

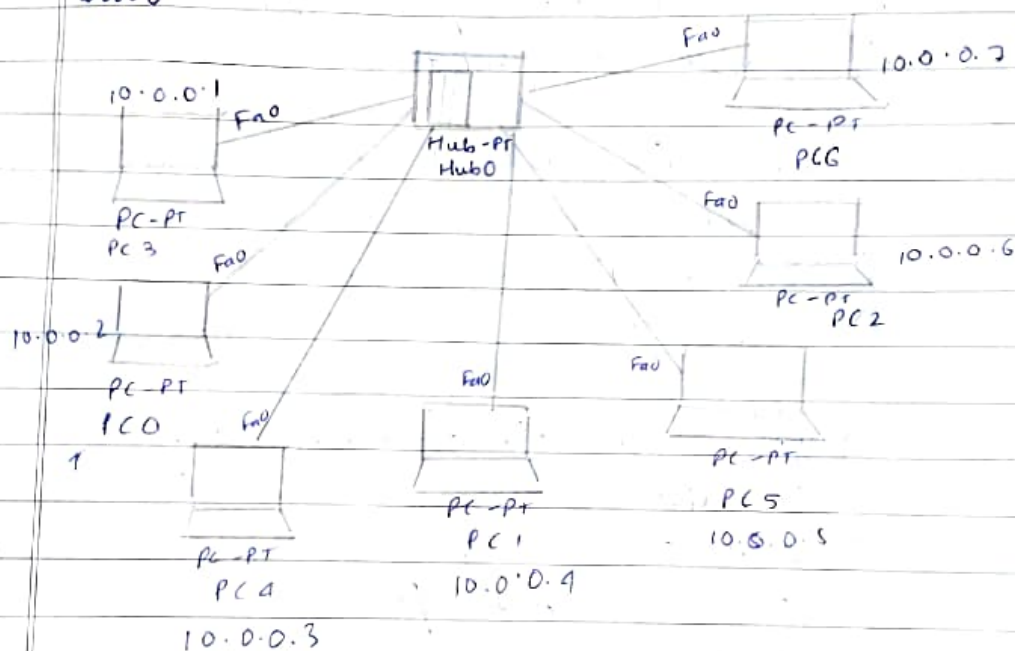
# Experiment - 1

Aim:-

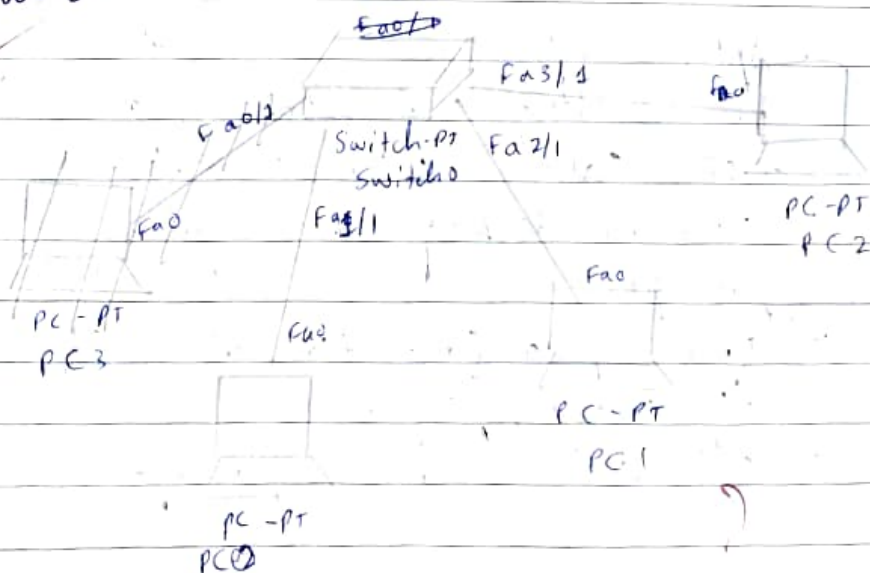
Create a topology and simulate sending a simple PDV from source to destination using hub and switch as connecting devices and demonstrate ping message

