

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

→ Aim

To create a topology and simulate sending a simple PDU from source to destination using a simple HUB and switch as connecting device.

Procedure.

1. Start creating the topology.
2. Select the HUB in the logical workspace and connect three PC's to the HUB. generic HUB through cu st wire.
3. Set the IP address for all 3 PC's by clicking on PC.
4. Similarly select the going to config and typing the needed ip address.

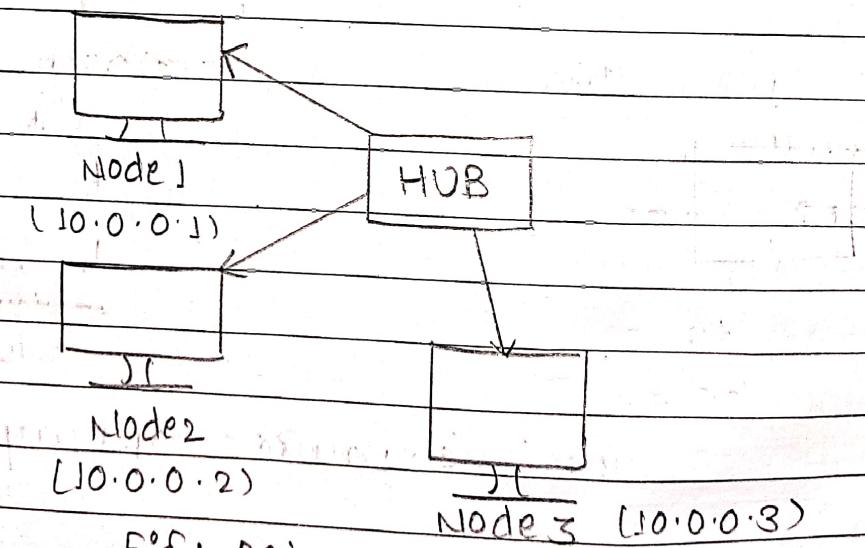


Fig: PC's connected with HUB.

4. Similarly a switch is selected in the logical workspace and connect 3 PC's to the generic switch - PT through copper st. wire.
5. set the IP address for all 3 PC's by clicking on PC, going to config and typing the needed ip address.

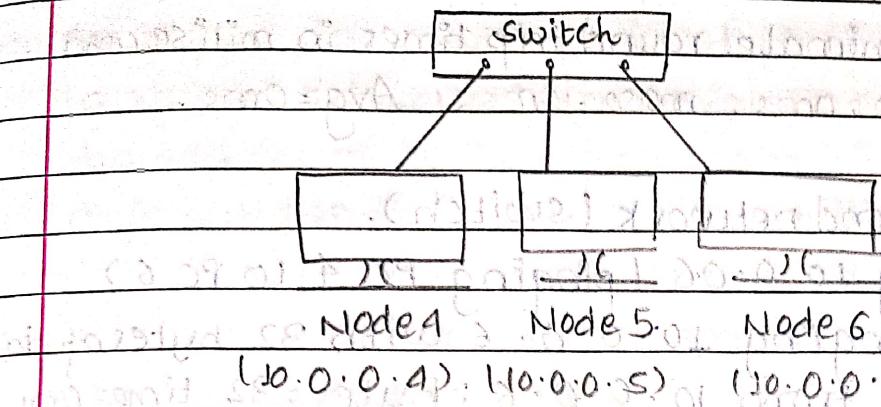


Fig: CPC's connected with switch

6. Now connect the HUB and the switch with the help of a copper-cross over wire. This completes the designing of the required topology.

