

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; for the 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	interface atm slot/0	(Optional) ATM interface slot and port for the following: <ul style="list-style-type: none"> • AIP on the Cisco 7500 series routers. • ATM port adapter on the Cisco 7200 series routers.
	interface atm slot/port-adapter/0	(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.
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 emulated LAN:

```
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
  culprits for the last failure: 39.020304050607080910111213.00602F557940.01
```

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

```
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 53 describes significant fields in the sample display.

Table 53 *show lane config Field Descriptions*

Field	Description
LE Config Server	Major interface on which the LANE configuration server is configured.
config table	Name of the database associated with the LANE configuration server.
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.

Table 53 *show lane config Field Descriptions (continued)*

Field	Description
vcd	Virtual circuit descriptor that uniquely identifies the configure VCC.
rxCnt	Number of packets received.
txCnt	Number of packets transmitted.
callingParty	ATM NSAP address of the LANE component that is connected to the LECS. "elan1" indicates the emulated LAN name, "0" indicates the priority number, and "active" indicates that the server is active.

show lane database

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

show lane database [*database-name*]

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

Usage Guidelines	By default, this command displays the LANE 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:
-----------------	---

```
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:

```
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 54 describes significant fields in the sample displays.

Table 54 *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 emulated LAN whose data is reported in this line and the following indented lines.
un-restricted	Indicates whether this emulated LAN is restricted or unrestricted.
local-segment-id 2048	Ring number of the emulated LAN.
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 emulated LAN. This display includes a separate line for every LANE client in this emulated LAN.
LEC NSAP	ATM addresses of all LANE clients in this emulated LAN.

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; for the 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		
interface atm <i>slot/port</i>	(Optional) ATM interface slot and port for the following:	<ul style="list-style-type: none"> AIP on the Cisco 7500 series routers. ATM port adapter on the Cisco 7200 series routers.
interface atm <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.	
interface atm <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 **show lane default-atm-addresses** command for the ATM interface 1/0 when all the major LANE components are located on that interface:

```
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 55 describes significant fields shown in the display.

Table 55 *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 LANE 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, use the **show lane le-arp** command in EXEC mode.

AIP on the Cisco 7500 series routers; for the 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

interface atm slot/port	(Optional) ATM interface slot and port for the following: <ul style="list-style-type: none"> 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 emulated LAN. 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:

```
show lane le-arp
```

```
Hardware Addr      ATM Address          VCD  Interface
0000.0c15.a2b5     39.00000000000000000000000000000000.00000C15A2B5.01  39  ATM1/0.1
0000.0c15.f3e5     39.00000000000000000000000000000000.00000C15F3E5.01  25* ATM1/0.1
```

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

```
show lane le-arp
```

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

Table 56 describes significant fields shown in the displays.

Table 56 *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, use the **show lane server** command in EXEC mode.

AIP on the Cisco 7500 series routers; for the 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		
interface atm <i>slot/port</i>	(Optional) ATM interface slot and port for the following:	<ul style="list-style-type: none"> • AIP on the Cisco 7500 series routers. • ATM port adapter on the Cisco 7200 series routers.
interface atm <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.	
interface atm <i>number</i>	(Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers.	
<i>.subinterface-number</i>	(Optional) Subinterface number.	
name <i>elan-name</i>	(Optional) Name of emulated LAN. 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.

Examples

The following is sample output from the **show lane server** command for an Ethernet-emulated LAN:

```
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-emulated LAN:

```
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 57 describes significant fields shown in the displays

Table 57 *show lane server Field Descriptions*

Field	Description
LE Server ATM2/0.2	Interface and subinterface of this server.
ELAN name	Name of the emulated LAN.
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 emulated LAN.
Max Frame Size	Maximum frame size (in bytes) of this type of emulated LAN.
Segment ID	The emulated LAN's ring number. 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 LANE configuration server, and the virtual circuit descriptor of the circuit connecting them.
control distribute	Virtual circuit descriptor of the Control Distribute VCC.

Table 57 *show lane server Field Descriptions (continued)*

Field	Description
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.
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*]

Syntax Description	<i>interface</i>	(Optional) Displays information for one interface. Without this argument, detailed view of all interfaces are displayed.				
Command Modes	EXEC					
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.3(3) WA4(4)</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	11.3(3) WA4(4)	This command was introduced.	
Release	Modification					
11.3(3) WA4(4)	This command was introduced.					

