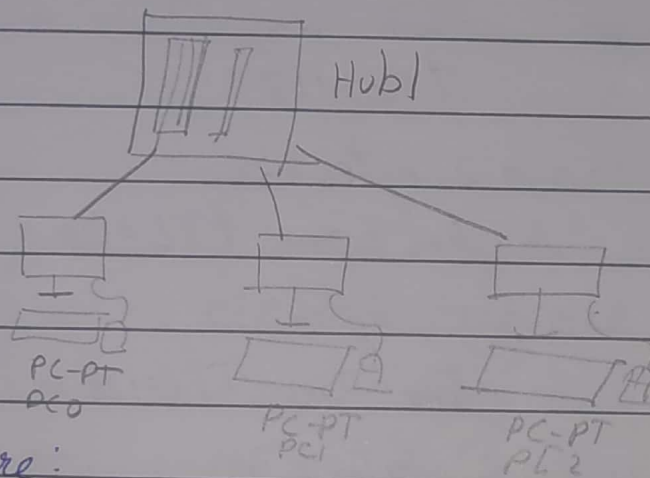


Experiment 1

Aim: Create a topology, hence simulate sending a simple PDU, from source to destination using a simple hub and switch as connecting

Topology: Hub to PC



Procedure:

- 1) Select hub and three PC's
- 2) Connect the hub to the individual PC using proper straight through wires
- 3) Assign the IP address to the PC's 10.0.0.1, 10.0.0.2, 10.0.0.3
- 4) Select the packet and select the source and destination PC

Observation: In simulation mode

- PC sends packet to hub and hub sends it to both PC1 and PC2.
- PC1 discards the message whereas PC2 accepts it

- PC2 sends the acknowledgement packet to the hub
- Hub again sends it to PC0 and PC1
- PC1 discards and PC0 accepts it

Output Reply from 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

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

Ping statistics for 10.0.0.2

Packet: sent = 4, Received = 4, 6
lost = 0 (0% loss)

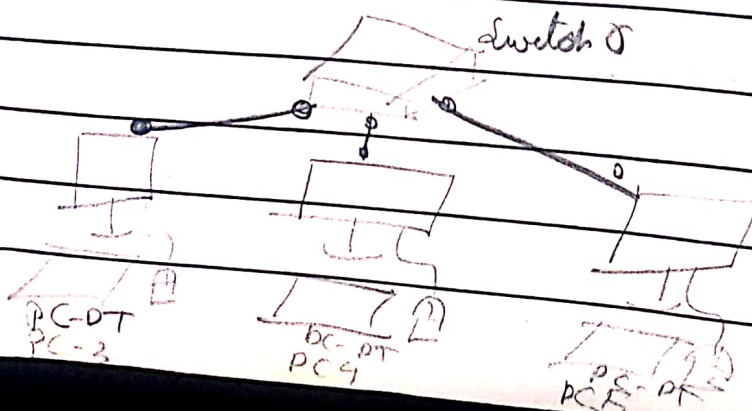
Approximate round trip times in milliseconds

minimum = 0ms, Maximum = 3ms

Average = 2ms

Topology:

Switch to PC



Procedure :

- 1) Select a switch and 3 PC's
- 2) Connect the switch to the individual PC's using a copper straight through
- 3) Assign the IP addresses to the PC's - 10.0.0.4, 10.0.0.5, 10.0.0.6 respectively
- 4) Select the PDU and the source and destination PC.

