

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

25/9/24 Lab-1
HUB

Aim: to demonstrate the transmission of a simple PDU between 2 devices connected using a hub and a switch

connection successful

copper straight through

generic PC 1
generic PC 2
generic PC 3

generic hub

IP: 192.180.160.1/24 IP: 192.180.160.2/24 IP: 192.180.160.3/24

Observation / procedure

Setup

1. Launch Cisco packet tracer
2. Add devices. left icon menu → select end devices → add 3 PCs
- ✓ 3. Add one hub from the network devices section.
4. Connect devices: Use copper straight through cable to connect each PC to the hub, establish the connection should turn green.
5. IP config
go to → each device click → select config → then port ethernet (1) do this for all 3 ports by address value.

		Subnet mask
PC1	192.180.160.1/24	255.255.255.0
PC2	192.180.160.2/24	255.255.255.0
PC3	192.180.160.3/24	255.255.255.0

switch to simulation from real time at the right bottom

6. add supply PDU
envelope click on the source PC 0 & destination PC 1 this will create on ICMP packet from PC1 to PC2

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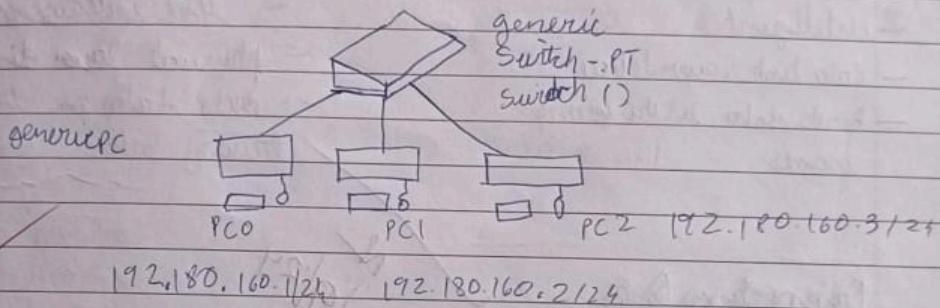
7) run the simulation / click auto capture / play

result (observation)

- from PC0 to P2 & P1 the PDU (protocol data unit)
 - return msg! PDU is sent from PC2 to PC0 that it is received.
 - but only PC 2 will accept the PDU hence X mark on P1
- Since it is hub ~~loop~~
broadcast happens to all
connected to hub only
intended PC will
be received.

Switch

Connecting PC to switch.



Observation / Procedure

1. open fire packet tracer .
- 2- Add devices .
 - switch → Network devices
 - Network devices - (generic switch)
 - end devices -
 - generic PC
- 3- Connect the 3PCD 1,2 to switch ports using copper straight through
- 4- setup devices by providing ip's
 - Get ~~Set~~ config → fast ethernet → input ip
 - IP 1 192.180.160.1
 - IP 2 192.180.160.2
 - IP 3 192.180.160.3

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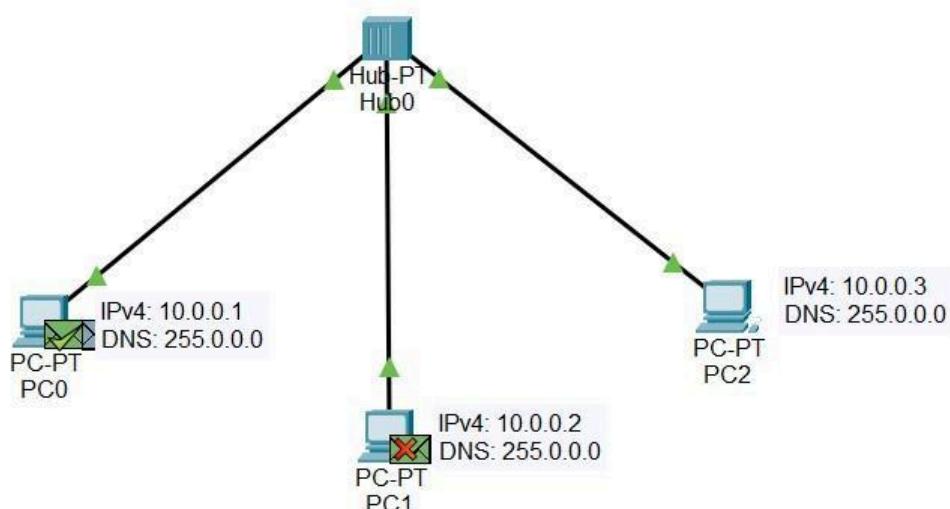
- 5) switch to simulation mode choose visible event / protocol
- 6) Add PDU to source & destination to PC 2
- 7) run simulation Auto capture (play)
if ICMP (ping) are sent to only correct device
with correct device mac.
- 8) Result switch uses mac addresses to intelligently forward the ping (ICMP) packets to the correct destination rather than broadcasting to all connected devices like a hub would.

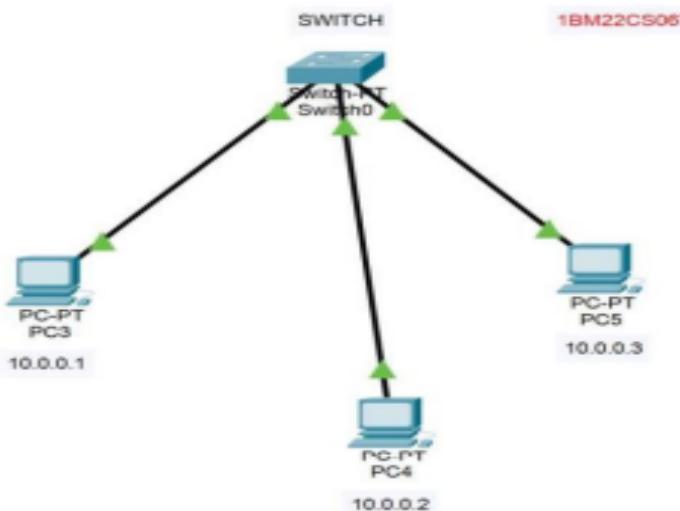
difference

Switches <ul style="list-style-type: none"> - direct to mac - intelligent - data link layer device - sends data in the form of frames 	Hubs <ul style="list-style-type: none"> - broadcast model - Not intelligent - physical layer device - sends data in the form of binary bits
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Observation

25/9/24





Realtime Simulation

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful		PC0	PC2	IC...	Gray	0.000	N	0	(e...)	(del)
Successful		PC3	PC5	IC...	Green	0.000	N	1	(e...)	(del)

Toggle PDU List Window

Command Prompt

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:
Reply from 10.0.0.3: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:
Reply from 10.0.0.2: bytes=32 time<1ms 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
  
```

Command Prompt

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Cisco Packet Tracer PC Command Line 1.0
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C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time<1ms 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
```