Each number is followed by a slash, the maximum size of the queue, and the number of packets dropped because of a full queue.
Five minute input rate, Five minute output rate	Average number of bits and packets transmitted per second in the last 5 minutes.  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 will be within two percent of the instantaneous rate of a uniform stream of traffic over that period.
packets input	Total number of error-free packets received by the system.
bytes	Total number of bytes, including data and MAC encapsulation, in the error-free packets received by the system.
no buffer	Number of received packets discarded because there was no buffer space in the main system. Compare with ignored count. Broadcast storms on Ethernet networks and bursts of noise on serial lines are often responsible for no input buffer events.
broadcasts	Total number of broadcast or multicast packets received by the interface.
runts	Number of packets that are discarded because they are smaller than the minimum packet size of the medium.
giants	Number of packets that are discarded because they exceed the maximum packet size of the medium.
CRC	Cyclic redundancy checksum generated by the originating LAN station or far-end device does not match the checksum calculated from the data received. On a LAN, this usually indicates noise or transmission problems on the LAN interface or the LAN bus itself. A high number of CRCs is usually the result of a station transmitting bad data.
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets.
overrun	Number of times the serial receiver hardware was unable to hand received data to a hardware buffer because the input rate exceeded the receiver's ability to handle the data.

Table 44 *show interfaces tunnel Field Descriptions (continued)*

Field	Description
ignored	Number of received packets ignored by the interface because the interface hardware ran low on internal buffers. These buffers are different than the system buffers mentioned previously in the buffer description. Broadcast storms and bursts of noise can cause the ignored count to be increased.
abort	Illegal sequence of one bits on a serial interface. This usually indicates a clocking problem between the serial interface and the data link equipment.
packets output	Total number of messages transmitted by the system.
bytes	Total number of bytes, including data and MAC encapsulation, transmitted by the system.
underruns	Number of times that the far-end transmitter has been running faster than the near-end router's receiver can handle. This may never be reported on some interfaces.
output errors	Sum of all errors that prevented the final transmission of datagrams out of the interface being examined. Note that this may not balance with the sum of the enumerated output errors, as some datagrams may have more than one error, and others may have errors that do not fall into any of the specifically tabulated categories.
collisions	Number of messages retransmitted because of an Ethernet collision. Some collisions are normal. However, if your collision rate climbs to around 4 or 5 percent, you should consider verifying that there is no faulty equipment on the segment and/or moving some existing stations to a new segment. A packet that collides is counted only once in output packets.
interface resets	Number of times an interface has been reset. The interface may be reset by the administrator or automatically when an internal error occurs.
restarts	Number of times that the controller was restarted because of errors.

## Related Commands

Command	Description
<a href="#">show interfaces ip-brief</a>	Displays the statistical information specific to a serial interface.
<a href="#">show ip route</a>	Displays all static IP routes or those installed using the AAA route download function.

# show interfaces vg-anylan

To display the information about the 100VG-AnyLAN port adapter on Cisco 7200 series routers and Cisco 7500 series routers, use the **show interfaces vg-anylan** command in user EXEC and privileged EXEC mode.

## Cisco 7200 Series

```
show interfaces vg-anylan [slot/port]
```

## Cisco 7500 Series with VIPs

```
show interfaces vg-anylan [slot/port-adapter/port]
```

Syntax Description	slot	(Optional) Number of the slot being configured. Refer to the appropriate hardware manual for slot and port information.
	<i>port</i>	(Optional) Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.
	<i>port-adapter</i>	(Optional) Number of the port adapter being configured. Refer to the appropriate hardware manual for information about port adapter compatibility.

Command Modes	User EXEC Privileged EXEC
---------------	------------------------------

Command History	Release	Modification
	11.3	This command was introduced.

