Configurar VPN MPLS sobre la atmósfera con los Cisco 7500 Router y el Switches del LightStream1010

Contenido

Introducción

Este documento muestra cómo configurar Multiprotocol Label Switching (MPLS) de Red Privada Virtual (VPN) sobre ATM con routers Cisco 7500 como Router de Borde de Etiqueta (LER) y switches LightStream 1010 como Label Switch Routers (LSR). Dos routers conectados por Ethernet, cada uno en un sitio de cliente remoto, forman parte de una VPN. En este documento, miramos las configuraciones de dispositivo de extremo a extremo y los comandos show útiles.

prerrequisitos

Requisitos

No hay requisitos específicos para este documento.

Convenciones

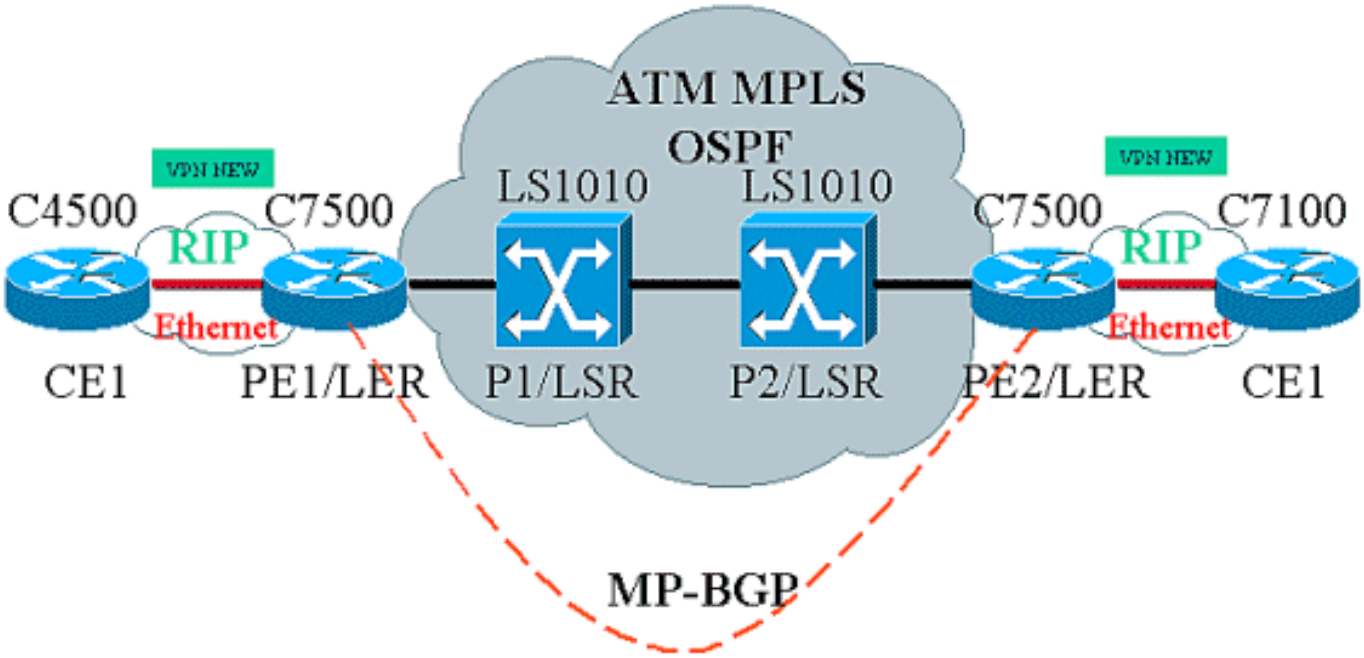
Consulte Convenciones de Consejos TécnicosCisco para obtener más información sobre las convenciones del documento.

Configurar

En esta sección encontrará la información para configurar las funciones descritas en este documento.

Diagrama de la red

En este documento, se utiliza esta configuración de red:



Descripción de la Red

La configuración actual contiene estos elementos en terminología VPN:

- CE = Router borde del cliente
- PE = router de borde del proveedor
- Router de P=Provider

La configuración actual contiene estos elementos en terminología MPLS:

- LER = Router de borde de etiqueta
- LSR = Label Switch Router
- TDP/LDP = Tag Distribution Protocol/Label Distribution Protocol

Configuraciones

En este documento, se utilizan estas configuraciones:

- El PE1 y el PE2 son los LER en nuestra red ATM.
- El P1 y el P2 son los LSR.
- El CE1 y el CE2 son el Routers de la frontera del cliente que está inconsciente y no realiza el VPN o el MPLS.
- El CE1 y el CE2 son Ethernet conectado con el PE1 y el PE2 respectivamente, y realizan el Routing Information Protocol (RIP).
- El PE1, el PE2, el P1 y el P2 hacen el Open Shortest Path First (OSPF) y son todo en el área 0. OSPF es el Interior Gateway Protocol (IGP) usado en la red ATM. El Tag Switching se utiliza en las interfaces ATM en los cuatro dispositivos ATM. El (TDP) del Tag Distribution

Protocol asigna las etiquetas a las OSPF rutas.

- El PE1 y el PE2 son pares del Multiprotocol-Border Gateway Protocol (MP-BGP).
- Las rutas del RIP se redistribuyen en el MP-BGP. Rutas MP-BGP redistribuidas en el RIP en el Routers PE1 y PE2.
- La configuración mantiene las tablas de ruteo separadas VRF en el Routers PE1 y PE2.
- El nombre del VPN usado en este ejemplo es NUEVO.

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
```

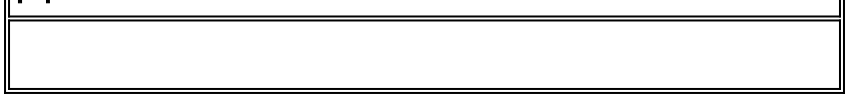
```
 rd 200:1
 route-target export 200:1
 route-target import 200:1
ip cef distributed

!
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 flashow 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
!
```

Comandos show

Use los siguientes comandos para probar que su red esté funcionando correctamente:

- **ruta de IP de la demostración** - Entradas de tabla de IP Routing de las visualizaciones.
- show ip rip database vrf - Muestra información contenida en la base de datos RIP para un VRF particular.
- show ip bgp vpnv4 vrf - Muestra la información de dirección de VPN desde la tabla BGP.
- **show tag-switching interfaces detail** - Visualiza la información sobre una o más interfaces que

tengan la característica MPLS habilitada.

- **muestre los atascamientos del tdp del Tag Switching** - Visualiza las entradas pedidas de la base de datos de vinculación de etiquetas atmósfera LDP.
- **show tag-switching forwarding-table vrf** - Marca la pila de etiquetas usada para una ruta determinado.

La salida mostrada abajo es un resultado de estos comandos entered en los dispositivos mostrados en el diagrama de la red. Este resultado muestra que la red está funcionando correctamente.

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  Outgoing    Prefix            Bytes tag  Outgoing   Next Hop
tag    tag or VC   or Tunnel Id      switched   interface
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  Outgoing    Prefix            Bytes tag  Outgoing   Next Hop
tag    tag or VC   or Tunnel Id      switched   interface
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
```

CE2

```
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
```

Información Relacionada

- Redes privadas virtuales MPLS
- Configuración de una VPN MPLS básica
- Flujo de paquetes en un entorno de VPN MPLS
- Soporte Técnico y Documentación - Cisco Systems