

# LAB-1

Create a topology and simulate sending a simple PDU from source to destination using hub and switch as connecting devices and demonstrate ping messages.

## OBSERVATION:

15/6/23

LAB-1

Q1. Create a topology and simulate sending a simple PDU from source to destination using a simple hub and switch as connecting devices.

Aim:- Create a topology and simulate sending a simple PDU from sources to destination using hub and switch as connecting devices and demonstrate ping message.

Hub:-

```
graph TD; HUB[HUB-PT HUB0] --- PC0[PC-PT PC0]; HUB --- PC1[PC-PT PC1]; HUB --- PC2[PC-PT PC2];
```

Step 1:- Select and devices and choose generic and choose PC0, PC1, PC2 (PC-PT)

Step 2:- Go to hubs and select generic hub

Step 3:- Go to connection and select copper straight through wires, then connect all PC's to the hub (select port numbers and PC).

Step 4:- Click on PC, go to config and select fast ethernet then set IP address for the PC. Do the same for all the PC's 10.0.0.1, 10.0.0.2, 10.0.0.3.

Step 5:- Add simple PDU

Step 6:- Click on sources and destination systems.

step 7:- Then go to simulation mode, Auto capture/play. Then the packets will start to transfer.

step 8:- click on PC, go to desktop and select command prompt. Then type command  
ping 10.0.0.3

PC > ping 10.0.0.3

Reply from 10.0.0.3 bytes=32 time=4ms TTL=128

Reply from 10.0.0.3 bytes=32 time=3ms TTL=128

Reply from 10.0.0.3 bytes=32 time=0ms TTL=128

Reply from 10.0.0.3 bytes=32 time=0ms TTL=128

Ping statistics for 10.0.0.3

packets: sent=4, Received=4, Lost=0 (0% loss).

Approximate round trip times in milliseconds

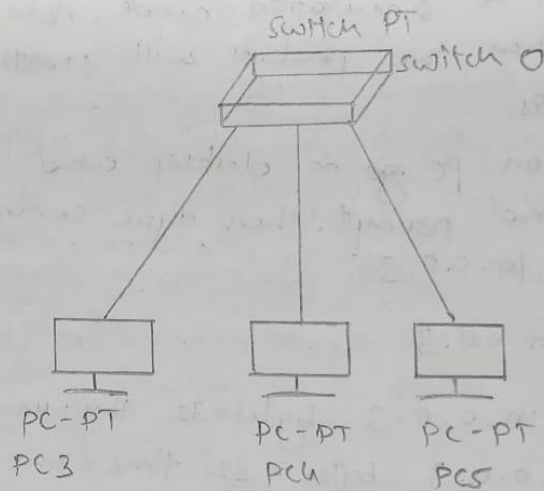
Minimum = 0ms, maximum = 4ms, Average = 2ms.

#### Observation

When the source device sends a packet to the hub, it will broadcast or send the packet to all the devices which are connected to the hub. And the destination devices will receive the packet and others will reject the packet.

And destination devices will send the acknowledgement and that will be distributed among all devices and the sources will accept and others will discard.

## Switch



### procedure 1-

Step 1:- Select switch and 3 PC's.

Step 2:- Set IP address for all the PC's.

10.0.0.4, 10.0.0.8, 10.0.0.6

PC → catalog → fast ethernet → IP address.

Step 3:- Connect PC's to the switch by selecting copper straight through.

Step 4:- Add simple PDU.

select source and destination.

Step 5:- Go to simulation mode and click on Auto capture / play.

Step 6:- Click on PC → Desktop → command prompt.

### ping message

PC > ping 10.0.0.6

Pinging 10.0.0.6 with 32 bytes of data.

Reply from 10.0.0.6 bytes=32 time=4ms TTL=128

Reply from 10.0.0.6 bytes=32 time=4ms TTL=128

Reply from 10.0.0.6 bytes=32 time=4ms TTL=128

Reply from 10.0.0.6 bytes=32 time=4ms TTL=128



ping statistics for 10.0.0.6

packets sent = 4 Received = 4 lost = 0 (0% loss)

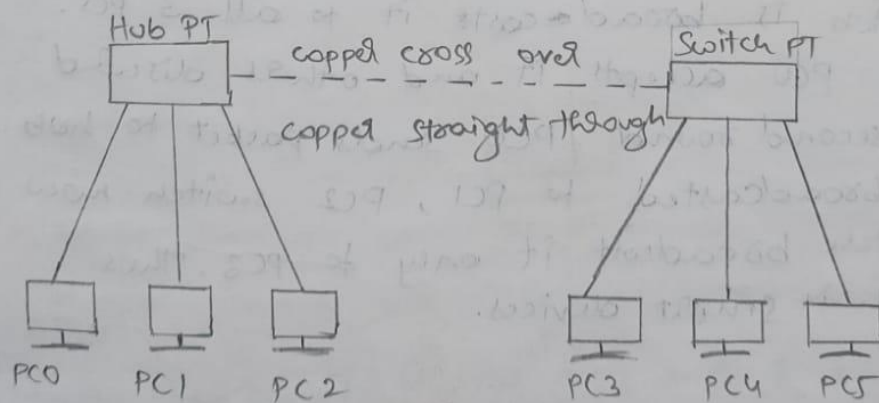
Appropriate round trip times in milliseconds

minimum = 4ms Maximum = 4ms Average = 4ms

### Observation:-

When the first time the packet is sent the switch will distribute the packet with all the devices. Once it learns about the IP address it will only send packet to the destination and send acknowledgement to the source.

### Switch-Hub Connection



Step 1:- Previously drawn hub-topology and switch topology are connected through copper cross over. In hub port 3 is used in switch port ethernet 3/1 is used.