**Examples** The following is sample output from the **show interfaces vg-anylan** command:

```
Router# show interfaces vg-anylan 3/0/0

VG-AnyLAN3/0/0 is up, line protocol is up
  Hardware is cyBus VG-AnyLAN Interface
  Frame type is 802.3, address is 0060.3e64.2460 (bia 0060.3e64.2460)
  Internet address is 10.1.1.5/16
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:26, output 00:00:09, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    5316 packets input, 857349 bytes, 0 no buffer
    Received 5310 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 input packets with dribble condition detected
    7920 packets output, 754259 bytes, 0 underruns
```

```

0 output errors, 0 collisions, 2 interface resets
0 output buffer failures, 0 output buffers swapped out
0 vg alignment error, 0 vg balance error
0 vg invalid ipm error, 0 vg symbol error
0 vg skew error, 0 vg frame delimit error
0 vg high priority packets, 0 vg high priority octets

```

Table 45 describes significant fields shown in the display.

**Table 45** *show interfaces vg-anylan Field Descriptions*

Field	Description
VG-AnyLAN3/0/0 is up, line protocol is up	Indicates if the interface hardware is currently active and can transmit and receive or if it has been taken down by an administrator.
Hardware is cyBus VG-AnyLAN	Hardware type.
Frame type is 803.2	Currently the frame type supported is 803.2.
Internet address	Internet address and subnet mask.
MTU	Maximum transmission unit of the interface.
BW	Bandwidth of the interface in kilobits per second.
DLY	Delay of the interface in microseconds.
rely	Reliability of the interface as a fraction of 255 (255/255 is 100 percent reliability), calculated as an exponential average over 5 minutes.
load	Load on the interface as a fraction of 255 (255/255 is completely saturated), calculated as an exponential average over 5 minutes. The calculation uses the value from the <b>bandwidth</b> interface configuration command.
Encapsulation	Encapsulation method assigned to the interface.
loopback	Indicates if loopbacks are set.
keepalive	Indicates if keepalives are set.
ARA type	ARP type on the interface.
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface and processed locally on the router. Useful for knowing when a dead interface failed. This counter is updated only when packets are process switched, not when packets are fast switched.
output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by an interface. This counter is updated only when packets are process switched, not when packets are fast switched.
output hang	Number of hours, minutes, and seconds (or never) since the interface was last reset because of a transmission that took too long. When the number of hours in any of the “last” fields exceeds 24 hours, the number of days and hours is printed. If that field overflows, asterisks are printed.

Table 45 show interfaces vg-anylan Field Descriptions (continued)

Field	Description
last clearing	Time at which the counters that measure cumulative statistics (such as number of bytes transmitted and received) shown in this report were last reset to zero. Variables that might affect routing (for example, load and reliability) are not cleared when the counters are cleared.  *** indicates the elapsed time is too large to be displayed.  0:00:00 indicates the counters were cleared more than $2^{31}$ ms (and less than $2^{32}$ ms) ago.
Queueing strategy	First-in, first-out queueing strategy (other queueing strategies that you might see are priority-list, custom-list, and weighted fair).
Output queue, drops input queue, drops	Number of packets in output and input queues. Each number is followed by a slash, the maximum size of the queue, and the number of packets dropped because a queue was full.
5 minute input rate 5 minute output rate	Average number of bits and packets received or transmitted per second in the last 5 minutes.
packets input	Total number of error-free packets received by the system.
bytes (input)	Total number of bytes, including data and MAC encapsulation, in the error-free packets received by the system.
no buffer	Number of received packets discarded because there was no buffer space in the main system. Compare with ignored count. Broadcast storms on Ethernet networks and bursts of noise on serial lines are often responsible for no input buffer events.
broadcasts	Total number of broadcast or multicast packets received by the interface.
runts	Number of packets that are discarded because they are smaller than the minimum packet size of the medium.
giants	Number of packets that are discarded because they exceed the maximum packet size of the medium.
input errors	Total number of no buffer, runts, giants, CRCs, frame, overrun, ignored, and abort counts. Other input-related errors can also increment the count, so that this sum might not balance with the other counts.
CRC	Cyclic redundancy checksum generated by the originating LAN station or far-end device does not match the checksum calculated from the data received. On a LAN, this usually indicates noise or transmission problems on the LAN interface or the LAN bus itself. A high number of CRCs is usually the result of collisions or a station transmitting bad data. On a serial link, CRCs usually indicate noise, gain hits or other transmission problems on the data link.
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets. On a serial line, this is usually the result of noise or other transmission problems.
overrun	Number of times the serial receiver hardware was unable to hand received data to a hardware buffer because the input rate exceeded the receiver's ability to handle the data.

Table 45 *show interfaces vg-anylan Field Descriptions (continued)*

Field	Description
ignored	Number of received packets ignored by the interface because the interface hardware ran low on internal buffers. These buffers are different than the system buffers mentioned previously in the buffer description. Broadcast storms and bursts of noise can cause the ignored count to be incremented.
abort	Illegal sequence of one bits on the interface.
input packets with dribble condition detected	Dribble bit error indicates that a frame is slightly too long. This frame error counter is incremented just for informational purposes; the router accepts the frame.
packets output	Total number of messages transmitted by the system.
bytes (output)	Total number of bytes, including data and MAC encapsulation, transmitted by the system.
underruns	Number of times that the far-end transmitter has been running faster than the near-end router's receiver can handle.
output errors	Sum of all errors that prevented the final transmission of datagrams out of the interface being examined. Note that this might not balance with the sum of the enumerated output errors, as some datagrams can have more than one error, and others can have errors that do not fall into any of the specifically tabulated categories.
collisions	Number of messages retransmitted because of an Ethernet collision. A packet that collides is counted only once in output packets.
interface resets	Number of times an interface has been completely reset. This can happen if packets queued for transmission were not sent within a certain interval. If the system notices that the carrier detect line of an interface is up, but the line protocol is down, it periodically resets the interface in an effort to restart it. Interface resets can also occur when an unrecoverable interface processor error occurred, or when an interface is looped back or shut down.
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.
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.
vg alignment error	Number of nonoctets received.
vg balance error	Number of incorrect balanced symbols received.
vg invalid ipm error	Number of packets received with an invalid packet marker (IPM).
vg symbol error	Number of symbols received that were not correctly decoded.
vg skew error	Number of skews between four pairs of twisted-pair wire that exceeded the allowable skew.
vg frame delimit error	Number of start-of-frame errors or false-start errors received.
vg high priority packets	Number of high-priority packets received.
vg high priority octets	Number of high-priority octets received.

## Related Commands

Command	Description
<a href="#">interface vg-anylan</a>	Specifies the interface on a 100VG-AnyLAN port adapter and enters interface configuration mode on Cisco 7200 series routers and Cisco 7500 series routers.

# show ipc

To display interprocess communication (IPC) statistics, use the **show ipc** command in privileged EXEC mode.

```
show ipc { nodes | ports [open] | queue | status [cumulative]}
```

## Syntax Description

<b>nodes</b>	Displays participating nodes.
<b>ports</b>	Displays local and registered IPC ports.
<b>open</b>	(Optional) Displays local IPC ports that have been opened by the current seat (node).
<b>queue</b>	Displays information about the IPC retransmission queue and IPC message queue.
<b>status</b>	Displays the status of the local IPC server.
<b>cumulative</b>	(Optional) Displays cumulative totals for the status counters of the local IPC server since the router was rebooted.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
12.1(12c)EW	This command was introduced.
12.2(15)T	The <b>cumulative</b> keyword was added.

## Usage Guidelines

The Cisco IOS version of IPC provides a reliable ordered delivery of messages using an underlying platform driver transport or UDP transport protocol.

### Nodes

A node (referred to as a seat) is an intelligent element like a processor that can communicate using IPC services. A seat is where entities and ports reside. A seat manager performs all the interprocessor communications by receiving messages from the network and forwarding the messages to the appropriate port.

### Ports

IPC communication endpoints (ports) receive and queue received IPC messages.

### Queue

Use the **queue** keyword to display information about the IPC retransmission queue and the IPC message queue.

### Status

Use the **status** keyword to display the IPC statistics generated after a **clear ipc statistics** command has been entered. The **show ipc status** command with the **cumulative** keyword displays the IPC statistics gathered since the router was rebooted, regardless of how many times the statistics have been cleared.

**Examples**

The following is sample output from the **show ipc** command with the **nodes** keyword displaying the participating seats (nodes):

```
Router# show ipc nodes

There are 3 nodes in this IPC realm.
ID      Type      Name                Last Sent Last Heard
10000   Local     IPC Master          0          0
2010000 Local     GALIOS IPC:Card 1  0          0
2020000 Ethernet GALIOS IPC:Card 2 12         26
```

[Table 46](#) describes the significant fields shown in the display.

**Table 46** *show ipc nodes Field Descriptions*

Field	Description
ID	Port ID.
Type	Type of seat (node).
Name	Seat name.
Last Sent	Sequence number of the message that was last sent.
Last Heard	Sequence number of the in-sequence message that was last heard.

The following is sample output from the **show ipc** command with the **ports** keyword displaying the local and registered IPC ports:

```
Router# show ipc ports

There are 11 ports defined.

Port ID  Type      Name                (current/peak/total)
10000.1  unicast  IPC Master:Zone
10000.2  unicast  IPC Master:Echo
10000.3  unicast  IPC Master:Control
10000.4  unicast  Remote TTY Server Port
10000.5  unicast  GALIOS RF :Active
index = 0 seat_id = 0x2020000 last sent = 0 heard = 1635 0/1/1635

10000.6  unicast  GALIOS RED:Active
index = 0 seat_id = 0x2020000 last sent = 0 heard = 2 0/1/2

2020000.3 unicast  GALIOS IPC:Card 2:Control
2020000.4 unicast  GALIOS RFS :Standby
2020000.5 unicast  Slave: Remote TTY Client Port
2020000.6 unicast  GALIOS RF :Standby
2020000.7 unicast  GALIOS RED:Standby
RPC packets: current/peak/total
              0/1/17
```

[Table 47](#) describes the significant fields shown in the display.

**Table 47** *show ipc ports Field Descriptions*

Field	Description
Port ID	Port ID.
Type	Type of port.

**Table 47** *show ipc ports Field Descriptions (continued)*

Field	Description
Name	Port name.
current/peak/total	Displays information about the number of messages held by this IPC session.

The following is sample output from the **show ipc** command with the **queue** keyword displaying information about the IPC retransmission queue:

```
Router# show ipc queue
```

```
There are 0 IPC messages waiting for acknowledgement in the transmit queue.
There are 0 IPC messages waiting for a response.
There are 0 IPC messages waiting for additional fragments.
There are 0 IPC messages currently on the IPC inboundQ.
There are 0 messages currently in use by the system.
```

The following is sample output from the **show ipc** command with the **status** keyword displaying information about the local IPC server:

```
Router# show ipc status
```

```
IPC System Status
```

```
Time last IPC stat cleared : never
```

```
This processor is the IPC master server.
Do not drop output of IPC frames for test purposes.
```

```
1000 IPC Message Headers Cached.
```

	Rx Side	Tx Side
Total Frames	189	140
Total from Local Ports	189	70
Total Protocol Control Frames	70	44
Total Frames Dropped	0	0

#### Service Usage

Total via Unreliable Connection-Less Service	145	0
Total via Unreliable Sequenced Connection-Less Svc	0	0
Total via Reliable Connection-Oriented Service	44	70

#### IPC Protocol Version 0

Total Acknowledgements	70	44
Total Negative Acknowledgements	0	0

#### Device Drivers

Total via Local Driver	0	0
Total via Platform Driver	0	70
Total Frames Dropped by Platform Drivers	0	0

