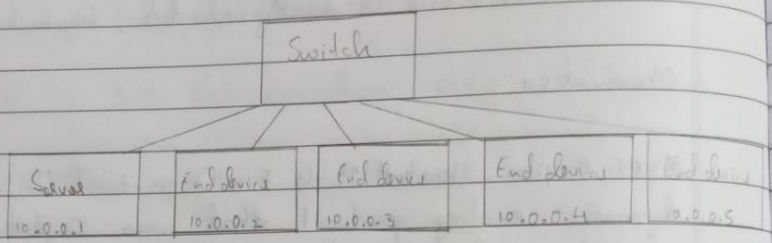
EXPERIMENT-8

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

Experiment-8

Aim: Construction of a simple LAN to understand concept and operation of Address Resolution Protocol (ARP).

Topology:



Procedure:

① Connect 4 PCs and a server to a switch.
② Assign IP addresses to all devices.
③ Use the 'inspect tool' and click on PC to view its ARP table.
④ In command prompt of PC, use command 'arp -a' to view ARP table. Initially ARP Table will be empty.
⑤ In the CLI of switch, use command 'show mac address-table' to observe ARP Table of the switch.
⑥ In the simulation mode, capture packets from one device to another and observe updation of ARP table.

SUKIA Gold
Date Page

Result:

In command prompt of 10.0.0.2

> arp -a

Internet address	Physical Address	Type
10.0.0.1	0090.2b50.070a	dynamic
10.0.0.3	00d0.ba36.9687	dynamic
10.0.0.4	00d0.97ed.5ae9	dynamic
10.0.0.5	0002.17d5.c0a0	dynamic

In CLI of switch

> show mac-address-table

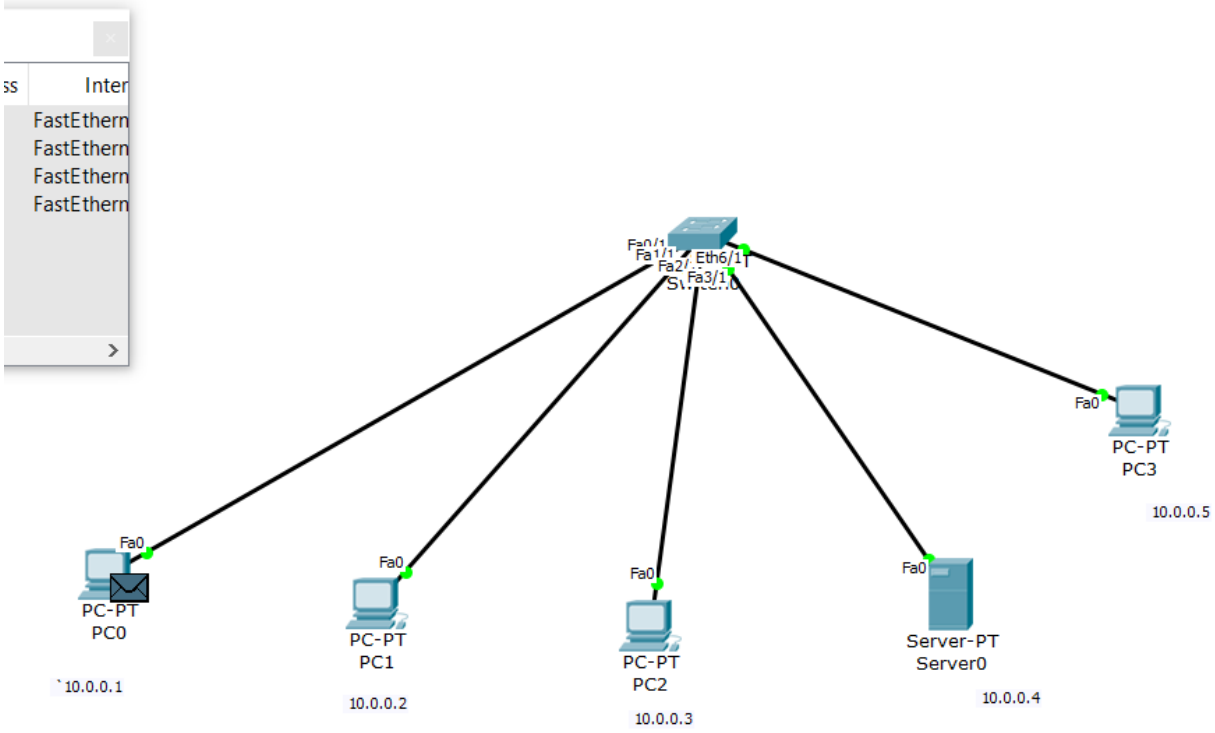
Mac Address Table

Vlan	Mac address	Type	Ports
1	0002.17d5.c0a0	dynamic	Eth 6/1
1	0003.e417.b2d5	dynamic	Fa 1/1
1	0090.2b50.070a	dynamic	Fa 0/1
1	00d0.97ed.5ae9	dynamic	Fa 3/1
1	00d0.ba36.9687	dynamic	Fa 2/1

