Chapter 2

Understanding General LSP Error Events

This chapter describes general label-switched path (LSP) error events that might occur in the output of the show mpls lsp extensive command. Various network configurations demonstrate LSP error events. Descriptions typically 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. (See Table 6.)

Table 6: Checklist for Understanding LSP Status Events

Understanding LSP Status Events Tasks	Possible Action or Command
Displaying General LSP Error Events on page 21	show mpls lsp extensive
1. Admission Control Failure Event on page 21	Not applicable.
2. Explicit Route: Bad Loose Route Event on page 22	Check the LSP configuration at the [edit protocols mpls] hierarchy level.
3. Explicit Route: Bad Strict Route Event on page 23	Examine the strict hop address, remove the no-cspf statement, or examine the path and verify that RSVP is enabled on each interface.
4. Explicit Route: Format Error Event on page 25	Analyze this event, and refer to events on either side to determine the appropriate action.
5. Explicit Route: Wrong Delivery Event on page 25	Take appropriate action: ■ Include the loopback (lo0) interface at the [edit protocols isis] hierarchy level. ■ Change the definition of the strict path at the [edit protocols mpls path path-name] hierarchy level. ■ Verify the validity of all IP addresses listed in the named path referenced by the LSP hop by hop.
6. Invalid Destination Address Event on page 26	Verify that the LSP destination address is not the local router's loopback address, and check that the addresses on the local router are correctly configured.
7. Invalid Filter for Policing Event on page 27	Not available.
8. MPLS Graceful Restart: Recovery Failed Event on page 27	Check the MPLS logs for more details about the failure.
9. MPLS Label Allocation Failure Event on page 28	Include interfaces at the [edit protocols mpls] hierarchy level, or include the family mpls statement at the [edit interfaces *type-fpc/pic/port*] hierarchy level.
10.Non-RSVP Capable Router Detected Event on page 28	Configure the router in question with RSVP.
11.No Route Toward Destination Event on page 29	Enable RSVP on the transit router's egress interface, or examine the IP configuration of the relevant router.
12.PathErr Received Event on page 30	Not available.

Understanding LSP Status Events Tasks	Possible Action or Command
13.Path MTU Change Event on page 30	Not available.
14.Path Name Undefined or Disabled Event on page 30	Define the named path.
15.Requested Bandwidth Unavailable Event on page 31	Lower the bandwidth of the ingress LSP or traffic-engineer other LSPs off the path.
16.Routing Loop Detected Event on page 32	Examine the strict hop addresses or examine the path in the ERO to determine the cause of the loop.
17.RSVP Error, Subcode 1: Bad Session Destination Address Event on page 33	Not available.
18.RSVP Error, Subcode 4: Protocol Shutdown Event on page 33	Check the RSVP configuration on the router in question.
19.RSVP Error, Subcode 6: No Non-lsp Route Event on page 34	Find the node with the error and confirm that the ERO route to the next hop takes an LSP next hop. Also, you can configure strict hops to avert the problem. For information about configuring strict hops, see the *JUNOS MPLS Applications Configuration Guide.*
20.TTL Expired Event on page 34	Not available.
21.Tunnel Local Repaired Event on page 35	Not available.
22.Unknown Object Class Event on page 36	Not available.
23.Unknown Object Type Event on page 36	Not available.
24.Unsupported Traffic Class Event on page 37	Not available.

Displaying General LSP Error Events

Purpose Display extensive information about LSPs, including the 50 most recent history events and the possible reasons why an LSP failed.

Action To examine error messages, enter the following JUNOS command-line interface (CLI) operational mode command from the ingress router:

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

Sample Output

```
user@R1# run show mpls lsp extensive
Ingress LSP: 1 sessions

10.0.0.6
  From: 10.0.0.1, State: Dn, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath: (none)
  LoadBalance: Random
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
  Primary                   State: Dn, No-decrement-ttl
    Bandwidth: 100Mbps
   14 Jan 21 15:43:39 Requested bandwidth unavailable[3 times]
   13 Jan 21 15:43:21 Deselected as active
   12 Jan 21 15:43:21 Requested bandwidth unavailable
   11 Jan 21 15:43:21 Clear Call
   10 Jan 21 15:42:32 Selected as active path
    9 Jan 21 15:42:32 Record Route:  10.1.12.2 10.1.26.2
    8 Jan 21 15:42:32 Up
[...Output truncated...]
```

What It Means The sample output from ingress router R1 is a section from the complete output. Typically, the output includes LSP events that led to an LSP failure and the 50 most recent state events. Only one example of a general LSP error event is displayed because it is impossible to provide all of the events described in this chapter in one sequence of log history. For a detailed description of this error event, see "Requested Bandwidth Unavailable Event" on page 31.

