

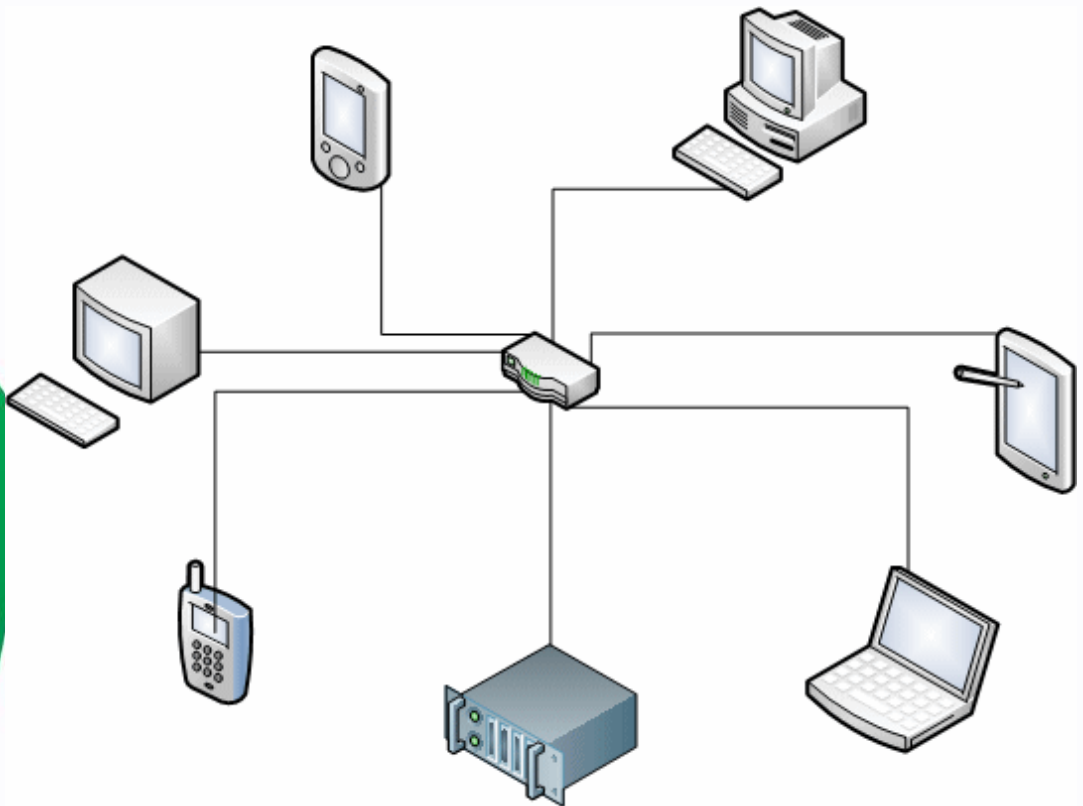
COMPUTER NETWORK

BCSC-0008



GLA
UNIVERSITY
MATHURA
Recognised by UGC Under Section 2(f)

Accredited with **A** Grade by **NAAC**



Course Overview

UNIT- I

Introduction Concepts: Goals and Applications of Networks, Network structure and architecture, The OSI reference model, services, Network **Topology Design**, Physical Layer Transmission Media, **Line coding scheme**, **switching methods** (circuit switching, Packet switching), TDM.

Medium Access sub layer: Medium Access sub layer - Channel Allocations, LAN protocols - **ALOHA protocols, CSMA, CSMA/CD**, Overview of IEEE standards

Data Link Layer –**Error detection and correction, Flow control (sliding window protocol)**

