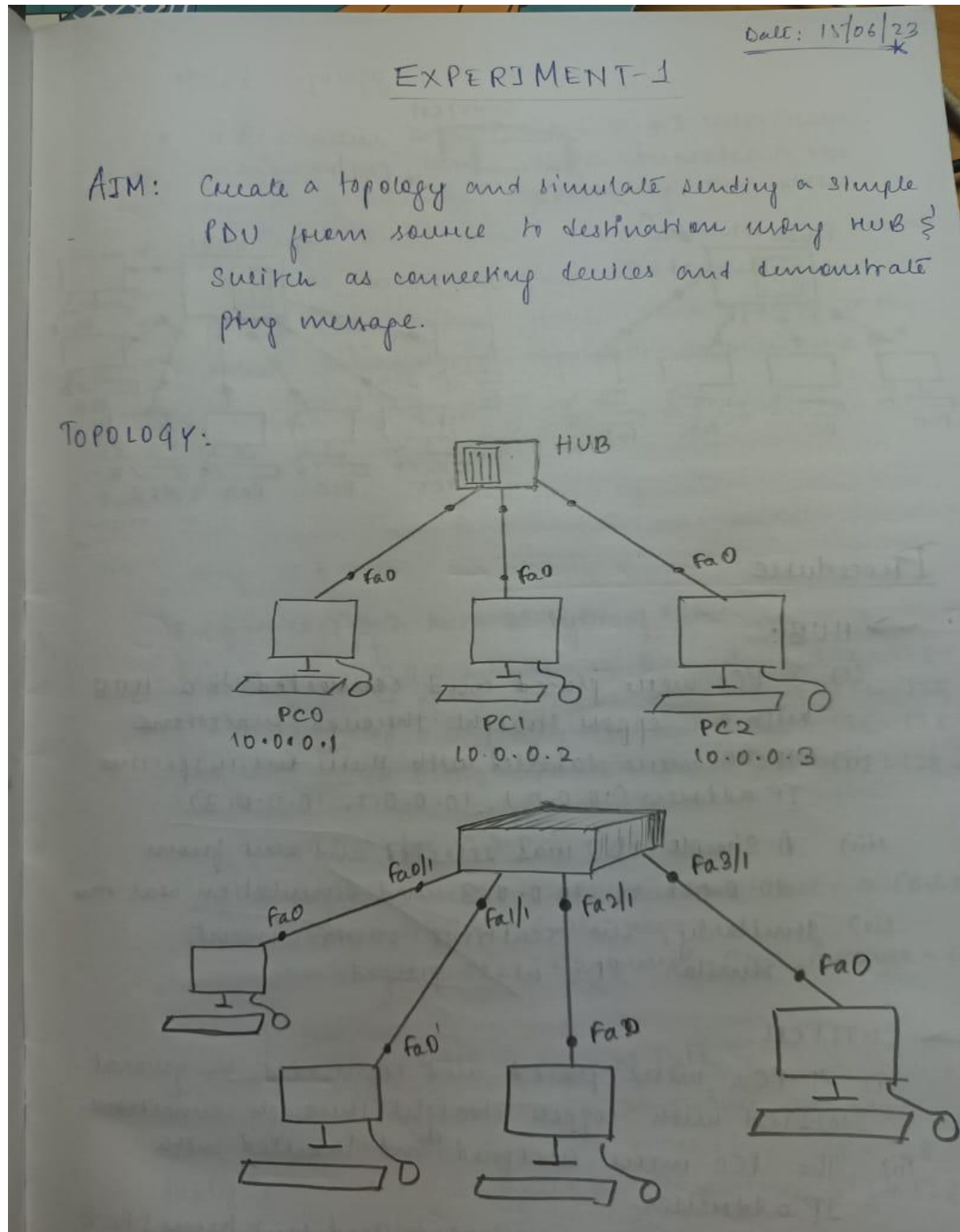
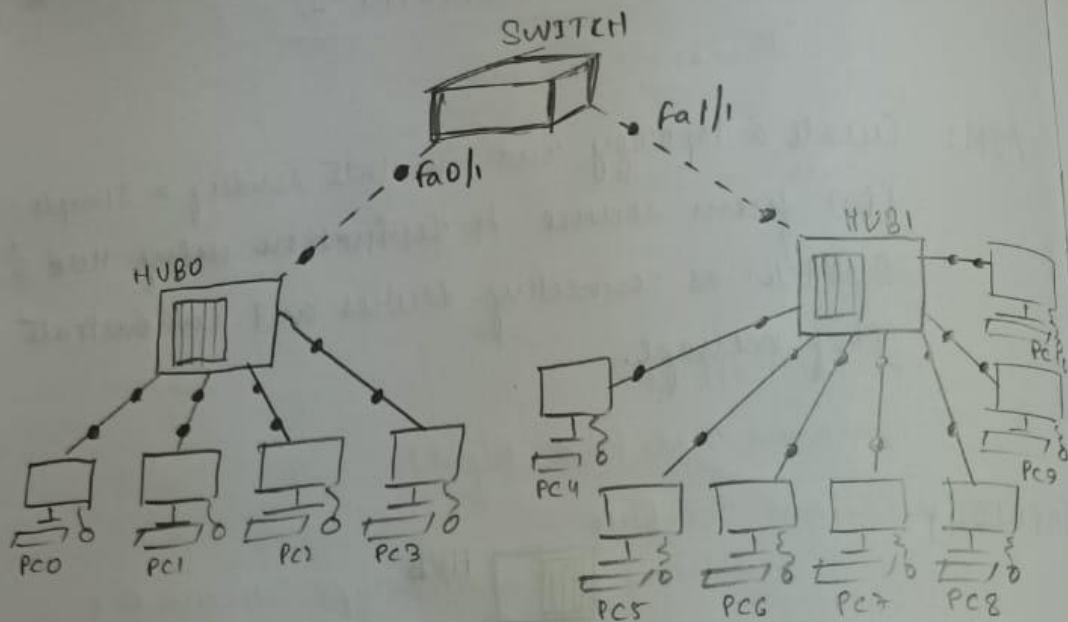


