

COMPUTER NETWORK . PBL(1)



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LEARNING OBJECTIVES:

- WHAT IS COMPUTER NETWORK AND HOW IT WORKS ?
- WHAT IS THE PUPOSE OF COMPUTER NETWORK ?
- LIST TYPES OF COMPUTER NETWORK AND THE COMPONENTS ?
- LIST DEFRENT TYPES OF GEOGRAPHY NETWOKR ?

A computer network is a group of computer systems and other computing hardware devices that are linked together through communication channels to facilitate communication and resource-sharing among a wide range of users. Networks are commonly categorized based on their characteristics. (1)



HOW THE COMPUTER NETWORK WORK

A computer network is typically made up of a server, or client workstation, an operating system (like Windows) , some sort of cabling and a network interface card (NIC). The network interface card--also known as an expansion board--is what allows the computer to be part of a network of other computers. It contains the communication circuits needed for the computer to function on a network.

Once connected to a network, computers can share and exchange information as well as resources. For most small business networks there is one or more server computers coordinating the network's activities. Some servers do require a specific type of operating system, though the larger servers can typically work with most operating systems. (2)

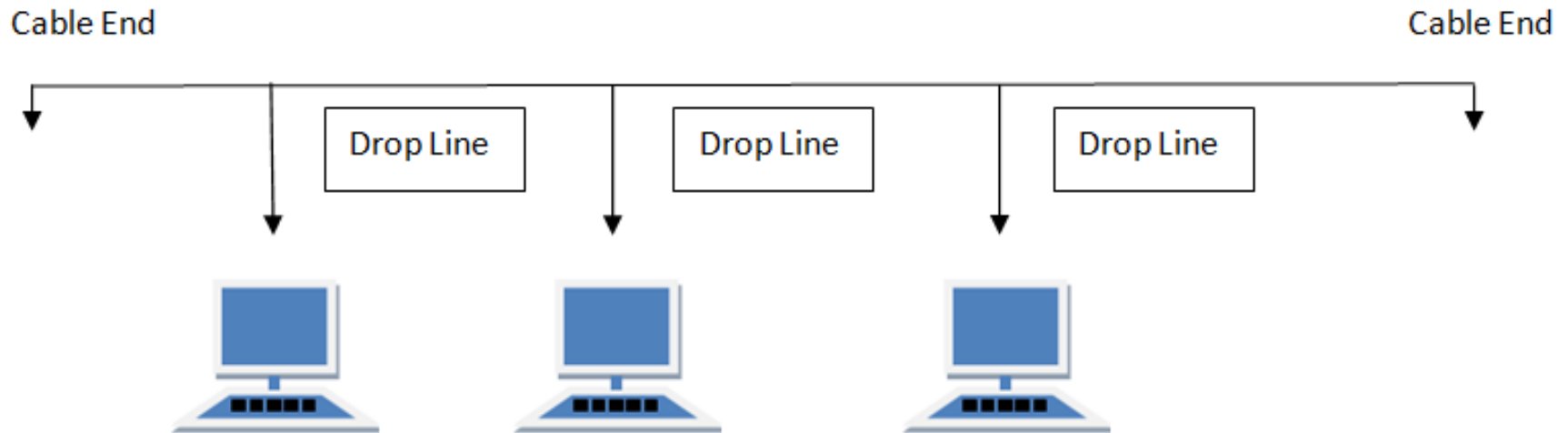


WHAT IS THE PURPOSE OF COMPUTER NETWORK

- 1- File sharing between two or more computers.(3)
- 2- Video chatting between computers located in different parts of the world .(3)
- 3- Surfing the web (for example, to use social media sites, watch streaming video, listen to an Internet radio station, or do research for a school term paper).(3)
- 4- Instant messaging (IM) between computers with IM software installed.(3)
- 5- Voice over IP (VoIP), to replace traditional telephony systems. (3)

LIST TYPES OF COMPUTER NETWORK AND COMPOENTS OF EACH TYPE

Bus : Bus topology is a network type in which every computer and network device is connected to single cable. (4)



