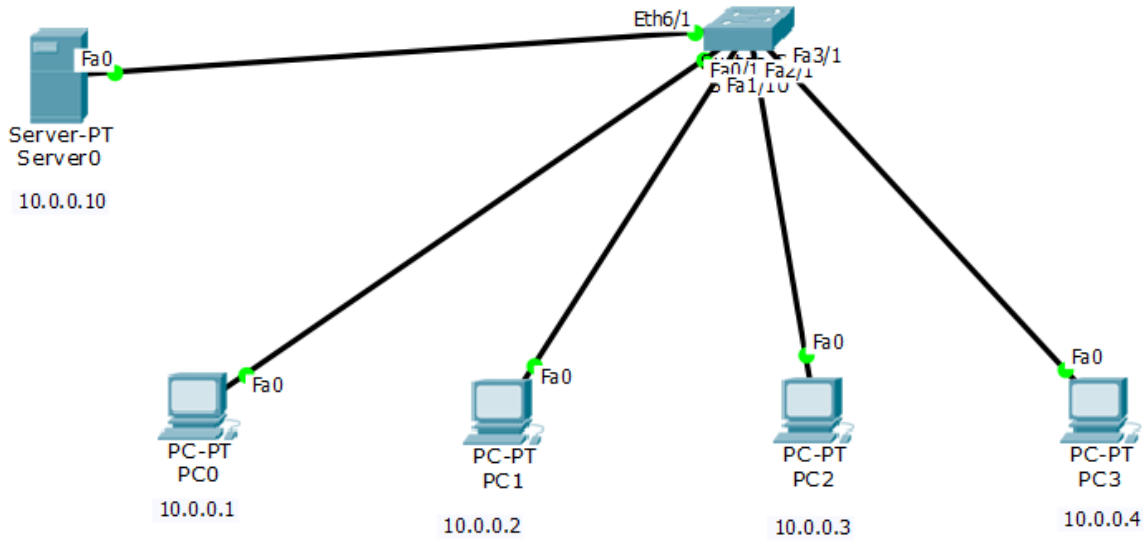
LAB 8:

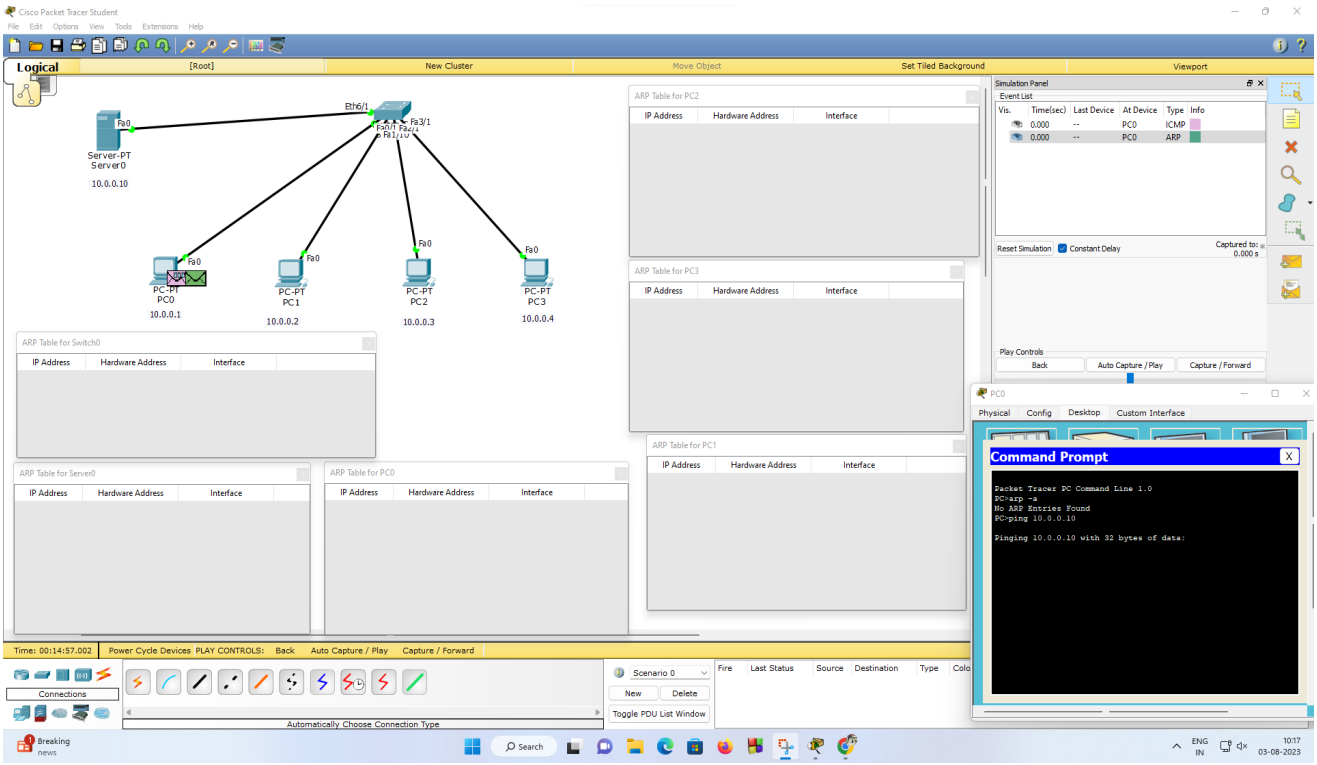
Aim : To construct simple LAN and understand the concept and operation of Address Resolution Protocol (ARP)