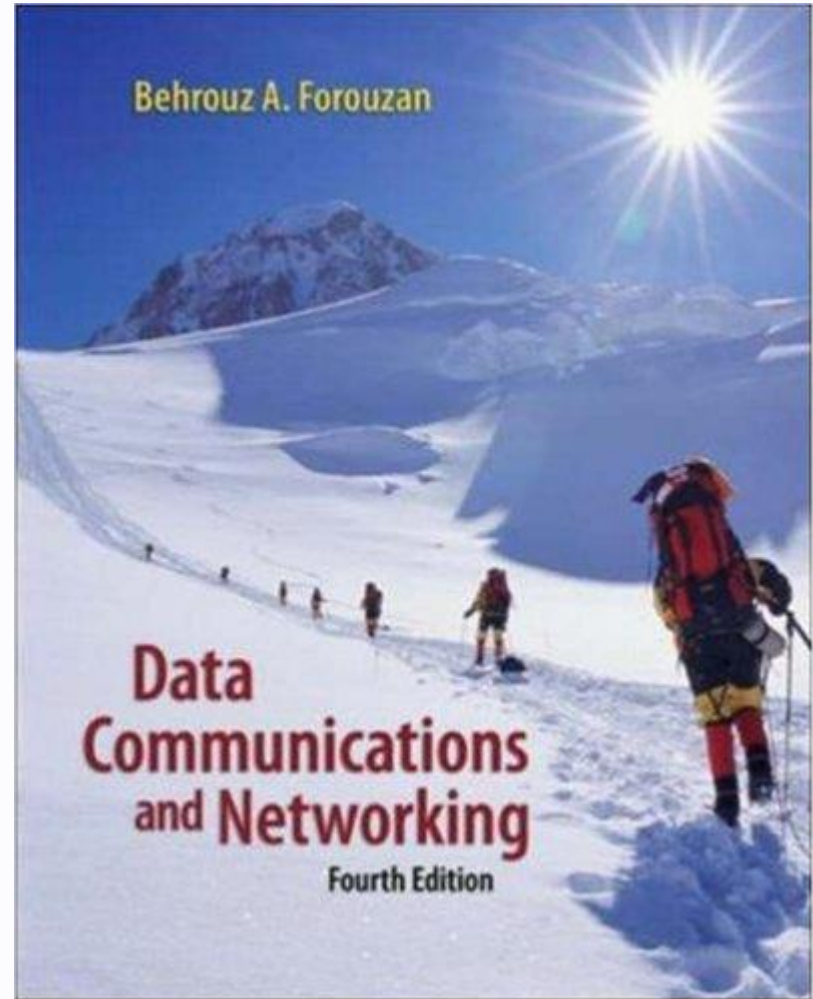
Course Overview

UNIT II

- **Network Layer:** Network Layer –IP addressing, subnet, CIDR, VLSM, Internetworking, Address mapping, routing. Connecting devices.
- **Transport Layer:** Transport Layer - Design issues, connection management, Flow control, TCP window management, congestion control-slow start algorithm
- **Application Layer:** Data compression, Data Encryption, File Transfer, DNS, HTTP, SMTP, TELNET.
- Introduction to IPv6, transition from IPv4 to IPv6.
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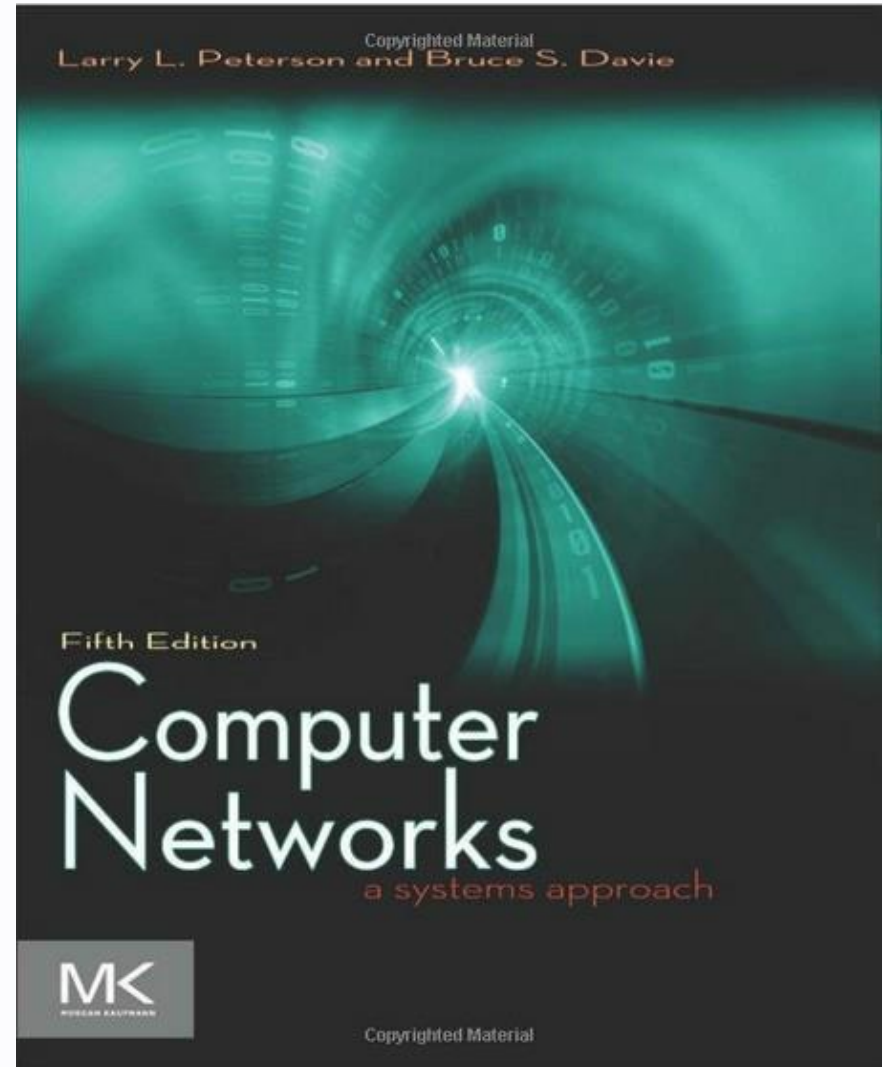
Literature II

