Aim-8

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

Topology:

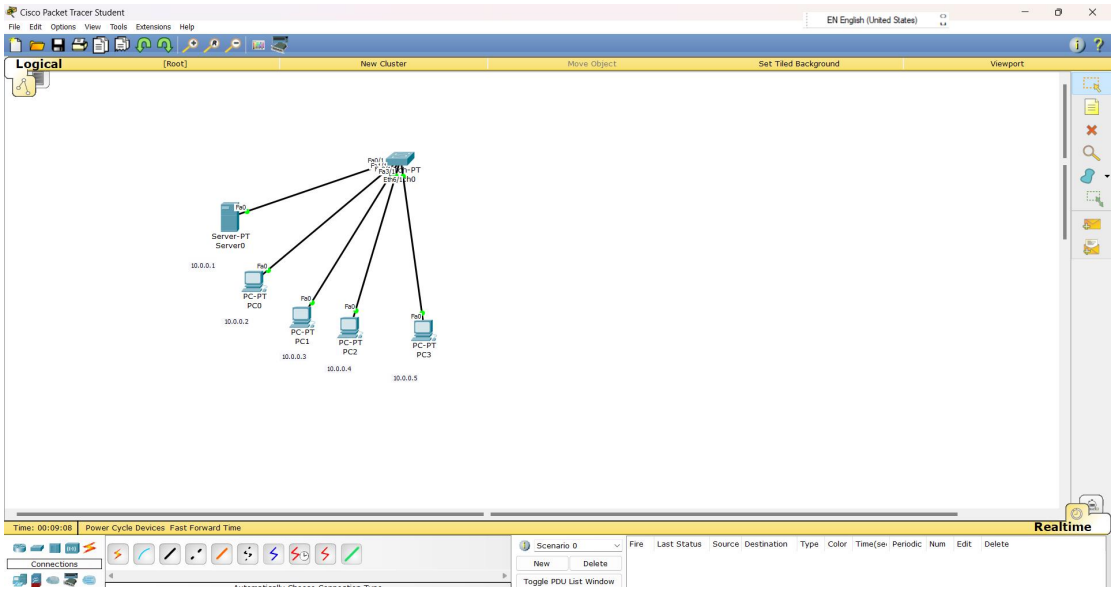


Fig 1: Topology

