

MPLS Transport Profile Commands

This module describes the commands used to configure Transport Profile (MPLS-TP) in a Multiprotocol Label Switching (MPLS) network.

MPLS Transport Profile supported by IETF enables the migration of transport networks to a packet-based network that efficiently scale to support packet services in a simple and cost effective way. MPLS transport profile enables you to create tunnels that provide the transport network service layer over which IP and MPLS traffic traverse.

For detailed information about MPLS concepts, configuration tasks, and examples, see *Cisco ASR 9000 Series Aggregation Services Router MPLS Configuration Guide* .

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fault-oam-refresh

To configure a refresh interval globally for all MPLS-TP LSPs, use the **fault-oam-refresh** command in MPLS-TP configuration mode. To return to the default behavior, use the **no** form of this command.

fault-oam-refresh interval *seconds*

Syntax Description

interval *seconds*	Configures the interval value, in seconds, that gets refreshed for all MPLS-TP LSPs. Range is 1 to 20 seconds. The default is 20 seconds.

Command Default

The default interval is 20 seconds.

Command Modes

MPLS-TP configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
MPLS-TE	read, write

The following example shows how to configure the global refresh interval :

```
RP/0/RP0RSP0/CPU0:router:hostname# config
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# tp
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-tp)# fault-oam-refresh 10
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-tp)# commit
```

The following example shows how to configure the OAM refresh interval for a LSP :

```
RP/0/RP0RSP0/CPU0:router:hostname# config
RP/0/RP0RSP0/CPU0:router:hostname(config)# interface tunnel-tp 10
RP/0/RP0RSP0/CPU0:router:hostname(config-if)# static-lsp
RP/0/RP0RSP0/CPU0:router:hostname(config-if-slsp)# fault-oam-refresh 10
RP/0/RP0RSP0/CPU0:router:hostname(config-if-slsp-prot)# commit
```

link-id

To define an ID for an interface or next-hop address that carries MPLS-TP LSPs, use the **link-id** command in interface configuration mode. To remove the ID, use the **no** form of this command.

link-id *value* **next-hop** [*IPv4address*]

Syntax Description

value	Value number that identifies the link ID. Range is 1 to 65535.
IPv4 *address*	Configures the IPv4 address for the MPLS-TP link ID.

Command Default

No default behavior or values

Command Modes

Interface configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

Note You can define MPLS-TP link ID only once. If you attempt to use the same MPLS-TP link ID with different interface or next-hop-address, the configuration gets rejected.

Task ID

Task ID	Operation
MPLS-TE	read, write

The following example shows how to define an ID for the GigabitEthernet interface 0/2/1/1:

```
RP/0/RP0RSP0/CPU0:router:hostname# config
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# interface Gige0/2/1/1
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-if)# link-id 22 next-hop 192.4.1.0
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-if)# commit
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-if)# no link-id 22
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-if)# exit
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-if)# exit
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# interface Gige0/2/1/3
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-if)# link-id 22 next-hop 192.4.1.0
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-if)# commit
```

lockout (MPLS LSP)

To enable lockout on a LSP, use the **lockout** command in LSP interface configuration mode. To disable lockout, use the **no** form of this command.

lockout

Syntax Description

This command has no arguments or keywords.

Command Default

No default behavior or values

Command Modes

LSP interface configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
MPLS-TE	read, write

The following example shows how to enable lock on the working LSP:

```
RP/0/RP0RSP0/CPU0:router:hostname# config
RP/0/RP0RSP0/CPU0:router:hostname(config)# interface tunnel-tp 1
RP/0/RP0RSP0/CPU0:router:hostname(config-if)# working-lsp
RP/0/RP0RSP0/CPU0:router:hostname(config-if-slsp-work)# lockout
RP/0/RP0RSP0/CPU0:router:hostname(config-if-slsp-work)# commit
RP/0/RP0RSP0/CPU0:router:hostname(config-if-slsp-work)# no lockout
RP/0/RP0RSP0/CPU0:router:hostname(config-if-slsp-work)# commit
```

The following example shows how to enable lock on the protecting LSP:

```
RP/0/RP0RSP0/CPU0:router:hostname# config
RP/0/RP0RSP0/CPU0:router:hostname(config)# interface tunnel-tp 1
RP/0/RP0RSP0/CPU0:router:hostname(config-if)# protect-lsp
RP/0/RP0RSP0/CPU0:router:hostname(config-if-slsp-work)# lockout
RP/0/RP0RSP0/CPU0:router:hostname(config-if-slsp-work)# commit
```

node-id

To assign a node ID for each node, use the **Node-ID** command in MPLS-TP configuration mode. To remove the ID, use the **no** form of this command.

node-id *address*

Syntax Description

address	Configures the IPv4 address for the MPLS-TP node ID.

Command Default

No default behavior or values

Command Modes

MPLS transport profile configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

The node ID is a 32-bit number represented in IPv4 address format, and can be optionally assigned to each node.

