Networking

A network is a number of computers linked together to allow the sharing of resources. A server usually provides services like file storage and email. Today when we speak of networks, we are generally referring to three primary categories: **L**ocal **A**rea **N**etworks (LANs), **M**etropolitan **A**rea **N**etworks (MANs), and **W**ide **A**rea **N**etworks (WANs). As shown in figure 1

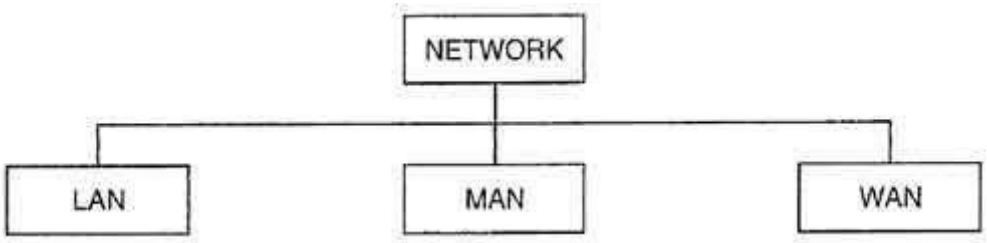

Figure 1: Categories of networks

1- Local Area Network (LAN)

A **Local Area Network** (**LAN**) is a computer network that interconnects computers within a limited area such as a residence, school, laboratory, university campus or office building. Ethernet and Wi-Fi are the two most common technologies in use for **LAN**. A number of experimental and early commercial LAN technologies were developed in the 1970s. Ethernet was developed at Xerox PARC between 1973 and 1974. In a wireless LAN, users have unrestricted movement within the coverage area. Wireless networks have become popular in residences and small businesses, because of their ease of installation. Most wireless LANs use Wi-Fi as it is built into smartphones, tablet computers and laptops. Guests are often offered Internet access via a hotspot service. As shown in figure 2

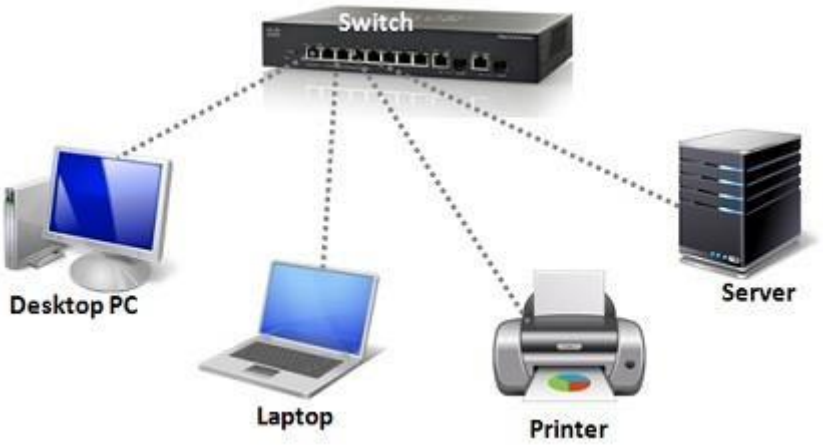

Figure 2: Local Area Network (LAN)

Advantages of LAN

1. The basic LAN implementation does not cost too much.
2. It is easy to control and manage the entire LAN as it is available in one small region.
3. The systems or devices connected to the LAN communicate at very high speeds, depending on the LAN type and Ethernet cables supported. The common speeds supported are 10 Mbps, 100 Mbps, and 1000 Mbps.
4. With the help of file servers connected on the LAN, sharing of files and folders among peers will become very easy and efficient.
5. It is easy to share common resources such as printers and an internet line among multiple LAN users.

Disadvantages of LANs:

1. Where a lot of terminals are served by only one or two printers, long print queues may develop, causing people to have to wait for printed output.
2. Network security can be a problem. If a virus gets into one computer, it is likely to spread quickly across the network because it will get into the central backup store.
3. If the dedicated file server fails, work stored on shared hard disk drives will not be accessible, and it will not be possible to use network printers either.

2-Metropolitan Area Network (MAN)

A Metropolitan Area Network is designed to extend over an entire city. It may be a single network such as a cable television network, or it may be a means of connecting a number of LANS into a larger network so that resources may be shared LAN - to - LAN as well as device - to - device. For example, a company can use a MAN to connect the LANS in all of its offices throughout a city, as shown in figure 3

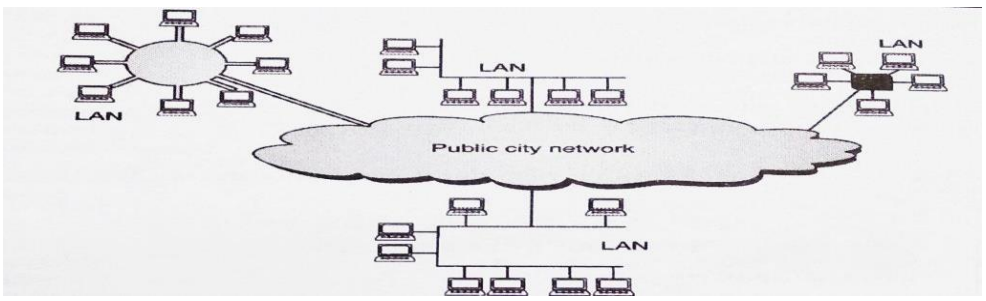

Figure 3 Metropolitan Area Network (MAN)

3-Wide Area Network (WAN)

A Wide Area Network (WAN) is a telecommunications network that extends over a large geographical area for the primary purpose of computer networking. The textbook definition of a WAN is a computer network spanning regions, countries, or even the world. WANs are used to connect LANs and other types of networks so that users and computers in one location can communicate with users and computers in other locations. Many WANs are built for one particular organization and are private. Others, built by Internet service providers, provide connections from an organization's LAN to the Internet. Many technologies are available for Wide Area Network links. Examples include circuit-switched telephone lines, radio wave transmission, and optical fiber. New developments in technologies have successively increased transmission rates.

