

# **Kardan University**

## **BCS Faculty**

### **Data Communication and Computer Network**

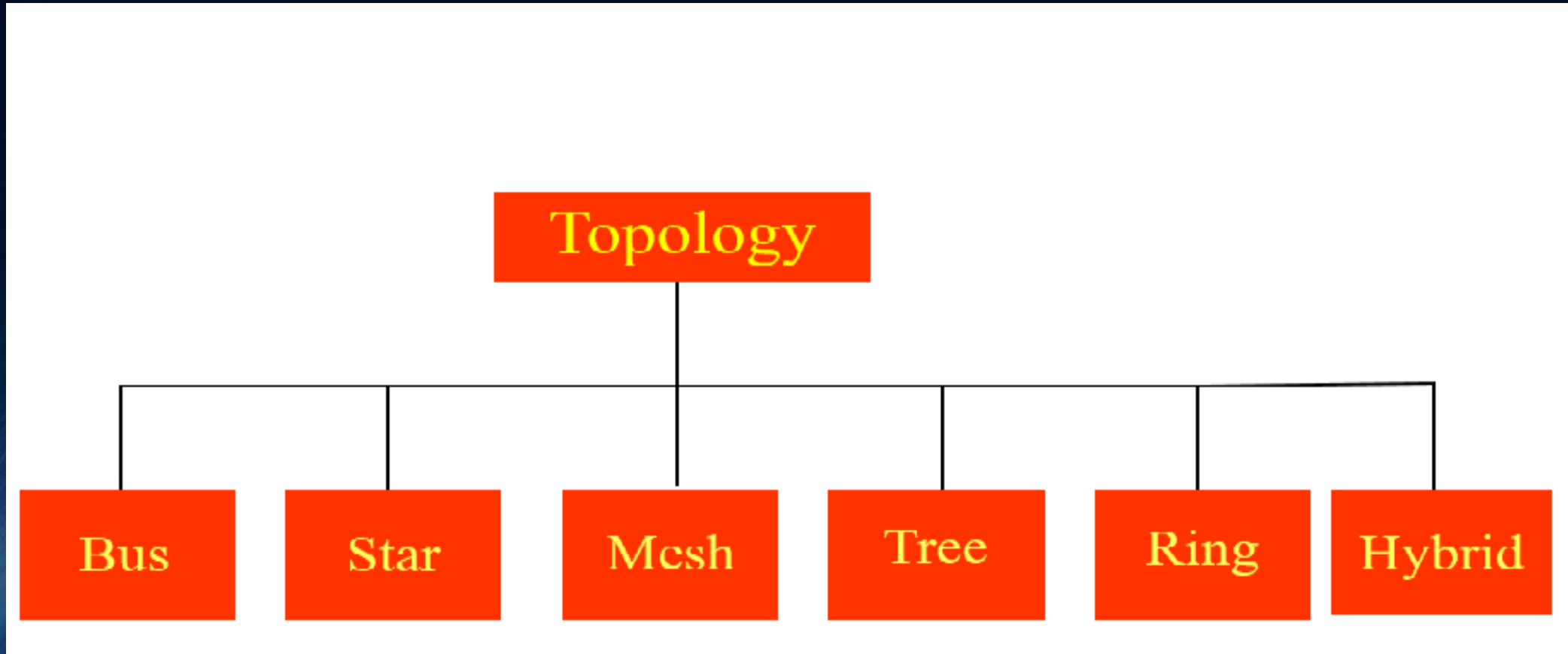
# OUTLINE

- What is Network Topologies
- Types of Network Topologies
- Benefits of Network Topologies

# What is a topology:

- The Network Map
- OR Topology refers to the physical layout of a network
- Used to show how devices connected with together
- Which type of cables used between devices

# Categories of Topology



# Bus Topology

- All the nodes are connected using the central link known as the bus.
- It is useful to connect a smaller number of devices.

