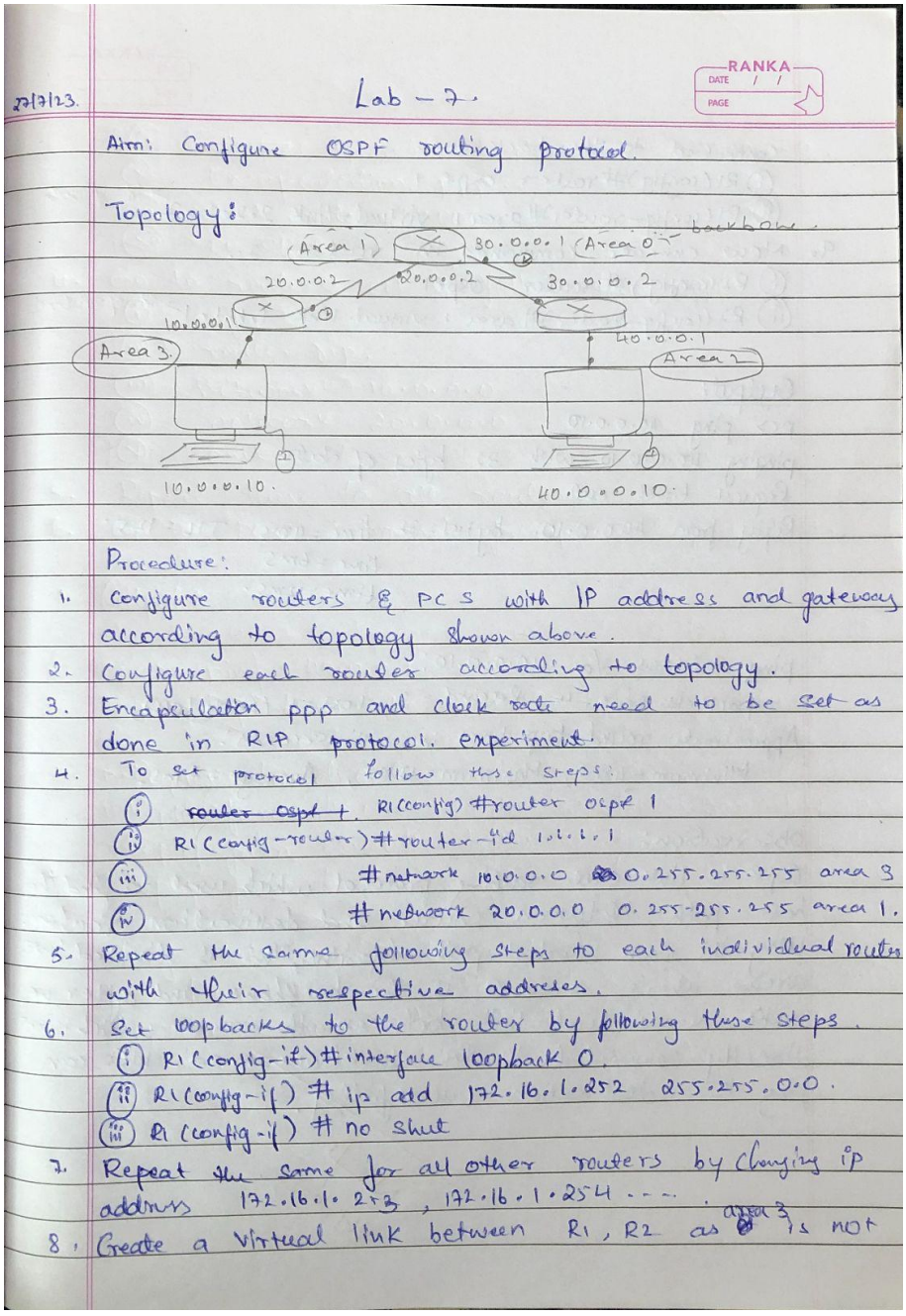
Aim: Configure OSPF routing Protocol

Observation:



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Aim: Configure OSPF routing protocol.

