

Configurazione di VPN MPLS su ATM con router Cisco 7500 e switch LightStream 1010

Sommario

[Introduzione](#)

[Prerequisiti](#)

[Requisiti](#)

[Convenzioni](#)

[Configurazione](#)

[Esempio di rete](#)

[Descrizione rete](#)

[Configurazioni](#)

[Informazioni correlate](#)

[Introduzione](#)

In questo documento viene spiegato come configurare Virtual Private Network (VPN) Multiprotocol Label Switching (MPLS) su ATM con router Cisco 7500 come Label Edge Router (LER) e switch LightStream 1010 come Label Switch Router (LSR). Due router connessi a Ethernet, ciascuno in una sede remota del cliente, fanno parte di una VPN. In questo documento vengono esaminate le configurazioni end-to-end dei dispositivi e vengono illustrati utili comandi show.

[Prerequisiti](#)

[Requisiti](#)

Nessun requisito specifico previsto per questo documento.

[Convenzioni](#)

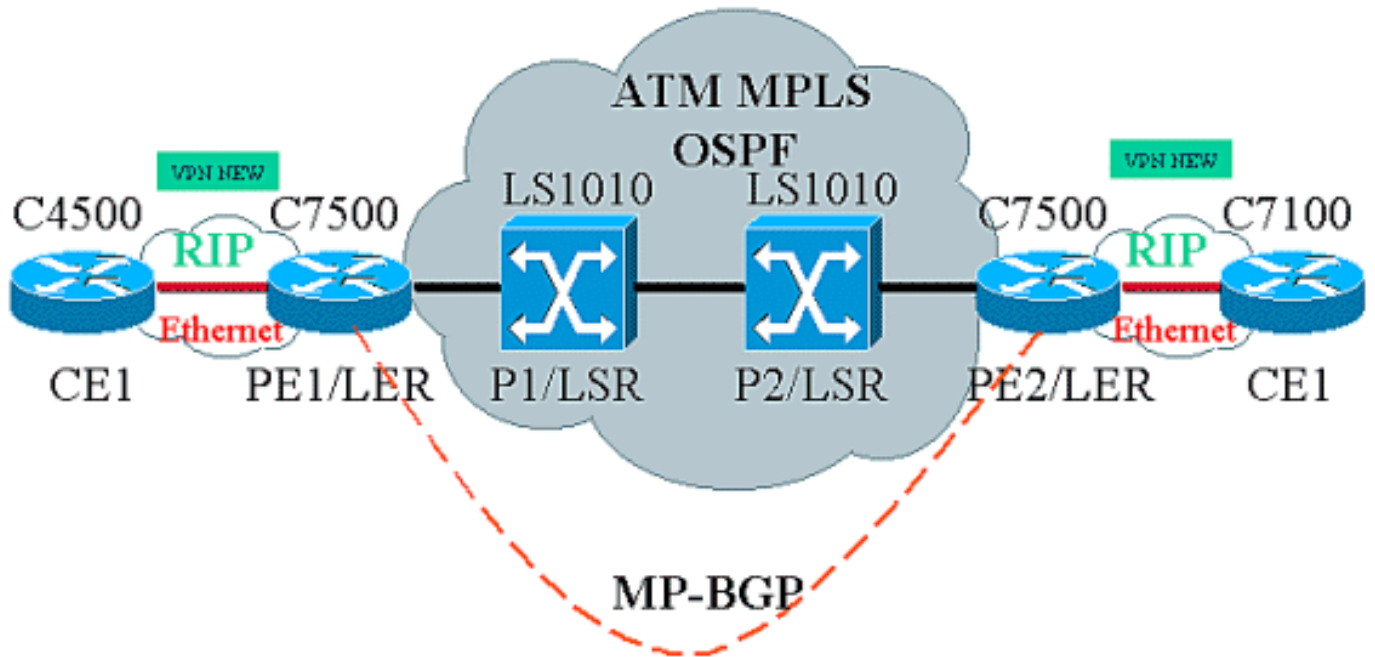
Per ulteriori informazioni sulle convenzioni usate, consultare il documento [Cisco sulle convenzioni nei suggerimenti tecnici](#).

[Configurazione](#)

In questa sezione vengono presentate le informazioni necessarie per configurare le funzionalità descritte più avanti nel documento.

