CO323 - Lab 04
Dynamic Routing - OSPF

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1. Explain the terms DR and BDR. What are the criteria/parameters used during the election of DR and BDR within an OSPF network?

-OSPF configured networks share the information about their link states with LSAs. If one change such as breaking of a link or one router shut offs , then all of the routers try to send that information to all the other routers. This can be messy and can make a LSA flood. To resolve this issue two special routers called DR and BDR are selected in the network.

-DR(Designated Router): collection and distribution point for LSAs sent and received.

-BDR(Backup Designated Router): Do the same job that the DR does in the event where DR fails.

-There are two main parameters to elect the DR and BDR of a network.

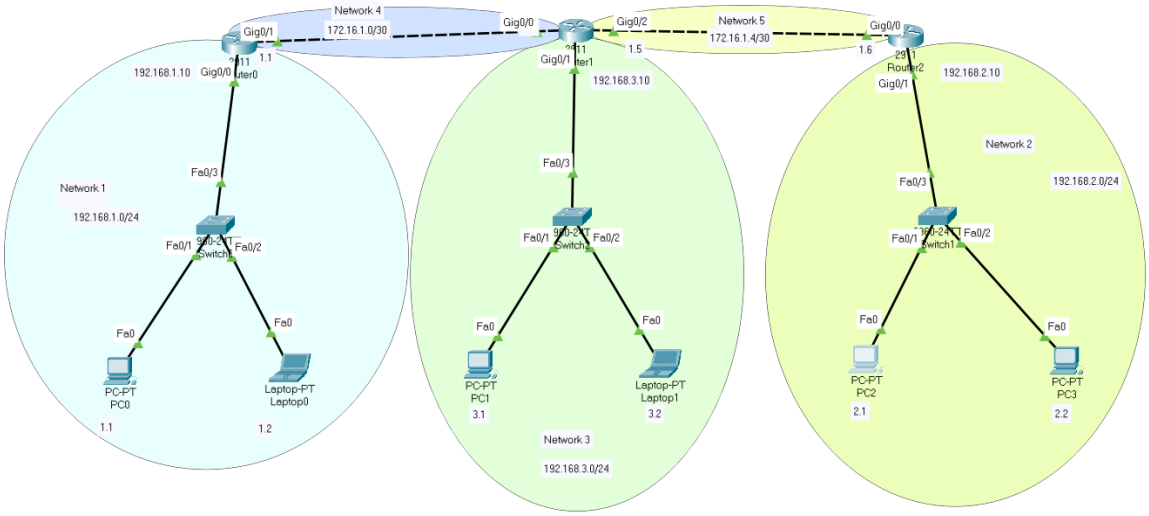
1.Routers with the highest and second highest OSPF interface priority get to be the DR and BDR. By default , all the routers have the same priority of 1.

2.Routers with the highest ip address selects the DR and BDR. This happens when the priority of the routers are the same.

A. Configure OSPF

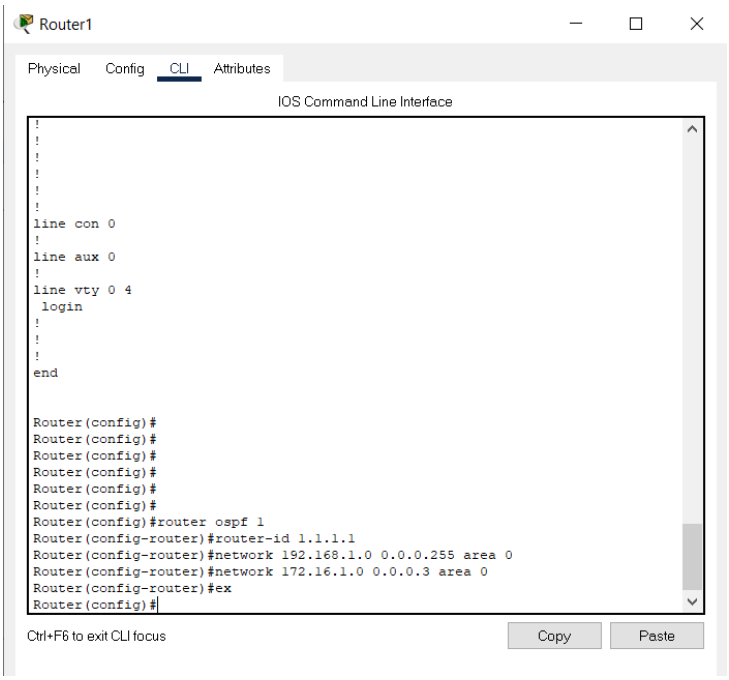
a. Draw the topology given in Figure 01, in Packet Tracer using appropriate networking and end devices.

