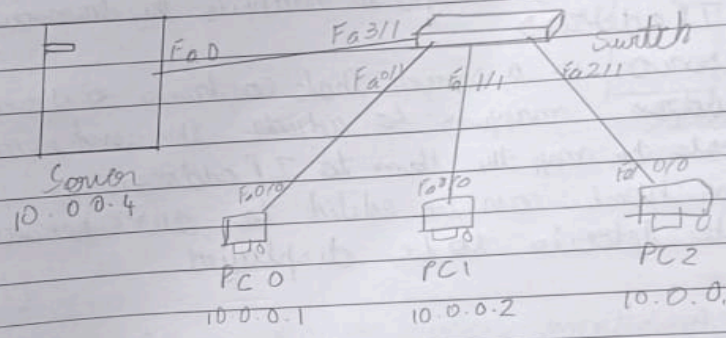
13/12/24

Lab-9

Q To construct simple LAN & understand the concept and operation of Address Resolution Protocol

Aim: To understand the concept & operation of ARP

Topology:



Procedure

1) Open Cisco Packet Tracer.
2) Set up the devices as shown in the Figure
3) Configure the IP addresses for the devices as shown
4) Switch to Simulation mode
5) Direct a simple PDU from a distination to Source
6) Start the Simulation & observe.
7) Take Inspect tool & open ARP tables for all devices

Result

In Switch CLI

> Show mac address-Table.

Mac Address Table

VLAN	MAC Address	Type	Ports
1	0001.42D5.1E08	Dynamic	Fa 3/1
1	0001.43EC.2AB3	"	Fa 2/1
1	0002.4A35.B302	"	1/1
1	00D0.D355.3B4B	"	0/1

Initially ARP tables Empty

After Simulation begins the ARP Tables of the Source & Destination Change

PC1 (Src)

IP	Hardware	Interface
10.0.0.3	0001.43CE.2AD3	FA0

PC2 (Dst)

IP	Hardware	Interface
10.0.0.2	0002.4A35.D3C2	FA0

Observation:

Initially, the ARP tables of all the devices are empty because no communication has occurred, and no MAC-IP mapping is cached. When one device attempts to communicate with another, it sends an ARP request to determine the MAC address corresponding to the IP address of the target device. The target device responds with an ARP reply, updating ARP tables on both ends. The switch builds its MAC address table by mapping MAC addresses to ports based on receiving frames. Subsequent communication uses cached ARP entries, avoiding repeated requests.

