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Introdução

Um problema comum ao usar o Open Shortest Path First (OSPF) é rotas no banco de dados não aparece na tabela de roteamento. Na maioria dos casos o OSPF encontra uma discrepância no banco de dados assim que não instala a rota na tabela de roteamento. Frequentemente, você pode ver que o `ADV Router é a` mensagem não-`alcançável` (que significa que o roteador que anuncia o LSA não é OSPF direto alcançável) sobre o anúncio link state (LSA) no banco de dados quando este problema ocorre. Aqui está um exemplo:

```
Adv Router is not-reachableLS age: 418Options: (No TOS-capability, DC)LS Type: Router LinksLink State ID: 172.16.32.2Advertising Router: 172.16.32.2LS Seq Number: 80000002Checksum: 0xFA63Length: 60 Number of Links: 3
```

Há diversas razões para este problema, a maioria de que negócio com configuração incorreta ou uma topologia quebrada. Quando a configuração é corrigida a discrepância da base de dados do OSPF parte e as rotas aparecem na tabela de roteamento. Este documento explica alguns de mais motivos comuns que podem causar a discrepância no banco de dados.

Alguns dos comandos usados durante todo este documento para a verificação do comportamento OSPF incluem a **relação OSPF da mostra IP**, o **roteador de banco de dados OSPF IP**, o **vizinho OSPF da mostra IP** e o **banco de dados OSPF da mostra IP externo**. Se você tem a saída de qualquens um comandos de seu dispositivo Cisco, você pode usar-se para indicar problemas potenciais e reparos. Para usar-se , você deve ser um cliente registrado, ser entrado, e ter o Javascript permitido.

Para usar o Output Interpreter, você deve ser um cliente registrado, estar conectado e ter o JavaScript ativado.

Pré-requisitos

Requisitos

Os leitores deste documento devem ter o conhecimento destes assuntos

- Compreensão básica do OSPF
- Configuração básica do OSPF

Componentes Utilizados

As informações neste documento são baseadas nestas versões de software e hardware:

- A Versão 12.3 do Cisco IOS ® Software estava sendo executado em todo o Roteadores.
- Isto é apoiado em todas as plataformas do Cisco Router.

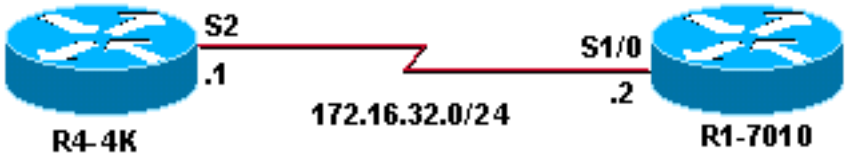
As informações neste documento foram criadas a partir de dispositivos em um ambiente de laboratório específico. Todos os dispositivos utilizados neste documento foram iniciados com uma configuração (padrão) inicial. Se a sua rede estiver ativa, certifique-se de que entende o impacto potencial de qualquer comando.

Convenções

Para obter mais informações sobre convenções de documento, consulte as Convenções de dicas técnicas Cisco.

Razão 1: Incompatibilidade de tipo de rede

Deixe-nos usar como um exemplo o diagrama de rede seguinte:



R4-4K	R1-7010
interface Loopback0 ip address 172.16.33.1 255.255.255.255interface Serial2 ip address 172.16.32.1 255.255.255.0 **ip ospf network broadcast**router ospf 20 network 172.16.0.0 0.0.255.255 area 0	interface Loopback0 ip address 172.16.33.1 255.255.255.255interface Serial2 ip address 172.16.32.1 255.255.255.0 **ip ospf network broadcast**router ospf 20 network 172.16.0.0 0.0.255.255 area 0

```
R4-4K(4)# show ip ospf interface serial 2Serial2 is up, line protocol is up   Internet Address
172.16.32.1/24, Area 0   Process ID 20, Router ID 172.16.33.1, Network Type BROADCAST, Cost: 64
Transmit Delay is 1 sec, State DR, Priority 1   Designated Router (ID) 172.16.33.1, Interface
address 172.16.32.1  Backup Designated router (ID) 172.16.32.2, Interface address 172.16.32.2
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5    Hello due in 00:00:08
```

```
Neighbor Count is 1, Adjacent neighbor count is 1     Adjacent with neighbor 172.16.32.2
(Backup Designated Router)  Suppress hello for 0 neighbor(s)R1-7010(5)# show ip ospf interface
serial 1/0Serial1/0 is up, line protocol is up   Internet Address 172.16.32.2/24, Area 0
Process ID 20, Router ID 172.16.32.2, Network Type POINT_TO_POINT, Cost: 64  Transmit Delay is 1
sec, State POINT_TO_POINT,  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:02  Neighbor Count is 1, Adjacent neighbor count is 1     Adjacent with
neighbor 172.16.33.1  Suppress hello for 0 neighbor(s)
```

Como você pode ver acima, o roteador R4-4K é configurado para a transmissão, e o roteador R1-7010 é configurado para ponto a ponto. Este tipo da incompatibilidade de tipo de rede faz o roteador de anúncio inacessível.

```
R4-4K(4)# show ip ospf database router 172.16.32.2  Adv Router is not-reachable  LS age: 418
Options: (No TOS-capability, DC)  LS Type: Router Links  Link State ID: 172.16.32.2  Advertising
Router: 172.16.32.2  LS Seq Number: 80000002  Checksum: 0xFA63  Length: 60   Number of Links: 3
Link connected to: another Router (point-to-point)    (Link ID) Neighboring Router ID:
172.16.33.1    (Link Data) Router Interface address: 172.16.32.2    Number of TOS metrics: 0
TOS 0 Metrics: 64    Link connected to: a Stub Network    (Link ID) Network/subnet number:
172.16.32.0    (Link Data) Network Mask: 255.255.255.0    Number of TOS metrics: 0    TOS 0
Metrics: 64R1-7010(5)# show ip ospf database router 172.16.33.1  Adv Router is not-reachable  LS
age: 357  Options: (No TOS-capability, DC)  LS Type: Router Links  Link State ID: 172.16.33.1
Advertising Router: 172.16.33.1  LS Seq Number: 8000000A  Checksum: 0xD4AA  Length: 48   Number
of Links: 2     Link connected to: a Transit Network     (Link ID) Designated Router address:
172.16.32.1     (Link Data) Router Interface address: 172.16.32.1     Number of TOS metrics: 0
TOS 0 Metrics: 64
```

Você pode ver que para a sub-rede 172.16.32.0/24, o roteador R1-7010 está gerando um link de ponto a ponto e o roteador R4-4K está gerando um enlace de trânsito. Isto cria uma discrepância na base de dados de link-state, que significa que nenhuma rota está instalada na tabela de roteamento.

```
R1-7010(5)# show ip route172.16.0.0/16 is variably subnetted, 3 subnets, 2 masksC
172.16.32.0/24 is directly connected, Serial1/0C       172.16.30.1/32 is directly connected,
Loopback0
```

Solução

Para resolver este problema, configurar ambo o Roteadores para o mesmo tipo de rede. Você pode mudar o tipo de rede do roteador R1-7010 para transmitir, ou mudar a interface serial do roteador R4-4K a ponto a ponto.

