

Stand alone environment

Each computer only have **one OS**. Storage drives are needed to give copy of the OS to other computer.

Advantages of stand alone environment

cheaper to set up as network cards and wiring are omitted

A network manager/administrator is not necessary to run the stand alone computers

Fewer problems with viruses

Not as hardware dependent as a network where failure in the file server or fault in the cable will affect the whole network

Characteristics of CLIENT SERVER, P2P, VPN

Client server	Peer to peer	Virtual private network (VPN) (P2P)

Application is distributed but data is centralised (server)

User can access data which is centrally control (server)

Strong emphasis on bringing on user friendly familiar apps and interface

How Intranets Are Used

Like the Internet itself, intranets are used to share information. Secure intranets are now the fastest-growing segment of the Internet because they are much less expensive to build and manage than private networks based on proprietary protocols.

extranets

An extranets is a means of extending an organisation's intranets for use by selected people outside the organisation

It is particularly useful to companies who wish to enable customers, sales people or suppliers, for example, to use the facilities of their intranet.

In order to maintain security and confidentiality of data, firewalls, VPNs and authentication techniques are used, together with complex data encryption techniques.

Extranets have many uses. Customers and an externally based sales force can be provided with up-to-the-minute catalogues.

Training facilities and courses can be shared with other companies

Projects can be set up and operated with business partners

They are also used so that employees can work from home and have access to all the facilities that they would have from the intranet at work.

Benefits on the internet

Information on almost every subject imaginable

Powerful search engines

Ability to do research from your home versus research libraries.

Information at various levels of study. Everything from scholarly articles to ones directed at children.

Benefits on the internet (cont)

Message boards where people can discuss ideas on any topic. Ability to get wide range of opinions. People can find others that have a similar interest in whatever they are interested in.

The internet provides the ability of emails. Free mail service to anyone in the country

Platform for products like SKYPE, which allow for holding a video conference with anyone in the world who also has access.

News, of all kinds is available almost instantaneously. Commentary, on that news, from every conceivable viewpoint is also available

the difference between the internet and the WWW

The internet is often defined as being a network of computer networks connected together by routers, and can be thought of as the cabling and connectors as well as the computer themselves.

The worldwide web is just one aspect of the internet, along with e-mail, file transfer and so on. It is a collection of hypertext documents, menus etc., often in html format. It is an information retrieval system that needs a web browser to access it.

The disadvantages of mobile networks

There are costs involved in setting up the equipment and training required to make use of mobile devices

Mobile IT devices can expose valuable data to unauthorised people if the proper precautions are not taken to ensure that the devices, and the data they can access, are kept safe.

Web conferencing

-Web conferencing enables the real-time sharing of computer screens, individual applications or web-based content among two or more computers or mobile devices.

-Web conferencing platforms may be internet based and delivered via software as a service (SaaS) or may run within enterprise data centers in an on-premises delivery model.

-Most web conferencing platforms support voice and video conferencing. Some platforms also support screen annotation, polling, speaker management, chat discussions, shared whiteboards and much more. Platforms that support video conferencing may also integrate with room-based video conferencing systems.

Web conferencing (cont)

-Web conferencing allows users to conduct business meetings and seminars, lead presentations, provide online education and offer direct customer support via remote keyboard mouse control. Control of the session can be passed among users, so any attendee can act as the main presenter.

-Most web conferencing platforms are accessible via a web browser, but downloading and installing a client is often required to take advantage of all features, such as voice and video conferencing and content sharing.

Network

Two or more computers connected together to enable sharing of computing power or storage facilities. Computers in a network can communicate with each other. A computer needs a network interface card to connect to a network.

Advantages of networking computers

Sharing of hardware peripheral devices such as laser printers, scanners, etc. amongst all the users

Software can be shared amongst different users

Advantages of networking computers (cont)

Data files can be shared amongst all the users without any need for duplication.

Messages can be sent between users on the same site with LANs or worldwide with WANs

Central maintenance and support. Any software upgrades need only be added to the file server instead of updating many stand-alone machines. Network software can be purchased which is often cheaper than buying an individual package for each machine.

Users may use any spare machine

Values in databases are always up to date.

Network administrator can monitor users' activities when they are logged onto the network.

Advantages and disadvantages of extranets

The ability to exchange large volumes of data using electronic data interchange	Disadvantage
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Advantages and disadvantages of extranets (cont)

Sharing product data or catalogs with business partners	Disadvantages are expensive implementation and maintenance if hosted internally and the potential for compromised sensitive or proprietary information. Alternately, it may be hosted by an application service provider.
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Sharing services such as online banking applications among affiliated banks

The internet: Usenet newsgroup (News services)

Usenet: a worldwide bulletin board system that can be accessed through the Internet or online services. It contains newsgroups on many different topics.

drawbacks on the internet

There is a lot of wrong information on the internet. Anyone can post anything, and much of it is garbage.

