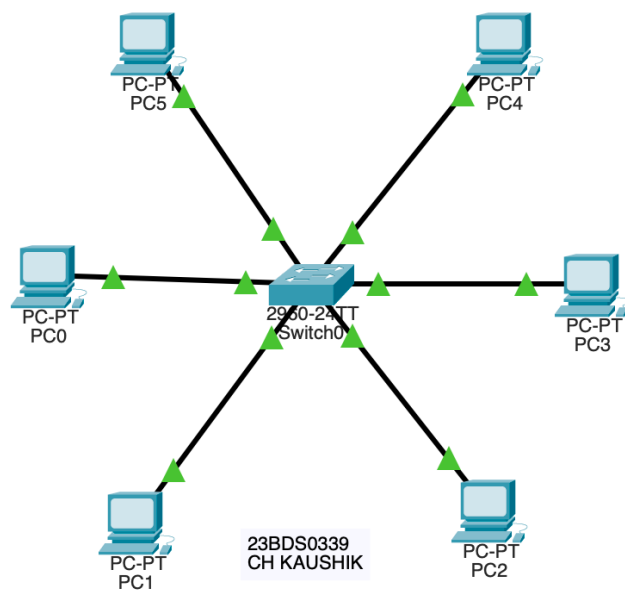23BDS0339

CH KAUSHIK

Objective:

Design and configure **two Star Topologies** (one with a Switch, one with a Hub), each with **6 PCs**, and verify connectivity.

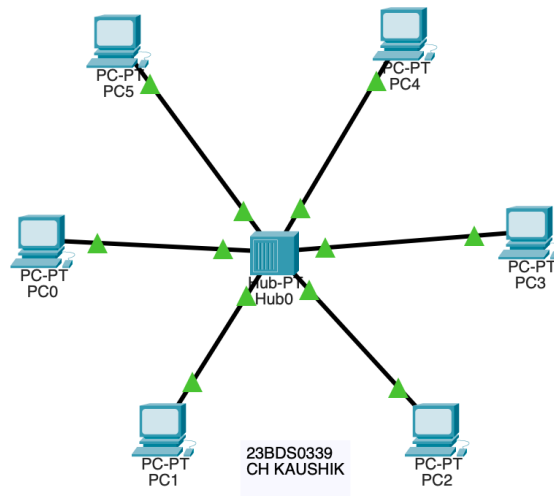# 1. Network Design

Topology 1:

Star Topology using Switch

- **Central Device**: 1 Switch (2960)
- **End Devices**: 6 PCs
- **Connection**: Each PC connected to the switch

Topology 2:

Star Topology using Hub

- **Central Device**: 1 Hub
- **End Devices**: 6 PCs
- **Connection**: Each PC connected to the hub

2. Basic Setup

Common Devices for both Topologies:

Device Type	Quantity	Model
PC	6	PC-PT
Switch	1	2960 (only for Switch topology)
Hub	1	Hub-PT (only for Hub topology)

3. Device Connection

1. Use **Copper Straight-Through Cable** to connect each PC to the Switch/Hub.
2. Click **PC → FastEthernet0**, then click the **central device → any available port (e.g., FastEthernet0/1 to 0/6)**.

Connection Type	Cable Type
PC ↔ Switch/Hub	Copper Straight-Through
Switch ↔ Switch	Copper Crossover

4. IP Address Configuration

Steps to assign IP:

1. Click each PC → Desktop → IP Configuration.
2. Assign unique IPs from the same subnet:

PC Name IP Address Subnet Mask

PC0   192.168.1.1 255.255.255.0

PC1   192.168.1.2 255.255.255.0

PC2   192.168.1.3 255.255.255.0

PC3   192.168.1.4 255.255.255.0

PC4   192.168.1.5 255.255.255.0

PC5   192.168.1.6 255.255.255.0

5. Connectivity Verification

Steps:

1. Open any PC → Desktop → Command Prompt.
2. Use the command:

```
ping 192.168.1.x
```

3. Ping every other PC to test communication.
4. You should get replies for successful communication.

For Switch:

For Hub:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time=17ms TTL=128
Reply from 192.168.1.1: bytes=32 time=12ms TTL=128
Reply from 192.168.1.1: bytes=32 time=15ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 17ms, Average = 11ms

C:\>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

Reply from 192.168.1.3: bytes=32 time<1ms TTL=128
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

```
C:\>ping 192.168.1.6

Pinging 192.168.1.6 with 32 bytes of data:

Reply from 192.168.1.6: bytes=32 time<1ms TTL=128
Reply from 192.168.1.6: bytes=32 time=1ms TTL=128
Reply from 192.168.1.6: bytes=32 time<1ms TTL=128
Reply from 192.168.1.6: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.1.5

Pinging 192.168.1.5 with 32 bytes of data:

Reply from 192.168.1.5: bytes=32 time=14ms TTL=128
Reply from 192.168.1.5: bytes=32 time<1ms TTL=128
Reply from 192.168.1.5: bytes=32 time<1ms TTL=128
Reply from 192.168.1.5: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 14ms, Average = 3ms
```
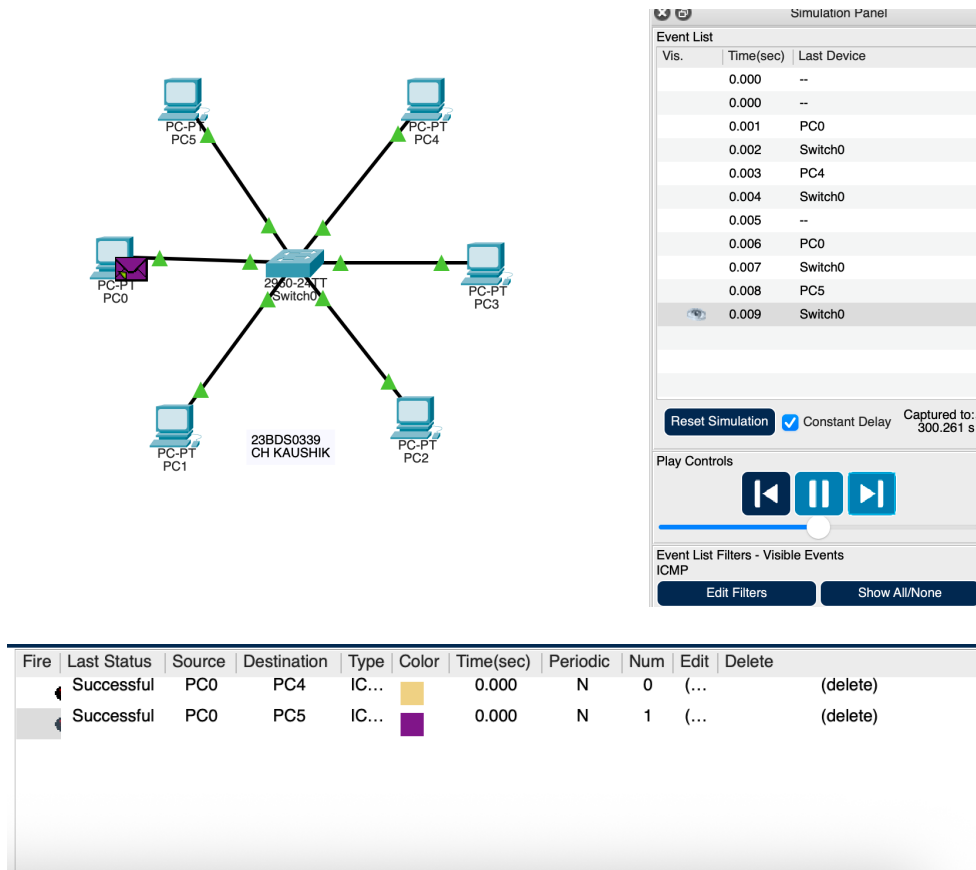
6. Packet Transmission Status

Steps in Simulation Mode:

1. Switch to **Simulation Mode** (bottom right).
2. Add a **PDU (ping)** from one PC to another.
3. Click the **Play** button to observe packet travel.

For Hub: