DATA COMMUNICATIONS

Lecture 2

1-2 NETWORKS

A network is a set of devices (often referred to as nodes) connected by communication links. A node can be a computer, printer, or any other device capable of sending and/or receiving data generated by other nodes on the network.

Topics discussed in this section:

Distributed Processing
Network Criteria
Physical Structures
Physical Topology
Categories of Networks

Distributed Processing

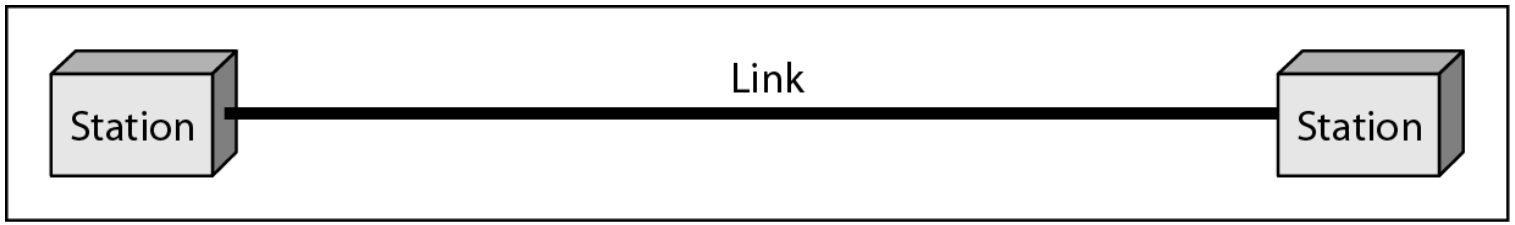
Most networks use distributed processing, in which a task is divided among multiple computers. Instead of one single large machine being responsible for all aspects of a process, separate computers (usually a personal computer or workstation) handle a subset.

Network Criteria

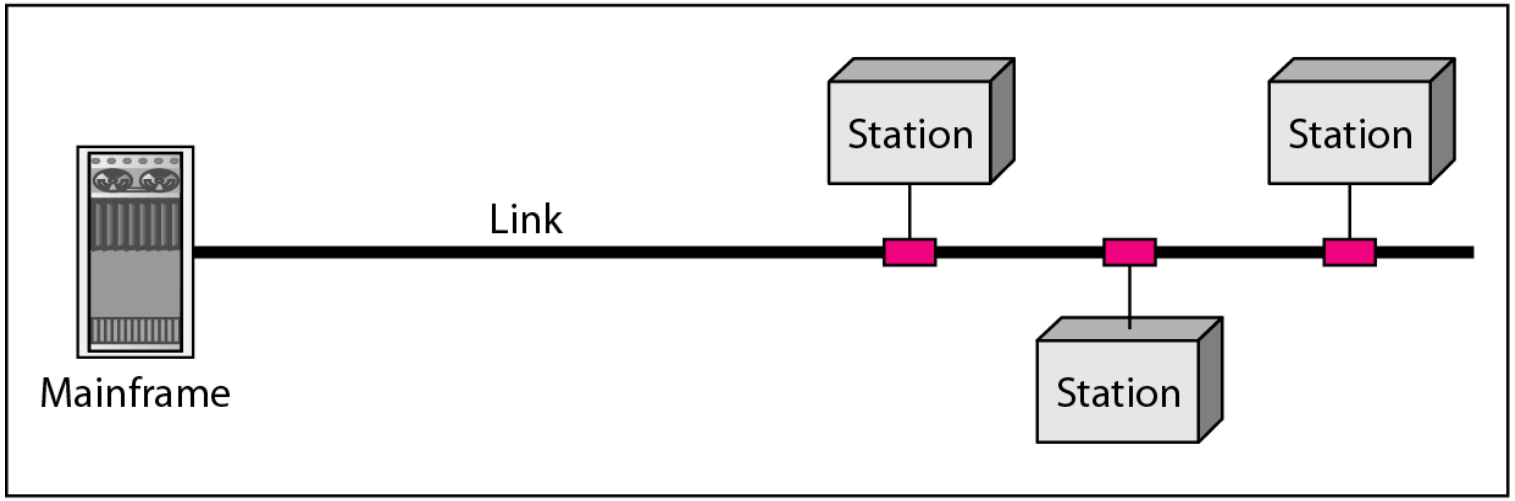
- *Performance (through put and delay)*
- Reliability
- security

