Aim-5

5. Configure RIP routing protocol in Routers

Topology:

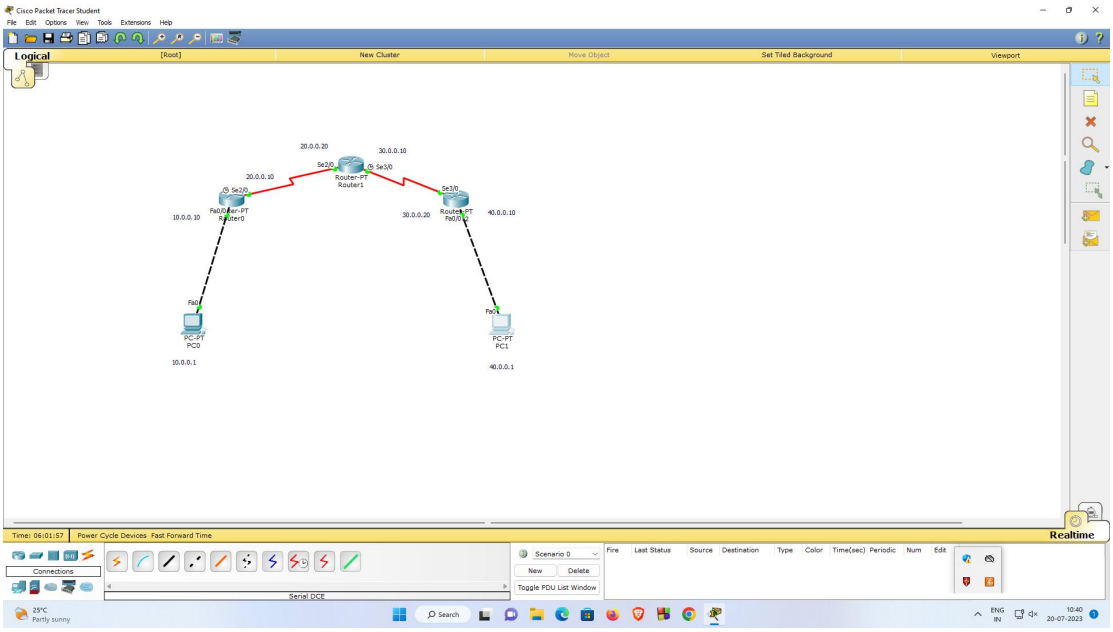


Fig 1: Topology