[Esempio di rete](#)

Nel documento viene usata questa impostazione di rete:



Descrizione rete

La configurazione corrente contiene questi elementi nella terminologia VPN:

- CE = Customer Edge Router
- PE = Provider Edge Router
- P=Router provider

L'impostazione corrente contiene questi elementi nella terminologia MPLS:

- LER = Label Edge Router
- LSR = Label Switch Router
- TDP/LDP = Tag Distribution Protocol/Label Distribution Protocol

Configurazioni

Nel documento vengono usate queste configurazioni:

- PE1 e PE2 sono i LER della rete ATM.
- P1 e P2 sono i LSR.
- CE1 e CE2 sono router perimetrali del cliente che non sono in grado di riconoscere e non eseguono VPN o MPLS.
- CE1 e CE2 sono collegati rispettivamente a PE1 e PE2 tramite Ethernet ed eseguono il protocollo RIP (Routing Information Protocol).
- PE1, PE2, P1 e P2 eseguono Open Shortest Path First (OSPF) e si trovano tutti nell'area 0. OSPF è il protocollo IGP (Interior Gateway Protocol) utilizzato nella rete ATM. La commutazione dei tag viene utilizzata sulle interfacce ATM su tutti e quattro i dispositivi ATM. Il protocollo TDP (Tag Distribution Protocol) assegna i tag alle route OSPF.
- PE1 e PE2 sono peer MP-BGP (Multiprotocol-Border Gateway Protocol).

- Le route RIP vengono ridistribuite in MP-BGP. Route MP-BGP ridistribuite in RIP su router PE1 e PE2.
- L'installazione mantiene tabelle di routing VRF separate nei router PE1 e PE2.
- Il nome della VPN utilizzato in questo esempio è NEW.

CE1

```

!
version 12.1
service timestamps debug datetime msec
service timestamps log datetime msec

!
boot system flashow c4500-js-mz.121-5
!

ip subnet-zero

!
interface Loopback0
 ip address 10.1.1.1 255.255.255.0
!
interface Loopback1
 ip address 10.2.2.2 255.255.255.0
!
interface Loopback2
 ip address 10.3.3.3 255.255.255.0
!
interface Ethernet0
 ip address 100.1.1.2 255.255.255.0
 media-type 10BaseT

!

router rip
 version 2
 network 10.0.0.0
 network 100.0.0.0
 no auto-summary
!
ip classless
!

```

PE1

```

!
version 12.1

service timestamps debug uptime
service timestamps log uptime

!
boot system flashow slot1:rsp-jsv-mz.121-5a.bin
!

ip subnet-zero

!
ip vrf NEW
 rd 200:1
 route-target export 200:1
 route-target import 200:1

```

```
ip cef distributed
!
interface Loopback0
 ip address 1.1.1.1 255.255.255.255
!
interface ATM2/0/0
 mtu 1500
 no ip address
!
interface ATM2/0/0.10 tag-switching
 ip unnumbered Loopback0
 tag-switching ip
!
interface Ethernet2/1/0
 ip vrf forwarding NEW
 ip address 100.1.1.1 255.255.255.0
!
router ospf 100
 no log-adjacency-changes
 network 1.0.0.0 0.255.255.255 area 0
 network 100.1.1.0 0.0.0.255 area 0
!
router rip
 version 2
 network 100.0.0.0
 no auto-summary
!
 address-family ipv4 vrf NEW
 version 2
 redistribute bgp 200 metric 0
 network 100.0.0.0
 no auto-summary
 exit-address-family
!
router bgp 200
 bgp log-neighbor-changes
 neighbor 2.2.2.2 remote-as 200

 neighbor 2.2.2.2 update-source Loopback0
 no auto-summary
!
 address-family ipv4 vrf NEW
 redistribute rip
 no auto-summary
 no synchronization
 exit-address-family
!
 address-family vpnv4
 neighbor 2.2.2.2 activate
 neighbor 2.2.2.2 send-community extended
 no auto-summary
 exit-address-family
!
ip classless
!
```

P1

```
!
service timestamps debug uptime
```

```
service timestamps log uptime
!
ip subnet-zero
!
interface Loopback0
 ip address 4.4.4.4 255.255.255.255
 no ip directed-broadcast
!
interface ATM12/0/0
 ip unnumbered Loopback0
 no ip directed-broadcast

 tag-switching ip
!
interface ATM12/0/1
 ip unnumbered Loopback0
 no ip directed-broadcast

 tag-switching ip

!
router ospf 100
 network 4.0.0.0 0.255.255.255 area 0
!
ip classless
!
```