- This is a good textbook for introductory courses to networking.
- The chapters include detailed yet easy to grasp explanations of the topics covered, often with figures and demonstrations.



Literature II

- This is a good book both as an introduction to networking and as a reference for graduate coursework.
- Good end-of-chapter questions, with text depth appropriate for a smart child or an average 2nd year CS undergrad.



9/1/2022

Why Computer Network

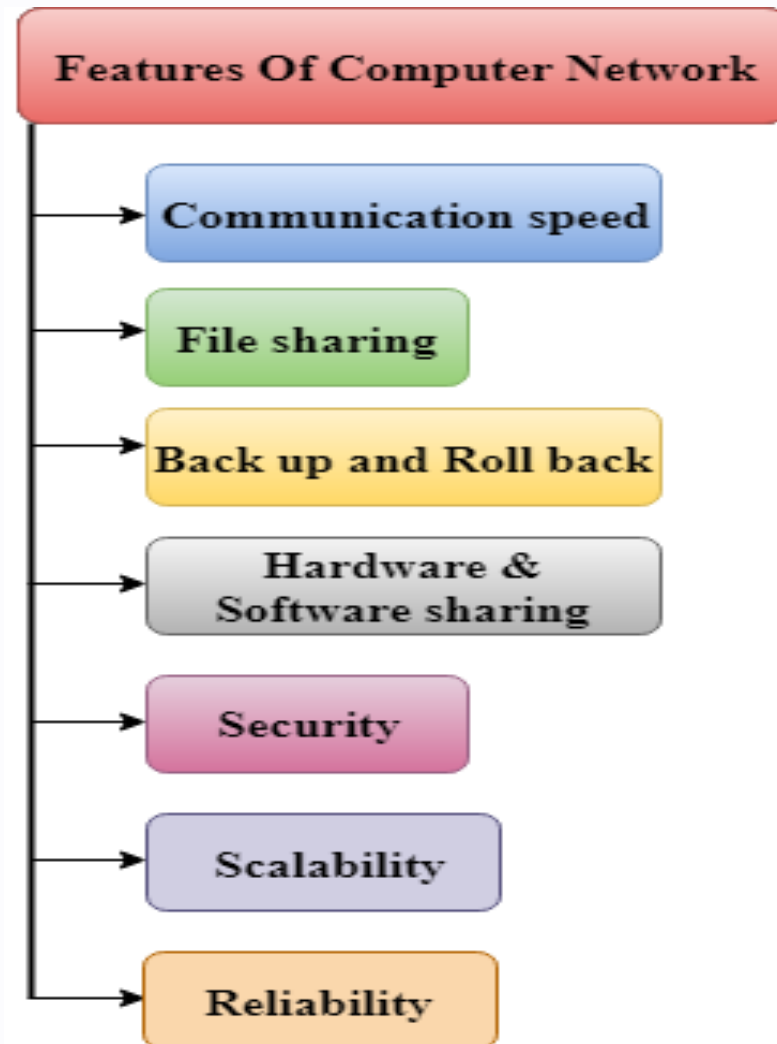


What is Computer Network

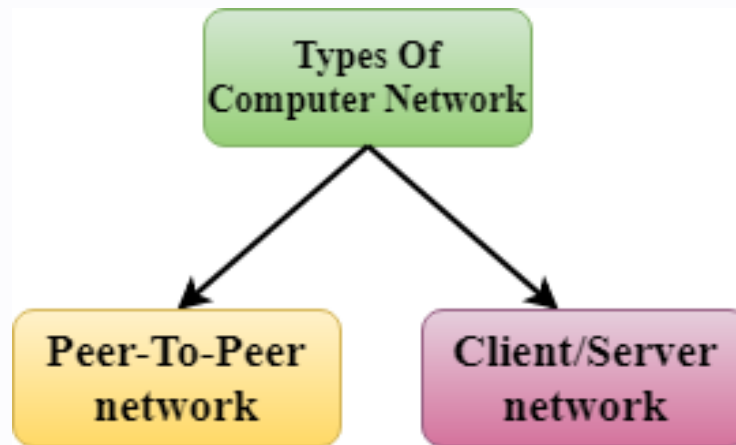
