Basic Concepts

- **Type of Connection**
- **Topology**
- **Transmission Mode**
- **Categories of Networks**
- **Internetworks**
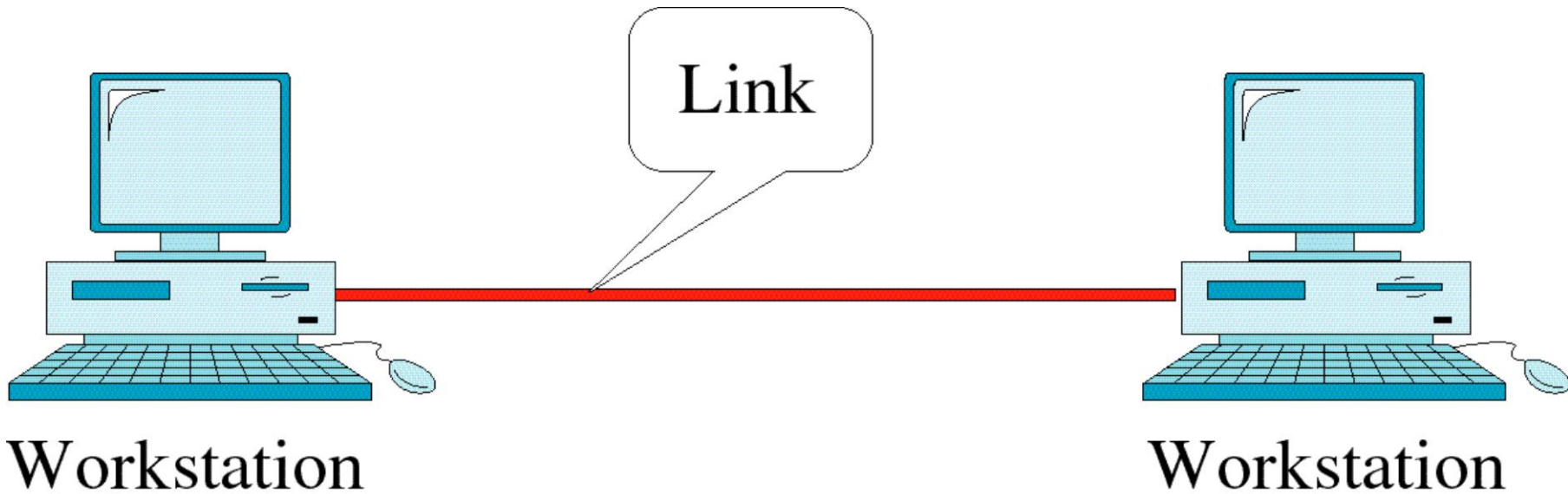
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Point-to-Point Line Configuration

