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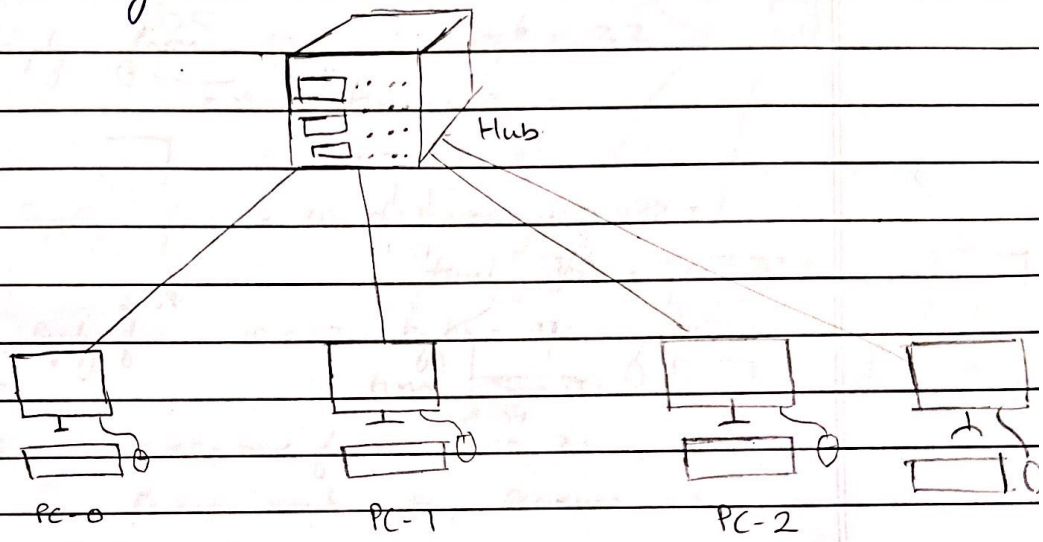
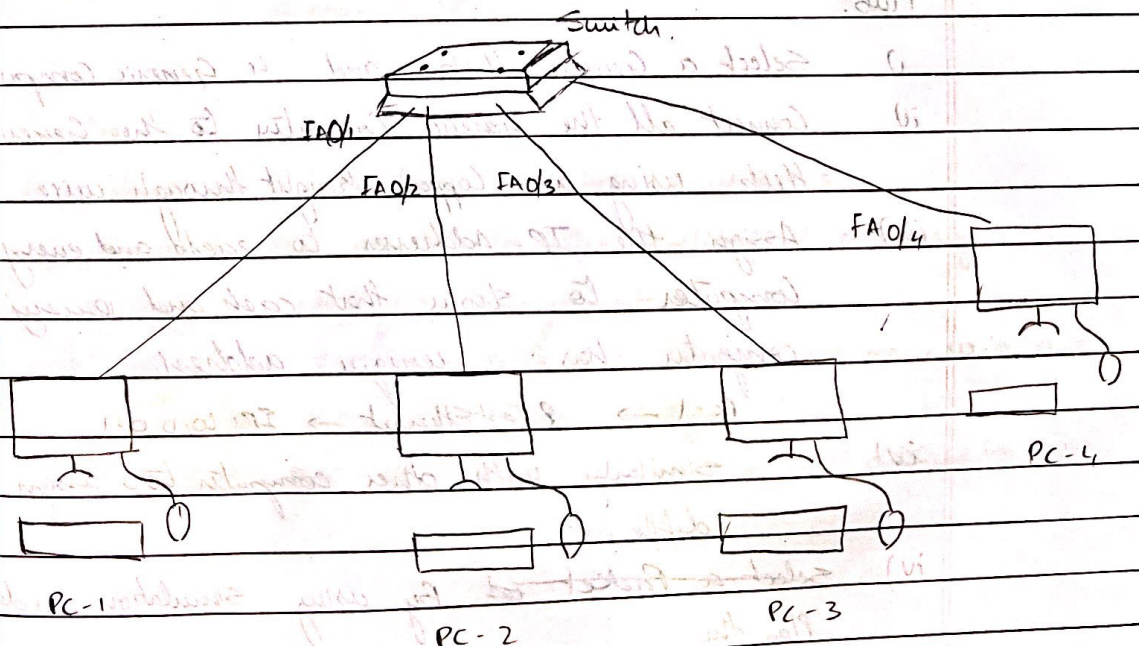
Experiment-1