Examples

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

```
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:

```
show mls rp int vlan 10

mls active on Vlan10, domain WBU
```

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

show mls rp interface

To display IPX Multilayer Switching (MLS) details for the route processor, 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
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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.

```
show mls rp interface vlan 10

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

Related Commands	Command	Description
	mls rp ipx (global)	Enables the router as an IPX Multilayer Switching Route Processor.
	mls rp locate ipx	Displays information about all switches currently shortcutting for the specified IPX flow(s).
	mls rp vtp-domain	Assigns an MLS interface to a specific VTP domain on the Multilayer Switching-Route Processor.
	mls rp management-interface	Designates an interface as the management interface for MLSP packets.
	mls rp vlan-id	Assigns a VLAN identification number to an IPX MLS interface.
	show mls rp ipx	Displays details for all IPX MLS interfaces on the IPX MLS router.
	show mls rp vtp-domain	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.
	statistics	(Optional) Displays MLS statistics.
	summary	(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:

```
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*:

```
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:

```
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:

```
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
mls rp ip multicast	Enables IP multicast Multilayer Switching (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:

```
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
mls rp ipx (global)	Enables the router as an IPX Multilayer Switching Route Processor.
mls rp locate ipx	Displays information about all switches currently shortcutting for the specified IPX flow(s).
mls rp management-interface	Designates an interface as the management interface for MLSP packets.
mls rp vlan-id	Assigns a VLAN identification number to an IPX MLS interface.
show mls rp vtp-domain	Displays IPX MLS interfaces for a specific VTP domain on the route processor.
show mls rp interface	Displays IPX MLS details for the route processor, including specific information about the MLSP.
show mls rp vtp-domain	Displays IPX MLS interfaces for a specific VTP domain on the route processor.

show mls rp vtp-domain

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

show mls rp vtp-domain *domain-name*

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

Examples

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

```

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
mls rp ipx (global)	Enables the router as an IPX Multilayer Switching Route Processor.
mls rp locate ipx	Displays information about all switches currently shortcutting for the specified IPX flow(s).
mls rp management-interface	Designates an interface as the management interface for MLSP packets.
mls rp vlan-id	Assigns a VLAN identification number to an IPX MLS interface.
show mls rp vtp-domain	Displays IPX MLS interfaces for a specific VTP domain on the route processor.

Command	Description
show mls rp interface	Displays IPX MLS details for the route processor, including specific information about the MLSP.
show mls rp ipx	Displays details for all IPX MLS interfaces on the IPX MLS router.

show mpls traffic-eng autoroute

To show tunnels that are announced to IGP, including interface, destination, and bandwidth, use the **show mpls traffic-eng autoroute** command in privileged EXEC mode.

show mpls traffic-eng autoroute

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes Privileged EXEC

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

Usage Guidelines The SPF/nexthop calculation of the IGP has been modified to understand TE tunnels. This command shows which tunnels are currently being used by the IGP in its SPF/nexthop calculation (tunnels that are up and have autoroute configured)

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

```
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 58 lists the fields displayed in this example.

Table 58 *show mpls traffic-eng autoroute* Field Descriptions

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

Table 58 *show mpls traffic-eng autoroute Field Descriptions (continued)*

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	The MPLS traffic engineering tunnel tail-end IP address.
absolute metric	The MPLS traffic engineering tunnel metric with mode absolute.
relative metric	The MPLS traffic engineering tunnel metric with mode relative.

show mpls traffic-eng link-management admission-control

To show which tunnels have been 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** command in EXEC mode.

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

Syntax Description	interface name (Optional) Shows only those tunnels that are admitted on the specified interface.
---------------------------	---

Defaults No default behavior or values.

Command Modes EXEC

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

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

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

System Information::
  Tunnels Count:      1
  Tunnels Selected:   1
TUNNEL ID            UP IF      DOWN IF  PRIORITY STATE           BANDWIDTH
3.3.25.3 1_1         -        PO1/0/0  1/1      Resv Admitted  10000    R
```

Table 59 lists the fields displayed in this example.