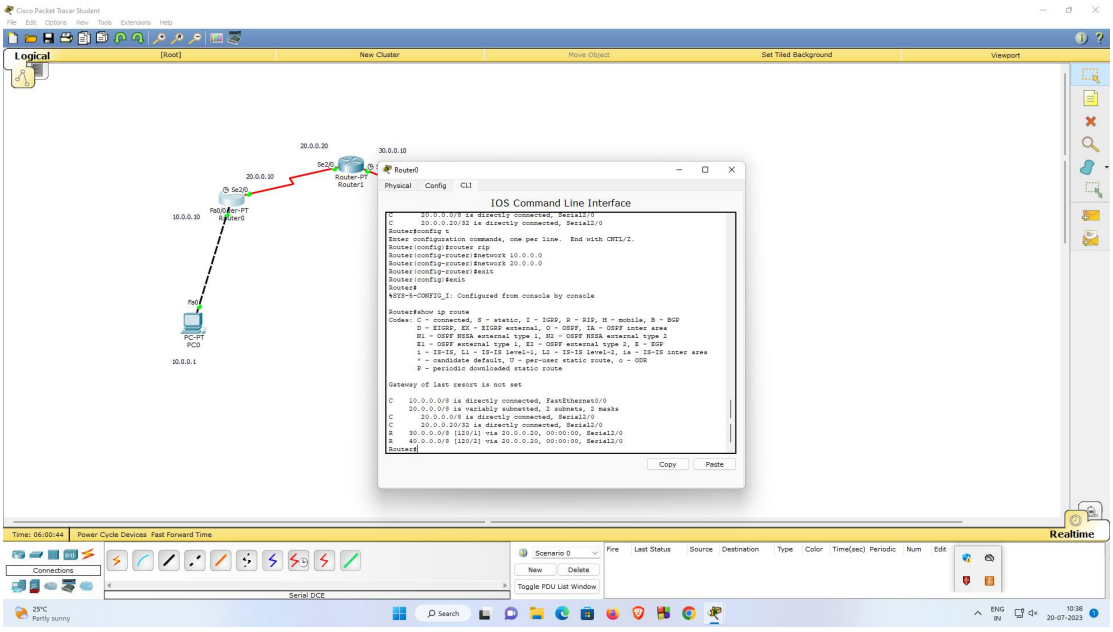


Fig 2: Router 0 networks and next hop ip addresses

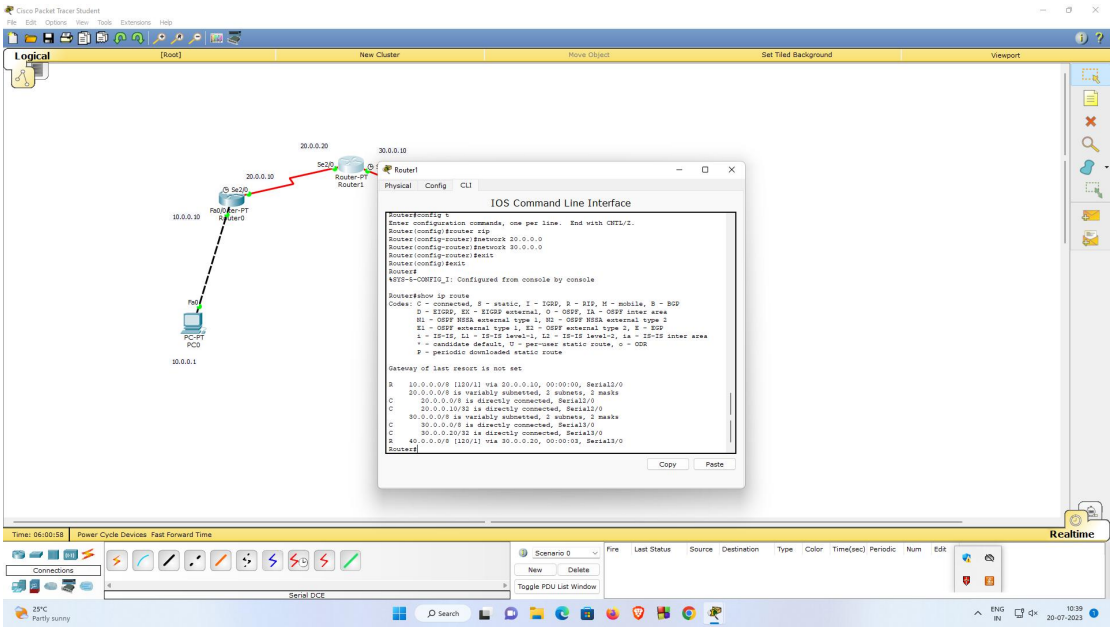


