# Configure Route Leaking with Route Replication Feature

## Contents



## Introduction

This document describes the process to configure route leaking with the use of Route Replication feature in Cisco IOS XE.

## Prerequisites

### Requirements

Cisco recommends that you have knowledge of these topics:

- Knowledge of Basic IP Routing

- Knowledge of Cisco IOS XE Command Line Interface (CLI)

## Components Used

The information in this document is based on these software and hardware versions:

- Cisco Catalyst 8500 Series Edge Platforms
- Cisco Catalyst 9500 Series Switches
- Cisco IOS XE version 17.15.X and 17.12.X

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, ensure that you understand the potential impact of any command.

## Background Information

Network segmentation is the practice of dividing a network into smaller, isolated portions to improve security, manageability, and operational efficiency. Segmentation can be implemented at different layers of the network, for example VLANs provide Layer 2 separation, while Virtual Routing and Forwarding (VRF) delivers Layer 3 isolation by allowing a single physical device to maintain multiple independent routing tables simultaneously. Each VRF operates as a self-contained routing instance with its own set of interfaces, routing protocols, and forwarding decisions, ensuring that traffic from one segment does not intermix with traffic from another.

Organizations adopt segmentation for a variety of reasons, including separating lines of business, isolating guest users from corporate resources, meeting regulatory compliance requirements, providing controlled access to business partners, or reducing the scope of potential security incidents. By default, VRFs do not share routing information, which preserves the boundaries between segments and ensures that prefixes contained within one VRF remain unreachable from another.

While VRF based segmentation provides strong traffic isolation, real world deployments often require selective connectivity between these segments. Particularly, for example, when multiple VRFs need access to common resources such as DNS, DHCP, application servers, or other shared services. Route Replication addresses this requirement by copying routes from one VRF into another, enabling controlled inter-VRF reachability without dismantling the underlying segmentation model.

Route Replication is supported for static, EIGRP, and OSPF routes, and is configured directly under the VRF address-family using the **route-replicate** command. Optional route maps can be applied to filter which prefixes are replicated, providing granular control and helping prevent routing loops. Replicated routes inherit the administrative distance and source protocol of the original route, and are propagated across virtual networks through standard Interior Gateway Protocol (IGP) redistribution.

There are different techniques to perform route leaking between VRFs and/or the Global Routing Table (GRT), the main difference of using the Route Replication feature is that an additional BGP process is no longer needed to achieve the leaking, and in some scenarios Route Replication can be seen as an easier method as only a few commands are needed.

**Note**: Although Route Replication is sometimes less commonly used in deployments, it is not a new feature. The route-replicate command was introduced in Cisco IOS XE Release 3.2S and remains a valid option for enabling controlled route leaking between VRFs and the GRT.

**Note**: Please also note that Route Replication and Redistribution of BGP routes was introduced in Cisco IOS XE Release 17.6.1, please refer to IP Routing Configuration Guide, Cisco IOS XE 17.x for more information.