## ❖ Advantages:

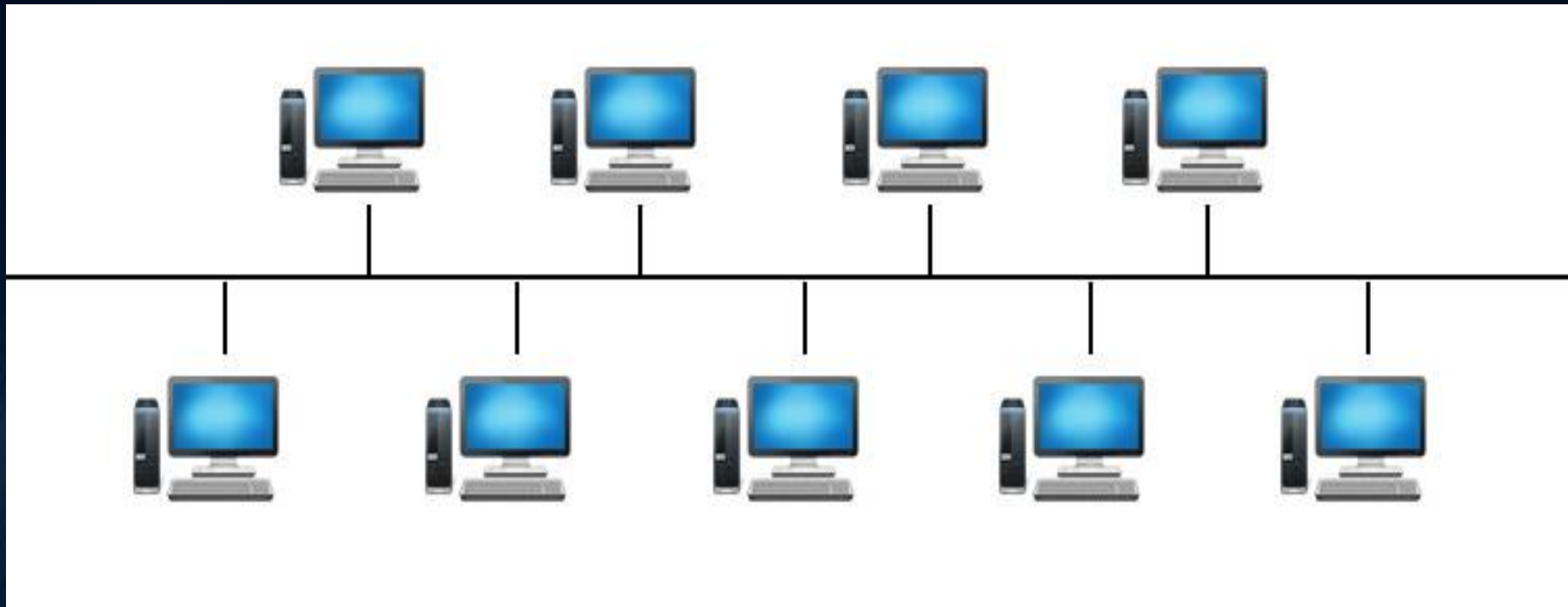
- Easy to add or remove nodes in a network
- It is less expensive
- Easy to manage
- In case of any computer failure, there will be no effect on other devices.

