show ip mroute

To display the contents of the IP multicast routing table, use the **show ip mroute** command in user EXEC or privileged EXEC mode.

show ip mroute [*group-name | group-address*] [*source*] [**summary**] [**count**] [**active** *kbps*]

Syntax Description		
group-name | group-address	(Optional) IP address, name, or interface of the multicast group as defined in the DNS hosts table.	
source	(Optional) IP address or name of a multicast source.	
summary	(Optional) Displays a one-line, abbreviated summary of each entry in the IP multicast routing table.	
count	(Optional) Displays statistics about the group and source, including number of packets, packets per second, average packet size, and bits per second.	
active *kbps*	(Optional) Displays the rate that active sources are sending to multicast groups. Active sources are those sending at a rate of *kbps* or higher. The *kbps* argument defaults to 4.	

Defaults

If you omit all optional arguments and keywords, the **show ip mroute** command displays all entries in the mroute table.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
10.0	This command was introduced.
12.0(5)T	The flag "H" was added in the output display to indicate that an outgoing interface is hardware-switched in the case of IP multicast Multilayer Switching (MLS).

Usage Guidelines

Use the **show ip mroute** command to display information about mroute entries in the mroute table. The Cisco IOS software populates the multicast routing table by creating (S, G) entries from (*, G) entries. The asterisk (*) refers to all source addresses, the "S" refers to a single source address, and the "G" is the destination multicast group address. In creating (S, G) entries, the software uses the best path to that destination group found in the unicast routing table (that is, through Reverse Path Forwarding [RPF]).

Use the **clear ip mroute** command to delete entries from the mroute table.

Examples

The following is sample output from the **show ip mroute** command for a router operating in dense mode. This command displays the contents of the IP multicast routing table for the multicast group named cbone-audio.

```
Router# show ip mroute cbone-audio
```

```
IP Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group, C - Connected,
       L - Local, P - Pruned, R - RP-bit set, F - Register flag,
       T - SPT-bit set, J - Join SPT, M - MSDP created entry,
       X - Proxy Join Timer Running, A - Candidate for MSDP Advertisement,
       U - URD, I - Received Source Specific Host Report, Z - Multicast Tunnel,
       Y - Joined MDT-data group, y - Sending to MDT-data group
Timers: Uptime/Expires
Interface state: Interface, Next-Hop, State/Mode

(*, 224.0.255.1), uptime 0:57:31, expires 0:02:59, RP is 224.0.0.0, flags: DC
  Incoming interface: Null, RPF neighbor 224.0.0.0, Dvmrp
  Outgoing interface list:
    Ethernet0, Forward/Dense, 0:57:31/0:02:52
    Tunnel0, Forward/Dense, 0:56:55/0:01:28

(192.168.37.100/32, 224.0.255.1), uptime 20:20:00, expires 0:02:55, flags: C
  Incoming interface: Tunnel0, RPF neighbor 10.20.37.33, Dvmrp
  Outgoing interface list:
    Ethernet0, Forward/Dense, 20:20:00/0:02:52
```

The following is sample output from the **show ip mroute** command for a router operating in sparse mode:

```
Router# show ip mroute

IP Multicast Routing Table
Flags: D - Dense, S - Sparse, C - Connected, L - Local, P - Pruned
       R - RP-bit set, F - Register flag, T - SPT-bit set
Timers: Uptime/Expires
Interface state: Interface, Next-Hop, State/Mode

(*, 224.0.255.3), uptime 5:29:15, RP is 198.92.37.2, flags: SC
  Incoming interface: Tunnel0, RPF neighbor 10.3.35.1, Dvmrp
  Outgoing interface list:
    Ethernet0, Forward/Sparse, 5:29:15/0:02:57

(198.92.46.0/24, 224.0.255.3), uptime 5:29:15, expires 0:02:59, flags: C
  Incoming interface: Tunnel0, RPF neighbor 10.3.35.1
  Outgoing interface list:
    Ethernet0, Forward/Sparse, 5:29:15/0:02:57
```

The following is sample output from the **show ip mroute** command that shows the VCD value, because an ATM interface with PIM multipoint signalling is enabled:

```
Router# show ip mroute 224.1.1.1

IP Multicast Routing Table
Flags: D - Dense, S - Sparse, C - Connected, L - Local, P - Pruned
       R - RP-bit set, F - Register flag, T - SPT-bit set, J - Join SPT
Timers: Uptime/Expires
Interface state: Interface, Next-Hop or VCD, State/Mode

(*, 224.1.1.1), 00:03:57/00:02:54, RP 130.4.101.1, flags: SJ
  Incoming interface: Null, RPF nbr 0.0.0.0
  Outgoing interface list:
    ATM0/0, VCD 14, Forward/Sparse, 00:03:57/00:02:53
```

The following is sample output from the **show ip mroute** command with the **summary** keyword:

```
Router# show ip mroute summary

IP Multicast Routing Table
```

```
Flags: D - Dense, S - Sparse, C - Connected, L - Local, P - Pruned
       R - RP-bit set, F - Register flag, T - SPT-bit set, J - Join SPT
Timers: Uptime/Expires
Interface state: Interface, Next-Hop, State/Mode

(*, 224.255.255.255), 2d16h/00:02:30, RP 171.69.10.13, flags: SJPC

(*, 224.2.127.253), 00:58:18/00:02:00, RP 171.69.10.13, flags: SJC

(*, 224.1.127.255), 00:58:21/00:02:03, RP 171.69.10.13, flags: SJC

(*, 224.2.127.254), 2d16h/00:00:00, RP 171.69.10.13, flags: SJCL
  (128.9.160.67/32, 224.2.127.254), 00:02:46/00:00:12, flags: CLJT
  (129.48.244.217/32, 224.2.127.254), 00:02:15/00:00:40, flags: CLJT
  (130.207.8.33/32, 224.2.127.254), 00:00:25/00:02:32, flags: CLJT
  (131.243.2.62/32, 224.2.127.254), 00:00:51/00:02:03, flags: CLJT
  (140.173.8.3/32, 224.2.127.254), 00:00:26/00:02:33, flags: CLJT
  (171.69.60.189/32, 224.2.127.254), 00:03:47/00:00:46, flags: CLJT
```

The following is sample output from the **show ip mroute** command with the **active** keyword:

```
Router# show ip mroute active

Active IP Multicast Sources - sending >= 4 kbps

Group: 224.2.127.254, (sdr.cisco.com)
   Source: 146.137.28.69 (mbone.ipd.anl.gov)
     Rate: 1 pps/4 kbps(1sec), 4 kbps(last 1 secs), 4 kbps(life avg)

Group: 224.2.201.241, ACM 97
   Source: 130.129.52.160 (webcast3-e1.acm97.interop.net)
     Rate: 9 pps/93 kbps(1sec), 145 kbps(last 20 secs), 85 kbps(life avg)

Group: 224.2.207.215, ACM 97
   Source: 130.129.52.160 (webcast3-e1.acm97.interop.net)
     Rate: 3 pps/31 kbps(1sec), 63 kbps(last 19 secs), 65 kbps(life avg)
```

The following example of the **show ip mroute** EXEC command is displayed when IP multicast MLS is configured. Note that the "H" indicates hardware switched.

```
Router# show ip mroute

IP Multicast Routing Table
Flags: D - Dense, S - Sparse, C - Connected, L - Local, P - Pruned
       R - RP-bit set, F - Register flag, T - SPT-bit set, J - Join SPT, H - Hardware
switched
Timers: Uptime/Expires

(*, 229.10.0.1), 00:04:35/00:02:59, RP 0.0.0.0, flags: DJC
Incoming interface: Null, RPF nbr 0.0.0.0
Outgoing interface list:
 Vlan6, Forward/Dense, 00:00:30/00:02:30
    Vlan5, Forward/Dense, 00:04:35/00:02:30
    Vlan2, Forward/Dense, 00:01:28/00:00:00

(192.0.2.20, 229.10.0.1), 00:04:35/00:02:27, flags: CT
Incoming interface: Vlan2, RPF nbr 0.0.0.0
Outgoing interface list:
    Vlan5, Forward/Dense, 00:03:25/00:00:00, H
    Vlan6, Forward/Dense, 00:00:10/00:00:00, H
```

Table 45 describes the significant fields shown in the output.