Topology:

Procedure:

1. Configure routers & PCs with IP address and gateway according to topology shown above.
2. Configure each router according to topology.
3. Encapsulation ppp and clock rate need to be set as done in RIP protocol. experiment.
4. To set protocol follow these steps:
   - (i) ~~router ospf 1~~ R1(config) #router ospf 1
   - (ii) R1(config-router) #router-id 1.1.1.1
   - (iii) #network 10.0.0.0 0.255.255.255 area 3
   - (iv) #network 20.0.0.0 0.255.255.255 area 1.
5. Repeat the same following steps to each individual routers with their respective addresses.
6. Set loopbacks to the router by following these steps.
   - (i) R1(config-if) #interface loopback 0.
   - (ii) R1(config-if) # ip add 172.16.1.252 255.255.0.0.
   - (iii) R1(config-if) # no shut
7. Repeat the same for all other routers by changing ip address 172.16.1.253, 172.16.1.254 ....
8. Create a virtual link between R1, R2 as area 3 is not

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connected to the backbone

(i) R1(config)# router ospf 1

(ii) R1(config-router)# area 1 virtual-link 2.2.2.2 → id of router

9. Now execute commands in router 2.

(i) R2(config)# router ospf 1

(ii) R2(config-router)# area 1 virtual-link 1.1.1.1 → id of router

Output:

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=4ms TTL=125

time=6ms

time=12ms.

ping statistics for 40.0.0.10:

packets: sent=4, Received=3, Lost=1 (25% loss),

Approximate round trip times in milli-seconds:

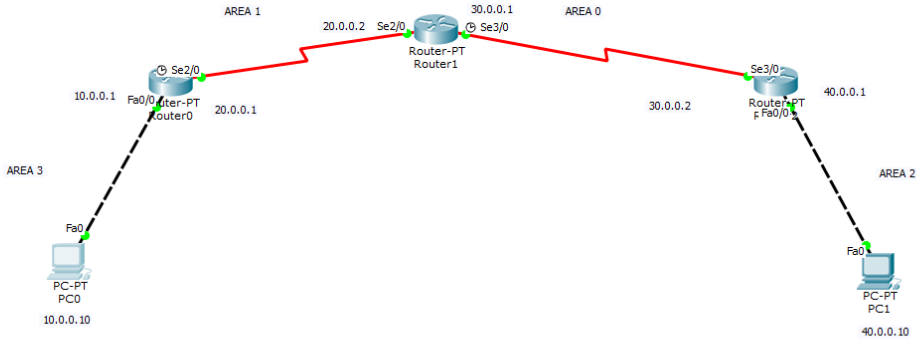
Minimum=4ms, Maximum=12ms, Average=7ms.

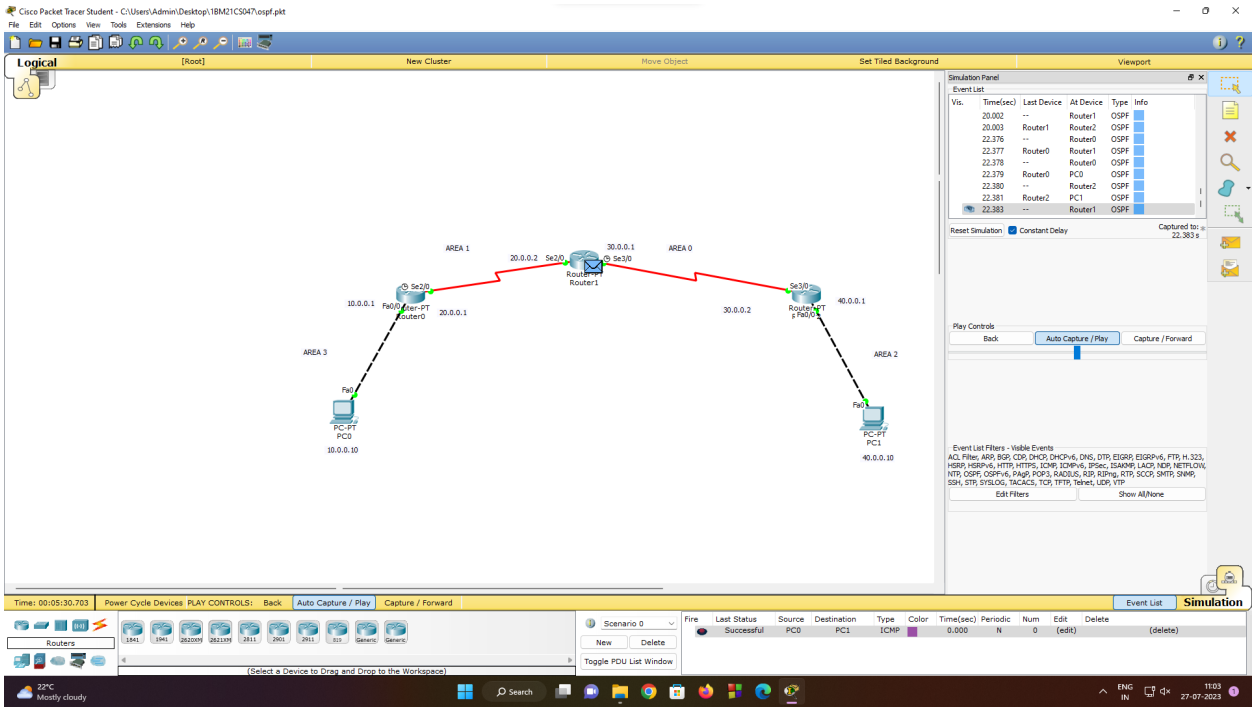
Observation:

Ospf is link state routing protocol which used to find the best path between source and destination router. Using its own Shortest path algorithm. This is divided into areas where area 0 is the backbone and after we make a virtual link between the area which is not directly connected to the backbone area. We can ping the destination successfully.

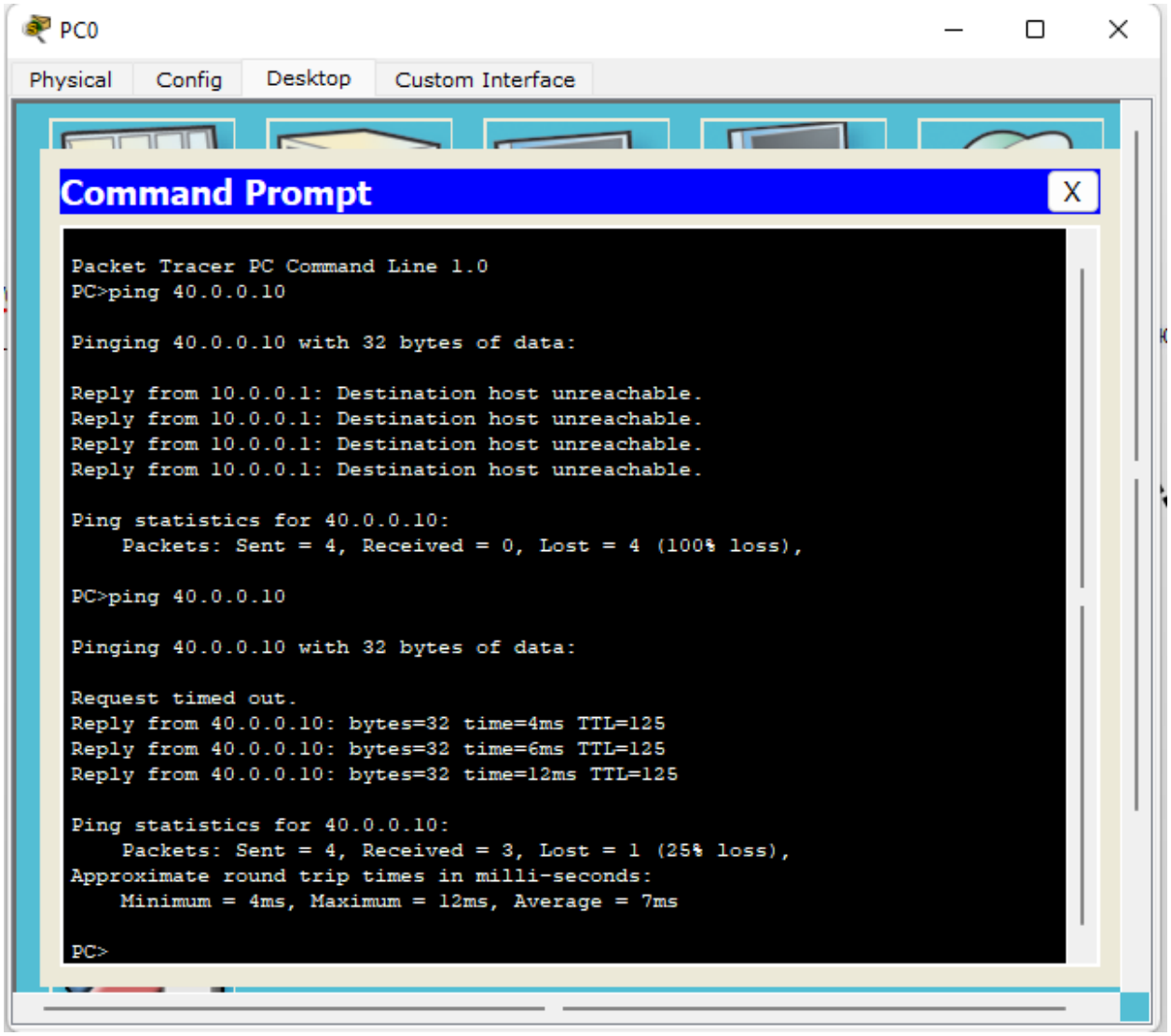
26/12/2023.

