BGP Extensions for Setup Service-Driven Co-Routed LSP in L3VPN

draft-ni-l3vpn-bgp-ext-sd-co-lsp-00

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Solution Suggested in [draft-li-mpls-serv-driven-co-lsp-fmwk]

■ For L3VPN Scenario:

Co-routed RSVP-LSPs between a pair of VRFs could be setup automatically driven by L3VPN Service

■ It contains 4 steps:

➢ STEP1: Doing L3VPN Service A-D by using VT VPN A-D Route in VRF granularity

➢ STEP2: One side PE(Active PE) setup LSP first and advertise Tunnel Type/ID to other side PE(Passive PE)

➢ STEP3: Passive PE setup reverse LSP based on forward LSP's Path info and advertise the Tunnel Type/ID back to Active PE

➢ STEP4: Both PEs bind the tunnels together for above L3VPN service.

A new BGP VT Type Route is defined to support above Step2&3 works.
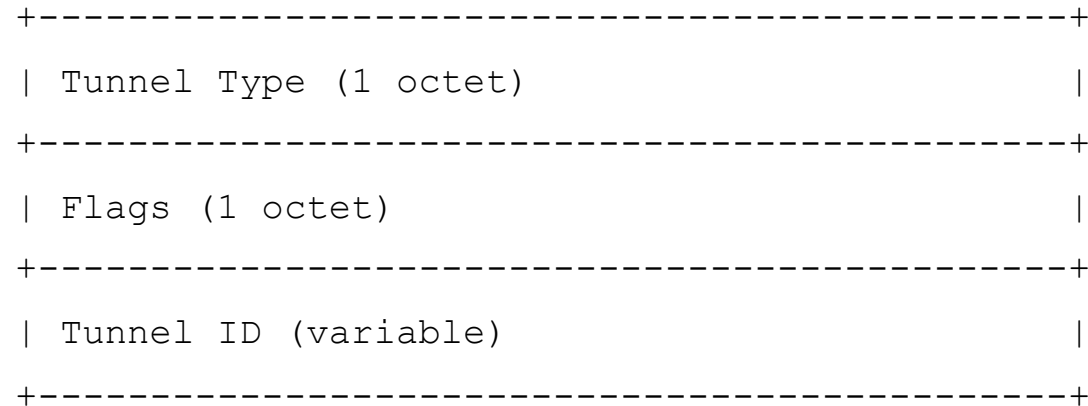
BGP Extensions: VT Tunnel-ID Signal Route(1)

■ VT Tunnel-ID Signal Route is defined as:

```
+------------------------------------------------+
| Local VRF's RD (8 octets)                      |
+------------------------------------------------+
| Local Router's IP Address                      |
+------------------------------------------------+
| Remote VRF's RD (8 octets)                     |
+------------------------------------------------+
| Remote Router's IP Address                     |
+------------------------------------------------+
| Tunnel Type (1 octet)                          |
+------------------------------------------------+
| Flags (1 octet)                                |
+------------------------------------------------+
| Tunnel ID (variable)                           |
+------------------------------------------------+
```

➤ Local VRF's RD together with Local Router's IP Address identifies a Local VRF

➤ Remote VRF's RD together with Remote Router's IP Address identifies a Remote VRF

BGP Extensions: VT Tunnel-ID Signal Route(2)

- VT Tunnel-ID Signal Route(Tunnel Info Part)

```
+------------------------------------------------+
| Tunnel Type (1 octet)                          |
+------------------------------------------------+
| Flags (1 octet)                                |
+------------------------------------------------+
| Tunnel ID (variable)                           |
+------------------------------------------------+
```

- Tunnel Type: 2 values are defined:

  ➢ 0: RESERVED

  ➢ 1: RSVP-TE Tunnel

  ➢ other value: to be defined later if need

- Flags Field: Lowest 1 Bit is used/defined as R bit (other 7 bits are RESERVED):

  ➢ 1: Active – Tunnel info is advertised from Active PE to Passive PE

  ➢ 0: Passive – Tunnel info is advertised from Passive PE to Active PE

- Tunnel ID:

  ➢ Tunnel ID format is defined specific according to Tunnel Type,

  ➢ For RSVP-TE tunnel, it has same format of SESSION Object defined in RSVP-TE [RFC 3209]

Active/Passive PE Role Auto Selection

■ Active/Passive PE role COULD be determined by 2 manners:

➢ Manually Configured

➢ Auto Selected through BGP protocol

— In VT Capability Negotiation, peer's Router IDs are compared as unsigned

integer, peer with Larger value is selected as Active PE.

Next Steps

- Solicit more comments & feedbacks
- Revise the draft