

# 配置IPv6 BGP本地首选功能

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## 简介

本文解释IPv6边界网关协议(BGP) Local-preference功能。本地优先级指示 AS 以哪条路径作为首选来退出 AS，到达特定网络。一个路径以更高的本地首选被选更多。默认值首选是100。

## 先决条件

### 要求

尝试进行此配置之前，请确保满足以下要求：

- 对BGP路由协议和其操作的了解
- 对IPv6编址方案的了解

### 使用的组件

本文档中的信息在这些软件和硬件版本测试

- Cisco IOS 软件版本 12.4，高级 IP 服务功能集
- Cisco 3700 系列多业务接入路由器

### 规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

## 背景信息

在示例中，路由器R1，R2和R3是BGP自治系统编号123的一部分。R4是自治系统100的自治系统101和R5部的一部分。

三路由器(R1、R2和R3)配置与IGP连接的OSPFv3。IPv6前缀回环接口Lo0 (1111:111:111:A::/64 eui-64，2222:222:222:A::/64 eui-64和3333:333:333:A::/64 eui-64)所有三路由器在OSPFv3路由协议Area 0通告。

IBGP同位体形成在路由器R1、R2和R3之间通过了解的环回前缀。路由器R1和R4在广域网链路(串行连接)连接并且形成EBGP对等体。同样路由器R3和R5形成在广域网链路的EBGP对等体。

路由器R4和R5注入同样IPv6前缀：

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

因为两路由器R4和R5注入同样IPv6前缀，路径选择根据BGP著名的属性。在本例中，本地首选选择。BGP本地首选值为500为在路由器R3的前缀BC01:BC1:10:A::/64设置通过route-map。这导致R3作为此前缀和R1的出口点剩余的两个前缀的出口点。

## 配置

快速以太网接口(F0/0和F0/1)路由器R1、R2和R3是IPv6启用与格式eui-64 IPv6地址。

## 网络图

本文档使用以下网络设置：

## 配置

本文档使用以下配置：

- [R1 的配置](#)
- [R2 配置](#)
- [R3 配置](#)
- [R4配置](#)
- [R5配置](#)

**注意：**通过使用[IPv6单播路由](#)命令，所有路由器启用与IPv6数据包转发。

```
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
```

## R4

```
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
```

## 验证

本部分提供的信息可用于确认您的配置是否工作正常。

在路由器R1上

1. [show ipv6 interface brief](#)
2. [show bgp ipv6 unicast summary](#)

在路由器 R2 上

1. [show ipv6 interface brief](#)
2. [show bgp ipv6单播](#)注意：当本地首选没有配置时，路由器R2 (Rtr2)有路由器R1 (Rtr1)作为其所有了解的IPv6地址的下一跳。
3. [show bgp ipv6单播](#)在配置前缀的BC01:BC1:10:A::/64本地首选以后500，R2有一不同的仅退出此前缀的。注意：因为本地首选设置的更加高，前缀BC01:BC1:10:A::/64采取路由器R3退出路径。

在路由器R3上

1. [show ipv6 interface brief](#)
2. [show bgp ipv6 unicast summary](#)

## 故障排除

请使用这些命令排除故障

1. [debug bgp ipv6 updates](#)
2. [clear bgp IPv6 {单播|组播}](#)

## 相关信息

- [BGP 支持页](#)

- [调试输出中显示“BGP:常见问题](#)
- [BGP 最佳路径选择算法](#)
- [BGP 案例分析](#)
- [IP 版本 6 支持页面](#)
- [实现 IPv6 的多协议 BGP](#)
- [技术支持和文档 - Cisco Systems](#)