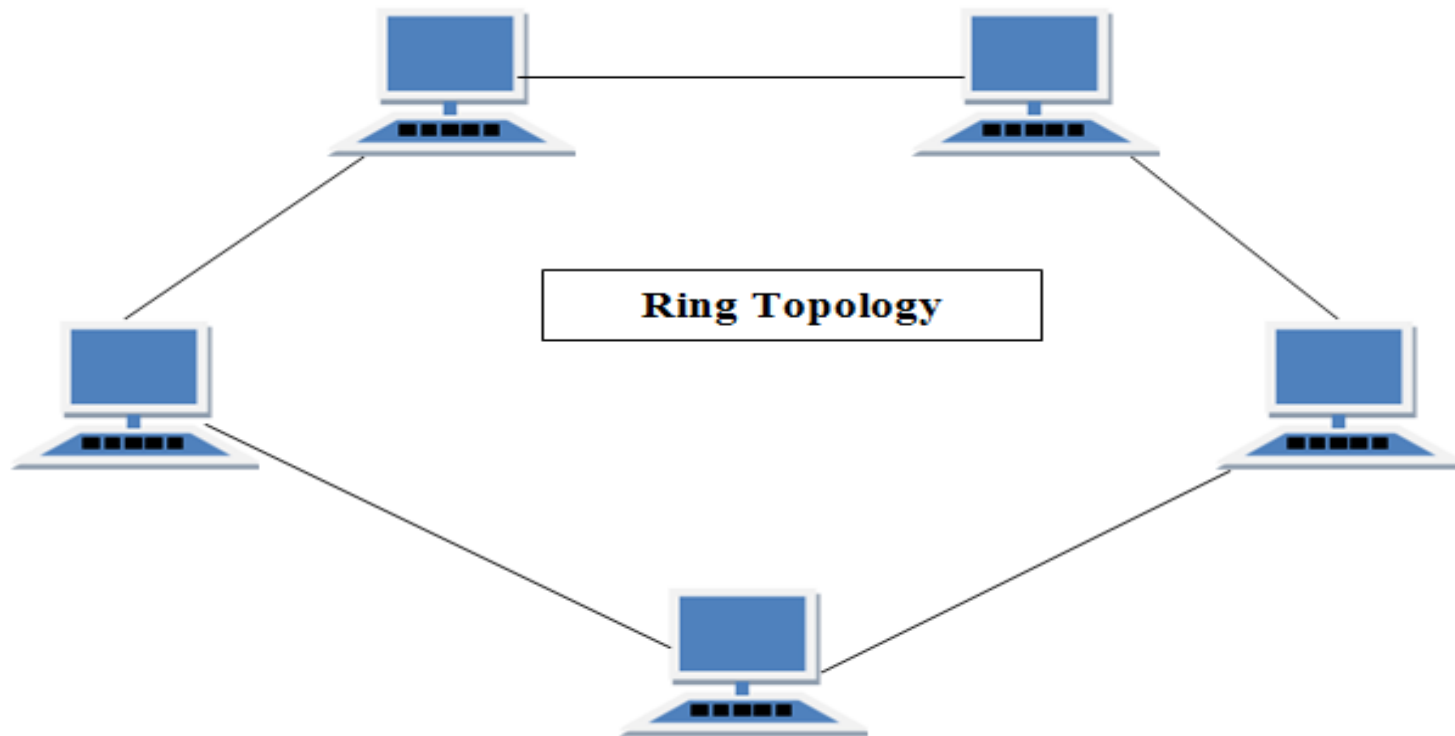
1_ all nodes (or devices) are connected to a common communication medium. Usually, a central cable is used as communication medium. This cable is called Bus. The computers or nodes are connected to the Bus through interface connector.(4)

2_ In bus network, each computer is assigned a unique address. When a computer sends a message to another computer, it also attaches the address of the destination computer with message.(4)

3_ This message moves from one computer to other through the bus. Each computer connected to the network checks the message. If the address matches with the address of computer, then it accepts the message. Otherwise, the message moves to the next computer. In this way, the message is received by the destination computer.(4)



