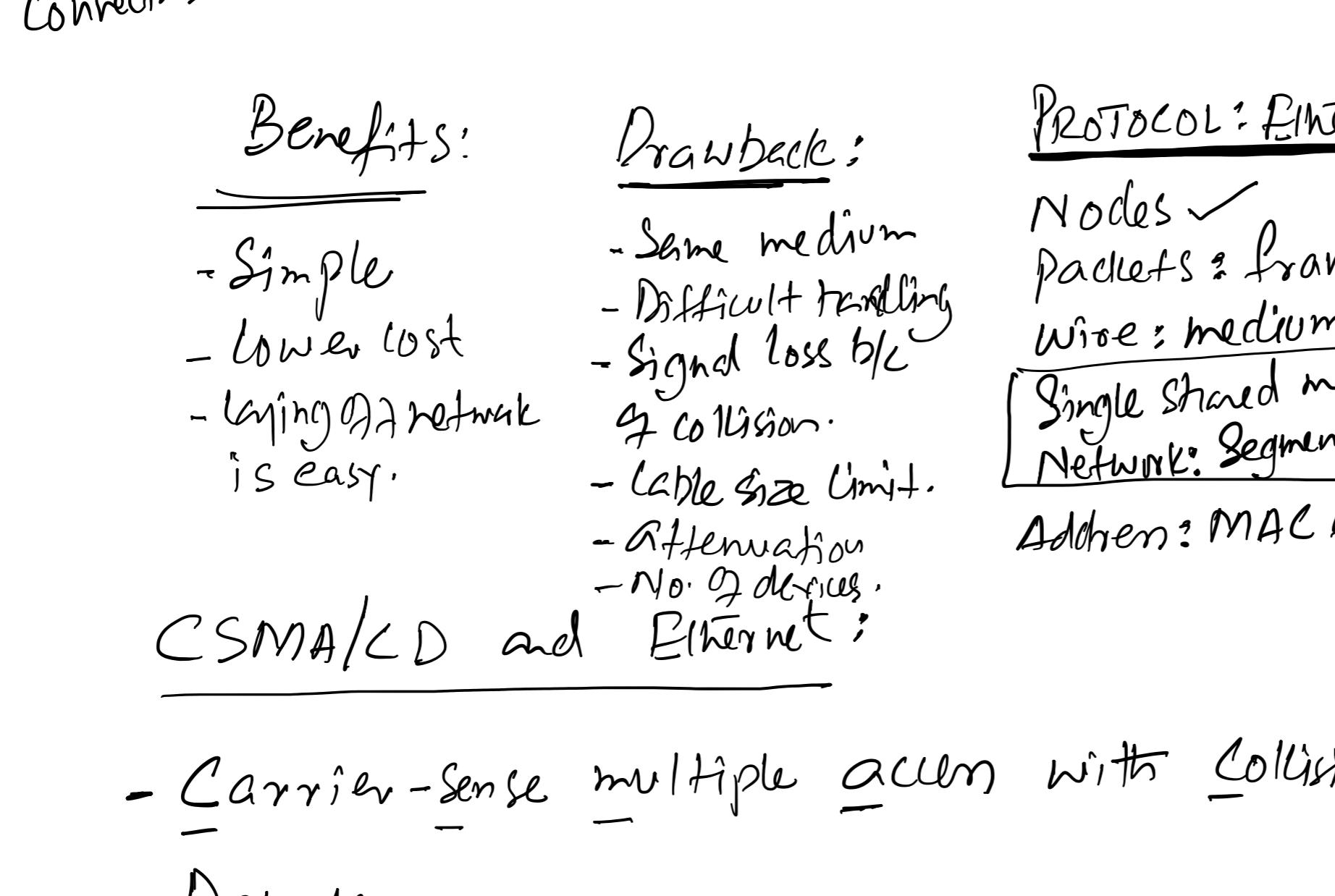


Local Area Networks (LAN):

Topology: Arrangement of nodes in a network.

Network
Devices like
Computers

BUS:



Benefits:

- Simple
- Lower cost
- laying off network is easy.

Drawback:

- Same medium
- Difficult handling
- Signal loss b/c of collision.
- Cable size limit.
- Attenuation
- No of devices.

