

## EXPERIMENT-4

**Objective:** To set up a basic network consisting a switch and study of different configuration with command line interface

**Resources Required:**

laptop, Cisco packet tracer

**Theory:**

A switch operates in the layer 2, i.e. data link layer of the OSI model. It is an intelligent network device that can be conceived as a multiport network bridge. It uses MAC addresses (addresses of medium access control sublayer) to send data packets to selected destination ports. It uses packet switching technique to receive and forward data packets from the source to the destination device. It supports unicast (one-to-one), multicast (one-to-many) and broadcast (one-to-all) communications. Transmission mode is full duplex, i.e. communication in the channel occurs in both the directions at the same time. Due to this, collisions do not occur.

***Following are the advantages of using a Switch:***

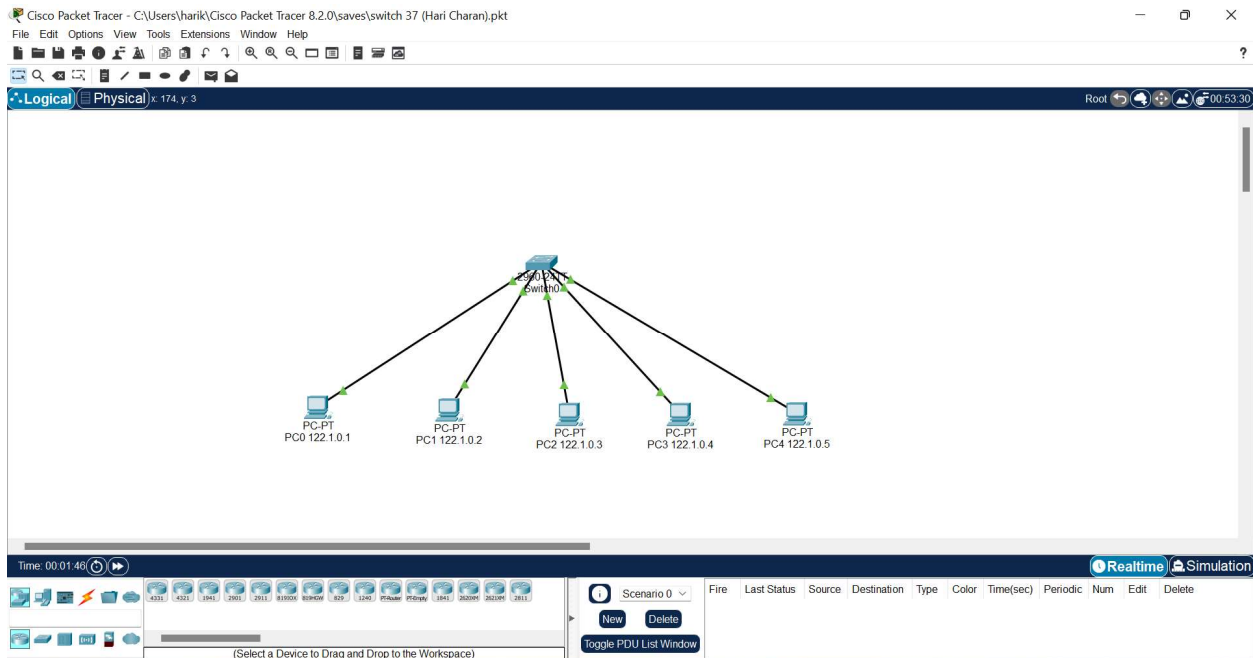
- 1.The implementation cost is medium.
- 2.It does not require any special system administration configuration. We can just plug and play it.
- 3.Improves security by limiting the scope of data frames.
- 4.It has the filtering capability.
- 5.It can be used in a large network.
- 6.It uses full-duplex mode of communication
- 7.It has multiple collision domains, so there are least or no collisions in the channel.

***Following are the disadvantages of using a Switch:***

- 1.It can connect devices of the same network only.
- 2.There is a delay in forwarding the frames due to error checking.
- 3.There is a need to maintain a Switch table.

**PROCEDURE:**

Topology:



Addressing table:

Device	IP address	Subnet mask
PC0	122.1.0.1	255.0.0.0
PC1	122.1.0.2	255.0.0.0
PC2	122.1.0.3	255.0.0.0
PC3	122.1.0.4	255.0.0.0
PC4	122.1.0.5	255.0.0.0

1. Setup the above shown topology using switch and 5 end device pc's
2. Connect the switch and the pc's using copper straight connection links.
3. Power on the devices.
4. Set the IP addresses of the PC's using above addressing table.
5. Start simulating the topology. The result is shown below.

## Simulation:

The screenshot shows the Cisco Packet Tracer interface. At the top, the title bar reads "Cisco Packet Tracer - C:\Users\harik\Cisco Packet Tracer 8.2.0\saves\switch 37 (Hari Charan).pkt". The main workspace displays a network diagram with a central "Switch0" connected to five PCs: PC0 (122.1.0.1), PC1 (122.1.0.2), PC2 (122.1.0.3), PC3 (122.1.0.4), and PC4 (122.1.0.5). The interface includes a top menu bar, a toolbar, and a right-hand "Simulation Panel" with an "Event List" table. The "Event List" table shows the following data:

Vis	Time(sec)	Last Device
	2.264	Switch0
	2.264	Switch0
	2.264	Switch0
	2.264	PC1 122.1.0.2
	2.265	Switch0
	2.265	Switch0
	2.265	Switch0

Below the event list are "Reset Simulation" and "Play Controls" buttons. The bottom status bar shows "Time: 00:02:02.792" and "PLAY CONTROLS".

This screenshot shows the same network simulation as above, but with a different "Event List" table in the Simulation Panel. The table data is as follows:

Vis	Time(sec)	Last Device
	2.264	PC1 122.1.0.2
	2.265	Switch0
	2.265	Switch0
	2.265	Switch0
	2.265	Switch0
	2.266	PC3 122.1.0.4
	2.267	Switch0

The interface elements are identical to the first screenshot, including the network diagram and the bottom status bar showing "Time: 00:02:02.794".

## Conclusion:

We have studied the basic network consisting a switch