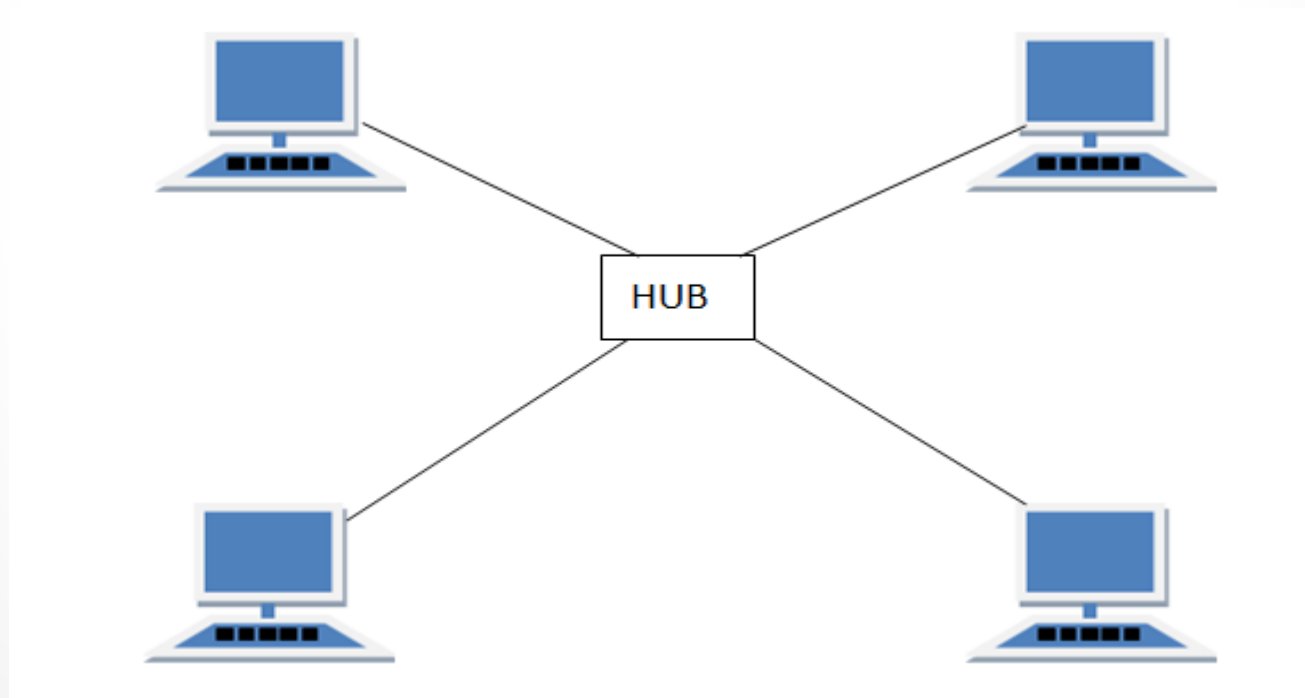
- **Ring** : It is called ring topology because it forms a ring as each computer is connected to another computer, with the last one connected to the first.(4)



1_ In ring topology, each computer is connected to the next computer and the last computer is connected to the first. Thus, a ring of computers is formed.(4)

2_ When a computer sends a message to another computer on the network, the message flows from one computer to the next computer. Every computer receives message from previous computer and transmits it to the next computer until the destination computer receives the message.(4)

- **Star** : In this type of topology all the computers are connected to a single hub through a cable. This hub is the central node and all others nodes are connected to the central node.(4)



1_ In a star network, all computers or nodes are directly connected to a central device.(4)

2_ The nodes are connected to the Hub with unshielded twisted pair central device is called Hub. (4)

3_ Star topology is most commonly used in LAN. This form of network shape looks like a Star. (4)

4_ In Star topology, the computers communicate with each other through central Hub. The sending computer sends data to the Hub. The Hub sends data to the receiving computer. In this way, data is transferred from one computer to another.(4)



LIST DEFIRENT TYPES OF GEOGRAPHY NETWORK

- **LAN stands for Local Area Network:**
It's a group of computers which all belong to the same organization, and which are linked within a small geographic area using a network, and often the same technology.(5)
- **WAN: (wide area network)** is have all of the basic network components cabling, protocols, and devices for routing information to the correct destination. WANs are like long-distance telephone systems. In fact, much WAN traffic is carried by long-distance voice communication providers and cable companies. So you can picture a WAN as a LAN that has long-distance communications needs among its servers, computers.(5)

- **HAN:** A wired home area network is the network of choice for online gamers and those that transfer large files where speed is a priority.(5)
- **MAN: A metropolitan area network (MAN)** is a network designed for a city or town. It is usually larger than a LAN but smaller than a WAN. Typically, a MAN is owned by a single government or organization.(5)
- **CAN: A campus area network (CAN)** includes several LANs that are housed in various locations on a college or business campus. Usually smaller than a WAN, CANs use devices such as switches, hubs, and routers to interconnect.(5)



- **PAN: (personal area network)** This is a network created among an individual's own personal devices, usually within a range of 32 feet. Such networks involve wireless technology. **(5)**

References

- **(1)** <https://www.techopedia.com/definition/25597/computer-network>
- **(2)** <https://www.techwalla.com/articles/how-do-computer-networks-work>
- **(3)** <https://www.techwalla.com/articles/how-do-computer-networks-work>
- **(4)** <https://www.studytonight.com/computer-networks/network-topology-types>
- **(5)** <https://searchmobilecomputing.techtarget.com/definition/personal-area-network>