

Generalized VPN Route Constrains

draft-dong-idr-vpn-route-constrain-00

Jie Dong, Mach Chen, Guiyan Liu, Hui Ni

IDR, Nov 2009

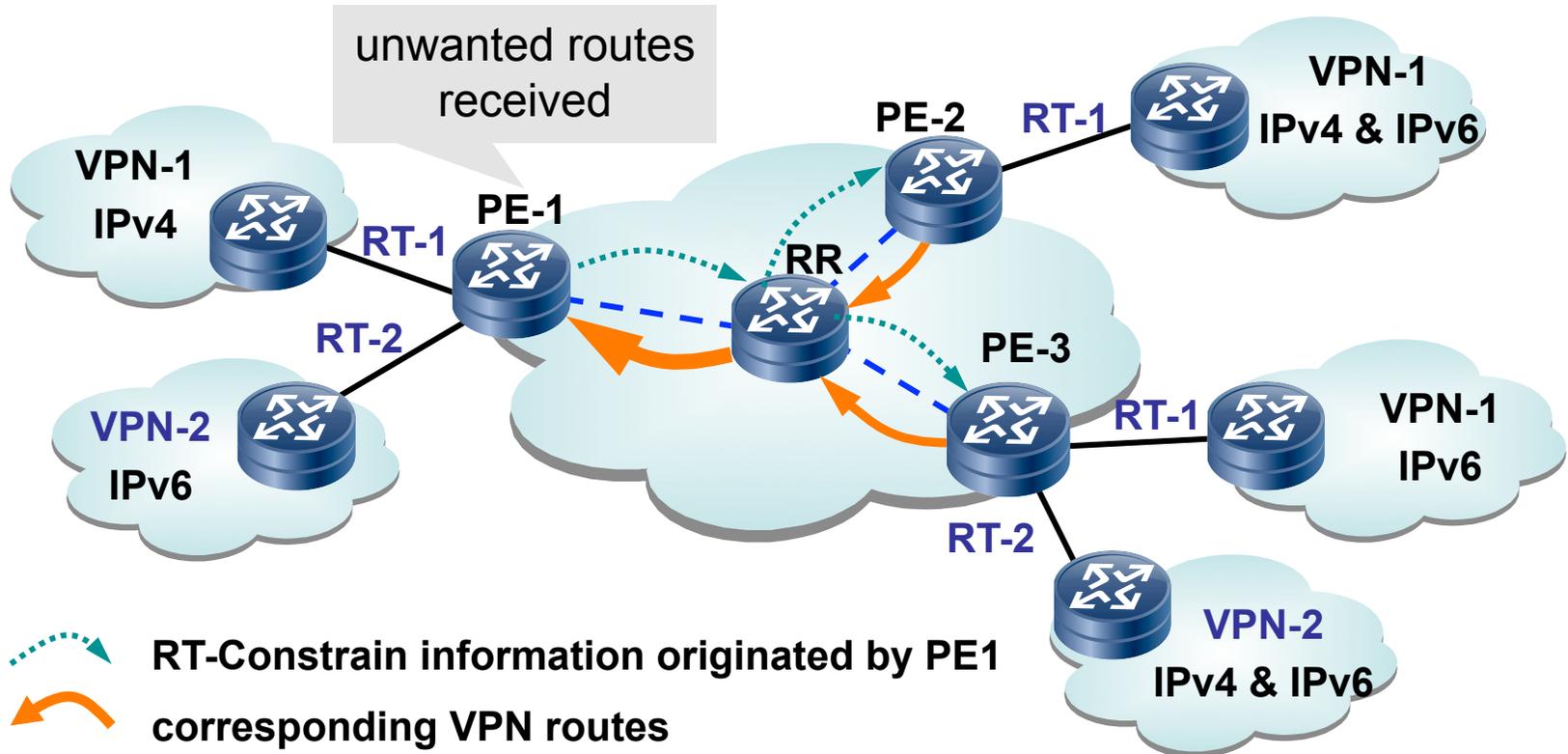
RT-Constrain Review

- RFC 4684 defines procedures to control VPN route distribution
- BGP speakers advertise import RTs using rt-constrain NLRI (with AFI/SAFI 1/132)
 - Origin AS (4 octets)
 - Route Target (8 octets)
- BGP speakers advertise VPN routes based on received rt-constrain information
- Benefit: VPN routes propagate only where needed, bandwidth and processing savings
- Applicable to any VPN using RT to control route distribution

Problems with RT-Constrain

- Multiple different kinds of VPNs can be deployed in the same network
 - L3 VPNv4 & VPNv6, L2VPN, Multicast VPN...
 - BGP speakers may receive unwanted VPN routes even if RT-Constrain is fully deployed
- Format of rt-constrain NLRI does not support IPv6 address specified Route Target [V6-EXT-COMM]
 - Length of the new RT is **20** octets
 - Length of the RT field is only **8** octets

Example of unwanted routes



- Similar problems exist in other scenarios
- Could be worse if more different VPNs are deployed
- Deployment of new VPNs may affect existing PEs

Root Cause

- RT-Constrain NLRI can not identify type of the requested VPN routes
- Different kinds of VPNs may use same/overlapping RT space

Proposed Solution

- A Generalized RT-Constrain solution
- New SAFI: Generalized RT membership NLRI (135)
- AFI/SAFI: 1/135, 2/135, 25/135,...
- Extended NLRI format:

Length (1 octet)
SAFI of VPN (1 octet)
Origin AS (4 octets)
Route Target (Variable)

- Benefit
 - Avoid sending & receiving of unwanted routes
 - Deployment of new VPNs will not affect existing network

Next Steps

- Comments & feedback from IDR
- Improve the draft
- WG document?