

*draft-esale-mpls-ldp-node-frr-05*

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# Fast Reroute for Node Protection in LDP- based LSPs

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(presented by  
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# Central theme

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- † Fast Re-route for LDP-signaled transport LSPs
- † Local protection to minimize connectivity disruption
- † Link and node protection for LDP based transport LSPs using RSVP-TE bypasses
- † No restrictions on the network topology – provide topology independent local protection so long as there is alternate path in the network that avoids the protected node

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# Central theme

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- † Additional provisioning and configuration required could be fairly small
  - † Depends on implementation - it could be as minimal as single line
  - † bypass LSPs from PLR to MPT and Targeted LDP between PLR and MPT can be established automatically
- † Relies on the existing IETF standards
  - † RSVP-TE for establishing bypass LSPs
  - † Targeted LDP to obtain label mapping from MPT
    - † Needed only for node protection
- † Synergy with link and node protection for mLDP-signaled LSPs

# Link Protection

For a given LSP traversing a given (protected) link:

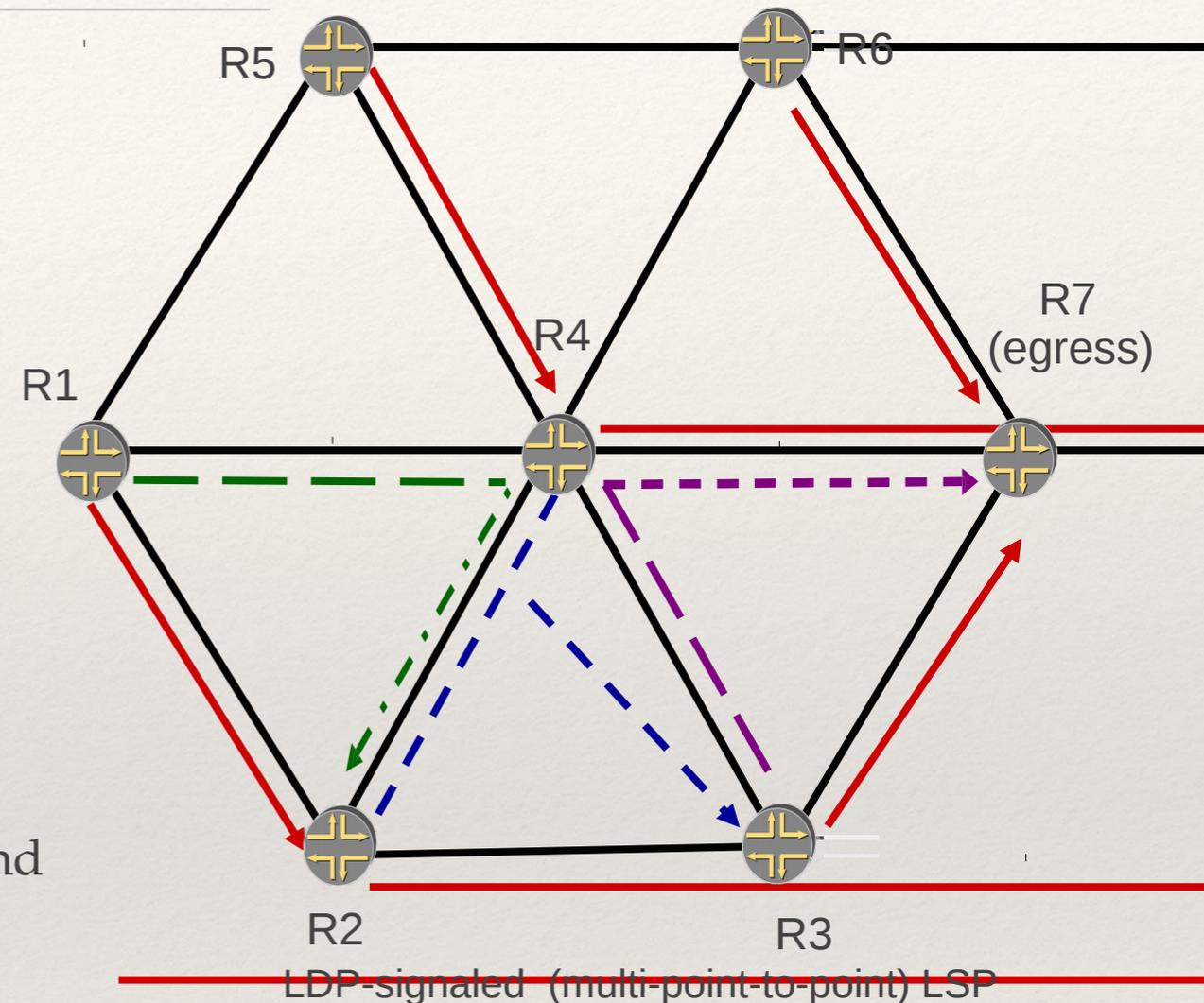
- ❖ PLR: router at the upstream end of the link
  - ❖ With respect to the LSP
  - ❖ Acts as PLR for the downstream link
- ❖ MPT: router at the downstream end of the link
  - ❖ With respect to the LSP
  - ❖ Next-hop from PLR's point of view

Bypass LSP: LSP created between the two routers at the end of the (protected) link

- ❖ Bypasses the protected link
- ❖ The same bypass LSP protects all LSPs traversing the protected link