Table 45   show ip mroute Field Descriptions

Field	Description
Flags:	Provides information about the entry.
D - Dense	Entry is operating in dense mode.
S - Sparse	Entry is operating in sparse mode.
C - Connected	A member of the multicast group is present on the directly connected interface.
L - Local	The router itself is a member of the multicast group.
P - Pruned	Route has been pruned. The Cisco IOS software keeps this information in case a downstream member wants to join the source.
R - RP-bit set	Indicates that the (S, G) entry is pointing toward the rendezvous point (RP). The RP is typically a prune state along the shared tree for a particular source.
F - Register flag	Indicates that the software is registering for a multicast source.
T - SPT-bit set	Indicates that packets have been received on the shortest path source tree.
H - Hardware switched	Indicates the outgoing interface is hardware switched because IP multicast MLS is enabled.
Timers:	Uptime/Expires.
Interface state:	Indicates the state of the incoming or outgoing interface. • Interface. Indicates the type and number of the interface listed in the incoming or outgoing interface list. • Next-Hop or VCD. "Next-hop" specifies the IP address of the downstream neighbor. "VCD" specifies the virtual circuit descriptor number. "VCD0" means the group is using the static map virtual circuit. • State/Mode. "State" indicates that packets will either be forwarded, pruned, or null on the interface depending on whether there are restrictions due to access lists or a time-to-live (TTL) threshold. "Mode" indicates whether the interface is operating in dense, sparse, or sparse-dense mode
(*, 224.0.255.1) (198.92.37.100/32, 224.0.255.1)	Entry in the IP multicast routing table. The entry consists of the IP address of the source router followed by the IP address of the multicast group. An asterisk (*) in place of the source router indicates all sources. Entries in the first format are referred to as (*, G) or "star comma G" entries. Entries in the second format are referred to as (S, G) or "S comma G" entries. (*, G) entries are used to build (S, G) entries.
uptime	How long (in hours, minutes, and seconds) the entry has been in the IP multicast routing table.
expires	How long (in hours, minutes, and seconds) until the entry will be removed from the IP multicast routing table on the outgoing interface.

Table 45   show ip mroute Field Descriptions (continued)

Field	Description
RP	Address of the rendezvous point router. For routers and access servers operating in sparse mode, this address is always 0.0.0.0.
flags:	Information about the entry.
Incoming interface:	Expected interface for a multicast packet from the source. If the packet is not received on this interface, it is discarded.
RPF neighbor	IP address of the upstream router to the source. "Tunneling" indicates that this router is sending data to the rendezvous point encapsulated in Register packets. The hexadecimal number in parentheses indicates to which rendezvous point it is registering. Each bit indicates a different rendezvous point if multiple rendezvous points per group are used.
Dvmrp or Mroute	Indicates whether the RPF information is obtained from the DVMRP routing table or the static mroutes configuration.
Outgoing interface list:	Interfaces through which packets will be forwarded. When the **ip pim nbma-mode** command is enabled on the interface, the IP address of the PIM neighbor is also displayed.
Ethernet0	Name and number of the outgoing interface.
Next hop or VCD	Next hop specifies the IP address of the downstream neighbors. VCD is the virtual circuit descriptor number. VCD0 means the group is using the static-map virtual circuit.
Forward/Dense	Indicates that packets will be forwarded on the interface if there are no restrictions due to access lists or TTL threshold. Following the slash (/) is the mode in which the interface is operating (dense or sparse).
Forward/Sparse	Sparse mode interface is in forward mode.
<time/time> (uptime/expiration time)	Per interface, how long (in hours, minutes, and seconds) the entry has been in the IP multicast routing table. Following the slash (/) is how long (in hours, minutes, and seconds) until the entry will be removed from the IP multicast routing table.

The following is sample output from the **show ip mroute** command with the **count** keyword:

```
Router# show ip mroute count

IP Multicast Statistics
4045 routes using 2280688 bytes of memory
41 groups, 97.65 average sources per group
Forwarding Counts:Pkt Count/Pkts per second/Avg Pkt Size/Kilobits per second
Other counts:Total/RPF failed/Other drops(OIF-null, rate-limit etc)

Group:239.0.18.1, Source count:200, Packets forwarded:348232, Packets received:348551
  RP-tree:Forwarding:12/0/218/0, Other:12/0/0
  Source:10.1.1.1/32, Forwarding:1763/1/776/9, Other:1764/0/1
  Source:10.1.1.2/32, Forwarding:1763/1/777/9, Other:1764/0/1
  Source:10.1.1.3/32, Forwarding:1763/1/783/10, Other:1764/0/1
  Source:10.1.1.4/32, Forwarding:1762/1/789/10, Other:1763/0/1
  Source:10.1.1.5/32, Forwarding:1762/1/768/10, Other:1763/0/1
  Source:10.1.1.6/32, Forwarding:1793/1/778/10, Other:1794/0/1
  Source:10.1.1.7/32, Forwarding:1793/1/763/10, Other:1794/0/1
  Source:10.1.1.8/32, Forwarding:1793/1/785/10, Other:1794/0/1
  Source:10.1.1.9/32, Forwarding:1793/1/764/9, Other:1794/0/1
  Source:10.1.1.10/32, Forwarding:1791/1/774/10, Other:1792/0/1
  Source:10.1.2.1/32, Forwarding:1689/1/780/10, Other:1691/0/2
  Source:10.1.2.2/32, Forwarding:1689/1/782/10, Other:1691/0/2
  Source:10.1.2.3/32, Forwarding:1689/1/776/9, Other:1691/0/2
.
.
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Group:239.0.18.132, Source count:0, Packets forwarded:8810, Packets received:8810
  RP-tree:Forwarding:8810/7/780/49, Other:8810/0/0

Group:239.0.17.132, Source count:0, Packets forwarded:704491, Packets received:704491
  RP-tree:Forwarding:704491/639/782/4009, Other:704491/0/0

Group:239.0.17.133, Source count:0, Packets forwarded:704441, Packets received:704441
  RP-tree:Forwarding:704441/639/782/3988, Other:704441/0/0

Group:239.0.18.133, Source count:0, Packets forwarded:8810, Packets received:8810
  RP-tree:Forwarding:8810/8/786/49, Other:8810/0/0

Group:239.0.18.193, Source count:0, Packets forwarded:0, Packets received:0

Group:239.0.17.193, Source count:0, Packets forwarded:0, Packets received:0

Group:239.0.18.134, Source count:0, Packets forwarded:8803, Packets received:8803
  RP-tree:Forwarding:8803/8/774/49, Other:8803/0/0
```

Note The RP-tree: field is displayed only for non-Source Specific Multicast (SSM) groups that have a (*, G) entry and a positive packet received count.

Table 46 describes the significant fields shown in the display.

