

# show lane config

To display global LANE information for the configuration server configured on an interface, use the **show lane config** command in EXEC mode.

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

**show lane config [interface atm slot/0]**

**ATM Port Adapter on the Cisco 7500 Series Routers**

**show lane config [interface atm slot/port-adapter/0]**

**Cisco 4500 and 4700 Routers**

**show lane config [interface atm number]**

Syntax Description	
<b>interface atm slot/0</b>	(Optional) ATM interface slot and port for the following: <ul style="list-style-type: none"> <li>• AIP on the Cisco 7500 series routers.</li> <li>• ATM port adapter on the Cisco 7200 series routers.</li> </ul>
<b>interface atm slot/port-adapter/0</b>	(Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers.
<b>interface atm number</b>	(Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers.

Command Modes	
	EXEC

Command History	Release	Modification
	11.0	This command was introduced.

## Examples

The following is sample **show lane config** output for an Ethernet ELAN:

```
Router# show lane config

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
```

The following example shows sample **show lane config** output for TR-LANE:

```
Router# show lane config

LE Config Server ATM4/0 config table: eng
Admin: up State: operational
LECS Mastership State: active master
list of global LECS addresses (40 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
```

Table 62 describes significant fields shown in the output.

**Table 62** *show lane config Field Descriptions*

Field	Description
LE Config Server	Major interface on which the LAN emulated Configuration Server (LECS) is configured.
config table	Name of the database associated with the LECS.
Admin	Administrative state, either up or down.
State	State of the configuration server: down or operational. If down, the reasons field indicates why it is down. The reasons include the following: NO-config-table, NO-nsap-address, and NO-interface-up.
LECS Mastership State	Mastership state of the configuration server. If you have configured simple server redundancy, the configuration server with the lowest index is the active LECS.
list of global LECS addresses	List of LECS addresses.
40 seconds to update	Amount of time until the next update.
<----- me	ATM address of this configuration server.
ATM Address of this LECS	ATM address of the active configuration server.
auto	Method of ATM address assignment for the configuration server. In this example, the address is assigned by the automatic method.
vcd	Virtual circuit descriptor that uniquely identifies the configure VCC.
rxCnt	Number of packets received.
txCnt	Number of packets sent.
callingParty	ATM NSAP address of the LANE component that is connected to the LECS. "elan1" indicates the ELAN name, "0" indicates the priority number, and "active" indicates that the server is active.

# show lane database

To display the database of the configuration server, use the **show lane database** command in EXEC mode.

**show lane database** [*database-name*]

<b>Syntax Description</b>	<i>database-name</i>	(Optional) Specific database name.
<b>Command Modes</b>	EXEC	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.0	This command was introduced.

**Usage Guidelines** By default, this command displays the LAN Emulated Configuration Server information displayed by the **show lane config** command.

If no database name is specified, this command shows all databases.

**Examples** The following is sample output of the **show lane database** command for an Ethernet LANE:

```
Router# show lane database

LANE Config Server database table 'engandmkt' bound to interface/s: ATM1/0
default elan: none
elan 'eng': restricted
  server 45.000001415555121f.yyyy.zzzz.0800.200c.1001.01 (prio 0) active
  LEC MAC 0800.200c.1100
  LEC NSAP 45.000001415555121f.yyyy.zzzz.0800.200c.1000.01
  LEC NSAP 45.000001415555124f.yyyy.zzzz.0800.200c.1300.01
elan 'mkt':
  server 45.000001415555121f.yyyy.zzzz.0800.200c.1001.02 (prio 0) active
  LEC MAC 0800.200c.1200
  LEC NSAP 45.000001415555121f.yyyy.zzzz.0800.200c.1000.02
  LEC NSAP 45.000001415555124f.yyyy.zzzz.0800.200c.1300.02
```

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

```
Router# show lane database

LANE Config Server database table 'eng' bound to interface/s: ATM4/0
default elan: elan1
elan 'elan1': un-restricted, local-segment-id 2048
  server 39.020304050607080910111213.006047704181.01 (prio 0) active
```

[Table 63](#) describes significant fields shown in the output.

**Table 63** *show lane database Field Descriptions*

Field	Description
LANE Config Server database	Name of this database and interfaces bound to it.
default elan	Default name, if one is established.
elan	Name of the ELAN whose data is reported in this line and the following indented lines.
un-restricted	Indicates whether this ELAN is restricted or unrestricted.
local-segment-id 2048	Ring number of the ELAN.
server	ATM address of the configuration server.
(prio 0) active	Priority level and simple server redundancy state of this configuration server. If you have configured simple server redundancy, the configuration server with the lowest priority will be active.
LEC MAC	MAC addresses of an individual LANE client in this ELAN. This display includes a separate line for every LANE client in this ELAN.
LEC NSAP	ATM addresses of all LANE clients in this ELAN.

# show lane default-atm-addresses

To display the automatically assigned ATM address of each LANE component in a router or on a specified interface or subinterface, use the **show lane default-atm-addresses** command in EXEC mode.

AIP on the Cisco 7500 series routers; ATM port adapter on the Cisco 7200 series

```
show lane default-atm-addresses [interface atm slot/port.subinterface-number]
```

ATM Port Adapter on the Cisco 7500 Series Routers

```
show lane default-atm-addresses [interface atm slot/port-adapter/port.subinterface-number]
```

Cisco 4500 and 4700 Routers

```
show lane default-atm-addresses [interface atm number.subinterface-number]
```

Syntax Description		
	<b>interface atm</b> <i>slot/port</i>	(Optional) ATM interface slot and port for the following: <ul style="list-style-type: none"> <li>• AIP on the Cisco 7500 series routers.</li> <li>• ATM port adapter on the Cisco 7200 series routers.</li> </ul>
	<b>interface atm</b> <i>slot/port-adapter/port</i>	(Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers.
	<b>interface atm</b> <i>number</i>	(Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers.
	<i>.subinterface-number</i>	(Optional) Subinterface number.

Command Modes	
	EXEC

Command History	Release	Modification
	11.0	This command was introduced.
	11.1	The <i>number.subinterface-number</i> argument was added.

Usage Guidelines	
	It is not necessary to have any of the LANE components running on this router before you use this command.

Examples	
	The following is sample output of the <b>show lane default-atm-addresses</b> command for the ATM interface 1/0 when all the major LANE components are located on that interface:

```
Router# show lane default-atm-addresses interface atm1/0
interface ATM1/0:
```

```

LANE Client:      47.00000000000000000000000000000000.00000C304A98.**
LANE Server:     47.00000000000000000000000000000000.00000C304A99.**
LANE Bus:        47.00000000000000000000000000000000.00000C304A9A.**
LANE Config Server: 47.00000000000000000000000000000000.00000C304A9B.00
note: ** is the subinterface number byte in hex

```

Table 64 describes the significant fields shown in the output.

**Table 64** *show lane default-atm-addresses Field Descriptions*

Field	Description
interface ATM1/0:	Specified interface.
LANE Client:	ATM address of the LANE client on the interface.
LANE Server:	ATM address of the LANE server on the interface.
LANE Bus:	ATM address of the LANE broadcast and unknown server on the interface.
LANE Config Server:	ATM address of the LAN Emulated Configuration Server on the interface.

# show lane le-arp

To display the LANE ARP table of the LANE client configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN (ELAN), use the **show lane le-arp** command in EXEC mode.

AIP on the Cisco 7500 series routers; ATM Port Adapter on the Cisco 7200 series

```
show lane le-arp [interface atm slot/port[.subinterface-number] | name elan-name]
```

ATM Port Adapter on the Cisco 7500 Series Routers

```
show lane le-arp [interface atm slot/port-adapter/port[.subinterface-number] | name elan-name]
```

Cisco 4500 and 4700 Routers

```
show lane le-arp [interface atm number[.subinterface-number] | name elan-name]
```

## Syntax Description

<b>interface atm slot/port</b>	(Optional) ATM interface slot and port for the following: <ul style="list-style-type: none"> <li>AIP on the Cisco 7500 series routers.</li> <li>ATM port adapter on the Cisco 7200 series routers.</li> </ul>
<b>interface atm slot/port-adapter/port</b>	(Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers.
<b>interface atm number</b>	(Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers.
<b>.subinterface-number</b>	(Optional) Subinterface number.
<b>name elan-name</b>	(Optional) Name of the ELAN. The maximum length of the name is 32 characters.

## Command Modes

EXEC

## Command History

Release	Modification
11.0	This command was introduced.

## Examples

The following is sample output of the **show lane le-arp** command for an Ethernet LANE client:

```
Router# show lane le-arp

Hardware Addr   ATM Address                               VCD   Interface
0000.0c15.a2b5  39.000000000000000000000000000000.00000C15A2B5.01  39  ATM1/0.1
0000.0c15.f3e5  39.000000000000000000000000000000.00000C15F3E5.01  25* ATM1/0.1
```

The following is sample output of the **show lane le-arp** command for a Token Ring LANE client:

```
Router# show lane le-arp
```

```
Ring Bridge      ATM Address                               VCD Interface
512 6            39.020304050607080910111213.00602F557940.01 47 ATM2/0.1
```

Table 65 describes the significant fields shown in the output.

**Table 65** *show lane le-arp Field Descriptions*

Field	Description
Hardware Addr	MAC address, in dotted hexadecimal notation, assigned to the LANE component at the other end of this VCD.
Ring	Route descriptor segment number for the LANE component.
Bridge	Bridge number for the LANE component.
ATM Address	ATM address of the LANE component at the other end of this VCD.
VCD	Virtual circuit descriptor.
Interface	Interface or subinterface used to reach the specified component.