Fig 3: Router 1 networks and next hop ip addresses

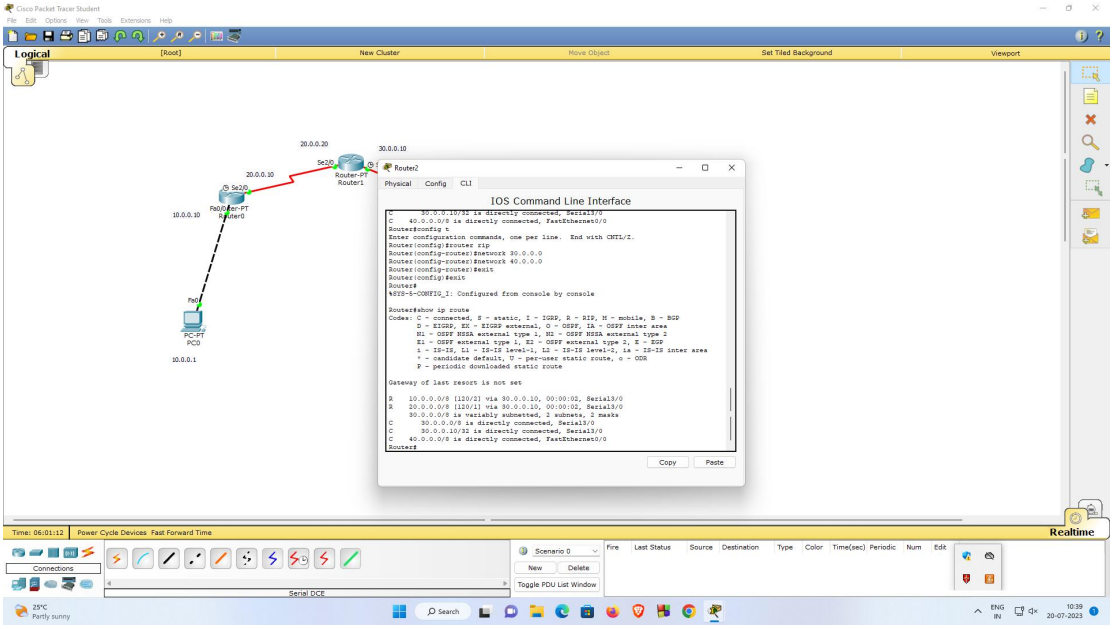
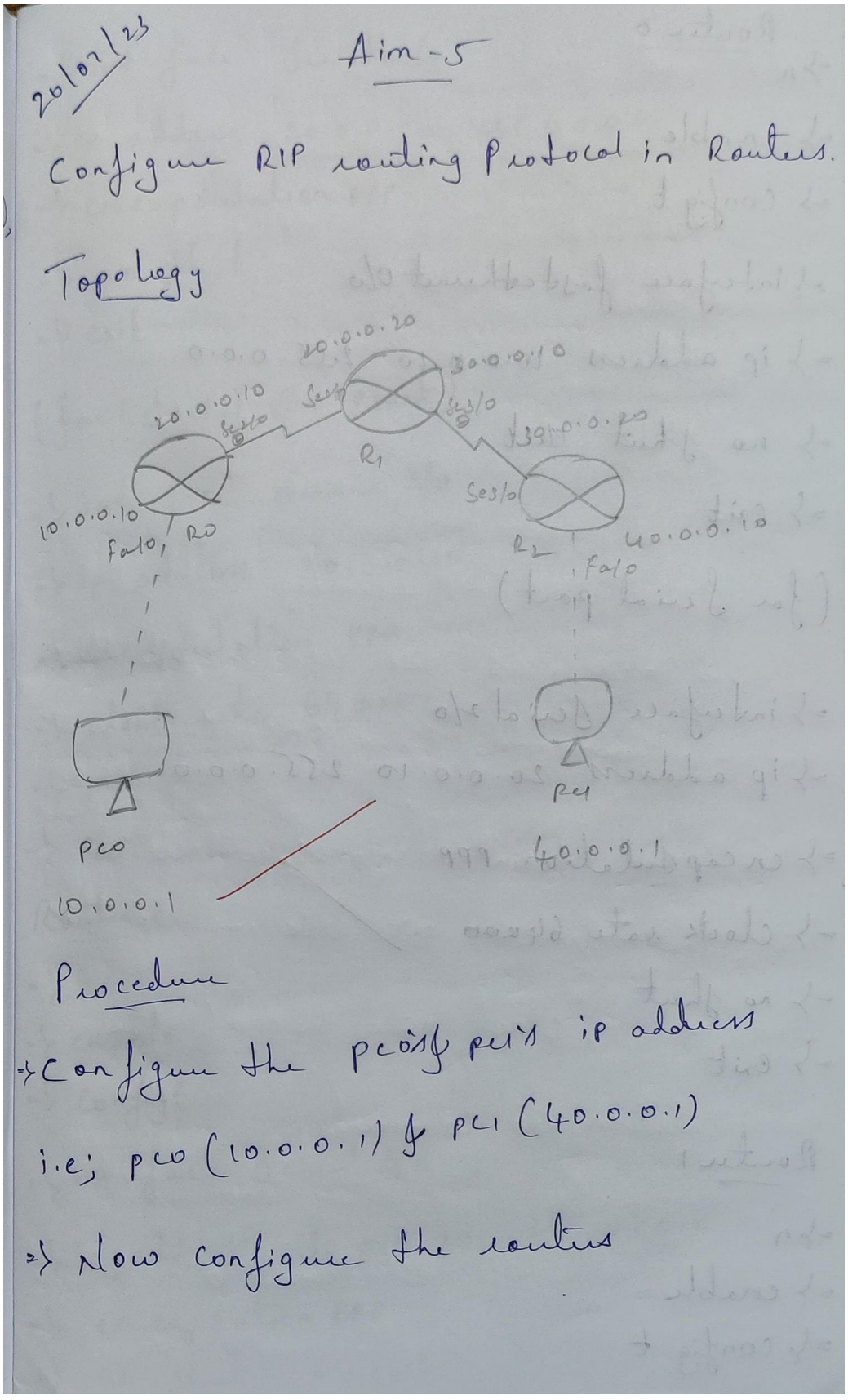


