Snelste pad openen eerste voorvoegsel-onderdrukking

Inhoud

Inleiding

Dit document beschrijft de optie Voorvoegsel-onderdrukking van Open Shortest Path First (OSPF) voor IOS® en IOS®-XE.

Achtergrondinformatie

OSPF-prefix is een nuttige functie om het aantal Link State Advertisement (LSA) dat binnen een gebied overstroomd wordt te verminderen. In een OSPF-gebied dat meerdere doorvoerverbindingen tussen hosts en daadwerkelijke communicatie heeft, ligt tussen de hosts. Er is geen noodzaak om de doorvoerlink LSAs naar alle routers bekend te maken. U kunt alleen de LSAs adverteren die betrekking hebben op eindhosts. Standaard adverteert OSPF alle LSA's die de doorvoerlink LSA's bevatten.

OSPF-voorvoegsel-suppressie helpt dit gedrag te overwinnen en vermindert het aantal geadverteerde LSA's van Type 1 (router) en Type 2 (netwerk).

Deze eigenschap kan mondiaal op een router of op per interfacebasis worden geactiveerd.

OSPF-prefix helpt in snellere snelste Path First (SPF) berekening vanwege minder aantal prefixes in de database (DB). OSPF-type 3, type 4, type 5 of type 7-LSA's zijn niet onderdrukt.

Voorwaarden

Vereisten

Er zijn geen specifieke vereisten van toepassing op dit document.

Gebruikte componenten

Dit document is niet beperkt tot specifieke software- en hardware-versies.

De informatie in dit document is gebaseerd op de apparaten in een specifieke laboratoriumomgeving. Alle apparaten die in dit document worden beschreven, hadden een opgeschoonde (standaard)configuratie. Als uw netwerk levend is, zorg er dan voor dat u de mogelijke impact van om het even welke opdracht begrijpt.

Configureren

Netwerkdiagram
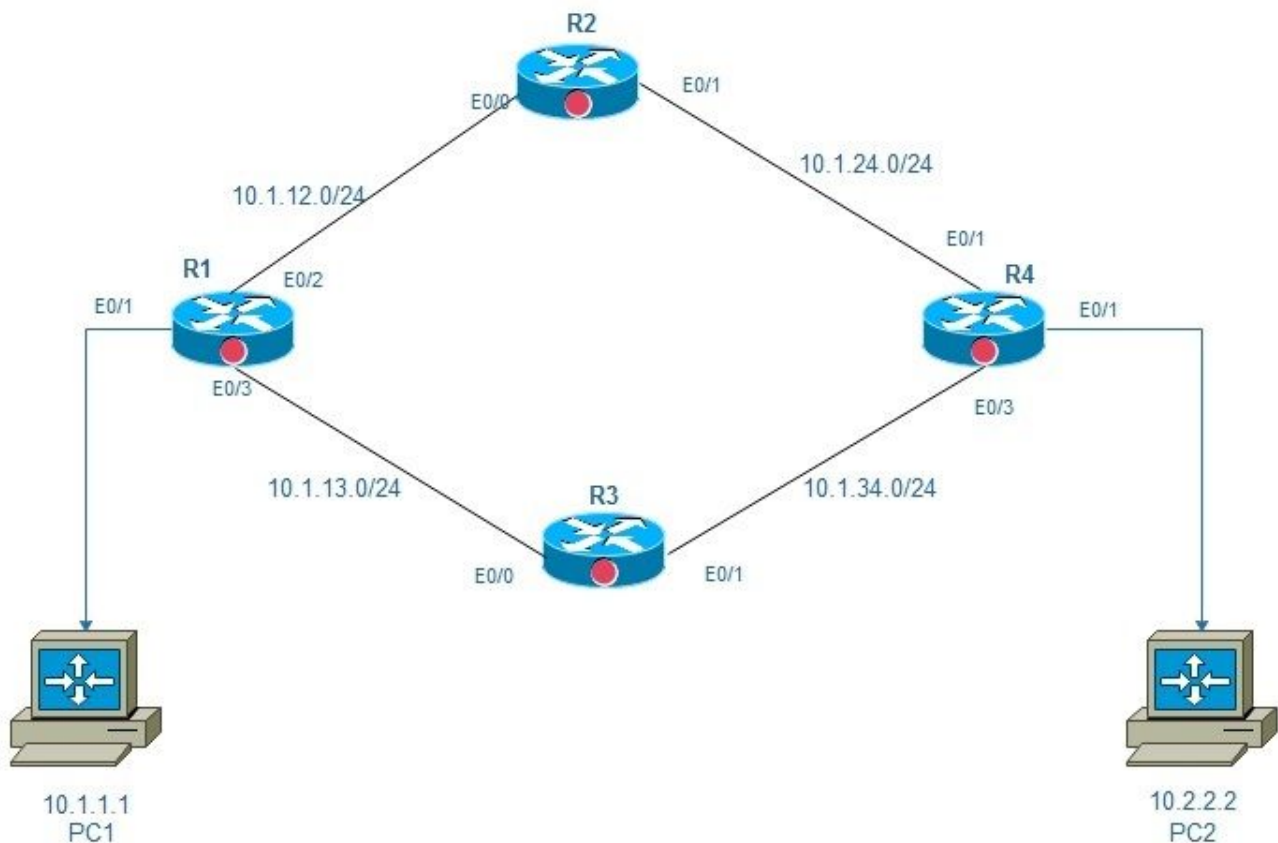
Oppervlakte 0 van ospf-prefix

