

Computer Network

✓ Networking Concept

- A network is a group of interconnected computer system by means of shared communication link.
- A computer network is nothing but two or more computers and devices like printers connected together.
- Therefore a network requires two or more individual systems with something (data or information) to share.

✓ Objectives of Networks

To provide the sharing of resources such as information ... peripherals.

To provide inter process communication such as among users and processors.

To improve the reliability of network through backup and redundancy if one processor breaks down another processor in the network can take it place.

To provide distribution of processing function.

To provide centralize management and allocation of network resources

To provide compatibility of dissimilar equipment and software.

To provide network users with maximum performance and minimum cost.

✓ Primary reasons for using networking

- ⇒ sharing files.
- ⇒ sharing printer and other devices.
- ⇒ Enabling common administration and security.
- ⇒ Supporting networks application such as electronic mail and database services.
- ⇒

✓ Types of Network

There are three types of networks

- ⇒ LAN
- ⇒ MAN
- ⇒ WAN

✓ **LAN**

LAN known as Local Area Network.

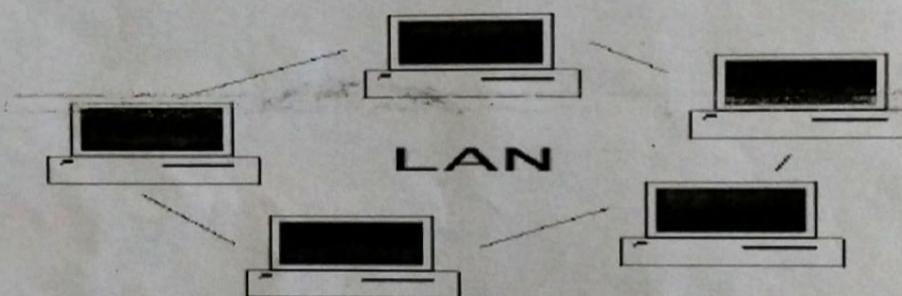
In LAN computers are connected within limited geographical area. Like within building, campus or within organization.

LAN generally uses cabling.

Data transfer at very high speed in LAN.

LAN is very less expensive technology.

Geographical area of LAN is within the range of 10 kilometers.



✓ **MAN**

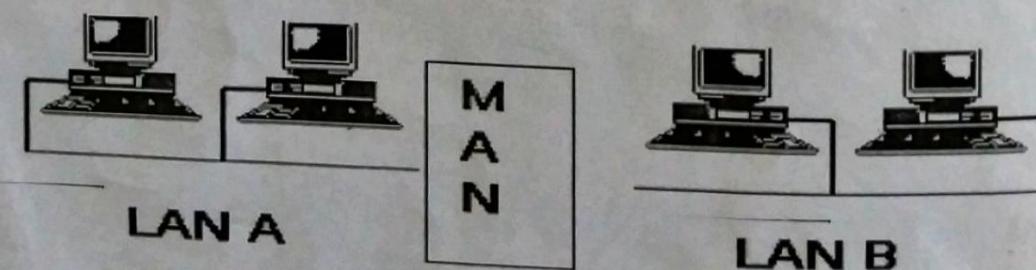
MAN known as Metropolitan Area Network.

In MAN computers are connected within city. Range from 10 kilometers to 100 kilometers.

Cable Net is the example of MAN

MAN is comparatively more expensive than LAN.

Data transfer rate in MAN is slow in comparison of LAN.