Link

Workstation   Workstation

P2P provide a dedicated link b/w two device
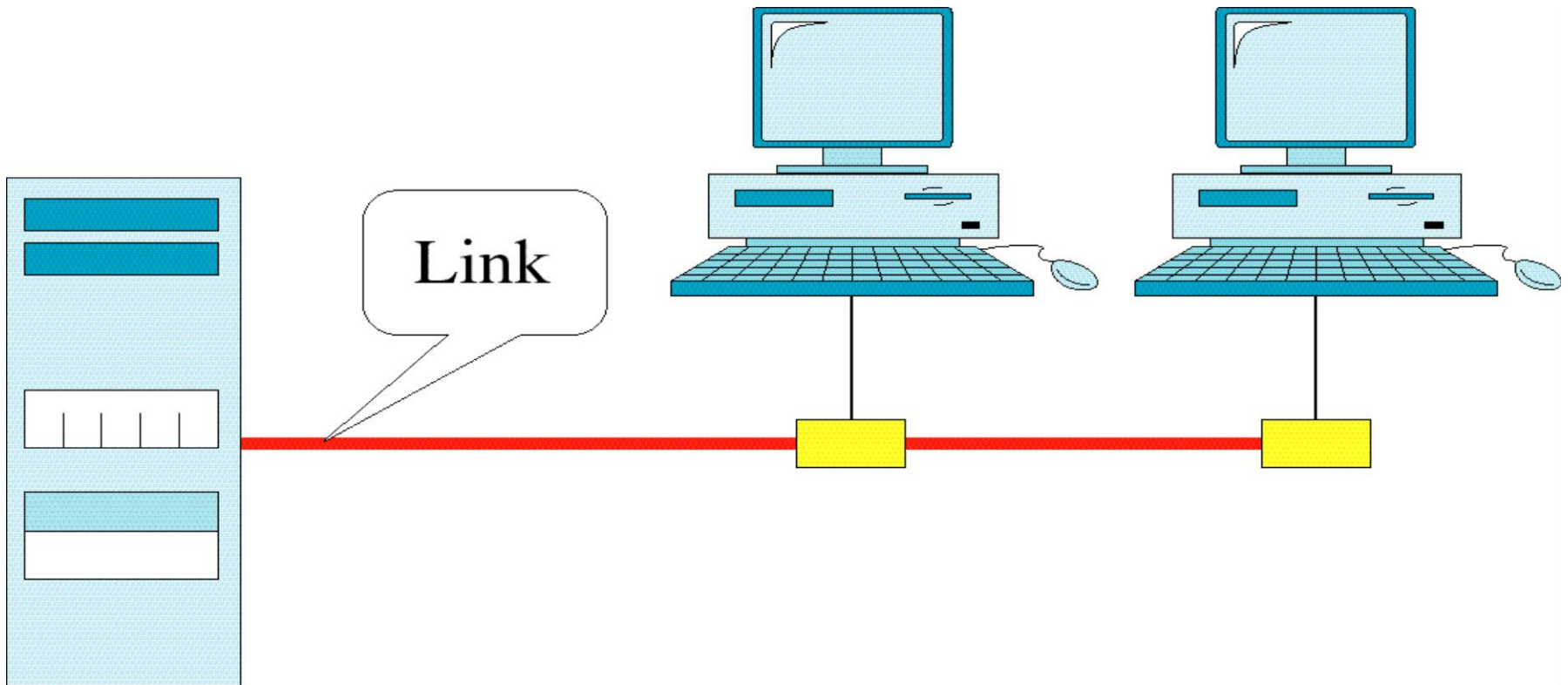
Point-to-Point Line Configuration

Link

Mainframe

Workstation
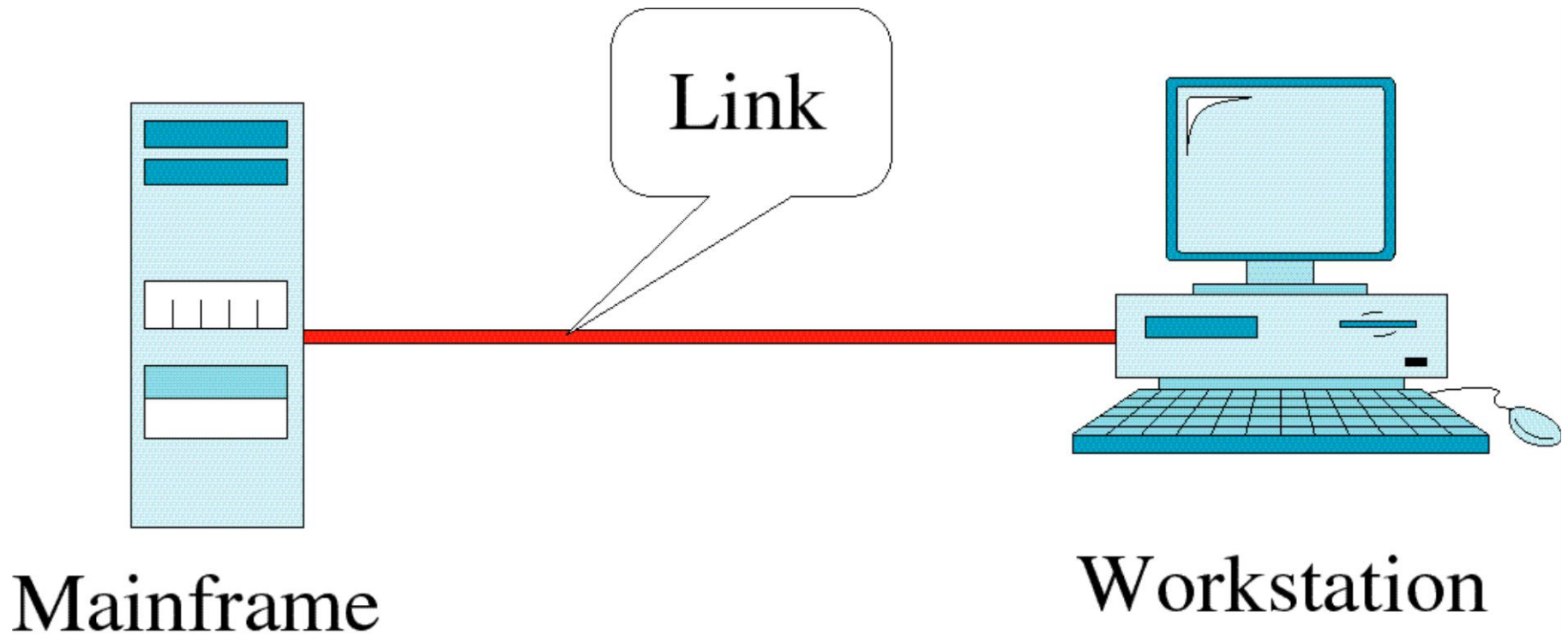
Point-to-Point Line Configuration