Physical Structures

Types of connections: point-to-point and multipoint

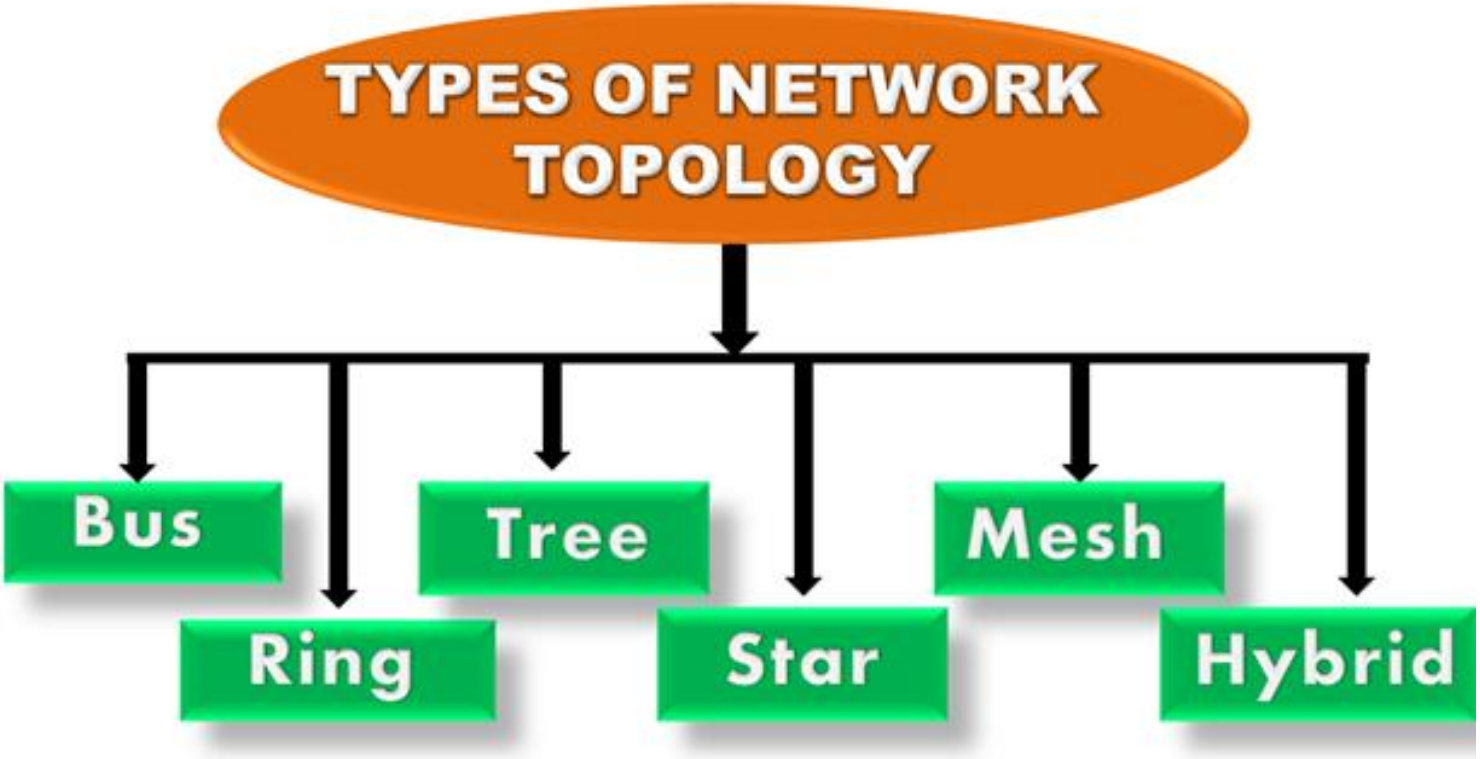


a. Point-to-point

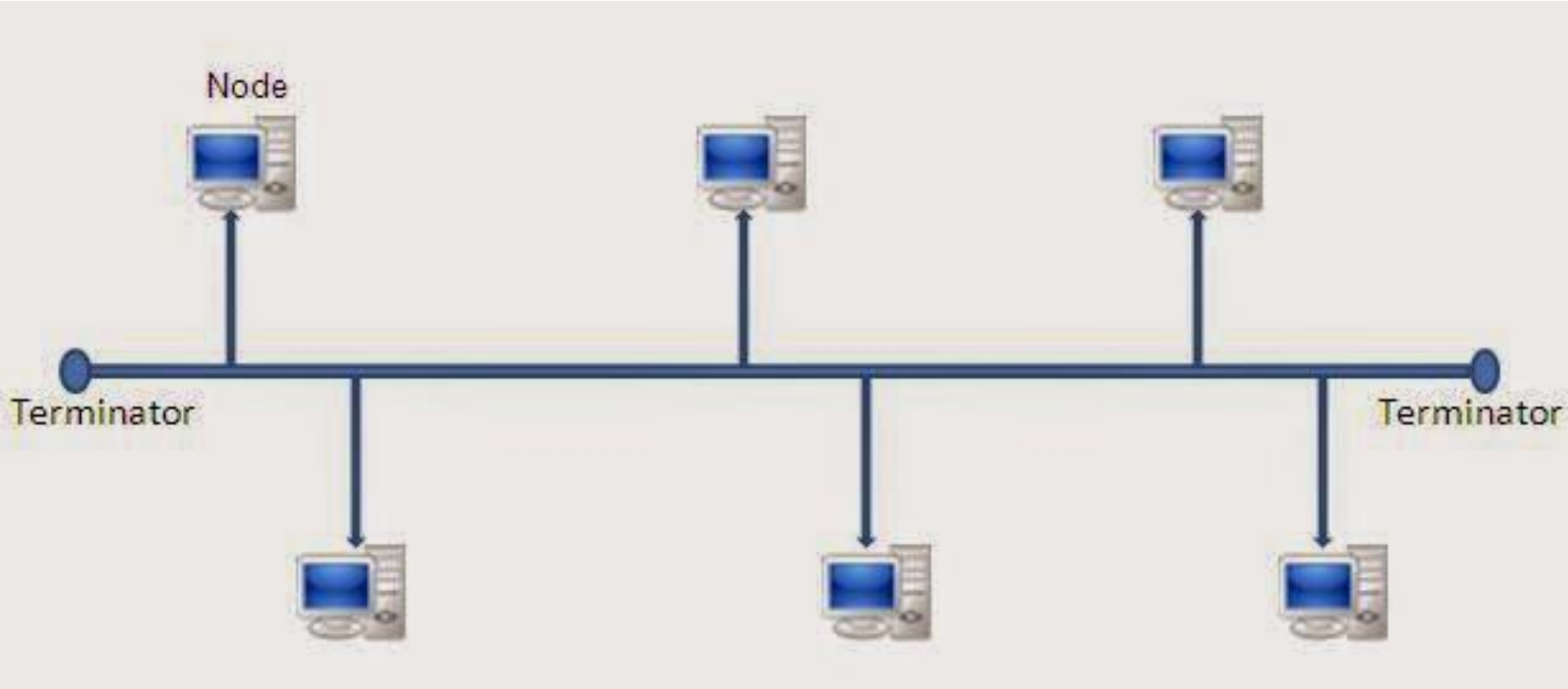


b. Multipoint

