

Konfigurieren der Funktion für lokale IPv6-BGP-Voreinstellungen

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In diesem Dokument wird die Funktion "BGP (IPv6 Border Gateway Protocol) Local-Preference" (Lokale Voreinstellungen) erläutert. Die lokale Präferenz ist ein Hinweis auf das AS, über den der Pfad das AS verlassen möchte, um ein bestimmtes Netzwerk zu erreichen. Ein Pfad mit einer höheren lokalen Präferenz wird bevorzugt. Der Standardwert der Voreinstellung ist 100.

[Voraussetzungen](#)

[Anforderungen](#)

Stellen Sie sicher, dass Sie diese Anforderungen erfüllen, bevor Sie versuchen, diese Konfiguration durchzuführen:

- Verständnis des BGP-Routing-Protokolls und seiner Funktionsweise
- Verständnis des IPv6-Adressierungsschemas

[Verwendete Komponenten](#)

Die Informationen in diesem Dokument wurden mit diesen Software- und Hardwareversionen getestet.

- Cisco IOS Software Release 12.4, Advanced IP Services Feature-Set
- Cisco Multiservice Access Router der Serie 3700

Konventionen

Weitere Informationen zu Dokumentkonventionen finden Sie unter [Cisco Technical Tips Conventions](#) (Technische Tipps zu Konventionen von Cisco).

Hintergrundinformationen

Im Beispiel sind Router R1, R2 und R3 Teil der BGP Autonomous System Number 123. R4 ist Teil des autonomen Systems 101 und R5 Teil des autonomen Systems 100.

Die drei Router (R1, R2 und R3) sind mit OSPFv3 für IGP-Verbindungen konfiguriert. IPv6-Präfix der Loop-Back-Schnittstelle Lo 0 (111:111:11:A::/64 eui-64, 222:222:222:A:/64 eui-64 und 333:333:333 3:A:/64 eui-64) aller drei Router wird im Bereich 0 des OSPFv3-Routing-Protokolls angekündigt.

Das IBGP-Peering wird zwischen den Routern R1, R2 und R3 durch gelernte Loopback-Präfixe gebildet. Router R1 und R4 sind über einen WAN-Link (serielle Verbindung) verbunden und bilden EBGP-Peering. Entsprechend bilden Router R3 und R5 EBGP-Peering über WAN-Verbindung.

Router R4 und R5 injizieren die gleichen IPv6-Präfixe:

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

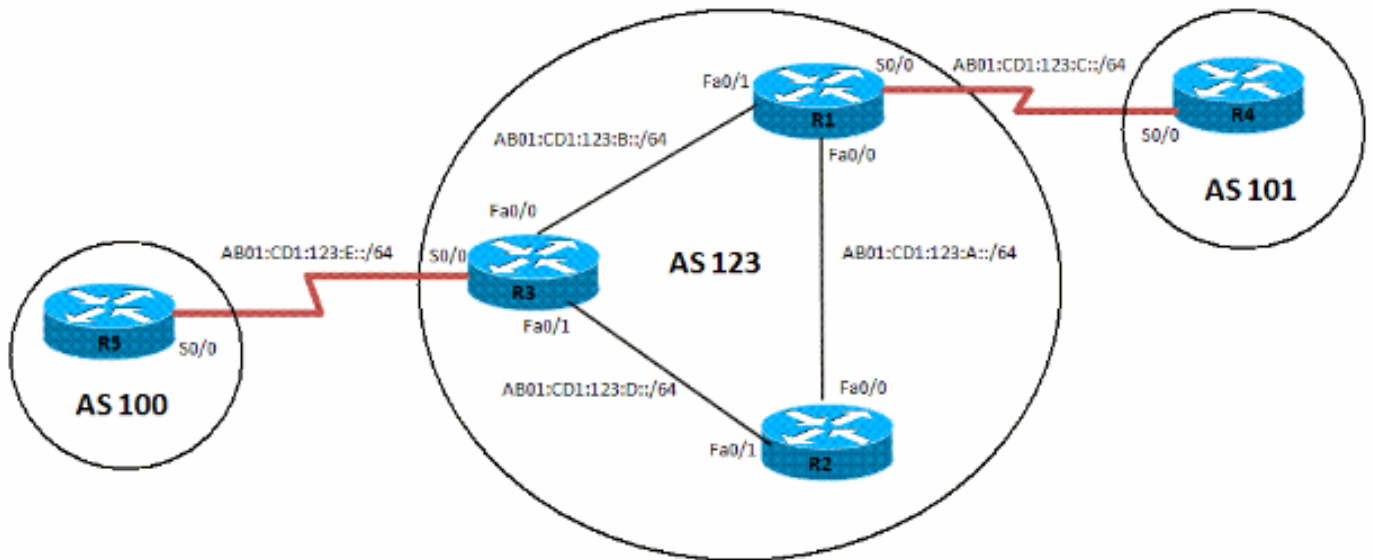
Da die beiden Router R4 und R5 dieselben IPv6-Präfixe einsetzen, basiert die Pfadauswahl auf den bekannten BGP-Attributen. In diesem Beispiel wird "Lokale Voreinstellungen" ausgewählt. Der Wert für die lokale BGP-Voreinstellung von 500 wird für das Präfix BC01:BC1:10:A:/64 auf Router R3 durch route-map festgelegt. Dies führt dazu, dass R3 als Ausgangspunkt für dieses Präfix und R1 der Ausgangspunkt für die beiden verbleibenden Präfixe ist.

Konfigurieren

Die Fast Ethernet-Schnittstellen (F0/0 und F0/1) der Router R1, R2 und R3 sind IPv6-fähig, wobei die IPv6-Adresse des Formats "eui-64" verwendet wird.

Netzwerkdiagramm

In diesem Dokument wird die folgende Netzwerkeinrichtung verwendet:



Konfigurationen

In diesem Dokument werden folgende Konfigurationen verwendet:

- [R1-Konfiguration](#)
- [R2-Konfiguration](#)
- [R3-Konfiguration](#)
- [R4-Konfiguration](#)
- [R5-Konfiguration](#)

Hinweis: Alle Router werden mit dem Befehl [ipv6 unicast-routing](#) mit der Weiterleitung von IPv6-Paketen aktiviert.

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

```

Überprüfen

Dieser Abschnitt enthält Informationen zur Bestätigung, dass Ihre Konfiguration ordnungsgemäß funktioniert.

Router R1

1. [show ipv6 interface brief](#)

```

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. [show bgp ipv6 Unicast-Zusammenfassung](#)

```

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

```

Router R2

1. [show ipv6 interface brief](#)

```
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. [show bgp ipv6 unicast](#) Hinweis: Wenn die lokale Voreinstellung nicht konfiguriert ist, hat Router R2 (Rtr2) den Router R1 (Rtr1) als nächsten Hop für alle gelernten 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. [show bgp ipv6 unicast](#) Nach der Konfiguration der lokalen Voreinstellungen 500 für das Präfix BC01:BC1:10:A:/64 hat R2 nur für dieses Präfix einen anderen Ausgang.


```

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

```

Hinweis: Das Präfix BC01:BC1:10:A:/64 verwendet einen Exitpfad des Routers R3, da die lokale Voreinstellung höher eingestellt ist.

Router R3

1. [show ipv6 interface brief](#)

```

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. [show bgp ipv6 Unicast-Zusammenfassung](#)

```

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

```

Fehlerbehebung

Verwenden Sie diese Befehle zur Fehlerbehebung

1. [debuggen bgp ipv6-Updates](#)
2. [clear bgp ipv6 {Unicast | Multicast}](#)

Zugehörige Informationen

- [BGP-Support-Seite](#)
- [BGP: Häufig gestellte Fragen](#)
- [BGP-Algorithmus für die beste Pfadauswahl](#)
- [BGP-Fallstudien](#)
- [Support-Seite für IP Version 6](#)
- [Implementierung von Multiprotocol BGP für IPv6](#)
- [Technischer Support und Dokumentation - Cisco Systems](#)