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**Institute of Computer Technology
B. Tech Computer Science and Engineering**

**Sub:CN
Practical 1**

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

Scenario:

An organization named Green Tech Solution contains 2 departments: Production and Sales in the same premises. Each department has 3 users. Departments are connected with each other using switches. Report the changes in ARP table when any user from production department communicates with any user of sales department.

Note:

Make sure last two digits of your enrollment numbers appears in network IP address that must be visible in snapshot of the cisco packet tracer. I.e. 192. YY . XX .1 (YY indicates batch number in two digit. XX indicates last two digits of your enrollment no.)

Task 1:

To compare working of HUB and SWITCH

ANSWER:

HUB	SWITCH
Physical Layer (Layer 1)	Data Link Layer (Layer 2)
Single collision domain	Each port has its own collision domain

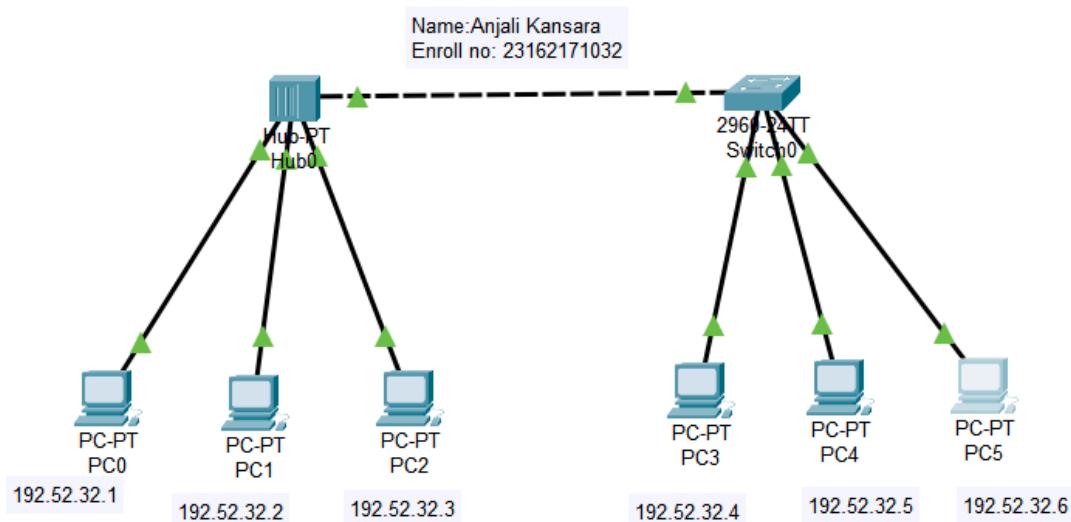
Cheaper cost	Slightly more expensive
Low Data Security	Better Data Security
Broadcasts data to all ports	Forwards data only to the specific destination port
Uses for Small/simple networks	Use for Modern networks (home, office, enterprise)

Task 2:

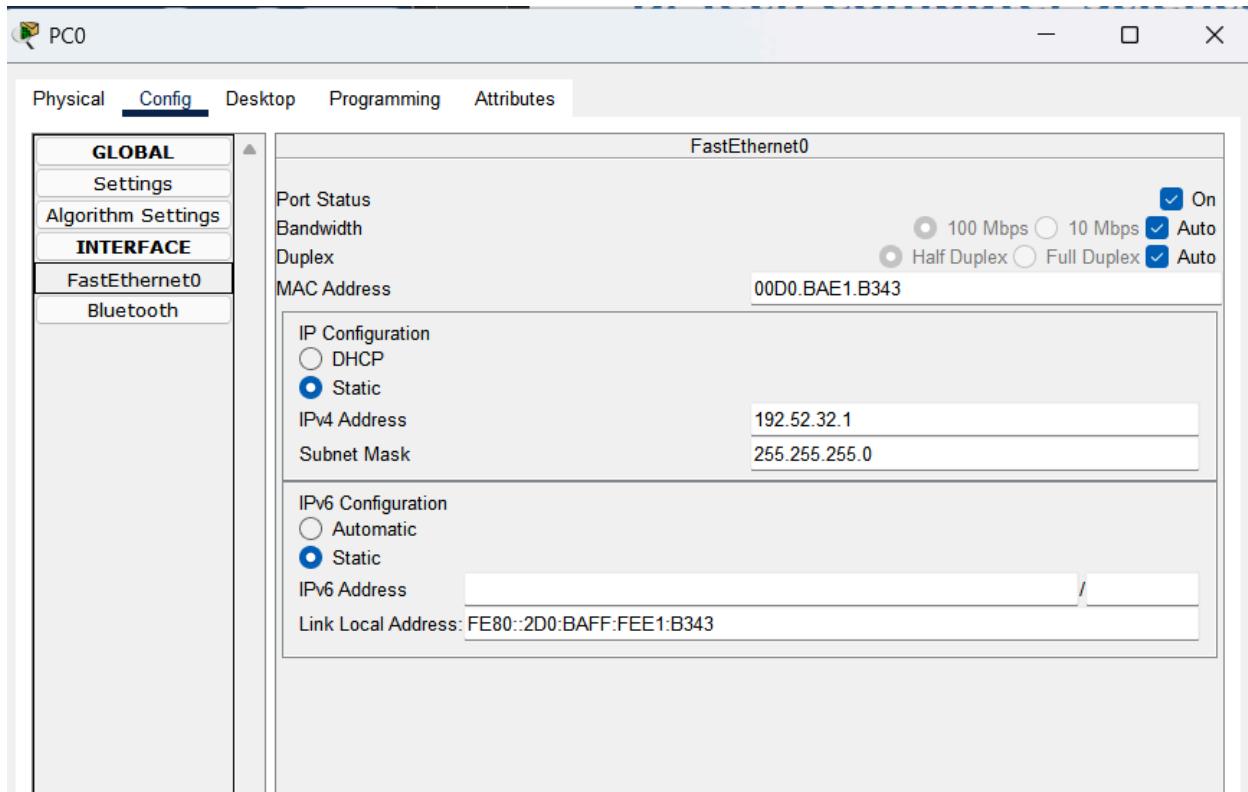
To verify the role of Address Resolution Protocol (ARP) in a network of an organization.