b. Assign IP addresses to each PC/router ports considering Table 01

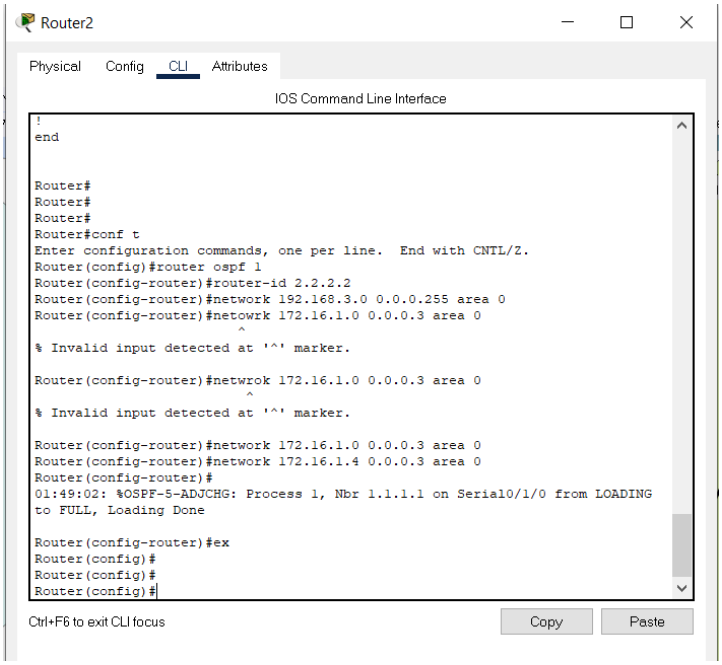


c. Configure OSPF in each of the routers accordingly (Configure each router with router ID or loopback IP addresses according to the data provided in Table 02)

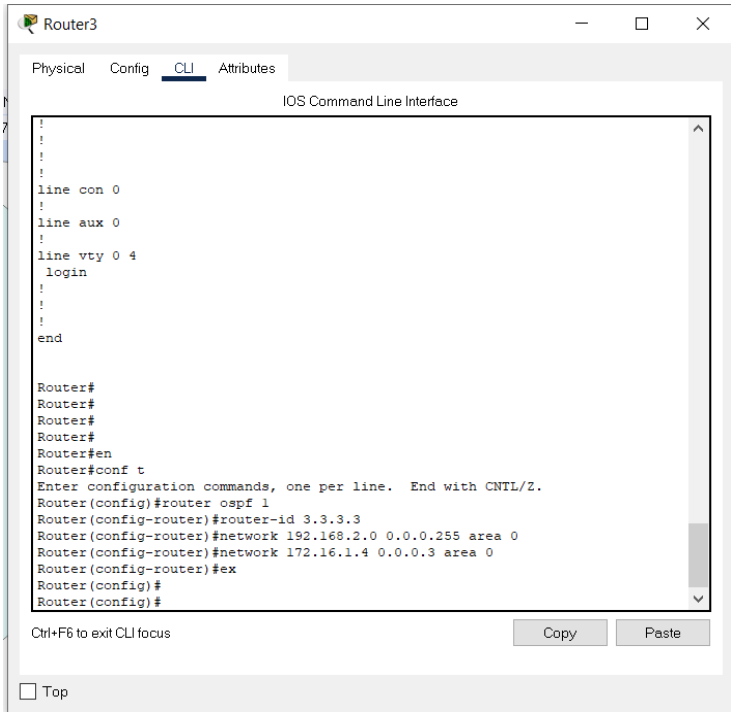
*Router 1:



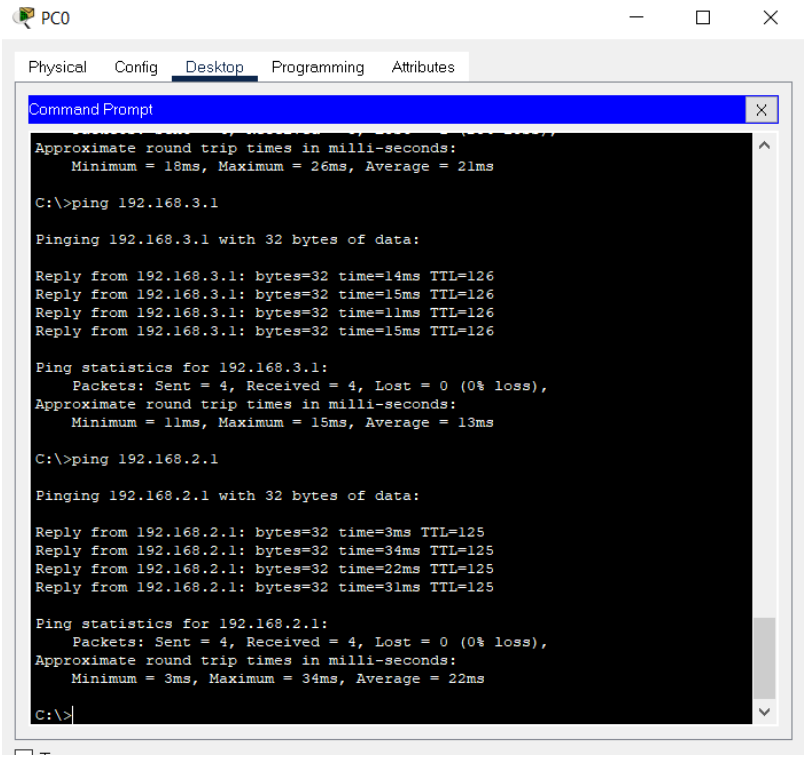
*Router 2:



*Router 3



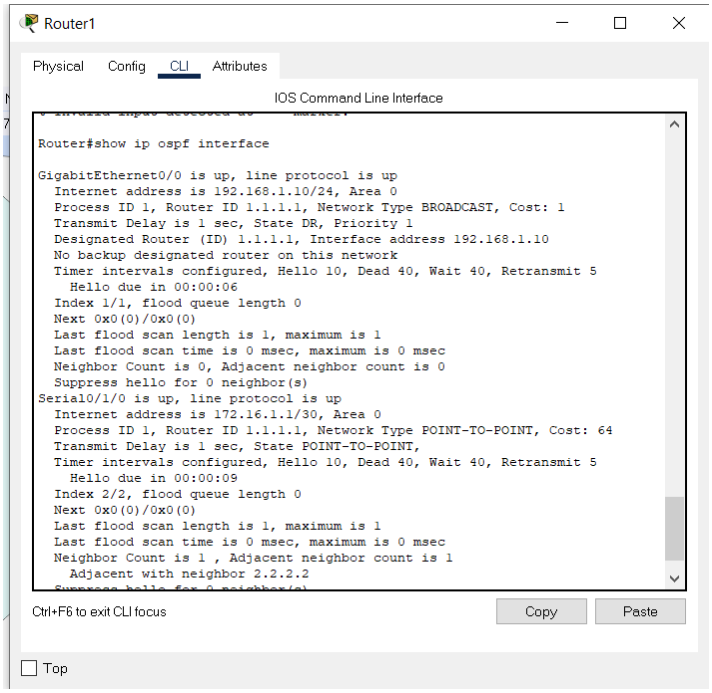
d. Ping from one of the PCs in network 1 to another PCs in network 2 and 3.



B. Network Verification

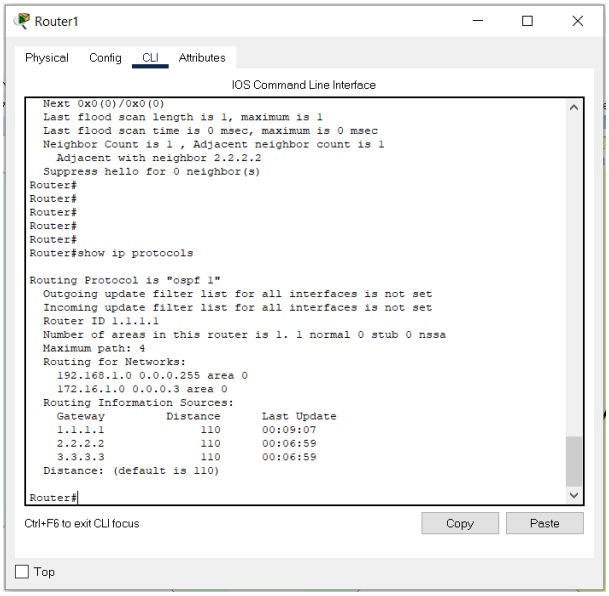
a. Use following commands to verify the implemented OSPF network. Include CLI screenshots for each command and mention what kind of information you have been retrieved via each command briefly.

