EVPN BUM
Procedure Updates

draft-zzhang-bess-evpn-bum-procedure-updates-01

Jeffrey Zhang
Wen Lin
Jorge Rabadan
Keyur Patel

95th IETF
Summary

• Selective Multicast based on S-PMSI/Leaf Auto Discovery (AD) routes
  • Based on RFC 7117 (VPLS Multicast)
    • Similar to MVPN procedures

• Inter-region Tunnel Segmentation
  • A region could be an AS, an area, or even part of an area
    • Region Border Routers (RBRs) are the segmentation points
  • Similar to MVPN inter-AS/area segmentation
  • Based on PMSI/Leaf AD routes
PMSI/Leaf AD Procedures

- PMSI - Provider Multicast Service Interface
  - Inclusive/Selective PMSI
  - MVPN/VPLS-MCAST concepts applicable to EVPN as well
    - Inclusive/Selective Multicast Ethernet Tag (IMET/SMET) routes correspond to I/S-PMSI AD routes

- An I/S-PMSI AD route from an ingress PE announces the tunnel that instantiates the PMSI
  - Provider Tunnel Attribute specifies tunnel information

- An S-PMSI AD route includes (S,G) information
  - where both S and G could be wildcard

- An egress PE joins the tunnel that instantiates an S-PMSI by:
  - Sending PIM join or mLDP label mapping, or
  - Sending corresponding Leaf AD routes for other tunnel types
    - Ingress Replication, RSVP-TE P2MP, BIER
Tunnel Segmentation 1/2

• An end-end PE-PE tunnel can consist of segments of intra-AS/area tunnels
• Different tunnel types/instances may be required/desired in different AS/area
  • E.g. mLDP in AS1, RSVP-TE P2MP in AS2, BIER in AS3
  • For technical or administrative reasons
• Segmented IR can reduce replication fan-out
  • Each segment only includes PEs and border routers in the local AS/area
• Segmented BIER can reduce the BitStringLength in case of a large BIER domain
  • A 1024-node BIER domain can be divided into four 256-node sub-domains
    • BitStringLength of 256 instead of 1024
• MVPN: RFC 6514 (inter-as segmentation) and 7524 (inter-area segmentation)
• EVPN: this draft-zzhang-bess-evpn-bum-procedure-updates
  • Inter-region – where a region can be an AS, an area, or part of an area
When an RBR re-advertises an I/S-PMSI route to the next region, it modifies the tunnel type/ID advertised by the route to what’s used in that region.

PEs/RBRs in that region joins the tunnel segment for that region by
- Sending PIM join or mLDP label mapping, or
- Sending corresponding Leaf AD routes for other tunnel types
  - Targeted at the upstream RBR
I-PMSI AD route

• An I-PMSI AD route can be per-PE/region
• Per-PE I-PMSI AD route – identifies a PE
  • MVPN type-1 route (Intra-AS I-PMSI AD route)
  • EVPN type-3 route (IMET: Inclusive Multicast Ethernet Tag route)
• Per-region I-PMSI AD route – identifies a region
  • Allows aggregation from PEs to regions
    • Per-PE I-PMSI routes are not propagated across region
      • They’re summarized into per-region I-PMSI routes
  • MVPN type-2 route (Inter-AS I-PMSI AD route)
    • NLRI encodes an AS number
  • With EVPN a region could be an AS, area, or sub-area
    • NLRI encodes an 8-octet field encoded just like an EC
      • Allowing maximum flexibility of identifying a region
      • This is the main difference between revision -00 and -01
Relationship with
draft-sajassi-bess-evpn-igmp-mld-proxy

• Draft-sajassi covers two aspects
  1. Turn IGMP/MLD soft-state messages to EVPN SMET routes
  2. SMET routes allows Ingress PEs to send traffic on selective tunnels
     • w/o the need for S-PMSI AD routes
     • SMET routes are like analogous to Leaf AD routes

• Draft-zzhang and draft-sajassi are complementary wrt selective multicast
  • Not mutually exclusive
  • SMET routes in draft-sajassi work well if non-segmented IR/BIER is used for all flows
  • S-PMSI/Leaf AD routes and procedures in draft-zzhang are needed for other situations
     • Segmented tunnels
     • PIM/mLDP/RSVP-TE P2MP tunnel
     • IR/BIER selective tunnel is used only for some flows
      • This could be for the purpose of reducing the number of SMET routes
Next Steps

• Seeking more feedback from WG
• Request WG adoption