# Bus Topology

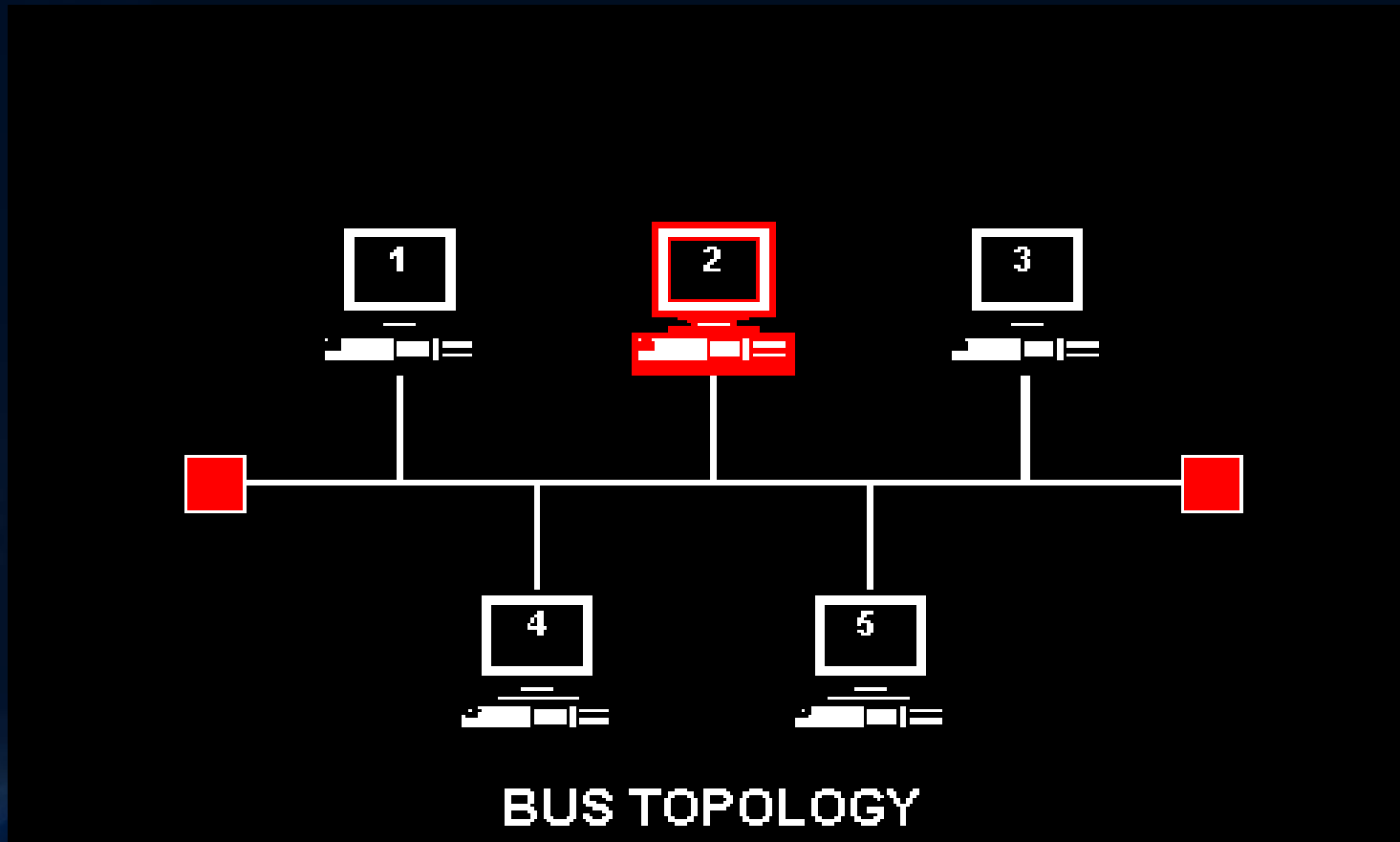
- Disadvantages:

- If the main cable is failed then the entire network will be failed.
- The messages are broadcast so, we can't send private messages.
- The length of cable is limited.

# BUS TOPOLOGY



# BUS TOPOLOGY



# Ring Topology

- Each node is connected to exactly two nodes forming a ring structure.

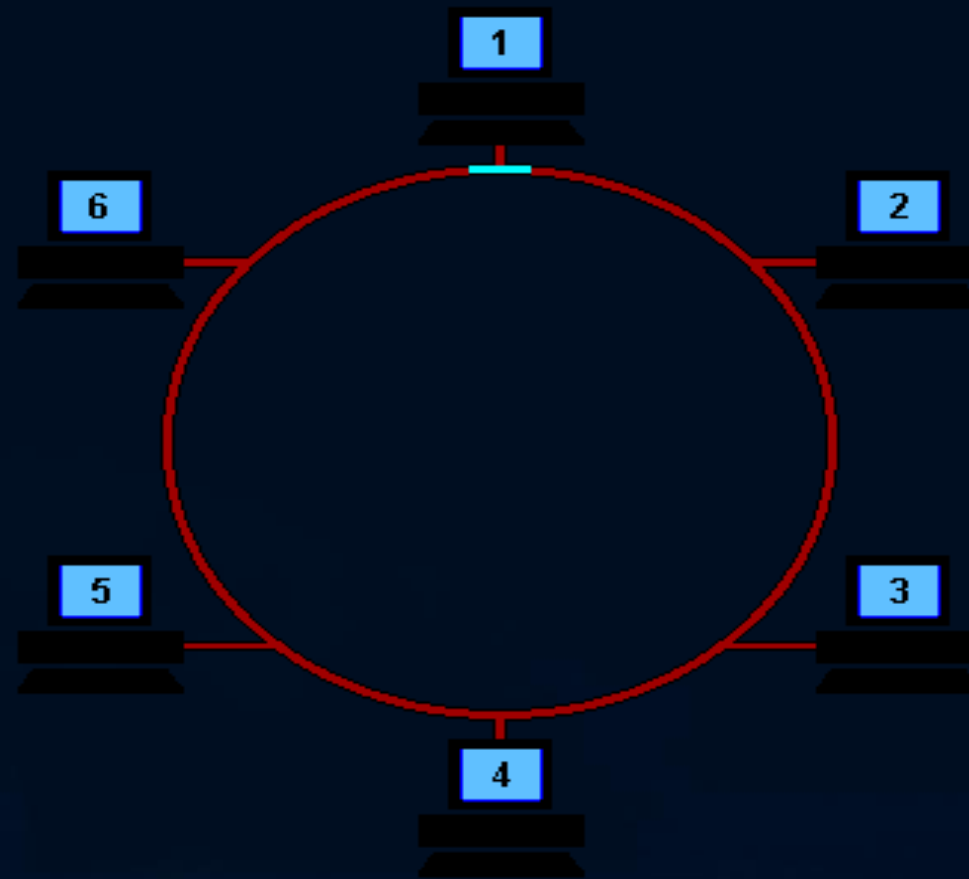
## ❖ Advantages:

- Transmission rate of data is very fast

## ❖ Disadvantages:

- Can't send private messages
- If one of the nodes are damaged, it will damage the whole network.
- It is used very rarely as it is expensive and hard to install and manage.

# RING TOPOLOGY



# Star Topology

- All the nodes are connected to one single node known as the central node.
- The central node can be Hub, Switch or Router.
- Sharing data is only possible through central node

## ❖ Advantages:

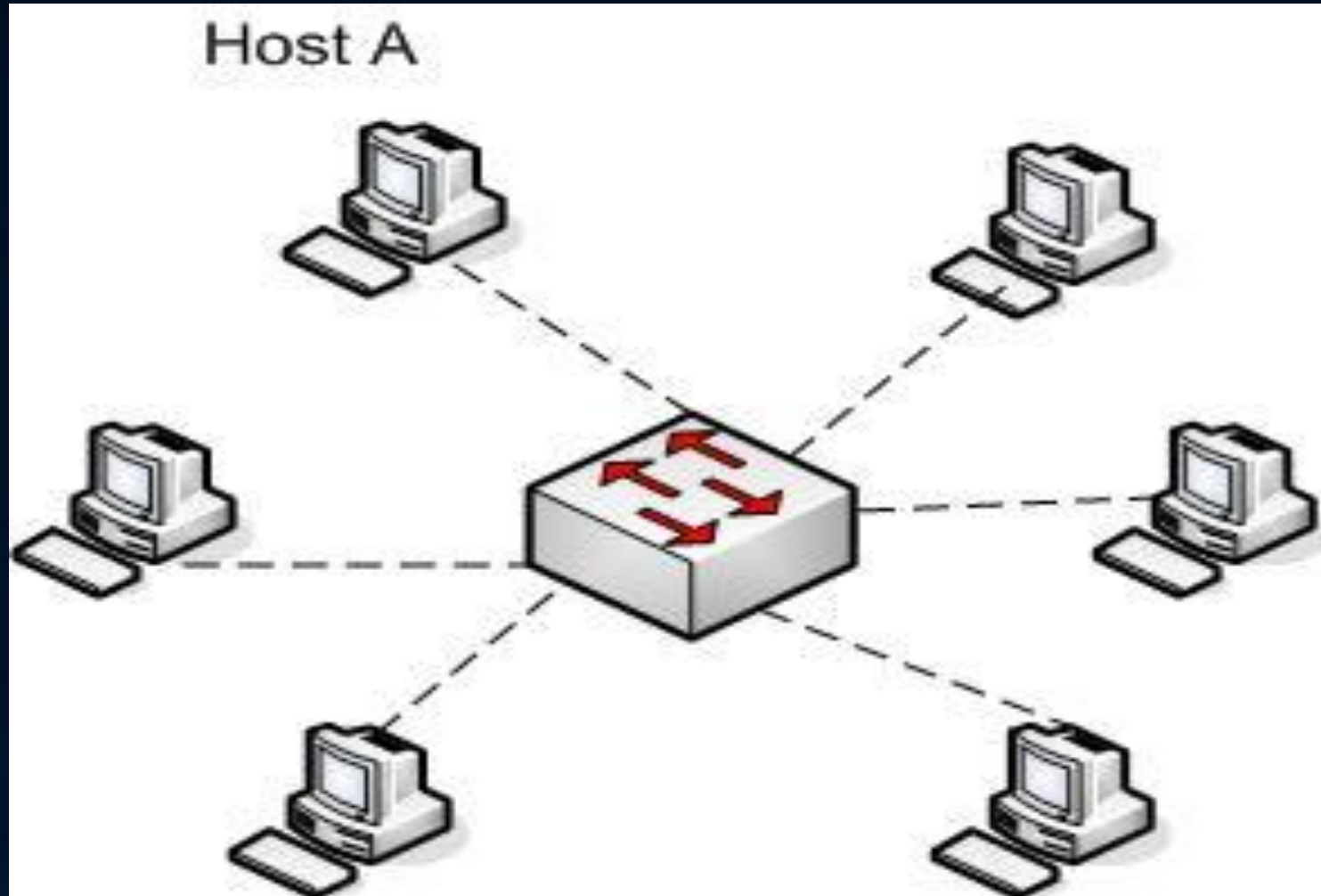
- Easy to troubleshoot, mainly used in home and office network
- If one node failed, it would not be failure of entire network
- Good option for modern network