For completeness, events not generated by the example network used throughout this book are described to show LSP events that might occur in your network. The output for these events includes the prompt user@host rather than the usual user@R1 prompt.

Admission Control Failure Event

LSP Event Admission control failure

Sample Output Not available.

What It Means This LSP error event indicates that a Resource Reservation Protocol (RSVP) Admission control failure occurred along the LSP path. This event is logged because of on an error notification (PathErr message) received from RSVP for the label-switched path.

Cause This LSP event is caused by inadequate bandwidth on a link along the LSP path. The available bandwidth could not satisfy the requested traffic parameters and no other sessions were pre-emptied to accommodate this request.

Action This error event is not generated by Juniper Networks routers. However, when this event is received by a Juniper Networks router, it appears in the log output of the show mpls lsp extensive command.

Explicit Route: Bad Loose Route Event

LSP Event Explicit Route: bad loose route

Sample Output 1

```
user@R1# run show mpls lsp extensive
Ingress LSP: 1 sessions

10.0.0.6
  From: 10.0.0.1, State: Up, ActiveRoute: 0, LSPname: R1-R6-3
  ActivePath: R6-3-1 (secondary)
  LoadBalance: Random
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
  Primary   R6-3              State: Dn
   10 Feb 15 21:21:58 Explicit Route: bad loose route[2 times]
    9 Feb 15 21:21:52 Deselected as active
    8 Feb 15 21:21:51 Explicit Route: bad loose route
    7 Feb 15 21:21:51 10.1.15.1: MPLS label allocation failure
    6 Feb 15 21:21:51 MPLS label allocation failure
    5 Feb 15 21:21:51 Down
    4 Feb 15 21:20:55 Selected as active path
    3 Feb 15 21:20:55 Record Route:  10.1.15.2 10.1.56.2
    2 Feb 15 21:20:55 Up
    1 Feb 15 21:20:55 Originate Call
 *Secondary R6-3-1           State: Up
    Received RRO (ProtectionFlag 1=Available 2=InUse 4=B/W 8=Node 10=SoftPre-
empt):
          10.1.12.2 10.1.26.2
    4 Feb 15 21:21:52 Selected as active path
    3 Feb 15 21:21:52 Record Route:  10.1.12.2 10.1.26.2
    2 Feb 15 21:21:52 Up
    1 Feb 15 21:21:52 Originate Call
  Created: Tue Feb 15 21:20:55 2005
Total 3 displayed, Up 2, Down 1
```

Sample Output 2

```
user@R1# run show protocols mpls
label-switched-path R1-to-R6 {
    to 10.0.0.6;
    bandwidth 155;
    no-cspf;
    link-protection;
    primary to-R6;
}
label-switched-path R1-to-R6-2 {
    to 10.0.0.6;
    link-protection;
    auto-bandwidth {
        adjust-interval 300;
        minimum-bandwidth 1;
```

```
        maximum-bandwidth 1k;
    }
}
label-switched-path R1-R6-3 {
    to 10.0.0.6;
    no-cspf;  <--Allows a loose ERO
    primary R6-3;
    secondary R6-3-1;
}
path to-R6 {
    10.1.15.2 strict;
    10.1.56.2 strict;
}
path R6-3 {
    10.1.15.2 loose;   <--Loose ERO
}
path R6-3-1 {
    10.1.12.2;
}
interface fxp0.0 {
    disable;
}
interface all;
```

What It Means This LSP error event indicates that there is an error in the loose hop specified in the Explicit Route Object (ERO) of a Path message received by a label-switched router (LSR) along the LSP path, indicating an LSP setup failure.

Cause This LSP error event is caused by control plane unreachability or data plane incompatibility.

Action Check the LSP configuration at the [edit protocols mpls] hierarchy level.

Explicit Route: Bad Strict Route Event

LSP Event Explicit route: bad strict route

Sample Output 1

```
user@R1> show mpls lsp extensive
[...Output truncated...]
   36 Jan  4 18:04:57 CSPF: link down/deleted 10.1.13.1(R1.00/10.0.0.1)
->10.1.13.2(R3.00/10.0.0.3)
   35 Jan  4 18:04:57 CSPF failed: no route toward 10.0.0.6
   34 Jan  4 18:04:57 Clear Call
   33 Jan  4 18:04:57 Explicit Route: bad strict route
   32 Jan  4 18:04:57 No Route toward dest
   31 Jan  4 18:04:57 Down
[...Output truncated...]
```

