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LSP Ping Support for E-VPN and PBB-EVPN

(draft-jain-bess-evpn-lsp-ping-01.txt)

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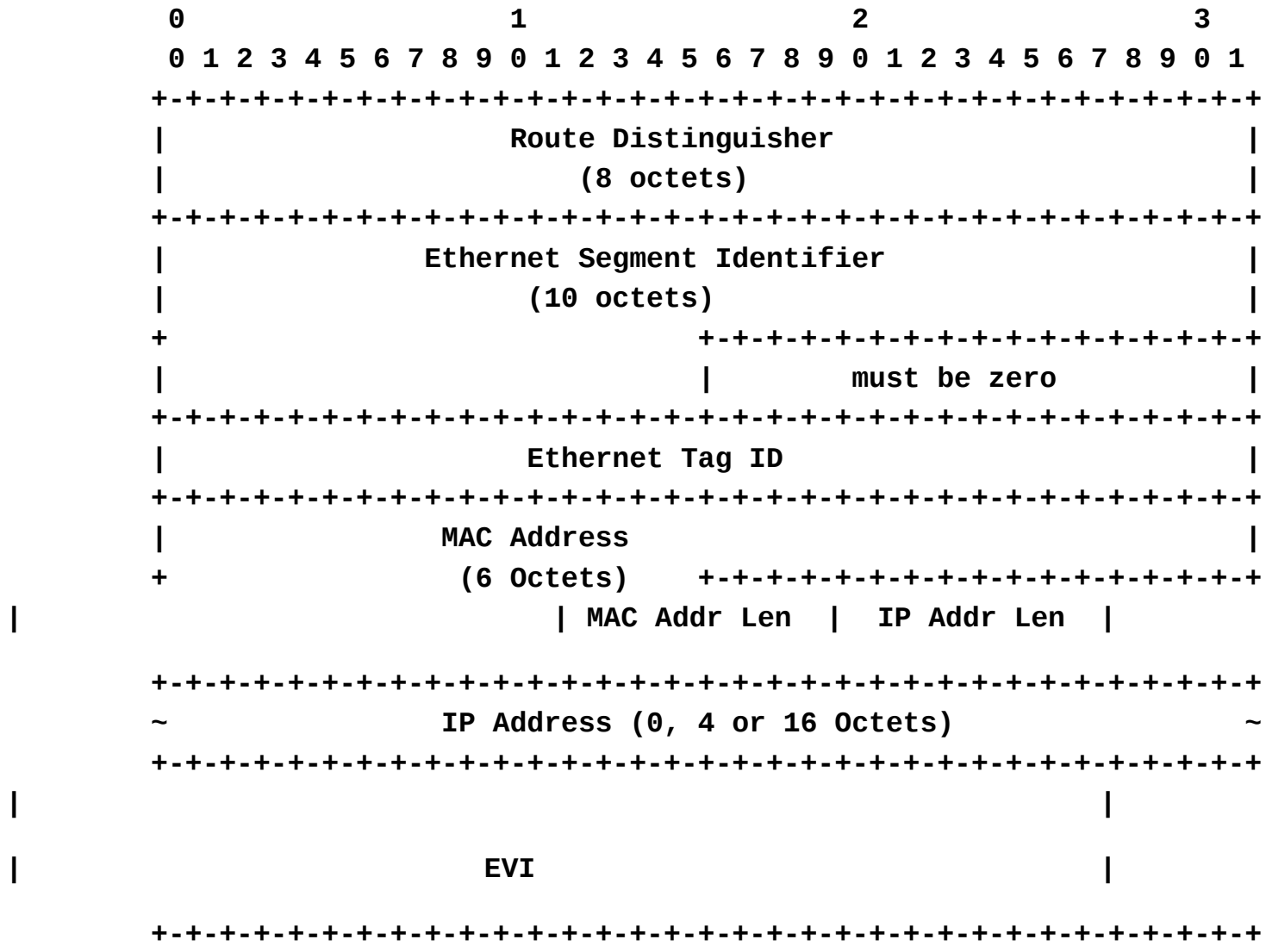
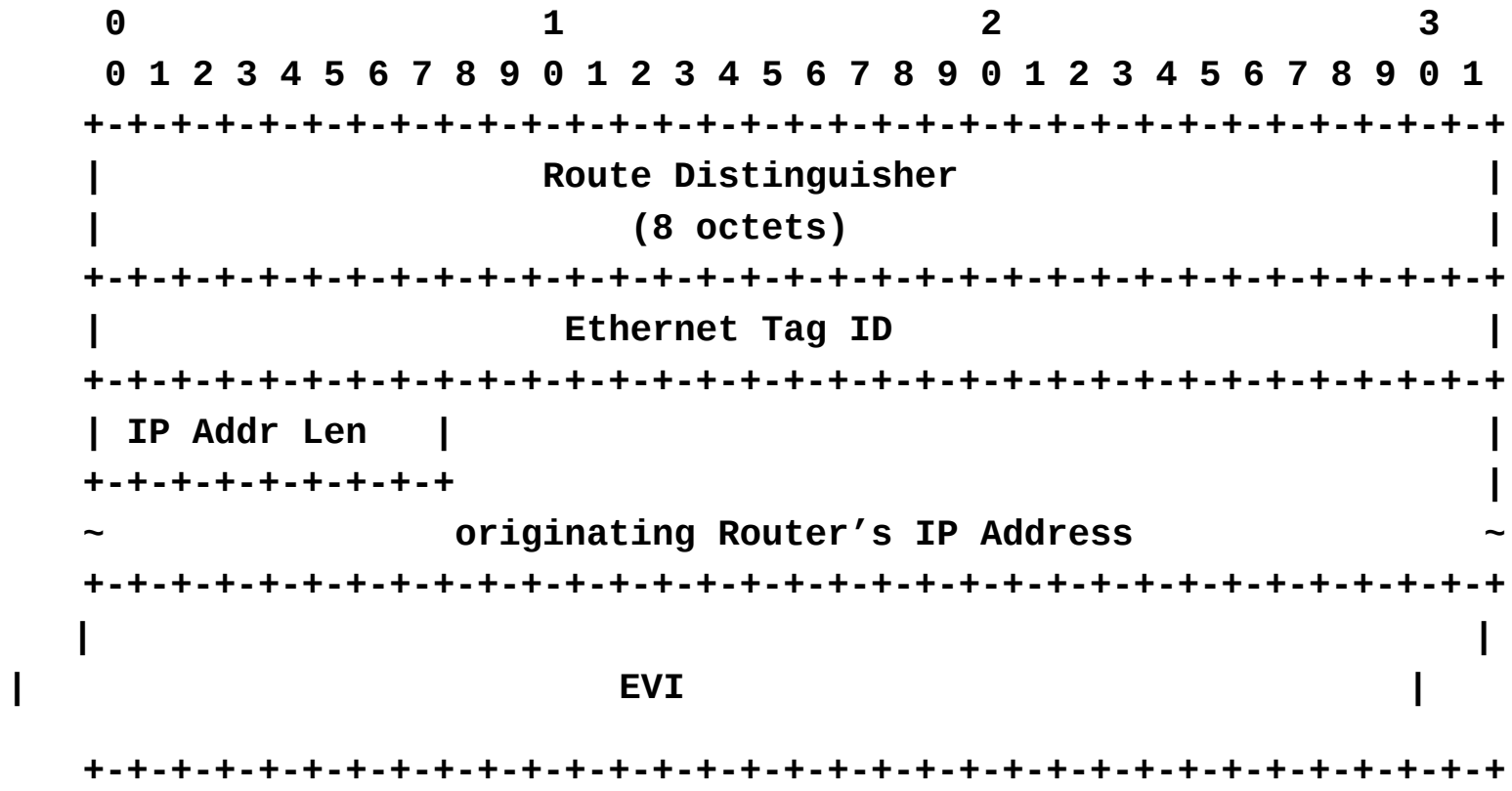
LSP Ping Support for E-VPN and PBB-EVPN