Requirement Submission:

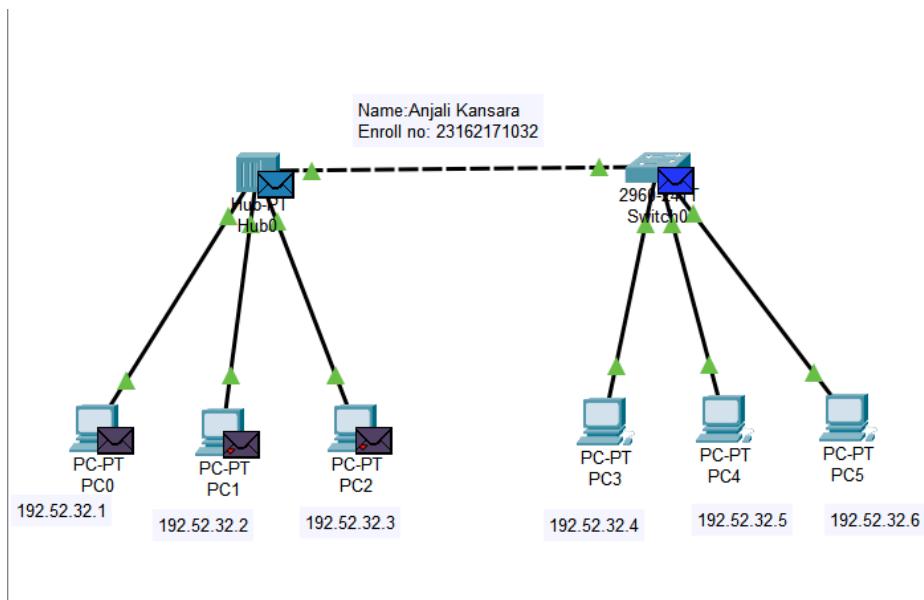
- Network image

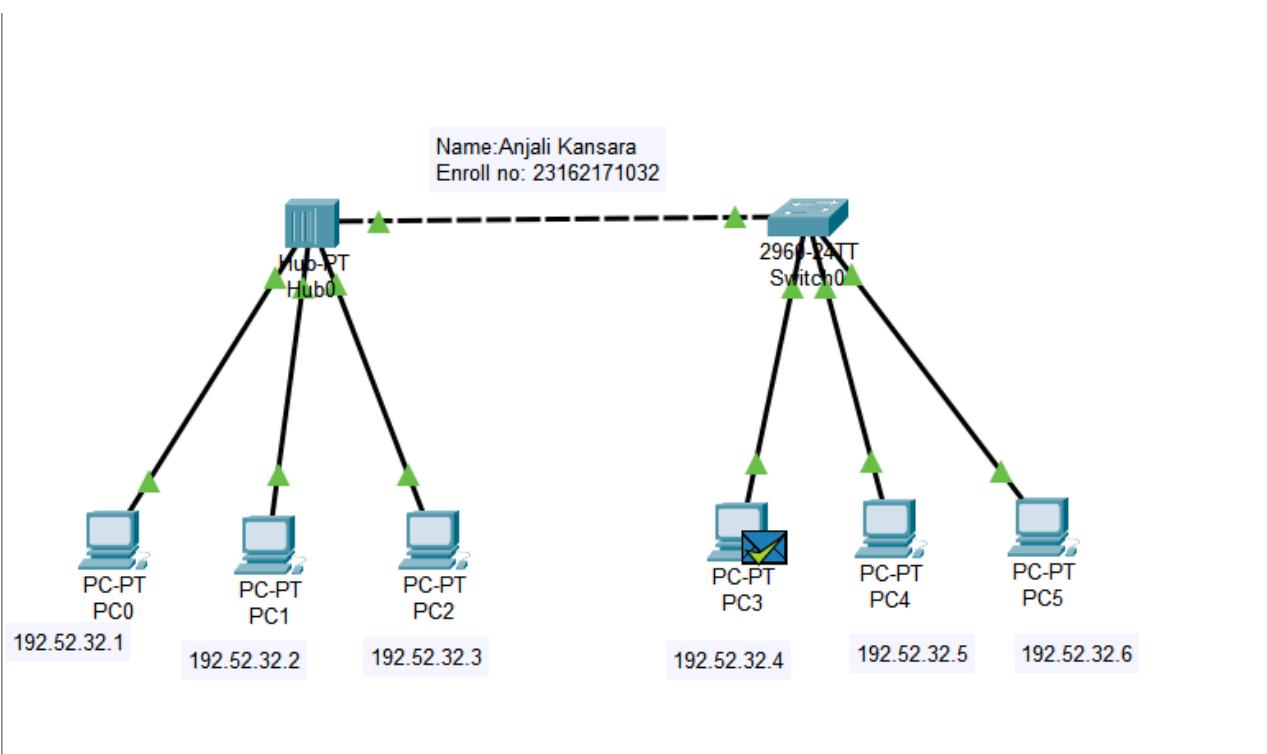


- PC IP address

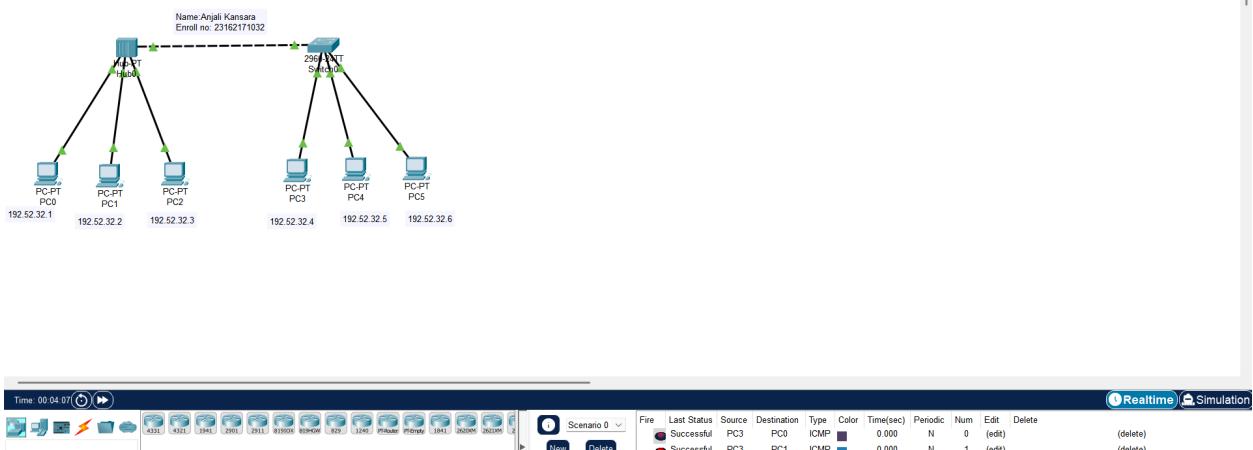


• Broadcasting





- Packet status (Successful)



- ARP table in PC

The screenshot shows the Cisco Packet Tracer application window titled "PC3". The tab bar at the top has tabs for "Physical", "Config", "Desktop" (which is selected), "Programming", and "Attributes". Below the tabs is a blue header bar with the text "Command Prompt". The main area is a black terminal window displaying the following text:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>arp-a
Invalid Command.

C:\>clear
Invalid Command.

C:\>arp -a
   Internet Address      Physical Address      Type
   192.52.32.1            00d0.bael.b343    dynamic
   192.52.32.2            0005.5ed3.0c10    dynamic
   192.52.32.3            00e0.f776.8863    dynamic
   192.52.32.5            0001.961c.a932    dynamic
   192.52.32.6            0001.9606.ad6a    dynamic

C:\>
```

- MAC table in switch

The screenshot shows the Cisco IOS CLI window titled "Switch0". The tab bar at the top has tabs for "Physical", "Config", "CLI" (which is selected), and "Attributes". Below the tabs is a title bar "IOS Command Line Interface". The main area is a black terminal window displaying the following text:

```
Switch>
Switch>enable
Switch#show mac-address
   Mac Address Table
-----
Vlan     Mac Address      Type      Ports
----  -----
  1      0001.9606.ad6a  DYNAMIC   Fa0/4
  1      0001.961c.a932  DYNAMIC   Fa0/3
  1      0005.5ed3.0c10  DYNAMIC   Fa0/1
  1      0090.0c9d.7699  DYNAMIC   Fa0/2
  1      00d0.bael.b343  DYNAMIC   Fa0/1
  1      00e0.f776.8863  DYNAMIC   Fa0/1
```

Conclusion:

In this practical we learn how ARP maps IP to MAC addresses for communication and how switches improve network efficiency compared to hubs.