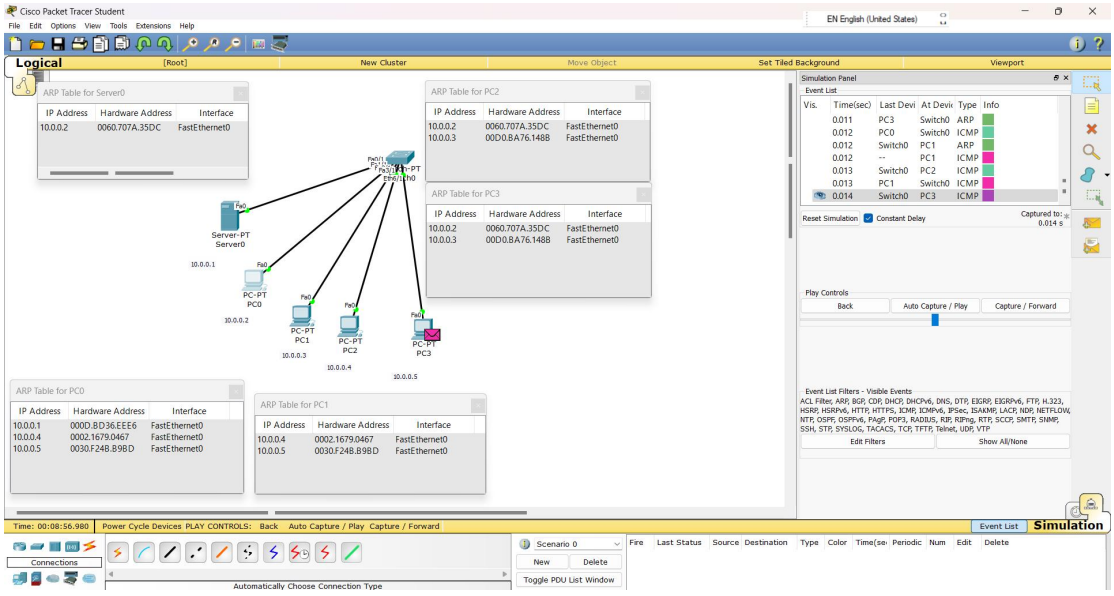


Fig 2: ARP tables of the devices connected in the topology

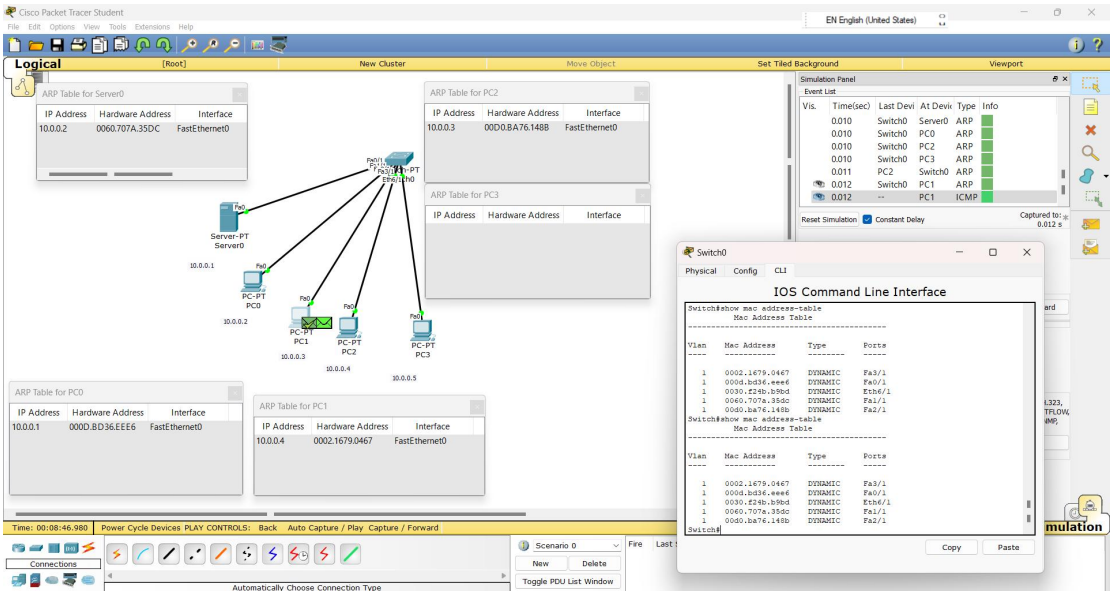