PROTOCOL: Ethernet

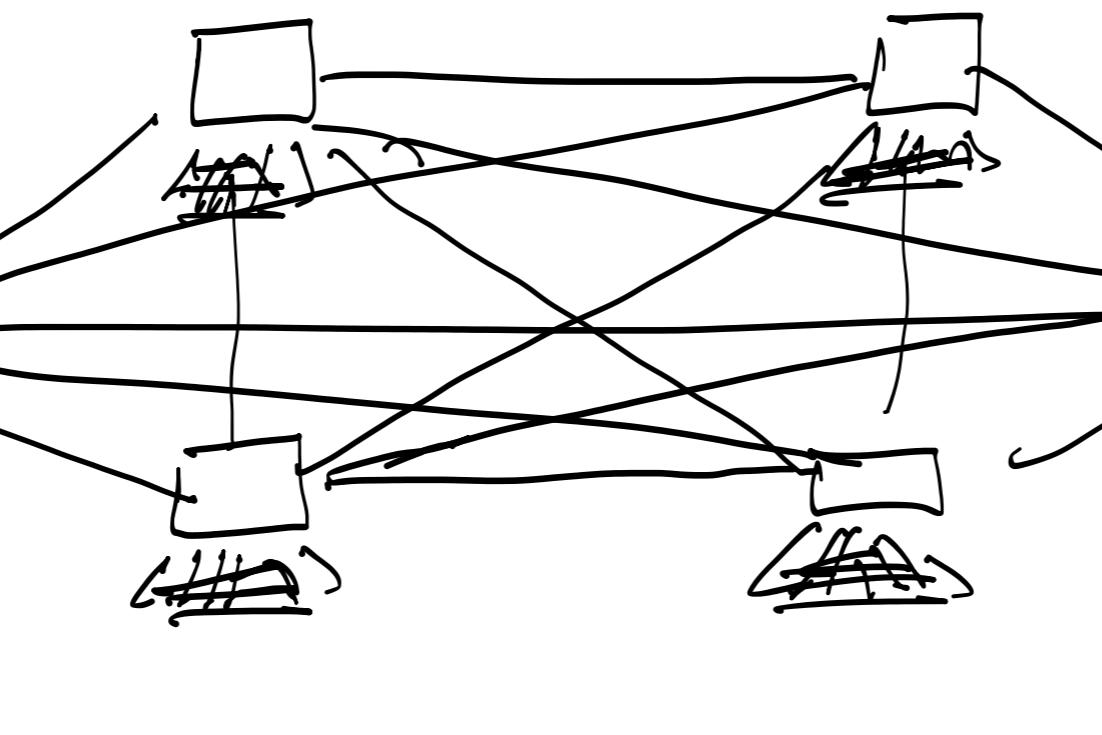
- Nodes ✓
- Packets: frames ✓
- Wires: medium ✓
- Single shared medium ✓
- Network: Segment ✓
- Address: MAC Address ~

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

STAR Topology:



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 affects 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 recipient.
- Sender transmits the packet directly to the server.
- Server reads packet and identifies recipient.
- Server transmits packet directly to recipient.
- Server only transmits to the recipient.

Devices used over the star topology network:

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

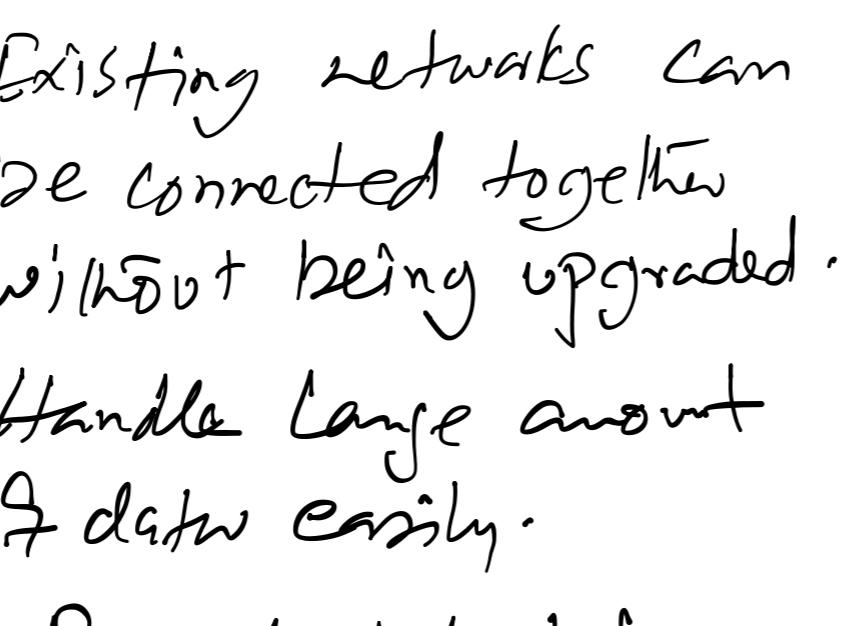
Types: - routing
- flooding

MESH Topology:

peer-to-peer

Hybrid Network Topology:

It's 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.
- Gateway can be used to connect different networks.

Disadvantages:

- Very complex to put them together.