

lane global-lecs-address

To specify a list of LECS addresses to use when the addresses cannot be obtained from the ILMI, use the **lane global-lecs-address** command in interface configuration mode. To remove a LECS address from the list, use the **no** form of this command.

lane global-lecs-address *address*

no lane global-lecs-address *address*

Syntax Description	<i>address</i>	Address of the LECS. You cannot use the well-known LECS address.
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Defaults No addresses are configured. The router obtains LECS addresses from the ILMI.

Command Modes Interface configuration

Command History	Release	Modification
	11.2	This command was introduced.

Usage Guidelines Use this command when your ATM switches do not support the ILMI list of LECS addresses and you want to configure Simple Server Redundancy. This command will simulate the list of LECS addresses, as if they had been obtained from the ILMI. Use this command with a different address for each LECS. The order they are used determines their priority. You should enter the addresses in the same order as you would on the ATM switch.



Note You must configure the same list of addresses on each interface that contains a LANE entity.

If your switches do support ILMI, this command forces the router to use the addresses specified and will not use the ILMI to obtain the LECS addresses.

Because the well-known LECS address is always used as a last resort LECS address, you cannot use the address in this command.

lane le-arp

To add a static entry to the LE ARP table of the LANE client configured on the specified subinterface, use the **lane le-arp** command in interface configuration mode. To remove a static entry from the LE ARP table of the LANE client on the specified subinterface, use the **no** form of this command.

```
lane le-arp {mac-address | route-desc segment segment-number bridge bridge-number}
           atm-address
```

```
no lane le-arp {mac-address | route-desc segment segment-number bridge bridge-number}
           atm-address
```

Syntax Description

<i>mac-address</i>	MAC address to bind to the specified ATM address.
route-desc segment <i>segment-number</i>	LANE segment number. The segment number ranges from 1 to 4095.
bridge <i>bridge-number</i>	Bridge number that is contained in the route descriptor. The bridge number ranges from 1 to 15.
<i>atm-address</i>	ATM address.

Defaults

No static address bindings are provided.

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.

Usage Guidelines

This command adds or removes a static entry binding a MAC address or segment number and bridge number to an ATM address. It does not add or remove dynamic entries. Removing the static entry for a specified ATM address from a LE ARP table does not release data direct VCCs established to that ATM address. However, clearing a static entry clears any fast-cache entries that were created from the MAC address-to-ATM address binding.

Static LE ARP entries are neither aged nor removed automatically.

To remove dynamic entries from the LE ARP table of the LANE client on the specified subinterface, use the **clear lane le-arp** command.

Examples

The following example adds a static entry to the LE ARP table:

```
lane le-arp 0800.aa00.0101 47.000014155551212f.00.00.0800.200C.1001.01
```

The following example adds a static entry to the LE ARP table binding segment number 1, bridge number 1 to the ATM address:

```
lane le-arp route-desc segment 1 bridge 1 39.020304050607080910111213.00000CA05B41.01
```

Related Commands

Command	Description
clear lane le-arp	Forces a LANE server to drop a client and allow the LANE configuration server to assign the client to another ELAN.

lane server-atm-address

To specify an ATM address—and thus override the automatic ATM address assignment—for the LANE server on the specified subinterface, use the **lane server-atm-address** command in interface configuration mode. To remove the ATM address previously specified for the LANE server on the specified subinterface and thus revert to the automatic address assignment, use the **no** form of this command.

lane server-atm-address *atm-address-template*

no lane server-atm-address [*atm-address-template*]

Syntax Description	<i>atm-address-template</i>	ATM address or a template in which wildcard characters are replaced by any nibble or group of nibbles of the prefix bytes, the ESI bytes, or the selector byte of the automatically assigned ATM address.
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Defaults	For the LANE server, the default is automatic address assignment; the LANE client finds the LANE server by consulting the configuration server.
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Command Modes	Interface configuration
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Command History	Release	Modification
	11.0	This command was introduced.

Usage Guidelines	<p>This command also instructs the LANE client configured on this subinterface to reach the LANE server by using the specified ATM address instead of the ATM address provided by the configuration server.</p> <p>When used on a selected subinterface, but with a different ATM address than was used previously, this command replaces the ATM address of the LANE server.</p>
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ATM Addresses

A LANE ATM address has the same syntax as an NSAP (but it is not a network-level address). It consists of the following:

- A 13-byte prefix that includes the following fields defined by the ATM Forum:
 - AFI (Authority and Format Identifier) field (1 byte)
 - DCC (Data Country Code) or ICD (International Code Designator) field (2 bytes)
 - DFI field (Domain Specific Part Format Identifier) (1 byte)
 - Administrative Authority field (3 bytes)
 - Reserved field (2 bytes)
 - Routing Domain field (2 bytes)
 - Area field (2 bytes)

- A 6-byte ESI
- A 1-byte selector field

Address Templates

LANE ATM address templates can use two types of wildcards: an asterisk (*) to match any single character (nibble), and an ellipsis (...) to match any number of leading, middle, or trailing characters. The values of the characters replaced by wildcards come from the automatically assigned ATM address.

In LANE, a *prefix template* explicitly matches the prefix, but uses wildcards for the ESI and selector fields. An *ESI template* explicitly matches the ESI field, but uses wildcards for the prefix and selector.

In the Cisco implementation of LANE, the prefix corresponds to the switch, the ESI corresponds to the ATM interface, and the selector field corresponds to the specific subinterface of the interface.

For a discussion of the Cisco method of automatically assigning ATM addresses, refer to the “Configuring LAN Emulation” chapter of the *Cisco IOS Switching Services Configuration Guide*.

Examples

The following example uses an ESI template to specify the part of the ATM address corresponding to the interface; the remaining parts of the ATM address come from automatic assignment:

```
lane server-atm-address ...0800.200C.1001.**
```

The following example uses a prefix template to specify the part of the ATM address corresponding to the switch; the remaining part of the ATM address come from automatic assignment:

```
lane server-atm-address 45.000014155551212f.00.00...
```

Related Commands

Command	Description
lane server-bus	Enables a LANE server and a BUS on the specified subinterface with the ELAN ID.

lane server-bus

To enable a LANE server and a broadcast and unknown server (BUS) on the specified subinterface with the ELAN ID, use the **lane server-bus** command in interface configuration mode. To disable a LANE server and BUS on the specified subinterface, use the **no** form of this command.

lane server-bus { **ethernet** | **tokenring** } *elan-name* [**elan-id** *id*]

no lane server-bus { **ethernet** | **tokenring** } *elan-name* [**elan-id** *id*]

Syntax Description

ethernet	Identifies the emulated LAN (ELAN) attached to this subinterface as an Ethernet ELAN.
tokenring	Identifies the ELAN attached to this subinterface as a Token Ring ELAN.
<i>elan-name</i>	Name of the ELAN. The maximum length of the name is 32 characters.
elan-id	(Optional) Identifies the ELAN.
<i>id</i>	(Optional) Specifies the ELAN ID of the LEC.

Defaults

No LAN type or ELAN name is provided.

Command Modes

Interface configuration

Command History

Release	Modification
11.0	This command was introduced.
12.0	This command was modified to support the elan-id keyword.

Usage Guidelines

The LANE server and the BUS are located on the same router.

If a **lane server-bus** command has already been used on the subinterface for a different ELAN, the server initiates termination procedures with all clients and comes up as the server for the new ELAN.

To participate in MPOA, a LEC must have an ELAN ID. This command enables the LEC to get the ELAN ID from the LES when the LEC bypasses the LECS phase.



Caution

If an ELAN ID is supplied, make sure that it corresponds to the same ELAN ID value specified in the LECS for the same ELAN.

The LEC can also obtain the ELAN ID from the LECS by using the **name elan-id** command.

Examples

The following example enables a LANE server and BUS for a Token Ring ELAN named MYELAN:

```
lane server-bus tokenring myelan
```

Related Commands

Command	Description
lane server-atm-address	Specifies an ATM address and thus overrides the automatic ATM address assignment for the LANE server on a specified subinterface.
name elan-id	Configures the ELAN ID of an ELAN in the LECS database to participate in MPOA.

list

To show all or part of the explicit path or paths, use the **list** IP explicit path configuration command.

list [*starting-index-number*]

Syntax Description	<i>starting-index-number</i> Index number at which the explicit path(s) will start to be displayed. Valid values are from 1 to 65535.
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Defaults No default behavior or values.

