GMPLS UNI Commands

This module describes the commands used to configure UNI-C configuration for a GMPLS tunnel.

Generalized Multiprotocol Label Switching (GMPLS) User-Network Interface (UNI) establishes a circuit connection by signaling exchanges between two clients (UNI-C) of an optical network.

For detailed information about MPLS concepts, configuration tasks, and examples, see *Cisco IOS XR MPLS Configuration Guide for the Cisco CRS-1 Router*.

attribute-set xro

To specify an attribute set for LSP diversity for GMPLS UNI, use the **attribute-set xro** command in MPLS-TE configuration mode. To remove the settings, use the **no** form of this command.

attribute-set xro *attribute-set*
no attribute-set xro *attribute-set*

Syntax Description

attribute-set	Specifies the attribute set.

Command Default

No default behavior or values

Command Modes

MPLS-TE configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

An XRO attribute-set can be specified as part of the path-option, if required. An empty XRO attribute set results in the GMPLS tunnel being signaled with no exclusions, and therefore no XRO.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to configure attribute set attr01:

```
RP/0/RP0/CPU0:router(config)# mpls traffic-eng
RP/0/RP0/CPU0:router(config-mpls-te)# attribute-set xro attr01
RP/0/RP0/CPU0:router(config-te-attribute-set)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.

controller dwdm (GMPLS)

To specify a controller for GMPLS UNI and enter configuration commands for the controller, use the **controller dwdm** command in the appropriate mode. To return to the default behavior, use the **no** form of this command.

controller dwdm *controller*
no controller dwdm *controller*

Syntax Description

controller	Specifies the controller in rack/slot/instance/port format.

Command Default

No default behavior or values

Command Modes

GMPLS-UNI configuration

LMP GMPLS-UNI configuration

RSVP configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The controller argument is the name of the GMPLS, LMP, or RSVP controller. This command forms a submode for the respective configuration.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to enter the GMPLS UNI sub-mode for a specified controller interface, starting from global configuration mode:

```
RP/0/RP0/CPU0:router(config)# mpls traffic-eng
RP/0/RP0/CPU0:router(config-mpls-te)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-te-gmpls-cntl)#
```

The following example shows how to specify an LMP controller 0/4/0/0:

```
RP/0/RP0/CPU0:router(config)# lmp
RP/0/RP0/CPU0:router(config-lmp)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-ctrl)#
```

The following example shows how to specify RSVP controller 0/4/0/0:

```
RP/0/RP0/CPU0:router(config)# rsvp
RP/0/RP0/CPU0:router(config-rsvp)# controller dwdm 0/1/0/0
RP/0/RP0/CPU0:router(config-rsvp-cntl)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
gmpls optical-uni, on page 9	Enables GMPLS optical UNI and enters configuration mode for UNI.

destination ipv4 unicast

To specify the destination of a GMPLS UNI tunnel, use the **destination ipv4 unicast** command in GMPLS-UNI controller tunnel-properties configuration sub-mode.

destination ipv4 unicast *address*
no destination

Syntax Description

address	Specifies the tunnel destination (IPv4 address).

