MPLS Traffic Engineering: Tunnel Source

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The Multiprotocol Label Switching (MPLS) Traffic Engineering (TE): Tunnel Source feature allows you to specify the IP address assigned to an interface as the source IP address for control packets. The default behavior is to use the router ID configured in the Interior Gateway Protocol (IGP) using the **mpls traffic-eng router-id** command.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the "Feature Information for MPLS Traffic Engineering: Tunnel Source" section on page 7.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

Contents

Prerequisites for MPLS Traffic Engineering: Tunnel Source

- You can configure tunnel source only for MPLS-TE tunnels.
- Understand how to configure TE tunnels. See the "Additional References" section on page 6.

Restrictions for MPLS Traffic Engineering: Tunnel Source

- The configuration of other types of tunnels are not affected by this feature.
- Configuring a tunnel source affects the control traffic and not the traffic forwarded in the dataplane on this tunnel.

Information About MPLS Traffic Engineering: Tunnel Source

When you configure an MPLS TE tunnel, the address specified in the **tunnel source** command is used as the source IP address for control traffic to signal the tunnel. The source IP address overrides the default IP address taken from the IGP command **mpls traffic-eng router-id**.

MPLS Traffic Engineering: Tunnel Source Usage Guidelines

- Specifying a new source for an established tunnel causes the tunnel to be withdrawn and re-established.
- The tunnel source may be configured as an IP address or as an interface. If an interface is specified, it must have an associated IP address.

How to Configure MPLS Traffic Engineering: Tunnel Source

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Configuring MPLS Traffic Engineering: Tunnel Source

You can configure the tunnel source as an IP address or as an interface. If you configure the tunnel source as an interface, then you should configure an IP address for the interface.

To specify a tunnel source for an MPLS TE tunnel, perform the following steps:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface tunnel** *number*
4. **ip unnumbered** *interface-type interface-number*
5. **no ip directed-broadcast**

6. **tunnel source** {*ip-address* | *interface-type interface-number*}

7. **tunnel destination** {*host-name* | *ip-address* | *ipv6-address*}

8. **tunnel mode mpls traffic-eng**

9. **tunnel mpls traffic-eng priority** *setup-priority* [*hold-priority*]

10. **tunnel mpls traffic-eng bandwidth** *bandwidth*

11. **tunnel mpls traffic-eng affinity** *affinity-value* **mask** *mask-value*

12. **tunnel mpls traffic-eng path-option** *number* **explicit name** *explicit-path-name*

13. **tunnel mpls traffic-eng autoroute announce**

14. **end**

15. **show ip rsvp sender**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** Router> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** Router# configure terminal	Enters global configuration mode.
Step 3	**interface tunnel** *number* **Example:** Router(config)# interface tunnel 1	Configures a tunnel interface and enters interface configuration mode.
Step 4	**ip unnumbered** *interface-name interface-number* **Example:** Router(config-if)# ip unnumbered loopback0	Configures an unnumbered IP interface, which enables IP processing without an explicit address. • An MPLS TE tunnel interface should be unnumbered because it represents a unidirectional link.
Step 5	**no ip directed-broadcast** **Example:** Router(config-if)# no ip directed-broadcast	Disables the translation of a directed broadcast to physical broadcasts.
Step 6	**tunnel source** {*ip-address*	*interface-type interface-number*} **Example:** Router(config-if)# tunnel source loopback1	Configures the tunnel source.
Step 7	**tunnel destination** {*host-name*	*ip-address*	*ipv6-address*} **Example:** Router(config-if)# tunnel destination 192.168.2.1	Specifies the destination for a tunnel. • The destination must be the MPLS TE router ID of the destination device.

