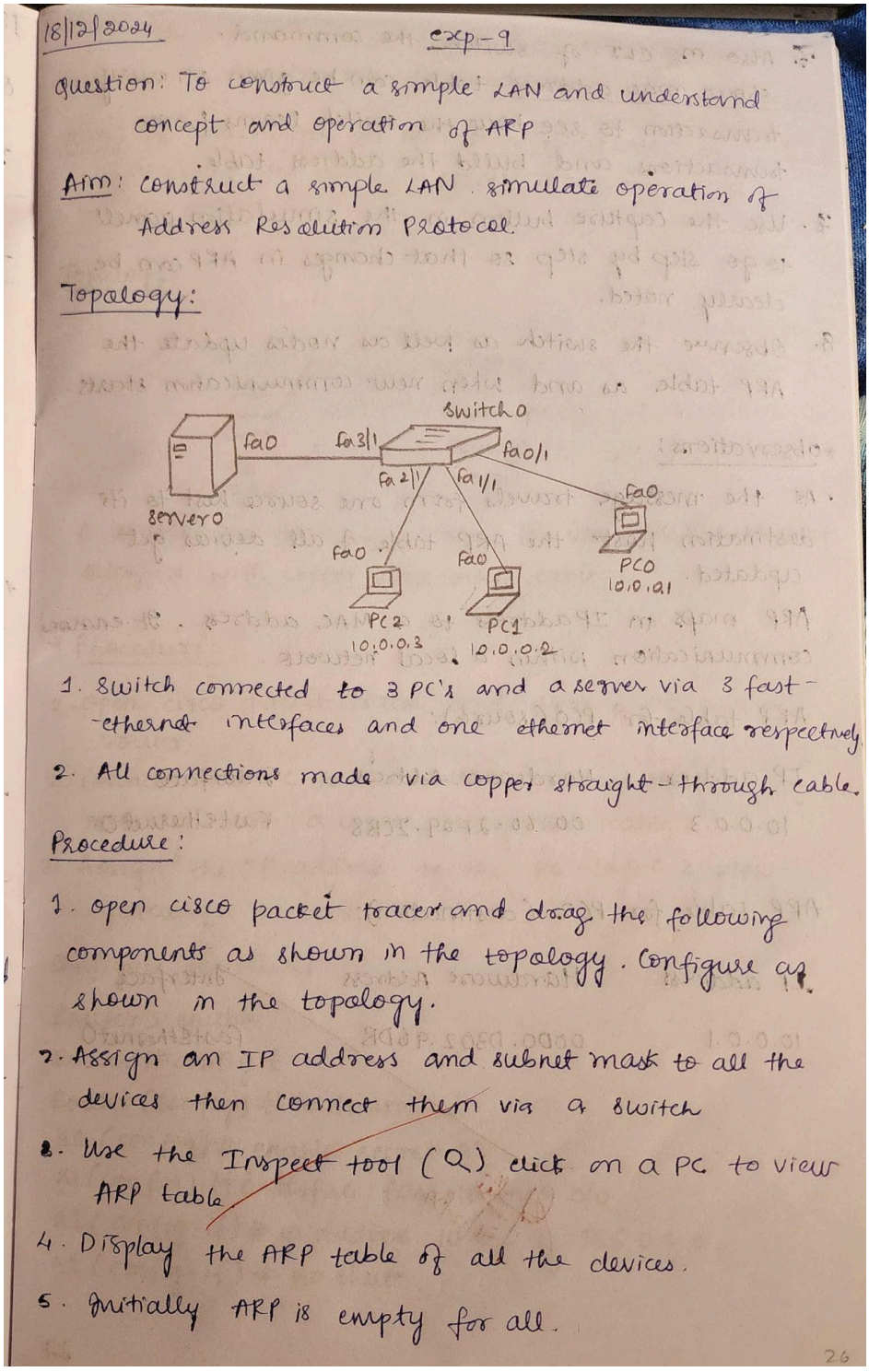
18|12|2024 Experiment 9

Observation Book:



18|12|2024 exp-9

Question: To construct a simple LAN and understand concept and operation of ARP

Aim: Construct a simple LAN simulate operation of Address Resolution Protocol.