Sample Output 2

```
user@host> show mpls lsp extensive
Ingress LSP: 34 sessions

10.172.2.99
From: 10.172.162.18, State: Up, ActiveRoute: 3726, LSPname:
dcr2.den_to_dcr1.chd_P
ActivePath: P1_dcr2.den_to_dcr1.chd (primary)
LoadBalance: Random
Metric: 25
```

```
Encoding type: Packet, Switching type: Packet, GPID: IPv4
*Primary P1_dcr2.den_to_dcr1.chd State: Up
Received RRO (ProtectionFlag 1=Available 2=InUse 4=B/W 8=Node
10=SoftPreempt):
10.70.192.134
16 Jun 28 18:27:51 Selected as active path
15 Jun 28 18:27:51 Record Route: 10.70.192.134
14 Jun 28 18:27:51 Up
13 Jun 28 18:27:29 Deselected as active
12 Jun 28 18:27:28 No Route toward dest
11 Jun 28 18:27:28 Down
10 Jun 18 03:52:18 Selected as active path
9 Jun 18 03:52:18 Record Route: 10.70.192.134
8 Jun 18 03:52:18 Up
7 Jun 18 03:52:18 Originate Call
6 Jun 18 03:52:18 Clear Call
5 Jun 18 03:52:18 Deselected as active
4 Jun 18 02:56:25 Selected as active path
3 Jun 18 02:56:25 Record Route: 10.70.192.134
2 Jun 18 02:56:25 Up
1 Jun 18 02:56:25 Originate Call
Standby B1_dcr2.den_to_dcr1.chd State: Dn
18 Jun 29 12:49:21 10.70.192.26: Routing loop detected[4798 times]
17 Jun 27 00:53:42 10.70.192.77: Explicit Route: bad strict route[20 times]
16 Jun 27 00:39:49 204.70.192.26: Routing loop detected [3370 times]
[...Output truncated...]
```

What It Means This LSP event indicates that a poorly formed ERO was generated. Sample Outputs 1 and 2 show that this LSP event was caused by different situations described below.

Cause This LSP event can be caused by several factors:

- A strict hop address specified for an LSP on a link that does not have RSVP enabled.
- The no-cspf statement included in the LSP configuration.
- An error with the configuration of constraints on a Constrained Shortest Path First (CSPF) LSP generates the CSPF: No route towards dest message, followed by the Explicit Route: bad strict route event.
- An ERO that causes a routing loop. See Sample Output 2.

Action Examine the strict hop address, remove the no-cspf statement, or examine the path and verify that RSVP is enabled on each interface.

Explicit Route: Format Error Event

LSP Event Explicit route: format error

Sample Output

```
user@R1> show mpls lsp extensive
[...Output truncated...]
10.0.0.6
  From: 10.0.0.1, State: Dn, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath: (none)
  LoadBalance: Random
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
  Primary   to-R6            State: Dn, No-decrement-ttl
    5 Jan 21 14:37:06 10.1.34.2: Explicit Route: format error[2 times]
    4 Jan 21 14:37:03 Originate Call
    3 Jan 21 14:37:03 Clear Call
[...Output truncated...]
```

What It Means This LSP event indicates an LSP setup failure in which a Path message error in the the ERO was received by a router along the LSP path.

Cause This LSP event can be caused by several factors:

- An incorrectly formed ERO in the RSVP Path message.
- A strict hop address specified in the middle of an ERO that is not contiguous.
- An unsupported subobject in the ERO of a router along the LSP path.
- The hop indicated by the RSVP hop object does not match the hop indicated by the ERO.

Action Examine the strict hop address configuration and make any necessary changes.

Explicit Route: Wrong Delivery Event

LSP Event Explicit route: wrong delivery

Sample Output 1

```
user@host> show mpls lsp extensive
[...Output truncated...]
Primary use-TOKYO State: Dn, No-decrement-ttl
   3 Sep 19 00:25:45 10.222.45.2: Explicit Route: wrong delivery
   2 Sep 19 00:25:34 No Route[8 times]
   1 Sep 19 00:23:01 Originate Call
[...Output truncated...]
```

Sample Output 2

```
user@host> show mpls lsp extensive
[...Output truncated...]
10.0.0.6
  From: 10.0.0.1, State: Dn, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath: (none)
  LoadBalance: Random
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
  Primary   to-R6            State: Dn
   40 Jan 26 16:35:26 10.1.36.2: Explicit Route: wrong delivery[2 times]
   39 Jan 26 16:35:23 Originate Call
   38 Jan 26 16:35:23 Clear Call
[...Output truncated...]
```

Sample Output 3

```
user@R1> show configuration protocols mpls
label-switched-path R1-to-R6 {
    to 10.0.0.6;
    no-cspf;
    primary to-R6;
}
path to-R6 {
    10.1.13.2 strict;
    10.1.56.1 strict;      <<< IP address not directly connected to 10.1.13.2
    10.1.26.1 strict;
```

What It Means This LSP event indicates that a RSVP message with an ERO arrived at the wrong router, even though a strict route was specified. The receiving router determines that the address is inconsistent with the ERO, and generates the error message. Note that the IP address of the sending router precedes the error event; for example, 10.222.45.2 in Sample Output 1, and 10.1.36.2 in Sample Output 2.