Command Modes IP explicit path configuration

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

Examples The following example shows the explicit path starting at index number 2:

```
Router(cfg-ip-expl-path)# list
```

```
Explicit Path name Joe:
  1:next-address 10.0.0.1
  2:next-address 10.0.0.2
```

```
Router(cfg-ip-expl-path)# list 2
```

```
Explicit Path name Joe:
  2:next-address 10.0.0.2
Router(cfg-ip-expl-path)#
```

Related Commands	Command	Description
	append-after	Inserts the new path entry after the specified index number. Commands might be renumbered as a result.
	index	Inserts or modifies a path entry at a specific index.
	ip explicit-path	Enters the command mode for IP explicit paths, and creates or modifies the specified path.
	next-address	Specifies the next IP address in the explicit path.
	show ip explicit-paths	Displays the configured IP explicit paths.

mask destination

To specify the destination mask, use the **mask destination** destination-prefix aggregation cache configuration command. To disable the destination mask, use the **no** form of this command.

mask destination minimum *value*

no mask destination minimum *value*

Syntax Description	minimum	Configures the minimum value for the mask.
	<i>value</i>	Specifies the value for the mask. Range is from 1 to 32.

Defaults	0
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Command Modes	Destination-prefix aggregation cache configuration
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Command History	Release	Modification
	12.1(2)T	This command was introduced.

Usage Guidelines	This command is only available with router-based aggregation. Minimum masking capability is not available if router-based aggregation is not enabled.
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Examples	The following example shows how to configure the destination-prefix aggregation cache with a minimum mask value:
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```
ip flow-aggregation cache destination-prefix
mask destination minimum 32
```

Related Commands	Command	Description
	ip flow-aggregation cache	Enables aggregation cache configuration mode.
	mask source	Specifies the source mask.
	show ip cache flow aggregation	Displays the aggregation cache configuration.

mask source

To specify the source mask, use the **mask source** source-prefix aggregation cache configuration command. To disable the source mask, use the **no** form of this command.

mask source minimum *value*

no mask source minimum *value*

Syntax Description

minimum	Configures the minimum value for the mask.
<i>value</i>	Specifies the value for the mask. Range is from 1 to 32.

Defaults

0

Command Modes

Source-prefix aggregation cache

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

This command is only available with router-based aggregation. Minimum masking capability is not available if router-based aggregation is not enabled.

Examples

The following example shows how to configure the source-prefix aggregation cache with a minimum mask value:

```
ip flow-aggregation cache source-prefix
mask source minimum 30
```

Related Commands

Command	Description
ip flow-aggregation cache	Enables aggregation cache configuration mode.
mask destination	Specifies the destination mask.
show ip cache flow aggregation	Displays the aggregation cache configuration.

maximum routes

To limit the maximum number of routes in a VRF to prevent a PE router from importing too many routes, use the **maximum routes** command in VRF configuration submode. To remove the limit on the maximum number of routes allowed, use the **no** form of this command.

maximum routes *limit* {*warn threshold* | **warn-only**}

no maximum routes

Syntax Description		
<i>limit</i>		Specifies the maximum number of routes allowed in a VRF. You may select from 1 to 4,294,967,295 routes to be allowed in a VRF.
<i>warn threshold</i>		Rejects routes when the threshold limit is reached. The threshold limit is a percentage of the limit specified, from 1 to 100.
warn-only		Issues a syslog error message when the maximum number of routes allowed for a VRF exceeds the threshold. However, additional routes are still allowed.

Defaults No default behavior or values.

Command Modes VRF configuration

Command History	Release	Modification
	12.0(7)T	This command was introduced.

Usage Guidelines To use the **maximum routes** command, you must enter the VRF configuration submode. In this submode you create a VRF routing table and assign a route distinguisher in one of the following formats:

- 16-bit autonomous system number (ASN): your 32-bit number. For example, 101.
- 32-bit address: your 16-bit number. For example, 192.168.255.255.

You then create a route-target extended community for a VRF and specify the import, export, or both arguments for the **route-target** command. These arguments allow you to configure a router to import and export routing information to the target VPN extended community.

Examples In the following example, the route distinguisher ASN is 100, and the maximum number of VRF routes to allow is set to 1000. When the maximum routes for the VRF reaches 1000, the router issues a syslog error message, but continues to accept new VRF routes.

```
ip vrf vrf1
 rd 100:1
 route-target import 100:1
 maximum routes 1000 warn-only
```

Related Commands	Command	Description
	import map	Configures an import route map for a specified VRF for more control over routes imported into the VRF.
	rd	Creates VRF routing and forwarding tables and specifies the default route distinguisher for a VPN.
	route-target	Configures a VRF route target community for importing and exporting extended community attributes.

metric-style narrow

To configure a router running IS-IS so that it generates and accepts old-style type, length, and value objects (TLVs), use the **metric-style narrow** router configuration command. To disable this feature, use the **no** form of this command.

```
metric-style narrow [transition ] [ { level-1 | level-2 | level-1-2 } ]
```

```
no metric-style narrow [transition ] [ { level-1 | level-2 | level-1-2 } ]
```

Syntax Description

transition	(Optional) Instructs the router to use both old- and new-style TLVs.
level-1	(Optional) Enables this command on routing level 1.
level-2	(Optional) Enables this command on routing level 2.
level-1-2	(Optional) Enables this command on routing levels 1 and 2.

Defaults

The MPLS traffic engineering image generates only old-style TLVs. To do MPLS traffic engineering, a router must generate new-style TLVs that have wider metric fields.

Command Modes

Router configuration

Command History

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

Examples

In the following example, the router is instructed to generate and accept old-style TLVs on router level 1:

```
Router(config-router)# metric-style narrow level-1
```

Related Commands

Command	Description
metric-style transition	Configures a router to generate both old-style and new-style TLVs.
metric-style wide	Configures a router to generate and accept only new-style TLVs.

metric-style transition

To configure a router running IS-IS so that it generates and accepts both old-style and new-style type, length, and value objects (TLVs), use the **metric-style transition** router configuration command. To disable this feature, use the **no** form of this command.

```
metric-style transition [{level-1 | level-2 | level-1-2}]
```

```
no metric-style transition [{level-1 | level-2 | level-1-2}]
```

Syntax Description

level-1	(Optional) Enables this command on routing level 1.
level-2	(Optional) Enables this command on routing level 2.
level-1-2	(Optional) Enables this command on routing levels 1 and 2.

Defaults

The MPLS traffic engineering image generates only old-style TLVs. To do MPLS traffic engineering, a router must generate new-style TLVs that have wider metric fields.

Command Modes

Router configuration

Command History

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

Examples

In the following example, a router is configured to generate and accept both old-style and new-style TLVs on router level 2:

```
Router(config-router)# metric-style transition level-2
```

Related Commands

Command	Description
metric-style narrow	Configures a router to generate and accept old-style TLVs.
metric-style wide	Configures a router to generate and accept only new-style TLVs.

metric-style wide

To configure a router running IS-IS so that it generates and accepts only new-style type, length, and value objects (TLVs), use the **metric-style wide** router configuration command. To disable this feature, use the **no** form of this command.

```
metric-style wide [transition][{level-1 | level-2 | level-1-2}]
```

```
no metric-style wide [transition][{level-1 | level-2 | level-1-2}]
```

Syntax Description

transition	(Optional) Instructs the router to accept both old- and new-style TLVs.
level-1	(Optional) Enables this command on routing level 1.
level-2	(Optional) Enables this command on routing level 2.
level-1-2	(Optional) Enables this command on routing levels 1 and 2.

Defaults

The MPLS traffic engineering image generates only old-style TLVs. To do MPLS traffic engineering, a router must generate new-style TLVs that have wider metric fields.

Command Modes

Router configuration

Command History

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

Usage Guidelines

If you enter the **metric-style wide** command, a router generates and accepts only new-style TLVs. Therefore, the router uses less memory and other resources than it would if it generated both old-style and new-style TLVs.

This style is appropriate for enabling MPLS traffic engineering across an entire network.



Note

This discussion of metric styles and transition strategies is oriented toward traffic engineering deployment. Other commands and models could be appropriate if the new-style TLVs are desired for other reasons. For example, a network might require wider metrics, but might not use traffic engineering.

Examples

In the following example, a router is configured to generate and accept only new-style TLVs on level 1:

```
Router(config-router)# metric-style wide level-1
```

Related Commands	Command	Description
	metric-style narrow	Configures a router to generate and accept old-style TLVs.
	metric-style transition	Configures a router to generate and accept both old-style and new-style TLVs.

mls rp ip

To enable Multilayer Switching Protocol (MLSP), use the **mls rp ip** command in global configuration mode. To disable MLS, use the **no** form of this command.

mls rp ip

no mls rp ip

Syntax Description

There are no arguments or keywords for this command.

Defaults

The default is MLS disabled.

Command Modes

Global configuration

Command History

Release	Modification
11.3(3) WA4(4)	This command was introduced.

Usage Guidelines

Use this command to enable MLS, either globally or on a specific interface. MLSP is the protocol that runs between the switches and routers.

Examples

The following example enables MLS:

```
mls rp ip
```

Related Commands

Command	Description
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	Displays MLS details, including specifics for MLSP.
show mls rp vtp-domain	Displays MLS interfaces for a specific VTP domain.

mls rp ip multicast

To enable IP multicast Multilayer Switching (hardware switching) on an external or internal router in conjunction with Layer 3 switching hardware for the Catalyst 5000, use the **mls rp ip multicast** command in interface configuration mode. To disable IP multicast Multilayer Switching (MLS) on the interface or VLAN, use the **no** form of this command.

mls rp ip multicast

no mls rp ip multicast

Syntax Description This command has no arguments or keywords.

Defaults Enabled

Command Modes Interface configuration

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

Usage Guidelines This feature is available only on specific router platforms connected to a Catalyst 5000 switch. Use this feature to reduce multicast load on the router. The switch will perform the multicast packet replication and forwarding.

IP multicast MLS is enabled by default on an interface once IP multicast routing and PIM are enabled.

Examples The following example disables IP multicast MLS:

```
interface fastethernet1/0.1
 no mls rp ip multicast
```

Related Commands	Command	Description
	mls rp ip multicast management-interface	Assigns a different interface (other than the default) to act as the management interface for MLSP.
	show ip mroute	Displays the contents of the IP multicast routing table.
	show mls rp interface	Displays hardware-switched multicast flow information about IP multicast MLS.

mls rp ip multicast management-interface

To assign a different interface (other than the default) to act as the management interface for Multilayer Switching Protocol (MLSP), use the **mls rp ip multicast management-interface** command in interface configuration mode. To restore the default interface as the management interface, use the **no** form of this command.

mls rp ip multicast management-interface

no mls rp ip multicast management-interface

Syntax Description

This command has no arguments or keywords.

Defaults

When IP multicast MLS is enabled, the subinterface (or VLAN interface) that has the lowest VLAN ID and is active (in the “up” state) is automatically selected as the management interface.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

When you enable IP multicast MLS, the subinterface (or VLAN interface) that has the lowest VLAN ID and is active (in the “up” state) is automatically selected as the *management interface*. The one-hop protocol MLSP is used between a router and a switch to pass messages about hardware-switched flows. MLSP packets are sent and received on the management interface. Typically, the interface in VLAN 1 is chosen (if that interface exists). Only one management interface is allowed on a single trunk link.

In most cases, we recommend that the management interface be determined by default. However, you can optionally use this command to specify a different router interface or subinterface as the management interface. We recommend using a subinterface with minimal data traffic so that multicast MLSP packets can be sent and received more quickly.

If the user-configured management interface goes down, the router uses the default interface (the active interface with the lowest VLAN ID) until the user-configured interface comes up again.

Examples

The following example configures the Fast Ethernet interface as the management interface:

```
interface fastethernet1/0.1
 mls rp ip multicast management-interface
```

Related Commands

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

mls rp ipx (global)

To enable the router as an IPX Multilayer Switching (MLS) Route Processor (RP), use the **mls rp ipx** command in global configuration. To disable IPX MLS on the router, use the **no** form of this command.

```
mls rp ipx
```

```
no mls rp ipx
```

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes Global configuration

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

Usage Guidelines Multilayer Switching Protocol (MLSP) is the protocol that runs between the MLS Switching Engine and the MLS RP.

Examples The following example enables IPX MLS on the MLS RP:

```
mls rp ipx
```

Related Commands	Command	Description
	mls rp locate ipx	Displays information about all switches currently shortcutting for the specified IPX flows.
	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.
	mls rp vtp-domain	Assigns an MLS interface to a specific VTP domain on the MLS RP.
	show mls rp interface	Displays IPX MLS details for the RP, including specific information about the MLSP.
	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 RP.

mls rp ipx (interface)

To enable IPX MLS on a router interface, use the **mls rp ipx** command in interface configuration mode. To disable IPX MLS on a router interface, use the **no** form of this command.

mls rp ipx

no mls rp ipx

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes Interface configuration

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

Usage Guidelines Multilayer Switching Protocol (MLSP) is the protocol that runs between the MLS Switching Engine and the MLS RP.

Examples The following example enables IPX MLS on a router interface:

```
mls rp ipx
```

Related Commands	Command	Description
	mls rp locate ipx	Displays information about all switches currently shortcutting for the specified IPX flows.
	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.
	mls rp vtp-domain	Assigns an MLS interface to a specific VTP domain on the MLS RP.
	show mls rp interface	Displays IPX MLS details for the RP, including specific information about the MLSP.
	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 RP.

mls rp locate ipx

To display information about all switches currently shortcutting for the specified IPX flows, use the **mls rp locate ipx** command in privileged EXEC mode.

```
mls rp locate ipx destination-network.destination-node [source-network]
```

Syntax Description	
<i>destination-network.destination-node</i>	The destination network and destination node of IPX packet flows. The destination network consists of 1 to 8 hexadecimal numbers in the format xxxxxxxx. The destination node consists of 1 to 12 hexadecimal numbers in the format xxxx.xxxx.xxxx.
<i>source-network</i>	(Optional) The source network of the IPX flow. The source network consists of 1 to 8 hexadecimal numbers in the format yyyyyyyy.

Defaults	None
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Command Modes	Privileged EXEC
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Command History	Release	Modification
	12.0(5)T	This command was introduced.

Examples This example displays the switch that is shortcutting routed flows to the specified IPX flow:

```
mls rp locate ipx 30.0000.1111.2222
  locator response from switch id 0010.1400.601f
```

Related Commands	Command	Description
	mls rp ipx (global)	Enables the router as an IPX MLS RP.
	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.
	mls rp vtp-domain	Assigns an MLS interface to a specific VTP domain on the MLS RP.
	show mls rp interface	Displays IPX MLS details for the RP, including specific information about the MLSP.
	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 RP.

mls rp management-interface

To specify an interface as the management interface, use the **mls rp management-interface** command in interface configuration mode. To remove an interface as the management interface, use the **no** form of this command.

mls rp management-interface

no mls rp management-interface

Syntax Description This command has no keywords or arguments.

Defaults None

Command Modes Interface configuration

Command History	Release	Modification
	11.3(3) WA4(4)	This command was introduced.

Usage Guidelines Multilayer Switching Protocol (MLSP) packets are sent and received through the management interface. Select only one IPX Multilayer Switching (MLS) interface connected to the switch. If you fail to select this interface, no connection between the MLS Route Processor (RP) and the MLS Switching Engine will occur, and any routing updates or changes to access lists will not be reflected on the switch.

Examples The following example selects a management interface:

```
mls rp management-interface
```

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

mls rp nde-address

To specify a NetFlow Data Export address, use the **mls rp nde-address** command in global configuration mode.

mls rp nde-address *ip-address*

Syntax Description	<i>ip-address</i>	NDE IP address.
---------------------------	-------------------	-----------------

Defaults	No default behaviors or values.
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Command Modes	Global configuration
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Command History	Release	Modification
	11.3(3) WA4(4)	This command was introduced.

Usage Guidelines	Use this command on an RP to specify the NetFlow Data Export address for a router. If you <i>do not</i> specify an NDE IP address for the MLS RP, the MLS RP automatically selects one of its interface's IP addresses and uses that IP address as its NDE IP address <i>and</i> its MLS IP address.
-------------------------	--

Examples	The following example sets the NDE address to 170.25.2.1: <pre>mls rp nde-address 170.25.2.1</pre>
-----------------	---

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 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	Displays MLS details, including specifics for MLSP.
	show mls rp vtp-domain	Displays MLS interfaces for a specific VTP domain.

mls rp vlan-id

To assign a virtual LAN (VLAN) identification number to an IPX MLS interface, use the **mls rp vlan-id** command in interface configuration mode. To remove a VLAN identification number, use the **no** form of this command.

mls rp vlan-id *vlan-id-number*

no mls rp vlan-id *vlan-id-number*

Syntax Description

vlan-id-number A VLAN identification number from 1 to 4096.

Defaults

None

Command Modes

Interface configuration

Command History

Release	Modification
11.3(3) WA4(4)	This command was introduced.

Usage Guidelines

The assigned IPX MLS interface must be either an Ethernet or Fast Ethernet interface—both without subinterfaces.

Examples

The following example assigns the VLAN identification number 23 to an IPX MLS interface:

```
mls rp vlan-id 23
```

Related Commands

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

mls rp vtp-domain

To assign a Multilayer Switching (MLS) interface to a specific Virtual Trunk Protocol (VTP) domain on the MLS Route Processor (RP), use the **mls rp vtp-domain** command in interface configuration mode. To remove a VTP domain, use the **no** form of this command.

mls rp vtp-domain *domain-name*

no mls rp vtp-domain *domain-name*

Syntax Description	<i>domain-name</i>	The name of the VTP domain assigned to an MLS interface and its related switches.
---------------------------	--------------------	---

Defaults	The interface is assigned to the null domain.
-----------------	---

Command Modes	Interface configuration
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Command History	Release	Modification
	11.3(3) WA4(4)	This command was introduced.

Usage Guidelines	The assigned IPX MLS interface must be either an Ethernet or Fast Ethernet interface—both without subinterfaces.
-------------------------	--

Examples The following example assigns the MLS interface to the VTP domain named engineering:

```
mls rp vtp-domain engineering
```

Related Commands	Command	Description
	mls rp ipx (global)	Enables the router as an IPX MLS RP.
	mls rp locate ipx	Displays information about all switches currently shortcutting for the specified IPX flows.
	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 interface	Displays IPX MLS details for the RP, including specific information about the MLSP.
	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 RP.	

mpls atm control-vc

To configure the VPI and VCI to be used for the initial link to the label switching peer device, use the **mpls atm control-vc** interface configuration command. To clear the interface configuration, use the **no** form of this command.

```
mpls atm control-vc vpi vci
```

```
no mpls atm control-vc vpi vci
```

Syntax Description

<i>vpi</i>	Virtual path identifier.
<i>vci</i>	Virtual channel identifier.

Defaults

If the subinterface has not changed to a VP tunnel, the default is 0/32. If the subinterface corresponds to VP tunnel VPI X, the default is X/32.

Command Modes

Interface configuration

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.

Usage Guidelines

The initial link is used to establish the TDP session and to carry non-IP traffic. For a router interface (for example, an AIP), ATM label switching can be enabled only on a label-switch subinterface.



Note

The **mpls atm control-vc** and **mpls atm vpi** subinterface level configuration commands are available on any interface that can support ATM labeling.

On the Cisco LightStream 1010 ATM switch, a subinterface corresponds to a VP tunnel; thus, the entry in the VPI field of the control-vc must match the entry in the VPI field of the VP tunnel.

Examples

The following commands create a label switching subinterface on a router and select VPI 1 and VCI 34 as the control VC:

```
Router(config)# interface atm4/0.1 mpls
Router(config-if)# mpls ip
Router(config-if)# mpls atm control-vc 1 34
```

Related Commands	Command	Description
	show mpls interfaces	Displays information about one or more interfaces for which label switching has been enabled.

mpls atm vpi

To configure the range of values to be used in the VPI field for label VCs, use the **mpls atm vpi** interface configuration command. To clear the interface configuration, use the **no** form of this command.

```
mpls atm vpi vpi [- vpi]
```

```
no mpls atm vpi vpi [- vpi]
```

Syntax Description

<i>vpi</i>	Virtual path identifier (low end of range).
- <i>vpi</i>	(Optional) Virtual path identifier (high end of range).

Defaults

The default is 1-1.

Command Modes

Interface configuration

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.

Usage Guidelines

To configure ATM label switching on a router interface (for example, an ATM interface processor), you must enable a label switching subinterface.



Note

The **mpls atm control-vc** and **mpls atm vpi** interface configuration commands are available on any interface that can support ATM labeling.

Use this command to select an alternate range of VPI values for ATM label assignment on this interface. The two ends of the link negotiate a range defined by the intersection (overlapping of labels in common) of the range configured at each end of the connection.

Examples

In the following example, a subinterface is created and a VPI range from 1 to 3 is selected:

```
Router(config)# interface atm4/0.1 mpls
Router(config-if)# mpls ip
Router(config-if)# mpls atm vpi 1-3
```

Related Commands

Command	Description
mpls atm control-vc	Configures the VPI and VCI to be used for the initial link to the label switching peer device.

mpls ip (global configuration)

To enable MPLS forwarding of IPv4 packets along normally routed paths for the platform, use the **mpls ip** global configuration command. To disable this feature, use the **no** form of this command.

mpls ip

no mpls ip

Syntax Description This command has no arguments or keywords.

Defaults Label switching of IPv4 packets along normally routed paths is enabled for the platform.

Command Modes Global configuration

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

Usage Guidelines This command enables MPLS forwarding of IPv4 packets along normally routed paths (sometimes called dynamic label switching). For a given interface to perform dynamic label switching, this function must be enabled for the interface and the platform.

The **no** form of this command stops dynamic label switching for all platform interfaces, regardless of the interface configuration; it also stops distribution of labels for dynamic label switching. However, the **no** form of this command does not affect the sending of labeled packets through TSP tunnels.

For an LC-ATM interface, the **no** form of this command prevents the establishment of label VCs originating at, terminating at, or passing through the platform.

Examples In the following example, dynamic label switching is disabled for the platform, terminating all label distribution for the platform:

```
Router(config)# no mpls ip
```

Related Commands	Command	Description
	mpls ip (interface configuration)	Enables label switching of IPv4 packets along normally routed paths for the associated interface.

mpls ip (interface configuration)

To enable MPLS forwarding of IPv4 packets along normally routed paths for a particular interface, use the **mpls ip** interface configuration command. To disable this feature, use the **no** form of this command.

mpls ip

no mpls ip

Syntax Description This command has no arguments or keywords.

Defaults MPLS forwarding of IPv4 packets along normally routed paths for the interface is disabled.

Command Modes Interface configuration

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

Usage Guidelines MPLS forwarding of IPv4 packets along normally routed paths is sometimes called dynamic label switching. If dynamic label switching has been enabled for the platform when this command is issued on an interface, you can start label distribution for the interface by initiating periodic transmission of neighbor discovery hello messages on the interface. When the outgoing label for a destination routed through the interface is known, packets for the destination are labeled with that outgoing label and forwarded through the interface.

The **no** form of this command causes packets routed out through the interface to be sent unlabeled; it also ends label distribution for the interface. The **no** form of this command does not affect the sending of labeled packets through any TSP tunnels that might use the interface.

For an LC-ATM interface, the **no** form of this command prevents the establishment of label VCs beginning at, terminating at, or passing through the interface.

Examples In the following example, label switching is enabled on Ethernet interface o/2:

```
Router(config)# configure terminal
Router(config-if)# interface e0/2
Router(config-if)# mpls ip
```

Related Commands	Command	Description
	show mpls interfaces	Displays information about one or more interfaces that have been configured for label switching.

mpls ip default-route

To enable the distribution of labels associated with the IP default route, use the **mpls ip default-route** global configuration command.

mpls ip default-route

Syntax Description This command has no arguments or keywords.

Defaults No distribution of labels for the IP default route.

Command Modes Global configuration

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.

Usage Guidelines

Dynamic label switching (that is, distribution of labels based on routing protocols) must be enabled before you can use the **mpls ip default-route** command.

Examples

The following commands enable the distribution of labels associated with the IP default route:

```
Router# configure terminal
Router(config)# mpls ip
Router(config)# mpls ip default-route
```

Related Commands

Command	Description
mpls ip (global configuration)	Enables MPLS forwarding of IPv4 packets along normally routed paths for the platform.
mpls ip (interface configuration)	Enables MPLS forwarding of IPv4 packets along normally routed paths for a particular interface.

mpls ip propagate-ttl

To control the generation of the time to live (TTL) field in the MPLS header when labels are first added to an IP packet, use the **mpls ip propagate-ttl** global configuration command. To use a fixed TTL value (255) for the first label of the IP packet, use the **no** form of this command.

mpls ip propagate-ttl

no mpls ip propagate-ttl [forwarded | local]

Syntax Description

forwarded	(Optional) Prevents the traceroute command from showing the hops for forwarded packets.
local	(Optional) Prevents the traceroute command from showing the hops only for local packets.

Defaults

By default, this command is enabled. The TTL field is copied from the IP header. A **traceroute** command shows all of the hops in the network.

Command Modes

Global configuration

Command History

Release	Modification
12.1(3)T	This command was introduced.
12.1(5)T	The keywords forwarded and local were added to this command.

Usage Guidelines

By default, the **mpls ip propagate-ttl** command is enabled and the IP TTL value is copied to the MPLS TTL field during label imposition. To disable TTL propagation for all packets, use the **no mpls ip propagate-ttl** command. To disable TTL propagation for only forwarded packets, use the **no mpls ip propagate forward** command. Disabling TTL propagation of forwarded packets allows the structure of the MPLS network to be hidden from customers, but not the provider.

This feature supports the IETF draft document *ICMP Extensions for Multiprotocol Label Switching*, draft-ietf-mpls-label-icmp-01.txt. The document can be accessed at the following URL:

<http://www2.ietf.org/internet-drafts/draft-ietf-mpls-label-icmp-01.txt>

Related Commands

Command	Description
traceroute	Displays the routes that packets take through a network to their destinations.

mpls ip ttl-expiration pop

To specify how a packet with an expired time to live (TTL) value is forwarded, use the **mpls ip ttl-expiration pop** privileged EXEC command. To disable this feature, use the **no** form of the command.

mpls ip ttl-expiration pop *labels*

no mpls ip ttl-expiration pop *labels*

Syntax Description

<i>labels</i>	The maximum number of labels in the packet necessary for the packet to be forwarded by means of the global IP routing table.
---------------	--

Defaults

By default, the packets are forwarded by the original label stack. However, in previous versions of Cisco IOS software, the packets were forwarded by the global routing table by default.

12.0 S	Packets are forwarded through the use of the global routing table.
12.0 ST	Packets are forwarded through the use of the original label stack.
12.1 T	Packets are forwarded through the use of the original label stack.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.

Usage Guidelines

You can specify that the packet be forwarded by the global IP routing table or by the packet's original label stack. The forwarding method is determined by the number of labels in the packet. You specify the number of labels as part of the command. If the packet contains the same or fewer labels than you specified, it is forwarded through the use of the global IP routing table. If the packet contains more labels than you specified, the packet is forwarded through the use of the original label stack.

This command is useful if expired TTL packets do not get back to their source, because there is a break in the Interior Gateway Protocol (IGP) path. Currently, MPLS forwards the expired TTL packets by reimposing the original label stack and forwarding the packet to the end of a label switched path (LSP). (For provider edge routers forwarding traffic over a Virtual Private Network (VPN), this is the only way to get the packet back to the source.) If there is a break in the IGP path to the end of the LSP, the packet never reaches its source.

If packets have a single label, that label is usually a global address or terminal VPN label. Those packets can be forwarded through the use of the global IP routing table. Packets that have more than one label can be forwarded through the use of the original label stack. Enter the **mpls ip ttl-expiration pop 1** command to enable forwarding based on more than one label. (This is the most common application of the command.)

Related Commands

Command	Description
traceroute	Displays the routes that packets take through a network to their destinations.

mpls label range

To configure the range of local labels available for use on packet interfaces, use the **mpls label range** global configuration command. To revert to the platform defaults, use the **no** form of this command.

mpls label range *min max*

no mpls label range

Syntax Description	
<i>min</i>	The smallest label allowed in the label space. The default is 16.
<i>max</i>	The largest label allowed in the label space. The default is 1048575.

Defaults	
<i>min</i> : 16	
<i>max</i> : 1048575	

Command Modes	
Global configuration	

Command History	Release	Modification
	11.1CT	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 labels 0 through 15 are reserved by the IETF (see draft-ietf-mpls-label-encaps-07.txt for details) and cannot be included in the range specified by the **mpls label range** command.

The label range defined by the **mpls label range** command is used by all MPLS applications that allocate local labels (for dynamic label switching, MPLS traffic engineering, MPLS VPNs, and so on).

If you specify a new label range that does not overlap the range currently in use, the new range will not take effect until the router is reloaded again.

Examples The following example configures the size of the local label space. In this example, the *min* argument is set with the value of 200, and the *max* value is set with the value of 120000. Because the new range does not overlap the current label range (assumed to be the default, that is, the *min* argument of 16 and the *max* argument of 100000), the new range will not take effect until the router is reloaded.

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

If you had specified a new range that overlaps the current range (for example, new range of the *min* argument of 16 and the *max* argument of 120000), then the new range would take effect immediately.

Related Commands

Command	Description
show mpls label range	Displays the range of the MPLS local label space.

mpls mtu

To set the per-interface Multiprotocol Label Switching (MPLS) maximum transmission unit (MTU) for labeled packets, use the **mpls mtu** interface configuration command. To restore the default, use the **no** form of this command.

mpls mtu *bytes*

no mpls mtu

Syntax Description

<i>bytes</i>	The MTU in bytes includes the label stack in the value. For example, to transport an IPv4 packet of 1500 bytes from the edge through an MPLS core, you need an MPLS MTU of at least 1504 bytes. This value accounts for the single 4-byte label and avoids fragmentation. Use the following calculation to determine the MTU: MPLS MTU = edge MTU + (label stack * 4 bytes)
--------------	--

Defaults

The default MPLS MTU is the MTU configured for the interface. The minimum allowable value is 64; the maximum allowable value is interface dependent.

Command Modes

Interface configuration

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.

Usage Guidelines

- MPLS baby giant packets (packets that were larger than the interface MTU value should allow) are no longer supported. Therefore, the MPLS MTU value cannot be larger than the interface MTU value.
- Note** The MPLS MTU setting is displayed in the **show running-config** command output only if the MPLS MTU value is different from the interface MTU value.
- ATM interfaces cannot accommodate packets that exceed the Segmentation and Reassembly (SAR) buffer size, because labels are added to the packet. The *bytes* argument refers to the number of bytes in the packet before the addition of any labels. If each label is 4 bytes, the maximum value of bytes on an ATM interface is the physical MTU minus 4*x bytes, where *x* is the number of labels expected in the received packet.
 - If a labeled IPv4 packet exceeds the MPLS MTU size for the interface, Cisco IOS software fragments the packet. If a labeled non-IPv4 packet exceeds the MPLS MTU size, the packet is dropped.
 - All devices on a physical medium must have the same MPLS MTU value in order for MPLS to interoperate.

- The MTU values for the interfaces on each side of a link must be equal for OSPF adjacencies to come up.
- The MTU for labeled packets for an interface is determined as follows:
 - If the **mpls mtu bytes** command has been used to configure an MPLS MTU, the MTU for labeled packets is the *bytes* value.
 - Otherwise, the MTU for labeled packets is the default MTU for the interface.
- Changing the interface MTU value (using the **mtu** interface configuration command) can affect the MPLS MTU of the interface. If the MPLS MTU value is the same as the interface MTU value (this is the default), and you change the interface MTU value, the MPLS MTU value will automatically be set to this new MTU as well. However, the reverse is not true; changing the MPLS MTU value has no effect on the interface MTU.
- The migration path for configurations using an MPLS MTU value greater than the interface MTU value is as follows:
 - During system initialization the system attempts to automatically set the interface MTU value to the configured MPLS MTU value.
 - If you attempt to set the MPLS MTU to a value larger than that of the interface MTU when the system is *not* doing its initial configuration, there is an error message indicating that you must increase the interface MTU value before you can set the MPLS MTU value.

Examples

The following example sets the maximum labeled packet size for the Fastethernet interface to 1508, which is common in an MPLS core carrying MPLS VPN traffic, for example:

```
interface Fastethernet0
 mpls mtu 1508
```

mpls netflow egress

To enable MPLS egress NetFlow accounting on an interface, use the **mpls netflow egress** interface configuration command. To disable MPLS egress NetFlow accounting, use the **no** form of this command.

mpls netflow egress

no mpls netflow egress

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes Interface configuration

Command History	Release	Modification
	12.0(10)ST	This command was introduced.
	12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.

Usage Guidelines Use this command to configure the PE-CE interface of a PE router.

Examples In the following example, MPLS egress NetFlow accounting is enabled on the egress PE interface that connects to the CE interface at the destination VPN site:

```
Router(config-if)# mpls netflow egress
```

Related Commands	Command	Description
	debug mpls netflow	Enables debugging of MPLS egress NetFlow accounting.
	show mpls forwarding-table	Displays a message that the quick flag is set for all prefixes learned from the MPLS egress NetFlow accounting enabled interface.
	show mpls interfaces	Displays the value of the output_feature_state. If MPLS egress NetFlow accounting is enabled on an interface, the value is any number other than 0. If MPLS egress NetFlow accounting is disabled on an interface, the value is 0.

mpls traffic-eng

To configure a router running IS-IS so that it floods MPLS traffic engineering link information into the indicated IS-IS level, use the **mpls traffic-eng** router configuration command. To disable this feature, use the **no** form of this command.

mpls traffic-eng {level-1 | level-2}

no mpls traffic-eng {level-1 | level-2}

Syntax Description

level-1	Floods MPLS traffic engineering link information into IS-IS level 1.
level-2	Floods MPLS traffic engineering link information into IS-IS level 2.

Defaults

Flooding is disabled.

Command Modes

Router configuration

Command History

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

Usage Guidelines

This command, which is part of the routing protocol tree, causes link resource information (such as available bandwidth) for appropriately configured links to be flooded in the IS-IS link-state database.

Examples

In the following example, MPLS traffic engineering is turned on for IS-IS level 1:

```
Router(config-router)# mpls traffic-eng level-1
```

Related Commands

Command	Description
mpls traffic-eng router-id	Specifies that the traffic engineering router identifier for the node is the IP address associated with a given interface.

mpls traffic-eng administrative-weight

To override the Interior Gateway Protocol (IGP) administrative weight (cost) of the link, use the **mpls traffic-eng administrative-weight** interface configuration command. To disable this feature, use the **no** form of this command.

mpls traffic-eng administrative-weight *weight*

no mpls traffic-eng administrative-weight

Syntax Description	<i>weight</i>	Cost of the link.
--------------------	---------------	-------------------

Defaults	IGP cost of the link.
----------	-----------------------

Command Modes	Interface configuration
---------------	-------------------------

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

Examples In the following example, the IGP cost of the link is overridden, and the cost is set to 20:

```
Router(config-if)# mpls traffic-eng administrative-weight 20
```

Related Commands	Command	Description
	mpls traffic-eng attribute-flags	Sets the user-specified attribute flags for an interface.

mpls traffic-eng area

To configure a router running Open Shortest Path First (OSPF) MPLS so that it floods traffic engineering for the indicated OSPF area, use the **mpls traffic-eng area** router configuration command. To disable this feature, use the **no** form of this command.

mpls traffic-eng area *num*

no mpls traffic-eng area *num*

Syntax Description	<i>num</i>	The OSPF area on which MPLS traffic engineering is enabled.
--------------------	------------	---

Defaults	No default behavior or values.
----------	--------------------------------

Command Modes	Router configuration
---------------	----------------------

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

Usage Guidelines	This command is in the routing protocol configuration tree and is supported for both OSPF and IS-IS. The command affects the operation of MPLS traffic engineering only if MPLS traffic engineering is enabled for that routing protocol instance. Currently, only a single level can be enabled for traffic engineering.
------------------	---

Examples	In the following example, a router running OSPF MPLS is configured to flood traffic engineering for OSPF 0:
----------	---

```
Router(config-router)# mpls traffic-eng area 0
```

Related Commands	Command	Description
	mpls traffic-eng router-id	Specifies that the traffic engineering router identifier for the node is the IP address associated with a given interface.
	network area	Defines the interfaces on which OSPF runs and defines the area ID for those interfaces.
	router ospf	Configures an OSPF routing process on a router.

mpls traffic-eng attribute-flags

To set the user-specified attribute flags for the interface, use the **mpls traffic-eng attribute-flags** interface configuration command. To disable this feature, use the **no** form of this command.

mpls traffic-eng attribute-flags *attributes*

no mpls traffic-eng attribute-flags

Syntax Description	<i>attributes</i>	Links attributes that will be compared to a tunnel's affinity bits during selection of a path. Valid values are from 0x0 to 0xFFFFFFFF, representing 32 attributes (bits) where the value of an attribute is 0 or 1.
Defaults	0x0	
Command Modes	Interface configuration	
Command History	Release	Modification
	12.0(5)S	This command was introduced.
Usage Guidelines	<p>This command assigns attributes to a link so that tunnels with matching attributes (represented by their affinity bits) prefer this link instead of others that do not match.</p> <p>The interface is flooded globally so that it can be used as a tunnel head-end path selection criterion.</p>	
Examples	<p>In the following example, the attribute flags are set to 0x0101:</p> <pre>Router(config-if)# mpls traffic-eng attribute-flags 0x0101</pre>	
Related Commands	Command	Description
	mpls traffic-eng administrative-weight	Overrides the IGP administrative weight of the link.
	tunnel mpls traffic-eng affinity	Configures affinity (the properties that the tunnel requires in its links) for an MPLS traffic engineering tunnel.

mpls traffic-eng flooding thresholds

To set a link's reserved bandwidth thresholds, use the **mpls traffic-eng flooding thresholds** interface configuration command. To return to the default settings, use the **no** form of this command.

```
mpls traffic-eng flooding thresholds { down | up } percent [percent ...]
```

```
no mpls traffic-eng flooding thresholds { down | up }
```

Syntax Description

down	Sets the thresholds for decreased resource availability.
up	Sets the thresholds for increased resource availability.
<i>percent</i> [<i>percent</i>]	Bandwidth threshold level. For the down keyword, valid values are from 0 through 99. For the up keyword, valid values are from 1 through 100.

The default for **down** is 100, 99, 98, 97, 96, 95, 90, 85, 80, 75, 60, 45, 30, 15.

The default for **up** is 15, 30, 45, 60, 75, 80, 85, 90, 95, 97, 98, 99, 100.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

When a threshold is crossed, MPLS traffic engineering link management advertises updated link information. If no thresholds are crossed, changes can be flooded periodically unless periodic flooding was disabled.

Examples

In the following example, the link's reserved bandwidth is set for decreased resource availability (down) and for increased resource availability (up) thresholds:

```
Router(config-if)# mpls traffic-eng flooding thresholds down 100 75 25
Router(config-if)# mpls traffic-eng flooding thresholds up 25 50 100
```

Related Commands

Command	Description
mpls traffic-eng link timers periodic-flooding	Sets the length of the interval used for periodic flooding.
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.

mpls traffic-eng interface

To enable OSPF to advertise an MPLS Traffic Engineering (TE) interface to area 0, use the **mpls traffic-eng interface** command in router configuration mode. To remove the interface from area 0, use the **no** form of this command.

mpls traffic-eng interface *interface area area*

no mpls traffic-eng interface *interface area area*

Syntax Description

<i>interface</i>	The interface where the virtual link exists.
<i>area</i>	The area where the link should be advertised. This is generally area 0.

Defaults

No default behaviors.

Command Modes

Router configuration

Command History

Release	Modification
12.0(11)S	This command was introduced.
12.1(3)T	This command was integrated into Cisco IOS Release 12.1(3)T.

Usage Guidelines

This command is useful in MPLS TE configurations that use virtual links between Area Border Routers (ABRs) with OSPF.

Often, OSPF ABRs have a link between them which is in a non-zero area, and a virtual link that in effect puts that link into area 0 as well as the non-zero area. This command allows you to advertise the link between ABRs into area 0, even though the link is in a non-zero area. This solves for TE the same problem that virtual links solve for IP routing.

Examples

In the following example, OSPF announces interface pos0/0 to area 0:

```
Router(config)# router ospf 1
Router(config-router)# mpls traffic-eng interface pos0/0 area 0
```

mpls traffic-eng link-management timers bandwidth-hold

To set the length of time that bandwidth is held for an RSVP path (setup) message while you wait for the corresponding RSVP Resv message to come back, use the **mpls traffic-eng link-management timers bandwidth-hold** router configuration command. To disable this feature, use the **no** form of this command.

mpls traffic-eng link-management timers bandwidth-hold *hold-time*

no mpls traffic-eng link-management timers bandwidth-hold

Syntax Description	<i>hold-time</i>	Length of time that bandwidth can be held. Valid values are from 1 to 300 seconds.
Defaults	15 seconds.	
Command Modes	Router configuration	
Command History	Release	Modification
	12.0(5)S	This command was introduced.
Examples	<p>In the following example, bandwidth is set to be held for 10 seconds:</p> <pre>Router(config)# mpls traffic-eng link-management timers bandwidth-hold 10</pre>	
Related Commands	Command	Description
	show mpls traffic-eng link-management bandwidth-allocation	Displays current local link information.

mpls traffic-eng link-management timers periodic-flooding

To set the length of the interval for periodic flooding, use the **mpls traffic-eng link-management timers periodic-flooding** router configuration command. To disable this feature, use the **no** form of this command.

mpls traffic-eng link-management timers periodic-flooding *interval*

no mpls traffic-eng link-management timers periodic-flooding

Syntax Description	<i>interval</i>	Length of the interval (in seconds) for periodic flooding. Valid values are from 0 to 3600. A value of 0 turns off periodic flooding. If you set this value from 1 to 29, it is treated as 30.				
Defaults	180 seconds (3 minutes)					
Command Modes	Router configuration					
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>12.0(5)S</td> <td>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.					
Usage Guidelines	Use this command to advertise link state information changes that do not trigger immediate action. For example, a change to the amount of allocated bandwidth that does not cross a threshold.					
Examples	<p>In the following example, the interval length for periodic flooding is set to 120 seconds:</p> <pre>Router(config)# mpls traffic-eng link-management timers periodic-flooding 120</pre>					
Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>mpls traffic-eng flooding thresholds</td> <td>Sets a link's reserved bandwidth thresholds.</td> </tr> </tbody> </table>	Command	Description	mpls traffic-eng flooding thresholds	Sets a link's reserved bandwidth thresholds.	
Command	Description					
mpls traffic-eng flooding thresholds	Sets a link's reserved bandwidth thresholds.					

mpls traffic-eng link timers bandwidth-hold

To set the length of time that bandwidth is “held” for a RSVP PATH (Set Up) message while waiting for the corresponding RSVP RESV message to come back, use the **mpls traffic-eng link timers bandwidth-hold** command in global configuration mode.

mpls traffic-eng link timers bandwidth-hold *hold-time*

Syntax Description	<i>hold-time</i>	Sets the length of time that bandwidth can be held. The range is from 1 to 300 seconds.
---------------------------	------------------	---

Defaults	15 seconds
-----------------	------------

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

Examples

The following example sets the length of time that bandwidth is held to 10 seconds.