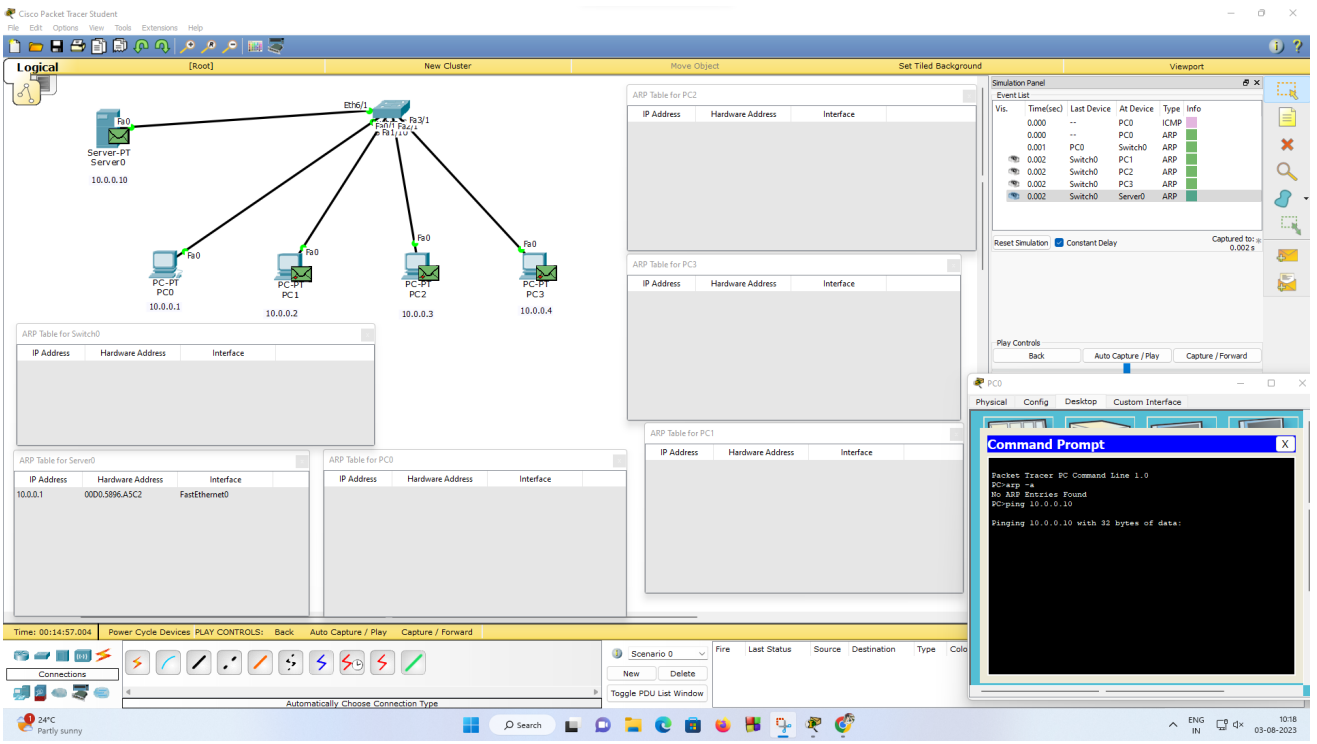
Topology:

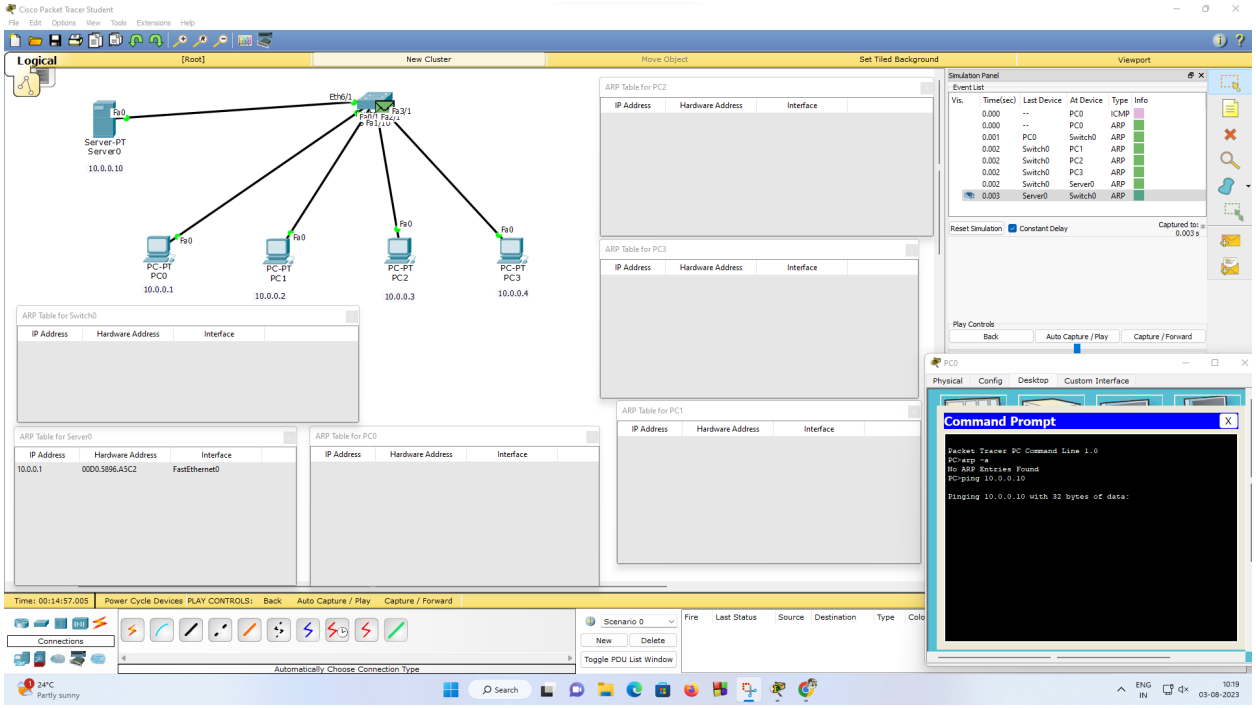


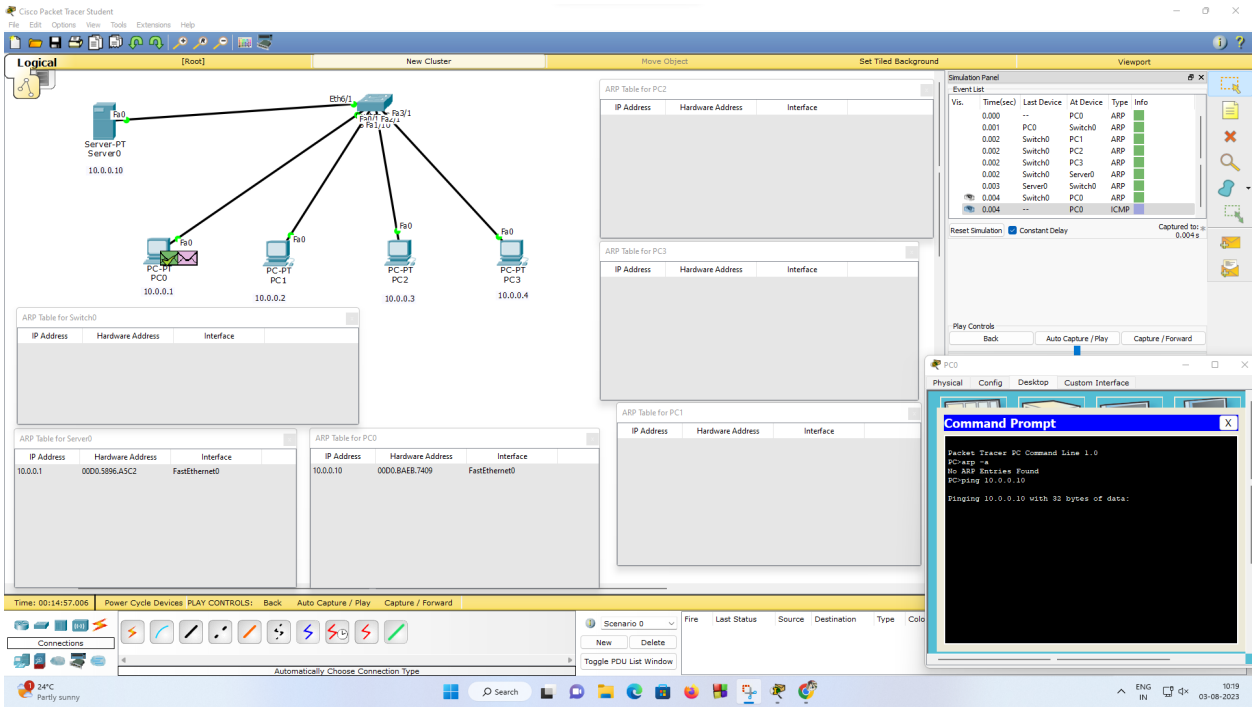
ARP Tables while pinging:

Ping from PC0 to Server0:






Logical
Server-PT Server0
10.0.0.10
PC-PT PC0
10.0.0.1
PC-PT PC1
10.0.0.2
PC-PT PC2
10.0.0.3
PC-PT PC3
10.0.0.4
Command Prompt
Packet Tracer PC Command Line 1.0
PC>arp -a
No ARP Entries Found
PC>ping 10.0.0.10
Pinging 10.0.0.10 with 32 bytes of data:


Logical
Server-PT Server0
10.0.0.10
PC-PT PC0
10.0.0.1
PC-PT PC1
10.0.0.2
PC-PT PC2
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PC-PT PC3
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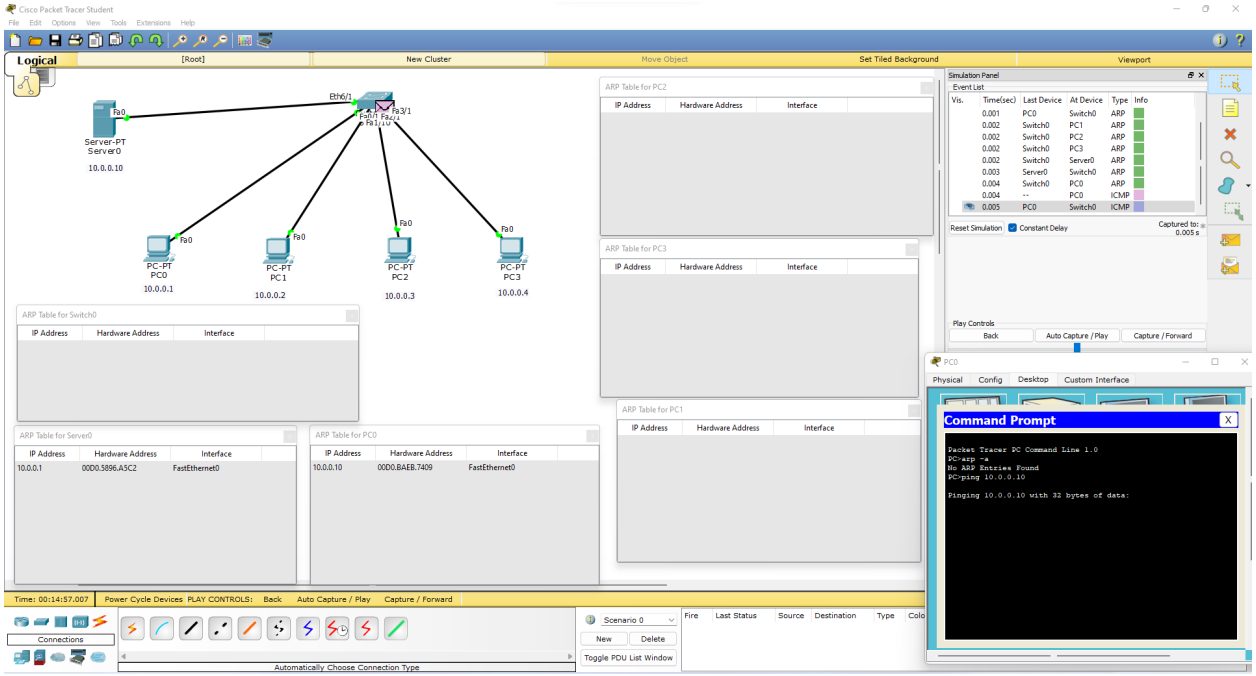
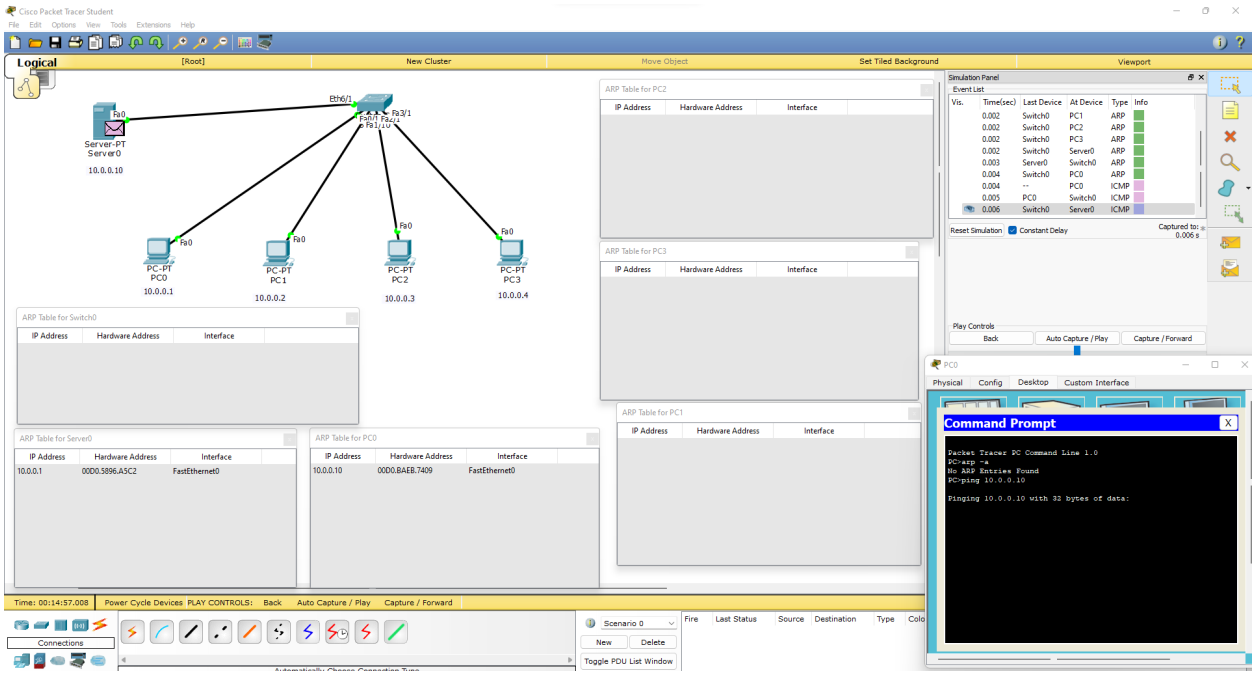
Pinging 10.0.0.10 with 32 bytes of data:


Cisco Packet Tracer Student
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Server-PT Server0
10.0.0.10
PC-PT PC0
10.0.0.1
PC-PT PC1
10.0.0.2
PC-PT PC2
10.0.0.3
PC-PT PC3
10.0.0.4
ARP Table for Switch0
ARP Table for Server0
ARP Table for PC0
ARP Table for PC1
ARP Table for PC2
ARP Table for PC3
Simulation Panel
Event List
Command Prompt
Packet Tracer PC Command Line 1.0
PC>arp -a
No ARP Entries Found
PC>ping 10.0.0.10
Pinging 10.0.0.10 with 32 bytes of data:
Time: 00:14:57.007
Power Cycle Devices
PLAY CONTROLS: Back
Auto Capture / Play
Capture / Forward
Connections
Automatically Choose Connection Type