- Computer Network is a group of computers connected with each other through wires, optical fibers or optical links so that various devices can interact with each other through a network.
- The aim of the computer network is the sharing of resources among various devices.



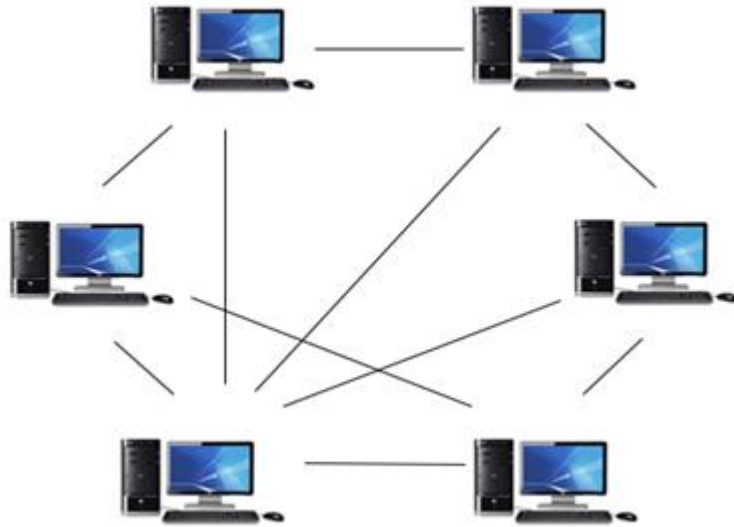
Features Of Computer network



Computer Network Architecture



Peer-To-Peer network

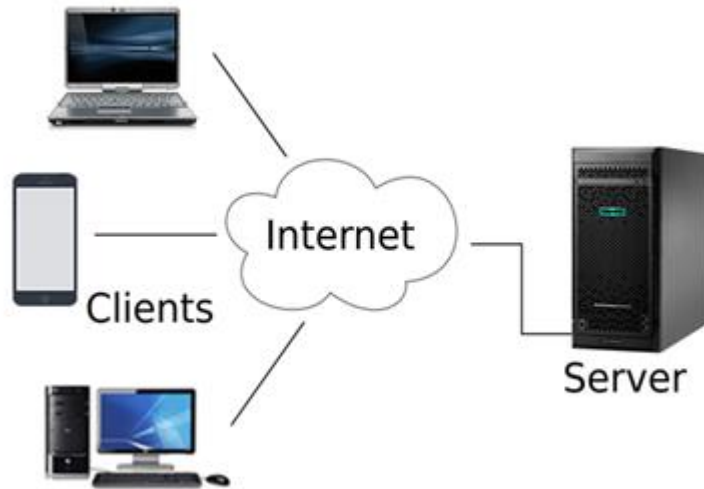


- Peer-To-Peer network is a network in which all the computers are linked together with equal privilege and responsibilities for processing the data.

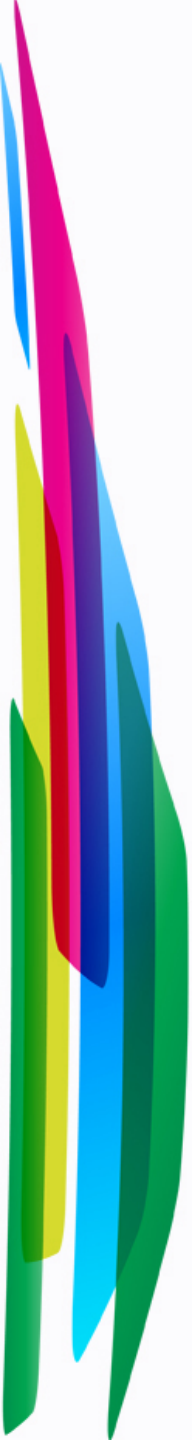
- Advantages and Disadvantages of peer to peer