```
mpls traffic-eng link-management timers bandwidth-hold 10
```

Related Commands	Command	Description
	show mpls traffic-eng link-management bandwidth-allocation	Displays current local link information.

mpls traffic-eng link timers periodic-flooding

To set the length of the interval used for periodic flooding, use the **mpls traffic-eng link timers periodic-flooding** command in global configuration mode.

mpls traffic-eng link timers periodic-flooding *interval*

Syntax Description	<i>interval</i>	Length of interval used for periodic flooding (in seconds). The range is from 0 to 3600. If you set this value to 0, you turn off periodic flooding. If you set this value anywhere in the range from 1 to 29, it is treated as 30.				
Defaults	3 minutes					
Command Modes	Global configuration					
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>12.0(5)S</td> <td>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.					
Usage Guidelines	<p>Use this command to set the interval for periodic flooding of TE topology information.</p> <p>Changes in the MPLS TE topology database are flooded by the link state Interior Gateway Protocol (IGP). Some changes, such as those to link status (up/down) or configured parameters, trigger immediate flooding. Other changes are considered less urgent and are flooded periodically. For example, changes to the amount of link bandwidth allocated to TE tunnels are flooded periodically unless the change causes the bandwidth to cross a configurable threshold.</p>					
Examples	<p>The following example sets the interval length for periodic flooding to advertise flooding changes to 120 seconds.</p> <pre>mpls traffic-eng timers periodic-flooding 120</pre>					
Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>mpls traffic-eng flooding thresholds</td> <td>Sets the reserved bandwidth thresholds of a link.</td> </tr> </tbody> </table>	Command	Description	mpls traffic-eng flooding thresholds	Sets the reserved bandwidth thresholds of a link.	
Command	Description					
mpls traffic-eng flooding thresholds	Sets the reserved bandwidth thresholds of a link.					

mpls traffic-eng logging lsp

To log certain traffic engineering label-switched path (LSP) events, use the **mpls traffic-eng logging lsp** router configuration command. To disable this feature, use the **no** form of this command.

```
mpls traffic-eng logging lsp {path-errors | reservation-errors | preemption | setups | teardowns} [aclnum]
```

```
no mpls traffic-eng logging lsp {path-errors | reservation-errors | preemption | setups | teardowns} [aclnum]
```

Syntax Description

path-errors	Logs RSVP path errors for traffic engineering LSPs.
reservation-errors	Logs RSVP reservation errors for traffic engineering LSPs.
preemption	Logs events related to the preemption of traffic engineering LSPs.
setups	Logs events related to the establishment of traffic engineering LSPs.
teardowns	Logs events related to the removal of traffic engineering LSPs.
<i>aclnum</i>	(Optional) Uses the specified access list to filter the events that are logged. Logs events only for LSPs that match the access list.

Defaults

Logging of LSP events is disabled.

Command Modes

Router configuration

Command History

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

Examples

In the following example, path errors are logged for LSPs that match access list 3:

```
Router(config)# mpls traffic-eng logging lsp path-errors 3
```

Related Commands

Command	Description
access-list (extended)	Defines an extended IP access list.
logging console	Limits the number of messages logged to the console.
mpls traffic-eng logging tunnel	Logs certain traffic engineering tunnel events.
show logging	Displays the messages that are logged in the buffer.

mpls traffic-eng logging tunnel

To log certain traffic engineering tunnel events, use the **mpls traffic-eng logging tunnel** router configuration command. To disable this feature, use the **no** form of this command.

mpls traffic-eng logging tunnel lsp-selection [*aclnum*]

no mpls traffic-eng logging tunnel lsp-selection [*aclnum*]

Syntax Description	lsp-selection	Logs events related to the selection of an LSP for a traffic engineering tunnel.
	<i>aclnum</i>	(Optional) Uses the specified access list to filter the events that are logged. Logs events only for tunnels that match the access list.

Defaults Logging of tunnel events is disabled.

Command Modes Router configuration

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

Examples In the following example, traffic engineering tunnel events associated with access list 3 are logged:

```
Router(config)# mpls traffic-eng logging tunnel lsp-selection 3
```

Related Commands	Command	Description
	access-list (extended)	Creates an extended access list.
	logging console	Limits the number of messages logged to the console.
	mpls traffic-eng logging lsp	Logs certain traffic engineering LSP events.
	show logging	Displays the messages that are logged in the buffer.

mpls traffic-eng multicast-intact

To configure a router running Intermediate System-to-Intermediate System (IS-IS) or Open Shortest Path First (OSPF) so that Protocol-Independent Multicast (PIM) and Multiprotocol Label Switching (MPLS) traffic engineering (TE) can work together, use the **mpls traffic-eng multicast-intact** command in router configuration mode. To disable interoperability between PIM and MPLS TE, use the **no** form of this command.

mpls traffic-eng multicast-intact

no mpls traffic-eng multicast-intact

Syntax Description This command has no arguments or keywords.

Defaults PIM and MPLS TE do not work together.

Command Modes Router configuration

Command History

Release	Modification
12.0(12)S	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.3	This command was integrated into Cisco IOS Release 12.3.
12.4T	This command was integrated into Cisco IOS Release 12.4T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The **mpls traffic-eng multicast-intact** command allows PIM to use the native hop-by-hop neighbors while unicast routing is using MPLS TE tunnels.

This command works only for OSPF and IS-IS protocols.

Examples

The following example shows how to enable PIM and MPLS TE to interoperate:

```
Router(config-router) # mpls traffic-eng multicast-intact
```

Related Commands

Command	Description
mpls traffic-eng interface	Configures a router running OSPF or IS-IS so that it floods MPLS TE link information in the indicated OSPF area or IS-IS level.
show ospf routes multicast-intact	Displays multicast-intact paths of OSPF routes.

mpls traffic-eng reoptimize

To force immediate reoptimization of all traffic engineering tunnels, use the **mpls traffic-eng reoptimize EXEC** command.

mpls traffic-eng reoptimize

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)ST	This command was introduced.

Examples In the following example, all traffic engineering tunnels are immediately reoptimized:

```
Router2# mpls traffic-eng reoptimize
```

mpls traffic-eng reoptimize events

To turn on automatic reoptimization of MPLS traffic engineering when certain events occur, such as when an interface becomes operational, use the **mpls traffic-eng reoptimize events** router configuration command. To disable this feature, use the **no** form of this command.

```
mpls traffic-eng reoptimize events {link-up}
```

```
no mpls traffic-eng reoptimize events {link-up}
```

Syntax Description

link-up	Triggers automatic reoptimization whenever an interface becomes operational.
----------------	--

Defaults

Event-based reoptimization is disabled.

Command Modes

Router configuration

Command History

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

Examples

In the following example, automatic reoptimization is turned on whenever an interface becomes operational:

```
Router(config)# mpls traffic-eng reoptimize events link-up
```

Related Commands

Command	Description
mpls traffic-eng logging lsp	Controls the frequency with which tunnels with established LSPs are checked for better LSPs.
mpls traffic-eng reoptimize (EXEC mode)	Reoptimizes all traffic engineering tunnels immediately.

mpls traffic-eng reoptimize timers frequency

To control the frequency with which tunnels with established label-switched paths (LSPs) are checked for better LSPs, use the **mpls traffic-eng reoptimize timers frequency** router configuration command. To disable this feature, use the **no** form of this command.

mpls traffic-eng reoptimize timers frequency *seconds*

no mpls traffic-eng reoptimize timers frequency

Syntax Description	<i>seconds</i>	Sets the frequency of reoptimization (in seconds). A value of 0 disables reoptimization.
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Defaults	3600 seconds (1 hour), with a range of 0 to 604800 seconds (1 week)
-----------------	---

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

Usage Guidelines	A device with traffic engineering tunnels periodically examines tunnels with established LSPs to learn if better LSPs are available. If a better LSP seems to be available, the device attempts to signal the better LSP; if the signalling is successful, the device replaces the old, inferior LSP with the new, better LSP.
-------------------------	--



Note	If you specify a low reoptimization frequency (e.g., less than 30 seconds), there may be an increase in CPU utilization for configurations with a large number of traffic engineering tunnels.
-------------	--

Examples	In the following example, the reoptimization frequency is set to 1 day:
-----------------	---

```
Router(config)# mpls traffic-eng reoptimize timers frequency 86400
```

Related Commands	Command	Description
	tunnel mpls traffic-eng path-option	If lockdown is specified, does not do a reoptimization check on this tunnel.
	mpls traffic-eng reoptimize (EXEC mode)	Reoptimizes all traffic engineering tunnels immediately.

mpls traffic-eng router-id

To specify that the traffic engineering router identifier for the node is the IP address associated with a given interface, use the **mpls traffic-eng router-id** router configuration command. To disable this feature, use the **no** form of this command.

mpls traffic-eng router-id *interface-name*

no mpls traffic-eng router-id

Syntax Description

<i>interface-name</i>	Interface whose primary IP address is the router's identifier.
-----------------------	--

Defaults

No default behavior or values.

Command Modes

Router configuration

Command History

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

Usage Guidelines

This router's identifier acts as a stable IP address for the traffic engineering configuration. This IP address is flooded to all nodes. For all traffic engineering tunnels originating at other nodes and ending at this node, you must set the tunnel destination to the destination node's traffic engineering router identifier, because that is the address that the traffic engineering topology database at the tunnel head uses for its path calculation.

Examples

In the following example, the traffic engineering router identifier is specified as the IP address associated with interface Loopback0:

```
Router(config-router)# mpls traffic-eng router-id Loopback0
```

Related Commands

Command	Description
mpls atm control-vc	Turns on flooding of MPLS traffic engineering link information in the indicated IGP level/area.

mpls traffic-eng signalling advertise implicit-null

To use MPLS encoding for the implicit-null label in signalling messages sent to neighbors that match the specified access list, use the **mpls traffic-eng signalling advertise implicit-null** router configuration command. To disable this feature, use the **no** form of this command.

