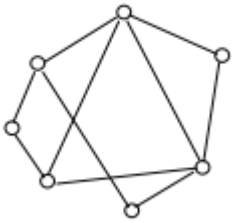
Advantages:

Very easy to install.

Unconstrained Topology:

All the topologies discussed so far are symmetric and constrained by well-defined interconnection pattern. However, sometimes no definite pattern is followed and nodes are interconnected in an arbitrary manner using point-to-point links as shown in Figure. Unconstrained topology allows a lot of configuration flexibility but suffers from the complex routing problem. Complex routing involves unwanted overhead and delay.

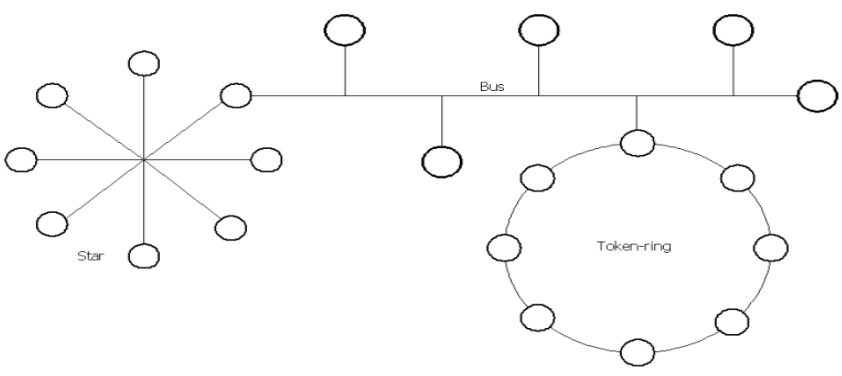


Broadband:

In telecommunications, broadband is wide bandwidth data transmission which transports multiple signals and traffic types.

The term broadband is used to describe a type of data transmission in which a single medium (wire) can carry several channels at once. Cable TV, for example, uses broadband transmission. In contrast, **baseband** transmission allows only **one signal** at a time. Most communications between computers, including the majority of local-area networks, use **baseband** communications.

Broadband Internet service truly is the most used form of Internet access because of its high access speeds; it is offered in **four different** forms,



1. DSL (or Digital Subscriber Line), also

2. Fiber-optic,

3. Cable, and

4. Satellite.

The old dial-up connection is the only non-broadband internet service available, and even though it is cheaper, most Internet users are moving towards the faster broadband Internet connection.

DSL

The DSL (or Digital Subscriber Line) internet service makes its connection by utilizing unused telephone wires that cause no interruption to your telephone service. The speed you experience with

a DSL connection varies with your distance from the switching station. Your speed will be slower the further away you are and faster the closer you are to the switching station and this may be a deciding factor when you attempt to select between a DSL line and a cable connection.

There are many advantages to the DSL and cable broadband service. It provides greater bandwidth than other Internet access forms, and that makes it easier for the computer user to multitask with several applications performing in the background while you surf the web. It is possible for you to surf the web while listening to audio.

The networking of computers in the home is made easier with a broadband connection, by either using wireless or wired modems.

Cable

The broadband cable connection is provided by the local cable TV provider. Here the cable Internet connection speed varies with the number of users on the service at a specific point in time. Given a specific geographical area, users of the broadband cable service share the connection bandwidth which slows the speed the **more users** are on the system. This will occur at the peak times for example late in the evenings after the work day is over when many people will be accessing the Internet. Somewhat misleadingly, often the cable company would estimate connection speeds that are based on the thinking that you are using the service. But that is clearly not the case.

Fiber-Optic

The newest broadband service is fiber-optic, which is the fastest Internet connection thus far. However, this type of Internet service is still in its infancy as its service areas are quite limited and because the laying down of the fiber-optic cable takes a while to complete. Wherever it is available, the cost not only

competes with that of DSL and cable, but it provides a much faster connection than both of those services.

Satellite

The last and slowest broadband service is provided by satellite. Although this is a good replacement for dial-up for those people living in remote rural areas, the installation costs are quite high, but the ongoing monthly charges are competitive to both cable and DSL.

WiMAX:

Acronym for **Worldwide Interoperability for Microwave Access**.

1. Based on Wireless MAN technology.
2. A wireless technology optimized for the delivery of IP centric services over a wide area.

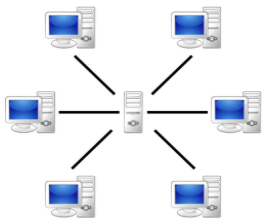
Wi-fi:

Wi-Fi is the name of a popular wireless networking technology that uses radio waves to provide wireless high-speed Internet and network connections.

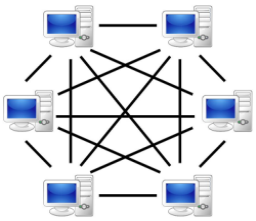
PEER TO PEER NETWORK:

1. In peer to peer network each computer is responsible for **making its own resources** available to other computers on the network.
2. Each computer is responsible for setting up and maintaining **its own security for these resources.**
3. Also each computer is responsible for **accessing** the required network resources from peerr relationships.
4. Peer to peer network is useful for a small network containing **less than 10** computers on a single LAN.
5. In peer to peer network each computer can function as both client and server.
6. Peer to peer networks do not have a central control system. There are no servers in peer networks.
7. Peer networks are amplified into home group.