Label mapping: the same as prior to link failure

- ❖ Because MPT is the next hop
  - ❖ Assuming platform labels at next hop



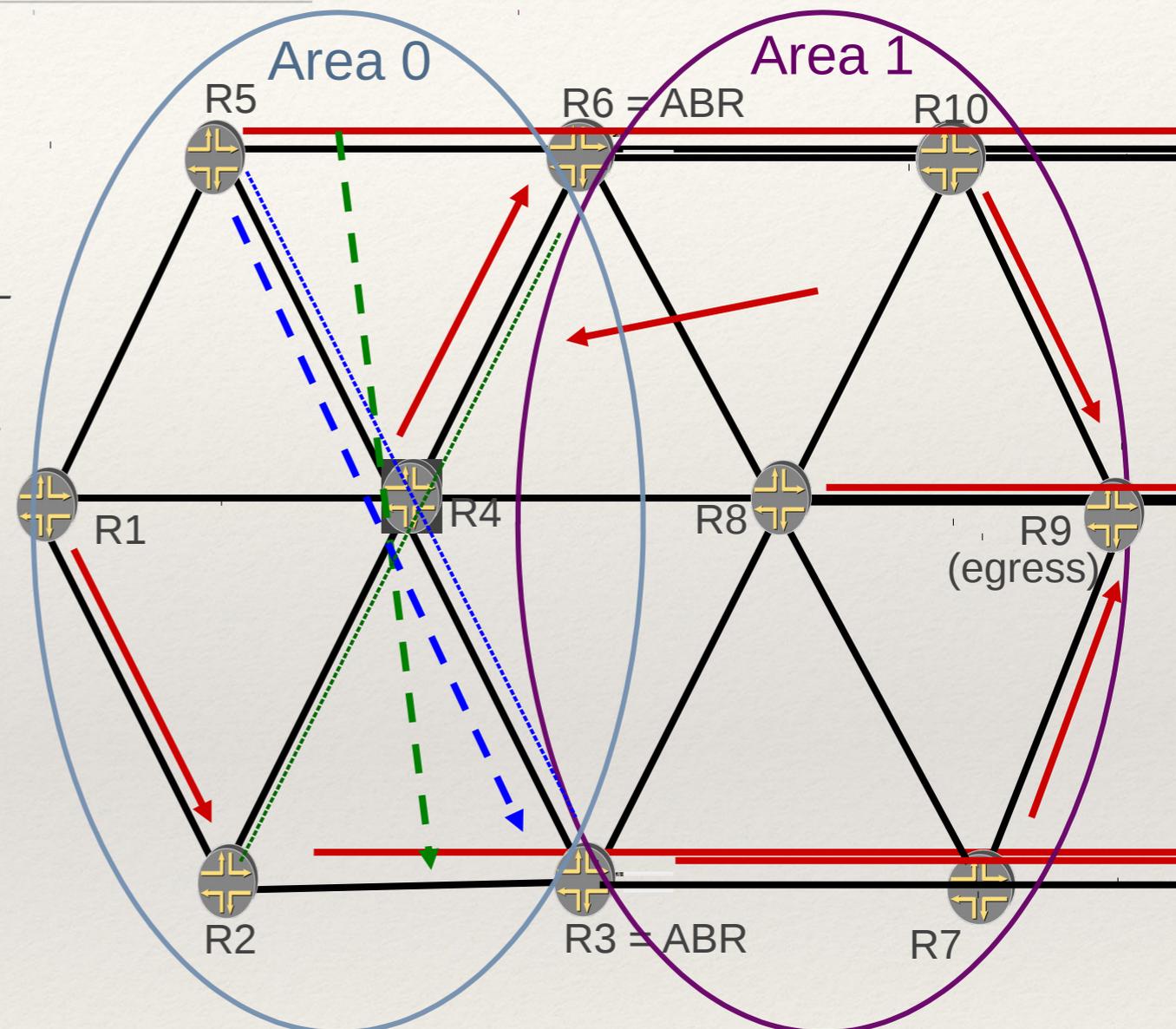
Protected link	PLR	MPT	Bypass LSP
R1-R2	R1	R2	<R1, R4, R2>
R2-R3	R2	R3	<R2, R4, R3>
R3-R7	R3	R7	<R3, R4, R7>
etc..			



# Node Protection – Inter-area

(protected node is ABR)

- ❖ Consider an LSP that traverses PLR, protected node, and particular neighbor of the protected node - we'll refer to this neighbor as the "next next-hop"
- ❖ When the protected node is an ABR, PLR may not be able to determine the next next-hop from its SPF
  - ❖ As PLR and the next next-hop may end up in different IGP areas
  - ❖ Yet in ISIS/OSPF scope of SPF is the IGP area of PLR
- ❖ In this scenario PLR uses an "alternative" ABR as MPT
  - ❖ For a given LSP that traverses PLR and protected ABR, an alternative ABR is defined as any ABR that advertises into PLR's own IGP area reachability to the FEC associated with the LSP
- ❖ PLR discovers an alternative ABR from the IGP



Protected node	PLR	MPT	Bypass LSP
R3	R2	R6	<R2, R4, R6>
R6	R5	R3	<R5, R4, R3>

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# Next Steps

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- † Version 05 addresses all the comments that we have received so far
- † The draft is stable for more than one year
- † Thus, the authors would like to request a working group adoption of the draft