

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 ASR 9000 Series Aggregation Services Router MPLS Configuration Guide* .

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announce srlgs

To announce all SRLGs discovered through GMPLS signaling to RSI (Router Space Infrastructure), use the **announce srlgs** command in MPLS-TE GMPLS UNI controller mode. To disable announcing SRLGs to RSI, use the **no** form of this command.

announce srlgs

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

MPLS-TE GMPLS UNI controller configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Task ID

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

The following example shows how to configure SRLG announcement:

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-uni)# controller dwdm 0/1/0/1
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)# announce srlgs
```

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*

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

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/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# attribute-set xro attr01
RP/0/RP0RSP0/CPU0:router:hostname(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*

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

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/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)#
```

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

```
RP/0/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-ctrl)#
```

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

```
RP/0/RP0RSP0/CPU0:router:hostname(config)# rsvp
```

```
RP/0/RP0RSP0/CPU0:router:hostname(config-rsvp)# controller dwdm 0/1/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-rsvp-cntl)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
#unique_377	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*

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

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/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#destination 10.10.3.4
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
#unique_377	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 5	Enters GMPLS UNI sub-mode for a controller.
tunnel-properties, on page 44	Enters tunnel configuration mode for a GMPLS UNI controller.

Command	Description
router-id ipv4 unicast , on page 32	Configures the unicast router ID for GMPLS.
link-id ipv4 unicast (LMP) , on page 19	Specifies the optical address for an LMP link for GMPLS.

dynamic

To enable the Dynamic LMP function on a UNI-C router, use the **dynamic** command in the LMP GMPLS-UNI neighbor configuration sub mode. To return to the default behavior, use the **no** form of this command.

dynamic

Syntax Description

This command has no arguments or keywords.

Command Default

The Dynamic LMP function is disabled.

Command Modes

LMP GMPLS-UNI neighbor configuration.

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

The Dynamic LMP function validates LMP configuration consistency at the head-end and tail-end UNIs. Examples:

1. One end of a TE link is configured as an unnumbered interface, and the other end is configured with an IP address.
2. When configuring an unnumbered neighbor interface, entering the wrong neighbor interface ID.

Examples

The following example shows how to enable the Dynamic LMP function on a UNI-C router:

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# neighbor N1
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-nbr-n1)# dynamic
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-nbr-n1)# commit
Tue Jul 9 09:22:31.558 UTC
```

Related Commands

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

encoding-type (GMPLS-UNI)

To assign the LSP encoding type for the GMPLS-UNI tunnel, use the **encoding-type** command in the GMPLS-UNI controller tunnel-properties configuration sub-mode. To return to the default behavior, use the **no** form of this command.

encoding-type *type*

Syntax Description

encoding-type *type*	Specifies the GMPLS traffic encoding type.

Command Default

Lambda encoding type is enabled.

Command Modes

GMPLS-UNI controller tunnel-properties configuration.

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

The **encoding-type** command is available in the GMPLS UNI tunnel and LMP neighbor configuration modes. Enable the same encoding type under both the modes.

Examples

The following example shows how to assign the LSP encoding type for the GMPLS UNI tunnel:

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-uni)# controller dwdm 1/0/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)# tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)# encoding-type lambda
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)# commit
Tue Jul 9 09:22:31.558 UTC
```

Related Commands

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

encoding-type (LMP)

To assign the LSP encoding type for LMP neighbor configuration, use the **encoding-type** command in the LMP controller neighbor configuration mode. To return to the default behavior, use the **no** form of this command.

encoding-type *type*

Syntax Description

encoding-type *type*	Specifies the LSP encoding type for LMP neighbor configuration.

Command Default

Lambda encoding type is enabled.

Command Modes

LMP controller neighbor configuration

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

The **encoding-type** command is available in the GMPLS UNI tunnel and LMP neighbor configuration modes. Enable the same encoding type under both the modes.

Examples

The following example shows how to assign the LSP encoding type for LMP neighbor configuration:

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# controller dwdm 1/0/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# link-id ipv4 unicast 10.0.0.2

RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# neighbor N1
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# link-id ipv4 unicast 10.0.0.4
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# switching-type lsc
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# encoding-type lambda
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# commit
Tue Jul 9 09:22:31.558 UTC
```

Related Commands

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

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*]

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

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/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# attribute-set xro attrset01
RP/0/RP0RSP0/CPU0:router:hostname(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/RP0RSP0/CPU0:router:hostname(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

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 7.3.1	This command was introduced.

Usage Guidelines

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

Examples

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

```
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls)#
```

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

```
RP/0/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls)#
```

Related Commands

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

g-pid

To assign a Generalized PID (G-PID) on the UNI-C router, use the **g-pid** command in the GMPLS-UNI controller tunnel-properties configuration sub-mode. To return to the default behavior, use the **no** form of this command.

g-pid *value*

Syntax Description

g-pid *value*	Specifies the G-PID value.