Cisco Packet Tracer Student
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Server-PT Server0
10.0.0.10
PC-PT PC0
10.0.0.1
PC-PT PC1
10.0.0.2
PC-PT PC2
10.0.0.3
PC-PT PC3
10.0.0.4
ARP Table for Switch0
ARP Table for Server0
ARP Table for PC0
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Simulation Panel
Event List
Command Prompt
Packet Tracer PC Command Line 1.0
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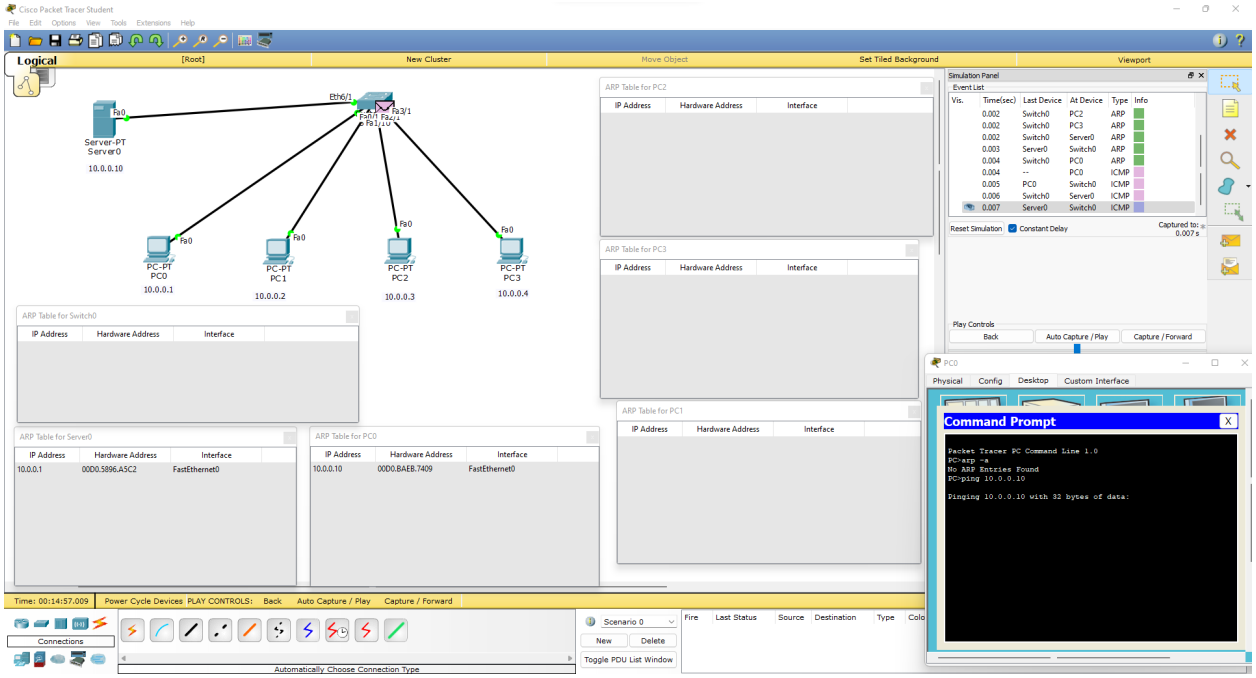
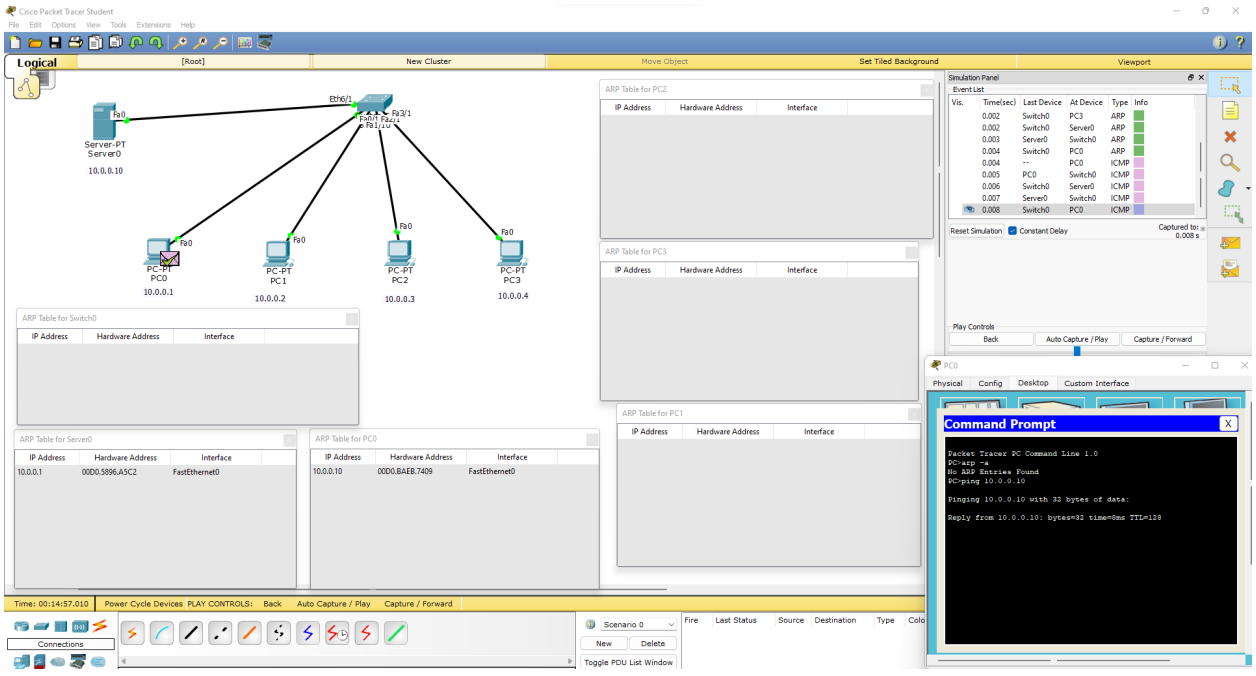
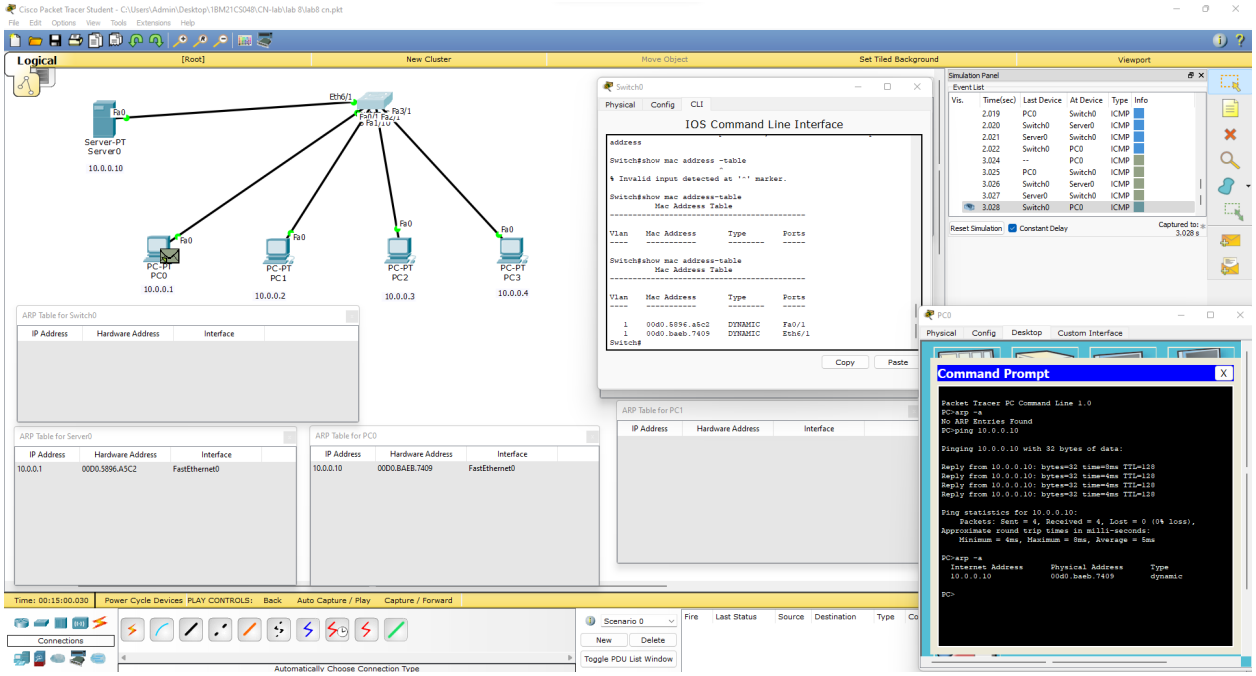
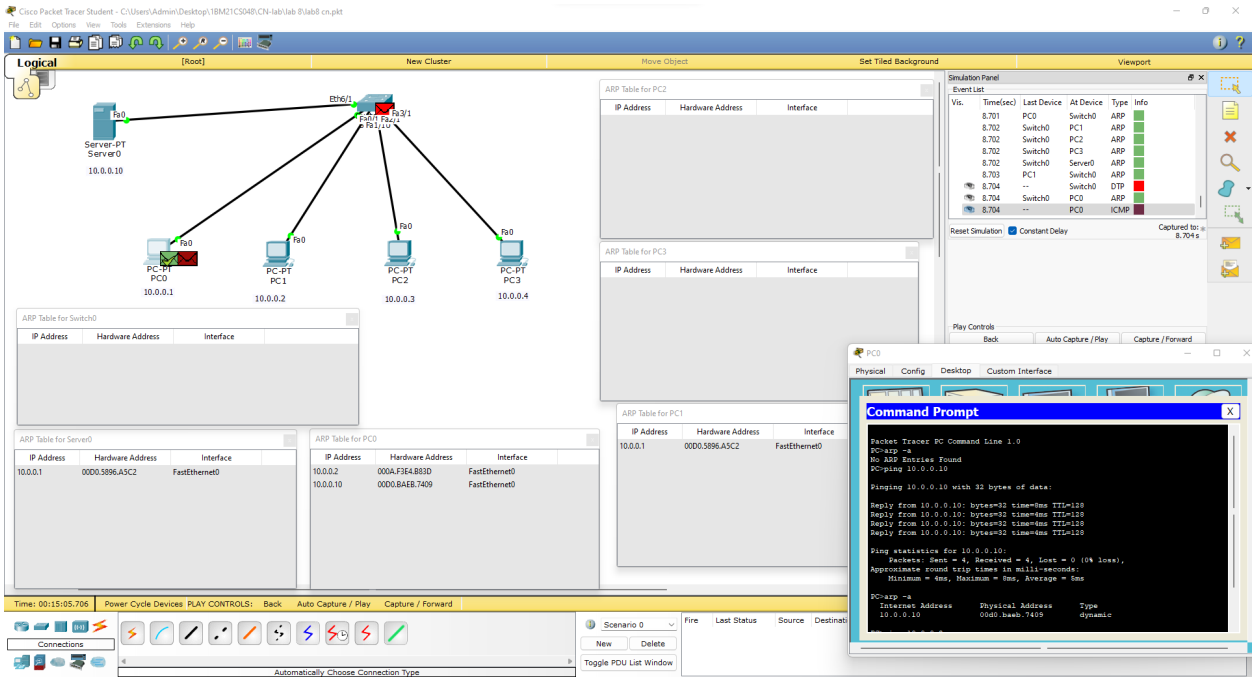
PC>ping 10.0.0.10
Pinging 10.0.0.10 with 32 bytes of data:
Time: 00:14:57.008
Power Cycle Devices
PLAY CONTROLS: Back
Auto Capture / Play
Capture / Forward
Connections