P2

```
!
service timestamps debug uptime
service timestamps log uptime

!
ip subnet-zero

!
interface Loopback0
 ip address 3.3.3.3 255.255.255.255
 no ip directed-broadcast
!
interface ATM0/1/1
 ip unnumbered Loopback0
 no ip directed-broadcast

 tag-switching ip
!
interface ATM0/1/3
 ip unnumbered Loopback0
 no ip directed-broadcast

 tag-switching ip

!
router ospf 100
 network 3.0.0.0 0.255.255.255 area 0
!
ip classless
!
```

PE2

```
!  
version 12.1  
service timestamps debug datetime msec  
service timestamps log datetime msec  
  
!  
boot system flash slot0:rsp-jsv-mz.121-5a  
!  
  
ip subnet-zero  
  
!  
ip vrf NEW  
  rd 200:1  
  route-target export 200:1  
  route-target import 200:1  
ip cef distributed  
  
!  
interface Loopback0  
  ip address 2.2.2.2 255.255.255.255  
!  
  
interface FastEthernet3/0/0  
  ip vrf forwarding NEW  
  ip address 110.1.1.1 255.255.255.0  
  
  half-duplex  
!  
  
interface ATM3/1/0.1 tag-switching  
  ip unnumbered Loopback0  
  tag-switching ip  
!  
router ospf 100  
  log-adjacency-changes  
  network 2.0.0.0 0.255.255.255 area 0  
  
!  
router rip  
  version 2  
  network 110.0.0.0  
  no auto-summary  
  !  
  address-family ipv4 vrf NEW  
  version 2  
  redistribute bgp 200 metric 0  
  network 110.0.0.0  
  no auto-summary  
  exit-address-family  
  !  
router bgp 200  
  bgp log-neighbor-changes  
  neighbor 1.1.1.1 remote-as 200  
  
  neighbor 1.1.1.1 update-source Loopback0  
  
  no auto-summary  
  !  
  address-family ipv4 vrf NEW  
  redistribute rip  
  no auto-summary
```

```
no synchronization
exit-address-family
!
address-family vpnv4
neighbor 1.1.1.1 activate
neighbor 1.1.1.1 send-community extended
no auto-summary
exit-address-family
!
ip classless
!
```

CE2

```
!
version 12.1

service timestamps debug uptime
service timestamps log uptime

!

boot system disk0:c7100-jo3s56i-mz.121-5.T.bin

!
ip subnet-zero

!
interface Loopback0
 ip address 30.1.1.1 255.255.255.0
!
interface Loopback1
 ip address 30.2.2.2 255.255.255.0
!
interface Loopback2
 ip address 30.3.3.3 255.255.255.0
!
interface FastEthernet0/0
 ip address 110.1.1.2 255.255.255.0

!
router rip
 version 2
 network 30.0.0.0
 network 110.0.0.0
 no auto-summary
!
```

Comandi show

Utilizzare questi comandi per verificare che la rete funzioni correttamente:

- **show ip route**: visualizza le voci della tabella di routing IP.
- **show ip rip database vrf**: visualizza le informazioni contenute nel database RIP per un particolare VRF.
- **show ip bgp vpnv4 vrf**: visualizza le informazioni sull'indirizzo VPN dalla tabella BGP.
- **show tag-switching interfaces detail**: visualizza le informazioni su una o più interfacce con la funzionalità MPLS abilitata.
- **show tag-switching tdp binding**: visualizza le voci richieste dal database di binding di etichette LDP ATM.

- **show tag-switching forwarding-table vrf**: controlla lo stack di etichette utilizzato per una route particolare.

L'output mostrato di seguito è il risultato dei comandi immessi sui dispositivi mostrati nel diagramma di rete. Questo output mostra che la rete funziona correttamente.