Cause This LSP event can be caused by several factors:

- The loopback (lo0) interface on the ingress router is not configured at the [edit protocols isis] hierarchy level. After the loopback (lo0) interface is included in the Intermediate System-to-Intermediate System (IS-IS) configuration, and while IS-IS is forming adjacencies, an RSVP packet is forwarded to an incorrect destination, 10.222.45.2, as shown in Sample Output 1.

- A strict path is configured to a directly connected router, then another strict path is configured to an IP address that is not directly connected. For example, Sample Output 3 shows that the path to-R6 includes three IP addresses, one of which (10.1.56.1) is not directly connected to the other IP addresses in the path.

Action Take appropriate action. On the ingress router, include the loopback (lo0) interface at the [edit protocols isis] hierarchy level, change the definition of the strict path at the [edit protocols mpls path *path-name*] hierarchy level, or verify the validity of all IP addresses listed in the named path referenced by the LSP hop by hop.

Invalid Destination Address Event

LSP Event Invalid Dest addr

Sample Output

```
user@R1> show mpls lsp extensive
Ingress LSP: 1 sessions

10.0.0.1
  From: 10.0.0.1, State: Dn, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath: (none)
  LoadBalance: Random
  Metric: 100
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
  Primary                    State: Dn
    4 Apr 22 10:22:15 Invalid Dest Addr
    3 Apr 22 10:22:15 Originate Call
```

```
    2 Apr 22 10:22:15 Invalid Dest Addr
    1 Apr 22 10:22:15 Originate Call
  Created: Fri Apr 22 10:22:16 2005
Total 1 displayed, Up 0, Down 1
```

What It Means This LSP event indicates that the to address configured at the [edit protocols mpls labeled-switched-path *name*] hierarchy level is invalid.

Cause This LSP event is caused when the to address of the LSP is the loopback address of the ingress router. A contributing factor may be that the no-cspf statement is included in the LSP configuration.

Action Verify that the LSP destination address is not the local router's loopback address, and check that the addresses on the local router are correctly configured.

Invalid Filter for Policing Event

LSP Event Invalid filter for policing

Sample Output Not available. This LSP event indicates an abnormal condition and is difficult to recreate.

What It Means Although a policer was configured on the LSP, the corresponding firewall filter index was not found, indicating a failure in the routing protocol process (rpd) or the firewall process (dfwd).

Cause A possible cause is that the routing protocol process (rpd) or the firewall process (dfwd) were restarted in a situation in which the LSP was established.

Action Not available.

MPLS Graceful Restart: Recovery Failed Event

LSP Event MPLS graceful restart: recovery failed

Sample Output Not available.

What It Means This LSP event indicates unsuccessful recovery of an LSP path after graceful restart, resulting in potential traffic loss.

Cause This LSP event is caused by several factors:

- MPLS graceful restart procedures may have been aborted by this LSR.
- MPLS graceful restart is disabled, by configuration, during the recovery period.
- An MPLS LSP path is disabled either due to a configuration change or due to an error during the recovery period.
- CSPF computation failed for the restarted LSP path with parameters and constraints preserved across the restart.

- A signaling failure occurred and an RSVP PathErr was received on the LSP path signaled after a restart.
- A network failure occurred on some hop that the LSP was traversing during the recovery period.

Action Check the MPLS logs for more details about the failure.

MPLS Label Allocation Failure Event

LSP Event MPLS label allocation failure

Sample Output

```
user@R1> show mpls lsp extensive
[...Output truncated...]
   24 Jan 20 09:25:35 CSPF failed: no route toward 10.0.0.6
   23 Jan 20 09:25:35 Clear Call
   22 Jan 20 09:25:35 Deselected as active
   21 Jan 20 09:25:35 10.1.13.1: MPLS label allocation failure
   20 Jan 20 09:25:34 MPLS label allocation failure
   19 Jan 20 09:25:34 Down
[...Output truncated...]
```

What It Means This LSP event indicates that the MPLS protocol or the family mpls statement were not configured properly. When the LSP event is preceded by an IP address, the address is typically the router that has the MPLS configuration error.

Cause This LSP event is caused by the omission of interfaces at the [edit protocols mpls] hierarchy level or failure to configure the family mpls statement at the [edit interfaces *type-fpc/pic/port*] hierarchy level. The family mpls statement specifies to the interface ASICs to permit protocol code 0x8847 (unicast MPLS) into the router.

Action Include interfaces at the [edit protocols mpls] hierarchy level, or include the family mpls statement at the [edit interfaces *type-fpc/pic/port*] hierarchy level. You must configure the family mpls statement, in the same way that you must configure the family iso statement for IS-IS.