i. #show ip ospf interfaces



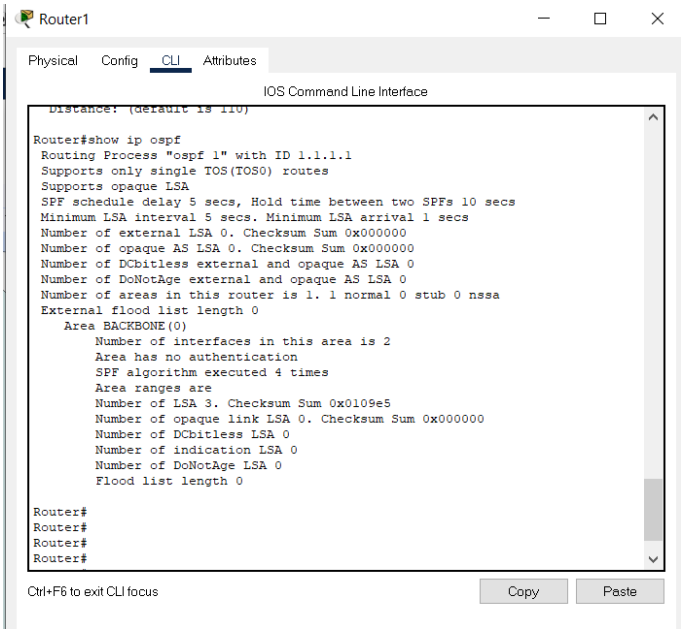
-We can use this command to get the general ospf network information.
-We can get each ip assigned to each interface of the router, area number, router id , state(DR,BDR or DRother) ,DR router id, BDR router id , Hello message timer intervals.

ii. #show ip protocols



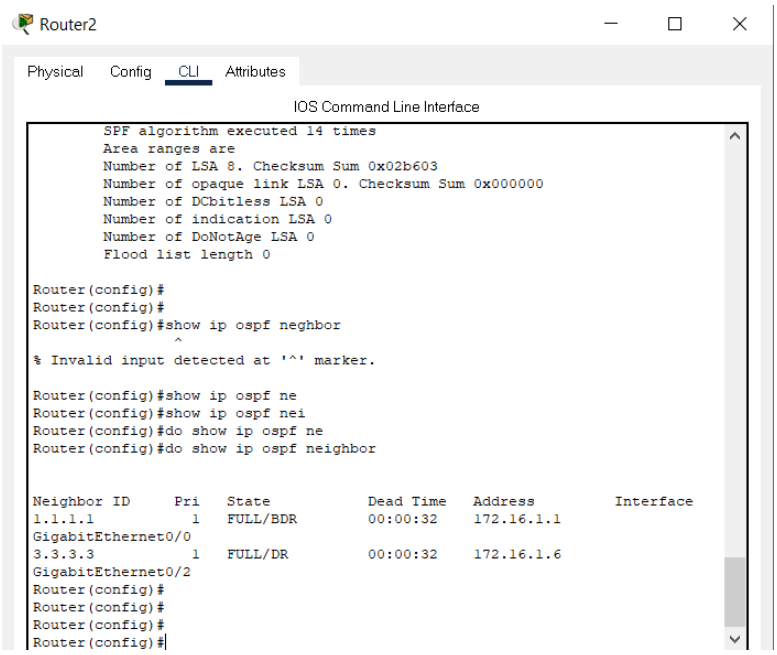
-This command can be used to get the currently configured dynamic routing protocol information of the router.We can see the priority id of the ospf protocol , router id, routing networks which are associated with the router , distances to each router and their router ids, last update time.

iii. #show ip ospf



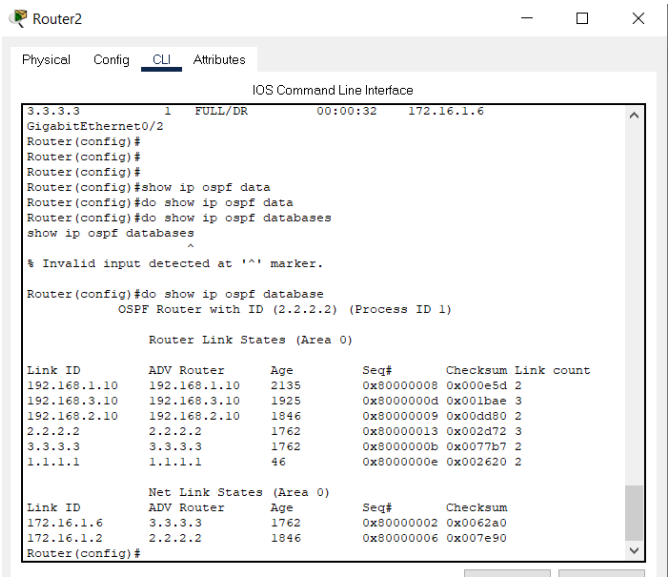
-We can use this to view general information of the ospf protocol.We can see the router id and other general LSA information about the protocol.

iv. #show ip ospf neighbor



-We can use this to view neighbor information which is directly connected to the router.We can obtain neighbor id, interface ip address, interface of the router which is connected to the neighbor , dead time and the state of the neighbour.

v. #show ip ospf database



-We can use this command to get information of all the routers in the network segment and participate in the ospf protocol.We can grab information such as router id of each router , Age / time since the initialization of the ospf protocol, sequence and error calculating checksum value of each router.