# show lane server

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

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

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

**ATM Port Adapter on the Cisco 7500 Series Routers**

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

**Cisco 4500 and 4700 Routers**

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

Syntax Description		
<b>interface atm</b> <i>slot/port</i>	(Optional) ATM interface slot and port for the following:	<ul style="list-style-type: none"> <li>• AIP on the Cisco 7500 series routers.</li> <li>• ATM port adapter on the Cisco 7200 series routers.</li> </ul>
<b>interface atm</b> <i>slot/port-adapter/port</i>	(Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers.	
<b>interface atm</b> <i>number</i>	(Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers.	
<i>.subinterface-number</i>	(Optional) Subinterface number.	
<b>name</b> <i>elan-name</i>	(Optional) Name of the ELAN. The maximum length of the name is 32 characters.	
<b>brief</b>	(Optional) Keyword used to display 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 server** command for an Ethernet ELAN:

```
Router# show lane server

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

```

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

```

Router# show lane server

LE Server ATM3/0.1 ELAN name: anubis Admin: up State: operational
type: token ring      Max Frame Size: 4544      Segment ID: 2500
ATM address: 47.009181000000000000000000.00000CA01661.01
LECS used: 47.009181000000000000000000.00000CA01663.00 connected, vcd 6
control distribute: vcd 10, 2 members, 4 packets
proxy/ (ST: Init, Conn, Waiting, Adding, Joined, Operational, Reject, Term)
lecid ST vcd    pkts Hardware Addr  ATM Address
  1  O    7      3 400.1          47.009181000000000000000000.00000CA01660.01
                    0000.0ca0.1660 47.009181000000000000000000.00000CA01660.01
  2  O   16      3 300.1          47.009181000000000000000000.00000CA04960.01
                    0000.0ca0.4960 47.009181000000000000000000.00000CA04960.01

```

Table 66 describes the significant fields shown in the output.

**Table 66** show lane server Field Descriptions

Field	Description
LE Server ATM2/0.2	Interface and subinterface of this server.
ELAN name	Name of the ELAN.
Admin	Administrative state, either up or down.
State	Status of this LANE server. Possible states for a LANE server include down, waiting_ILMI, waiting_listen, up_not_registered, operational, and terminating.
type	Type of ELAN.
Max Frame Size	Maximum frame size (in bytes) of this type of emulated LAN.
Segment ID	The ring number of the ELAN. This field appears only for Token Ring LANE.
ATM address	ATM address of this LANE server.
LECS used	ATM address of the LANE configuration server being used. This line also shows the current state of the connection between the LANE server and the LAN Emulated Configuration Server (LECS), and the virtual circuit descriptor (VCD) of the circuit connecting them.
control distribute	VCD of the Control Distribute VCC.
proxy	Status of the LANE client at the other end of the Control Distribute VCC.
lecid	Identifier for the LANE client at the other end of the Control Distribute VCC.

**Table 66** *show lane server Field Descriptions (continued)*

Field	Description
ST	Status of the LANE client at the other end of the Control Distribute VCC. Possible states are Init, Conn, Waiting, Adding, Joined, Operational, Reject, and Term.
vcd	Virtual channel descriptor used to reach the LANE client.
pkts	Number of packets sent by the LANE server on the Control Distribute VCC to the LANE client.
Hardware Addr	The top number in this column is the router descriptor, and the second number is the MAC-layer address of the LANE client.
ATM Address	ATM address of the LANE client.

# show mls rp

To display MLS details, including specifics for MLSP, use the **show mls rp** command in EXEC mode.

**show mls rp** [*interface*]

<b>Syntax Description</b>	<i>interface</i>	(Optional) Displays information for one interface. Without this argument, detailed views of all interfaces are displayed.
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<b>Command Modes</b>	EXEC
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.3(3) WA4(4)	This command was introduced.

## Examples

The following is sample output for the **show mls rp** command:

```
Router# show mls rp

multilayer switching is globally enabled
mls id is 00e0.fefc.6000
mls ip address 10.20.26.64
mls flow mask is ip-flow
vlan domain name: WBU
  current flow mask: ip-flow
  current sequence number: 80709115
  current/maximum retry count: 0/10
  current domain state: no-change
  current/next global purge: false/false
  current/next purge count: 0/0
  domain uptime: 13:03:19
  keepalive timer expires in 9 seconds
  retry timer not running
  change timer not running
  fcp subblock count = 7

1 management interface(s) currently defined:
  vlan 1 on Vlan1

7 mac-vlan(s) configured for multi-layer switching:

  mac 00e0.fefc.6000
  vlan id(s)
  1   10   91   92   93   95   100

router currently aware of following 1 switch(es):
  switch id 0010.1192.b5ff
```

The following is sample output for the **show mls rp** command for a specific interface:

```
Router# show mls rp int vlan 10

mls active on Vlan10, domain WBU
```

Related Commands	Command	Description
	<b>mls rp ip</b>	Enables MLSP.
	<b>mls rp management-interface</b>	Designates an interface as the management interface for MLSP packets.
	<b>mls rp nde-address</b>	Specifies a NetFlow Data Export address.
	<b>mls rp vlan-id</b>	Assigns a VLAN ID.
	<b>mls rp vtp-domain</b>	Selects the router interface to be Layer 3 switched and then adds that interface to a VTP domain.
	<b>show mls rp vtp-domain</b>	Displays MLS interfaces for a specific VTP domain.

# show mls rp interface

To display IPX Multilayer Switching (MLS) details for the Route Processor (RP), including specific information about the Multilayer Switching Protocol (MLSP), use the **show mls rp interface** command in privileged EXEC mode.

**show mls rp interface** *type number*

Syntax Description		
	<i>type</i>	Interface type.
	<i>number</i>	Interface number.

**Defaults** None

**Command Modes** Privileged EXEC

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

**Examples** The following displays sample output from the **show mls rp interface** command. The interface type is VLAN, and its number is 10.

```
Router# show mls rp interface vlan 10

      IPX MLS active on Vlan 10, domain WBU
```

Related Commands	Command	Description
	<b>mls rp ipx (global)</b>	Enables the router as an IPX MLS RP.
	<b>mls rp locate ipx</b>	Displays information about all switches currently shortcutting for the specified IPX flow(s).
	<b>mls rp vtp-domain</b>	Assigns an MLS interface to a specific VTP domain on the MLS RP.
	<b>mls rp management-interface</b>	Designates an interface as the management interface for MLSP packets.
	<b>mls rp vlan-id</b>	Assigns a VLAN identification number to an IPX MLS interface.
	<b>show mls rp ipx</b>	Displays details for all IPX MLS interfaces on the IPX MLS router.
	<b>show mls rp vtp-domain</b>	Displays IPX MLS interfaces for a specific VTP domain on the route processor.

# show mls rp ip multicast

To display hardware-switched multicast flow information about IP multicast Multilayer Switching (MLS), use the **show mls rp ip multicast** command in EXEC mode.

**show mls rp ip multicast** [**locate**] [*group* [*source*] [*vlan-id* ]] | [**statistics**] | [**summary**]

Syntax Description	locate	(Optional) Displays flow information associated with the switch. This keyword applies only to a single router and multiple switches.
	<i>group</i>	(Optional) Address of the IP multicast group about which to display information.
	<i>source</i>	(Optional) IP multicast source sending to the specified multicast <i>group</i> about which to display information.
	<i>vlan-id</i>	(Optional) Source VLAN about which to display information.
	<b>statistics</b>	(Optional) Displays MLS statistics.
	<b>summary</b>	(Optional) Displays MLS summary.

**Command Modes** EXEC

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

## Examples

The following is sample output of the **show mls rp ip multicast** command using the **locate** keyword:

```
Router# show mls rp ip multicast locate
```

```
Source          Group          Vlan  SwitchIP      SwitchMAC
-----
192.1.10.6      239.255.158.197  10    1.2.10.199    0010.a60b.b4ff
```

The following is sample output of the **show mls rp ip multicast** command for a specific IP multicast group:

```
Router# show mls rp ip multicast 224.1.1.1
```

```
Multicast hardware switched flows:
(1.1.13.1, 224.1.1.1) Incoming interface: Vlan13, Packets switched: 61590
Hardware switched outgoing interfaces: Vlan20 Vlan9
MFD installed: Vlan13

(1.1.9.3, 224.1.1.1) Incoming interface: Vlan9, Packets switched: 0
Hardware switched outgoing interfaces: Vlan20
MFD installed: Vlan9

(1.1.12.1, 224.1.1.1) Incoming interface: Vlan12, Packets switched: 62010
Hardware switched outgoing interfaces: Vlan20 Vlan9
MFD installed: Vlan12
```

(1.1.12.3, 224.1.1.1) Incoming interface: Vlan12, Packets switched: 61980  
 Hardware switched outgoing interfaces: Vlan20 Vlan9  
 MFD installed: Vlan12

(1.1.11.1, 224.1.1.1) Incoming interface: Vlan11, Packets switched: 62430  
 Hardware switched outgoing interfaces: Vlan20 Vlan9  
 MFD installed: Vlan11

(1.1.11.3, 224.1.1.1) Incoming interface: Vlan11, Packets switched: 62430  
 Hardware switched outgoing interfaces: Vlan20 Vlan9  
 MFD installed: Vlan11

Total shortcut installed: 6

The following is sample output of the **show mls rp ip multicast** command using the **statistics** keyword:

Router# **show mls rp ip multicast statistics**

MLS Multicast Operation Status:

MLS Multicast configuration and state:

Router Mac: 0010.298f.0009  
 Switch Mac: 0010.0d70.a3ff      Switch IP: 1.2.10.195  
 MLS Multicast Operating state: ACTIVE  
 Active management vlan: Vlan1, 192.1.4.1  
 User configured management vlan: None, 0.0.0.0  
 Include-List: IP1 = 192.1.28.2, IP2 = 0.0.0.0  
 Router IP used in MLS Multicast messages: 192.1.28.2

MLS Multicast statistics:

Keepalive sent: 90  
 Keepalive ACK received: 90  
 Open request sent: 3  
 Open request ACK received: 3  
 Delete notifications received: 3  
 Flow statistics messages received: 181  
 Flow message sent: 14  
 Flow message Ack received: 14  
 Flow message Nack received: 0

Flow install Ack: 2  
 Flow install Nack: 0  
 Flow update Ack: 7  
 Flow update Nack: 0  
 Flow delete Ack: 0  
 Complete flow install Ack: 3  
 Complete flow install Nack: 0  
 Complete flow delete Ack: 1  
 Input vlan delete Ack: 0  
 Output vlan delete Ack: 0  
 Global delete sent: 1

L2 entry not found error: 0  
 LTL entry not found error: 0  
 MET entry not found error: 0  
 L3 entry not found error: 0  
 L3 entry exists error : 0  
 Hash collision error : 0  
 Sequence number error : 0  
 None-supported error : 0  
 Generic error : 0



The following is sample output of the **show mls rp ip multicast** command using the **summary** keyword:

```
Router# show mls rp ip multicast summary

Switch IP:0.0.0.0  Switch MAC:0000.0000.0000
Number of complete flows: 0
Total hardware-switched flows: 0

Switch IP:1.2.10.199  Switch MAC:0010.a60b.b4ff
Number of complete flows: 1
Total hardware-switched flows: 1
```

**Related Commands**

Command	Description
<b>mls rp ip multicast</b>	Enables IP multicast MLS (hardware switching) on an external or internal router in conjunction with Layer 3 switching hardware for the Catalyst 5000 switch.

# show mls rp ipx

To display details for all IPX Multilayer Switching (MLS) interfaces on the IPX MLS router, use the **show mls rp ipx** command in privileged EXEC mode.

## show mls rp ipx

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

**Command Modes** Privileged EXEC

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

**Usage Guidelines** This command gives you details about the following:

- MLS status (enabled or disabled) for switch interfaces and subinterfaces
- Flow mask required when creating Layer 3 switching entries for the router
- Current settings for the keepalive timer, retry timer, and retry count
- MLS identifier used in Multilayer Switching Protocol (MLSP) messages
- List of all interfaces in all Virtual Trunk Protocol (VTP) domains enabled for MLS

**Examples** The following example displays sample output from the **show mls rp ipx** command for all IPX MLS interfaces on an MLS-RP:

```
Router# show mls rp ipx

ipx multilayer switching is globally enabled
ipx mls inbound acl override is globally disabled
mls id is 0050.73ff.b580
mls ip address 5.5.5.155
IPX MLS flow mask is source-destination
number of domains configured for mls 1

vlan domain name:Engineering
  current ipx flow mask:source-destination
  ipx current/next global purge:false/false
  ipx current/next purge count:0/0
  current sequence number:4086390283
  current/maximum retry count:0/10
  current domain state:no-change
  domain uptime:03:13:09
  keepalive timer expires in 3 seconds
  retry timer not running
  change timer not running

1 management interface(s) currently defined:
  vlan 21 on Vlan21
```

```

2 mac-vlan(s) enabled for ipx multi-layer switching:

    mac 0010.0738.2917
      vlan id(s)
      22

    mac 0050.73ff.b5b8
      vlan id(s)
      21

router currently aware of following 1 switch(es):
switch id 00e0.fe4a.aeff
    
```

**Related Commands**

Command	Description
<b>mls rp ipx (global)</b>	Enables the router as an IPX MLS RP.
<b>mls rp locate ipx</b>	Displays information about all switches currently shortcutting for the specified IPX flows.
<b>mls rp management-interface</b>	Designates an interface as the management interface for MLSP packets.
<b>mls rp vlan-id</b>	Assigns a VLAN identification number to an IPX MLS interface.
<b>show mls rp interface</b>	Displays IPX MLS details for the RP, including specific information about the MLSP.
<b>show mls rp vtp-domain</b>	Displays IPX MLS interfaces for a specific VTP domain on the RP.

## show mls rp vtp-domain

To display IPX Multilayer Switching (MLS) interfaces for a specific Virtual Trunk Protocol (VTP) domain on the Route Processor (RP), use the **show mls rp vtp-domain** command in privileged EXEC mode.

**show mls rp vtp-domain** *domain-name*

<b>Syntax Description</b>	<i>domain-name</i>	The name of the VTP domain whose MLS interfaces will be displayed.
<b>Defaults</b>	None	
<b>Command Modes</b>	Privileged EXEC	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.3(3) WA4(4)	This command was introduced.

### Examples

This example shows details about IPX MLS interfaces in a VTP domain named WBU:

```
Router# show mls rp vtp-domain WBU

vlan domain name: WBU
current ipx flow mask: destination
  ipx current/next global purge: false/false
  ipx current/next purge count: 0/0
current ipx flow mask: destination
  ipx current/next global purge: false/false
  ipx current/next purge count: 0/0
current sequence number: 590678296
current/maximum retry count: 0/10
current domain state: no-change
domain uptime: 1d14h
keepalive timer expires in 3 seconds
retry timer not running
change timer not running
fcp subblock count = 20

1 management interface(s) currently defined:
  vlan 2 on Vlan2

20 mac-vlan(s) configured for multi-layer switching

17 mac-vlan(s) enabled for ipx multi-layer switching:

      mac 0010.0738.2917
      vlan id(s)
2     3     4     5     6     7     8     9     10    12    13
14    15    88    99

      mac 0090.6dfc.5800
```

```

vlan id(s)
20 21

18 mac-vlan(s) enabled for ipx multi-layer switching:

mac 0010.0738.2917
vlan id(s)
2 3 4 5 6 7 8 9 10 11 12
13 14 15 66 77 88 99

router currently aware of following 1 switch(es):
switch id 0010.141f.6fff

```

**Related Commands**

Command	Description
<b>mls rp ipx (global)</b>	Enables the router as an IPX MLS RP.
<b>mls rp locate ipx</b>	Displays information about all switches currently shortcutting for the specified IPX flows.
<b>mls rp management-interface</b>	Designates an interface as the management interface for MLSP packets.
<b>mls rp vlan-id</b>	Assigns a VLAN identification number to an IPX MLS interface.
<b>show mls rp vtp-domain</b>	Displays IPX MLS interfaces for a specific VTP domain on the RP.
<b>show mls rp interface</b>	Displays IPX MLS details for the RP, including specific information about the MLSP.
<b>show mls rp ipx</b>	Displays details for all IPX MLS interfaces on the IPX MLS router.

# show mpls forwarding-table

To display the contents of the MPLS forwarding information base (LFIB), use the **show mpls forwarding-table** user EXEC command.

```
show mpls forwarding-table [{network {mask | length} | labels label [- label] | interface interface | next-hop address | lsp-tunnel [tunnel-id ]}] [detail]
```

Syntax Description	
<i>network</i>	(Optional) Destination network number.
<i>mask</i>	(Optional) IP address of the destination mask whose entry is to be shown.
<i>length</i>	(Optional) Number of bits in mask of destination.
<b>labels</b> <i>label - label</i>	(Optional) Displays only entries with the specified local labels.
<b>interface</b> <i>interface</i>	(Optional) Displays only entries with the specified outgoing interface.
<b>next-hop</b> <i>address</i>	(Optional) Displays only entries with the specified neighbor as the next hop.
<b>lsp-tunnel</b> <i>tunnel-id</i>	(Optional) Displays only entries with the specified LSP tunnel, or all LSP tunnel entries.
<b>detail</b>	(Optional) Displays information in long form (includes length of encapsulation, length of MAC string, maximum transmission unit (MTU), and all labels).

**Command Modes** User EXEC

Command History	Release	Modification
	11.1 CT	This command was introduced.
	12.1(3)T	This command was modified to reflect new MPLS IETF terminology and CLI command syntax.

