

Het configureren van de IPv6 BGP lokale voorkeuren

Inhoud

[Inleiding](#)

[Voorwaarden](#)

[Vereisten](#)

[Gebruikte componenten](#)

[Conventies](#)

[Achtergrondinformatie](#)

[Configureren](#)

[Netwerkdigram](#)

[Configuraties](#)

[Verifiëren](#)

[Problemen oplossen](#)

[Gerelateerde informatie](#)

[Inleiding](#)

Dit document verklaart de IPv6 Border Gateway Protocol (BGP) functie Local-Preference. Plaatselijke preferentie is een indicatie van het AS over welk pad de voorkeur heeft om het AS te verlaten om een bepaald netwerk te bereiken. Een pad met een hogere lokale voorkeur heeft meer de voorkeur. De standaardwaarde van preferentie is 100.

[Voorwaarden](#)

[Vereisten](#)

Zorg ervoor dat u aan deze vereisten voldoet voordat u deze configuratie probeert:

- Het begrip van BGP-routingprotocol en de werking ervan
- Inzicht op een IPv6-adresseringsregeling

[Gebruikte componenten](#)

De informatie in dit document is getest op deze software- en hardwareversies

- Cisco IOS-software-release 12.4, functieset voor geavanceerde IP-services
- Cisco 3700 Series multiservice toegangsrouteurs

Conventies

Raadpleeg [Cisco Technical Tips Conventions \(Conventies voor technische tips van Cisco\) voor meer informatie over documentconventies.](#)

Achtergrondinformatie

In het voorbeeld maken router R1, R2 en R3 deel uit van BGP Autonoom Systeem nummer 123. R4 maakt deel uit van Autonoom Systeem 101 en R5 deel van Autonoom Systeem 100.

De drie routers (R1, R2 en R3) worden geconfigureerd met OSPFv3 voor IGP-connectiviteit. IPv6-voorvoegsel van lus back interface Lo 0 (1111:11:11:A:/64 eui-64, 2222:222:222:A:/64 eui-64 en 333:33:33:A:/64 (eui-64) van alle drie routers wordt geadverteerd in gebied 0 van OSPFv3-routeringsprotocol.

Er wordt een IBGP-peering tussen de routers R1, R2 en R3 gevormd door middel van duidelijke loopback-upprefixes. De router R1 en R4 worden aangesloten via een WAN-link (seriële verbinding) en vormen de EBGP-bewerking. Op dezelfde manier vormen de router R3 en R5 EBGP die over WAN-link loopt.

Injecteer door router R4 en R5 dezelfde IPv6-prefixes:

1. netwerk BC01:BC1:10:A:/64
2. netwerk BC02:BC1:11:A:/64
3. netwerk BC03:BC1:12:A:/64

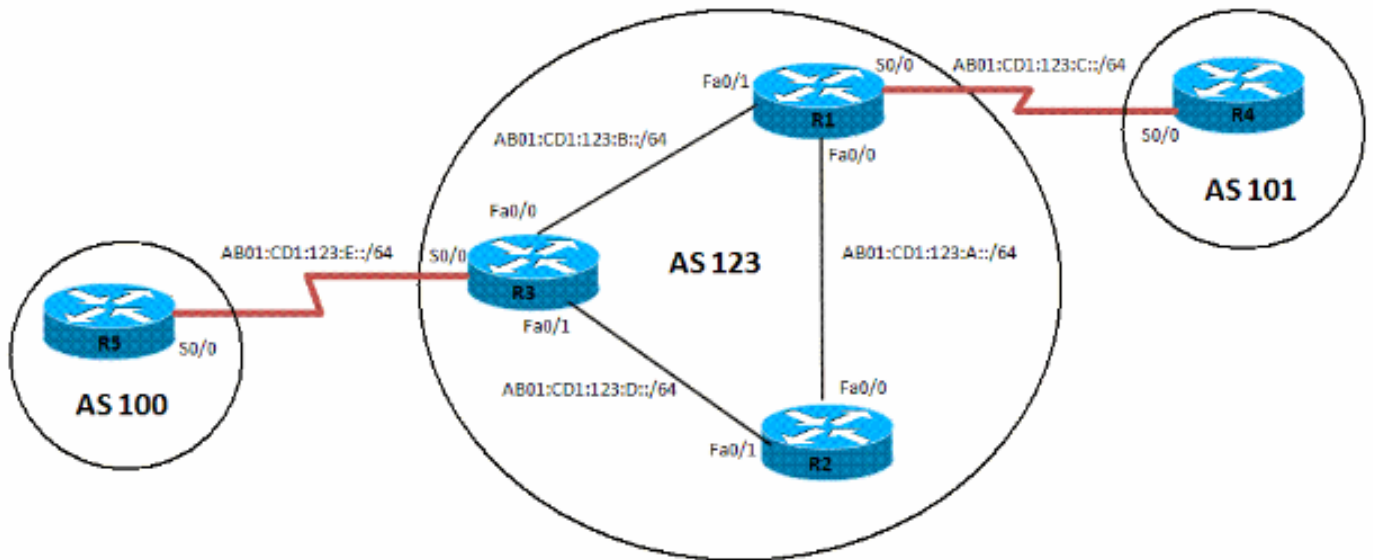
Aangezien de twee routers R4 en R5 dezelfde IPv6-prefixes injecteren, is de padselectie gebaseerd op BGP bekende Attributen. In dit voorbeeld wordt de lokale voorkeur gekozen. De BGP lokale referentiewaarde van 500 is ingesteld voor het voorvoegsel BC01:BC1:10:A:/64 op router R3 via route-kaart. Dit resulteert in R3 als exitpunt voor dit voorvoegsel en R1 het exitpunt voor de overige twee prefixes.