Table 46   show ip mroute count Field Descriptions

Field	Description
Group:	Summary statistics for traffic on an IP multicast group G. This row is displayed only for non-SSM groups.
Forwarding Counts:	Statistics on the packets that are received and forwarded to at least one interface. **Note** There is no specific command to clear only the forwarding counters; you can clear only the actual multicast forwarding state with the **clear ip mroute** command. Issuing this command will cause interruption of traffic forwarding.
Pkt Count/	Total number of packets received and forwarded since the multicast forwarding state to which this counter applies was created.
Pkts per second/	Number of packets received and forwarded per second. On an IP multicast fast-switching platform, this number is the number of packets during the last second. Other platforms may use a different approach to calculate this number. Please refer to the platform documentation for more information.
Avg Pkt Size/	Total number of bytes divided by the total number of packets for this multicast forwarding state. There is no direct display for the total number of bytes. You can calculate the total number of bytes by multiplying the average packet size by the packet count.
Kilobits per second	Bytes per second divided by packets per second divided by 1000. On an IP multicast fast switching platform, the number of packets per second is the number of packets during the last second. Other platforms may use a different approach to calculate this number. Please refer to the platform documentation for more information.
Other counts:	Statistics on the received packets. These counters include statistics about the packets received and forwarded and packets received but not forwarded.
Total/	Total number of packets received.
RPF failed/	Number of packets not forwarded due to a failed RPF or acceptance check (when bidir-PIM is configured).
Other drops(OIF-null, rate-limit etc)	Number of packets not forwarded for reasons other than an RPF or acceptance check (such as the OIF list was empty or because the packets were discarded because of a configuration, such as **ip multicast rate-limit**, was enabled).
Group:	Summary information about counters for (*, G) and the range of (S, G) states for one particular group G. The following RP-tree: and Source: output fields contain information about the individual states belonging to this group. **Note** For SSM range groups, the Group: displays are statistical. All SSM range (S, G) states are individual, unrelated SSM channels.

Table 46   show ip mroute count Field Descriptions (continued)

Field	Description
Source count:	Number of (S, G) states for this group G. Individual (S, G) counters are detailed in the Source: output field rows.
Packets forwarded:	The sum of the packets detailed in the Forwarding Counts: fields for this IP multicast group G. This field is the sum of the RP-tree and all Source: fields for this group G.
Packets received:	The sum of packets detailed in the Other counts fields for this IP multicast group G. This field is the sum of the Other count: Pkt Count fields of the RP-tree: and Source: rows for this group G.
RP-tree:	Counters for the (*, G) state of this group G. These counters are displayed only for groups that have a forwarding mode that do not forward packets on the shared tree. These (*,G) groups are bidir-PIM and PIM-SM groups. There are no RP-tree displays for PIM-DM and SSM range groups.
Source:	Counters for an individual (S, G) state of this group G. There are no (S, G) states for bidir-PIM groups.

Related Commands

Command	Description
ip multicast-routing	Enables IP multicast routing or multicast distributed switching.
ip pim	Enables PIM on an interface.

show ip ospf database opaque-area

To display lists of information related to traffic engineering opaque link-state advertisements (LSAs), also known as Type-10 opaque link area link states, use the **show ip ospf database opaque-area** EXEC command.

show ip ospf database opaque-area

Syntax Description   This command has no arguments or keywords.

Defaults   No default behavior or values.

Command Modes   EXEC

Command History

Release	Modification
12.0(8)S	This command was introduced.

Examples   The following is sample output from the **show ip ospf database opaque-area** command:

```
Router# show ip ospf database opaque-area

OSPF Router with ID (25.3.3.3) (Process ID 1)

              Type-10 Opaque Link Area Link States (Area 0)

  LS age: 12
  Options: (No TOS-capability, DC)
  LS Type: Opaque Area Link
  Link State ID: 1.0.0.0
  Opaque Type: 1
  Opaque ID: 0
  Advertising Router: 24.8.8.8
  LS Seq Number: 80000004
  Checksum: 0xD423
  Length: 132
  Fragment number : 0

    MPLS TE router ID: 24.8.8.8

    Link connected to Point-to-Point network
      Link ID : 26.2.2.2

      Interface Address : 198.1.1.1
```

Table 47 describes the significant fields displayed in the output.

Table 47   show ip ospf database opaque-area Field Descriptions

Field	Description
LS age	Link-state age.
Options	Type of service options.
LS Type	Type of the link state.
Link State ID	Router ID number.
Opaque Type	Opaque link-state type.
Opaque ID	Opaque LSA ID number.
Advertising Router	Advertising router ID.
LS Seq Number	Link-state sequence number that detects old or duplicate link state advertisements (LSAs).
Checksum	Fletcher checksum of the complete contents of the LSA.
Length	Length (in bytes) of the LSA.
Fragment number	Arbitrary value used to maintain multiple traffic engineering LSAs.
MPLS TE router ID	Unique MPLS traffic engineering ID.
Link ID	Index of the link being described.
Interface Address	Address of the interface.

Related Commands

Command	Description
mpls traffic-eng area	Configures a router running OSPF MPLS to flood traffic engineering for an indicated OSPF area.
mpls traffic-eng router-id	Specifies that the traffic engineering router identifier for the node is the IP address associated with a given interface.
show ip ospf mpls traffic-eng	Provides information about the links available on the local router for traffic engineering.

show ip ospf mpls traffic-eng

To display information about the links available on the local router for traffic engineering, use the **show ip ospf mpls traffic-eng** EXEC command.

show ip ospf [**process-id** [**area-id**]**mpls traffic-eng** [**link**] | [**fragment**]]

Syntax Description		
process-id	(Optional) Internal identification number that is assigned locally when the OSPF routing process is enabled. The value can be any positive integer.	
area-id	(Optional) Area number associated with the OSPF	
link	(Optional) Provides detailed information about the links over which traffic engineering is supported on the local router.	
fragment	(Optional) Provides detailed information about the traffic engineering fragments on the local router.	

Defaults   No default behavior or values.

Command Modes   EXEC

Command History

Release	Modification
Release 12.0 S	This command was introduced.

Examples

The following is sample output from the **show ip ospf mpls traffic-eng** command:

```
router# show ip ospf mpls traffic-eng link

OSPF Router with ID (23.0.0.1) (Process ID 1)

  Area 0 has 2 MPLS TE links. Area instance is 14.

  Links in hash bucket 8.
    Link is associated with fragment 1. Link instance is 14
      Link connected to Point-to-Point network
      Link ID :197.0.0.1
      Interface Address :66.0.0.1
      Neighbor Address :66.0.0.2
      Admin Metric :97
      Maximum bandwidth :128000
      Maximum reservable bandwidth :250000
      Number of Priority :8
      Priority 0 :250000      Priority 1 :250000
      Priority 2 :250000      Priority 3 :250000
      Priority 4 :250000      Priority 5 :250000
      Priority 6 :250000      Priority 7 :212500
      Affinity Bit :0x0
    Link is associated with fragment 0. Link instance is 14
      Link connected to Broadcast network
      Link ID :195.1.1.2
```

```
                Interface Address :195.1.1.1
                Neighbor Address :195.1.1.2
                Admin Metric :10
                Maximum bandwidth :1250000
                Maximum reservable bandwidth :2500000
                Number of Priority :8
                Priority 0 :2500000      Priority 1 :2500000
                Priority 2 :2500000      Priority 3 :2500000
                Priority 4 :2500000      Priority 5 :2500000
                Priority 6 :2500000      Priority 7 :2500000
                Affinity Bit :0x0
```

Table 48 describes the significant fields shown in the output.

Table 48   show ip ospf mpls traffic-eng Field Descriptions

Field	Description
OSPF Router with ID	Router identification number.
Process ID	OSPF process identification.
Area instance	Number of times traffic engineering information or any link changed.
Link instance	Number of times any link changed.
Link ID	Link-state ID.
Interface Address	Local IP address on the link.
Neighbor Address	IP address that is on the remote end of the link.
Admin Metric	Traffic engineering link metric.
Maximum bandwidth	Bandwidth set by the **bandwidth interface** interface configuration command.
Maximum reservable bandwidth	Bandwidth available for traffic engineering on this link. This value is set in the **ip rsvp** interface configuration command.
Number of priority	Number of priorities that are supported.
Priority	Bandwidth (in bytes per second) that is available for traffic engineering at certain priorities.
Affinity Bit	Affinity bits (color) assigned to the link.

show ip pim interface

To display information about interfaces configured for Protocol Independent Multicast (PIM), use the **show ip pim interface** command in EXEC mode.