Command Default

No default behavior or values

Command Modes

GMPLS-UNI controller tunnel-properties configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The destination can be either the optical router ID of the destination node or the optical address of the desired ingress interface to the destination node. Specifying the router-id means that the ingress interface is selected by the network.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify a tunnel destination (10.10.3.4), starting from global configuration mode:

```
RP/0/RP0/CPU0:router(config)# mpls traffic-eng
RP/0/RP0/CPU0:router(config-mpls-te)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#destination 10.10.3.4
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.

Command	Description
gmpls optical-uni, on page 9	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 3	Enters GMPLS UNI sub-mode for a controller.
tunnel-properties, on page 38	Enters tunnel configuration mode for a GMPLS UNI controller.
router-id ipv4 unicast , on page 27	Configures the unicast router ID for GMPLS.
link-id ipv4 unicast (LMP) , on page 13	Specifies the optical address for an LMP link for GMPLS.

exclude (MPLS-TE)

To specify exclusions for an attribute set for LSP diversity for MPLS-TE, use the **exclude** command in MPLS-TE attribute set configuration mode. To remove exclusions, use the **no** form of this command.

exclude {**best-effort**|**strict**} **lsp source** *source-address* **destination** *destination-address* **tunnel-id** *tunnel-id* **extended-tunnel-id** *extended-tunnel-id* [**lsp-id** *lsp-id*]
no exclude {**best-effort**|**strict**} **lsp source** *source-address* **destination** *destination-address* **tunnel-id** *tunnel-id* **extended-tunnel-id** *extended-tunnel-id* [**lsp-id** *lsp-id*]

Syntax Description

best-effort	Specifies that the condition is met if possible.
strict	Specifies that the condition must be met.
source-address	Specifies the source IPv4 address of the LSP from which a diverse path is required.
destination-address	Specifies the destination address of the LSP from which a diverse path is required.
tunnel-id	Specifies the tunnel ID of the LSP from which a diverse path is required.
extended-tunnel-id	Specifies the extended tunnel ID (IPv4 address) of the LSP from which a diverse path is required.
lsp-id	Specifies the numeric LSP ID of the LSP from which a diverse path is required.

Command Default

No default behavior or values

Command Modes

MPLS-TE attribute-set configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

An XRO attribute-set can be specified as part of the path-option, if required. An empty XRO attribute set results in the GMPLS tunnel being signaled with no exclusions, and therefore no XRO.

Multiple LSP exclusions can be configured in the attribute-set. If this is done, multiple exclusions will be added to the path message. If the lsp-id is specified, only the LSP with the specified lsp-id will be excluded. If it is omitted, all LSPs matching the specified session (source, destination, tunnel-id, extended tunnel-id) will be excluded.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to configure exclusions for the attribute set attrset01:

```
RP/0/RP0/CPU0:router(config)# mpls traffic-eng
RP/0/RP0/CPU0:router(config-mpls-te)# attribute-set xro attrset01
RP/0/RP0/CPU0:router(config-te-attribute-set)# exclude best-effort lsp source 10.10.1.2
destination 10.20.4.4 tunnel-id 17 extended-tunnel-id 10.10.1.2 lsp-id 17
RP/0/RP0/CPU0:router(config-te-attribute-set)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
attribute-set	Specifies an attribute set for LSP diversity for MPLS-TE.

gmpls optical-uni

To enable GMPLS UNI feature, use the **gmpls optical-uni** command in the appropriate mode. To return to the default behavior, use the **no** form of this command.

gmpls optical-uni
no gmpls optical-uni

Syntax Description

This command has no arguments or keywords.

Command Default

No default behavior or values

Command Modes

MPLS-TE configuration

LMP configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The LMP submode enables GMPLS-UNI LMP functionality and acts as a container for other GMPLS-UNI LMP configuration commands.

Task ID

Task ID	Operations
mpls-te	read, write
ouni	read, write

Examples

The following example shows how to enable GMPLS-UNI, starting from global configuration mode:

```
RP/0/RP0/CPU0:router(config)# mpls traffic-eng
RP/0/RP0/CPU0:router(config-mpls-te)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-te-gmpls)#
```

The following example shows how to enable GMPLS UNI and enter LMP configuration mode:

```
RP/0/RP0/CPU0:router(config)# lmp
RP/0/RP0/CPU0:router(config-lmp)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-lmp-gmpls)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
lmp , on page 15	Enables GMPLS LMP functionality and enters configuration mode for LMP.

ipcc routed (LMP)

To specify the Link Management Protocol neighbor IPCC configuration for GMPLS UNI, use the **ipcc routed** command in the neighbor sub-mode for LMP GMPLS-UNI controller configuration mode. To return to the default behavior, use the **no** form of this command.

ipcc routed
no ipcc routed

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

LMP GMPLS-UNI controller neighbor configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify the IPCC configuration for the GMPLS-UNI controller 0/0/0/3, neighbor UN02:

```
RP/0/RP0/CPU0:router(config)# lmp
RP/0/RP0/CPU0:router(config-lmp)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni)# neighbor UN02
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-nbr-UN02)# ipcc routed
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-nbr-UN02)#
```

Related Commands

Command	Description
lmp , on page 15	Enables GMPLS LMP functionality and enters configuration mode for LMP.
gmpls optical-uni, on page 9	Enables GMPLS optical UNI and enters configuration mode for UNI.

Command	Description
neighbor (LMP) , on page 18	Specifies an LMP neighbor for GMPLS and enters configuration mode for the neighbor.

link-id ipv4 unicast (LMP)

To specify the optical interface address for an LMP link for a GMPLS UNI controller, use the **link-id ipv4 unicast** command in GMPLS-UNI controller configuration mode. To return to the default behavior, use the **no** form of this command.

link-id ipv4 unicast *address*
no link-id

Syntax Description

address	Specifies the optical unicast IPv4 address.

Command Default

No default behavior or values

Command Modes

LMP GMPLS-UNI controller configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

This command specifies the local optical address for the link. It can be used as a tunnel destination at the tail UNI-C if the ingress link to the tail is to be specified.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify the link ID:

```
RP/0/RP0/CPU0:router(config)# lmp
RP/0/RP0/CPU0:router(config-lmp)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-ctrl)# link-id ipv4 unicast 10.10.4.2
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-ctrl)#
```

Related Commands

Command	Description
lmp , on page 15	Enables GMPLS LMP functionality and enters configuration mode for LMP.
gmpls optical-uni, on page 9	Enables GMPLS optical UNI and enters configuration mode for UNI.

Command	Description
controller (LMP)	Specifies the LMP controller for GMPLS UNI and enters configuration mode for the controller.

lmp

To enable functionality for GMPLS UNI LMP and enter LMP configuration commands, use the **lmp** command in global configuration mode. To return to the default behavior, use the **no** form of this command.

lmp
no lmp

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

Global configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to enable LMP functionality and enter the sub-mode for LMP configuration commands:

```
RP/0/RP0/CPU0:router(config)# lmp
RP/0/RP0/CPU0:router(config-lmp)#
```

logging events lsp-status state (GMPLS)

To specify the tunnel state logging configuration for GMPLS UNI, use the **logging events lsp-status state** command in GMPLS-UNI controller tunnel-properties configuration sub-mode. To return to the default behavior, use the **no** form of this command.

logging events lsp-status state
no logging events lsp-status state

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

GMPLS-UNI controller tunnel-properties configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify the tunnel state logging configuration for controller 0/4/0/0:

```
RP/0/RP0/CPU0:router(config)# mpls traffic-eng
RP/0/RP0/CPU0:router(config-mpls-te)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-te-gmpls-ctrl)# tunnel-properties
RP/0/RP0/CPU0:router(config-te-gmpls-tun)# logging events lsp-status state
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
gmpls optical-uni, on page 9	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 3	Enters GMPLS UNI sub-mode for a controller.

Command	Description
tunnel-properties, on page 38	Enters tunnel configuration mode for a GMPLS UNI controller.

neighbor (LMP)

To specify an LMP neighbor for GMPLS and enter commands to configure the neighbor, use the **neighbor** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

neighbor *name*
no neighbor

Syntax Description

name	Specifies the name of the LMP neighbor.

Command Default

No default behavior or values

Command Modes

LMP GMPLS-UNI configuration

LMP Controller configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Under LMP controller configuration submode, this command specifies the neighbor reached via the controller. And, under the LMP GMPLS UNI submode, it creates a submode in which other properties of the neighbor can be specified. The name argument is the name of the configured neighbor.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify the neighbor UN01 for the GMPLS-UNI controller 0/0/0/3:

```
RP/0/RP0/CPU0:router(config)# lmp
RP/0/RP0/CPU0:router(config-lmp)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni)# neighbor UN01
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-nbr-UN01)# exit
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni)# controller dwdm 0/1/0/0
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-cntl)# neighbor UN01
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-cntl)#
```

Related Commands

Command	Description
lmp , on page 15	Enables GMPLS LMP functionality and enters configuration mode for LMP.
gmpls optical-uni, on page 9	Enables GMPLS UNI functionality and enters configuration mode for UNI.

neighbor interface-id unnumbered

To specify the neighbor's optical interface ID of an LMP link for a GMPLS UNI controller, use the **neighbor interface-id unnumbered** command in GMPLS-UNI controller configuration mode. To return to the default behavior, use the **no** form of this command.

neighbor interface-id unnumbered *interface-id*
no neighbor interface-id unnumbered *interface-id*

Syntax Description

interface-id	Specifies the optical interface ID of the neighbor.

