**Aim:** Study & Verification of standard Network topologies i.e., Star, Tree, Bus etc. (Tool used: Packet Tracer)

**Apparatus (Software):** Packet tracer Software

**Procedure:** To implement this practical following network topology is required to be
configured using the commands learned in previous practical. After configuring the given network, a packet should be ping from any one machine to
another.

- Network topology is the arrangement of the various elements (links, nodes, etc.) of a computer network.
- Essentially, it is the topological structure of a network, and may be depicted physically or logically.
- Physical topology refers to the placement of the network's various components, including device location and cable installation, while logical topology shows how data flows within a network, regardless of its physical design. Distances between nodes, physical interconnections, transmission rates, and/or signal types may differ
between two networks, yet their topologies may be identical. • A good example is a local area network (LAN): Any given node in the LAN has one or more physical links to other devices in the network; graphically mapping these links results in a geometric shape that can be used to describe the physical topology of the network. Conversely, mapping the data flow between the components determines the logical topology of the network.

There are two basic categories of network topologies:

1. Physical topologies
2. Logical topologies

1. The shape of the cabling layout used to link devices is called the physical topology of the network. This refers to the layout of cabling, the locations of nodes, and the interconnections between the nodes and the cabling.

2. The physical topology of a network is determined by the capabilities of the network access devices and media, the level of control or fault tolerance desired, and the cost associated with cabling or telecommunications circuits.

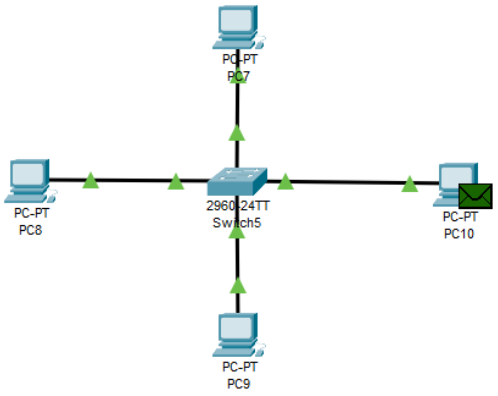
Logical topologies are often closely associated with Media Access Control methods and protocols. Logical topologies are able to be dynamically reconfigured by special types of equipment such as routers

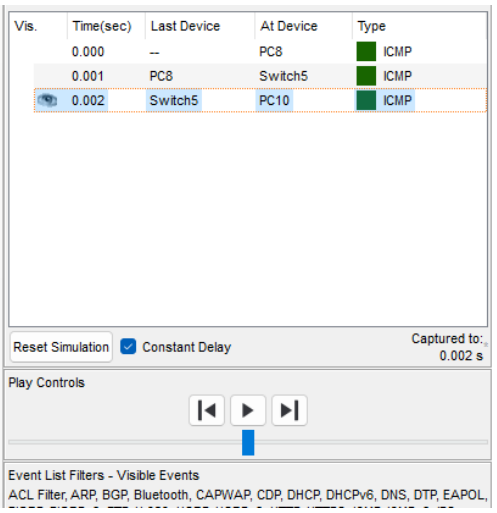
and switches.
The study of network topology recognizes eight basic topologies: - Bus Topology
- Star Topology
- Ring or circular Topology
- Mesh Topology
- Tree Topology

Creating of network topology using Cisco Packet tracer is Very easy. By help of its inbuilt tools and functionality user can create topology in very easy ways.

**The Star Topology can be done as following steps.**
- Select SWITCH Device Type Selection Box.
- Then select SWITCH-PT from Device- Specific Selection Box. - Now Put That SWITCH to the workspace.
- Now Select the few ends device from the selection boxes. - Put all end devices on workspace.
- Now select connection from the selection box.
- Then select 'Automatically choose connection type'.
- Joint the end devices and SWITCH in star connection. - After Joining the Devices, you'll see the Star topology is running. - You can change the Configuration as you want.