**Usage Guidelines** The optional parameters described allow specification of a subset of the entire LFIB.

**Examples** The following is sample output from the **show mpls forwarding-table** command:

```
Router# show mpls forwarding-table
```

```
Local  Outgoing  Prefix      Bytes tag  Outgoing     Next Hop
tag    tag or VC  or Tunnel Id  switched interface
26     Untagged  10.253.0.0/16  0         Et4/0/0      172.27.32.4
28     1/33      10.15.0.0/16  0         AT0/0.1      point2point
29     Pop tag   10.91.0.0/16  0         Hs5/0        point2point
       1/36     10.91.0.0/16  0         AT0/0.1      point2point
30     32       10.250.0.97/32  0         Et4/0/2      10.92.0.7
       32       10.250.0.97/32  0         Hs5/0        point2point
34     26       10.77.0.0/24  0         Et4/0/2      10.92.0.7
       26       10.77.0.0/24  0         Hs5/0        point2point
35     Untagged [T] 10.100.100.101/32  0         Tu301        point2point
36     Pop tag   168.1.0.0/16  0         Hs5/0        point2point
```

```
1/37          168.1.0.0/16      0          AT0/0.1      point2point
```

```
[T] Forwarding through a TSP tunnel.
View additional tagging info with the 'detail' option
```

The following is sample output from the **show mpls forwarding-table** command when you specify the **detail** keyword:

```
Router# show mpls forwarding-table detail
```

```
Local Outgoing Prefix Bytes tag Outgoing Next Hop
tag tag or VC or Tunnel Id switched interface
26 Untagged 10.253.0.0/16 0 Et4/0/0 172.27.32.4
MAC/Encaps=0/0, MTU=1504, Tag Stack{}
28 1/33 10.15.0.0/16 0 AT0/0.1 point2point
MAC/Encaps=4/8, MTU=4470, Tag Stack{1/33(vcd=2)}
00020900 00002000
29 Pop tag 10.91.0.0/16 0 Hs5/0 point2point
MAC/Encaps=4/4, MTU=4474, Tag Stack{}
FF030081
1/36 10.91.0.0/16 0 AT0/0.1 point2point
MAC/Encaps=4/8, MTU=4470, Tag Stack{1/36(vcd=3)}
00030900 00003000
30 32 10.250.0.97/32 0 Et4/0/2 10.92.0.7
MAC/Encaps=14/18, MTU=1500, Tag Stack{32}
006009859F2A00E0F7E984828847 00020000
32 10.250.0.97/32 0 Hs5/0 point2point
MAC/Encaps=4/8, MTU=4470, Tag Stack{32}
FF030081 00020000
34 26 10.77.0.0/24 0 Et4/0/2 10.92.0.7
MAC/Encaps=14/18, MTU=1500, Tag Stack{26}
006009859F2A00E0F7E984828847 0001A000
26 10.77.0.0/24 0 Hs5/0 point2point
MAC/Encaps=4/8, MTU=4470, Tag Stack{26}
FF030081 0001A000
35 Untagged 10.100.100.101/32 0 Tu301 point2point
MAC/Encaps=0/0, MTU=1504, Tag Stack{}, via Et4/0/2
36 Pop tag 168.1.0.0/16 0 Hs5/0 point2point
MAC/Encaps=4/4, MTU=4474, Tag Stack{}
FF030081
1/37 168.1.0.0/16 0 AT0/0.1 point2point
MAC/Encaps=4/8, MTU=4470, Tag Stack{1/37(vcd=4)}
00040900 00004000
```

Table 67 describes the significant fields shown in the output.

**Table 67** show mpls forwarding-table Field Descriptions

Field	Description
Local tag	Label assigned by this router.
Outgoing tag or VC	Label assigned by the next hop, or VPI/VCI used to get to next hop. The entries that you can specify in this column include the following: <ul style="list-style-type: none"> <li>[T]—Means forwarding through a TSP tunnel.</li> <li>“Untagged”—Means there is no label for the destination from the next hop, or label switching is not enabled on the outgoing interface.</li> <li>“Pop tag”—Means that the next hop advertised an implicit NULL label for the destination, and that this router popped the top label.</li> </ul>
Prefix or Tunnel Id	Address or tunnel to which packets with this label are going.

**Table 67** *show mpls forwarding-table Field Descriptions (continued)*

Field	Description
Bytes tag switched	Number of bytes switched with this incoming label.
Outgoing interface	Interface through which packets with this label are sent.
Next Hop	IP address of the neighbor that assigned the outgoing label.
Mac/Encaps	Length in bytes of the Layer 2 header, and length in bytes of the packet encapsulation, including the Layer 2 header and label header.
MTU	Maximum transmission unit (MTU) of the labeled packet.
Tag Stack	All the outgoing labels. If the outgoing interface is TC-ATM, the VCD is also shown.
00020900 00002000	The actual encapsulation in hexadecimal form. A space is shown between Layer 2 and the label header.



# show mpls interfaces

To display information about one or more interfaces that have been configured for label switching, use the **show mpls interfaces** privileged EXEC command.

**show mpls interfaces** [*interface*] [**detail**]

**show mpls interfaces** [**all**]

Syntax Description	
<i>interface</i>	(Optional) Defines the interface about which to display label switching information.
<b>detail</b>	(Optional) Displays detailed label switching information for the specified interface.
<b>all</b>	(Optional) When the <b>all</b> keyword is specified in the absence of other optional parameters, the command displays LDP discovery information for all VPNs.

**Defaults** If no optional keyword or parameter is specified in this command, summary information is displayed for each interface that has been configured for label switching.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.1 CT	This command was introduced.
	12.1(3)T	This command was modified to reflect new MPLS IETF terminology and CLI command syntax.

**Usage Guidelines** This command shows MPLS information about the specified interface, or about all of the interfaces for which MPLS has been configured.

**Examples** The following is sample output generated by the **show mpls interfaces** command:

```
Router> show mpls interfaces

Interface          IP          Tunnel  Operational
Ethernet1/1/1     Yes (tdp)  No      No
Ethernet1/1/2     Yes (tdp)  Yes     No
Ethernet1/1/3     Yes (tdp)  Yes     Yes
POS2/0/0          Yes (tdp)  No      No
ATM0/0.1          Yes (tdp)  No      No          (ATM labels)
ATM3/0.1          Yes (ldp)  No      Yes          (ATM labels)
ATM0/0.2          Yes (tdp)  No      Yes
```

**Note**

If an interface uses LC-ATM procedures, the associated line in the display is flagged with the following notation “(ATM labels)”.

Table 68 describes the significant fields in the output.

**Table 68** *show mpls interfaces Field Descriptions*

Field	Description
Interface	Interface name.
IP	“Yes” if IP label switching (sometimes called hop-by-hop label switching) has been enabled on this interface.
Tunnel	“Yes” if LSP tunnel labeling has been enabled on this interface.
Operational	Operational state. “Yes” if packets are being labeled.
MTU	Maximum number of data bytes per labeled packet that will be transmitted.

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

```
Router# show mpls interfaces detail

Interface Ethernet1/1/1:
  IP labeling enabled (tdp)
  LSP Tunnel labeling not enabled
  MPLS operational
  MPLS turbo vector
  MTU = 1500
Interface POS2/0/0:
  IP labeling enabled (ldp)
  LSP Tunnel labeling not enabled
  MPLS not operational
  MPLS turbo vector
  MTU = 4470
Interface ATM3/0.1:
  IP labeling enabled (ldp)
  LSP Tunnel labeling not enabled
  MPLS operational
  MPLS turbo vector
  MTU = 4470
  ATM labels: Label VPI = 1
               Label VCI range = 33 - 65535
               Control VC = 0/32
```

**Related Commands**

Command	Description
<b>mpls ip (global configuration)</b>	Enables label switching of IPv4 packets on all interfaces.
<b>mpls ip (interface configuration)</b>	Enables label switching of IPv4 packets on the associated interface.

Command	Description
<b>mpls traffic-eng tunnels (global configuration)</b>	Enables MPLS traffic engineering tunnel signalling on a device.
<b>mpls traffic-eng tunnels (interface configuration)</b>	Enables MPLS traffic engineering tunnel signalling on an interface.

# show mpls label range

To display the range of local labels available for use on packet interfaces, use the **show mpls label range** privileged EXEC command.

## show mpls label range

### Syntax Description

This command has no optional keywords or arguments.

### Defaults

This command has no default behavior or values.

### Command Modes

Privileged EXEC

### Command History

Release	Modification
12.0(9)ST	This command was introduced.

### Usage Guidelines

You can use the **mpls label range** command to configure a range for local labels that is different from the default range. If the newly configured range does not overlap the current range, then the new range will not take effect until the router is reloaded. In this situation, the **show mpls label range** command displays both the label range currently in use and the label range that will be in use following the next router reload.

### Examples

In the following example, the use of the **show mpls label range** command is shown before and after the **mpls label range** command is used to configure a label range that does not overlap the starting label range.

```
Router# show mpls label range

Downstream label pool: Min/Max label: 16/100000

Router# configure terminal

Router(config)# mpls label range 200 120000
% Label range changes will take effect at the next reload.
Router(config)# exit

Router# show mpls label range

Downstream label pool: Min/Max label: 16/100000
    [Configured range for next reload: Min/Max label: 200/120000]
```

### Related Commands

Command	Description
<b>mpls label range</b>	Configures a range of values for use as local labels.

# show mpls traffic-eng autoroute

To show tunnels that are announced to the Interior Gateway Protocol (IGP), including interface, destination, and bandwidth, use the **show mpls traffic-eng autoroute** EXEC command.

## show mpls traffic-eng autoroute

**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.

**Usage Guidelines** The enhanced shortest path first (SPF) calculation of the IGP has been modified so that it uses traffic engineering tunnels. This command shows which tunnels IGP is currently using in its enhanced SPF calculation (that is, which tunnels are up and have autoroute configured).

**Examples** The following is sample output from the **show mpls traffic-eng autoroute** command. Note that the tunnels are organized by destination. All tunnels to a destination carry a share of the traffic tunneled to that destination.

```
Router# show mpls traffic-eng autoroute

MPLS TE autorouting enabled
  destination 0002.0002.0002.00 has 2 tunnels
    Tunnel1021 (traffic share 10000, nexthop 2.2.2.2, absolute metric 11)
    Tunnel1022 (traffic share 3333, nexthop 2.2.2.2, relative metric -3)
  destination 0003.0003.0003.00 has 2 tunnels
    Tunnel1032 (traffic share 10000, nexthop 3.3.3.3)
    Tunnel1031 (traffic share 10000, nexthop 3.3.3.3, relative metric -1)
```

[Table 69](#) describes the significant fields shown in the output.

