

LAB10: BGP – IPv6

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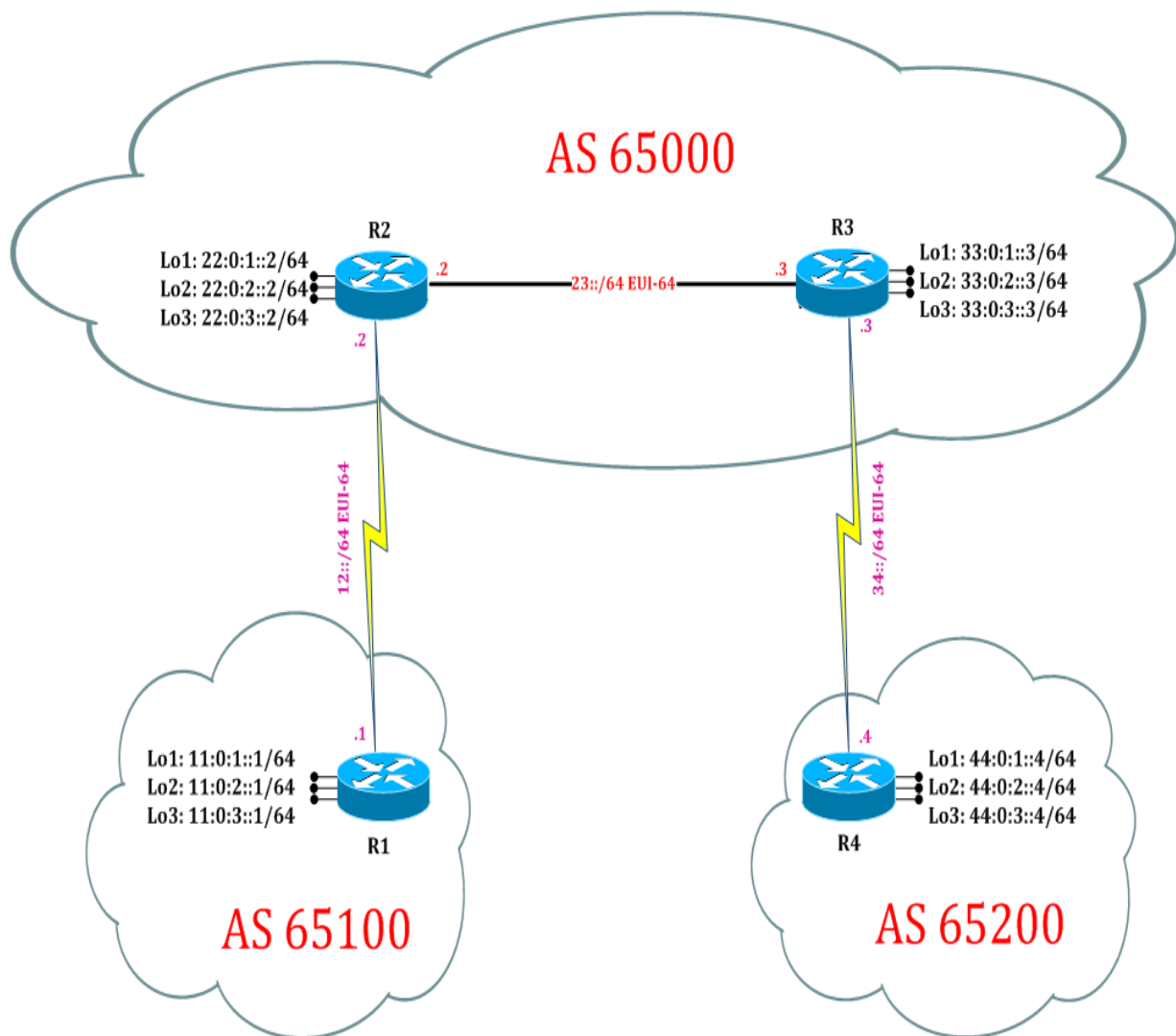
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BGP: AS-Path Attributes

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LAB 10: Diagram

Note: This Lab was developed on Cisco IOS Version 15.2(4) M1 ADVENTERPRISEK9-M.



