# Updates on VPN Prefix ORF Solutions

## draft-wang-idr-vpn-prefix-orf

*Aijun Wang (China Telecom)*
*Wei Wang (China Telecom)*
*Gyan Mishra (Verizon)*
*Haibo Wang (Huawei)*
*Shunwan Zhuang (Huawei)*
*Jie Dong (Huawei)*

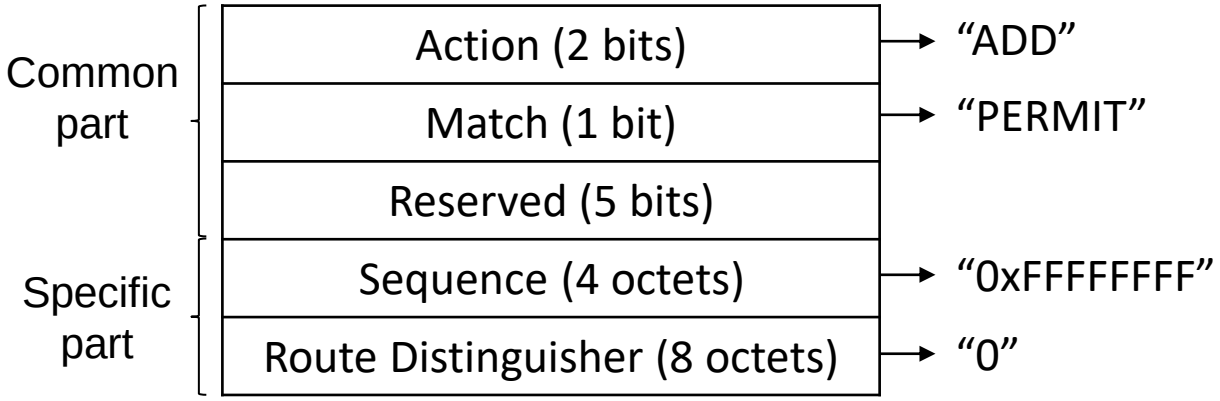
IETF 114, July 2022

# Motivation of This Presentation & Summary of Updates & Issues resolved

- ✓ Describes the updates on draft-wang-idr-vpn-prefix-orf after last adoption call:
  - The PERMIT-ALL mechanism is defined via set Sequence to 0xFFFFFFFF and set RD to 0.
  - Trigger of VPN Prefix ORF mechanism has been clarified.
  - Operational process of VPN Prefix ORF on receiver has been updated to now use a 3-tuple {RD, Source PE, RT} of the VPN route extracted from BGP update.
  - Source PE TLV is defined to identify the source of the VPN routes where it is set to next-hop for Option-C or intra-domain scenario and set to Source PE Extended community for Option-B where the next hop is changed to preserve the next hop at the inter-as boundary.
  - Route Target TLV is defined to identify the RT of the offending VPN route so that RT & RD can be used together to filter VPN routes when the source VRF contains multiple RTs assigned to different VRF on the receiver.

# PERMIT-ALL mechanism of VPN Prefix ORF solution

Due to the default behavior of ORF mechanism is “DENY”, the device which support VPN Prefix ORF mechanism needs to send an “PERMIT-ALL” entry to its peers to ensure it can receive non-offending VPN routes.

