Institute of Computer Technology
B. Tech Computer Science and Engineering

Subject: Computer Network

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PRACTICAL 1

Task 1:

To compare working of HUB and SWITCH.

- **HUB**

1. Operates at **Layer 1** (Physical Layer) of the OSI model.
2. Broadcasts incoming data to **all ports**, causing unnecessary traffic.
3. Has **no intelligence** — does not check MAC addresses.
4. Shares total bandwidth among all connected devices.
5. Higher chance of **collisions**, especially in busy networks.
6. Usually cheaper and simpler to set up.
7. Not secure — data can be easily captured by all devices.
8. Rarely used today, mostly replaced by switches.

- **SWITCH**

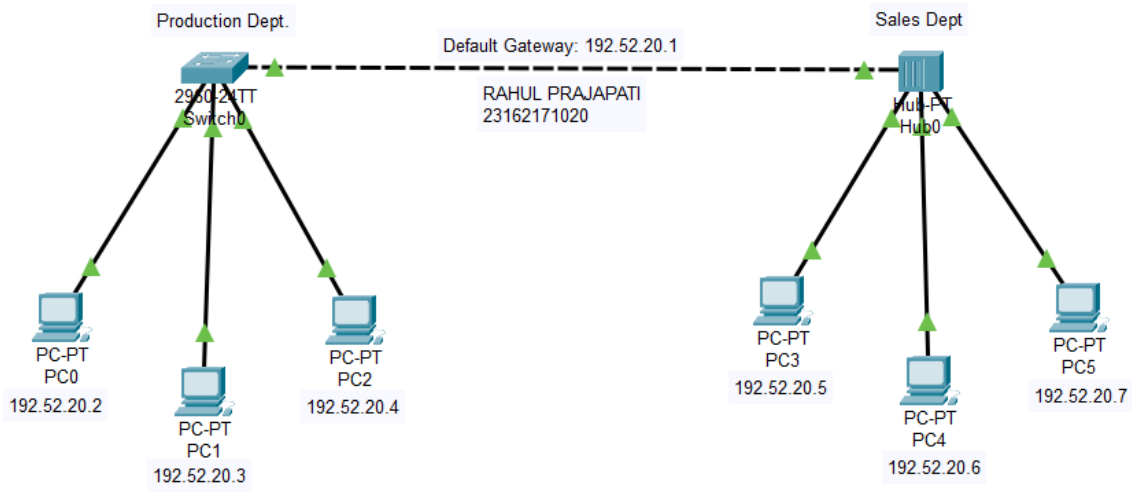
1. Operates at **Layer 2** (Data Link Layer) of the OSI model.
2. Uses **MAC addresses** to send data only to the intended device.
3. Reduces unnecessary traffic and improves efficiency.
4. Provides **dedicated bandwidth** to each port.
5. Minimizes collisions by creating separate collision domains.
6. More secure — data is sent only to the correct port.
7. Slightly more expensive than hubs, but cost-effective for performance.
8. Commonly used in modern networks for better speed and management.

Task 2:

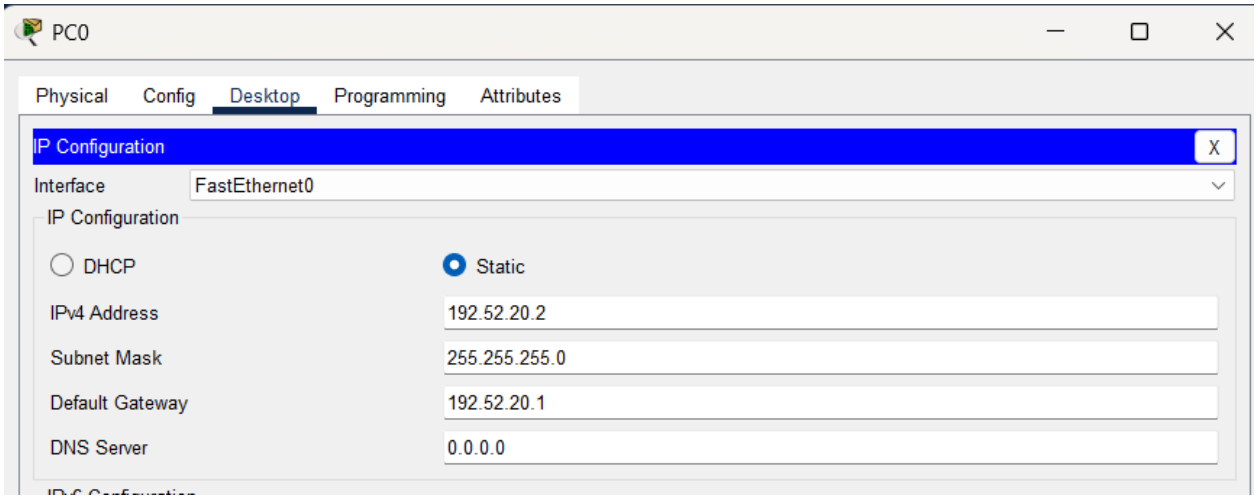
To verify the role of Address Resolution Protocol (ARP) in a network of an organization.

