Route Distinguisher Outbound Route Filter (RD-ORF) for BGP-4

[draft-wang-idr-rd-orf]

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Changes to the draft:

- The description of the limitations of existing solutions is added
- Clarifying some previously unclear aspects of RD-ORF mechanism
- Modifying the withdraw mechanism of RD-ORF
- The solution of RD-ORF mechanism in the scenario of "several VRFs in a PE import VPN routes which carries the same RT" is added
Operation process of RD-ORF mechanism on source PE

PE1 – PE4 maintain VPN route information in Virtual Routing Forwarding (VRF)
RR do not maintain any VRF
The RD-ORF mechanism in different devices is independent.
When the VRF of VPN1 in PE1 overflows, PE1 generates a BGP ROUTE-REFRESH message contains a RD-ORF entry, and send it to RR.
Operation process of RD-ORF mechanism on source PE

The scenario of several VRFs in a PE import VPN routes carries the same RT

Problems:
• If VRF3 overflows, PE will send RD-ORF to RR, RR stops sending VPN routes contains RD3, VRF1 & VRF2 cannot receives VPN routes contains RD3, too.

Solution:
• PE can use local determination to inhibit RD-ORF mechanism
Operation process of RD-ORF mechanism on RR

- RR checks the RD-ORF entry and add it into its Adj-RIB-out;
- RR stops sending VPN routes contains RD1 to PE1;
- If RR’s capacity reach the limit, RR will find out the peer sends the most routing entries to it (assuming it is PE3 and the overflow VPN route’s RD is RD1);
- RR regenerates a BGP ROUTE-REFRESH message to send RD-ORF entry to PE3;
Operation process of RD-ORF mechanism on target PE

- PE3 checks the RD-ORF entry and add the RD-ORF entry into its Adj-RIB-out;
- PE3 stops sending VPN routes contains RD1 to RR;
Withdraw of RD-ORF entries

1. RD-ORF mechanism is triggered
2. Operators manually recover the overflow device
3. After returning to normal, the device sends withdraw ORF entries to its peers who have previously received ORF entries
4. Network operation returned to normal
Further Action

• Comments?
• Adopt as WG document?

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