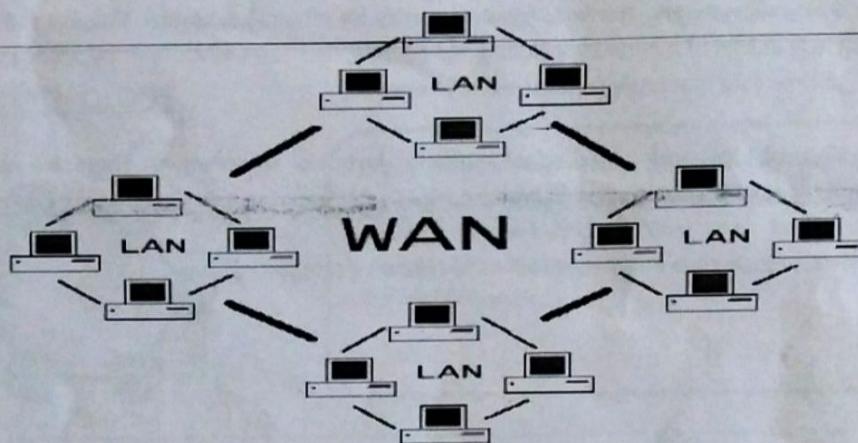


✓ WAN

WAN means Wide Area Network.

WAN is nothing but interconnected LAN.

Wide Area Network exists in unlimited geographical area. WAN may be spread in city, country or continental.



WAN is more complex and there are more errors than LAN.

WAN is very expensive technology.

WAN is more sophisticated and complex than LAN.

There are 2 types of WAN

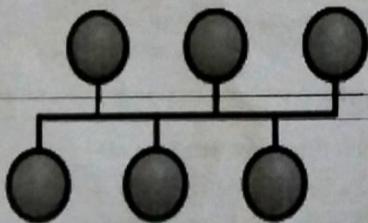
- Enterprise WAN: It will connect widely spread computer resources of the single organization.
Network of ICICI Bank is the example of Enterprise WAN
- Global WAN : It will connect networks of several organizations. Internet is the example of global WAN.

Network topology

❖ What is a network topology?

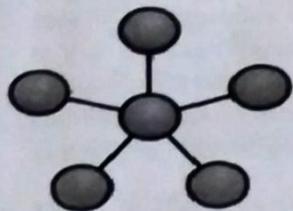
- In communication networks, a topology is a usually schematic description of the arrangement of a network, including its nodes and connecting lines. There are two ways of defining network geometry: the physical topology and the logical (or signal) topology.
 - Network topology is the layout pattern of interconnections of the various elements (links, nodes, etc.) of a computer or biological network. Network topologies may be physical or logical. Physical topology refers to the physical design of a network including the devices, location and cable installation. Logical topology refers to how data is actually transferred in a network
 - The physical topology of a network is the actual geometric layout of workstations. There are several common physical topologies, as described below.
 - Computer network topologies can be categorized in the following categories.
 - bus
 - star
 - ring
 - mesh
 - Tree.
- Hybrid networks are the complex networks, which can be built of two or more above mentioned topologies

✓ BUS TOPOLOGY



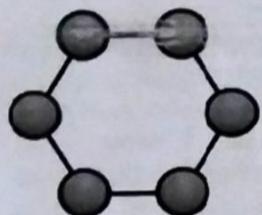
In bus topology each node is connected to a single cable. Each computer or server is connected to the single bus cable. A signal from the source travels in both directions to all machines connected on the bus cable until it finds the intended recipient. If the machine address does not match the intended address for the data, the machine ignores the data. Alternatively, if the data does match the machine address, the data is accepted. Since the bus topology consists of only one wire, it is rather inexpensive to implement when compared to other topologies. If the network cable breaks, the entire network will be down.

✓ STAR TOPOLOGY



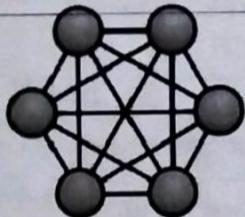
In local area networks with a star topology, each network host is connected to a central hub with a point-to-point connection. All traffic that traverses the network passes through the central hub. The hub acts as a signal repeater. The star topology is considered the easiest topology to design and implement. An advantage of the star topology is the simplicity of adding additional nodes. The primary disadvantage of the star topology is that the hub represents a single point of failure.