CE1

```
Cisco4500#show ip route
```

```
Codes: C - connected, S - static, I - IGRP, 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, E - EGP
       i - IS-IS, 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
```

```
100.0.0.0/24 is subnetted, 1 subnets
C    100.1.1.0 is directly connected, Ethernet0
110.0.0.0/24 is subnetted, 1 subnets
R    110.1.1.0 [120/1] via 100.1.1.1, 00:00:14, Ethernet0
10.0.0.0/24 is subnetted, 3 subnets
C    10.3.3.0 is directly connected, Loopback2
C    10.2.2.0 is directly connected, Loopback1
C    10.1.1.0 is directly connected, Loopback0
30.0.0.0/24 is subnetted, 3 subnets
R    30.3.3.0 [120/1] via 100.1.1.1, 00:00:14, Ethernet0
R    30.2.2.0 [120/1] via 100.1.1.1, 00:00:15, Ethernet0
R    30.1.1.0 [120/1] via 100.1.1.1, 00:00:15, Ethernet0
```

PE1

```
Cisco7500a#show ip route
```

```
Codes: C - connected, S - static, I - IGRP, 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, E - EGP
       i - IS-IS, 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
```

```
1.0.0.0/32 is subnetted, 1 subnets
C    1.1.1.1 is directly connected, Loopback0
2.0.0.0/32 is subnetted, 1 subnets
O    2.2.2.2 [110/4] via 4.4.4.4, 18:17:37, ATM2/0/0.10
3.0.0.0/32 is subnetted, 1 subnets
O    3.3.3.3 [110/3] via 4.4.4.4, 18:17:37, ATM2/0/0.10
4.0.0.0/32 is subnetted, 1 subnets
O    4.4.4.4 [110/2] via 4.4.4.4, 18:17:37, ATM2/0/0.10
```

```
Cisco7500a#show ip route vrf NEW
```

```
Codes: C - connected, S - static, I - IGRP, 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, E - EGP
       i - IS-IS, 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

```
100.0.0.0/24 is subnetted, 1 subnets
C    100.1.1.0 is directly connected, Ethernet2/1/0
110.0.0.0/24 is subnetted, 1 subnets
B    110.1.1.0 [200/0] via 2.2.2.2, 00:26:11
10.0.0.0/24 is subnetted, 3 subnets
R    10.3.3.0 [120/1] via 100.1.1.2, 00:00:11, Ethernet2/1/0
R    10.2.2.0 [120/1] via 100.1.1.2, 00:00:11, Ethernet2/1/0
R    10.1.1.0 [120/1] via 100.1.1.2, 00:00:11, Ethernet2/1/0
30.0.0.0/24 is subnetted, 3 subnets
B    30.3.3.0 [200/1] via 2.2.2.2, 00:26:12
B    30.2.2.0 [200/1] via 2.2.2.2, 00:26:12
B    30.1.1.0 [200/1] via 2.2.2.2, 00:26:12
```

Cisco7500a#**show ip rip database vrf NEW**

```
10.0.0.0/8    auto-summary
10.1.1.0/24
    [1] via 100.1.1.2, 00:00:18, Ethernet2/1/0
10.2.2.0/24
    [1] via 100.1.1.2, 00:00:18, Ethernet2/1/0
10.3.3.0/24
    [1] via 100.1.1.2, 00:00:18, Ethernet2/1/0
30.0.0.0/8    auto-summary
30.1.1.0/24    redistributed
    [1] via 2.2.2.2,
30.2.2.0/24    redistributed
    [1] via 2.2.2.2,
30.3.3.0/24    redistributed
    [1] via 2.2.2.2,
100.0.0.0/8    auto-summary
100.1.1.0/24    directly connected, Ethernet2/1/0
110.0.0.0/8    auto-summary
110.1.1.0/24    redistributed
    [1] via 2.2.2.2,
```

Cisco7500a#**show ip bgp vpnv4 vrf NEW**

BGP table version is 17, local router ID is 1.1.1.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 200:1 (default for vrf NEW)					
*> 10.1.1.0/24	100.1.1.2	1		32768	?
*> 10.2.2.0/24	100.1.1.2	1		32768	?
*> 10.3.3.0/24	100.1.1.2	1		32768	?
*>i30.1.1.0/24	2.2.2.2	1	100	0	?
*>i30.2.2.0/24	2.2.2.2	1	100	0	?
*>i30.3.3.0/24	2.2.2.2	1	100	0	?
*> 100.1.1.0/24	0.0.0.0	0		32768	?
*>i110.1.1.0/24	2.2.2.2	0	100	0	?

Cisco7500a#**show tag-switching interfaces**

Interface	IP	Tunnel	Operational	
ATM2/0/0.10	Yes	No	Yes	(ATM tagging)

Cisco7500a#**show tag-switching interfaces detail**

