GMPLS Configuration Commands

LMP Commands

lmp

Syntax **[no] lmp**

Context config>router

Description This command creates a context for the configurartion of the Link Management Protocol (LMP) on the system.

Default **no lmp**

gmpls-loopback-address

Syntax **gmpls-loopback-address** *ip-address*
no gmpls-loopback-address

Context config>router>lmp

Description This command specifies the GMPLS Loopback Address to be used by LMP. A corresponding **gmpls-loopback** interface must have been configured for LMP to be enabled.

Default **no gmpls-loopback-address**

Parameters *ip-address* — Specifies an IPv4 address.

peer

Syntax **[no] peer** *peer-node-id*

Context config>router>lmp

Description This command creates a context to enable the specification of the LMP peer parameters. It also specifies the LMP peer node. For a GMPLS UNI, this is the UNI-N node at the far end of the IP control channel for the GMPLS UNI. If the peer loopback address is entered using the **peer-loopback-address** command, then this is used as the routable peer address; otherwise the *peer-node-id* is assumed to correspond to a routable peer loopback

Default **no peer**

Parameters *peer-node-id* — An identifier for the LMP peer node. This may be an IPv4-formatted address or a 32-bit unsigned integer.

Values a.b.c.d | 1 — 4294967295

control-channel

Syntax [**no**] **control-channel** *lmp-cc-id*

Context config>router>lmp>peer

Description This command enables the context for configuring an IP control channel for use by GMPLS UNI control plane (RSVP and LMP).

Default **no control-channel**

Parameters *lmp-cc-id* — An unsigned integer identifier for the control channel.

Values 1 — 42949672

hello

Syntax **hello** [**interval** *hello-interval*] **dead-interval** *hello-dead-interval*
hello interval *hello-interval* [**dead-interval** *hello-dead-interval*]

Context config>router>lmp>peer>control-channel

Description This command configures the transmission interval for LMP Hello packets. The **dead-interval** specifies the period after which the IPCC is declared down if no hello packets are received from the LMP peer.

Default n/a

Parameters *interval hello-interval* — The interval at which LMP hello packets are sent on an IP control channel.

Values 1000 — 65535 milliseconds

Default 1000 milliseconds

dead-interval hello-dead-interval — The interval after which the IPCC is declared down if no hello packets are received from the LMP peer.

Values 1000 — 65535 milliseconds

Default 1000 milliseconds

peer-interface-address

Syntax **peer-interface-address** *ip-address*

Context config>router>lmp>peer>control-channel

Description This command configures the mandatory **peer-interface-address**. It is the destination address of the IPCC on the peer UNI-N used to reach the GMPLS Router ID of the UNI-N peer. It corresponds to the lmpCcRemoteIpAddr in RFC 4631.

Default n/a

Parameters *ip-address* — The interface address of the IPCC next-hop.

Values ipv4-address — a.b.c.d
ipv6-address — x:x:x:x:x:x:x:x (eight 16-bit pieces)
x:x:x:x:x:x:d.d.d.d
x — [0..FFFF]H
d — [0..255]D

setup-role

Syntax **setup-role** {**active | passive**}

Context config>router>lmp>peer>control-channel

Description This comand specifies whether this node takes the active or the passive role in establishing the LMP session to the peer over a GMPLS UNI.

Default n/a

Parameters **active —** The 7x50 takes the active role. (Default)

passive — The 7x50 takes the passive role.

shutdown

Syntax [**no**] **shutdown**

Context config>router>lmp>peer>control-channel

Description This comand administratively enables or disables the IP control channel.

Default **no shutdown**

peer-loopback-address

Syntax **peer-loopback-address** *ip-address*
no peer-loopback-address

Context config>router>lmp>peer

Description The IP address corresponding to the GMPLS loopback address configured on the LMP peer. If **peer-loopback-address** is entered, then this is used as the routable peer address, otherwise the *peer-node-id* is assumed to correspond to a routable peer loopback.

peer-loopback-address is an optional configurable field. If **peer-loopback-address** is not configured, 7x50 will use **lmp-peer-node-id** (i.e. LmpNbrNodeId as per RFC 4631) as the dstIpAddr in the IP-header for the peer-specific messages (i.e. Link summary msgs, RSVP msgs). Note that the **peer-interface-address** is mandatory; it is the destination address of the IPCC on the peer UNI-N used to reach the GMPLS Router ID of the UNI-N peer. It corresponds to the lmpCcRemoteIpAddr in RFC 4631.

