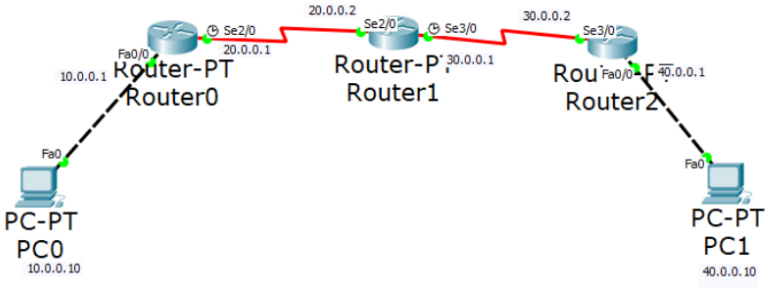
Experiment- 7

Aim: Configure OSPF routing protocol

Topology:



Router2

Physical | Config | CLI

IOS Command Line Interface

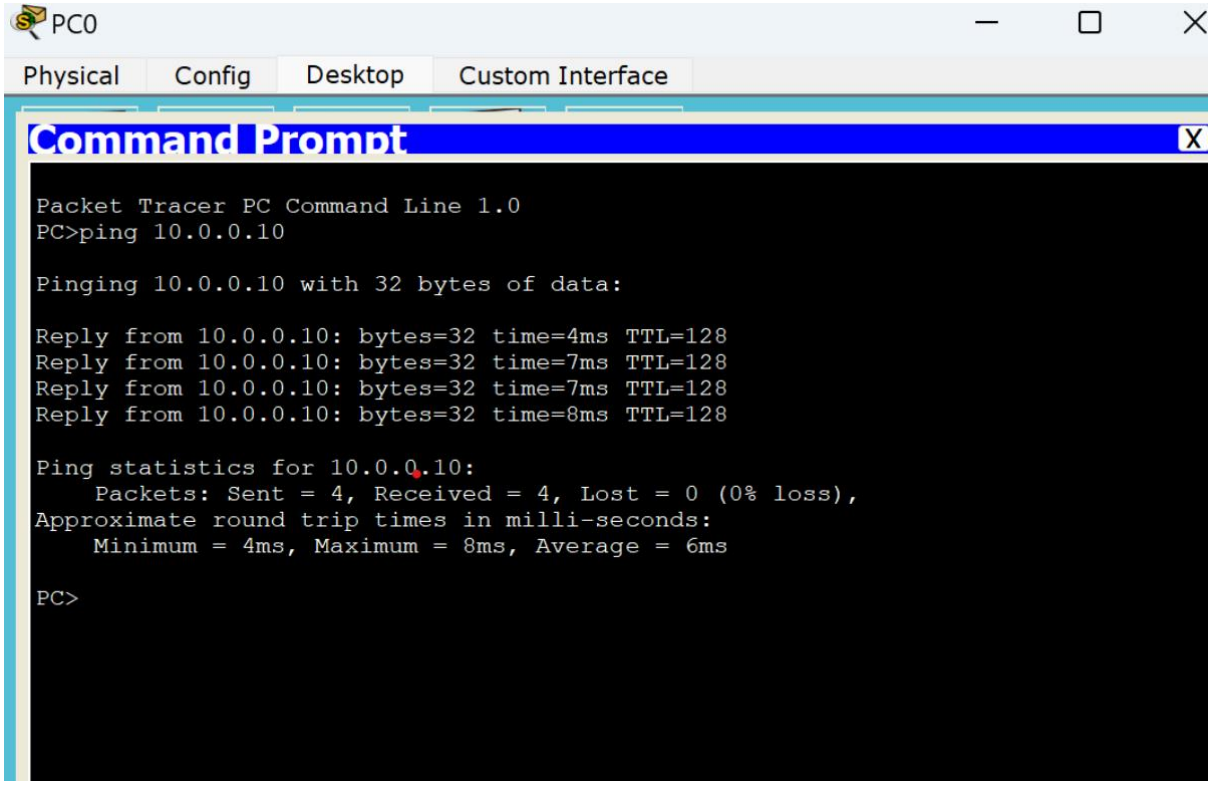
```
Loading Done


Router>enable
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

O IA 10.0.0.0/8 [110/129] via 30.0.0.1, 00:00:33, Serial3/0
O IA 20.0.0.0/8 [110/128] via 30.0.0.1, 00:00:43, Serial3/0
     30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       30.0.0.0/8 is directly connected, Serial3/0
C       30.0.0.1/32 is directly connected, Serial3/0
C    40.0.0.0/8 is directly connected, FastEthernet0/0
C    172.16.0.0/16 is directly connected, Loopback0
Router#
```

Copy | Paste

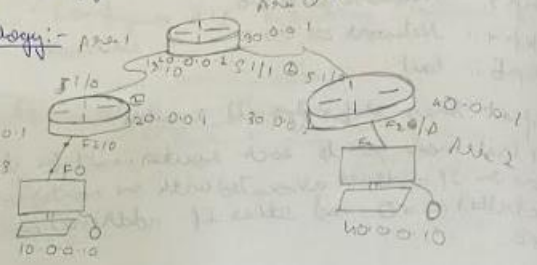

PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
X
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.10
Pinging 10.0.0.10 with 32 bytes of data:
Reply from 10.0.0.10: bytes=32 time=4ms TTL=128
Reply from 10.0.0.10: bytes=32 time=7ms TTL=128
Reply from 10.0.0.10: bytes=32 time=7ms TTL=128
Reply from 10.0.0.10: bytes=32 time=8ms TTL=128
Ping statistics for 10.0.0.10:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 4ms, Maximum = 8ms, Average = 6ms
PC>