# STAR TOPOLOGY USING SWITCH

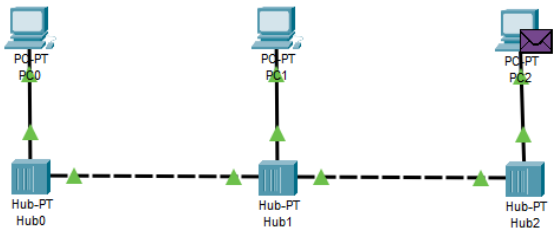


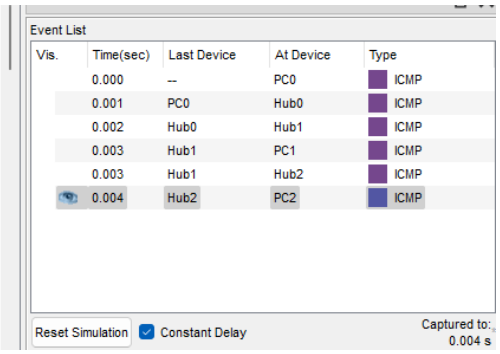




**Ping:**

```
Pinging 192.168.12.11 with 32 bytes of data:

Reply from 192.168.12.11: bytes=32 time=1ms TTL=128
Reply from 192.168.12.11: bytes=32 time<1ms TTL=128
Reply from 192.168.12.11: bytes=32 time<1ms TTL=128
Reply from 192.168.12.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.12.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

## BUS TOPOLOGY USING SWITCHES :

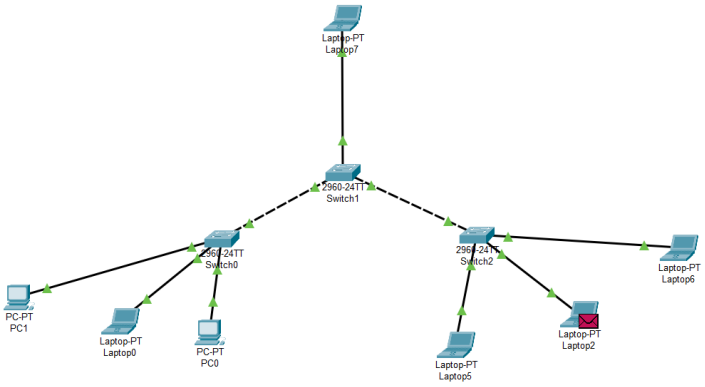


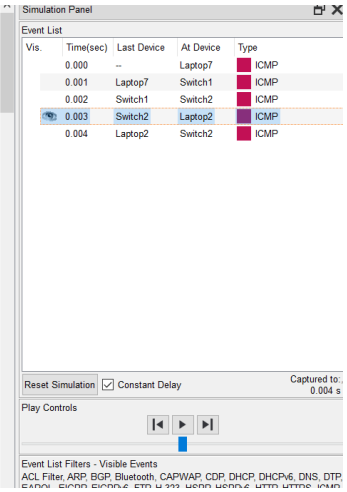




## Ping Check :

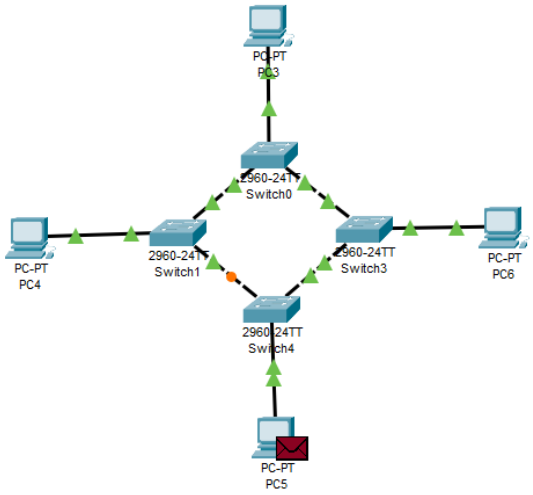
```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.12.4