```
Interface ATM2/0/0.10:
  IP tagging enabled
  TSP Tunnel tagging not enabled
  Tagging operational
```

```
Tagswitching turbo vector
MTU = 4470
ATM tagging:
    Tag VPI = 1
    Tag VCI range = 33 - 65535
    Control VC = 0/32
```

Cisco7500a#**show tag-switching ?**

```
atm-tdp          ATM Tagging Protocol information
cos-map          Show Tag CoS ATM Multi-VC CoS Map
forwarding-table Show the Tag Forwarding Information Base (TFIB)
interfaces       Show per-interface tag switching
prefix-map       Show Tag CoS Prefix Map
tdp              Tag Distribution Protocol information
```

Cisco7500a#**show tag-switching tdp bindings**

```
tib entry: 1.1.1.1/32, rev 2
    local binding: tag: imp-null
tib entry: 2.2.2.2/32, rev 23
    local binding: tag: 27
tib entry: 3.3.3.3/32, rev 21
    local binding: tag: 26
tib entry: 4.4.4.4/32, rev 10
    local binding: tag: 28
```

Cisco7500a#**show tag-switching atm-tdp bindings**

```
Destination: 4.4.4.4/32
    Headend Router ATM2/0/0.10 (1 hop) 1/33 Active, VCD=24
Destination: 3.3.3.3/32
    Headend Router ATM2/0/0.10 (2 hops) 1/43 Active, VCD=25
Destination: 2.2.2.2/32
    Headend Router ATM2/0/0.10 (3 hops) 1/42 Active, VCD=26
Destination: 1.1.1.1/32
    Tailend Router ATM2/0/0.10 1/33 Active, VCD=24
```

Cisco7500a#**show tag-switching forwarding-table vrf NEW**

Local tag	Outgoing tag or VC	Prefix or Tunnel Id	Bytes tag switched	Outgoing interface	Next Hop
29	Aggregate	100.1.1.0/24[V]	2080		
30	Untagged	10.3.3.0/24[V]	0	Et2/1/0	100.1.1.2
31	Untagged	10.2.2.0/24[V]	0	Et2/1/0	100.1.1.2
32	Untagged	10.1.1.0/24[V]	0	Et2/1/0	100.1.1.2

P1

LS1010#**show ip route**

```
Codes: C - connected, S - static, I - IGRP, 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, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, * - candidate default
U - per-user static route, o - ODR
T - traffic engineered route
```

Gateway of last resort is not set

```
1.0.0.0/32 is subnetted, 1 subnets
O    1.1.1.1 [110/2] via 1.1.1.1, 19:00:12, ATM12/0/0
2.0.0.0/32 is subnetted, 1 subnets
O    2.2.2.2 [110/3] via 3.3.3.3, 19:00:12, ATM12/0/1
3.0.0.0/32 is subnetted, 1 subnets
```

```
O      3.3.3.3 [110/2] via 3.3.3.3, 19:00:12, ATM12/0/1
      4.0.0.0/32 is subnetted, 1 subnets
C      4.4.4.4 is directly connected, Loopback0
```

LS1010#show tag-switching atm-tdp bindings

```
Destination: 4.4.4.4/32
  Tailend Switch ATM12/0/0 1/33 Active -> Terminating Active
  Tailend Switch ATM12/0/1 1/34 Active -> Terminating Active
Destination: 2.2.2.2/32
  Transit ATM12/0/0 1/42 Active -> ATM12/0/1 1/35 Active
Destination: 1.1.1.1/32
  Transit ATM12/0/1 1/33 Active -> ATM12/0/0 1/33 Active
Destination: 3.3.3.3/32
  Transit ATM12/0/0 1/43 Active -> ATM12/0/1 1/34 Active
```

P2

LS1010#show ip route

```
Codes: C - connected, S - static, I - IGRP, 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, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, * - candidate default
       U - per-user static route, o - ODR
```

Gateway of last resort is 10.118.1.21 to network 0.0.0.0