Topology:-

hub:



switch:



### Procedure:-

#### Hub :- (Simulation)

- i) connect 7 PCs to 1 hub.
- ii) extend the port by clicking on hub and adding the ~~hub~~<sup>extra</sup> port (have to turn off hub for this)
- iii) connect the PCs to the hub using the copper straight through cable
- iv) set the IP addresses to the PCs
- v) Add simple PDU to source and destination
- vi) click on Auto capture/play
- vii) observe the packets

#### Switch:- (Simulation)

- i) connect 3 PCs to 1 switch
- ii) Set the IP addresses to all the PCs
- iii) connect the PCs to the switch using the copper straight through cable.
- iv) Wait until the signal turns from orange to green
- v) Add simple PDU to source & destination
- vi) Click on Auto capture/play.
- vii) observe the packets.

#### Hub:- (realtime)

- i) After completing the connections of hub & PCs, setting IP addresses, and using copper straight cable, click on the source PC.
- ii) click on desktop and go to <sup>in cmd, PC</sup> command prompt.
- iii) type ping [destination IP address], here in the experiment, ping 10.0.0.2
- iv) observe the command prompt.

Result (Hub realtime):

Packet Tracer PC command Line 1.0

PC > ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

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

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

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

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

Ping statistics for 10.0.0.2:

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

Approximate round trip times in milli-seconds:

Minimum=0ms, Maximum=0ms, Average=0ms

PC > PC

Procedure:

Result (Switch realtime):

Switch: (realtime)

- After completing the connections of switch & PCs, setting IP address, & using copper straight through cable, click on the source PC, in this end, PC0
- click on desktop and go to command prompt
- type ping [destination IP], here in the experiment, ping 10.0.0.2
- observe the command prompt:

Result (Switch realtime):

Packet Tracer PC command Line 1.0

PC > ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:



Reply from 10.0.0.4 : bytes = 32 time = 0ms TTL = 128  
 Reply from 10.0.0.0 : bytes = 32 time = 0ms TTL = 128  
 Reply from 10.0.0.0 : bytes = 32 time = 0ms TTL = 128  
 Reply from 100.0.0.0 : bytes = 32 time = 0ms TTL = 128

Ping statistics for 10.0.0.0 :

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

Approximate round trip times in milliseconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC >

Observation (Switch simulation):

- i) The packet goes from source to hub
- ii) The hub sends it to all the rest PCs.
- iii) The PC's with which the message wasn't intended to show a red cross on the message
- iv) The PC's for which it was intended to receive the message send an acknowledgment to the hub which sends it to <sup>all PCs</sup> ~~the source PC~~.  
 & source receives green tick, rest are red.

