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Assignment  
Unit - III

Scenario :

A multinational uses BGP (Border Gateway Protocol) with multiple ISPs to ensure route redundancy.

Parameters :-

1. AS-PATH comparison :

BGP uses AS-PATH length to select the best path. Shorter paths are preferred as they indicate fewer autonomous systems to traverse.

2. Loop prevention :

BGP prevents routing loops by rejecting any route advertisement containing its own AS number in the AS-PATH attribute.

3. Traffic selection :

Based on policies, BGP allows administrators to control how traffic flows in and out using attributes like AS-PATH, Local preference, MED, etc.



Q1) If one path has AS-PATH 200 300 and another has 200 400 500, which will BGP prefer and why?

- Path 1 : 200 300 → AS-PATH length = 2
- Path 2 : 200 400 500 → AS-PATH length = 3

BGP Decision :

- BGP selects routes with shorter AS-PATHS, as it assumes they represent a more efficient and faster route.
- Therefore, BGP will prefer path (200 300) because it is shorter.

Conclusion :

Path with AS-PATH 200 300 is preferred due to its shorter length, enhancing efficiency and reducing potential delay.

Q2) If route filtering removes 15 out of 40 prefixes, how many remain?

- Total prefixes received : 40
- Filtered prefixes : 15
- Remaining prefixes =  $40 - 15 = 25$

Conclusion :

25 prefixes remain after route filtering is applied.

3. What is the minimum AS-PATH length for loop detection?

→ AS-PATH is used by BGP to detect loops.

→ If a router sees its own AS number in the AS-PATH, it concludes a loop exists and discards the route.

→ Even if the AS-PATH contains only one AS number (length=1) loop detection is still possible.

Conclusion :-

Minimum AS-PATH length required for loop detection is 1