NOTE: Do not configure the family mpls statement on the loopback (lo0) interface.

Non-RSVP Capable Router Detected Event

LSP Event Non-RSVP capable router detected

Sample Output

```
user@host> show mpls lsp extensive
[...Output truncated...]
10.0.0.6
  From: 10.0.0.1, State: Dn, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath: (none)
  LoadBalance: Random
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
  Primary                   State: Dn, No-decrement-ttl
   19 Jan 21 15:05:37 10.1.24.2: Non-RSVP capable router detected
   18 Jan 21 15:04:52 10.1.26.2: Non-RSVP capable router detected[4 times]
```

```
   17 Jan 21 15:04:34 Originate Call
   16 Jan 21 15:04:34 Clear Call
[...Output truncated...]
```

What It Means This LSP event indicates that a router, forwarding packets to the egress router, was not configured for RSVP.

Cause This LSP event might be caused when a router not configured for RSVP forwards an RSVP packet toward the egress router without decrementing the Send_TTL value in the RSVP common header. The next downstream router detects that the Send_TTL value and the IP_TTL value are different, and generates this LSP event. Note that two different routers generated the same error message at different times.

Action Configure the router in question with RSVP.

No Route Toward Destination Event

LSP Event No route toward destination

Sample Output 1

```
user@R1> show mpls lsp extensive
[...Output truncated...]
   35 Oct 26 22:48:36 Down
   34 Oct 26 22:48:29 CSPF failed: no route toward 10.0.0.1[4 times]
   33 Oct 26 22:47:25 CSPF: link down/deleted
10.1.13.2(R3.00/10.0.0.3)->10.1.13.1(R1.00/10.0.0.1)
   32 Oct 26 22:47:25 CSPF failed: no route toward 10.0.0.1
   31 Oct 26 22:47:25 10.1.36.1: No Route toward dest
   30 Oct 26 22:33:54 Selected as active path
   29 Oct 26 22:33:53 Record Route:  10.1.36.1 10.1.13.1
[...Output truncated...]
```

Sample Output 2

```
user@R1> show mpls lsp extensive
[...Output truncated...]
10.0.0.6
  From: 10.0.0.1, State: Dn, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath: (none)
  LoadBalance: Random
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
  Primary                   State: Dn
    Will be enqueued for recomputation in 7 second(s).
   13 Oct 25 16:29:28 Deselected as active
   12 Oct 25 16:29:27 CSPF failed: no route toward 10.0.0.6
   11 Oct 25 16:29:27 CSPF: link down/deleted
10.1.13.1(R1.00/10.0.0.1)->10.1.13.2(R3.00/10.0.0.3)
   10 Oct 25 16:29:27 CSPF failed: no route toward 10.0.0.6
    9 Oct 25 16:29:27 Clear Call
    8 Oct 25 16:29:27 Explicit Route: bad strict route
    7 Oct 25 16:29:27 No Route toward dest
    6 Oct 25 16:29:27 Down
[...Output truncated...]
```

What It Means This LSP event indicates that the router at address 10.1.36.1 in Sample Output 1 does not have a route to the specified destination. Sample Output 2 shows that the local router, ingress router 10.0.0.1, does not have a route to the specified destination.

Cause This LSP event is caused by different factors. The egress interface of a transit router might not have RSVP enabled, or IP reachability to the destination (either the egress router or the next address in the ERO) does not exist.

Action Enable RSVP on the transit router's egress interface, or examine the IP configuration of the relevant router.

PathErr Received Event

LSP Event PathErr received

Sample Output Not available.

What It Means This LSP error event indicates that an RSVP signaling error occurred along the LSP path and a PathErr message was sent back to the ingress LSR reporting the problem. If the failed link can be determined, depending on the RSVP signaling error reported, the failed link is not used while a new path is computed. This is an asynchronous event, occurring the first time the LSP is set up or after the LSP has been set up for some time.

Cause An RSVP signaling failure along the LSP path.

Action Not available.

Path MTU Change Event

LSP Event Path MTU change

Sample Output Not available.

What It Means This LSP event indicates that the RSVP path maximum transmission unit (MTU) value has changed and the MTU on the next hop was updated.

Cause Not available.

Action Not available.

Path Name Undefined or Disabled Event

LSP Event Path name undefined or disabled

Sample Output 1

```
user@host> show mpls lsp extensive
[...Output truncated...]
10.0.0.6
  From: 0.0.0.0, State: Dn, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath: (none)
  LoadBalance: Random
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
  Primary   to-R6            State: Dn
        No computed ERO.
    1 Jan 26 16:40:49 Path name undefined or disabled[4 times]
[...Output truncated...]
```

Sample Output 2

```
user@host> show configuration protocols mpls
[...Output truncated...]
label-switched-path R1-to-R6 {
    to 10.0.0.6;
    primary to-R6;  <<< the path to-R6 is not defined
}
[...Output truncated...]
```

Sample Output 3

```
user@R1> show configuration protocols mpls
label-switched-path R1-to-R6 {
    to 10.0.0.6;
    primary to-R6;
}
path to-R6;     <<< the path is now defined
[...Output truncated...]
```

What It Means This LSP event indicates that the ingress router referenced a named path, but did not define it. The configuration was committed, but with a warning message.