# Star Topology

## ❖ Disadvantages:

- If the central node failed, the entire network will be failed
- Requires More cable
- We can't send private data (While the central node is hub)

# Star Topology



# Mesh Topology

- In this topology each or every computer is directly connected with each other so, we can directly send the data to the destination machine.

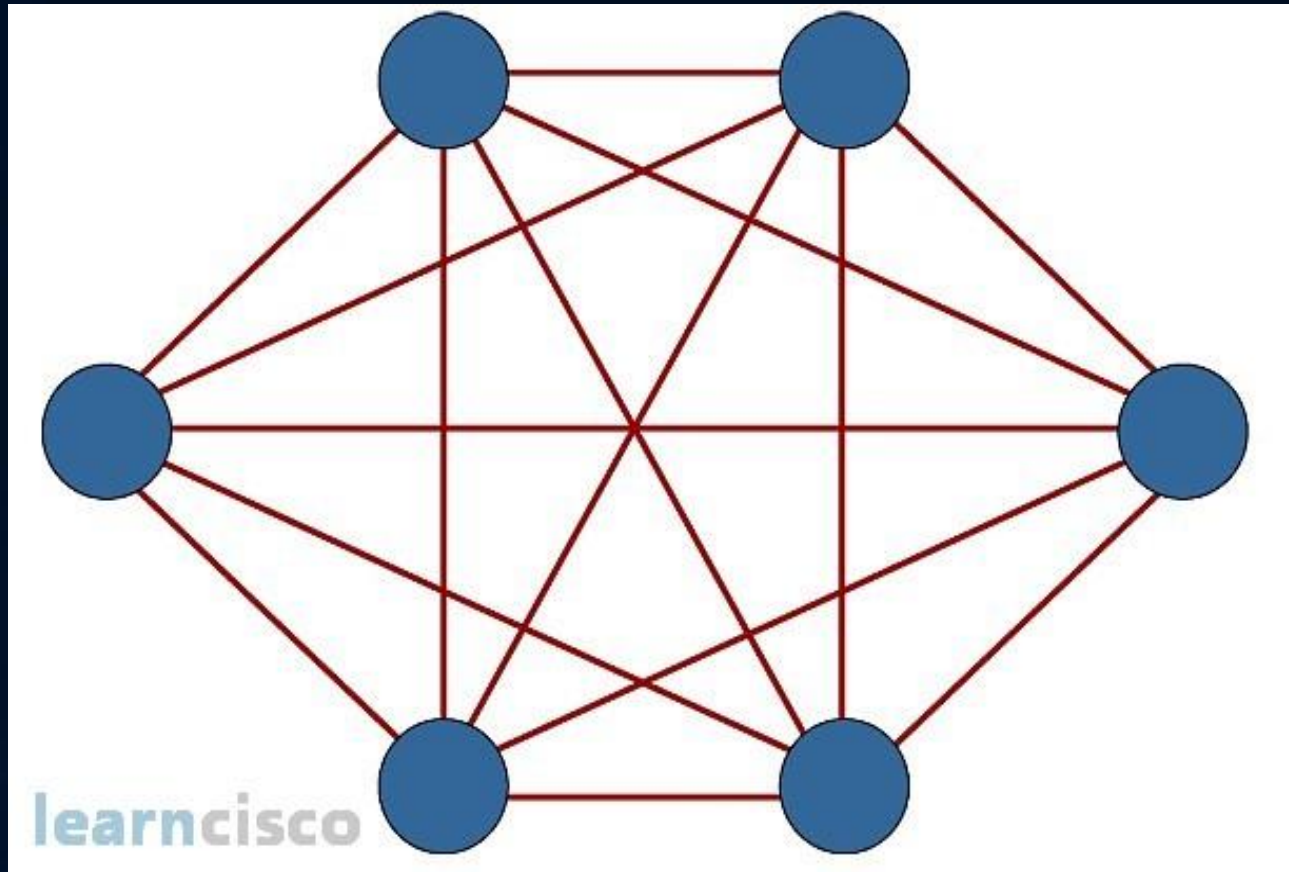
## ❖ Advantages:

- It is very good topology to send the private messages
- If one node failed, it would not be failure of entire network
- Multiple devices can send or receive data at the same time.

## ❖ Disadvantages:

- It's rarely used, installation and management are difficult
- Need more cables

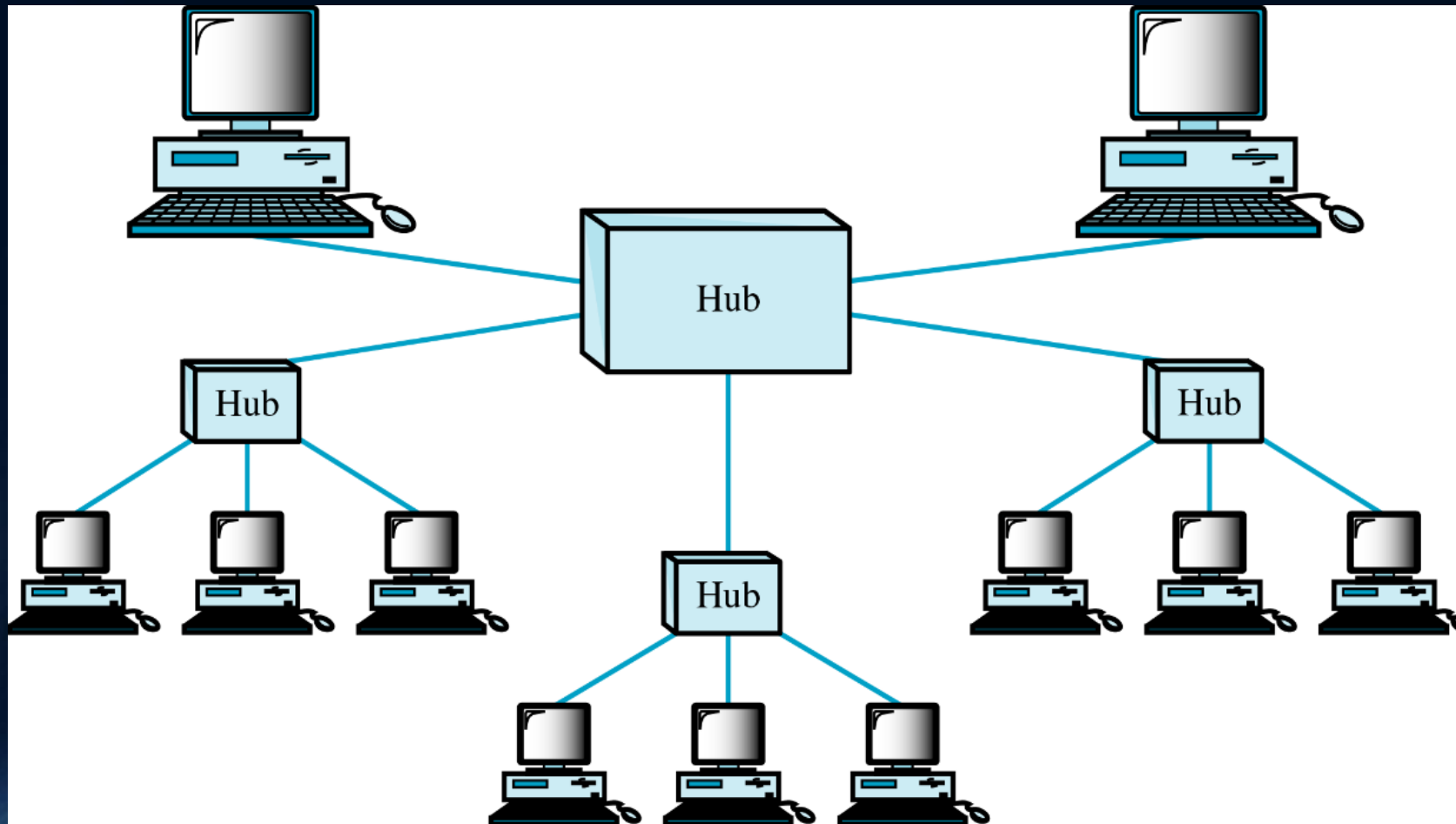
# Mesh Topology



# Tree Topology

- because of secondary hub more devices can be connected
- Rest of the advantages are almost same as Star