```
      1.0.0.0/32 is subnetted, 1 subnets
O      1.1.1.1 [110/3] via 4.4.4.4, 19:46:00, ATM0/1/1
      2.0.0.0/32 is subnetted, 1 subnets
O      2.2.2.2 [110/2] via 2.2.2.2, 19:46:00, ATM0/1/3
      3.0.0.0/32 is subnetted, 1 subnets
C      3.3.3.3 is directly connected, Loopback0
      4.0.0.0/32 is subnetted, 1 subnets
O      4.4.4.4 [110/2] via 4.4.4.4, 19:46:00, ATM0/1/1
      10.0.0.0/24 is subnetted, 1 subnets
C      10.118.1.0 is directly connected, Ethernet2/0/0
S*    0.0.0.0/0 [1/0] via 10.118.1.21
```

LS1010#show tag-switching atm-tdp bindings

```
Destination: 1.1.1.1/32
  Transit ATM0/1/3 1/33 Active -> ATM0/1/1 1/33 Active
Destination: 3.3.3.3/32
  Tailend Switch ATM0/1/3 1/34 Active -> Terminating Active
  Tailend Switch ATM0/1/1 1/34 Active -> Terminating Active
Destination: 4.4.4.4/32
  Transit ATM0/1/3 1/35 Active -> ATM0/1/1 1/34 Active
Destination: 2.2.2.2/32
  Transit ATM0/1/1 1/35 Active -> ATM0/1/3 1/33 Active
```

PE2

Cisco7500#show ip route

```
Codes: C - connected, S - static, I - IGRP, 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, E - EGP
       i - IS-IS, 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

```
1.0.0.0/32 is subnetted, 1 subnets
O   1.1.1.1 [110/4] via 3.3.3.3, 02:58:46, ATM3/1/0.1
2.0.0.0/32 is subnetted, 1 subnets
C   2.2.2.2 is directly connected, Loopback0
3.0.0.0/32 is subnetted, 1 subnets
O   3.3.3.3 [110/2] via 3.3.3.3, 02:58:46, ATM3/1/0.1
4.0.0.0/32 is subnetted, 1 subnets
O   4.4.4.4 [110/3] via 3.3.3.3, 02:58:46, ATM3/1/0.1
```

Cisco7500#show ip route vrf NEW

Codes: C - connected, S - static, I - IGRP, 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, E - EGP
i - IS-IS, 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

```
100.0.0.0/24 is subnetted, 1 subnets
B   100.1.1.0 [200/0] via 1.1.1.1, 01:16:13
110.0.0.0/24 is subnetted, 1 subnets
C   110.1.1.0 is directly connected, FastEthernet3/0/0
10.0.0.0/24 is subnetted, 3 subnets
B   10.3.3.0 [200/1] via 1.1.1.1, 01:16:13
B   10.2.2.0 [200/1] via 1.1.1.1, 01:16:13
B   10.1.1.0 [200/1] via 1.1.1.1, 01:16:13
30.0.0.0/24 is subnetted, 3 subnets
R   30.3.3.0 [120/1] via 110.1.1.2, 00:00:16, FastEthernet3/0/0
R   30.2.2.0 [120/1] via 110.1.1.2, 00:00:17, FastEthernet3/0/0
R   30.1.1.0 [120/1] via 110.1.1.2, 00:00:17, FastEthernet3/0/0
```

Cisco7500#show ip rip database vrf NEW

```
10.0.0.0/8    auto-summary
10.1.1.0/24   redistributed
               [1] via 1.1.1.1,
10.2.2.0/24   redistributed
               [1] via 1.1.1.1,
10.3.3.0/24   redistributed
               [1] via 1.1.1.1,
30.0.0.0/8    auto-summary
30.1.1.0/24   [1] via 110.1.1.2, 00:00:09, FastEthernet3/0/0
30.2.2.0/24   [1] via 110.1.1.2, 00:00:09, FastEthernet3/0/0
30.3.3.0/24   [1] via 110.1.1.2, 00:00:09, FastEthernet3/0/0
100.0.0.0/8   auto-summary
100.1.1.0/24  redistributed
               [1] via 1.1.1.1,
110.0.0.0/8   auto-summary
110.1.1.0/24  directly connected, FastEthernet3/0/0
```

Cisco7500#show ip bgp vpnv4 vrf NEW

BGP table version is 17, local router ID is 2.2.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 200:1 (default for vrf NEW)					
*>i10.1.1.0/24	1.1.1.1	1	100	0	?

```

*>i10.2.2.0/24      1.1.1.1          1    100      0 ?
*>i10.3.3.0/24      1.1.1.1          1    100      0 ?
*> 30.1.1.0/24      110.1.1.2        1           32768 ?
*> 30.2.2.0/24      110.1.1.2        1           32768 ?
*> 30.3.3.0/24      110.1.1.2        1           32768 ?
*>i100.1.1.0/24     1.1.1.1          0    100      0 ?
*> 110.1.1.0/24     0.0.0.0          0           32768 ?