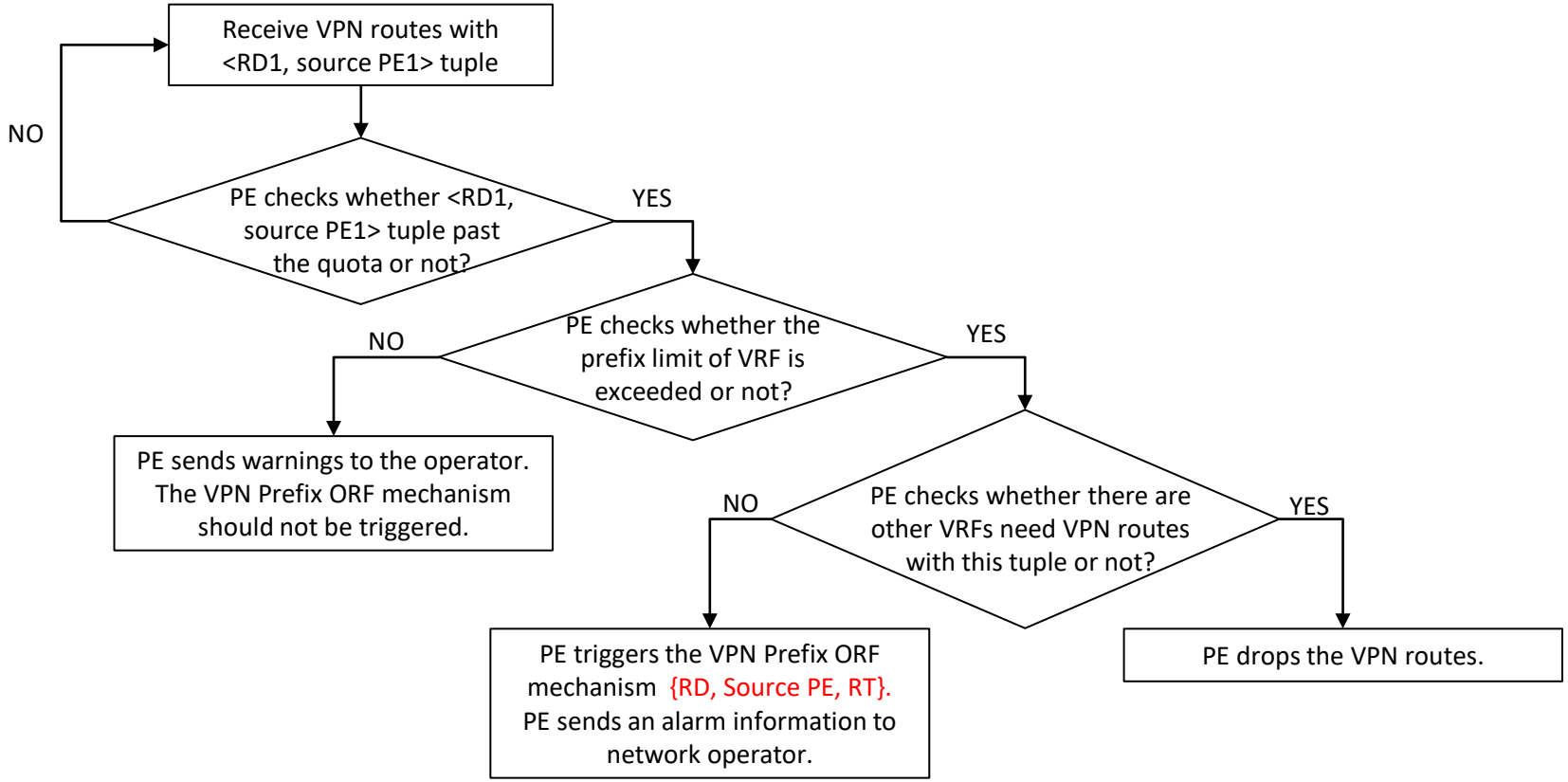



**The encoding of “PERMIT-ALL” entry**

This entry should be sent before the other VPN Prefix ORF entries. The Sequence field is set to 0xFFFFFFFF so that the “PERMIT-ALL” entry can be stored as the last entry in ORF-Policy table. The RD is set to 0 specifies all VPN routes are permitted, no additional Optional TLV is required.

# The trigger of VPN Prefix ORF mechanism

The operation of VPN Prefix ORF mechanism on each device is **independent**. On a PE, each VRF has a **prefix limit**, and routes associated with each <RD, source PE,RT> 3-tuple has a **pre-configurated quota**.