> **show ip pim interface** [*type number*] [**count**]

Syntax Description

type	(Optional) Interface type.
number	(Optional) Interface number.
count	(Optional) Number of packets received and sent out the interface.

Command Modes   EXEC

Command History

Release	Modification
11.2(11)GS	This command was introduced.
12.0(5)T	The flag "H" was added in the output display to indicate that an outgoing interface is hardware-switched in the case of IP multicast Multilayer Switching (MLS).

Usage Guidelines   This command works only on interfaces that are configured for PIM.

Examples   The following is sample output from the **show ip pim interface** EXEC command:

```
router# show ip pim interface

Address         Interface        Mode     Neighbor  Query      DR
                                          Count     Interval
198.92.37.6     Ethernet0        Dense    2         30         198.92.37.33
198.92.36.129   Ethernet1        Dense    2         30         198.92.36.131
10.1.37.2       Tunnel0          Dense    1         30         0.0.0.0
```

The following is sample output from the **show ip pim interface** command with the **count** keyword:

```
router# show ip pim interface count

Address         Interface        FS   Mpackets In/Out
171.69.121.35   Ethernet0        *    548305239/13744856
171.69.121.35   Serial0.33       *    8256/67052912
198.92.12.73    Serial0.1719     *    219444/862191
```

The following is sample output from the **show ip pim interface** command with the **count** keyword when IP multicast MLS is enabled. The examples lists the PIM interfaces that are fast switched and process switched, and the packet counts for these. The "H" is added to interfaces where IP multicast MLS is enabled.

```
router# show ip pim interface count

States: FS - Fast Switched, H - Hardware Switched
```

Cisco IOS Switching Services Command Reference ■

```
Address          Interface        FS  Mpackets In/Out
192.1.10.2       Vlan10           * H 40886/0
192.1.11.2       Vlan11           * H 0/40554
192.1.12.2       Vlan12           * H 0/40554
192.1.23.2       Vlan23           *   0/0
192.1.24.2       Vlan24           *   0/0
```

Table 49 describes the significant fields shown in the output.

Table 49   show ip pim interface count Field Descriptions

Field	Description
Address	IP address of the next hop router.
Interface	Interface type and number that is configured to run PIM.
Mode	Multicast mode in which the Cisco IOS software is operating. This can be dense mode or sparse mode. DVMRP indicates that a DVMRP tunnel is configured.
Neighbor Count	Number of PIM neighbors that have been discovered through this interface. If the neighbor count is 1 for a DVMRP tunnel, the neighbor is active (receiving probes and reports).
Query Interval	Frequency (in seconds) of PIM router query messages, as set by the **ip pim query-interval** interface configuration command. The default is 30 seconds.
DR	IP address of the designated router on the LAN. Note that serial lines do not have designated routers, so the IP address is shown as 0.0.0.0.
FS	An asterisk (*) in this column indicates that fast switching is enabled.
Mpackets In/Out	Number of packets into and out of the interface since the box has been up.

Related Commands

Command	Description
ip pim	Enables PIM on an interface.
show ip pim neighbor	Lists the PIM neighbors discovered by the Cisco IOS software.

show ip protocols vrf

To display the routing protocol information associated with a VRF, use the **show ip protocols vrf** command in EXEC mode.

show ip protocols vrf *vrf-name*

Syntax Description	*vrf-name*	Name assigned to a VRF.

Defaults   No default behavior or values.

Command Modes   EXEC

Command History

Release	Modification
12.0(5)T	This command was introduced.

Usage Guidelines   Use this command to display routing information associated with a VRF.

Examples   The following example shows information about a VRF named vpn1:

```
router# show ip protocols vrf vpn2

Routing Protocol is "bgp 100"
  Sending updates every 60 seconds, next due in 0 sec
  Outgoing update filter list for all interfaces is
  Incoming update filter list for all interfaces is
  IGP synchronization is disabled
  Automatic route summarization is disabled
  Redistributing:connected, static
  Routing for Networks:
  Routing Information Sources:
    Gateway         Distance      Last Update
    13.13.13.13         200        02:20:54
    18.18.18.18         200        03:26:15
  Distance:external 20 internal 200 local 200
```

Table 50 describes the significant fields shown in the output.

Table 50   show ip protocols vrf Field Descriptions

Field	Description
Gateway	Displays the IP address of the router identifier for all routers in the network.
Distance	Displays the metric used to access the destination route.
Last Update	Displays the last time the routing table was updated from the source.

Related Commands

Command	Description
show ip vrf	Displays the set of defined VRFs and associated interfaces.

show ip route vrf

To display the IP routing table associated with a VRF, use the **show ip route vrf** command in EXEC mode.

> **show ip route vrf** *vrf-name* [**connected**] [*protocol* [*as-number*] [*tag*] [*output-modifiers*]] [**list**
> *number* [*output-modifiers*]] [**profile**] [**static** [*output-modifiers*]] [**summary** [*output-modifiers*]]
> [**supernets-only** [*output-modifiers*]]

Syntax Description

vrf-name	Name assigned to the VRF.
connected	(Optional) Displays all connected routes in a VRF.
protocol	(Optional) To specify a routing protocol, use one of the following keywords: **bgp**, **egp**, **eigrp**, **hello**, **igrp**, **isis**, **ospf**, or **rip**.
as-number	(Optional) Autonomous system number.
tag	(Optional) Cisco IOS routing area label.
output-modifiers	(Optional) For a list of associated keywords and arguments, use context-sensitive help.
list *number*	(Optional) Specifies the IP access list to display.
profile	(Optional) Displays the IP routing table profile.
static	(Optional) Displays static routes.
summary	(Optional) Displays a summary of routes.
supernets-only	(Optional) Displays supernet entries only.

Defaults

No default behavior or values.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)T	This command was introduced.

Usage Guidelines

This command displays specified information from the IP routing table of a VRF.

Examples

This example shows the IP routing table associated with the VRF named vrf1:

```
router# show ip route vrf vrf1

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
```

```
         T - traffic engineered route

Gateway of last resort is not set

B    51.0.0.0/8 [200/0] via 13.13.13.13, 00:24:19
C    50.0.0.0/8 is directly connected, Ethernet1/3
B    11.0.0.0/8 [20/0] via 50.0.0.1, 02:10:22
B    12.0.0.0/8 [200/0] via 13.13.13.13, 00:24:20
```

This example shows BGP entries in the IP routing table associated with the VRF named vrf1:

```
Router# show ip route vrf vrf1 bgp

B  51.0.0.0/8 [200/0] via 13.13.13.13, 03:44:14
B  11.0.0.0/8 [20/0] via 51.0.0.1, 03:44:12
B  12.0.0.0/8 [200/0] via 13.13.13.13, 03:43:14
```

Related Commands	Command	Description
	show ip cache	Displays the CEF forwarding table associated with a VRF.
	show ip vrf	Displays the set of defined VRFs and associated interfaces.

show ip rsvp host

To display RSVP terminal point information for receivers or senders, use the **show ip rsvp host** EXEC command.

show ip rsvp host {**senders** | **receivers**} [*hostname* | *A.B.C.D*]

Syntax Description

senders	Displays information for senders.
receivers	Displays information for receivers.
hostname	(Optional) Restricts the display to sessions with *hostname* as their destination.
A.B.C.D	(Optional) Restricts the display to sessions with the specified IP address as their destination.

Defaults   No default behavior or values.

Command Modes   EXEC

Command History

Release	Modification
12.0(5)S	This command was introduced.

Examples   The following is sample output from the **show ip rsvp host receivers** command:

```
Router# show ip rsvp host receivers

To          From         Pro DPort Sport Next Hop    I/F   Fi Serv BPS Bytes
10.0.0.11   10.1.0.4     0   10011 1                       SE LOAD 100K  1K
```

Table 51 describes the significant fields shown in the output.