Multipoint Line Configuration

Link

A **multipoint** (also called **Multidrop**) connection is one in which more than two specific devices share a single link.

Topology

•The term topology refers to the way in which a n/w is laid out physically.

•Two or more devices connect to a link.

•The topology of a n/w is the geometric representation of the relationship of all the link.

There are following basic topologies possible:
      1. Mesh topology
      2. Star topology
      3. Tree topology
      4. Bus Topology
      5. Ring Topology

```
                    ┌─────────────┐
                    │  Topology   │
                    └─────────────┘
                           │
   ┌───────────┬───────────┼───────────┬───────────┐
┌──────┐   ┌──────┐   ┌──────┐   ┌──────┐   ┌──────┐
│ Mesh │   │ Star │   │ Tree │   │ Bus  │   │ Ring │
└──────┘   └──────┘   └──────┘   └──────┘   └──────┘
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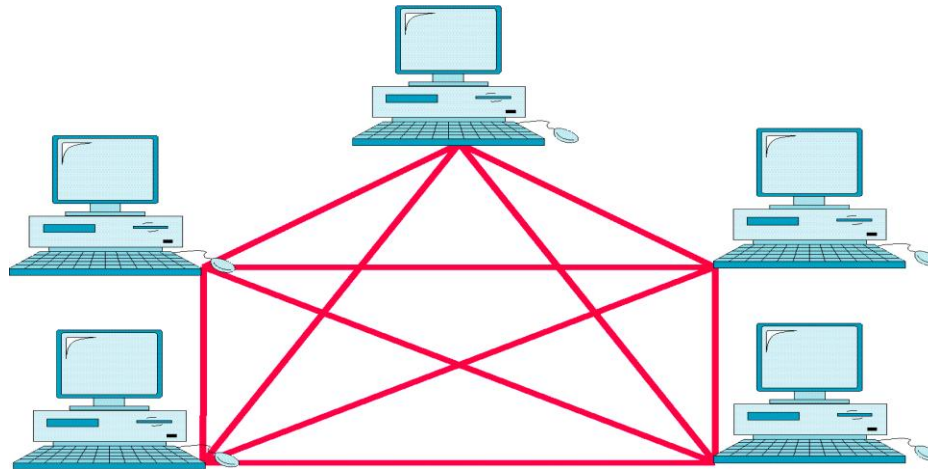
Mesh Topology

In a mesh topology, every device has a dedicated point-to point link to every other devices.

Find the number of physical link in a fully connected mesh n/w with n nodes.

We first consider that each node must be connected to every other nodes.
Than node **1** must be connected with **n-1** nodes
    node **2** must be connected with **n-1** nodes
    node **n** must be connected with **n-1** nodes so we need n(n-1) physical link.