# Experiment 1

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





## Procedure

### ⇒ HUB:

- (i) 3 PCs were placed and connected to a HUB with a Copper straight-through connections
- (ii) The 3 were labelled with their ~~the~~ respective IP address (10.0.0.1, 10.0.0.2, 10.0.0.3)
- (iii) A simple PDU was selected and sent from 10.0.0.1 to 10.0.0.3 and simulation was run
- (iv) Similarly, in realtime environment, a similar PDU was pinged.

### ⇒ SWITCH:

- (i) 4 PCs were placed and connected to a general SWITCH with Copper straight-through connections.
- (ii) The PCs were assigned and labelled with IP addresses.
- (iii) A simple PDU was selected and sent from 1 PC to another.
- (iv) A similar PDU was pinged in realtime environment

## ⇒ Mixed Topology:

- 4 PCs were connected to a 1 HUB (Hub0); and another 7 PCs were connected to the second HUB (Hub1) by extending Port places
- The 2 Hubs were each connected to a switch.
- The PCs were assigned IP addresses.
- PDU's were pinged from 1-Hub topology to the other, through Switch, both in real time and in simulation.

## Result:

(i) > ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data

Reply from 10.0.0.3 bytes = 32 time = 2ms 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

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)

Approx. round trip times in ms:

Minimum = 0ms, Maximum = 0ms, Average = 0ms.

(ii) > Ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data.

request timed out  
Reply from 10.0.0.3 bytes = 32 time = 1ms TTL = 128

Reply from 10.0.0.3 bytes = 32 time = 1ms TTL = 128

Reply from 10.0.0.3 bytes = 32 time = 1ms TTL = 128

Ping statistics for 10.0.0.3

Packets: sent: 4, Received: 3, Lost: 1 (25% loss)

Minimum = 1ms, Maximum = 1ms, Average = 1ms



(iii)

PC > Ping 10.0.0.6 ~~with 32 bytes~~

Pinging 10.0.0.6 with 32 bytes of data

Reply from 10.0.0.6: Bytes = 32 Time = 11ms TTL = 128

Reply from 10.0.0.6: Bytes = 32 Time = 2ms TTL = 128

Reply from 10.0.0.6: Bytes = 32 Time = 2ms TTL = 128

Reply from 10.0.0.6: Bytes = 32 Time = 0ms TTL = 128

Ping statistics for 10.0.0.6:

Packets: Sent = 4, Received = 4, Lost = 0 (0.1%)

Approx. time in ms:

Minimum = 0ms, Maximum = 11ms, Average = 3ms

### Observations

- when connecting 2 similar level devices, we use ~~not~~ happen cross-over connection.
- Hub: A Hub receives data packets and broadcasts it to all devices and lets the destined device acknowledge itself.
- Switch: whereas, a switch, is a smart hub. It acknowledges the destination device itself and sends the data packet to only that.
- when connecting of 2 ~~same~~ different level devices, ~~not~~ happen straight through connection.

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# OUTPUT :

## 1. Hub Network

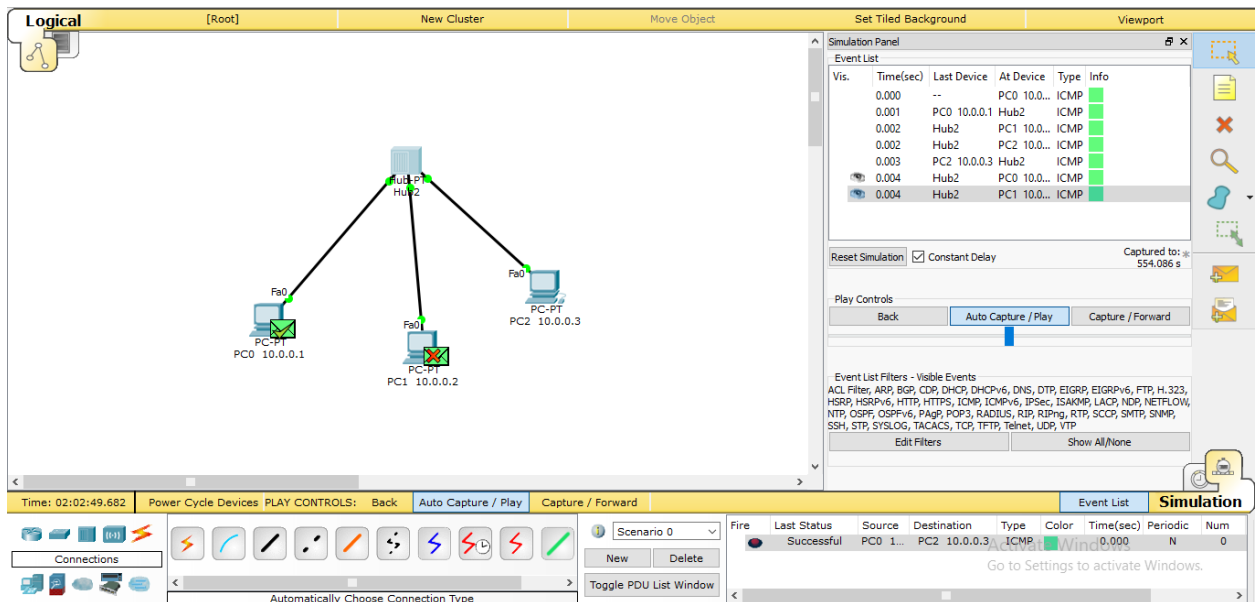
```
PC>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time=0ms 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
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 milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>
```



