

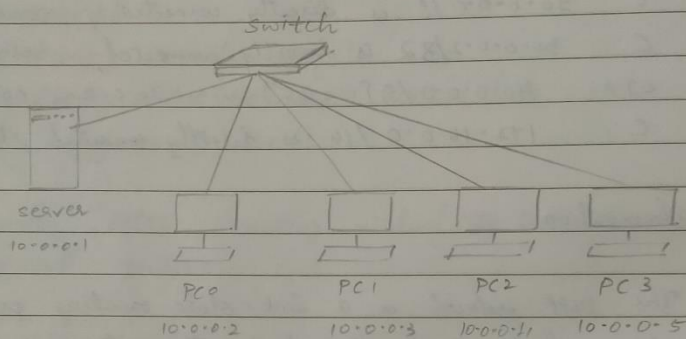
## Experiment 9:

### Address Resolution Protocol

#### Address Resolution Protocol

Aim: To construct simple LAN and understand the concept and operation of

Topology:



#### Procedure

- Construct a topology of 4 PCs and a server
- IP address assigned to all.
- Connect them through a switch
- Use the inspect tool to click on a PC to see the ARP Table
- Command in CLI for the same is `arp-a`
- Initially ARP is empty.
- Then go to simulation mode and start sending packets from every device to the other.
- Use the capture button in simulation panel to go step by step so that the changes in ARP can be clearly noted.
- Observe the switch as well the nodes update the ARP Table as and when a new communication starts

→ Go to the CLI of any device and give commands to check that device's ARP table.

> arp -a

→ Go to the switch CLI and type the command

> show mac-address-table

to see the address table of the entire LAN.

Output :

Server > arp -a

Internet address	Physical address	Type
10.0.0.2	0001.64e0.1b10	dynamic
10.0.0.3	0010.113e.54d6	dynamic
10.0.0.4	0030.f2e5.ae1e	dynamic
10.0.0.5	0060.2fd9.6c6d	dynamic

Switch > show mac address-table

#### Mac Address Table

Vlan	Mac Address	Type	Ports
1	0001.64e0.1b10	Dynamic	Fa1/1
1	000c.cfb9.4e6d	Dynamic	Fa0/1
1	0010.113e.54d6	Dynamic	Fa2/1
1	0030.f2e5.ae1e	Dynamic	Fa3/1
1	0060.2fd9.6c6d	Dynamic	Fa6/1

Observation:

we observe that everytime we capture a ping, the arp table of the corresponding devices get updated. ~~ARP~~ ARP finds the hardware address, also known as the MAC address of a host from its known IP address. So after the experiment, we can see that the mac address table of ~~the~~ switch contains all the MAC address of the devices in the LAN, which was found out through ARP protocol & its ip address.

10/10  
17/8/23



## Topology and output screenshots:

Cisco Packet Tracer Student - C:\Users\sanja\Cisco Packet Tracer 6.2sv\saves\8.pkt

File Edit Options View Tools Extensions Help

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

ARP Table for PC0

IP Address	Hardware Address	Interface
10.0.0.2	000C.8566.E0...	FastEthernet0/24
10.0.0.3	0090.218C.4006	FastEthernet0/24
10.0.0.4	00E0.B048.BCC3	FastEthernet0/24

ARP Table for PC3

IP Address	Hardware Address	Interface
10.0.0.1	0090.21CE.43D7	FastEthernet0/24

ARP Table for Server0

IP Address	Hardware Address	Interface
10.0.0.1	0090.21CE.43D7	FastEthernet0

ARP Table for PC2

IP Address	Hardware Address	Interface
10.0.0.1	0090.21CE.43D7	FastEthernet0/24

ARP Table for PC1

IP Address	Hardware Address	Interface
10.0.0.1	0090.21CE.43D7	FastEthernet0/24

Simulation Panel

Event List

Vis.	Time(sec)	Last De	At Dev	Type	Info
	0.016	Switch0	Server0	ARP	
	0.016	Switch0	PC1	ARP	
	0.016	Switch0	PC2	ARP	
	0.016	Switch0	PC3	ARP	
	0.017	Server0	Switch0	ARP	

Reset Simulation Constant Delay Captured to: 0.017 s

Switch0

Physical Config CLI

IOS Command Line Interface

```

%LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet0/1, changed state to up

Switch>show mac address-table
Mac Address Table
-----
Vlan    Mac Address      Type      Ports
-----
1       000c.8566.e0dc   DYNAMIC   Fa2/1
1       0090.21bc.4006   DYNAMIC   Fa3/1
1       0090.21ce.43d7   DYNAMIC   Fa1/1
1       00e0.b048.bcc3   DYNAMIC   Fa16/1
1       00e0.f78b.ac89   DYNAMIC   Fa0/1
Switch>

```

Time: 00:05:08.650 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward

Connections

Scenario 0

New Delete

Toggle PDU List Window

Fire Last Sta

Successful PC0 PC3 IC... 0.000 N 0 (ed... (delete)

Successful PC0 PC1 IC... 0.007 N 1 (ed... (delete)

Successful PC0 PC2 IC... 0.007 N 2 (ed... (delete)

31°C Partly sunny

Search

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16:23 26-08-2023