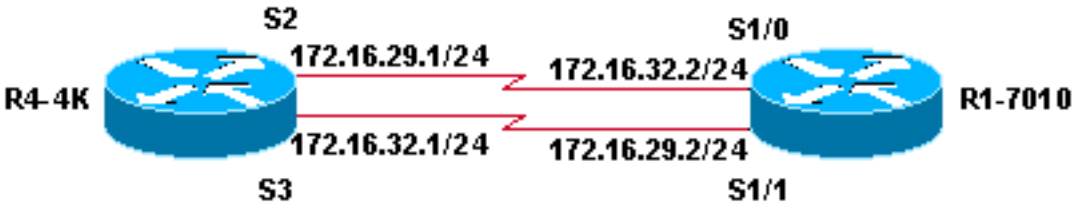
Nota: Se você tem uma situação onde um lado seja uma interface multiponto e o outro lado é uma secundário-relação a seguir muda o tipo de rede para transmitir em ambos os lados.

Neste exemplo nós removemos a indicação do “tipo de rede broadcast” no R4-4K porque os ambos os lados são interfaces encapsulada pontos a ponto do High-Level Data Link Control (HDLC).

```
R4-4K(4)# configure terminal R4-4K(4)(config)# interface serial 2 R4-4K(4)(config-if)# no ip
ospf network broadcast R4-4K(4)(config-if)# endR4-4K(4)# show ip ospf interface serial 2 Serial2
is up, line protocol is up   Internet Address 172.16.32.1/24, Area 0   Process ID 20, Router ID
172.16.33.1, Network Type POINT_TO_POINT, Cost: 64  Transmit Delay is 1 sec, State
POINT_TO_POINT,  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5   Hello
due in 00:00:04  Neighbor Count is 1, Adjacent neighbor count is 1   Adjacent with neighbor
172.16.32.2  Suppress hello for 0 neighbor(s)
```

Razão 2: Atribuição de endereço errado na instalação do link serial dual

Considere este diagrama da rede como um exemplo:



R4-4K	R1-7010
R4-4K(4)# **configure terminal** R4-4K(4)(config)# **interface serial 2** R4-4K(4)(config-if)# **no ip ospf network broadcast** R4-4K(4)(config-if)# **end**R4-4K(4)# **show ip ospf interface serial 2** Serial2 is up, line protocol is up Internet Address 172.16.32.1/24, Area 0 Process ID 20, Router ID 172.16.33.1, **Network Type POINT_TO_POINT**, Cost: 64 Transmit Delay is 1 sec, State POINT_TO_POINT, Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5 Hello due in 00:00:04 Neighbor Count is 1, Adjacent neighbor count is 1 Adjacent with neighbor 172.16.32.2 Suppress hello for 0 neighbor(s)	R4-4K(4)# **configure terminal** R4-4K(4)(config)# **interface serial 2** R4-4K(4)(config-if)# **no ip ospf network broadcast** R4-4K(4)(config-if)# **end**R4-4K(4)# **show ip ospf interface serial 2** Serial2 is up, line protocol is up Internet Address 172.16.32.1/24, Area 0 Process ID 20, Router ID 172.16.33.1, **Network Type POINT_TO_POINT**, Cost: 64 Transmit Delay is 1 sec, State POINT_TO_POINT, Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5 Hello due in 00:00:04 Neighbor Count is 1, Adjacent neighbor count is 1 Adjacent with neighbor 172.16.32.2 Suppress hello for 0 neighbor(s)

Você pode ver que os endereços IP de Um ou Mais Servidores Cisco ICM NT estão lançados nas configurações acima, que causa uma discrepância na base de dados do OSPF. Contudo, o Roteadores ainda forma vizinhos na versão do Cisco IOS mais cedo de 12.1 porque em um link de ponto a ponto, os OSPF Router não verificam que o roteador vizinho está na mesma sub-rede.

```
R4-4K(4)# show ip ospf neighborNeighbor ID     Pri   State           Dead Time   Address
Interface172.16.32.2       1   FULL/  -        00:00:37    172.16.32.2     Serial2172.16.32.2
1   FULL/  -        00:00:31    172.16.29.2     Serial3
```

Da saída acima, você pode ver que Serial2 está formando vizinhos com endereço IP 172.16.32.2, que não está na mesma sub-rede. Embora os vizinhos sejam formados, nenhuma rota é instalada na tabela de roteamento:

```
R1-7010(5)# show ip route172.16.0.0/16 is variably subnetted, 3 subnets, 2 masksC
172.16.32.0/24 is directly connected, Serial1/0C       172.16.29.0/24 is directly connected,
Serial1/1C       172.16.30.1/32 is directly connected, Loopback0
```

Solução

Para resolver este problema, qualquer um atribui corretamente os endereços IP de Um ou Mais Servidores Cisco ICM NT ou comuta os cabos serial. Aqui nós corrigimos os endereços IP de Um ou Mais Servidores Cisco ICM NT:

R4-4K	R1-7010
R1-7010(5)# **show ip route**172.16.0.0/16 is variably subnetted, 3 subnets, 2 masksC 172.16.32.0/24 is directly connected, Serial1/0C 172.16.29.0/24 is directly connected, Serial1/1C 172.16.30.1/32 is directly connected, Loopback0	R1-7010(5)# **show ip route**172.16.0.0/16 is variably subnetted, 3 subnets, 2 masksC 172.16.32.0/24 is directly connected, Serial1/0C 172.16.29.0/24 is directly connected, Serial1/1C 172.16.30.1/32 is directly connected, Loopback0

