

LDP Extensions for RMR

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Issues with LDP on Ring

- Single LDP LSP
 - After failure, SPF changes nexthop of same LSP to other side of ring, resulting in micro-loops
 - No weighted ECMP to optimally utilize all of the ring bandwidth
- Ring is worst topology for LFA protection
- LDP over RSVP protection has same limitation as described in RSVP-TE extensions
- More in architecture document - draft-ietf-mpls-rmr

LDP RMR LSPs

- After the Ring discovery, each node acting as egress signals two counter-rotating LSPs to itself
- Each transit node that receives the label mapping message signals this LSP further in same direction by using the ring topology information from IGP discovery
- Once the signaling is complete, every node in a ring should have two counter rotating LSPs in clockwise (CW) and anti-clockwise (AC) direction to reach every other node on the ring
- Each node can send traffic to a specific node on the ring either via CW or AC or both LSPs
 - Its a local decision via policy

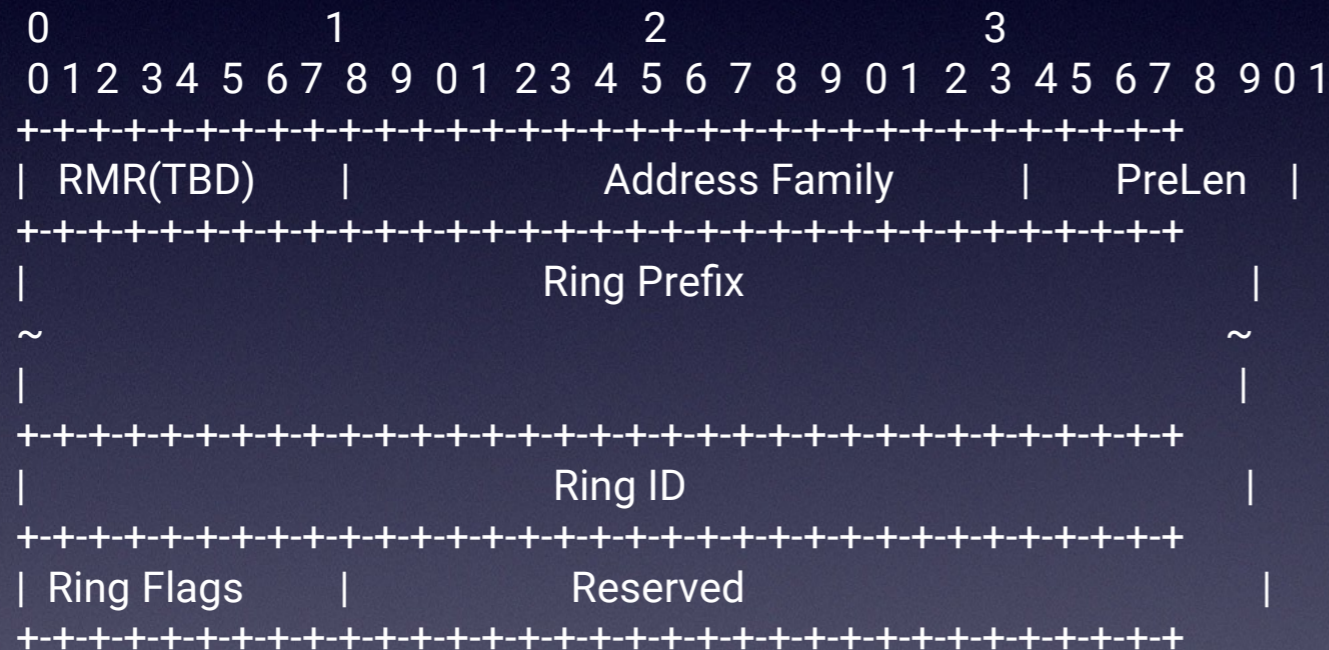
Protection

- Protection happens naturally - No LFA, No R-LFA, No TI-LFA, No RSVP-TE Bypasses
- RMR uses the two counter-rotating LSPs to protect one another

Protocol Extensions

- RMR LSP support for a LSR is advertised in LDP Initialization message using the new LDP capability called as RMR capability.
- Label mapping message with RMR FEC element is used to setup two counter rotating RMR LSPs

- Format



- Ring Flags value determine whether it is a CW or AC
- More details about upstream LSR selection and signaling procedures are described in the draft - draft-esale-mpls-ldp-rmr-extensions-00

Next Steps

- The new version addresses all the comments that we have received so far
- Need more feedback from the working group
- Request for MPLS WG Document

Thank you !