Command Default

No default behavior or values

Command Modes

LMP GMPLS-UNI controller configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

For the interface ID on the command line, you can use the SNMP ifindex of the interface on the neighbor node.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify the optical interface ID (17) of an LMP neighbor:

```
RP/0/RP0/CPU0:router(config)# lmp
RP/0/RP0/CPU0:router(config-lmp)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-ctrl)# neighbor interface-id unnumbered 17
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-ctrl)#
```

Related Commands

Command	Description
lmp , on page 15	Enables GMPLS LMP functionality and enters configuration mode for LMP.
gmpls optical-uni, on page 9	Enables GMPLS UNI functionality and enters configuration mode for UNI.

Command	Description
controller dwdm (GMPLS), on page 3	Enters GMPLS UNI sub-mode for a controller.

neighbor link-id ipv4 unicast

To specify the neighbor's optical address of an LMP link for a GMPLS UNI controller, use the **neighbor link-id ipv4 unicast** command in GMPLS-UNI controller configuration mode. To return to the default behavior, use the **no** form of this command.

neighbor link-id ipv4 unicast *address*
no neighbor link-id ipv4 unicast *address*

Syntax Description

address	Specifies the IPv4 address of the neighbor.

Command Default

No default behavior or values

Command Modes

LMP GMPLS-UNI controller configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify the optical IPv4 address (10.10.4.5) of an LMP neighbor for controller 0/4/0/0:

```
RP/0/RP0/CPU0:router(config)# lmp
RP/0/RP0/CPU0:router(config-lmp)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-ctrl)# neighbor link-id ipv4 unicast 10.10.4.5
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-ctrl)#
```

Related Commands

Command	Description
lmp , on page 15	Enables GMPLS LMP functionality and enters configuration mode for LMP.
gmpls optical-uni, on page 9	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 3	Enters GMPLS UNI sub-mode for a controller.

path-option (GMPLS)

To specify a path option for a GMPLS UNI tunnel, use the **path-option** command in GMPLS-UNI controller tunnel-properties configuration sub-mode. To remove a path option, use the **no** form of this command.

path-option 10 {**no-ero**|**explicit** {**name** *path-name*|**index** *index*}} [**xro-attribute-set** *name*] **[lockdown] [verbatim]**
no path-option 10

Syntax Description

10	Specifies the path option index. 10 is the only supported index in this release.
explicit	Specifies that LSP paths are IP explicit paths.
name *path-name*	Specifies the path name of the IP explicit path.
no-ero	Specifies that no ERO object is included in signalling.
xro-attribute-set	(Optional) Specifies the xro attribute set for the path option.
name	Specifies the name of the xro-attribute-set.
lockdown	(Optional) Indicates that the tunnel does not reoptimize without user intervention. This is the only supported behavior in this release.
verbatim	(Optional) Bypasses the topology check for explicit paths.

Command Default

No default behavior or values

Command Modes

GMPLS UNI controller tunnel-properties configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify the tunnel path option for controller 0/4/0/0, attribute set A01, starting from global configuration mode:

```
RP/0/RP0/CPU0:router(config)# mpls traffic-eng
RP/0/RP0/CPU0:router(config-mpls-te)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-te-gmpls)# controller dwdm 0/4/0/0
```

```
RP/0/RP0/CPU0:router(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#path-option 10 no-ero xro-attribute-set A01
lockdown
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
gmpls optical-uni, on page 9	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 3	Enters GMPLS UNI sub-mode for a controller.
tunnel-properties, on page 38	Enters tunnel configuration mode for a GMPLS UNI controller.
attribute-set xro, on page 2	Enters tunnel configuration mode for a GMPLS UNI controller.

record-route (GMPLS)

To enable record-route functionality for the GMPLS UNI tunnel, use the **record-route** command in GMPLS-UNI controller tunnel-properties configuration sub-mode. To return to the default behavior, use the **no** form of this command

record-route
no record-route

Syntax Description

This command has no arguments or keywords.

Command Default

No default behavior or values

Command Modes

GMPLS-UNI controller tunnel-properties configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how enable record-route functionality, starting from global configuration mode:

```
RP/0/RP0/CPU0:router(config)# mpls traffic-eng
RP/0/RP0/CPU0:router(config-mpls-te)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#record-route
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
gmpls optical-uni, on page 9	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 3	Enters GMPLS UNI sub-mode for a controller.

