Update on
draft-ietf-bess-mvpn-expl-track

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Two Major Topics

• First topic
  • Use of PMSI Tunnel Attribute (PTA) as follows:
    • Tunnel type of no tunnel information,
    • Leaf Info Required (LIR) flag set
  • This provide mechanism for ingress node to learn:
    • which egress nodes are interested in receiving which multicast flows from the ingress node
    • without impacting the binding of flows to tunnels
  • Useful information for monitoring

• Second topic
  • New PTA flag: Leaf Info Required per Flow (LIR-pF)
**Leaf Info Required per Flow (LIR-pF)**

- Ingress-PE can send wildcard S-PMSI route with LIR-pF set
- Egress-PEs respond with a *Leaf* route for each flow
  - *route key* field identifies individual flow
- Without LIR-pF, egress-PE responds with only one *Leaf* route
  - *route key* field contains the wildcard (the S-PMSI’s NLRI)
  - cannot identify individual flows
- Useful with BIER or Ingress Replication, since ingress-PE:
  - benefits from per-flow response,
  - can save the overhead of sending per-flow S-PMSI route.
- **N.B.**: this changes the ingress PE processing of received *Leaf* routes, because now a valid *Leaf* route may have a *route key* that is not identical to an S-PMSI route’s NLRI
Recent Changes

• Many clarifications and textual improvements
  • Thanks to Stephane Litkowski for thorough shepherd’s review

• Changes in the way Leaf routes are constructed when sent in response to LIR-pF
  • New and improved way of identifying that a Leaf route is a response to LIR-pF
  • Much more detailed spec of how the PTA of such a Leaf route is constructed
    • depending upon the PTA of the S-PMSI route to which it is a reply

• New section detailing how an ingress node processes a received Leaf route whose route key is not identical to the NLRI of a sent x-PMSI route
Marking a *Leaf* Route to Indicate that it is a Response to *LIR-pF*

- **New technique:**
  - If and only if *Leaf* route is response to *LIR-pF*, it carries a *PTA* with *LIR-pF* set
    - (so *PTA* is now mandatory in such *Leaf* routes)

- Previous drafts instead required modification of the *RD* in the *route key* field:
  - that was a more complex solution with more unintended side-effects
More Detail about Constructing PTA of Leaf Route in Response to LIR-pF

- New details about how to set *Tunnel type* field:
  - when *Leaf’s PTA* can have same *tunnel type* field as corresponding *S-PMSI* route
  - vs. when it can specify *no tunnel type*

- New details about how to set *MPLS Label* field:
  - For *Ingress Replication*, specifies procedure that allows:
    - Ingress to send one wildcard *S-PMSI* route
    - Egress to not only reply with one *Leaf* route per flow, but also to **optionally** specify an MPLS label for each flow

- Informational reference added to bier-mvpn document, which covers these details for the case where the ingress specifies a tunnel type of BIER
New Section On Ingress Node Processing of Received *Leaf* Routes

- If *Leaf* route *PTA* has *LIR-pF* set, route key field doesn’t have to match *NLRI* of any *S-PMSI* route originated by the ingress
  - but the *Leaf* route does have to be a valid response to some *S-PMSI* route, or it won’t impact the multicast processing on the ingress node
  - ingress node has to match the *Leaf* route to the right *S-PMSI* route (or at least keep an eye on the *Leaf* route until there is a right *S-PMSI* route)
- Details provided for handling received *Leaf* routes, with *LIR-pF* set, that specify *IR* tunnels and per-flow MPLS labels
What Documents Does this Update?

- Updates RFC 6625 (*MVPN Wild Cards*),
  - RFC 6625 neglects to handle combination of wild cards with *PTA* that specifies *no tunnel type*
- Modifies ingress node processing of received *Leaf* routes, therefore updates:
  - RFC 6514 (*Base spec for BGP-MVPN*), which says that *Leaf* route *root key* must be identical to *NLRI* of corresponding *S-PMSI* route
  - RFC 7524 (*Inter-Area Segmentation*) which also has *Leaf* routes whose *route keys* don’t correspond exactly to the *NLRI* of an *S-PMSI* route.
Next Steps

- Document is ready for WG LC
- It has been claimed that this document is a normative reference of the BIER-MVPN spec, which is ready to go to the RFC Editor
  - We hope we can move this document along quickly, so as not to block the BIER documents.