Modem

Uses

Digital lines are used for transmitting large volumes of data at a fast
rate. Analogue lines are often used by single users with little data
transfer, perhaps for a small amount of e-mail used over a conventional
telephone line.

Advantages and Disadvantages

- Digital lines are more expensive to install than normal telephone lines and
the line rental is higher.

- Modems must be purchased for use with normal telephone lines.

- There is much faster transmission rate typically found on digital lines because they have a higher bandwidth than an ordinary telephone line.
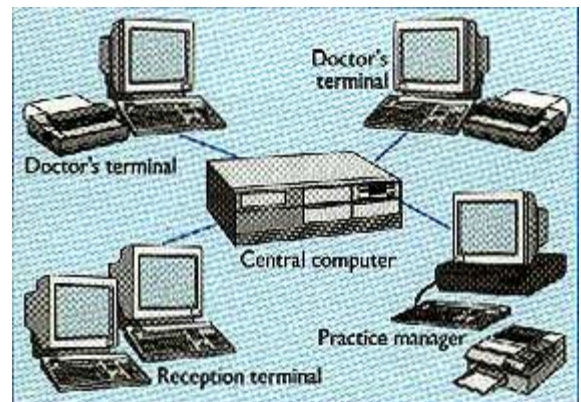
Computer Networks

A network of computers is when several computers have communication lines linking them. There are many types of computer network . One type of computer network is when we have many individual computers linked so that a message may be sent from one to another. Another type of computer network is when we have one main computer called a network server. This controls access to work areas which are usually stored on the network server.

Uses

A computer network is often used to allow users to share data and software.
A typical example of where you will see a network in operation is in a bank
or a supermarket. Cashiers in banks will have a computer on their desk,
which can access the main network server computer so they can see your
account. Supermarket assistants sometimes have a smaller computer known as
an electric point of sale (EPOS) the EPOS is connected to the main network

server computer which stored all the details about the stock. In both these situations the main server computer controls access to shared data.

Advantages

When computers are networked together both programs ,for (example a word processor) and data (for example stock data) can be shared.

It is also possible for all networks users to communicate with one another and for them to share other resources like printers.

Disadvantages

Initial installation costs of a network can be quite high because of the cost of installing communication links.

There is an extra task involved in making sure the shared resources are safe and secure. To do this extra task a specially trained person will also need to be employed. This is why we have our own user identification and password to gain access to private data.
If the network fails, users may not be able to look at the work that they need to see.

If a lot of users are logged on together then the system may operate very slowly.

User id's and passwords.

When using a networked computer, it is important that we can only see the data which belongs to us and other resources which we are allowed to see. We should not be able to see other users personal data. To achieve this kind of privacy users must logon to the system by giving a user identification, and a password to allow them access. The user id gives each user a personal identity, which is recognised by the system. The password attempts to ensure that the person is who they say they are. For security reasons it is important to:

- Keep passwords private

- Change passwords frequently

- Log off the network properly

- Ways of communicating

There are many ways of communicating using computers. We are going to look at fax, e-mail ,voicemail and videoconferencing.

Fax

It is possible to send a fax using a computer as well as by using a fax
machine. A fax is when you send a copy of a document over communication
lines. This could be printed out immediately at the other end of the line. A
fax is an image of a document. It is sent to a particular fax number and is
not necessarily private since it is not to a private address of an
individual person. It cannot be transmitted if the fax number is busy.

Uses

Fax machines are used to transmit documents which are not of a personal
nature. For example solicitors may fax details of their service to a new
client.

Advantages

Immediate hard copy is sent to the chosen destination

Disadvantages

Only one fax number can be selected each time when a message is sent. So it
is not possible to broadcast the document to many different fax machines in
one go.

Fax machines are not suitable for sending private messages or documents
because many people in a busy office environment often share fax machines.

It is not possible to edit a received a document and re-print it, or attach
other times or files, which cannot be printed out.