Fig 3: PDU packets are being sent/received with acknowledgement

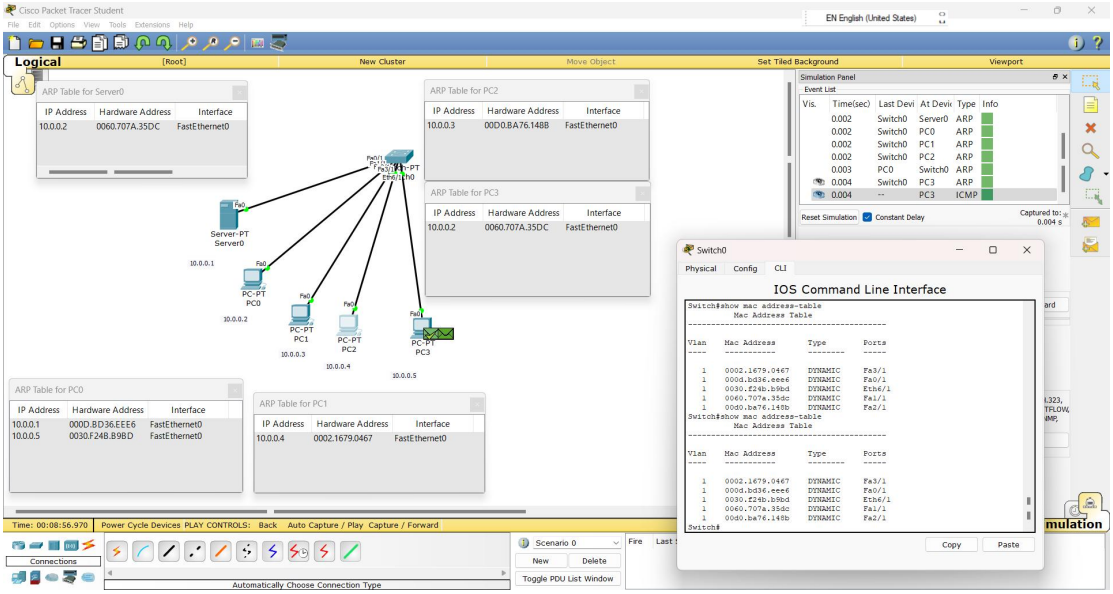
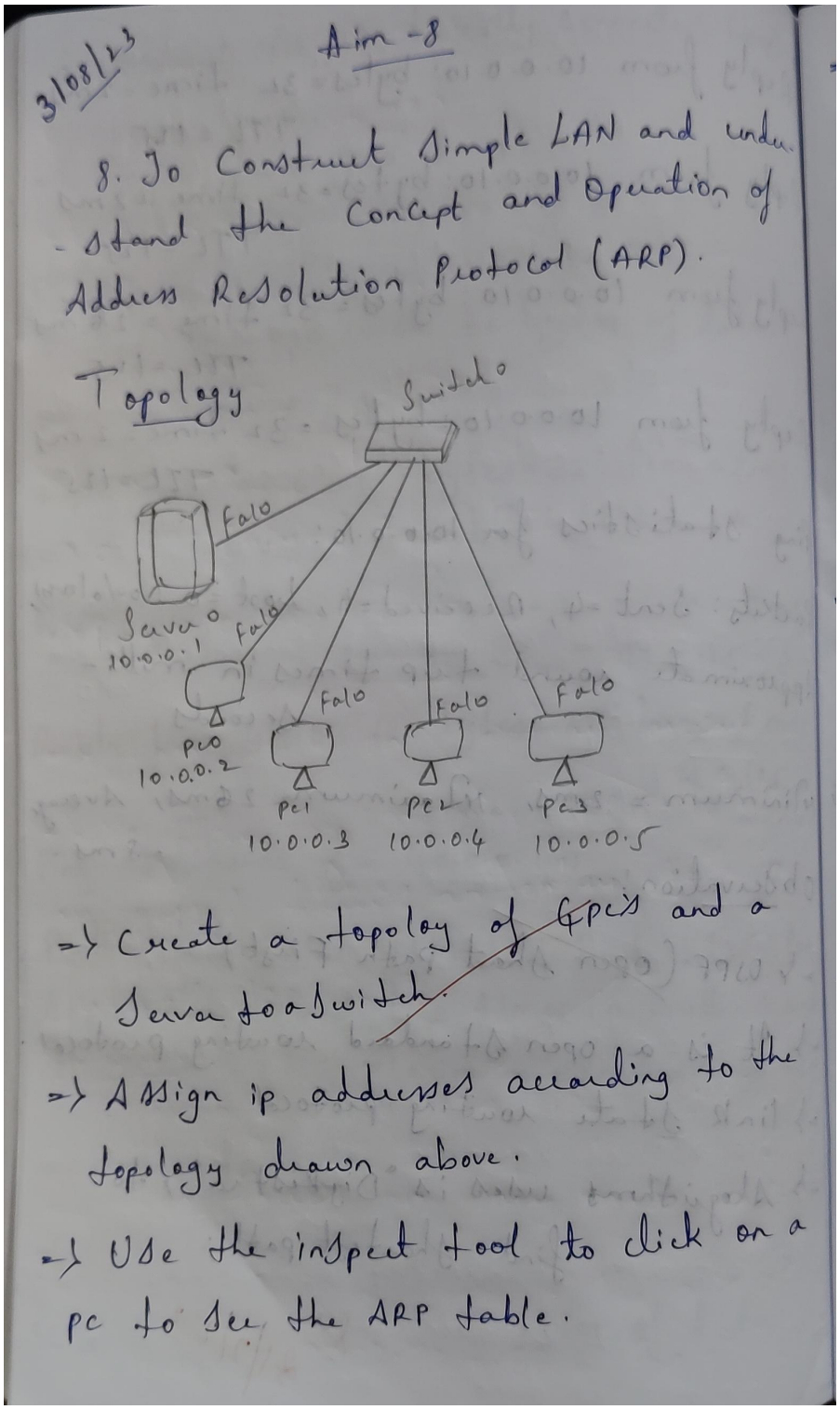


