

Routing  
Switching  
Tigers  
Forum



BGP

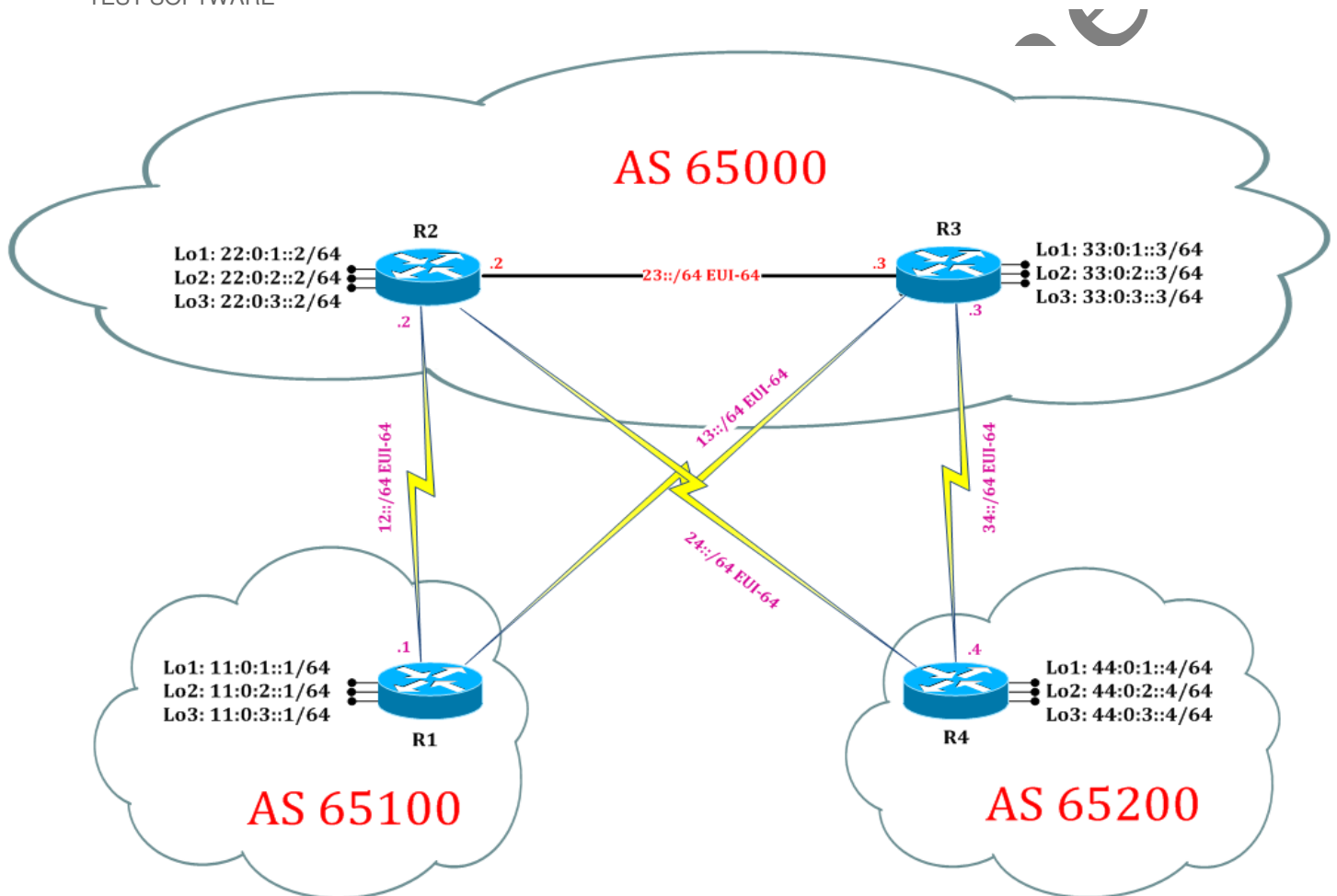


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Cisco IOS Software, Linux Software (I86BI\_LINUX-ADVENTERPRISEK9-M), Version 15.2(4)M1, DEVELOPMENT TEST SOFTWARE



