VPN Label Monitoring Using BMP

draft-gu-grow-bmp-vpn-label-00

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Use Case

- For traffic optimization, in the multi-exit network scenario, operator inserts explicit route(s) into the network gateways (i.e., IX A, IX B) to steer the traffic.
- In the MPLS VPN case, the VPN label needs to included in the explicit route so that the gateway can correlate the route with the responsible VRF.
- PE: IX A, IX B, IX C
- CE: devices from ISP A and ISP B
Current Approach of Collecting VPN Labels

Steps:
- Setting up VPNv4/6 peering relationship between the router server and the PE routers;
- The route server receives VPNv4/6 routes from PE routers, and then extracts VPN Label from the VPNv4/6 routes;

Issues:
- Inefficient processing of VPN routes in the server;
- No usage of VPN routes other than extracting the label, extra bandwidth consumption of VPN routes collection.
Solutions Options Using BMP

Solution 1:
- BMP server monitors BGP session between PE and CE;
- Problem:
  - The peer between PE and CE is a "RD Instance Peer", and there is no VPN label information for this peer in the BMP messages.

Solution 2:
- Get VPN Label from Peer Up Notification Message and/or Route Monitoring Message.
- Advantage over existing approach:
  - No extra work of label extracting from VPN routes, more efficient
  - Saves network bandwidth

No VPNv4/6 Peering Info in Router Server/Controller.
Extension of BMP Peer Up Message

- The Peer Up Notification of BMP, defined in [RFC7854], is used to indicate the come-up of a peering session.
- The VPN route label can be carried in Peer Up Notification message and reported to the BMP monitoring station in the TLV format.

```
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-----------------------------------------------+
| Information Type | Information Length |
+-----------------------------------------------+
   Information (variable)                     +
```

- Type = TBD1: VPN Label, allocated per VRF per label.
- Type = TBD2: VPN Label, allocated per interface per label.
- Type = TBD4: VPN Label, allocated per next hop per label.
Benefit

- Reduce amount of label reports (per label per instance)
- Eliminate the process of label stripping step, improve routing process efficiency
- Avoid errors caused by effective label monitoring
Next Steps

- Close the existing comments
- Solicit more comments, feedback from WG
Thank you !