**Table 69** show mpls traffic-eng autoroute Field Descriptions

Field	Description
MPLS TE autorouting enabled	IGP automatically routes traffic into tunnels.
destination	MPLS traffic engineering tailend router system ID.

**Table 69** *show mpls traffic-eng autoroute Field Descriptions (continued)*

Field	Description
traffic share	A factor based on bandwidth, indicating how much traffic this tunnel should carry, relative to other tunnels, to the same destination. If two tunnels go to a single destination, one with a traffic share of 200 and the other with a traffic share of 100, the first tunnel carries two-thirds of the traffic.
nexthop	MPLS traffic engineering tailend IP address of the tunnel.
absolute metric	MPLS traffic engineering metric with mode absolute of the tunnel.
relative metric	MPLS traffic engineering metric with mode relative of the tunnel.

**Related Commands**

Command	Description
<b>show isis mpls traffic-eng tunnel</b>	Displays information about tunnels considered in the IS-IS next hop calculation.
<b>tunnel mpls traffic-eng autoroute announce</b>	Causes the IGP to use the tunnel (if it is up) in its enhanced SPF calculation.
<b>tunnel mpls traffic-eng autoroute metric</b>	Specifies the MPLS traffic engineering tunnel metric that the IGP enhanced SPF calculation will use.

# show mpls traffic-eng link-management admission-control

To show which tunnels were admitted locally and their parameters (such as, priority, bandwidth, incoming and outgoing interface, and state), use the **show mpls traffic-eng link-management admission-control EXEC** command.

**show mpls traffic-eng link-management admission-control** [*interface-name*]

<b>Syntax Description</b>	<i>interface-name</i> (Optional) Displays only tunnels that were admitted on the specified interface.
---------------------------	---

**Defaults** No default behavior or values.

**Command Modes** EXEC

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.0(5)S	This command was introduced.
	12.1(3)T	The command output changed. The BW field now shows bandwidth in kbps, and it is followed by the status (reserved or held) of the bandwidth.

**Examples** The following is sample output from the **show mpls traffic-eng link-management admission-control** command:

```
Router2# show mpls traffic-eng link-management admission-control

System Information::
  Tunnels Count:      4
  Tunnels Selected:   4
TUNNEL ID            UP IF      DOWN IF    PRIORITY STATE          BW (kbps)
10.106.0.6 1000_1    AT1/0.2    -          0/0           Resv Admitted  0
10.106.0.6 2000_1    Et4/0/1    -          1/1           Resv Admitted  0
10.106.0.6 1_2      Et4/0/1    Et4/0/2    1/1           Resv Admitted  3000          R
10.106.0.6 2_2      AT1/0.2    AT0/0.2    1/1           Resv Admitted  3000          R
```

Table 70 describes the significant fields shown in the output.

**Table 70** show mpls traffic-eng link-management admission-control Field Descriptions

<b>Field</b>	<b>Description</b>
Tunnels Count	Total number of tunnels admitted.
Tunnels Selected	Number of tunnels to be displayed.
TUNNEL ID	Tunnel identification.
UP IF	Upstream interface that the tunnel used.
DOWN IF	Downstream interface that the tunnel used.

**Table 70** *show mpls traffic-eng link-management admission-control Field Descriptions (continued)*

Field	Description
PRIORITY	Setup priority of the tunnel followed by the hold priority.
STATE	Admission status of the tunnel.
BW (kbps)	Bandwidth of the tunnel (in kbps). If an "R" follows the bandwidth number, the bandwidth is reserved. If an "H" follows the bandwidth number, the bandwidth is temporarily being held for a path message.

**Related Commands**

Command	Description
<b>show mpls traffic-eng link-management advertisements</b>	Displays local link information that MPLS traffic engineering link management is currently flooding into the global traffic engineering topology.
<b>show mpls traffic-eng link-management bandwidth-allocation</b>	Displays current local link information.
<b>show mpls traffic-eng link-management igp-neighbors</b>	Displays IGP neighbors.
<b>show mpls traffic-eng link-management interfaces</b>	Displays per-interface resource and configuration information.
<b>show mpls traffic-eng link-management summary</b>	Displays a summary of link management information.



# show mpls traffic-eng link-management advertisements

To show local link information that MPLS traffic engineering link management is currently flooding into the global traffic engineering topology, use the **show mpls traffic-eng link-management advertisements EXEC** command.

## show mpls traffic-eng link-management 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.
	12.1(3)T	The command output was modified.

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

```
Router1# show mpls traffic-eng link-management advertisements

Flooding Status:      ready
Configured Areas:    1
IGP Area[1] ID:: isis level-1
  System Information::
    Flooding Protocol:  ISIS
  Header Information::
    IGP System ID:      0001.0000.0001.00
    MPLS TE Router ID:  10.106.0.6
    Flooded Links:      1
  Link ID:: 0
    Link IP Address:    10.1.0.6
    IGP Neighbor:       ID 0001.0000.0001.02
    Admin. Weight:      10
    Physical Bandwidth: 10000 kbits/sec
    Max Reservable BW:  5000 kbits/sec
  Downstream::
    Reservable Bandwidth[0]: 5000 kbits/sec
    Reservable Bandwidth[1]: 2000 kbits/sec
    Reservable Bandwidth[2]: 2000 kbits/sec
    Reservable Bandwidth[3]: 2000 kbits/sec
    Reservable Bandwidth[4]: 2000 kbits/sec
    Reservable Bandwidth[5]: 2000 kbits/sec
    Reservable Bandwidth[6]: 2000 kbits/sec
    Reservable Bandwidth[7]: 2000 kbits/sec
  Attribute Flags:      0x00000000
```

Table 71 describes the significant fields shown in the output.

**Table 71** *show mpls traffic-eng link-management advertisements Field Descriptions*

Field	Description
Flooding Status	Status of the link management flooding system.
Configured Areas	Number of the IGP areas configured.
IGP Area [1] ID	Name of the first IGP area.
Flooding Protocol	IGP that is flooding information for this area.
IGP System ID	Identification that IGP flooding uses in this area to identify this node.
MPLS TE Router ID	MPLS traffic engineering router ID.
Flooded Links	Number of links that are flooded in this area.
Link ID	Index of the link that is being described.
Link IP Address	Local IP address of this link.
IGP Neighbor	IGP neighbor on this link.
Admin. Weight	Administrative weight associated with this link.
Physical Bandwidth	Link bandwidth capacity (in kbps).
Max Reservable BW	Amount of reservable bandwidth on this link.
Reservable Bandwidth	Amount of bandwidth that is available for reservation.
Attribute Flags	Attribute flags of the link are being flooded.

#### Related Commands

Command	Description
<b>show mpls traffic-eng link-management bandwidth-allocation</b>	Displays current local link information.
<b>show mpls traffic-eng link-management igp-neighbors</b>	Displays IGP neighbors.
<b>show mpls traffic-eng link-management interfaces</b>	Displays per-interface resource and configuration information.
<b>show mpls traffic-eng link-management summary</b>	Displays a summary of link management information.

# show mpls traffic-eng link-management bandwidth-allocation

To show current local link information, use the **show mpls traffic-eng link-management bandwidth-allocation** EXEC command.

**show mpls traffic-eng link-management bandwidth-allocation** [*interface-name*]

<b>Syntax Description</b>	<i>interface-name</i> (Optional) Displays only tunnels that were admitted on the specified interface.
---------------------------	---

**Defaults** No default behavior or values.

**Command Modes** EXEC

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.0(5)S	This command was introduced.
	12.1(3)T	The command output was modified.

**Usage Guidelines** Advertised information might differ from the current information, depending on how flooding was configured.

**Examples** The following is sample output from the **show mpls traffic-eng link-management bandwidth-allocation** command:

```
Router1# show mpls traffic-eng link-management bandwidth-allocation Et4/0/1

System Information::
  Links Count:          2
  Bandwidth Hold Time: max. 15 seconds
Link ID:: Et4/0/1 (10.1.0.6)
Link Status:
  Physical Bandwidth:  10000 kbits/sec
  Max Reservable BW:  5000 kbits/sec (reserved:0% in, 60% out)
  BW Descriptors:     1
  MPLS TE Link State: MPLS TE on, RSVP on, admin-up, flooded
  Inbound Admission:  reject-huge
  Outbound Admission: allow-if-room
  Admin. Weight:      10 (IGP)
  IGP Neighbor Count: 1
  Up Thresholds:      15 30 45 60 75 80 85 90 95 96 97 98 99 100 (default)
  Down Thresholds:    100 99 98 97 96 95 90 85 80 75 60 45 30 15 (default)
Downstream Bandwidth Information (kbits/sec):
  KEEP PRIORITY    BW HELD    BW TOTAL    HELD    BW LOCKED    BW TOTAL    LOCKED
      0              0          0          0          0            0          0
      1              0          0          0          3000         3000
      2              0          0          0          0            3000
      3              0          0          0          0            3000
```

4	0	0	0	3000
5	0	0	0	3000
6	0	0	0	3000
7	0	0	0	3000

Table 72 describes the significant fields shown in the output.

