

# BGP Extension For L3VPN PM

draft-ni-l3vpn-pm-bgp-ext-00

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# Solution Suggested in [draft-dong-l3vpn-pm-framework]

## ■ Basic Idea:

- Create a VRF-To-VRF Tunnel ( VT Tunnel ) between a pair of VRFs
- Carry L3VPN traffic on this P2P tunnel.

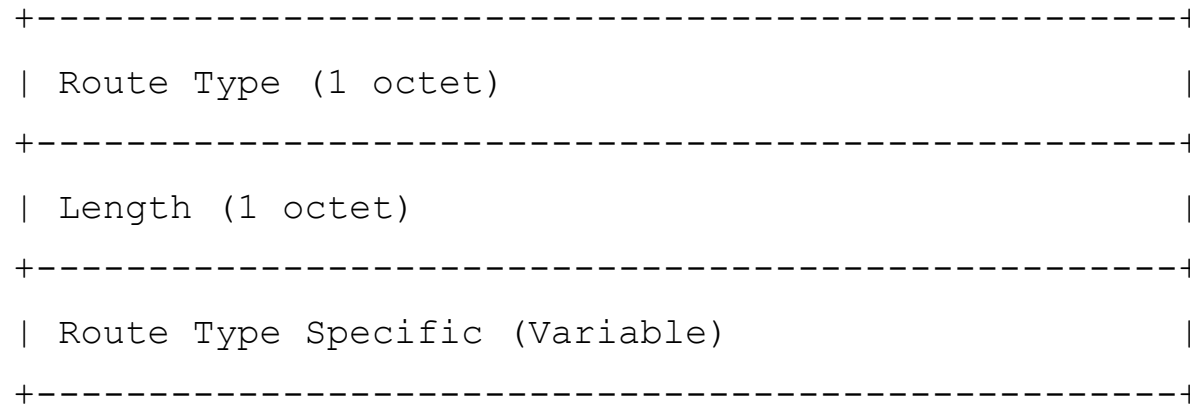
## ■ 3 basic steps taken to setup VT tunnel

- STEP1: Doing L3VPN membership A-D in VRF granularity through BGP protocol
- STEP2: Support allocating a new L3VPN inner Label(VT Label) in a VRF-to-VRF manner through BGP protocol
- STEP3: Still Use BGP VPN Labeled Route to exchange private routes, but apply VT Label to Private Routes as Inner Label to shift L3VPN forwarding model from MP2P to P2P

**BGP extension for step1 & 2 work is defined in this draft.**

# BGP Extensions: VT Sub Address Family

- VT is introduced by following MP-BGP Framework defined in [RFC 4760] , with a [SAFI to be assigned by IANA](#) to indicated VT Sub Address Family
- VT NLRI is defined as below diagram and it supports multiple route types



- Two types of routes are defined:
  - TYPE 1: VT VPN membership A-D Route
  - TYPE 2: VT Labeled Route

# BGP Extensions: VT VPN A-D Route

■ VT VPN A-D route is designed to describe VRF's route importing requirement, utilized to guide remote PE to advertise VT Labeled Route in a DoD-Like manner

■ VT VPN A-D Route is defined as:

```
+-----+
| RD (8 octets) |
+-----+
| Local Router's IP Address |
+-----+
```

- RD value is filled with local VRF's RD value
- Local Router's IP address is advertising PE's loopback IP address for BGP session

■ This route MUST carry Local VRF's IRTs as Ext-Community attribute in BGP Update message

# BGP Extensions: VT Labeled Route

- VT Labeled Route is designed to advertise VT Label in a VRF-to-VRF manner

```
+-----+
| Local VRF's RD (8 octets) |
+-----+
| Local Router's IP Address |
+-----+
| Remote VRF's RD (8 octets) |
+-----+
| Remote Router's IP Address |
+-----+
| Label (3 octets) |
+-----+
```

- Local VRF's RD together with Local Router's IP Address identifies Local VRF
- Remote VRF's RD together with Remote Router's IP Address identifies Remote VRF
- Label field is one or more labels allocated for the VT tunnel between Local VRF & Remote VRF

# Best Route Selection: VT A-D/Labeled Route

- VT A-D Route MUST follow Best Route Selection defined in [RFC 4271 ]
  - The Best Route result is utilized to guide VT Labeled Route's advertisement:  
VT Labeled Route MUST be advertised to the BGP Peer from which the Best VT A-D route is received.
  
- VT Labeled Route SHOULD follow Best Route Selection defined in [RFC 4271] as an implementation option.

# Next Steps

- Solicit more comments & feedbacks
- Revise the draft