Cause This LSP event is caused when you configure a primary LSP, primary/secondary LSP, or static LSP, and do not define the named path. For example, the LSP path primary to-R6 (shown in Sample Output 2), is not defined at the [edit protocols mpls] hierarchy level. RSVP does not signal this message.

Action Define the named path at the [edit protocols mpls] hierarchy level, as shown in Sample Output 3. For each path, specify some or all transit routers in the path, or leave the path empty, as shown in Sample Output 3. For more information on the configuration of named paths, see the *JUNOS MPLS Applications Configuration Guide*.

Requested Bandwidth Unavailable Event

LSP Event Requested Bandwidth Unavailable

Sample Output 1

```
user@R1> show mpls lsp extensive
[...Output truncated...]
10.0.0.6
  From: 10.0.0.1, State: Dn, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath: (none)
  LoadBalance: Random
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
  Primary                   State: Dn, No-decrement-ttl
    Bandwidth: 100Mbps
   14 Jan 21 15:43:39 Requested bandwidth unavailable[3 times]
   13 Jan 21 15:43:21 Deselected as active
   12 Jan 21 15:43:21 Requested bandwidth unavailable
   11 Jan 21 15:43:21 Clear Call
   10 Jan 21 15:42:32 Selected as active path
    9 Jan 21 15:42:32 Record Route:  10.1.12.2 10.1.26.2
    8 Jan 21 15:42:32 Up
[...Output truncated...]
```

Sample Output 2:

```
user@R1> show mpls lsp extensive
10.0.0.6
  From: 10.0.0.1, State: Dn, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath: (none)
  LoadBalance: Random
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
```

```
  Primary                   State: Dn, No-decrement-ttl
    Bandwidth: 100Mbps
   31 Jan 21 15:47:40 10.1.12.2: Requested bandwidth unavailable[2 times]
   30 Jan 21 15:47:37 Originate Call
   29 Jan 21 15:47:37 Clear Call
   28 Jan 21 15:47:37 Deselected as active
   27 Jan 21 15:45:12 Record Route:  10.1.12.2 10.1.26.2
   26 Jan 21 15:45:12 Up
[...Output truncated...]
```

What It Means This LSP event indicates that a router could not supply the requested bandwidth. Sample Output 1 was generated by the ingress router, while Sample Output 2 was generated by router 10.1.12.1, since the IP address precedes the LSP event.

Cause This LSP event is caused by the LSP requesting bandwidth that is not available in a router along the paths to the egress router.

Action Lower the bandwidth assignment of the ingress LSP below the amount of bandwidth available along the path to the egress router, or traffic-engineer other LSPs off the path that you want the ingress LSP to follow, freeing up the necessary bandwidth.

Routing Loop Detected Event

LSP Event Routing loop detected

Sample Output 1

```
user@R1> show mpls lsp extensive
[...Output truncated...]
10.0.0.6
  From: 10.0.0.1, State: Dn, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath: (none)
  LoadBalance: Random
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
  Primary   to-R6           State: Dn, No-decrement-ttl
   10 Jan 21 14:40:19 10.1.12.1: Routing loop detected
    9 Jan 21 14:40:19 Originate Call
    8 Jan 21 14:40:19 Clear Call
    7 Jan 21 14:40:16 10.1.12.1: Routing loop detected
    6 Jan 21 14:40:16 Clear Call
[...Output truncated...]
```

What It Means This LSP error event indicates that the RSVP message has looped. The IP address of the router that detected the loop precedes the LSP event.

Cause The LSP error event is generated as part of a PathErr or ResvErr RSVP message when the packet goes through a router that is already listed in the Record Route Object (RRO). The RRO keeps a record of every address that the RSVP Path or Resv message transits.

Action Examine the strict hop addresses or examine the path in the ERO to determine the cause of the loop.

RSVP Error, Subcode 1: Bad Session Destination Address Event

LSP Event RSVP error, subcode 1: Bad sess dst addr

Sample Output Not available.

What It Means This LSP error event is a Juniper Networks proprietary error that indicates failure of the RSVP session destination address at the egress LSR.

Cause This LSP error event can be caused by a number of situations. For example, the RSVP session destination is a link, and that link is down.

Action Not available.

