Multicast and RMR

draft-zzhang-mpls-rmr-multicast-00

MPLS WG
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Multicast and RMR

• Informational draft (for now) discussing multicast in the presence of RMR
  – Multicast can work as is
  – Some optimizations could be applied for certain cases

• Two scenarios:
  – The multicast domain is a RMR
  – The multicast domain has one or more RMRs
Multicast Services & Transport

• Services: end-end \((x,g)\) multicast
  – In global table (default routing instance): GTM
  – In VPNs (VRFs): MVPN/EVPN/VPLS

• Transport: tunnels used to support multicast services
  – Provider tunnels for MVPN/GTM/EVPN/VPLS
  – mLDP inband signaling
  – RSVP-TE P2MP base tunnel for mLDP over RSVP-TE
PIM/mLDP

• No need for optimization
  – Except for mLDP tunnel protection on a RMR
    • See later slides
  – Whether the domain goes beyond a ring or not
  – PIM join messages and mLDP label mapping merged as they go upstream
    • Ring topology does not make any difference

• PIM can be for both multicast service and transport
• mLDP is for transport
RSVP-TE P2MP Tunnel

• Multicast transport
  – For multicast services
  – For mLDP over RSVP-TE P2MP

• Tunnel spanning a single RMR:
  – draft-zzhang-mpls-rmr-rsvp-p2mp
    • One or at most two sub-LSPs
    • No need for explicit path
    • Implicit Leaves
    • Tunnel protection

• Tunnel spanning beyond a single RMR
  – Optimizations over each RMR, with the help of
    • Service overlay segmentation, or
    • Built-in RSVP-TE P2MP signaling enhancements
      – Further pondering needed
P2MP/MP2MP Tunnel Protection on a RMR

• No additional signaling or state for protection
• Before global repair finishes after a failure:
  – Don’t send RESV tear on failure
  – On link failure, PLR tunnels traffic to next node via a unicast ring LSP in the other direction
  – On node failure, PLR tunnel traffic to next next node
  – Traffic then continues from there on
Live-live Protection

• Live-live protection not needed in most situations
  – Traffic tunneled via Ring LSP upon failure

• Live-live protection can be easily achieved for mission-critical scenarios
  – If duplication removal is done by application
  – Just set up two opposite-direction sub-LSPs to reach all leaves and send traffic in both directions
  – Each leaf will deliver duplicate traffic (received in two directions) to application
  – No switchover upon failure detection; just global repair
Next Steps

- Seek comments
- Polish the document then request adoption