Advantages:	**Disadvantages:**
Use less expensive computer hardware	Not very secure
Easy to administer	No central point of storage or file archiving
No NOS required	Additional load on computer because of resource sharing
More built in redundancy	Hard to maintain version control
Easy setup & low cost	



Server–based



P2P–network

CLIENT/SERVER NETWORK:

1. In client-server network relationships, certain computers act as server and other act as clients. A server is simply a computer, that available the network resources and provides service to other computers when they request it. A client is the computer running a program that requests the service from a server.
2. Local area network (LAN) is based on client server network relationship.
3. A client-server network is one in which all available network resources such as files, directories, applications and shared devices, are centrally managed and hosted and then are accessed by client.
4. Client server network are defined by the presence of servers on a network that provide security and administration of the network.

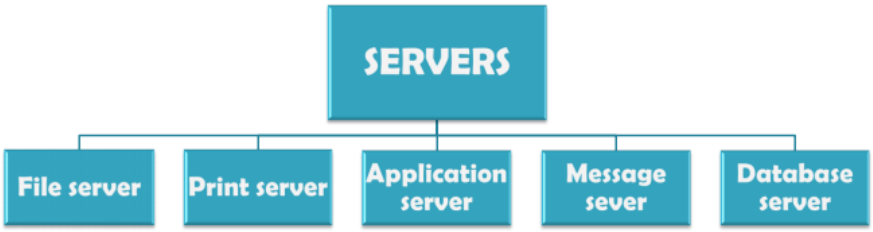
Advantages:

- Very secure
- Better performance
- Centralized backup
- very reliable

Disadvantages:

- requires professional administration
- More hardware intensive
- More software intensive
- Expensive dedicated software

TYPES OF SERVERS



 File server: These servers provide the services for storing, retrieving and moving the data. A user can read, write, exchange and manage the files with the help of file servers.
 Printer server: The printer server is used for controlling and managing printing on the network. It also offers the fax service to the network users.
 Application server: The expensive software and additional computing power can be shared by the computers in a network with he help of application servers.
 Message server: It is used to co-ordinate the interaction between users, documents and applications. The data can be used in the for of audio, video, binary, text or graphics.
 Database server: It is a type of application server. It allows the uses to access the centralized strong database.

Network Applications:

A Network application is any application running on one host and provides a
communication to another application running on a different host, the application
may use an existing application layer protocols such as: HTTP(e.g. the Browser
and web server), SMTP(e.g. the email-client).

Network Devices:

- Network Hub: Network Hub is a networking device which is used to connect
multiple network hosts.

- Network Switch: Like a hub, a switch also works at the layer of LAN (Local
Area Network) but you can say that a switch is more intelligent than a hub.
- Modem
- Network Router
- Bridge
- Repeater

Modem:

A Modem is somewhat a more interesting network device in our daily life. So if
you have noticed around, you get an internet connection through a wire (there are
different types of wires) to your house. This wire is used to carry our internet data
outside to the internet world.
However, our computer generates binary data or digital data in forms of 1s and 0s
and on the other hand, a wire carries an analog signal and that’s where a modem
comes in.
A modem stands for (**Mo**dulator+**De**modulator). That means it modulates and
demodulates the signal between the digital data of a computer and the analogue
signal of a telephone line

Network Router:

A router is a network device which is responsible for routing traffic from one to

another network. These two networks could be a private company network to a
public network. You can think of a router as a traffic police who directs different
network traffic to different directions.

Bridge:

If a router connects two different types of networks, then a bridge connects two
subnetworks as a part of the same network. You can think of two different labs or
two different floors connected by a bridge.

Repeater:

A repeater is an electronic device that amplifies the signal it receives. In other
terms, you can think of repeater as a device which receives a signal and retransmits
it at a higher level or higher power so that the signal can cover longer distances.
For example, inside a college campus, the hostels might be far away from the main
college where the ISP line comes in. If the college authority wants to pull a wire in
between the hostels and main campus, they will have to use repeaters if the
distance is much because different types of cables have limitations in terms of the
distances they can carry the data for
When these network devices take a particular configurational shape on a network,

their configuration gets a particular name and the whole formation is
called Network topology

- **TCP/IP:**
- TCP/IP stands for Transmission Control Protocol/Internet Protocol, which is a set of networking protocols that allows two or more computers to communicate. The Defence Data Network, part of the Department of Defence, developed TCP/IP, and it has been widely adopted as a networking standard.
- **Internet:**
- a global computer network providing a variety of information and communication facilities, consisting of interconnected networks using standardized communication protocols.
- The First personal computer appeared in the early 1980s.
- Commercial use of internet started in early 1980s.
- World wide web was invented in 1991.
- What is Parts of URL?
- Uniform Resource Locator
- Resource name
- http:// Protocol
- www subdomain
- Google domain
- .com top level domain
- 80 Port number.

Fill In The Blanks.

1. Number of links to connect n nodes in a mesh topology is = _____.
2. Mesh Topology is _____ flexible and has a _____ expandability
3. In BUS topology, at each end of the bus is a _____, which absorbs any signal, removing it from the bus.
4. In BUS topology, One can easily add any new node or delete any node without affecting other nodes; this makes this topology easily _____.
5. _____ and _____ will force a maximum length of shared medium

which can be used in BUS topology.

6. The two alternatives for the operation of the central node in STAR topology are:

_____ and _____.

7. In Ring Topology, the links are _____; that is, data are transmitted in _____ direction only and all are oriented in the same way

8. In Ring Topology, Repeater works in 3 modes: _____, _____ and _____.

9. _____ topology can be considered as an extension to BUS topology.

10. _____ is suitable for use in star and ring topologies

11. Coaxial cable is suitable for use in _____ topology.

Solutions.

1. n(n-1)/2
2. not, poor
3. terminator
4. expandable.
5. Delay, signal unbalancing
6. repeater, switch
7. unidirectional, one
8. Listen, Transmit, By-Pass
9. Tree
10. Twisted pair
11. BUS