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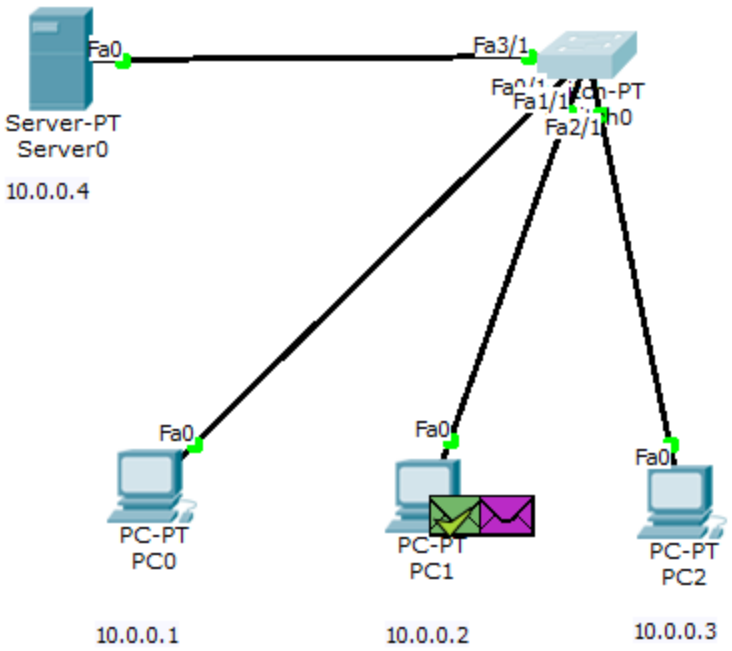
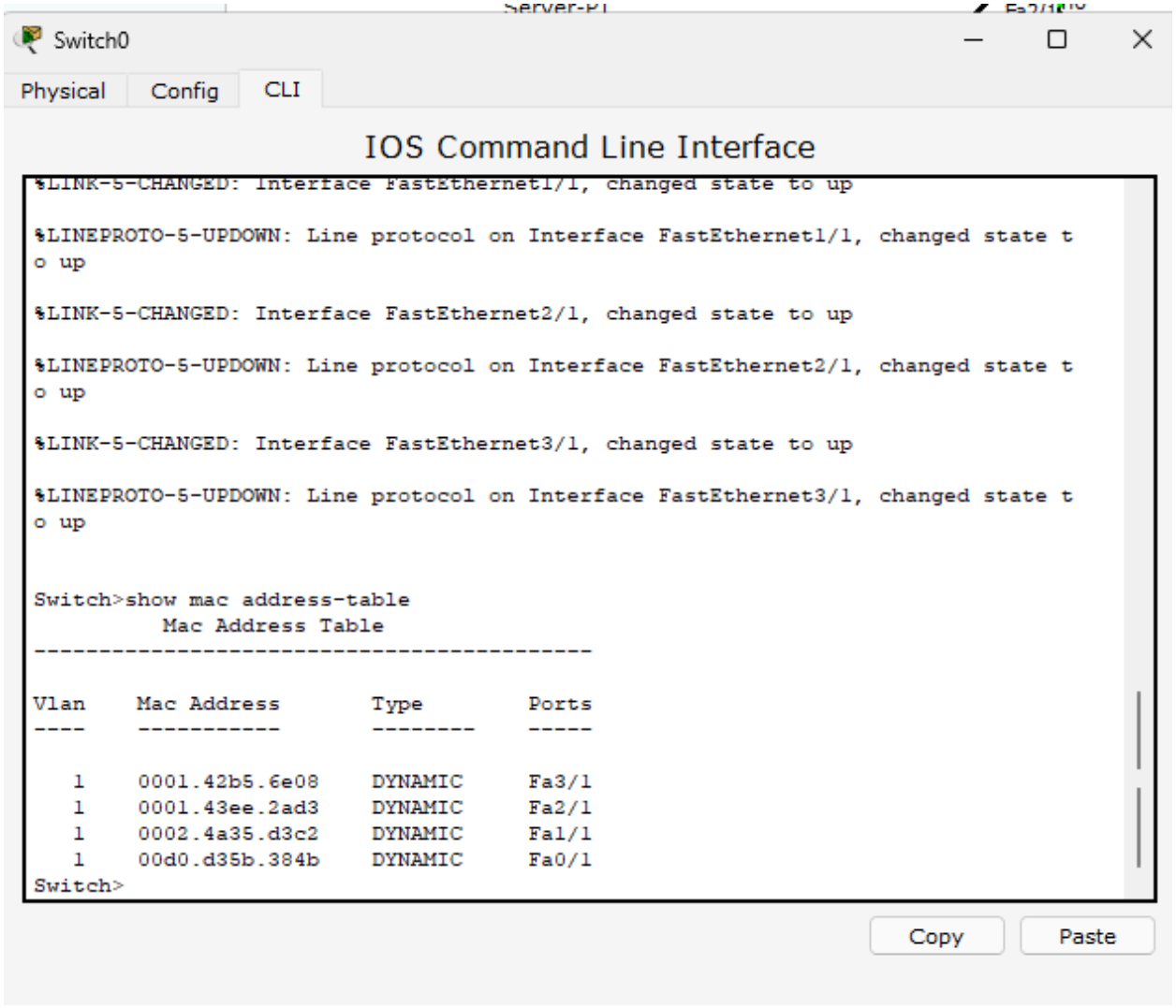
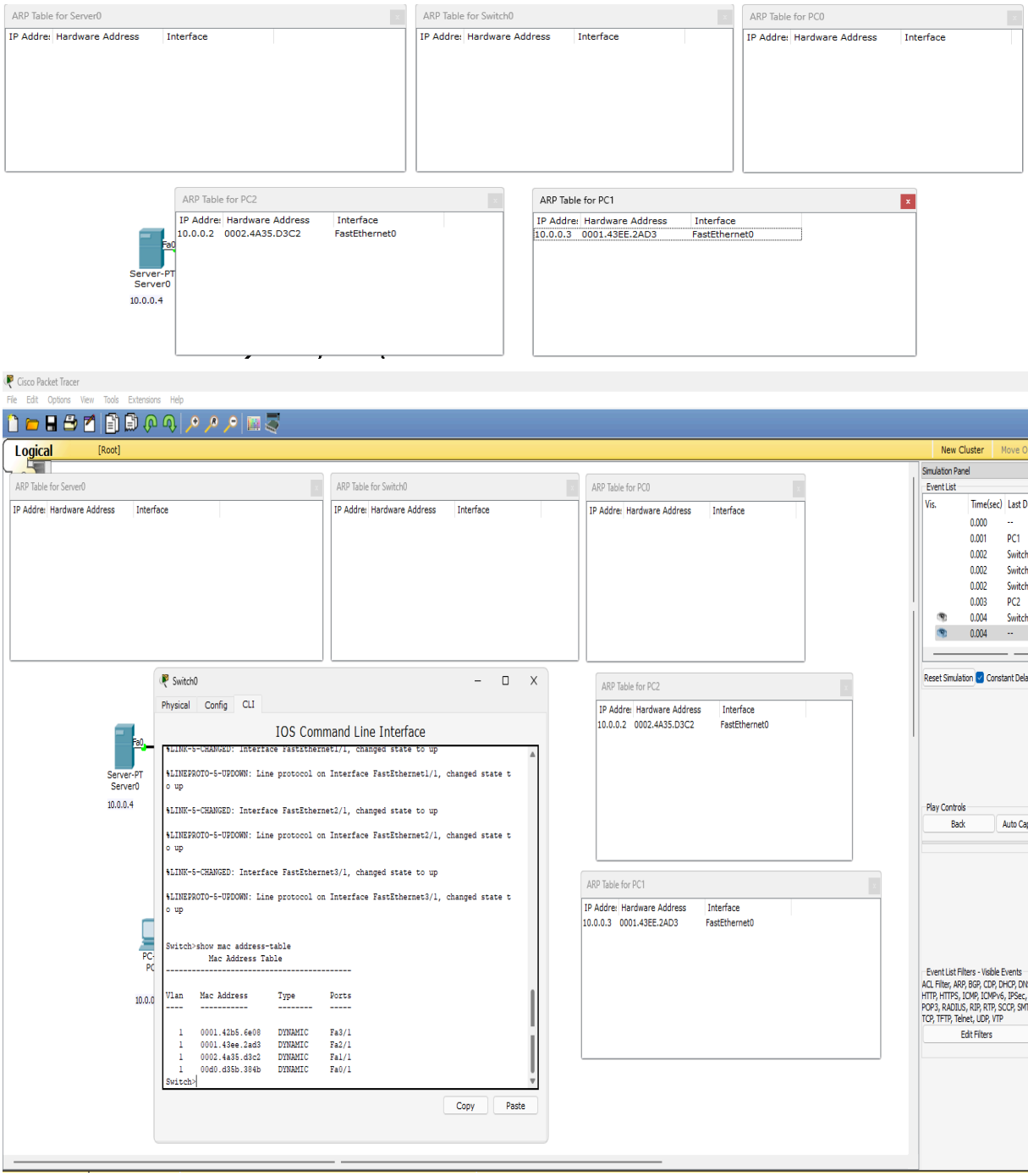