Configureren

De snelle Ethernet interfaces (F0/0 en F0/1) van de routers R1, R2 en R3 zijn IPv6 ingeschakeld met IPv6-adres van formaat EUI-64.

Netwerkdigram

Het netwerk in dit document is als volgt opgebouwd:



Configuraties

Dit document gebruikt deze configuraties:

- [Configuratie R1](#)
- [R2-configuratie](#)
- [R3-configuratie](#)
- [R4-configuratie](#)
- [R5-configuratie](#)

N.B.: Alle routers zijn ingeschakeld bij het verzenden van IPv6-pakketten door de opdracht [ipv6-routing](#) te gebruiken.

R1

```
interface Loopback0
  no ip address
  ipv6 address 1111:111:111:A::/64 eui-64
  ipv6 enable
  ipv6 ospf 10 area 0
  !--- Enables OSPFv3 on the interface and associates !---
  the interface loopback0 to area 0. ! interface
FastEthernet0/0 description CONNECTED TO Rtr2 no ip
address duplex auto speed auto ipv6 address
AB01:CD1:123:A::/64 eui-64 ipv6 enable ipv6 ospf 10 area
0 ! interface Serial0/0 no ip address ipv6 address
AB01:CD1:123:C::/64 eui-64 ipv6 enable clock rate
2000000 ! interface FastEthernet0/1 no ip address duplex
auto speed auto ipv6 address AB01:CD1:123:B::/64 eui-64
ipv6 enable ipv6 ospf 10 area 0 ! ipv6 router ospf 10
router-id 1.1.1.1 log-adjacency-changes redistribute
connected route-map CONNECTED ! route-map CONNECTED
permit 10 match interface Serial0/0 ! router bgp 123 bgp
router-id 1.1.1.1 no bgp default ipv4-unicast bgp log-
neighbor-changes neighbor 2222:222:222:A:C602:3FF:FEF0:0
remote-as 123 neighbor 2222:222:222:A:C602:3FF:FEF0:0
update-source Loopback0 neighbor
3333:333:333:A:C603:3FF:FEF0:0 remote-as 123 neighbor
3333:333:333:A:C603:3FF:FEF0:0 update-source Loopback0
neighbor AB01:CD1:123:C:C604:16FF:FE98:0 remote-as 101
```

```
neighbor AB01:CD1:123:C:C604:16FF:FE98:0 ebgp-multihop 5
! address-family ipv6 neighbor
2222:222:222:A:C602:3FF:FEF0:0 activate neighbor
2222:222:222:A:C602:3FF:FEF0:0 next-hop-self neighbor
3333:333:333:A:C603:3FF:FEF0:0 activate neighbor
3333:333:333:A:C603:3FF:FEF0:0 next-hop-self neighbor
AB01:CD1:123:C:C604:16FF:FE98:0 activate exit-address-
family
```

