

mpls traffic-eng

To configure a router running Intermediate System-to-Intermediate System (IS-IS) so that it floods Multiprotocol Label Switching (MPLS) traffic engineering (TE) link information into the indicated IS-IS level, use the **mpls traffic-eng** command in router configuration mode. To disable the flooding of MPLS TE link information into the indicated IS-IS level, 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 TE link information into IS-IS level 1.
	level-2	Floods MPLS TE 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 The following example shows how to configure MPLS TE link information flooding 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** command in interface configuration mode. To disable the override, 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	<p>The following example shows how to override the IGP cost of the link and set the cost to 20:</p> <pre>Router(config-if)# mpls traffic-eng administrative-weight 20</pre>	
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) Multiprotocol Label Switching (MPLS) so that it floods traffic engineering for the indicated OSPF area, use the **mpls traffic-eng area** command in router configuration mode. To disable flooding of traffic engineering for the indicated OSPF area, use the **no** form of this command.

mpls traffic-eng area *number*

no mpls traffic-eng area *number*

Syntax Description	<i>number</i>	The OSPF area on which MPLS traffic engineering is enabled.
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Defaults	Flooding is disabled.	
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Command Modes	Router configuration	
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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.
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Examples	The following example shows how to configure a router running OSPF MPLS to flood traffic engineering for OSPF 0: Router(config-router)# mpls traffic-eng area 0
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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 atm cos global-pool

To specify the class of service for all global pools in traffic engineering tunnels traversing XTagATM interfaces on an ATM-label switch router (LSR), use the **mpls traffic-eng atm cos global-pool** command in global configuration mode.

mpls traffic-eng atm cos global-pool [**available** | **standard** | **premium** | **control**]

Syntax Description	available standard premium control (Optional) Four classes of service, ordered from lowest priority (available) to highest priority (control). The default is available .				
Defaults	The default class is the lowest, available .				
Command Modes	Global configuration				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>12.2(8)T</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	12.2(8)T	This command was introduced.
Release	Modification				
12.2(8)T	This command was introduced.				
Usage Guidelines	Because this command works at the global rather than at the interface level, it sets the same class of service for global pool traffic engineering (TE) tunnel traffic on <i>all</i> XTagATM interfaces of the device.				
Examples	<p>The following example shows how to specify the second-lowest possible priority class of service for the global pool traffic:</p> <pre>Router(config)# mpls traffic-eng atm cos global-pool standard</pre>				
Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>mpls traffic-eng atm cos sub-pool</td> <td>Specifies class of service for subpool traffic traversing XtagATM interfaces.</td> </tr> </tbody> </table>	Command	Description	mpls traffic-eng atm cos sub-pool	Specifies class of service for subpool traffic traversing XtagATM interfaces.
Command	Description				
mpls traffic-eng atm cos sub-pool	Specifies class of service for subpool traffic traversing XtagATM interfaces.				

mpls traffic-eng atm cos sub-pool

To specify the class of service for all subpools in traffic engineering tunnels traversing XTagATM interfaces on an ATM-label switch router (LSR), use the **mpls traffic-eng atm cos sub-pool** command in global configuration mode.

mpls traffic-eng atm cos sub-pool [available | standard | premium | control]

Syntax Description	available standard premium control Four classes of service, ordered from lowest priority (available) to highest priority (control). The default is control .				
Defaults	The default class is the highest, control .				
Command Modes	Global configuration				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>12.2(8)T</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	12.2(8)T	This command was introduced.
Release	Modification				
12.2(8)T	This command was introduced.				
Usage Guidelines	Because this command works at the global rather than at the interface level, it sets the same class of service for subpool traffic engineering (TE) tunnel traffic on <i>all</i> XTagATM interfaces of the device.				
Examples	<p>The following example shows how to specify the second-highest possible priority class of service for the subpool traffic:</p> <pre>Router(config)# mpls traffic-eng atm cos sub-pool premium</pre>				
Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>mpls traffic-eng atm cos global-pool</td> <td>Specifies class of service for global-pool traffic traversing XTagATM interfaces.</td> </tr> </tbody> </table>	Command	Description	mpls traffic-eng atm cos global-pool	Specifies class of service for global-pool traffic traversing XTagATM interfaces.
Command	Description				
mpls traffic-eng atm cos global-pool	Specifies class of service for global-pool traffic traversing XTagATM interfaces.				