Table 59 *show mpls traffic-eng link-management admission-control Field Descriptions*

Field	Description
Tunnels Count	Total number of tunnels admitted.
Tunnels Selected	Number of tunnels to be displayed.
TUNNEL ID	Tunnel identification.
UP IF	Upstream interface used by the tunnel.
DOWN IF	Downstream interface used by the tunnel.
PRIORITY	Setup priority of the tunnel, followed by the hold priority.

Table 59 *show mpls traffic-eng link-management admission-control Field Descriptions*

STATE	Admission status of the table.
BANDWIDTH	Bandwidth in bits per second. If an “R” appears after the bandwidth number, it means the bandwidth has been reserved. If an “H” appears after the bandwidth number, it means the bandwidth has been temporarily held for a path message.

Related Commands

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

show mpls traffic-eng link-management advertisements

To show local link information currently being flooded by MPLS traffic engineering link management into the global traffic engineering topology, use the **show mpls traffic-eng link-management advertisements** command in EXEC mode.

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.

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

```
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:     10.32.0.6
  IGP Neighbor:        ID 0001.0000.0002.00, IP 10.32.0.10
  Admin. Weight:       10
  Physical BW:          155520000 bits/sec
  Reservable BW:        5000000 bits/sec
  Output Bandwidth::
    BW Unreserved[0]:   5000000 bits/sec
    BW Unreserved[1]:   1000000 bits/sec
    BW Unreserved[2]:   1000000 bits/sec
    BW Unreserved[3]:   1000000 bits/sec
    BW Unreserved[4]:   1000000 bits/sec
    BW Unreserved[5]:   1000000 bits/sec
    BW Unreserved[6]:   1000000 bits/sec
    BW Unreserved[7]:   1000000 bits/sec
  Affinity Bits         0x00000000
```

Table 60 lists the fields displayed in this example.

Table 60 *show mpls traffic-eng link-management advertisements Field Descriptions*

Field	Description
Flooding Status	Enable 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 being used to flood information for this area.
IGP System ID	Identification used by IGP flooding this area to identify this node.
MPLS TE Router ID	MPLS traffic engineering router ID.
Flooded Links	Number of links flooded for this area.
Link ID	Index of the link 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 BW	Link's 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's attribute flags being flooded.

Related Commands

Command	Description
show mpls traffic-eng link-management advertisements	Displays local link information currently being flooded by MPLS traffic engineering link management into the global traffic engineering topology.
show mpls traffic-eng link-management bandwidth-allocation	Displays current local link information.
show mpls traffic-eng link-management igp-neighbors	Displays IGP neighbors.
show mpls traffic-eng link-management interfaces	Displays per-interface resource and configuration information.
show mpls traffic-eng link-management summary	Displays 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** command in EXEC mode.

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

Syntax Description	interface name (Optional) Shows only those tunnels that have been admitted on the specified interface.
---------------------------	---

Defaults No default behavior or values.

Command Modes EXEC

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

Usage Guidelines Advertised information may differ from current information depending on how flooding has been configured.

Examples

The following example shows output from this command:

```
show mpls traffic-eng link-management bandwidth-allocation atm0/0.1

System Information::
  Links Count:          3
  Bandwidth Hold Time: max. 15 seconds
Link ID:: AT0/0.1 (10.32.0.6)
Link Status:
  Physical Bandwidth:  155520000 bits/sec
  MPLS TE Bandwidth:   5000000 bits/sec (reserved:0% in, 80% out)
  BW Descriptors:     1
  MPLS TE Link State:  MPLS TE on, RSVP on, admin-up, flooded
  Inbound Admission:  allow-all
  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)
Outbound Bandwidth Information (bits/second):
  KEEP PRIORITY    BW HELD    BW TOTAL HELD    BW LOCKED    BW TOTAL LOCKED
  0                 0          0                 0            0
  1                 0          0                 4000000     4000000
  2                 0          0                 0            4000000
  3                 0          0                 0            4000000
  4                 0          0                 0            4000000
  5                 0          0                 0            4000000
  6                 0          0                 0            4000000
  7                 0          0                 0            4000000
```

Table 61 lists the fields displayed in this example.