RSVP Error, Subcode 4: Protocol Shutdown Event

LSP Event RSVP error, subcode 4: protocol shutdown

Sample Output

```
user@R1> show mpls lsp extensive
Ingress LSP: 1 sessions

10.0.0.6
  From: 10.0.0.1, State: Dn, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath: (none)
  LoadBalance: Random
  Metric: 100
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
  Primary                   State: Dn
    Will be enqueued for recomputation in 27 second(s).
   164 May 10 18:50:50 CSPF failed: no route toward 10.0.0.6[3 times]
   163 May 10 18:49:52 Clear Call
   162 May 10 18:49:52 CSPF: link down/deleted:
10.1.36.1(R3.00/10.0.0.3)->10.1.36.2(R6.00/10.0.0.6)
   161 May 10 18:49:52 Deselected as active
   160 May 10 18:49:52 10.1.13.2: RSVP error, subcode 4: protocol shutdown
   159 May 10 18:49:52 ResvTear received
   158 May 10 18:49:52 Down
   157 May 10 18:48:19 Selected as active path
   156 May 10 18:48:19 Record Route:  10.1.13.2 10.1.36.2
   155 May 10 18:48:19 Up
[...Output truncated...]
  Created: Fri Apr 29 10:38:54 2005
Total 1 displayed, Up 0, Down 1
```

What It Means This LSP event is a Juniper Networks proprietary error and indicates that the RSVP control plane on an LSR along the path is terminated.

Cause This LSP event is caused when you disable an RSVP configuration, restart the routing protocol process (rpd), or load a new image on an LSR along the LSP path.

Action Check the RSVP configuration on the router in question.

RSVP Error, Subcode 6: No Non-lsp Route Event

LSP Event RSVP error, subcode 6: No non-lsp route

Sample Output

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

192.168.28.1
From: 192.168.0.1, State: Dn, ActiveRoute: 0, LSPname: sj-to-lo
ActivePath: (none)
LoadBalance: Random
Encoding type: Packet, Switching type: Packet, GPID: IPv4
Primary State: Dn
87 Sep 18 08:23:12 Deselected as active
86 Sep 18 08:23:12 RSVP error, subcode 6: No non-lsp route
85 Sep 18 08:23:12 Down
84 Sep 18 08:23:12 RSVP error, subcode 6: No non-lsp route
83 Sep 18 08:23:07 Selected as active path
82 Sep 18 08:23:07 Record Route: 10.0.1.1 10.0.24.2 10.0.29.1
81 Sep 18 08:23:07 Up
80 Sep 18 08:22:27 Deselected as active
79 Sep 18 08:22:27 RSVP error, subcode 6: No non-lsp route
78 Sep 18 08:22:27 Down
77 Sep 18 08:22:27 RSVP error, subcode 6: No non-lsp route
76 Sep 18 08:22:22 Selected as active path
75 Sep 18 08:22:22 Record Route: 10.0.1.1 10.0.24.2 10.0.29.1
74 Sep 18 08:22:22 Up
[...Output truncated...]
```

What It Means This LSP event indicates that RSVP Path messages for one LSP are tunneled into another RSVP LSP along the LSP path. Non-adjacent RSVP signaling is not currently supported on Juniper Networks LSRs, resulting in a path setup failure. This error is reported only by a Juniper Networks LSR.

Cause This LSP event is most likely to occur when an LSP configured with the no-cspf statement and loose hops is in a Multiprotocol Label Switching (MPLS) network configured with interior gateway protocol (IGP) shortcuts or LSP advertisements.

Action Find the node with the error and confirm that the ERO route to the next hop takes an LSP next hop. Also, you can configure strict hops to avert the problem. For information about configuring strict hops, see the *JUNOS MPLS Applications Configuration Guide*.

TTL Expired Event

LSP Event TTL expired

Sample Output Not available.

What It Means This LSP error event indicates that the time to live (TTL) in the RSVP header of a received Path message is zero.

Cause Not available.

Action Not available.

Tunnel Local Repaired Event

LSP Event Tunnel local repaired

Sample Output