mpls traffic-eng attribute-flags

To set the user-specified attribute flags for the interface, use the **mpls traffic-eng attribute-flags** command in interface configuration mode. To disable the user-specified attribute flags for the interface, 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>The following example shows how to set the attribute flags 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 auto-bw timers

To enable automatic bandwidth adjustment for a platform and to start output rate sampling for tunnels configured for automatic bandwidth adjustment, use the **mpls traffic-eng auto-bw timers** command in global configuration mode. To disable automatic bandwidth adjustment for the platform, use the **no** form of this command.

mpls traffic-eng auto-bw timers [*frequency seconds*]

no mpls traffic-eng auto-bw timers

Syntax Description	frequency seconds (Optional) Interval, in seconds, for sampling the output rate of each tunnel configured for automatic bandwidth. The value must be from 1 through 604800. The recommended value is 300.				
Defaults	When the optional frequency keyword is not specified, the sampling interval is 300 seconds (5 minutes).				
Command Modes	Global configuration				
Command History	<table border="1" style="width: 100%; border-collapse: collapse;"> <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;">Release 12.2(4)T</td> <td style="border-bottom: 1px solid black;">This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 12.2(4)T	This command was introduced.
Release	Modification				
Release 12.2(4)T	This command was introduced.				
Usage Guidelines	<p>The mpls traffic-eng auto-bw timers command enables automatic bandwidth adjustment on a platform by causing traffic engineering to periodically sample the output rate for each tunnel configured for bandwidth adjustment.</p> <p>The no mpls traffic-eng auto-bw timers command disables automatic bandwidth adjustment for a platform by terminating the output rate sampling and bandwidth adjustment for tunnels configured for adjustment. In addition, the no form of the command restores the configured bandwidth for each tunnel where “configured bandwidth” is determined as follows:</p> <ul style="list-style-type: none"> • If the tunnel bandwidth was explicitly configured via the tunnel mpls traffic-eng bandwidth command after the running configuration was written (if at all) to the startup configuration, the “configured bandwidth” is the bandwidth specified by that command. • Otherwise, the “configured bandwidth” is the bandwidth specified for the tunnel in the startup configuration. 				
Examples	<p>The following example shows how to designate that for each Multiprotocol Label Switching (MPLS) traffic engineering tunnel, the output rate is sampled once every 10 minutes (every 600 seconds):</p> <pre>Router(config)# mpls traffic-eng auto-bw timers frequency 600</pre>				

Related Commands

Command	Description
tunnel mpls traffic-eng auto-bw	Enables automatic bandwidth adjustment for a tunnel, specifies the frequency with which tunnel bandwidth can be automatically adjusted, and designates the allowable range of bandwidth adjustments.

mpls traffic-eng flooding thresholds

To set a reserved bandwidth thresholds for a link, use the **mpls traffic-eng flooding thresholds** command in interface configuration mode. 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	Parameter	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.

Defaults

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, Multiprotocol Label Switching (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

The following example shows how to set the reserved bandwidth of the link 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.

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.

mpls traffic-eng interface

To enable MPLS Traffic Engineering (TE) link-state advertisement (LSA) for an interface to be advertised into the Open Shortest Path First (OSPF) area 0, use the **mpls traffic-eng interface** command in router configuration mode. Usually, the MPLS TE LSA is advertised into the same area as the router LSA. To restore the setting of the MPLS TE LSA to the same area as the router LSA, use the **no** form of this command.

mpls traffic-eng interface *interface* **area 0**

no mpls traffic-eng interface *interface* **area 0**

Syntax Description	<i>interface</i>	The interface to be advertised with an MPLS TE LSA into OSPF area 0. The interface may be one or two words.
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Defaults	The default is to advertise the area assigned to the interface by the OSPF network configuration.
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Command Modes	Router configuration
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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.

Usage Guidelines	<p>This command is useful in configurations where a link between two Area Border Routers (ABRs) is in an OSPF area besides area 0. 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. This command is valid only for OSPF.</p>
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Issue the command on both ABRs for the interfaces at both ends of the link.