There are predators that hang out on the internet waiting to get unsuspecting people in dangerous situations.

drawbacks on the internet (cont)

Some people are getting addicted to the internet and thus causing problems with their interactions of friends and loved ones.

Pornography that can get in the hands of young children too easily.

Easy to waste a lot of time on the internet. You can start surfing, and then realize far more time has passed than you realized. Internet and television together of added to the more sedentary lifestyles of people which further exacerbates the obesity problem

Internet has a lot of "cheater" sites. People can buy essays and pass them off as their own far more easily than they used to be able to do.

There are a lot of unscrupulous businesses that have sprung up on the internet to take advantage of people.

Hackers can create viruses that can get into your personal computer and ruin valuable data.

Hackers can use the internet for identity theft.

It can be quite depressing to be on the internet and realize just how uneducated so many people have become in today's society.

Video conferencing

Video-conferencing is a system that allows people to have conversations and meetings with other people in different locations, but without leaving their office.

Video conferencing (cont)

A video-conference involves people sitting in front of a camera and a microphone, whilst watching other people of a screen and listening to them through loudspeakers.

Note: The camera is usually TV quality - must be better than a standard webcam

Steps to set up video/ web conferencing

- An organizer sends out e-mail or text message invitations to join the Web conference on a certain day and certain time.
- The invitation includes a link to the conference and a password or access code to enter. If the invitation is accepted, a reminder is programmed into the attendee's calendar application.**
- Once all the attendees log on to the conference or seminar, a single presenter controls the meeting. As presenter, you can share your desktop and other documents and applications. You can also hand control over to the other attendees and let them present.

Local area network (LAN)

Local Area Network: a set of links that connect together computers that are geographically close.

Local area network (LAN) (cont)

Characteristics of LAN:

- The workstations are usually microcomputers.
- The communication between workstations is usually along cables like wire cables, fibre optic cables, or via radio signals.**
- A File Server is a dedicated computer that runs the software needed by the network and stores the files that users have created. It sets up control access to folders belonging to different users and departments. A file server is usually set up to control 'who can log on' to the network system, and to control 'who has access to which resources'.
- A Proxy server might control which users have access to the internet and when.**
- Terminals are individual workstations that give access to the network. Using a terminal give access to the network's software and files.

Local area network (LAN) (cont)

-If a group of terminals share use of a printer then the system needs a Print Server. If two or more documents are sent to the printer at the same time the print server will put them into a queue. Users can then carry on with other work whilst waiting for the document to be printed. A Printer Server controls who can print to a variety of different printers available on the network.

disadvantages of networking computers

A fault with the server will prevent the whole network from working.

Network fault could lead to loss of resources.

User work dependent upon network.

System open to hackers.

Decisions tend to become centralised.

Could become inefficient

Could degrade in performance.

Resources could be located too far from users.

A loss in the ability to transmit data for even a short time can cause havoc, with tasks having to be performed manually and can cause loss of data.

If a virus infected one computer, then it might spread to all other computers.

disadvantages of networking computers (cont)

Security measures are needed to restrict access to the network especially in a WAN where computers are connected to the public telephone system.

Intranet

An intranet is a network based on TCP/IP protocols (an internet) belonging to an organization, usually a corporation, accessible only by the organization's members, employees, or others with authorization. An intranet's Web sites look and act just like any other Web sites, but the firewall surrounding an intranet fends off unauthorized access.

Difference between intranets and extranets

An intranet is a network where employees can create content, communicate, collaborate, get stuff done, and develop the company culture.	An extranet is like an intranet, but also provides controlled access to authorized customers, vendors, partners, or others outside the company.
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The internet: Instant messaging (IM)

Instant messaging is the exchange of text messages between two or more people logged into a particular instant messaging (IM) services

It is an interactive service, as people can reply immediately to others logged into the same system

It requires a user name (often an e-mail address) and a password.

When someone logs on for the first time they have to make a list of people they want to contact – these individuals need to agree to be contacts.

Then they select the individual they want to talk to and send a message.

If the contact happens to be online at the same time they can reply, leading to a conversation.

It is better than e-mail because messages are sent immediately, whereas e-mail messages can be stored on a mail server for seconds or even minutes.

However, the screen display is very basic and does not contain all the options available with e-mail

World wide web (WWW)

The World Wide Web is a special part of the Internet that allows people to view information stored on participating computers

It is an easy-to-use, graphical source of information that has opened the Internet to millions of people interested in finding out information

World wide web (WWW) (cont)

It consists of documents called pages that contain information on a particular topic, and links to other Web pages, which may be stored on other computers in different countries.