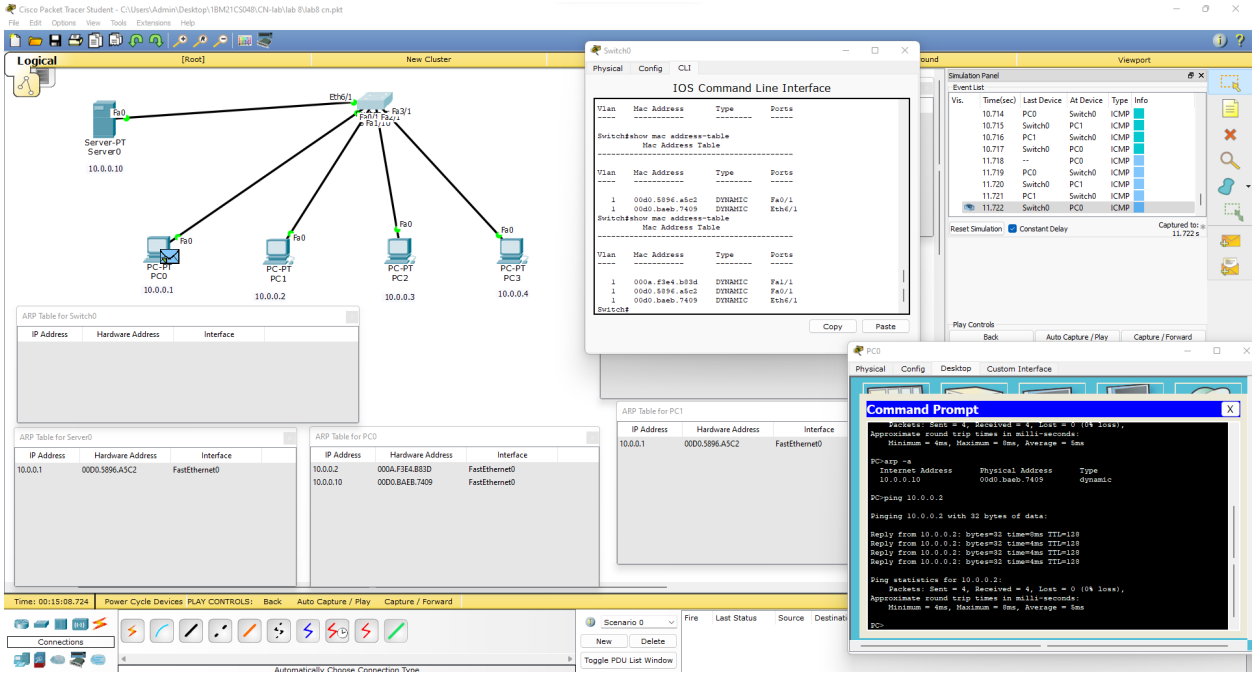

Cisco Packet Tracer Student
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Server-PT Server0
10.0.0.10
PC-PT PC0
10.0.0.1
PC-PT PC1
10.0.0.2
PC-PT PC2
10.0.0.3
PC-PT PC3
10.0.0.4
Command Prompt
Packet Tracer PC Command Line 1.0
PC>arp -a
No ARP Entries Found
PC>ping 10.0.0.10
Pinging 10.0.0.10 with 32 bytes of data:


Cisco Packet Tracer Student
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Server-PT Server0
10.0.0.10
PC-PT PC0
10.0.0.1
PC-PT PC1
10.0.0.2
PC-PT PC2
10.0.0.3
PC-PT PC3
10.0.0.4
Command Prompt
Packet Tracer PC Command Line 1.0
PC>arp -a
No ARP Entries Found
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=0ms TTL=128