R2

```
interface Loopback0
  no ip address
  ipv6 address 2222:222:222:A::/64 eui-64
  ipv6 enable
  ipv6 ospf 10 area 0
!
interface FastEthernet0/0
  no ip address
  duplex auto
  speed auto
  ipv6 address AB01:CD1:123:A::/64 eui-64
  ipv6 ospf 10 area 0
!
interface FastEthernet0/1
  no ip address
  duplex auto
  speed auto
  ipv6 address AB01:CD1:123:D::/64 eui-64
  ipv6 enable
  ipv6 ospf 10 area 0
!
ipv6 router ospf 10
  router-id 2.2.2.2
  log-adjacency-changes
!
router bgp 123
  no synchronization
  bgp router-id 2.2.2.2
  bgp log-neighbor-changes
  neighbor 1111:111:111:A:C601:3FF:FEF0:0 remote-as 123
  neighbor 1111:111:111:A:C601:3FF:FEF0:0 update-source
Loopback0
  neighbor 3333:333:333:A:C603:3FF:FEF0:0 remote-as 123
  neighbor 3333:333:333:A:C603:3FF:FEF0:0 update-source
Loopback0
  no auto-summary
!
address-family ipv6
  neighbor 1111:111:111:A:C601:3FF:FEF0:0 activate
  neighbor 3333:333:333:A:C603:3FF:FEF0:0 activate
exit-address-family
```

R3

```
interface Loopback0
  no ip address
  ipv6 address 3333:333:333:A::/64 eui-64
  ipv6 enable
  ipv6 ospf 10 area 0
!
interface FastEthernet0/0
  no ip address
```

```

duplex auto
speed auto
ipv6 address AB01:CD1:123:B::/64 eui-64
ipv6 enable
ipv6 ospf 10 area 0
!
interface Serial0/0
no ip address
ipv6 address AB01:CD1:123:E::/64 eui-64
ipv6 enable
clock rate 2000000
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
ipv6 address AB01:CD1:123:D::/64 eui-64
ipv6 ospf 10 area 0
!
ipv6 router ospf 10
router-id 3.3.3.3
log-adjacency-changes
redistribute connected route-map CONNECTED
!
router bgp 123
no synchronization
bgp router-id 3.3.3.3
bgp log-neighbor-changes
neighbor 1111:111:111:A:C601:3FF:FEF0:0 remote-as 123
neighbor 1111:111:111:A:C601:3FF:FEF0:0 update-source
Loopback0
neighbor 2222:222:222:A:C602:3FF:FEF0:0 remote-as 123
neighbor 2222:222:222:A:C602:3FF:FEF0:0 update-source
Loopback0
neighbor AB01:CD1:123:E:C605:16FF:FE98:0 remote-as 202
neighbor AB01:CD1:123:E:C605:16FF:FE98:0 ebgp-multihop
5
no auto-summary
!
address-family ipv6
neighbor 1111:111:111:A:C601:3FF:FEF0:0 activate
neighbor 1111:111:111:A:C601:3FF:FEF0:0 next-hop-self
neighbor 1111:111:111:A:C601:3FF:FEF0:0 route-map
LOCAL_PREF out
neighbor 2222:222:222:A:C602:3FF:FEF0:0 activate
neighbor 2222:222:222:A:C602:3FF:FEF0:0 next-hop-self
neighbor 2222:222:222:A:C602:3FF:FEF0:0 route-map
LOCAL_PREF out
neighbor AB01:CD1:123:E:C605:16FF:FE98:0 activate
exit-address-family
!
ipv6 prefix-list 10 seq 5 permit BC01:BC1:10:A::/64
!
route-map LOCAL_PREF permit 10
match ipv6 address prefix-list 10
set local-preference 500
!
route-map LOCAL_PREF permit 20
!
route-map CONNECTED permit 10
match interface Serial0/0

```

```
interface Serial0/0
  no ip address
  ipv6 address AB01:CD1:123:C::/64 eui-64
  ipv6 enable
  clock rate 2000000
!
interface Loopback10
  no ip address
  ipv6 address BC01:BC1:10:A::/64 eui-64
  ipv6 enable
!
interface Loopback11
  no ip address
  ipv6 address BC02:BC1:11:A::/64 eui-64
  ipv6 enable
!
interface Loopback12
  no ip address
  ipv6 address BC03:BC1:12:A::/64 eui-64
  ipv6 enable

router bgp 101
  bgp router-id 4.4.4.4
  no bgp default ipv4-unicast
  bgp log-neighbor-changes
  neighbor AB01:CD1:123:C:C601:3FF:FEF0:0 remote-as 123
  neighbor AB01:CD1:123:C:C601:3FF:FEF0:0 ebgp-multihop 5
!
  address-family ipv6
    neighbor AB01:CD1:123:C:C601:3FF:FEF0:0 activate
    network BC01:BC1:10:A::/64
    network BC02:BC1:11:A::/64
    network BC03:BC1:12:A::/64
  exit-address-family
```