Fig 4: PDU packets are being sent/received with acknowledgement

Procedure and Observation:



-> Command in PKT CLI for the same is arp -a (this command is to be used in pc's command prompt which is situated in Desktop tab.

-> when the "arp -a" command is used initially you will get a reply saying ARP table is empty.

-> 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 & build the address-table.

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

Outcome

Output observation

-> when ping message is passed from pc0 to Server0 in Simulation mode.

commands

* (pc0 - Server0)

-> arp -a

No ARP Entries Found.

-> Ping 10.0.0.1

-> then click on capture/forward

-> Yes After the message / ARP packets / packets are passed there an entry made in Server0's ARP table

"-> 10.0.0.2 0060.2074.35DC FastEthernet

-> then there an entry made in pc0's ARP table.

"-> 10.0.0.1 000D.BD36.EEE6 FastEthernet0

=> Like wise the packets / messages have been passed from. PC1 - PC2, PC3 to PC0, PC2 - PC0 & PC1 - PC3.

=> the entries in respective PCs ARP table will be made as switch learns their MAC addresses.

Output

=> Now check the MAC address table in switch

=> check the MAC address table in switch after each transaction is being made.

Switch> enable

Switch# show mac address-table

Mac Address Table

Vlan	Mac Address	Type	Ports
1	0002.167A.0467	DYNAMIC	Fa3/1
1	000d.bd36.eceb	DYNAMIC	Fa0/1
1	0030.f24b.69bd	DYNAMIC	Eth6/1
1	0060.707a.35dc	DYNAMIC	Fa4/1
1	00d0.ba7b.148b	DYNAMIC	Fa2/1

Output:

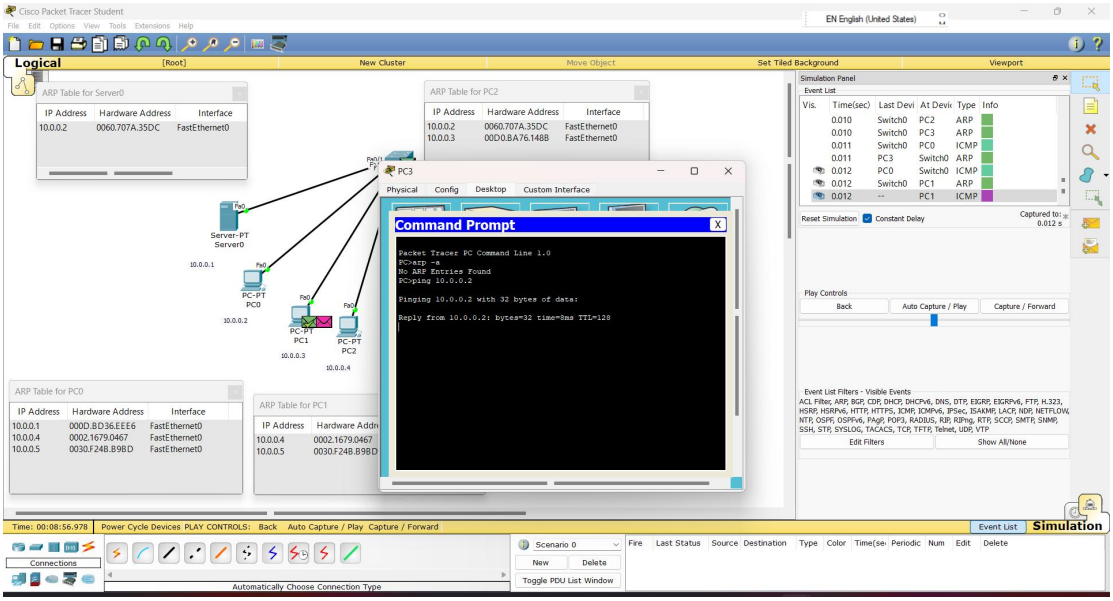


Fig 5: Initially you will not find any entries in ARP table

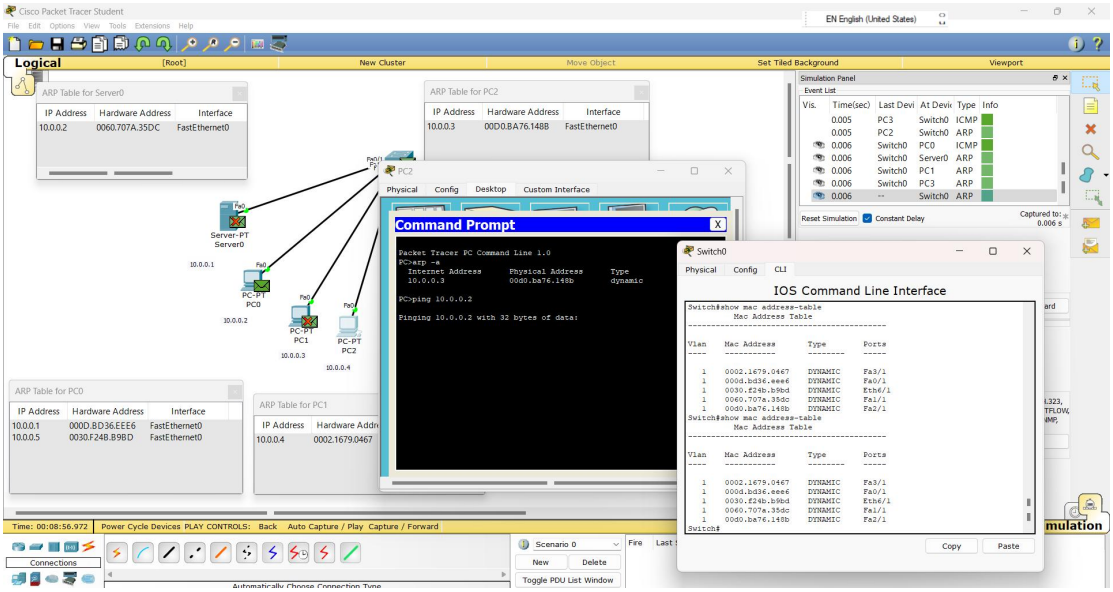


Fig 6: showing the contents of the ARP table

