show interfaces

To display statistics for all interfaces configured on the router or access server, use the **show interfaces** command in privileged EXEC mode. The resulting output varies, depending on the network for which an interface has been configured.

show interfaces [*type number*] [*first*] [*last*] [**accounting**]

Cisco 7200 Series and Cisco 7500 Series with a Packet over SONET Interface Processor

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

Cisco 7500 Series with Ports on VIPs

show interfaces [*type slot*/*port-adapter*/*port*] [**ethernet** | **serial**]

Syntax Description

type	(Optional) Interface type. Allowed values for *type* include **async**, **bri0**, **dialer**, **ethernet**, **fastethernet**, **fddi**, **hssi**, **loopback**, **null**, **serial**, **tokenring**, and **tunnel**. For the Cisco 4000 series routers, *type* can be **e1**, **ethernet**, **fastethernet**, **fddi**, **serial**, **t1**, and **token**. For the Cisco 4500 series routers, *type* can also include **atm**. For the Cisco 7000 family, *type* can be **atm**, **e1, ethernet**, **fastethernet**, **fddi**, **serial**, **t1,** and **tokenring**. For the Cisco 7500 series *type* can also include **pos**.
number	(Optional) Port number on the selected interface.
first last	(Optional) For the Cisco 2500 and 3000 series routers, ISDN BRI only. The argument *first* can be either 1 or 2. The argument *last* can only be 2, indicating B channels 1 and 2. D-channel information is obtained by using the command without the optional arguments.
accounting	(Optional) Displays the number of packets of each protocol type that has been sent through the interface.
slot	(Optional) Number of the slot being configured. Refer to the appropriate hardware manual for slot and port information.
port	(Optional) Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.
port-adapter	(Optional) Number of the port adapter being configured. Refer to the appropriate hardware manual for information about port adapter compatibility.

Command Modes

Privileged EXEC

Command History

Release	Modification
10.0	This command was introduced.
12.0(3)T	This command was modified to include support for flow-based WRED.
12.0(4)T	This command was modified to include enhanced display information for dialer bound interfaces.
12.0(7)T	This command was modified to include **dialer** as an interface type, and to reflect the default behavior.

Usage Guidelines

Statistics in the Display

The **show interfaces** command displays statistics for the network interfaces. The resulting display on the Cisco 7200 series routers, for example, shows the interface processors in slot order. If you add interface processors after booting the system, they will appear at the end of the list, in the order in which they were inserted.

Load Calculations

The load calculation appears in the displays for this command. The load is a 5-minute exponentially weighted average that is updated every five seconds. The load can be adversely affected if the default K values used to calculate metrics are modified.

Reliability

When PA-A3 input and output error counters increment, they affect the reliability counter, which indicates the likelihood that a packet will be successfully transmitted or received. The value is expressed as a fraction of 255, with a value of 255 indicating a totally reliable link.

```
router#show interface atm 10/1/0
         ATM10/1/0 is up, line protocol is up
         Hardware is cyBus ENHANCED ATM PA
         MTU 1500 bytes, sub MTU 1500, BW  149760 Kbit, DLY 80 usec,
            reliability 249/255, txload 1/255, rxload 1/255
```

Reliability is calculated using the followi ng formula:

```
reliability = number of errors / number of total frames
```

The show interface output displays the average reliability

Significance of the *type slot/port* Argument

If you use the **show interfaces** command on the Cisco 7200 series routers without the *slot/port* arguments, information for all interface types will be shown. For example, if you type **show interfaces ethernet** you will receive information for all ethernet, serial, Token Ring, and FDDI interfaces. Only by adding the *type slot/port* argument can you specify a particular interface.

Removed Interface Types

If you enter a **show interfaces** command for an interface type that has been removed from the router or access server, interface statistics will be displayed accompanied by the following text: “Hardware has been removed.”

Accounting Information

The optional keyword **accounting** displays the number of packets of each protocol type that have been sent through the interface.

Weighted Fair Queueing Information

If you use the **show interfaces** command on a router or access server for which interfaces are configured to use weighted fair queueing through the **fair-queue** interface command, additional information is displayed. This information consists of the current and high-water mark number of flows.

Use with Dialer Interfaces

If you use the **show interfaces** command on dialer interfaces configured for binding, the display will report statistics on each physical interface bound to the dialer interface; see the following examples for more information.

Variations of this Command

You will use the **show interfaces** command frequently while configuring and monitoring devices. The various forms of the **show interfaces** commands are described in detail in the sections immediately following this command.

Examples

The following is sample output from the **show interfaces** command. Because your display will depend on the type and number of interface cards in your router or access server, only a portion of the display is shown.

Note If an asterisk (*) appears after the throttles counter value, it means that the interface was throttled at the time the command was run.

```
Router# show interfaces

Ethernet 0 is up, line protocol is up
  Hardware is MCI Ethernet, address is 0000.0c00.750c (bia 0000.0c00.750c)
  Internet address is 131.108.28.8, subnet mask is 255.255.255.0
  MTU 1500 bytes, BW 10000 Kbit, DLY 100000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 4:00:00
  Last input 0:00:00, output 0:00:00, output hang never
  Last clearing of "show interface" counters 0:00:00
  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 2000 bits/sec, 4 packets/sec
     1127576 packets input, 447251251 bytes, 0 no buffer
     Received 354125 broadcasts, 0 runts, 0 giants, 57186* throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     5332142 packets output, 496316039 bytes, 0 underruns
     0 output errors, 432 collisions, 0 interface resets, 0 restarts
...
```

Example with Custom Output Queueing

The following shows partial sample output when custom output queueing is enabled:

```
Router# show interfaces

Last clearing of "show interface" counters 0:00:06
Input queue: 0/75/0 (size/max/drops); Total output drops: 21
Output queues: (queue #: size/max/drops)
     0: 14/20/14  1: 0/20/6  2: 0/20/0 3: 0/20/0 4: 0/20/0 5: 0/20/0
     6: 0/20/0 7: 0/20/0  8: 0/20/0  9: 0/20/0  10: 0/20/0
```

When custom queueing is enabled, the drops accounted for in the output queues result from bandwidth limitation for the associated traffic and leads to queue length overflow. Total output drops include drops on all custom queues as well as the system queue. Fields are described with the Weighted Fair Queueing output in Table 35.

Example including Weighted-Fair-Queueing Output

For each interface on the router or access server configured to use weighted fair queueing, the **show interfaces** command displays the information beginning with *Input queue:* in the following display:

```
Router# show interfaces

Ethernet 0 is up, line protocol is up
  Hardware is MCI Ethernet, address is 0000.0c00.750c (bia 0000.0c00.750c)
  Internet address is 131.108.28.8, subnet mask is 255.255.255.0
  MTU 1500 bytes, BW 10000 Kbit, DLY 100000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 4:00:00
  Last input 0:00:00, output 0:00:00, output hang never
  Last clearing of "show interface" counters 0:00:00
  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 2000 bits/sec, 4 packets/sec
     1127576 packets input, 447251251 bytes, 0 no buffer
     Received 354125 broadcasts, 0 runts, 0 giants, 57186* throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     5332142 packets output, 496316039 bytes, 0 underruns
     0 output errors, 432 collisions, 0 interface resets, 0 restarts
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Output queue: 7/64/0 (size/threshold/drops)
     Conversations 2/9 (active/max active)
```

Table 35 describes the input queue and output queue fields shown in the preceding display.

Table 35 Weighted-Fair-Queueing Output Field Descriptions

Field	Description
Input queue:	
• size	Current size of the input queue.
• max	Maximum size of the queue.
• drops	Number of messages discarded in this interval.
• Total output drops	Total number of messages discarded in this session.
Output queue:	
• size	Current size of the output queue.
• 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.
• Conversations: max active	Maximum number of concurrent conversations allowed.

Example with Accounting Option

To display the number of packets of each protocol type that have been sent through all configured interfaces, use the **show interfaces accounting** EXEC command. When you use the **accounting** option, only the accounting statistics are displayed.

Note Except for protocols that are encapsulated inside other protocols, such as IP over X.25, the accounting option also shows the total of all bytes sent and received, including the MAC header. For example, it totals the size of the Ethernet packet or the size of a packet that includes High-Level Data Link Control (HDLC) encapsulation.

Per-packet accounting information is displayed for protocols. The following is an example of protocols for which accounting information is displayed. This list is not inclusive of all protocols and could vary among platforms.