Mobile tech can use:

wireless fidelity (Wi-Fi) - a type of wireless local area network technology

Bluetooth - connects mobile devices wirelessly

'third generation' (3G), 'fourth generation' (4G), global system for mobile communications (GSM) and general packet radio service (GPRS) data services - data networking services for mobile phones

dial-up services - data networking services using modems and telephone lines

virtual private networks - secure access to a private network

Video conferencing: hardware

Video camera

Monitor

Microphone

Loudspeakers

High-speed network / Internet connection

the use of networks in video and web conferencing

Network components that are mainly use for video and web conferencing are such as:

-Integrated Services Digital Network (ISDN)

-LAN

-WAN

the use of networks in video and web conferencing (cont)

- VPN, 802.11 a/b/g/n (wireless)
- Asynchronous Digital Subscriber Lines (ADSL)
- Synchronous Digital Subscriber Lines (SDSL)
- 3G/4G mobile networks

Wide area network (WAN)

Wide Area Networks: a set of links that connect together geographically remote computers.

-WANs span broad geographical distances, ranging from several miles to across the world. Carriers such as BT typically determine transmission rates and interconnection between lines. The communication links may consist of a variety of cable, satellite and microwave technologies. There are two options for communication over a WAN:

-Dial-up networking. The user connects to the WAN using the standard telephone network (public lines). The dial-up line is only connected while in use.

-Dedicated or leased lines. The user's computer is permanently connected to the WAN. Therefore, no call set up and call disconnection is involved.

Hardware needed to connect to a Network

- **Network interface card/ wireless network card when connected to a cable/ by being connected to a wireless antenna enables a computer to communicate/ send / receive messages in a network.**

-**Hub/switch**

-**File/print server**

Software needed to connect to a Network

Network operating system to enable communication with other network users, sharing of files, software and hardware.

Network versions of application software installed at the server for easy maintenance and upgrade.

CHARACTERISTICS OF LAN VS WAN

LAN	WAN
Small geographical range	Large geographical range
Low cost installation	It interconnect multiple LAN
Run multiple devices to share a transmission medium	Data transmission error is higher than LAN
High speed transmission rates	Low bandwidth due to wider area to cover
Maintenance cost is low	Set up cost are high
Better communication quality	

The internet

The internet is a special type of **WAN**.

It is a network of computer networks

It is worldwide and, unlike many other types of networks, is publicly accessible to anybody with an internet connection

The most common way of connecting is through a broadband modem or router, which connects to the public telephone line and via this an internet service provider (isp) is connected

All the computers on the internet can be classified as either clients or servers.

The servers are those that provide services, for example mail servers or web servers.

The client computer is able to access the worldwide web and ask for information, which the web server provides

The internet: Voice over ip (voip)

Wans are used with telephone call centres, particularly virtual call centres.

A call server distributes a call to an available operator connected to the wan.

Voice over ip (VOIP) is employed to transfer calls from the server to the operator.

The software used in any type of call centre is called the computer telephony integration (CTI) software.

It has features such as the operator being able to identify who is calling.

The internet: Voice over ip (voip) (cont)

In addition, the server can identify the number being dialed by the caller and direct it towards the relevant operator together with any data held on the system about the caller, for example account details in the case of a bank's call centre

Mobile technology

Mobile technology is exactly what the name implies - technology that is portable

Examples of mobile IT devices include:

laptop, tablets and netbook computers

'smart phones'

global positioning system (GPS) devices

wireless debit/credit card payment terminals

the advantages of mobile networks

Mobile computing can improve the service you offer your customers.

Powerful solutions can link you directly into the office network while working off site.

The growth of cloud computing has also impacted positively on the use of mobile devices, supporting more flexible working practices by providing services over the internet.

Video conferencing is popular in business bcs::

-No travel costs

-No time wasted travelling to other cities / countries

Video conferencing is popular in business bcs:: (cont)

-Can organise meetings at short notice

INTEGRATED SERVICES DIGITAL NETWORK (ISDN)

When an ISDN line is used, a modem is not required as the line is itself digital. Instead, a network termination device and a terminal adapter are required. However, because most users are familiar with the term modem, the manufacturers of these devices often refer to them as digital modems. ISDN is offered by local telephone companies. There are different kinds of ISDN connection of varying bandwidth. The original version of ISDN employs baseband transmission. Another version, called B-ISDN, uses broadband transmission, and is able to support transmission rates of 1.5 Mbps. B-ISDN requires fibre optic cables and is not widely available.