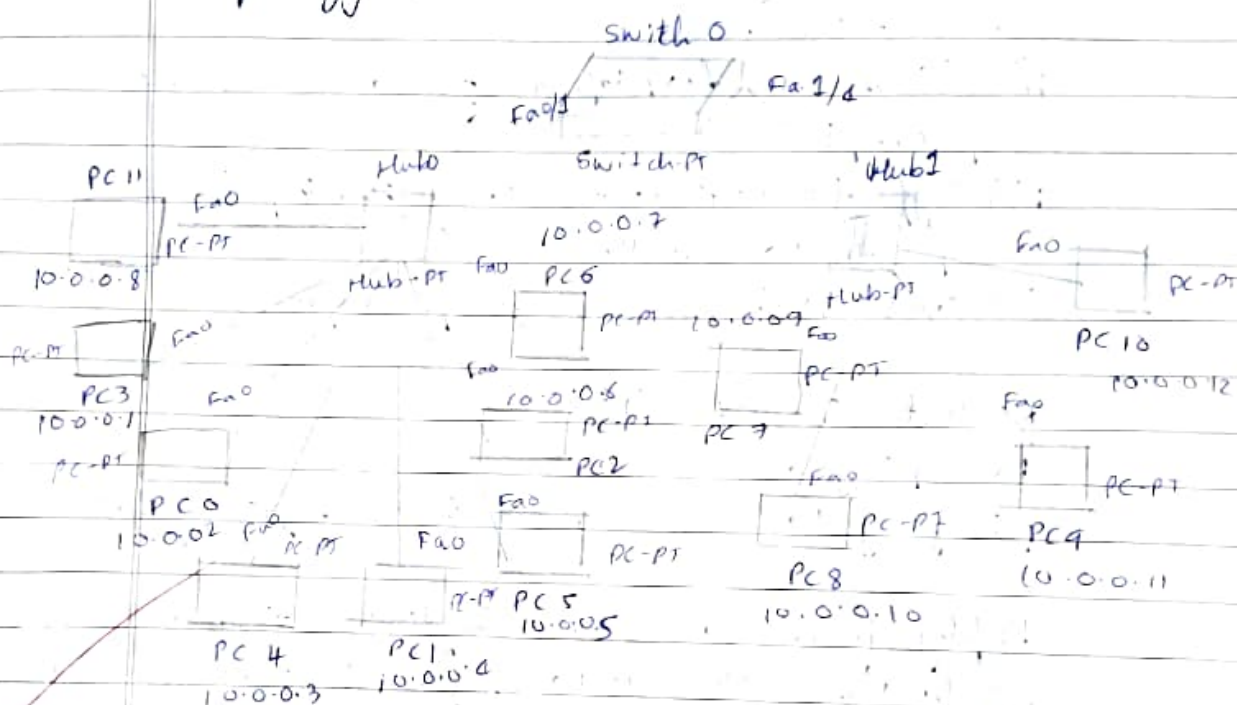
Observation (Switch simulation):

- i) The packet goes from source to switch
- ii) Switch sends it to rest PCs
- iii) The PC's for which the message wasn't intended show red cross & the one it was intended to show sends an acknowledgement back that it receives message
- iv) The switch relays it back only to the source unlike hub.
- v) Sending a message again from same source & destination, the switch would have

learnt and sends it only to the destination and not the rest PCs.

Hybrid:-

Topology:-



Procedure:-

simulation

- i) Connect 8 PC's to 1st hub & 4 PC's to 2nd hub
- ii) Set the IP addresses of the PC's
- iii) Connect the 2 hubs to a Switch
- iv) PC's are connected to hub using copper straight through cable
- v) Hubs are connected switch using copper cross over wire
- vi) wait until the signal on switch turns from orange to green
- vii) Add simple PDU to source & destination, here from PC11 to PC10

- viii) click on Auto capture/play
- ix) observe the packets

Realtime:

- i) After connecting all the PC's to hubs to switch and setting IP addresses, click on source PC, here PC0
- ii) click on desktop & go to command prompt
- iii) Type the destination IP address, here ping 10.0.0.10
- iv) observe the command prompt

Result (Real time):

PC > ping 10.0.0.10

pinging 10.0.0.10 with 32 bytes of data:

Reply from 10.0.0.10: bytes=32 time=0ms TTL=120

Reply from 10.0.0.10: bytes=32 time=0ms TTL=120

Reply from 10.0.0.10: bytes=32 time=0ms TTL=120

Reply from 10.0.0.10: bytes=32 time=0ms TTL=120

Ping statistics for 10.0.0.10:

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

Approximate round trip times in milliseconds:

Minimum=0ms, Maximum=1ms, Average=0ms

PC >

Observation

- i) The packet goes from source to hub
- ii) The hub sends it to rest of the PC's & to the switch
- iii) The switch sends to the other hub which