✓ RING TOPOLOGY



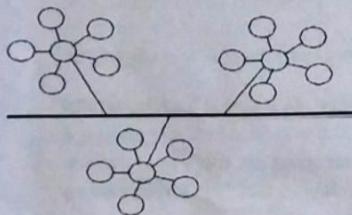
In ring Network, every computer or devices has two adjacent neighbors for communication. In a ring network, all the communication messages travel in the same directory whether clockwise or anti clockwise. Any damage of the cable of any cable or device can result in the breakdown of the whole network.

✓ MESH TOPOLOGY



The mesh network topology employs either of two schemes, called full mesh and partial mesh. In the full mesh topology, each workstation is connected directly to each of the others. In the partial mesh topology, some workstations are connected to all the others, and some are connected only to those other nodes with which they exchange the most data.

✓ TREE TOPOLOGY

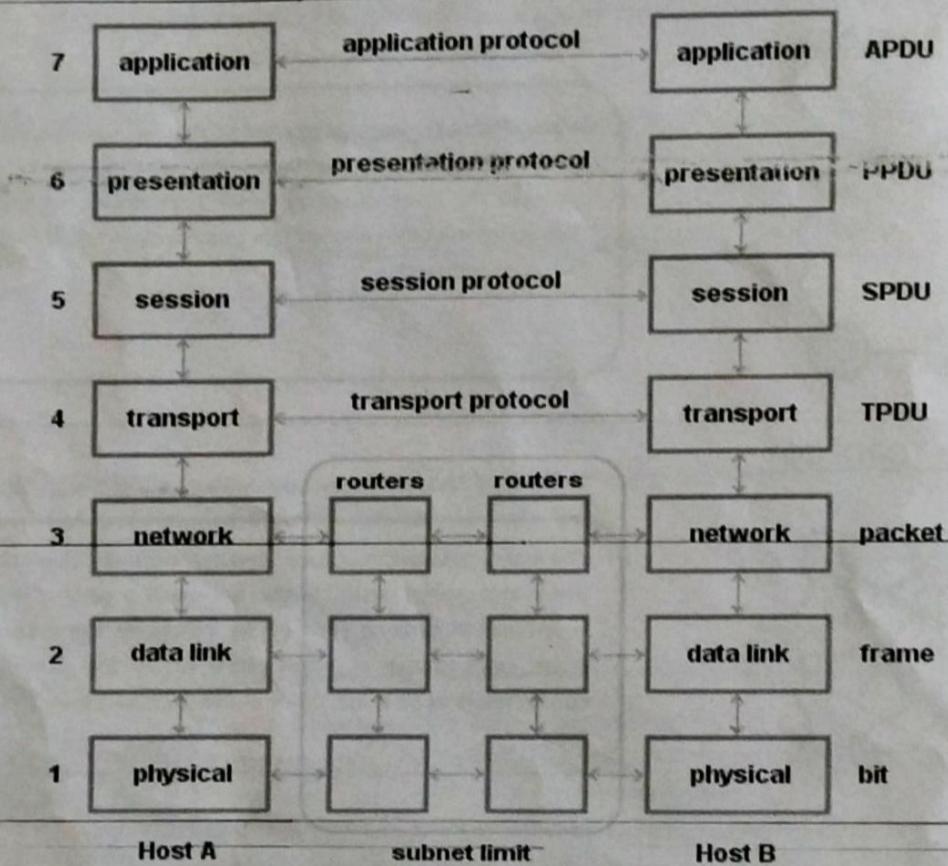


Tree topologies are combination of the two or more star topologies on a bus. Tree topologies integrate multiple star topologies together onto a bus. Only the hub devices can connect directly with the tree bus and each Hub functions as a root of a tree of the network devices. This bus/star/hybrid combination supports future expandability of the computer networks, much better than a bus or star.