**Table 72** show mpls traffic-eng link-management bandwidth-allocation Field Descriptions

Field	Description
Links Count	Number of links configured for MPLS traffic engineering.
Bandwidth Hold Time	Amount of time that bandwidth can be held.
Link ID	Interface name and IP address of the link being described.
Physical Bandwidth	Link bandwidth capacity (in bits per second).
Max Reservable BW	Amount of reservable bandwidth on this link.
BW Descriptors	Number of bandwidth allocations on this link.
MPLS TE Link State	Status of the link's MPLS traffic engineering-related functions.
Inbound Admission	Link admission policy for incoming tunnels.
Outbound Admission	Link admission policy for outgoing tunnels.
Admin. Weight	Link administrative weight.
IGP Neighbor Count	List of the IGP neighbors directly reachable over this link.
Up Thresholds	Link's bandwidth thresholds for allocations.
Down Thresholds	Link's bandwidth thresholds for deallocations.
KEEP PRIORITY	Priority levels for the link's bandwidth allocations.
BW HELD	Amount of bandwidth (in kbps) temporarily held at this priority for path messages.
BW TOTAL HELD	Bandwidth held at this priority and those above it.
BW LOCKED	Amount of bandwidth reserved at this priority.
BW TOTAL LOCKED	Bandwidth locked at this priority and those above it.

#### Related Commands

Command	Description
<b>show mpls traffic-eng link-management advertisements</b>	Displays local link information currently being flooded by MPLS traffic engineering link management into the global traffic engineering topology.
<b>show mpls traffic-eng link-management igp-neighbors</b>	Displays IGP neighbors.
<b>show mpls traffic-eng link-management interfaces</b>	Displays per-interface resource and configuration information.
<b>show mpls traffic-eng link-management summary</b>	Displays a summary of link management information.

# show mpls traffic-eng link-management igp-neighbors

To show Interior Gateway Protocol (IGP) neighbors, use the **show mpls traffic-eng link-management igp-neighbors** EXEC command.

```
show mpls traffic-eng link-management igp-neighbors [{igp-id {isis isis-address |
ospf ospf-id} | ip A.B.C.D}]
```

Syntax Description		
<i>igp-id</i>	(Optional) Displays the IGP neighbors that are using a specified IGP identification.	
<b>isis</b> <i>isis-address</i>	(Optional) Displays the specified IS-IS neighbor when you display neighbors by IGP ID.	
<b>ospf</b> <i>ospf-id</i>	(Optional) Displays the specified OSPF neighbor when you display neighbors by IGP ID.	
<b>ip</b> <i>A.B.C.D</i>	(Optional) Displays the IGP neighbors that are using a specified IGP IP address.	

**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 mpls traffic-eng link-management igp-neighbors** command:

```
Router# show mpls traffic-eng line-management igp-neighbors

Link ID:: Et0/2
  Neighbor ID: 0000.0024.0004.02 (area: isis level-1, IP: 0.0.0.0)
Link ID:: PO1/0/0
  Neighbor ID: 0000.0026.0001.00 (area: isis level-1, IP: 170.1.1.2)
```

[Table 73](#) describes the significant fields shown in the output.

**Table 73** *show mpls traffic-eng link-management igp-neighbors* Field Descriptions

Field	Description
Link ID	Link by which the neighbor is reached.
Neighbor ID	IGP identification information for the neighbor.

Related Commands	Command	Description
	<b>show mpls traffic-eng link-management advertisements</b>	Displays local link information currently being flooded by MPLS traffic engineering link management into the global traffic engineering topology.
	<b>show mpls traffic-eng link-management bandwidth-allocation</b>	Displays current local link information.
	<b>show mpls traffic-eng link-management interfaces</b>	Displays per-interface resource and configuration information.
	<b>show mpls traffic-eng link-management summary</b>	Displays a summary of link management information.

# show mpls traffic-eng link-management interfaces

To show interface resource and configuration information, use the **show mpls traffic-eng link-management interfaces EXEC** command.

**show mpls traffic-eng link-management interfaces** [*interface-name*]

<b>Syntax Description</b>	<i>interface-name</i> (Optional) Displays information only for the specified interface.
---------------------------	---

<b>Defaults</b>	Displays resource and configuration information for all configured interfaces.
-----------------	--

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.0(5)S	This command was introduced.
	12.1(3)T	The command output was modified.

**Examples** The following is sample output from the **show mpls traffic-eng link-management interfaces** command:

```
Router1# show mpls traffic-eng link-management interfaces Et4/0/1

System Information::
  Links Count:          2
Link ID:: Et4/0/1 (10.1.0.6)
  Link Status:
    Physical Bandwidth: 10000 kbits/sec
    Max Reservable BW:  5000 kbits/sec (reserved:0% in, 60% out)
    MPLS TE Link State: MPLS TE on, RSVP on, admin-up, flooded
    Inbound Admission:  reject-huge
    Outbound Admission: allow-if-room
    Admin. Weight:      10 (IGP)
    IGP Neighbor Count: 1
    IGP Neighbor:       ID 0001.0000.0001.02, IP 0.0.0.0 (Up)
  Flooding Status for each configured area [1]:
    IGP Area[1]: isis level-1: flooded
```

[Table 74](#) describes the significant fields shown in the output.

**Table 74** *show mpls traffic-eng link management interfaces Field Descriptions*

<b>Field</b>	<b>Description</b>
Links Count	Number of links that were enabled for use with MPLS traffic engineering.
Link ID	Index of the link.
Physical Bandwidth	Link's bandwidth capacity (in kbps).

Table 74 show mpls traffic-eng link management interfaces Field Descriptions (continued)

Field	Description
Max Reservable BW	Amount of reservable bandwidth on this link.
MPLS TE Link State	The status of the MPLS link.
Inbound Admission	Link admission policy for inbound tunnels.
Outbound Admission	Link admission policy for outbound tunnels.
Admin. Weight	Administrative weight associated with this link.
IGP Neighbor Count	Number of IGP neighbors directly reachable over this link.
IGP Neighbor	IGP neighbor on this link.
Flooding Status for each configured area	Flooding status for the specified configured area.

## Related Commands

Command	Description
<b>show mpls traffic-eng link-management advertisements</b>	Displays local link information currently being flooded by MPLS traffic engineering link management into the global traffic engineering topology.
<b>show mpls traffic-eng link-management bandwidth-allocation</b>	Displays current local link information.
<b>show mpls traffic-eng link-management igp-neighbors</b>	Displays IGP neighbors.
<b>show mpls traffic-eng link-management summary</b>	Displays a summary of link management information.



# show mpls traffic-eng link-management summary

To show a summary of link management information, use the **show mpls traffic-eng link-management summary** EXEC command.

**show mpls traffic-eng link-management summary** [*interface-name*]

<b>Syntax Description</b>	<i>interface-name</i> (Optional) Displays information only for the specified interface.
---------------------------	---

**Defaults** No default behavior or values.

**Command Modes** EXEC

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.0(5)S	This command was introduced.
	12.1(3)T	The command output was modified.

**Examples** The following is sample output from the **show mpls traffic-eng link-management summary** command:

```
Router1# show mpls traffic-eng link-management summary

System Information::
  Links Count:          2
  Flooding System:     enabled
IGP Area ID:: isis level-1
  Flooding Protocol:   ISIS
  Flooding Status:    data flooded
  Periodic Flooding:  enabled (every 180 seconds)
  Flooded Links:      1
  IGP System ID:      0001.0000.0001.00
  MPLS TE Router ID:  10.106.0.6
  IGP Neighbors:      1
Link ID:: Et4/0/1 (10.1.0.6)
  Link Status:
    Physical Bandwidth: 10000 kbits/sec
    Max Reservable BW:  5000 kbits/sec (reserved:0% in, 60% out)
    MPLS TE Link State: MPLS TE on, RSVP on, admin-up, flooded
    Inbound Admission:  reject-huge
    Outbound Admission: allow-if-room
    Admin. Weight:      10 (IGP)
    IGP Neighbor Count: 1
Link ID:: AT0/0.2 (10.42.0.6)
  Link Status:
    Physical Bandwidth: 155520 kbits/sec
    Max Reservable BW:  5000 kbits/sec (reserved:0% in, 0% out)
    MPLS TE Link State: MPLS TE on, RSVP on
    Inbound Admission:  allow-all
    Outbound Admission: allow-if-room
    Admin. Weight:      10 (IGP)
    IGP Neighbor Count: 0
```

Table 75 describes the significant fields shown in the output.

**Table 75** *show mpls traffic-eng link-management summary Field Descriptions*

Field	Description
Links Count	Number of links configured for MPLS traffic engineering.
Flooding System	Enable status of the MPLS traffic engineering flooding system.
IGP Area ID	Name of the IGP area being described.
Flooding Protocol	IGP being used to flood information for this area.
Flooding Status	Status of flooding for this area.
Periodic Flooding	Status of periodic flooding for this area.
Flooded Links	Number of links that were flooded.
IGP System ID	IGP for this node associated with this area.
MPLS TE Router ID	MPLS traffic engineering router ID for this node.
IGP Neighbors	Number of reachable IGP neighbors associated with this area.
Link ID	Interface name and IP address of the link being described.
Physical Bandwidth	Link bandwidth capacity (in kbps).
Max Reservable BW	Amount of reservable bandwidth on this link.
MPLS TE Link State	Status of the link's MPLS traffic engineering-related functions.
Inbound Admission	Link admission policy for incoming tunnels.
Outbound Admission	Link admission policy for outgoing tunnels.
Admin. Weight	Link administrative weight.
IGP Neighbor Count	List of the IGP neighbors directly reachable over this link.

#### Related Commands

Command	Description
<b>show mpls traffic-eng link-management advertisements</b>	Displays local link information currently being flooded by MPLS traffic engineering link management into the global traffic engineering topology.
<b>show mpls traffic-eng link-management bandwidth-allocation</b>	Displays current local link information.
<b>show mpls traffic-eng link-management igp-neighbors</b>	Displays IGP neighbors.
<b>show mpls traffic-eng link-management interfaces</b>	Displays per-interface resource and configuration information.

