

Institute of Computer Technology

B. Tech Computer Science and Engineering

Sub: Computer Networks

Sem-V(CS)

Class:-A

Practical:1

Aim: To verify the role of Address Resolution Protocol (ARP) in a network of an organization.

Task 1:

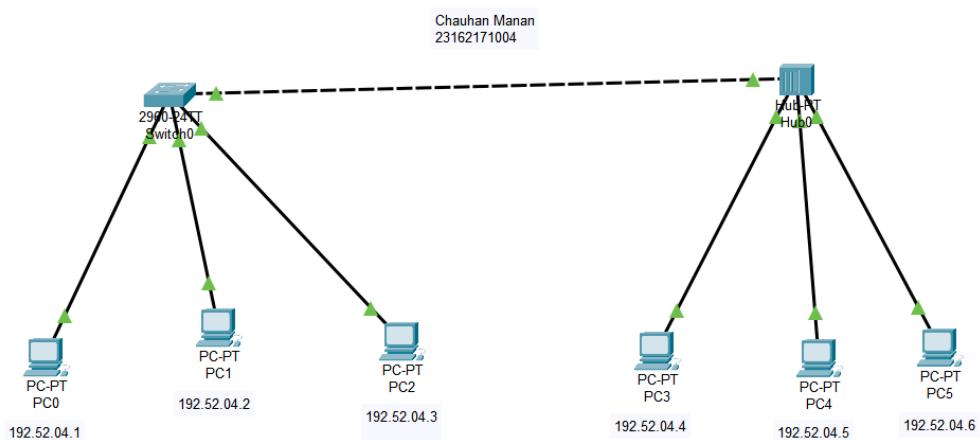
To compare working of HUB and SWITCH

| Hub | Switch |
|--|--|
| Works on Physical Layer (Layer 1) | Works on Data Link Layer (Layer 2) |
| Broadcasts data to all devices | Sends data only to the intended device |
| Slower in performance | Faster and more efficient |
| Half-duplex communication | Full-duplex communication |
| Cannot learn MAC addresses | Learns and stores MAC addresses |
| One collision domain (more collisions) | Separate collision domain per port |
| Cheaper | More expensive |

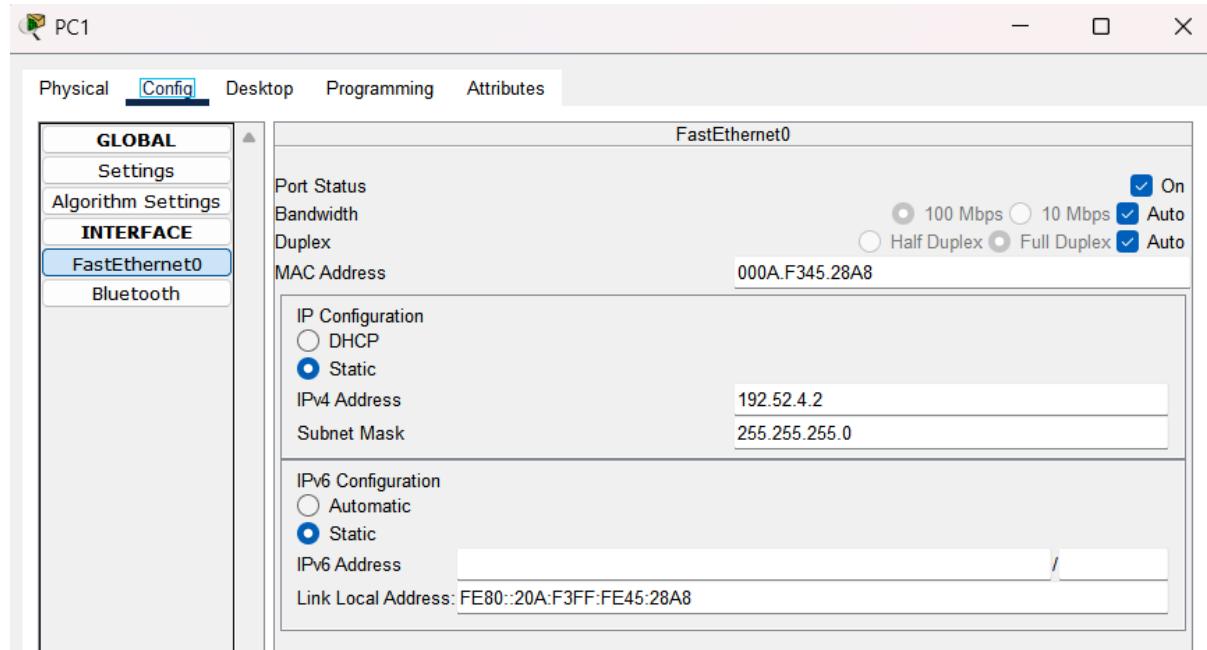
Task 2:

To verify the role of Address Resolution Protocol (ARP) in a network of an organization.

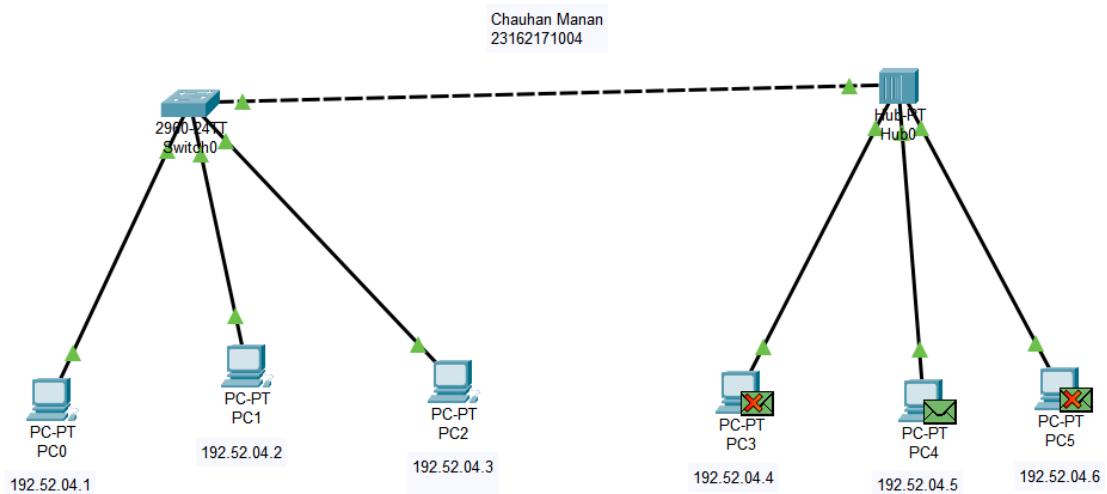
Network image



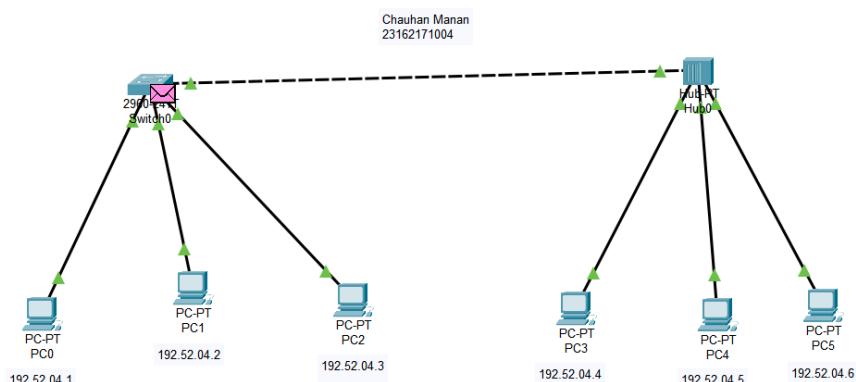
PC IP address



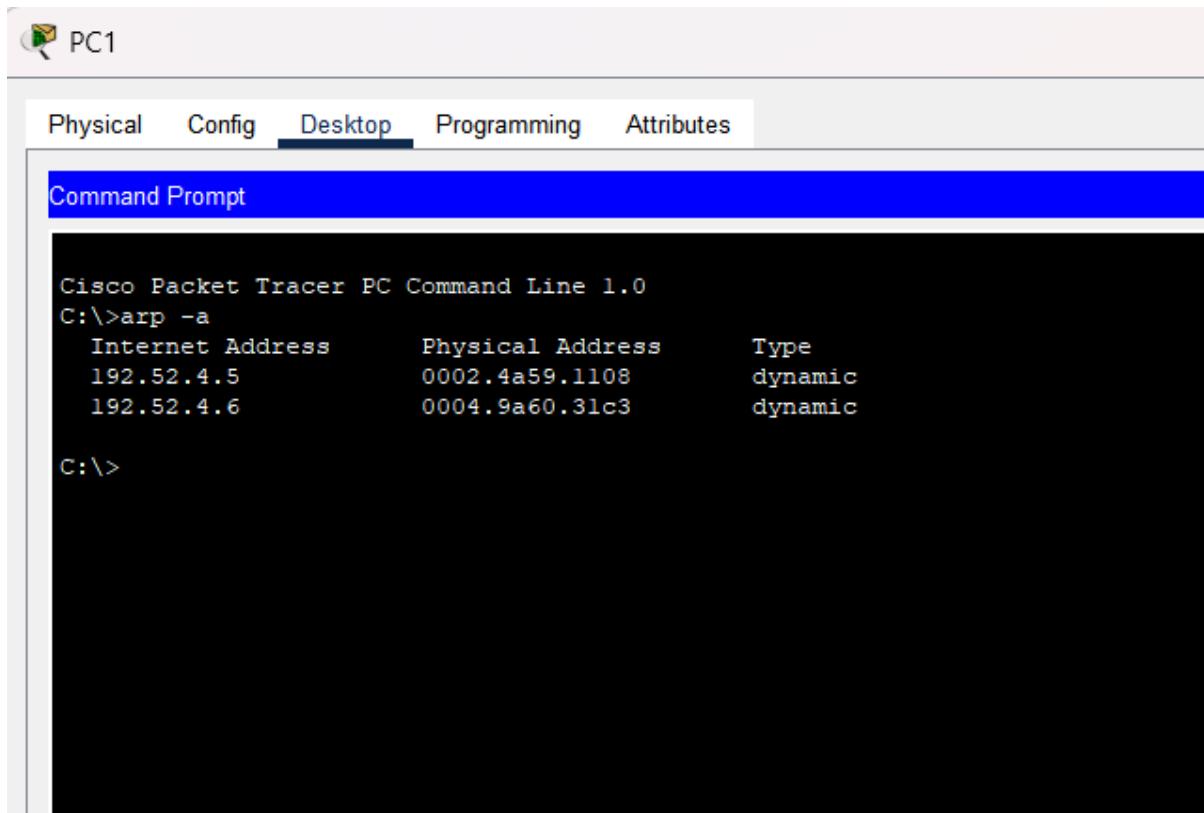
Broadcasting



Packet status (Successful)



ARP table in PC



The screenshot shows a window titled "PC1" with tabs for Physical, Config, Desktop (which is selected), Programming, and Attributes. Below the tabs is a blue header bar labeled "Command Prompt". The main area displays the output of the command "arp -a":

```
Cisco Packet Tracer PC Command Line 1.0
C:\>arp -a
  Internet Address      Physical Address      Type
  192.52.4.5            0002.4a59.1108    dynamic
  192.52.4.6            0004.9a60.31c3    dynamic

C:\>
```

MAC table in switch

```
Switch>show mac-address-table
      Mac Address Table
-----
Vlan   Mac Address      Type      Ports
----  -----
  1    0002.4a59.1108  DYNAMIC   Fa0/4
  1    0004.9a60.31c3  DYNAMIC   Fa0/4
  1    000a.f345.28a8  DYNAMIC   Fa0/2
  1    0060.4713.2583  DYNAMIC   Fa0/4
```

Conclusion:-

In this practical, we verified the working of ARP in a network. We observed how ARP helps in mapping IP address to MAC address during communication between two departments. Also, we compared hub and switch, and found that switch sends data to specific device while hub broadcasts to all.