R5

```
interface Serial0/0
  no ip address
  ipv6 address AB01:CD1:123:E::/64 eui-64
  ipv6 enable
  clock rate 2000000
!
interface Loopback10
  no ip address
  ipv6 address BC01:BC1:10:A::/64 eui-64
  ipv6 enable
!
interface Loopback11
  no ip address
  ipv6 address BC02:BC1:11:A::/64 eui-64
  ipv6 enable
!
interface Loopback12
  no ip address
  ipv6 address BC03:BC1:12:A::/64 eui-64
  ipv6 enable
!
router bgp 202
  bgp router-id 5.5.5.5
  no bgp default ipv4-unicast
  bgp log-neighbor-changes
```

```

neighbor AB01:CD1:123:E:C603:3FF:FEF0:0 remote-as 123
neighbor AB01:CD1:123:E:C603:3FF:FEF0:0 ebgp-multihop 5
!
address-family ipv6
 neighbor AB01:CD1:123:E:C603:3FF:FEF0:0 activate
 network BC01:BC1:10:A::/64
 network BC02:BC1:11:A::/64
 network BC03:BC1:12:A::/64
exit-address-family

```

Verifiëren

Deze sectie verschaft informatie die u kunt gebruiken om te bevestigen dat de configuratie correct werkt.

Op router R1

1. [samenvatting van ipv6-interface](#)

```

Rtr1#show ipv6 interface brief
FastEthernet0/0          [up/up]
 FE80::C601:3FF:FEF0:0
 AB01:CD1:123:A:C601:3FF:FEF0:0
Serial0/0                [up/up]
 FE80::C601:3FF:FEF0:0
 AB01:CD1:123:C:C601:3FF:FEF0:0
FastEthernet0/1         [up/up]
 FE80::C601:3FF:FEF0:1
 AB01:CD1:123:B:C601:3FF:FEF0:1
Serial0/1                [administratively down/down]
Loopback0                [up/up]
 FE80::C601:3FF:FEF0:0
 1111:111:111:A:C601:3FF:FEF0:0

```

2. [samenvatting van het bgp ipv6 - unicast](#)

```

Rtr1#show bgp ipv6 unicast summary
BGP router identifier 1.1.1.1, local AS number 123
BGP table version is 9, main routing table version 9
3 network entries using 456 bytes of memory
6 path entries using 456 bytes of memory
4/2 BGP path/bestpath attribute entries using 496 bytes of memory
2 BGP AS-PATH entries using 48 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
Bitfield cache entries: current 2 (at peak 2) using 64 bytes of memory
BGP using 1520 total bytes of memory
BGP activity 3/0 prefixes, 8/2 paths, scan interval 60 secs

Neighbor          V      AS MsgRcvd MsgSent   TblVer  InQ  OutQ Up/Down  State/PfxRcd
2222:222:222:A:C602:3FF:FEF0:0
                   4      123     45     50       9     0    0 00:41:30      0
3333:333:333:A:C603:3FF:FEF0:0
                   4      123     59     55       9     0    0 00:45:09      3
AB01:CD1:123:C:C604:16FF:FE98:0
                   4      101     56     56       9     0    0 00:50:14      3

```

Op router R2

1. [samenvatting van ipv6-interface](#)

```
Rtr2#show ipv6 interface brief
FastEthernet0/0          [up/up]
    FE80::C602:3FF:FEFO:0
    ABO1:CD1:123:A:C602:3FF:FEFO:0
FastEthernet0/1          [up/up]
    FE80::C602:3FF:FEFO:1
    ABO1:CD1:123:D:C602:3FF:FEFO:1
FastEthernet1/0          [administratively down/down]
Loopback0                [up/up]
    FE80::C602:3FF:FEFO:0
    2222:222:222:A:C602:3FF:FEFO:0
```