Default **no peer-loopback-address**

Parameters *ip-address* — The GMPLS control plane loopback address of the IPCC next-hop.

Values ipv4-address — a.b.c.d
ipv6-address — x:x:x:x:x:x:x:x (eight 16-bit pieces)
x:x:x:x:x:x:d.d.d.d
x — [0..FFFF]H
d — [0..255]D

retransmission-interval

Syntax **retransmission-interval** *milliseconds*

Context config>router>lmp>peer

Description This command specifies the interval between resubmitted LMP messages.

Default n/a

Parameters *milliseconds* — Specifies the retransmission interval, in milliseconds.

Values 1 — 4294967295

Default 500

retry-limit

Syntax **retry-limit** *limit*
no retry-limit

Context config>router>lmp>peer

Description This command specifies how many times LMP resends a message before restarting the process.

Default **no retry-limit**

Parameters *limit* — Specifies the number of reattempts.

Values 1 — 4294967295

te-link

Syntax [**no**] **te-link** *te-link-id*

Context config>router>lmp>peer

Description This command assigns a Traffic Engineering (TE) Link to a given LMP peer. The TE Link with ID *te-link-id* must already have been created under **config>router>lmp>te-link**.

Default **no te-link**

Parameters *te-link-id* — Specifies the ID of the TE Link.

Values 1 — 4294967295 | *te-link-name*
te-link-name: 32 character (max) name of the TE Link

shutdown

Syntax [**no**] **shutdown**

Context config>router>lmp>peer

Description This comand administratively enables or disables LMP with a given peer.

Default **no shutdown**

te-link

Syntax [**no**] **te-link** *te-link-id*

Context config>router>lmp

Description This command creates a Traffic Engineering (TE) Link in LMP across a GMPLS UNI. An unsigned integer TE link ID must be specified when the TE Link is first created. Once the link is created, the user can configure the link name (i.e. 'link-name te-link-name'). From here, the user can refer to this TE Link by either the unsigned integer or the ASCII name.

Default no te-link

Parameters *te-link-id* — Specifies the ID of the TE Link.

Values 1 — 4294967295 | *te-link-name*
te-link-name: 32 character (max) name of the TE Link

data-bearer

Syntax [**no**] **data-bearer** *data-bearer-id*

Context config>router>lmp>te-link

Description This command creates a data bearer assigned to a TE Link. Only one data bearer may be configured within a given TE Link.

Default **no data-bearer**

Parameters *data-bearer-id* — Specifies the ID of the data bearer.

Values 1 — 4294967295

port

Syntax [**no**] **port** *port-id*

Context config>router>lmp>te-link>data-bearer

Description This command configures the port associated with the data bearer. The port must be a physical black and white Ethernet port.

Default **no port**

Parameters *port-id* — Specifies the ID of the port.

Values *slot*/*mda*/*port*

remote-id

Syntax **remote-id** *remote-id*
no remote-id

Context config>router>lmp>te-link>data-bearer

Description This command configures the identifier assigned to the data-bearer at the LMP peer node. For a GMPLS UNI, this is the UNI-N node.

Default **no remote-id**

Parameters *remote-id* — Specifies the ID of the data-bearer at the LMP peer node.

Values 1 — 4294967295

shutdown

Syntax [**no**] **shutdown**

Context config>router>lmp>te-link>data-bearer

Description This comand administratively enables or disables the data bearer.

Default **no shutdown**

link-name

Syntax **link-name** *te-link-name*
no link-name

Context config>router>lmp>te-link

Description This command configures text names for the TE Link.

Default n/a

Parameters *te-link-name* — Specifies the text name for the TE Link.

Values 32 characters maximum text string

remote-id

Syntax **remote-id** *id*
no remote-id

Context config>router>lmp>te-link

Description This command configures the identifier assigned to the TE Link at the LMP peer node. For a GMPLS UNI, this is the UNI-N node.

Default **no remote-id**

Parameters *id* — Specifies the identifier for the LMP peer node TE Link.

Values 1 — 4294967295

shutdown

Syntax [**no**] **shutdown**

Context config>router>lmp>te-link

Description This comand administratively enables or disables the TE Link.

Default **no shutdown**

shutdown

Syntax [**no**] **shutdown**

Context config>router>lmp

Description This comand administratively enables or disables LMP.

