

Network

Chapter 6

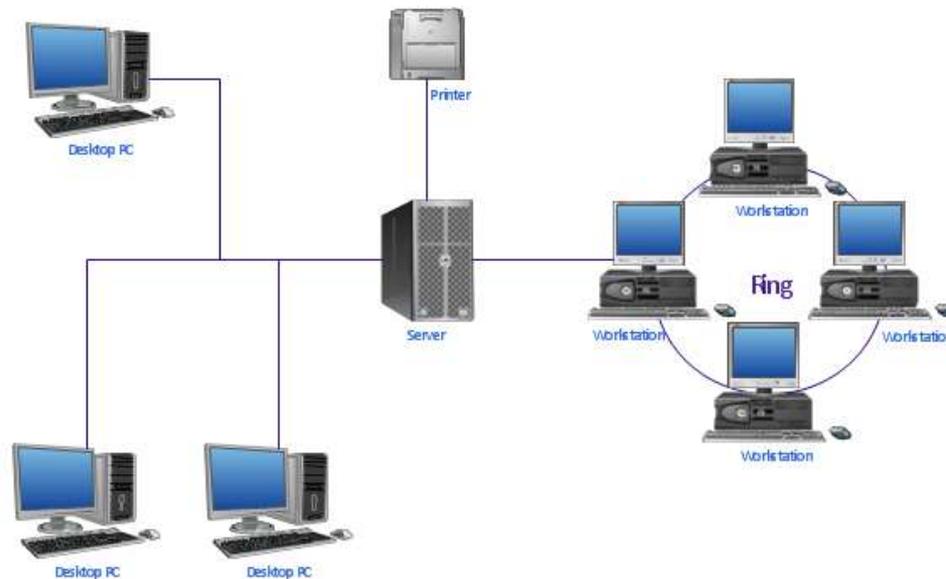
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Computer Network



- A collection of computers and other hardware devices that are connected together to share hardware, software, and data, as well as to communicate electronically with one another.



Internet



- The largest computer network in the world.



Network Topologies

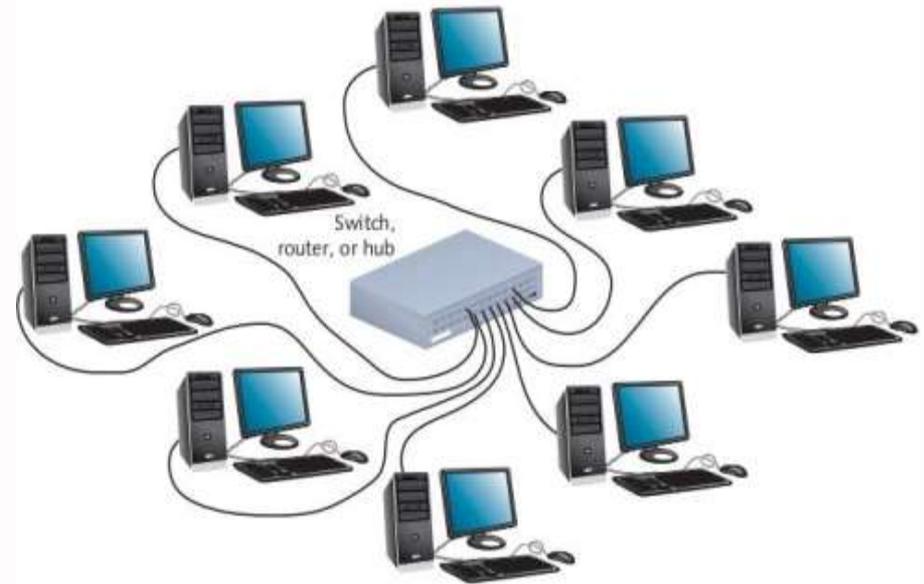


- Computer networks vary in their physical *topology* or how the devices in the network (call *nodes*) are arranged. Four of the most common physical topologies are *star*, *bus*, *ring*, and *mesh*.

