

Routing
Switching
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IPv6

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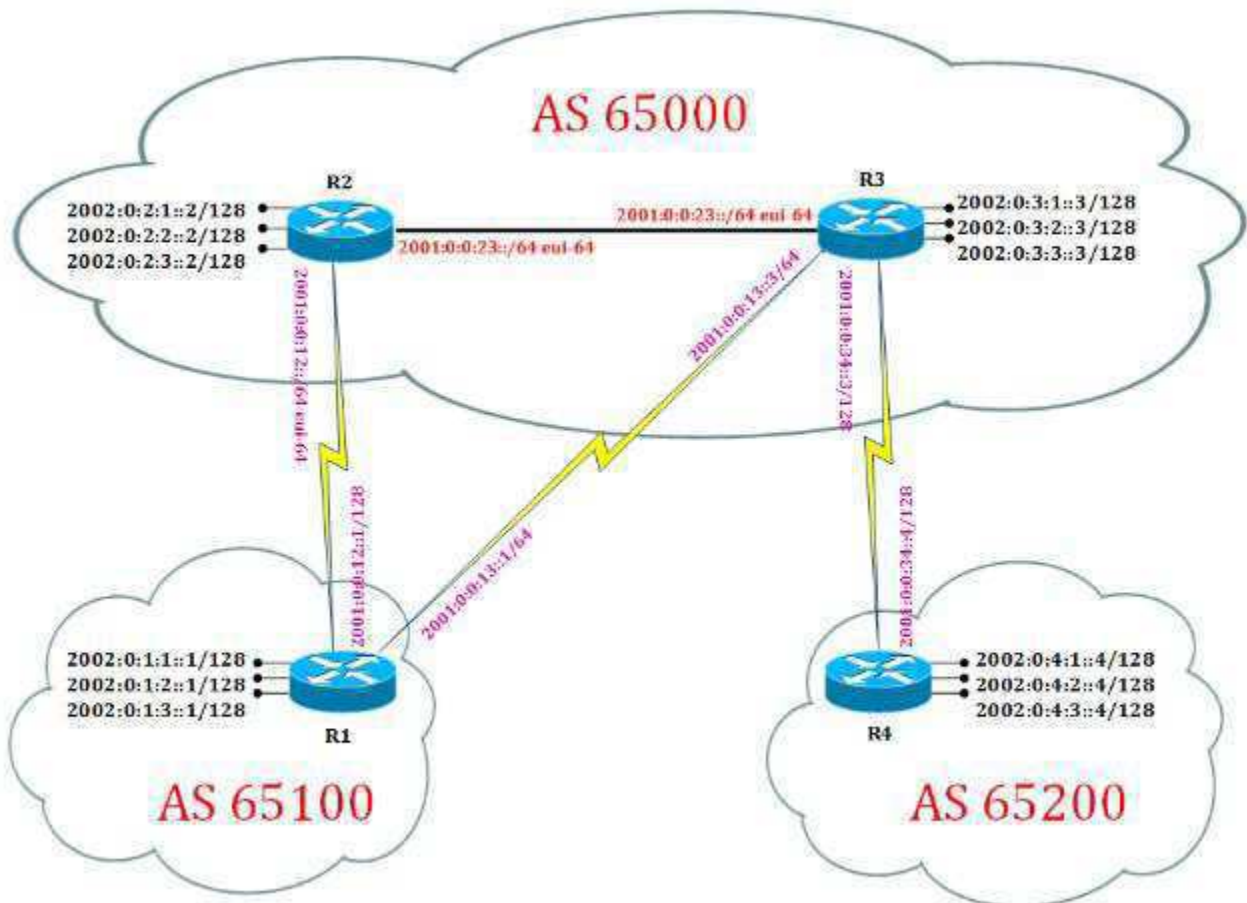
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IPv6 BGP Weight

Disclaimer

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Cisco IOS Software, 7200 Software (C7200-ADVENTERPRISEK9-M), Version 15.0(1)M9, RELEASE SOFTWARE (fc1)



4

R1 Router Config:

```
!  
ipv6 unicast-routing  
ipv6 cef  
!  
interface Loopback0  
no ip address  
ipv6 address 2002:0:1:1::1/128  
ipv6 ospf 1 area 0  
!  
interface Loopback1  
no ip address  
ipv6 address 2002:0:1:2::1/128  
ipv6 ospf 1 area 0  
!  
interface Loopback2  
no ip address  
ipv6 address 2002:0:1:3::1/128  
ipv6 ospf 1 area 0  
!  
interface Serial1/0  
no ip address  
ipv6 address 2001:0:0:12::1/128  
ipv6 ospf 1 area 0  
no fair-queue  
serial restart-delay 0  
!  
interface Serial1/1  
ipv6 address 2001:0:0:13::1/64  
serial restart-delay 0  
!  
router bgp 65100  
bgp router-id 1.1.1.1  
no bgp default ipv4-unicast  
bgp log-neighbor-changes  
neighbor 2001:0:0:13::3 remote-as 65000  
neighbor 2002:0:2:1::2 remote-as 65000  
neighbor 2002:0:2:1::2 ebgp-multihop 5  
neighbor 2002:0:2:1::2 update-source  
Loopback0  
!  
address-family ipv6  
no synchronization  
network 2002:0:1:2::1/128
```

R4 Router Config:

```
!  
ipv6 unicast-routing  
ipv6 cef  
!  
interface Loopback0  
no ip address  
ipv6 address 2002:0:4:1::4/128  
!  
interface Loopback1  
no ip address  
ipv6 address 2002:0:4:2::4/128  
!  
interface Loopback2  
no ip address  
ipv6 address 2002:0:4:3::4/128  
!  
interface Serial1/0  
no ip address  
ipv6 address 2001:0:0:34::4/128  
serial restart-delay 0  
clock rate 64000  
!  
router bgp 65200  
bgp router-id 4.4.4.4  
no bgp default ipv4-unicast  
bgp log-neighbor-changes  
neighbor 2002:0:3:1::3 remote-as 65000  
neighbor 2002:0:3:1::3 ebgp-multihop 5  
neighbor 2002:0:3:1::3 update-source  
Loopback0  
!  
address-family ipv6  
no synchronization  
network 2002:0:4:2::4/128  
network 2002:0:4:3::4/128  
neighbor 2002:0:3:1::3 activate  
exit-address-family  
!  
ipv6 route 2001:0:0:34::3/128 Serial1/0  
ipv6 route 2002:0:3:1::3/128 Serial1/0  
!
```

```
network 2002:0:1:3::1/128
neighbor 2001:0:0:13::3 activate
neighbor 2002:0:2:1::2 activate
exit-address-family
!
ipv6 router ospf 1
router-id 1.1.1.1
log-adjacency-changes
!
```

R2 Router Config:

```
!
ipv6 unicast-routing
ipv6 cef
!
interface Loopback0
no ip address
ipv6 address 2002:0:2:1::2/128
ipv6 ospf 1 area 0
!
interface Loopback1
no ip address
ipv6 address 2002:0:2:2::2/128
ipv6 ospf 1 area 0
!
interface Loopback2
no ip address
ipv6 address 2002:0:2:3::2/128
ipv6 ospf 1 area 0
!
interface Serial1/0
no ip address
ipv6 address 2001:0:0:12::/64 eui-64
ipv6 ospf 1 area 0
no fair-queue
serial restart-delay 0
clock rate 64000
!
interface FastEthernet2/0
no ip address
duplex full
speed 100
```

R3 Router Config:

```
!
ipv6 unicast-routing
ipv6 cef
!
interface Loopback0
no ip address
ipv6 address 2002:0:3:1::3/128
ipv6 ospf 1 area 0
!
interface Loopback1
no ip address
ipv6 address 2002:0:3:2::3/128
ipv6 ospf 1 area 0
!
interface Loopback2
no ip address
ipv6 address 2002:0:3:3::3/128
ipv6 ospf 1 area 0
!
interface Serial1/0
no ip address
ipv6 address 2001:0:0:34::3/128
no fair-queue
serial restart-delay 0
clock rate 64000
!
interface Serial1/1
no ip address
ipv6 address 2001:0:0:13::3/64
serial restart-delay 0
!
```

```

ipv6 address 2001:0:0:23::/64 eui-64
ipv6 ospf 1 area 0
!
router bgp 65000
bgp router-id 2.2.2.2
no bgp default ipv4-unicast
bgp log-neighbor-changes
neighbor 2001::23:C803:CFF:FE78:38
remote-as 65000
neighbor 2002:0:1:1::1 remote-as 65100
neighbor 2002:0:1:1::1 ebgp-multihop 5
neighbor 2002:0:1:1::1 update-source
Loopback0
!
address-family ipv6
no synchronization
network 2002:0:2:2::2/128
network 2002:0:2:3::2/128
neighbor 2001::23:C803:CFF:FE78:38
activate
neighbor 2002:0:1:1::1 activate
exit-address-family
!
ipv6 router ospf 1
router-id 2.2.2.2
log-adjacency-changes
!

