LABORATORY PROGRAM – 9

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

18/12/24 LAB NO 10

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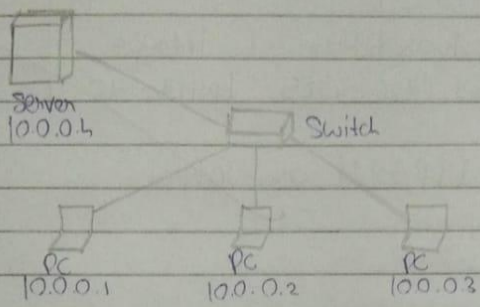
ARP

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

Topology:



Procedure:

1. Create the topology as shown above
2. Configure the PC's and the Server
3. Click on Inspect mode (9), then click on the end devices and open ARP tables
4. Send a data packet from any end device say Server to other end devices say 10.0.0.3 PC
5. Open Simulation mode to capture each step of data transfer

Observations

1. The ARP tables of the all end devices are initially empty.
2. When the data packet from device arrives at the Switch, since the source MAC address is unknown, it sends a broadcast message to all devices
3. The device with the IP address present in the destination address of the data packet responds to the message

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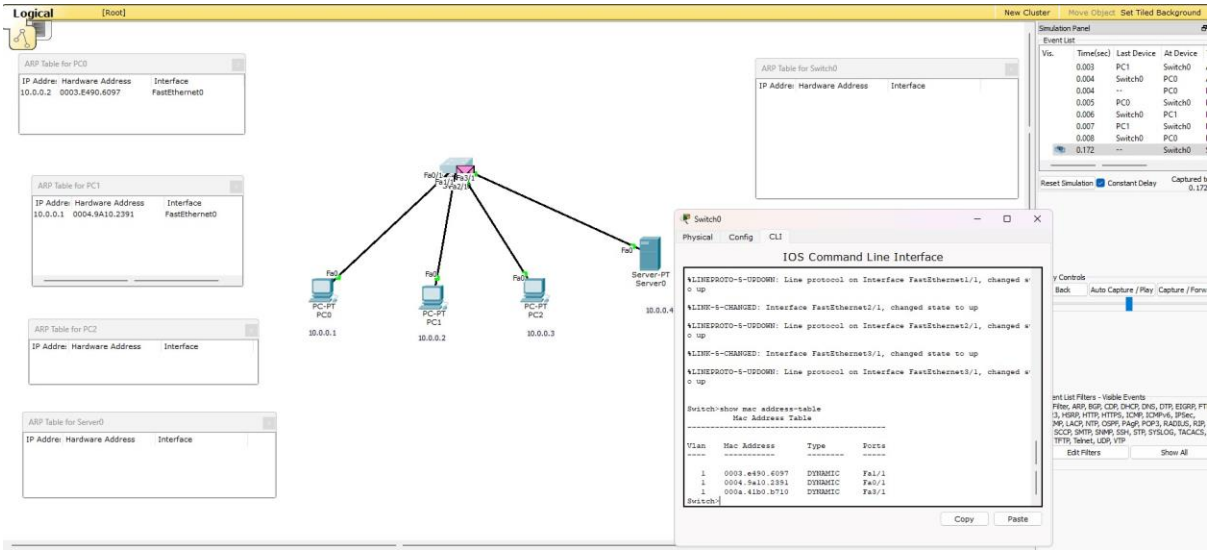
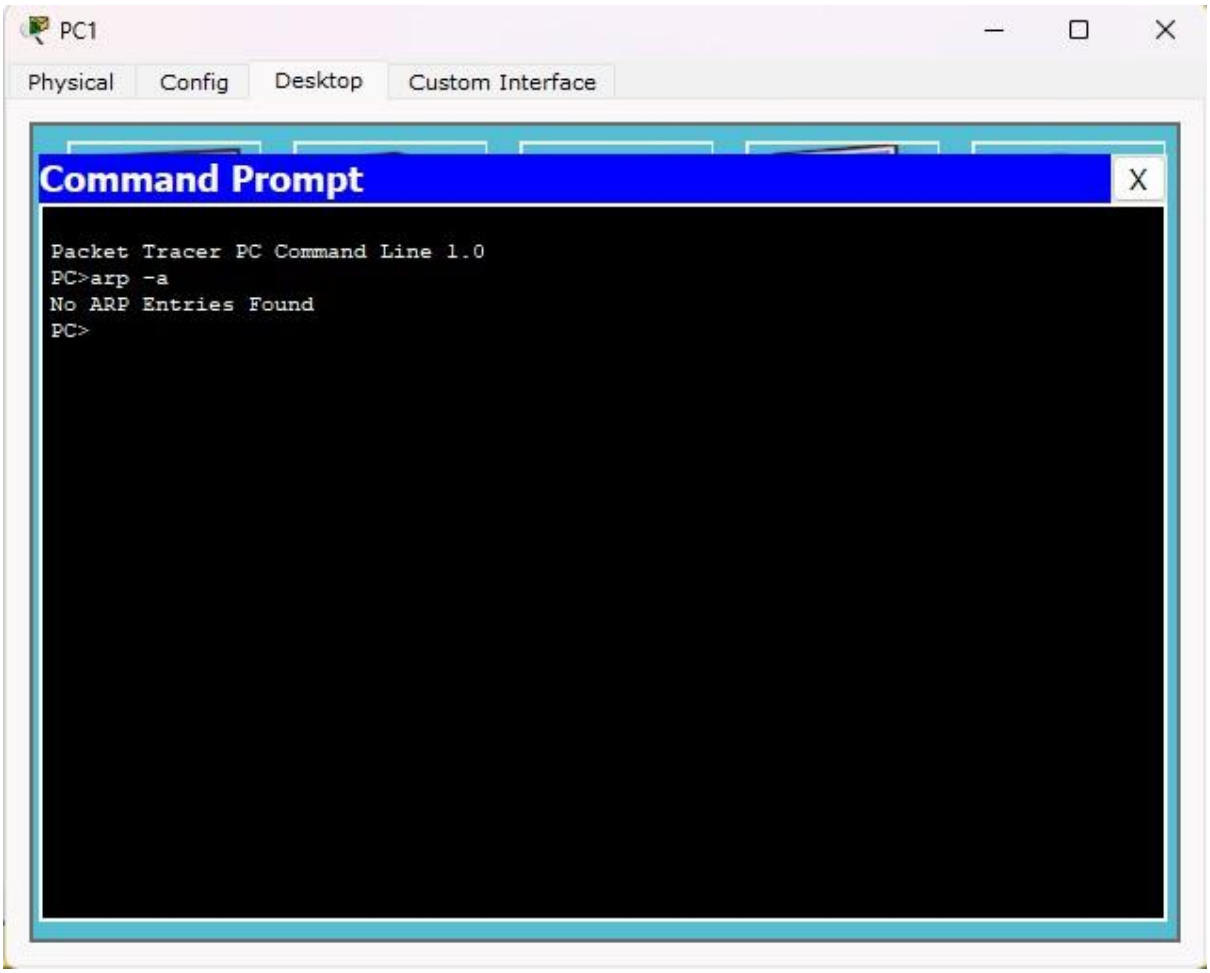
4. The Server and the PC update their ARP tables matching IP addresses to MAC address.
5. Over Time, the ARP tables grows as data packets are sent
6. The MAC table of the switch which was initially empty updates its MAC table gradually too

