

## CN LAB 1

AIM: TO DEMONSTRATE THE TRANSMISSION OF A SINGLE PDU B/W TWO DEVICES CONNECTED USING A HUB AND SWITCH

Lab-01

Aim:- To demonstrate the transmission of a single PDU b/w two devices connected using a Hub and a switch.

- Switch = intelligence      hub  $\Rightarrow$  no intelligence
- Interface = point of connection
- IPv4 addresses  $\rightarrow$  of form  $\rightarrow a.b.c.d \Rightarrow$ 
  - PC1 = 10.0.0.1
  - PC2 = 10.0.0.2
  - PC3 = 10.0.0.3
- With HUB
- $\Rightarrow$  Topology


Steps to config :-

- Select the Hub from connection panel — selected HUB-PT
- Select End-devices i.e. selected 3 PC's  $\rightarrow$  PCPT
- Then connect PC or end-devices to HUB using
  - Cooper Straight Through or Automatically chosen connection Type.
- Then PC's are not configured yet, so to send data Config PC by —
  - click on PC then go to 'config' select 'interface'
  - click on fast Ethernet0
- Add IP addresses for PC.
  - You can choose DHCP (automatic) or Static (manual)
- if static then IP addresses for 3 PC's are
  - PC0 = 10.0.0.1
  - PC1 = 10.0.0.2
  - PC2 = 10.0.0.3

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→ Now PCs are all configured.

→ To send msg from one device to others -

- o) from right side panel select simple message  PDU,
  - o) select source device then select destination device now msg are being sent to
  - o) see the working of how it is working go to click on simulation mode.
- Likewise, can connect multiple devices with to hub.

→ Observation :-

- o) HUB : hardware device in physical layer
  - o) connects multiple devices in network.
  - o) it broadcasts or sends msg to each port without filtering data

working

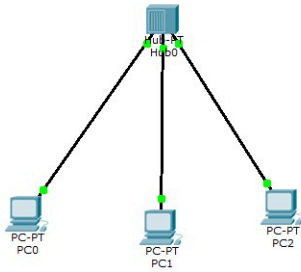
PC0 is sending data/msg to PC1 and PC2 but at a one time, any one of PC1 and PC2 is accessing data to avoid collision.

→ PDU :: (Protocol Data Unit)

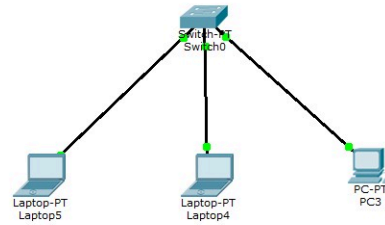
Along with data it contains protocol-specific control information.

- o) It is block of infor. that is transferred b/w network end systems.

REALTIME :

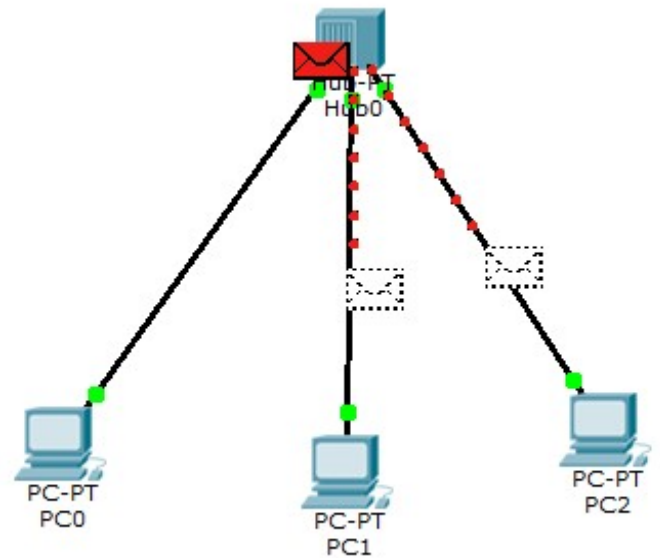
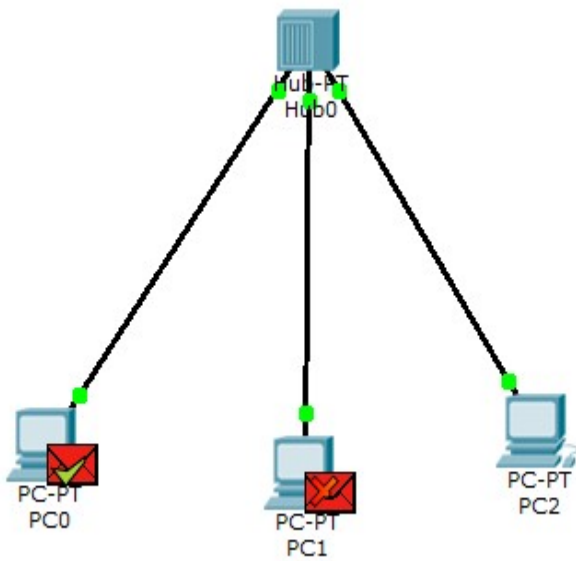


a) HUB

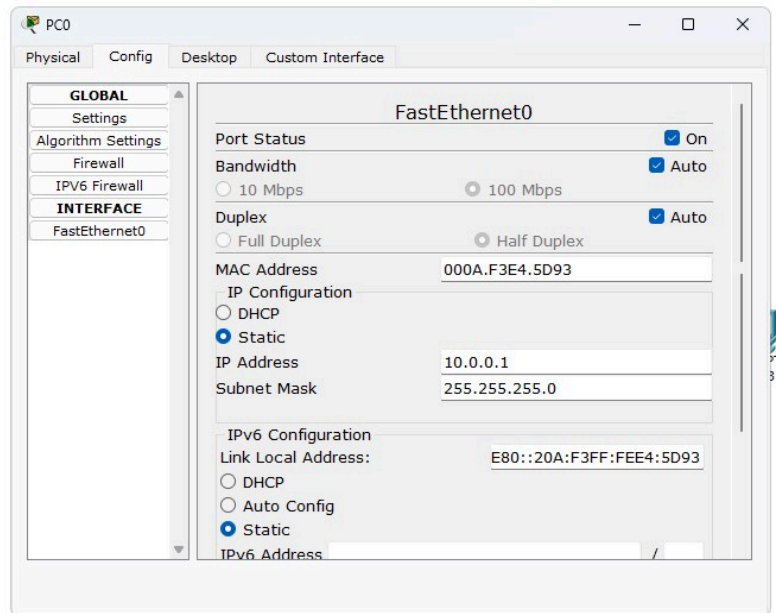
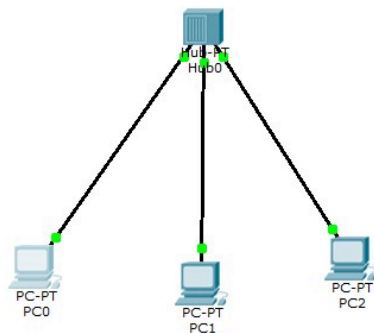


b) SWITCH

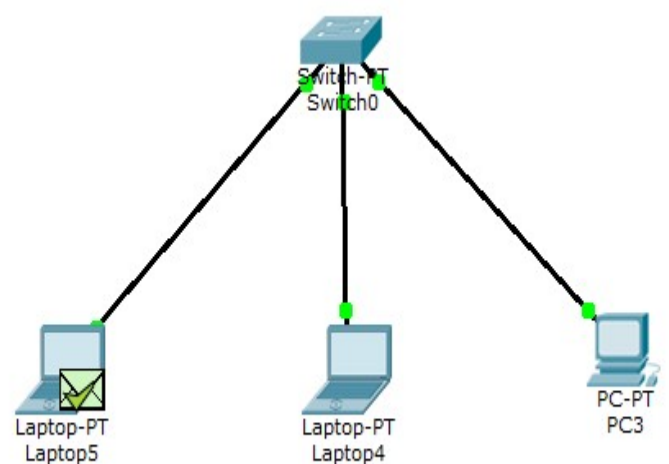
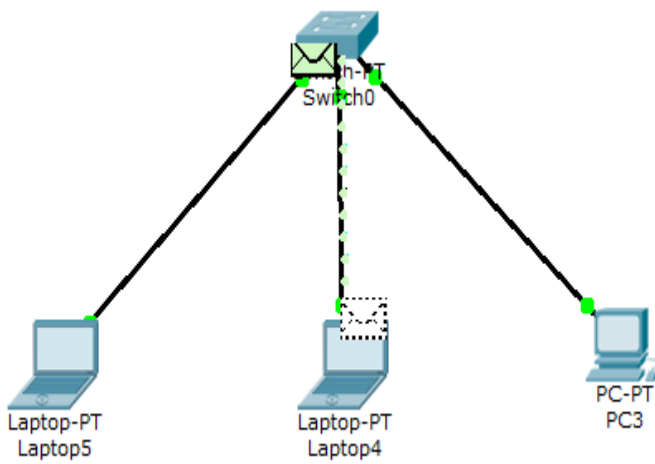
HUB SIMULATION:



## HUB CONFIGURATION:

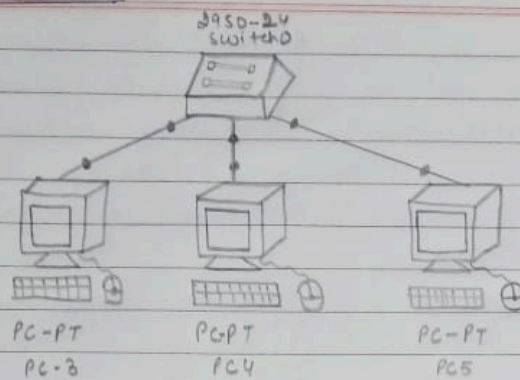


## SWITCH SIMULATION:





### \*) With switch



- \*) Configuration step and setup steps
- \*) same as that for HUB only change is instead of HUB add switch
- \*) Message sending steps are also similar way as previous

### \*) Observation

- \*) Switch: A multipoint bridge with buffer  
it is a data link layer device

It filters the data and sends only to dest<sup>n</sup> devices.

### ICMP :- (Internet Control Message Protocol)

- \*) error handling at network layer
- \*) protocol at network layer — connectionless protocol

### STP :- (Spanning Tree Protocol)

- \*) prevents looping of frames
- \*) finds shortest path.

### Working

- \*) PC3 sending msg to PC5
- \*) msg will be collected by switch first then sends to PC5 only
- \*) switch sends data to the specific devices i.e. filtering the data.

*if 10/24*