

show interfaces bri

To display information about the BRI D channel or about one or more B channels, use the **show interfaces bri** command in privileged EXEC mode.

```
show interfaces bri number[:bchannel] | [first] [last]] [accounting]
```

Cisco 7200 series router

```
show interfaces bri slot/port
```

Syntax Description

<i>number</i>	Interface number. The value is 0 through 7 if the router has one 8-port BRI NIM, or 0 through 15 if the router has two 8-port BRI NIMs. Interface number values will vary, depending on the hardware platform used. The Cisco 3600 series router for example, can have up to 48 interfaces. Specifying just the number will display the D channel for that BRI interface.
<i>slot/port</i>	On the Cisco 7200 series, slot location and port number of the interface.
<i>:bchannel</i>	(Optional) Colon (:) followed by a specific B channel number.
<i>first</i>	(Optional) Specifies the first of the B channels; the value can be either 1 or 2.
<i>last</i>	(Optional) Specifies the last of the B channels; the value can only be 2, indicating B channels 1 and 2.
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
10.3	This command was introduced.
11.2P	This command was modified to include slot/port syntax for the PA-8B-ST and PA-4B-U port adapters on Cisco 7200 series routers.

Usage Guidelines

Use either the *:bchannel-number* argument or the *first* or *last* arguments to display information about specified B channels.

Use the **show interfaces bri number** form of the command (without the optional *:bchannel*, or *first* and *last* arguments) to obtain D channel information.

Use the command syntax sample combinations in Table 52 to display the associated output.

Table 52 Sample show interfaces bri Command step Combinations

Command Syntax	Displays
show interfaces	All interfaces in the router
show interfaces bri 2	Channel D for BRI interface 2

Table 22 Sample show interfaces bri Command step Combinations (continued)

Command Syntax	Displays
show interfaces bri 2:1	Channel B1 on BRI interface 2
show interfaces bri 2:2	Channel B2 on BRI interface 2
show interfaces bri 4 1	Channel B1 on BRI interface 4
show interfaces bri 4 2	Channel B2 on BRI interface 4
show interfaces bri 4 1 2	Channels B1 and B2 on BRI interface 4
show interfaces bri	Error message: "% Incomplete command."

Examples

The following is an output example from the **show interfaces bri** command:

```
Router# show interfaces bri 0:1

BRI0:1 is down, line protocol is down
  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
  LCP Closed
  Closed: IPCP
  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, 7 interface resets
    0 output buffer failures, 0 output buffers swapped out
    0 carrier transitions
```

The following is an output example from the **show interfaces bri** command on a Cisco 7200 series router:

```
Router# show interfaces bri 2/0

BRI2/0 is up, line protocol is up (spoofing)
  Hardware is BRI
  Internet address is 11.1.1.3/27
  MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation PPP, loopback not set
  Last input 00:00:01, output 00:00:01, output hang never
  Last clearing of "show interface" counters never
  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 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    609 packets input, 2526 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    615 packets output, 2596 bytes, 0 underruns
    0 output errors, 0 collisions, 5 interface resets
    0 output buffer failures, 0 output buffers swapped out
    3 carrier transitions
```

Table 53 describes the fields shown in the display.

Table 53 *show interfaces bri Field Descriptions*

Field	Description
BRI... is {up down administratively down}	Indicates whether the interface hardware is currently active (whether line signal is present) and if it 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 is	Hardware type.
Internet address is	IP address and subnet mask, followed by packet size.
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 or not.
keepalive	Indicates whether keepalives are set or not.

Table 53 *show interfaces bri Field Descriptions (continued)*

Field	Description
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface. Useful for knowing when a nonfunctioning interface failed.
output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by an interface.
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 due to 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	Total number of bytes, including data and media access control (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 medium’s minimum packet size.
giants	Number of packets that are discarded because they exceed the medium’s maximum packet size.
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 this sum may 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 increase the ignored count.

Table 53 *show interfaces bri Field Descriptions (continued)*

Field	Description
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 sent by the system.
bytes	Total number of bytes, including data and MAC encapsulation, sent 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, 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.
collisions	Number of collisions. These can occur when you have several devices connected on a multiport line.
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 recognizes 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.
carrier transitions	Number of times the carrier detect signal of a serial interface has changed state. Check for modem or line problems if the carrier detect line is changing state often.

show interfaces serial bchannel

To display information about the physical attributes of the ISDN PRI over channelized E1 or channelized T1 B and D channels, use the **show interfaces serial bchannel** command in EXEC mode.

show interfaces serial *slot/port* **bchannel** *channel-number*

show interfaces serial *number* **bchannel** *channel-number*

Syntax Description

<i>slot/port</i>	Backplane slot number and port number on the interface. See your hardware installation manual for the specific slot and port numbers.
<i>number</i>	Network processor module (NPM) number, in the range 0 through 2.
<i>channel-number</i>	E1 channel number in the range 1 to 31 or T1 channel number in the range 1 to 23; 1-24 if using NFAS.

Command Modes

EXEC

Command History

Release	Modification
11.2F	This command was introduced.

show interfaces virtual-access

To display status, traffic data, and configuration information about a specified virtual access interface, use the **show interfaces virtual-access** command in EXEC mode.

show interfaces virtual-access *number* [**configuration**]

Syntax Description

<i>number</i>	Number of the virtual access interface.
configuration	(Optional) Restricts output to configuration information.

Command Modes

EXEC

Command History

Release	Modification
11.2F	This command was introduced.
11.3	The configuration keyword was added.

Usage Guidelines

To identify the number of the virtual terminal line on which the virtual access interface was created, enter the **show users** EXEC command included in this feature chapter.

Examples

The following is an output example from the **show interfaces virtual-access** command:

```
router# show interface virtual-access 2

Virtual-Access2 is up, line protocol is up
  Hardware is Virtual Access interface
  Interface is unnumbered. Using address of Ethernet0 (10.0.21.14)
  MTU 1500 bytes, BW 9 Kbit, DLY 100000 usec, rely 255/255, load 1/255
  Encapsulation PPP, loopback not set, keepalive not set
  DTR is pulsed for 0 seconds on reset
  LCP Open
  Open: IPCP
  Last input 00:00:06, output 00:00:05, output hang never
  Last clearing of "show interface" counters 00:14:58
  Input queue: 1/75/0 (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 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    4 packets input, 76 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    8 packets output, 330 bytes, 0 underruns
    0 output errors, 0 collisions, 0 interface resets
    0 output buffer failures, 0 output buffers swapped out
    0 carrier transitions
```

Table 54 describes the fields shown in the output example.

Table 54 *show interfaces virtual-access Field Descriptions*

Field	Description
Virtual-Access ... is {up down administratively down}	Indicates whether the interface is currently active (whether carrier detect is present), 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 think the line is usable (that is, whether keepalives are successful).
Hardware is Virtual Access interface	Type of interface. In this case, the interface is a dynamically created virtual access interface existing on a VTY line.
Internet address interface is unnumbered	IP address, or IP unnumbered for the line. If unnumbered, the output lists the interface and IP address to which the line is assigned (Ethernet0 at 10.0.21.14 in this example).
MTU	Maximum transmission unit for packets on the virtual access interface.
BW	Bandwidth of the virtual access interface in kilobits per second.
DLY	Delay of the virtual access interface in microseconds.
rely	Reliability of the virtual access interface as a fraction of 255 (255/255 is 100% reliability), calculated as an exponential average over five minutes.
load	Load on the virtual access interface as a fraction of 255 (255/255 is completely saturated), calculated as an exponential average over five minutes. The calculation uses the value from the bandwidth interface configuration command.
Encapsulation	Encapsulation method assigned to the virtual access interface.
loopback	Test in which signals are sent and then directed back toward the source at some point along the communication path. Used to test network interface usability.
keepalive	Interval set for keepalive packets on the interface. If keepalives have not been enabled, the message is "keepalive not set."
DTR	Data Terminal Ready. An RS232-C circuit that is activated to let the DCE know when the DTE is ready to send and receive data.
LCP open closed req sent	Link control protocol (for PPP only; not for SLIP). LCP must come to the open state before any useful traffic can cross the link.

Table 54 *show interfaces virtual-access Field Descriptions (continued)*

Field	Description
Open IPCP IPXCP ATCP	IPCP is IP control protocol for PPP, IPXCP is IPX control protocol for PPP, ATCP is AppleTalk control protocol for PPP. Network control protocols (NCPs) for the PPP suite. The NCP is negotiated after the LCP opens. The NCP must come into the open state before useful traffic can cross the link.
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by a virtual access interface. Useful for knowing when a dead interface failed.
output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by a virtual access interface.
output hang	Number of hours, minutes, and seconds (or never) since the virtual access 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.
Input queue, drops	Number of packets in input queues. Each number is followed by a slash, the maximum size of the queue, and the number of packets dropped due to a full queue.
Queueing strategy	Type of queueing selected to prioritize network traffic. The options are first-come-first-serve (FCFS) queueing, weighted fair queueing, priority queueing, and custom queueing.
Output queue	Number of packets in output queues. Each number is followed by a slash, the maximum size of the queue, and the number of packets dropped due to a full queue.
Conversations	Number of weighted fair queueing conversations.
Reserved Conversations	Number of reserved weighted fair queueing conversations. The example shows the number of allocated conversations divided by the number of maximum allocated conversations. In this case, there have been 0 reserved conversations.
Five minute input rate, Five minute output rate	Average number of bits and packets transmitted per second in the last five minutes.