Task ID

Task ID	Operation
MPLS-TE	read, write

The following example shows how to define a node ID for the node:

```
RP/0/RP0RSP0/CPU0:router:hostname# config
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# tp
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-tp)# node-id 10.1.1.1
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-tp)# commit
```

alarm (MPLS)

To enable alarm, use the **alarm** command in MPLS-TP configuration mode. To disable alarm, use the **no** form of this command.

alarm {**soak-time** *time* | **suppression** **disable**}

Syntax Description

soak-time *time*	Defines the time interval in seconds. Range is 0 to 10.
suppression	Suppresses the alarm that is configured.
disable	Disables the configured alarm.

Command Default

None

Command Modes

MPLS Transport Profile configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
mpls-te	read, write

This example shows how to disable alarm configured in MPLS-TP configuration mode:

```
conf
 mpls traffic-eng
 tp alarm
 suppression disable
```

bfd (MPLS)

To specify the minimum control packet interval for BFD sessions for the corresponding BFD configuration scope, use the **bfd** command in the MPLS-TP configuration mode. To return the router to the default setting, use the **no** form of this command.

bfd {**min-interval** {*value* | **standby** *value*} | **multiplier** {*value* | **standby** *value*}}

Syntax Description

min-interval*time*	Specifies the rate, in seconds, at which BFD control packets are sent BFD peers. Range is 15 to 5000.
standby *time*	Specifies the minimum interval, in seconds, for a standby LSP. Range is 15 to 5000.
multiplier *value*	Specifies the number of consecutive BFD control packets that must be missed from a BFD peer before BFD declares that the peer is unavailable. Range is 2 to 10.
standby *value*	Specifies the multiplier for a standby LSP. Range is from 2 to 10.

Command Default

The default value of minimum interval is 50 seconds.

The default value of multiplier is 3.

Command Modes

MPLS Transport profile configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
MPLS-TE	read, write

Examples

This example shows how to configure BFD parameters on a working LSP:

```
interface tunnel-tp1
  bfd
    min-interval 30 standby 300
    multiplier 3 standby 5
 !
!
```

bandwidth (MPLS)

To configure MPLS-TP bandwidth, use the **bandwidth** command in MPLS-TP configuration mode. To remove the configured bandwidth from the MPLS-TP mode, use the **no** form of this command.

bandwidth *kbps*

Syntax Description

kbps	Number of kilobits per second set aside for the MPLS-TP tunnel. Range is 0 to 4294967295.

Command Default

The default bandwidth is 0.

Command Modes

MPLS Transport profile configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
MPLS-TE	read, write

Examples

This example shows how to configure bandwidth on a MPLS-TP tunnel:

```
mpls traffic-eng
 tp mid midpt1
 tunnel-name tunnel-tp1
  lsp-id 20
  fwd-lsp
  source 10.0.0.1 10 tunel-id 20 bandwidth 500
  in-label 2000 out-label 2000 out-tp-link 1
 exit
  rev-lsp
  source 172.16.0.1 20 tunnel-id 30 bandwidth 500
  in-label 2000 out-label 3000  out-tp-link 1
exit
```

description

To give a descriptive name to a MPLS-TP tunnel, use the **description** command at MPLS-TP interface configuration mode.

description *line*

Syntax Description

line	Describes the MPLS-TP tunnel.

Command Default

None

Command Modes

MPLS Transport Profile Interface configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
MPLS-TE	read, write

Examples

This example shows how to describe the MPLS-TP tunnel:

```
interface tunnel-tp1
 description PE1_PE2
 source 10.0.0.1
```

destination (MPLS)

To specify destination at a destination end point, use the **destination** command in MPLS-TP interface configuration mode.

destination *node id* **global-id** *id* **tunnel-id** *id*

Syntax Description

node id	Specifies node ID at a destination. It is a 32-bit number represented in IPv4 address format. **Note** The destination node ID do not have to be a routable IPv4 address.
global-id *id*	Specifies global ID at a destination end point. It is a 32-bit number.
tunnel-id *id*	Specifies tunnel ID at the destination end point.

Command Default

None

Command Modes

MPLS Transport Profile Interface configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
MPLS-TE	read, write

Examples

This example shows how to configure various options at the destination end point:

```
interface tunnel-tp 2
 tunnel-name tunnel1
 source 10.1.1.1
 destination 2.2.2.2
 bandwidth  500
```

fast-protect

To enable MPLS-TP LSP wrapping, use the **fast-protect** command in MPLS-TP mode. To remove MPLS-TP LSP wrapping, use the **no** form of this command.

fast-protect

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values.

Command Modes

MPLS-TP configuration.

Command History

Release	Modification
Release 4.3.1	This command was introduced.

Usage Guidelines

To verify if MPLS-TP LSP wrapping is enabled, use the **show run mpls traffic-eng tp mid** command and check for **fast-protect**.