- Apollo
- AppleTalk
- ARP (for IP, Apollo, Frame Relay, SMDS)
- CLNS
- DEC MOP

  The routers use MOP packets to advertise their existence to Digital Equipment Corporation machines that use the MOP protocol. A router periodically broadcasts MOP packets to identify itself as a MOP host. This results in MOP packets being counted, even when DECnet is not being actively used.
- DECnet
- HP Probe
- IP
- LAN Manager (LAN Network Manager and IBM Network Manager)
- Novell
- Serial Tunnel (SDLC)
- Spanning Tree
- SR Bridge
- Transparent Bridge
- VINES
- XNS

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

```
Router# show interfaces accounting

Interface TokenRing0 is disabled

Ethernet0
                Protocol    Pkts In   Chars In   Pkts Out  Chars Out
                      IP     873171  735923409      34624    9644258
                  Novell     163849   12361626      57143    4272468
                 DEC MOP          0          0          1         77
                     ARP      69618    4177080       1529      91740
Interface Serial0 is disabled
```

```
Ethernet1
                Protocol    Pkts In   Chars In   Pkts Out  Chars Out
                      IP          0          0         37      11845
                  Novell          0          0       4591     275460
                 DEC MOP          0          0          1         77
                     ARP          0          0          7        420

Interface Serial1 is disabled
Interface Ethernet2 is disabled
Interface Serial2 is disabled
Interface Ethernet3 is disabled
Interface Serial3 is disabled
Interface Ethernet4 is disabled
Interface Ethernet5 is disabled
Interface Ethernet6 is disabled
Interface Ethernet7 is disabled
Interface Ethernet8 is disabled
Interface Ethernet9 is disabled

Fddi0
                Protocol    Pkts In   Chars In   Pkts Out  Chars Out
                  Novell          0          0        183      11163
                     ARP          1         49          0          0
```

When the output indicates an interface is "disabled," the router has received excessive errors (over 5000 in a keepalive period).

The following is sample output from the **show interfaces accounting** command when a switched packet is dropped:

```
Router# show interfaces accounting

FastEthernet0/2
       Protocol    Pkts In   Chars In   Pkts Out  Chars Out
          Other          0          0       9373      562380
             IP      37342   21789327        954       86850
        DEC MOP          0          0        158       12166
            ARP        882      52920         71        4260

Interface FastEthernet1/0 is disabled
Interface FastEthernet1/1 is disabled

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

Table 36 describes the fields shown in the display.

Table 36 show interfaces accounting Field Descriptions

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 DWRED

The following is sample output from the **show interfaces** command when distributed weighted RED (DWRED) is enabled on an interface. Notice that the packet drop strategy is listed as "VIP-based weighted RED."

```
Router# show interfaces hssi 0/0/0

Hssi0/0/0 is up, line protocol is up
  Hardware is cyBus HSSI
  Description: 45Mbps to R1
Internet address is 200.200.14.250/30
MTU 4470 bytes, BW 45045 Kbit, DLY 200 usec, rely 255/255, load 1/255
Encapsulation HDLC, loopback not set, keepalive set (10 sec)
Last input 00:00:02, output 00:00:03, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Packet Drop strategy: VIP-based weighted RED
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
1976 packets input, 131263 bytes, 0 no buffer
Received 1577 broadcasts, 0 runts, 0 giants
0 parity
4 input errors, 4 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
1939 packets output, 130910 bytes, 0 underruns
0 output errors, 0 applique, 3 interface resets
0 output buffers copied, 0 interrupts, 0 failures
```

Example with ALC

The following is sample output from the **show interfaces** command for serial interface 2 when ALC is enabled:

```
Router# show interfaces serial 2

Serial2 is up, line protocol is up
Hardware is CD2430
MTU 1500 bytes, BW 115 Kbit, DLY 20000 usec, rely 255/255, load 1/255
Encapsulation ALC, loopback not set
Full-duplex enabled.
     ascus in UP state: 42, 46
     ascus in DOWN state:
     ascus DISABLED:
Last input never, 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
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, 3 interface resets
0 output buffer failures, 0 output buffers swapped out
DCD=down  DSR=down  DTR=down  RTS=down  CTS=down
```

Example with SDLC

The following is sample output from the **show interfaces** command for an Synchronous Data Link Control (SDLC) primary interface supporting the SDLC function:

```
Router# show interfaces
```

```
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 Field Descriptions When SDLC is Enabled

Field	Description
Timers (msec)	List of timers in milliseconds.
poll pause, fair poll, Poll limit	Current values of these timers, as described in the individual commands in this chapter.
T1, N1, N2, K	Current values for these variables, as described in the individual commands in this chapter.

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

Table 38 SDLC Field Descriptions

Field	Description
addr	Address of this secondary interface.
State	Current state of this connection. The possible values are: • DISCONNECT—No communication is being attempted to this secondary. • CONNECT—A normal connect state exists between this router and this secondary. • DISCSENT—This router has sent a disconnect request to this secondary and is awaiting its response. • SNRMSENT—This router has sent a connect request (SNRM) to this secondary and is awaiting its response. • THEMBUSY—This secondary has told this router that it is temporarily unable to receive any more information frames. • USBUSY—This router has told this secondary that it is temporarily unable to receive any more information frames. • BOTHBUSY—Both sides have told each other that they are temporarily unable to receive any more information frames. • ERROR—This router has detected an error, and is waiting for a response from the secondary acknowledging this.
VS	Sequence number of the next information frame this station sends.
VR	Sequence number of the next information frame from this secondary that this station expects to receive.
RCNT	Number of correctly sequenced I-frames received when the Cisco IOS software was in a state in which it is acceptable to receive I-frames.
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/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, given to this secondary at this time.
chain	Shows the previous (p) and next (n) secondary address on this interface in the round robin loop of polled devices.

Example with Flow-based WRED

The following is sample output from the **show interfaces** command issued for the Serial1 interface for which flow-based weighted RED (WRED) is enabled. The output shows that there are 8 active flow-based WRED flows, that the maximum number of flows active at any time is 9, and that the maximum number of possible flows configured for the interface is 16:

```
Router# show interfaces serial1
Serial1 is up, line protocol is up

  Hardware is HD64570
  Internet address is 190.1.2.1/24
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
Reliability 255/255, txload 237/255, rxload 1/255
  Encapsulation HDLC, loopback not set
  Keepalive not set
  Last input 00:00:22, output 00:00:00, output hang never
  Last clearing of "show interface" counters 00:17:58
  Input queue: 0/75/0 (size/max/drops); Total output drops: 2479


  Queueing strategy: random early detection(RED)
    flows (active/max active/max): 8/9/16
    mean queue depth: 27
    drops: class  random   tail     min-th   max-th   mark-prob
           0      946      0        20       40       1/10
           1      488      0        22       40       1/10
           2      429      0        24       40       1/10
           3      341      0        26       40       1/10
           4      235      0        28       40       1/10
           5      40       0        31       40       1/10
           6      0        0        33       40       1/10
           7      0        0        35       40       1/10
           rsvp   0        0        37       40       1/10
  30 second input rate 1000 bits/sec, 2 packets/sec
  30 second output rate 119000 bits/sec, 126 packets/sec
     1346 packets input, 83808 bytes, 0 no buffer
     Received 12 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     84543 packets output, 9977642 bytes, 0 underruns
     0 output errors, 0 collisions, 6 interface resets
     0 output buffer failures, 0 output buffers swapped out
     0 carrier transitions
     DCD=up  DSR=up  DTR=up  RTS=up  CTS=up
```

Example with DWFQ

The following is sample output from the **show interfaces** command when distributed weighted fair queueing (DWFQ) is enabled on an interface. Notice that the queueing strategy is listed as "VIP-based fair queueing."

