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Introduction

Route leaking between Global Routing Table (GRT) and Virtual Routing and Forwarding (VRF) table is quiet easy using static routes. You either provide the next-hop IP address (for multi-access segment) or point the route out of an interface (point-to-point interface).

However, in the absence of a next-hop IP address on a multi-access segment, route leaking becomes tricky as you cannot use static route. This document will discuss an alternative and simple approach to accomplish route leaking in such scenario.

Prerequisites

Requirements

Readers of this document should have knowledge of these topics:

- Basic IP routing.
- OSPF routing protocol concepts and terms.

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Configure

Network Diagram

Following image would be used as a sample topology for rest of the document.

BGP support for IP prefix import

Global IPv4 unicast or multicast prefixes are defined as match criteria for the import route map using standard Cisco filtering mechanisms like an IP access-list or an IP prefix-list.

```
access-list 50 permit 10.10.1.0 0.0.0.255
or
ip prefix-list GLOBAL permit 10.10.1.0/24
```

The IP prefixes that are defined for import are then processed through a match clause in a route map. IP prefixes that pass through the route map are imported into the VRF.

```
route-map GLOBAL_TO_VRF permit 10
match ip address 50
 or
match ip address prefix-list GLOBAL
!
ip vrf RED
rd 1:1
 import ipv4 unicast mapGLOBAL_TO_VRF
!
ip route 10.10.3.0 255.255.255.0 Vlan900
```

This method requires using BGP with VRF lite, which may not be feasible in all scenarios.

Policy Based Routing (PBR)

PBR can be used to leak routes between GRT and VRF. Following is a sample configuration where we are leaking a route from global routing table to VRF:

```
ip vrf RED
 rd 1:1
!
interface Vlan100
 description GLOBAL_INTERFACE
 ip address 10.10.1.254 255.255.255.0
!
access-list 101 permit ip 10.10.3.0 0.0.0.255 10.10.1.0 0.0.0.255
!
route-map VRF_TO_GLOBAL permit 10
 match ip address 101
set global
!
interface Vlan900
 description VRF_RED
 ip vrf forwarding RED
 ip address 10.10.3.254 255.255.255.0
ip policy route-map VRF_TO_GLOBAL
```

This works well for high end devices like 6500 switch but for devices like 3750, it is not supported. It is a platform limitation as you can see an the error message like :

```
3750X(config)#int vlan 900
3750X(config-if)#ip policy route-map VRF_TO_GLOBAL
3750X(config-if)#
Mar 30 02:02:48.758: %PLATFORM_PBR-3-UNSUPPORTED_RMAP: Route-map VRF_TO_GLOBAL not supported for
Policy-Based Routing
```

VRF Receive

VRF Receive feature can be used to insert the connected GRT subnet as a connected route entry in the VRF routing table.

```
ip vrf RED
 rd 1:1
!
interface Vlan100
 description GLOBAL_INTERFACE
ip vrf select source
ip vrf receive RED
 ip address 10.10.1.254 255.255.255.0
end
!
interface Vlan900
 description VRF_RED
 ip vrf forwarding RED
 ip address 10.10.3.254 255.255.255.0
end
!
ip route 10.10.3.0 255.255.255.0 Vlan900

 3750X#show ip route vrf RED

Routing Table: RED

Gateway of last resort is not set

     10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C        10.10.3.0/24 is directly connected, Vlan900
L        10.10.3.254/32 is directly connected, Vlan900
C        10.10.1.0/24 is directly connected, Vlan100
L        10.10.1.254/32 is directly connected, Vlan100

3750X#ping 10.10.3.1 source vlan 100
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.3.1, timeout is 2 seconds:
Packet sent with a source address of 10.10.1.254
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/4/9 ms

3750X#show ip arp vrf RED vlan 900
Protocol  Address          Age (min)  Hardware Addr   Type   Interface
Internet  10.10.3.254              -   d072.dc36.7fc2  ARPA   Vlan900
Internet  10.10.3.1               0   c84c.751f.26f0  ARPA   Vlan900
```