Default **no shutdown**

GMPLS Commands

gmpls

Syntax **[no] gmpls**

Context config>router

Description This command enables the context to configure GMPLS parameters. GMPLS is not enabled by default and must be explicitly enabled using **no shutdown**. The **shutdown** command administratively disables GMPLS.

The **no** form of this command deletes this GMPLS protocol instance; this will remove all configuration parameters for this GMPLS instance.

GMPLS must be shut down before the GMPLS instance can be deleted. If GMPLS is not shut down when the **no gmpls** command is executed, a warning message on the console indicates that GMPLS is still administratively up.

Default **no gmpls**

gr-helper-time

Syntax **gr-helper-time max-recovery** *recovery-interval* **seconds max restart** *restart-interval* **seconds**
no gr-helper-time

Context config>router>gmpls

Description This command configures the local values for the max-recovery and the max-restart intervals used in the RSVP Graceful Restart Helper feature when applied to a GMPLS UNI.

The values are configured globally in GMPLS.

The **no** version of this command re-instates the default value for the delay timer.

Default n/a

Parameters *recovery-interval* — Specifies the maximum recovery interval value, in seconds.

Values 1 — 1800

Default 300

restart-interval — Specifies the maximum restart interval value, in seconds.

Values 1 — 300

Default 180

keep-multiplier

Syntax **keep multiplier** *number*
no keep-multiplier

Context config>router>gmpls

Description This command configures the integer used by RSVP to declare that a reservation is down or the neighbor is down.

The **no** form of this command reverts to the default value.

Default 3

Parameters *number* — Specifies the keep multiplier value.

Values 1 — 255

Default 3

lsp

Syntax [**no**] **lsp** *lsp-name*

Context config>router>gmpls

Description This command creates a GMPLS LSP that is signaled dynamically by the router.

When the LSP is created, the egress router must be specified using the **to** command and a **working-path** must be specified.

GMPLS LSPs are created in the administratively down (**shutdown**) state.

The **no** form of this command deletes the GMPLS LSP. All configuration information associated with this GMPLS LSP is lost. The GMPLS LSP must be administratively shut down before it can be deleted.

Default n/a

Parameters *lsp-name* — Specifies the identifier for the GMPLS LSP. The LSP name can be up to 32 characters long and must be unique.

e2e-protection-type

Syntax **e2e-protection-type** *protection-type*
no e2e-protection-type

Context config>router>gmpls>lsp

Description This command defines the end-to-end recovery type for the GLSP. This is the recovery model between the source and terminating UNI-C nodes of the GMPLS LSP.

The **no** form of this command removes any configured end-to-end recovery, and the GMPLS LSP becomes unprotected.

Default **no e2e-protection-type**

Parameters *protection-type* — Specifies the end-to-end GMPLS recovery type.

Values {unprotected | 1toN | sbr}

Default unprotected

encoding-type

Syntax **encoding-type** *encoding-type*
no encoding-type

Context config>router>gmpls>lsp

Description This command configures the encoding type of the payload carried by the GMPLS LSP. **line** is the only supported type.

Default **no encoding-type**

Parameters *encoding-type* — Specifies the encoding type.

Values line

Default line

generalized-pid

Syntax **generalized-pid** *generalized-pid*
no generalized-pid

Context configure>router>gmpls>lsp

Description This command configures the type of payload carried by the gLSP. Standard ethertype values are used for packet and Ethernet LSPs (see RFC 3471). Only Ethernet (value 33) is supported in Release 13.0.

Default **no generalized-pid**

Parameters *generalized-pid* — Specifies the name of the generalized-pid.

Values ethernet

Default ethernet

retry-limit

Syntax **retry-limit** *retry-limit*
no retry-limit

Context config>router>gmpls>lsp

Description This optional command specifies the number of attempts software should make to re-establish the GMPLS LSP after it has failed. After each successful attempt, the counter is reset to zero.

When the specified number is reached, no more attempts are made and the GMPLS LSP path is put into the **shutdown** state.

Use the **config router gmpls lsp** *lsp-name* **no shutdown** command to bring up the path after the retry limit is exceeded.

Default 0 (no limit, retries forever)

Parameters *retry-limit* — Specifies the number of retries.

Values 0 — 10000

Default 0

retry-timer

Syntax **retry-timer** *seconds*
no retry-timer

Context config>router>gmpls>lsp

Description This command configures the time, in seconds, for LSP re-establishment attempts after it has failed. The retry time is jittered to +/- 25% of its nominal value.