Output

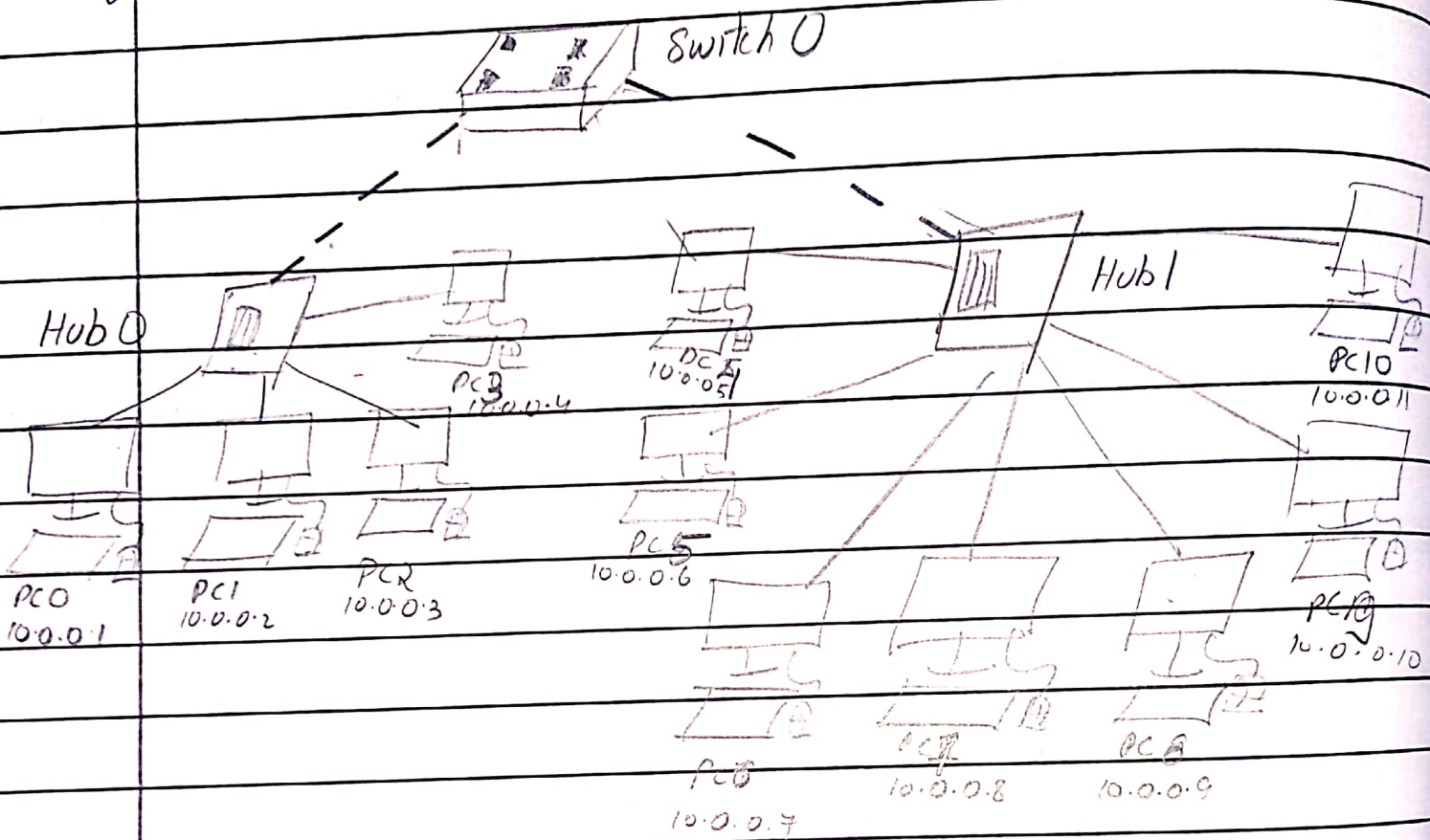
Reply from 10.0.0.5 bytes=32 time=0ms TTL=128
 Reply from 10.0.0.5 bytes=32 time=0ms TTL=128
 Reply from 10.0.0.5 bytes=32 time=3ms TTL=128
 Reply from 10.0.0.5 bytes=32 time=3ms TTL=128
 Ping Statistics for 10.0.0.5

Packets: sent = 4, Received = 4, lost = 0 (0% loss)
 Approximate round trip times in milli seconds
 Minimum = 0ms Maximum = 3ms, Average = 20ms

Observation: In simulation mode

- PC 3 sends packets to switch and it sends to both PC 4 and PC 5 in first round.
- PC 4 rejects and PC 5 accepts and sends acknowledgement packet to both PC 3 and PC 5.
- PC 4 discards it PC 5 accepts it.
- Now because of switch PC 3 sends packets only to PC 5.