Step 2:- Add simple PDC from PC0 to PC3

ping 10.0.0.4.

pinging 10.0.0.4 with 32 bytes of data

Reply from 10.0.0.4 : bytes=32 time=1ms TTL=128

Reply from 10.0.0.4 : bytes=32 time=1ms TTL=128

Reply from 10.0.0.4 : bytes=32 time=1ms TTL=128  
Reply from 10.0.0.4 : bytes=32 time=1ms TTL=128

Ping statistics for 10.0.0.4.

Packets : sent = 4 Received = 4 Lost = 0 (0% loss)

Appropriate round trip times in milliseconds

Minimum = 4ms Maximum = 4ms Average = 4ms

### Observation:-

In simulation mode PC0 sends packet to hub sends it to PC1, PC2 & switch board with it to PC3, PC4 and PC5.

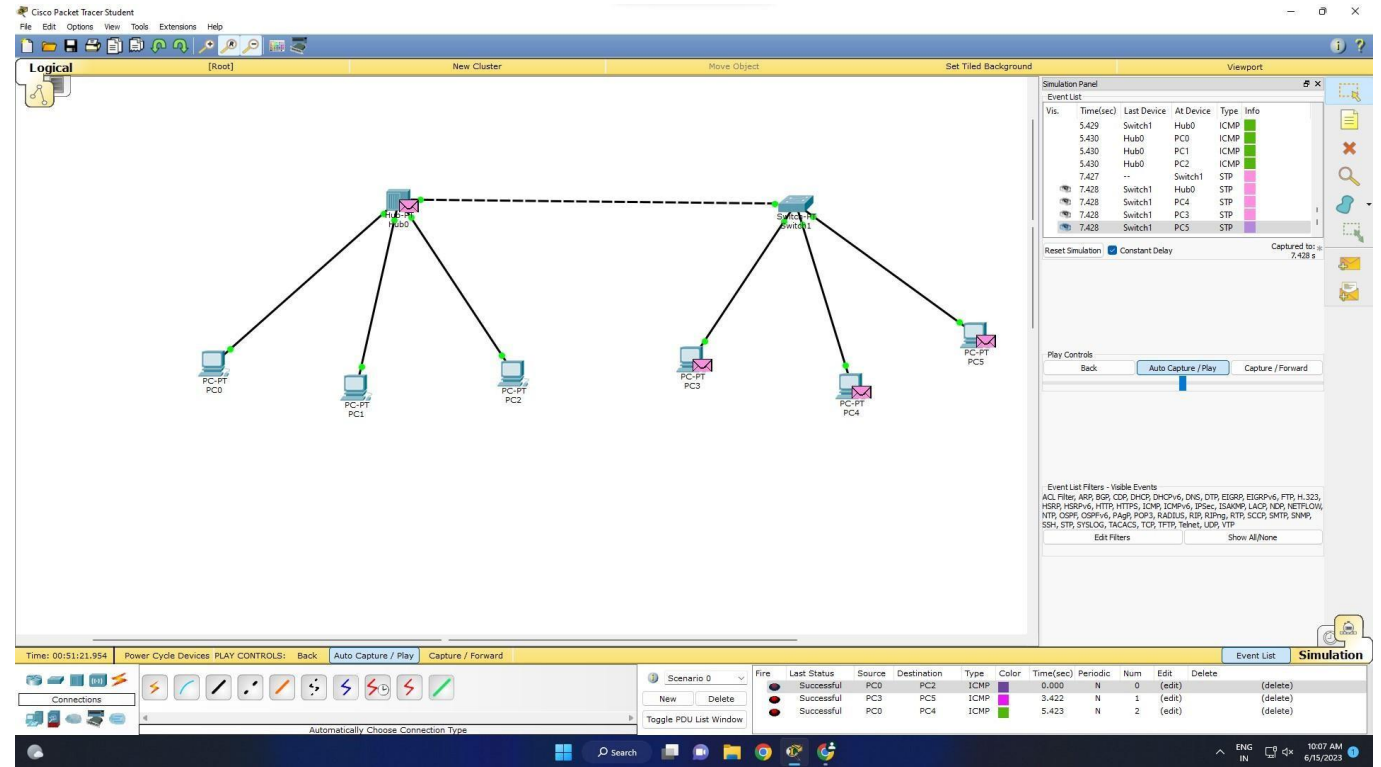
PC1, PC2, PC4 and PC5 discards them, PC3 accepts and sends acknowledgement to hub through switch.

Hub is broadcasted it to all 3 PCs.

Only PC0 accepts it and others discard

In second round PC0 sends packet to hub & broadcasted to PC1, PC2 switch now switch broadcast it only to PC3, thus switch it smart devices.

  
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The screenshot shows a Packet Tracer PC Command Line window with the following text:

```

Packet Tracer PC Command Line 1.0
PC>ping 192.160.1.5

Pinging 192.160.1.5 with 32 bytes of data:

Reply from 192.160.1.5: bytes=32 time=0ms TTL=128
Reply from 192.160.1.5: bytes=32 time=0ms TTL=128
Reply from 192.160.1.5: bytes=32 time=0ms TTL=128
Reply from 192.160.1.5: bytes=32 time=0ms TTL=128

Ping statistics for 192.160.1.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 192.160.1.5

Pinging 192.160.1.5 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.160.1.5:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>192.160.1.2
Invalid Command.

PC>ping 192.160.1.2

Pinging 192.160.1.2 with 32 bytes of data:

Reply from 192.160.1.2: bytes=32 time=0ms TTL=128
Reply from 192.160.1.2: bytes=32 time=0ms TTL=128
Reply from 192.160.1.2: bytes=32 time=0ms TTL=128
Reply from 192.160.1.2: bytes=32 time=0ms TTL=128

Ping statistics for 192.160.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>
  
```