Command Default

A G-PID value of 37, assigned for Lambda switching over optic fiber technology.

Command Modes

GMPLS-UNI controller tunnel-properties configuration.

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

The G-PID value identifies the payload carried by the LSP.

Examples

The following example shows how to configure the G-PID value:

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-uni)# controller dwdm 1/0/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)# tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)# g-pid 37
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)# commit
Tue Jul 9 09:22:31.558 UTC
```

Related Commands

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

hello (GMPLS-UNI)

To configure LMP hello message and hello expiry message intervals, use the **hello** command in the LMP GMPLS-UNI neighbor configuration sub mode. To return to the default behavior, use the **no** form of this command.

hello *interval expiry-interval*

Syntax Description

interval	Specifies the LMP hello message interval.
expiry-interval	Specifies the LMP hello expiry message interval. **Note** Ensure that the LMP hello expiry message interval is at least thrice the interval of the LMP hello message.

Command Default

Interval of LMP hello messages between two LMP enabled routers is 2000 ms. An LMP hello expiry message is sent after a 6000 ms duration.

Command Modes

LMP GMPLS-UNI neighbor configuration.

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

An LMP hello message is sent every 2000 ms from an LMP enabled router to LMP peers. If an LMP enabled router does not receive an LMP hello message from a peer device for a 6000 ms duration, an LMP hello expiry message is sent to other LMP routers. If the LMP fast keep-alive mechanism is not used, both message intervals should be set to zero.

Examples

The following example shows how set the hello message and hello expiry message intervals:

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# neighbor N1
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-nbr-n1)# dynamic
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-nbr-n1)# hello 3000 10000
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-nbr-n1)# commit
Tue Jul 9 09:22:31.558 UTC
```

Related Commands

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

Command	Description
gmpls optical-uni	Enables GMPLS optical UNI and enters configuration mode for UNI.

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

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.

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/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# neighbor UN02
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-nbr-UN02)# ipcc routed
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-nbr-UN02)#
```

Related Commands

Command	Description
lmp , on page 20	Enables GMPLS LMP functionality and enters configuration mode for LMP.
#unique_377	Enables GMPLS optical UNI and enters configuration mode for UNI.
neighbor (LMP) , on page 24	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*

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

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/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-ctrl)# link-id ipv4 unicast 10.10.4.2
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-ctrl)#
```

Related Commands

Command	Description
lmp , on page 20	Enables GMPLS LMP functionality and enters configuration mode for LMP.
#unique_377	Enables GMPLS optical UNI and enters configuration mode for UNI.
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 modeXR Config mode. To return to the default behavior, use the **no** form of this command.

lmp

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

Global Configuration modeXR Config mode

Command History

Release	Modification
Release 4.3.0	This command was introduced.

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/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(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

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.

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/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-ctrl)# tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)# logging events lsp-status state
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
#unique_377	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 5	Enters GMPLS UNI sub-mode for a controller.
tunnel-properties, on page 44	Enters tunnel configuration mode for a GMPLS UNI controller.

mpls traffic-eng optical-uni reoptimize tunnel-id

To manually trigger the reoptimization of a GMPLS UNI tunnel, use the **mpls traffic-eng optical-uni reoptimize tunnel-id** command in EXEC modeXR EXEC mode.

mpls traffic-eng optical-uni reoptimize tunnel-id *number*

Syntax Description

number	MPLS-TE tunnel identification expressed as a number. The range is from 0 to 65535.

Command Default

None

Command Modes

EXEC modeXR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

It is not possible to trigger reoptimization for multiple GMPLS UNI tunnels or at the tailend of a tunnel.

Task ID

Task ID	Operation
mpls-te	execute

Example

The following example shows how to manually reoptimize a GMPLS UNI tunnel with tunnel ID 100:

```
RP/0/RP0RSP0/CPU0:router:hostname# mpls traffic-eng optical-uni reoptimize tunnel-id 100
```

mtu (GMPLS-UNI)

To configure the maximum traffic limit (MTU) value on a GMPLS UNI controller interface, use the **mtu** command in GMPLS-UNI configuration sub-mode. To return to the default behavior, use the **no** form of this command.

mtu *value*

Syntax Description

mtu *value*	Specifies the MTU value for the controller interface.

Command Default

An MTU of 9212 bytes is configured on a GMPLS UNI controller interface.