# Network Scenarios

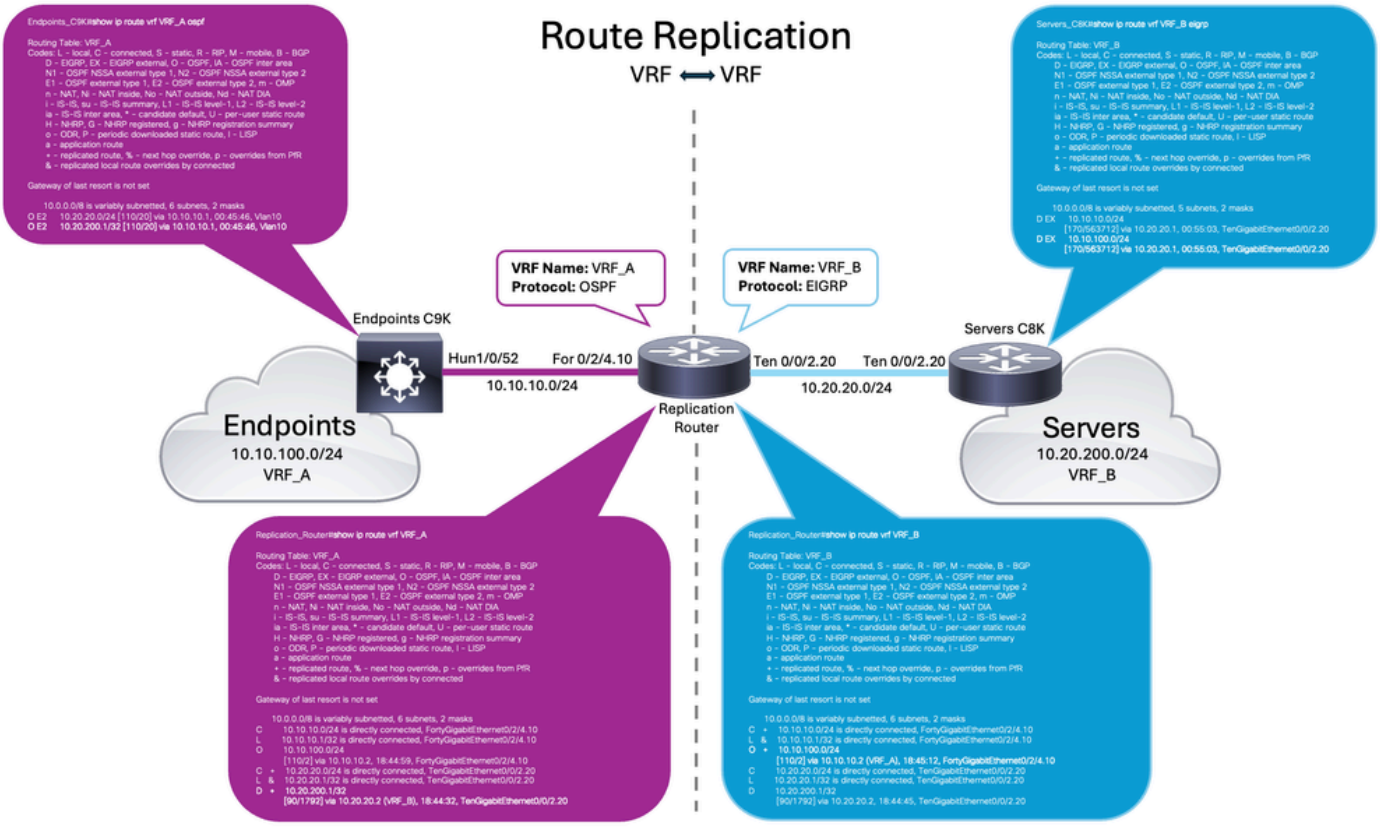
# Scenario 1 - VRF to VRF Route Leaking

This scenario demonstrates how the Route Replication feature enables selective connectivity between two isolated routing domains through a single device.

The network is divided into two segments, separated by the central Catalyst 8500 Series Router (Replication Router):

- **VRF_A (left side - OSPF):** A Catalyst 9500 Series Switch connects the **Endpoints** segment (10.10.100.0/24). The link between the C9K and the Replication Router uses subnet 10.10.10.0/24, where the interface is FortyGigabitEthernet0/2/4.10 (10.10.10.1).
- **VRF_B (right side - EIGRP):** A Catalyst 8500 Series Router connects the **Servers** segment (10.20.200.0/24). The link between this C8K and the Replication Router uses subnet 10.20.20.0/24, where the Replication Router interface is TenGigabitEthernet0/0/2.20 (10.20.20.1).

### Network Diagram




*Route Replicatio Topology - Scenario1 (VRF to VRF)*

## Configurations

### Step 1. Define VRF Instances

Start by defining your VRFs. This step creates the independent routing tables that keep your network segments isolated. By creating VRF_A and VRF_B, you establish the foundation for your separate environments. You can think of this as creating two distinct "lanes" for your data to travel through.