The **no** form of this command reverts the parameter to the default value.

Default 30

Parameters *seconds* — Specifies the amount of time, in seconds, between attempts to re-establish the LSP after it has failed.

Values 0 — 600 seconds

Default 30

revert-timer

Syntax **revert-timer** *seconds*
no revert-timer

Context config>router>gmpls>lsp

Description This command configures the time, in seconds, for LSP reversion attempts after it has failed.

The **no** form of the command reverts the timer to the default value.

Default 0

Parameters *seconds* — Specifies the time, in seconds, for the LSP to attempt reversion after failure.

Values 0 — 1800

Default 0

shutdown

Syntax [**no**] **shutdown**

Context config>router>gmpls>lsp

Description This comand administratively enables or disables the GMPLS LSP.

Default **shutdown**

switching-type

Syntax **switching-type** *switching-type*
no switching-type

Context config>router>gmpls>lsp

Description This command configures the type of switching required for the gLSP. As defined in RFC 3471. The default CLI value is ethernet, which indicates that Digital Channel Switch Capable (DCSC) should be signaled. Ethernet is the only supported value in Release 13.0.

Default ethernet

Parameters *switching-type* — Specifies the required type of switching.

Values ethernet

to

Syntax **to** *ip-address*

Context config>router>gmpls>lsp

Description This command specifies the GMPLS loopback address of the far-end UNI-C router for a GMPLS LSP. When creating a GMPLS LSP, this command is mandatory.

Parameters *ip-address* — Specifies the system IP address of the far-end UNI-C router.

working-path

Syntax **working-path** *path-name*
no working-path

Context config>router>gmpls>lsp

Description This command specifies the working path for a GMPLS LSP. One working path must be specified for each GMPLS LSP. The path-name parameter must correspond to a path defined under **config>router>gmpls>path**.

The **no** form of the command removes the working-path definition.

Default **no working-path**

Parameters *path-name* — Specifies the name of the path used by the working path.

Values 32 characters maximum text string

protect-path

Syntax **protect-path** *path-name*
no protect-path

Context config>router>gmpls>lsp

Description This command specifies the protect path for a GMPLS LSP. At least one protect path must be specified if a GMPLS LSP uses 1-to-N end-to-end protection. The path-name parameter must correspond to a path defined under **config>router>gmpls>path**.

The **no** form of the command removes the protect-path definition.

Default **no protect-path**

Parameters *path-name* — The name of the path used by the protect path.

Values 32 characters maximum text string

bandwidth

Syntax **bandwidth signal-type** *signal-type*
no bandwidth

Context config>router>gmpls>lsp>working-path
config>router>gmpls>lsp>protect-path

Description This command specifies the bandwidth to be signaled for the path of the GMPLS LSP. Bandwidth is specified in terms of the RFC 3471 signal type name.

If an empty path is configured or the first hop TE Link is not configured, the system will automatically select a TE Link to use for a GMPLS LSP path based on the lowest available TE Link ID with a matching bandwidth (if a bandwidth is configured for the GMPLS LSP). During a data-

bearer link allocation request, an RSVP-requested GMPLS LSP BW can be either a non-zero value as per RFC 3471 signal-type, or it can be zero). There are the following cases:

- Case 1 — The requested BW is non-zero as per RFC 3471 Signal-type config:

  a) When a TE (or TE/DB) Link is configured in the related hop, LMP checks whether the related port BW is the same (exact match) as the requested BW, and allocates the port (provided any other checks are OK).

  b) When the related Hop is empty: LMP finds a db-link port to the peer node matching the requested BW, and allocates it.

- Case 2 — Requested BW is zero:

  a) When a TE (or TE/DB) Link is configured in the related hop, LMP allocates the port (provided the other checks are OK), and provides the port BW to RSVP to use in signaling.

  b) When the related Hop is empty, LMP finds the first available db-link to the peer (based on lower db-link Id), and allocates it and provides the port BW to RSVP to use in signaling.

The **no** form of the command udates the bandwidth to zero.

Default 0

Parameters *signal-type* — Specifies the RFC 3471 name of the signal type representing the requested bandwidth for the GMPLS LSP path.

