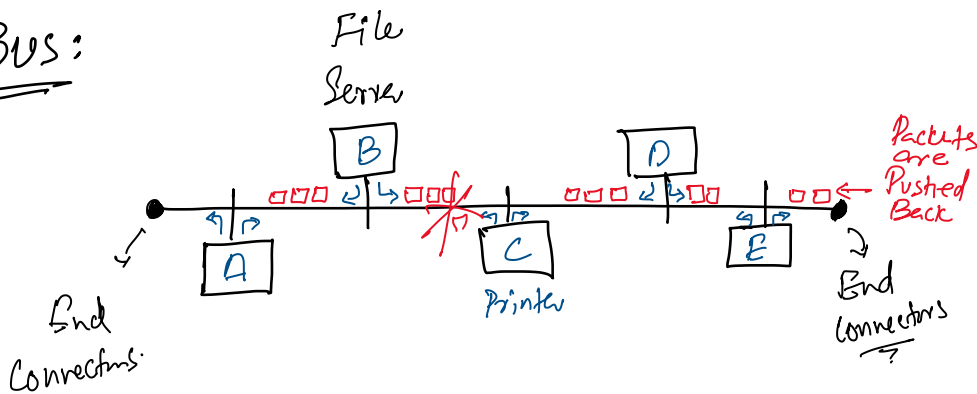## Local Area Networks(LAN):

Topology: Arrangement of nodes in a network.

Network Devices like Computers.

Bus:

File Server

Packets are Pushed Back

End Connectors.

Printer

End connectors

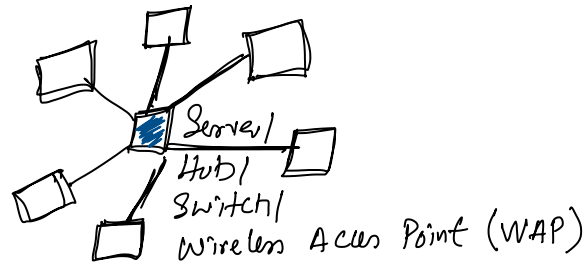| Benefits:	Drawback:	PROTOCOL: Ethernet
- Simple	- Same medium	Nodes ✓
- Lower cost	- Difficult handling	Packets : frames ✓
- Laying of network is easy.	- Signal loss b/c of collision.	Wire : medium ✓
	- Cable Size Limit.	Single shared medium Network : Segment
	- Attenuation	Address : MAC Address ✓
	- No. of devices.	

CSMA/CD and Ethernet:

- Carrier-Sense multiple access with Collision Detection.

1. Nodes Sense the medium for the presence of frames.

2. If there are no frames already on the medium then the node drops its frame over the medium.

3. If frames (data) is dropped over the medium Simultaneously by more than one nodes, then a collision will occur.

4. In the event of collision all nodes will give up (throw) their frames, including the

destination node"

3. Sending nodes then will use random timer to send frames at different random timings to avoid the collision.

STAR Topology:

Server/
Hub/
Switch/
Wireless Acces Point (WAP)

Advantages:

- Data Collision is reduced.
- It is more secure b/c packets only travel to the required address.
- It is easy to improve, by installing upgraded hub.
- If one of the connection is broken, it only effects one node.

Disadvantages:

- Initial installation cost is high
- If central hub/switch fails then whole network goes down.
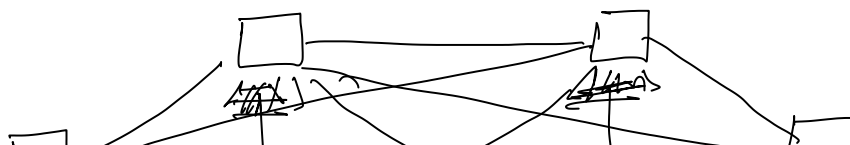
Steps taken by network hosts to send data:

- Packet has address of the recepient.
- Sender transmits the packets directly to Server
- Server reads packets and identifies recipient
- Server transmits packets directly to receipient
- Server only transmits to the receipient.
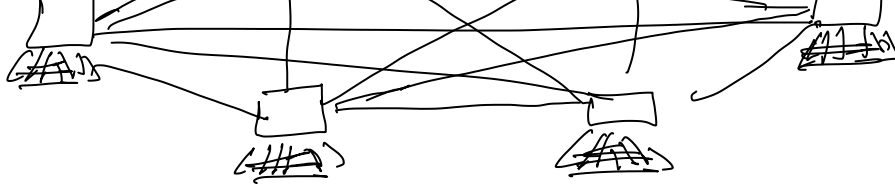
Devices used over the Star topology network:

✓ - NIC   ✓ - Switch   ✓ - Repeater
✓ - WNIC   ✓ - Router   ✓ - Modem
✓ - WAP   ✓ - Bridge   ✓ - Gateway
✓ - Hub

Mesh Topology.

Types: - routing
        - flooding

peer - to - peer.

Disadvantages:

- Large Amount of Cabling is needed
- Expensive to layout
- Maintainance is tough and time Consuming.

Advantages:

- Easy to identify failed node
- Broken links do not distrub the network.
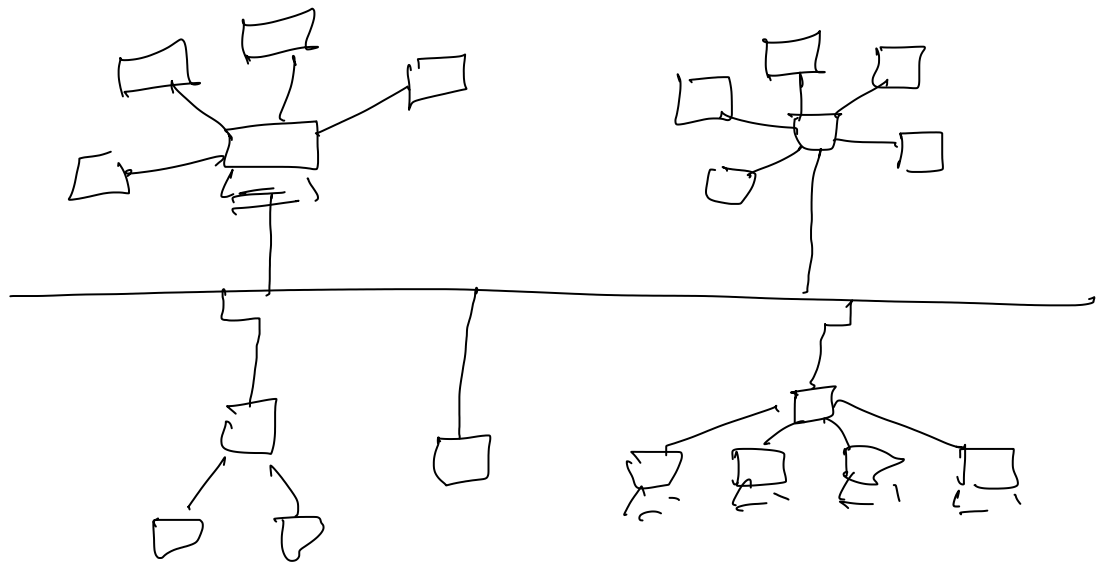- Better privacy and security.

Applications:

- Wide Area Network
- Can sensors are attached with mesh -
- Industrial monitoring & Control System.

———— α ———— α ———— α ————

Hybrid Network Topology:

Its a mixture of two or more topologies.

Advantages:

- Existing networks can be connected together without being upgraded.
- Handle large amount of data easily.
- Easy to identify networks' fault.

Disadvantages:

- Very complex to put this together.

- Gateway can be used
  to connect different
  networks.

9/3/21

- Gateway can be used
  to connect different
  networks.