**Replication Router**

<#root>

Replication_Router#

```
configure terminal

Enter configuration commands, one per line.  End with CNTL/Z.
Replication_Router(config)#

vrf definition VRF_A

Replication_Router(config-vrf)#

description Tenant A - OSPF

Replication_Router(config-vrf)#

address-family ipv4
```

```
Replication_Router(config-vrf-af)#
exit-address-family

Replication_Router(config-vrf)#
exit


Replication_Router(config)#
vrf definition VRF_B
Replication_Router(config-vrf)#
description Tenant B - EIGRP
Replication_Router(config-vrf)#
address-family ipv4
Replication_Router(config-vrf-af)#
exit-address-family

Replication_Router(config-vrf)#
exit
```

**Step 2. Assign interfaces to VRF Instances**

Next, assign your interfaces to their respective VRFs. This step is important because it tells the router which physical or logical ports belong to which routing table. Without this mapping, the router cannot direct traffic into the correct segment. It ensures that data enters the specific lane you created in the first step.

**Replication Router**

```
<#root>
Replication_Router(config)#
interface FortyGigabitEthernet0/2/4.10
Replication_Router(config-subif)#
encapsulation dot1Q 10
Replication_Router(config-subif)#
vrf forwarding VRF_A
Replication_Router(config-subif)#
ip address 10.10.10.1 255.255.255.0
Replication_Router(config-subif)#
no shutdown
```

```
Replication_Router(config-subif)#
exit

Replication_Router(config)#
interface TenGigabitEthernet0/0/2.20
Replication_Router(config-subif)#
encapsulation dot1Q 20
Replication_Router(config-subif)#
vrf forwarding VRF_B
Replication_Router(config-subif)#
ip address 10.20.20.1 255.255.255.0
Replication_Router(config-subif)#
no shutdown

Replication_Router(config-subif)#
exit
```

**Step 3. Configure Routing Protocols and Redistribution**

In this scenario, OSPF and EIGRP protocols are being used to share routing information between the C9K connecting the endpoints and the C8K that provides reachability to the servers. This step allows the router to form OSPF and EIGRP neighbor relationships and dynamically learn and advertise routes.

Configuring redistribution prepares the router to share routing information between the different domains. This step is essential because it provides the visibility required to advertise the replicated routes. For example, a prefix learned from an OSPF neighbor in VRF_A can be replicated into VRF_B. Once the route exists in the VRF_B routing table, redistribution allows the router to advertise that prefix into the EIGRP process.

**Replication Router**

<#root>

```
Replication_Router(config)#
router ospf 100 vrf VRF_A
Replication_Router(config-router)#
network 10.10.10.0 0.0.0.255 area 0
Replication_Router(config-router)#
redistribute vrf VRF_B eigrp 200
Replication_Router(config-router)#
```

```
exit

Replication_Router(config)#
router eigrp MULTI_AF
Replication_Router(config-router)#
address-family ipv4 vrf VRF_B autonomous-system 200
Replication_Router(config-router-af)#
topology base

Replication_Router(config-router-af-topology)#
redistribute vrf VRF_A ospf 100 metric 10000 10 255 1 1500
Replication_Router(config-router-af-topology)#
exit-af-topology

Replication_Router(config-router-af)#
network 10.20.20.0 0.0.0.255
Replication_Router(config-router-af)#
exit-address-family
```

### Step 4. Configure Route Replication

Finally, apply the **route-replicate** command within the address family of each VRF. This is the core of the feature. It allows you to import routes from one VRF into another directly. This method simplifies your configuration because it removes the need for an additional BGP process. It is a clean and effective way to achieve controlled reachability between your segments.