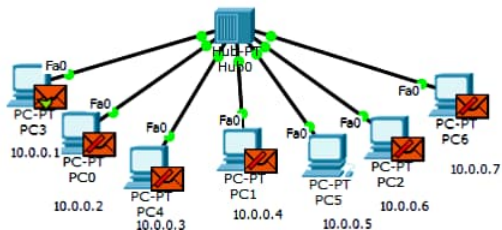
sends it to rest of PC's

- ii) The PC's which the message wasn't intended to show a red cross on the message,
- iv) The PC's for which it was intended to receives it & sends an acknowledgment to the hub which sends it to rest of the PC's of the switch
- v) The switch relays it to the other hubs of which sends it to rest of the PC's
- vi) the source receives the Acknowledgment

9/10

N  
22/6/23





### Simulation Panel

#### Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.002	Hub0	PC2	ICMP	
	0.002	Hub0	PC6	ICMP	
	0.003	PC5	Hub0	ICMP	
	0.004	Hub0	PC3	ICMP	
	0.004	Hub0	PC0	ICMP	
	0.004	Hub0	PC4	ICMP	
	0.004	Hub0	PC1	ICMP	
	0.004	Hub0	PC2	ICMP	
	0.004	Hub0	PC6	ICMP	

Reset Simulation ☒ Constant Delay Captured to: 716.838 s

#### Play Controls

Back Auto Capture / Play Capture / Forward

#### Event List Filters - Visible Events

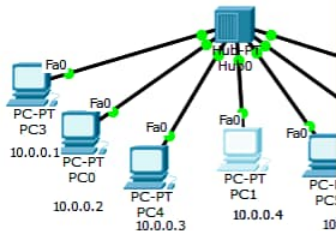
ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP

Edit Filters Show All/None

Time: 00:43:08.145 Power Cycle Devices **PLAY CONTROLS:** Back Auto Capture / Play Capture / Forward Event List **Simulation**

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
	Successful	PC3	PC5	ICMP		0.000	N	0





PC1

Physical

Config

Desktop

Custom Interface

## Command Prompt

Packet Tracer PC Command Line 1.0

PC&gt;ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

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

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

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

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

Ping statistics for 10.0.0.2:

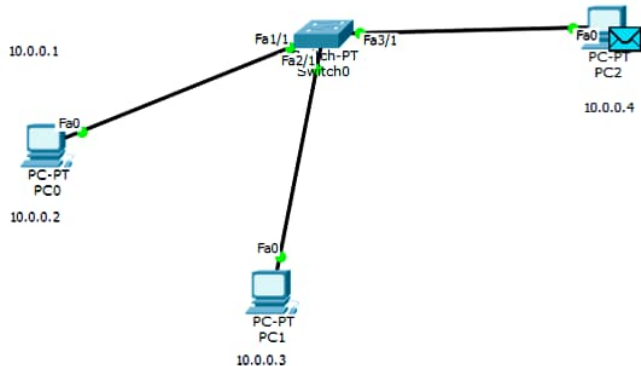
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC&gt;

Realtime



0.000	--	PC0	Switch0	ICMP	
0.001	PC0	Switch0	ICMP		
0.002	Switch0	PC2	ICMP		

Reset Simulation

☒ Constant Delay

Captured to: \*  
0.002 s

Play Controls

Back

Auto Capture / Play

Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP

Edit Filters

Show All/None

Time: 00:03:21.838

Power Cycle Devices

PLAY CONTROLS:

Back

Auto Capture / Play

Capture / Forward

Event List

Simulation

Logical

[Root]

New Cluster

Move Object

Set Tiled Background

Viewport

PC0

Physical

Config

Desktop

Custom Interface

Command Prompt

Packet Tracer PC Command Line 1.0  
PC>ping 10.0.0.4  
  
Pinging 10.0.0.4 with 32 bytes of data:  
  
