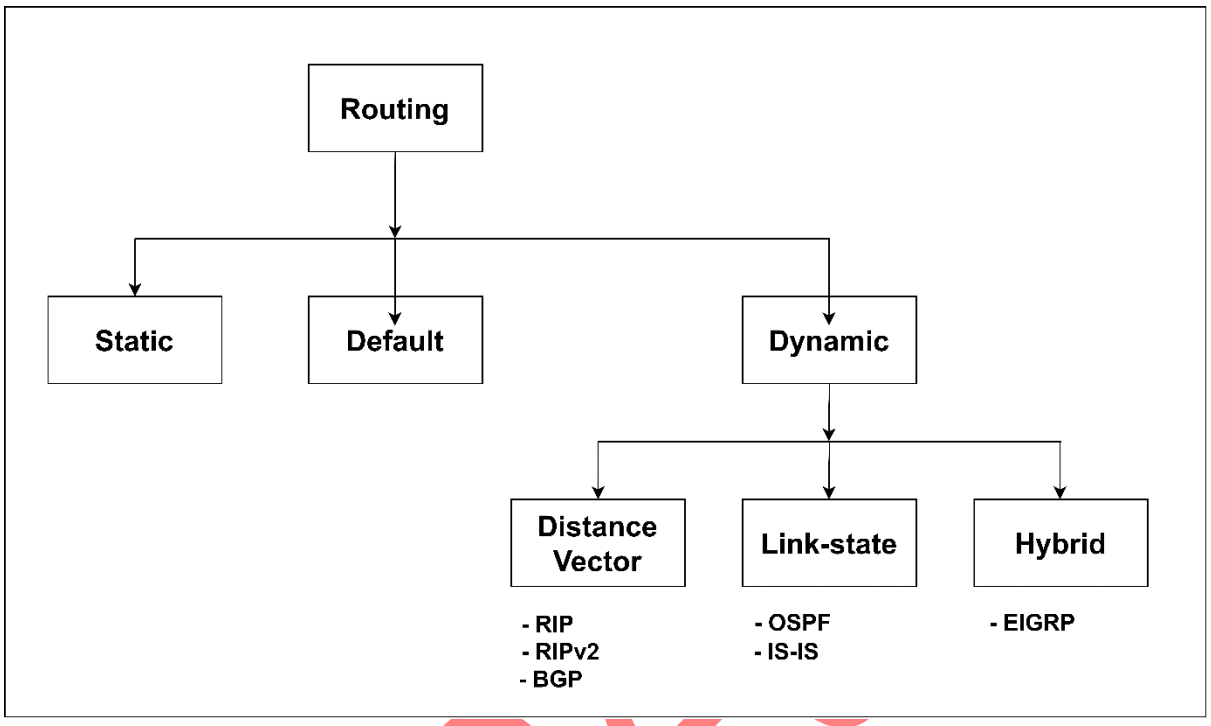
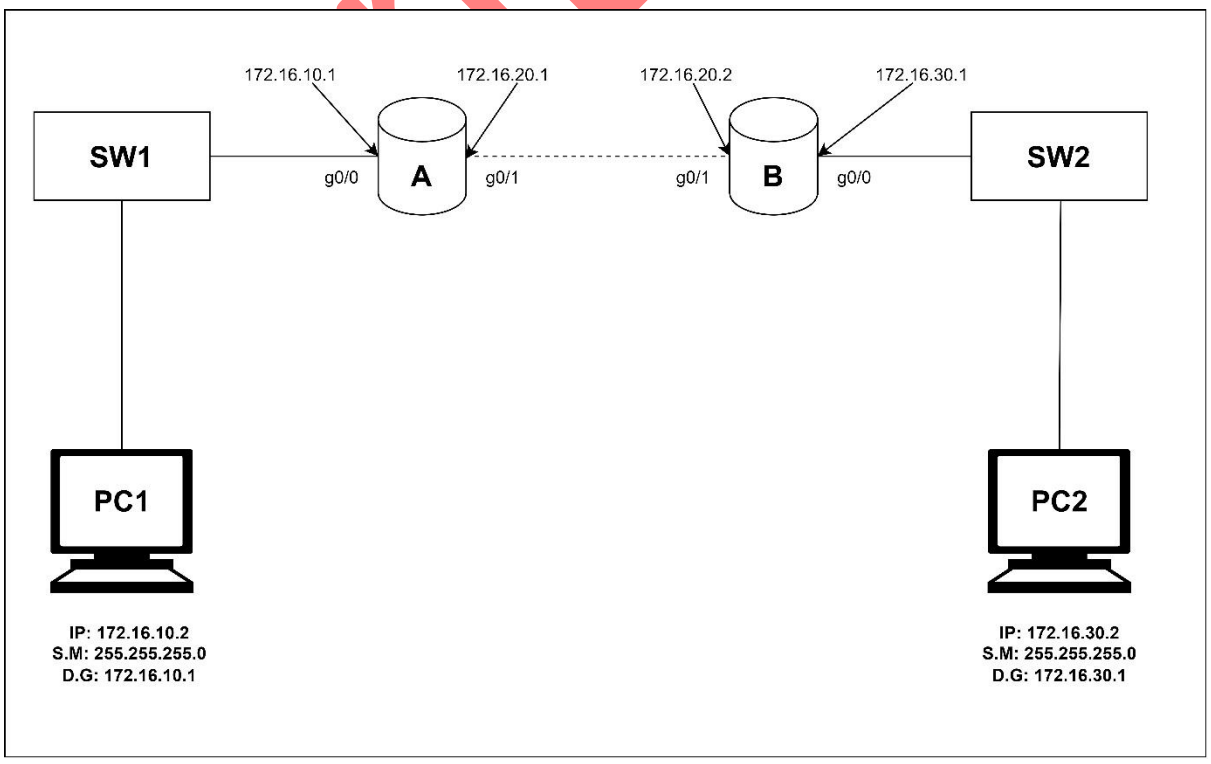
Routing