**Replication Router (Pull OSPF routes from VRF_A into VRF_B)**

```
<#root>
Replication_Router(config)#
vrf definition VRF_B
Replication_Router(config-vrf)#
address-family ipv4
Replication_Router(config-vrf-af)#
route-replicate from vrf VRF_A unicast connected

Replication_Router(config-vrf-af)#
route-replicate from vrf VRF_A unicast ospf 100
```

```
Replication_Router(config-vrf-af)#
exit-address-family
```

**Replication Router (Pull EIGRP routes from VRF_B into VRF_A)**

```
<#root>
Replication_Router(config)#
vrf definition VRF_A
Replication_Router(config-vrf)#
address-family ipv4
Replication_Router(config-vrf-af)#
route-replicate from vrf VRF_B unicast connected

Replication_Router(config-vrf-af)#
route-replicate from vrf VRF_B unicast eigrp 200

Replication_Router(config-vrf-af)#
exit-address-family
```

## Verify

The outputs from the Route Replication router and neighbors confirm the leaking is successful:

- In **VRF_A**, the EIGRP route 10.20.200.1/32 appears as a replicated route, marked with the + flag, learned via 10.20.20.2 (VRF_B).
- In **VRF_B**, the OSPF route 10.10.100.0/24 appears as a replicated route, marked with the + flag, learned via 10.10.10.2 (VRF_A).
- The **Endpoints_C9K** and **Servers_C8K** tables show the redistributed external routes (O E2 and D EX) reaching across to the opposite segment.
- The ICMP tests confirm the end-to-end connectivity.

### Routing Table important Flags/Codes

| Code | Meaning |
|---|---|
| + | Replicated route — copied from the other VRF by route-replicate |
| & | Replicated local route, overridden by a connected route in the same VRF |
| (VRF_A) / (VRF_B) | Source VRF of a replicated route |

**Note**: Routes without + flag are native to that VRF (directly connected or learned normally by OSPF/EIGRP inside the same VRF).

| Replication Router |
|---|

<#root>

Replication_Router#

**show ip route vrf VRF_A**

```
Routing Table: VRF_A
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
       n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       H - NHRP, G - NHRP registered, g - NHRP registration summary
       o - ODR, P - periodic downloaded static route, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR
       & - replicated local route overrides by connected
Gateway of last resort is not set
      10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks
C        10.10.10.0/24 is directly connected, FortyGigabitEthernet0/2/4.10
L        10.10.10.1/32 is directly connected, FortyGigabitEthernet0/2/4.10
O        10.10.100.0/24
           [110/2] via 10.10.10.2, 00:03:37, FortyGigabitEthernet0/2/4.10
C
```

**+**

```
    10.20.20.0/24 is directly connected, TenGigabitEthernet0/0/2.20
L   &    10.20.20.1/32 is directly connected, TenGigabitEthernet0/0/2.20
```

**D + 10.20.200.1/32 [90/1792] via 10.20.20.2 (VRF_B), 3d00h, TenGigabitEthernet0/0/2.20**

Replication_Router#

**show ip ospf neighbor**

```
Neighbor ID     Pri   State           Dead Time   Address         Interface
10.10.100.2       1   FULL/BDR        00:00:34    10.10.10.2      FortyGigabitEthernet0/2/4.10
```

Replication_Router#

**show ip route vrf VRF_B**

```
Routing Table: VRF_B
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
       n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
```

```
       H - NHRP, G - NHRP registered, g - NHRP registration summary
       o - ODR, P - periodic downloaded static route, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR
       & - replicated local route overrides by connected
Gateway of last resort is not set
      10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks
C
+
    10.10.10.0/24 is directly connected, FortyGigabitEthernet0/2/4.10
L   &    10.10.10.1/32 is directly connected, FortyGigabitEthernet0/2/4.10
```

**O + 10.10.100.0/24 [110/2] via 10.10.10.2 (VRF_A), 00:02:43, FortyGigabitEthernet0/2/4.10**

```
C        10.20.20.0/24 is directly connected, TenGigabitEthernet0/0/2.20
L        10.20.20.1/32 is directly connected, TenGigabitEthernet0/0/2.20
D        10.20.200.1/32
           [90/1792] via 10.20.20.2, 3d00h, TenGigabitEthernet0/0/2.20
```