Task ID

Task ID	Operations
mpls-te	read, write

Examples

The following example shows how to enable LSP wrapping:

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)#mpls traffic-eng tp mid midpt1
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te-tp-mid)#fast-protect
```

Related Commands

Command	Description
mpls traffic-eng	
show mpls forwarding	

mid

To specify the mid-point identifier for the MPLS-TP tunnel, use the **mid** command in MPLS-TP configuration mode.

mid *name*

Syntax Description

name	Specifies the name of the mid-point identifier.

Command Default

None

Command Modes

MPLS Transport Profile configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
MPLS-TE	read, write

Examples

This example shows how to configure the mid point with various parameters:

```
mid tun_PE1_PE2_1_7_Protect
   lsp-number 1
   source 10.0.0.1 tunnel-id 1
   destination 172.16.0.1 tunnel-id 2
```

protect LSP

To configure the working LSP on a MPLS-TP tunnel, use the **protect-lsp** command in MPLS-TP interface configuration mode.

protect-lsp {**in-label** | **lockout** | **lsp-number** | **out-label**}

Syntax Description

in-label	Specifies the incoming MPLS label.
lockout	Locks out the protecting LSP.
lsp-number	Specifies the LSP identifier.
out-label	Specifies the outgoing MPLS label.

Command Default

None

Command Modes

MPLS Transport Profile Interface configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Task ID

Task ID	Operations
MPLS-TE	read, write

Examples

This example shows how to configure protecting LSP on a MPLS-TP tunnel:

```
interface tunnel-tp1
 description Router_1
 source 10.0.0.1
destination 172.16.0.1
  working-lsp
   in-label 2000
   out-label 2000 out-link 1
  !
  protect-lsp
   in-label 3000
   out-label 3000 out-link 2
  !
 !
!
```

working LSP

To configure the working LSP on a MPLS-TP tunnel, use the **working-lsp** command in MPLS-TP interface configuration mode.

working-lsp {**in-label** | **lockout** | **lsp-number** | **out-label**}

Syntax Description

in-label	Specifies the incoming MPLS label.
lockout	Locks out the working LSP.
lsp-number	Specifies the LSP identifier.
out-label	Specifies the outgoing MPLS label.

Command Default

None

Command Modes

MPLS Transport Profile Interface configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
MPLS-TE	read, write

Examples

This example shows how to configure working LSP on a MPLS-TP tunnel:

```
interface tunnel-tp1
 description Router_1
 source 10.0.0.1
destination 172.16.0.1
  working-lsp
   in-label 2000
   out-label 2000 out-link 1
  !
  !
!
```

forward LSP

To configure LSP in forward direction, use the **forward-lsp** command in MPLS transport profile midpoint configuration mode.

forward-lsp bandwidth *value* **in-label** *value* **out-label** *value* **out-tp-link** *value*

Syntax Description

bandwidth *value*	Defines the bandwidth in kbps. The range is 0 to 4294967295.
in-label *value*	Defines the incoming local MPLS label.
out-label *value*	Defines the outgoing local MPLS label.
out-tp-link *value*	Defines the TP link ID of outgoing link.

Command Default

None

Command Modes

MPLS Transport Profile midpoint configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
MPLS-TP	read, write

Examples

This sample shows an output from the **forward-lsp** command:

```
mpls traffic-eng
 !
 tp
  mid work
   lsp-number 0
   source 10.0.0.1 tunnel-id 1
   destination 4.4.4.4 tunnel-id 1
   forward-lsp
    in-label 2001 out-label 4001 out-link 3
   !
   reverse-lsp
    in-label 2002 out-label 1001 out-link 1
   !
  !
  mid protect
   lsp-number 1
   source 10.0.0.1 tunnel-id 1
```

```
   destination 4.4.4.4 tunnel-id 1
   forward-lsp
    in-label 2003 out-label 4002 out-link 4
   !
   reverse-lsp
    in-label 2004 out-label 1002 out-link 2
   !
  !
 !
!
```

reverse LSP

To configure LSP in reverse direction, use the **reverse-lsp** command in MPLS transport profile midpoint configuration mode.

reverse-lsp bandwidth *value* **in-label** *value* **out-label** *value* **out-tp-link** *value*

Syntax Description

bandwidth *value*	Defines the bandwidth in kbps.
in-label *value*	Defines the incoming local MPLS label.
out-label *value*	Defines the outgoing local MPLS label.
out-tp-link *value*	Defines the TP link ID of outgoing link.

Command Default

None

Command Modes

MPLS Transport Profile midpoint configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
mpls-tp	read, write

Examples

This sample shows an output from the **reverse-lsp** command:

```
mpls traffic-eng
 !
 tp
  mid work
   lsp-number 0
   source 10.0.0.1 tunnel-id 1
   destination 4.4.4.4 tunnel-id 1
   forward-lsp
    in-label 2001 out-label 4001 out-link 3
   !
   reverse-lsp
    in-label 2002 out-label 1001 out-link 1
   !
  !
  mid protect
   lsp-number 1
   source 10.0.0.1 tunnel-id 1
```

```
   destination 4.4.4.4 tunnel-id 1
   forward-lsp
    in-label 2003 out-label 4002 out-link 4
   !
   reverse-lsp
    in-label 2004 out-label 1002 out-link 2
   !
  !
 !
!
```