	Command or Action	Purpose
Step 8	**tunnel mode mpls traffic-eng** **Example:** Router(config-if)# tunnel mode mpls traffic-eng	Sets the encapsulation mode of the tunnel to MPLS TE.
Step 9	**tunnel mpls traffic-eng priority** *setup-priority* [*hold-priority*] **Example:** Router(config-if)# tunnel mpls traffic-eng priority 1 1	Sets the priority to be used when the system determines which existing tunnels are eligible to be preempted. • The setup-priority argument is the priority used when signaling an LSP for this tunnel to determine which existing tunnels can be preempted. Valid values are from 0 to 7. A lower number indicates a higher priority. An LSP with a setup priority of 0 can preempt any LSP with a non-0 priority. • The hold-priority argument is the priority associated with an LSP for this tunnel to determine if it should be preempted by other LSPs that are being signaled. Valid values are from 0 to 7, where a lower number indicates a higher priority.
Step 10	**tunnel mpls traffic-eng bandwidth** *bandwidth* **Example:** Router(config-if)# tunnel mpls traffic-eng bandwidth 5000	Configures the bandwidth for the MPLS traffic engineering tunnel.
Step 11	**tunnel mpls traffic-eng affinity** *affinity value* **mask** *mask-value* **Example:** Router(config-if)# tunnel mpls traffic-eng affinity 0x0 mask 0x0	Configures the properties an MPLS TE tunnel requires in its links.
Step 12	**tunnel mpls traffic-eng path-option** *number* **explicit name** *explicit-path-name* **Example:** Router(config-if)# tunnel mpls traffic-eng path-option 1 explicit name BEST-WAY	Configures a path option for an MPLS TE tunnel. • The **explicit** keyword specifies that the path of the LSP is an IP explicit path.
Step 13	**tunnel mpls traffic-eng autoroute announce** **Example:** Router(config-if)# tunnel mpls traffic-eng autoroute announce	Causes the IGP to use the tunnel in its enhanced shortest path first (SPF) calculation.
Step 14	**end** **Example:** Router(config-if)# end	Exits interface configuration modes and enters privileged EXEC mode.
Step 15	**show ip rsvp sender** **Example:** Router# show ip rsvp sender	Displays the IP address used as the source for tunnel control traffic.

Configuration Examples for MPLS Traffic Engineering: Tunnel Source

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MPLS Traffic Engineering: Tunnel Source: Example

The output of the **show running-config** command displays the tunnel source configuration. If the **tunnel source** command is not configured, the IP address specified in the IGP command **mpls traffic-eng router-id** is used.

```
Router# show running-config

Building configuration...

Current configuration: 3969 bytes
!
!
interface Tunnel1
 ip unnumbered loopback0
 tunnel source loopback1
 tunnel mode mpls traffic-eng
 tunnel destination 192.168.2.1
 tunnel mpls traffic-eng priority 1 1
 tunnel mpls traffic-eng bandwidth 5000
 tunnel mpls traffic-eng affinity 0x0 mask 0x0
 tunnel mpls traffic-eng path-option 1 explicit name BEST-WAY
 tunnel mpls traffic-eng autoroute announce
 !
!
  ...
  router isis
   net 49.0000.0001.0000.0001.00
   is-type level-1
   metric-style wide
   mpls traffic-eng router-id Ethernet4/0/1
   mpls traffic-eng level-1
  !
```

The following sample output from the **show ip rsvp sender** command displays that the source IP address of the loopback interface used for tunnel control traffic:

```
Router# show ip rsvp sender

To              From          Pro DPort Sport    Prev Hop        I/F      BPS
192.168.2.1     192.168.42.2    0   1     13     192.168.42.10   Et0/0 SE LOAD 5M
```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	*Cisco IOS Master Commands List, All Releases*
MPLS commands	*Cisco IOS Multiprotocol Label Switching Command Reference*
MPLS TE automatic bandwidth adjustment for TE tunnels configuration tasks	*MPLS Traffic Engineering (TE)—Automatic Bandwidth Adjustment for TE Tunnels* module
MPLS TE - LSP Attributes	*MPLS Traffic Engineering—LSP Attributes* module
MPLS TE: Path Protection	*MPLS Traffic Engineering (TE) - Path Protection* module

MIBs

MIB	MIBs Link
• None	To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for MPLS Traffic Engineering: Tunnel Source

Table 1 lists the release history for this feature.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

Note Table 1 lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Table 1 *Feature Information for MPLS Traffic Engineering: Tunnel Source*

Feature Name	Releases	Feature Information
MPLS Traffic Engineering: Tunnel Source	12.2(33)SRD 12.2(33)SXI2 12.2(52)SE 15.0(1)M	The MPLS Traffic Engineering: Tunnel source feature allows you to specify the IP address assigned to an interface as the source IP address for control packets. The default behavior is to use the router ID configured in the IGP using the **mpls traffic-eng router-id** command. The following command was introduced or modified: **tunnel source**.