

## Aim-4

### 4. Configure DHCP within a LAN and outside LAN.

Topology:

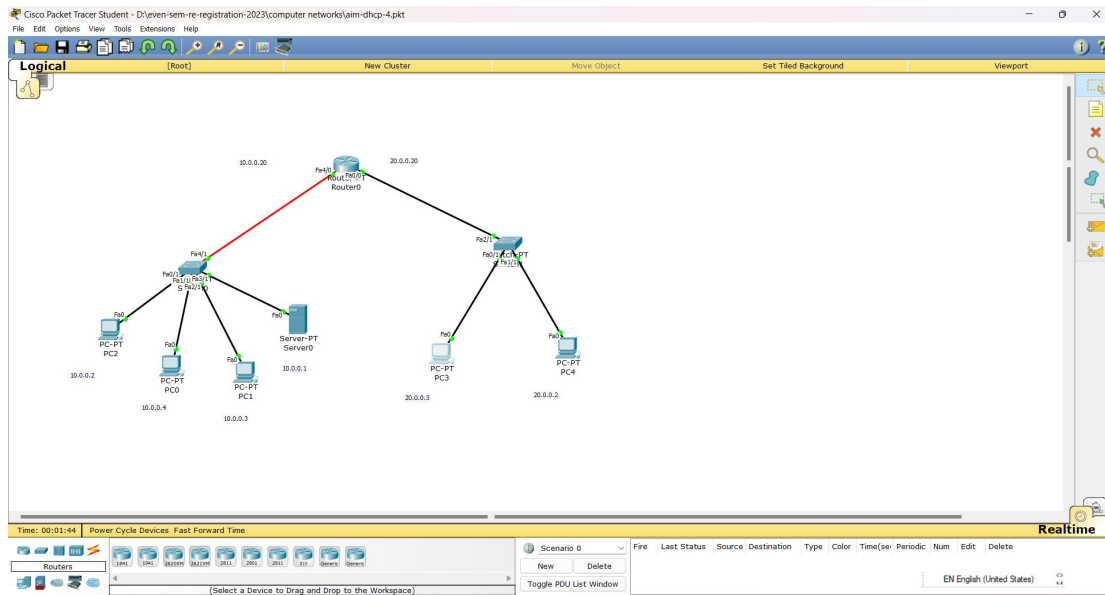


Fig 1: Topology

The screenshot shows the DHCP configuration interface in Cisco Packet Tracer. The 'Interface' is set to 'FastEthernet0'. The 'Service' is set to 'On'. The 'Pool Name' is 'serverPool'. The 'Default Gateway' is '10.0.0.20'. The 'DNS Server' is '0.0.0.0'. The 'Start IP Address' is '10.0.0.2'. The 'Subnet Mask' is '255.0.0.0'. The 'Maximum number of Users' is '512'. The 'TFTP Server' is '0.0.0.0'. The interface also shows a table of DHCP pools.

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server
serverPool 1	20.0.0.20	0.0.0.0	20.0.0.2	255.0.0.0	512	0.0.0.0
serverPool	10.0.0.20	0.0.0.0	10.0.0.2	255.0.0.0	512	0.0.0.0