Command Modes

GMPLS-UNI configuration

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Examples

The following example shows how to configure the MTU value on a GMPLS UNI controller interface:

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-uni)# controller dwdm 1/0/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)# mtu 9000
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)# commit
Tue Jul 9 09:22:31.558 UTC
```

Related Commands

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

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*

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

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/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# neighbor UN01
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-nbr-UN01)# exit
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# controller dwdm 0/1/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# neighbor UN01
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)#
```

Related Commands

Command	Description
lmp , on page 20	Enables GMPLS LMP functionality and enters configuration mode for LMP.
#unique_377	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*

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

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/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-ctrl)# neighbor interface-id unnumbered
 17
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-ctrl)#
```

Related Commands

Command	Description
lmp , on page 20	Enables GMPLS LMP functionality and enters configuration mode for LMP.
#unique_377	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 5	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*

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.

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/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-ctrl)# neighbor link-id ipv4 unicast
 10.10.4.5
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-ctrl)#
```

Related Commands

Command	Description
lmp , on page 20	Enables GMPLS LMP functionality and enters configuration mode for LMP.
#unique_377	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 5	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*][**signaled-label dwdm wavelength** *channel*][**lockdown**][**verbatim**]

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.
signaled-label	(Optional) Sets a specific label for the path option.
dwdm	(Optional) Specifies that it is a DWDM label.
wavelength	(Optional) Specifies the DWDM wavelength to use.
channel	Specifies the channel number to use. The range is form 1 to 89.
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.
Release 6.0	The following items were added: • The **signaled-label** keyword was added. • The **dwdm** keyword was added. • The **wavelength** keyword and the *channel* argument were added.

Usage Guidelines

The path option index is no longer fixed at 10. It is now set by the user and distinguishes path options in the same manner as for packet tunnels. The path option index may be any value between 1 and 1000 (the same range as for packet tunnels).

The **verbatim** keyword is mandatory when an explicit path is referenced by a GMPLS UNI path option, but must not be present if the **no-ero** option is in use.

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/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#path-option 10 no-ero xro-attribute-set
 A01 lockdown
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#
```

The following example shows how to configure an ERO (Explicit Route Object) for a GMPLS tunnel:

```
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls)# controller dwdm 0/2/0/2
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#path-option 10 explicit name
explicit_path_a lockdown verbatim
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#
```

The following example shows how to configure wavelength for a path option:

```
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls)# controller dwdm 0/3/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#tunnel-id 1001
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#destination ipv4 unicast 2.2.2.2
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#path-option 10 explicit name
explicit_all_loose_multi_hop signaled-label dwdm wavelength 10 lockdown verbatim
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#
```

Related Commands

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

Command	Description
#unique_377	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 5	Enters GMPLS UNI sub-mode for a controller.
tunnel-properties, on page 44	Enters tunnel configuration mode for a GMPLS UNI controller.
attribute-set xro, on page 4	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

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.

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/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#record-route
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
#unique_377	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 5	Enters GMPLS UNI sub-mode for a controller.
tunnel-properties, on page 44	Enters tunnel configuration mode for a GMPLS UNI controller.

record srlg

To record the SRLGs used by a GMPLS UNI connection during signaling, use the **record srlg** command in MPLS-TE GMPLS UNI controller tunnel properties mode. To disable SRLG recording, use the **no** form of this command.

record srlg

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

MPLS-TE GMPLS UNI controller tunnel properties configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

SRLG recording allows a maximum of 62 SRLGs in RSVP, which is different from the maximum count of 64 in RSI.

Task ID

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

The following example shows how to configure SRLG recording:

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-uni)# controller dwdm 0/1/0/1
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-uni)# tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)# record srlg
```

router-id ipv4 unicast

To configure the LMP unicast or neighbor router ID for GMPLS, use the **router-id ipv4 unicast** command in the appropriate configuration mode. To return to the default behavior, use the **no** form of this command.

router-id ipv4 unicast *address*

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.

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/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# router-id ipv4 unicast 10.10.4.4
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)
```

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