# show mpls traffic-eng topology

To show the MPLS traffic engineering global topology currently known at this node, use the **show mpls traffic-eng topology** EXEC command.

**show mpls traffic-eng topology** [{*A.B.C.D* | **igp-id** {*isis nsapaddr* | **ospf A.B.C.D**}] [**brief**]

Syntax Description		
<i>A.B.C.D</i>	(Optional) Node IP address (router identifier to interface address).	
<b>igp-id</b>	(Optional) Node IGP router identifier.	
<b>isis nsapaddr</b>	(Optional) Node router identification, if IS-IS is enabled.	
<b>ospf A.B.C.D</b>	(Optional) Node router identifier, if OSPF is enabled.	
<b>brief</b>	(Optional) Brief form of the output; gives a less detailed version of the topology.	

**Defaults** No default behavior or values.

**Command Modes** EXEC

Command History	Release	Modification
	12.0(5)S	This command was introduced.
	12.1(3)T	The command output was modified.

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

```
Router1# show mpls traffic-eng topology 10.106.0.6

IGP Id:0001.0000.0001.00, MPLS TE Id:10.106.0.6 Router Node id 1
  link[0 ]:Nbr IGP Id:0001.0000.0001.02, nbr_node_id:3, gen:14
    frag_id 0, Intf Address:10.1.0.6
    admin_weight:10, attribute_flags:0x0
    physical_bw:10000 (kbps), max_reservable_bw:5000 (kbps)
      allocated_bw   reservable_bw   allocated_bw   reservable_bw
      -----
      bw[0]:0         5000         bw[1]:3000     2000
      bw[2]:0         2000         bw[3]:0        2000
      bw[4]:0         2000         bw[5]:0        2000
      bw[6]:0         2000         bw[7]:0        2000
```

Table 76 describes the significant fields shown in the output.

**Table 76** show mpls traffic-eng topology Field Descriptions

Field	Description
IGP Id	Identification of the advertising router.
MPLS TE Id	MPLS traffic engineering node identifier.

**Table 76** *show mpls traffic-eng topology Field Descriptions (continued)*

Field	Description
Nbr IGP Id	Neighbor IGP interface.
nbr_node_id	Neighbor IGP router identifier.
gen	Generation number of the link-state packet. This internal number is incremented when any new link-state packet is received.
frag_id	IGP LSA fragment identifier.
Intf Address	This link's interface address.
admin_weight	Cost of the link.
attribute_flags	The requirements on the attributes of the links that the traffic crosses.
physical_bw	Physical line rate.
max_reservable_bw	Maximum amount of bandwidth that you can reserve on a link.
allocated_bw	Amount of bandwidth allocated at that priority.
reservable_bw	Amount of available bandwidth reservable at that priority.

**Related Commands**

Command	Description
<b>show mpls traffic-eng tunnels</b>	Displays information about tunnels.

# show mpls traffic-eng topology path

To show the properties of the best available path to a specified destination that satisfies certain constraints, use the **show mpls traffic-eng topology path EXEC** command.

```
show mpls traffic-eng topology path {tunnel-interface [destination address]
| destination address}[bandwidth value] [priority value [value]]
[affinity value [mask mask]]
```

Syntax Description		
<i>tunnel-interface</i>	Name of an MPLS traffic engineering interface (for example, Tunnel1) from which default constraints should be copied.	
<b>destination</b> <i>address</i>	(Optional) IP address specifying the path's destination.	
<b>bandwidth</b> <i>value</i>	(Optional) Bandwidth constraint. The amount of available bandwidth that a suitable path requires. This overrides the bandwidth constraint obtained from the specified tunnel interface. You can specify any positive number.	
<b>priority</b> <i>value</i> [ <i>value</i> ]	(Optional) Priority constraints. The setup and hold priorities used to acquire bandwidth along the path. If specified, this overrides the priority constraints obtained from the tunnel interface. Valid values are from 0 to 7.	
<b>affinity</b> <i>value</i>	(Optional) Affinity constraints. The link attributes for which the path has an affinity. If specified, this overrides the affinity constraints obtained from the tunnel interface.	
<b>mask</b> <i>mask</i>	(Optional) Affinity constraints. The mask associated with the affinity specification.	

**Defaults** The specified constraints override any constraints obtained from a reference tunnel.

**Command Modes** EXEC

Command History	Release	Modification
	12.1(3)T	This command was introduced.

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

```
Router1# show mpls traffic-eng topology path Tunnel1 bandwidth 1000

Query Parameters:
  Destination:10.112.0.12
  Bandwidth:1000
  Priorities:1 (setup), 1 (hold)
  Affinity:0x0 (value), 0xFFFF (mask)
Query Results:
  Min Bandwidth Along Path:2000 (kbps)
  Max Bandwidth Along Path:5000 (kbps)
  Hop  0:10.1.1.0.6      :affinity 00000000, bandwidth 2000 (kbps)
  Hop  1:10.1.1.0.10    :affinity 00000000, bandwidth 5000 (kbps)
```

```

Hop 2:10.43.0.10      :affinity 00000000, bandwidth 2000 (kbps)
Hop 3:10.112.0.12
Router1#

```

Table 77 describes the significant fields shown in the output.

**Table 77** *show mpls traffic-eng topology path Field Descriptions*

Field	Description
Destination	IP address of the path's destination.
Bandwidth	Amount of available bandwidth that a suitable path requires.
Priorities	Setup and hold priorities used to acquire bandwidth.
Affinity	Link attributes for which the path has an affinity.
Min Bandwidth Along Path	Minimum amount of bandwidth configured for a path.
Max Bandwidth Along Path	Maximum amount of bandwidth configured for a path.
Hop	Information about each link in the path.

# show mpls traffic-eng tunnels

To show information about tunnels, use the **show mpls traffic-eng tunnels** EXEC command.

**show mpls traffic-eng tunnels** *tunnel-interface* [**brief**]

**show mpls traffic-eng tunnels**

[**destination** *address*]

[**source-id** {*num* | *ipaddress* | *ipaddress num*}]

[**role** {**all** | **head** | **middle** | **tail** | **remote**}]

[{**up** | **down**}]

[**name** *string*]

[**suboptimal constraints** {**none** | **current** | **max**}]

[{[**interface in** *phys-intf*] [**interface out** *phys-intf*] | [**interface** *phys-intf*]}]

[**brief**]

## Syntax Description

<i>tunnel-interface</i>	Displays information for the specified tunneling interface.
<b>brief</b>	(Optional) Displays the information in brief format.
<b>destination</b> <i>address</i>	(Optional) Restricts the display to tunnels destined to the specified IP address.
<b>source-id</b>	(Optional) Restricts the display to tunnels with a matching source IP address or tunnel number.
<i>num</i>	(Optional) Tunnel number.
<i>ipaddress</i>	(Optional) Source IP address.
<i>ipaddress num</i>	(Optional) Source IP address and tunnel number.
<b>role</b>	(Optional) Restricts the display to tunnels with the indicated role (all, head, middle, tail, or remote).
<b>all</b>	(Optional) Displays all tunnels.
<b>head</b>	(Optional) Displays tunnels with their heads at this router.
<b>middle</b>	(Optional) Displays tunnels with their midpoints at this router.
<b>tail</b>	(Optional) Displays tunnels with their tails at this router.
<b>remote</b>	(Optional) Displays tunnels with their heads at another router; this is a combination of the <b>middle</b> and <b>tail</b> keyword values.
<b>up</b>	(Optional) Displays tunnels if the tunnel interface is up. Tunnel midpoints and tails are typically up or not present.
<b>down</b>	(Optional) Displays tunnels that are down.
<b>name</b> <i>string</i>	(Optional) Displays tunnels with the specified name. The tunnel name is derived from the interface description, if specified; otherwise, it is the interface name. The tunnel name is included in the signalling message so it is available at all hops.
<b>suboptimal constraints none</b>	(Optional) Displays tunnels whose path metric is greater than the shortest unconstrained path. Selected tunnels have a longer path than the IGP's shortest path.
<b>suboptimal constraints current</b>	(Optional) Displays tunnels whose path metric is greater than the current shortest path, constrained by the tunnel's configured options. Selected tunnels would have a shorter path if they were reoptimized immediately.

<b>suboptimal constraints max</b>	(Optional) Displays tunnels whose path metric is greater than the current shortest path, constrained by the tunnel's configured options, and considering only the network's capacity. Selected tunnels would have a shorter path if no other tunnels were consuming network resources.
<b>interface in <i>phys-intf</i></b>	(Optional) Displays tunnels that use the specified input interface.
<b>interface out <i>phys-intf</i></b>	(Optional) Displays tunnels that use the specified output interface.
<b>interface <i>phys-intf</i></b>	(Optional) Displays tunnels that use the specified interface as an input or output interface.
<b>brief</b>	(Optional) Specifies one line per tunnel.

**Defaults**

No default behavior or values.

**Command Modes**

EXEC

**Command History**

Release	Modification
12.0(5)S	This command was introduced.
12.1(3)T	The new <b>brief</b> format includes input and output interface information. The <b>suboptimal</b> and <b>interface</b> keywords were added to the nonbrief format. The nonbrief, nonsummary formats each include the history of LSP selection.

