

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

[\[draft-wang-idr-rd-orf\]](#)

Wei Wang (China Telecom)

Aijun Wang (China Telecom)

Haibo Wang (Huawei)

Gyan Mishra (Verizon)

Shunwan Zhuang (Huawei)

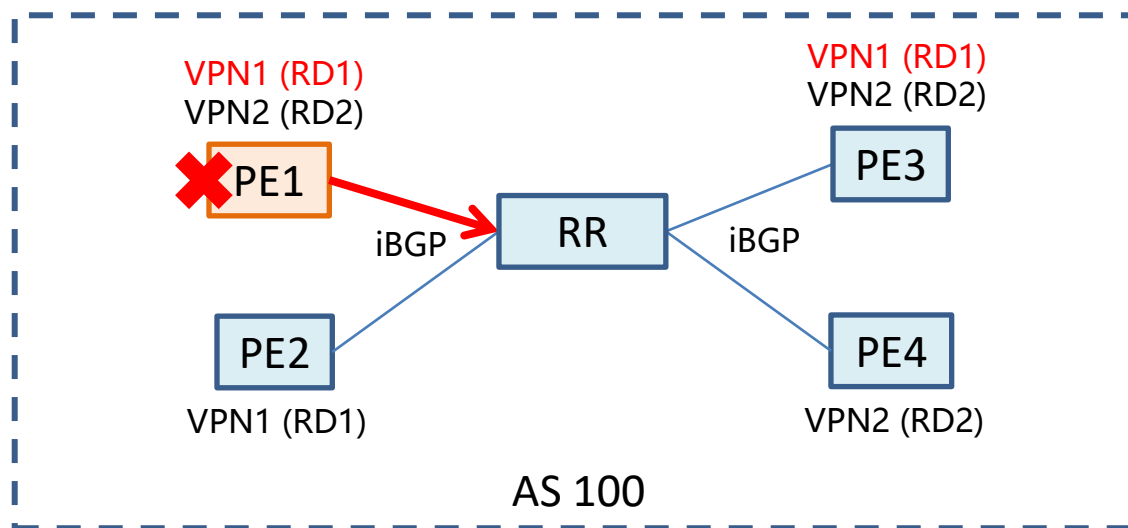
Jie Dong (Huawei)

IETF 109, November. 2020

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

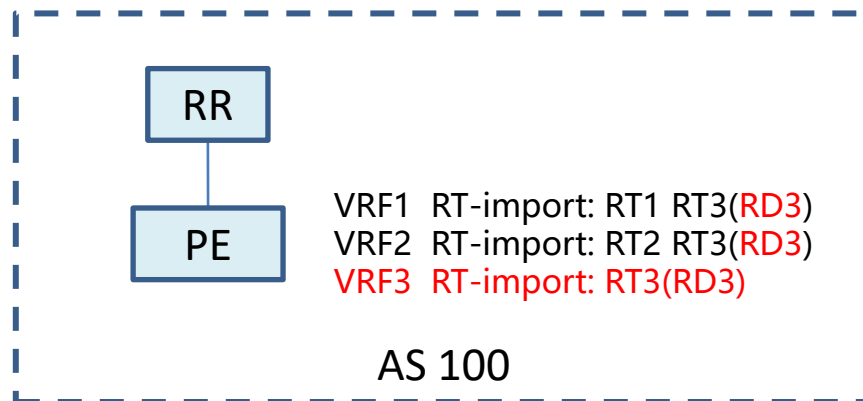
Operation process of RD-ORF mechanism on **source PE**



VPN Routes Exchange via RR within one Single Domain

- 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

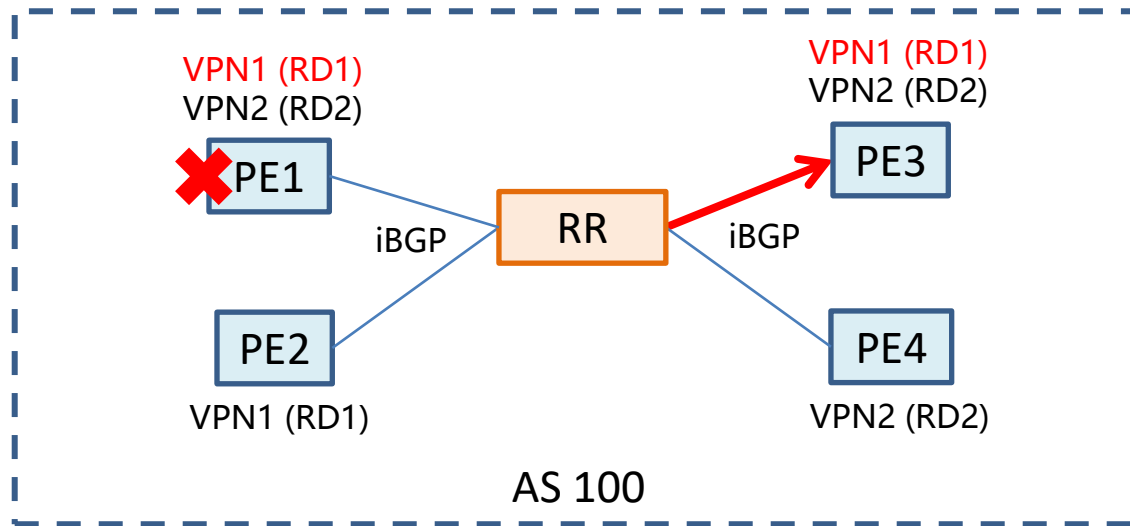
Problems:

- 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

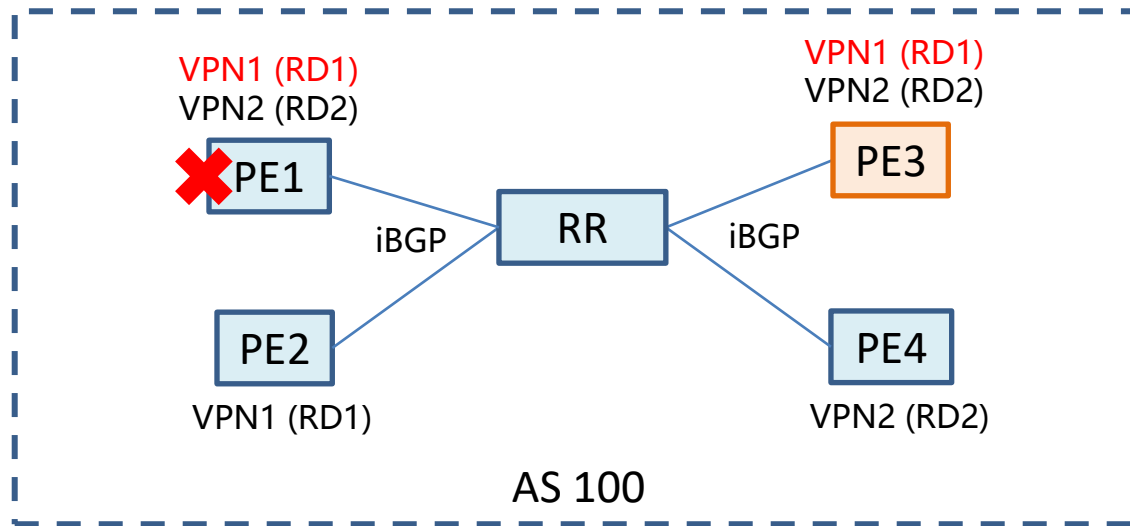
Operation process of RD-ORF mechanism on RR



VPN Routes Exchange via RR within one Single Domain

- 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;

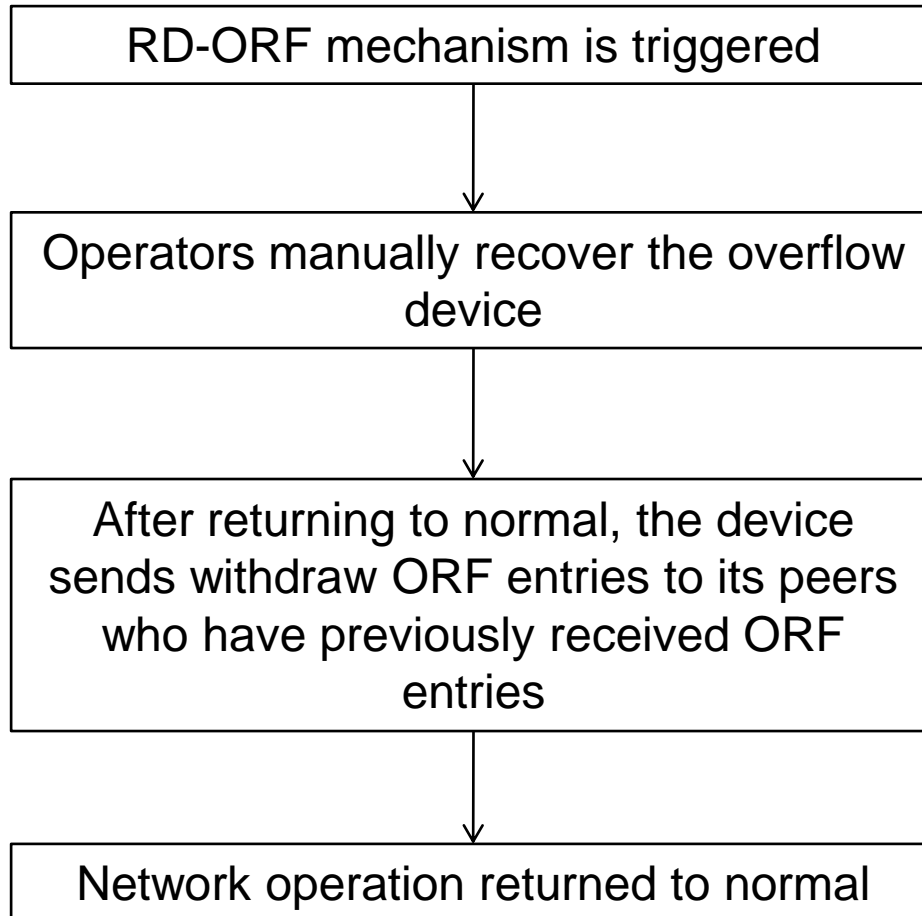
Operation process of RD-ORF mechanism on **target PE**



VPN Routes Exchange via RR within one Single Domain

- 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



Further Action

- Comments?
- Adopt as WG document?

wangw36@chinatelecom.cn
wangaj3@chinatelecom.cn
rainsword.wang@huawei.com
gyan.s.mishra@verizon.com
zhuangshunwan@huawei.com
jie.dong@huawei.com

IETF109