Table 51   show ip rsvp host Field Descriptions

Field	Description
To	IP address of the receiver.
From	IP address of the sender.
Pro	Protocol code.
DPort	Destination port number.
Sport	Source port number.
Next Hop	IP address of the next hop.
I/F	Interface of the next hop.
Fi	Filter (wild card, shared explicit, or fixed).

Table 51   show ip rsvp host Field Descriptions (continued)

Field	Description
Serv	Service (RATE or LOAD).
BPS	Reservation rate (in bits per second).
Bytes	Bytes of requested burst size.

Related Commands

Command	Description
show ip rsvp request	Displays the RSVP reservations currently being requested upstream for a specified interface or all interfaces.
show ip rsvp reservation	Displays RSVP-related receiver information currently in the database.
show ip rsvp sender	Displays RSVP-related sender information currently in the database.

show ip vrf

To display the set of defined VRFs and associated interfaces, use the **show ip vrf** command in EXEC mode.

show ip vrf [{**brief** | **detail** | **interfaces**}] [*vrf-name*] [*output-modifiers*]

Syntax Description

brief	(Optional) Displays concise information on the VRFs and associated interfaces.
detail	(Optional) Displays detailed information on the VRFs and associated interfaces.
interfaces	(Optional) Displays detailed information about all interfaces bound to a particular VRF, or any VRF.
vrf-name	(Optional) Name assigned to a VRF.
output-modifiers	(Optional) For a list of associated keywords and arguments, use context-sensitive help.

Defaults

When no optional parameters are specified the command shows concise information about all configured VRFs.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)T	This command was introduced.

Usage Guidelines

Use this command to display information about VRFs. Two levels of detail are available: use the **brief** keyword or no keyword to display concise information, or use the **detail** keyword to display all information. To display information about all interfaces bound to a particular VRF, or to any VRF, use the **interfaces** keyword.

Examples

This example shows brief information for the VRFs currently configured:

```
Router# show ip vrf

  Name              Default RD          Interfaces
  vrf1              100:1               Ethernet1/3
  vrf2              100:2               Ethernet0/3
```

Table 52 describes the fields shown in this example.

Table 52   show ip vrf Field Descriptions

Field	Description
Name	Specifies the VRF name.
Default RD	Specifies the default route distinguisher.
Interfaces	Specifies the network interfaces.

This example shows detailed information for the VRF called vrf1:

```
Router# show ip vrf detail vrf1

VRF vrf1; default RD 100:1
 Interfaces:
  Ethernet1/3
 Connected addresses are in global routing table
 Export VPN route-target communities
  RT:100:1
 Import VPN route-target communities
  RT:100:1
 No import route-map
```

Table 53 describes the significant fields shown in the output.

Table 53   show ip vrf detail Field Descriptions

Field	Description
Interfaces	Specifies the network interfaces.
Export	Specifies VPN route-target export communities.
Import	Specifies VPN route-target import communities.

This example shows the interfaces bound to a particular VRF:

```
Router# show ip vrf interfaces

Interface       IP-Address      VRF                     Protocol
Ethernet2       130.22.0.33     blue_vrf                up
Ethernet4       130.77.0.33     hub                     up
router#
```

Table 54 describes the significant fields shown in the output.

Table 54   show ip vrf interfaces Field Descriptions

Field	Description
Interface	Specifies the network interfaces for a VRF.
IP-Address	Specifies the IP address of a VRF interface.
VRF	Specifies the VRF name.
Protocol	Displays the state of the protocol (up/down) for each VRF interface.

Related Commands	Command	Description
	import map	Configures an import route map for a VRF.
	ip vrf	Configures a VRF routing table.
	ip vrf forwarding	Associates a VRF with an interface or subinterface.
	rd	Creates routing and forwarding tables for a VRF.
	route-target	Creates a route-target extended community for a VRF.

show isis database verbose

To display additional information about the database, use the **show isis database verbose** EXEC command.

show isis database verbose

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes EXEC

Command History

Release	Modification
12.0(5)S	This command was introduced.

Examples The following is sample output from the **show isis database verbose** command:

```
Router# show isis database verbose

IS-IS Level-1 Link State Database
LSPID              LSP Seq Num  LSP Checksum  LSP Holdtime      ATT/P/OL
dtp-5.00-00       * 0x000000E6   0xC9BB        1042              0/0/0
  Area Address:49.0001
  NLPID:      0xCC
  Hostname:dtp-5
  Router ID:  5.5.5.5
  IP Address: 172.21.39.5
  Metric:10       IP 172.21.39.0/24
dtp-5.00-01       * 0x000000E7   0xAB36        1065              0/0/0
  Metric:10       IS-Extended dtp-5.01
    Affinity:0x00000000
    Interface IP Address:172.21.39.5
    Physical BW:10000000 bits/sec
    Reservable BW:1166000 bits/sec
    BW Unreserved[0]: 1166000 bits/sec, BW Unreserved[1]: 1166000 bits/sec
    BW Unreserved[2]: 1166000 bits/sec, BW Unreserved[3]: 1166000 bits/sec
    BW Unreserved[4]: 1166000 bits/sec, BW Unreserved[5]: 1166000 bits/sec
    BW Unreserved[6]: 1166000 bits/sec, BW Unreserved[7]: 1153000 bits/sec
  Metric:0        ES dtp-5
```

Table 55 describes the fields displayed in this example.

Table 55   show isis database verbose Field Descriptions

Field	Description
LSPID	LSP identifier. The first six octets form the System ID of the router that originated the LSP.
	The next octet is the pseudonode ID. When this byte is zero, the LSP describes links from the system. When it is nonzero, the LSP is a pseudonode LSP. This is similar to a router LSA in OSPF; the LSP describes the state of the originating router. For each LAN, the designated router for that LAN creates and floods a pseudonode LSP that describes all systems attached to that LAN.
	The last octet is the LSP number. If all the data cannot fit into a single LSP, the LSP is divided into multiple LSP fragments. Each fragment has a different LSP number. An asterisk (*) indicates that the system issuing this command originated the LSP.
LSP Seq Num	LSP sequence number that allows other systems to determine if they received the latest information from the source.
LSP Checksum	Checksum of the entire LSP packet.
LSP Holdtime	Amount of time that the LSP remains valid (in seconds). An LSP hold time of zero indicates that this LSP was purged and is being removed from all routers' link-state databases (LSDBs). The value indicates how long the purged LSP will stay in the LSDB before it is completely removed.
ATT	Attach bit. This bit indicates that the router is also a Level 2 router, and it can reach other areas. Level 1 routers use the Attach bit to find the closest Level 2 router. They install a default route to the closest Level 2 router.
P	P bit. This bit detects if the IS can repair area partitions. Cisco and other vendors do not support area partition repair.
OL	Overload bit. This bit determines if the IS is congested. If the overload bit is set, other routers do not use this system as a transit router when they calculate routes. Only packets for destinations directly connected to the overloaded router are sent to this router.
Area Address	Reachable area addresses from the router. For Level 1 LSPs, these are the area addresses configured manually on the originating router. For Level 2 LSPs, these are all the area addresses for the area to which this router belongs.
NLPID	Network Layer Protocol identifier.
Hostname	Host name of the node.
Router ID	Traffic engineering router identifier for the node.
IP Address	IPv4 address for the interface.
Metric	IS-IS metric for the cost of the adjacency between the originating router and the advertised neighbor, or the metric of the cost to get from the advertising router to the advertised destination (which can be an IP address, an end system (ES), or a connectionless network service (CLNS) prefix).
Affinity	Link attribute flags that are being flooded.

Table 55   show isis database verbose Field Descriptions (continued)

Field	Description
Physical BW	Link bandwidth capacity (in bits per second).
Reservable BW	Amount of reservable bandwidth on this link.
BW Unreserved	Amount of bandwidth that is available for reservation.

