

Chapter 6

Understanding GMPLS Events

This chapter describes Generalized Multiprotocol Label Switching (GMPLS) error events that might occur in the output of the `show mpls lsp extensive` command. Descriptions typically include sample output of the label-switched path (LSP) event, an explanation of what the event means, the possible cause of the event, and any possible actions that you can take. (See Table 10.)

Table 10: Checklist for Understanding GMPLS Events

| Understanding GMPLS Events Tasks | Possible Action or Command |
|--|---|
| Displaying GMPLS Events on page 66 | <code>show mpls lsp extensive</code> |
| 1. RSVP Error, Subcode 7, Signal Type Does Not Match Link Encoding Event on page 67 | Make sure that the configured bandwidth and the encoding type of the traffic engineering link match in the LSP configuration. |
| 2. RSVP Error, Subcode 8, Tspec Invalid for Encoding/Switching Type Requested Event on page 67 | Not available. |
| 3. Unacceptable Label Value Event on page 67 | Not available |
| 4. Unsupported Encoding Type Event on page 68 | Not available. |
| 5. Unsupported Switching Type Event on page 68 | Not available. |
| 6. Update LSP Encoding Type Event on page 68 | Not available. |

Displaying GMPLS Events

Purpose GMPLS generalizes MPLS by defining labels for switching varying types of Layer 1, Layer 2, or Layer 3 traffic. LSPs must start and end on links with the same switching capability. For example, routers can establish packet-switched LSPs with other routers. LSPs might be carried over a Time-Division Multiplexing (TDM)-switched LSP between SONET add/drop multiplexers (ADMs), which in turn might be carried over a lambda-switched LSP. GMPLS signaling requires strict paths, and you must disable Constrained Shortest Path First (CSPF) with the **no-cspf** statement. For more information on GMPLS, see the *JUNOS MPLS Applications Configuration Guide*.

When the configuration of an GMPLS LSP is incorrect, an event or error message can appear in the output of the **show mpls lsp extensive** command.

Action To display GMPLS events, enter the following JUNOS command-line interface (CLI) operational mode command from the ingress router:

```
user@host> show mpls lsp extensive
```

Sample Output

```
user@host> show mpls lsp extensive
Ingress LSP: 1 sessions

10.255.255.40
  From: 10.255.255.35, State: Up, ActiveRoute: 0, LSPname: gmpls-lsp1
  Bidirectional
  ActivePath: path-lsp1 (primary)
  LoadBalance: Random
  Signal type: STM-1
  Encoding type: SDH/SONET, Switching type: Fiber, GPID: PPP
  *Primary path-lsp1 State: Up
    Bandwidth: 155.52Mbps
    Computed ERO (S [L] denotes strict [loose] hops): (CSPF metric: 2)
      10.35.100.1 S 10.35.150.1 S 10.35.200.1 S
    Received RR0:
      10.35.100.1 10.35.150.1 10.35.200.1
    7 Nov 7 15:47:11 Selected as active path
    6 Nov 7 15:47:11 Record Route: 10.35.100.1 10.35.150.1 10.35.200.1
    5 Nov 7 15:47:11 Up
    4 Nov 7 15:47:11 Update LSP Encoding Type
    3 Nov 7 15:47:11 Originate Call
    2 Nov 7 15:47:11 CSPF: computation result accepted
    1 Nov 7 15:46:41 CSPF failed: no route toward 10.255.255.40
    Created: Thu Nov 7 15:46:38 2002
  Total 1 displayed, Up 1, Down 0
  [...Output truncated...]
```

What It Means The sample output from ingress router R1 shows extensive ingress LSP information, including LSP events that led to an LSP failure, with the most recent events at the top. The last line before the history log begins indicates the length of time the router waits before attempting to re-signal the LSP, three seconds in this instance.

LSP events in bold are described in this chapter. Descriptions include sample output of the LSP event, an explanation of what the event means, the possible cause of the event, and any possible actions that you can take.