Reply from 10.0.0.4: bytes=32 time=0ms TTL=128  
Reply from 10.0.0.4: bytes=32 time=1ms TTL=128  
Reply from 10.0.0.4: bytes=32 time=0ms TTL=128  
Reply from 10.0.0.4: bytes=32 time=0ms TTL=128  
  
Ping statistics for 10.0.0.4:  
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 0ms, Maximum = 1ms, Average = 0ms  
  
PC>

10.0.0.1

10.0.0.2

10.0.0.3

Fa0

PC-PT  
PC0

Fa1/1

Fa2/1

Switch0

Fa3/1

Fa0

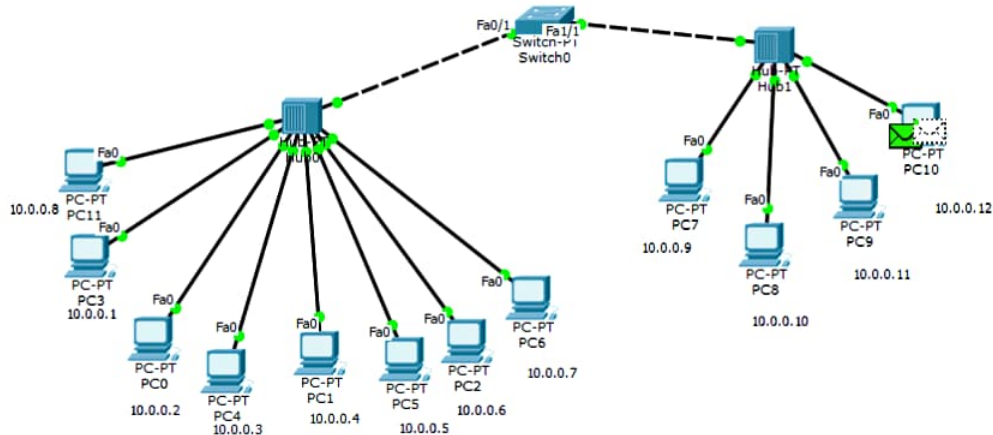
PC-PT  
PC1

Time: 00:04:08

Power Cycle Devices

Fast Forward Time

Realtime



## Simulation Panel

## Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.002	Hub0	PC2	ICMP	
	0.002	Hub0	PC6	ICMP	
	0.002	Hub0	Switch0	ICMP	
	0.003	Switch0	Hub1	ICMP	
	0.004	Hub1	PC7	ICMP	
	0.004	Hub1	PC8	ICMP	
	0.004	Hub1	PC9	ICMP	
	0.004	Hub1	PC10	ICMP	
	0.005	PC10	Hub1	ICMP	

Reset Simulation

☒ Constant Delay

Capturing...

## Play Controls

Back

Auto Capture / Play

Capture / Forward

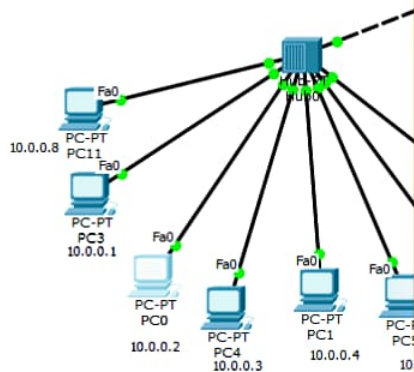
## Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H. 323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP

Edit Filters

Show All/None





PC0

Physical Config Desktop Custom Interface

### Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.10

Pinging 10.0.0.10 with 32 bytes of data:

Reply from 10.0.0.10: bytes=32 time=0ms TTL=128
Reply from 10.0.0.10: bytes=32 time=1ms TTL=128
Reply from 10.0.0.10: bytes=32 time=0ms TTL=128
Reply from 10.0.0.10: bytes=32 time=1ms TTL=128

Ping statistics for 10.0.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>
```



Realtime

Color Time(sec) Periodic Num Edit Delete

Time: 00:07:52 Power Cycle Devices Fast Forward Time