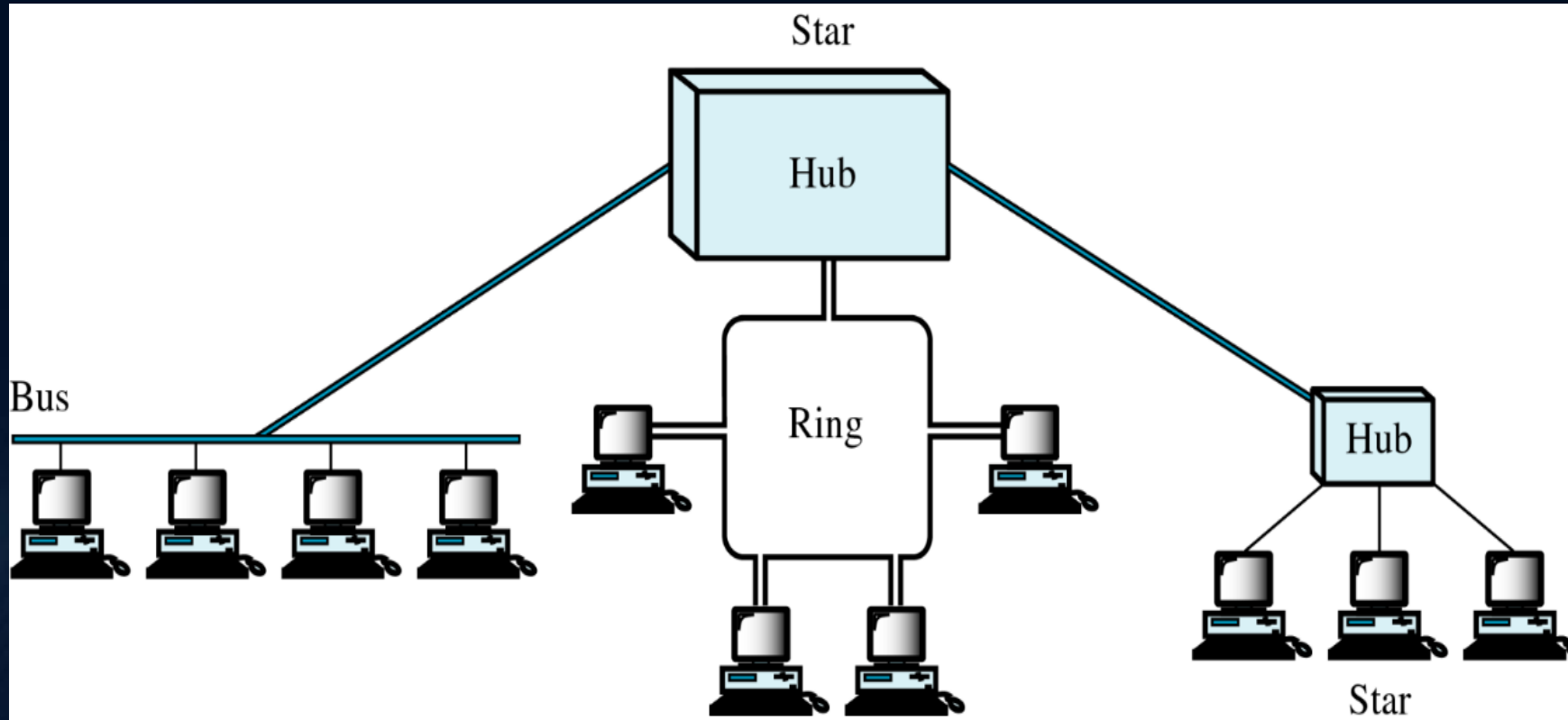
# Tree Topology



# Hybrid Topology

- It is a combination of different topologies to form a new topology.
- It helps to ignore the drawback of a particular topology and helps to pick the strengths from other.

# Hybrid Topology



THANK YOU