Table 54 *show interfaces virtual-access Field Descriptions (continued)*

Field	Description
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.
broadcasts	Total number of broadcast or multicast packets received by the virtual access interface.
runts	Number of packets that are discarded because they are smaller than the medium's minimum packet size.
giants	Number of packets that are discarded because they exceed the medium's maximum packet size.
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 data received. On a LAN, this often indicates noise or transmission problems on the LAN interface or the LAN bus. A high number of CRCs is usually the result of collisions or a station transmitting bad data. On a serial link, CRCs often 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 virtual access 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 a virtual access interface. This usually indicates a clocking problem between the virtual access 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.

Table 54 *show interfaces virtual-access Field Descriptions (continued)*

Field	Description
underruns	Number of times that the far-end transmitter has been running faster than the near-end communication server's receiver can handle. This might never be reported on some virtual access interfaces.
output errors	Sum of all errors that prevented the final transmission of datagrams out of the virtual access interface being examined. Note that this might not balance with the sum of the enumerated output errors, as some datagrams might have more than one error, and others might have errors that do not fall into any of the tabulated categories.
collisions	Number of packets colliding.
interface resets	Number of times a virtual access interface has been completely reset. This can happen if packets queued for transmission were not sent within several seconds. 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 virtual access 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 a virtual access interface is looped back or shut down.
restarts	Number of times the controller was restarted because of errors.
carrier transitions	Number of times the carrier detect (CD) signal of a virtual access interface has changed state. Indicates modem or line problems if the CD line changes state often. If data carrier detect (DCD) goes down and comes up, the carrier transition counter increments two times.
output buffer failures	Number of outgoing packets dropped from the output buffer.
output buffers swapped out	Number of times the output buffer was swapped out.

show ip interface virtual-access

To display network layer IP information about a specified virtual access interface, use the **show ip interface virtual-access** command in EXEC mode.

show ip interface virtual-access *number*

Syntax Description	<i>number</i>	Number of the virtual access interface.
Command Modes	EXEC	
Command History	Release	Modification
	11.2F	This command was introduced.

Examples

The following is output from the **show ip interface virtual-access** command. This virtual access interface has been configured with a virtual template interface that applies the **ip unnumbered ethernet 0** command.

```
Router# show ip interface virtual-access 1

Virtual-Access1 is up, line protocol is up
  Interface is unnumbered. Using address of Ethernet0 (172.21.114.132)
  Broadcast address is 255.255.255.255
  Peer address is 20.0.0.1
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is enabled
  Outgoing access list is not set
  Inbound access list is Virtual-Access1#0
  Proxy ARP is enabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachable are always sent
  ICMP mask replies are never sent
  IP fast switching is disabled
```

Table 55 describes only the output fields that are significant to virtual access interfaces and not described in other IP commands.

Table 55 *show ip interface virtual-access Field Descriptions*

Field	Description
Virtual-Access1 is up, line protocol is up	Virtual access interface is up and the upper layers consider the line usable.
Interface is unnumbered. Using the address of Ethernet0 (172.21.114.132)	The ip unnumbered ethernet 0 command was included in the virtual template interface cloned on this interface.

show ip local pool

To display statistics for any defined IP address pools, use the **show ip local pool** command in privileged EXEC mode.

```
show ip local pool [name]
```

Syntax Description	
	<i>name</i> (Optional) Name of a specific IP address pool.

Command Modes	
	Privileged EXEC

Command History	Release	Modification
	11.1	This command was introduced.

Usage Guidelines	
	If you omit the variable <i>name</i> , the software will display a generic list of all defined address pools and the IP addresses that belong to them. If you specify a name, the software displays more detailed information for that pool.

Examples	
	The following is an output example from the show ip local pool command:

```
Router# show ip local pool

Scope   Begin           End             Free InUse
Dialin  172.30.228.11  172.30.228.26  16    0
Available addresses:
 172.30.228.12
 172.30.228.13
 172.30.228.14
 172.30.228.15
 172.30.228.16
 172.30.228.17
 172.30.228.18
 172.30.228.19
 172.30.228.20
 172.30.228.21
 172.30.228.22
 172.30.228.23
 172.30.228.24
 172.30.228.25
 172.30.228.26
 172.30.228.11          Async5

Inuse addresses:
None
```

Table 56 describes the fields shown in the display.

Table 56 *show ip local pool Field Descriptions*

Field	Description
Scope	The type of access.
Begin	The first IP address in the defined range of addresses in this pool.
End	The last IP address in the defined range of addresses in this pool.
Free	The number of addresses currently available.
InUse	The number of addresses currently in use.

Related Commands

Command	Description
ip address-pool	Enables an address pooling mechanism used to supply IP addresses to dial-in asynchronous, synchronous, or ISDN point-to-point interfaces.
ip local pool	Configures a local pool of IP addresses to be used when a remote peer connects to a point-to-point interface.

show ip route

To display all static IP routes, or those installed using the AAA (authentication, authorization, and accounting) route download function, use the **show ip route** command in EXEC mode.

```
show ip route [address [network-mask] [longer-prefixes]] | [protocol [process-id]] | [static
[download]]
```

Syntax Description	
<i>address</i>	(Optional) The IP address about which routing information should be displayed.
<i>network-mask</i>	(Optional) Network mask that lets you mask network and subnetwork bits.
longer-prefixes	(Optional) The <i>address</i> and <i>mask</i> pair becomes a prefix, and any routes that match that prefix are displayed.
<i>protocol</i>	(Optional) Name of a routing protocol; or the keyword connected , static , or summary . If you specify a routing protocol, use one of the following keywords: bgp , egp , eigrp , hello , igrp , isis , ospf , or rip .
<i>process-id</i>	(Optional) Arbitrary number assigned to identify a process of the specified protocol.
static	(Optional) All static routes.
download	(Optional) The route installed using the AAA route download function.

Command Modes EXEC

Command History	Release	Modification
	10.0	This command was introduced.
	10.3	The <i>process-id</i> argument was introduced.
	11.0	The longer-prefixes keyword was introduced.
	12.0(3)T	The following keywords were introduced: <ul style="list-style-type: none"> static download

Usage Guidelines The **show ip route static download** command provides a way to display all dynamic static routes with name and distance information, including active and inactive ones. You can display all active dynamic static routes with both the **show ip route** and **show ip route static** commands after these active routes are added in the main routing table.

Examples

The following examples display all downloaded static routes. A P designates which route was installed using AAA route download.

```
router# show ip route
```

```
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, * - candidate default
       U - per-user static route, o - ODR, P - periodic downloaded static route
       T - traffic engineered route
```

```
Gateway of last resort is 172.21.17.1 to network 0.0.0.0
```

```
       172.31.0.0/32 is subnetted, 1 subnets
P       172.31.229.41 is directly connected, Dialer1 20.0.0.0/24 is subnetted, 3 subnets
P       20.1.1.0 [200/0] via 172.31.229.41, Dialer1
P       20.1.3.0 [200/0] via 172.31.229.41, Dialer1
P       20.1.2.0 [200/0] via 172.31.229.41, Dialer1
```

```
router# show ip route static
```

```
       103.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
P       103.1.1.1/32 is directly connected, BRI0
P       103.0.0.0/8 [1/0] via 103.1.1.1, BRI0
S       172.31.0.0/16 [1/0] via 172.21.114.65, Ethernet0
S       18.0.0.0/8 is directly connected, BRI0
P       20.0.0.0/8 is directly connected, BRI0
       172.21.0.0/16 is variably subnetted, 5 subnets, 2 masks
S       172.21.114.201/32 is directly connected, BRI0
S       172.21.114.205/32 is directly connected, BRI0
S       172.21.114.174/32 is directly connected, BRI0
S       172.21.114.12/32 is directly connected, BRI0
P       10.0.0.0/8 is directly connected, BRI0
P       11.0.0.0/8 is directly connected, BRI0
P       12.0.0.0/8 is directly connected, BRI0
S*      0.0.0.0/0 [1/0] via 172.21.114.65, Ethernet0
S       198.92.0.0/16 [1/0] via 172.21.114.65, Ethernet0
```

The following example shows how to use the **show ip route static download** command to see all active and inactive routes installed using the AAA route download feature:

```
router# show ip route static download
```

```
Connectivity: A - Active, I - Inactive
```

```
A       10.0.0.0 255.0.0.0 BRI0
A       11.0.0.0 255.0.0.0 BRI0
A       12.0.0.0 255.0.0.0 BRI0
A       20.0.0.0 255.0.0.0 BRI0
I       21.0.0.0 255.0.0.0 172.21.1.1
I       22.0.0.0 255.0.0.0 Serial0
I       30.0.0.0 255.0.0.0 Serial0
I       31.0.0.0 255.0.0.0 Serial1
I       32.0.0.0 255.0.0.0 Serial1
A       103.0.0.0 255.0.0.0 103.1.1.1
A       103.1.1.1 255.255.255.255 BRI0 200 name remotel
I       104.21.69.0 255.255.255.0 104.21.69.1
```

Related Commands

Command	Description
show dialer	Displays general diagnostic information for interfaces configured for DDR.

show ipx compression

To show the current status and statistics of Internetwork Packet Exchange (IPX) header compression during PPP sessions, use the **show ipx compression** command in EXEC mode.

show ipx compression [**detail** *int-spec*]

Syntax Description	detail	(Optional) Shows detailed link-state database information for NLSP.
	<i>int-spec</i>	(Optional) Interface type, as listed in Table 57.