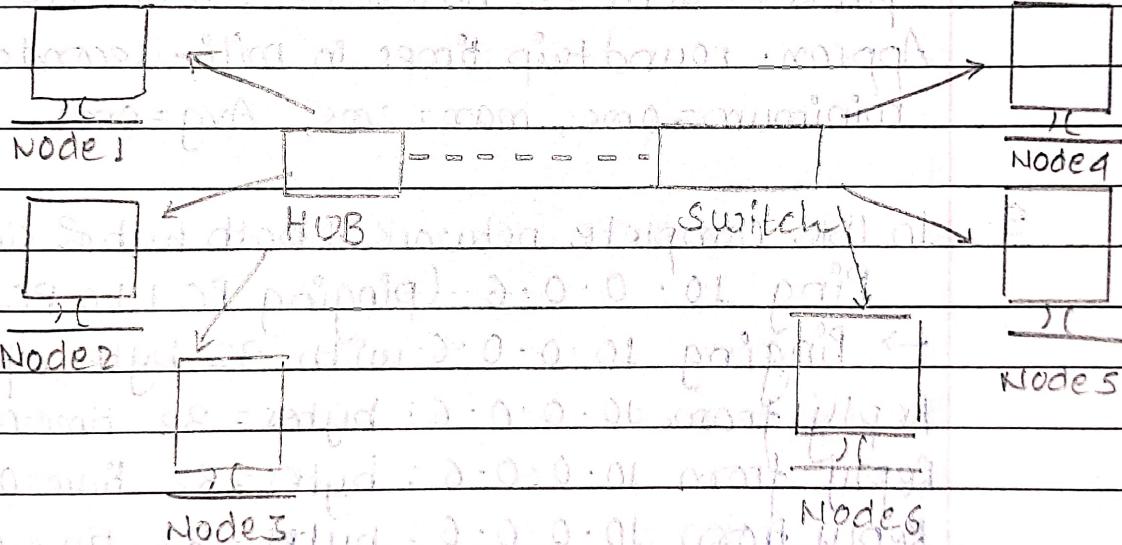


Fig: The required topology

Output of behaviour of topology

1. In first network (HUB)
 ping 10.0.0.3 (Pinged PC 1 with PC 3)
 → Pinging 10.0.0.3 with 32 bytes of data

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

Pinging statistics for 10.0.0.3 with 32 bytes

packets: sent = 4, received = 4, lost = 0 (0% loss).
Approximate round trip times in milliseconds:
min = 0ms, max = 0ms, Avg = 0ms.

2. In second network (switch).

Ping 10.0.0.6 (pinging PC 4 to PC 6)
→ Pinging 10.0.0.6 with 32 bytes of data.
Reply from 10.0.0.6: bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.6: bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.6: bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.6: bytes = 32 time = 2ms TTL = 128

Ping statistics for 10.0.0.6 (ping 3 times)
packets: sent = 4, received = 4, lost = 0 (0% loss),

Approx. round trip times in milliseconds:

minimum = 0ms, max = 2ms, Avg = 0ms.

3. In the complete network (both hub & switch).

Ping 10.0.0.6 (pinging PC 1 to PC 6)
→ Pinging 10.0.0.6 with 32 bytes of data.

Reply from 10.0.0.6: bytes = 32 time = 0ms TTL = 128

Reply from 10.0.0.6: bytes = 32 time = 0ms TTL = 128

Reply from 10.0.0.6: bytes = 32 time = 0ms TTL = 128

Reply from 10.0.0.6: bytes = 32 time = 0ms TTL = 128

Ping stat's for 10.0.0.6

packets: sent = 4, received = 4, lost = 0 (0% loss)

Approximate round trips times in milliseconds:

minimum = 0ms, max = 0ms, Avg = 0ms.

Observation:

When a packet is sent from PC 1 to PC 3 that are connected to the HUB it is broadcasted to all the PC, but acknowledgement is received from only the addressed PC.

2. When PC -> Packet is sent from PC 4 to PC 6 connected to a switch if at first it is broadcasted to all and acknowledgement is only received from the addressed PC but from next time it is only unicasted that is sent to the add. PC.
3. When Packet is sent from PC 1 to PC 6 that are connected to HUB and switch, which are also connected to each other the packet is sent to all PC connected to HUB but no ackno. is received and it is only sent to the addressed PC through switch and ack. is also received only for it.