```
10.0.0.6
  From: 10.0.0.1, State: Up, ActiveRoute: 0, LSPname: R1-R6-3
  ActivePath:  (primary)
  FastReroute desired
  LoadBalance: Random
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
 *Primary                    State: Up
    Computed ERO (S [L] denotes strict [loose] hops): (CSPF metric: 20)
 10.1.12.2 S 10.1.26.2 S
    Received RRO (ProtectionFlag 1=Available 2=InUse 4=B/W 8=Node
10=SoftPreempt):
          10.1.12.2(flag=1) 10.1.26.2
   24 Feb 15 20:56:12 Record Route:  10.1.12.2(flag=1) 10.1.26.2
   23 Feb 15 20:56:11 Fast-reroute Detour Up
   22 Feb 15 20:56:09 Record Route:  10.1.12.2 10.1.26.2
   21 Feb 15 20:56:09 Up
   20 Feb 15 20:56:09 CSPF: computation result accepted
   19 Feb 15 20:56:09 CSPF: link down/deleted
10.1.15.1(R1.00/10.0.0.1)->10.1.15.2(R5.00/10.0.0.5)
   18 Feb 15 20:56:09 Record Route:  10.1.12.2 10.1.26.2
   17 Feb 15 20:56:09 Up
   16 Feb 15 20:56:08 CSPF: computation result accepted
   15 Feb 15 20:56:08 Tunnel local repaired
   14 Feb 15 20:56:08 CSPF: computation result accepted
   13 Feb 15 20:56:08 10.1.15.1: MPLS label allocation failure
   12 Feb 15 20:56:08 MPLS label allocation failure
   11 Feb 15 20:56:08 Record Route:  10.1.13.2 10.1.36.2
   10 Feb 15 20:56:08 Down
    9 Feb 15 20:52:56 Fast-reroute Detour Up
    8 Feb 15 20:52:53 Fast-reroute Detour Down
    7 Feb 15 20:50:00 Record Route:  10.1.15.2(flag=1) 10.1.56.2
    6 Feb 15 20:50:00 Fast-reroute Detour Up
    5 Feb 15 20:49:57 Selected as active path
    4 Feb 15 20:49:57 Record Route:  10.1.15.2 10.1.56.2
    3 Feb 15 20:49:57 Up
    2 Feb 15 20:49:56 Originate Call
    1 Feb 15 20:49:56 CSPF: computation result accepted
  Created: Tue Feb 15 20:49:56 2005
Total 3 displayed, Up 2, Down 1
```

What It Means This LSP error event indicates to the head-end (ingress) router that a local protection path was used when a link or node failed along the protected LSP path. Also, the LSR received a PathErr message from RSVP for the label-switched path.

Cause This LSP error event is caused by a network failure along an LSP path that is locally protected with either a bypass LSP or fast reroute detour. In this case, the failure occurred when the primary link was deactivated, resulting in the fast reroute detour repairing the tunnel.

Action Not available.

Unknown Object Class Event

LSP Event Unknown object class

Sample Output Not available. This LSP event indicates an abnormal condition and is difficult to recreate.

What It Means This LSP error event indicates that the LSR received a PathErr message from RSVP for the label-switched path.

Cause This LSP error event is caused when an LSR along the LSP path receives an RSVP object with a class number that is unsupported by the LSR.

Action Not available.

Unknown Object Type Event

LSP Event Unknown Object type: recovery label

Sample Output

```
user@R1> show mpls lsp extensive
Ingress LSP: 1 sessions

10.0.0.6
  From: 10.0.0.1, State: Up, ActiveRoute: 0, LSPname: R1-to-R6
  ActivePath:  (primary)
  LoadBalance: Random
  Metric: 100
  Encoding type: Packet, Switching type: Packet, GPID: IPv4
 *Primary                    State: Up
    Computed ERO (S [L] denotes strict [loose] hops): (CSPF metric: 20)
 10.1.15.2 S 10.1.56.2 S
    Received RRO (ProtectionFlag 1=Available 2=InUse 4=B/W 8=Node
10=SoftPreempt):
          10.1.15.2 10.1.56.2
   17 Mar 29 20:36:07 Selected as active path
   16 Mar 29 20:36:07 Record Route:  10.1.15.2 10.1.56.2
   15 Mar 29 20:36:07 Up
   14 Mar 29 20:36:07 Originate Call
   13 Mar 29 20:36:07 CSPF: computation result accepted
   12 Mar 29 20:35:37 CSPF failed: no route toward 10.0.0.6
   11 Mar 29 20:35:37 Clear Call
   10 Mar 29 20:35:37 Deselected as active
    9 Mar 29 20:35:37 Session preempted
    8 Mar 29 20:35:37 Down
    7 Mar 29 20:34:49 10.1.15.2: Unknown Object type:recovery label
    6 Mar 29 20:29:09 Selected as active path
    5 Mar 29 20:29:09 Record Route:  10.1.15.2 10.1.56.2
```

What It Means This LSP error event indicates that the LSR received a PathErr message from RSVP for the label-switched path.

Cause This LSP event is caused when an LSR receives an RSVP object with a class type that the LSR does not support.

Action Not available.

Unsupported Traffic Class Event

LSP Event Unsupported traffic class

Sample Output Not available. This LSP event indicates an abnormal condition and is difficult to recreate.

What It Means This LSP error event is a Juniper Networks proprietary error, indicating that a Diffserv-traffic engineering (TE) LSP was signaled with one or more traffic classes with values greater than the four traffic classes currently supported.

Cause Not available.

Action Not available.