Command Modes	EXEC
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Command History	Release	Modification
	11.1	This command was introduced.

Usage Guidelines Table 57 lists the supported interface types.

Table 57 *Interface Types*

Keyword	Description
Async	Asynchronous interface.
Ethernet	Ethernet IEEE 802.3 interface.
Null	Null interface.
Serial	WAN serial interface.

Related Commands	Command	Description
	ipx compression cipx	Enables compression of IPX packet headers in a PPP session.
	show ipx interface	Displays the status of the IPX interfaces configured in the Cisco IOS software and the parameters configured on each interface.

show ipx nasi connections

To show the status of NetWare Asynchronous Services Interface (NASI) connections, use the **show ipx nasi connections** command in EXEC mode.

show ipx nasi connections

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.1	This command was introduced.

Examples The following is an example of output from the **show ipx nasi connections** command:

```
router# show ipx nasi connections

NASI Remote: A001500::0020.afe5.3ec5:626C   Local: ACBB::0000.0000.0001:2010
flags 0

NASI Remote: A001500::0020.afe5.3ec5:6E6C   Local: ACBB::0000.0000.0001:20D0
flags 0
  Connected to line 2  incount 0  outcount 0  OVF 0
```

The following output example shows an incoming NASI connection on tty line 2:

```
router# show users
   Line  User      Host(s)          Idle Location
*  0 con 0                idle             1
  2 tty 2   chris         incoming         1 A001500.0020.afe5.3ec5
```

Table 58 describes fields from the **show ipx nasi connections** output example.

Table 58 *show ipx nasi connections* Field Descriptions

Field	Description
NASI Remote	<ul style="list-style-type: none"> • <code>xxxxxxx::yyyyyyyyy:zzzz</code> is the address for the remote NASI client connected to the router. • <code>xxxx</code> is the IPX network number. • <code>yyyyyyy</code> is the IPX host node (MAC address) for the client. • <code>zzzz</code> is the SPX connection number.
Local	<code>xxxxxxx::yyyyyyyyy:zzzz</code> is the local address associated to this connection on the router end of the link.
flags	A status bit that is used internally to allow and close connections.

Table 58 *show ipx nasi connections Field Descriptions (continued)*

Field	Description
Connected to line 2	Appears only when the connection is associated with a tty port. Indicates that this NASI connection is attached to tty 2.
incount 0	Data from the remote client.
outcount 0	Data to be sent to the remote client.
OVF 0	Refers to the number of times data could not be written to the tty line, because the buffers were full. Ideally, this counter should stay at 0.

Related Commands

Command	Description
ipx nasi-server enable	Enables NASI clients to connect to asynchronous devices attached to a router.
show ipx spx-protocol	Displays the status of the SPX protocol stack and related counters.

show ipx spx-protocol

To view the status of the Sequenced Packet Exchange (SPX) protocol stack and related counters, use the **show ipx spx-protocol** command.

show ipx spx-protocol

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.1	This command was introduced.

Examples The following is an output example from the **show ipx spx-protocol** command:

```
router> show ipx spx-protocol
Next wake time:

SPX socket: 1D90
state: 0 Connections: 2

SPX Remote: A001500::0000.c047.ed5a:3A80 Local: ACBB::0000.0000.0001:2010
state 1 flags 1
Queue counts: inq 0, outQ 0, unackedQ 0
Sequence: 34, Ack: 34, local-alloc: 39, remote-alloc: 35
Abort Timer fires in 24 secs
Verify Watchdog Timer fires in 3 secs

SPX Remote: A001500::0000.c047.ed5a:C980 Local: ACBB::0000.0000.0001:2900
state 1 flags 1
Queue counts: inq 0, outQ 0, unackedQ 0
Sequence: 111, Ack: 55, local-alloc: 60, remote-alloc: 112
Abort Timer fires in 27 secs
Verify Watchdog Timer fires in 0 secs
```

Table 59 describes significant fields from this output example.

Table 59 show ipx spx-protocol Field Descriptions

Field	Description
SPX socket:	IPX/SPX socket number.
state	Internal state.
connections:	Number of open connections for this IPX/SPX socket.
SPX Remote: xxxxxx::yyyy:zzzz	The SPX client address for each SPX connection on this IPX/SPX socket, where xxxx is the client IPX network number, yyyy is the client IPX MAC address, and zzzz is the client SPX connection number.

Table 59 show ipx spx-protocol Field Descriptions (continued)

Field	Description
SPX Local xxxxxx::yyyy:zzzz	The local SPX address, where <i>xxxx</i> is local IPX network number, <i>yyyy</i> is the local IPX MAC address, and <i>zzzz</i> is the local SPX connection number.
state	Internal state.
flags	A status bit that is used internally to allow and close connections.
Queue counts	inQ, outQ, and unackedQ, as specified in the following three rows.
inq	Number of SPX packets available for the SPX application to read.
outQ	Number of SPX packets that must be sent to the remote client.
unackedQ	Number of SPX packets sent, but no packet was received by the client, so far.
Sequence:	SPX sequence number. Represents the sequence number of next packet of data to be sent by the router.
Ack:	SPX acknowledgment number. Represents the sequence number of the client's packet that the router has received, so far.
local-alloc:	Maximum packet sequence number that is acceptable from the client. This is a method of imposing flow control on the NASI client.
remote-alloc:	Maximum packet sequence number that the NASI client can accept from the router. This is the NASI client's way of imposing flow control on the router.
Purge Timer	Time in seconds until this SPX connection is closed and deleted from the list.
Abort Timer	Time in seconds until this SPX connection is closed and deleted if a watchdog packet is not received.
Verify Watchdog Timer fires in X secs	Indicates the time when you last sent a watchdog packet to the client.

Related Commands

Command	Description
aaa authentication nasi	Specifies AAA authentication for NASI clients connecting through the access server.
ipx nasi-server enable	Enables NASI clients to connect to asynchronous devices attached to a router.
nasi authentication	Enables AAA authentication for NASI clients connecting to a router.
show ipx nasi connections	Displays the status of NASI connections

show isdn

To display the information about memory, Layer 2 and Layer 3 timers, and the status of PRI channels, use the **show isdn** command in EXEC mode.

```
show isdn { active [dsl | serial number] | history [dsl | serial number] | memory | service [dsl | serial number] | status [dsl | serial number] | timers [dsl | serial number]} 
```

Syntax Description

active [<i>dsl</i> <i>serial number</i>]	Displays current call information of all ISDN interfaces or, optionally, a specific digital subscriber line (DSL) or a specific ISDN PRI interface (created and configured as a serial interface). Values of <i>dsl</i> range from 0 to 15. Information displayed includes the called number, the remote node name, the seconds of connect time, the seconds of connect time remaining, the seconds idle, and Advice of Charge (AOC) charging time units used during the call.
history [<i>dsl</i> <i>serial number</i>]	Displays historic and current call information of all ISDN interfaces or, optionally, a specific DSL or a specific ISDN PRI interface (created and configured as a serial interface). Values of <i>dsl</i> range from 0 to 15. Information displayed includes the called number, the remote node name, the seconds of connect time, the seconds of connect time remaining, the seconds idle, and AOC charging time units used during the call.
memory	Displays ISDN memory pool statistics. This keyword is for use by technical development staff only.
service [<i>dsl</i> <i>serial number</i>]	Displays the service status of all ISDN interfaces or, optionally, a specific DSL or a specific ISDN PRI interface (created and configured as a serial interface). Values of <i>dsl</i> range 0 to 15.
status [<i>dsl</i> <i>serial number</i>]	Displays the status of all ISDN interfaces or, optionally, a specific DSL or a specific ISDN PRI interface (created and configured as a serial interface). Values of <i>dsl</i> range 0 to 15.
timers [<i>dsl</i> <i>serial number</i>]	Displays the values of Layer 2 and Layer 3 timers for all ISDN interfaces or, optionally, a specific DSL or a specific ISDN PRI interface (created and configured as a serial interface). Values of <i>dsl</i> range from 0 to 15.

Command Modes

EXEC

Command History

Release	Modification
11.1	This command was introduced.

