

RSVP Setup Protection

draft-shen-mpls-rsvp-setup-protection-03

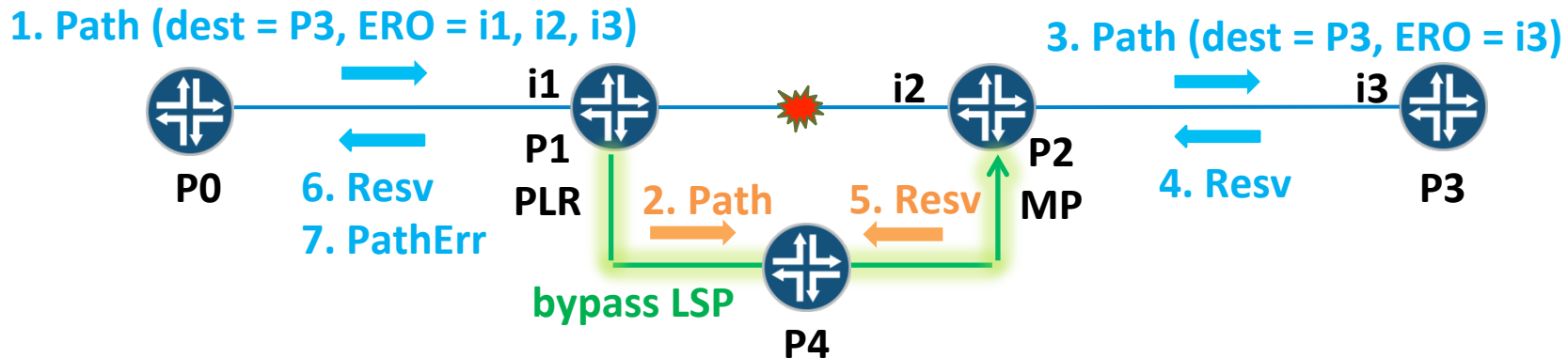
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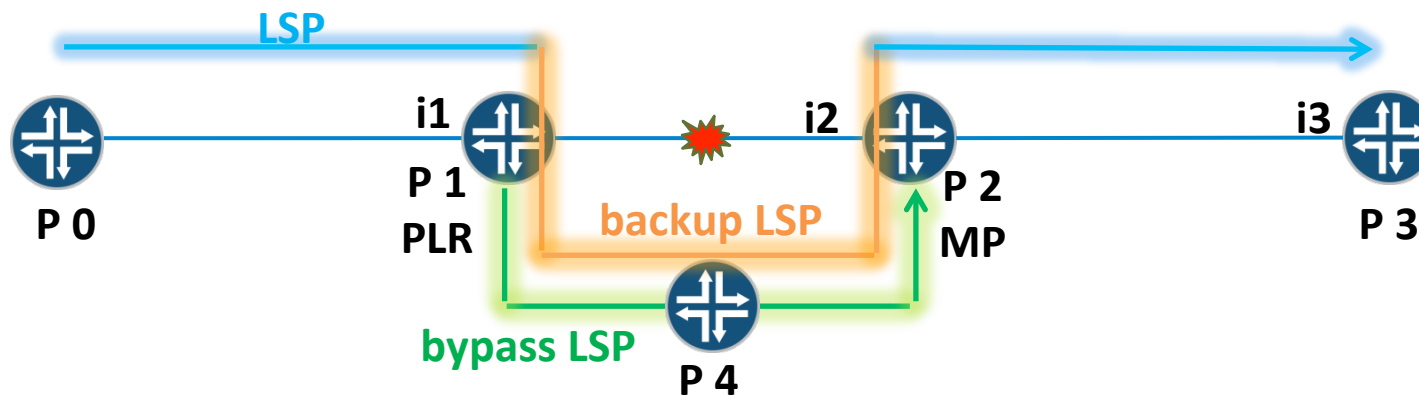
IETF 87, Berlin

The idea



- An LSP is signaled with ERO of strict hops, while a link/node happens to be in failure state.
- The router upstream adjacent to the failure (i.e. PLR) can reroute the LSP by signaling a backup LSP through an existing bypass LSP.
- Egress router of the bypass LSP (i.e. MP) terminates the backup LSP, re-creates the original LSP, and signals it to destination.
- Ingress router of the LSP receives Resv → LSP up.
- Ingress router of the LSP receives PathErr of “tunnel locally repaired” → re-compute path and resignal LSP, if applicable.

The established LSP



- The LSP comes up as if it were originally set up along the desired ERO and then failed over to the bypass LSP.
- PLR's notification to ingress router:
 - Resv with "Local protection in use" flag.
 - PathErr of "tunnel locally repaired".

The benefit

- Improvement of reliability in RSVP signaling.
- LSPs are protected during setup time, i.e. initial Path message signaling.
 - Higher chance of establishment.
 - Minimal setup delay + no crankback.
- Ingress router can still re-compute path and re-signal an LSP.
 - Based on PathErr of “tunnel locally repaired” from PLR.

Use Cases

- 1) LSPs with strict EROs which are configured or planned based a topology assuming no network failure.
 - ERO cannot be modified on the fly by ingress routers.
 - An ERO change must require involvement of operators.
 - **Setup protection → higher chance of establishment.**
- 2) LSPs with a strict requirement for setup latency.
 - Example: On-demand transport LSPs for TV broadcast.
 - Cannot tolerate the delay of PathErr propagation, path re-computation, LSP re-signaling, etc.
 - Solution: First, use setup protection to bring up LSP; Second, re-compute and resignal LSP, if applicable.
 - **Setup protection → lower setup latency.**

Use Cases (cont.)

- 3) Avoiding traffic duplication for P2MP LSPs.
 - If a sub-LSP is being protected by a bypass LSP, new sibling sub-LSPs can use the same bypass LSP to minimize traffic duplication.
 - **Setup protection → less traffic duplication.**

RSVP extensions

- 1) A "**setup protection desired**" flag for Attribute Flags TLV of LSP_ATTRIBUTES object.
- 2) New LSP Attribute TLVs for backup LSP to carry the original source address of protected LSP to MP.
 - **Protected LSP Sender IPv4 Address TLV.**
 - **Protected LSP Sender IPv6 Address TLV.**
 - Carried by the LSP_REQUIRED_ATTRIBUTES of Path message of the backup LSP.
 - Used by MP to recreate the protected LSP.

Next Steps

- Comments?
- WG adoption?