Mokhtari (9831143) – Computer Networks 2 - HW 03

P14 from Chapter **5** of Kurose & Ross's Computer Networking, A Top-Down Approach, **8**th edition:

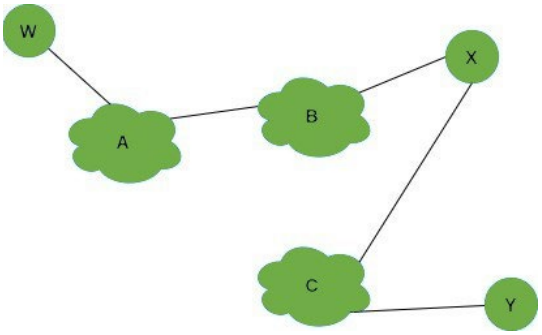
a) Router 3c learns about x from the eBGP routing protocol.
b) Router 3a learns about x from the iBGP routing protocol.
c) Router 1c learns about x from the eBGP routing protocol.
d) Router 1d learns about x from the iBGP routing protocol.

P15 from Chapter **5** of Kurose & Ross's Computer Networking, A Top-Down Approach, **8**th edition:

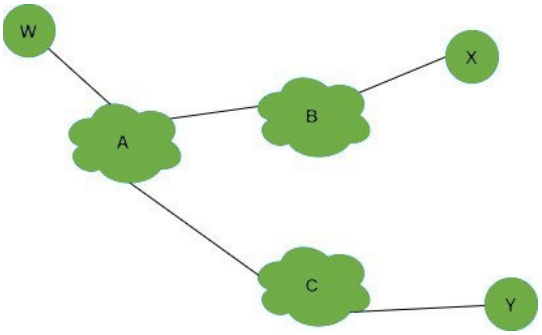
a) It will be equal to I1 since this interface begins the least expensive path from router 1d to gateway router 1c.
b) It will be configured similarly to I2. Although both routes (AS2 AS4 and AS3 AS4) have the same AS-PATH length, I2 begins on the path with the closest NEXT-HOP router, which is from 1d to gateway router 1b.
c) It will be set to I1. Since I1 is the start of the lease cost path from router 1d to gateway router 1c, and AS2 AS5 AS4 has a longer AS-PATH length than AS3 AS4, it begins the path that has the shortest AS-PATH so that it will be configured as I1.

P17 from Chapter **5** of Kurose & Ross's Computer Networking, A Top-Down Approach, **8**th edition:

The topological views of X and W are shown below.



Stub network X's view of the topology



Stub network W's view of the topology

In this case, X is unaware of the AC link as it does not receive an advertised route to W or Y that includes the AC link. This means that on the way to a destination, X does not receive any advertisements that include AS A and AS C.

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P19 from Chapter **5** of Kurose & Ross's Computer Networking, A Top-Down Approach, **8**th edition:

- The AS-paths A-W and A-V are two routes that A should advertise to B.
- Only the A-V route should be advertised by A to C.
- The AS paths B-A-W, B-A-V, and A-V are received at C.

P20 from Chapter **5** of Kurose & Ross's Computer Networking, A Top-Down Approach, **8**th edition:

Yes, Z can directly implement this policy using the BGP protocol, and here is why: Peering has been agreed upon between AS X and AS Y as well as between AS Y and AS Z. The BGP protocol enables AS Z to propagate subnet reachability information to all routers through the handling of BGP route advertisements by each AS. Although there is a link to YZ, AS Y should notify AS X that it does not have a path to Z. AS X never forwards traffic because it is unaware that AS Y has a route to AS Z.
So, I have proved that AS Z can efficiently transport all of Y's traffic!

P21 from Chapter **5** of Kurose & Ross's Computer Networking, A Top-Down Approach, **8**th edition:

(1) Overhead:
Request-response has more overhead because the manager needs to send two messages for each piece of information they receive: the poll and the response. Trapping, on the other hand, only sends one message to the sender.

(2) Notification Time:
An event with trapping will immediately notify the manager. On the other hand, polling will take half a polling cycle between when the event occurs and when the manager notifies the event has occurred.

(3) Robustness:
Trapping is less reliable because the managed device will not send it again if it goes missing. However, polling can be repeated if necessary.