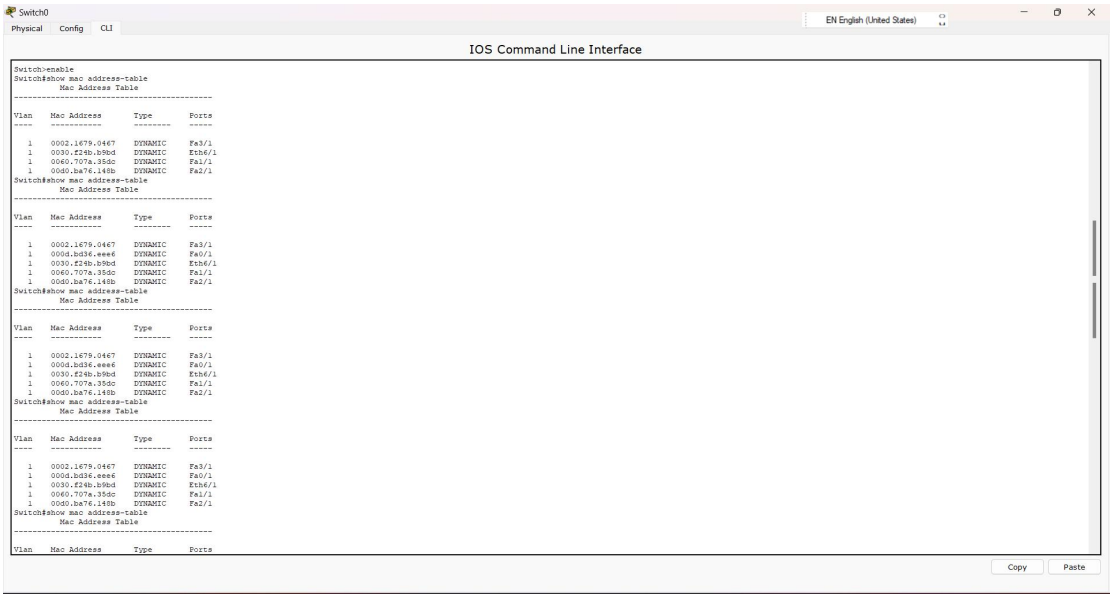


Fig 7: Showing mac address-table for every transaction

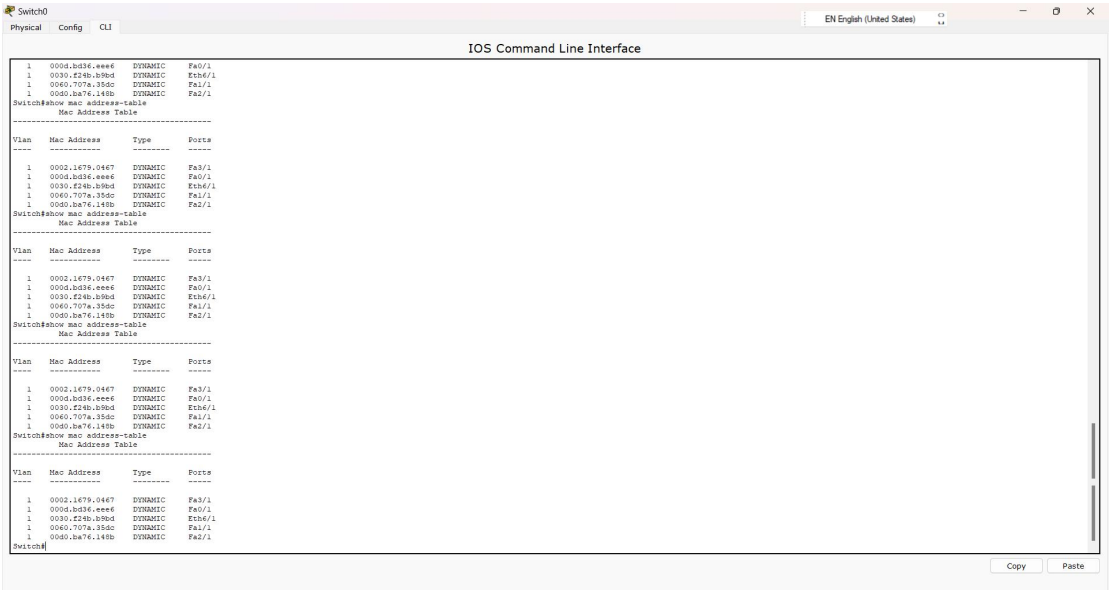


Fig 8: Showing mac address-table for every transaction