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

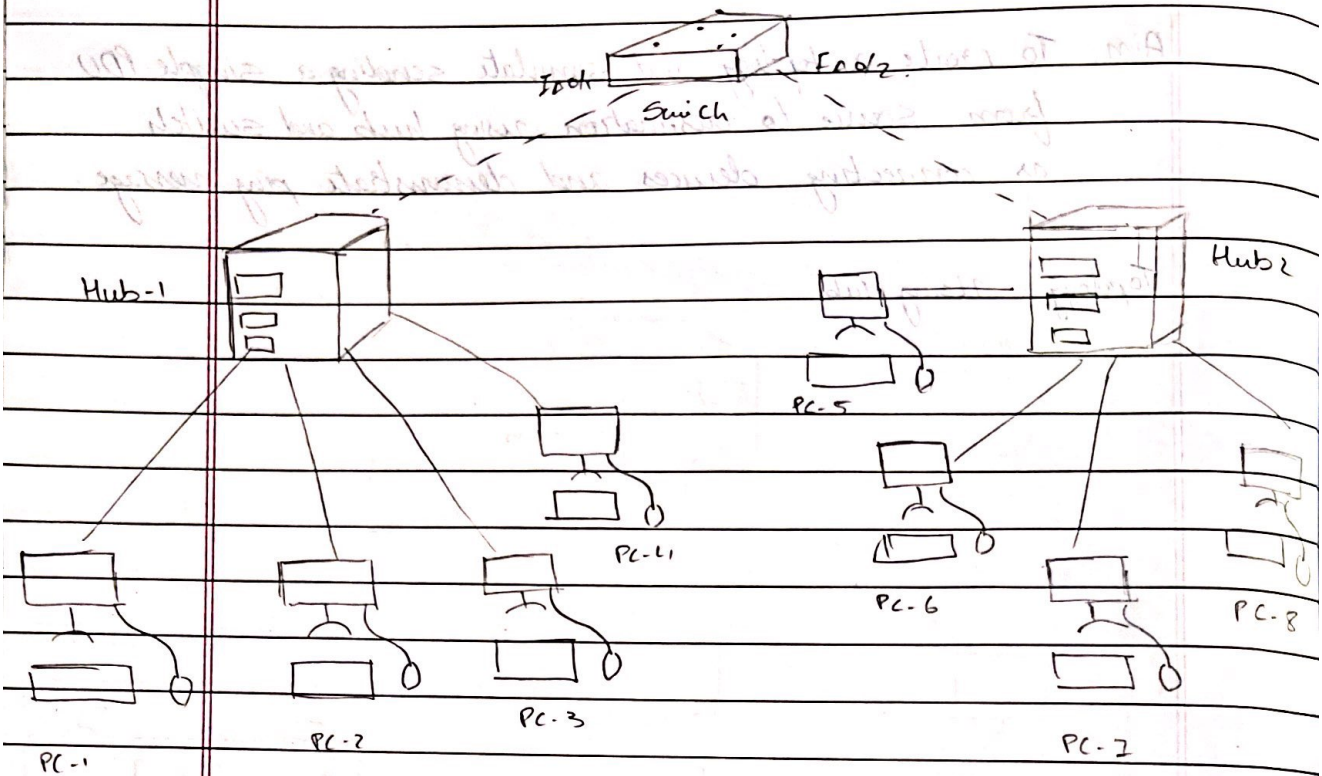
Topology :- Using Hub.



Using Switch :



Hybrid.



Procedure:

Hub:

i) Select a Generic Hub and 4 Generic Computers

ii) Connect all the Generic Computers to the Generic Hub using a Copper - Straight through wire.

iii) Assign the IP-Addresses to each and every Computer to show that each and every computer has a unique address.

PC-1 → IP FastEthernet → IP: 10.0.0.1

iv) Similarly with other computer too assign different

iv) ~~Select a Packet~~ By using simulation mode Play the

Observation: In Simulation mode.

- PC sends packet to hub and hub send it to both PC1 and PC2.
- PC1 dispatch the message whereas PC2 accepts it
- PC2 send the acknowledgement packet to hub
- hub again sends it to PC0 and PC1
- PC1 discards and PC0 accepts it.

output

Reply form 10.0.0.2 bytes = 32
time = 2ms TTL = 128

Reply from 10.0.0.2 bytes = 32
time = 0ms TTL = 128

Reply from 10.0.0.2 bytes = 32
time = 3ms TTL = 128

Ping statistics for 10.0.0.2.
Packet = sent = 4, Received = 4,
Lost = 0 (0% loss)
Approximate round trip times in milli-seconds
minimum = 0ms, Maximum = 3ms
Average = 2ms

Switch:

Procedure: i) Select a switch and 3PC's
ii) Connect the switch to the conditioned PC's using a copper straight through cut
iii) Assign the I-Paddress to the PC's - 10.0.0.4, 10.0.0.5, 10.0.0.5, 10.0.0.6 respectively.
iv) select the PC's and the source and distination to PC

Observation in simulation:

- PC3 sends the packet to switch and it sends to the both PC4 and PC5 in first round.
- PC4 reject and PC 5 accepts and sends acknowledge packet to both PC3 and PC5
- PC 4 discards it PC3 accepts it
- Now because of switch PC5 sends packet only to PC5

Output:

Reply from 10.0.0.5 bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.5 bytes = 32 time 0ms TTL = 128
Reply from 10.0.0.5 bytes = 32 time = 0 ms TTL = 128
Ping statistics from 10.0.0.5
Packets sent 4, received = 4 lost = 0 (0% lost)
Approximate round trips in milli seconds
Minimum = 0ms Maximum = 3ms, average = 22ms

Hybrid

Procedure:

- 11 PC's 2 generic Hubs and 1 switch were placed in the workspace
- 4 PC's were connected to hub 0 via copper straight through cables. Remaining 7 pc's were connected to hub 1 via copper straight cable.
- All pc's were assigned address IP(10.0.0.1 to 10.0.0.11)
- Two hubs were connected to the switch via copper cross over cables which are used to connect devices on the same level.

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Observation.

Hub: A hub receives data and broadcast it to all device connected to it.

Switch: A switch prevents traffic between 2 device from being shared with other devices connected to it.

Result:

PC$ command line

PC> ping 10.0.0.8

Ping from 10.0.0.8 byte = 32 time = 8ms TTL=128

Ping from 10.0.0.8 byte = 32 time = 18ms TTL=128

Ping from 10.0.0.8 byte = 32 time = 40ms TTL=128

Ping statistics 10.0.0.8

Packets sent = 4, received = 4, loss = 0 (0% loss).

Approximate round trip time in millie seconds

maximum = 8ms Average = 2ms Minimum = 0ms/s