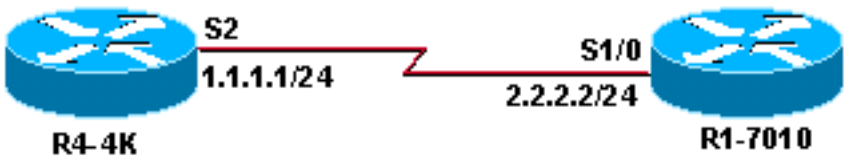
```
R4-4K(4)# show ip ospf neighborNeighbor ID     Pri   State           Dead Time   Address
Interface172.16.32.2       1   FULL/  -        00:00:36    172.16.32.2     Serial2172.16.32.2
1   FULL/  -        00:00:39    172.16.29.2     Serial3
```

Agora mostra o endereço vizinho correto na relação de Serial2. As rotas estão igualmente na tabela de roteamento:

```
R1-7010(5)# show ip route172.16.0.0/16 is variably subnetted, 4 subnets, 2 masksC
172.16.32.0/24 is directly connected, Serial1/0O       172.16.35.1/32 [110/65] via 172.16.32.1,
00:03:12, Serial1/0                    [110/65] via 172.16.29.1, 00:03:12, Serial1/1C
172.16.29.0/24 is directly connected, Serial1/1C       172.16.30.1/32 is directly connected,
Loopback0
```

Razão 3: Um lado do enlace ponto-a-ponto foi incluído na rede principal ou na rede auxiliar de maneira errada

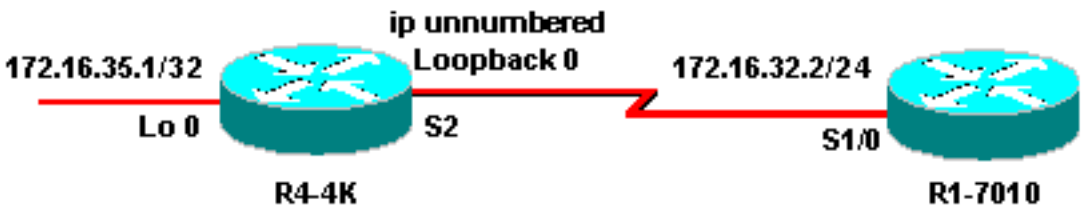
Considere este diagrama da rede como um exemplo:



Esta situação cria exatamente o mesmo comportamento que a atribuição de endereço errado na instalação do link serial dual. Para resolver o problema, atribua endereços IP de Um ou Mais Servidores Cisco ICM NT na mesma sub-rede em ambo o Roteadores.

Razão 4: Um dos lados não é numerado e o outro lado é numerado

Considere o diagrama de rede seguinte como um exemplo:



R4-4K	R1-7010
interface Loopback0 ip address 172.16.35.1 255.255.255.255interface Serial2 **ip unnumbered Loopback0** router ospf 20 network 172.16.0.0 0.0.255.255 area 0	interface Loopback0 ip address 172.16.35.1 255.255.255.255interface Serial2 **ip unnumbered Loopback0** router ospf 20 network 172.16.0.0 0.0.255.255 area 0

R4-4K(4)# **show interface serial 2**Serial2 is up, line protocol is up Hardware is cxBus Serial **Interface is unnumbered. Using address of Loopback0** (172.16.35.1)R1-7010(5)# **show interface serial 1/0**Serial1/0 is up, line protocol is up Hardware is cxBus Serial **Internet address is 172.16.32.2/24**

A saída acima mostra que a relação de Serial2 do R4-4K é unnumbered a Loopback0, visto que o Serial1/0 do R1-7010 é uma interface numerada.

R4-4K(4)# **show ip ospf interface serial 2**Serial2 is up, line protocol is up Internet Address **0.0.0.0/24**, Area 0 Process ID 20, Router ID 172.16.35.1, **Network Type** POINT_TO_POINT, Cost: 64 Transmit Delay is 1 sec, State POINT_TO_POINT, Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5 Hello due in 00:00:02 Neighbor Count is 1, Adjacent neighbor count is 1 Adjacent with neighbor 172.16.32.2 Suppress hello for 0 neighbor(s)R1-7010(5)# **show ip ospf interface serial 1/0**Serial1/0 is up, line protocol is up Internet Address 172.16.32.2/24, Area 0 Process ID 20, Router ID 172.16.32.2, **Network Type** POINT_TO_POINT, Cost: 64 Transmit Delay is 1 sec, State POINT_TO_POINT, Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5 Hello due in 00:00:02 Neighbor Count is 1, Adjacent neighbor count is 1 Adjacent with neighbor 172.16.33.1 Suppress hello for 0 neighbor(s)

Como você pode ver acima, o tipo de rede é em ambos os casos ponto a ponto. O problema é que um lado é unnumbered e o outro lado não é, que cria uma discrepância no banco de dados como mostrado abaixo.

R4-4K(4)# **show ip ospf database router 172.16.30.1** OSPF Router with ID (172.16.35.1) (Process ID 20) Router Link States (Area 0) LS age: 202 Options: (No TOS-capability, DC) LS Type: Router Links Link State ID: 172.16.30.1 Advertising Router: 172.16.30.1 LS Seq Number: 80000002 Checksum: 0xC899 Length: 60 Number of Links: 3 Link connected to: another Router (point-to-point) (Link ID) Neighboring Router ID: 172.16.35.1 (Link Data) Router Interface address: 172.16.32.2 Number of TOS metrics: 0 TOS 0 Metrics: 64 Link connected to: a Stub Network (Link ID) Network/subnet number: 172.16.32.0 (Link Data) Network Mask: 255.255.255.0 Number of TOS metrics: 0 TOS 0 Metrics: 64 Link connected to: a Stub Network (Link ID) Network/subnet number: 172.16.30.1 (Link Data) Network Mask: 255.255.255.255 Number of TOS metrics: 0 TOS 0 Metrics: 1 R4-4k(4)# R1-7010(5)# **show ip ospf database router 172.16.35.1**OSPF Router with ID (172.16.30.1) (Process ID 20) Router Link States (Area 0) Adv Router is not-reachable LS age: 396 Options: (No TOS-capability, DC) LS Type: Router Links Link State ID: 172.16.35.1 Advertising Router: 172.16.35.1 LS Seq Number: 80000003 Checksum: 0xBEA1 Length: 48 Number of Links: 2 Link connected to: another Router (point-to-point) (Link ID) Neighboring Router ID: 172.16.30.1 (Link Data) Router Interface address: 0.0.0.3 *!--- In case of an unnumbered link we use MIB !--- II IfIndex value which usually starts with 0.* Number of TOS metrics: 0 TOS 0 Metrics: 64 Link connected to: a Stub Network (Link ID) Network/subnet number: 172.16.35.1 (Link Data) Network Mask: 255.255.255.255 Number of TOS metrics: 0 TOS 0 Metrics: 1 R1-7010(5)#

Você pode ver que o R1-7010 está gerando um LSA para este link de ponto a ponto com o campo de dados de enlace que contém seu endereço da relação, quando o R4-4K gerar o LSA para o mesmo link com o campo de dados de enlace que contém o valor do ifIndex MIBII. Isto cria uma discrepância na base de dados de link-state, que significa que nenhuma rota está instalada na tabela de roteamento.

R1-7010(5)# **show ip route**172.16.0.0/16 is variably subnetted, 3 subnets, 2 masksC 172.16.32.0/24 is directly connected, Serial1/0C 172.16.30.1/32 is directly connected, Loopback0

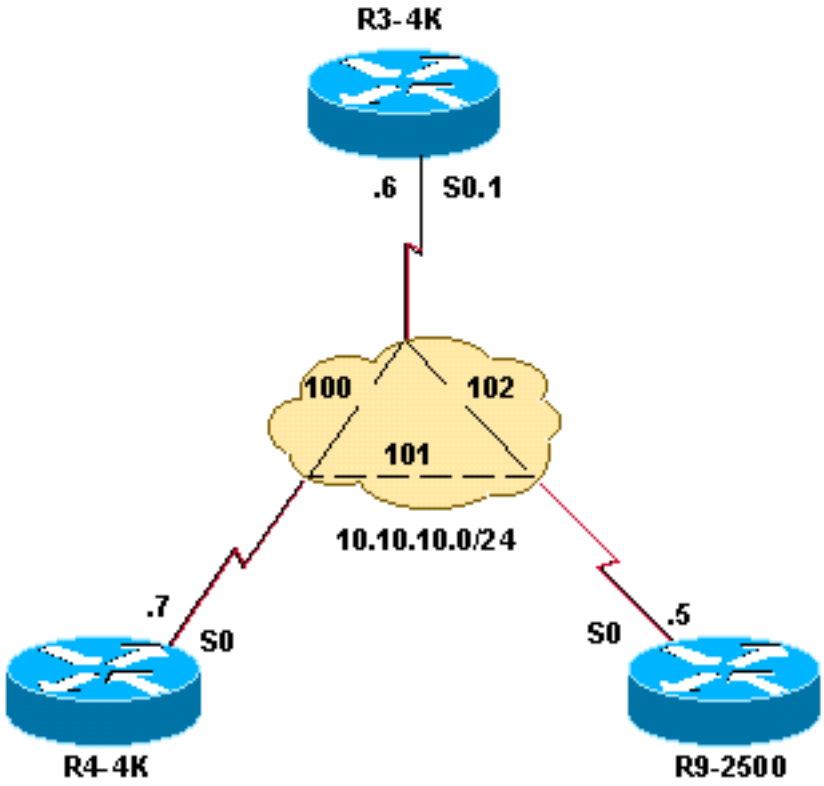
Solução

Para resolver este problema, configurar as interfaces serial do Roteadores como ou numerado ou unnumbered. Neste exemplo nós numeramos a relação da série 2 do roteador R4-4K.

```
R4-4K(4)# configure terminal R4-4K(4)(config)# interface serial 2R4-4K(4)(config-if)# no ip
unnumbered loopback 0 R4-4K(4)(config-if)# ip address 172.16.32.1 255.255.255.0R4-4K(4))# show
ip ospf interface serial 2Serial2 is up, line protocol is up   Internet Address 172.16.32.1/24,
Area 0   Process ID 20, Router ID 172.16.33.1, Network Type POINT_TO_POINT, Cost: 64  Transmit
Delay is 1 sec, State POINT_TO_POINT,  Timer intervals configured, Hello 10, Dead 40, Wait 40,
Retransmit 5    Hello due in 00:00:02  Neighbor Count is 1, Adjacent neighbor count is 1
Adjacent with neighbor 172.16.32.2  Suppress hello for 0 neighbor(s)R1-7010(5)# show ip
route172.16.0.0/16 is variably subnetted, 3 subnets, 2 masksC       172.16.32.0/24 is directly
connected, Serial1/0O       172.16.33.1/32 [110/65] via 172.16.32.1, 00:03:08, Serial1/0C
172.16.30.1/32 is directly connected, Loopback0
```

Razão 5: PVC quebrado em ambiente de Frame Relay totalmente em malha

Considere este diagrama da rede como um exemplo:



R9-2500
R4-4K(4)# **configure terminal** R4-4K(4)(config)# **interface serial 2**R4-4K(4)(config-if)# **no ip unnumbered loopback 0** R4-4K(4)(config-if)# **ip address 172.16.32.1 255.255.255.0**R4-4K(4))# **show ip ospf interface serial 2**Serial2 is up, line protocol is up Internet Address 172.16.32.1/24, Area 0 Process ID 20, Router ID 172.16.33.1, **Network Type** POINT_TO_POINT, Cost: 64 Transmit Delay is 1 sec, State POINT_TO_POINT, Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5 Hello due in 00:00:02 Neighbor Count is

```
1, Adjacent neighbor count is 1     Adjacent with
neighbor 172.16.32.2  Suppress hello for 0
neighbor(s)R1-7010(5)# show ip route172.16.0.0/16 is
variably subnetted, 3 subnets, 2 masksC
172.16.32.0/24 is directly connected, Serial1/0O
172.16.33.1/32 [110/65] via 172.16.32.1, 00:03:08,
Serial1/0C       172.16.30.1/32 is directly connected,
Loopback0
```