Examples

The following is an output example from the **show isdn** command with the **active** keyword:

```
Router# show isdn active
```

```
-----
                                ISDN ACTIVE CALLS
-----
History Table MaxLength = 100 entries
History Retain Timer = 15 Minutes
-----
Call Calling and Called  Remote Node  Seconds  Seconds  Seconds  Recorded Charges
Type Phone Number      Name       Used     Left     Idle     Units/Currency
-----
In +---Not Available---- aerocore   684802  +499598   401
In +---Not Available----      pmg       363578  +499503   496
In +---Not Available----      solpro    253232  +499325   674
In +---Not Available----                194047  +499965    34
In +---Not Available----      taber     189165  +499841   158
In +---Not Available----      newt     110342          0
In +---Not Available----                2603   +499997    2
In +---Not Available----                1310   +499798   201
-----
```

The following is an output example from the **show isdn** command with the **history** keyword:

```
Router# show isdn history
```

```
-----
                                ISDN CALL HISTORY
-----
History Table MaxLength = 100 entries
History Retain Timer = 15 Minutes
-----
Call Calling and Called  Remote Node  Seconds  Seconds  Seconds  Recorded Charges
Type Phone Number      Name       Used     Left     Idle     Units/Currency
-----
In +---Not Available---- aerocore   684818  +499583   416
In +---Not Available----      pmg       363593  +499488   511
In +---Not Available----      solpro    253248  +499310   689
In +---Not Available----                194062  +499950    49
In +---Not Available----      taber     189180  +499826   173
In +---Not Available----      newt     110357          0
In +---Not Available----      a45968    5244          0
In +---Not Available----                2619   +499997    0
In +---Not Available----      zetta     1432          0
In +---Not Available----                1325   +499783   216
In +---Not Available----      trf       161          0
-----
```

Table 60 describes the fields in the **show isdn active** and **show isdn history** output displays.

Table 60 *show isdn active and show isdn history Field Descriptions*

Field	Description
History Table MaxLength	Maximum number of entries that can be retained in the Call History table.
History Retain Timer	Maximum amount of time any entry can be retained in Call History table.
Call Type	Type of call: In for incoming, Out for outgoing, or -- when direction of call cannot be determined.
Calling and Called Phone Number	For incoming calls, the number from which the call was received. For outgoing calls, the number to which the call was placed, or +---Not Available--- when a phone number is not available. The phone number display is limited to 20 digits. (+---Not Available--- is the truncated version of ---Not Available---. The + in the field means more data is available than can be displayed. The low-order data is displayed and the overflowing data is replaced by a +.)
Remote Node Name	Name of the host placing the call or the host called. The name display is limited to ten characters.
Seconds Used	Six digits (999999) of seconds showing connect time used, or Failed when the connection attempt fails.
Seconds Left	Six digits (999999) of seconds of connect time remaining (when configured through the dialer idle-timeout command. The + in the field means more data is available than can be displayed. The low-order data is displayed and the overflowing data is replaced by a +.)
Seconds Idle	Six digits (999999) of seconds since the last interesting packet.
Recorded Charges Units/Currency	For outgoing calls, number of ISDN AOC charging units used or the currency cost of the call. Currency information display is limited to ten characters.

The following output example shows the output of the **show isdn** command with the **service** keyword when PRI is configured on a T1 controller:

```
Router# show isdn service

PRI Channel Statistics:
ISDN Se0:15, Channel (1-31)
  Activated dsl 8
  State (0=Idle 1=Propose 2=Busy 3=Reserved 4=Restart 5=Maint)
  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  Channel (1-31) Service (0=Inservice 1=Maint 2=Outofservice)
  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

Table 62 describes the significant fields shown in the display.

Table 61 show isdn service Field Descriptions

Field	Description
ISDN Se1/0:15	ISDN PRI interface corresponding to serial interface 1/0:15.
Channel (1-31)	Channel range “1-31” is a standard format for both T1 and E1 outputs, but the state value shown identifies whether the channel is used.
Activated dsl 8	The digital signal link (DSL) value is 8.
State (0=Idle 1=Propose 2=Busy 3=Reserved 4=Restart 5=Maint)	Current state of each channel. Channels 24 through 31 are marked as reserved when the output is from T1.
Channel (1-31) Service (0=Inservice 1=Maint 2=Outofservice)	Service state assigned to each channel. Channel 24 is marked as out of service. ¹

1. If channel 24 (marked as out of service) is configured as the NFAS primary D channel, NFAS will roll over to the backup D channel if one is configured. If channel 24 is a B channel, it will not accept calls.

The following is sample output from the **show isdn** command with the **service** keyword when PRI is configured on a T1 controller:

```
Router# show isdn service

PRI Channel Statistics:
ISDN Se0:15, Channel (1-31)
  Activated dsl 8
  State (0=Idle 1=Propose 2=Busy 3=Reserved 4=Restart 5=Maint)
  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  Channel (1-31) Service (0=Inservice 1=Maint 2=Outofservice)
  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

Table 62 describes the significant fields shown in the **show isdn service** display.

Table 62 show isdn service Field Descriptions

Field	Description
ISDN Se1/0:15	ISDN PRI interface corresponding to serial interface 1/0:15.
Channel (1-31)	Channel range “1-31” is a standard format for both T1 and E1 outputs, but the state value shown identifies whether the channel is used.
Activated dsl 8	The DSL value.
State (0=Idle 1=Propose 2=Busy 3=Reserved 4=Restart 5=Maint)	Current state of each channel. Channels 24 through 31 are marked as reserved when the output is from T1.
Channel (1-31) Service (0=Inservice 1=Maint 2=Outofservice)	Service state assigned to each channel. Channel 24 is marked as out of service. ¹

1. If channel 24 (marked as out of service) is configured as the NFAS primary D channel, NFAS will roll over to the backup D channel if one is configured. If channel 24 is a B channel, it will not accept calls.

The following is sample output from the **show isdn** command with the **status** keyword when no calls are active for a Cisco 4500 router with eight BRIIs and one E1 PRI:

```
Router# show isdn status

Global ISDN Switchtype = basic-5ess
ISDN BRI0 interface
    dsl 0, interface ISDN Switchtype = basic-5ess
    Layer 1 Status:
        ACTIVE
    Layer 2 Status:
        TEI = 64, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
    Layer 3 Status:
        0 Active Layer 3 Call(s)
    Activated dsl 0 CCBs = 0
ISDN BRI1 interface
    dsl 1, interface ISDN Switchtype = basic-5ess
    Layer 1 Status:
        DEACTIVATED
    Layer 2 Status:
        Layer 2 NOT Activated
    Layer 3 Status:
        0 Active Layer 3 Call(s)
    Activated dsl 1 CCBs = 0
ISDN BRI2 interface
    dsl 2, interface ISDN Switchtype = basic-5ess
    Layer 1 Status:
        DEACTIVATED
    Layer 2 Status:
        Layer 2 NOT Activated
    Layer 3 Status:
        0 Active Layer 3 Call(s)
    Activated dsl 2 CCBs = 0
ISDN BRI3 interface
    dsl 3, interface ISDN Switchtype = basic-5ess
    Layer 1 Status:
        ACTIVE
    Layer 2 Status:
        TEI = 75, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
    Layer 3 Status:
        0 Active Layer 3 Call(s)
    Activated dsl 3 CCBs = 0
ISDN BRI4 interface
    dsl 4, interface ISDN Switchtype = basic-5ess
    Layer 1 Status:
        DEACTIVATED
    Layer 2 Status:
        Layer 2 NOT Activated
    Layer 3 Status:
        0 Active Layer 3 Call(s)
    Activated dsl 4 CCBs = 0
ISDN BRI5 interface
    dsl 5, interface ISDN Switchtype = basic-5ess
    Layer 1 Status:
        DEACTIVATED
    Layer 2 Status:
        Layer 2 NOT Activated
    Layer 3 Status:
        0 Active Layer 3 Call(s)
    Activated dsl 5 CCBs = 0
ISDN BRI6 interface
    dsl 6, interface ISDN Switchtype = basic-5ess
    Layer 1 Status:
        DEACTIVATED
```

```

Layer 2 Status:
  Layer 2 NOT Activated
Layer 3 Status:
  0 Active Layer 3 Call(s)
Activated dsl 6 CCBs = 0
ISDN BRI7 interface
  dsl 7, interface ISDN Switchtype = basic-5ess
Layer 1 Status:
  DEACTIVATED
Layer 2 Status:
  Layer 2 NOT Activated
Layer 3 Status:
  0 Active Layer 3 Call(s)
Activated dsl 7 CCBs = 0
ISDN Serial0:15 interface
  dsl 8, interface ISDN Switchtype = primary-ni
Layer 1 Status:
  ACTIVE
Layer 2 Status:
  TEI = 0, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
Layer 3 Status:
  0 Active Layer 3 Call(s)
Activated dsl 8 CCBs = 0
Total Allocated ISDN CCBs = 0

```

The following is sample output from the **show isdn** command with the **status** keyword, with one active call:

```
Router# show isdn status
```

```

The current ISDN Switchtype = ntt
ISDN BRI0 interface
  Layer 1 Status:
    ACTIVE
  Layer 2 Status:
    TEI = 64, State = MULTIPLE_FRAME_ESTABLISHED
  Layer 3 Status:
    1 Active Layer 3 Call(s)
Activated dsl 0 CCBs = 1
  CCB:callid=8003, callref=0, sapi=0, ces=1, B-chan=1
Number of active calls = 1
Number of available B-channels = 1
Total Allocated ISDN CCBs = 1

```

Table 63 describes the significant fields shown in the **show isdn status** display.

