BGP for P2MP-LSP

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Motivation

- Need the fast recovery mechanism for the Multicast traffic
- Need the Traffic-Engineering feature for the Multicast traffic
- Need the Inter-Domain Multicast environments
Problems

- P2MP TE-LSP has already proposed
- P2MP TE-LSP use RSVP extension
  - IGP area configuration will restrict P2MP-LSP deployment
    - Lack of mechanism to discover/notify the P2MP capable node on Inter-Area/Inter-Domain
  - Increase a lot of path-state

We have BGP!
Advantage of BGP for P2MP

- Applicable for the Inter-Area/Inter-Domain
  - BGP messages traverse Area/Domain border
  - Easy and mature policy-control
- BGP-LSP stitch P2MP-LSP on Branch-LSR
  - P2MP path-state/instance exist at Branch-LSR
  - Core/non-P2MP LSR doesn’t have path-state of P2MP-LSP
P2MP-LSP Overview

Sender

Ingress LSR1

Branch LSR2

Branch LSR4

Egress LSR4

Egress LSR6

Egress LSR5

Egress LSR7

Receiver1

Receiver2

Receiver3

P2MP-LSP

P2MP Instance
BGP for P2MP LSP

- Advertising P2MP-LSP=L
- Advertising P2MP-LSP=L w/ branch-LSR-b
- Advertising P2MP-LSP=L w/ branch-LSR-b and c

- Ingress LSR-a
- Branch LSR-b
- Branch LSR-c
- Egress LSR-d

- Joined P2MP-LSP=L
  Upstream LSR=a
- Joined P2MP-LSP=L
  Upstream LSR=b
- Joined P2MP-LSP=L
  Upstream LSR=c

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Flood P2MP info to the network

- BGP Update
- P2MP-LSP-COMMUNITY
- Ingress LSR
- Branch LSR
- Branch LSR
- Egress LSR-1
- Egress LSR-2
- Egress LSR-3
Flood P2MP capable info to the network
Making the branch-node tree

- Ingress LSR
- Branch LSR-a
- Branch LSR-b
- Egress LSR-1
- Egress LSR-2
- Egress LSR-3

BGP Update
- P2MP-LSP-COMMUNITY
- P2MP-LSP-BRANCH-LIST=a
- P2MP-LSP-BRANCH-LIST=b
Join to P2MP-LSP(1)
Join to P2MP-LSP(2)
Established P2MP-LSP

Diagram:
- Ingress LSR
- Branch LSR-a
- Branch LSR-b
- Egress LSR-1
- Egress LSR-2
- Egress LSR-3
Coexisting w/ RSVP-P2MP Scenario

Intra area/domain

- RSVP P2MP-LSP
  - Ingress LSR
  - Branch LSR

Branch LSR

Border LSR

BGP P2MP-LSP

Other area/domain
Summary

- BGP is applicable for P2MP-LSP
  - Inter-Area/Domain
  - Saving number of path-state
- BGP P2MP-LSP can co-exist w/ P2MP-TE-LSP
Thank you!