Table 61 *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	Bandwidth hold time of the link in seconds.
Link ID	Interface name and IP address of the link being described.
Physical Bandwidth	Bandwidth capacity of the link (in bits per second).
MPLS TE Bandwidth	Amount of reservable bandwidth on this link.
BW Descriptors	Number of bandwidth allocations on this link.
MPLS TE Link State	Status of the MPLS traffic engineering-related functions of the link.
Inbound Admission	Admission policy of the link for incoming tunnels.
Outbound Admission	Admission policy of the link for outgoing tunnels.
Admin. Weight	Administrative weight associated with this link.
Up Thresholds	Bandwidth thresholds of the link for allocations.
Down Thresholds	Bandwidth thresholds of the link for deallocations.
IGP Neighbor	List of the IGP neighbors directly reachable over this link.
KEEP PRIORITY	Priority levels for the bandwidth allocations of the link.
BW HELD	Amount of bandwidth (in bits per seconds) temporarily held at this priority for path messages.
BW TOTAL HELD	Bandwidth held at this priority and those above it.

Table 61 show mpls traffic-eng link-management bandwidth-allocation Field Descriptions

BW LOCKED	Amount of bandwidth reserved at this priority.
BW TOTAL LOCKED	Bandwidth reserved at this priority and those above.

Related Commands

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

show mpls traffic-eng link-management igp-neighbors

To show IGP neighbors, use the **show mpls traffic-eng link-management igp-neighbors** command in privileged EXEC mode.

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

Syntax Description		
igp-id		Shows the IGP neighbors using a specified IGP identification.
isis <i>isis-address</i>		Specifies an IS-IS neighbor to display when displaying neighbors by IGP ID.
ospf <i>ospf-id</i>		Specifies an OSPF neighbor to display when displaying neighbors by IGP ID.
ip <i>A.B.C.D.</i>		Shows the IGP neighbors 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 example shows output from the **show mpls traffic-eng link-management igp-neighbors** command:

```
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 62 lists the fields displayed in this example.

Table 62 *show mpls traffic-eng link-management igp-neighbors Field Descriptions*

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

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

show mpls traffic-eng link-management interfaces

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

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

Syntax Description	<i>interface</i>	(Optional) Specifies the name of a single interface for which information is to be displayed.
Defaults	No default behavior or values.S	
Command Modes	EXEC	
Command History	Release	Modification
	12.0(5)S	This command was introduced.

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

```
show mpls traffic-eng link-management interfaces

System Information::
Links Count:          3
Link ID:: Et1/1/1 (10.1.0.6)
  Link Status:
    Physical Bandwidth: 10000000 bits/sec
    MPLS TE Bandwidth: 5000000 bits/sec (reserved:0% in, 0% out)
    MPLS TE Link State: MPLS TE on, RSVP on
    Inbound Admission:  reject-huge
    Outbound Admission: allow-if-room
    Admin. Weight:      10 (IGP)
    IGP Neighbor Count: 2
    IGP Neighbor:       ID 0000.0000.0000.02, IP 0.0.0.0 (Up)
    IGP Neighbor:       ID 0001.0000.0001.02, IP 0.0.0.0 (Down)
  Flooding Status for each configured area [1]:
    IGP Area[1] isis level-1: not flooded
    (Reason:Interface has been administratively disabled)
Link ID:: AT0/0.1 (10.32.0.6)
  Link Status:
    Physical Bandwidth: 155520000 bits/sec
    MPLS TE Bandwidth: 5000000 bits/sec (reserved:0% in, 80% out)
    MPLS TE Link State: MPLS TE on, RSVP on, admin-up, flooded
    Inbound Admission:  allow-all
    Outbound Admission: allow-if-room
    Admin. Weight:      10 (IGP)
    IGP Neighbor Count: 1
    IGP Neighbor:       ID 0001.0000.0002.00, IP 10.32.0.10 (Up)
  Flooding Status for each configured area [1]:
    IGP Area[1] isis level-1: flooded
```

Table 63 lists the fields displayed in this example.

Table 63 show mpls traffic-eng link-management interfaces Field Descriptions

Field	Description
Links Count	Number of links that have been enabled for use with MPLS traffic engineering.
Physical Bandwidth	Bandwidth capacity of the link (in bits per second).
MPLS TE Bandwidth	Amount of reservable bandwidth on this link.
MPLS TE Link State	The status of the MPLS link.
Inbound Admission	Admission policy for a link for incoming tunnels.
Outbound Admission	Admission policy for a link for outgoing tunnels.
Admin. Weight	Administrative weight associated with this link.
IGP Neighbor Count	Number of IGP neighbors directly reachable over this link.
IGP Area [1]	Flooding status for the specified configured area.

Related Commands

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

show mpls traffic-eng link-management summary

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

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

Syntax Description	<i>interface name</i> (Optional) Specifies the name of a single interface for which information is to be displayed.				
Defaults	No default behavior or values.				
Command Modes	EXEC				
Command History	<table border="1"> <thead> <tr> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Release</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Modification</th> </tr> </thead> <tbody> <tr> <td style="border-bottom: 1px solid black;">12.0(5)S</td> <td style="border-bottom: 1px solid black;">This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	12.0(5)S	This command was introduced.
Release	Modification				
12.0(5)S	This command was introduced.				

Examples

The following example shows output from the **show mpls traffic-eng link-management summary** command:

```
show mpls traffic-eng link-management summary atm0/0.1

System Information::
  Links Count:          3
  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:       3
Link ID:: AT0/0.1 (10.32.0.6)
  Link Status:
    Physical Bandwidth: 155520000 bits/sec
    MPLS TE Bandwidth:  5000000 bits/sec (reserved:0% in, 80% out)
    MPLS TE Link State: MPLS TE on, RSVP on, admin-up, flooded
    Inbound Admission:  allow-all
    Outbound Admission: allow-if-room
    Admin. Weight:       10 (IGP)
    IGP Neighbor Count:  1
```

Table 64 lists the fields displayed in this example.

Table 64 show mpls traffic-eng link-management summary Field Descriptions

Field	Description
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 flooded.
IGP System ID	IGP for the 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	Bandwidth capacity for the link (in bits per second).
MPLS TE Bandwidth	Amount of reservable bandwidth on this link.
MPLS TE Link State	Status of the MPLS traffic engineering-related functions of the link.
Inbound Admission	Admission policy of the link for incoming tunnels.
Outbound Admission	Admission policy of the link for outgoing tunnels.
Admin. Weight	Administrative weight of the link.
IGP Neighbor Count	List of the IGP neighbors directly reachable over this link.

Related Commands

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

show mpls traffic-eng topology

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

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>		Specifies the node by the IP address (router identifier to interface address).
igp-id		Specifies the node by IGP router identifier.
isis nsapaddr		Specifies the node by router identification (nsapaddr) if using IS-IS.
ospf A.B.C.D		Specifies the node by router identifier if using OSPF.
brief		(Optional) The 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.

Examples The following example shows output from the **show mpls traffic-eng topology** command:

```
show mpls traffic-eng topology

My_System_id: 0000.0025.0003.00

IGP Id: 0000.0024.0004.00, MPLS TE Id:24.4.4.4 Router Node
  link[0 ]:Intf Address: 150.1.1.4
    Nbr IGP Id: 0000.0024.0004.02,
    admin_weight:10, affinity_bits:0x0
    max_link_bw:10000 max_link_reservable: 10000
    allocated   reservable   allocated   reservable
    -----
    bw[0]: 0           10000     bw[1]: 0           10000
    bw[2]: 0           10000     bw[3]: 0           10000
    bw[4]: 0           10000     bw[5]: 0           10000
    bw[6]: 0           10000     bw[7]: 0           10000
```

Table 65 lists the fields displayed in this example.

Table 65 *show mpls traffic-eng topology Field Descriptions*

Field	Description
My-System_id	Unique identifier of the IGP.
IGP Id	Identification of advertising router.
MPLS TE Id	Unique MPLS traffic engineering identification.
Intf Address	This interface address of the link.
Nbr IGP Id	Neighbor IGP router identifier.
admin_weight	Cost of the link.
affinity_bits	The requirements on the attributes of the links that the traffic crosses.
max_link_bw	Physical line rate.
max_link_reservable	The maximum amount of bandwidth that can be reserved on a link.
allocated	Amount of bandwidth allocated at that priority.
reservable	Amount of available bandwidth reservable at that priority.

show mpls traffic-eng tunnel

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