Star Network



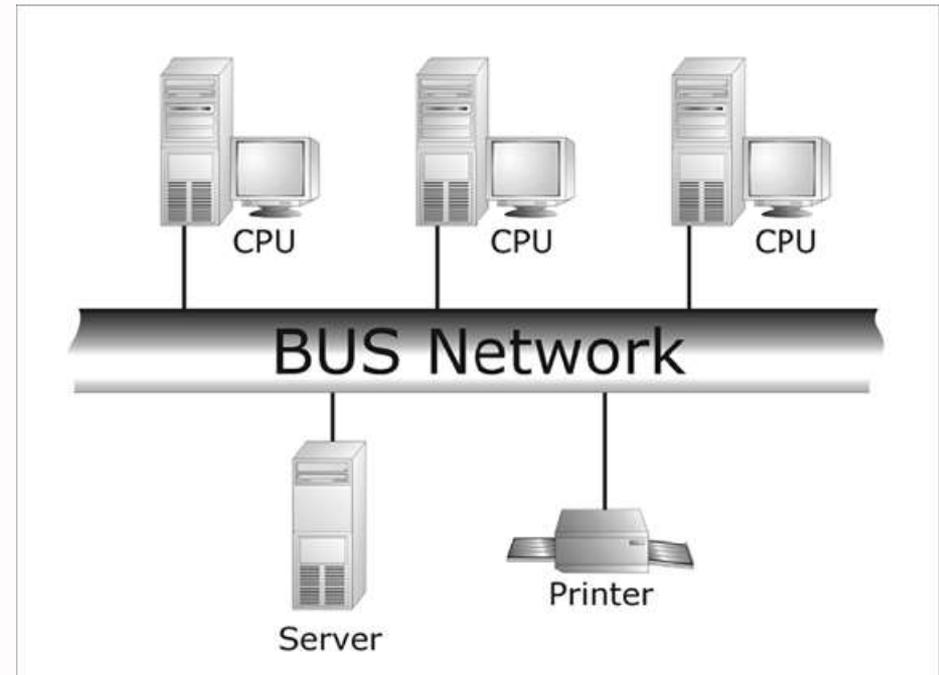
- A network that uses a host device connected directly to several other devices.
- There is a central device (usually a hub, switch, or router) to which all the computers and other devices in the network connect, forming a star shape.



Bus Network



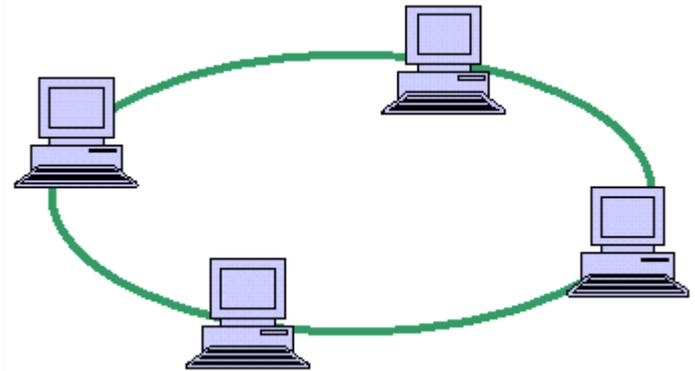
- A network consisting of a central cable to which all network devices are attached.
- A bus network has no central hub. Instead, it consists of a central cable to which all network nodes are attached.



Ring Network



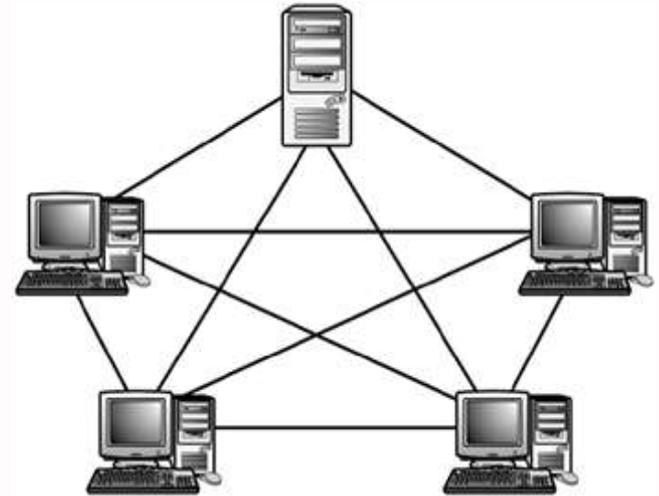
- A network that connects devices in a closed loop.
- Like a bus network, ring networks do not have a central hub, but the computers and other network devices are connected in a ring formation from one node to the next, without the use of a central cable.



Mesh Network



- A network in which there are multiple connections between the devices on the network so that messages can take any of several possible paths.
- There are a number of different connections between the devices on the network so that messages can take any several possible paths from source to destination, instead of having to follow one specific path, as in star, bus, and ring networks.



Types of Network by Size



- One additional way networks are classified is by their size, which specifies how large an area the network services and what users the network is designed to service. Some of the most common types of networks are listed next.

Local Area Networks (LANs)



- A network that connects devices located in a small geographical area, such as within a building.
- Covers a relatively small geographical area, such as a home, office building, or school.

Wide Area Networks (WANs)



- A network that connects devices located in a large geographical area.
- Covers a large geographical area. Typically, a WAN consists of two or more LANs that are connected together using communications technology. The Internet, by this definition, is the world's largest WAN. WANs may be publicly accessible, like the Internet, or may be privately owned and operated.

Metropolitan Area Networks (MANs)



- A network designed to service a metropolitan area.
- Designed to service a metropolitan area, typically a city or county. MANs fall between LANs and WANs on the size continuum and typically consist of multiple LANs. Most MANs are owned and operated by a city or by a network provider, who provides individuals in that location with access to the MAN.