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# LAB 12: Configure IPv6 BGP MED Attributes:

## Task 1: Configure IPv6 BGP MED Attributes for Autonomous

Step 1 In the configuration mode of router configure IPv6 BGP MED Attributes by following command:

**R1:**

```
interface serial 2/3
ipv6 address 13::1/64
ipv6 ospf 1 area 0
no shutdown
exit
router bgp 65100
neighbor 13::3 remote-as 65000
address-family ipv6
neighbor 13::3 activate
neighbor 13::3 soft-reconfiguration inbound
exit
```

**R2:**

```
interface serial 2/3
ipv6 address 24::2/64
ipv6 ospf 1 area 0
no shutdown
exit
router bgp 65000
neighbor 24::4 remote-as 65200
address-family ipv6
neighbor 24::4 activate
neighbor 24::4 soft-reconfiguration inbound
exit
```

**R3:**

```
interface s2/3
ipv6 address 13::3/64
ipv6 ospf 1 area 0
no shutdown
exit
router bgp 65000
neighbor 13::1 remote-as 65100
address-family ipv6
neighbor 13::1 activate
neighbor 13::1 soft-reconfiguration inbound
exit
```

```

R4:
interface serial 2/3
ipv6 address 24::4/64
ipv6 ospf 1 area 0
no shutdown
exit
router bgp 65200
neighbor 24::2 remote-as 65000
address-family ipv6
neighbor 24::2 activate
neighbor 24::2 soft-reconfiguration inbound
exit

```

Step 2 Verify IPv4 BGP routes by following command:

```

R1#show bgp ipv6 unicast
BGP table version is 22, local router ID is 11.0.3.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
                r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
                x best-external, a additional-path, c RIB-compressed,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

```

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 11:0:1::/64	::	0		32768	i
*> 11:0:2::/64	::	0		32768	i
*> 11:0:3::/64	::	0		32768	i
*> 22:0:1::/64	13::3			0	65000 i
*	22:0:1::2	0		0	65000 i
*> 22:0:2::/64	13::3			0	65000 i
*	22:0:1::2	0		0	65000 i
*> 22:0:3::/64	13::3			0	65000 i
*	22:0:1::2	0		0	65000 i
*> 33:0:1::/64	13::3	0		0	65000 i
*	22:0:1::2			0	65000 i
*> 33:0:2::/64	13::3	0		0	65000 i
*	22:0:1::2			0	65000 i
*> 33:0:3::/64	13::3	0		0	65000 i
*	22:0:1::2			0	65000 i
*> 44:0:1::/64	13::3			0	65000 65200 i
*	22:0:1::2			0	65000 65200 i
*> 44:0:2::/64	13::3			0	65000 65200 i
*	22:0:1::2			0	65000 65200 i
*> 44:0:3::/64	13::3			0	65000 65200 i
*	22:0:1::2			0	65000 65200 i

MED is local to a router and it is use to change router's decision when it receives multiple path from same AS.

Router R1 can reach 22:0:2::0 via 22:0:1::2 and via 13::3 through AS 65000 i.e. Router R1 has multiple path to reach AS 65000. But Router R1 will select path via 13::3 as best path because MED select directly connected path as best path when having multiple exit. Therefore MED selects 13::3 as best directly connected to reach R2 as best path as 13::3 is directly connected.