```
mpls traffic-eng signalling advertise implicit-null [aclname | aclnum]
```

```
no mpls traffic-eng signalling advertise implicit-null
```

Syntax Description

<i>aclname</i>	Name of the access list.
<i>aclnum</i>	Number of the access list.

Defaults

Use the Cisco encoding for the implicit-null label in signalling messages.

Command Modes

Router configuration

Command History

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

Examples

In the following example, the router is configured to use MPLS encoding for the implicit-null label when it sends signalling messages to certain peers:

```
Router(config)# mpls traffic-eng signalling advertise implicit-null
```

mpls traffic-eng tunnels (global)

To enable MPLS traffic engineering tunnel signaling on a device, use the **mpls traffic-eng tunnels** global configuration command. To disable this feature, use the **no** form of this command.

mpls traffic-eng tunnels

no mpls traffic-eng tunnels

Syntax Description This command has no arguments or keywords.

Defaults The feature is disabled.

Command Modes Global configuration

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

Usage Guidelines This command enables MPLS traffic engineering on a device. For you to use the feature, MPLS traffic engineering must also be enabled on the desired interfaces.

Examples In the following example, MPLS traffic engineering tunnel signalling is turned on:

```
Router(config)# mpls traffic-eng tunnels
```

Related Commands	Command	Description
	mpls traffic-eng tunnels (interface)	Enables MPLS traffic engineering tunnel signalling on an interface.

mpls traffic-eng tunnels (interface)

To enable MPLS traffic engineering tunnel signalling on an interface (assuming that it is enabled on the device), use the **mpls traffic-eng tunnels** interface configuration command. To disable this feature, use the **no** form of this command.

mpls traffic-eng tunnels

no mpls traffic-eng tunnels

Syntax Description

This command has no arguments or keywords.

Defaults

The feature is disabled on all interfaces.

Command Modes

Interface configuration

Command History

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

Usage Guidelines

To enable MPLS traffic engineering on the interface, MPLS traffic engineering must also be enabled on the device. An enabled interface has its resource information flooded into the appropriate IGP link-state database and accepts traffic engineering tunnel signalling requests.

Examples

In the following example, MPLS traffic engineering is enabled on Ethernet interface 0/0:

```
Router(config)# interface Ethernet0/0
Router(config-if)# mpls traffic-eng tunnels
```

Related Commands

Command	Description
mpls traffic-eng tunnels (global)	Enables MPLS traffic engineering tunnel signalling on a device.

mpoa client config name

To define an MPC with a specified name, use the **mpoa client config name** command in global configuration mode. To delete the MPC, use the **no** form of this command.

mpoa client config name *mpc-name*

no mpoa client config name *mpc-name*

Syntax Description	<i>mpc-name</i>	Specifies the name of an MPC.
---------------------------	-----------------	-------------------------------

Defaults	This command has no default setting.	
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Command Modes	Global configuration	
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Command History	Release	Modification
	11.3(3a)WA4(5)	This command was introduced.

Usage Guidelines When you configure or create an MPC, you automatically enter the MPC configuration mode. From here, you can enter subcommands to define or change MPC variables specific only to this MPC. Note that the MPC is not functional until it is attached to a hardware interface.

Examples The following example creates or modifies the MPC named ip_mpc:

```
mpoa client config name ip_mpc
```

Related Commands	Command	Description
	atm-address	Overrides the control ATM address of an MPC or MPS.
	shortcut-frame-count	Specifies the maximum number of times a packet can be routed to the default router within shortcut-frame time before an MPOA resolution request is sent.
	shortcut-frame-time	Sets the shortcut-setup frame time (in seconds) for the MPC.

mpoa client name

To attach an MPC to a major ATM interface, use the **mpoa client name** command in interface configuration mode. To break the attachment, use the **no** form of this command.

mpoa client name *mpc-name*

no mpoa client name *mpc-name*

Syntax Description	<i>mpc-name</i>	Specifies the name of an MPC.
--------------------	-----------------	-------------------------------

Defaults	No MPC is attached to an ATM interface.
----------	---

Command Modes	Interface configuration
---------------	-------------------------

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

Usage Guidelines	The mpoa client name command provides an interface to the MPC through which the MPC can set up and receive calls.
------------------	--

When you enter this command on a major interface that is up and operational, the named MPC becomes operational. Once the MPC is fully operational, it can register its ATM address.

Examples	The following example attaches the MPC named ip_mpc to an interface:
----------	--

```
interface atm 1/0
 mpoa client name ip_mpc
```

mpoa server config name

To define an MPS with the specified name, use the **mpoa server config name** command in global configuration mode. To delete an MPS, use the **no** form of this command.

mpoa server config name *mps-name*

no mpoa server config name *mps-name*

Syntax Description

<i>mps-name</i>	Name of the MPOA server.
-----------------	--------------------------

Defaults

No MPS is defined.

Command Modes

Global configuration

Command History

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

Usage Guidelines

This command defines an MPS with the specified name. The MPS does not actually start functioning until it is attached to a specific hardware interface. Once that attachment is complete, the MPS starts functioning. When you configure or create an MPS, you automatically enter the MPS configuration mode.

You can define the MPS variables specific to an MPS only after that MPS has been defined with a specified name. After this command is entered, further commands can be used to change MPS variables that are specific only to this MPS.

Examples

The following example defines the MPS named MYMPS:

```
mpoa server config name MYMPS
```

mpos server name

To attach an MPS to a major ATM interface, use the **mpos server name** command in interface configuration mode. To break the attachment, use the **no** form of this command.

mpos server name *mpos-name*

no mpos server name *mpos-name*

Syntax Description	<i>mpos-name</i>	Name of the MPOA server.
--------------------	------------------	--------------------------

Defaults	No MPS is attached to an ATM interface.
----------	---

Command Modes	Interface configuration
---------------	-------------------------

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

Usage Guidelines	This command attaches an MPS to a specific (major) interface. At this point, the MPS can obtain its autogenerated ATM address and an interface through which it can communicate to the neighboring MPOA devices. Only when an MPS is both defined globally and attached to an interface is it considered to be operational. Although multiple different servers may share the same hardware interface, an MPS can be attached to only a single interface at any one time. Note that the specified MPS must have already been defined when this command is entered.
------------------	--

Examples	The following example attaches the MPS named MYMPS to an ATM interface:
----------	---

```
mpos server name MYMPS
```

mpoa server name trigger ip-address

To originate an MPOA trigger for the specified IP address to the specified MPOA client from the specified MPS, use the **mpoa server name trigger ip-address** interface configuration command.

mpoa server name *mps-name* **trigger ip-address** *ip address* [**mpc-address** *mpc-address*]

Syntax Description		
	<i>mps-name</i>	Specifies the name of the MPOA server.
	<i>ip address</i>	Specifies the IP address.
	mpc-address <i>mpc-address</i>	(Optional) Specifies the MPOA client (MPC) address to which the trigger should be sent. If the address is not specified, a trigger will be sent to all clients.

Command Modes Interface configuration

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

Usage Guidelines This command sends an MPOA trigger for the specified IP address to the specified MPOA client from the specified MPOA server. If an MPOA client is not specified, it is triggered to all MPOA clients.

Examples The following example sends an MPOA trigger for the specified IP address 128.9.0.7 to all known MPOA clients from the MPOA server named MYMPS:

```
mpoa server name MYMPS trigger ip-address 128.9.0.7
```

name elan-id

To configure the emulated LAN (ELAN) ID of an ELAN in the LECS database to participate in MPOA, use the **name elan-id** command in LANE database configuration mode. To disable the ELAN ID of an ELAN in the LECS database to participate in MPOA, use the **no** form of this command.

name *name* **elan-id** *id*

no name *name* **elan-id** *id*

Syntax Description

<i>name</i>	Specifies the name of the ELAN.
<i>id</i>	Specifies the identification number of the ELAN.

Defaults

No ELAN ID is configured.

Command Modes

LANE database configuration

Command History

Release	Modification
12.0	This command was introduced.

Usage Guidelines

To participate in MPOA, a LEC must have an ELAN ID. The LEC obtains the ELAN ID from the LECS. In case the LEC bypasses the LECS phase, the LEC can get the ELAN ID from the LES when the **name elan-id** command is used.

Examples

The following example sets the ELAN ID to 10 for an ELAN named MYELAN:

```
name MYELAN elan-id 10
```

Related Commands

Command	Description
lane server-bus	Enables a LANE server and a broadcast and unknown server on the specified subinterface with the ELAN ID.