Fa0
Server-PT
Server0
10.0.0.4
Fa3/1
Fa1/1
Fa2/1
Fa0
PC-PT
PC0
10.0.0.1
Fa0
PC-PT
PC1
10.0.0.2
Fa0
PC-PT
PC2
10.0.0.3


Switch0
Physical
Config
CLI
IOS Command Line Interface
%LINK-5-CHANGED: Interface FastEthernet1/1, changed state to up
%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 0001.42b5.6e08 DYNAMIC Fa3/1
1 0001.43ee.2ad3 DYNAMIC Fa2/1
1 0002.4a35.d3c2 DYNAMIC Fa1/1
1 00d0.d35b.384b DYNAMIC Fa0/1
Switch>
Copy
Paste


ARP Table for Server0
IP Addre: Hardware Address Interface
ARP Table for Switch0
IP Addre: Hardware Address Interface
ARP Table for PC0
IP Addre: Hardware Address Interface
ARP Table for PC2
IP Addre: Hardware Address Interface
10.0.0.2 0002.4A35.D3C2 FastEthernet0
ARP Table for PC1
IP Addre: Hardware Address Interface
10.0.0.3 0001.43EE.2AD3 FastEthernet0
Server-PT
Server0
10.0.0.4
Cisco Packet Tracer
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Simulation Panel
Event List
Vis. Time(sec) Last Device At Device Type Info
0.000 -- PC1 ARP
0.001 PC1 Switch0 ARP
0.002 Switch0 PC0 ARP
0.002 Switch0 PC2 ARP
0.002 Switch0 Server0 ARP
0.003 PC2 Switch0 ARP
0.004 Switch0 PC1 ARP
0.004 -- PC1 ICMP
Reset Simulation
Constant Delay
Captured to:
0.004 s
Play Controls
Back
Auto Capture / Play
Capture / Forward
Event List Filters - Visible Events
ACL Filter, ARP, BGP, CDP, DHCP, DNS, DTP, EIGRP, FTP, H.323, HSRP, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, LACP, NTP, OSPF, PAgP, POP3, RADIUS, RIP, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP
Edit Filters
Show All
Switch0
Physical
Config
CLI
IOS Command Line Interface
%LINK-5-CHANGED: Interface FastEthernet1/1, changed state to up
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1 00d0.d35b.384b DYNAMIC Fa0/1
Switch>
Copy
Paste