```
RP/0/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# neighbor UN01
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-nbr-UN01)# router-id ipv4 unicast
10.10.5.5
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-nbr-UN01)#
```

Related Commands

Command	Description
lmp , on page 20	Enables GMPLS LMP functionality and enters configuration mode for LMP.
#unique_377	Enables GMPLS optical UNI and enters configuration mode for UNI.

Command	Description
destination ipv4 unicast, on page 7	Specifies the destination of a GMPLS optical UNI tunnel.
neighbor (LMP) , on page 24	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 modeXR 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 modeXR EXEC mode

Command History

Release	Modification
Release 4.3.0	This command was introduced.
Release 6.0	The output was enhanced to include the SRLGs configured locally on the DWDM controller and the collected SRLG and latency data for the tunnel.

Usage Guidelines

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/RP0RSP0/CPU0:router:hostname# 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/RP0RSP0/CPU0:router:hostname# 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/RP0RSP0/CPU0:router:hostname# 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*

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.

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/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#signalled-name tunname
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
#unique_377	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 5	Enters GMPLS UNI sub-mode for a controller.
tunnel-properties, on page 44	Enters tunnel configuration mode for a GMPLS UNI controller.

signalling out-of-band vrf

To configure a single non-default VRF for the GMPLS RSVP signaling, use the **signalling out-of-band vrf** command in RSVP configuration mode. To remove the configuration, use the **no** form of this command.

signalling out-of-band vrf *vrf-name*

Syntax Description

vrf-name	The name of vrf that is used to signal GMPLS-UNI.

Command Default

None

Command Modes

RSVP configuration

Command History

Release	Modification
Release 5.1.3	This command was introduced.

Usage Guidelines

If this command configuration is absent, signaling for GMPLS tunnels occurs in the default VRF itself.

RSVP authentication is not supported when signaling in non-default VRF. Also, RSVP Graceful Restart is not supported for non-default VRF neighbors.

Task ID

Task ID	Operation
ouni	read, write

This example shows how to specify a non-default VRF for the GMPLS RSVP signaling:

```
RP/0/RP0RSP0/CPU0:router:hostname(config)# rsvp
RP/0/RP0RSP0/CPU0:router:hostname(config-rsvp)# signalling out-of-band vrf vrf1
```

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*

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

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/RP0RSP0/CPU0:router:hostname(config)# rsvp
RP/0/RP0RSP0/CPU0:router:hostname(config-rsvp)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-rsvp-ctrl)# signalling refresh out-of-band interval
 200
RP/0/RP0RSP0/CPU0:router:hostname(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 40	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 *count*

Syntax Description

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

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/RP0RSP0/CPU0:router:hostname(config)# rsvp
RP/0/RP0RSP0/CPU0:router:hostname(config-rsvp)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-rsvp-ctrl)# signalling refresh out-of-band missed
 10
RP/0/RP0RSP0/CPU0:router:hostname(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 39	Specifies the out-of-band refresh interval for RSVP.

switching-type (GMPLS-UNI)

To assign the GMPLS traffic switching type on the UNI-C router, use the **switching-type** command in the MPLS-TE GMPLS UNI controller configuration mode. To return to the default behavior, use the **no** form of this command.

switching-type *type*

Syntax Description

switching-type *type*	Specifies the GMPLS traffic switching type.

Command Default

Lambda-Switch Capable (LSC) switching type.

Command Modes

MPLS-TE GMPLS UNI controller configuration.

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

The **switching-type** command is available in the GMPLS UNI tunnel and LMP neighbor configuration modes. Enable the same switching type under both the modes.

Examples

The following example shows how to assign the GMPLS traffic switching type for the GMPLS UNI tunnel:

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-uni)# controller dwdm 1/0/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)# tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)# encoding-type lambda
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)# exit
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)# switching-type lsc
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)# commit
Tue Jul 9 09:22:31.558 UTC
```

Related Commands

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

switching-type (LMP)

To assign the GMPLS traffic switching type for LMP neighbor configuration, use the **switching-type** command in the LMP controller neighbor configuration mode. To return to the default behavior, use the **no** form of this command.

switching-type *type*

Syntax Description

switching-type *type*	Specifies the LSP switching type for the LMP neighbor configuration.

Command Default

Lambda-Switch Capable (LSC) type.

Command Modes

LMP controller neighbor configuration

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

The **switching-type** command is available in the GMPLS UNI tunnel and LMP neighbor configuration modes. Enable the same switching type under both the modes.

Examples

The following example shows how to assign the GMPLS traffic switching type for LMP neighbor configuration:

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)# lmp
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni)# controller dwdm 1/0/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# link-id ipv4 unicast 10.0.0.2

RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# neighbor N1
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# link-id ipv4 unicast 10.0.0.4
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# switching-type lsc
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# encoding-type lambda
RP/0/RP0RSP0/CPU0:router:hostname(config-lmp-gmpls-uni-cntl)# commit
Tue Jul 9 09:22:31.558 UTC
```

Related Commands

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

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*

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.

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/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#tunnel-id 5
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
#unique_377	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 5	Enters GMPLS UNI sub-mode for a controller.
tunnel-properties, on page 44	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

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

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/RP0RSP0/CPU0:router:hostname(config)# mpls traffic-eng
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-te)# gmpls optical-uni
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls)# controller dwdm 0/4/0/0
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-cntl)#tunnel-properties
RP/0/RP0RSP0/CPU0:router:hostname(config-te-gmpls-tun)#
```

Related Commands

Command	Description
mpls traffic-eng	Enters MPLS-TE configuration mode.
#unique_377	Enables GMPLS UNI functionality and enters configuration mode for UNI.
controller dwdm (GMPLS), on page 5	Enters GMPLS UNI sub-mode for a controller.