ARP table for 10.0.0.4:		
IPaddress	Hardware Address	Interface
10.0.0.3	0001.C726.47E5	FastEthernet0

7. Similarly other ARP tables are updated.


Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Simulation Panel
Event List
ARP Table for PC0
IP Addre: Hardware Address Interface
10.0.0.2 0003.E490.6097 FastEthernet0
ARP Table for Switch0
IP Addre: Hardware Address Interface
ARP Table for PC1
IP Addre: Hardware Address Interface
10.0.0.1 0004.9A10.2391 FastEthernet0
ARP Table for PC2
IP Addre: Hardware Address Interface
ARP Table for Server0
IP Addre: Hardware Address Interface
PC-PT PC0
PC-PT PC1
PC-PT PC2
Server-PT Server0
10.0.0.1
10.0.0.2
10.0.0.3
10.0.0.4
Switch0
Physical
Config
CLI
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet2/1, changed state to up
%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 0003.e490.6097 DYNAMIC Fa1/1
1 0004.9a10.2391 DYNAMIC Fa2/1
1 000a.41b0.b710 DYNAMIC Fa3/1
Switch>
Copy
Paste


PC1
Physical
Config
Desktop
Custom Interface
Command Prompt
X
Packet Tracer PC Command Line 1.0
PC>arp -a
No ARP Entries Found
PC>