OSI Reference Model

❖ What is OSI Reference Model

The Open Systems Interconnection model (OSI model) was a product of the Open Systems Interconnection effort at the International Organization for Standardization. It is a way of sub-dividing a communications system into smaller parts called layers. Similar communication functions are grouped into logical layers. A layer provides services to its upper layer while receiving services from the layer below.



OSI divides telecommunication into seven layers. The layers are in two groups. The upper four layers are used whenever a message passes from or to a user. The lower three layers are used when any message passes through the host computer. Messages intended for this computer pass to the upper layers. Messages destined for some other host are not passed up to the upper layers but are forwarded to another host. The seven layers are:

Layer 7: The application layer ...This is the layer at which communication partners are identified, quality of service is identified, user authentication and privacy are considered, and any constraints on data syntax are identified. (This layer is not the application itself, although some applications may perform application layer functions.)

Layer 6: The presentation layer ...This is a layer, usually part of an operating system, that converts incoming and outgoing data from one presentation format to another (for example, from a text stream into a popup window with the newly arrived text). Sometimes called the **syntax layer**.

Layer 5: The session layer ...This layer sets up, coordinates, and terminates conversations, exchanges, and dialogs between the applications at each end. It deals with session and connection coordination.

Layer 4: The transport layer ...This layer manages the end-to-end control (for example, determining whether all packets have arrived) and error-checking. It ensures complete data transfer.

Layer 3: The network layer ...This layer handles the routing of the data (sending it in the right direction to the right destination on outgoing transmissions and receiving incoming transmissions at the packet level). The network layer does routing and forwarding.

Layer 2: The data-link layer ...This layer provides synchronization for the physical level and does bit-stuffing for strings of 1's in excess of 5. It furnishes transmission protocol knowledge and management.

Layer 1: The physical layer ...This layer conveys the bit stream through the network at the electrical and mechanical level. It provides the hardware means of sending and receiving data on a carrier.

✓ TCP / IP

TCP/IP stands for Transmission Control Protocol / Internet Protocol.

TCP/IP handles message traffic from multiple sources and to multiple destinations at the same time.

You can download an internet mail messages and update web pages simultaneously (at a time).

It can also known as a protocol suite because it is not just one protocol, but it is actually a combination of many different protocols.

Which are works together to move data around a network.

TCP and IP ate the two primary protocols in this suite.

✓ TCP

TCP handles data integrity. It will make sure that the data reached to the destination without errors.

It is also responsible for disassembling and reassembling the data.

It divides large messages into smaller bits called segments.

It numbers each TCP segments to indicate its position in the sequence.

For example:

In order to send a message to a remote computer TCP might break it down into 10 segments.

And numbers those segments 1 of 10, 2 of 10, 3 of 10 10 of 10.

- On the other hand TCP reassembles each of the segments in order to when all of them are received.

✓ IP

IP is the protocol that controls how data moves around the internet.

After TCP divides a message into segments it stuffs each TCP segment into a packet called an IP datagram.

IP labels each IP datagram with the source and destination address of the packet.

Then IP sends the packet towards its destination.

Introduction to internet

❖ The Internet

The Internet has been described as "a loose collection of related networks" or as a "network of networks." Both of these descriptions are accurate, in a sense, but both fall short of describing fully what the Internet really is.

That is perhaps because it is very hard to exactly describe the Internet; it appears to be different things to different people. Internet is called network of networks because there are actually many different network systems readily accessible through the Internet. Each of these networks has its own roots, and each collectively helps to define the scope and breadth of the Internet.

The Internet is a "network of networks," meaning that many different networks operated by a multitude of organizations are connected together collectively to form the Internet. The Internet lets you communicate, share resources, and share data with people across the street or around the world. The biggest advantage of the Internet is that it is a tool providing access to vast (worldwide) quantities of information.