R4-4K

```
R4-4K(4)# configure terminal R4-4K(4)(config)# interface
serial 2R4-4K(4)(config-if)# no ip unnumbered loopback 0
R4-4K(4)(config-if)# ip address 172.16.32.1
255.255.255.0R4-4K(4))# show ip ospf interface serial
2Serial2 is up, line protocol is up   Internet Address
172.16.32.1/24, Area 0   Process ID 20, Router ID
172.16.33.1, Network Type POINT_TO_POINT, Cost: 64
Transmit Delay is 1 sec, State POINT_TO_POINT,  Timer
intervals configured, Hello 10, Dead 40, Wait 40,
Retransmit 5    Hello due in 00:00:02  Neighbor Count is
1, Adjacent neighbor count is 1     Adjacent with
neighbor 172.16.32.2  Suppress hello for 0
neighbor(s)R1-7010(5)# show ip route172.16.0.0/16 is
variably subnetted, 3 subnets, 2 masksC
172.16.32.0/24 is directly connected, Serial1/0O
172.16.33.1/32 [110/65] via 172.16.32.1, 00:03:08,
Serial1/0C       172.16.30.1/32 is directly connected,
Loopback0
```

R3-4K

```
R4-4K(4)# configure terminal R4-4K(4)(config)# interface
serial 2R4-4K(4)(config-if)# no ip unnumbered loopback 0
R4-4K(4)(config-if)# ip address 172.16.32.1
255.255.255.0R4-4K(4))# show ip ospf interface serial
2Serial2 is up, line protocol is up   Internet Address
172.16.32.1/24, Area 0   Process ID 20, Router ID
172.16.33.1, Network Type POINT_TO_POINT, Cost: 64
Transmit Delay is 1 sec, State POINT_TO_POINT,  Timer
intervals configured, Hello 10, Dead 40, Wait 40,
Retransmit 5    Hello due in 00:00:02  Neighbor Count is
1, Adjacent neighbor count is 1     Adjacent with
neighbor 172.16.32.2  Suppress hello for 0
neighbor(s)R1-7010(5)# show ip route172.16.0.0/16 is
variably subnetted, 3 subnets, 2 masksC
172.16.32.0/24 is directly connected, Serial1/0O
172.16.33.1/32 [110/65] via 172.16.32.1, 00:03:08,
Serial1/0C       172.16.30.1/32 is directly connected,
Loopback0
```

O modelo de broadcast sobre o Frame Relay funciona corretamente enquanto a perturbação do Frame Relay é engrenada inteiramente. Se algum circuito permanente (PVC) é quebrado, pode criar problemas na base de dados do OSPF, que produz por sua vez a `mensagem alcançável do ADV Router não`.

Neste exemplo, o PVC entre o R9-2500 e o R4-4K são quebrados, e o link R9-2500 ao Designated Router (DR) é quebrado. Em consequência, o R9-2500 declara todos os LSA do R3-4K (que não é um DR), como inacessíveis. Como você pode ver, o R9-2500 não está gerando um enlace de trânsito para a interface serial anexada ao R3-4K; está gerando um link do stub pelo contrário porque tanto quanto o R9-2500 não há nenhum DR neste link.

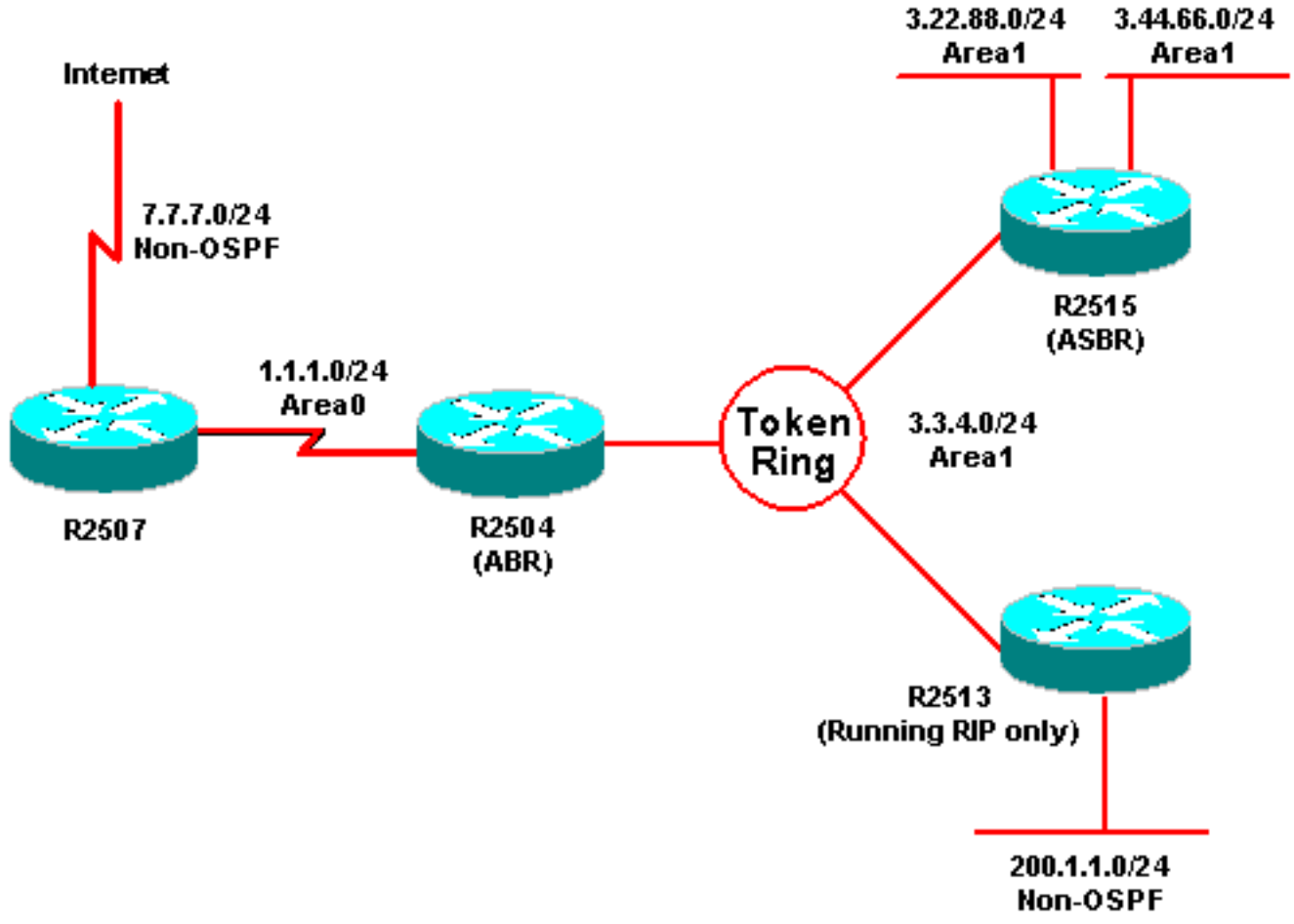
```
R9-2500(3)# show ip ospf database router       OSPF Router with ID (50.50.50.50) (Process ID 10)
```

Router Link States (Area 0) LS age: 148 Options: (No TOS-capability, DC) LS Type: Router Links Link State ID: 50.50.50.50 Advertising Router: 50.50.50.50 LS Seq Number: 8000000B Checksum: 0x55A Length: 48 Number of Links: 2 Link connected to: a Stub Network (Link ID) Network/subnet number: 10.10.10.0 (Link Data) Network Mask: 255.255.255.0 Number of TOS metrics: 0 TOS 0 Metrics: 64 Link connected to: a Stub Network (Link ID) Network/subnet number: 50.50.50.50 (Link Data) Network Mask: 255.255.255.255 Number of TOS metrics: 0 TOS 0 Metrics: 1 **Adv Router is not-reachable** LS age: 1081 Options: (No TOS-capability, DC) LS Type: Router Links Link State ID: 60.60.60.60 Advertising Router: 60.60.60.60 LS Seq Number: 80000006 Checksum: 0x4F72 Length: 48 Number of Links: 2 Link connected to: a Stub Network (Link ID) Network/subnet number: 60.60.60.60 (Link Data) Network Mask: 255.255.255.255 Number of TOS metrics: 0 TOS 0 Metrics: 1 Link connected to: a Transit Network (Link ID) Designated Router address: 10.10.10.7 (Link Data) Router Interface address: 10.10.10.6 Number of TOS metrics: 0 TOS 0 Metrics: 64 **Adv Router is not-reachable** LS age: 306 Options: (No TOS-capability, DC) LS Type: Router Links Link State ID: 70.70.70.70 Advertising Router: 70.70.70.70 LS Seq Number: 80000007 Checksum: 0xC185 Length: 48 Number of Links: 2 Link connected to: a Stub Network (Link ID) Network/subnet number: 70.70.70.70 (Link Data) Network Mask: 255.255.255.255 Number of TOS metrics: 0 TOS 0 Metrics: 1 Link connected to: a Transit Network (Link ID) Designated Router address: 10.10.10.7 (Link Data) Router Interface address: 10.10.10.7 Number of TOS metrics: 0 TOS 0 Metrics: 64

Refira problemas com executar o OSPF no modo de NBMA sobre o Frame Relay para informações mais detalhadas sobre deste problema.

Razão 6: Encaminhando endereços conhecidos via rota externa

Considere este diagrama da rede como um exemplo:



R2507
R9-2500(3)# **show ip ospf database router** OSPF

```
Router with ID (50.50.50.50) (Process ID 10)
Router Link States (Area 0)  LS age: 148  Options: (No
TOS-capability, DC)  LS Type: Router Links  Link State
ID: 50.50.50.50  Advertising Router: 50.50.50.50  LS Seq
Number: 8000000B  Checksum: 0x55A  Length: 48   Number
of Links: 2    Link connected to: a Stub Network
(Link ID) Network/subnet number: 10.10.10.0    (Link
Data) Network Mask: 255.255.255.0    Number of TOS
metrics: 0    TOS 0 Metrics: 64    Link connected to: a
Stub Network    (Link ID) Network/subnet number:
50.50.50.50    (Link Data) Network Mask: 255.255.255.255
Number of TOS metrics: 0    TOS 0 Metrics: 1  Adv Router
is not-reachable  LS age: 1081  Options: (No TOS-
capability, DC)  LS Type: Router Links  Link State ID:
60.60.60.60  Advertising Router: 60.60.60.60  LS Seq
Number: 80000006  Checksum: 0x4F72  Length: 48   Number
of Links: 2    Link connected to: a Stub Network
(Link ID) Network/subnet number: 60.60.60.60    (Link
Data) Network Mask: 255.255.255.255    Number of TOS
metrics: 0    TOS 0 Metrics: 1    Link connected to: a
Transit Network    (Link ID) Designated Router address:
10.10.10.7    (Link Data) Router Interface address:
10.10.10.6    Number of TOS metrics: 0    TOS 0 Metrics:
64            Adv Router is not-reachable  LS age: 306
Options: (No TOS-capability, DC)  LS Type: Router Links
Link State ID: 70.70.70.70  Advertising Router:
70.70.70.70  LS Seq Number: 80000007  Checksum: 0xC185
Length: 48   Number of Links: 2    Link connected to: a
Stub Network    (Link ID) Network/subnet number:
70.70.70.70    (Link Data) Network Mask: 255.255.255.255
Number of TOS metrics: 0    TOS 0 Metrics: 1    Link
connected to: a Transit Network    (Link ID) Designated
Router address: 10.10.10.7    (Link Data) Router
Interface address: 10.10.10.7    Number of TOS metrics:
0    TOS 0 Metrics: 64
```

R2504

```
R9-2500(3)# show ip ospf database router       OSPF
Router with ID (50.50.50.50) (Process ID 10)
Router Link States (Area 0)  LS age: 148  Options: (No
TOS-capability, DC)  LS Type: Router Links  Link State
ID: 50.50.50.50  Advertising Router: 50.50.50.50  LS Seq
Number: 8000000B  Checksum: 0x55A  Length: 48   Number
of Links: 2    Link connected to: a Stub Network
(Link ID) Network/subnet number: 10.10.10.0    (Link
Data) Network Mask: 255.255.255.0    Number of TOS
metrics: 0    TOS 0 Metrics: 64    Link connected to: a
Stub Network    (Link ID) Network/subnet number:
50.50.50.50    (Link Data) Network Mask: 255.255.255.255
Number of TOS metrics: 0    TOS 0 Metrics: 1  Adv Router
is not-reachable  LS age: 1081  Options: (No TOS-
capability, DC)  LS Type: Router Links  Link State ID:
60.60.60.60  Advertising Router: 60.60.60.60  LS Seq
Number: 80000006  Checksum: 0x4F72  Length: 48   Number
of Links: 2    Link connected to: a Stub Network
(Link ID) Network/subnet number: 60.60.60.60    (Link
Data) Network Mask: 255.255.255.255    Number of TOS
metrics: 0    TOS 0 Metrics: 1    Link connected to: a
Transit Network    (Link ID) Designated Router address:
10.10.10.7    (Link Data) Router Interface address:
10.10.10.6    Number of TOS metrics: 0    TOS 0 Metrics:
64            Adv Router is not-reachable  LS age: 306
Options: (No TOS-capability, DC)  LS Type: Router Links
```

Link State ID: 70.70.70.70 Advertising Router: 70.70.70.70 LS Seq Number: 80000007 Checksum: 0xC185 Length: 48 Number of Links: 2 Link connected to: a Stub Network (Link ID) Network/subnet number: 70.70.70.70 (Link Data) Network Mask: 255.255.255.255 Number of TOS metrics: 0 TOS 0 Metrics: 1 Link connected to: a Transit Network (Link ID) Designated Router address: 10.10.10.7 (Link Data) Router Interface address: 10.10.10.7 Number of TOS metrics: 0 TOS 0 Metrics: 64

R2515

R9-2500(3)# **show ip ospf database router** OSPF Router with ID (50.50.50.50) (Process ID 10)
Router Link States (Area 0) LS age: 148 Options: (No TOS-capability, DC) LS Type: Router Links Link State ID: 50.50.50.50 Advertising Router: 50.50.50.50 LS Seq Number: 8000000B Checksum: 0x55A Length: 48 Number of Links: 2 Link connected to: a Stub Network (Link ID) Network/subnet number: 10.10.10.0 (Link Data) Network Mask: 255.255.255.0 Number of TOS metrics: 0 TOS 0 Metrics: 64 Link connected to: a Stub Network (Link ID) Network/subnet number: 50.50.50.50 (Link Data) Network Mask: 255.255.255.255 Number of TOS metrics: 0 TOS 0 Metrics: 1 **Adv Router is not-reachable** LS age: 1081 Options: (No TOS-capability, DC) LS Type: Router Links Link State ID: 60.60.60.60 Advertising Router: 60.60.60.60 LS Seq Number: 80000006 Checksum: 0x4F72 Length: 48 Number of Links: 2 Link connected to: a Stub Network (Link ID) Network/subnet number: 60.60.60.60 (Link Data) Network Mask: 255.255.255.255 Number of TOS metrics: 0 TOS 0 Metrics: 1 Link connected to: a Transit Network (Link ID) Designated Router address: 10.10.10.7 (Link Data) Router Interface address: 10.10.10.6 Number of TOS metrics: 0 TOS 0 Metrics: 64 **Adv Router is not-reachable** LS age: 306 Options: (No TOS-capability, DC) LS Type: Router Links Link State ID: 70.70.70.70 Advertising Router: 70.70.70.70 LS Seq Number: 80000007 Checksum: 0xC185 Length: 48 Number of Links: 2 Link connected to: a Stub Network (Link ID) Network/subnet number: 70.70.70.70 (Link Data) Network Mask: 255.255.255.255 Number of TOS metrics: 0 TOS 0 Metrics: 1 Link connected to: a Transit Network (Link ID) Designated Router address: 10.10.10.7 (Link Data) Router Interface address: 10.10.10.7 Number of TOS metrics: 0 TOS 0 Metrics: 64

R2513

R9-2500(3)# **show ip ospf database router** OSPF Router with ID (50.50.50.50) (Process ID 10)
Router Link States (Area 0) LS age: 148 Options: (No TOS-capability, DC) LS Type: Router Links Link State ID: 50.50.50.50 Advertising Router: 50.50.50.50 LS Seq Number: 8000000B Checksum: 0x55A Length: 48 Number of Links: 2 Link connected to: a Stub Network (Link ID) Network/subnet number: 10.10.10.0 (Link Data) Network Mask: 255.255.255.0 Number of TOS metrics: 0 TOS 0 Metrics: 64 Link connected to: a Stub Network (Link ID) Network/subnet number: 50.50.50.50 (Link Data) Network Mask: 255.255.255.255 Number of TOS metrics: 0 TOS 0 Metrics: 1 **Adv Router**

```
is not-reachable  LS age: 1081  Options: (No TOS-
capability, DC)  LS Type: Router Links  Link State ID:
60.60.60.60  Advertising Router: 60.60.60.60  LS Seq
Number: 80000006  Checksum: 0x4F72  Length: 48   Number
of Links: 2    Link connected to: a Stub Network
(Link ID) Network/subnet number: 60.60.60.60    (Link
Data) Network Mask: 255.255.255.255    Number of TOS
metrics: 0    TOS 0 Metrics: 1    Link connected to: a
Transit Network    (Link ID) Designated Router address:
10.10.10.7    (Link Data) Router Interface address:
10.10.10.6    Number of TOS metrics: 0    TOS 0 Metrics:
64            Adv Router is not-reachable  LS age: 306
Options: (No TOS-capability, DC)  LS Type: Router Links
Link State ID: 70.70.70.70  Advertising Router:
70.70.70.70  LS Seq Number: 80000007  Checksum: 0xC185
Length: 48   Number of Links: 2    Link connected to: a
Stub Network    (Link ID) Network/subnet number:
70.70.70.70    (Link Data) Network Mask: 255.255.255.255
Number of TOS metrics: 0    TOS 0 Metrics: 1    Link
connected to: a Transit Network    (Link ID) Designated
Router address: 10.10.10.7    (Link Data) Router
Interface address: 10.10.10.7    Number of TOS metrics:
0    TOS 0 Metrics: 64
```

```
R2507# show ip ospf data external 200.1.1.0       OSPF Router with ID (7.7.7.1) (Process ID 1)
Type- 5 AS External Link States       LS age: 72       Options: (No TOS- capability, DC)
LS Type: AS External Link       Link State ID: 200.1.1.0 (External Network Number )
Advertising Router: 3.44.66.3       LS Seq Number: 80000001       Checksum: 0xF161       Length:
36       Network Mask: /24                    Metric Type: 2 (Larger than any link state path)
TOS: 0                   Metric: 20                    Forward Address: 3.3.4.4
External Route Tag: 0
```

O R2507 tem 200.1.1.0/24 em seu banco de dados mas não o instalou na tabela de roteamento porque 3.3.4.4 é instruído através de uma rota externa OSPF.

```
R2507# show ip route 3.3.4.4       Routing entry for 3.3.4.0/ 24       Known via "ospf 1",
distance 110, metric 20,type extern 2, forward metric 70       Redistributing via ospf 1
Last update from 1.1.1.2 on Serial0, 00: 00: 40 ago       Routing Descriptor Blocks:       *
1.1.1.2, from 3.44.66.3, 00: 00: 40 ago, via Serial0          Route metric is 20, traffic share
count is 1
```

Nota: Com o reparo do CSCdp72526 da identificação de bug Cisco (clientes registrados somente), o OSPF não gera um anúncio link state type-5 (LSA) de uma rede externa sobreposta; consequentemente, o R2507 terá somente uma rota intra-área sumária de 3.0.0.0/8. Então, o R2507 instalará 200.1.1.0/24 como o endereço de encaminhamento e serão alcançáveis através da rota intra-área 3.0.0.0/8, assim em conformidade com o RFC 2328 .