2. [bgp ipv6 - unicast tonen](#) Opmerking: Wanneer Local Preference niet is geconfigureerd heeft router R2 (Rtr2) router R1 (Rtr1) als haar volgende hop voor alle belangrijke IPv6-adressen.

```
Rtr2#sh bgp ipv6 unicast
BGP table version is 4, local router ID is 2.2.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
* iBC01:BC1:10:A::/64
                   3333:333:333:A:C603:3FF:FEFO:0
                               0   100       0 202 i
*>i
                   1111:111:111:A:C601:3FF:FEFO:0
                               0   100       0 101 i
* iBC02:BC1:11:A::/64
                   3333:333:333:A:C603:3FF:FEFO:0
                               0   100       0 202 i
*>i
                   1111:111:111:A:C601:3FF:FEFO:0
                               0   100       0 101 i
* iBC03:BC1:12:A::/64
                   3333:333:333:A:C603:3FF:FEFO:0
                               0   100       0 202 i
*>i
                   1111:111:111:A:C601:3FF:FEFO:0
                               0   100       0 101 i
```

3. [bgp ipv6 - unicast tonen](#) Nadat u lokale voorkeur 500 voor het voorvoegsel BC01:BC1:10:A:/64 hebt u alleen een andere uitgang voor dit voorvoegsel.


```

Rtr2#show bgp ipv6 unicast
BGP table version is 12, local router ID is 2.2.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*>iBC01:BC1:10:A::/64
                   3333:333:333:A:C603:3FF:FEF0:0
                               0   500       0 202 i
*>iBC02:BC1:11:A::/64
                   1111:111:111:A:C601:3FF:FEF0:0
                               0   100       0 101 i
* i                 3333:333:333:A:C603:3FF:FEF0:0
                               0   100       0 202 i
*>iBC03:BC1:12:A::/64
                   1111:111:111:A:C601:3FF:FEF0:0
                               0   100       0 101 i
* i                 3333:333:333:A:C603:3FF:FEF0:0
                               0   100       0 202 i

```

Opmerking: Het voorvoegsel BC01:BC1:10:A:: 10/64 voert een exit pad van router R3 omdat de lokale voorkeuren hoger zijn ingesteld.

Op router R3

1. [samenvatting van ipv6-interface](#)

```

Rtr3#show ipv6 interface brief
FastEthernet0/0          [up/up]
  FE80::C603:3FF:FEF0:0
  AB01:CD1:123:B:C603:3FF:FEF0:0
Serial0/0                [up/up]
  FE80::C603:3FF:FEF0:0
  AB01:CD1:123:E:C603:3FF:FEF0:0
FastEthernet0/1         [up/up]
  FE80::C603:3FF:FEF0:1
  AB01:CD1:123:D:C603:3FF:FEF0:1
Serial0/1               [administratively down/down]
  unassigned
Loopback0               [up/up]
  FE80::C603:3FF:FEF0:0
  3333:333:333:A:C603:3FF:FEF0:0

```

2. [samenvatting van het bgp ipv6 - unicast](#)

```

Rtr3#show bgp ipv6 unicast summary
BGP router identifier 3.3.3.3, local AS number 123
BGP table version is 4, main routing table version 4
3 network entries using 456 bytes of memory
5 path entries using 380 bytes of memory
3/1 BGP path/bestpath attribute entries using 372 bytes of memory
2 BGP AS-PATH entries using 48 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
Bitfield cache entries: current 1 (at peak 2) using 32 bytes of memory
BGP using 1288 total bytes of memory
BGP activity 3/0 prefixes, 8/3 paths, scan interval 60 secs

Neighbor          V      AS MsgRcvd MsgSent   TblVer  InQ  OutQ Up/Down  State/PfxRcd
1111:111:111:A:C601:3FF:FEF0:0
                   4      123     57     61       4    0    0 00:47:59      2
2222:222:222:A:C602:3FF:FEF0:0
                   4      123     51     63       4    0    0 00:44:59      0
AB01:CD1:123:E:C605:16FF:FE98:0
                   4      202     55     53       4    0    0 00:49:40      3

```

[Problemen oplossen](#)

Gebruik deze opdrachten voor het oplossen van problemen

1. [debug bgp ipv6-updates](#)
2. [helder bgp ipv6 {eenastmaands | multicast}](#)

[Gerelateerde informatie](#)

- [BGP-ondersteuningspagina](#)
- [BGP: Veelgestelde vragen](#)
- [BGP-algoritme voor selectie van het beste pad](#)
- [BGP-casestudy's](#)
- [Ondersteuning van IP, versie 6](#)
- [Implementatie van Multiprotocol BGP voor IPv6](#)
- [Technische ondersteuning en documentatie – Cisco Systems](#)