

Failover com EIGRP Usando Exemplo de Configuração de VRF

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[Introduction](#)

Este documento descreve como configurar failover com EIGRP (Enhanced Interior Gateway Routing Protocol) usando VRF (Virtual Routing and Forwarding). O VRF é uma extensão do roteamento IP que fornece várias instâncias de roteamento. Os provedores de serviços de Internet (ISPs) aproveitam esse VRF para criar redes virtuais privadas (VPNs) separadas para os clientes, pois permite que várias instâncias da tabela de roteamento existam em um roteador.

[Prerequisites](#)

- Conhecimento básico do EIGRP
- Conhecimento básico de VRF

[Versões de hardware e software](#)

As configurações neste documento são baseadas no Cisco 3700 Series Router no Cisco IOS® Software Release 12.4 (15)T 13.

[Conventions](#)

Consulte as [Convenções de Dicas Técnicas da Cisco para obter mais informações sobre convenções de documentos](#).

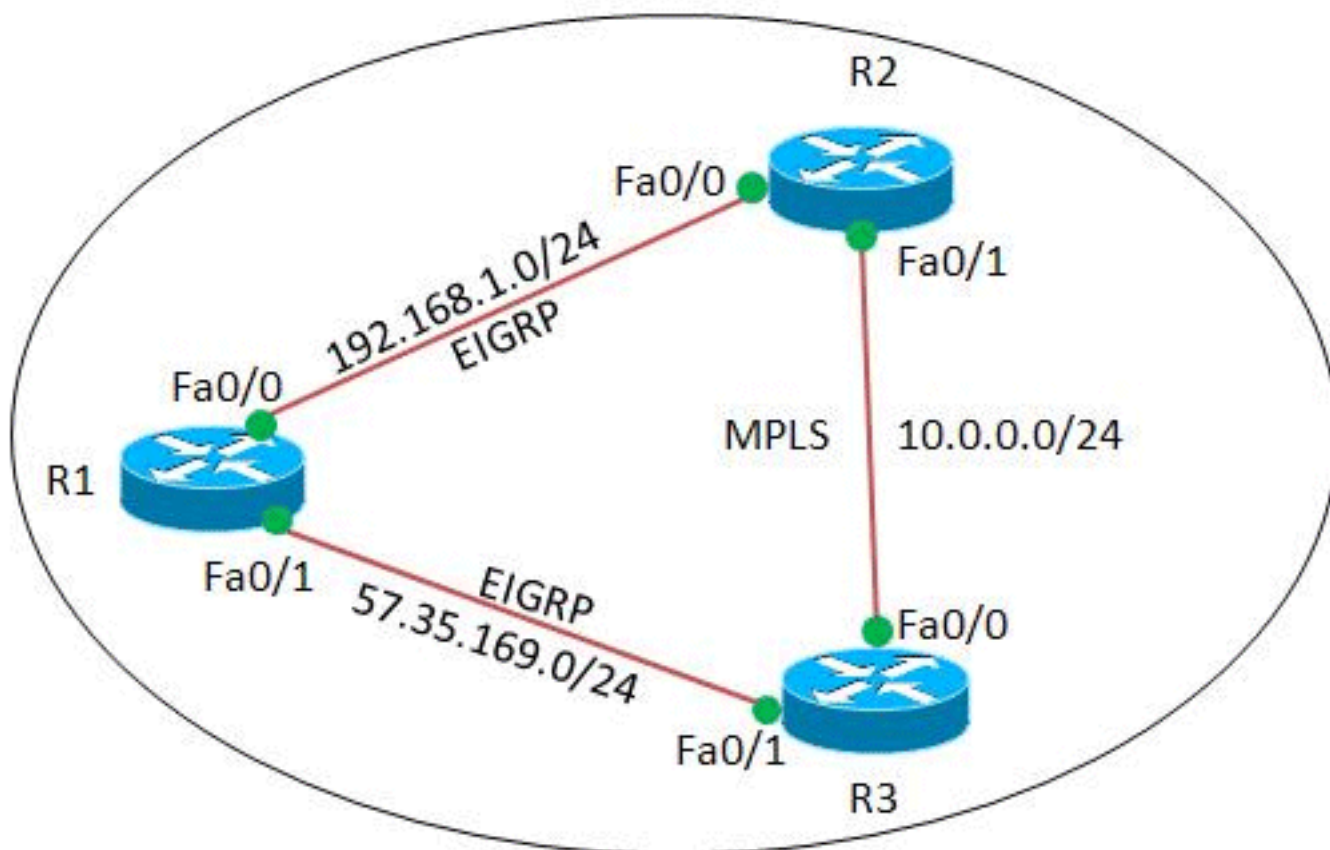
[Configurar](#)

Neste exemplo, o roteador R1 é considerado um roteador PE. Os roteadores R2 e R3 são considerados roteadores CE. Os roteadores usam o EIGRP para se comunicar entre si. Se R2 perder conectividade com R1 (ou seja, em caso de failover), as rotas podem alcançar R1 através de R3. Os roteadores R2 e R3 têm uma conexão MPLS entre eles.

Nota: Use a Command Lookup Tool (somente clientes registrados) para obter mais informações sobre os comandos usados neste documento.

Diagrama de Rede

Este documento utiliza a seguinte configuração de rede:



Configurações

Este documento utiliza as seguintes configurações:

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

Roteador 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

```

Roteador 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
```

Roteador 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
```

Verificar

Use esta seção para confirmar se a sua configuração funciona corretamente.

A [Output Interpreter Tool \(somente clientes registrados\) \(OIT\)](#) oferece suporte a determinados comandos `show`. Use a OIT para exibir uma análise da saída do comando `show`.

comandos show

Para verificar se o EIGRP está configurado corretamente, use o comando [show ip route vrf](#).

show ip route vrf

No roteador 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
```

No roteador 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.

```

Se R2 perder a conectividade com R1, as rotas de R2 chegarão ao roteador R1 até R3.

Em caso de failover

Quando R2 perder a conectividade com R1, tente emitir **shutdown** na Fa0/0 de R2. **No roteador 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

```

Na mesma instância do roteador R3, o link de failover é **ativado**.

```

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 se o roteador R2 ainda pode acessar R1, emita o comando [ping_vrf](#) para fazer ping no R1 a partir do roteador R2.

Ping
No roteador R2
<pre>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.</pre>

[Informações Relacionadas](#)

- [Serviços compatíveis com VRF](#)
- [Página de suporte de EIGRP](#)
- [Suporte Técnico e Documentação - Cisco Systems](#)