

## 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.

### Advantages and disadvantages of networks

#### Advantages

- Sharing devices such as printers saves money.
- Site (software) licences are likely to be cheaper than buying several standalone licences.
- Files can easily be shared between users.
- Network users can communicate by email and instant messenger.
- Security is good - users cannot see other users' files.
- Data is easy to backup as all the data is stored on the file server.

#### Disadvantages

- Purchasing the network cabling and file servers can be expensive.
- Managing a large network is complicated, requires training and a network manager usually needs to be employed.
- If the file server breaks down, the files on the file server become inaccessible.
- Viruses can spread to other computers throughout a computer network.
- There is a danger of hacking, particularly with wide area networks. Security procedures are needed to prevent such abuse, eg a firewall.

## 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 local area networks. 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.

#### 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 on LAN communicates at very high speed depending upon 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 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 backing 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.

### **Wide area network**

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 together 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 its typically massive size, WAN's are almost always slower than a LAN. 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.

## **Advantages of a wide area network (WAN)**

### **Covers large geographical area:**

WAN covers a large geographical area of 1000 km or more. If your office is in different cities or countries then you can connect your office branches through wan. ISP (Internet service provider) can give you leased lines by which you can connect different branch offices together.

### **Centralized data:**

Your company doesn't need to buy email, files, and backup servers, they can all reside on head office. All office branches can share the data through the head office server. You can get back up, support, and other useful data from the head office and all data are synchronized with all other office branches.

### **Get updated files and data:**

Software companies work over the live server to exchange updated files. So all the coders and office staff get updated version of files within seconds.

### **Sharing of software and resources:**

Like LAN we can share software applications and other resources like a hard drive, RAM with other users on the internet. In web hosting, we share computer resources among many websites.

### **Global business:**

Now everyone with computer skills can do business on the internet and expand his business globally. There are many types of business like a shopping cart, sale, and purchase of stocks etc.

### **High bandwidth:**

If you get leased lines for your company then it gives high bandwidth than normal broadband connection. You can get a high data transfer rate that can increase your company productivity.

### **Distribute workload and decrease travel charges:**

Another benefit of wide area network is that you can distribute your work to other locations. For example, you have an office in the U.S then you can hire people from any other country and communicate with them easily over WAN. It also reduces your travel charges as you can monitor the activities of your team online.

## **Disadvantages of a wide area network (WAN)**

### **Security problems:**

WAN has more security problem as compare to LAN. WAN has many technologies combined with each other which can create a security gap.

### **Needs firewall and antivirus software:**

As data transferred on the internet can be accessed and changed by hackers so firewall needs to be enabled in the computer. Some people can also inject a virus into the computer so antivirus software needs to be installed. Other security software also needs to be installed on different points in WAN.

### **The setup cost is high:**

Setting up WAN for the first time in office costs higher money. It may involve purchasing routers, switches, and extra security software.

### **Server down and disconnection issue:**

In some areas, Internet Service Provider faces problems due to electricity supply or bad lines structure. Customers often face connectivity issues or slow Internet speed issues. The solution to this is to purchase a dedicated line from ISP.

### **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