**Examples**

The following is sample output from the **show mpls traffic-eng tunnels brief** command:

```
Router1# show mpls traffic-eng tunnels brief
```

```
Signalling Summary:
```

```
  LSP Tunnels Process:      running
  RSVP Process:             running
  Forwarding:               enabled
```

```
  Periodic reoptimization:  every 3600 seconds, next in 1706 seconds
```

TUNNEL NAME	DESTINATION	UP IF	DOWN IF	STATE/PROT
Router1_t1	10.112.0.12	-	Et4/0/1	up/up
tagsw-r11_t2	10.112.0.12	-	unknown	up/down
tagsw-r11_t3	10.112.0.12	-	unknown	admin-down
tagsw-r11_t1000	10.110.0.10	-	unknown	up/down
tagsw-r11_t2000	10.110.0.10	-	Et4/0/1	up/up

```
Displayed 5 (of 5) heads, 0 (of 0) midpoints, 0 (of 0) tails
```

[Table 78](#) describes the significant fields shown in the output.

**Table 78** *show mpls traffic-eng tunnels Field Descriptions*

Field	Description
LSP Tunnels Process	Status of the LSP tunnels process.
RSVP Process	Status of the RSVP process.
Forwarding	Status of forwarding (enabled or disabled).
Periodic reoptimization	Schedule for periodic reoptimization.



*Table 78 show mpls traffic-eng tunnels Field Descriptions (continued)*

Field	Description
TUNNEL NAME	Name of the interface that is configured at the tunnel head.
DESTINATION	Identifier of the tailend router.
UP IF	Upstream interface that the tunnel used.
DOWN IF	Downstream interface that the tunnel used.
STATE/PROT	For tunnel heads, admin-down or up. For nonheads, signalled.

**Related Commands**

Command	Description
<b>mpls traffic-eng reoptimize timers frequency</b>	Controls the frequency with which tunnels with established LSPs are checked for better LSPs.
<b>mpls traffic-eng tunnels (configuration)</b>	Enables MPLS traffic engineering tunnel signalling on a device.
<b>mpls traffic-eng tunnels (interface)</b>	Enables MPLS traffic engineering tunnel signalling on an interface.

# show mpls traffic-eng tunnels summary

To show summary information about tunnels, use the **show mpls traffic-eng tunnels summary** EXEC command.

## show mpls traffic-eng tunnels summary

**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 mpls traffic-eng tunnels summary** command:

```
Router# show mpls traffic-eng tunnels summary

Signalling Summary:
  LSP Tunnels Process:          running
  RSVP Process:                 running
  Forwarding:                   enabled
  Head: 1 interfaces, 1 active signalling attempts, 1 established
      1 activations, 0 deactivations
  Midpoints: 0, Tails: 0
  Periodic reoptimization:      every 3600 seconds, next in 3436 seconds
```

[Table 79](#) describes the significant fields shown in the output.

**Table 79** *show mpls traffic-eng tunnels summary* Field Descriptions

Field	Description
LSP Tunnels Process	MPLS traffic engineering has or has not been enabled.
RSVP Process	RSVP has or has not been enabled. (This feature is enabled as a consequence of MPLS traffic engineering being enabled.)
Forwarding	Indicates whether appropriate forwarding is enabled. (Appropriate forwarding on a router is CEF switching.)
Head	Summary information about tunnel heads at this device.
Interfaces	Number of MPLS traffic engineering tunnel interfaces.
Active signalling attempts	LSPs currently successfully signalled or being signalled.
Established	LSPs currently signalled.
activations	Signalling attempts initiated.

*Table 79 show mpls traffic-eng tunnels summary Field Descriptions (continued)*

Field	Description
deactivations	Signalling attempts terminated.
Periodic reoptimization	Frequency of periodic reoptimization and time until the next periodic reoptimization.

**Related Commands**

Command	Description
<b>mpls traffic-eng reoptimize timers frequency</b>	Controls the frequency with which tunnels with established LSPs are checked for better LSPs.
<b>mpls traffic-eng tunnels (configuration)</b>	Enables MPLS traffic engineering tunnel signalling on a device.
<b>mpls traffic-eng tunnels (interface)</b>	Enables MPLS traffic engineering tunnel signalling on an interface.

# show mpoa client

To display a summary of information regarding one or all MPCs, use the **show mpoa client** command in EXEC mode.

**show mpoa client** [*name mpc-name*] [*brief*]

## Syntax Description

<b>name</b> <i>mpc-name</i>	(Optional) Name of the MPC with the specified name.
<b>brief</b>	(Optional) Output limit of the command.

## Command Modes

EXEC

## Command History

Release	Modification
11.3(3a)WA4(5)	This command was introduced.

## Usage Guidelines

If you omit the **name** keyword, the command displays information for all MPCs.

## Examples

The following is sample output from the **show mpoa client** command:

```
Router# show mpoa client name ip_mpc brief

MPC Name: ip_mpc, Interface: ATM1/0, State: Up
MPC actual operating address: 47.0091810000000613E5A2F01.0010A6943825.00
Shortcut-Setup Count: 1, Shortcut-Setup Time: 1
Lane clients bound to MPC ip_mpc: ATM1/0.1
Discovered MPS neighbours          kp-alv   vcd      rxPkts   txPkts
47.0091810000000613E5A2F01.006070174824.00    59      30        28        2
Remote Devices known                vcd      rxPkts   txPkts
47.0091810000000613E5A2F01.00000C5A0C5D.00    35       0         0        10
```

[Table 80](#) describes the significant fields shown in the output.

**Table 80** show mpoa client Field Descriptions

Field	Description
MPC Name	Name specified for the MPC.
Interface	Interface to which the MPC is attached.
State	Current state of the MPC.
MPC actual operating address	ATM address of the MPC.
Shortcut-Setup Count	Current number specified by the <b>shortcut-frame-count</b> command.
Shortcut-Setup Time	Current value specified by the <b>shortcut-frame-time</b> command.
Lane clients bound to MPC ip_mpc	List of LANE clients currently bound to MPC ip_mpc.

**Table 80** *show mpoa client Field Descriptions (continued)*

Field	Description
Discovered MPS neighbours	List of learned MPS addresses.
kp-alm	Number of seconds until the next keepalive message should be received.
vcd	Number that identifies the virtual circuit.
rxPkts	Number of packets received from the learned MPS.
txPkts	Number of packets sent to the learned MPS.
Remote Devices known	List of other devices (typically other MPCs) not in this ELAN.
vcd	Number that identifies the virtual circuit to that MPC.
rxPkts	Number of packets received from the learned remote device.
txPkts	Number of packets sent to the learned remote device.

**Related Commands**

Command	Description
<b>clear mpoa client name</b>	Clears the ingress and egress cache entries.

# show mpoa client cache

To display the ingress or egress cache entries matching the IP addresses for the MPCs, use the **show mpoa client cache** command in EXEC mode.

```
show mpoa client [name mpc-name] cache [ingress | egress] [ip-address ip-address]
```

Syntax Description	
<b>name</b> <i>mpc-name</i>	(Optional) Name of the MPC with the specified name.
<b>ingress</b>	(Optional) Displays ingress cache entries associated with an MPC.
<b>egress</b>	(Optional) Displays egress cache entries associated with an MPC.
<b>ip-address</b> <i>ip-address</i>	(Optional) Displays cache entries that match the specified IP address.

**Command Modes** EXEC

Command History	Release	Modification
	11.3(3a)WA4(5)	This command was introduced.

**Examples** The following is sample output from the **show mpoa client cache** command for a specific MPC:

```
Router# show mpoa client ip_mpc cache

MPC Name: ip-mpc, Interface: ATM1/0, State: Up
MPC actual operating address: 47.00918100000000613E5A2F01.0010A6943825.00
Shortcut-Setup Count: 1, Shortcut-Setup Time: 1
Number of Ingress cache entries: 1
MPC Ingress Cache Information:
Dst IP addr      State   vcd Expires Egress MPC Atm address
20.20.20.1      RSVLD  35   11:38 47.00918100000000613E5A2F01.00000C5A0C5D.00
Number of Egress cache entries: 1
MPC Egress Cache Information:
Dst IP addr      Dst MAC      Src MAC      MPSid  Elan Expires  CacheId  Tag
10.10.10.1      0000.0c5a.0c58 0060.7017.4820   9     2   11:55     1     1
```

[Table 81](#) describes the significant fields shown in the output.

**Table 81** *show mpoa client cache Field Descriptions*

Field	Description
MPC Name	Name specified for the MPC.
Interface	Interface to which the MPC is attached.
State	Current state of the MPC (up or down).
MPC actual operating address	ATM address of the MPC.
Shortcut-Setup Count	Current number specified by the <b>shortcut-frame-count</b> command.
Number of Ingress cache entries	Number of entries in the ingress cache.

**Table 81** *show mpoa client cache Field Descriptions (continued)*

Field	Description
MPC Ingress Cache Information	
Dst IP addr	IP address of the destination.
State	State of the ingress cache entry. (Valid states are initialized, trigger, refresh, hold_down, resolved, and suspended..)
vcd	Number that identifies the virtual circuit.
Expires	Time in minutes or seconds until the ingress cache entry expires.
Egress MPC Atm address	ATM address of the egress MPC.
Number of Egress cache entries	Number of entries in the egress cache.
MPC Egress Cache Information	
Dst IP addr	IP address of the destination.
Dst MAC	MAC address of the destination.
Src MAC	MAC address of the source.
MPSid	Unique number representing the egress MPS.
Elan	ELAN identifier of the ELAN serving this destination IP address.
Expires	Time in minutes or seconds until the egress cache entry expires.
CacheID	Cache identifier.
Tag	Label (tag) identifier.