Fig 2: Configuring DHCP Settings in Server

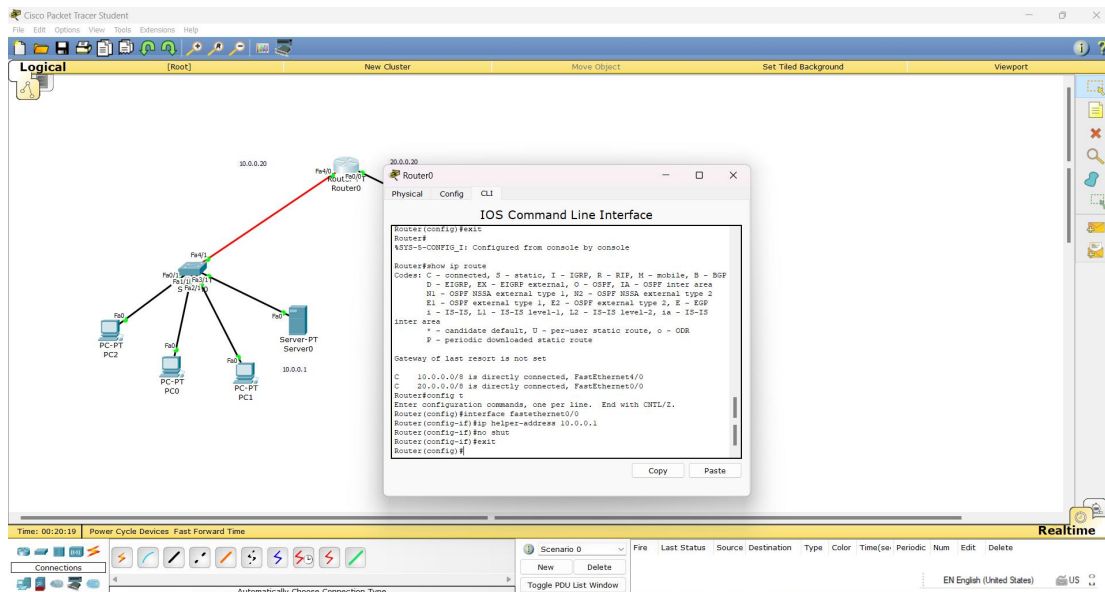


Fig 3: Router Configuring and Connections

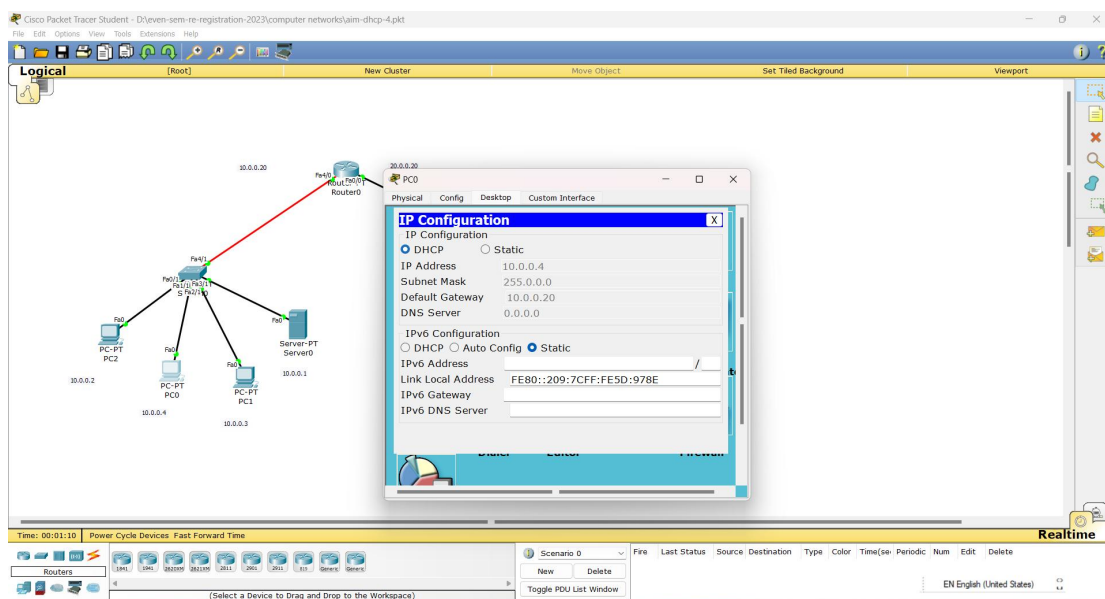


Fig 4: Pc0 Configurations

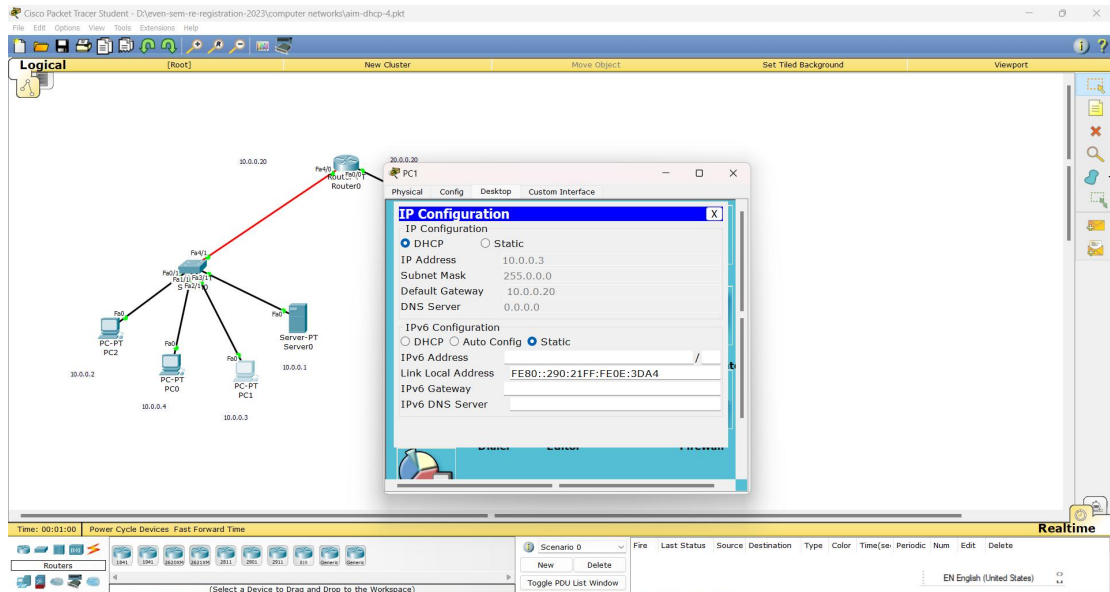


Fig 5: Pc1 Configurations

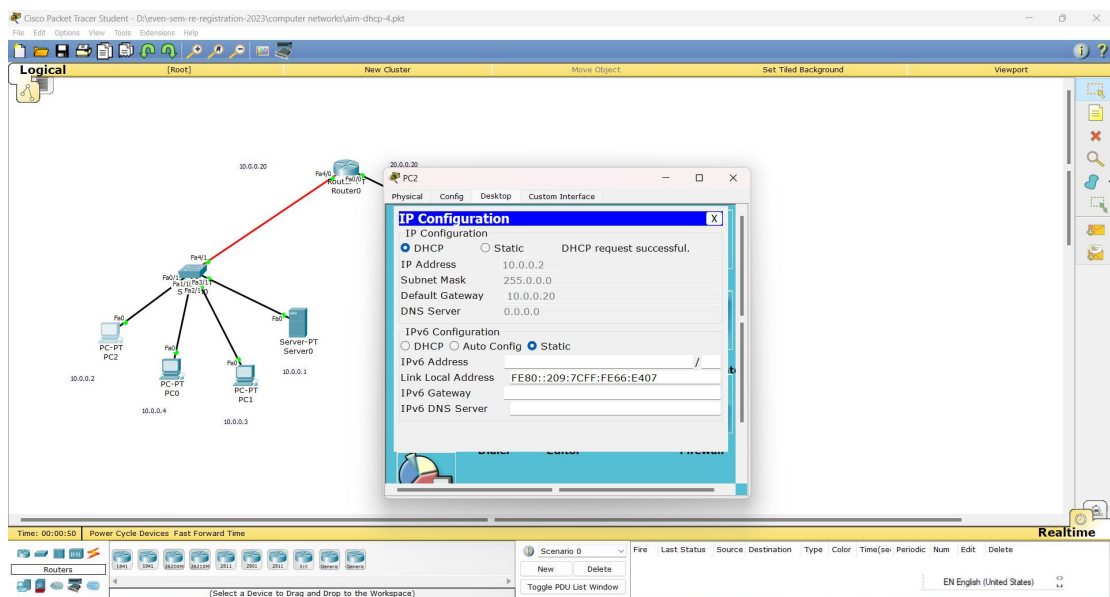


Fig 6: Pc2 Configurations

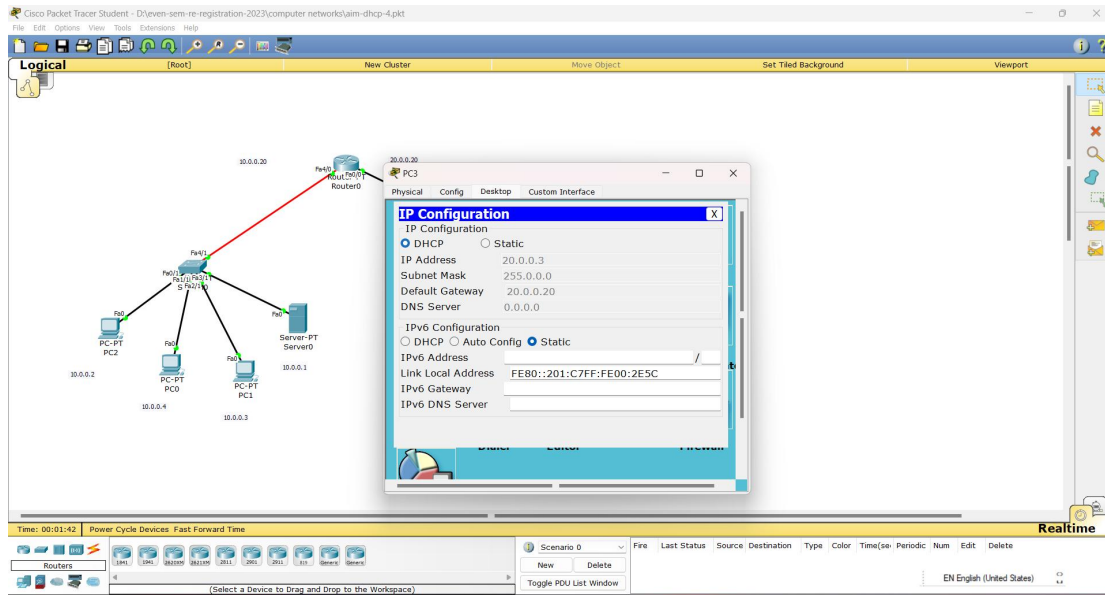


Fig 7: Pc3 Configurations

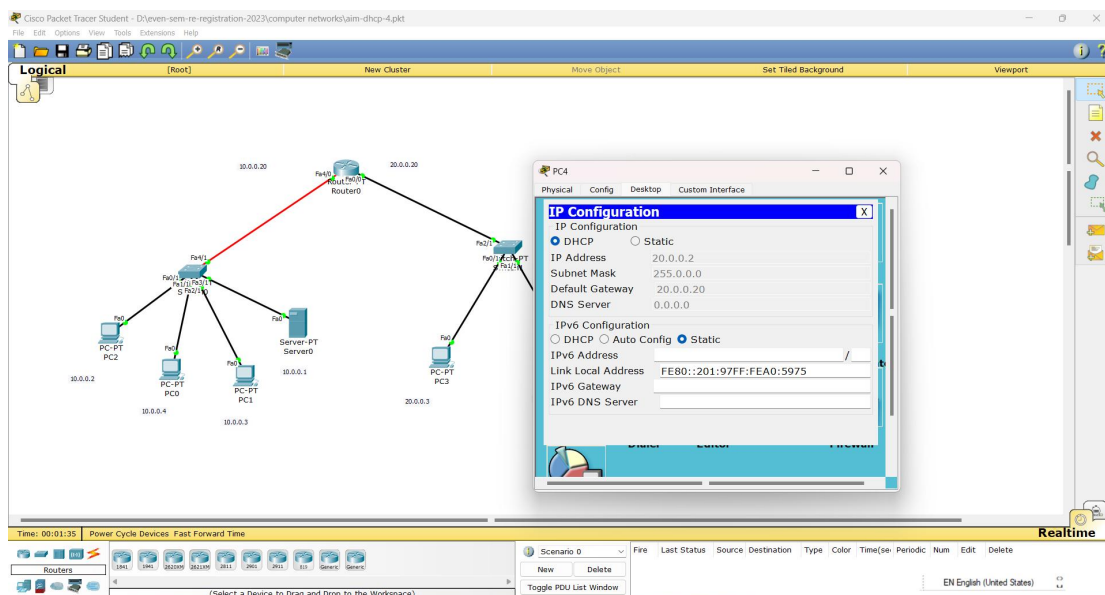


Fig 8: Pc4 Configurations

## Procedure and Observations:

18/07/23 Aim-4

Configure DHCP within a LAN and outside LAN.

Topology

The diagram illustrates a network topology. At the top, a router (represented by a circle with a cross) is connected to two switches (represented by squares). The router has two interfaces labeled 'Fa0/0' with IP addresses '10.0.0.20' and '20.0.0.20'. The left switch is connected to three PCs (PC2, PC0, PC1) and a server (Server 0 with IP 10.0.0.1). The right switch is connected to two PCs (PC3, PC4). The connections between the router and switches are labeled 'Fa0/1' and 'Fa0/0'.

Procedure

- => Server Configuration
  - > Server -> Services -> DHCP
  - > Service "on" (toggle from off to on.)



=> Set the Start IP address: 10.0.0.2  
and subnet mask as 255.0.0.0 then  
click on Save.

→ In Config tab of Server -> FastEthernet0  
-> Set the default gateway as 10.0.0.1.  
-> Set the IP address as 10.0.0.1.

=> Now go to PCs.

=> Select PC2 -> Desktop -> IP Configuration

-> click on DHCP

=> the IP address of the PC will assigned  
automatically saying following message

DHCP request Successful

-> for PC2, PC of PC1 the IP addresses

are 10.0.0.2, 10.0.0.4, 10.0.0.3

respectively along with Subnet mask as

255.0.0.0.

=> Like how 3 PCs of a Server is connected  
to a Switch, like wise 2 PCs are has

=> to be connected to a one more switch (Basically 1an) (say switch 1 PC3 & PC4)

=> And Switch 0 & Switch 1 has to be connected to a router.

=> Now configuring the router

=> n

=> enable

=> config t

=> interface fast ethernet 4/0

=> ip address 10.0.0.20 255.0.0.0

=> no shut

=> exit

=> interface ~~fast ethernet~~ 0/0

=> ip address 20.0.0.20 255.0.0.0

=> no shut

=> exit

=> Now check if connections are proper.

=> show ip route

C 10.0.0.0/8 is directly connected,  
FastEthernet 4/0

C 20.0.0.0/8 is directly connected  
FastEthernet 0/0

=> Now click on Server -> Config +

=> Set the default gateway as 10.0.0.20.

=> Now click on Router and following  
Configuration Commands <sup>are</sup> as follows

=> Config t

=> interface fastethernet 0/0

=> ip address ip helper - address 10.0.0.1

=> no shut

=> exit.

=> Then go to Server click on Services  
Tap.

=> In DHCP change the pool Name  
as Server pool 1



=> then set the Start IP address:  
as 20.0.0.2 and click on  
add and save.

=> Now click on PCs which are  
connected to Switch 1.

=> pc -> desktop -> IP Configuration  
-> DHCP.

=> the IP addresses & Subnet mask  
will assigned automatically.

=> the IP address for pc3 & pc4 are  
20.0.0.3 & 20.0.0.4 respectively and

Subnet mask as 255.0.0.0  
=> In DHCP (Server) for Server Pool set default  
observation gateway as 10.0.0.20 & for Server Pool 1  
also same 20.0.0.20 and click on  
save each time the default gateway  
as been set.

=> Dynamic Host Configuration Protocol  
(DHCP)

=> It works on DORA application

=> DORA is D (Discover), O (Offer),

R (Request) & A (Acknowledgement)

=> Basically the client broadcasts for network

=> server offers the client

=> if the client requests the server

=> and server sends the acknowledgement to clients and assigns the IP as provide the IP address to the client which has requested:

### Output

=> Pinging Ping message from PC4 to PC2

Ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Request timed out

Reply from 10.0.0.2: bytes = 32 time = 0ms  
TTL = 128

Reply from 10.0.0.2: bytes = 32 time = 8ms  
TTL = 128

Reply from 10.0.0.2: bytes = 32 time = 0ms  
TTL = 128

Ping Statistics for 10.0.0.2:

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

Approximate round trip times in milliseconds:  
- seconds:

Minimum = 0 ms, Maximum = 3 ms,

Average = 1 ms.

=> Passing Ping message from PC1 to PC3

Ping 20.0.0.3

Pinging 20.0.0.3 with 32 bytes of data:

Reply from 20.0.0.3: bytes=32 time=0ms  
TTL=127

Reply from 20.0.0.3: bytes=32 time=0ms  
TTL=127

Reply from 20.0.0.3: bytes=32 time=1ms  
TTL=127

Reply from 20.0.0.3: bytes=32 time=0ms  
TTL=127



Ping statistics for 20.0.0.3:

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

Approximate round trip time in milli-  
-seconds:

Minimum = 0ms, Maximum = 1ms, Average

20ms

Done  
18/7/23



Output:

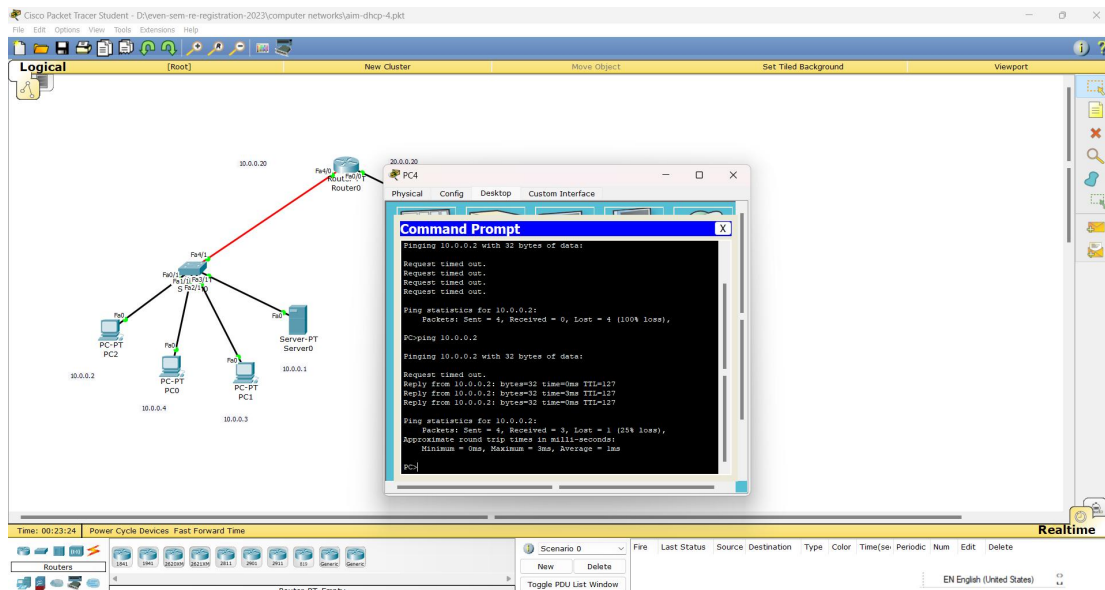


Fig 9: Pinging from pc4 to pc2

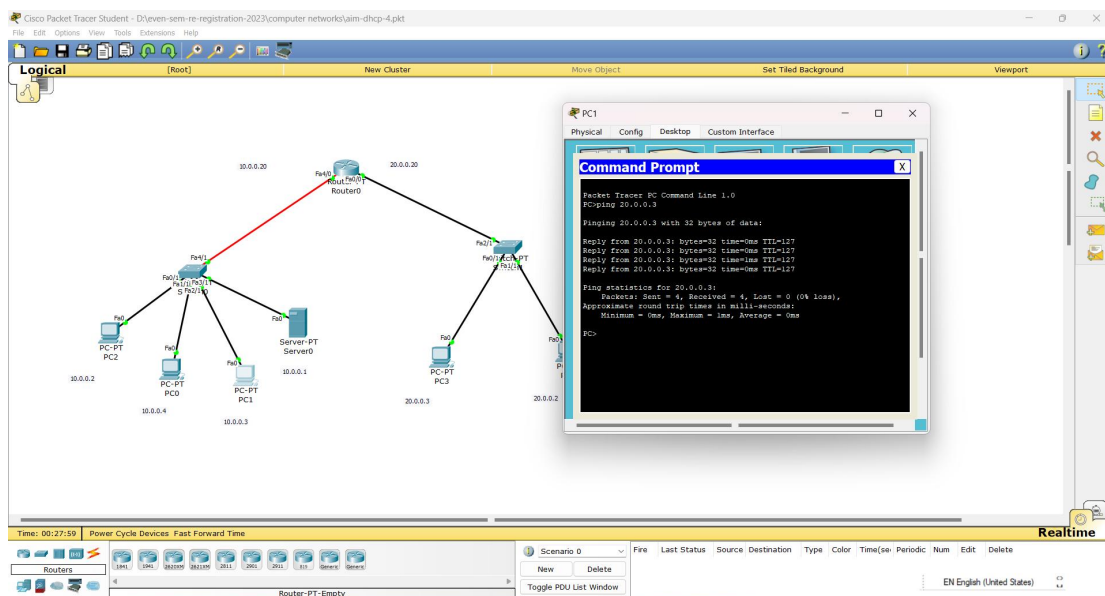


Fig 10: Pinging from pc1 to pc3