```

Cisco7500#show tag-switching interfaces

```

Interface          IP      Tunnel  Operational
ATM3/1/0.1         Yes    No      Yes          (ATM tagging)

```

Cisco7500#show tag-switching interfaces detail

```

Interface ATM3/1/0.1:
  IP tagging enabled
  TSP Tunnel tagging not enabled
  Tagging operational
  Tagswitching turbo vector
  MTU = 4470
  ATM tagging:
    Tag VPI = 1
    Tag VCI range = 33 - 65535
    Control VC = 0/32

```

Cisco7500#show tag-switching ?

```

atm-tdp           ATM Tagging Protocol information
cos-map           Show Tag CoS ATM Multi-VC CoS Map
forwarding-table  Show the Tag Forwarding Information Base (TFIB)
interfaces        Show per-interface tag switching
prefix-map        Show Tag CoS Prefix Map
tdp               Tag Distribution Protocol information

```

Cisco7500#show tag-switching tdp bindings

```

tib entry: 1.1.1.1/32, rev 25
  local binding: tag: 26
tib entry: 2.2.2.2/32, rev 2
  local binding: tag: imp-null
tib entry: 3.3.3.3/32, rev 27
  local binding: tag: 27
tib entry: 4.4.4.4/32, rev 29
  local binding: tag: 28

```

Cisco7500#show tag-switching atm-tdp bindings

```

Destination: 1.1.1.1/32
  Headend Router ATM3/1/0.1 (3 hops) 1/33 Active, VCD=8
Destination: 3.3.3.3/32
  Headend Router ATM3/1/0.1 (1 hop) 1/34 Active, VCD=6
Destination: 4.4.4.4/32
  Headend Router ATM3/1/0.1 (2 hops) 1/35 Active, VCD=7
Destination: 2.2.2.2/32
  Tailend Router ATM3/1/0.1 1/33 Active, VCD=8

```

Cisco7500#show tag-switching forwarding-table vrf NEW

Local tag	Outgoing tag or VC	Prefix or Tunnel Id	Bytes tag switched	Outgoing interface	Next Hop
33	Aggregate	110.1.1.0/24[V]	0		
34	Untagged	30.3.3.0/24[V]	0	Fa3/0/0	110.1.1.2
35	Untagged	30.2.2.0/24[V]	0	Fa3/0/0	110.1.1.2
36	Untagged	30.1.1.0/24[V]	0	Fa3/0/0	110.1.1.2

Cisco7100#show ip route

Codes: C - connected, S - static, I - IGRP, 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, E - EGP
i - IS-IS, 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

```
100.0.0.0/24 is subnetted, 1 subnets
R    100.1.1.0 [120/1] via 110.1.1.1, 00:00:19, FastEthernet0/0
110.0.0.0/24 is subnetted, 1 subnets
C    110.1.1.0 is directly connected, FastEthernet0/0
10.0.0.0/24 is subnetted, 3 subnets
R    10.3.3.0 [120/1] via 110.1.1.1, 00:00:19, FastEthernet0/0
R    10.2.2.0 [120/1] via 110.1.1.1, 00:00:19, FastEthernet0/0
R    10.1.1.0 [120/1] via 110.1.1.1, 00:00:19, FastEthernet0/0
30.0.0.0/24 is subnetted, 3 subnets
C    30.3.3.0 is directly connected, Loopback2
C    30.2.2.0 is directly connected, Loopback1
C    30.1.1.0 is directly connected, Loopback0
```

[Informazioni correlate](#)

- [Reti private virtuali MPLS](#)
- [Configurazione di una VPN MPLS di base](#)
- [Flusso di pacchetti in un ambiente VPN MPLS](#)
- [Documentazione e supporto tecnico – Cisco Systems](#)