Replication_Router#

**show ip eigrp vrf VRF_B neighbors**

```
EIGRP-IPv4 VR(MULTI_AF) Address-Family Neighbors for AS(200)
           VRF(VRF_B)
H   Address                 Interface              Hold Uptime   SRTT   RTO  Q  Seq
                                                   (sec)         (ms)       Cnt Num
0   10.20.20.2              Te0/0/2.20               14 3d01h       1   100  0  4
Replication_Router#
```

| Endpoints Catalyst 9K | Servers Catalyst 8K |
|---|---|
| <#root><br>Endpoints_C9K#<br>**show ip route vrf VRF_A**<br>Routing Table: VRF_A<br>Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP<br>D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area<br>N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2<br>E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP<br>n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA<br>i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2<br>ia - IS-IS inter area, * - candidate default, U - per-user static route<br>H - NHRP, G - NHRP registered, g - NHRP registration summary<br>o - ODR, P - periodic downloaded static route, l - LISP<br>a - application route<br>+ - replicated route, % - next hop override, p - overrides from PfR<br>& - replicated local route overrides by connected<br>Gateway of last resort is not set<br>10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks<br>C 10.10.10.0/24 is directly connected, Vlan10<br>L 10.10.10.2/32 is directly connected, Vlan10<br>C 10.10.100.0/24 is directly connected, Vlan100<br>L 10.10.100.2/32 is directly connected, Vlan100 | <#root><br>Servers_C8K#<br>**show ip route vrf VRF_B**<br>Routing Table: VRF_B<br>Codes: L - local, C - cor<br>D - EIGRP, EX - EI<br>N1 - OSPF NSSA ext<br>E1 - OSPF externa<br>n - NAT, Ni - NAT<br>i - IS-IS, su - IS<br>ia - IS-IS inter a<br>H - NHRP, G - NHRF<br>o - ODR, P - peric<br>a - application ro<br>+ - replicated rou<br>& - replicated loc<br>Gateway of last resort is<br>10.0.0.0/8 is varia<br>D EX 10.10.10.0/24<br>[170/563712] v<br>**D EX 10.10.100.0/24 [170/** |

```
O E2     10.20.20.0/24 [110/20] via 10.10.10.1, 00:47:21, Vlan10
O E2 10.20.200.1/32 [110/20] via 10.10.10.1, 00:47:21, Vlan10


Endpoints_C9K#
show ip ospf neighbor


Neighbor ID     Pri   State           Dead Time   Address         Interface
10.10.10.1        1   FULL/DR         00:00:36    10.10.10.1      Vlan10

Endpoints_C9K#
ping vrf VRF_A 10.20.200.1 source 10.10.100.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.20.200.1, timeout is 2 seconds:
Packet sent with a source address of 10.10.100.2
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
Endpoints_C9K#
```