The Federal Networking Council (FNC) agreed that the following language reflects our definition of the term "Internet". "Internet" refers to the global information system that

is logically linked together by a globally unique address space based on the internet(IP) or its subsequent extension/follow-one

is able to support communications using the transmission control protocol/internet protocol(tcp/ip) suits or its subsequent extensions/follow-one, and/or other ip-compatible protocols. And

provides users or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure described herein

The Internet is sometimes called simply "the Net" in which users at any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users at other computers).

It was conceived by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1969 and was first known as the ARPANet.

The original aim was to create a network that would allow users of a research computer at one university to be able to "talk to" research computers at other universities.

A side benefit of ARPANet's design was that, because messages could be routed or rerouted in more than one direction, the network could continue to function even if parts of it were destroyed in the event of a military attack or other disaster.

The Original Internet

The backbone of the Internet was originally a series of high-speed links between major supercomputer sites and educational and research institutions within the U.S. and throughout the world.

A major part of it was the NFSNet, managed by the U.S. National Science Foundation. In 1995, large commercial Internet providers (ISPs), such as MCI, Sprint and UUNET, took responsibility for the Internet backbones and have increasingly enhanced their capacities.

Regional ISPs link into these backbones to provide lines for their subscribers, and smaller ISPs hook either directly into the national backbones or into the regional ISPs.

Around the world, each country has at least one backbone network that operates at very high speed and carries the bulk of the traffic. Other smaller Networks connect to that backbone.

The Internet, a global system of connected computers, was once available only to the government, academic, and research communities. Now the greatly publicized information superhighway is accessible to anyone with time, interest, and curiosity.

❖ Internet Service Provider

- An internet service provider (ISP) is an organization that provides internet accounts, whether dial-up, DSL, ISDN, cable, satellite or wireless.
- Thousands of ISPs exist in the United States, including dozen's of ISP's with dial-up access phone numbers throughout the country and many with phone numbers in regions.

For example: EarthLink (www.earthlink.com) has access phone numbers in all major U.S. cities, whereas Shoreham Internet (www.shoreham.com) has phone numbers in only central city.

- Large ISPs provide both dial-up and DSL or ISDN connections.

- In addition to connecting you to the internet, here are some other features that your internet account may provide.

E-Mail mailboxes: your account almost certainly comes with at least one e-mail mailbox. Many ISPs provide more than one mailbox, so that each of your family can read his or her mail separately.

Web Server Space: most internet accounts include a modest amount of disk space (10 MB) on a web server, so that you can make your own web pages accessible to the internet. If you need more space, you can usually buy more for a small monthly fee.

Domain hosting: if you want your own domain name, most ISPs can host your domain, so that e-mail to the domain lands in your mailbox and web addresses in your domain refer to pages that you store on your ISP's web server.

❖ Intranet

As the internet became more popular, organizations began offering internet-like services on their internal LAN's, and the intranet was born. An intranet is a private network (usually a LAN, but it may be larger) that uses TCP/IP and other internet standard protocols.

Because it uses TCP/IP, an intranet can support TCP/IP based protocols, such as HTTP (the protocol that web browsers use to talk to web servers), and SMTP and POP (the protocols that email client programs use to send and receive mail).

An intranet can run web servers, web clients, mail servers and mail clients - it can work like a small private network.

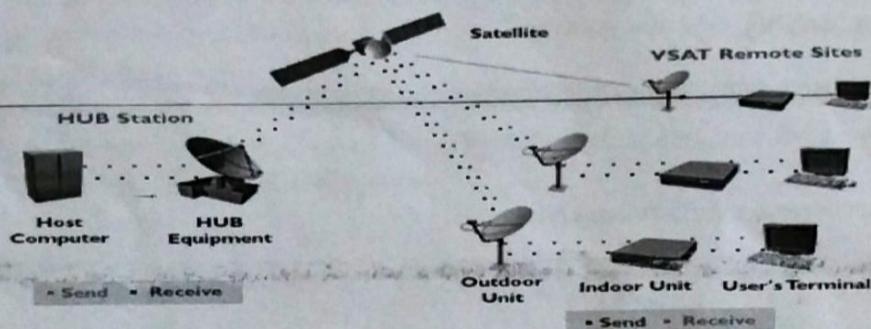
Like the internet, most intranets also carry lots of email traffic. All paper memos that used to send around large organizations to set up web sites and online discussion groups for their staff are invisible to the outside world.