Configuraties

In dit diagram zijn er 2 PC's, PC1 en PC2 die via een netwerk worden aangesloten dat 4 routers, R1, R2, R3, en R4 heeft. Aangezien het doel hier is om eind-aan-eind bereikbaarheid te verzekeren, kunt u OSPF-prefix suppressie op backbone links van R1, R2, R en R4 inschakelen die zullen helpen om een aantal LSA's te verminderen.

OSPF-prefix kan in of mondiale modus of interfacemodus worden ingesteld:

```
Global mode configuration:
```

```
!
router ospf 1
prefix-suppression
!
```

Interface mode configuration:

```
R1:
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int e0/2
R1(config-if)#ip ospf prefix-suppression
R1(config-if)#int e0/3
R1(config-if)#ip ospf prefix-suppression
R1(config-if)#end
R1#

R2:

R2#
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int e0/0
R2(config-if)#ip ospf prefix-suppression
R2(config-if)#int e0/1
R2(config-if)#ip ospf prefix-suppression
R2(config-if)#end
R2#
R2#

R3:

R3#
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config-if)#int e0/1
R3(config-if)# ip ospf prefix-suppression
R3(config-if)#int e0/0
R3(config-if)# ip ospf prefix-suppression
R3(config-if)#end
R3#
R3#

R4:

R4#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R4(config)#int e0/2
R4(config-if)#ip ospf prefix-suppression
R4(config-if)#int e0/3
R4(config-if)#ip ospf prefix-suppression
R4(config-if)#end
R4#
R4#
```

> Opmerking: U kunt het beheer of de loopback interfaces van de prefixsuppressie OSPF moeten uitsluiten als u het beheer of de loopback interfaces via OSPF adverteert.

Verifiëren

Gebruik dit gedeelte om te bevestigen dat de configuratie correct werkt.

Voordat u voorvoegsel-suppressie configureren:

```
R1:

R1#sh ip route
Codes: L - local, 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, H - NHRP, l - LISP
+ - replicated route, % - next hop override

Gateway of last resort is not set

      10.0.0.0/8 is variably subnetted, 9 subnets, 2 masks
C        10.1.1.0/24 is directly connected, Ethernet0/1
L        10.1.1.254/32 is directly connected, Ethernet0/1
C        10.1.12.0/24 is directly connected, Ethernet0/2
L        10.1.12.1/32 is directly connected, Ethernet0/2
C        10.1.13.0/24 is directly connected, Ethernet0/3
L        10.1.13.1/32 is directly connected, Ethernet0/3
O        10.1.24.0/24 [110/20] via 10.1.12.2, 00:02:29, Ethernet0/2
O        10.1.34.0/24 [110/20] via 10.1.13.3, 00:02:12, Ethernet0/3
O        10.2.2.0/24 [110/30] via 10.1.13.3, 00:04:22, Ethernet0/3
                     [110/30] via 10.1.12.2, 00:04:22, Ethernet0/2
R1#


R1#show ip ospf database network | i Mask|Attached Router|State ID
  Link State ID: 10.1.12.2 (address of Designated Router)
  Network Mask: /24
        Attached Router: 10.1.24.2
        Attached Router: 10.1.13.1
  Link State ID: 10.1.13.3 (address of Designated Router)
  Network Mask: /24
        Attached Router: 10.1.34.3
        Attached Router: 10.1.13.1
  Link State ID: 10.1.24.4 (address of Designated Router)
  Network Mask: /24
        Attached Router: 10.2.2.254
        Attached Router: 10.1.24.2
  Link State ID: 10.1.34.4 (address of Designated Router)
  Network Mask: /24
        Attached Router: 10.2.2.254
        Attached Router: 10.1.34.3
R1#


R4:

R4#sh ip route
Codes: L - local, 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, H - NHRP, l - LISP
+ - replicated route, % - next hop override

Gateway of last resort is not set
```

```
10.0.0.0/8 is variably subnetted, 9 subnets, 2 masks
O 10.1.1.0/24 [110/30] via 10.1.34.3, 00:04:59, Ethernet0/3
  [110/30] via 10.1.24.2, 00:04:59, Ethernet0/2
O 10.1.12.0/24 [110/20] via 10.1.24.2, 00:04:59, Ethernet0/2
O 10.1.13.0/24 [110/20] via 10.1.34.3, 00:04:59, Ethernet0/3
C 10.1.24.0/24 is directly connected, Ethernet0/2
L 10.1.24.4/32 is directly connected, Ethernet0/2
C 10.1.34.0/24 is directly connected, Ethernet0/3
L 10.1.34.4/32 is directly connected, Ethernet0/3
C 10.2.2.0/24 is directly connected, Ethernet0/1
L 10.2.2.254/32 is directly connected, Ethernet0/1
R4#



R4#show ip ospf database network | i Mask|Attached Router|State ID
Link State ID: 10.1.12.2 (address of Designated Router)
Network Mask: /24
Attached Router: 10.1.24.2
Attached Router: 10.1.13.1
Link State ID: 10.1.13.3 (address of Designated Router)
Network Mask: /24
Attached Router: 10.1.34.3
Attached Router: 10.1.13.1
Link State ID: 10.1.24.4 (address of Designated Router)
Network Mask: /24
Attached Router: 10.2.2.254
Attached Router: 10.1.24.2
Link State ID: 10.1.34.4 (address of Designated Router)
Network Mask: /24
Attached Router: 10.2.2.254
Attached Router: 10.1.34.3
R4#
```