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

Fast Ethernet 1/1/0 is up, line protocol is up
  Hardware is cyBus Fast Ethernet Interface, address is 0007.f618.4448 (bia 00e0)
  Description: pkt input i/f for WRL tests (to pagent)
  Internet address is 80.0.2.70/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive not set, fdx, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output 01:11:01, output hang never
  Last clearing of "show interface" counters 01:12:31
  Queueing strategy: VIP-based fair queueing
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  30 second input rate 0 bits/sec, 0 packets/sec
  30 second output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 no buffer
     Received 0 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
```

```
     1 packets output, 60 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 buffers copied, 0 interrupts, 0 failures
```

Example with DNIS Binding

When the **show interfaces** command is issued on an unbound dialer interface, the output looks as follows:

```
Router# show interfaces dialer0

Dialer0 is up (spoofing), line protocol is up (spoofing)
  Hardware is Unknown
  Internet address is 21.1.1.2/8
  MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec, rely 255/255, load 3/255
  Encapsulation PPP, loopback not set
  DTR is pulsed for 1 seconds on reset
  Last input 00:00:34, output never, output hang never
  Last clearing of "show interface" counters 00:05:09
  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 1000 bits/sec, 0 packets/sec
     18 packets input, 2579 bytes
     14 packets output, 5328 bytes
```

But when the **show interfaces** command is issued on a bound dialer interface, you will get an additional report that indicates the binding relationship. The output is shown here:

```
Router# show interfaces dialer0

Dialer0 is up, line protocol is up
  Hardware is Unknown
  Internet address is 21.1.1.2/8
  MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation PPP, loopback not set
  DTR is pulsed for 1 seconds on reset
  Interface is bound to BRI0:1
  Last input 00:00:38, output never, output hang never
  Last clearing of "show interface" counters 00:05:36


  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
     38 packets input, 4659 bytes
     34 packets output, 9952 bytes
Bound to:
BRI0:1 is up, line protocol is up
  Hardware is BRI
  MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation PPP, loopback not set, keepalive not set
  Interface is bound to Dialer0 (Encapsulation PPP)
  LCP Open, multilink Open
  Last input 00:00:39, output 00:00:11, 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
     78 packets input, 9317 bytes, 0 no buffer
     Received 65 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
```

```
     93 packets output, 9864 bytes, 0 underruns
     0 output errors, 0 collisions, 7 interface resets
     0 output buffer failures, 0 output buffers swapped out
     4 carrier transitions
```

At the end of the Dialer0 output, the **show interfaces** command is executed on each physical interface bound to it.

Example of show interface With BRI

In this example, the physical interface is the B1 channel of the BRI0 link. This example also illustrates that the output under the B channel keeps all hardware counts that are not displayed under any logical or virtual access interface. The line in the report that states "Interface is bound to Dialer0 (Encapsulation LAPB)" indicates that this B interface is bound to Dialer0 and the encapsulation running over this connection is LAPB, not PPP, which is the encapsulation configured on the D interface and inherited by the B channel.

```
Router# show interface bri0:1

BRI0:1 is up, line protocol is up
  Hardware is BRI
  MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation PPP, loopback not set, keepalive not set
  Interface is bound to Dialer0 (Encapsulation LAPB)
  LCP Open, multilink Open
  Last input 00:00:31, output 00:00:03, 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, 1 packets/sec
  5 minute output rate 0 bits/sec, 1 packets/sec
     110 packets input, 13994 bytes, 0 no buffer
     Received 91 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     135 packets output, 14175 bytes, 0 underruns
     0 output errors, 0 collisions, 12 interface resets
     0 output buffer failures, 0 output buffers swapped out
     8 carrier transitions
```

Any protocol configuration and states should be displayed from the Dialer0 interface.

show interfaces ctunnel

To display information about an IP over CLNS tunnel (CTunnel), use the **show interfaces ctunnel** command in privileged EXEC mode.

show interfaces ctunnel *interface-number* [**accounting**]

Syntax Description

interface-number	Virtual interface number.
accounting	(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
12.1(5)T	This command was introduced.

Examples

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

```
Router# show interfaces ctunnel 1

CTunnel1 is up, line protocol is up
  Hardware is CTunnel
  Internet address is 10.0.0.1/24
  MTU 1514 bytes, BW 9 Kbit, DLY 500000 usec,
      reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation TUNNEL, loopback not set
  Keepalive set (10 sec)
  Tunnel destination 49.0001.2222.2222.2222.cc
  Last input never, output 00:00:05, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/0, 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
     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
     1 packets output, 104 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 output buffer failures, 0 output buffers swapped out
```

Table 39 describes the significant fields shown in the display.

Note For the **show interfaces ctunnel** command, all output that relates to a physical medium is irrelevant and should be ignored because the CTunnel is a virtual interface.

Table 39 show interfaces ctunnel Field Descriptions

Field	Description
CTunnel is {up | down | administratively down}	Interface is currently active (up) or inactive (down). Shows interface is administratively down if disabled.
line protocol is {up | down}	Shows line protocol up if a valid route is available to the CLNS tunnel (CTunnel) destination. Shows line protocol down if no route is available, or if the route would be recursive.
Hardware	Type of interface, in this instance CTunnel.
Internet address	IP address of the interface.
MTU	Maximum transmission unit of the interface.
BW	Bandwidth, as specified by the user, that is available on the link.
DLY	Delay of the interface, in microseconds.
Encapsulation	Encapsulation method is always TUNNEL for tunnels.
Loopback	Shows whether loopback is set or not.
Keepalive	Shows whether keepalives are set or not.
Tunnel destination	The NSAP address of the tunnel destination. The N-Selector part of the displayed NSAP address is set by the router and cannot be changed.
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface. This counter is updated only when packets are process switched, not when packets are fast switched.
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 that the elapsed time is too large to be displayed. 0:00:00 indicates that the counters were cleared more than 2^{31} ms (and less than 2^{32} ms) ago.
Queueing strategy	Type of queueing active on this interface.
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 4 time constants must pass before the average will be within 2 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 in the error-free packets received by the system.
no buffer	Number of received packets discarded because there was no memory buffer available.

Table 39 show interfaces ctunnel Field Descriptions (continued)

Field	Description
broadcasts	Total number of broadcast or multicast packets received by the interface.
runts	This field does not apply to the CTunnel virtual interface.
giants	This field does not apply to the CTunnel virtual interface.
throttles	This field does not apply to the CTunnel virtual interface.
input errors	This field does not apply to the CTunnel virtual interface.
CRC	This field does not apply to the CTunnel virtual interface.
frame	This field does not apply to the CTunnel virtual interface.
overrun	This field does not apply to the CTunnel virtual interface.
ignored	This field does not apply to the CTunnel virtual interface.
abort	This field does not apply to the CTunnel virtual interface.
packets output	Total number of messages transmitted by the system.
bytes	Total number of bytes transmitted by the system.
underruns	This field does not apply to the CTunnel virtual interface.
output errors	This field does not apply to the CTunnel virtual interface.
collisions	This field does not apply to the CTunnel virtual interface.
interface resets	Number of times an interface has been reset. The interface may be reset manually by the administrator or automatically by the system when an internal error occurs.
output buffer failures	Number of buffer failures.
output buffers swapped out	Number of output buffer allocation failures.

Related Commands

Command	Description
show interfaces	Displays the statistical information specific to interfaces.
show ip route	Displays all static IP routes, or those installed using the AAA route download function.

show interfaces ethernet

To display information about an Ethernet interface on the router, use the **show interfaces ethernet** command in privileged EXEC mode.

show interfaces ethernet *unit* [**accounting**]

Cisco 7200 and 7500 Series

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

Cisco 7500 Series with Ports on VIPs

show interfaces ethernet [*type slot*/*port-adapter*/*port*]

Syntax Description

unit	Must match a port number on the selected interface.
accounting	(Optional) Displays the number of packets of each protocol type that have been sent through the interface.
slot	(Optional) Number of the slot being configured. Refer to the appropriate hardware manual for slot and port information.
port	(Optional) Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.
type	(Optional) Type of interface.
port-adapter	(Optional) Number of the port adapter being configured. Refer to the appropriate hardware manual for information about port adapter compatibility.

Command Modes

Privileged EXEC

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

If you do not provide values for the argument *unit* (or *slot* and *port* on the Cisco 7200 series routers or slot and port adapter on the Cisco 7500 series routers), the command displays statistics for all 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 ethernet** command for Ethernet interface 0:

```
Router# show interfaces ethernet 0

Ethernet0 is up, line protocol is up
  Hardware is Lance, address is 0060.3ef1.702b (bia 0060.3ef1.702b)
  Internet address is 172.21.102.33/24
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 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 00:00:20, output 00:00:06, 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
   115331 packets input, 27282407 bytes, 0 no buffer
   Received 93567 broadcasts, 0 runts, 0 giants, 0 throttles
   0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
   0 input packets with dribble condition detected
   143782 packets output, 14482169 bytes, 0 underruns
   0 output errors, 1 collisions, 5 interface resets
   0 babbles, 0 late collision, 7 deferred
   0 lost carrier, 0 no carrier
   0 output buffer failures, 0 output buffers swapped out
```

Table 40 describes significant fields shown in the display.

Table 40 show interfaces ethernet Field Descriptions

Field	Description
Ethernet ... is up ... is administratively down	Indicates whether the interface hardware is currently active and if it has been taken down by an administrator. “Disabled” indicates the router has received over 5000 errors in a keepalive interval, which is 10 seconds by default.
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) or if it has been taken down by an administrator.
Hardware	Hardware type (for example, MCI Ethernet, SCI, cBus Ethernet) and address.
Internet address	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.
Encapsulation	Encapsulation method assigned to interface.
ARP type:	Type of Address Resolution Protocol assigned.
loopback	Indicates whether loopback is set or not.
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.

Table 40 show interfaces ethernet Field Descriptions (continued)

Field	Description
output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by an interface. 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 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, 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. If the interface is not in promiscuous mode, it senses network traffic it sends and receives (rather than all network traffic). 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 buffers	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. For instance, any Ethernet packet that is less than 64 bytes is considered a runt.
giants	Number of packets that are discarded because they exceed the maximum packet size of the medium. For example, any Ethernet packet that is greater than 1518 bytes is considered a giant.

Table 40 show interfaces ethernet Field Descriptions (continued)

Field	Description
input error	Includes runts, giants, no buffer, CRC, frame, overrun, and ignored counts. Other input-related errors can also cause the input errors count to be increased, and some datagrams may have more than one error; therefore, this sum may not balance with the sum of enumerated input error 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.
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets. On a LAN, this is usually the result of collisions or a malfunctioning Ethernet device.
overrun	Number of times the 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.
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	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 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 transmitted 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 several seconds. 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.

Table 40 show interfaces ethernet Field Descriptions (continued)

Field	Description
restarts	Number of times a Type 2 Ethernet controller was restarted because of errors.
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.
output buffer failures	Number of failed buffers and number of buffers swapped out.

Example on Cisco 7500 Series Routers

The following sample output illustrates the **show interfaces ethernet** command on a Cisco 7500 series router:

```
Router> show interfaces ethernet 4/2

Ethernet4/2 is up, line protocol is up
  Hardware is cxBus Ethernet, address is 0000.0c02.d0ce (bia 0000.0c02.d0ce)
  Internet address is 131.108.7.1, subnet mask is 255.255.255.0
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 4:00:00
  Last input 0:00:00, output 0:00:09, output hang never
  Last clearing of "show interface" counters 0:56:40
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 3000 bits/sec, 4 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
     4961 packets input, 715381 bytes, 0 no buffer
     Received 2014 broadcasts, 0 runts, 0 giants
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     567 packets output, 224914 bytes, 0 underruns
     0 output errors, 168 collisions, 0 interface resets, 0 restarts
     0 babbles, 2 late collision, 7 deferred
     0 lost carrier, 0 no carrier
     0 output buffer failures, 0 output buffers swapped out
```

Example with Accounting Option

The following is sample output from the **show interfaces ethernet** command with the **accounting** option on a Cisco 7500 series router:

```
Router# show interfaces ethernet 4/2 accounting

Ethernet4/2
       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 fastethernet

To display information about the Fast Ethernet interfaces, use the **show interfaces fastethernet** command in EXEC mode.

Cisco 4500 and 4700 Series

show interfaces fastethernet [*number*]

Cisco 7200 and 7500 Series

show interfaces fastethernet [*slot*/*port*]

Cisco 7500 Series with a VIP

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

Syntax Description

number	(Optional) Port, connector, or interface card number. On a Cisco 4500 or Cisco 4700 series routers, specifies the network interface module (NIM) or NPM number. The numbers are assigned at the factory at the time of installation or when added to a system.
slot	(Optional) Number of the slot being configured. Refer to the appropriate hardware manual for slot and port information.
port	(Optional) Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.
port-adapter	(Optional) Number of the port adapter being configured. Refer to the appropriate hardware manual for information about port adapter compatibility.

Command Modes

EXEC

Command History

Release	Modification
11.2	This command was introduced.

Examples

The following is sample output from the **show interfaces fastethernet** command on a Cisco 4500 series routers:

```
c4500-1# show interfaces fastethernet 0

Fast Ethernet0 is up, line protocol is up
  Hardware is DEC21140, address is 0000.0c0c.1111 (bia 0002.eaa3.5a60)
  Internet address is 10.0.0.1 255.0.0.0
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive not set, hdx, 100BaseTX
  ARP type: ARPA, ARP Timeout 4:00:00
  Last input never, output 0:00:16, output hang 0:28:01
  Last clearing of "show interface" counters 0:20:05
  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
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants
     0 input errors, 0 CRC, 0 frame, 0 overrun, 1786161921 ignored, 0 abort
     0 watchdog, 0 multicast
     0 input packets with dribble condition detected
     67 packets output, 8151 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets, 0 restarts
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier
     0 output buffer failures, 0 output buffers swapped out
```

The following is sample output from the **show interfaces fastethernet** command on a Cisco AS5300 access server:

```
as5300# show interface fastethernet 0
Fast Ethernet0 is up, line protocol is up
  Hardware is DEC21140AD, address is 00e0.1e3e.c179 (bia 00e0.1e3e.c179)
  Internet address is 10.17.30.4/16
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Half-duplex, 10Mb/s, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:00, output 00:00:03, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/120, 8 drops
  5 minute input rate 2000 bits/sec, 3 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     158773 packets input, 17362631 bytes, 4 no buffer
     Received 158781 broadcasts, 0 runts, 0 giants, 7 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     0 watchdog, 0 multicast
     0 input packets with dribble condition detected
     6299 packets output, 622530 bytes, 0 underruns
     1 output errors, 0 collisions, 3 interface resets
     0 babbles, 0 late collision, 0 deferred
     1 lost carrier, 1 no carrier
     0 output buffer failures, 0 output buffers swapped out
```

The following shows information specific to the first Fast Ethernet Interface Processor (FEIP) port in slot 0 on a Cisco 7500 series routers:

```
Router# show interface fastethernet 0/1

Fast Ethernet0/1 is administratively down, line protocol is down
  Hardware is cxBus Fast Ethernet, address is 0000.0c35.dc16 (bia 0000.0c35.dc16)
  Internet address is 10.1.0.64 255.255.0.0
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive not set, half-duplex, RJ45 (or MII)
  ARP type: ARPA, ARP Timeout 4:00:00
  Last input never, output 2:03:52, output hang never
  Last clearing of "show interface" counters never
  Output queue 0/40, 0 drops; input queue 0/75, 1 drops
  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 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     0 watchdog, 0 multicast
     0 input packets with dribble condition detected
```

```
5 packets output, 805 bytes, 0 underruns

0 output errors, 0 collisions, 4 interface resets, 0 restarts
0 babbles, 0 late collision, 0 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out
```

Table 41 describes the fields in these displays.

Table 41 show interfaces fastethernet Field Descriptions—FEIP

Field	Description
Fast Ethernet0 is ... is up ...is administratively down	Indicates whether the interface hardware is currently active and if it has been taken down by an administrator.
line protocol is	Indicates whether the software processes that handle the line protocol consider the line usable or if it has been taken down by an administrator.
Hardware	Hardware type (for example, MCI Ethernet, SCI, cBus Ethernet) and address.
Internet address	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.
Encapsulation	Encapsulation method assigned to interface.
ARP type:	Type of Address Resolution Protocol assigned.
loopback	Indicates whether loopback is set or not.
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 the interface. 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 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 41 show interfaces fastethernet Field Descriptions—FEIP (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, 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. If the interface is not in promiscuous mode, it senses network traffic it sends and receives (rather than all network traffic). 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 Ethernets 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. For instance, any Ethernet packet that is less than 64 bytes is considered a runt.
giants	Number of packets that are discarded because they exceed the maximum packet size of the medium. For example, any Ethernet packet that is greater than 1518 bytes is considered a giant.
input errors	Includes runts, giants, no buffer, CRC, frame, overrun, and ignored counts. Other input-related errors can also cause the input errors count to be increased, and some datagrams may have more than one error; therefore, this sum may not balance with the sum of enumerated input error 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.

Table 41 show interfaces fastethernet Field Descriptions—FEIP (continued)

Field	Description
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets. On a LAN, this is usually the result of collisions or a malfunctioning Ethernet device.
overrun	Number of times the 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.
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	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 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. 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. 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 a Type 2 Ethernet controller was restarted because of errors.
babbles	The transmit jabber timer expired.

Table 41 show interfaces fastethernet Field Descriptions—FEIP (continued)

Field	Description
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.
output buffer failures	Number of failed buffers and number of buffers swapped out.