Values {ds0 | ds1 | e1 | ds2 | e2 | ethernet | e3 | ds3 | sts-1 | fast-ethernet | e4 | fc-0-133m | oc-3/stm1 | fc-0-266m | fc-0-531m | oc-12/stm-4 | gige | fc-0-1062m | oc-48/stm-16 | oc-192/stm-64 | 10gige-ieee | oc-768/stm-256 | 100gige-ieee}

exclude-srlg

Syntax **exclude-srlg** *group-name* [*group-name* ... (up to 5 max)]
no exclude-srlg [*group-name* [*group-name* ... (up to 5 max)]]

Context config>router>gmpls>lsp>working-path
config>router>gmpls>lsp>protect-path

Description This command specifies a list of one to five SRLG groups in the optical network which the 7x50 can request to the UNI-N that the GMPLS LSP path should avoid by signaling it in the XRO of the RSVP path message. Each *group-name* must have been defined under **config>router>if-attribute>srlg-group**.

The **no** form of the command removes the list of SRLG groups to exclude.

Default n/a

Parameters *group-name* — Specifies the name of the SRLG.

Values 32 characters maximum text string

peer-node

Syntax **peer-node** *peer-node-id*
no peer-node

Context config>router>gmpls>lsp>working-path
config>router>gmpls>lsp>protect-path

Description This command specifies a peer node to use for the first hop of the GMPLS LSP. If specified, this command forces the GMPLS LSP to use a specific UNI-N node on ingress to the optical network. This command is only applicable if 1toN end to end protection is used.

The **no** form of the command removes the list of SRLG groups to exclude.

Default none

Parameters *peer-node-id* — The node ID of the peer UNI-N. This may be an Ipv4-formatted address or a 32-bit unsigned integer.

Values a.b.c.d | 1 – 4294967295

segment-protection-type

Syntax **segment-protection-type** *protection-type*
no segment-protection-type

Context config>router>gmpls>lsp>working-path
config>router>gmpls>lsp>protect-path

Description This command defines the requested segement recovery type for the GLSP path. This is the recovery capability requested by the 7x50 UNI-C to the UNI-N for recovery in segments of the optical network between ingress and egress UNI-N nodes.

The **no** form of this command removes the configued segement recovery, reverting to unprotected.

Default **no segment-protection-type**

Parameters *protection-type* — Specifies the requested GMPLS segment recovery type.

Values {unprotected | sbr | gr | sncp | prc}

Default unprotected

shutdown

Syntax [**no**] **shutdown**

Context config>router>gmpls>lsp>working-path
config>router>gmpls>lsp>protect-path

Description This comand administratively enables or disables the GMPLS LSP path.

Default **no shutdown**

lsp-init-retry-timeout

Syntax **lsp-init-retry-timeout** *seconds*
no lsp-init-retry-timeout

Context config>router>gmpls

Description This command configures the initial GMPLS LSP path retry timer.

The new GMPLS LSP path initial retry timer is used instead of the retry-timer to abort the retry cycle when no RESV is received. The retry-timer exclusively governs the time between two retry cycles and to handle retrying of a GMPLS LSP path in a failure case with PATH errors or RESVTear.

The **no** form of this command returns the timer to the default value.

Default **no lsp-init-retry-timeout**

Parameters *seconds* — Specifies the time, in seconds, between retry cycles.

path

Syntax **path** *path-name*
no path *path-name*

Context config>router>gmpls

Description This command creates the path to be used for a GMPLS LSP. A path can be used by multiple GMPLS LSPs. A path can specify some or all hops from ingress to egress and they can be either strict or loose.

Paths are created in a **no shutdown** state. A path must be shut down before making any changes (adding or deleting hops) to the path. When a path is shut down, any GMPLS LSP using the path becomes operationally down.

The **no** form of this command deletes the path and all its associated configuration information. All the GMPLS LSPs that are currently using this path will be affected. A path must be shut down and unbound from all GMPLS LSPs using the path before it can be deleted. The **no path** *path-name* command will not result in any action except a warning message on the console indicating that the path may be in use.

Parameters *path-name* — Specifies a unique case-sensitive name label for the LSP path.

Values 32 characters maximum alphanumeric string

shutdown

Syntax [**no**] **shutdown**

Context config>router>gmpls>path

Description This command disables GMPLS LSPs using the path. All services using these GMPLS LSPs are affected. Paths are created in the **shutdown** state.

The **no** form of this command administratively enables the path. All LSPs, where this path is defined as primary or defined as standby secondary, are (re)established.