Related Commands

Command	Description
show isis mpls traffic-eng adjacency-log	Displays a log of 20 entries of MPLS traffic engineering IS-IS adjacency changes.
show isis mpls traffic-eng advertisements	Displays the last flooded record from MPLS traffic engineering.
show isis mpls traffic-eng tunnel	Displays information about tunnels considered in the IS-IS next hop calculation.

show isis mpls traffic-eng adjacency-log

To display a log of 20 entries of MPLS traffic engineering IS-IS adjacency changes, use the **show isis mpls traffic-eng adjacency-log** EXEC command.

show isis mpls traffic-eng adjacency-log

Syntax Description   This command has no arguments or keywords.

Defaults   No default behavior or values.

Command Modes   EXEC

Command History

Release	Modification
12.0(5)S	This command was introduced.

Examples   The following is sample output from the **show isis mpls traffic-eng adjacency-log** command:

```
Router# show isis mpls traffic-eng adjacency-log

IS-IS RRR log
When       Neighbor ID      IP Address       Interface Status Level
04:52:52   0000.0024.0004.02  0.0.0.0          Et0/2     Up     level-1
04:52:50   0000.0026.0001.00  170.1.1.2        PO1/0/0   Up     level-1
04:52:37   0000.0024.0004.02  0.0.0.0          Et0/2     Up     level-1
```

Table 56 describes the significant fields shown in the output.

Table 56   show isis mpls traffic-eng adjacency-log Field Descriptions

Field	Description
When	Amount of time since the entry was recorded in the log.
Neighbor ID	Identification value of the neighbor.
IP Address	Neighbor IPv4 address.
Interface	Interface from which a neighbor is learned.
Status	Up (active) or Down (disconnected).
Level	Routing level.

Related Commands

Command	Description
show isis mpls traffic-eng advertisements	Displays the last flooded record from MPLS traffic engineering.

show isis mpls traffic-eng advertisements

To display the last flooded record from MPLS traffic engineering, use the **show isis mpls traffic-eng advertisements** EXEC command.

show isis mpls traffic-eng advertisements

Syntax Description   This command has no arguments or keywords.

Defaults   No default behavior or values.

Command Modes   EXEC

Command History

Release	Modification
12.0(5)S	This command was introduced.

Examples   The following is sample output from the **show isis mpls traffic-eng advertisements** command:

```
Router# show isis mpls traffic-eng advertisements

System ID:dtp-5.00
  Router ID:5.5.5.5
  Link Count:1
    Link[1]
      Neighbor System ID:dtp-5.01 (broadcast link)
      Interface IP address:172.21.39.5
      Neighbor IP Address:0.0.0.0
      Admin. Weight:10
      Physical BW:10000000 bits/sec
      Reservable BW:1166000 bits/sec
      BW unreserved[0]:1166000 bits/sec, BW unreserved[1]:1166000 bits/sec
      BW unreserved[2]:1166000 bits/sec, BW unreserved[3]:1166000 bits/sec
      BW unreserved[
4]:1166000 bits/sec, BW unreserved[5]:1166000 bits/sec
      BW unreserved[6]:1166000 bits/sec, BW unreserved[7]:1153000 bits/sec
      Affinity Bits:0x00000000
```

Table 57 describes the significant fields shown in the output.

Table 57   show isis mpls traffic-eng advertisements Field Descriptions

Field	Description
System ID	Identification value for the local system in the area.
Router ID	MPLS traffic engineering router ID.
Link Count	Number of links that MPLS traffic engineering advertised.
Neighbor System ID	Identification value for the remote system in an area.

Table 57   show isis mpls traffic-eng advertisements Field Descriptions (continued)

Field	Description
Interface IP address	IPv4 address of the interface.
Neighbor IP Address	IPv4 address of the neighbor.
Admin. Weight	Administrative weight associated with this link.
Physical BW	Link bandwidth capacity (in bits per second).
Reservable BW	Amount of reservable bandwidth on this link.
BW unreserved	Amount of bandwidth that is available for reservation.
Affinity Bits	Link attribute flags being flooded.

Related Commands

Command	Description
show isis mpls traffic-eng adjacency-log	Displays a log of 20 entries of MPLS traffic engineering IS-IS adjacency changes.

show isis mpls traffic-eng tunnel

To display information about tunnels considered in the IS-IS next hop calculation, use the **show isis mpls traffic-eng tunnel** EXEC command.

show isis mpls traffic-eng tunnel

Syntax Description   This command has no arguments or keywords.

Defaults   No default behavior or values

Command Modes   EXEC

Command History

Release	Modification
12.0(5)	This command was introduced.

Examples   The following is sample output from the **show isis mpls traffic-eng tunnel** command:

```
Router# show isis mpls traffic-eng tunnel

Station Id        Tunnel Name   Bandwidth   Nexthop      Metric    Mode
kangpa-router1.00 Tunnel1022    3333        2.2.2.2      -3        Relative
                  Tunnel1021    10000       2.2.2.2      11        Absolute
tomklong-route.00 Tunnel1031    10000       3.3.3.3      -1        Relative
                  Tunnel1032    10000       3.3.3.3
```

Table 58 describes the significant fields shown in the output.

Table 58   show isis mpls traffic-eng tunnel Field Descriptions

Field	Description
Station Id	Name or system ID of the MPLS traffic engineering tailend router.
Tunnel Name	Name of the MPLS traffic engineering tunnel interface.
Bandwidth	MPLS traffic engineering specified bandwidth of the tunnel.
Nexthop	MPLS traffic engineering destination IP address of the tunnel.
Metric	MPLS traffic engineering metric of the tunnel.
Mode	MPLS traffic engineering metric mode of the tunnel. It can be relative or absolute.

Related Commands

Command	Description
show mpls traffic-eng autoroute	Displays tunnels that are announced to IGP, including interface, destination, and bandwidth.

show lane

To display detailed information for all the LANE components configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN (ELAN), use the **show lane** command in EXEC mode.

AIP on the Cisco 7500 Series Routers; ATM Port Adapter on the Cisco 7200 Series

    show lane [**interface atm** *slot*/*port*[**.***subinterface-number*] | **name** *elan-name*] [**brief**]

ATM Port Adapter on the Cisco 7500 Series Routers

    show lane [**interface atm** *slot*/*port-adapter*/*port*[**.***subinterface-number*] | **name** *elan-name*][**brief**]

Cisco 4500 and 4700 Routers

    show lane [**interface atm** *number*[**.***subinterface-number*] | **name** *elan-name*] [**brief**]

Syntax Description

interface atm *slot*/*port*	(Optional) ATM interface slot and port for the following:
	• AIP on the Cisco 7500 series routers.
	• ATM port adapter on the Cisco 7200 series routers.
interface atm *slot*/*port-adapter*/*port*	(Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers.
interface atm *number*	(Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers.
.*subinterface-number*	(Optional) Subinterface number.
name *elan-name*	(Optional) Name of the ELAN. The maximum length of the name is 32 characters.
brief	(Optional) Keyword used to display the brief subset of available information.

Command Modes   EXEC

Command History

Release	Modification
11.0	This command was introduced.

Usage Guidelines   Using the **show lane** command is equivalent to using the **show lane config**, **show lane server**, **show lane bus**, and **show lane client** commands. The **show lane** command shows all LANE-related information except the **show lane database** command information.