Requirement Submission:

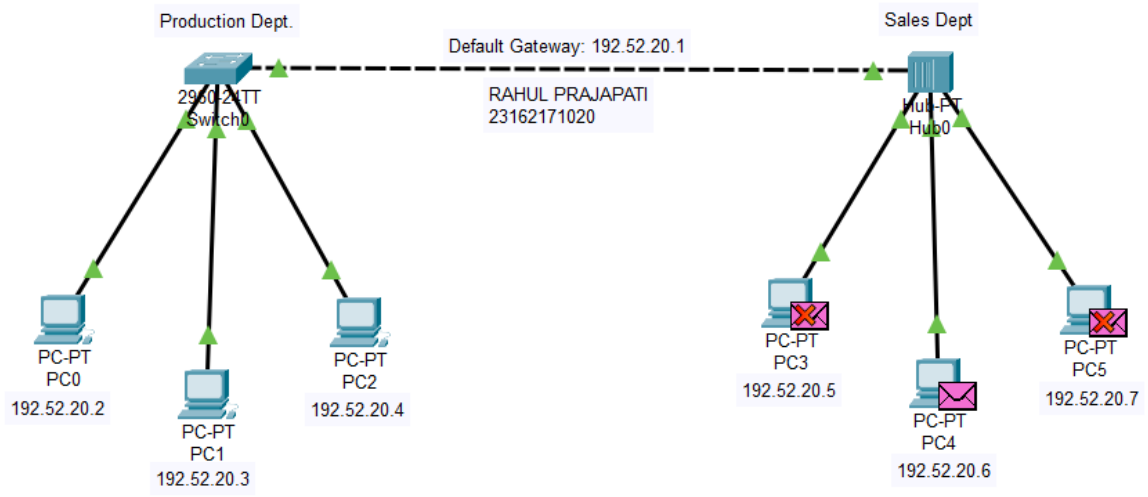
- Network image



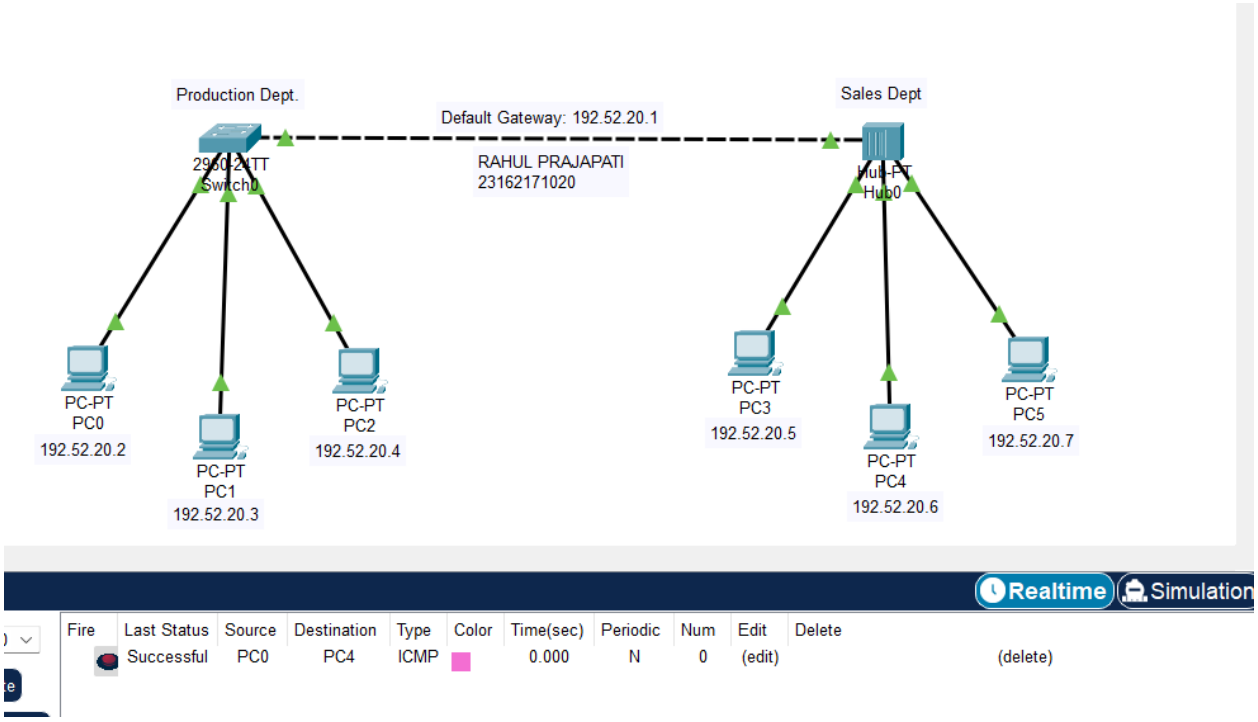
- PC IP address



• Broadcasting



• Packet status (Successful)



• ARP table in PC

```
C:\>arp -a
  Internet Address      Physical Address      Type
  192.52.20.4           00d0.d37d.1baa        dynamic
  192.52.20.5           0001.63e8.3560        dynamic
  192.52.20.7           00e0.f991.be44        dynamic

C:\>
```

• MAC table in switch

```
Switch>show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
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   1    0000.0c36.890e    DYNAMIC     Fa0/2
   1    0001.63e8.3560    DYNAMIC     Fa0/1
   1    0001.6424.17ed    DYNAMIC     Fa0/3
   1    00d0.d37d.1baa    DYNAMIC     Fa0/4
   1    00e0.f991.be44    DYNAMIC     Fa0/1
Switch>
```

Conclusion: From this practical, we learned that ARP helps devices find each other by matching IP addresses with MAC addresses. We saw how ARP tables update when devices communicate. This shows that ARP is essential for smooth data transfer within a local network. Without ARP, devices couldn't talk to each other properly.