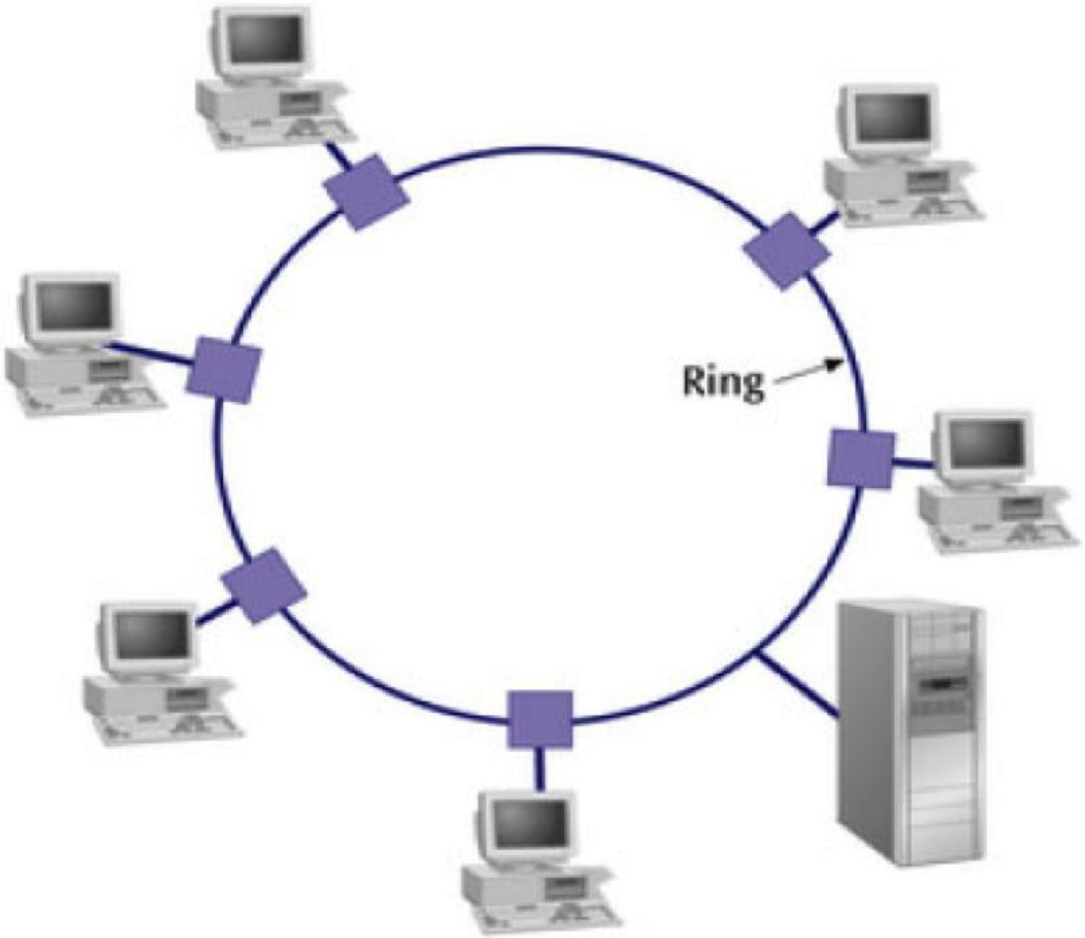
4. Physical Topology



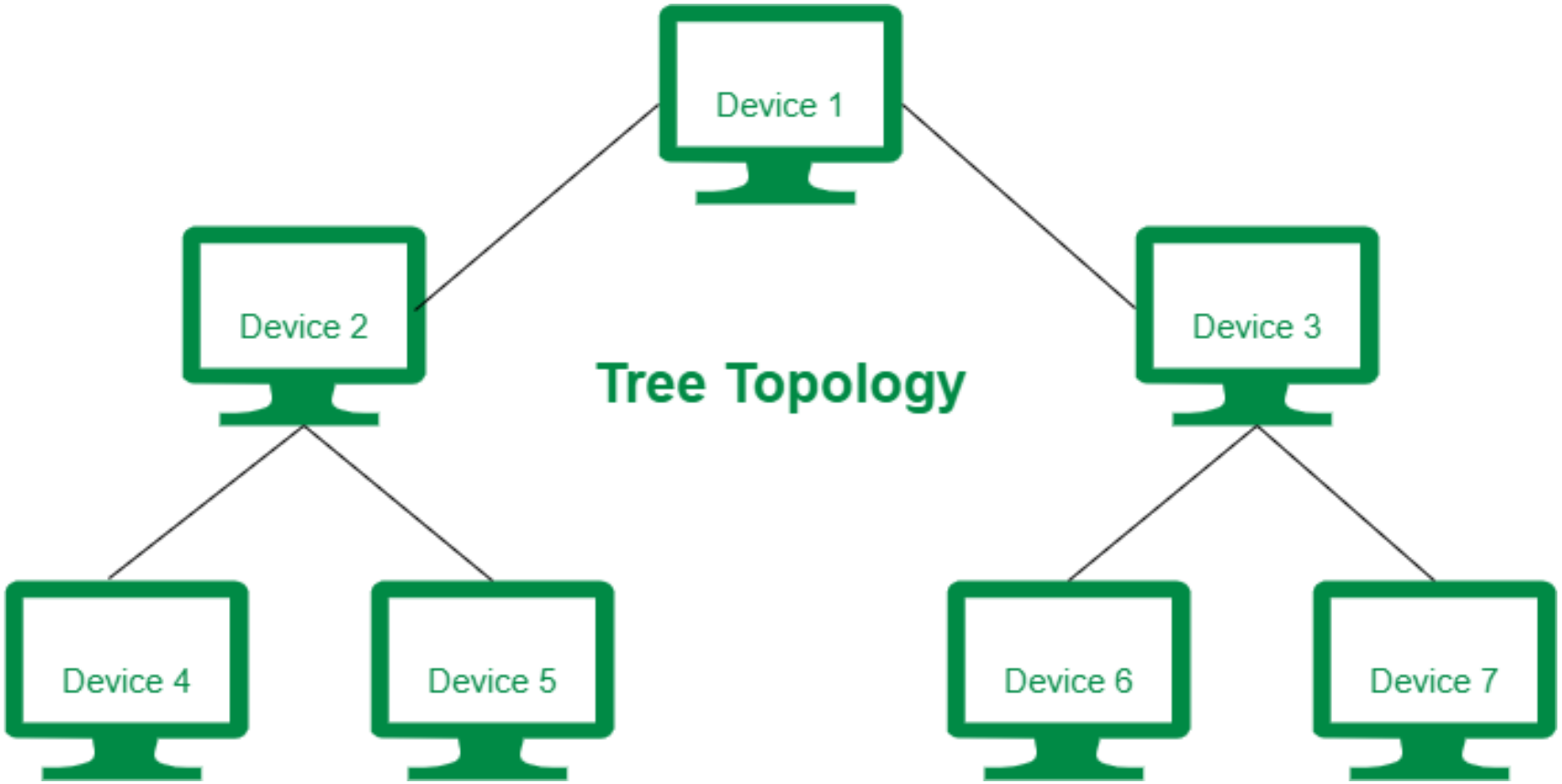
4.1 Bus Topology



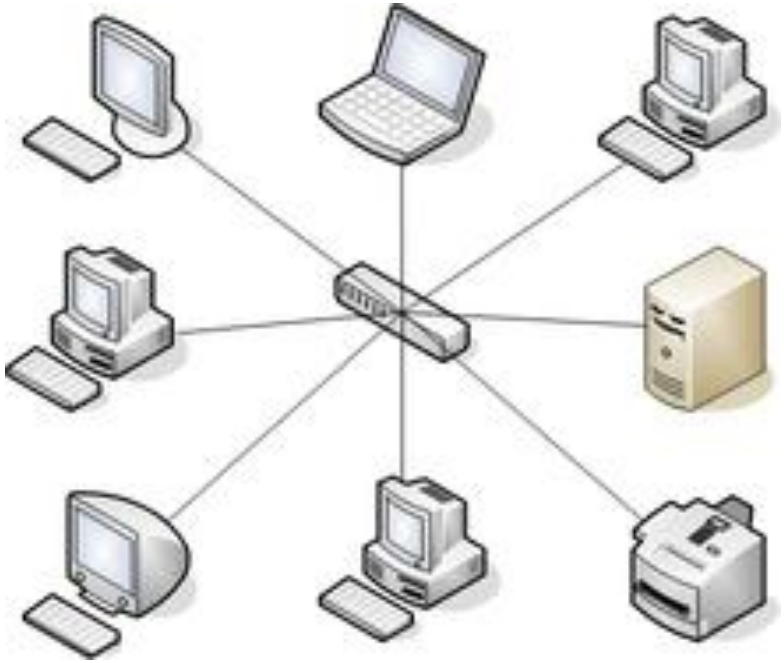
4.2 Ring Topology