27/7/23

Week - 7

Aim :- Configure OSPF routing protocol

Topology :-



Procedure :

→ create the topology using 3 routers & 2 PC's
→ Configure the PC's with IP address and gateway
→ Configure each of the routers acc. to IP address given.
→ Execute the following commands.
Router → CLI → config mode.
Step 1 :- Router ospf 1
step 2 :- router-id 1.1.1.1
step 3 :- Network 10.0.0.0
step 4 : Network 20.0.0.0
step 5 : exit
→ Repeat these commands for other routers.
→ Then type show ip route
→ Next to set loopbacks
step 1 : (in config if mode) interface loopback 0
step 2 : ip address 17.2.16.1 252.255.255.0.0
step 3 : No shut down
→ Repeat these step 3 for other 2 routers

→ Create virtual link bfw R1, R2 by this we create a virtual link ~~btw R1~~ to connect to area0.

⇒ In config mode of R1
step 1: router ospf 1
step 2: area 1 virtual-link 2.2.2.2
step 3: #enter/exit
In route 2 config - mode
step 1: #router ospf 1
step 2: area 1 virtual link 1.1.1.1
step 3: exit
step 4: #

→ check the routing table, show ip route
→ Lastly ping messages from PC to PC

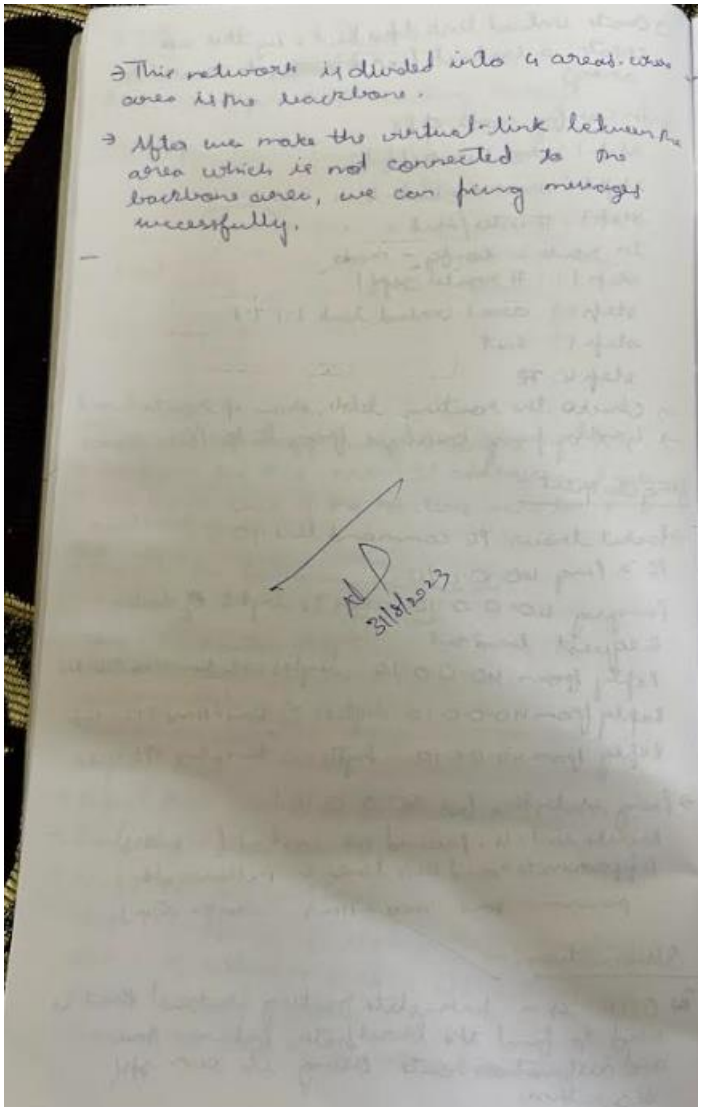
Ping output :-

→ Packet Tracer PC command line 1.0
PC > Ping 40.0.0.10
Pinging 40.0.0.10 with 32 bytes of data
Request timed out
Reply from 40.0.0.10: bytes = 32 time = 11ms TTL = 125
Reply from 40.0.0.10: bytes = 32 time = 11ms TTL = 125
Reply from 40.0.0.10: bytes = 32 time = 8ms TTL = 125

⇒ Ping statistics for 40.0.0.10;
Packets sent = 4, Received = 3, Lost = 1 (25% loss)
Approximate round trip times in milliseconds
minimum = 8ms max = 11ms Avg = 10ms

Observation :-

* OSPF is a link-state routing protocol that is used to find the best path between source and destination route using its own spf Algorithm.

→ This network is divided into 4 areas. area 0 is the backbone.

→ After we make the virtual-link between the area which is not connected to the backbone area, we can ping messages successfully.