

Experiment 1 – Types of Topologies and Transmission Media

Tool: Cisco Packet Tracer

Aim

To study and implement different types of topologies (Bus, Star, Mesh) and understand types of transmission media using Cisco Packet Tracer.

Objectives

1. Understand working of different network topologies.
2. Understand concept of transmission media.
3. Learn to use Cisco Packet Tracer for simulation.

Important Oral Topics & Answers

1 What is Cisco Packet Tracer?

It is a **network simulation tool** developed by Cisco. It allows users to design and test virtual networks without using real hardware. You can add routers, switches, PCs, cables, and configure IP addresses, routing, etc.

2 What are Topologies?

Topology means the **arrangement of devices** (nodes) and how they are connected.

◆ **Types of Topologies:**

1. Bus Topology:

All devices share a single communication line (bus). Data travels in both directions, and every device receives every signal.

- **Advantages:** Simple, cost-effective.
- **Disadvantages:** If main cable fails, entire network goes down.

2. Star Topology:

All devices are connected to a **central hub or switch**. Data passes through this central device.

- **Advantages:** Easy to add or remove devices. Failure of one cable doesn't affect others.
- **Disadvantages:** If central hub fails, the whole network fails.

3. Mesh Topology:

Every device is connected to every other device directly. Provides multiple paths.

- **Advantages:** Highly reliable, no single point of failure.
- **Disadvantages:** Expensive and complex cabling.

3 What is Transmission Media?

It refers to the **medium through which data is transmitted** from one device to another. Examples:

- Wired: Copper cables, fiber optics
- Wireless: Wi-Fi, Bluetooth

Steps (Procedure Overview)

- Open Cisco Packet Tracer
- Add PCs and switches
- Connect using proper cables
- Assign IP addresses
- Ping between PCs to check connectivity

Outcome

Successfully implemented Bus, Star, and Mesh topologies using Cisco Packet Tracer.