NJ
15/1/2023

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

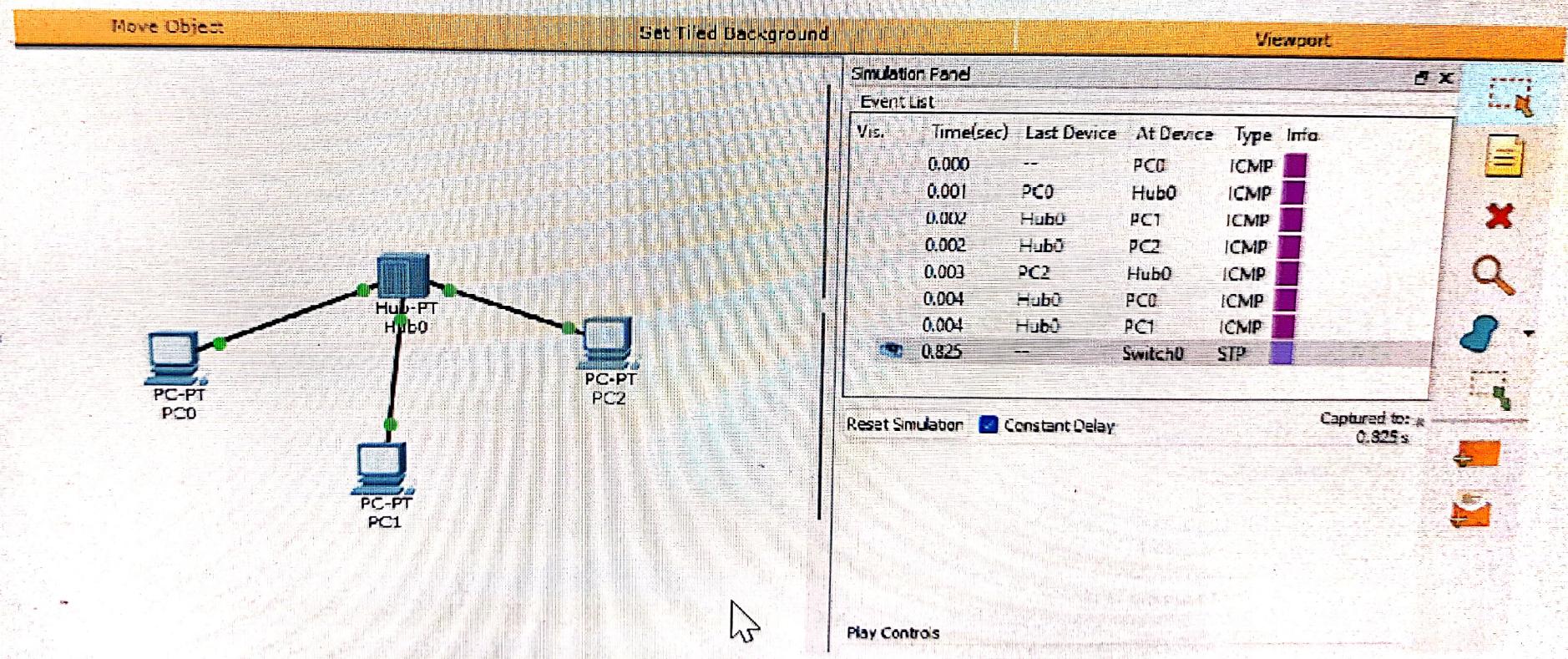
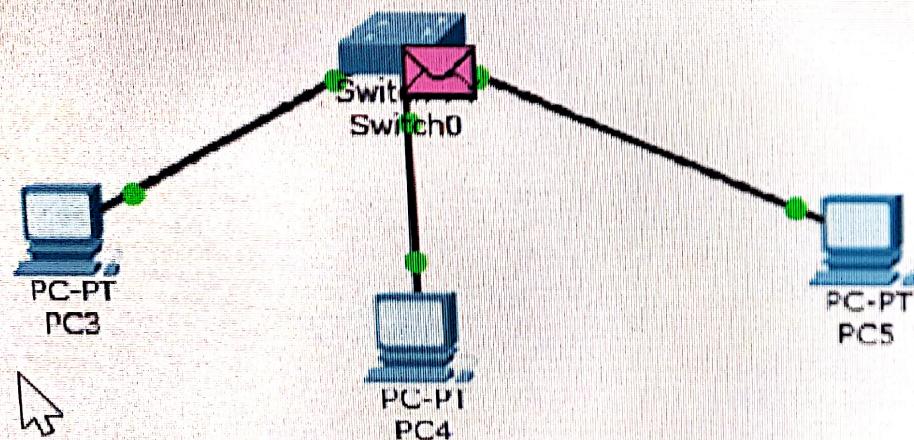


Fig 1: Topology with hub as connecting device

[Move Object](#)[Set Fixed Background](#)[Viewport](#)

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.000	--	PC3	ICMP	
	0.001	PC3	Switch0	ICMP	
	0.002	Switch0	PC5	ICMP	
	0.003	PC5	Switch0	ICMP	
	0.004	Switch0	PC3	ICMP	
	1.853	--	Switch0	STP	

[Reset Simulation](#) Constant DelayCaptured t
1.853

Fig 2: Topology with switch as connecting device

Command Prompt

```
Packet Tracer PC Command Line 1.0  
PC>ping 192.160.1.6
```

```
Pinging 192.160.1.6 with 32 bytes of data:
```

```
Reply from 192.160.1.6: bytes=32 time=0ms TTL=128  
Reply from 192.160.1.6: bytes=32 time=0ms TTL=128  
Reply from 192.160.1.6: bytes=32 time=0ms TTL=128  
Reply from 192.160.1.6: bytes=32 time=0ms TTL=128
```

```
Ping statistics for 192.160.1.6:
```

```
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```

```
Approximate round trip times in milli-seconds:
```

```
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

```
PC>ping 192.160.1.6
```

```
Pinging 192.160.1.6 with 32 bytes of data:
```

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

```
Ping statistics for 192.160.1.6:
```

```
    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>
```

Command Prompt

X

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=1ms 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 = 1ms, Average = 0ms

PC>