Depois que o reparo de erro acima mencionado, saída olhará como o seguinte:

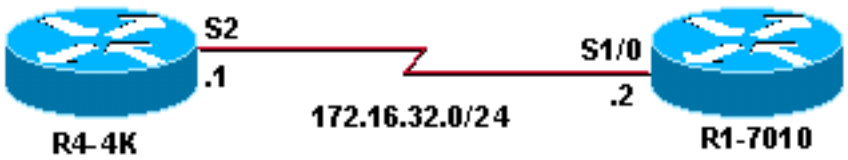
```
R2507# show ip route 3.3.4.4       Routing entry for 3.0.0.0/8       Known via "ospf 1", distance
110, metric 74, type inter area       Last update from 1.1.1.2 on Serial0, 00:19:20 ago
Routing Descriptor Blocks:       * 1.1.1.2, from 3.3.4.2, 00:19:20 ago, via Serial0R2507# show ip
route         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
routeGateway of last resort is not set1.0.0.0/24 is subnetted, 1 subnets     C 1.1.1.0 is
directly connected, Serial0     O IA 3.0.0.0/8 [110/74] via 1.1.1.2, 00:30:18, Serial0     O E2
200.1.1.0/24 [110/20] via 1.1.1.2, 00:22:58, Serial0     Route metric is 74, traffic share count
is 1R2507#
```

Se o endereço de encaminhamento é sabido igualmente através de uma rota externa, o OSPF

não instala essa rota na tabela de roteamento. Para informações mais detalhadas sobre deste problema, veja o Problema de Roteamento Comum com Endereço de Encaminhamento do OSPF.

Razão 7: A lista de distribuição está bloqueando as rotas

Deixe-nos usar como um exemplo o diagrama de rede seguinte:



R4-4K	R1-7010
R2507# **show ip route 3.3.4.4** Routing entry for 3.0.0.0/8 Known via "ospf 1", distance 110, metric 74, type inter area Last update from 1.1.1.2 on Serial0, 00:19:20 ago Routing Descriptor Blocks: * 1.1.1.2, from 3.3.4.2, 00:19:20 ago, via Serial0R2507# **show ip route** 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 routeGateway of last resort is not set1.0.0.0/24 is subnetted, 1 subnets C 1.1.1.0 is directly connected, Serial0 O IA 3.0.0.0/8 [110/74] via 1.1.1.2, 00:30:18, Serial0 O E2 200.1.1.0/24 [110/20] via 1.1.1.2, 00:22:58, Serial0 Route metric is 74, traffic share count is 1R2507#	R2507# **show ip route 3.3.4.4** Routing entry for 3.0.0.0/8 Known via "ospf 1", distance 110, metric 74, type inter area Last update from 1.1.1.2 on Serial0, 00:19:20 ago Routing Descriptor Blocks: * 1.1.1.2, from 3.3.4.2, 00:19:20 ago, via Serial0R2507# **show ip route** 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 routeGateway of last resort is not set1.0.0.0/24 is subnetted, 1 subnets C 1.1.1.0 is directly connected, Serial0 O IA 3.0.0.0/8 [110/74] via 1.1.1.2, 00:30:18, Serial0 O E2 200.1.1.0/24 [110/20] via 1.1.1.2, 00:22:58, Serial0 Route metric is 74, traffic share count is 1R2507#

Como você pode ver acima, o R1-7010 tem o **comando distribute-list** configurado e está permitindo somente que aos 172.16.32.0/24 a escala de endereço fosse instalada na tabela de roteamento. Nos protocolos de estado de enlace você não pode realmente filtrar um LSA com o **comando distribute-list**. O LSA ainda estará no banco de dados; contudo o LSA não será instalado na tabela de roteamento.

```
R1-7010(5)# show ip ospf database router 172.16.33.1  LS age: 357  Options: (No TOS-capability,
DC)  LS Type: Router Links  Link State ID: 172.16.33.1  Advertising Router: 172.16.33.1  LS Seq
Number: 8000000A  Checksum: 0xD4AA  Length: 48  Number of Links: 3 Link connected to: another
Router (point-to-point)  (Link ID) Neighboring Router ID: 172.16.32.2  (Link Data) Router
Interface address: 172.16.32.1  Number of TOS metrics: 0  TOS 0 Metrics: 64
```

O comando distribute-list configuration no R1-7010 está filtrando a rede 172.16.33.1/32 da instalação na tabela de roteamento.

```
R1-7010(5)# show ip route172.16.0.0/16 is variably subnetted, 3 subnets, 2 masksC
172.16.32.0/24 is directly connected, Serial1/0C       172.16.30.1/32 is directly connected,
Loopback0
```

Solução

Para resolver este problema, configurar o R1-7010 e permitir 172.16.33.0/24 no Access Control List (ACL) assim que esta rede obtém instalado na tabela de roteamento.

```
R1-7010(5)# configure terminal R1-7010(5)(config)# access-list 1 permit 172.16.33.0 0.0.0.255
R1-7010(5)(config)# endR1-7010(5)# show ip access-list 1Standard IP access list 1  permit
172.16.32.0, wildcard bits 0.0.0.255  permit 172.16.33.0, wildcard bits 0.0.0.255R1-7010(5)#
show ip route172.16.0.0/16 is variably subnetted, 3 subnets, 2 masksC       172.16.32.0/24 is
directly connected, Serial1/0O       172.16.33.1/32 [110/65] via 172.16.32.1, 00:00:08,
Serial1/0C       172.16.30.1/32 is directly connected, Loopback0
```

Informações Relacionadas

- Página de suporte de OSPF
- OSPF: Perguntas mais freqüentes
- Suporte Técnico - Cisco Systems