Automatic Route Target Filtering for legacy PEs

draft-l3vpn-legacy-rtc-00

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IETF 82, Nov 2011, Taipei, Taiwan

Motivation

- Current VPN Route Target Constraint mechanism requires all the BGP speakers in the network are upgraded to support this functionality.

- In a network with route reflectors (RR), if one PE client does not support RT constraint distribution, the cluster degenerates into storing and processing all the VPN routes.

    – RR needs to request and stores all the network routes since they do not receive route target membership information from the legacy PEs.

    – RR will also generate all those routes to the legacy PE which end up filtering the routes and store the subset of VPN routes that are of interest.

Legacy PE Method

- Create a special "route-filter VRF".

- Originate one or more routes from this VRF and attach a subset of Import Route Target (IRT) to each route.

- To refrain from importing "route-filter" VRF routes into VPN VRFs, two approaches:

    -Use of translation of IRTs to RT.

    - Use of outbound policy to avoud route-filter VRF routes from import into VPN VRFs.

Route-Filter routes handling by RR

- RR translates the attached route-target extended communities (TRT) to equivalent import route-target (IRT).

- RR also creates the route-target filter list for each legacy client by collecting the entire set of route targets.

- Generating Route Target Membership NLRIs for the legacy PE client by following:

  -Translate the received extended communities into RT membership NLRIs.

  - Allow further propagation of the NLRIs to rest of the network to create RT membership flooding graph.

Exchanging RTC between legacy PE and RR

Route-filter routes
IRT = RT 1, RT 2

RT-Constraint:
NLRI = {RT 2, RT 1}

VRF- Blue RT 1

VRF- Red RT 2

Legacy PE

RR-1

RR-2

Outbound Filter:
Permit RT 1
Permit RT 2
Deny all
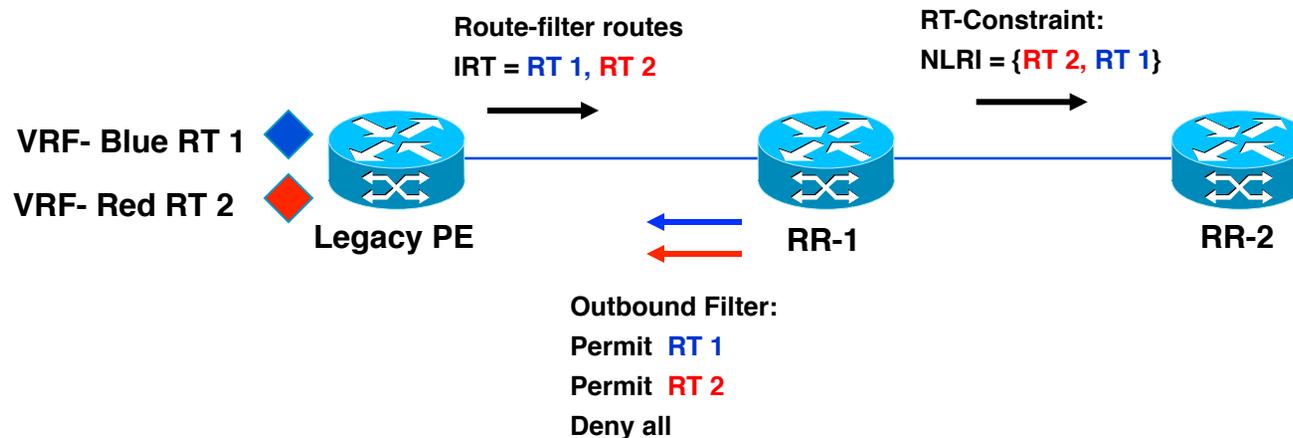
1. Legacy PE send RTC NLRI {RT 1, RT 2} to RR-1

2. RR-1 install an outbound Filter (Permit RT 1, RT 2) for PE-3

3. RR-1 converts the special VPN routes into RT-Constraint NLRI and propagates this update to connecting RR-2.

Status

- Received initial feedback from a few network operators.

- Implemented in both Cisco IOS and IOS-XR Routing System.

Next Step

- We would like to make this document as a WG document.

Thank You!