Default **no shutdown**

hop

Syntax **hop** *hop-index* **node-id** *node-id* [**te-link** *te-link-id*] {**strict | loose**}
no hop *hop-index*

Context config>router>gmpls>path

Description This command specifies the node ID of the hops that the GMPLS LSP should traverse on its way to the egress UNI-C router.

The GMPLS LSP ingress and egress node IDs can be included as the first and the last hop. This is necessary when interoperating with the Alcatel-Lucent 1830 PSS.

The **no** form of this command deletes hop list entries for the path. All of the GMPLS LSPs currently using the path are affected. Additionally, all services actively using these GMPLS LSPs are affected. The path must be shut down first in order to delete the hop from the hop list. The **no hop** *hop-index* command will not result in any action except a warning message on the console indicating that the path is administratively up.

Default none

Parameters *hop-index* — Specifies the order of the hops. The LSP always traverses from the lowest hop index to the highest. The hop index does not need to be sequential.

Values 1 — 1024

node-id — Specified the node ID of the transit GMPLS LSR. This can be an IPv4 address or a 32-bit unsigned integer identifier of the data plane switching node of the adjacent UNI-N.

loose — Specifies that the route taken by the GMPLS LSP from the previous hop to this hop can traverse through other LSRs. Multiple hop entries with the *node-id* are flagged as errors. Either the loose or strict keyword must be specified.

strict — Specifies that the LSP must take a direct path from the previous hop router to this router. No transit routers between the previous router and this router are allowed. If the IP address specified is the interface address, then the LSP must use that interface. If there are direct parallel links between the previous router and this router, and if the system IP address is specified, then any one of the available interfaces can be used by the LSP. The user must ensure that the previous router and this router have a direct link. Multiple hop entries with the same IP address are flagged as errors. Either the loose or strict keyword must be specified.

peer

Syntax [**no**] **peer** *peer-node-id*

Context config>router>gmpls

Description This command specifies parameters for the RSVP session to a neighboring GMPLS UNI-N node. The *peer-node-id* is the control plane identifier for the adjacent UNI-N node.

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

Default n/a

Parameters *peer-node-id* — Specifies the control plane node ID of the neighboring GMPLS UNI-N node. This can be an IP address or a 32-bit unsigned integer.

Values {a.b.c.d | 1 — 4294967295}

hello-interval

Syntax [**no**] **hello-interval** *hello-interval*

Context config>router>gmpls>peer

Description This command configures the RSVP hello packet interval, in milliseconds, towards the peer UNI-N node.

The **no** form of this command sets the **hello-interval** to the default of 3000 milliseconds. A value of 0 disables RSVP hellos.

Default **no hello-interval**

Parameters *hello-interval* — Specifies the RSVP hello packet interval, in milliseconds.

Values 0 — 6000

Default 3000

lsp-hold-timer

Syntax [**no**] **lsp-hold-timer** *hold-time*

Context config>router>gmpls>peer

Description This command specifies the amount of time that the ingress node holds before programming its data plane and declaring a GMPLS LSP up. This occurs anytime the ingress UNI-C node brings up a GMPLS LSP path or reroutes a GMPLS LSP. The *hold-time* value should be configured to reflect the data path programming time for the optical technology used between the ingress and egress UNI-N nodes.

The **no** form of the command reverts the hold-timer to the default value.

Default **no lsp-hold-timer**

Parameters *hold-timer* — Specifies the ingress node hold time, in seconds.

Values 5 — 300

Default 60

shutdown

Syntax [**no**] **shutdown**

Context config>router>gmpls>peer

Description This command disables or enables RSVP adjaceny with the neighboring UNI-N peer node.

Default **shutdown**

rapid-retransmit-time

Syntax **rapid-retransmit-time** *hundred-milliseconds*
no rapid-retransmit-time

Context config>router>gmpls

Description This command configures the value of the Rapid Retransmission Interval. It is used in the re-transmission mechanism to handle unacknowledged message_id objects and is based on an exponential back-off timer.

Re-transmission interval of a RSVP message with the same message_id = 2 * rapid-retransmit-time interval of time.

The node stops re-transmission of unacknowledged RSVP messages:

- if the updated back-off interval exceeds the value of the regular refresh interval, or
- if the number of re-transmissions reaches the value of the **rapid-retry-limit** parameter, whichever comes first

The Rapid Retransmission Interval must be smaller than the regular refresh interval configured in **config>router>gmpls>refresh-time**.