Command	Description
tunnel-properties, on page 38	Enters tunnel configuration mode for a GMPLS UNI controller.

router-id ipv4 unicast

To configure the LMP unicast or neighbor router ID for GMPLS, use the **router-id** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

router-id ipv4 unicast *address*
no router-id

Syntax Description

address	Specifies the GMPLS-UNI optical router-id (IPv4 address).

Command Default

No default behavior or values

Command Modes

LMP GMPLS UNI configuration

LMP GMPLS UNI neighbor configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify a router ID (address 10.10.4.4) for GMPLS-UNI:

```
RP/0/RP0/CPU0:router(config)# lmp
RP/0/RP0/CPU0:router(config-lmp)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni)# router-id ipv4 unicast 10.10.4.4
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni)
```

The following example shows how to specify the neighbor router ID 10.10.5.5 for GMPLS UNI:

```
RP/0/RP0/CPU0:router(config)# lmp
RP/0/RP0/CPU0:router(config-lmp)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni)# neighbor UN01
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-nbr-UN01)# router-id ipv4 unicast 10.10.5.5
RP/0/RP0/CPU0:router(config-lmp-gmpls-uni-nbr-UN01)#
```

Related Commands

Command	Description
lmp , on page 15	Enables GMPLS LMP functionality and enters configuration mode for LMP.
gmpls optical-uni, on page 9	Enables GMPLS optical UNI and enters configuration mode for UNI.
destination ipv4 unicast, on page 5	Specifies the destination of a GMPLS optical UNI tunnel.
neighbor (LMP) , on page 18	Specifies an LMP neighbor for GMPLS and enters configuration mode for the neighbor.

show mpls traffic-eng link-management optical-uni

To display a summary of the TE link management GMPLS-UNI states, use the **show mpls traffic-eng link-management optical-uni** command in EXEC mode.

show mpls traffic-eng link-management optical-uni [**controller** *controller*][**tabular]**

Syntax Description

controller	Displays information for the specified controller.
tabular	Displays information in tabular format.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

To use this command, first enable the MPLS-TE application.

Task ID

Task ID	Operation
ouni	read

Example

The following command displays the TE GMPLS-UNI states for the specified controller .

```
RP/0/RP0/CPU0:router# show mpls traffic-eng link-management optical-uni controller dwdm0/1/0/0

Thu Oct  4 14:52:46.147 ottawa

Optical interface: dwdm0/1/0/0
  Overview:
    IM state: Up
    OLM/LMP state: Up
    Optical tunnel state: up
  Connection:
    Tunnel role: Head
    Tunnel-id: 300
    Local optical router-id:  10.58.64.239
    Remote optical router-id: 10.58.40.40
    Upstream label:
```

```
      Optical label:
      Grid                : DWDM
      Channel spacing     : 50 GHz
      Identifier          : 0
      Channel Number      : 42
    Downstream label:
      Optical label:
      Grid                : DWDM
      Channel spacing     : 50 GHz
      Identifier          : 0
      Channel Number      : 42
  Admission Control:
    Upstream: Admitted (LSP ID: 77)
    Downstream: Admitted (LSP ID: 77)
  OLM/LMP adjacency information:
    Adjacency status: Up
    Local:
      node ID: 10.58.64.239
      link interface ID: 39
      link ID: 10.20.2.1
    Neighbor:
      node ID: 10.58.40.40 (crs1-239-nr)
      link interface ID: 2
      link ID: 10.20.2.2
      IPCC: Routed to 10.58.40.40
  Optical capabilities:
    Controller type: DWDM
    Channel spacing: 50 GHz
    Default channel: 58
    82 supported channels:
      -23, -22, -21, -20, -19, -18, -17, -16
      -15, -14, -13, -12, -11, -10, -9, -8
      -7, -6, -5, -4, -3, -2, -1, 0
      1, 2, 3, 4, 5, 6, 7, 8
      9, 10, 11, 12, 13, 14, 15, 16
      17, 18, 19, 20, 21, 22, 23, 24
      25, 26, 27, 28, 29, 30, 31, 32
      33, 34, 35, 36, 37, 38, 39, 40
      41, 42, 43, 44, 45, 46, 47, 48
      49, 50, 51, 52, 53, 54, 55, 56
      57, 58
RP/0/RP0/CPU0:crs239#
```