#### Reliable Tx Statistics

Re-Transmission	0
Re-Tx Timeout	0

```

Rx Errors
Unsupp IPC Proto Version      0
Corrupt Frame                 0
Duplicate Frame               0
Out-of-Sequence Frame        0
Dest Port does Not Exist     0
Rx IPC Msg Alloc Failed      0
Unable to Deliver Msg        0

Tx Errors
Tx Session Error              0
Tx Seat Error                 0
Destination Unreachable      0
Tx Test Drop                  0
Tx Driver Failed              0
Ctrl Frm Alloc Failed         0

Buffer Errors
IPC Msg Alloc                 0
Emer IPC Msg Alloc            0
IPC Frame PakType Alloc      0
IPC Frame MemD Alloc         0

Misc Errors
IPC Open Port                 0
No HWQ                        0
Hardware Error                0

Tx Driver Errors
No Transport                  0
MTU Failure                   0
Dest does not Exist          0

```

Table 48 describes the significant fields shown in the display.

**Table 48** *show ipc status Field Descriptions*

Field	Description
Time last IPC stat cleared	Displays time, in dd:hh:mm, since the IPC statistics were last cleared.
This processor is	Shows whether the processor is the IPC master or an IPC slave.
IPC Message Headers Cached	Number of message headers available in the IPC message cache.
Rx Side	Information about IPC messages received.
Tx Side	Information about IPC messages sent.
Service Usage	Number of IPC messages received or sent via connectionless or connection-oriented protocols.
IPC Protocol Version 0	Number of acknowledgements and negative acknowledgements received or sent by the system.
Device Drivers	Number of IPC messages received or sent using the underlying device drivers.
Reliable Tx Statistics	Number of IPC messages that were retransmitted or that timed out on retransmission using a reliable connection-oriented protocol.
Rx Errors	Number of IPC messages received that displayed various internal frame or delivery errors.
Tx Errors	Number of IPC messages sent that displayed various transmission errors.
Buffer Errors	Number of message allocation failures from the IPC message cache, IPC emergency message cache, IPC frame allocation cache, and the IPC frame memory allocation cache.

**Table 48** *show ipc status Field Descriptions (continued)*

Field	Description
Misc Errors	Various miscellaneous errors that relate to the IPC open queue, or to the hardware queue, or to other hardware failures.
Tx Driver Errors	Number of messages that relate to IPC transmission driver failures including messages to or from a destination without a valid transport entity from the seat; number of messages dropped because packet size is larger than the maximum transmission unit (MTU); and number of messages without a valid destination address.

The following example shows how to display cumulative IPC counters for the local IPC server. Note that the recent IPC clearing has not cleared the IPC counters because the **cumulative** keyword displays the IPC statistics generated since the router was rebooted.

```
Router# show ipc status cumulative
```

```
IPC System Status
```

```
Time last IPC stat cleared : 00:00:05
```

```
This processor is the IPC master server.  
Do not drop output of IPC frames for test purposes.
```

```
1000 IPC Message Headers Cached.
```

	Rx Side	Tx Side
Total Frames	3473	184
Total from Local Ports	3473	92
Total Protocol Control Frames	92	54
Total Frames Dropped	0	0

#### Service Usage

Total via Unreliable Connection-Less Service	2449	0
Total via Unreliable Sequenced Connection-Less Svc	970	0
Total via Reliable Connection-Oriented Service	54	92

#### IPC Protocol Version 0

Total Acknowledgements	0	0
Total Negative Acknowledgements	0	0

#### Device Drivers

Total via Local Driver	0	0
Total via Platform Driver	0	92
Total Frames Dropped by Platform Drivers	0	0