Topology:


AREA 1
20.0.0.2
Se2/0
30.0.0.1
Se3/0
AREA 0
Router-PT
Router1
Se2/0
10.0.0.1
Fa0/0
Router-PT
Router0
20.0.0.1
Se3/0
30.0.0.2
Router-PT
Fa0/0
40.0.0.1
AREA 3
AREA 2
Fa0
PC-PT
PC0
10.0.0.10
Fa0
PC-PT
PC1
40.0.0.10


Cisco Packet Tracer Student - C:\Users\Admin\Desktop\1BM21CS047\ospf.pkt
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Simulation Panel
Event List
Vis. Time(sec) Last Device At Device Type Info
20.002 -- Router1 OSPF
20.003 Router1 Router2 OSPF
22.376 -- Router0 OSPF
22.377 Router0 Router1 OSPF
22.378 -- Router0 OSPF
22.379 Router0 PC0 OSPF
22.380 -- Router2 OSPF
22.381 Router2 PC1 OSPF
22.383 -- Router1 OSPF
Reset Simulation
Constant Delay
Captured to: 22.383 s
Play Controls
Back
Auto Capture / Play
Capture / Forward
Event List Filters - Visible Events
Edit Filters
Show All/None
AREA 1
20.0.0.2
Se2/0
30.0.0.1
Se3/0
AREA 0
Router-PT
Router1
Se2/0
10.0.0.1
Fa0/0
Router-PT
Router0
20.0.0.1
Se3/0
30.0.0.2
Router-PT
Fa0/0
40.0.0.1
AREA 3
AREA 2
Fa0
PC-PT
PC0
10.0.0.10
Fa0
PC-PT
PC1
40.0.0.10
Time: 00:05:30.703
Power Cycle Devices
PLAY CONTROLS:
Back
Auto Capture / Play
Capture / Forward
Event List
Simulation
Routers
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete
Successful PC0 PC1 ICMP 0.000 N 0 (edit) (delete)
(Select a Device to Drag and Drop to the Workspace)
22°C
Mostly cloudy
Search
ENG
IN
11:03
27-07-2023

Output:


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
X
Packet Tracer PC Command Line 1.0
PC>ping 40.0.0.10
Pinging 40.0.0.10 with 32 bytes of data:
Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.
Ping statistics for 40.0.0.10:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
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=4ms TTL=125
Reply from 40.0.0.10: bytes=32 time=6ms TTL=125
Reply from 40.0.0.10: bytes=32 time=12ms TTL=125
Ping statistics for 40.0.0.10:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 4ms, Maximum = 12ms, Average = 7ms
PC>