Home networks do not usually turn into intranets because home users do not need to use their LAN for email and web pages within the home. The LAN is used primarily to share files, printers and the internet connection.

VSAT (very small aperture terminal)

❖ What is a VSAT?

A very small aperture terminal (VSAT) is a device - known as **an earth station** - that is used to receive satellite transmissions. The "very small" component of the VSAT acronym refers to the size of the VSAT dish antenna -typically about 2 to 4 feet (0.55-1.2 m) in diameter- that is mounted on a roof on a wall, or placed on the ground. This antenna, along with the attached low-noise blocker or LNB (which receives satellite signals) and the transmitter (which sends signals) make up the VSAT outdoor unit (ODU), one of the two components of a VSAT earth station.



The second component of VSAT earth station is the indoor unit (IDU). The indoor unit is a small desktop box or PC that contains receiver and transmitter boards and an interface to communicate with the user's existing in-house equipment - LANs, servers, PCs, TVs, kiosks, etc. The indoor unit is connected to the outdoor unit with a pair of cables.

❖ How does a VSAT network work?

A VSAT network has three components:

- A central hub (also called a master earth station)
- The satellite
- A virtually unlimited number of VSAT earth stations in various locations - across a country or continent

Content originates at the hub, which features a very large -15 to 36-foot (4.5 -11m)- antenna. The hub controls the network through a network management system (NMS) server, which allows a network operator to monitor and control all components of the network. The NMS operator can view, modify and download individual configuration information to the individual VSATs.

Outbound information (from the hub to the VSATs) is sent up to the communications satellite's transponder, which receives it, amplifies it and beams it back to earth for reception by the remote VSATs. The VSATs at the remote locations send information inbound (from the VSATs to the hub) via the same satellite transponder to the hub station. This arrangement, where all network communication passes through the network's hub processor, is called a "star" configuration, with the hub station at the center of the star. One major advantage of this configuration is that there is virtually no limit on the number of remote VSATs that can be connected the hub. "Mesh" configurations also allow for direct communication between VSATs

❖ URL (Uniform Resource Locator):

- A URL identifies particular internet resources. For example a web page, a gopher server, a library catalog, an image, or a text files.
- Every resource available via the World Wide Web has a unique URL.
- URLs consist of letters, numbers, and punctuation. The basic structure of a URL is hierarchical and it moves from left to right.

Protocol://servername.domainname.topleveldomain:port/directory/file

Examples are:

http://www.kscinfoserve.com/staff/index.html

gopher://gopher.state.edu/

ftp://ftp.xyz.com/

- Similar to an e-mail address, a URL is read like a sentence. For example, the URL http://www.microsoft.com is read as "http colon slash slash www dot Microsoft dot com".

- The URL will tell a host of information about the resources. For example ftp://ftp.ksccollege.com/shareware/animation.exe tells us the following

- the protocol used to access and transmit the resources is FTP.
- the top level domain is for commercial organization.
- the resource in the directory labeled "shareware" and is a software program called "animation.exe"

- Each internet application is associated with a unique port number. For example the port number associated with web resources is 80 by default.