- Define LSP Ping procedures for E-VPN and PBB-EVPN
- Support ingress replication and P2MP P-trees for Broadcast, multicast and unknown unicast.
- Define 3 new sub-TLVs for Target FEC Stack for identifying various FEC under test

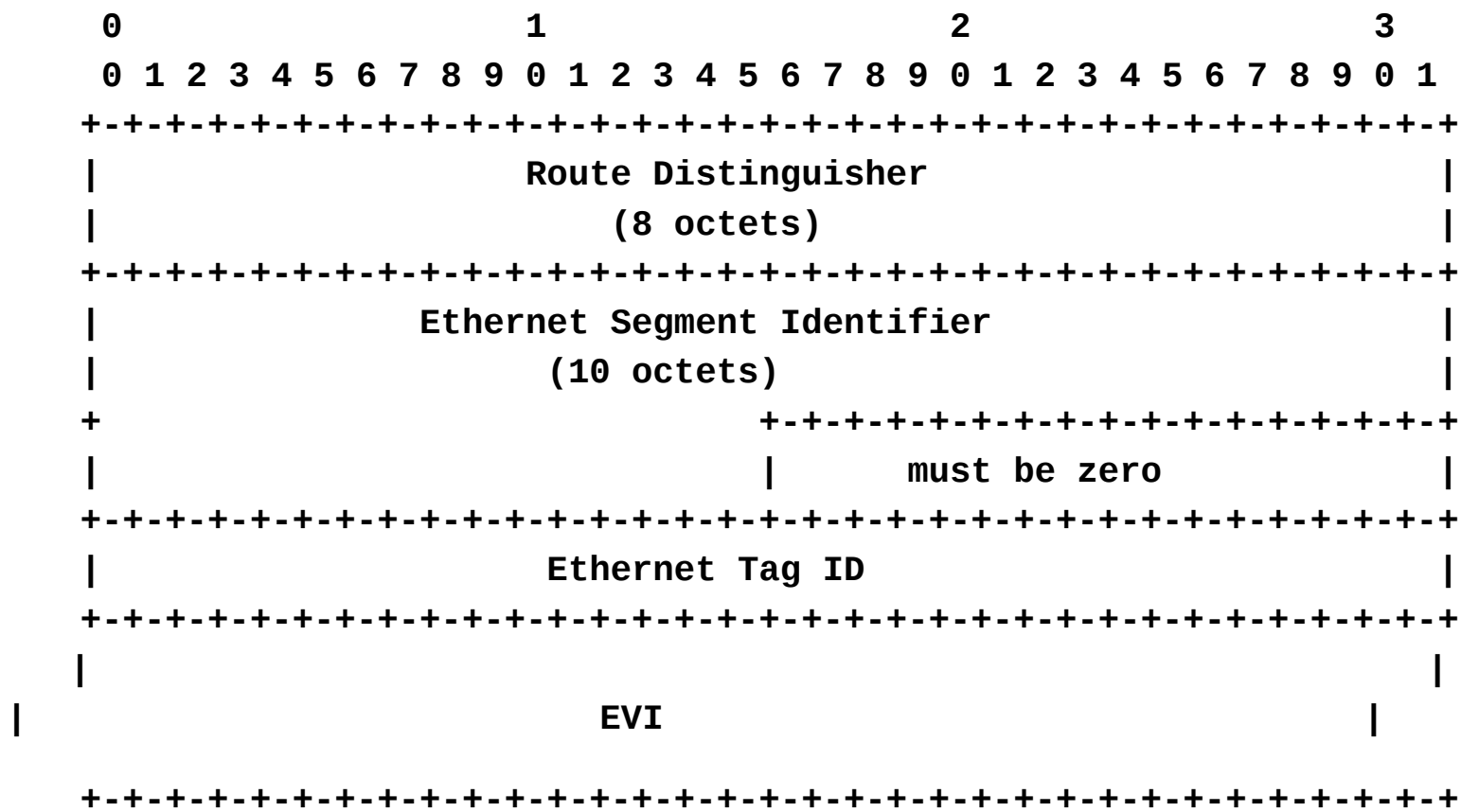
Proposed E-VPN MAC sub-TLV Format



Proposed E-VPN Inclusive Multicast sub-TLV Format



Proposed E-VPN Auto-Discovery sub-TLV Format



Encapsulation of OAM Ping Packets

- Use GAL and followed by ACH with PW channel type IPv4 for encapsulating LSP Ping Echo Request packets

Remote MAC Connectivity test

- Echo Request with target FEC stack TLV containing E-VPN MAC sub-TLV.
  - Echo Request packet will be encapsulated with E-VPN MAC label as the bottom label:

{Transport Label(s), E-VPN MAC Label, GAL}

Multicast Connectivity test for Ingress Replication

- Echo Request with target FEC stack TLV containing E-VPN Inclusive Multicast sub-TLV.
- Echo Request packet will be encapsulated with E-VPN Inclusive Multicast label as the bottom label:

  {Transport Label(s), E-VPN Inclusive multicast Label, GAL}

  - For PBB-EVPN, if remote PE is not DF for the tag (ISID) ID in the inclusive Multicast sub-TLV on some Ethernet Segments, the remote will reply with a special return code –

  "FEC exists on the router and the behavior is to drop the packet because of not DF"

  - For E-VPN case, Echo Request packet may carry an Ethernet AD sub-TLV and associated MPLS Split Horizon Label at the bottom of the MPLS label stack for the other remote MH PE which will respond with a special return code.

  "*FEC exists on the router and the behavior is to drop the packet because of Split Horizon Filtering"*

Multicast Connectivity test for P2MP P-tree

- Echo request to the remote PE with the target FEC stack TLV containing E-VPN Inclusive Multicast sub-TLV.
- When Using Inclusive P2MP P-trees, send Echo Request packet with the following label stack:

  {P2MP P-tree label, GAL}

  - When Using Aggregate Inclusive P2MP P-trees, send Echo Request packet with the following label stack:

  {P2MP P-tree label, Upstream assigned E-VPN Multicast Label, GAL }

  - For PBB-EVPN, if remote PE is not DF for the tag (ISID) ID in the inclusive Multicast sub-TLV on some Ethernet Segments, the remote will reply with a special return code –

  "FEC exists on the router and the behavior is to drop the packet because of not DF"

  - For E-VPN case, Echo Request packet may carry an Ethernet AD sub-TLV and associated MPLS Split Horizon Label at the bottom of the MPLS label stack for the other remote MH PE who will respond with a special return code.

  "*FEC exists on the router and the behavior is to drop the packet because of Split Horizon Filtering"*

Aliasing State Connectivity test

- Echo request to the remote PE with the target FEC stack TLV containing E-VPN Ethernet AD sub-TLV.
  - Echo Request packet encapsulated with E-VPN Ethernet AD label as the bottom label:

    {Transport Label(s), E-VPN Ethernet AD Label, GAL}

Next Steps

- Seeking Feedback
- Looking for WG adoption