The **no** form of this command reverts to the default value.

Default **no rapid-retransmit-time**

Parameters *hundred-milliseconds* — Specifies the Rapid Retransmission Interval, in units of 100 milliseconds.

Values 1 — 100

Default 5

rapid-retry-limit

Syntax **rapid-retry-limit** *limit*
no rapid-retry-limit

Context config>router>gmpls

Description This command configures the value of the Rapid Retry Limit. This is used in the retransmission mechanism based on an exponential backoff timer in order to handle unacknowledged message_id objects. The RSVP message with the same message_id is retransmitted every 2 * rapid-retransmit-time interval of time. The node will stop retransmission of unacknowledged RSVP messages whenever the updated backoff interval exceeds the value of the regular refresh interval, or the number of retransmissions reaches the value of the **rapid-retry-limit** parameter, whichever comes first.

The **no** form of this command reverts to the default value.

Default **no rapid-retry-limit**

Parameters *limit* — Specifies the Rapid Retry Limit.

Values 1 — 6

Default 3

refresh-time

Syntax **refresh-time** *seconds*
no refresh-time

Context config>router>gmpls

Description This command configures the interval, in seconds, between the successive Path and Resv refresh messages. RSVP declares the session down after it misses a consecutive number of refresh messages equal to the configured **keep-multiplier** number.

The **no** form of this command reverts to the default value.

Default **no refresh-time**

Parameters *seconds* — Specifies the interval, in seconds, between successive Path and Resv refresh messages.

Values 1 — 65535

Default 30

shutdown

Syntax [**no**] **shutdown**

Context config>router>gmpls

Description This command disables or enables GMPLS.

Default **shutdown**

te-link

Syntax [**no**] **te-link** *te-link-id*

Context config>router>gmpls

Description This command enables the use of a Traffic Engineering (TE) Link (which has previously been configured under **config>router>lmp**) in GMPLS.

The **no** form of this command reverts to the default value.

Default **no te-link**

Parameters *te-link-id* — Specifies the ID or name of the configured TE Link.

Values 1 — 4294967295 | *te-link-name*
te-link-name: 32 character maximum name of the TE Link

shutdown

Syntax [**no**] **shutdown**

Context config>router>gmpls>te-link

Description This command enables or disables the TE Link in GMPLS.

Default **no shutdown**

GMPLS Tunnel Group Commands

gmpls-tun-grp

Syntax [**no**] **gmpls-tun-grp** *gmpls-tunnel-group-id*

Context config

Description This command configures a GMPLS tunnel group. A GMPLS tunnel group is a bundle of GMPLS LSPs providing an abstraction of the data bearers that are intended to be associated to one IP interface. This object allows, for example, end-to-end load balancing across the set of data bearers corresponding to a set of gLSPs. A gLSP is bound to an overlay tunnel group by a gLSP tunnel name at both the head end and the tail end UNI-C nodes of a gLSP. A sender-address may be optionally configured for the tail end of a gLSP in case overlapping GMPLS LSP tunnel names are used by different head end nodes.

The **no** form of this command removes the tunnel group. All memebers of a GMPLS tunnel group must be removed and the tunnel group shutdown before the tunnel group can be deleted.

Default **no gmpls-tun-grp**

Parameters *gmpls-tunnel-group-id* — Specifies the identifier of the GMPLS tunnel group.

Values 1 — 1024

description

Syntax **description** *description-string*
no description

Context config>gmpls-tun-grp

Description This command configures a description string for the GMPLS tunnel group.

The **no** form of this command removes the description.

Default **no description**

Parameters *description-string* — Specifies a text string of up to 160 characters describing the GMPLS tunnel group.

far-end

Syntax **far-end** *ip-address*
no far-end

Context config>gmpls-tun-grp

Description This command configures the IP address (GMPLS Loopback Address) of the far-end UNI-C router.

The **no** form of this command removes the far-end address

Default **no far-end**

Parameters *ip-address* — Specifies an IPv4 or IPv6 address of the far-end UNI-C router.