```
show mpls traffic-eng tunnel [{tunnel_interface | destination address | source-id [{ipaddress |
0-MAX | name name role {all | head | middle | tail | remote} | {up | down}}] [brief]
```

Syntax Description		
tunnel_interface	(Optional)	Shows tunnel interface.
destination address	(Optional)	Displays brief summary of tunnel status and configuration.
source-id ipaddress	(Optional)	Restricts the display to tunnels originating at that IP address.
0-MAX	(Optional)	
name name	(Optional)	Restricts the display to tunnels with that value as their 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 signaling message so it is available at all hops.
role	(Optional)	Restrict the display to tunnels with the indicated role.
all	(Optional)	Displays all tunnels.
head	(Optional)	Displays tunnels with their head at this router.
middle	(Optional)	Displays tunnels with a midpoint at this router.
tail	(Optional)	Displays tunnels with a tail at this router.
remote	(Optional)	Displays tunnels with their head at some other router—the combination of middle and tail.
up	(Optional)	Restricts the display to tunnels that are up. When you specify “up,” a tunnel head is shown if the tunnel interface is up. Tunnel midpoints and tails are typically either up or not present.
down	(Optional)	Restricts the display to tunnels that are down.
brief	(Optional)	Specifies a format with 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.

Examples

The following example shows output from the **show mpls traffic-eng tunnel brief** command:

```
show mpls traffic-eng tunnel brief

Signaling Summary:
  LSP Tunnels Process:      running
  RSVP Process:            running
  Forwarding:              enabled
  Periodic reoptimization: every 180 seconds, next in 108 seconds
TUNNEL NAME                DESTINATION    STATUS    STATE
tagsw-r4_t1                10.0.0.11     admin-down down
tagsw-r4_t10011           10.0.0.11     up        up
...
al7500-sw12_t20004        10.0.0.4      signaled  up
Displayed 16 (of 16) heads, 0 (of 0) midpoints, 1 (of 1) tails
```

Table 66 lists the fields displayed in this example.

Table 66 show mpls traffic-eng Field Descriptions

Field	Description
TUNNEL NAME	Name of the interface that is configured at the tunnel head.
DESTINATION	Tail-end router identifier.
STATUS	For tunnel heads, admin-down or up. For non-heads, signaled.
STATE	Up or down.

Related Commands

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

show mpls traffic-eng tunnel summary

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

show mpls traffic-eng tunnel summary

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes Privileged EXEC

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

Examples The following example shows output from the **show mpls traffic-eng tunnel summary** command:

```
show mpls traffic-eng tunnel summary

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

Table 67 lists the fields displayed in this example.

Table 67 *show mpls traffic-eng tunnel summary* Field Descriptions

Field	Description
LSP Tunnels Process	Indicates the MPLS traffic engineering feature has been enabled.
RSVP Process	Indicates the RSVP feature has been enabled. (This is enabled as a consequence of enabling the MPLS traffic engineering feature.)
Forwarding	Indicates appropriate forwarding has been 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 signaling attempts	LSPs currently either successfully signaled or in the process of being signaled.
Established	LSPs currently signaled.

Table 67 show mpls traffic-eng tunnel summary Field Descriptions (continued)

Activations	Signalling attempts initiated.
Deactivations	Signalling attempts terminated.
Periodic reoptimization	Frequency of periodic reoptimization and time until next periodic reoptimization.

Related Commands

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

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

name <i>mpc-name</i>	(Optional) Name of the MPC with the specified name.
brief	(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:

```
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 68 describes the fields shown in the display.

Table 68 *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 shortcut-frame-count command.
Shortcut-Setup Time	Current value specified by the shortcut-frame-time command.
Lane clients bound to MPC ip_mpc	List of LANE clients currently bound to MPC ip_mpc.

Table 68 *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 transmitted 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 transmitted to the learned remote device.

Related Commands

Command	Description
clear mpoa client name	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	name <i>mpc-name</i>	(Optional) Name of the MPC with the specified name.
	ingress	(Optional) Displays ingress cache entries associated with an MPC.
	egress	(Optional) Displays egress cache entries associated with an MPC.
	ip-address <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:

```
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 69 describes the fields shown in the display.

Table 69 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 shortcut-frame-count command.
Number of Ingress cache entries	Number of entries in the ingress cache.

Table 69 *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. ¹
vcd	Number that identifies the virtual circuit.
Expires	Time in minutes/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/seconds until the egress cache entry expires.
CacheID	Cache identifier.
Tag	Label (tag) identifier.

1. Valid states are initialized, trigger, refresh, hold_down, resolved, and suspended.