```

```

interface FastEthernet2/0
mac-address ca03.0c78.0038
no ip address
duplex auto
speed auto
ipv6 address 2001:0:0:23::/64 eui-64
ipv6 ospf 1 area 0
!
router bgp 65000
bgp router-id 3.3.3.3
no bgp default ipv4-unicast
bgp log-neighbor-changes
neighbor 2001:0:0:13::1 remote-as 65100
neighbor 2001::23:C802:CFF:FE78:38
remote-as 65000
neighbor 2002:0:4:1:4 remote-as 65200
neighbor 2002:0:4:1:4 ebgp-multihop 5
neighbor 2002:0:4:1:4 update-source
Loopback0
!
address-family ipv6
no synchronization
network 2002:0:3:2::3/128
network 2002:0:3:3::3/128
neighbor 2001:0:0:13::1 activate
neighbor 2001::23:C802:CFF:FE78:38
activate
neighbor 2001::23:C802:CFF:FE78:38
next-hop-self
neighbor 2002:0:4:1:4 activate
exit-address-family
!
ipv6 route 2001:0:0:34::4/128 Serial1/0
ipv6 route 2002:0:4:1:4/128 Serial1/0
!
ipv6 router ospf 1
router-id 3.3.3.3
log-adjacency-changes
!

```

Weight attribute is used to change the path selection decision of BGP locally on a router. IT never propagates outside the router. Weight attribute is CISCO proprietary attribute. More the weight, better the path.

Note 1: In above topology OSPFv3 has been run over R1, R2 and R3 within same area AREA 0.

Note 2: Static routes has been used between R3 and R4 for reachability.

Verification:

R1#sh bgp ipv6 unicast

BGP table version is 11, local router ID is 1.1.1.1

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 |
|----------------------|----------------|--------|--------|--------|---------------|
| *> 2002:0:1:2::1/128 | :: | 0 | | 32768 | i |
| *> 2002:0:1:3::1/128 | :: | 0 | | 32768 | i |
| *> 2002:0:2:2::2/128 | 2001:0:0:13::3 | 0 | | 0 | 65000 i |
| * | 2002:0:2:1::2 | 0 | | 0 | 65000 i |
| *> 2002:0:2:3::2/128 | 2001:0:0:13::3 | 0 | | 0 | 65000 i |
| * | 2002:0:2:1::2 | 0 | | 0 | 65000 i |
| * 2002:0:3:2::3/128 | 2002:0:2:1::2 | 0 | | 0 | 65000 i |
| *> | 2001:0:0:13::3 | 0 | | 0 | 65000 i |
| * 2002:0:3:3::3/128 | 2002:0:2:1::2 | 0 | | 0 | 65000 i |
| *> | 2001:0:0:13::3 | 0 | | 0 | 65000 i |
| * 2002:0:4:2::4/128 | 2002:0:2:1::2 | 0 | | 0 | 65000 65200 i |
| *> | 2001:0:0:13::3 | 0 | | 0 | 65000 65200 i |
| * 2002:0:4:3::4/128 | 2002:0:2:1::2 | 0 | | 0 | 65000 65200 i |
| *> | 2001:0:0:13::3 | 0 | | 0 | 65000 65200 i |

Here the best paths selected by BGP are via R3.

Changes on R1

R1(config)#router bgp 65100

R1(config-router)#addr

R1(config-router)#address-family ipv6

R1(config-router-af)#neigh 2002:0:2:1::2 weight 100 (Command will set weight 100 on all the route updates received by R2)

R1(config-router-af)#^Z

R1#clear bgp ipv6 unicast 2002:0:2:1::2

Verification:

R1#sh bgp ipv6 unicast

BGP table version is 11, local router ID is 1.1.1.1

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 |
|----------------------|----------------|--------|--------|--------|---------------|
| *> 2002:0:1:2::1/128 | :: | 0 | | 32768 | i |
| *> 2002:0:1:3::1/128 | :: | 0 | | 32768 | i |
| * 2002:0:2:2::2/128 | 2001:0:0:13::3 | 0 | | 0 | 65000 i |
| *> | 2002:0:2:1::2 | 0 | | 100 | 65000 i |
| * 2002:0:2:3::2/128 | 2001:0:0:13::3 | 0 | | 0 | 65000 i |
| *> | 2002:0:2:1::2 | 0 | | 100 | 65000 i |
| *> 2002:0:3:2::3/128 | 2002:0:2:1::2 | 0 | | 100 | 65000 i |
| * | 2001:0:0:13::3 | 0 | | 0 | 65000 i |
| *> 2002:0:3:3::3/128 | 2002:0:2:1::2 | 0 | | 100 | 65000 i |
| * | 2001:0:0:13::3 | 0 | | 0 | 65000 i |
| *> 2002:0:4:2::4/128 | 2002:0:2:1::2 | 0 | | 100 | 65000 65200 i |
| * | 2001:0:0:13::3 | 0 | | 0 | 65000 65200 i |
| *> 2002:0:4:3::4/128 | 2002:0:2:1::2 | 0 | | 100 | 65000 65200 i |
| * | 2001:0:0:13::3 | 0 | | 0 | 65000 65200 i |

The weight is increased from 0 to 100 for routes received via R2 (2002:0:0:1::2) and those paths have been selected as best paths by BGP.

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