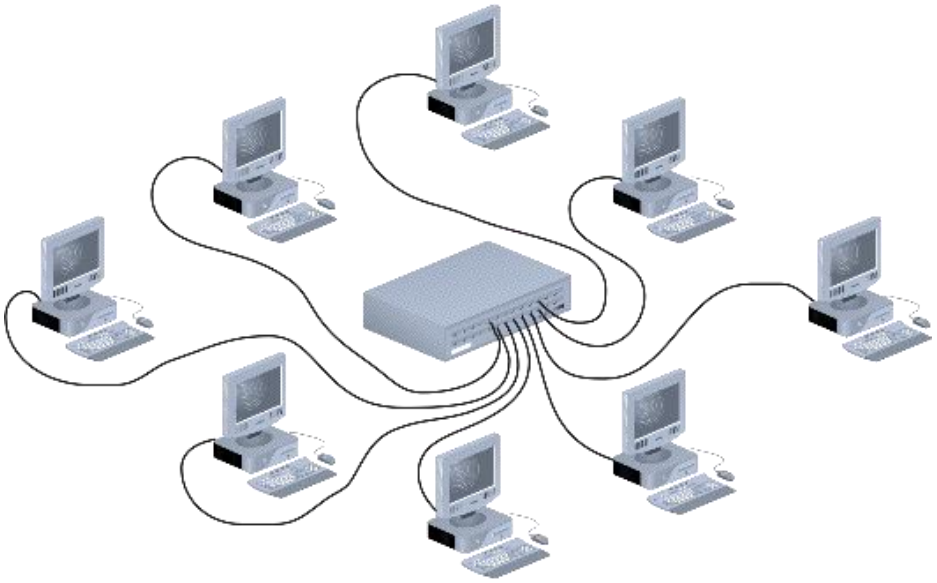


4.3 Tree Topology

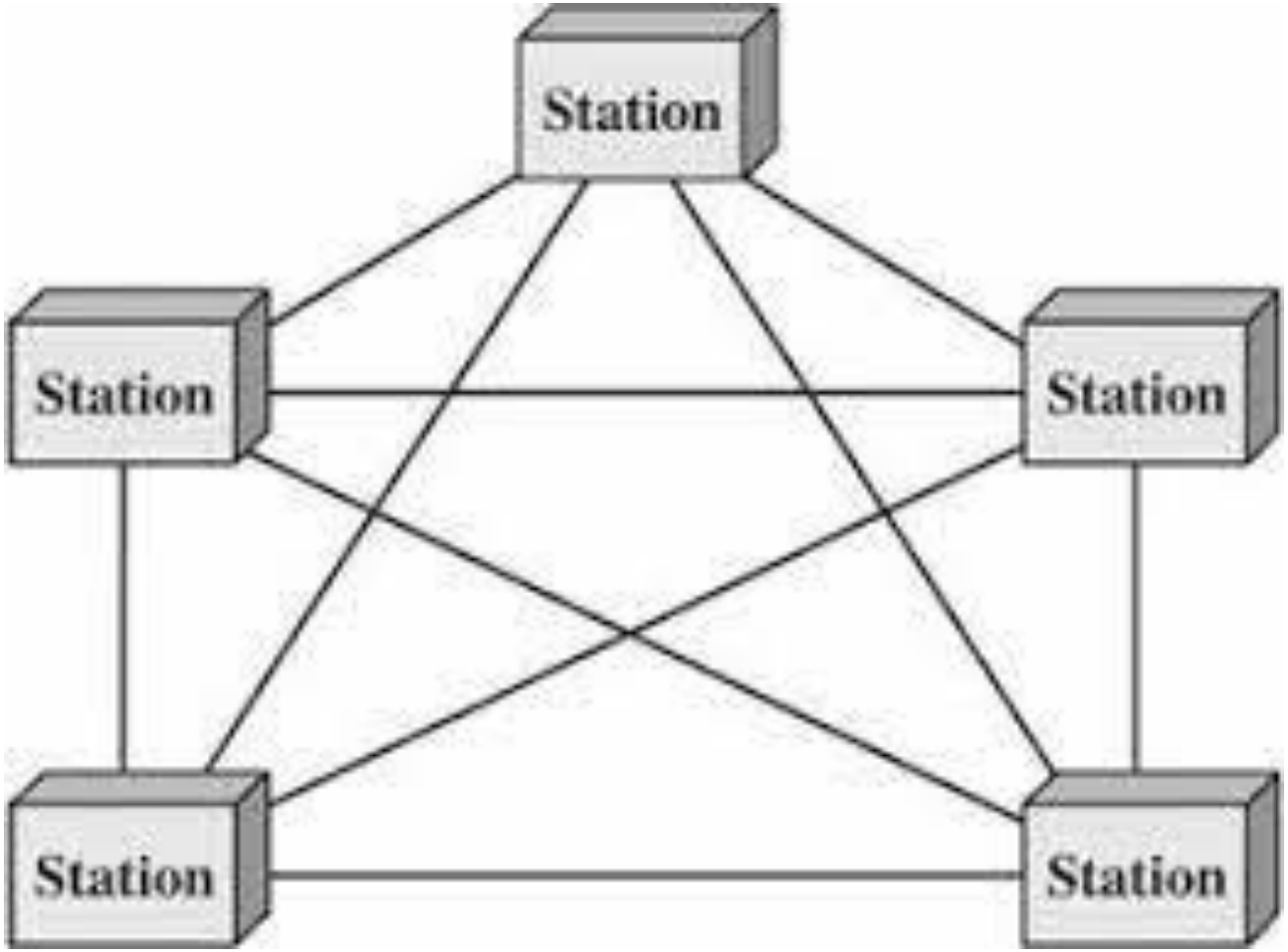


4.4 Star Topology

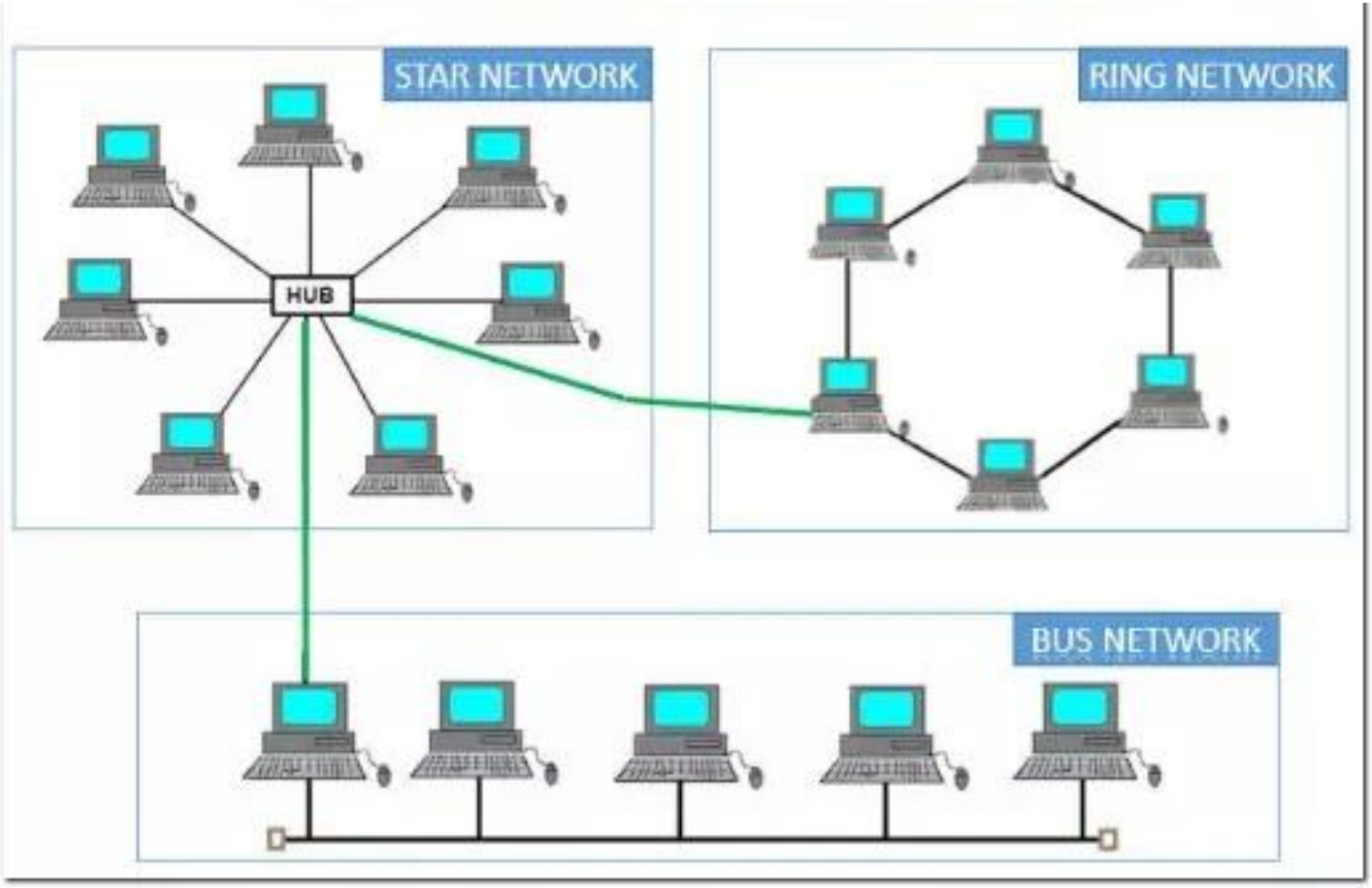




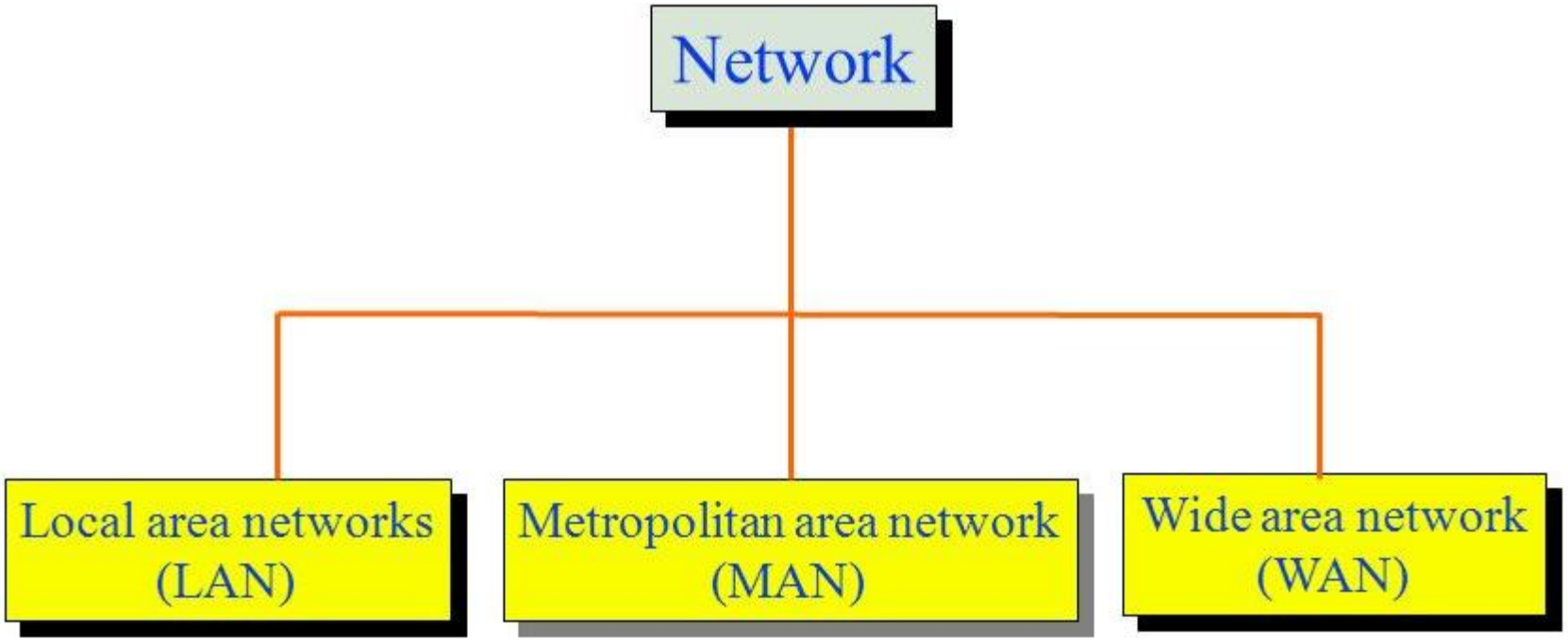
4.5 mesh Topology

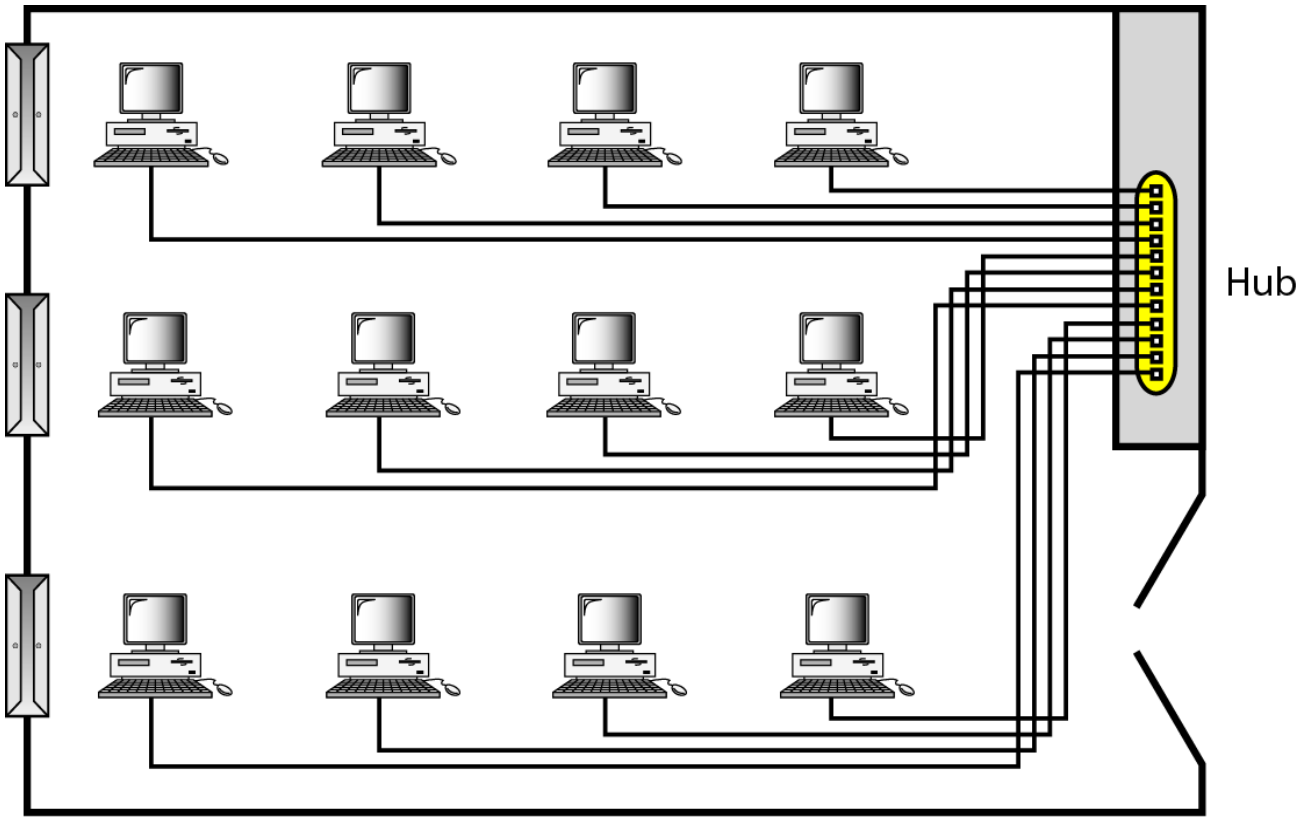


4.6 Hybrid Topology



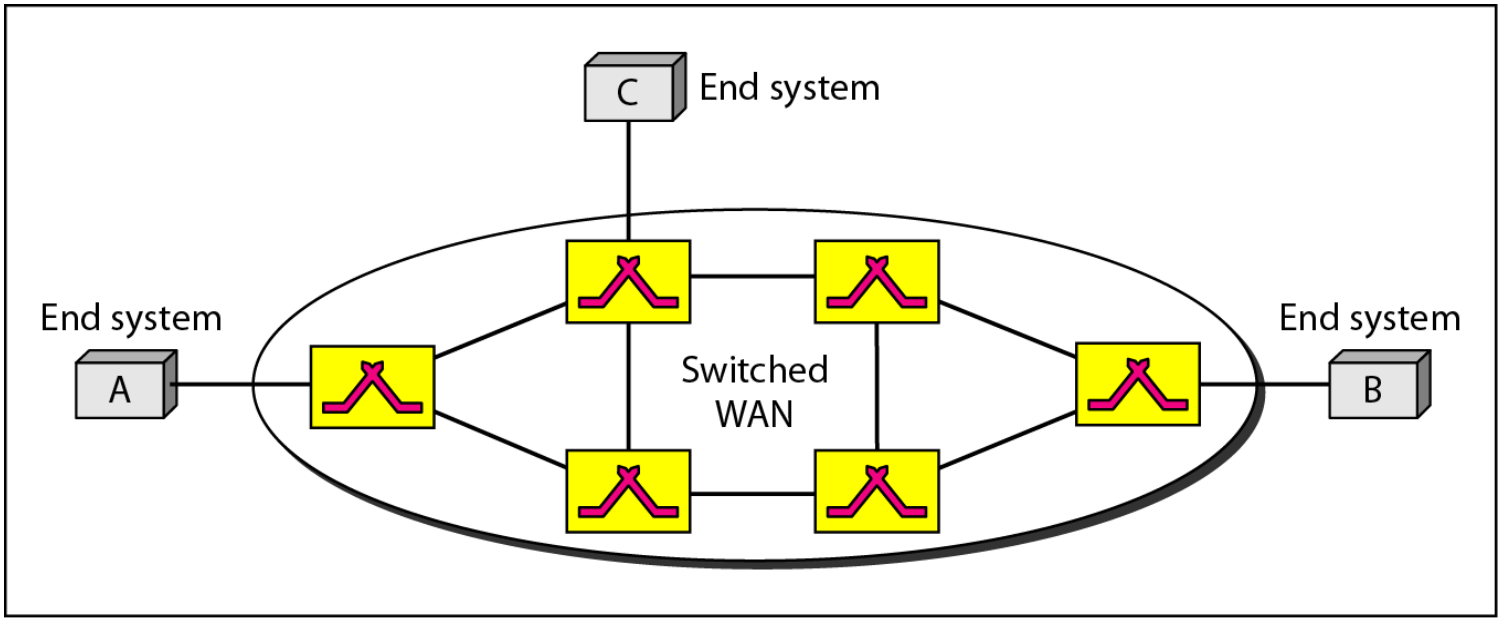
Categories of Networks



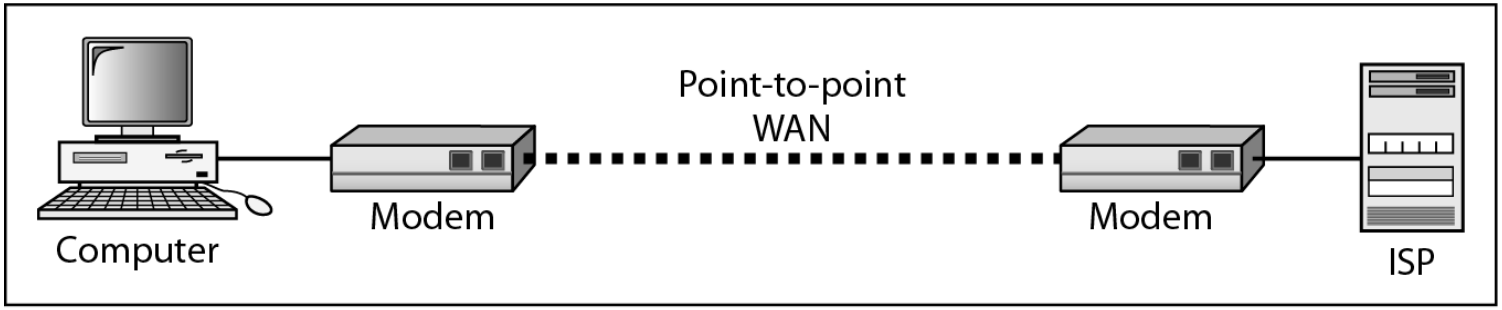


An isolated LAN connecting 12 computers to a hub in a closet

WANs: a switched WAN and a point-to-point WAN

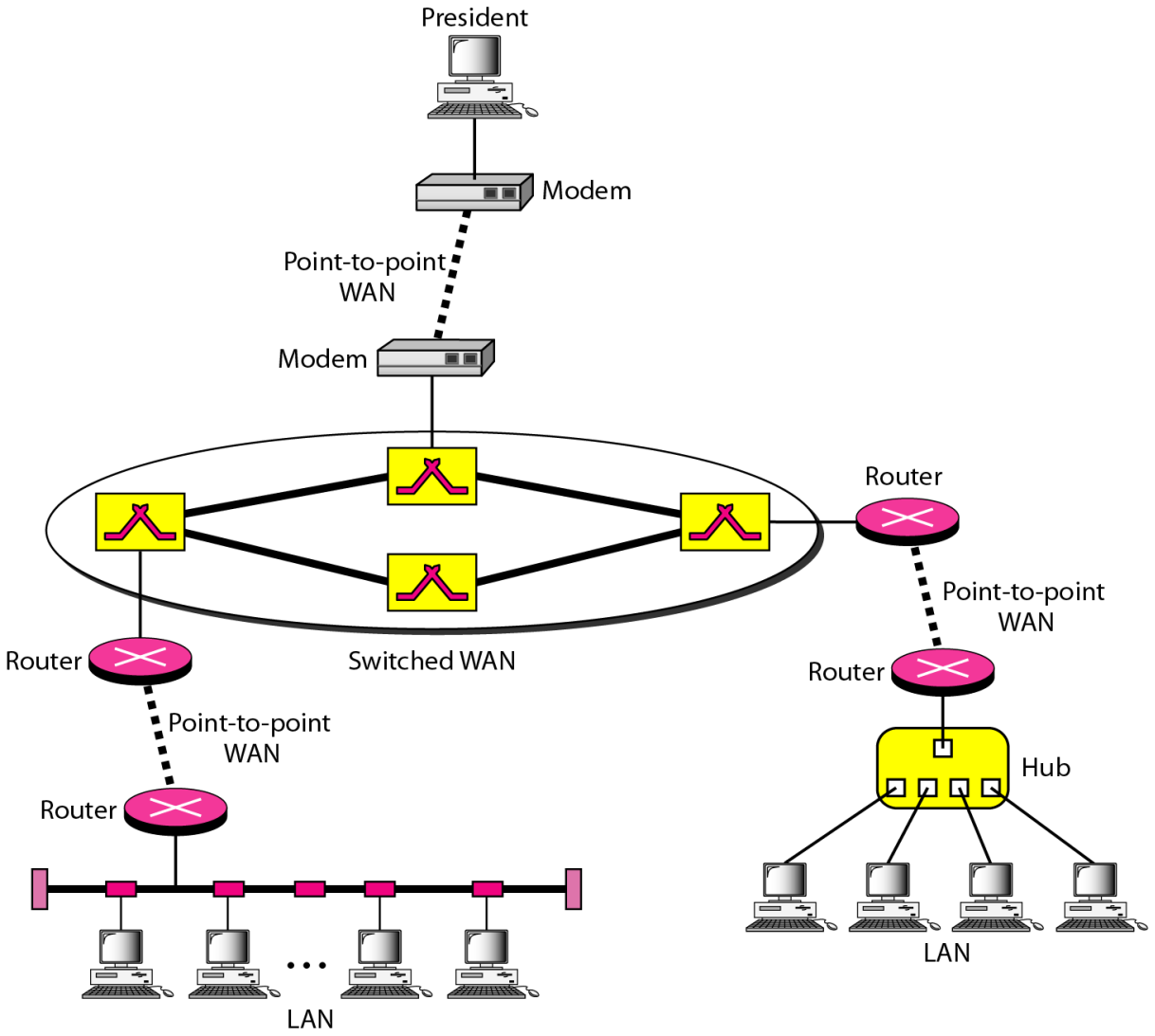


a. Switched WAN



b. Point-to-point WAN

A heterogeneous network made of four WANs and two LANs



Summary

- **Distributed Processing**
- **Network Criteria (***Performance (through put and delay)*, Reliability, security**)**
- **Physical Structures (**Point-to-Point, Multipoint**)**
- **Physical Topology (**Bus, Ring, Tree, Star, Mesh,Hybrid**)**
- **Categories of Networks (LAN, MAN, WAN)**