What separates a WAN like the Internet from a LAN? Due to their typically massive size, WANs are almost always slower than LANs. The further the distance, the slower the network. One of the big disadvantages to having a WAN is the cost it can incur. Having a private WAN can be expensive. The reason that WANs cost a lot tends to be because of the technology required to connect two remote places. As shown in Figure 4

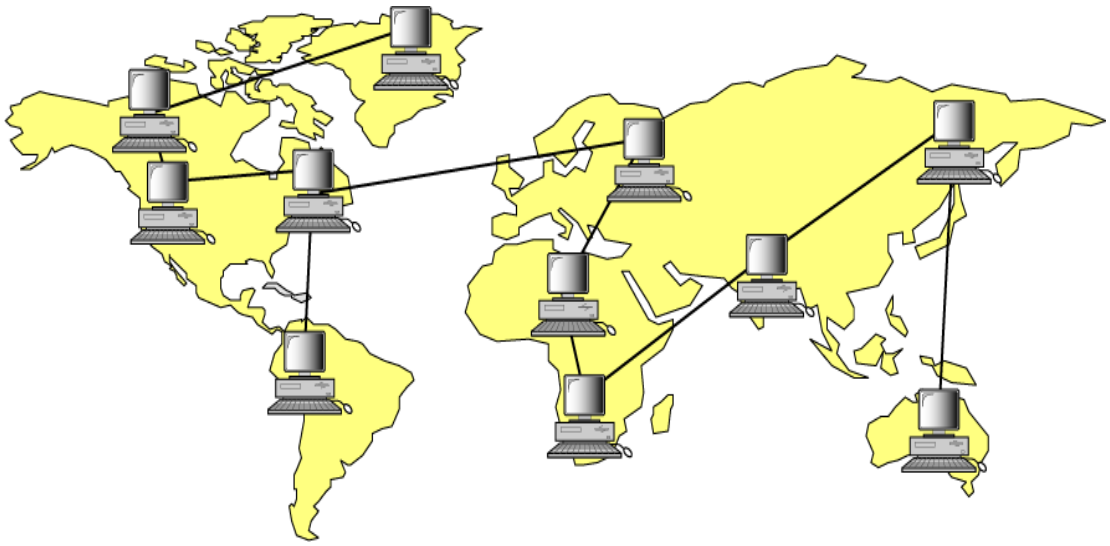

Figure 4: Wide Area Network (WAN)

Advantages of a wide area network (WAN)

- Covers a large geographical area
- Centralized data
- Get updated files and data
- Sharing of software and resources
- Global business
- High bandwidth
- Distribute workload and decrease travel charges

Disadvantages of a wide area network (WAN)

- Security problems
- Needs a firewall and antivirus software
- The setup cost is high
- Server down and disconnection issue

Examples of wide area network (WAN)

Some examples of WAN are below:

- Internet
- Most big banks
- Airline companies
- Stock brokerages
- Railway reservations counter
- Satellite systems

What is an Internet?

The Internet is a global web of computers connected to each other by wires (mostly phone lines). If you look at a map of big cities, smaller towns, and scattered houses, each is connected together with roads, railways, etc. This is similar to the Internet, except that with the Internet, wires connect computers. The Internet is a superhighway

Application of Internet

1- Communication
2- Job Searches
3- Finding books & Study materials
4- Health & Medicine
5- Travel
6- Entertainment
7- Shopping
8- Stock market updates
9- Research
10- Business

Internet Terms

1. WWW
2. Browser
3. Search Engine
4. URL
5. Domain
6. HTML

1. WWW

The World Wide Web is the universe of network-accessible information, an embodiment of human knowledge.

2. Browsers

Browser is a Software program that allows a person to view WWW documents.

Examples of browsers are Netscape, Microsoft Internet Explorer, Mosaic, Chrome, Mozila Mac web, and Net cruiser.

3. Search Engines

A website that will help you search the Internet for keywords and subjects. Search engines are programs that search documents for specified keywords and return a list of the documents where the keywords were found. A search engine is really a general class of programs; however, the term is often used to specifically describe systems like Google, Bing, and Yahoo! Search that enable users to search for documents on the WWW.

4. URL

Uniform Resource Locator (URL): The unique address of any web page. It tells your computer where the information is stored so it can be viewed.

Ex. http://www.google.com

HTTP protocol (hypertext transfer)

www- subdomain

Google—domain name

Com—top level domain (TLD)

5. Domain

A way to indicate what type of site you may be viewing. Some common domains are .com—commercial, .org—non-profit and research organizations, .gov—government agency, and .edu—education. More are constantly being added, so these should only be used as guidelines to help you know what type of site you are on.

6. HTML

HyperText Markup Language—Standard markup language used to create web pages.