Values ipv4-address — a.b.c.d
ipv6-address — x:x:x:x:x:x:x:x (eight 16-bit pieces)
x:x:x:x:x:x:d.d.d.d
x — [0..FFFF]H
d — [0..255]D

member

Syntax [**no**] **member** *member-id*

Context config>gmpls-tun-grp

Description This command configures a member of a GMPLS tunnel group. A member of a GMPLS tunnel group is a GMPLS LSP. All members of a tunnel group must have the same bandwidth. Up to 16 members may be configured for each GMPLS tunnel group.

The **no** form of this command removes the member.

Default **no member**

Parameters *member-id* — Specifies the identifier of the GMPLS tunnel group member.

Values 1 — 16

glsp

Syntax [**no**] **glsp session-name** *name*

Context config>gmpls-tun-grp>member

Description This command binds a GMPLS LSP as a member of the GMPLS tunnel group. The session name is used to identify the GMPLS LSP. This is the LSP name of the GMPLS LSP.

The **no** form of this command removes the member.

Default none

Parameters **session-name** *name* — Specifies the session name of the GMPLS LSP.

Values 80 characters maximum text string

shutdown

Syntax [**no**] **shutdown**

Context config>gmpls-tun-grp>member

Description This command disables or enables the member of the GMPLS tunnel group.

Default **shutdown**

member-threshold

Syntax [**no**] **member-threshold** *threshold*

Context config>gmpls-tun-grp

Description The **member-threshold** is the number of member GMPLS LSPs that must be operationally up before the GMPLS tunnel group is considered operationally up. If that number is not reached, then the GMPLS tunnel group is taken operationally down.

A member of a GMPLS tunnel group may be treated as down for one of the following reasons. These reason codes are recorded in the tmnxGmplsTunGrpMemberTable in the MIB:

- adminDn — The member or the related tunnel group is admin down.
- wpLspDn — The associated GMPLS LSP working path is down.
- wpPortDn — The data-bearer port associated with the GMPLS LSP working path is down.
- wpPortNoRsrc — The data bearer port associated with the LSP working path has no resource to support the services over the GMPLS tunnel group logical port.
- ppLspDn — The associated GMPLS LSP protect path is down.
- ppPortDn — The data-bearer port associated with the GMPLS LSP protect path is down.
- ppPortNoRsrc — The data bearer port associated with the GMPLS LSP protect path has no resource to support the services over the GMPLS tunnel group logical port.

The **no** form of this command reverts the member threshold to 0.

Default 0

Parameters *threshold* — Specifies the minimum number of GMPLS LSPs that must be operationally up before the GMPLS tunnel group is considered operationally up.

Values 0 — 15

mode

Syntax **mode** *mode*

Context config>gmpls-tun-grp

Description This command sets the operating mode of the GMPLS tunnel group.

In **load-sharing** mode, traffic is load-shared across the member GMPLS LSPs of the tunnel group. The same hashing algorithm is used as for LAG (see the "LAG and ECMP hashing" chapter of the Alcatel-Lucent 7450 ESS OS / 7750 SR OS / 7710 SR OS Interface Configuration Guides). If load-sharing is configured, then all of the GMPLS LSPs must terminate on the same far-end node. All of the ports used by GMPLS LSPs must be equivalent in that they must have the same named QoS policy, bandwidth, etc. Once more than one gLSP is associated with a tunnel group, the QoS policy / scheduler policy cannot be changed for any of the ports. All GMPLS LSPs must be unprotected end-to-end. Segment protection is allowed for GMPLS LSPs associated in a load sharing mode tunnel group.

In **active-standby** mode, only one member gLSP can be associated with the tunnel group.

The **no** form of this command removes the member.

Default **load-sharing**

Parameters *mode* — Specifies the operating mode of the GMPLS tunnel group.

Values **active-standby** — Sets the operating mode to active-standby.
load-sharing — Sets the operating mode to load-sharing.

Default **load-sharing**

shutdown

Syntax [**no**] **shutdown**

Context config>gmpls-tun-grp

Description This command administratively disables or enables the GMPLS tunnel group.

Default **shutdown**

type

Syntax **type** [**head-end | tail-end**]

Context config>gmpls-tun-grp

Description This command configures whether a GMPLS tunnel group is at the head-end or tail-end of the set of member GMPLS LSPs from the perspective of GMPLS LSP setup. It can only configured if the GMPLS tunnel group has no members; for example, if none have yet been configured.

Default **head-end**

Parameters **head-end —** Sets the GMPLS tunnel group to operate as a head-end.

tail-end — Sets the GMPLS tunnel group to operate as a tail-end.