Title:
Cisco CCNP / BSCI Exam Tutorial: The BGP Attribute MED

Word Count:
389

Summary:
Mastering BGP attributes is a huge part of passing the BSCI and earning your CCNP. Learn how to work with the MED attribute from Chris Bryant, CCIE #12933.

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Article Body:
Your BSCI exam and CCNP certification success depend on mastering BGP, and a big part of that is knowing how and when to use the many BGP attributes. And for those of you with an eye on the CCIE, believe me - you've got to know BGP attributes like the back of your hand. One such BGP attribute is the Multi-Exit Discriminator, or MED.

The MED attribute is sent from a router or routers in one AS to another AS to indicate what path the remote AS should use to send data to the local AS.

That sounds a little confusing on paper, so let's walk through an example. R1 is in AS 1, and R2, R3, and R4 are in AS 234. R4 is advertising a loopback into BGP, and R1 has two possible next-hops to get to that loopback - R2 (172.12.123.2) and R3 (172.12.123.3). Let's see which of the two paths R1 is using.

```
R1#show ip bgp 4.4.4.4

BGP routing table entry for 4.4.4.4/32, version 8

Paths: (2 available, best #2, table Default-IP-Routing-Table)

Flag: 0x208

Advertised to non peer-group peers:

172.12.123.3
```

```
234

172.12.123.3 from 172.12.123.3 (3.3.3.3)

Origin IGP, localpref 100, valid, external

234

172.12.123.2 from 172.12.123.2 (2.2.2.2)

Origin IGP, localpref 100, valid, external, best
```

R1 is using 172.12.123.2 as the next-hop to enter AS 234. If all values are left at their default, we could have 100 routes being advertised from AS 234 to AS 1 and the next-hop would remain the same.

We can configure R2 and R3 to send different MED values to R1, and the router sending the lowest MED would be the preferred next-hop. (The MED is a metric, and the lowest metric is always preferred.) We'll configure the MED attribute on both R2 and R3, sending a MED of 200 from R2 and 100 from R3.

```
R2(config)#route-map SET_MED_200 permit 10

R2(config-route-map)#set metric 200

R2(config-route-map)#router bgp 234

R2(config-router)#neighbor 172.12.123.1 route-map SET_MED_200 out

R3(config)#route-map SET_MED_100 permit 10

R3(config-route-map)#set metric 100

R3(config-route-map)#router bgp 234

R3(config-router)#neighbor 172.12.123.1 route-map SET_MED_100 out
```

After clearing the BGP table on R1, R1 will still see both next-hop addresses and will still consider both to be valid, but the path through R3 will be selected due to its lower metric.

Just keep in mind that the MED is actually a metric, and lower metrics are more

desirable in path selection. That will put you one step closer to passing the BSCI and earning your CCNP Certification!