Fig 4: Router 2 networks and next hop ip addresses

Procedure and Observation:



Router 0

-> en
-> enable
-> config t
-> interface fastethernet 0/0
-> ip address 10.0.0.10 255.0.0.0
-> no shut click
-> exit

(for Serial port)

-> interface Serial 2/0
-> ip address 20.0.0.10 255.0.0.0
-> encapsulation PPP
-> clock rate 64000
-> no shut
-> exit

Router 1

-> en
-> enable
-> config t

-> interface Serial 2/0
-> ip address 20.0.0.20 255.0.0.0
-> encapsulation PPP
-> no shut
-> exit

(for Serial 3/0 port)

-> interface Serial 3/0
-> ip address 30.0.0.10 255.0.0.0
-> encapsulation PPP
-> clock rate 64000
-> no shut
-> exit

Router2

-> n
-> enable
-> configt
-> interface Serial 3/0
-> ip address 30.0.0.20 255.0.0.0
-> encapsulation PPP
-> no shut -> exit

(for fastethernet port)

-> int fa interface fastethernet 0/0

-> ip address 40.0.0.10 255.0.0.0

-> no shut

-> exit

Note:

-> As here it is rip routing for all serial interfaces we use/include this extra command i.e; "encapsulation ppp".

-> And for serial interfaces ~~with~~ only which has clock symbol ~~we~~ use/include this command i.e; "clock rate 64000" (after encapsulation ppp command).

=> Now check the connected networks (hops)

Router 0

=> exit

=> show ip route

=> Now we've to make routers help to themselves know the about the networks present. For that we need to use following commands

