BGP-MVPN Source Active Routes for SPT-only Mode

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BGP-MVPN SPT-only Mode

- RFC 6514, Section 14. “Supporting PIM-SM without Inter-Site Shared C-Trees”
- Egress PEs do not send (C-*, C-G) C-Multicast routes to the UMH PE connecting toward the C-RP
- Egress PEs do send (C-S, C-G) C-Multicast routes to the UMH PE connecting toward the C-S
  - When they receive (C-S, C-G) Source Active routes
- Source Active routes are originated by a PE with the C-RP or an MSDP speaker in the VRF
  - They are only for announcing sources
    - They do not announce the actual traffic arrival
    - They do not need to be announced by the UMH PE for the C-S
  - (C-S, C-G) C-multicast routes are targeted at the C-S UMH PE
    - Not at the originator of the SA route
One Deficiency

• Suppose PE2’s BGP session goes down and PE3 loses/invalidates the \((C-S, C-G)\) Source Active route for some reason

• PE3 will withdraw its \((C-S, C-G)\) C-multicast route, and PE1 will send \((S, G)\) PIM prune and stop sending traffic
  • This is undesired because PE2 is not even in the traffic path
Solution

• PE1 can advertise the Source Active routes as well
  • Now PE3 has the Source Active routes from both PE1 and PE2 and won’t withdraw the (C-S, C-G) C-Multicast route even if one is lost/invalidated
  • PE1 knows the source because of the (C-S, C-G) state triggered by the (C-S, C-G) C-Multicast route
    • It should withdraw its Source Active route if it stops receiving traffic for a while
• This aligned with the purpose of Source Active routes – announcing sources

A PE can obtain information about active multicast sources within a given MVPN in a variety of ways. One way is for the PE to act as a fully functional customer RP (C-RP) for that MVPN. Another way is to use PIM Anycast RP procedures [PIM-ANYCAST-RP] to convey information about active multicast sources from one or more of the MVPN C-RPs to the PE. Yet another way is to use MSDP [MSDP] to convey information about active multicast sources from the MVPN C-RPs to the PE.
Proposal

• A PE may learn sources via many methods and advertise Source Active routes after that:
  • It is a C-RP (anycast or not), or has MSDP sessions to C-RPs
  • It receives (C-S, C-G) C-multicast routes
  • It receives traffic as a First Hop Router
  • Possible other ways – provisioning, PFM-SD, etc.

• A PE MUST withdraw its SA route when the source is no longer active
  • Detection by C-RP or MSDP mechanisms
  • Detection by traffic statistics
  • Possible other ways corresponding to how it was learned before
Next Steps

• Comments appreciated!
• Progress the draft separately, or,
• Fold into a RFC6514bis draft?