LAB 10: Configure IPv6 BGP AS-PATH Attributes

Task 1: Configure BGP IPv6 AS-PATH Attributes for Autonomous

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

```
R1:
interface loopback 100
ipv6 ospf 1 area 0
ipv6 address 100::1/64
exit
router bgp 65100
address-family ipv6
network 100::/64
exit
```

```
R4:
interface loopback 100
ipv6 ospf 1 area 0
ipv6 address 100::4/64
exit
router bgp 65200
address-family ipv6
network 100::/64
exit
```

Step 2 Verify IPv6 BGP routes by following command:

```
R2#show bgp ipv6 unicast
(Shows IPv6 bgp table where ">" shows best path.)
```

BGP table version is 14, local router ID is 22.0.3.2
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	11:0:1::1	0		0	65100 i
*> 11:0:2::/64	11:0:1::1	0		0	65100 i
*> 11:0:3::/64	11:0:1::1	0		0	65100 i
*> 22:0:1::/64	::	0		32768	i
*> 22:0:2::/64	::	0		32768	i
*> 22:0:3::/64	::	0		32768	i

```

*>i 33:0:1::/64 33:0:1::3 0 100 0 i
*>i 33:0:2::/64 33:0:1::3 0 100 0 i
*>i 33:0:3::/64 33:0:1::3 0 100 0 i
*>i 44:0:1::/64 44:0:1::4 0 100 0 65200 i
*>i 44:0:2::/64 44:0:1::4 0 100 0 65200 i
*>i 44:0:3::/64 44:0:1::4 0 100 0 65200 i
*i 100::/64 44:0:1::4 0 100 0 65200 i
*> 11:0:1::1 0 0 0 65100 i

```

(R2 can reach 100 network via next hop 11:0:1::1 through AS 65100 and via 44:0:1::4 through AS 65200. Best path for R2 to reach 100 network is via net hop 11:0:1::1 because 11:0:1::1 is EBGP neighbor with AD value 20 and 44:0:1::4 is received from IBGP neighbor with AD value 200.)

Task 2: Configure BGP AS-PATH Manipulation for Autonomous

Step 1 Prepend AS for as-path manipulation

! (Router R2 wants to make via 44:0:1::4 as best path instead of 11:0:1::1)

R2:

```

router bgp 65000
address-family ipv6
neighbor 11:0:1::1 route-map abc in
exit
exit
route-map abc permit 10
set as-path prepend 222 22
exit

```

(A policy is call on Router R2 that 100 network is prepended 222 22 via 11:0:1::1 through AS 65100 222 22 i.e. through 3 AS.)

R1:

```

router bgp 65100
address-family ipv6
neighbor 22:0:1::2 route-map abc out
exit
exit
route-map abc permit 10
set as-path prepend 111 11
exit

```

(A policy is call on Router R2 that 100 network is prepended 111 11 via 11:0:1::1 through AS 111 11 65100 i.e. through 3 AS.)

Step 2 Verify IPv4 BGP routes by following command:

```
R2# show bgp ipv6 unicast
```

BGP table version is 18, local router ID is 22.0.3.2

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	11:0:1::1	0		0	222 22 65100 i
*> 11:0:2::/64	11:0:1::1	0		0	222 22 65100 i
*> 11:0:3::/64	11:0:1::1	0		0	222 22 65100 i
*> 22:0:1::/64	::	0		32768	i
*> 22:0:2::/64	::	0		32768	i
*> 22:0:3::/64	::	0		32768	i
*>i 33:0:1::/64	33:0:1::3	0	100	0	i
*>i 33:0:2::/64	33:0:1::3	0	100	0	i
*>i 33:0:3::/64	33:0:1::3	0	100	0	i
*>i 44:0:1::/64	44:0:1::4	0	100	0	65200 i
*>i 44:0:2::/64	44:0:1::4	0	100	0	65200 i
*>i 44:0:3::/64	44:0:1::4	0	100	0	65200 i
*>i 100::/64	44:0:1::4	0	100	0	65200 i
*	11:0:1::1	0		0	222 22 65100 111 11 i

(Router R2 now selects 44:0:1::4 as best path because it can reach 100 network through As 65200, where as to reach 100 network via 11:0:1::1 through AS 222 22 65100 111 11

Hence AS-PATH is manipulated.)