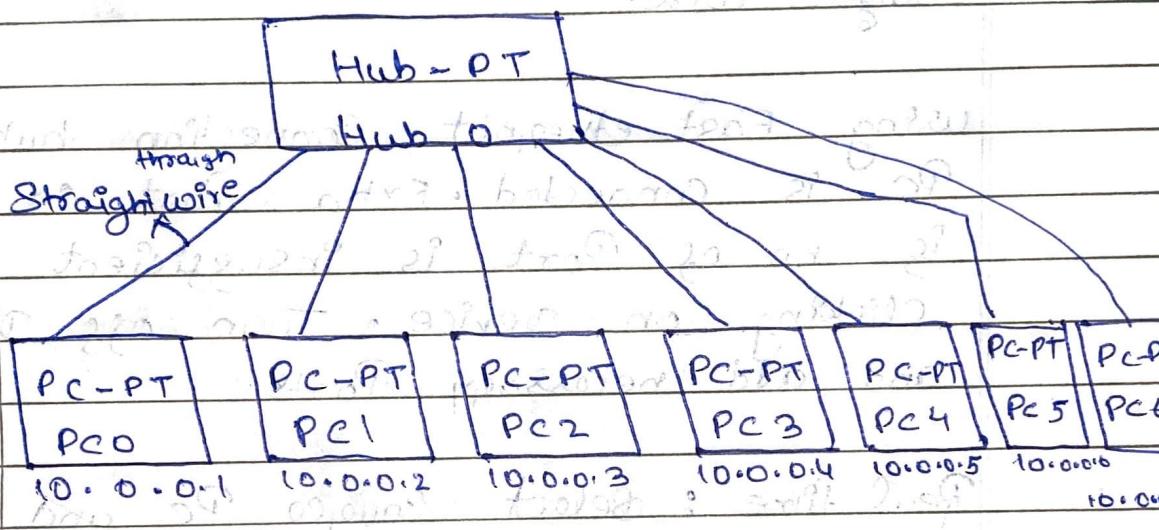


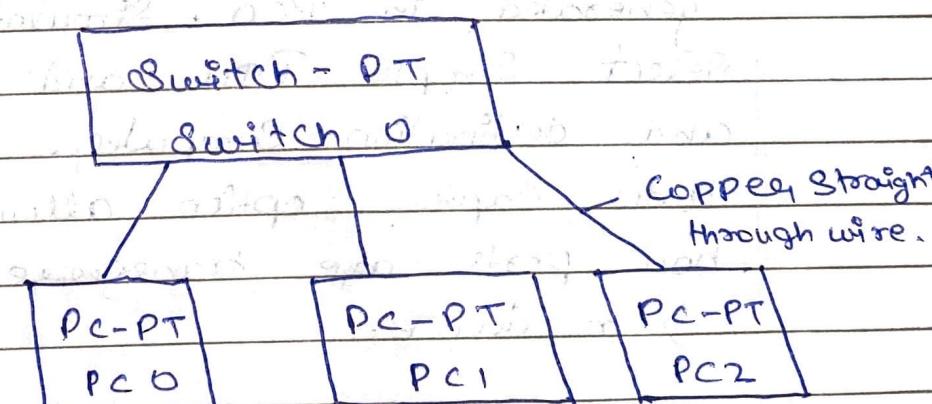
Lab Work - 1

Aim :- Creating a topology and simulate sending simple PDU from Source to destination using simple hub and switch as connecting domain.

Topology : Bus型网络拓扑结构
连接到一个中心的Hub，再通过Hub连接到不同的PC端口。



Using Switches instead of hub



Procedure

using hub i) First add generic hub and seven PCs to workspace after that configure the ip address of each PC in Configuration tab and ensure that ip is different for each PC or (device). In hub all PC is connected using copper straight wire.

using Fast ethernet connection hub and PC is connected . Extra Port is added if no of Port is insufficient by clicking on device . Turn off Device and add necessary Ports.

Real time : Select Source PC and in desktop tab, Select Command Prompt option in Command Prompt type. Ping 10.0.0.3 This Ping PC₂ and response is generated in PC₀ . Simulation time Select Simple PDU and Select Source and destination Computer, clicking on auto Capture option allow us to see how ports are transferred to and from device.

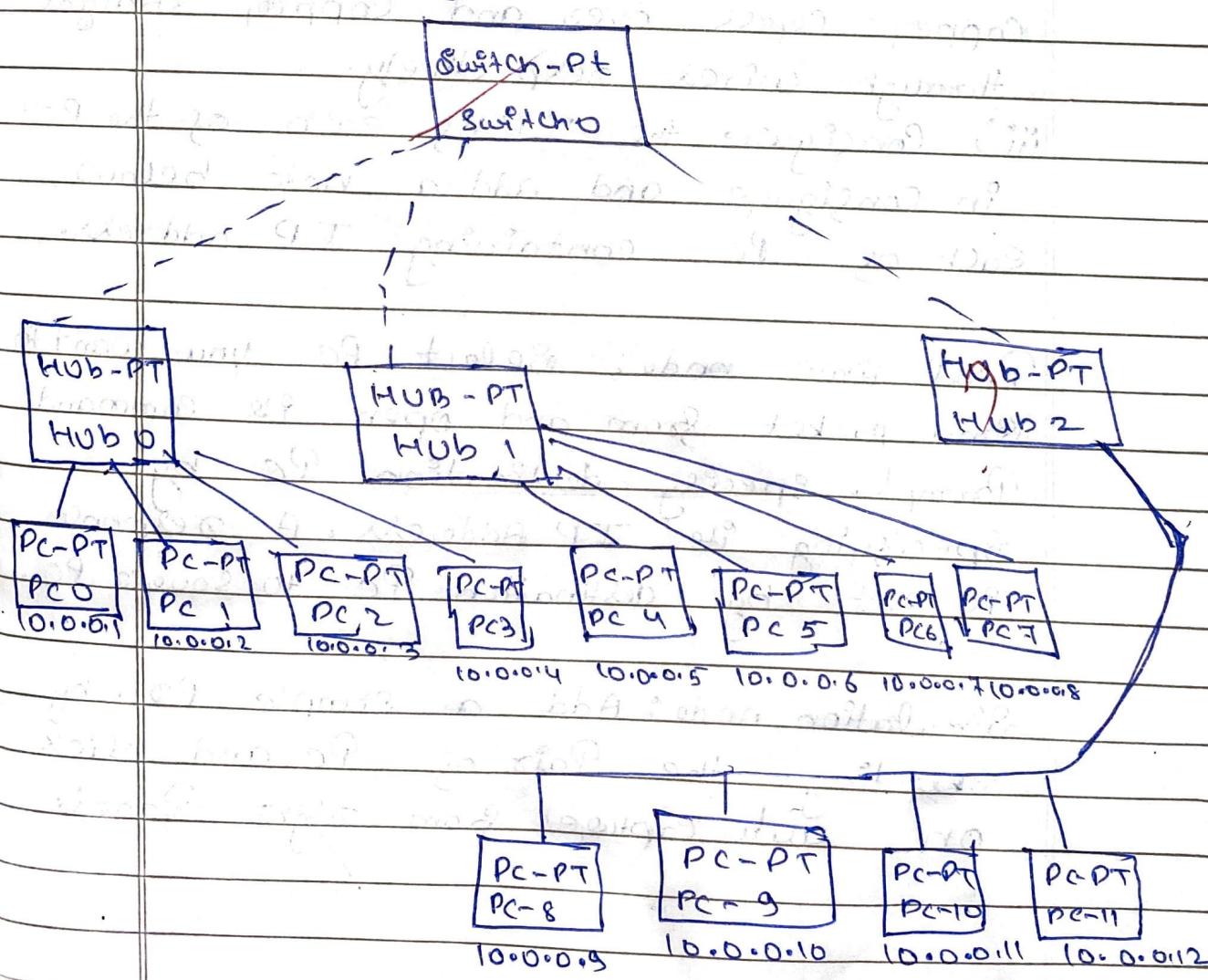
using Switch : i) Add generic switch and PC's to workspace.

ii) Configure IP address of each PCs in the Configuration tab and ensure that

IP is different for each device

- iii) Connect all PCs to switch using copper straight through wire.
- iv) If no. of ports are insufficient then add extra ports by clicking on device. Turn on device and add necessary ports.
- v) Write IP's of all devices in note below the device.

Hybrid (using hubs and switches)



Real time :- Select Source PC and in the desktop tab • Select Command Prompt option In Command prompt option; Ping destination PC by specifying its IP.

Simulation time :- Select Simple PDU and Select Source and destination Computer, clicking on auto capture option allows us to see how packets are transferred.

- Hybrid mode
- Add a switch, 3 hub's and 10 PC's to workspace.
 - Convert three hubs to switch and 4 PCs to bus each of the hub's using Copper, cross over, and copper straight through wires respectively.
 - Configure the IP of each of the PCs in configure and add a note below each of PC containing IP address.

Real time node : Select PC you want to send packet from and open its Command Prompt. Specify destination PC by specifying its IP Address. A response is set by destination PC to source PC.

Simulation node : Add a simple PDU by selecting the pair of PC and click on auto capture from right panel.

Observation :

→ Hub has simple functioning protocol.
Learning outcome - i) when we send a packet in network the hub source the packet and sends broadcast over the network i.e. it sends data to all the end devices in network and node whose MAC address matches with the specified address accepts the packet and acknowledge it. Remaining nodes ignore the message.

- ii) Common between hub and end devices is established through copper straight through wire as they belong to different layers.
- iii) No of ports can be added if needed by clicking on the device and adding the necessary ports.

Result : PC → Ping 10.0.0.3

Pinging 10.0.0.3 with 32 byte of data

Reply from 10.0.0.3 byte = 32 time = 0ms

Reply from 10.0.0.3 byte = 32 time = 0ms

Reply from 10.0.0.3 byte = 32 time = 0ms

Reply from 10.0.0.3 byte = 32 time = 0ms

~~Ping Statistics for 10.0.0.3~~

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

→ Hybrid mode :

Learning outcomes i) Switch and hub are connected through copper cables over as they belong to the same network layer but PC and hub are connected through copper straight through as they belong to different network layers.

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24/11/22