Nadat u voorvoegsel-suppressie hebt ingesteld:

```
Please note that now we see only one OSPF route on Router1 and Router4.

R1:

[110/30] via 10.1.12.2, 00:04:22, Ethernet0/2
R1#sh ip route
Codes: L - local, 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, H - NHRP, l - LISP
+ - replicated route, % - next hop override


Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 7 subnets, 2 masks
C 10.1.1.0/24 is directly connected, Ethernet0/1
L 10.1.1.254/32 is directly connected, Ethernet0/1
C 10.1.12.0/24 is directly connected, Ethernet0/2
L 10.1.12.1/32 is directly connected, Ethernet0/2
C 10.1.13.0/24 is directly connected, Ethernet0/3
L 10.1.13.1/32 is directly connected, Ethernet0/3
O 10.2.2.0/24 [110/30] via 10.1.13.3, 00:07:38, Ethernet0/3
[110/30] via 10.1.12.2, 00:07:38, Ethernet0/2
```

```
R1#



R1#show ip ospf database network | i Mask|Attached Router|State ID
Link State ID: 10.1.12.1 (address of Designated Router)
Network Mask: /32
Attached Router: 10.1.13.1
Attached Router: 10.1.24.2
Link State ID: 10.1.13.1 (address of Designated Router)
Network Mask: /32
Attached Router: 10.1.13.1
Attached Router: 10.1.34.3
Link State ID: 10.1.24.2 (address of Designated Router)
Network Mask: /32
Attached Router: 10.1.24.2
Attached Router: 10.2.2.254
Link State ID: 10.1.34.4 (address of Designated Router)
Network Mask: /32
Attached Router: 10.2.2.254
Attached Router: 10.1.34.3
R1#



R4:


R4#sh ip route
Codes: L - local, 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, H - NHRP, l - LISP
+ - replicated route, % - next hop override


Gateway of last resort is not set


10.0.0.0/8 is variably subnetted, 7 subnets, 2 masks
O 10.1.1.0/24 [110/30] via 10.1.34.3, 01:15:37, Ethernet0/3
  [110/30] via 10.1.24.2, 01:15:47, Ethernet0/2
C 10.1.24.0/24 is directly connected, Ethernet0/2
L 10.1.24.4/32 is directly connected, Ethernet0/2
C 10.1.34.0/24 is directly connected, Ethernet0/3
L 10.1.34.4/32 is directly connected, Ethernet0/3
C 10.2.2.0/24 is directly connected, Ethernet0/1
L 10.2.2.254/32 is directly connected, Ethernet0/1
R4#




R4#show ip ospf database network | i Mask|Attached Router|State ID
Link State ID: 10.1.12.1 (address of Designated Router)
Network Mask: /32
Attached Router: 10.1.13.1
Attached Router: 10.1.24.2
Link State ID: 10.1.13.1 (address of Designated Router)
Network Mask: /32
Attached Router: 10.1.13.1
Attached Router: 10.1.34.3
Link State ID: 10.1.24.2 (address of Designated Router)
Network Mask: /32
```

```
Attached Router: 10.1.24.2
Attached Router: 10.2.2.254
Link State ID: 10.1.34.4 (address of Designated Router)
Network Mask: /32
Attached Router: 10.2.2.254
Attached Router: 10.1.34.3
R4#
```

Problemen oplossen

Er is momenteel geen specifieke troubleshooting-informatie beschikbaar voor deze configuratie.