R4#show bgp ipv6 unicast

BGP table version is 22, local router ID is 44.0.3.4

Status codes: s suppressed, d damped, h history, \* valid, > best, i - internal,

r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,

x best-external, a additional-path, c RIB-compressed,

Origin codes: i - IGP, e - EGP, ? - incomplete

RPKI validation codes: V valid, I invalid, N Not found

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 11:0:1::/64	24::2			0	65000 65100 i
*	33:0:1::3			0	65000 65100 i
*> 11:0:2::/64	24::2			0	65000 65100 i
*	33:0:1::3			0	65000 65100 i
*> 11:0:3::/64	24::2			0	65000 65100 i
*	33:0:1::3			0	65000 65100 i
*> 22:0:1::/64	24::2	0		0	65000 i
*	33:0:1::3			0	65000 i
*> 22:0:2::/64	24::2	0		0	65000 i
*	33:0:1::3			0	65000 i
*> 22:0:3::/64	24::2	0		0	65000 i
*	33:0:1::3			0	65000 i
*> 33:0:1::/64	24::2			0	65000 i
*	33:0:1::3	0		0	65000 i
*> 33:0:2::/64	24::2			0	65000 i
*	33:0:1::3	0		0	65000 i
*> 33:0:3::/64	24::2			0	65000 i
*	33:0:1::3	0		0	65000 i
*> 44:0:1::/64	::	0		32768	i
*> 44:0:2::/64	::	0		32768	i
*> 44:0:3::/64	::	0		32768	i

Router R4 can reach 11:0:2::0 via 33:0:1::3 and via 24::2 through AS 65000 65100 i.e. Router R4 has multiple path to reach AS 65000. But Router R1 will select path via 24::2 as best path because MED select directly connected path as best path when having multiple exit. Therefore MED selects 24::2 as best directly connected to reach R2 as best path as 24::2 is directly connected.

## Task 2: Configure BGP Selective Manipulation using MED for Autonomous

Step 1 In the configuration mode of router configure BGP Selective Manipulation using MED by following command:

```
R1:
router bgp 65100
address-family ipv6
neighbor 13::3 route-map iii in
exit
route-map iii permit 10
match ipv6 address uuu
set metric 5000
exit
route-map iii permit 20
ipv6 access-list uuu
permit 22:0:2::/64 any
exit
```

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Step 2 Verify IPv6 BGP route by following command:

```
R1#show bgp ipv6 unicast
```

```
BGP table version is 41, local router ID is 11.0.3.1
```

```
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
```

```
 r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
```

```
 x best-external, a additional-path, c RIB-compressed,
```

```
Origin codes: i - IGP, e - EGP, ? - incomplete
```

```
RPKI validation codes: V valid, I invalid, N Not found
```

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 11:0:1::/64	::	0		32768	i
*> 11:0:2::/64	::	0		32768	i
*> 11:0:3::/64	::	0		32768	i
*> 22:0:1::/64	13::3			0	65000 i
*	22:0:1::2	0		0	65000 i
* 22:0:2::/64	13::3			5000	0 65000 i
*>	22:0:1::2	0		0	65000 i
*> 22:0:3::/64	13::3			0	65000 i
*	22:0:1::2	0		0	65000 i
*> 33:0:1::/64	13::3	0		0	65000 i
*	22:0:1::2			0	65000 i
*> 33:0:2::/64	13::3	0		0	65000 i
*	22:0:1::2			0	65000 i
*> 33:0:3::/64	13::3	0		0	65000 i
*> 33:0:1::/64	13::3	0		0	65000 i
*	22:0:1::2			0	65000 i
*> 33:0:2::/64	13::3	0		0	65000 i
*	22:0:1::2			0	65000 i
*> 33:0:3::/64	13::3	0		0	65000 i
*	22:0:1::2			0	65000 i
*> 44:0:1::/64	13::3			0	65000 65200 i
*	22:0:1::2			0	65000 65200 i
*> 44:0:2::/64	13::3			0	65000 65200 i
*	22:0:1::2			0	65000 65200 i
*> 44:0:3::/64	13::3			0	65000 65200 i
*	22:0:1::2			0	65000 65200 i

Router R1 can now reach 22:0:2:: via 22:0:1::2. This is done by calling route map policy in which selective route 22:0:2::0 only will set 13::3 metric 5000 and rest all routes will select their best path via 13::3. Hence Selective Route Manipulation is done.

as well as Individual routes to other routers.