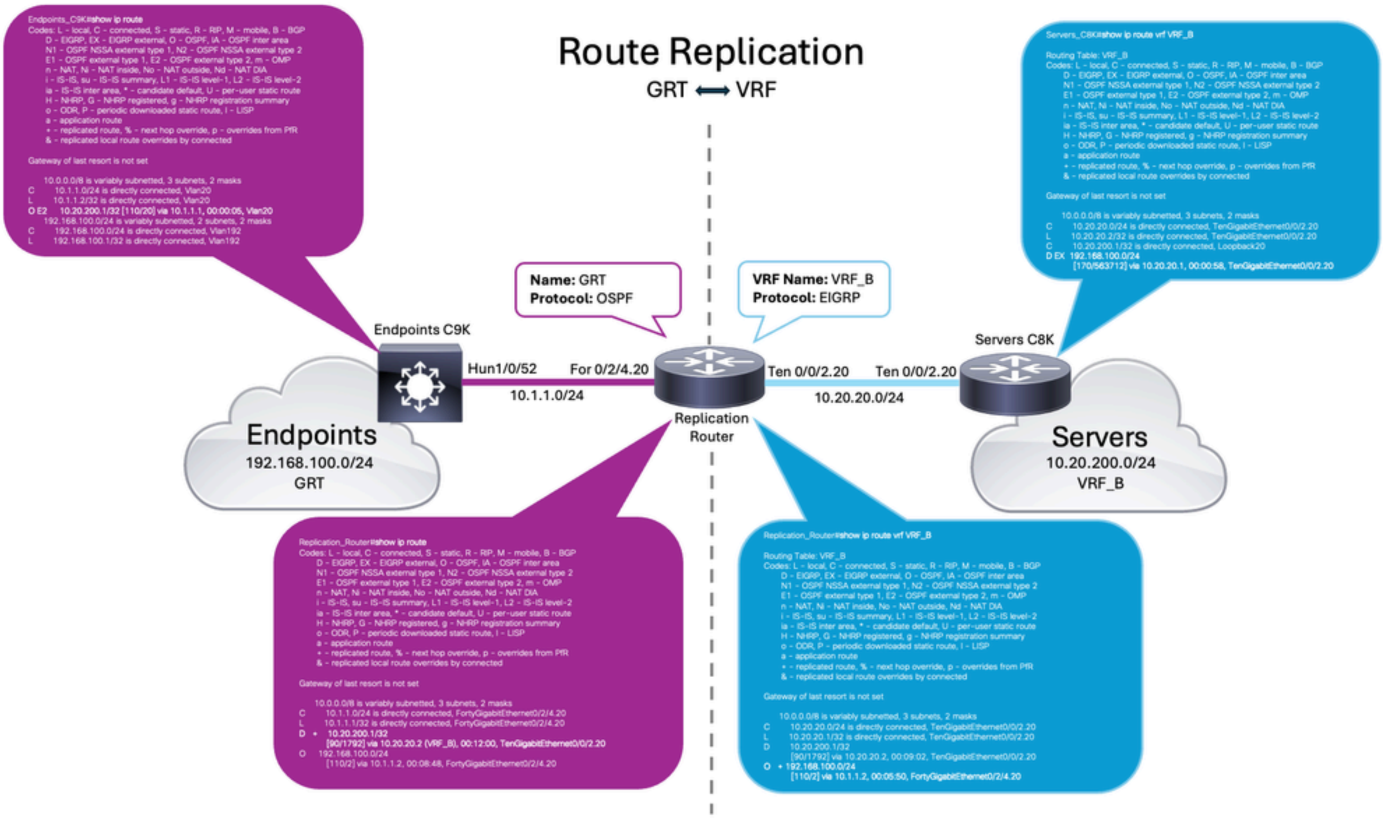
```
C        10.20.20.0/24 is
L        10.20.20.2/32 is
C        10.20.200.1/32 i

Servers_C8K#
show ip eigrp vrf VRF_B n
EIGRP-IPv4 VR(MULTI_AF) A
           VRF(VRF_B)
H   Address

O   10.20.20.1

Servers_C8K#
ping vrf VRF_B 10.10.100.
Type escape sequence to a
Sending 5, 100-byte ICMP
Packet sent with a source
!!!!!
Success rate is 100 perce
Servers_C8K#
```

# Scenario 2 - GRT to VRF Route Leaking

In this scenario, the Replication Router learns the Endpoints network **192.168.100.0/24** through OSPF in the **GRT** and replicates that route into **VRF_B**. After replication, the route appears in the VRF_B routing table as an OSPF learned replicated route and is then made available to the EIGRP domain on the Servers side after proper redistribution. In a similar way, Replication Router learns the Servers network **10.20.200.0/24** through EIGRP in the VRF_B and then replicates that route into GRT:

- **GRT (left side - OSPF):** A Catalyst 9000 Series Switch connects the Endpoints segment **192.168.100.0/24**. The link between the Endpoints C9K and the Replication Router uses subnet **10.1.1.0/24**, where the Replication Router interface is **FortyGigabitEthernet0/2/4.20** with IP address **10.1.1.1**. This side operates in the **Global Routing Table** using **OSPF**.
- **VRF_B (right side - EIGRP):** A Catalyst 8000 Series Router connects the Servers segment **10.20.200.0/24**. The link between the Servers C8K and the Replication Router uses subnet **10.20.20.0/24**, where the Replication Router interface is **TenGigabitEthernet0/0/2.20** with IP address **10.20.20.1**. This side operates inside **VRF_B** using **EIGRP**.

## Network Diagram




*Route Replication Topology - Scenario 2 (GRT to VRF)*

## Configurations

The process is similar to the previous scenario. In this case, the VRF must be defined, with OSPF adjacency established in the GRT and EIGRP adjacency established in the VRF; therefore, this configuration is not covered in this section.

### Step 1. Configure Route Replication

The main difference is the set of configuration commands required to enable this feature between the GRT and the VRF:

| **Replication Router (Pull OSPF routes from GRT into VRF_B)** |
|---|
| <#root><br>Replication_Router#<br>**configure terminal**<br><br>Replication_Router(config)#<br>**vrf definition VRF_B**<br>Replication_Router(config-vrf)#<br>**address-family ipv4** |

```
Replication_Router(config-vrf-af)#
route-replicate from vrf global unicast ospf 300

Replication_Router(config-vrf-af)#
end
```

**Replication Router (Pull EIGRP routes from VRF_B into GRT)**

<#root>

```
Replication_Router#
configure terminal
Replication_Router(config)#
global-address-family ipv4 unicast

Replication_Router(config-af)#
route-replicate from vrf VRF_B unicast eigrp 200

Replication_Router(config-af)#
end
```

**Step 2. Configure Redistribution**

Make sure mutual redistribution is configured so the Replication Router advertises the replicated routes to the corresponding neighbors:

**Replication Router**

<#root>

```
Replication_Router#
configure terminal
Replication_Router(config)#
router eigrp MULTI_AF
Replication_Router(config-router)#
address-family ipv4 unicast vrf VRF_B autonomous-system 200

Replication_Router(config-router-af)#
topology base
Replication_Router(config-router-af-topology)#
redistribute vrf global ospf 300 metric 10000 10 255 1 1500
```

```
Replication_Router(config-router-af-topology)#

end

Replication_Router#

Replication_Router#

configure terminal

Replication_Router(config)#

router ospf 300

Replication_Router(config-router)#

redistribute vrf VRF_B eigrp 200 subnets


Replication_Router(config-router)#

end
```

## Verify

Use the next verification commands to confirm that Route Replication is working as expected and that end-to-end connectivity is available between the **GRT** and **VRF_B**. Validate that the replicated routes are present in the appropriate routing tables, that OSPF and EIGRP adjacencies are established, and that traffic can successfully reach the remote networks using ping.

The verification includes:

- **show ip route** to confirm routes in the Global Routing Table.
- **show ip route vrf VRF_B** to confirm routes in VRF_B.
- **show ip ospf neighbor** to verify the OSPF adjacency.
- **show ip eigrp vrf VRF_B neighbors** to verify the EIGRP adjacency in VRF_B.
- **ping** to validate end-to-end connectivity.