Electronic mail (E-mail)

Electronic mail is when a message is sent from one person directly to
another using computers which are connected to a network. There is a special
computer which receives all mail and sorts it out, deciding which 'mailbox'
it needs to go to. This is called a mail server and it acts a bit like a
post sorting room. Each user has their own mailbox which is labelled with
their own personal e-mail address. This means that this method of communication is very private. All sorts of documents can be attached to the email including pictures, sound, video etc.

To be able to send e-mail, the user will need:

1. A computer processor
2. A communication link : using analogue or digital telephone lines;
3. Software to enable you to read, write, send and retrieve messages . This software may be purchased separately or may come as part of a package with other software;
4. An agreement with a service provider. This means that you agree to the terms and conditions that are given by the service provider.
5. an e-mail address can be provided by the service provider, for example, A.jones@hotmail.com , the email addresses are usually made up of your email identification for your mail box such as A.Hones, the '@' sign to indicate which place your mail box Is set up as such as 'hotmail.com'

When a users computer is not connected to the service provider's computer (usually known as a mail server), any mail is stored in the mail box on the mail server. When you dial into your own service provider your computer will link to their server and then you will be able to download your messages. You are then able to read your own messages 'off-line'. This simply means that you now have your messages on your own computer you can read them at leisure without being connected to your service provider. E-mail is there-fore very cost affective to use once it has been set up.

Basic e-mail facilities:
1. send a message, by simply typing in the address of the person you are sending it to with a message. This may have been checked for spelling.
2. reply to a message you have received.
3. forward a message you have received to another person.
4. attach a variety of different of documents, including sound files.
5. send multiple copies to a large number of recipients.

Some email users have permanent access to a computer network and their own server. These users are usually business users. They have high speed communication lines and their own network regularly downloads mail to user work areas.

Advantages

- Email allows person to person communication.

- Broadcasting the same message to a large number of people very fast

- Important documents may be attached

- If the person concerned is not currently on line the mail server will store the message for later retrieval.

Disadvantages

- As a single user you may need to subscribe to a service provider to obtain an e-mail address.

- You need to learn how to use the software and be reasonably computer literate to use email.

Voice mail systems

Voice mail systems are really like digital answering machines that allow people calling to leave messages. Many systems also direct callers to specific telephone extensions connected to a business telephone network. These digital systems play recorded messages so that callers can choose an option to help them find the correct person to speak to within the business. Once the system has helped to direct the caller to the correct telephone extension, it is possible to leave a message. The people receiving a message can then listen to it, delete and/or forward it onto someone else.

Uses

Many businesses use voice mail systems to assist callers in finding the correct service they require. Some banks have voicemail systems. Which use computer generated voice output messages to prove information to callers? Callers may then leave messages or even make transactions based upon numbers selected and security codes entered.

Advantages

- Fast routing of callers to the service they require.

- Ability to leave messages in the relevant voice mailbox.

Disadvantages

- Sometimes they can be impersonal and the service required may not be easy to get to by selecting numbers and options.

Tele/Video Conferencing

Teleconferencing allows groups in different locations to talk together over communication lines as though they were all sat around a table in a meeting, even though they are far apart. This saves on traveling costs and on traveling time on the meeting. It is very convenient except that it is sometimes difficult to exchange ideas when people are not talking to one another face to face in one another's company.

Video conferencing is similar to teleconferencing except that the people in the meeting can now see one another because video cameras are used. Desktop video conferencing systems are available which have the correct software, video and sound systems attached to them, often users can work on the same document.

1. Appropriate hardware. This may be simple multi-way telephone system for teleconferencing, or a more sophisticated hardware set up for videoconferencing.
2. Relevant software.
3. People to be available at the same time.
4. Systems which can work together.

Uses

Business meetings and academic groups will sometimes use this rather than setting up a location to meet, particularly if all the people involved are located a large distance away from each other.

As computers are becoming commonplace and software to support teleconferencing has become more readily available, more people are beginning to use this facility; videoconferencing can be used to allow groups of children to participate in lessons from a distance.

Advantages

- Tele/Video conferencing saves on traveling costs and on traveling time to the meeting.

Disadvantages

- It's sometimes difficult for people to exchange ideas when they are not face to face with another person

- Video conferencing equipment is very expensive

- Over a distance synchronising sound and vision is technologically challenging.