Topology = Hybrid - Hubs and Switch



Procedure

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

Result

PC1 command line:

PC1 > ping 10.0.0.8

Pinging 10.0.0.8 with 32 bytes of data:

Reply from 10.0.0.8: bytes=32 time=8ms TTL=128

Reply from 10.0.0.8: bytes=32 time=40ms TTL=128

Reply from 10.0.0.8: bytes=32 time=40ms TTL=128

Reply from 10.0.0.8: bytes=32 time=40ms TTL=128

Ping statistics for 10.0.0.8

Packets: sent=4, Received=4, lost=0 (0% loss)

Approximate round trip time in milliseconds

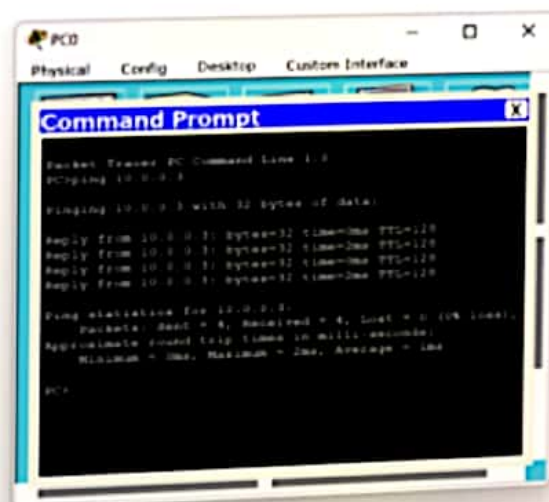
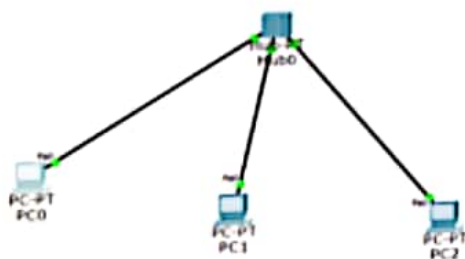
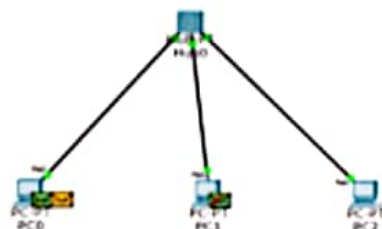
Minimum=0ms ~~Maximum~~ Maximum=8ms, Average=2ms

Observations:

Hub: A hub receives data and broadcasts it to all devices connected to it.

Switch: A switch prevents traffic between 2 devices from being shared with other devices connected to it. It sends messages only to the receiver.

1. Hub and PCs



Simulation Panel

Event List

Via	Time(s)	Last Dev	At Dev	Type	Info
0.004	Hub0	PC 1	ICMP		
0.004	Switch0	PC 1	ARP		
0.004		PC 1	ICMP		
0.005	PC 1	Switch0	ICMP		
0.006	Switch0	PC 1	ICMP		

Reset Simulation ☒ Constant Delay

Captured for 0.006 s

Play Controls

Back Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, IMMP, IMMPv6, IPsec, ISAKMP, LACP, NTP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RDP, RDPv6, RTR, SCCP, SMTP, SNMP, SSH, STP, SYN, TELNET, TACACS, TCP, TFTP, VRRP, VRRPv6, VTY

PC2

Physical Config Desktop Custom Interface

Command Prompt

```

C:\>ipconfig /all

Ethernet adapter Ethernet0:

   Connection-specific DNS Suffix . : 
   IP Address . . . . . : 192.168.1.10
   Subnet Mask . . . . . : 255.255.255.0
   Default Gateway . . . . . : 192.168.1.1
   DHCP Enabled . . . . . : Yes
   IP Address from DHCP . . . . . : 192.168.1.10
   Subnet Mask from DHCP . . . . . : 255.255.255.0
   Default Gateway from DHCP . . . . . : 192.168.1.1
   DNS Servers . . . . . : 
   NetBIOS over HTTP . . . . . : Enabled
   IPv6 Address . . . . . : 
   IPv6 Subnet Mask . . . . . : 
   IPv6 Default Gateway . . . . . : 
   IPv6 DNS Servers . . . . . : 
   IPv6 NetBIOS over HTTP . . . . . : Disabled

```

