RSVP Setup Protection
draft-shen-mpls-rsvp-setup-protection-01

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Overview

A mechanism for protecting initial Path message signaling for LSPs.

Motivation:

- An LSP may be signaled with an ERO that doesn't reflect the current state of every link/node in the network, resulting in a PathErr.
  - ERO may be statically configured or pre-computed.
  - ERO may be computed based on a TED experiencing a delayed update.
  - Ingress router is expected to signal an alternative path.
- Issues:
  - Alternative path may not be possible, e.g. configured or pre-computed ERO
  - Ingress router may be incapable of path computation, and have to wait for a new path from PCE or configuration.
  - Re-computation or new configuration may introduce a significant delay, impacting on signaling performance, e.g. transport LSPs for real-time videos.
  - Existing bypass LSP will not be used.

Solution:

- RSVP setup protection.
- An extension to the RSVP facility-backup fast reroute.
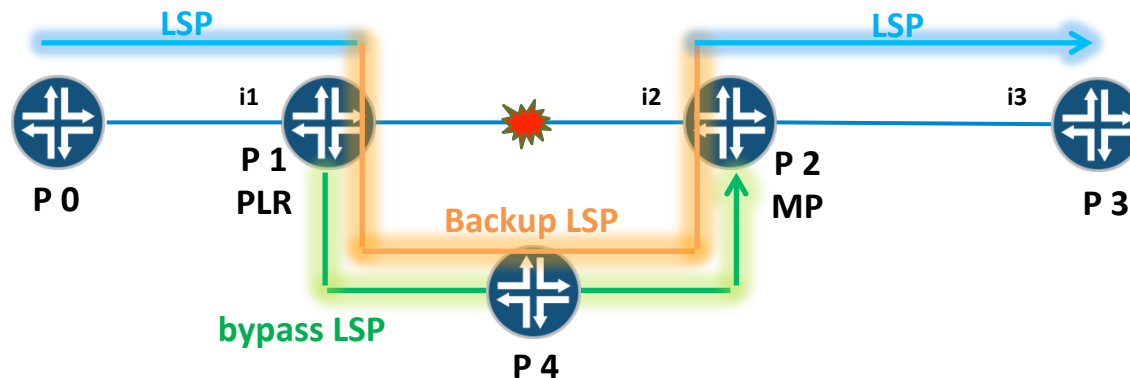
Setup Protection
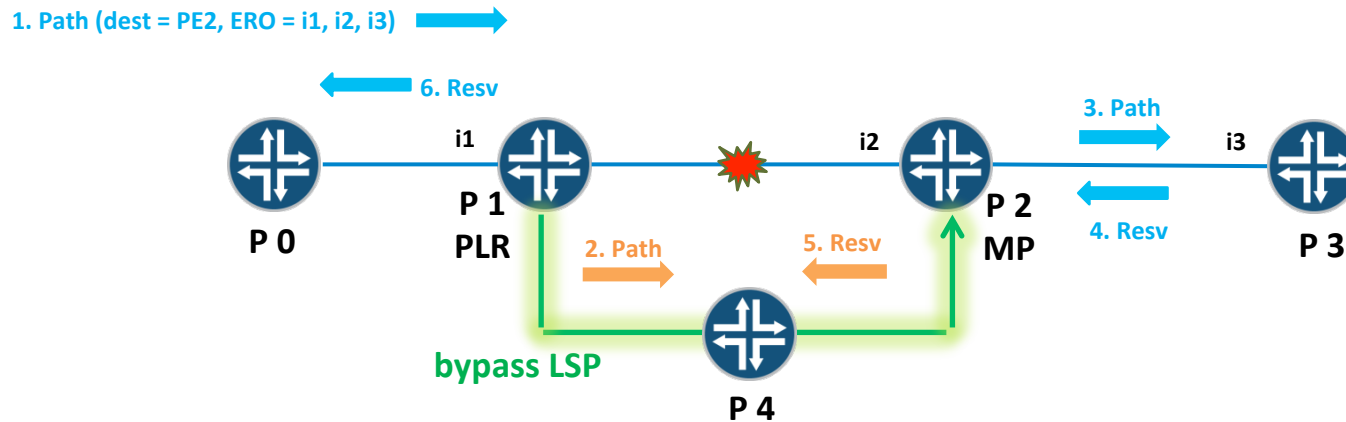
The router immediately upstream to the failure (i.e. PLR; point of local repair) reroutes the LSP through an existing bypass LSP.

- Detects downstream link/node failure based on strict ERO.
- Finds an existing bypass LSP that is protecting the failed link/node.
- Signals a backup LSP through the bypass LSP, using "sender template specific" method.

MP (merge point) terminates the backup LSP, re-creates the original LSP, and signals it towards destination.

Setup Protection (cont.)

LSP appears as if it was originally set up along the desired path and failed over to the bypass LSP.

- PLR sends Resv with "local protection available" and "local protection in use" in RRO.
- PLR sends PathErr of "tunnel locally repaired".

LSP is established without delay.

PLR may perform local reversion after the failed link/node is restored.

Extension to RSVP

1) A "**setup protection desired**" flag in Attribute Flags TLV of LSP_ATTRIBUTES object.

2) Two new LSP Attribute TLVs for conveying the original source IP address of LSP from PLR to MP.
   o **Protected LSP Sender IPv4 Address TLV**.
   o **Protected LSP Sender IPv6 Address TLV**.
   o Carried by the LSP_REQUIRED_ATTRIBUTES of Path message of the backup LSP.
   o Used by MP for recreating the protected LSP.

Next Steps

- Comments?
- WG adoption?