Client/Server Network

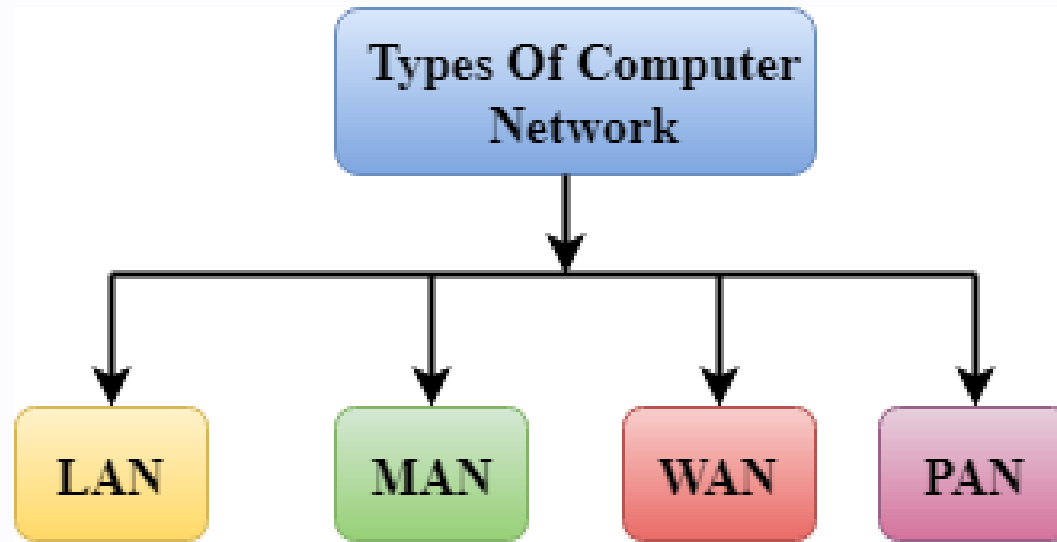


- Client/Server network is a network model designed for the end users called clients, to access the resources such as songs, video, etc. from a central computer known as Server.

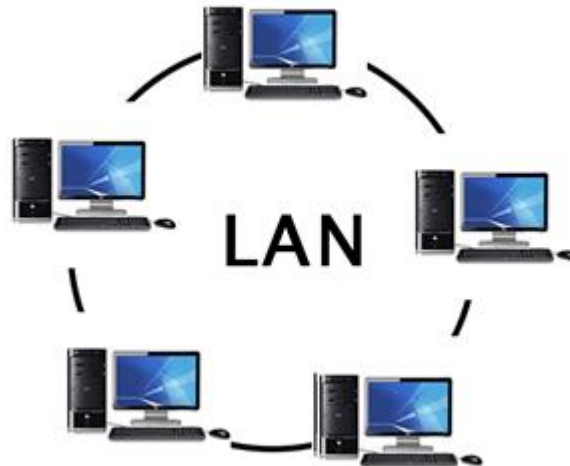
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- Advantages and Disadvantages of Client Server



Computer Network Types



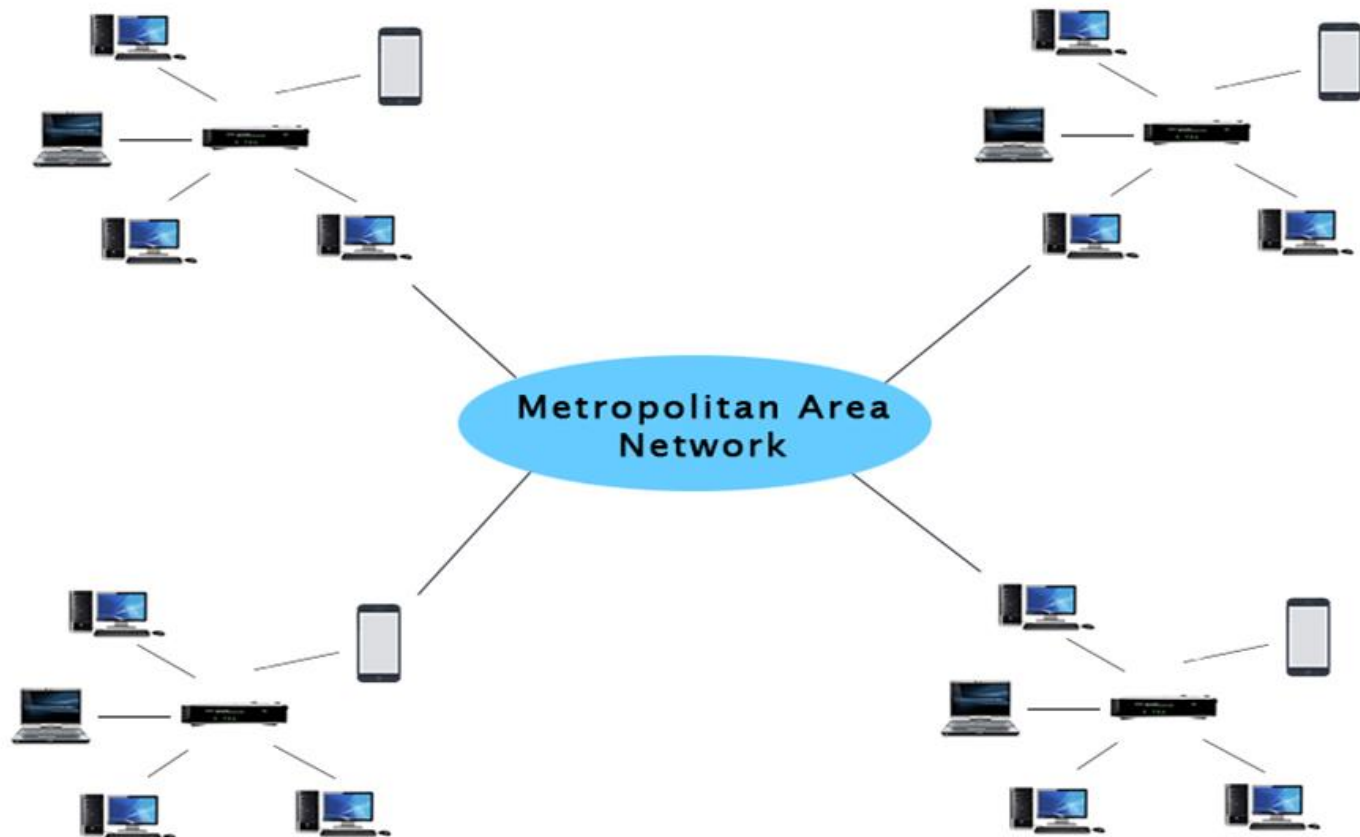
LAN



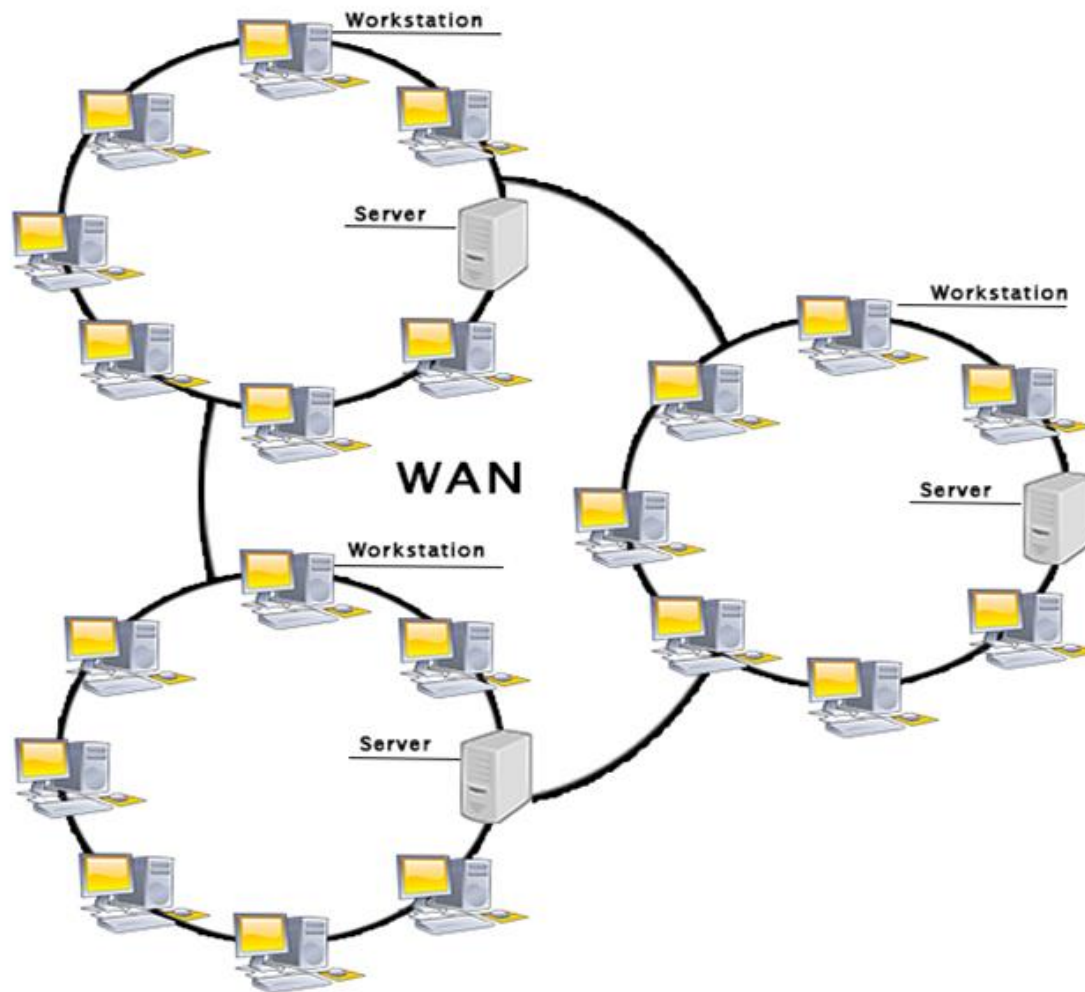
PAN



MAN

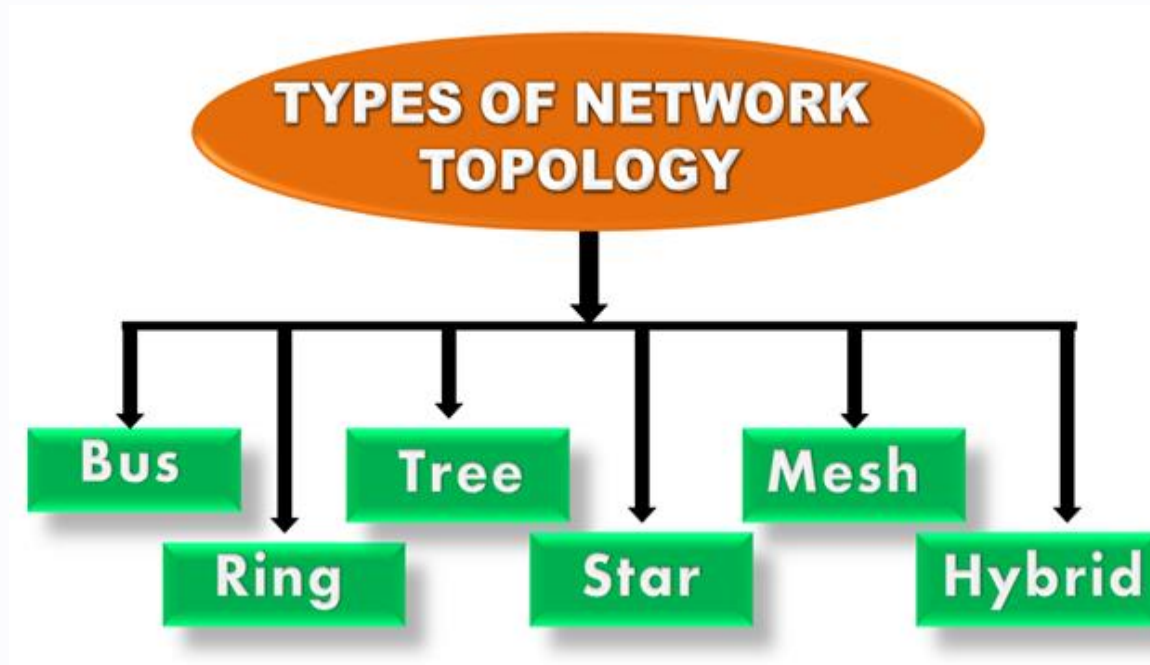


WAN



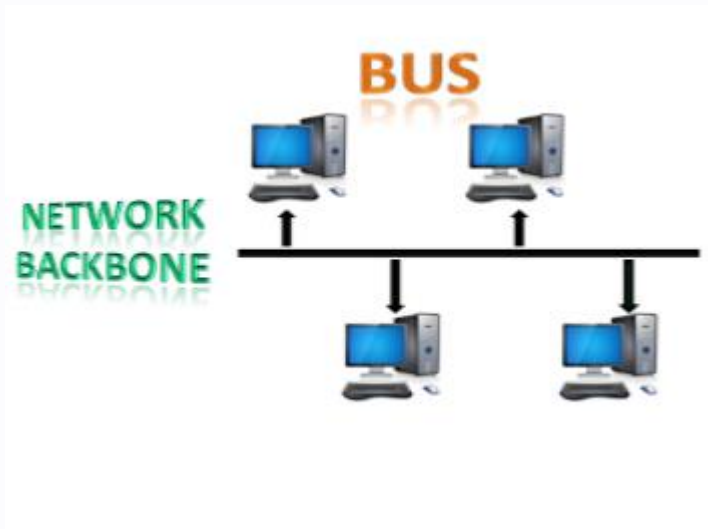
What is Network Topology

Topology defines the structure of the network of how all the components are interconnected to each other.



BUS TOPOLOGY

- The bus topology is designed in such a way that all the stations are connected through a single cable known as a backbone cable.



Advantages of Bus topology

- Low-cost cable
- Moderate data speeds
- Familiar technology
- Limited failure

Disadvantages of Bus topology

- Extensive cabling
- Difficult troubleshooting
- Signal interference
- Reconfiguration difficult
- Attenuation

RING TOPOLOGY



- Ring topology is like a bus topology, but with connected ends.
- The node that receives the message from the previous computer will retransmit to the next node.

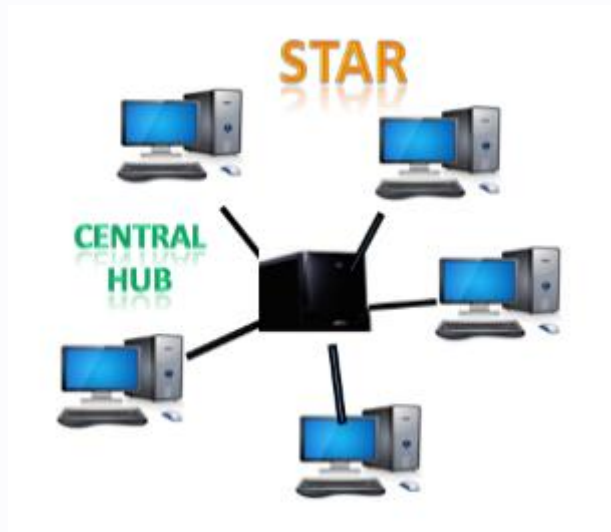
Advantages

- Network Management
- Cost
- Reliable

Disadvantages

- **Difficult troubleshooting Failure**
- **Reconfiguration difficult**
- **Delay**

STAR TOPOLOGY



- Star topology is an arrangement of the network in which every node is connected to the central hub, switch or a central computer.