Now we can say that in mesh topology, we need **n(n-1)/2** duplex-mode links.

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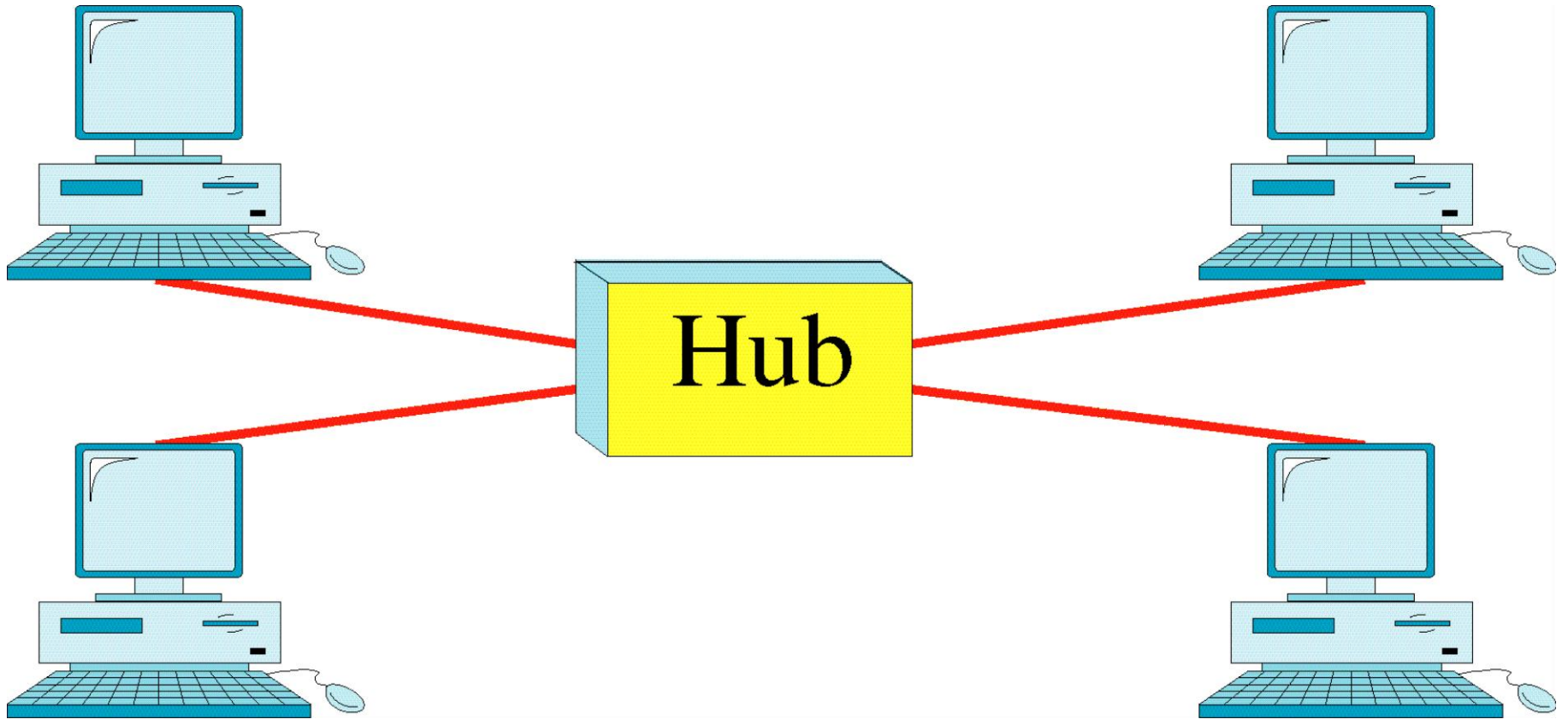
Mesh Topology

Advantages of Mesh Topology

1. Eliminating the traffic problem.
2. A Mesh topology is strong(robust).
3. There is the advantage of privacy and security.
4. P2P links make fault identification and fault isolation easy

Disadvantages of Mesh Topology

1. Amount of cabling and no. of I/O port required.
2. Installation and reconnection are difficult .

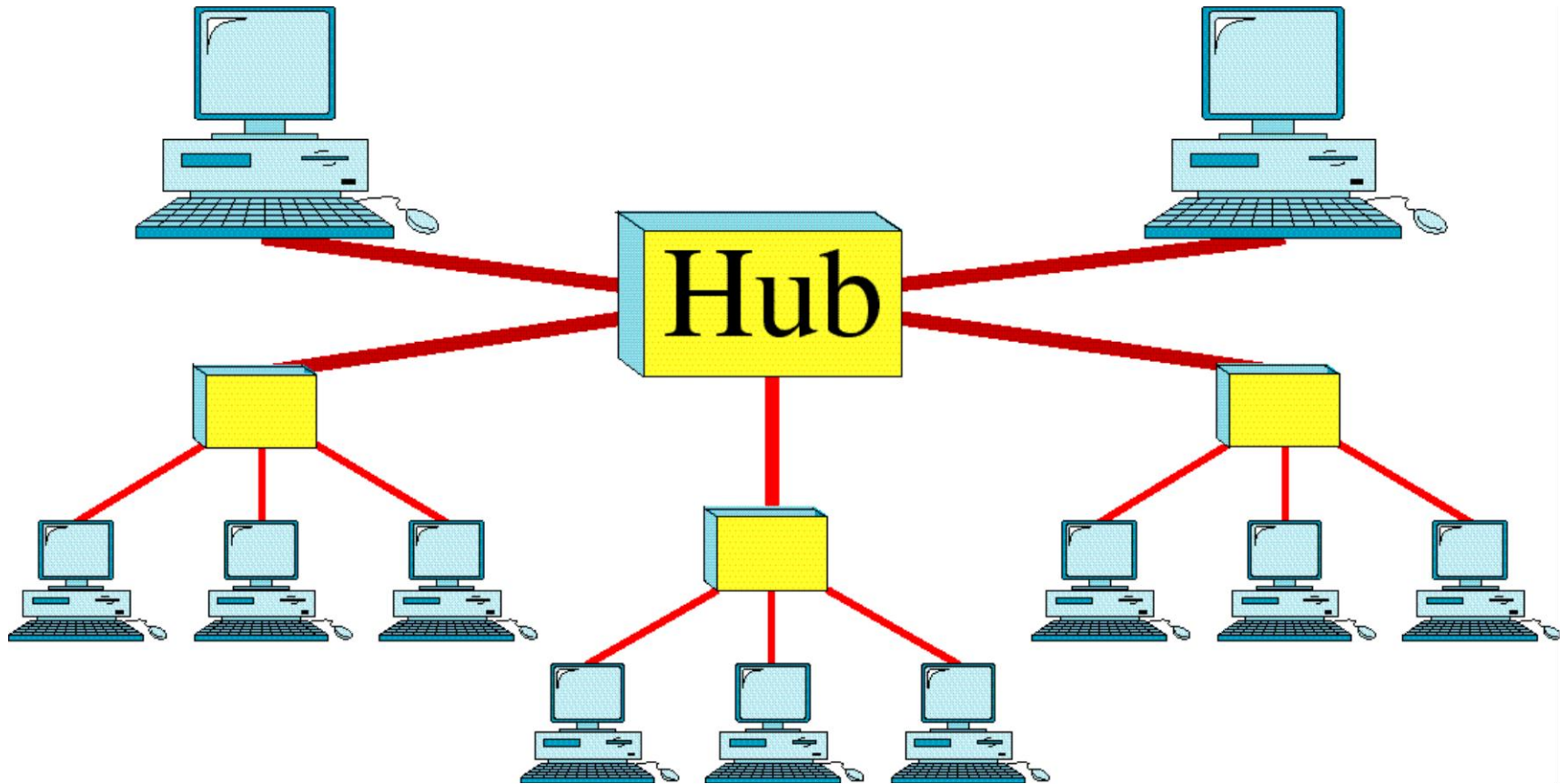# Star Topology

Star Topology

Advantages of Star Topology