Examples	In the following example, OSPF advertises the MPLS TE LSA for interface pos2/0 to area 0:
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```
Router(config)# router ospf 1
Router(config-router)# mpls traffic-eng interface pos2/0 area 0
```

The following example shows how to enter the MPLS TE interface configuration mode:

```
Router(config)# router traffic-eng
Router(config-router)# mpls traffic-eng interface pos2/0 area 0
```

The following example shows how to remove an interface from the MPLS TE domain:

```
Router(config)# router traffic-eng  
Router(config-router)# no interface pos2/0 area 0
```

Related Commands

Command	Description
mpls traffic-eng multicast-intact	Enables multicast-intact support from the Open Shortest Path First (OSPF) routing protocol to maintain and publish the native IP nexthops (paths) for every OSPF route.

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** command in global configuration mode. To disable this function, 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 second					
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.					
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	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>show mpls traffic-eng link-management bandwidth-allocation</td> <td>Displays current local link information.</td> </tr> </tbody> </table>	Command	Description	show mpls traffic-eng link-management bandwidth-allocation	Displays current local link information.	
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** command in global configuration mode. To disable the specified interval length for periodic flooding, 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	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	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>The following example shows how to set the interval length for periodic flooding 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 Resource Reservation Protocol (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.
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Defaults	15 seconds
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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.

```
Router(config)# 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	Release	Modification
	12.0(5)S	This command was introduced.

Usage Guidelines

Use this command to set the interval for periodic flooding of traffic engineering (TE) topology information.

Changes in the Multiprotocol Label Switching (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.

Examples

The following example sets the interval length for periodic flooding to advertise flooding changes to 120 seconds.

```
Router(config)# mpls traffic-eng timers periodic-flooding 120
```

Related Commands	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** command in global configuration mode. To disable logging of LSP events, use the **no** form of this command.

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

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

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>acl-number</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 Global configuration

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

Examples The following example shows how to log path errors 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** command in global configuration mode. To disable logging of traffic engineering tunnel events, use the **no** form of this command.

mpls traffic-eng logging tunnel lsp-selection *[acl-number]*

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

Syntax Description	lsp-selection	Logs events related to the selection of a label switched path (LSP) for a traffic engineering tunnel.
	<i>acl-number</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 Global configuration

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

Examples The following example shows how to log traffic engineering tunnel events associated with access list 3:

```
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** command in privileged EXEC mode.

mpls traffic-eng reoptimize

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

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

Examples The following example shows how to reoptimize all traffic engineering tunnels immediately:

```
Router# mpls traffic-eng reoptimize
```

mpls traffic-eng reoptimize events

To turn on automatic reoptimization of Multiprotocol Label Switching (MPLS) traffic engineering when certain events occur, such as when an interface becomes operational, use the **mpls traffic-eng reoptimize events** command in global configuration mode. To disable automatic reoptimization, 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	Global configuration	
Command History	Release	Modification
	12.1(3)T	This command was introduced.
Examples	<p>The following example shows how to turn on automatic reoptimization whenever an interface becomes operational:</p> <pre>Router(config)# mpls traffic-eng reoptimize events link-up</pre>	
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	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** command in global configuration mode. To disable this function, 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)
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Command Modes	Global 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 the **lockdown** keyword is specified with the **tunnel mpls traffic-eng path-option** command, then a reoptimize check is not done on the tunnel.



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 The following example shows how to set the reoptimization frequency to 1 day:

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

Related Commands	Command	Description
	tunnel mpls traffic-eng path-option	Configures a path option for an MPLS traffic engineering tunnel.
	mpls traffic-eng reoptimize	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** command in router configuration mode. To remove the traffic engineering router identifier, 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 traffic engineering router identifier is specified.	
Command Modes	Router configuration	
Command History	Release	Modification
	12.0(5)S	This command was introduced.
Usage Guidelines	This router 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 traffic engineering router identifier of the destination node, because that is the address that the traffic engineering topology database at the tunnel head uses for its path calculation.	
Examples	The following example shows how to specify the traffic engineering router identifier 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 the Multiprotocol Label Switching (MPLS) encoding for the implicit-null label in signaling messages sent to neighbors that match the specified access list, use the **mpls traffic-eng signalling advertise implicit-null** command in router configuration mode. To disable this feature, use the **no** form of this command.

mpls traffic-eng signalling advertise implicit-null [*acl-name* | *acl-number*]

no mpls traffic-eng signalling advertise implicit-null

Syntax Description		
	<i>acl-name</i>	Name of the access list.
	<i>acl-number</i>	Number of the access list.

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

Command Modes Router configuration

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

Examples The following example shows how to configure the router to use MPLS encoding for the implicit-null label when it sends signaling messages to certain peers:

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

mpls traffic-eng tunnels (global)

To enable Multiprotocol Label Switching (MPLS) traffic engineering tunnel signaling on a device, use the **mpls traffic-eng tunnels** command in global configuration mode. To disable MPLS traffic engineering tunnel signaling, 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 command is disabled by default.

Command Modes Global configuration

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 The following example shows how to turn on MPLS traffic engineering tunnel signaling:

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

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

mpls traffic-eng tunnels (interface)

To enable Multiprotocol Label Switching (MPLS) traffic engineering tunnel signaling on an interface (assuming that it is enabled on the device), use the **mpls traffic-eng tunnels** command in interface configuration mode. To disable MPLS traffic engineering tunnel signaling on the interface, 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 command is disabled on all interfaces.

Command Modes Interface configuration

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 The following example shows how to enable MPLS traffic engineering on Ethernet interface 0/0:

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

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

mpoa client config name

To define a Multiprotocol over ATM (MPOA) client (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.
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Defaults	No MPC is defined.	
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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 shows how to create or modify the MPC named ip_mpc:
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```
Router(config)# 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 a Multiprotocol over ATM (MPOA) client (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.
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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 shows how to attach the MPC named ip_mpc to an interface:

```
Router(config)# interface atm 1/0
Router(config-if)# mpoa client name ip_mpc
```

mpoa server config name

To define a Multiprotocol over ATM (MPOA) server (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.
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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 shows how to define the MPS named MYMPS:

```
Router(config)# mpoa server config name MYMPS
```

mpoa server name

To attach a Multiprotocol over ATM (MPOA) server (MPS) to a major ATM interface, use the **mpoa server name** command in interface configuration mode. To break the attachment, use the **no** form of this command.

mpoa server name *mps-name*

no mpoa server name *mps-name*

Syntax Description	<i>mps-name</i>	Name of the MPOA server.
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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. The specified MPS must already be defined when this command is entered.

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

```
Router(config)# interface atm 1/0
Router(config-if)# mpoa server name MYMPS
```

mpoa server name trigger ip-address

To originate a Multiprotocol over ATM (MPOA) trigger for the specified IP address to the specified MPOA client from the specified Multiprotocol over ATM server (MPS), use the **mpoa server name trigger ip-address** command in interface configuration mode.

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 shows how to send an MPOA trigger for the specified IP address 128.9.0.7 to all known MPOA clients from the MPOA server named MYMPS:

```
Router(config)# interface atm 1/0
Router(config-if)# 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 LAN Emulation Configuration Server (LECS) database to participate in Multiprotocol over ATM (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 LAN Emulation Client (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 shows how to set the ELAN ID to 10 for an ELAN named MYELAN:

```
Router(lane-config-dat)# 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.

name local-seg-id

To specify or replace the ring number of the emulated LAN (ELAN) in the configuration server's configuration database, use the **name local-seg-id** command in database configuration mode. To remove the ring number from the database, use the **no** form of this command.

name *elan-name* **local-seg-id** *segment-number*

no name *elan-name* **local-seg-id** *segment-number*

Syntax Description		
	<i>elan-name</i>	Name of the ELAN. The maximum length of the name is 32 characters.
	<i>segment-number</i>	Segment number to be assigned to the ELAN. The number ranges from 1 to 4095.

Defaults No ELAN name or segment number is provided.

Command Modes LANE database configuration

Command History	Release	Modification
	11.3	This command was introduced.

Usage Guidelines This command is ordinarily used for Token Ring LANE.
The same LANE ring number cannot be assigned to more than one ELAN.
The **no** form of this command deletes the relationships.

Examples The following example shows how to specify a ring number of 1024 for the ELAN named red:
Router(lane-config-dat)# **name red local-seg-id 1024**

Related Commands	Command	Description
	default-name	Provides an ELAN name in the database of the configuration server for those client MAC addresses and client ATM addresses that do not have explicit ELAN name bindings.
	lane database	Creates a named configuration database that can be associated with a configuration server.
	mac-address	Sets the MAC-layer address of the Cisco Token Ring.

name preempt

To set the emulated LAN (ELAN) preempt, use the **name preempt** command in LANE database configuration mode. To disable preemption, use the **no** form of this command.

name *elan-name* **preempt**

no name *elan-name* **preempt**

Syntax Description	<i>elan-name</i>	Specifies the name of the ELAN.
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Defaults	Preemption is disabled by default.
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Command Modes	LANE database configuration
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Command History	Release	Modification
	11.3	This command was introduced.

Usage Guidelines

Prior to Cisco IOS Release 11.3, when the primary LAN Emulation Server (LES) failed, the Cisco Simple Server Redundancy Protocol (SSRP) switched over to a secondary LES. But when a LES that is ranked higher in the list came back up, the SSRP protocol switched the active LES to the new LES, which had a higher priority. This forced the network to flap multiple times. We have prevented the network flapping by staying with the currently active master LES regardless of the priority. If a higher priority LES comes back online, SSRP will not switch to that LES.

LES preemption is off by default. The first LES that comes on becomes the master. Users can revert to the old behavior (of switching to the higher-priority LES all the time) by specifying the **name elan-name preempt** command in the LECS database.

Examples

The following example shows how to set the ELAN preempt for the ELAN named MYELAN:

```
Router(lane-config-dat)# name MYELAN preempt
```

name server-atm-address

To specify or replace the ATM address of the LAN Emulation (LANE) server for the emulated LAN (ELAN) in the configuration server's configuration database, use the **name server-atm-address** command in database configuration mode. To remove it from the database, use the **no** form of this command.

name *elan-name* **server-atm-address** *atm-address* [**restricted** | **un-restricted**] [**index number**]

no name *elan-name* **server-atm-address** *atm-address* [**restricted** | **un-restricted**] [**index number**]

Syntax Description	
<i>elan-name</i>	Name of the ELAN. Maximum length is 32 characters.
<i>atm-address</i>	LANE server's ATM address.
restricted un-restricted	(Optional) Membership in the named ELAN is restricted to the LANE clients explicitly defined to the ELAN in the configuration server's database.
index number	(Optional) Priority number. When specifying multiple LANE servers for fault tolerance, you can specify a priority for each server. 0 is the highest priority.

Defaults No emulated LAN name or server ATM address is provided.

Command Modes Database configuration

Command History	Release	Modification
	11.0	This command was introduced.
	11.2	The following keywords were added: <ul style="list-style-type: none"> • un-restricted • index

Usage Guidelines ELAN names must be unique within one named LANE configuration database.

Specifying an existing ELAN name with a new LANE server ATM address adds the LANE server ATM address for that ELAN for redundant server operation or simple LANE service replication. This command can be used multiple times.

The **no** form of this command deletes the relationships.

Examples

The following example shows how to configure the example3 database with two restricted and one unrestricted ELANs. The clients that can be assigned to the eng and mkt ELANs are specified using the **client-atm-address** commands. All other clients are assigned to the man ELAN.

```
Router(config)# lane database example3
Router(lane-config-dat)# name eng server-atm-address
39.000001415555121101020304.0800.200c.1001.02 restricted
Router(lane-config-dat)# name man server-atm-address
39.000001415555121101020304.0800.200c.1001.01
Router(lane-config-dat)# name mkt server-atm-address
39.000001415555121101020304.0800.200c.4001.01 restricted
Router(lane-config-dat)# client-atm-address 39.000001415555121101020304.0800.200c.1000.02
name eng
Router(lane-config-dat)# client-atm-address 39.000001415555121101020304.0800.200c.2000.02
name eng
Router(lane-config-dat)# client-atm-address 39.000001415555121101020304.0800.200c.3000.02
name mkt
Router(lane-config-dat)# client-atm-address 39.000001415555121101020304.0800.200c.4000.01
name mkt
Router(lane-config-dat)# default-name man
Router(lane-config-dat)# exit
```

Related Commands

Command	Description
client-atm-address name	Adds a LANE client address entry to the configuration database of the configuration server.
default-name	Provides an ELAN name in the database of the configuration server for those client MAC addresses and client ATM addresses that do not have explicit ELAN name bindings.
lane database	Creates a named configuration database that can be associated with a configuration server.
mac-address	Sets the MAC-layer address of the Cisco Token Ring.