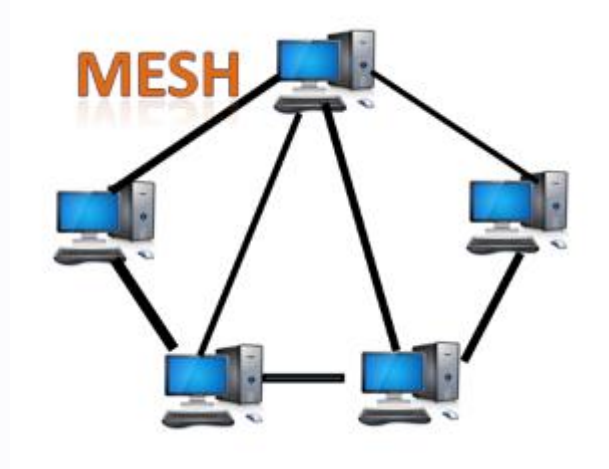
Advantages

- Efficient troubleshooting
- Network control
- Limited failure
- Easily expandable
- Cost effective
- High data speeds

Disadvantages

- A Central point of failure
- Cable

MESH TOPOLOGY



- Mesh technology is an arrangement of the network in which computers are interconnected with each other through various redundant connections.

Mesh topology can be formed by using the formula:
Number of cables = $(n*(n-1))/2$;

Advantages

- **Reliable**
- **Fast Communication**
- **Easier Reconfiguration**

Disadvantages

- Cost
- Management
- Efficiency