## 2. Switch Network

### Command Prompt

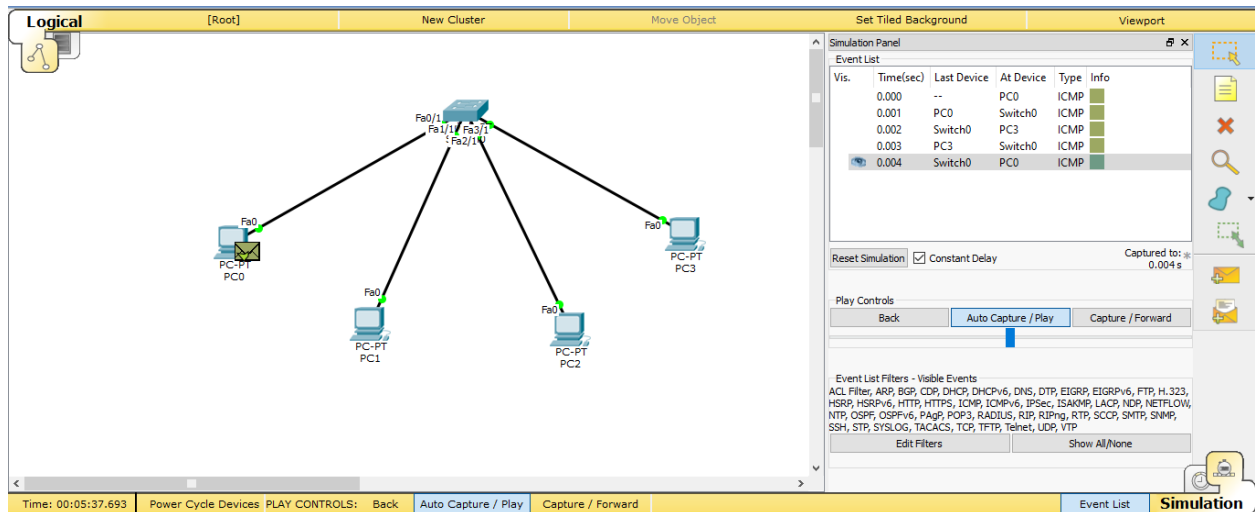
```
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Request timed out.
Reply from 10.0.0.3: bytes=32 time=1ms TTL=128
Reply from 10.0.0.3: bytes=32 time=1ms TTL=128
Reply from 10.0.0.3: bytes=32 time=1ms TTL=128

Ping statistics for 10.0.0.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

PC>|
```



### 3. Hybrid Topology

The top screenshot shows a network simulation interface with a hybrid topology. The network consists of a central switch (Switch0) connected to two hubs (Hub0 and Hub1). Hub0 is connected to four PCs (PC0 10.0.0.1, PC1 10.0.0.2, PC2 10.0.0.3, PC3 10.0.0.4). Hub1 is connected to seven PCs (PC4 10.0.0.5, PC5 10.0.0.6, PC6 10.0.0.7, PC7 10.0.0.8, PC8 10.0.0.9, PC9 10.0.0.10, PC10 10.0.0.11). The interface includes a 'Logical' tab, a 'Physical' tab, and a 'Command Prompt' window. The Command Prompt window shows the output of a ping command from PC1 (10.0.0.2) to PC9 (10.0.0.6). The output indicates that the ping was successful with 4 packets sent, 4 received, and 0 lost. The approximate round trip times in milliseconds are: Minimum = 0ms, Maximum = 1ms, Average = 3ms.

The bottom screenshot shows the same network simulation interface, but with the 'Simulation' tab selected. The 'Simulation Panel' is visible, showing a list of events. The events are listed in a table with columns: Vis, Time(sec), Last Device, At Device, Type, and Info. The events are as follows:

Vis	Time(sec)	Last Device	At Device	Type	Info
	0.012	Hub0	Switch0	ICMP	
	0.014	Switch0	Hub1	ICMP	
	0.015	Hub1	PC4 10.0.0.5	ICMP	
	0.015	Hub1	PC5 10.0.0.6	ICMP	
	0.015	Hub1	PC6 10.0.0.7	ICMP	
	0.015	Hub1	PC7 10.0.0.8	ICMP	
	0.015	Hub1	PC8 10.0.0.9	ICMP	
	0.015	Hub1	PC10 10.0.0.11	ICMP	
	0.015	Hub1	PC9 10.0.0.10	ICMP	

The 'Simulation Panel' also includes a 'Reset Simulation' button, a 'Constant Delay' checkbox, and a 'Capturing...' button. The 'Play Controls' section includes a 'Back' button, an 'Auto Capture / Play' button, and a 'Capture / Forward' button. The 'Event List Filters - Visible Events' section includes a list of filters: ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgg, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP. The 'Edit Filters' button and the 'Show All/None' button are also present.