1. A **Star** topology less expensive than a **Mash** topology.
2. Robustness.
    (If one link fail, only that link affected. All other link remain active)
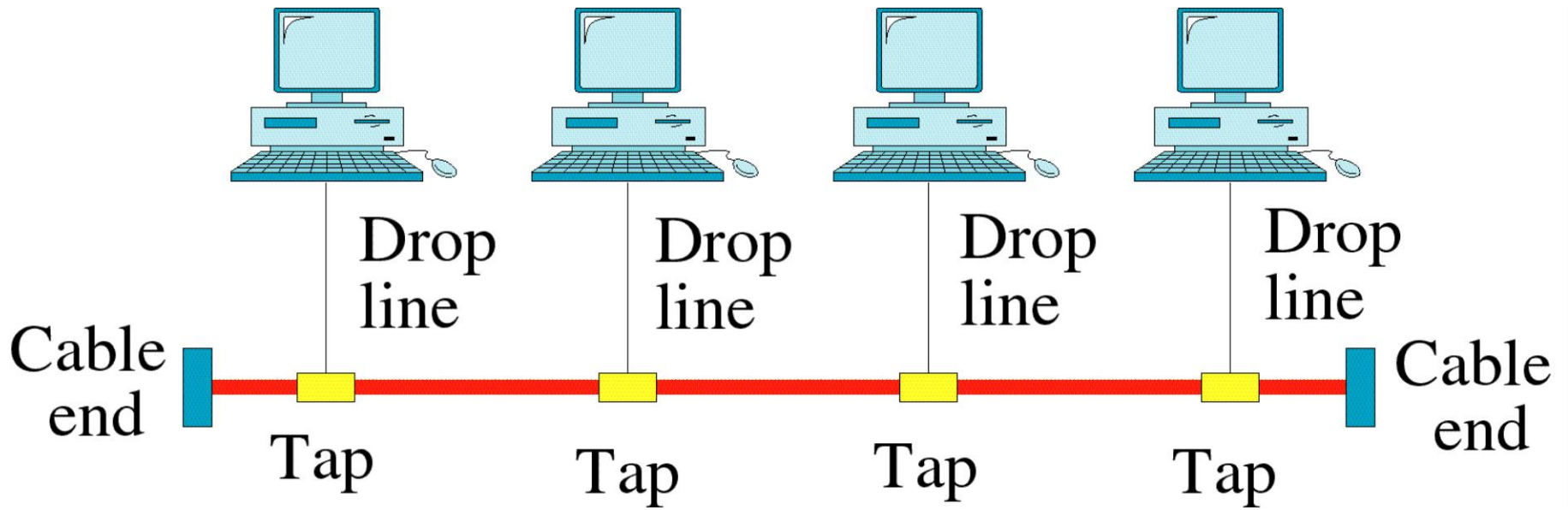3. P2P links make fault identification and fault isolation easy.

Disadvantages of Star Topology

1. If the HUB goes down , the hole system is down.

Tree Topology

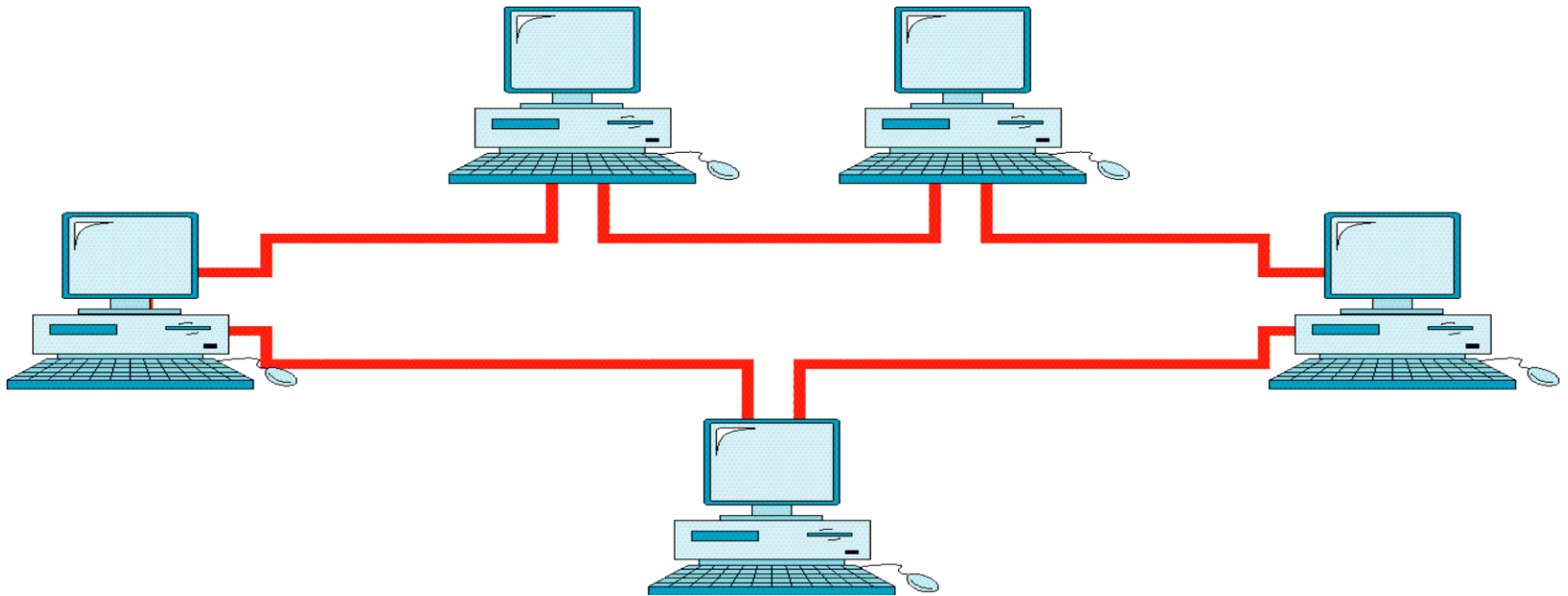# Bus Topology

Bus Topology

Advantages of Bus Topology

1. Easy installation.
2. A bus topology use less cabling than mash and star topology.

Disadvantages of Bus Topology

1. Difficult reconnection and fault isolation.
2. A fault or break in the bus cable than stop all transmission.

Ring Topology

