

# ROUTING TOPOLOGY

- OSPF : -

This one is a link state protocol. It depends on IP. It uses Dijkstra algorithm ( an algorithm for finding the shortest paths between nodes in a graph). It uses interface bandwidth to decide interface cost. OSPF router creates neighbour and it uses hello messages to create and maintain the neighbourhood. OSPF exchange special messages named as **Link State Advertisement (LSA)** instead of exchanging routes directly.

- Any particular OSPF router at first creates a **Link State Database (LSDB)** and then generates the routing table from it.

# ROUTING TOPOLOGY

- OSPF uses flooding triggered update, means it will send fresh LSA information to the every possible neighbour only if there is a network change occurs. OSPF divides its routing domain into small areas. Area means, all the OSPF routers which have the same link state database. OSPF follows a hierarchical concept for area. Area 0 is always the backbone area and all the other area can only communicate through area 0. The entire OSPF routing domain connects to some other routing domain only by area 0. The router which connects any other area to the backbone area is called Area Border Router (ABR) for the area. The router which connects the OSPF routing domain to some other external domain is called Autonomous System Boundary Router (ASBR). When two or more OSPF router are present in a multi-access switched network then routers will select any particular router

# ROUTING TOPOLOGY

as Designated Router (DR) for the that network, and another router is selected as the Backup Designated Router (BDR) and the rest of the routers are DROthers. If the present DR fails then the BDR becomes the next DR and another suitable DROthers will become next BDR. This selection first considers OSPF interface priority. OSPF interface priority ranges between 0 – 255. Highest priority router is the DR, next highest is BDR. Default priority is 1. If all the OSPF router have the same priority then router having the highest router ID is DR, next is BDR. The DROthers will create complete neighbourhoods only with the DR and BDR. So, during any flooding triggered updates the DROthers sends there LSA information to the DR and BDR. OSPF uses 224.0.0.5 and 222.0.0.6 as multicast address for updates. Its Ad value is 110.

# ROUTING TOPOLOGY

- OSPF :-

Standard Protocol : -

Link state Protocol : -

Uses Shortest path (Dijkstra algorithm ) : -

Unlimited hop count : -

Metric is cost : -

AD Value 110

Classless

Supports VLSM : -

Supports only equal cost load balancing

Introduces the concept of Area's to ease management and traffic control

# ROUTING TOPOLOGY

- OSPF timers
- Hello Timer :- 10 seconds
- Hold Down Timer :- 40 seconds

# ROUTING TOPOLOGY

- Advantages of OSPF
  - > Unlimited Hop counts
  - > Metric is cost ( $\text{cost} = 10^8 / \text{Bandwidth}$ )
  - > It supports VLSM
  - > Faster recovery of route path
  - > Trigger/Incremental update (Updates are sent during network change)
- Disadvantage of OSPF
  - > Only supports equal cost load balancing
  - > Works only on bandwidth(Like, doesn't check hop)





END OF DAY 14

# NETWORKING (CCNA TRAINING)

INDIAN CYBER SECURITY SOLUTIONS

[HTTP://INDIANCYBERSECURITYSOLUTIONS.COM](http://indiancybersecuritysolutions.com) (CONTACT - +919831165046)