#### Reliable Tx Statistics

Re-Transmission	0
Re-Tx Timeout	0

Rx Errors		Tx Errors	
Unsupp IPC Proto Version	0	Tx Session Error	0
Corrupt Frame	0	Tx Seat Error	0
Duplicate Frame	0	Destination Unreachable	0
Out-of-Sequence Frame	0	Tx Test Drop	0
Dest Port does Not Exist	0	Tx Driver Failed	0
Rx IPC Msg Alloc Failed	0	Ctrl Frm Alloc Failed	0
Unable to Deliver Msg	0		
Buffer Errors		Misc Errors	
IPC Msg Alloc	0	IPC Open Port	0
Emer IPC Msg Alloc	0	No HWQ	0
IPC Frame PakType Alloc	0	Hardware Error	0
IPC Frame MemD Alloc	0		
Tx Driver Errors			
No Transport	0		
MTU Failure	0		
Dest does not Exist	0		

---

**Related Commands**

Command	Description
<b>clear ipc statistics</b>	Clears and resets the IPC statistics.

---

# show ipc hog-info

To provide information about interprocess communication (IPC) messages that consume excessive CPU, use the **show ipc hog-info** command in privileged EXEC mode.

## show ipc hog-info

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(15)T	This command was introduced.
	12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

**Usage Guidelines** The Cisco IOS version of IPC provides a reliable ordered delivery of messages using an underlying platform driver transport or User Datagram Protocol (UDP) transport protocol.

The **show ipc hog-info** command displays information about IPC messages that are being processed when a CPUHOG error occurs, indicating that the client processing an IPC message is using too much CPU, or when an IPC message callback exceeds 200 milliseconds.

**Examples** The following example shows that the IPC process has had a CPUHOG error or the message callback exceeded the 200-millisecond threshold:

```
Router# show ipc hog-info

Time last IPC process hogged CPU: 00:05:09

IPC Messages Processed:
Source          Destination Name          Message-Type      Time-taken
                (0x)                    (msec)
-----
1030000        10000.14      ISSU Process: Active Por      0      864
1030000        10000.D       RF : Active                  0      0
```

In the following example, the **show ipc status** command shows a counter incrementing whenever a callback exceeds 200 milliseconds:

```
Router# show ipc status

IPC System Status

Time last IPC stat cleared : never

This processor is the IPC master server.
Do not drop output of IPC frames for test purposes.

1000 IPC Message Headers Cached.
```

	Rx Side	Tx Side
Total Frames	9501	3973
Total from Local Ports	14328	3258
Total Protocol Control Frames	1628	713
Total Frames Dropped	0	0
Service Usage		
Total via Unreliable Connection-Less Service	7865	0
Total via Unreliable Sequenced Connection-Less Svc	0	0
Total via Reliable Connection-Oriented Service	831	1629
IPC Protocol Version 0		
Total Acknowledgments	1628	713
Total Negative Acknowledgments	0	0
Device Drivers		
Total via Local Driver	12	12
Total via Platform Driver	9478	1619
Total Frames Dropped by Platform Drivers	0	0
Total Frames Sent when media is quiesced		0
Reliable Tx Statistics		
Re-Transmission		0
Re-Tx Timeout		0
Rx Errors		Tx Errors
Unsupp IPC Proto Version	0	Tx Session Error 0
Corrupt Frame	0	Tx Seat Error 0
Duplicate Frame	0	Destination Unreachable 0
Rel Out-of-Seq Frame	0	Unrel Out-of-Seq Frame 0
Dest Port does Not Exist	0	Tx Driver Failed 0
Rx IPC Msg Alloc Failed	0	Rx IPC Frag Dropped 0
Rx IPC Transform Errors	0	Tx IPC Transform Errors 0
Unable to Deliver Msg	0	Tx Test Drop 0
Ctrl Frm Alloc Failed	0	Rx Msg Callback Hog 11
Buffer Errors		Misc Errors
IPC Msg Alloc	0	IPC Open Port 0
Emer IPC Msg Alloc	0	No HWQ 0
IPC Frame PakType Alloc	0	Hardware Error 0
IPC Frame MemD Alloc	0	Invalid Messages 0
Tx Driver Errors		
No Transport	0	
MTU Failure	0	
Dest does not Exist	0	

**Related Commands**

Command	Description
<b>show ipc</b>	Displays IPC statistics.