In a ring topology each device has a dedicated P2P connection with only the two devices on either side of it.

Ring Topology

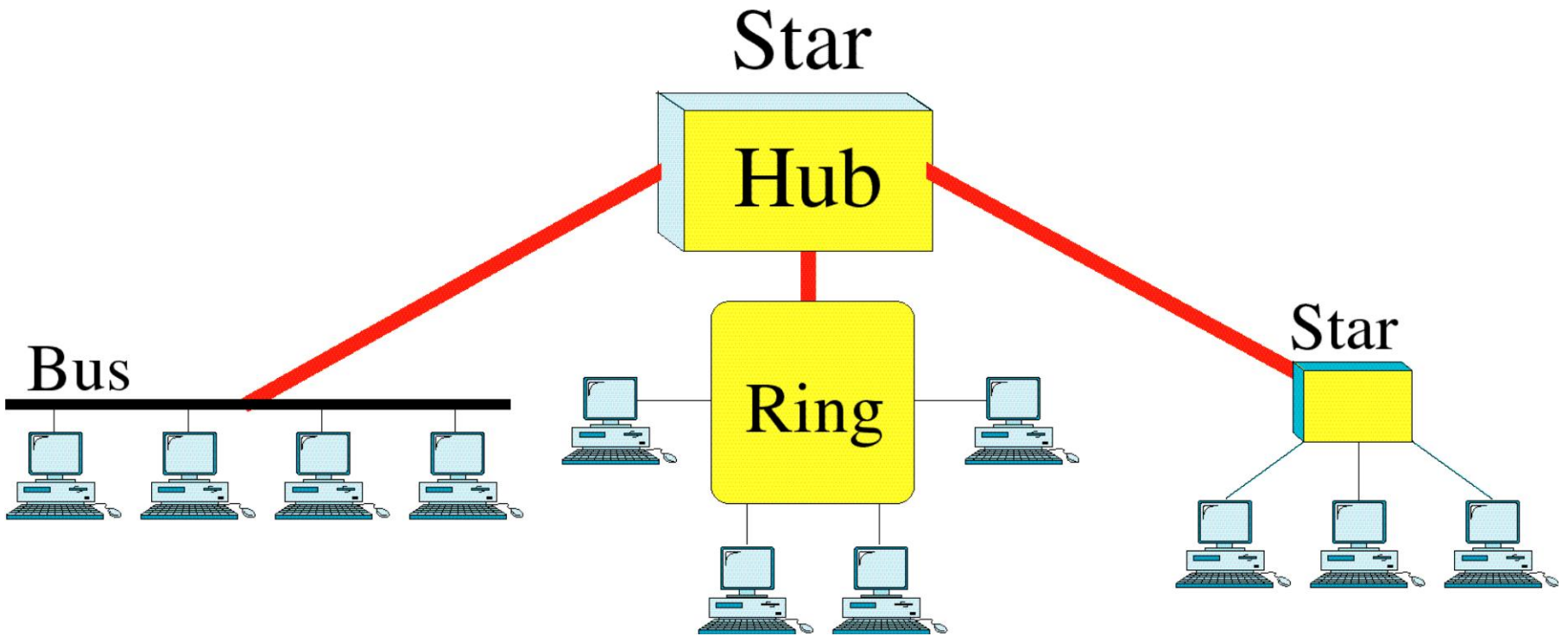## Advantages of Ring Topology

1. Easy to install and reconfigure.
2. Fault isolation is simplified.
      (A signal is circulating at all time if one device does not receive a signal than alarm alert the n/w operator)

Disadvantages of Ring Topology

1. Unidirectional traffic.

Hybrid Topology

Q: Explain following topology.

1. Mesh topology

2. Star topology

3. Tree topology

4. Bus Topology

5. Ring Topology

Q: Differentiate b/w point to point and Multipoint connection.

Q: What is difference between Connection Oriented and Connectionless Service.