

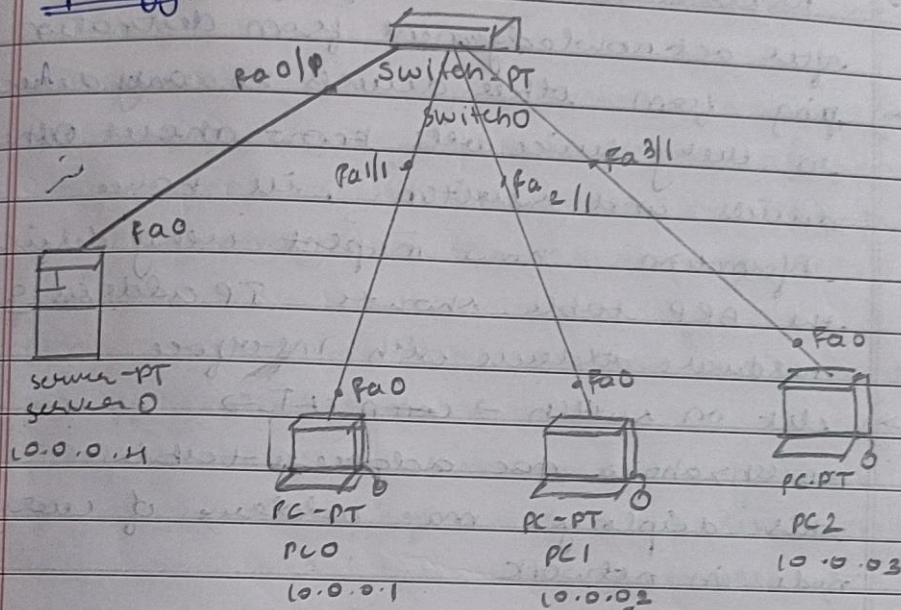
3/8/23

## Experiment - 8

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

Aim: Construct LAN and to understand concept of ARP

### Topology:



### procedure:

- \* select a switch, server and three pcs and drop them in the workspace. a generic server, pc and switch.
- \* set IP address of server as 10.0.0.11, PC0 as 10.0.0.1, PC1 as 10.0.0.2, PC2 as 10.0.0.3 and connect them to the switch0 with automatic connection.
- \* PC1 → command prompt → ~~ping~~ <sup>PC2 no arp found</sup> → arp -a, select inspect and click on every device ~~no arp~~ <sup>no arp</sup>



the arp table will be empty.

\* select simulation mode. select a source and destination device. for example PC0 → desktop → command prompt  
PC> ping 10.0.0.1 i.e ping

each time and message reaches destination upon pressing capture/forward to see the ping output after acknowledgment from destination.

\* ping from other devices to any device. so, every device will know about other devices and switch will have information. now inspect every device the ARP table shows IP address, Hardware address with Interface.

\* click on switch → CLI →

switch>show mac address-table  
this displays mac address of every node in network.

### Observation:

\* At beginning arp table will be empty and arp-a command does not fetch any output.

\* after pinging the switch knows about all devices and show mac address-table shows the mac address of all devices. the inspect option shows the IP, and hardware address of all devices with its interface.



### Result

\*) ping output from PC0 to PC1 (10.0.0.1) to PC2 (10.0.0.4)

PC>ping 10.0.0.4

pinging 10.0.0.4 with 32 bytes of data:

Reply from 10.0.0.4: bytes=32 time=8ms TTL=128

Reply from 10.0.0.4: bytes=32 time=4ms TTL=128

Reply from 10.0.0.4: bytes=32 time=4ms TTL=128

Reply from 10.0.0.4: bytes=32 time=4ms TTL=128

ping statistics for 10.0.0.4:

packets: sent=4, Received=4, lost=0(0% loss),

Approximate Round trip time in milli-seconds:

Minimum=4ms, Maximum=8ms, Average=5ms

\*) ping from PC1 to PC2 i.e (10.0.0.2) to (10.0.0.3)

PC>ping 10.0.0.3

pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time=8ms TTL=128

Reply from 10.0.0.3: bytes=32 time=4ms TTL=128

Reply from 10.0.0.3: bytes=32 time=4ms TTL=128

Reply from 10.0.0.3: bytes=32 time=4ms TTL=128

ping statistics for 10.0.0.3:

packets: sent=4, Received=4, lost=0(0% loss)

Approximate Round trip time in milli-seconds:

Minimum=4ms, Maximum=8ms, Average=5ms

\*) after purging to check mac address of all devices.