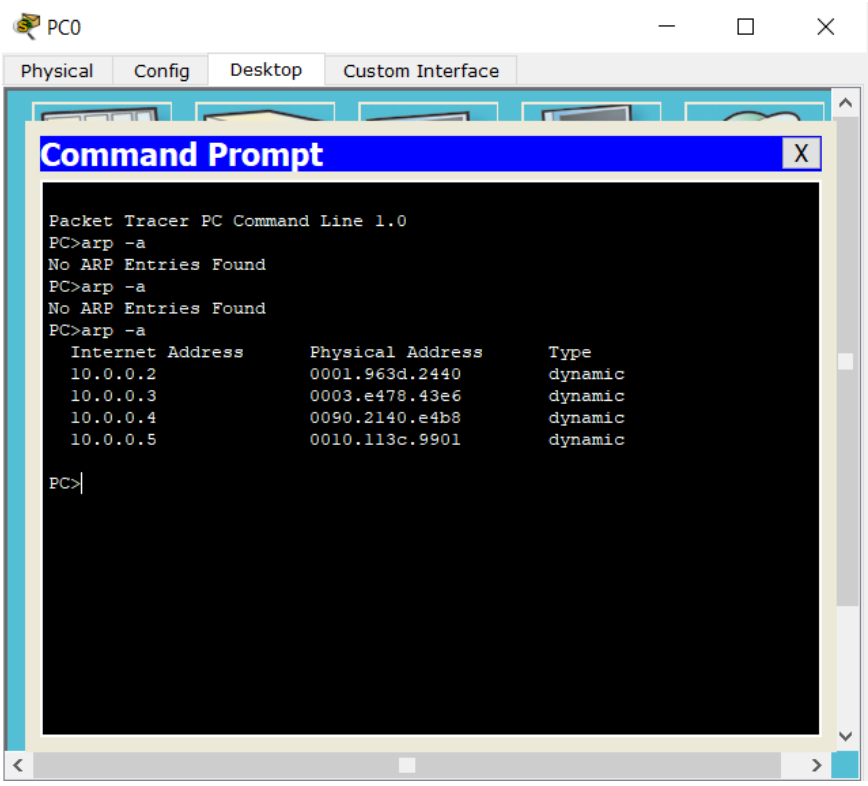
Observation:

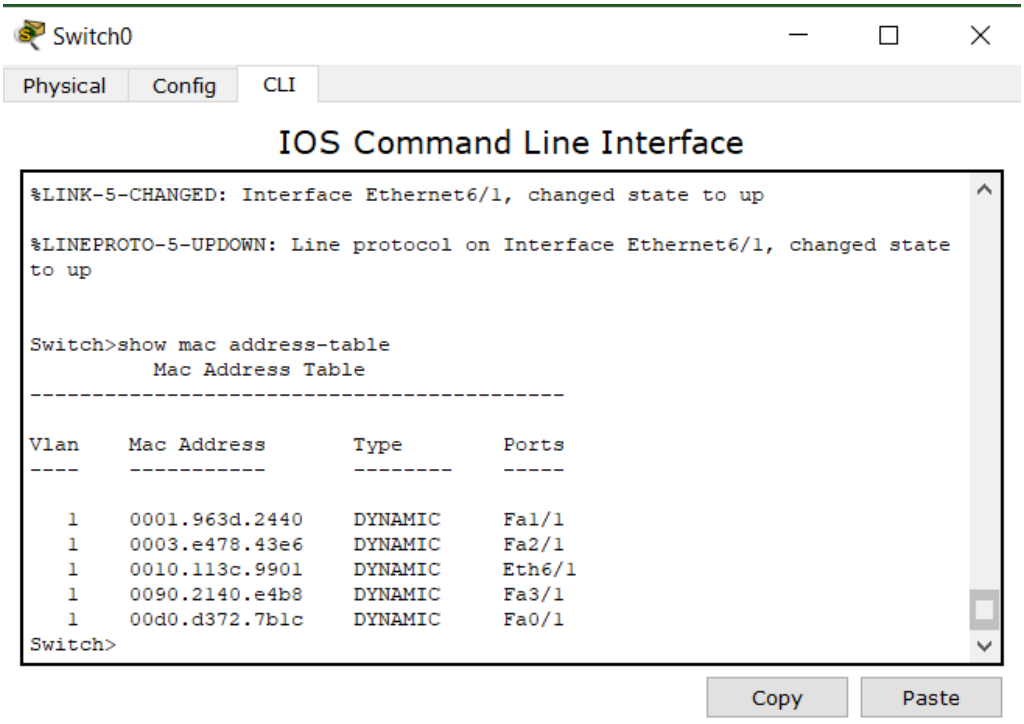
ARP (Address Resolution Protocol) is a layer 3 protocol that is used to find the MAC address from the IP address. An ARP broadcast is sent requesting MAC address of ~~required~~ mentioned IP address. The called device unicasts with its MAC address. The MAC address is updated in the ARP table with

Topology:


Inter
FastEthern
FastEthern
FastEthern
FastEthern
Fa0/1
Fa1/1
Fa2/
Fa3/1
Eth6/1
Fa0
PC-PT
PC3
10.0.0.5
Fa0
PC-PT
PC0
`10.0.0.1
Fa0
PC-PT
PC1
10.0.0.2
Fa0
PC-PT
PC2
10.0.0.3
Fa0
Server-PT
Server0
10.0.0.4

Result:


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
X
Packet Tracer PC Command Line 1.0
PC>arp -a
No ARP Entries Found
PC>arp -a
No ARP Entries Found
PC>arp -a
Internet Address Physical Address Type
10.0.0.2 0001.963d.2440 dynamic
10.0.0.3 0003.e478.43e6 dynamic
10.0.0.4 0090.2140.e4b8 dynamic
10.0.0.5 0010.113c.9901 dynamic
PC>


Switch0
Physical
Config
CLI
IOS Command Line Interface
%LINK-5-CHANGED: Interface Ethernet6/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet6/1, changed state to up
Switch>show mac address-table
Mac Address Table
Vlan Mac Address Type Ports
1 0001.963d.2440 DYNAMIC Fa1/1
1 0003.e478.43e6 DYNAMIC Fa2/1
1 0010.113c.9901 DYNAMIC Eth6/1
1 0090.2140.e4b8 DYNAMIC Fa3/1
1 00d0.d372.7b1c DYNAMIC Fa0/1
Switch>
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