For completeness, events not included in this example output are also described in this chapter to show LSP events that did not occur in the example network configuration, but might occur in your network. The output for these events includes the prompt `user@host` rather than the usual `user@R1` prompt.

RSVP Error, Subcode 7, Signal Type Does Not Match Link Encoding Event

| | |
|----------------------|---|
| LSP Event | RSVP error, subcode 7, signal-type does not match link encoding |
| Sample Output | Not available |
| What It Means | This LSP error event is a Juniper Networks proprietary error reported for GMPLS LSPs when the configured signal bandwidth does not match the encoding type of the traffic engineering link selected on the first hop. |
| Cause | The signal bandwidth is misconfigured with the encoding type of the traffic engineering link. |
| Action | Make sure that the configured bandwidth and the encoding type of the traffic engineering link match in the LSP configuration. |

RSVP Error, Subcode 8, Tspec Invalid for Encoding/Switching Type Requested Event

| | |
|----------------------|--|
| LSP Event | RSVP error, subcode 8, Tspec invalid for encoding/switching type requested |
| Sample Output | Not available. |
| What It Means | This LSP error event is a Juniper Networks proprietary error reported for GMPLS LSPs as a result of validation of the signaled traffic parameters against the generalized label request for the LSP. |
| Cause | An incorrect Sender Tspec is used with a particular LSP switching or encoding type. |
| Action | Not available. |

Unacceptable Label Value Event

| | |
|----------------------|---|
| LSP Event | Unacceptable label value event |
| Sample Output | Not available. |
| What It Means | This LSP error event indicates that the label value signaled in either the Path or Resv message was unacceptable to a label-switched router (LSR) along the LSP path. |

Cause For GMPLS LSPs, this LSP error event is generated by incorrect label mapping configured on one of the LSRs, or by deletion of a resource that was being used by an LSP.

Action Not available.

Unsupported Encoding Type Event

LSP Event Unsupported encoding type

Sample Output Not available.

What It Means This LSP error event indicates that the LSP encoding type requested in the generalized label request for a GMPLS LSP is unsupported on the corresponding selected traffic engineering link.

Cause Not available.

Action Not available.

Unsupported Switching Type Event

LSP Event Unsupported switching type

Sample Output Not available.

What It Means This LSP error event indicates that the switching type requested in the generalized label request for a GMPLS LSP is unsupported on the corresponding selected TE link.

Cause Not available.

Action Not available.

Update LSP Encoding Type Event

LSP Event Update Encoding Type

Sample Output

```

user@host> show mpls lsp extensive
Ingress LSP: 1 sessions

10.255.255.40
  From: 10.255.255.35, State: Up, ActiveRoute: 0, LSPname: gmpls-lsp1
  Bidirectional
  ActivePath: path-lsp1 (primary)
  LoadBalance: Random
  Signal type: STM-1
  Encoding type: SDH/SONET, Switching type: Fiber, GPID: PPP
  *Primary path-lsp1 State: Up
  Bandwidth: 155.52Mbps
  Computed ERO (S [L] denotes strict [loose] hops): (CSPF metric: 2)
    10.35.100.1 S 10.35.150.1 S 10.35.200.1 S
  Received RRO:
    10.35.100.1 10.35.150.1 10.35.200.1

```

```

7 Nov 7 15:47:11 Selected as active path
6 Nov 7 15:47:11 Record Route: 10.35.100.1 10.35.150.1 10.35.200.1
5 Nov 7 15:47:11 Up
4 Nov 7 15:47:11 Update LSP Encoding Type
3 Nov 7 15:47:11 Originate Call
2 Nov 7 15:47:11 CSPF: computation result accepted
1 Nov 7 15:46:41 CSPF failed: no route toward 10.255.255.40
Created: Thu Nov 7 15:46:38 2002
Total 1 displayed, Up 1, Down 0

```

- What It Means** This LSP event indicates that the encoding type was updated based on the traffic engineering link selected as the first hop.
- Cause** This LSP event occurs when the encoding type is not configured on a non-packet LSP. In this case, the encoding type is derived from the traffic engineering link that was selected as the first hop.
- Action** Not available.