Pinging 192.168.12.4 with 32 bytes of data:

Reply from 192.168.12.4: bytes=32 time=2ms TTL=128
Reply from 192.168.12.4: bytes=32 time=2ms TTL=128
Reply from 192.168.12.4: bytes=32 time<1ms TTL=128
Reply from 192.168.12.4: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.12.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 1ms

C:\>
```

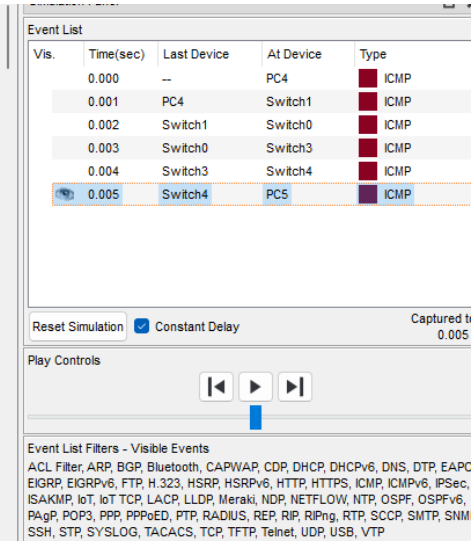
# TREE TOPOLOGY USING SWITCHES



# RING TOPOLOGY USING SWITCHES :

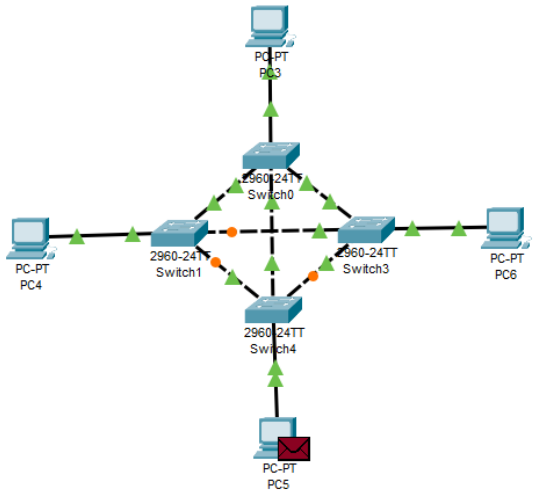


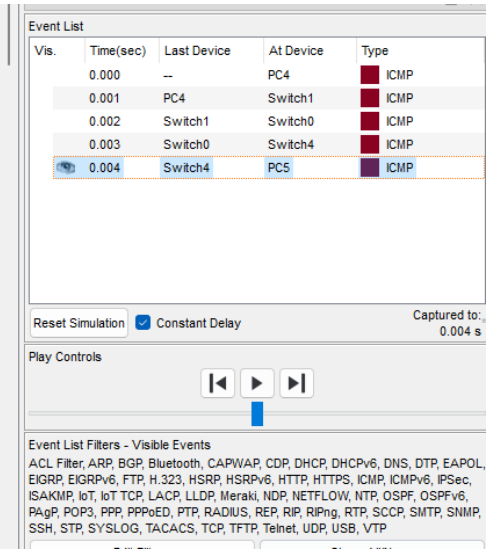




## Ping Check :

```
Pinging 192.168.12.9 with 32 bytes of data:

Reply from 192.168.12.9: bytes=32 time<1ms TTL=128
Reply from 192.168.12.9: bytes=32 time<1ms TTL=128
Reply from 192.168.12.9: bytes=32 time<1ms TTL=128
Reply from 192.168.12.9: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.12.9:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

# MESH TOPOLOGY USING SWITCHES :




## Ping Check :

```
Pinging 192.168.12.9 with 32 bytes of data:

Reply from 192.168.12.9: bytes=32 time=2ms TTL=128
Reply from 192.168.12.9: bytes=32 time<1ms TTL=128
Reply from 192.168.12.9: bytes=32 time=1ms TTL=128
Reply from 192.168.12.9: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.12.9:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 0ms
```