Role-Based State Advertisement for Multicast in MPLS/BGP IP VPNs

draft-li-bess-mvpn-role-state-ad-00

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Introduction

• Introduce a new BGP attribute called the "Role Discovery attribute" to advertise the mVRF's Role & State info.

• The role-based state advertisement can help optimization of process in BGP MVPN.
History Review and Updates

• History Review
  - Presented IETF 87, Berlin
  - Previous is draft-li-l3vpn-mvpn-role-state-ad-02

• Updates
  - Add the new use case, Centralized Multicast Traffic Optimization.
  - BGP Extensions changed from "Role-Based Intra-AS I-PMSI A-D route" to "Role Discovery attribute".
Scenario 1 - Easing Provision of mLD P P2MP LSP

• In Role Discovery attribute, mVRF’s Root/Leaf Role information is supported.

• It can facilitate the provision of mLDP to setup P2MP LSP:
  • Because all LEAF nodes can learn ROOT node’ IP Address thru this Role Discovery attribute in conjunction with A-D Route, and send Mapping Msg to ROOT automatically
  • LEAF node no need to configure root information under mLDP protocol.
Scenario 2 - Reducing Unnecessary Traffic Replication

- Role Discovery attribute supports advertising Leaf Role with Primary/Backup status information

- CE2 multi-homes to two PEs(PE2 and PE3), suppose PE2 is Primary Egress PE
- With help of new Role Discovery attribute, PE1 can learn the Egress Backup relationship between PE2/PE3, the bandwidth can be saved in the network since PE1 can stop to setup the ingress replication tunnel or P2MP LSPs to Backup Egress PE3
Scenario 3 - Local Protection of Egress Nodes

- Role Discovery attribute supports advertising Leaf Role with Primary/Backup Relationship information.
- With the info in Role Discovery attribute that PE1 is protected by PE2, Ingress PE5 could setup RSVP P2MP LSP with Egress Node Local Protection between PE1/PE2.
Scenario 4: Centralized Multicast Traffic Optimization

- Centralized Multicast Traffic Optimization
  - As the development of central controlled multicast application such as PCE-initiated P2MP LSP [I-D.palle-pce-stateful-pce-initiated-p2mp-lsp], PCE can be used to initiate the setup of RSVP-TE P2MP LSP for the purpose of traffic optimization.
  - In order to support such applications, the controller should learn the roles of Multicast VPN instances distributed on different PEs.
Protocol Extensions

• This document defines and uses a new BGP attribute called the "Role Discovery attribute".
• The Role Discovery attribute can be used in conjunction with Intra-AS I-PMSI A-D routes.

```
+-----------------------------------+
|R|RS|L|LS|      Reserved           |
+-----------------------------------+
|Protected Root's IP Addr(Optional) |
+-----------------------------------+
|Protected Leaf's IP Addr(Optional) |
```
Next Step

• Solicit comments and feedbacks
• Revise the draft