Examples   The following is sample output from the **show lane** command for an Ethernet ELAN:

```
Router# show lane

LE Config Server ATM2/0 config table: cisco_eng
Admin: up  State: operational
LECS Mastership State: active master
list of global LECS addresses (30 seconds to update):
39.020304050607080910111213.00000CA05B43.00  <-------- me
ATM Address of this LECS: 39.020304050607080910111213.00000CA05B43.00 (auto)
 vcd  rxCnt txCnt  callingParty
  50     2     2  39.020304050607080910111213.00000CA05B41.02 LES elan2 0 active
cumulative total number of unrecognized packets received so far: 0
cumulative total number of config requests received so far: 30
cumulative total number of config failures so far: 12
    cause of last failure: no configuration
    culprit for the last failure: 39.020304050607080910111213.00602F557940.01

LE Server ATM2/0.2  ELAN name: elan2  Admin: up  State: operational
type: ethernet        Max Frame Size: 1516
ATM address: 39.020304050607080910111213.00000CA05B41.02
LECS used: 39.020304050607080910111213.00000CA05B43.00 connected, vcd 51
control distribute: vcd 57, 2 members, 2 packets

proxy/ (ST: Init, Conn, Waiting, Adding, Joined, Operational, Reject, Term)
lecid ST vcd    pkts Hardware Addr  ATM Address
   1  O  54       2 0000.0ca0.5b40 39.020304050607080910111213.00000CA05B40.02
   2  O  81       2 0060.2f55.7940 39.020304050607080910111213.00602F557940.02

LE BUS ATM2/0.2  ELAN name: elan2  Admin: up  State: operational
type: ethernet        Max Frame Size: 1516
ATM address: 39.020304050607080910111213.00000CA05B42.02
data forward: vcd 61, 2 members, 0 packets, 0 unicasts

lecid  vcd     pkts  ATM Address
   1   58        0 39.020304050607080910111213.00000CA05B40.02
   2   82        0 39.020304050607080910111213.00602F557940.02

LE Client ATM2/0.2  ELAN name: elan2  Admin: up  State: operational
Client ID: 1               LEC up for 11 minutes 49 seconds
Join Attempt: 1
HW Address: 0000.0ca0.5b40   Type: ethernet         Max Frame Size: 1516

ATM Address: 39.020304050607080910111213.00000CA05B40.02

 VCD  rxFrames  txFrames  Type       ATM Address
   0        0         0 configure  39.020304050607080910111213.00000CA05B43.00
  55        1         4 direct     39.020304050607080910111213.00000CA05B41.02
  56        6         0 distribute 39.020304050607080910111213.00000CA05B41.02
  59        0         1 send       39.020304050607080910111213.00000CA05B42.02
  60        3         0 forward    39.020304050607080910111213.00000CA05B42.02
  84        3         5 data       39.020304050607080910111213.00602F557940.02
```

The following is sample output from the **show lane** command for a Token Ring LANE network:

```
Router# show lane

LE Config Server ATM4/0 config table: eng
Admin: up  State: operational
LECS Mastership State: active master
list of global LECS addresses (35 seconds to update):
39.020304050607080910111213.006047704183.00  <-------- me
ATM Address of this LECS: 39.020304050607080910111213.006047704183.00 (auto)
 vcd  rxCnt  txCnt  callingParty
```

```
   7      1      1 39.020304050607080910111213.006047704181.01 LES elan1 0 active
cumulative total number of unrecognized packets received so far: 0
cumulative total number of config requests received so far: 2
cumulative total number of config failures so far: 0


LE Server ATM4/0.1  ELAN name: elan1  Admin: up  State: operational
type: token ring         Max Frame Size: 4544       Segment ID: 2048
ATM address: 39.020304050607080910111213.006047704181.01
LECS used: 39.020304050607080910111213.006047704183.00 connected, vcd 9
control distribute: vcd 12, 1 members, 2 packets

proxy/ (ST: Init, Conn, Waiting, Adding, Joined, Operational, Reject, Term)
lecid ST vcd    pkts Hardware Addr  ATM Address
   1  O    8       3 100.2           39.020304050607080910111213.006047704180.01
                    0060.4770.4180 39.020304050607080910111213.006047704180.01

LE BUS ATM4/0.1  ELAN name: elan1  Admin: up  State: operational
type: token ring         Max Frame Size: 4544       Segment ID: 2048
ATM address: 39.020304050607080910111213.006047704182.01
data forward: vcd 16, 1 members, 0 packets, 0 unicasts

lecid  vcd     pkts   ATM Address
   1   13        0 39.020304050607080910111213.006047704180.01

LE Client ATM4/0.1  ELAN name: elan1  Admin: up  State: operational
Client ID: 1               LEC up for 2 hours 25 minutes 39 seconds
Join Attempt: 3
HW Address: 0060.4770.4180  Type: token ring         Max Frame Size: 4544
Ring:100    Bridge:2       ELAN Segment ID: 2048
ATM Address: 39.020304050607080910111213.006047704180.01

 VCD  rxFrames  txFrames  Type       ATM Address
   0         0         0 configure 39.020304050607080910111213.006047704183.00
  10         1         3 direct    39.020304050607080910111213.006047704181.01
  11         2         0 distribute 39.020304050607080910111213.006047704181.01
  14         0         0 send      39.020304050607080910111213.006047704182.01
  15         0         0 forward   39.020304050607080910111213.006047704182.01
```

Table 59 describes significant fields shown in the output.

Table 59   show lane Field Descriptions

Field	Description
LE Config Server	Identifies the following lines as applying to the LANE configuration server. These lines are also displayed in output from the **show lane config** command. See the **show lane config** command for explanations of the output.
LE Server	Identifies the following lines as applying to the LANE server. These lines are also displayed in output from the **show lane server** command. See the **show lane server** command for explanations of the output.
LE BUS	Identifies the following lines as applying to the LANE broadcast and unknown server. These lines are also displayed in output from the **show lane bus** command. See the **show lane bus** command for explanations of the output.
LE Client	Identifies the following lines as applying to a LANE client. These lines are also displayed in output from the **show lane client** command. See the **show lane bus** command for explanations of the output.

show lane bus

To display detailed LANE information for the broadcast and unknown server (BUS) configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN (ELAN), use the **show lane bus** command in EXEC mode:

AIP on the Cisco 7500 Series Routers; ATM Port Adapter on the Cisco 7200 Series

show lane bus [**interface atm** *slot*/*port*[**.***subinterface-number*] | **name** *elan-name*] [**brief**]

ATM Port Adapter on the Cisco 7500 Series Routers

show lane bus [**interface atm** *slot*/*port-adapter*/*port*[**.***subinterface-number*] | **name** *elan-name*][**brief**]

Cisco 4500 and 4700 Routers

show lane bus [**interface atm** *number*[**.***subinterface-number*] | **name** *elan-name*] [**brief**]

Syntax Description		
interface atm *slot*/*port*	(Optional) ATM interface slot and port for the following:	
	• AIP on the Cisco 7500 series routers.	
	• ATM port adapter on the Cisco 7200 series routers.	
interface atm *slot*/*port-adapter*/*port*	(Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers.	
interface atm *number*	(Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers.	
.*subinterface-number*	(Optional) Subinterface number.	
name *elan-name*	(Optional) Name of the ELAN. The maximum length of the name is 32 characters.	
brief	(Optional) Displays the brief subset of available information.	

Command Modes   EXEC

Command History

Release	Modification
11.0	This command was introduced.

Examples   The following is sample output from the **show lane bus** command for an Ethernet ELAN:

```
Router# show lane bus

LE BUS ATM2/0.2  ELAN name: elan2  Admin: up  State: operational
```

```
type: ethernet          Max Frame Size: 1516
ATM address: 39.020304050607080910111213.00000CA05B42.02
data forward: vcd 61, 2 members, 0 packets, 0 unicasts

lecid  vcd      pkts   ATM Address
    1   58          0 39.020304050607080910111213.00000CA05B40.02
    2   82          0 39.020304050607080910111213.00602F557940.02
```

The following is sample output from the **show lane bus** command for a Token Ring LANE:

```
show lane bus

LE BUS ATM3/0.1  ELAN name: anubis  Admin: up  State: operational
type: token ring        Max Frame Size: 4544      Segment ID: 2500
ATM address: 47.009181000000000000000000.00000CA01662.01
data forward: vcd 14, 2 members, 0 packets, 0 unicasts

lecid  vcd      pkts   ATM Address
    1   11          0 47.009181000000000000000000.00000CA01660.01
    2   17          0 47.009181000000000000000000.00000CA04960.01
```

Table 60 describes significant fields shown in the output.