Router 0

=> config t

=> router rip

=> network 10.0.0.0

=> network 20.0.0.0

=> exit

Router 1

=> Config t

=> router rip

-> network 20.0.0.0

-> network 30.0.0.0

-> exit

Router 2

-> Config t

-> router rip

=> network 30.0.0.0

-> network 40.0.0.0

-> exit

=> Now check the connected networks and the next hops of all the routers

Router 0

-> exit

-> show ip route

C 10.0.0.0/8 is directly connected FastEthernet 0/0

C 20.0.0.0/8 is directly connected Serial 2/0

20.0.0.0/8 is Variably Subnetted, 2 Subn-
-ets, 2 masks

C 20.0.0.20/32 is directly connected
Serial 2/0

R 30.0.0.0/8 [120/1] via 20.0.0.20, 00:00:00,
Serial 2/0

R 40.0.0.0/8 [120/1] via 20.0.0.20, 00:00:00,
Serial 2/0

Router1

=> exit

=> show ip route

R 10.0.0.0/8 [120/1] via 20.0.0.10, 00:00:00,
Serial 2/0

20.0.0.0/8 is directly connected Variably
Subnetted, 2 subnets, 2 masks

C 20.0.0.0/8 is directly connected, Serial2/0

C 20.0.0.10/32 is directly connected, Serial2/0

30.0.0.0/8 is Variably Subnetted, 2 Subn-
-ets, 2 masks

C 30.0.0.0/8 is directly connected,
Serial 3/0
C 30.0.0.20/32 is directly connected,
Serial 3/0

R 40.0.0.0/8 [120/1] via 30.0.0.20, 00:00:03,
Serial 3/0.

Router2

-> exit

-> show ip route

R 10.0.0.0/8 [120/2] via 30.0.0.10, 00:00:03,
Serial 3/0

R 20.0.0.0/8 [120/1] via 30.0.0.10, 00:00:02,
Serial 3/0

30.0.0.0/8 is Variably Subnetted, 2 Subnets,
2 masks

C 30.0.0.0/8 is directly connected, Serial 3/0

C 30.0.0.10/32 is directly connected, Serial 3/0

C 40.0.0.0/8 is directly connected to
FastEthernet 0/0

-> Set the default gateways of pcs.

i.e; pc0 (10.0.0.10) & pc1 (40.0.0.10).

Output

=> Pinging from pc0 to pc1

>Ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data:

Request timed out

Reply from 40.0.0.1: bytes = 32 time = 6ms
TTL = 125

Reply from 40.0.0.1: bytes = 32 time = 11 ms
TTL = 125

Reply from 40.0.0.1: bytes = 32 time = 5ms
TTL = 125

Ping statistics for 40.0.0.1:

Packets Sent = 4, Received = 3, Lost = 1 (25% loss)

Approximate round trip times in milli-seconds

Minimum = 5ms, Maximum = 11 ms,

Average = 7 ms

=> Pinging from PC1 to PC0

>Ping 10.0.0.1:

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes = 32 time = 12ms
TTL = 125

Reply from 10.0.0.1: bytes = 32 time = 7ms
TTL = 125

Reply from 10.0.0.1: bytes = 32 time = 12 ms
TTL = 125

Reply from 10.0.0.1: bytes = 32 time = 9 ms
TTL = 125

Ping statistics for 10.0.0.1:

Packets: Sent = 4, Received = 4, Lost = 0
(0% loss)

Approximate round trip times in milli-seconds

Minimum = 7 ms, Maximum = 12 ms,

Average = 10 ms.

Observation

=> RIP is (Routing Information Protocol)

=> It uses distance vector algorithm

=> when you use this particular protocol the routers themselves learn about the other networks present and the next hop to be communicated.

Output:

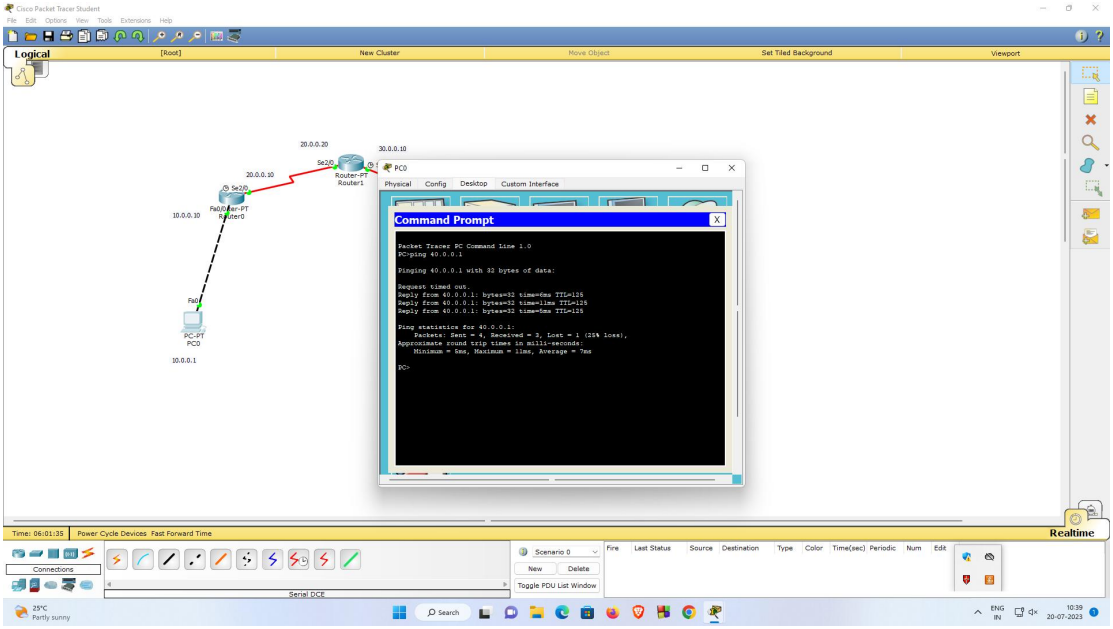


Fig 5: Pinging from pc0 to pc1

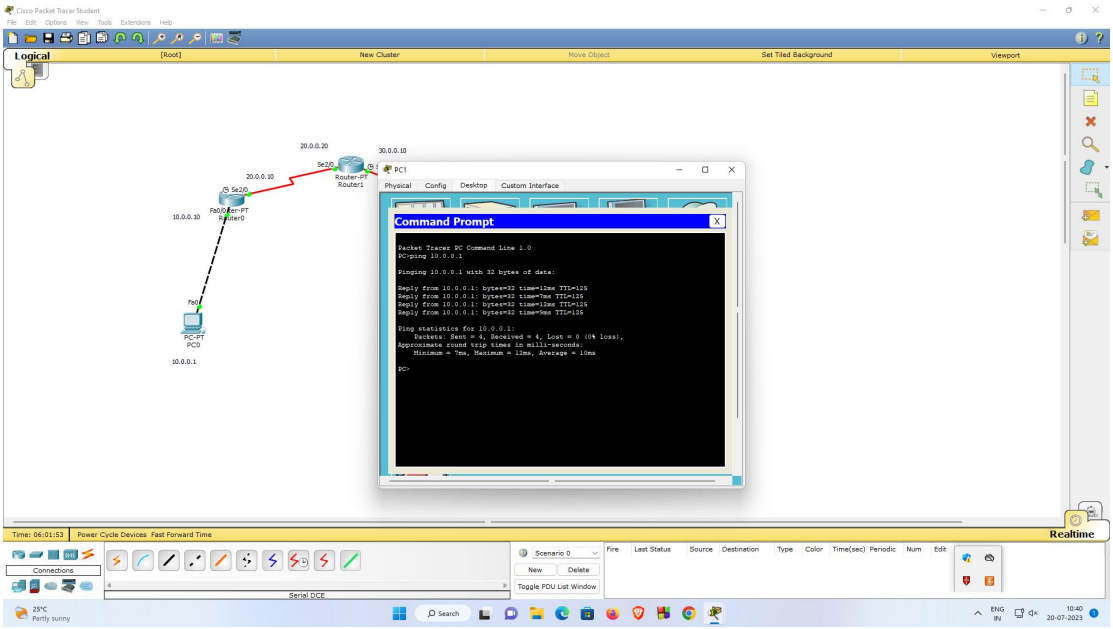


Fig 6: Pinging from pc1 to pc0