Table 63 *show isdn status* Field Descriptions

Field	Description
Layer 1 Status	
ACTIVE	Status of ISDN Layer 1.
Layer 2 Status	
TEI = 64, State = MULTIPLE_FRAME_ESTABLISHED	Status of ISDN Layer 2. Terminal endpoint identifier number and multiframe structure state.
Layer 3 Status	
1 Active Layer 3 Call(s)	Number of active calls.

Table 63 *show isdn status Field Descriptions (continued)*

Field	Description
Activated dsl 0 CCBs =	Number of the DSL activated. Number of call control blocks in use.
CCB:callid=8003, callref=0, sapi=0, ces=1, B-chan=1	Information about the active call.
Number of active calls =	Number of active calls.
Number of available B-channels =	Number of B channels that are not being used.
Total Allocated ISDN CCBs =	Number of ISDN call control blocks that are allocated.

The following is sample output from the **show isdn** command with the **timers** keyword:

```
Router# show isdn timers

ISDN Serial0:23 Timers (dsl 0) Switchtype = primary-5ess
  ISDN Layer 2 values
    K      = 7 outstanding I-frames
    N200   = 3 max number of retransmits
    T200   = 1.000 seconds
    T202   = 2.000 seconds
    T203   = 30.000 seconds
  ISDN Layer 3 values
    T303   = 4.000 seconds
    T304   = 20.000 seconds
    T305   = 4.000 seconds
    T306   = 30.000 seconds
    T307   = 180.000 seconds
    T308   = 4.000 seconds
    T309   = Disabled
    T310   = 30.000 seconds
    T313   = 4.000 seconds
    T316   = 120.000 seconds
    T318   = 4.000 seconds
    T319   = 4.000 seconds
    T322   = 4.000 seconds
    T300S  = 5.000 seconds
    TGUARD = 8.000 seconds, Expiry = REJECT_CALL
ISDN Serial1:23 Timers (dsl 1) Switchtype = primary-5ess
  ISDN Layer 2 values
    K      = 7 outstanding I-frames
    N200   = 3 max number of retransmits
    T200   = 1.000 seconds
    T202   = 2.000 seconds
    T203   = 30.000 seconds
  ISDN Layer 3 values
    T303   = 4.000 seconds
    T304   = 20.000 seconds
    T305   = 4.000 seconds
    T306   = 30.000 seconds
    T307   = 180.000 seconds
    T308   = 4.000 seconds
    T309   = Disabled
    T310   = 30.000 seconds
    T313   = 4.000 seconds
    T316   = 120.000 seconds
    T318   = 4.000 seconds
    T319   = 4.000 seconds
```

```

T322 = 4.000 seconds
T300S = 5.000 seconds
TGUARD= 8.000 seconds, Expiry = REJECT_CALL
*** dsl 2 is not configured
*** dsl 3 is not configured
*** dsl 4 is not configured
*** dsl 5 is not configured
*** dsl 6 is not configured
*** dsl 7 is not configured
ISDN BRI0 Timers (dsl 0) Switchtype = basic-net3
ISDN Layer 2 values
K = 1 outstanding I-frames
N200 = 3 max number of retransmits
N202 = 2 max number of retransmits of TEI ID Request
T200 = 1 seconds
T202 = 2 seconds
T203 = 10 seconds
ISDN Layer 3 values
T303 = 4 seconds
T305 = 30 seconds
T308 = 4 seconds
T310 = 40 seconds
T313 = 4 seconds
T316 = 0 seconds
T318 = 4 seconds
T319 = 4 seconds

```

Table 64 and Table 65 show typical and default values of the timers shown in the **show isdn timers** display. The values of the timers depend on the switch type. The Cisco routers support the following switch type keywords: **basic-ni**, **basic-net3**, **primary-5ess**, and **basic-qsig** and **primary-qsig**. Refer to the Q.921 specifications for detailed technical definitions of the Layer 2 timers; refer to the Q.931 specifications for detailed technical definitions of the Layer 3 timers.

Table 64 *show isdn timers Layer 2 Command Output*

Timer Number Field	System Parameter (typical)
K = 7 outstanding I-frames	None
N200 = 3 max number of retransmits	3 seconds
T200 = 1.000 seconds	1 second
T202 = 2.000 seconds	2 seconds
T203 = 30.000 seconds	10 seconds

Table 65 *show isdn timers Layer 3 Command Output*

Timer Number Field	Network Side ITU Default Value	User Side ITU Default Value
T303 = 4.000 seconds	4 seconds	4 seconds
T304 = 20.000 seconds	20 seconds	30 seconds
T305 = 4.000 seconds	30 seconds	30 seconds
T306 = 30.000 seconds	30 seconds	None
T307 = 180.000 seconds	180 seconds (3 minutes)	None
T308 = 4.000 seconds	4 seconds	4 seconds
T309 Disabled	90 seconds	90 seconds

Table 65 *show isdn timers Layer 3 Command Output (continued)*

Timer Number Field	Network Side ITU Default Value	User Side ITU Default Value
T310 = 30.000 seconds	10 seconds	30 to 120 seconds
T313 = 4.000 seconds	None	4 seconds
T316 = 120.000 seconds	120 seconds (2 minutes)	120 seconds (2 minutes)
T318 = 4.000 seconds	None	4 seconds
T319 = 4.000 seconds	None	4 seconds
T322 = 4.000 seconds	4 seconds	4 seconds
T3OOS = 5.000 seconds	Time interval after which the software should attempt to recover from a Layer 2 failure. Default is 5 seconds	Time interval after which the software should attempt to recover from a Layer 2 failure. Default is 5 seconds
TGUARD = 8.000 seconds, Expiry = REJECT_CALL	Managed timer for authentication requests configured with the isdn guard-timer command. Default is 8 seconds.	Managed timer for authentication requests configured with the isdn guard-timer command. Default is 8 seconds.

show isdn nfas group

To display all the members of a specified NFAS group or all NFAS groups, use the **show isdn nfas group** command in privileged EXEC mode.

```
show isdn nfas group [id-number]
```

Syntax Description	<i>id-number</i> (Optional) Identifier number in the range from 1 to 24 of a specific NFAS group.				
Command Modes	Privileged EXEC				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.3</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	11.3	This command was introduced.
Release	Modification				
11.3	This command was introduced.				

Examples

The following is an output example from the **show isdn nfas group** command:

```
Router# show isdn nfas group 1
ISDN NFAS GROUP 1 ENTRIES:
```

```
The primary D is Serial1/0:23.
The backup D is Serial1/1:23.
The NFAS member is Serial2/0:23.
```

```
There are 3 total nfas members.
There are 93 total available B channels.
The primary D-channel is DSL 0 in state INITIALIZED.
The backup D-channel is DSL 1 in state INITIALIZED.
The current active layer 2 DSL is 1.
```

The following three examples show the D channel state changes when rollover occurs from the primary NFAS D channel to the backup D channel. The first example shows the output with the primary D channel in service and the backup D channel in standby.

```
Router# show isdn nfas group 0
ISDN NFAS GROUP 0 ENTRIES:
```

```
The primary D is Serial1/0:23.
The backup D is Serial1/1:23.
The NFAS member is Serial2/0:23.
```

```
There are 3 total nfas members.
There are 70 total available B channels.
The primary D-channel is DSL 0 in state IN SERVICE.
The backup D-channel is DSL 1 in state STANDBY.
The current active layer 2 DSL is 0.
```

The following example shows the output in the middle of rollover. The configured primary D channel is in maintenance busy state and the backup D channel is waiting.

```
Router# show isdn nfas group 0
ISDN NFAS GROUP 0 ENTRIES:
The primary D is Serial1/0:23.
The backup D is Serial1/1:23.
The NFAS member is Serial2/0:23.

There are 3 total nfas members.
There are 70 total available B channels.
The primary D-channel is DSL 0 in state MAINTENANCE BUSY.
The backup D-channel is DSL 1 in state WAIT.
The current active layer 2 DSL is 1.
```

The following example shows the output when rollover is complete. The configured primary D channel is now in standby and the backup D channel is in service.

```
Router# show isdn nfas group 0
ISDN NFAS GROUP 0 ENTRIES:

The primary D is Serial1/0:23.
The backup D is Serial1/1:23.
The NFAS member is Serial2/0:23.

There are 3 total nfas members.
There are 70 total available B channels.
The primary D-channel is DSL 0 in state STANDBY.
The backup D-channel is DSL 1 in state IN SERVICE.
The current active layer 2 DSL is 1.
```

Table 66 describes the fields in the output example.

