Typical Scenarios

How to choose topology and Network type

Problem Scenario 1

You are setting up a small office with 10 computers that need to share files and access a common printer. The network should be cost-effective and easy to set up while ensuring minimal disruption if one computer fails.

Use a **Star Topology** with a central switch or hub. It is easy to set up, and a single computer failure won't affect others. The network type is **LAN (Local Area Network)**.

Problem Scenario 2

A data center needs to interconnect multiple servers to handle high-speed data transfer with redundancy to avoid failures. The network should ensure minimal latency and provide alternative paths if a connection fails.

Use a **Mesh Topology**. It provides multiple paths for data transfer and ensures high reliability. The network type is **LAN** or **Data Center Network (DCN)**.

Problem Scenario 3

A remote village requires internet connectivity. The village is spread over a large area, and there are no existing wired networks nearby.

Use a **Wireless WAN (Wide Area Network)** with technologies like satellite internet or Wi-Fi hotspots.

Problem Scenario 4

A university campus has multiple departments located in separate buildings, requiring interconnection for shared resources and scalability.

Use a **Tree Topology** combining departmental star topologies with a central backbone. The network type is **Campus Area Network (CAN)**.

Problem Scenario 5

A smart home setup includes devices like smart lights, thermostats, and security cameras. All devices need reliable communication.

Use a **Mesh Topology** with Zigbee or Wi-Fi-based IoT networks. This ensures reliable device-to-device communication.

Problem Scenario 6

A retail chain has stores in different cities, requiring real-time inventory and sales data updates to a central server.

Use a **WAN** (Wide Area Network) with a **Star Topology**, where each store connects directly to the central server

Problem Scenario 7

A large event requires Wi-Fi for attendees across the venue and handles many simultaneous connections.

Use a **Wireless Mesh Network** with multiple access points connected in a Mesh Topology to ensure high coverage and reliability.

Problem Scenario 8

computer lab with 30 PCs requires internet access and the ability to share files across systems.

Use a **Star Topology** with a central switch or hub. The network type is **LAN**.

Problem Scenario 9

A city’s traffic lights and sensors need to be interconnected to monitor and optimize traffic flow.

Use a **Mesh Topology** to connect all traffic points for high redundancy and scalability. The network type is **WAN**

Problem Scenario 10

A co-working space with 50 devices requires a flexible network that allows easy addition and removal of devices.

Use a **Star Topology** with a managed switch and **LAN**.
This ensures scalability and flexibility.

Problem Scenario 11

A hotel needs to provide internet access to guests across multiple floors with centralized management.

Use a **Tree Topology** with access points on each floor connected to a central router. The network type is **LAN**.

Problem Scenario 12

A gaming company needs to set up a network for its multiplayer servers to handle low-latency global connections.

Use a **Hybrid Topology** with data centers connected via **WAN** to support global players efficiently.

Problem Scenarios-Practice

1) An organization situated within a small building wants to setup a computer networks of seven users having equal priority. Suggest type of network with reasons.

2) You need to link a small number of computers in a room into network for training exercise. This will be a temporary network and with low cost. Which network is appropriate for this situation? Justify your answer.

3) It is proposed design network with all the machines having equal priority and without strong security. Which network is appropriate for this situation? Justify your answer.

4) For following situation state which network is appropriate? Justify your answer.
   a)Number of users 50. B) Data and resources need to be restricted
   c)Administrator is required d)All users with equal priority

1) A small educational organization situated within a single building wants to create a network to share the 5 departments among them. No centralized management required; no security required. Which network is appropriate? Justify your answer.

2) A travel agency wants to create a computer network of 22 computers with windows 98 installed on 21 computers and windows server 2000 on one computer. Justify why it will be better to make this as client server than peer to peer.

Thank You !!!