

Failover con EIGRP utilizzando l'esempio di configurazione VRF

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[Introduzione](#)

In questo documento viene descritto come configurare il failover con il protocollo EIGRP (Enhanced Interior Gateway Routing Protocol) utilizzando il routing e l'inoltro virtuali (VRF). VRF è un'estensione del routing IP che fornisce più istanze di routing. I provider di servizi Internet (ISP) traggono vantaggio da questo VRF per creare reti VPN (Virtual Private Network) separate per i clienti, in quanto consente l'esistenza di più istanze della tabella di routing in un router.

[Prerequisiti](#)

- Conoscenze base di EIGRP
- Conoscenze base di VRF

[Versioni hardware e software](#)

Le configurazioni di questo documento si basano sul router Cisco serie 3700 con software Cisco IOS® versione 12.4 (15)T 13.

[Convenzioni](#)

Per ulteriori informazioni sulle convenzioni usate, consultare il documento [Cisco sulle convenzioni nei suggerimenti tecnici](#).

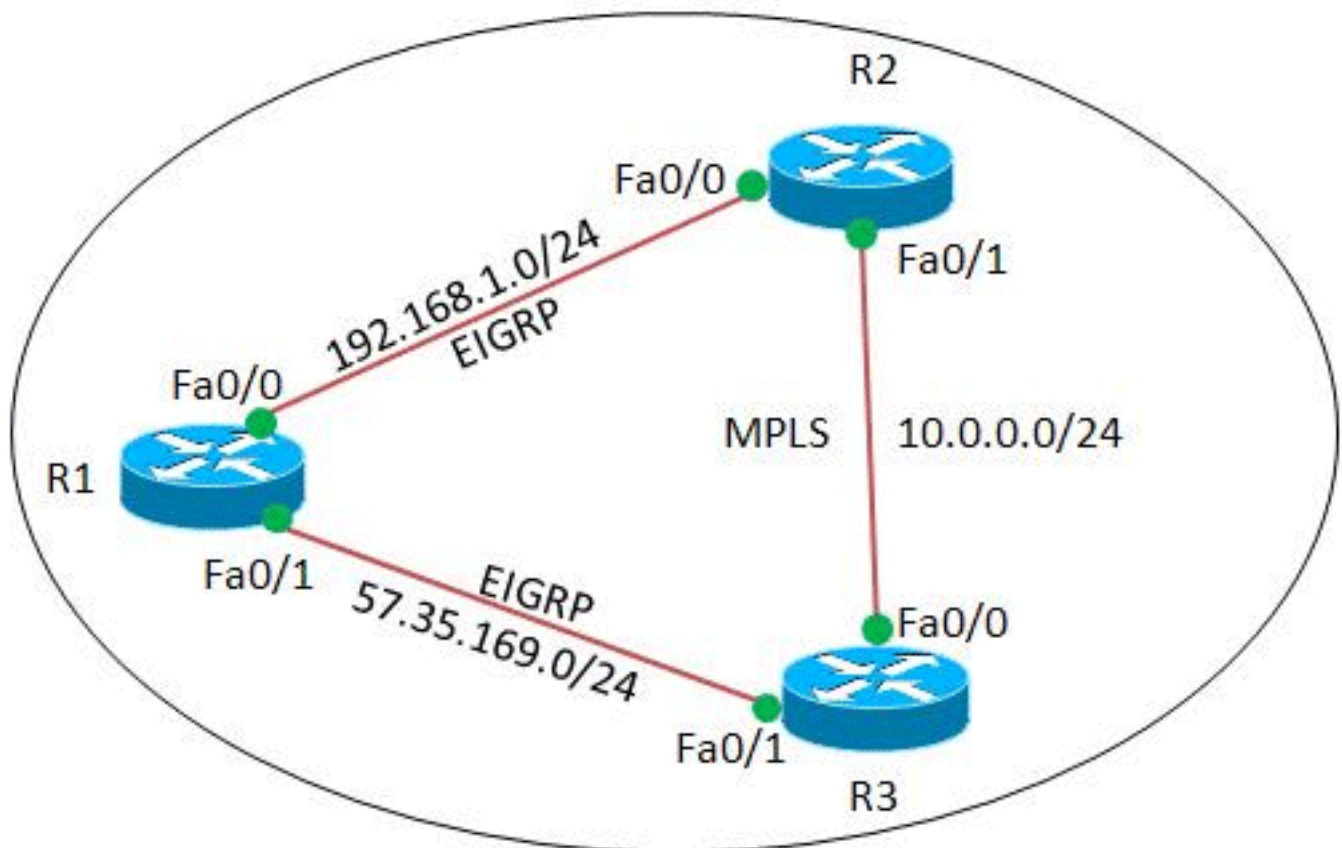
[Configurazione](#)

Nell'esempio, il router R1 è considerato un router PE. I router R2 e R3 sono considerati router CE. I router comunicano tra loro usando il protocollo EIGRP. Se R2 perde la connettività con R1 (ovvero, in caso di failover), le route possono raggiungere R1 tramite R3. I router R2 e R3 dispongono di una connessione MPLS.

Nota: per ulteriori informazioni sui comandi menzionati in questo documento, usare lo [strumento di ricerca](#) dei comandi (solo utenti [registrati](#)).

Esempio di rete

Nel documento viene usata questa impostazione di rete:



Configurazioni

Nel documento vengono usate queste configurazioni:

- [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
```

Verifica

Per verificare che la configurazione funzioni correttamente, consultare questa sezione.

Lo [strumento Output Interpreter](#) (solo utenti [registrati](#)) (OIT) supporta alcuni comandi **show**. Usare l'OIT per visualizzare un'analisi dell'output del comando **show**.

Comandi show

Per verificare che il protocollo EIGRP sia configurato correttamente, usare il comando [show ip route vrf](#).

show ip route vrf

Nel 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
```

Nel 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.

```

Se R2 perde la connettività con R1, i percorsi da R2 raggiungeranno il router R1 a R3.

In caso di failover

Quando R2 perde la connettività con R1, provare a eseguire il comando **shdown** su Fa0/0 di R2. **Nel 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

```

Nella stessa istanza del router R3, viene attivato il collegamento di 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
```

Per verificare che il router R2 possa ancora raggiungere R1, usare il comando [ping vrf](#) per eseguire il ping di R1 dal router R2.

Ping

Nel 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.
```

Informazioni correlate

- [Servizi compatibili con VRF](#)
- [Pagina di supporto del protocollo EIGRP](#)
- [Documentazione e supporto tecnico – Cisco Systems](#)