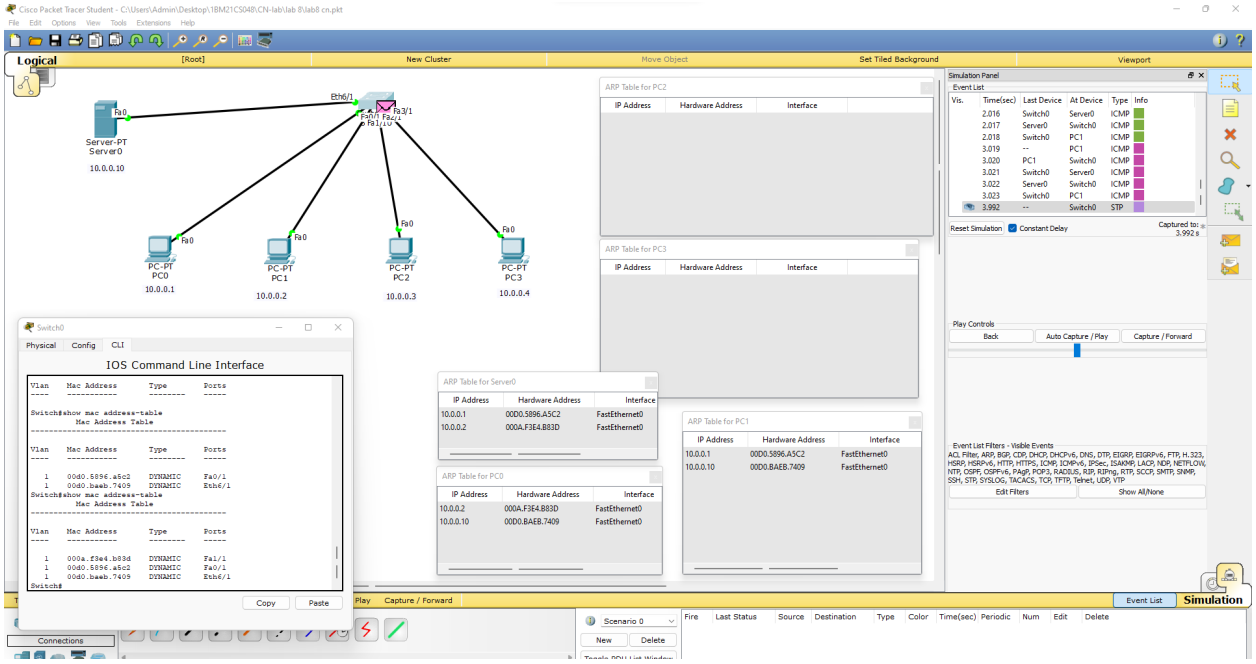


Ping from PC0 to PC1:





Final ARP Tables after pinging:

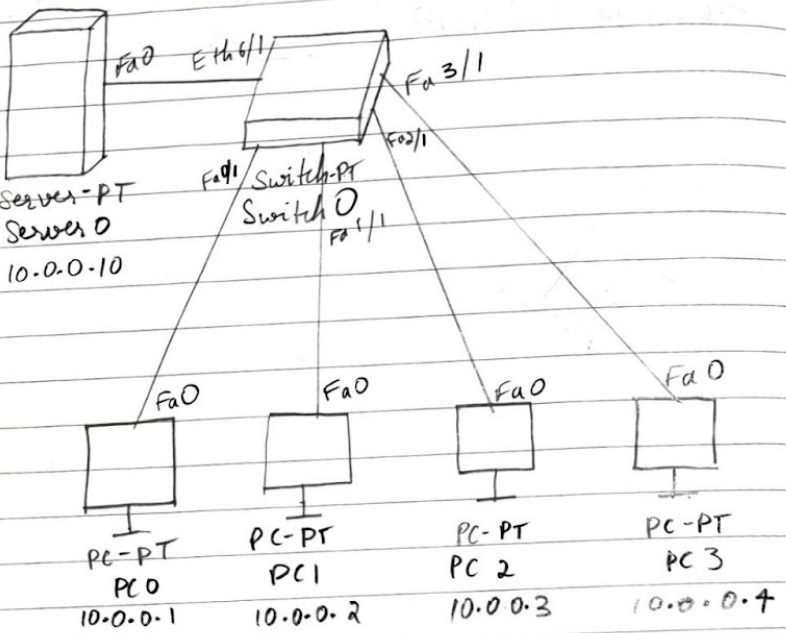


3/8/'23

Lab8:

Aim: To construct simple LAN and understand the concept and operation of address resolution protocol (ARP)

Topology:



Procedure

1) Create a topology of 4 PCs and a server and a switch as shown in the diagram.

2) Set IP address of all devices as shown in the topology.

3) Use inspect tool to click on devices to open ARP tables of each device.

4) In command prompt of PC0, write arp -a to see arp table.
   o/p: No ARP Entries Found as no pinging done yet.

5) In CLI of switch, enter
Switch >enable
~~# show MAC~~
show mac address-table
Now, mac address table is empty.

6) Go to Simulation mode.
ping the server from PC0
Click on capture button in Simulation panel to go step by step. ~~change~~

28/12/22

Ping Output :-

```
PC > arp -a
NO ARP Entries found
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=8ms TTL=128
Reply from 10.0.0.10 : bytes=32 time=4ms TTL=128
Reply from 10.0.0.10 : bytes=32 time=4ms TTL=128
Reply from 10.0.0.10 : bytes=32 time=4ms 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 = 5ms

PC>arp -a
  Internet Address      Physical Address      Type
  10.0.0.10             0060.baab.7409        dynamic
```

Observations:

→ We can see mac address-table of switch in CLI

→ We can observe that, when we ping and click on capture on simulation panel, ARP request is broadcasted and ARP reply is unicasted.

→ Then ICMP packets are sent.

→ As and when capture is clicked, ARP table is updated accordingly for PC and server.