The following example of the **show interfaces fastethernet** command shows all the information specific to the first PA-12E/2FE interface port (interface port 0) in port adapter slot 3:

```
Router# show interfaces fastethernet 3/0

Fast Ethernet3/0 is up, line protocol is up
  Hardware is TSWITCH, address is 00e0.f7a4.5130 (bia 00e0.f7a4.5130)
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  Half-duplex, 100BaseTX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:05:30, output 00:00:00, 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
     312 packets input, 18370 bytes, 0 no buffer
     Received 216 broadcasts, 0 runts, 0 giants, 0 throttles
     3 input errors, 0 CRC, 0 frame, 0 overrun, 3 ignored, 0 abort
     0 input packets with dribble condition detected
     15490 packets output, 1555780 bytes, 0 underruns
     2 output errors, 0 collisions, 2 interface resets
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier
     2 output buffer failures, 0 output buffers swapped out
```

Table 42 describes the fields in this displays.

Table 42 show interfaces fastethernet Field Descriptions—PA-12E/2FE

Field	Description
Fast Ethernet0 is... is up ...is administratively down	Indicates whether the interface hardware is currently active and if it has been taken down by an administrator.
line protocol is	Indicates whether the software processes that handle the line protocol consider the line usable or if it has been taken down by an administrator.
Hardware	Hardware type (for example, MCI Ethernet, SCI, cBus Ethernet) and address.
Internet address	Internet address followed by subnet mask.

Table 42 show interfaces fastethernet Field Descriptions—PA-12E/2FE (continued)

Field	Description
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.
ARP type:	Type of Address Resolution Protocol assigned.
loopback	Indicates whether loopback is set or not.
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 the interface. 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 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, 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 42 show interfaces fastethernet Field Descriptions—PA-12E/2FE (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. If the interface is not in promiscuous mode, it senses network traffic it sends and receives (rather than all network traffic). 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 Ethernets 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. For instance, any Ethernet packet that is less than 64 bytes is considered a runt.
giants	Number of packets that are discarded because they exceed the maximum packet size of the medium. For example, any Ethernet packet that is greater than 1518 bytes is considered a giant.
throttles	Number of times the receiver on the port was disabled, possibly because of buffer or processor overload.
input errors	Includes runts, giants, no buffer, CRC, frame, overrun, and ignored counts. Other input-related errors can also cause the input errors count to be increased, and some datagrams may have more than one error; therefore, this sum may not balance with the sum of enumerated input error 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.
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets. On a LAN, this is usually the result of collisions or a malfunctioning Ethernet device.
overrun	Number of times the 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 42 show interfaces fastethernet Field Descriptions—PA-12E/2FE (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	Number of packets whose receipt was aborted.
input packets with dribble condition detected	Dribble bit error indicates that a frame is slightly too long. This frame error counter is incremented for informational purposes; the router accepts the frame.
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 transmitter has been running faster than the router 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. 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. 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.
babbles	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.

show interfaces fddi

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

show interfaces fddi *number* [**accounting**]

Cisco 7000 and 7200 Series

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

Cisco 7500 Series

show interfaces fddi [*slot*/*port-adapter*/*port*] [**accounting**]

Syntax Description

number	Port number on the selected interface.
accounting	(Optional) Displays the number of packets of each protocol type that have been sent through the interface.
slot	(Optional) Number of the slot being configured. Refer to the appropriate hardware manual for slot and port information.
port	(Optional) Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.
port-adapter	(Optional) Number of the port adapter being configured. Refer to the appropriate hardware manual for information about port adapter compatibility.

Command Modes

EXEC

Command History

Release	Modification
10.0	This command was introduced.
11.3	This command was modified to include support for FDDI full-duplex, single- and multimode port adapters (PA-F/FD-SM and PA-F/FD-MM).

Examples

The following is a sample partial display of FDDI-specific data from the **show interfaces fddi** command on a Cisco 7500 series router:

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

Fddi3/0/0 is up, line protocol is up
  Hardware is cxBus Fddi, address is 0000.0c02.adf1 (bia 0000.0c02.adf1)
  Internet address is 131.108.33.14, subnet mask is 255.255.255.0
  MTU 4470 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255
  Encapsulation SNAP, loopback not set, keepalive not set
  ARP type: SNAP, ARP Timeout 4:00:00
  Phy-A state is active, neighbor is   B, cmt signal bits 008/20C, status ILS
  Phy-B state is active, neighbor is   A, cmt signal bits 20C/008, status ILS
  ECM is in, CFM is thru, RMT is ring_op
  Token rotation 5000 usec, ring operational 21:32:34
```

```
  Upstream neighbor 0000.0c02.ba83, downstream neighbor 0000.0c02.ba83
  Last input 0:00:05, output 0:00:00, output hang never
  Last clearing of "show interface" counters 0:59:10
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 69000 bits/sec, 44 packets/sec
  Five minute output rate 0 bits/sec, 1 packets/sec
     113157 packets input, 21622582 bytes, 0 no buffer
     Received 276 broadcasts, 0 runts, 0 giants
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     4740 packets output, 487346 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets, 0 restarts
     0 transitions, 2 traces, 3 claims, 2 beacons
```

The following is sample output from the **show interfaces fddi** command for the full-duplex FDDI port adapter on a Cisco 7500 series router:

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

Fddi0/1/0 is up, line protocol is up
  Hardware is cxBus FDDI, address is 0060.3e33.3608 (bia 0060.3e33.3608)
  Internet address is 10.1.1.1/24
  MTU 4470 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255
  Encapsulation SNAP, loopback not set, keepalive not set
  ARP type: SNAP, ARP Timeout 04:00:00
  FDX supported, FDX enabled, FDX state is operation
  Phy-A state is maintenance, neighbor is Unknown, status HLS
  Phy-B state is active, neighbor is A, status SILS
  ECM is in, CFM is c_wrap_b, RMT is ring_op,
  Requested token rotation 5000 usec, negotiated 4997 usec
  Configured tvx is 2500 usec
  LER for PortA = 0A, LER for PortB = 0A ring operational 00:02:45
  Upstream neighbor 0060.3e73.4600, downstream neighbor 0060.3e73.4600
  Last input 00:00:12, output 00:00:13, 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
     62 packets input, 6024 bytes, 0 no buffer
     Received 18 broadcasts, 0 runts, 0 giants
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     71 packets output, 4961 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 output buffer failures, 0 output buffers swapped out
     3 transitions, 0 traces, 100 claims, 0 beacon
```

Table 43 describes the fields shown in the display.

Table 43 show interfaces fddi Field Descriptions

Field	Description
Fddi is {up | down | administratively down	Gives the interface processor unit number and tells whether the interface hardware is currently active and can transmit and receive or if it has been taken down by an administrator.
line protocol is {up | down}	Indicates whether the software processes that handle the line protocol consider the interface usable.
Hardware	Provides the hardware type, followed by the hardware address.
Internet address	IP address, followed by subnet mask.
MTU	Maximum transmission unit of the interface.

Table 43 show interfaces fddi Field Descriptions (continued)

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 or not loopback is set.
keepalive	Indicates whether or not keepalives are set.
ARP type	Type of Address Resolution Protocol assigned.
FDX	Displays full-duplex information. Values are: not supported or supported. When the value is supported, the display indicates whether full-duplex is enabled or disabled. When enabled, the state of the FDX negotiation process is displayed. The negotiation states only relate to the full-duplex negotiation process. You must also ensure that the interface is up and working by looking at other fields in the **show interfaces fddi** command such as line protocol and RMT. Negotiation states are: • idle—Interface is working but not in full-duplex mode yet. If persistent, it could mean that the interface did not meet all negotiation conditions (for example, there are more than two stations in the ring). • request—Interface is working but not in full-duplex mode yet. If persistent, it could mean that the remote interface does not support full-duplex or full-duplex is not enabled on the interface. • confirm—Transient state. • operation—Negotiations completed successfully, and both stations are operating in full-duplex mode.
Phy-{A | B}	Lists the state the Physical A or Physical B connection is in; one of the following: off, active, trace, connect, next, signal, join, verify, or break.