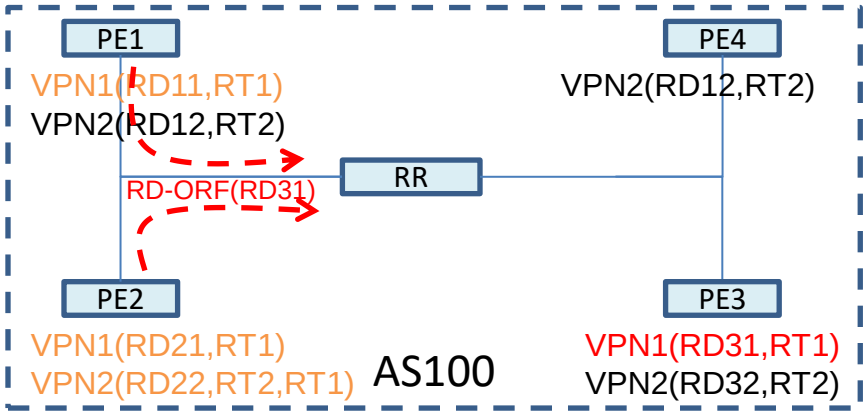
# Comments & Next Steps  for Adoption Call

- Comments?
- Does the updates address all concerns?
- If so, request an additional adoption call.

*wangaj3@chinatelecom.cn*
*wangw36@chinatelecom.cn*
*gyan.s.mishra@verizon.com*
*rainsword.wang@huawei.com*
*zhuangshunwan@huawei.com*
*jie.dong@huawei.com*
*IETF 114*

# Backup Slides

# Scenario-1 and Solution
# (Intra-AS, Different RD, one RT )




1. Shared BGP session between RR and PE for VRFs
   - ① RD is allocated per VPN/per PE
   - ② PE3 send excessive VPN routes with RT1
   - ③ PE1、PE2 will be influenced with the excessive VPN routes
2. PE/RR should have some mechanisms to identify and control the advertisement of specified excessive VPN routes.

Proposed Solution

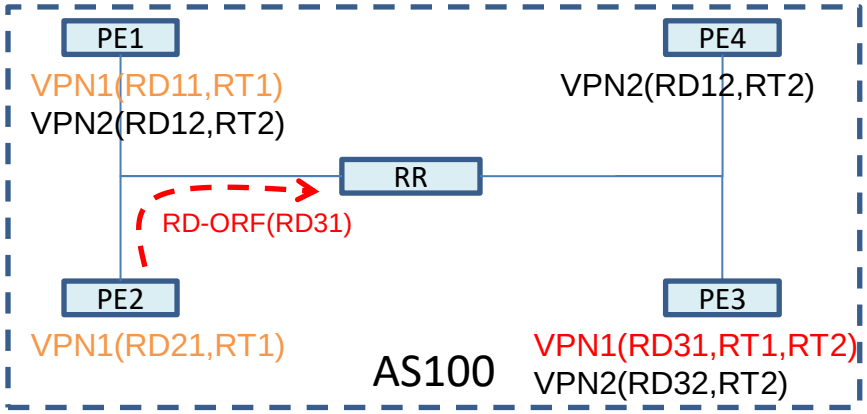
① Once PE1 detects the VPN1 VRF is overflowed , and:
- ✓ The excessive VPN routes has RD31, associated RT is RT1
- ✓ No other VRFs on it to import the VPN routes with RT1

PE1 triggers the RD-ORF message to RR(RD field is set to RD31)

② Once PE2 detects the VPN1 VRF is overflowed, and:
- ✓ The excessive VPN routes has RD31, associated RT is RT1
- ✓ There is other VRF on it to import the VPN routes with RT1

PE2 triggers the RD-ORF message to RR(RD field is set to RD31) only when all the VRFs that import RT1 are overflowed. Else, it discards the overflowed VPN routes locally.

# Scenario-2 and Solution
# (Intra-AS, Different RD, Multiple RTs)




① RD is allocated per VPN/per PE
② Multiple RTs are associated with such VPN routes, and be imported into different VRFs in other devices(PE1)
③ PE3 send excessive VPN routes with RT1, RT2.

Proposed Solution

① Once PE1 detects the VPN1 VRF is overflowed , and:
- ✓ The excessive VPN routes has RD31, associated with RT1, RT2
- ✓ There are different VRFs on it import the VPN routes respectively with RT1, RT2

② PE1 triggers the RD-ORF message to RR(RD field is set to RD31) only when all these VRFs are overflowed; else, it discards the overflowed VPN routes locally.

③ In this example, PE1 will not trigger RD-ORF, only PE2 will trigger RD-ORF(RD31).