Topology:

1. Switch connected to 3 PC's and a server via 3 fast-ethernet interfaces and one ethernet interface respectively
2. All connections made via copper straight-through cable.

Procedure:

1. open cisco packet tracer and drag the following components as shown in the topology. Configure as shown in the topology.
2. Assign an IP address and subnet mask to all the devices then connect them via a switch
3. Use the Inspect tool (Q) click on a PC to view ARP table
4. Display the ARP table of all the devices.
5. Initially ARP is empty for all.

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7. Also in CLI of switch, the command - show mac address-table can be given on every transaction to see how the switch learns from transactions and build the address table.

8. Use the capture button in the simulation panel to go step by step so that changes in ARP can be clearly noted.

9. Observe the switch as well as nodes update the ARP table as and when new communication starts.

*Observations:

- As the message travels from one source host to its destination host the ARP table of all devices get updated.

ARP maps an IP address to a MAC address. It ensures communication within a local network.

ARP table for PC0 (source):

IP address	Hardware Address	Interface
10.0.0.3	00:60-2F29.2CB8	FastEthernet0

ARP table for PC2 (destination):

IP address	Hardware Address	Interface
10.0.0.1	0000.D302.96DB	FastEthernet0

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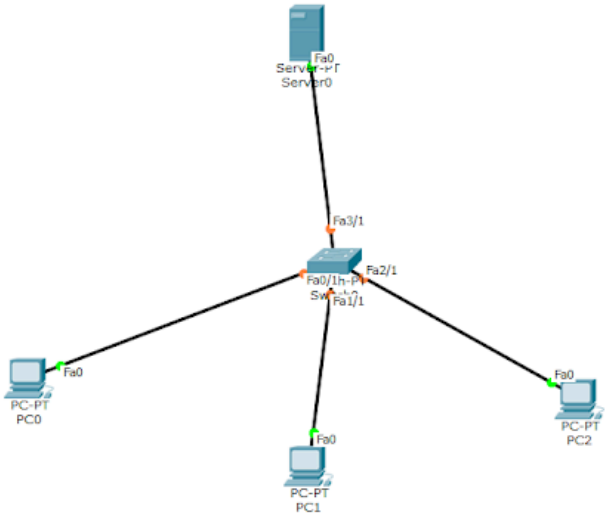
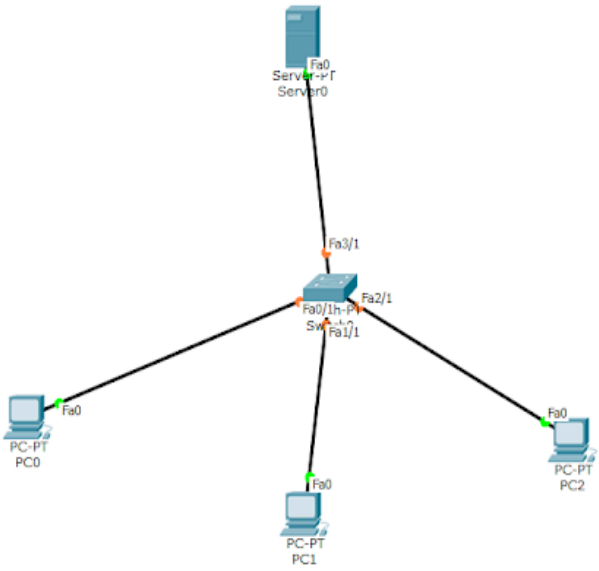
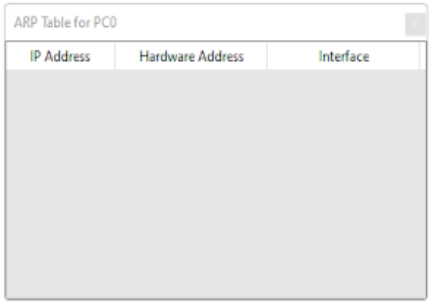
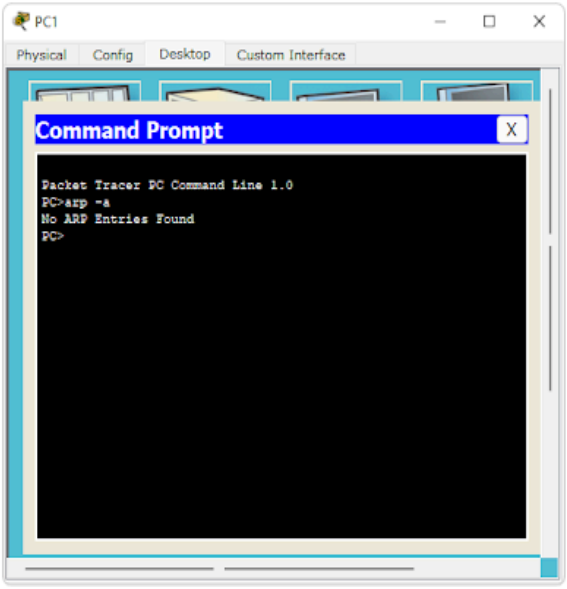
Topology:

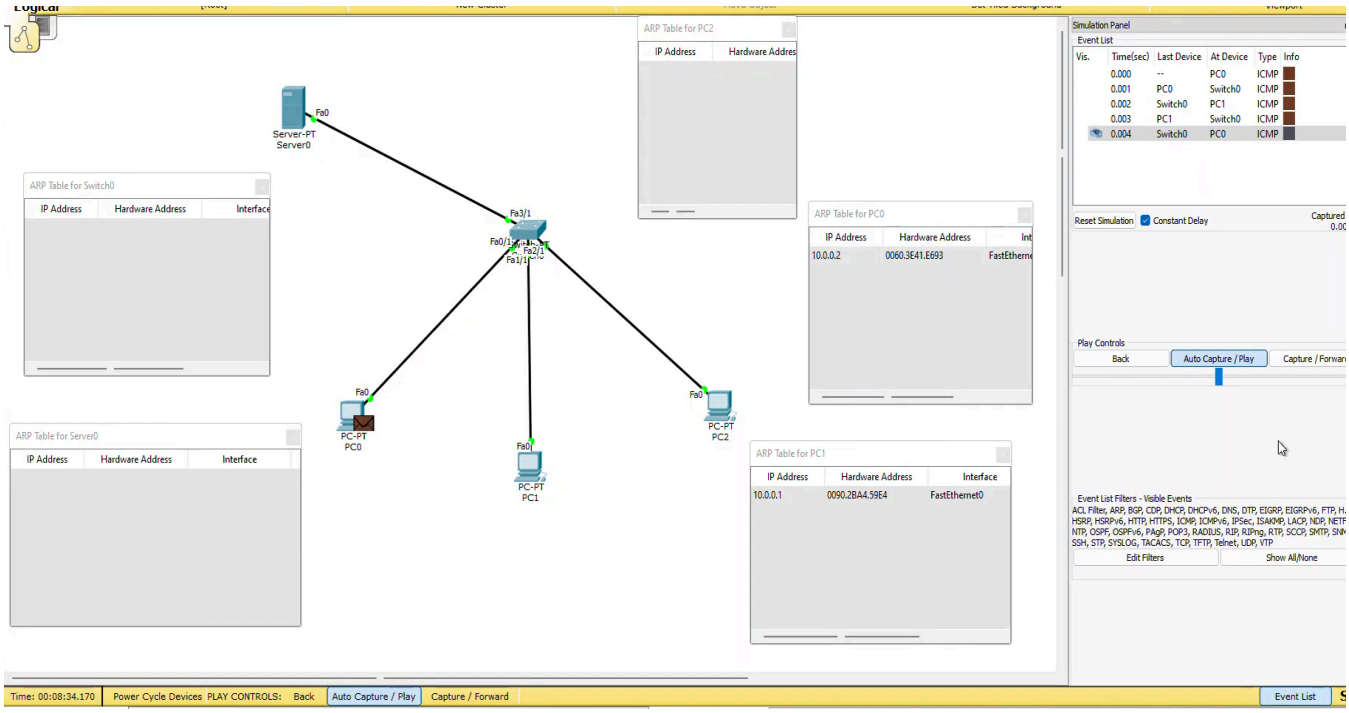


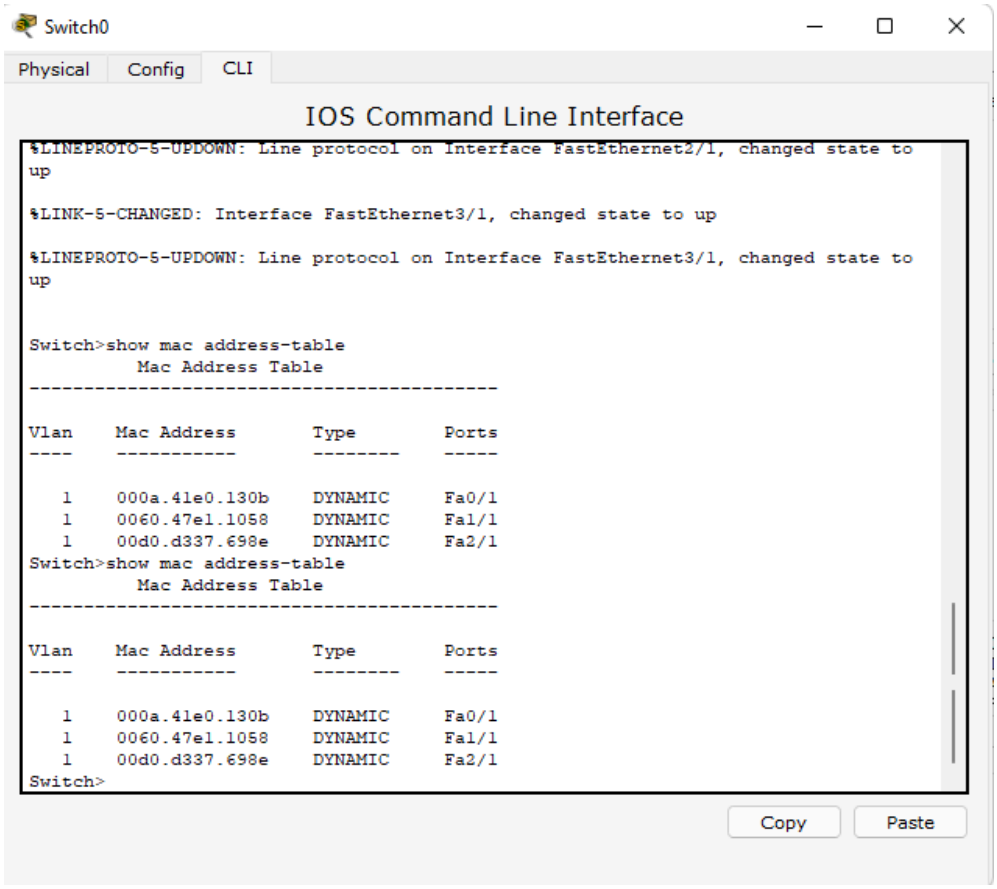
Output:








Server-PT
Server0
Fa0
Fa3/1
PC-PT
PC0
PC-PT
PC1
PC-PT
PC2
ARP Table for PC2
ARP Table for Switch0
ARP Table for PC0
ARP Table for Server0
ARP Table for PC1
IP Address
Hardware Address
Interface
10.0.0.2
0060.3E41.E693
10.0.0.1
0090.2BA4.59E4
FastEthernet0
Simulation Panel
Event List
Vis.
Time(sec)
Last Device
At Device
Type
Info
Reset Simulation
Constant Delay
Play Controls
Back
Auto Capture / Play
Capture / Forward
Edit Filters
Show All/None
Time: 00:08:34.170
Power Cycle Devices
PLAY CONTROLS:
Event List


Switch0
Physical
Config
CLI
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet3/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet3/1, changed state to up
Switch>show mac address-table
Mac Address Table
Vlan Mac Address Type Ports
1 000a.41e0.130b DYNAMIC Fa0/1
1 0060.47e1.1058 DYNAMIC Fa1/1
1 00d0.d337.698e DYNAMIC Fa2/1
Switch>show mac address-table
Mac Address Table
Vlan Mac Address Type Ports
1 000a.41e0.130b DYNAMIC Fa0/1
1 0060.47e1.1058 DYNAMIC Fa1/1
1 00d0.d337.698e DYNAMIC Fa2/1
Switch>
Copy
Paste