Table 66 show isdn nfas group Field Descriptions

Field	Description
The primary D is Serial1/0:23.	Identifies the primary D channel.
The backup D is Serial1/1:23.	Identifies the backup D channel.
The NFAS member is Serial2/0:23.	Identifies the NFAS group.
There are 3 total nfas members.	Number of member interfaces in the group.
There are 70 total available B channels.	Number of B channels in this NFAS group.
The primary D-channel is DSL 0 in state STANDBY.	Service state of the NFAS primary D channel; this D channel is in service.
The backup D-channel is DSL 1 in state IN SERVICE.	Service state of the NFAS backup D channel; this D channel is in service. The states are In service, Standby, Out of service, Maintenance, Wait, Initialized, and Busy.
The current active layer 2 DSL is 1.	Digital subscriber loop (DSL) identifier assigned by the service provider. If both D channels are out of service, the value displayed in this line is -1.

Related Commands

Command	Description
show isdn	Displays the information about memory, Layer 2 and Layer 3 timers, and the status of PRI channels.

show isdn service

To display the service status of each ISDN channel, use the **show isdn service** command in privileged EXEC mode.

show isdn service

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

Command History	Release	Modification
	11.3	This command was introduced.

Examples The following example shows channel statistics on a PRI configured on a T1 controller:

```
Router# show isdn service

PRI Channel Statistics:
ISDN Se0:15, Channel (1-31)
  Activated dsl 8
  State (0=Idle 1=Propose 2=Busy 3=Reserved 4=Restart 5=Maint)
  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  Channel (1-31) Service (0=Inservice 1=Maint 2=Outofservice)
  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

Table 67 describes the fields in this output.

Table 67 show isdn service Field Descriptions

Field	Description
ISDN Se1/0:23	ISDN PRI interface corresponding to serial interface 1/0:23.
Channel (1-31)	Channel range “1-31” is a standard format for both T1 and E1 outputs, but the state value shown identifies whether the channel is used.
Activated dsl 0	The digital signal link (DSL) value is 0.
State (0=Idle 1=Propose 2=Busy 3=Reserved 4=Restart 5=Maint)	Current state of each channel. Channels 24 through 31 are marked as reserved when the output is from T1.
Channel (1-31) Service (0=Inservice 1=Maint 2=Outofservice)	Service state assigned to each channel. Channel 24 is marked as out of service. ¹

1. If channel 24 (marked as out of service) is configured as the NFAS primary D channel, NFAS will roll over to the backup D channel if one is configured. If channel 24 is a B channel, calls will not be accepted to it.

show isdn service**Related Commands**

Command	Description
show isdn	Displays the information about memory, Layer 2 and Layer 3 timers, and the status of PRI channels.

show keymap

To test for the availability of a keymap after a connection on a router takes place, use the **show keymap** command in EXEC mode.

```
show keymap [keymap-name | all]
```

Syntax Description

<i>keymap-name</i>	(Optional) Name of the keymap.
all	(Optional) Lists the names of all defined keymaps. The name of the default keymap is not listed.

Command Modes

EXEC

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

The Cisco IOS software searches for the specified keymap in its active configuration image and lists the complete entry if found. If the keymap is not found, an appropriate “not found” message appears.

If you do not use any arguments with the **show keymap** command, then the keymap currently used for the terminal is displayed.

Examples

The following is an output example from the **show keymap** command:

```
router# show keymap

ciscocodefault { clear = '^z'; flinp = '^x'; enter = '^m';\
  delete = '^d' | '^?';\
  synch = '^r'; reshov = '^v'; eof = '^e'; tab = '^i';\
  btab = '^b'; nl = '^n'; left = '^h'; right = '^l';\
  up = '^k'; down = '^j'; einp = '^w'; reset = '^t';\
  xoff = '^s'; xon = '^q'; escape = '^c'; ferase = '^u';\
  insrt = '^E ';\
  pa1 = '^p1'; pa2 = '^p2'; pa3 = '^p3';\
  pfk1 = '^E1'; pfk2 = '^E2'; pfk3 = '^E3'; pfk4 = '^E4';\
  pfk5 = '^E5'; pfk6 = '^E6'; pfk7 = '^E7'; pfk8 = '^E8';\
  pfk9 = '^E9'; pfk10 = '^E0'; pfk11 = '^E-'; pfk12 = '^E=';\
  pfk13 = '^E!'; pfk14 = '^E@'; pfk15 = '^E#'; pfk16 = '^E$';\
  pfk17 = '^E%'; pfk18 = '^E^'; pfk19 = '^E&'; pfk20 = '^E*';\
  pfk21 = '^E('; pfk22 = '^E)'; pfk23 = '^E_'; pfk24 = '^E+';\
}
```

show lat advertised

To display the local-area transport (LAT) services a router offers to other systems running LAT on the network, use the **show lat advertised** command in EXEC mode.

show lat advertised

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	10.0	This command was introduced.

Usage Guidelines Advertised services are created with the **lat service** commands. The display includes the service rating, rotary group, if present, and whether or not the service is enabled for incoming connections.

Examples The following is an output example from the **show lat advertised** command:

```
router# show lat advertised

Service Name      Rating      Rotary  Flags
BEAR-CAT          4 (Dynamic) None    Enabled
  Autocommand: telnet bear-cat
MODEMS            0 (Dynamic) 12     Enabled
  Ident: SpaceBlazer modem services
RECLUSE           4 (Dynamic) None    Enabled
  Ident: white recluse...
```

The display shows output from a router, sloth, which has three services defined: BEAR-CAT, MODEMS, and RECLUSE.

Table 68 describes significant fields shown in the display.

Table 68 *show lat advertised Field Descriptions*

Field	Description
Service Name	Lists the LAT service name.
Rating	Lists the static service rating set, if any.
Rotary	Lists the associated rotary service.
Flags	Lists whether or not a service is enabled.
Autocommand	Defines the autocommand associated with the service.
Ident	Lists the advertised identification for the service.

show lat groups

To display the groups that were defined in the Cisco IOS software with the **lat group-list** command, use the **show lat groups** command in EXEC mode.

```
show lat groups
```

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	10.0	This command was introduced.

Examples The following is an output example from the **show lat groups** command:

```
sloth# show lat groups

Group Name      Len  Groups
cafeteria       3    13 15 23
engineering     7    55
manufacturing   10   70 71 72
```

Table 69 describes only the significant fields shown in the previous display.

Table 69 *show lat groups Field Descriptions*

Field	Description
Group Name	Assigned group name.
Len	Size of internal data structure used to contain the group code map.
Groups	Group codes associated with the learned group.

Related Commands	Command	Description
	lat group-list	Allows a name to be assigned to the group list, which is any combination of group names, numbers, or ranges.

show lat nodes

To display information about all known local-area network (LAT) nodes, use the **show lat nodes** command in EXEC mode.

show lat nodes

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	10.0	This command was introduced.

Examples The following is an output example from the **show lat nodes** command:

```
router# show lat nodes

Node "CHAOS", usage -1, Interface Ethernet0, Address 0000.0c01.0509
  Timer 89, sequence 188, changes 131, flags 0x0, protocol 5.1
  Facility 0, Product code 0, Product version 0
  Recv 0/0/0, Xmit 0/0/0, 0 Dups, 0 ReXmit
  Bad messages: 0, Bad slots: 0, Solicits accepted: 0
  Solicits rejected: 0, Multiple nodes: 0
  Groups: 0
  Service classes: 1
Node "CONFUSED", usage -1, Local
  Timer 99, sequence 4, changes 151, flags 0x0, protocol 5.2
  Facility 0, Product code 0, Product version 0
  Recv 0/0/0, Xmit 0/0/0, 0 Dups, 0 ReXmit
  Bad messages: 0, Bad slots: 0, Solicits accepted: 0
  Solicits rejected: 0, Multiple nodes: 0
  Groups: 0
  Service classes: 1
Node "EMAN-cs", usage -1, Interface Ethernet0, Address 0000.0cff.c9ed
  Timer 99, sequence 9, changes 159, flags 0x0, protocol 5.1
  Facility 0, Product code 0, Product version 0
  Recv 0/0/0, Xmit 0/0/0, 0 Dups, 0 ReXmit
  Bad messages: 0, Bad slots: 0, Solicits accepted: 0
  Solicits rejected: 0, Multiple nodes: 0
  Groups: 0
  Service classes: 1
Node "TARMAC", usage -1, Interface Ethernet0, Address 0000.0c02.c7c1
  Timer -10351, sequence 1, changes 131, flags 0x40, protocol 5.2
  Facility 0, Product code 0, Product version 0
  Recv 0/0/0, Xmit 0/0/0, 0 Dups, 0 ReXmit
  Bad messages: 0, Bad slots: 0, Solicits accepted: 0
  Solicits rejected: 0, Multiple nodes: 0
  Groups: 0
  Service classes: 1
```

Table 70 describes significant fields shown in the display.

Table 70 *show lat nodes Field Descriptions*

Field	Description
Node	The node name as reported by the host computer.
usage	The number of virtual circuits currently active to this node.
Interface	Node interface type and number.
Address	The MAC address of the node's Ethernet interface.
Timer	The number of seconds remaining until this node's service advertisement message will time out; this value is set to three times the nodes multicast timer value whenever a new service advertisement message is received.
sequence	The sequence number received in the last service advertisement message received. Nodes increment their sequence number when the contents of the service advertisement change.
changes	The internal representation of what changed in the multicast message the last time the sequence number changed.
flags	The internal representation of various state information about the node.
protocol	The LAT protocol version used by the node.
Facility	The remote facility number.
Product code	The remote product code.
Product version	The remote product version.
Recv and Xmit	The number of messages, slots, and bytes received or transmitted to the node. The number of messages is the number of LAT virtual circuit messages. Each virtual circuit message contains some number of slots, which contain actual terminal data or control information. Bytes is the number of data bytes (input or output characters) exchanged.
Dups	The number of duplicate virtual circuit messages received.
ReXmit	The number of virtual circuit messages retransmitted.
Bad messages	The number of bad messages received.
Bad slots	The number of bad slots received.
Solicits accepted	The number of solicit-information requests accepted.
Solicits rejected	The number of solicit-information requests rejected.
Multiple nodes	The total of multiple nodes seen.
Groups	The list of group codes advertised by the node's service advertisement message.
Service classes	The number of service classes.

show lat services

To display information about learned local-area transport (LAT) services in the Cisco IOS software, use the **show lat services** user command in EXEC mode.

show lat services [*service-name*]

Syntax Description

service-name (Optional) Name of a specific LAT service.

Command Modes

User EXEC

Command History

Release	Modification
11.2	This command was introduced.

Examples

The following is an output example from the **show lat services** command:

```
router# show lat services

Service Name      Rating  Interface  Node (Address)
ABCDEFGHIJ         5       Ethernet0  CONFUSED (0000.0c00.391f)
GLAD              84      Ethernet0  BLUE (aa00.0400.9205)
  Ident: Welcome to Big Blue Gateway
WHEEL            83      Ethernet0  WHEEL (aa00.0400.9005)
ZXYW             5       Ethernet0  CONFUSED (0000.0c00.391f)
```

Table 71 describes significant fields shown in this display.

Table 71 *show lat services* Field Descriptions

Field	Description
Service Name	LAT service name.
Rating	Rating of the service. If a single service is provided by more than one host, the Cisco IOS software connects to the one with the highest rating.
Interface	Interface type.
Node	Connection address.
(Address)	Advertised identification for the service.

Related Commands

Command	Description
show lat sessions	Displays active LAT sessions.
show resource-pool call	Displays specific LAT learned services.

show lat sessions

To display active local-area transport (LAT) sessions, use the **show lat sessions** user command in EXEC mode.

```
show lat sessions [line-number]
```

Syntax Description	
	<i>line-number</i> (Optional) Shows an active LAT session on a specific line.

Command Modes	
	User EXEC

Command History	Release	Modification
	11.2	This command was introduced.

Examples

The following is an output example from the **show lat sessions** command. In this example, information about all active LAT sessions is displayed. The output is divided into three sections for each session (in this case two sessions): TTY data, session data, and remote node data.

```
router> show lat sessions

tty0, connection 1 to service TERM1
TTY data:
  Name "0", Local usage 1/0, Remote usage disabled
  Flags: Local Connects, Enabled
  Type flags: none
  Config flags: -FlowOut, -FlowIn, Parameter Info
  Flow control ^S/^Q in ^S/^Q out, Mode Normal, Parity None, databits 8
  Groups: 0
Session data:
  Name TERM1, Remote Id 1, Local Id 1
  Remote credits 2, Local credits 0, Advertised Credits 2
  Flags: none
  Max Data Slot 255, Max Attn Slot 255, Stop Reason 0
Remote Node data:
Node "TERM1", Address 0000.0C00.291F, usage 1
  Timer 59, sequence 5, changes 159, flags 0x0, protocol 5.1
  Recv 56/22/83, Xmit 41/23/14, 0 Dups, 0 ReXmit
  Groups: 0
tty10, connection 1 to service ENG2
TTY data:
  Name "10", Local usage 1/0, Remote usage disabled
  Flags: Local Connects, Enabled
  Type flags: none
  Config flags: -FlowOut, +FlowIn, Set Parameters, 0x40000000
  Flow control ^S/^Q in ^S/^Q out, Mode Normal, Parity None, databits 8
  Groups: 0
Session data:
  Name ENG2, Remote Id 1, Local Id 1
  Remote credits 1, Local credits 0, Advertised Credits 2
  Flags: none
  Max Data Slot 255, Max Attn Slot 255, Stop Reason 0
```

```

Remote Node data:
Node "ENG2", Address AA00.0400.34DC, usage 1
  Timer 179, sequence 60, changes 255, flags 0x0, protocol 5.1
  Recv 58/29/186, Xmit 50/36/21, 0 Dups, 0 ReXmit
  Groups: 0

```

The following an output example displays information about active LAT sessions on one line (line 10). The output is divided into three sections: TTY data, session data, and remote node data.

```

router> show lat sessions 10

tty10, connection 1 to service ENG2
TTY data:
  Name "10", Local usage 1/0, Remote usage disabled
  Flags: Local Connects, Enabled
  Type flags: none
  Config flags: -FlowOut, +FlowIn, Set Parameters, 0x40000000
  Flow control ^S/^Q in ^S/^Q out, Mode Normal, Parity None, databits 8
  Groups: 0
Session data:
  Name ENG2, Remote Id 1, Local Id 1
  Remote credits 1, Local credits 0, Advertised Credits 2
  Flags: none
  Max Data Slot 255, Max Attn Slot 255, Stop Reason 0
Remote Node data:
Node "ENG2", Address AA00.0400.34DC, usage 1
  Timer 189, sequence 61, changes 247, flags 0x0, protocol 5.1
  Recv 60/29/186, Xmit 52/36/21, 0 Dups, 0 ReXmit
  Groups: 0

```

Table 72 describes the screen output for the preceding two examples.

Table 72 *show lat sessions* Field Descriptions

Field	Description
TTY data	Summary of the LAT-oriented terminal-line-specific data.
Name	Name used for this port as a port identification string. The name is reported to remote systems, which can display it in some operating-system dependent manner. This value is also used for targets of host-initiated connections. Currently, this value is hard-wired to be the line number of the associated terminal line.
Local/Remote usage	Current status of the terminal. The number is reported as current/maximum, where current is the current number of sessions of a given type, and maximum is the maximum number of sessions allowed (or zero if there is no maximum). If a terminal is being used for outgoing sessions, the local usage is equal to the number of current LAT sessions. If the terminal is being used for incoming sessions, local usage is disabled, and the remote count and maximum is one.
Flags	Current state of the line, and whether there are any queued host-initiated connections.
Type flags	Report flags not used in the current software release.
Config flags	Current port state as reflected by the most recent configuration message exchange.
Flow control	Lists set flow control characters.

Table 72 *show lat sessions Field Descriptions (continued)*

Field	Description
Groups	Group code list currently in use for the line.
Session data	Reports various parameters about the connection.
Name	For the outbound connection, the name of the remote service to which it is connected. For inbound connections, this field is currently unused.
Remote/Local ID	Slot IDs being used to uniquely identify the session multiplexed over the underlying LAT virtual circuit.
Remote/Local/ Advertised Credits	Number of flow control credits that the Cisco IOS software will be sending to the host as soon as possible. The advertised credits are the number of credits that have already been sent.
Flags	Transient conditions in the LAT-state machine dealing with the current connection status.
Max Data Slot	Maximum number of characters that can be sent in a single data slot.
Max Attn Slot	Maximum amount of data that can be sent in an attention message. Current LAT implementations only sends 1-byte attention messages (attention messages are used to flush buffered output). A nonzero value means that remote data flushing can be used; a zero means that it cannot.
Stop Reason	Reason the session was stopped, if it was stopped but not deleted. This value is usually zero, indicating that the session has not yet been stopped. If a session persists for a long time with a nonzero stop reason, there is probably a problem in the local LAT software.
Remote Node data	Reports information about the remote node. The data includes the same fields as those from the show lat nodes output.
Node	Node name as reported by the host computer.
Address	MAC address of the node's Ethernet interface.
usage	Number of virtual circuits currently active to the node.
Timer	Number of seconds remaining until the node's service advertisement message will time out; this value is set to three times greater than the node's multicast timer value whenever a new service advertisement message is received.
sequence	Sequence number received in the last service advertisement message. Nodes increment their sequence number when the contents of the service advertisement change.
changes	Internal representation of what changed in the multicast message the last time the sequence number changed.
flags	Internal representation of various state information about the node.
protocol	LAT protocol version used by the node.
Recv and Xmit	Number of messages, slots, and bytes received or transmitted to the node. The number of messages is the number of LAT virtual circuit messages. Each virtual circuit message contains some number of slots, which contain actual terminal data or control information.
Dups	Number of duplicate virtual circuit messages received.

Table 72 *show lat sessions Field Descriptions (continued)*

Field	Description
ReXmit	Number of virtual circuit messages retransmitted.
Groups	Group codes advertised by the node's service advertisement message.

Related Commands

Command	Description
show lat services	Displays information about learned LAT services in the Cisco IOS software.
show resource-pool call	Displays specific LAT learned services.

show lat traffic

To display information about traffic and resource utilization statistics on all active lines, use the **show lat traffic** command in EXEC mode.

show lat traffic

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	10.0	This command was introduced.

Examples The following is an output example from the **show lat traffic** command:

```
router# show lat traffic

Local host statistics:
  0/100 circuits, 0/500 sessions, 1/500 services
  100 sessions/circuit, circuit timer 80, keep-alive timer 5
Recv:  335535 messages (2478 duplicates),  161722 slots,  1950146 bytes
       0 bad circuit messages,  3458 service messages (52 used)
Xmit:  182376 messages (2761 retransmit),  146490 slots,  36085 bytes
       1 circuit timeouts
Total: 23 circuits created,  38 sessions
```

Table 73 describes significant fields shown in the display.

Table 73 *show lat traffic Field Descriptions*

Field	Description
Local host statistics	Information about the router.
circuits	Current number and maximum support number of virtual circuits.
sessions	Current and maximum number of sessions.
services	Current number of known remote services, and the maximum supported.
sessions/circuit	Number of sessions per virtual circuit supported by the software.
circuit timer	Value of the virtual circuit timer parameter defined by the lat vc-timer global configuration command.
keep-alive timer	Value defined by the lat ka-timer global configuration command.
Recv	Statistics about local node receive totals.
messages	Total count of virtual circuit messages received.
duplicates	Number of duplicate virtual circuit messages received.
slots	Number of slots received.

Table 73 *show lat traffic Field Descriptions (continued)*

Field	Description
bytes	Number of data bytes received.
bad circuit messages	Count of invalid messages received.
service messages	Number of service advertisement multicast messages received.
used	Number of multicast messages that caused the local node information to be updated.
Xmit	Various transmission totals.
messages	Total number of virtual circuit messages transmitted.
retransmit	Number of virtual circuit messages retransmitted due to the lack of an acknowledgment.
slots	Number of data and control slots transmitted.
bytes	Count of user data bytes transmitted.
circuit timeouts	Count of times that a virtual circuit timed-out because the remote node stopped responding (due to a node failure or communications failure).
Total	Count of virtual circuits and sessions that have existed since the router booted or rebooted.

show line

To display parameters of a terminal line, use the **show line** command in EXEC mode.

```
show line [line-number | aux | console | summary]
```

Syntax Description	
<i>line-number</i>	(Optional) Absolute line number of the line for which you want to list parameters.
aux	(Optional) Auxiliary line.
console	(Optional) Primary terminal line.
summary	(Optional) Line status summary.

Command Modes EXEC

Command History	Release	Modification
	10.0	This command was introduced.
	11.3(1)T	The summary keyword added.
	12.1	Output from this command was modified to show the transport method configured.

Usage Guidelines The **show line** command used with the **summary** keyword will provide line status summary details such as whether there were modem calls or character mode calls.

Examples The following sample output from the **show line vty 4** command shows that virtual terminal line 4 has a send and receive rate of 9600 bits per second (bps). Also shown are the terminal screen width and length, modem state, preferred transport method, and other characteristics.

```
Router# show line vty 4

      Tty Typ      Tx/Rx      A Modem  Roty AccO AccI   Uses   Noise  Overruns
      22 VTY          -      -      -      -      -      0       0     0/0 -

Line 22, Location: "", Type: ""
Length: 24 lines, Width: 80 columns
Baud rate (TX/RX) is 9600/9600
Status: No Exit Banner
Capabilities: CUG Security Enabled
Modem state: Idle
Special Chars: Escape  Hold  Stop  Start  Disconnect  Activation
                ^^x   none  -    -      none
Timeouts:      Idle EXEC  Idle Session  Modem Answer  Session
Dispatch
                never      never      none      not set
                Idle Session Disconnect Warning
                never
                Login-sequence User Response
                00:00:30
                Autoselect Initial Wait
                not set
```

```

Modem type is unknown.
Session limit is not set.
Time since activation: never
Editing is enabled.
History is enabled, history size is 10.
DNS resolution in show commands is enabled
Full user help is disabled
Allowed input transports are none.
Allowed output transports are pad v120 telnet rlogin udptn.
Preferred transport is telnet.
No output characters are padded
No special data dispatching characters

```

Table 74 describes the significant fields shown in the display.

Table 74 *show line Field Descriptions*

Field	Description
Tty	Line number.
Typ	Type of line. In this case, a virtual terminal line, which is active, in asynchronous mode denoted by the preceding "A." All possible values follow: <ul style="list-style-type: none"> • VTY—virtual terminal line • CTY—console • AUX—auxiliary port • TTY—asynchronous terminal port • lpt—parallel printer
Tx/Rx	Transmit rate/receive rate of the line.
A	Indicates whether autobaud has been configured for the line. A value of F indicates that autobaud has been configured; a hyphen indicates that it has not been configured.
Modem	Types of modem signals that have been configured for the line. Possible values follow: <ul style="list-style-type: none"> • callin • callout • cts-req • DTR-Act • inout • RIisCD
Roty	Rotary group configured for the line, if set.
AccO, AccI	Output or input access list number configured for the line.
Uses	Number of connections established to or from the line since the system was restarted.
Noise	Number of times noise has been detected on the line since the system restarted.

Table 74 *show line Field Descriptions (continued)*

Field	Description
Overruns	Hardware Universal Asynchronous Receiver/Transmitter (UART) overruns or software buffer overflows, both defined as the number of overruns or overflows that have occurred on the specified line since the system was restarted. Hardware overruns are buffer overruns; the UART chip has received bits from the software faster than it can process them. A software overflow occurs when the software has received bits from the hardware faster than it can process them.
A (or I or *)	An A at the upper left of the display indicates that the user is running an asynchronous interface; an I indicates that the line has an asynchronous interface available; an asterisk (*) indicates that the line is otherwise active (in character mode).
Line	Definition of the specified protocol and address of the line.
Location	Location of the current line.
Type	Type of line, as specified by the line global configuration command.
Length	Length of the terminal or screen display, in rows.
Width	Width of the terminal or screen display, in columns.
Baud rate (TX/RX)	Transmit rate/receive rate of the line, in bps.
Status	State of the line: ready or not, connected or disconnected, active or inactive, exit banner or no exit banner, asynchronous interface active or inactive.
Capabilities	Current terminal capabilities.
Modem state	Modem control state. Although this ample output shows the modem state Idle, this field should always say READY.
Special Chars	Current settings of special characters that were input by the user (or taken by default) from the following global configuration commands: <ul style="list-style-type: none"> • escape-character • hold-character • stop-character • start-character • disconnect-character • activation-character
Timeouts	Current settings that were input by the user (or taken by default) from the following global configuration commands: <ul style="list-style-type: none"> • exec-timeout • session-timeout • dispatch-timeout • modem answer-timeout • session-disconnect-warning • timeout login response • autoselect timeout
Session limit	Maximum number of sessions.
Time since activation	Last time start_process was run.

Table 74 *show line Field Descriptions (continued)*

Field	Description
Editing	Whether command-line editing is enabled.
History	Current history list size, set by the user (or taken by default) from the history configuration command.
DNS resolution in show commands is	Whether Open Shortest Path First (OSPF) is configured to look up Domain Name System (DNS) names for use in show EXEC command displays.
Full user help	Whether full user help has been set by the user with the terminal full-help EXEC command or by the administrator with the full-help line configuration command.
Allowed input transports are	Current set transport method, set by the user (or taken by default) from the transport input line configuration command.
Allowed output transports are	Current set transport method, set by the user (or taken by default) from the transport output line configuration command.
Preferred transport is	Current set transport method, set by the user (or taken by default) from the transport preferred line configuration command.
...characters are padded	Current set padding, set by the user (or taken by default) from the padding line configuration command.
...data dispatching characters	Current dispatch character set by the user (or taken by default) from the dispatch-character line configuration command.

The following sample output from the **show line summary** command shows line summary status for lines 1/3/36 through 1/3/102. Each row of output represents 36 lines, and the line status characters in groups of four for readability. For example, the first row represents information on rows 1/3/36 through 1/3/71, and the first line status character “U” corresponds to line 1/3/36.

```
Router# show line summary

1/3/36: U??? ---- ---- ---- --u- ---- ????. . . .
1/3/72: ---- ????. ---- ????. ????. MMMM MMMM MMMM MMMM

2 character mode users.          (U)
19 lines never used.             (?)
31 lines used, but currently idle. (-)
4 lines do not exist.            (.)
16 lines in use by modem management (M)

18 total lines in use, 1 not authenticated (lowercase)
```

Table 75 describes the possible line status characters that can be shown in output from the **show line summary** command.

Table 75 *Line Status Character Descriptions*

Line Status Character	Description
?	Line has never been used.
-	Lines has been used but is currently idle.
.	Line does not exist.

Table 75 *Line Status Character Descriptions (continued)*

Line Status Character	Description
A	Line in use by a packet mode user such as asynchronous PPP, Serial Line Internet Protocol (SLIP), ARAP or ASTUN.
D	Line in use by a digit mode user such as V.110 or V.120.
F	Line in use by a TCP fast-stream user.
M	Line in use by modem management.
U	Line in use by character mode user, such as an EXEC user making an outbound packet connection using Telnet, rlogin, local-area transport (LAT), packet assembler/disassembler (PAD), or normal (nonfast-stream) TCP clear.
V	Line in use by a voice mode user.

■ show line