Table 60   show lane bus Field Descriptions

Field	Description
LE BUS ATM2/0.2	Interface and subinterface for which information is displayed.
ELAN name	Name of the ELAN for this BUS.
Admin	Administrative state, either up or down.
State	Status of this LANE BUS. Possible states include down and operational.
type	Type of ELAN.
Max Frame Size	Maximum frame size (in bytes) on the ELAN.
Segment ID	The ring number of the ELAN. This field appears only for Token Ring LANE.
ATM address	ATM address of this LANE BUS.
data forward	Virtual channel descriptor of the Data Forward VCC, the number of LANE clients attached to the VCC, and the number of packets sent on the VCC.
lecid	Identifier assigned to each LANE client on the Data Forward VCC.
vcd	Virtual channel descriptor used to reach the LANE client.
pkts	Number of packets sent by the BUS to the LANE client.
ATM Address	ATM address of the LANE client.

show lane client

To display detailed LANE information for all the LANE clients configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN (ELAN), use the **show lane client** command in EXEC mode.

AIP on the Cisco 7500 Series Routers; ATM Port Adapter on the Cisco 7200 Series

show lane client detail [**interface atm** *slot*/*port*[**.**subinterface-number] | **name** *elan-name*] [**brief**]

ATM Port Adapter on the Cisco 7500 Series Routers

show lane client detail [**interface atm** *slot*/*port-adapter*/*port*[**.**subinterface-number] | **name** *elan-name*] [**brief**]

Cisco 4500 and 4700 Routers

show lane client detail [**interface atm** *number*[**.**subinterface-number] | **name** *elan-name*] [**brief**]

Syntax Description	

detail	Displays additional FSSRP information.
interface atm *slot*/*port*	(Optional) ATM interface slot and port for the following: • AIP on the Cisco 7500 series routers. • ATM port adapter on the Cisco 7200 series routers.
interface atm *slot*/*port-adapter*/*port*	(Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers.
interface atm *number*	(Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers.
.subinterface-number	(Optional) Subinterface number.
name *elan-name*	(Optional) Name of ELAN. The maximum length of the name is 32 characters.
brief	(Optional) Displays the brief subset of available information.

Command Modes EXEC

Command History

Release	Modification
11.0	This command was introduced.
12.0(5)T	The **detail** option and command output line "This client is running in FSSRP mode" were added.

Examples

The following is sample output from the **show lane client** command for an Ethernet ELAN:

```
Router# show lane client

LE Client ATM2/0.2  ELAN name: elan2  Admin: up  State: operational
Client ID: 1                LEC up for 11 minutes 49 seconds
Join Attempt: 1
HW Address: 0000.0ca0.5b40   Type: ethernet         Max Frame Size: 1516

ATM Address: 39.020304050607080910111213.00000CA05B40.02

 VCD   rxFrames  txFrames  Type       ATM Address
  0         0         0  configure  39.020304050607080910111213.00000CA05B43.00
 55         1         4  direct     39.020304050607080910111213.00000CA05B41.02
 56         6         0  distribute 39.020304050607080910111213.00000CA05B41.02
 59         0         1  send       39.020304050607080910111213.00000CA05B42.02
 60         3         0  forward    39.020304050607080910111213.00000CA05B42.02
 84         3         5  data       39.020304050607080910111213.00602F557940.02
```

The following is sample output from the **show lane client** command for a Token Ring LANE:

```
Router# show lane client

LE Client ATM4/0.1  ELAN name: elan1  Admin: up  State: operational
Client ID: 1                LEC up for 2 hours 26 minutes 3 seconds
Join Attempt: 3
HW Address: 0060.4770.4180   Type: token ring       Max Frame Size: 4544
Ring:100    Bridge:2     ELAN Segment ID: 2048
ATM Address: 39.020304050607080910111213.006047704180.01

 VCD   rxFrames  txFrames  Type       ATM Address
  0         0         0  configure  39.020304050607080910111213.006047704183.00
 10         1         3  direct     39.020304050607080910111213.006047704181.01
 11         2         0  distribute 39.020304050607080910111213.006047704181.01
 14         0         0  send       39.020304050607080910111213.006047704182.01
 15         0         0  forward    39.020304050607080910111213.006047704182.01
```

The following is sample output from the **show lane client detail** command.

```
Router# show lane client detail

LE Client ATM1/0.1 ELAN name:xxx Admin:up State:operational
Client ID:2 LEC up for 5 days 40 minutes 45 seconds
ELAN ID:0
This client is running in FSSRP mode.
Join Attempt:14
Known LE Servers:1
Configured Idle Time:5 seconds
Last Fail Reason:Config VC being released
HW Address:00e0.8fcf.d820   Type:ethernet          Max Frame Size:1516

ATM Address:47.009181000000000061705B0C01.00E08FCFD820.01
VCDrxFramestxFramesTypeATM Address
0 0 0 configure 47.009181000000000613E5A2F01.006070174823.00

LEC ID:2, State:LESBUS_ACTIVE

52 17783556direct47.009181000000000613E5A2F01.00000C5A0C59.01
5317780distribute47.009181000000000613E5A2F01.00000C5A0C59.01
54 00send47.009181000000000613E5A2F01.00000C5A0C5A.01
55 00forward47.009181000000000613E5A2F01.00000C5A0C5A.01

LEC ID:3, State:LESBUS_ACTIVE
```

```
93122234direct47.00918100000000613E5A2F01.00000ABCD001.09
941220distribute47.00918100000000613E5A2F01.00000ABCD001.09
9700send47.00918100000000613E5A2F01.00000ABCD002.09
0800forward47.00918100000000613E5A2F01.00000ABCD002.09
```

Table 61 describes significant fields shown in the output.

Table 61   show lane client Field Descriptions

Field	Description
LE Client ATM2/0.2	Interface and subinterface of this client.
ELAN name	Name of the ELAN.
Admin	Administrative state, either up or down.
State	Status of this LANE client. Possible states include initialState, lecsConnect, configure, join, busConnect, and operational.
Client ID	The LANE 2-byte client ID assigned by the LANE server.
Join Attempt	The number of attempts made before successfully joining the ELAN.
HW Address	MAC address of this LANE client.
Type	Type of ELAN.
Max Frame Size	Maximum frame size (in bytes) on the ELAN.
Ring	The ring number for the client. This field appears only for Token Ring LANE.
Bridge	The bridge number for the client. This field appears only for Token Ring LANE.
ELAN Segment ID	The ring number for the ELAN. This field appears only for Token Ring LANE.
ATM Address	ATM address of this LANE client.
VCD	Virtual channel descriptor for each of the VCCs established for this LANE client.
rxFrames	Number of frames received.
txFrames	Number of frames sent.
Type	Type of VCC. The Configure Direct VCC is shown in this display as *configure*. The Control Direct VCC is shown as *direct*; the Control Distribute VCC is shown as *distribute*. The Multicast Send VCC and Multicast Forward VC are shown as *send* and *forward*, respectively. The Data Direct VCC is shown as *data*.
ATM Address	ATM address of the LANE component at the other end of this VCC.

Related Commands

Command	Description
lane client	Activates a LANE client on the specified subinterface.
lane fssrp	Enables the special LANE features so that LANE components (such as the LANE configuration server, the LANE client, the LANE server, and the BUS) become aware of FSSRP.

Command	Description
lane server	Activates a LANE server on the specified subinterface.
show lane config	Displays global LANE information for the configuration server configured on an interface.