Switch0 → CLI

switch > show mac address-table



## Mac Addresses Table

Vlan	Mac Address	Type	Ports
1	0000.0C0C.HA2b	DYNAMIC	fa 3/1
1	000H.9a55.0b51	DYNAMIC	fa 1/1
1	0060.2F09.A2C2	DYNAMIC	fa 2/1
1	00E0.605b.d54b	DYNAMIC	fa 0/1

## PC Zarp-a

Internet address	Physical address	Type
10.0.0.1	0001.9c53.7660	Dynamic
100.0.4	6070.2373.E0A4	dynamic
10.0.0.2	0001.9796.E267	dynamic

10/10

3/8/23

Cisco Packet Tracer Student

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tied Background Viewport

ARP Table for Server0

IP Address	Hardware Address	Interface
10.0.0.2	0000.D35A.5B4A	FastEthernet0

ARP Table for PC0

IP Address	Hardware Address	Interface
10.0.0.1	0001.C94A.5437	FastEthernet0

ARP Table for PC1

IP Address	Hardware Address	Interface
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ARP Table for PC2

IP Address	Hardware Address	Interface
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Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.000	PC0	Switch0	ICMP	
	0.001	PC0	Switch0	ICMP	
	0.002	Switch0	Server0	ICMP	
	0.003	Server0	Switch0	ICMP	
	0.004	Switch0	PC0	ICMP	

Reset Simulation Constant Delay Captured: 0.004 s

Play Controls Back Auto Capture / Play Capture / Forward

Event List Filters - Visible Events

ACL, Ping, ARP, RST, CDP, DHCP, DNS, FTP, HTTP, SSH, SNMP, Telnet, TFTP, UDP, VTY, BGP, OSPF, IS-IS, LACP, LLDP, NTP, RADIUS, RMON, SMI, STP, Syslog, Traceroute, VRRP, WPA, X.25, Z39.50

Time: 00:10:04.668 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward

Connections Automatically Choose Connection Type

Scenario 0 New Delete

Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Successful	PC0	Server0	ICMP		0.000	N	0	(edit)	(delete)
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Toggle PDU List Window

Cisco Packet Tracer Student

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Logical [Root] New Cluster Move Object Set Tied Background Viewport

ARP Table for Server0

IP Address	Hardware Address	Interface
10.0.0.2	0000.D35A.5B4A	FastEthernet0

ARP Table for PC0

IP Address	Hardware Address	Interface
10.0.0.1	0001.C94A.5437	FastEthernet0

ARP Table for PC1

IP Address	Hardware Address	Interface
10.0.0.4	0001.6A40.ECB3	FastEthernet0

ARP Table for PC2

IP Address	Hardware Address	Interface
10.0.0.3	0008.2C19.7360	FastEthernet0

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.006	Switch0	PC2	ARP	
	0.006	Switch0	Server0	ARP	
	0.007	PC2	Switch0	ARP	
	0.008	Switch0	PC1	ARP	
	0.008	PC1	Switch0	ICMP	
	0.009	PC1	Switch0	ICMP	
	0.010	Switch0	PC2	ICMP	
	0.011	PC2	Switch0	ICMP	
	0.012	Switch0	PC1	ICMP	

Reset Simulation Constant Delay Captured: 0.012 s

Play Controls Back Auto Capture / Play Capture / Forward

Event List Filters - Visible Events

ACL, Ping, ARP, RST, CDP, DHCP, DNS, FTP, HTTP, SSH, SNMP, Telnet, TFTP, UDP, VTY, BGP, OSPF, IS-IS, LACP, LLDP, NTP, RADIUS, RMON, SMI, STP, Syslog, Traceroute, VRRP, WPA, X.25, Z39.50

Time: 00:10:04.676 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward

Connections Automatically Choose Connection Type

Scenario 0 New Delete

Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Successful	PC0	Server0	ICMP		0.000	N	0	(edit)	(delete)
Successful	PC1	PC2	ICMP		0.004	N	1	(edit)	(delete)

Toggle PDU List Window

