

Ejemplo de Configuración de Failover con EIGRP Usando VRF

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[Introducción](#)

Este documento describe cómo configurar la conmutación por fallo con el protocolo de routing de gateway interior mejorado (EIGRP) mediante routing y reenvío virtuales (VRF). VRF es una extensión del IP Routing que proporciona varias instancias de ruteo. Los proveedores de servicios de Internet (ISP) aprovechan este VRF para crear redes privadas virtuales (VPN) independientes para los clientes, ya que permite que existan varias instancias de la tabla de routing en un router.

[Prerequisites](#)

- Conocimiento básico de EIGRP
- Conocimiento básico de VRF

[Versiones de hardware y de software](#)

Las configuraciones en este documento se basan en el Cisco 3700 Series Router en Cisco IOS® Software Release 12.4 (15)T 13.

[Convenciones](#)

Consulte [Convenciones de Consejos Técnicos Cisco para obtener más información sobre las convenciones del documento.](#)

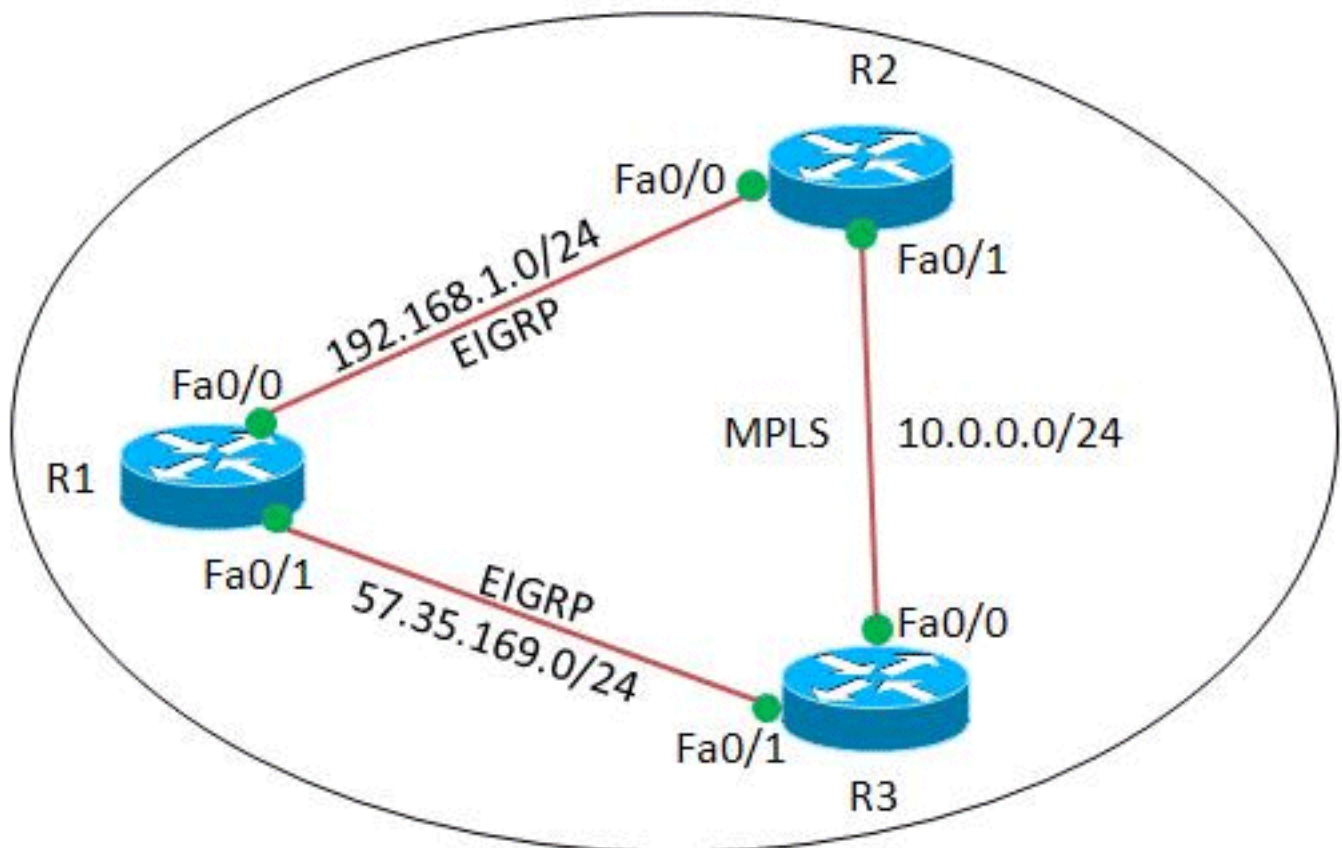
[Configurar](#)

En este ejemplo, el router R1 se considera un router PE. Los routers R2 y R3 se consideran routers CE. Los routers utilizan EIGRP para comunicarse entre sí. Si R2 pierde conectividad con R1 (es decir, en caso de conmutación por fallas), las rutas pueden alcanzar R1 a R3. Los routers R2 y R3 tienen una conexión MPLS entre ellos.

Nota: Use la [Command Lookup Tool](#) (sólo [clientes registrados](#)) para obtener más información sobre los comandos utilizados en este documento.

Diagrama de la red

En este documento, se utiliza esta configuración de red:



Configuraciones

En este documento, se utilizan estas configuraciones:

- [Router R1](#)
- [Router R2](#)
- [Router R3](#)

Router R1
! version 12.4 !

```

hostname R1
!
ip cef
!
!
interface Loopback0
 ip address 2.2.2.2 255.255.255.255
!
interface FastEthernet0/0
 ip address 192.168.1.2 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 57.35.169.2 255.255.255.0
 duplex auto
 speed auto
!
router eigrp 220
 network 2.2.2.2 0.0.0.0
 network 57.35.169.2 0.0.0.0
 network 192.168.1.0
 no auto-summary
!--- Configured EIGRP and advertised the networks. ! end

```

Router R2

```

!
version 12.4
!
hostname R2
!
ip cef
!
ip vrf A
!--- Configures VRF routing table! rd 1.1.1.1:111
!---Configuring a route distinguisher RD creates routing
and forwarding table for a VRF. The RD can be used in
either of these formats: - 16-bit AS number: Your 32-bit
number (for example, 1:100) - 32-bit IP address: Your
16-bit number (In our case, 1.1.1.1:111) route-target
export 1.1.1.1:111
 route-target import 1.1.1.1:111
!--- Creates a list of import and/or export route target
communities for the specified VRF. ! ip vrf B rd
2.2.2.2:222 import ipv4 unicast map vrfA-to-vrfB
!--- Associates the specified route map with the VRF.
route-target export 2.2.2.2:222 route-target import
2.2.2.2:222 ! mpls label protocol ldp ! interface
Loopback1 ip vrf forwarding B !--- Associates a VRF
instance with an interface. ip address 172.16.2.1
255.255.255.255 ! interface FastEthernet0/0 ip vrf
forwarding A ip address 192.168.1.1 255.255.255.0 duplex
auto speed auto ! interface FastEthernet0/1 ip vrf
forwarding A ip address 10.0.0.1 255.255.255.0 duplex
auto speed auto mpls ip ! interface FastEthernet1/0 ip
vrf forwarding B ip address 203.197.194.1 255.255.255.0
duplex auto speed auto ! router eigrp 1 no auto-summary
! address-family ipv4 vrf B !--- Enter address family
configuration mode for configuring EIGRP routing
sessions. network 172.16.2.0 0.0.0.255 network
203.197.194.0 no auto-summary autonomous-system 330 !---
Defines the autonomous system number for this specific

```

```
instance of EIGRP. exit-address-family ! address-family
ipv4 vrf A network 10.0.0.1 0.0.0.0 network 192.168.1.0
no auto-summary autonomous-system 220 exit-address-
family ! access-list 99 permit 172.16.1.0 0.0.0.255
access-list 99 permit 192.168.1.0 0.0.0.255 access-list
101 permit udp host 192.168.1.1 eq bootps host 1.1.1.1
eq bootps !--- Create access list in order to permit the
host addresses. ! route-map vrfA-to-vrfB permit 10
match ip address 99
!--- Created a route map and distributed the routes
permitted by access list 99. ! end
```

Router R3

```
!
version 12.4
!
hostname R3
!
ip cef
!
!
!
!
ip vrf A
 rd 1.1.1.1:111
!
mpls label protocol ldp
!
interface Loopback1
 ip address 1.1.1.1 255.255.255.255
!
interface FastEthernet0/0
 ip vrf forwarding A
 ip address 10.0.0.2 255.255.255.0
 duplex auto
 speed auto
 mpls ip
!
interface FastEthernet0/1
 ip vrf forwarding A
 ip address 57.35.169.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/0
 ip address 203.197.194.2 255.255.255.0
 duplex auto
 speed auto
!
router eigrp 330
 network 1.1.1.1 0.0.0.0
 network 10.0.0.2 0.0.0.0
 network 57.35.169.1 0.0.0.0
 network 203.197.194.0
 no auto-summary
!
 address-family ipv4 vrf A
  network 10.0.0.2 0.0.0.0
  network 57.35.169.1 0.0.0.0
  no auto-summary
 autonomous-system 220
 exit-address-family
```

```
!  
end
```

Verificación

Use esta sección para confirmar que su configuración funciona correctamente.

[La herramienta Output Interpreter Tool \(clientes registrados solamente\) \(OIT\) soporta ciertos comandos show.](#) Utilice la OIT para ver un análisis del resultado del comando show.

Comandos show

Para verificar que EIGRP esté configurado correctamente, utilice el comando [show ip route vrf](#).

show ip route vrf

En el router R2

```
R2#show ip route vrf A
```

```
Routing Table: A
```

```
Codes: 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
```

```
    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
```

```
    o - ODR, P - periodic downloaded static route
```

```
Gateway of last resort is not set
```

```
    2.0.0.0/32 is subnetted, 1 subnets
```

```
D       2.2.2.2 [90/409600] via 192.168.1.2, 00:15:47,  
FastEthernet0/0
```

```
    57.0.0.0/24 is subnetted, 1 subnets
```

```
D       57.35.169.0 [90/307200] via 192.168.1.2,  
00:15:47, FastEthernet0/0  
                [90/307200] via 10.0.0.2, 00:15:47,  
FastEthernet0/1
```

```
    10.0.0.0/24 is subnetted, 1 subnets
```

```
C       10.0.0.0 is directly connected, FastEthernet0/1
```

```
C       192.168.1.0/24 is directly connected,  
FastEthernet0/0
```

En el router R3

```
R3#show ip route vrf A
```

```
Routing Table: A
```

```
Codes: 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
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
o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

2.0.0.0/32 is subnetted, 1 subnets
D 2.2.2.2 [90/409600] via 57.35.169.2, 00:16:59,
FastEthernet0/1
57.0.0.0/24 is subnetted, 1 subnets
C 57.35.169.0 is directly connected,
FastEthernet0/1
10.0.0.0/24 is subnetted, 1 subnets
C 10.0.0.0 is directly connected, FastEthernet0/0
D 192.168.1.0/24 [90/307200] via 57.35.169.2,
00:17:02, FastEthernet0/1
[90/307200] via 10.0.0.1, 00:17:02,
FastEthernet0/0
!--- Displays the routing table associated with VRF
instance A.

```

Si R2 pierde la conectividad con R1, las rutas de R2 alcanzarán el router R1 a R3.

En caso de failover

Cuando R2 pierda su conectividad con R1, intente ejecutar **shutdown** en R2 Fa0/0. **En el router R2**

```

R2#conf t
Enter configuration commands, one per line. End with
CNTL/Z.
R2(config)#int fa0/0
R2(config-if)#shut down
R2(config-if)#
*Mar 1 00:01:01.539: %TDP-5-INFO: VRF A: TDP ID removed
*Mar 1 00:01:01.675: %LDP-5-NBRCHG: LDP Neighbor (vrf
A) 57.35.169.1:0 (1) is
DOWN (LDP Router ID changed)
*Mar 1 00:01:01.679: %DUAL-5-NBRCHANGE: IP-EIGRP(1)
220: Neighbor 192.168.1.2
(FastEthernet0/0) is down: interface down
R2(config-if)#
*Mar 1 00:01:03.519: %LINK-5-CHANGED: Interface
FastEthernet0/0, changed state
to administratively down
*Mar 1 00:01:04.519: %LINEPROTO-5-UPDOWN: Line protocol
on Interface
FastEthernet0/0, changed state to down

```

En la misma instancia en el router R3, se activa el link de failover.

```

R3#
*Mar 1 00:00:52.527: %LDP-5-NBRCHG: LDP Neighbor (vrf
A) 192.168.1.1:0 (1) is
DOWN (TCP connection closed by peer)
R3#
*Mar 1 00:00:59.591: %LDP-5-NBRCHG: LDP Neighbor (vrf
A) 10.0.0.1:0 (1) is UP

```

Para verificar que el router R2 aún pueda alcanzar R1, ejecute el comando [ping vrf](#) para hacer ping al R1 del router R2.

```
Ping
-----
En el router R2
R2#ping vrf A 192.168.1.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout
is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip
min/avg/max = 12/51/96 ms
!--- R2 can still reach R1 through R3.
```

[Información Relacionada](#)

- [Servicios que reconocen VRF](#)
- [Página de Soporte de EIGRP](#)
- [Soporte Técnico y Documentación - Cisco Systems](#)