Example

The following command provides an overview of the TE GMPLS-UNI states in tabular format.

```
RP/0/RP0/CPU0:router# show mpls traffic-eng link-management optical-uni tabular
  System Information:
  Optical Links Count: 2 (Maximum Links Supported 100)

                  State          LMP          GMPLS tunnel
Interface      Admin  Oper    adjacency    role  tun-id  state
-------------------------------------------------------------
     PO0/1/0/0    up    up        up       Head       1     up
     PO0/1/0/1    up    up        up       Head       2     up
```

The following command displays the SRLGs configured locally on the DWDM controller and the collected SRLG and latency data for the tunnel.

```
RP/0/RP0/CPU0:router# show mpls traffic-eng link-management optical-uni
  System Information:
  Optical Links Count: 4 (Maximum Links Supported 100)

Optical interface: dwdm0/1/0/0
  Overview:
    IM state: Up
    OLM/LMP state: Up
    Optical tunnel state: up
  Connection:
    Tunnel role: Head
    Tunnel-id: 1, LSP-id: 2, Extended tunnel-id: 88.0.0.8
    Tunnel source: 88.0.0.8, destination: 10.0.1.2
    Optical router-ids: Local: 88.0.0.8, Remote: 99.0.0.9
    Label source: UNI-N
    Upstream label:
Optical label:
      Grid                : DWDM
      Channel spacing     : 50 GHz
      Identifier          : 0
      Channel Number      : 59
    Downstream label:
      Optical label:
      Grid                : DWDM
      Channel spacing     : 50 GHz
      Identifier          : 0
      Channel Number      : 59
    SRLG discovery: Enabled
    SRLG announcement: announced to TenGigE 0/1/0/0
  Admission Control:
    Upstream: Admitted (LSP ID: 2)
    Downstream: Admitted (LSP ID: 2)
  OLM/LMP adjacency information:
    Adjacency status: Up
    Local:
      node ID: 88.0.0.8
      link interface ID: 15
      link ID: 10.0.0.1
    Neighbor:
      node ID: 99.0.0.9 (gmpls2_uni)
      link interface ID: 3
      link ID: 10.0.0.2
      IPCC: Routed to 99.0.0.9
  Optical capabilities:
    Controller type: DWDM
    Channel spacing: 50 GHz
    Default channel: 59
    44 supported channels:
      -27, -25, -23, -21, -19, -17, -15, -13
      -11, -9, -7, -5, -3, -1, 1, 3
      5, 7, 9, 11, 13, 15, 17, 19
      21, 23, 25, 27, 29, 31, 33, 35
      37, 39, 41, 43, 45, 47, 49, 51
      53, 55, 57, 59
    Controller SRLGs:
      1, 2, 3, 4
```

signalled-name (GMPLS)

To specify the signalled name to apply to the GMPLS UNI tunnel, use the **signalled-name** command in GMPLS-UNI controller tunnel-properties configuration sub-mode. To return to the default behavior, use the **no** form of this command.

signalled-name *name*
no signalled-name

Syntax Description

name	Specifies the signalled name to apply to the tunnel.

Command Default

No default behavior or values

Command Modes

GMPLS-UNI controller tunnel-properties configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify a signalled name for the tunnel (tunname), starting from global configuration mode:

```
RP/0/RP0/CPU0:router(config)# mpls traffic-eng
RP/0/RP0/CPU0:router(config-mpls-te)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#signalled-name tunname
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
gmpls optical-uni, on page 9	Enables GMPLS UNI functionality and enters configuration mode for UNI.

Command	Description
controller dwdm (GMPLS), on page 3	Enters GMPLS UNI sub-mode for a controller.
tunnel-properties, on page 38	Enters tunnel configuration mode for a GMPLS UNI controller.

signalling refresh out-of-band interval

To specify the out-of-band refresh interval for RSVP, use the **signalling refresh out-of-band interval** command in RSVP controller configuration mode. To return to the default behavior, use the **no** form of this command.

signalling refresh out-of-band interval *interval*
no signalling refresh out-of-band interval

Syntax Description

interval	Specifies the refresh interval (180-86400 seconds).

Command Default

45 seconds

Command Modes

RSVP controller configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

This command applies only to the RSVP sessions associated with GMPLS-UNI tunnels.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify 200 seconds for the out-of-band interface refresh interval:

```
RP/0/RP0/CPU0:router(config)# rsvp
RP/0/RP0/CPU0:router(config-rsvp)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-rsvp-ctrl)# signalling refresh out-of-band interval 200
RP/0/RP0/CPU0:router(config-rsvp-ctrl)#
```

Related Commands

Command	Description
rsvp	Enables RSVP functionality and enters configuration mode for RSVP.
controller (LMP)	Specifies the RSVP controller for GMPLS UNI and enters configuration mode for the controller.
signalling refresh out-of-band missed , on page 35	Specifies the number of missed refresh messages allowed before states are deleted for optical tunnels.

signalling refresh out-of-band missed

To specify the number of missed refresh messages allowed before states are deleted for optical tunnels, use the **signalling refresh out-of-band missed** command in RSVP controller configuration mode. To return to the default behavior, use the **no** form of this command.

signalling refresh out-of-band missed *mis-count*
no signalling refresh out-of-band missed

Syntax Description

mis-count	Number of missed refresh messages allowed before states are deleted for optical tunnels (1-48).

Command Default

The default value is 12.

Command Modes

RSVP controller configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

This command applies only to the RSVP sessions associated with GMPLS-UNI tunnels.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify a maximum of 10 messages for the number of allowed missed refresh messages:

```
RP/0/RP0/CPU0:router(config)# rsvp
RP/0/RP0/CPU0:router(config-rsvp)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-rsvp-ctrl)# signalling refresh out-of-band missed 10
RP/0/RP0/CPU0:router(config-rsvp-ctrl)#
```

Related Commands

Command	Description
rsvp	Enables RSVP functionality and enters configuration mode for RSVP.
controller (LMP)	Specifies the RSVP controller for GMPLS UNI and enters configuration mode for the controller.
signalling refresh out-of-band interval , on page 34	Specifies the out-of-band refresh interval for RSVP.

tunnel-id (GMPLS)

To specify the ID of the GMPLS UNI tunnel, use the **tunnel-id** command in GMPLS-UNI controller tunnel-properties configuration sub-mode. To return to the default behavior, use the **no** form of this command.

tunnel-id *number*
no tunnel-id

Syntax Description

number	Specifies the tunnel ID.

Command Default

No default behavior or values

Command Modes

GMPLS-UNI controller tunnel-properties configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to specify a tunnel ID (5), starting from global configuration mode:

```
RP/0/RP0/CPU0:router(config)# mpls traffic-eng
RP/0/RP0/CPU0:router(config-mpls-te)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#tunnel-id 5
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
gmpls optical-uni, on page 9	Enables GMPLS UNI functionality and enters configuration mode for UNI.

Command	Description
controller dwdm (GMPLS), on page 3	Enters GMPLS UNI sub-mode for a controller.
tunnel-properties, on page 38	Enters tunnel configuration mode for a GMPLS UNI controller.

tunnel-properties

To configure tunnel-specific information for a GMPLS UNI controller, use the **tunnel-properties** command in GMPLS-UNI configuration sub-mode. To return to the default behavior, use the **no** form of this command.

tunnel-properties
no tunnel-properties

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

GMPLS-UNI configuration

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

This command designates the controller as a tunnel-head, rather than a tunnel tail. After the tunnel properties are configured, the incoming path messages are rejected and any existing tail-end tunnel is torn down.

Task ID

Task ID	Operations
ouni	read, write

Examples

The following example shows how to enter the sub-mode to configure tunnel-specific information for a GMPLS UNI controller:

```
RP/0/RP0/CPU0:router(config)# mpls traffic-eng
RP/0/RP0/CPU0:router(config-mpls-te)# gmpls optical-uni
RP/0/RP0/CPU0:router(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0/CPU0:router(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0/CPU0:router(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
gmpls optical-uni, on page 9	Enables GMPLS UNI functionality and enters configuration mode for UNI.

Command	Description
controller dwdm (GMPLS), on page 3	Enters GMPLS UNI sub-mode for a controller.