Table 43 show interfaces fddi Field Descriptions (continued)

Field	Description
neighbor	State of the neighbor: • A—Indicates that the connection management (CMT) process has established a connection with its neighbor. The bits received during the CMT signaling process indicate that the neighbor is a Physical A type dual attachment station (DAS) or concentrator that attaches to the primary ring IN and the secondary ring OUT when attaching to the dual ring. • S—Indicates that the CMT process has established a connection with its neighbor and that the bits received during the CMT signaling process indicate that the neighbor is one Physical type in a single attachment station (SAS). • B—Indicates that the CMT process has established a connection with its neighbor and that the bits received during the CMT signaling process indicate that the neighbor is a Physical B dual attachment station or concentrator that attaches to the secondary ring IN and the primary ring OUT when attaching to the dual ring. • M—Indicates that the CMT process has established a connection with its neighbor and that the bits received during the CMT signaling process indicate that the router's neighbor is a Physical M-type concentrator serving as a Master to a connected station or concentrator. • unk—Indicates that the network server has not completed the CMT process and, as a result, does not know about its neighbor. See the section "Setting Bit Control" for an explanation of the bit patterns.
cmt signal bits	Shows the transmitted/received CMT bits. The transmitted bits are 0x008 for a Physical A type and 0x20C for Physical B type. The number after the slash (/) is the received signal bits. If the connection is not active, the received bits are zero (0); see the line beginning Phy-B in the display. This applies to FIP interfaces only.

Table 43 show interfaces fddi Field Descriptions (continued)

Field	Description
status	Status value displayed is the actual status on the fiber. The FDDI standard defines the following values: • LSU—Line State Unknown, the criteria for entering or remaining in any other line state have not been met. • NLS—Noise Line State is entered upon the occurrence of 16 potential noise events without satisfying the criteria for entry into another line state. • MLS—Master Line State is entered upon the receipt of eight or nine consecutive HQ or QH symbol pairs. • ILS—Idle Line State is entered upon receipt of four or five idle symbols. • HLS—Halt Line State is entered upon the receipt of 16 or 17 consecutive H symbols. • QLS—Quiet Line State is entered upon the receipt of 16 or 17 consecutive Q symbols or when carrier detect goes low. • ALS—Active Line State is entered upon receipt of a JK symbol pair when carrier detect is high. • OVUF—Elasticity buffer Overflow/Underflow. The normal states for a connected Physical type are ILS or ALS. If the report displays the QLS status, this indicates that the fiber is disconnected from Physical B, or that it is not connected to another Physical type, or that the other station is not running.
ECM is...	ECM is the SMT entity coordination management, which overlooks the operation of CFM and PCM. The ECM state can be one of the following: • out—Router is isolated from the network. • in—Router is actively connected to the network. This is the normal state for a connected router. • trace—Router is trying to localize a stuck beacon condition. • leave—Router is allowing time for all the connections to break before leaving the network. • path_test—Router is testing its internal paths. • insert—Router is allowing time for the optical bypass to insert. • check—Router is making sure optical bypasses switched correctly. • deinsert—Router is allowing time for the optical bypass to deinsert.

Table 43 show interfaces fddi Field Descriptions (continued)

Field	Description
CFM is...	Contains information about the current state of the MAC connection. The Configuration Management state can be one of the following: • isolated—MAC is not attached to any Physical type. • wrap_a—MAC is attached to Physical A. Data is received on Physical A and transmitted on Physical A. • wrap_b—MAC is attached to Physical B. Data is received on Physical B and transmitted on Physical B. • wrap_s—MAC is attached to Physical S. Data is received on Physical S and transmitted on Physical S. This is the normal mode for a single attachment station (SAS). • thru—MAC is attached to Physical A and B. Data is received on Physical A and transmitted on Physical B. This is the normal mode for a dual attachment station (DAS) with one MAC. The ring has been operational for 1 minute and 42 seconds.
RMT is...	RMT (Ring Management) is the SMT MAC-related state machine. The RMT state can be one of the following: • isolated—MAC is not trying to participate in the ring. This is the initial state. • non_op—MAC is participating in ring recovery, and ring is not operational. • ring_op—MAC is participating in an operational ring. This is the normal state while the MAC is connected to the ring. • detect—Ring has been nonoperational for longer than normal. Duplicate address conditions are being checked. • non_op_dup—Indications have been received that the address of the MAC is a duplicate of another MAC on the ring. Ring is not operational. • ring_op_dup—Indications have been received that the address of the MAC is a duplicate of another MAC on the ring. Ring is operational in this state. • directed—MAC is sending beacon frames notifying the ring of the stuck condition. • trace—Trace has been initiated by this MAC, and the RMT state machine is waiting for its completion before starting an internal path test.
token rotation	Token rotation value is the default or configured rotation value as determined by the **fddi token-rotation-time** command. This value is used by all stations on the ring. The default is 5000 microseconds. For FDDI full-duplex, this indicates the value in use prior to entering full-duplex operation.
negotiated	Actual (negotiated) target token rotation time.

Table 43 show interfaces fddi Field Descriptions (continued)

Field	Description
ring operational	When the ring is operational, the displayed value will be the negotiated token rotation time of all stations on the ring. Operational times are displayed by the number of hours:minutes:seconds the ring has been up. If the ring is not operational, the message "ring not operational" is displayed.
Configured tvx	Transmission timer.
LER	Link error rate.
Upstream | downstream neighbor	Displays the canonical MAC address of outgoing upstream and downstream neighbors. If the address is unknown, the value will be the FDDI unknown address (0x00 00 f8 00 00 00).
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.
Queueing strategy	First-in, first-out queueing strategy (other queueing strategies you might see are priority-list, custom-list, and weighted fair).
Output queue, 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 five-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.

Table 43 show interfaces fddi Field Descriptions (continued)

bytes	Total number of bytes, including data and MAC encapsulation, in the error-free packets received by the system.
Field	**Description**
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 mediu.
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 collisions or a station transmitting bad data.
frame	Number of packets received incorrectly that have a CRC error and a noninteger number of octets. On a LAN, this is usually the result of collisions or a malfunctioning Ethernet device. On an FDDI LAN, this also can be the result of a failing fiber (cracks) or a hardware malfunction.
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 from 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	Total number of bytes, including data and MAC encapsulation, transmitted by the system.
underruns	Number of transmit aborts (when the router cannot feed the transmitter fast enough).
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, 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	Because an FDDI ring cannot have collisions, this statistic is always zero.
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 FDDI interfaces.
output buffer failures	Number of no resource errors received on the output.

Table 43 show interfaces fddi Field Descriptions (continued)

output buffers swapped out	Number of packets swapped to DRAM.
Field	**Description**
transitions	The number of times the ring made a transition from ring operational to ring nonoperational, or vice versa. A large number of transitions indicates a problem with the ring or the interface.
traces	Trace count applies to both the FCI, FCIT, and FIP. Indicates the number of times this interface started a trace.
claims	Pertains to FCIT and FIP only. Indicates the number of times this interface has been in claim state.
beacons	Pertains to FCIT and FIP only. Indicates the number of times the interface has been in beacon state.

The following is sample output that includes the **accounting** option. When you use the **accounting** option, only the accounting statistics are displayed.

```
Router# show interfaces fddi 3/0 accounting

Fddi3/0
       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 44 describes the fields shown in the display.

Table 44 show interfaces fddi 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.

show interfaces gigabitethernet

To check the status and configuration settings of the Gigabit Ethernet interface of the Cisco 7200-I/O-GE+E, use the **show interfaces gigabitethernet** command in privileged EXEC mode.

show interfaces gigabitethernet *slot/port*

Syntax Description

slot	Slot number on the interface.
port	Port number on the interface.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.1 CC	This command was introduced.
12.1(3a)E	Support for the Cisco 7200-I/O-GE+E controller was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.

Usage Guidelines

This command is used on the Cisco 7200-I/O-GE+E to display the configuration status of the Gigabit Ethernet interface. Slot 0 is always reserved for the Gigabit Ethernet port on the I/O controller.

Examples

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

```
Router# show interfaces gigabitethernet 0/0

GigabitEthernet0/0 is up, line protocol is up
   Hardware is 82543 (Livengood), address is 00d0.ffb6.4c00 (bia 00d0.ffb6.4c00)
   Internet address is 10.1.1.3/8
   MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
      reliability 255/255, txload 1/255, rxload 1/255
   Encapsulation ARPA, loopback not set
   Keepalive set (10 sec)
   Full-duplex mode, link type is autonegotiation, media type is SX
   output flow-control is on, input flow-control is on
   ARP type:ARPA, ARP Timeout 04:00:00
   Last input 00:00:04, output 00:00:03, 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
      2252 packets input, 135120 bytes, 0 no buffer
      Received 2252 broadcasts, 0 runts, 0 giants, 0 throttles
      0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
      0 watchdog, 0 multicast, 0 pause input
      0 input packets with dribble condition detected
      2631 packets output, 268395 bytes, 0 underruns
      0 output errors, 0 collisions, 2 interface resets
      0 babbles, 0 late collision, 0 deferred
      0 lost carrier, 0 no carrier, 0 pause output
      0 output buffer failures, 0 output buffers swapped out
```

Related Commands

Command	Description
show controllers gigabitethernet	Displays initialization block information, transmit ring, receive ring, and errors for the interface controllers for the Gigabit Ethernet interface of the Cisco 7200-I/O-GE+E.

show interfaces hssi

To display information about the high-speed serial interface (HSSI), use the **show interfaces hssi** command in privileged EXEC mode.

show interfaces hssi *unit* [**accounting**]

Cisco 7500 Series

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

Syntax Description

unit	Must match a port number on the selected interface.
accounting	(Optional) Displays the number of packets of each protocol type that have been sent through the interface.
slot	(Optional) Number of the slot being configured. Refer to the appropriate hardware manual for slot and port information.
port	(Optional) Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.

Command Modes

Privileged EXEC

Command History

Release	Modification
10.0	This command was introduced.

Examples

The following is sample output from the **show interfaces hssi** command when HSSI is enabled:

```
Router# show interfaces hssi 0

HSSI 0 is up, line protocol is up
Hardware is cBus HSSI
Internet address is 131.136.67.190, subnet mask is 255.255.255.0
MTU 4470 bytes, BW 45045 Kbit, DLY 20000 usec, rely 255/255, load 1/255
Encapsulation HDLC, loopback not set, keepalive set (10 sec)
Last input 0:00:03, 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
    0 packets input, 0 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants
              0 parity, 0 rx disabled
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
17 packets output, 994 bytes, 0 underruns
0 output errors, 0 applique, 4 interface resets, 0 restarts
2 carrier transitions
```

Table 45 describes significant fields shown in the display.

Table 45 show interfaces hssi Field Descriptions

Field	Description
HSSI is {up | down | administratively down}	Indicates whether the interface hardware is currently active (whether carrier detect is present) and wshether it has been taken down by an administrator. “Disabled” indicate that the router has received over 5000 errors in a keepalive interval, which is 10 seconds by default.
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	Specifies the hardware type.
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.
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.

Table 45 show interfaces hssi Field Descriptions (continued)

Field	Description
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.
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 sizeof the medium.
parity	Report of the parity errors on the HSSI.
rx disabled	Indicates that the HSSI could not find a free buffer on the ciscoBus controller to reserve for use for the HSSI receiver. When this happens, the HSSI shuts down its receiver and waits until a buffer is available. Data is not lost unless a packet comes in and overflows the HSSI FIFO. Usually, the receive disables are frequent but do not last for long, and the number of dropped packets is less than the count in the "rx disabled" field. A receive disabled condition can happen in systems that are under heavy traffic load and that have shorter packets. In this situation, the number of buffers available on the ciscoBus controller is at a premium. One way to alleviate this problem is to reduce the MTU on the HSSI interface from 4500 (FDDI size) to 1500 (Ethernet size). Doing so allows the software to take the fixed memory of the ciscoBus controller and divide it into a larger number of smaller buffers, rather than a small number of large buffers. Receive disables are not errors, so they are not included in any error counts.
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.

Table 45 show interfaces hssi Field Descriptions (continued)

Field	Description
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 ability of the receiver 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.
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 receiver can handle.
congestion drop	Number of messages discarded because the output queue on an interface grew too long. This can happen on a slow, congested serial link.
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, 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.
applique	Indicates that an unrecoverable error has occurred on the HSA applique. The system then invokes an interface reset.
interface resets	Number of times that 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.

Table 45 show interfaces hssi Field Descriptions (continued)

Field	Description
restarts	Number of times that the controller was restarted because of errors.
carrier transitions	Number of times that the carrier detect signal of the interface has changed state. Indicates modem or line problems if the carrier detect line is changing state often.
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.

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

```
Router# show interfaces hssi 1/0

Hssi1/0 is up, line protocol is up
  Hardware is cxBus HSSI
  Internet address is 131.108.38.14, subnet mask is 255.255.255.0
  MTU 1500 bytes, BW 45045 Kbit, DLY 1000000 usec, rely 255/255, load 1/255
  Encapsulation HDLC, loopback not set, keepalive set (10 sec)
  Last input 0:00:00, output 0:00:08, 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 1000 bits/sec, 2 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
     630573548 packets input, 2077237628 bytes, 0 no buffer
     Received 2832063 broadcasts, 0 runts, 0 giants
              0 parity, 1970 rx disabled
     113 input errors, 20 CRC, 93 frame, 0 overrun, 0 ignored, 0 abort
     629721628 packets output, 1934313295 bytes, 0 underruns
     0 output errors, 0 applique, 62 interface resets, 0 restarts
     309 carrier transitions
```

The following is sample output from the **show interfaces hssi** command with the **accounting** option on a Cisco 7500 series routers:

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

HIP1/0
       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 lex

To display statistics about a LAN Extender interface, use the **show interfaces lex** command in EXEC mode.

show interfaces lex *number* [**ethernet** | **serial**]

Syntax Description

number	Number of the LAN Extender interface that resides on the core router about which to display statistics.
ethernet	(Optional) Displays statistics about the Ethernet interface that resides on the LAN Extender chassis.
serial	(Optional) Displays statistics about the serial interface that resides on the LAN Extender chassis.

Command Modes

EXEC

Command History

Release	Modification
10.3	This command was introduced.

Usage Guidelines

To display statistics about the LAN Extender interface on the core router, use the **show interfaces lex** command without any keywords.

Administratively, the physical serial interface that connects the core router to the LAN Extender is completely hidden. The **show interfaces serial** command will show only that the serial interface is present. However, it will not report any statistics about the traffic passing over the physical line. All statistics are report by the **show interfaces lex** command.

Examples

The following is sample output from the **show interfaces lex** command, showing the LAN Extender interface on the host router. Note the “Bound to ...” field, which is displayed only on a LAN Extender interface.

```
Router# show interfaces lex 0

Lex0 is up, line protocol is up
  Hardware is Lan Extender, address is 0204.0301.1526 (bia 0000.0000.0000)
  MTU 1500 bytes, BW 10000 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set
  ARP type: ARPA, ARP Timeout 4:00:00
  Bound to Serial3
  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 1000 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
     1022 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
     2070 packets output, 23663 bytes, 0 underruns
```

```
     0 output errors, 0 collisions, 0 interface resets, 0 restarts
```

The following is sample output from the **show interfaces lex** command when you specify the **ethernet** keyword:

```
Router# show interfaces lex 0 ethernet

Lex0-Ethernet0 is up, line protocol is up
  Hardware is LAN-Extender, address is 0000.0c01.1526 (bia 0000.0c01.1526)
  Last input 6w3d, output 6w3d
  Last clearing of "show interface" counters 0:02:30
  Output queue 40/50, 60 drops; input queue 10/40, 2 drops
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
     3916 packets input, 960303 bytes, 3 no buffer
     Received 2 broadcasts, 3 runts, 3 giants
     2 input errors, 1 CRC, 1 frame, 1 overrun, 3 ignored, 2 abort
     2500 packets output, 128288 bytes, 1 underruns
     1 output errors, 1 collisions, 0 interface resets, 0 restarts
```

The following is sample output from the **show interfaces lex** command when you specify the **serial** keyword:

```
Router# show interfaces lex 0 serial

Lex0-Serial0 is up, line protocol is up
  Hardware is LAN-Extender
  Last input 6w3d, output 6w3d
  Last clearing of "show interface" counters 0:03:05
  Input queue: 5/15/4 (size/max/drops); Total output drops: 450
  Output queue: high 25/35/90, medium 70/80/180, normal 40/50/120, low 10/20/60
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
     1939 packets input, 30998 bytes, 6 no buffer
     Received 4 broadcasts, 6 runts, 6 giants
     4 input errors, 2 CRC, 2 frame, 2 overrun, 6 ignored, 4 abort
     1939 packets output, 219535 bytes, 2 underruns
     2 output errors, 2 collisions, 0 interface resets, 0 restarts
     2 carrier transitions
```

Table 46 describes the fields shown in the preceding displays.

Table 46 show interfaces lex Field Descriptions

Field	Description
Lex0 is up, line protocol is up	Indicates whether the logical LAN Extender interface on the core router is currently active (that is, whether carrier detect is present), inactive, or has been taken down by an administrator.
Lex0-Ethernet0 is up, line protocol is up Lex0-Serial0 is up, line protocol is up	Indicates whether the physical Ethernet and serial interfaces on the LAN Extender chassis are currently active (that is, whether carrier detect is present) and whether it has been taken down by an administrator.
Hardware is LAN-Extender	Hardware type of the interfaces on the LAN Extender.
address is ...	Logical MAC address of the interface.
bia	Burned-in MAC address of the interface. The LAN Extender interface does not have a burned in address; hence it appears as all zeroes.

Table 46 show interfaces lex Field Descriptions (continued)

Field	Description
MTU	Maximum transmission unit size of the interface.
BW	Value of the bandwidth parameter that has been configured for the interface (in kilobits per second). The bandwidth parameter is used to compute IGRP metrics only. If the interface is attached to a serial line with a line speed that does not match the default (1536 or 1544 for T1 and 56 for a standard synchronous serial line), use the **bandwidth** 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.
ARP type	Type of Address Resolution Protocol assigned.
ARP Timeout	Number of hours, minutes, and seconds an ARP cache entry will stay in the cache.
Bound to ...	Number of the serial interface to which the logical LAN Extender interface is bound.
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 (or never) 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 of "show interface" counters	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 46 show interfaces lex 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	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.
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.
input packets with dribble condition detected	Does not apply to a LAN Extender interface.
packets output	Total number of messages transmitted by the system.

Table 46 show interfaces lex Field Descriptions (continued)

Field	Description
bytes	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 being examined. Note that this might 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 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.

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

number	(Optional) Port number on the selected interface.
accounting	(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 47 describes significant fields shown in the displays.

Table 47 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 47 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 theminimum 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 47 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 EXEC mode.

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

Syntax Description

channel-number	(Optional) Port channel number. Range is 1 to 4.

Command Modes

EXEC

Command History

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-channel1 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 48 describes significant fields shown in the display.

Table 48 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 **bandwidth** 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 48 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 48 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 48 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
interface multilink	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 EXEC mode.

Cisco 7000 and 7500 Series with VIPs

show interfaces pos [*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.
port-adapter	(Optional) Number of the port adapter being configured. Refer to the appropriate hardware manual for information about port adapter compatibility.
port	(Optional) Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.

Command Modes

EXEC

Command History

Release	Modification
11.2	The **show interface posi** command was introduced.
11.3	The name of the command was modified **show interface posi** to **show interfaces pos** 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 49 describes the significant fields shown in the display.

Table 49 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 **bandwidth** 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 22^{31} ms (and less than 2^{32} ms) ago.

Table 49 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 49 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
interface	Configures an interface type and enters interface configuration mode.

show interfaces posi

The **show interfaces posi** command is replaced by the **show interfaces pos** command. See the description of the **show interfaces pos** command for more information.

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

number	(Optional) Number of the port being displayed.
:*channel-group*	(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 **channel-group** controller configuration command.
accounting	(Optional) Displays the number of packets of each protocol type that have been sent through the interface.
slot	(Optional) Number of the slot being displayed. Refer to the appropriate hardware manual for slot and port information.
/*port*	(Optional) Number of the port being displayed. Refer to the appropriate hardware manual for slot and port information.
/*port-adapter*	(Optional) Number of the port adapter being displayed. Refer to the appropriate hardware manual for information about port adapter compatibility.

:*t1-channel*	(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.
crb	(Optional) Displays interface routing and bridging information.
dial-shelf	Dial shelf chassis in the Cisco AS5800 access server that contains the CT3 interface card.
slot	Location of the CT3 interface card in the dial shelf chassis.
t3-port	T3 port number. The only valid value is 0.
:*t1-num*	T1 time slot in the T3 line. The value can be from 1 to 28.
:*chan-group*	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 50 describes significant fields shown in the display.

Table 50 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 **bandwidth** 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 50 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 50 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 51 describes significant fields shown in the display that are different from the fields described in Table 50 on page 429.

Table 51 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 51 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 52 describes significant fields shown in the display that are different from the fields described in Table 50 on page 429.

Table 52 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 52 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 53 describes significant fields shown in the display that are different from the fields described in Table 50 on page 429.

Table 53 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 53 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 54 describes significant fields relevant to the CT3IP shown in the display that are different from the fields described in Table 50 on page 429.

Table 54 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 50 on page 429 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 50 on page 429 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 50 on page 429 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 Queueing and Fragmentation at the Interface

The following is sample output from the **show interfaces serial** command when low-latency queueing 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 55 describes significant fields shown in the display that are different from the fields described in Table 50 on page 429.

Table 55 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 recvd	Number of Frame Relay status request messages received.
LMI upd recvd	Number of single PVC asynchronous status messages received.
DTE LMI up	LMI peers are synchronized.
LMI enq recvd	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 55 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 56 describes the few differences that exist.

Table 56 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 57 shows the fields relevant to all LAPB connections.

Table 57 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 58 show the fields relevant to PPP connections.

Table 58 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 59 shows the fields relevant to all SDLC connections.

Table 59 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 60 shows other data given for each SDLC secondary interface configured to be attached to the serial interface.

Table 60 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: • DISCONNECT—No communication is being attempted to this secondary. • CONNECT—A normal connect state exists between this router and this secondary. • DISCSENT—This router has sent a disconnect request to this secondary and is awaiting its response. • SNRMSENT—This router has sent a connect request (SNRM) to this secondary and is awaiting its response. • THEMBUSY—This secondary has told this router that it is temporarily unable to receive any more information frames. • USBUSY—This router has told this secondary that it is temporarily unable to receive any more information frames. • BOTHBUSY—Both sides have told each other that they are temporarily unable to receive any more information frames. • ERROR—This router has detected an error and is waiting for a response from the secondary acknowledging this.
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 *round robin loop* 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 61 shows the parameters specific to SDLLC.

Table 61 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 **sdllc traddr** 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 62 describes significant fields shown in the display.

Table 62 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: • R1 is the normal ready state. • R2 is the DTE restarting state. • R3 is the DCE restarting state. 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 **x25 facility** 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 **x25 facility** 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: • T10 through T13 for a DCE device • T20 through T23 for a DTE device

Table 62 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 63 describes the fields shown in the display.

Table 63 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 64 describes the significant fields shown in the display that are different from the fields described in Table 50 on page 429.

Table 64 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 64 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
show controllers serial	Displays information about the virtual serial interface.

show interfaces summary

To display a summary of statistics for all interfaces that are configured on a networking device, use the **show interfaces summary** command in privileged EXEC mode.

show interfaces summary

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2	This command was introduced.

Examples

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

```
Router# show interfaces summary

 *: interface is up
 IHQ: pkts in input hold queue     IQD: pkts dropped from input queue
 OHQ: pkts in output hold queue    OQD: pkts dropped from output queue
 RXBS: rx rate (bits/sec)          RXPS: rx rate (pkts/sec)
 TXBS: tx rate (bits/sec)          TXPS: tx rate (pkts/sec)
 TRTL: throttle count

  Interface          IHQ   IQD  OHQ   OQD  RXBS RXPS  TXBS TXPS  TRTL
------------------------------------------------------------------------
* FastEthernet0/0       0     0    0     0     0    0     0    0   0
  Serial0/0             0     0    0     0     0    0     0    0   0
  FastEthernet0/1       0     0    0     0     0    0     0    0   0
  Serial0/1             0     0    0     0     0    0     0    0   0
NOTE:No separate counters are maintained for subinterfaces
   Hence Details of subinterface are not shown.
```

Related Commands

Command	Description
show interfaces	Displays the statistical information specific to interfaces.
show interfaces atm	Displays information about the ATM interfaces.
show interfaces ethernet	Displays information about the Ethernet interfaces.
show interfaces fastethernet	Displays information about the Fast Ethernet interfaces.
show interfaces serial	Displays information about the serial interfaces.

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

unit	Must match the interface port line number.
accounting	(Optional) Displays the number of packets of each protocol type that have been sent through the interface.
slot	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.
port	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.
port-adapter	(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 65 describes the significant fields shown in the displays.

Table 65 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 65 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 65 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 mediummaximum 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 65 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

number	Port line number.
accounting	(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 66 describes significant fields shown in the display.

Table 66 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 **tunnel mode** 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 66 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 them 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 66 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
show interfaces	Displays the statistical information specific to a serial interface.
show ip route	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 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.
port	(Optional) Number of the port being configured. Refer to the appropriate hardware manual for slot and port information.
port-adapter	(Optional) Number of the port adapter being configured. Refer to the appropriate hardware manual for information about port adapter compatibility.

Command Modes

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 67 describes significant fields shown in the display.

Table 67 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 **bandwidth** 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 67 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 67 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
interface vg-anylan	Specifies the interface on a 100VG-AnyLAN port adapter and enters interface configuration mode on Cisco 7200 series routers and Cisco 7500 series routers.