**Replication Router**

```
<#root>

Replication_Router#

show ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
       n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       H - NHRP, G - NHRP registered, g - NHRP registration summary
       o - ODR, P - periodic downloaded static route, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR
```

```
       & - replicated local route overrides by connected

Gateway of last resort is not set

      10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
C        10.1.1.0/24 is directly connected, FortyGigabitEthernet0/2/4.20
L        10.1.1.1/32 is directly connected, FortyGigabitEthernet0/2/4.20

D + 10.20.200.1/32 [90/1792] via 10.20.20.2 (VRF_B), 1d23h, TenGigabitEthernet0/0/2.20

O     192.168.100.0/24
           [110/2] via 10.1.1.2, 1d23h, FortyGigabitEthernet0/2/4.20

Replication_Router#

show ip ospf neighbor



Neighbor ID     Pri   State           Dead Time   Address         Interface

192.168.100.1 1 FULL/DR 00:00:39 10.1.1.2 FortyGigabitEthernet0/2/4.20


Replication_Router#

show ip route vrf VRF_B


Routing Table: VRF_B
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
       n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       H - NHRP, G - NHRP registered, g - NHRP registration summary
       o - ODR, P - periodic downloaded static route, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR
       & - replicated local route overrides by connected

Gateway of last resort is not set

      10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
C        10.20.20.0/24 is directly connected, TenGigabitEthernet0/0/2.20
L        10.20.20.1/32 is directly connected, TenGigabitEthernet0/0/2.20
D        10.20.200.1/32
           [90/1792] via 10.20.20.2, 1d23h, TenGigabitEthernet0/0/2.20

O + 192.168.100.0/24 [110/2] via 10.1.1.2, 1d23h, FortyGigabitEthernet0/2/4.20


Replication_Router#

show ip eigrp vrf VRF_B neighbors

EIGRP-IPv4 VR(MULTI_AF) Address-Family Neighbors for AS(200)
           VRF(VRF_B)
H   Address                 Interface              Hold Uptime   SRTT   RTO  Q  Seq
                                                   (sec)         (ms)       Cnt Num

0 10.20.20.2 Te0/0/2.20 14 1d23h 1 100 0 10
```

| Endpoints Catalyst 9K | Servers Catalyst 8K |
|---|---|

**Endpoints Catalyst 9K**

```
<#root>

Endpoints_C9K#

show ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
       n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       H - NHRP, G - NHRP registered, g - NHRP registration summary
       o - ODR, P - periodic downloaded static route, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR
       & - replicated local route overrides by connected

Gateway of last resort is not set

      10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
C        10.1.1.0/24 is directly connected, Vlan20
L        10.1.1.2/32 is directly connected, Vlan20

O E2 10.20.200.1/32 [110/20] via 10.1.1.1, 1d23h, Vlan20

      192.168.100.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.100.0/24 is directly connected, Vlan192
L        192.168.100.1/32 is directly connected, Vlan192

Endpoints_C9K#

show ip ospf neighbor



Neighbor ID     Pri   State           Dead Time   Address         Interface
10.1.1.1          1   FULL/BDR        00:00:31    10.1.1.1        Vlan20

Endpoints_C9K#

ping 10.20.200.1 source 192.168.100.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.20.200.1, timeout is 2 seconds:
Packet sent with a source address of 192.168.100.1
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
```

**Servers Catalyst 8K**

```
<#root>

Servers_C8K#

show ip route vrf VRF_B


Routing Table: VRF_B
Codes: L - local, C - cor
       D - EIGRP, EX - EI
       N1 - OSPF NSSA ext
       E1 - OSPF externa
       n - NAT, Ni - NAT
       i - IS-IS, su - IS
       ia - IS-IS inter a
       H - NHRP, G - NHRF
       o - ODR, P - peric
       a - application rc
       + - replicated rou
       & - replicated loc

Gateway of last resort is

      10.0.0.0/8 is varia
C        10.20.20.0/24 is
L        10.20.20.2/32 is
C        10.20.200.1/32 i

D EX 192.168.100.0/24 [17


Servers_C8K#

show ip eigrp vrf VRF_B r

EIGRP-IPv4 VR(MULTI_AF) A
           VRF(VRF_B)
H   Address

0   10.20.20.1

Servers_C8K#

ping vrf VRF_B 192.168.10

Type escape sequence to a
Sending 5, 100-byte ICMP
Packet sent with a source
!!!!!
Success rate is 100 perce
```

# Related Information

- Configure VRF Leaks on Cisco IOS XE
- Configure Route Leak between GRT and VRF with Cisco IOS XR