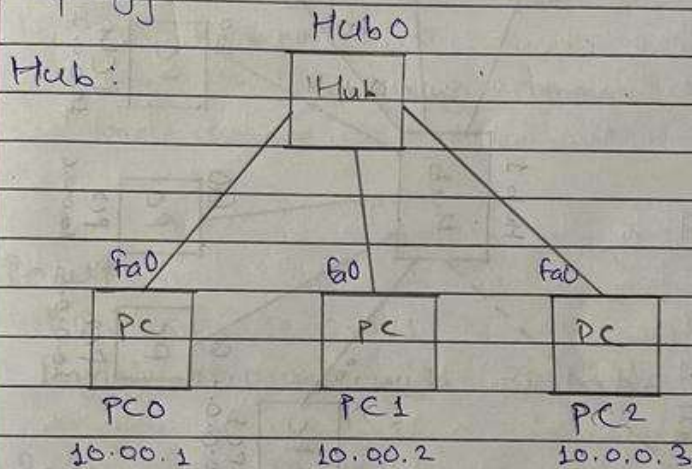


Experiment: 1 Hubs and Switches.

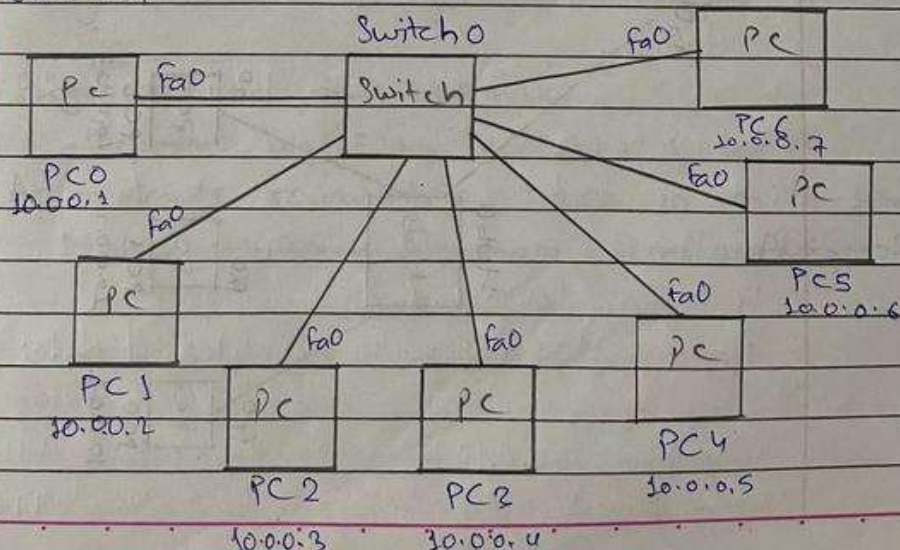
Date 15/06/2023
Page 3

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

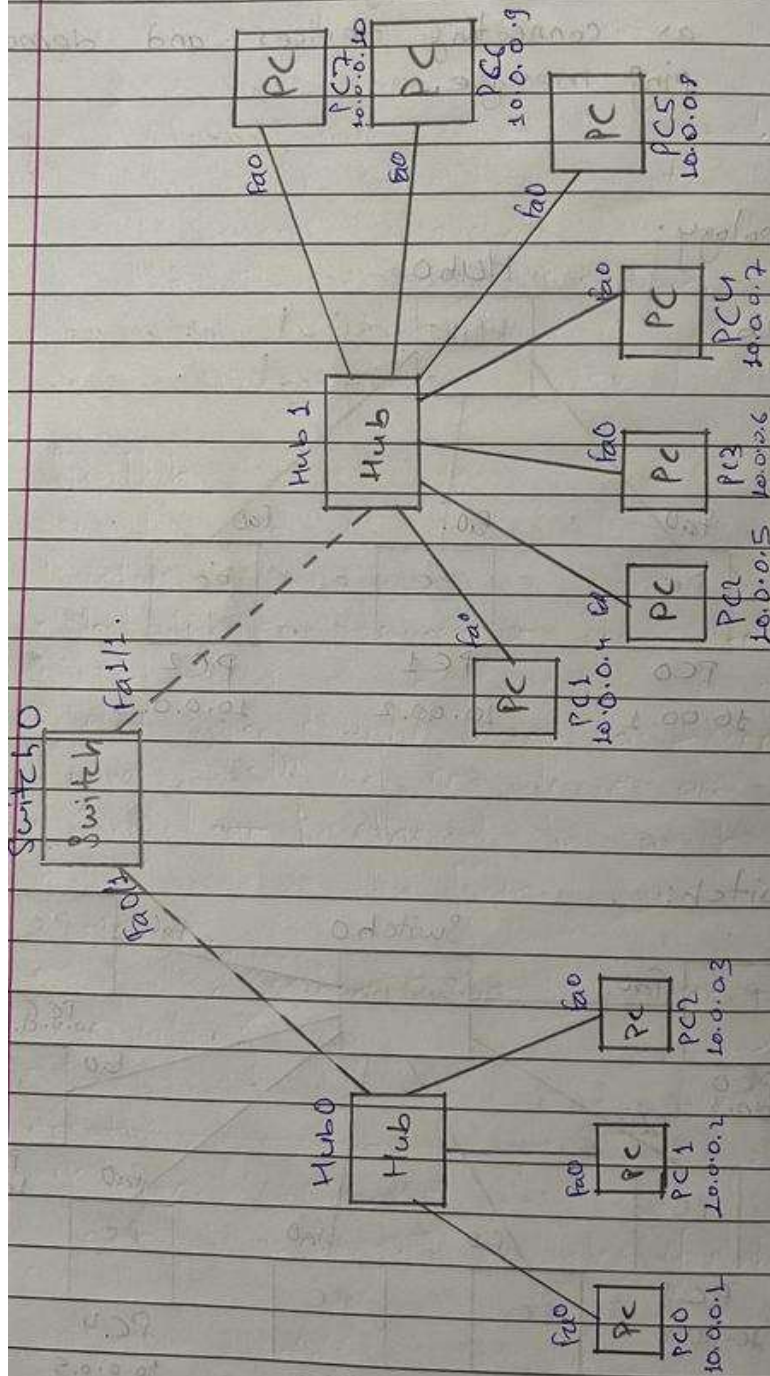
Topology:



Switch:



Combination of Hub & Switch



Hub:

Procedure:-

Date: 1/1
Page: 1

Hub:

Procedure:- Select the end device and change their IP address suitably.

- Select hub as connecting device.
- Select copper straight-through as connection wire between end devices and hub.
- Connect fastethernet to hub ports.
- Add simple PDU from source to destination device.
- Ping a PDU using command prompt in one device.

Result:

PC > ping 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=10ms TTL=128

Reply from 10.0.0.1: bytes=32 time=0ms TTL=128

Reply from 10.0.0.1: bytes=32 time=18ms TTL=128

Reply from 10.0.0.1: bytes=32 time=2ms TTL=128

Ping statistics for 10.0.0.1:

Packets: Sent = 4, Received = 4, Lost = 0

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 18ms, Average = 2ms

Observation

- The packet transmission starts from source device and reaches the hub.
- Hub sends the packet to all other devices connected to it.
- The destined device receives the packet and sends signal back an acknowledgement stating it has received the packet.
- Other device ignore the packet.
- The packet transmission takes place in the above scenario everytime.

Switch

Procedure:

- Select the end devices and change their IP address.
- Select switch as the connecting device.
- Select copper straight through as a connection wire between the end devices and switches.
- Connect the fast ethernet to switch ports.
- Add simple PDU from source to destination device.
- Ping a ^{PDU using} command prompt in one device.

Result:

PC > ping 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=2ms TTL=128

Reply from 10.0.0.1: bytes=32 time=4ms TTL=128

Reply from 10.0.0.1: bytes=32 time=8ms TTL=128
Reply from 10.0.0.1: bytes=32 time=3ms TTL=128

Ping statistics for 10.0.0.1:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milliseconds:
Minimum = 2ms, Maximum = 8ms, Average = 4ms

Observation:

- The packet transmission starts from source device and reaches the switch.
- Switch sends the packet to all devices connected to it.
- The destination device receives the packet and sends an acknowledgment back to switch stating it has received the packet.
- Switch remembers the device sending the acknowledgment and only communicates with that device for further transmission.
- Other devices do not receive the packet from next transmission.

Hub & Switch.

Procedure:

- Select the end devices and change their IP address.
- Select hubs for end devices and for connecting devices. Select switch as connecting device of hubs.
- Select copper straight through as connection wire betⁿ

- the end devices and hubs.
- Select copper crossover as connection wire between hubs and switch.
 - Connect fastethernet to ports.
 - Add simple PDU from source to destination device.
 - Ping a PDU using command prompt in one device.

Result:

PC > ping 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=9ms TTL=128

Reply from 10.0.0.1: bytes=32 time=19ms TTL=128

Reply from 10.0.0.1: bytes=32 time=4ms TTL=128

Reply from 10.0.0.1: bytes=32 time=0ms TTL=128

Ping statistics for 10.0.0.1:

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

Approximate round trip times in milli-seconds:

Minimum=0ms, Maximum=19ms, Average=8ms.

Observation:

- The packet transmission starts from source device and reaches the hub.
- Hub sends packet to switch, and from switch it sends to another hub.
- Hub sends the packet to all other devices connected to it.
- The destination device receives the packet.

and sends back an acknowledgement -
stating it has received the packet.

- Other device ignore the packet.
- The packet transmission takes place in
the above scenario everytime.

~~12/12/17~~