Consider the following basic scenario for every routing protocol



1. Static routing:

Syntax:

Router> enable
Router# configure terminal
Router(config)# ip route [destination network] [subnet mask] [next hop address/exit-interface]

Example: Considering above diagram, the commands will be on

Router A:

A(config)# ip route 172.16.30.0 255.255.255.0 172.16.20.2

Router B:

B(config)# ip route 172.16.10.0 255.255.255.0 172.16.20.1

2. Default routing:

The default route (0.0.0.0/0 in IPv4 or ::/0 in IPv6) is the entry in the routing table that is used when there are no more specific routes. Only one interface.

Syntax:

Router> enable
Router# configure terminal
Router(config)# ip route 0.0.0.0 0.0.0.0 [next hop address/exit-interface]

Example: Considering above diagram, the commands will be on

Router A:

A(config)# ip route 0.0.0.0 0.0.0.0 172.16.20.2

Router B:

B(config)# ip route 0.0.0.0 0.0.0.0 172.16.20.1

Show Commands:

Router# show ip route

3. Dynamic routing:

- RIP (Routing Information Protocol)

Syntax:

Router> enable
Router# configure terminal
Router(config)# router rip
Router(config-router)# network [classfull value of directly connected networks]
Router(config-router)# exit

Example: Considering above diagram, the commands will be on

Router A:

A(config)# router rip
A(config-router)# network 172.16.0.0
A(config-router)# exit

Router B:

B(config)# router rip
B(config-router)# network 172.16.0.0
B(config-router)# exit

- RIPv2

Syntax:

Router> enable
Router# configure terminal
Router(config)# router rip
Router(config-router)# version 2
Router(config-router)# network [classfull value of directly connected networks]
Router(config-router)# exit

Show commands:

Router# show ip route
Router# show ip rip database

- OSPF (Open Shortest Path First)

Syntax:

Router> enable
Router# configure terminal
Router(config)# router ospf [process_ID 1-65535]
Router(config-router)# network [network_ID] [wildcard_mask] area [area_number 0-4294967295]
Router(config-router)# exit

Example: Considering above diagram, the commands will be on

Router A:

A(config)# router ospf 100
A(config-router)# network 172.16.10.0 0.0.0.255 area 0
A(config-router)# network 172.16.20.0 0.0.0.255 area 0
A(config-router)# exit

Router B:

B(config)# router ospf 10
B(config-router)# network 172.16.20.0 0.0.0.255 area 0
B(config-router)# network 172.16.30.0 0.0.0.255 area 0
B(config-router)# exit

Process ID can be anything on every router.

Show commands:

Router# show ip route
Router# show ip ospf database
Router# show ip ospf neighbor

- **EIGRP (Enhanced Interior Gateway Routing Protocol)**

Syntax:

Router> enable
Router# configure terminal
Router(config)# router eigrp [autonomous-system-number]
Router(config-router)# network [classfull_value_network]
Router(config-router)# exit

Example: Considering above diagram, the commands will be on

Router A:

A(config)# router eigrp 100
A(config-router)# network 172.16.0.0
A(config-router)# exit

Router B:

B(config)# router eigrp 100
B(config-router)# network 172.16.0.0
B(config-router)# exit

Autonomous system number should be same on every router.

Show commands:

Router# show ip route
Router# show ip eigrp topology
Router# show ip eigrp neighbor