Portal

- (1) A *Web portal* or *public portal* refers to a Web site or service that offers a broad array of resources and services, such as e-mail, forums, search engines, and online shopping malls. The first Web portals were online services, such as AOL, that provided access to the Web, but by now most of the traditional search engines have transformed themselves into Web portals to attract and keep a larger audience.
- (2) An *enterprise portal* is a Web-based interface for users of enterprise applications. Enterprise portals also provide access to enterprise information such as corporate databases, applications (including Web applications), and systems

❖ Types of portal

- Personal portals
- News portals
- Government web portals
- Corporate web portals
- Stock portals
- Health & Medical Web Portal
- Search portals
- Tender's portals
- Hosted web portals
- Domain-specific portals
- Engineering aspects

❖ Telnet

Telnet was developed in 1969 and standardized as Internet Engineering Task Force (IETF) Internet Standard STD 8, one of the first Internet standards.

Telnet, which stands for Telecommunications Network, is a protocol that provides a way for users (or clients) to connect to multiuser computers (or servers) on the Internet, whether in the next building or across the other side of the world. In most cases, users use Telnet to communicate with a remote login service.

Telnet program runs on your computer and connects your PC to a server on the network. You can then enter commands through the Telnet program and they will be executed as if you were entering them directly on the server console. This enables you to control the server and communicate with other servers on the network. To start a Telnet session, you must log in to a server by entering a valid username and password. Telnet is a common way to remotely control Web servers. Telnet is a network protocol used on the Internet or local area networks to provide a bidirectional interactive text-oriented communication facility using a virtual terminal connection. User data is interspersed in-band with Telnet control information in an 8-bit byte oriented data connection over the Transmission Control Protocol.

❖ FTP- File Transfer Protocol

Definition:

FTP means FILE TRANSFER PROTOCOL allows you to transfer files between two computers on the Internet. FTP is a simple network protocol based on Internet Protocol and also a term used when referring to the process of copying files when using FTP technology.

A protocol used for transferring files between machines on networks such as LANs and the Internet. In a typical FTP session, a client logs onto an FTP server, views directory listings, and downloads files from the server. FTP sessions can either be anonymous or require authentication for access. To transfer files with FTP, you use a program often called the "client". The FTP client program initiates a connection to a remote computer running FTP "server" software. After the connection is established, the client can choose to send and/or receive copies of files, singly or in groups. To connect to an FTP server, a client requires a **username and password** as set by the administrator of the server.

In any FTP interface, clients identify the FTP server either by its IP address (such as 192.168.0.1) or by its host name (such as ftp.about.com). FTP supports two modes of data transfer: plain text (ASCII), and binary. You set the mode in the FTP client. A common error when using FTP is attempting to transfer a binary file (such as a program or music file) while in text mode, causing the transferred file to be unusable.

❖ Electronic Mail (Email)

Electronic mail, also known as **email** or **e-mail**, is a method of exchanging digital messages from an author to one or more recipients. Modern email operates across the Internet or other computer networks. Some early email systems required that the author and the recipient both be online at the same time, in common with instant messaging. Today's email systems are based on a store-and-forward model. Email servers accept, forward, deliver and store messages. Neither the users nor their computers are required to be online simultaneously; they need connect only briefly, typically to an email server, for as long as it takes to send or receive messages. The header of an email includes the From, To, Cc and Subject- fields.

From- The email address of message sender.

To - The email address of the recipient of the message.

Date- The date and time the message was sent, according to the sender's computer.

Cc - cc means carbon copy. Cc used for same message send to many user then users e-mail address write in cc.e-mail address separated by semicolon(;) all users e-mail address are display on message header at message reading time.

Bcc - bcc means blank carbon copy. Bcc used for the same message send to many users then User e-mail address writes in bcc. E-mail address separated by semicolon(;) all users e-mail address are not display on message header at message reading time.

Subject- the subject of the message obviously in this field.

Message -Id The unique id that identified this message.

The part below the header of the email is called the body, and contains the message itself.

Email Addresses

An e-mail address typically has two main parts:

abc@yahoo.com

The first field is the user name (abc) which refers to the recipient's mailbox. Then there is the sign (@) which is the same in every email address. Then comes the host name (yahoo.com), which can also be called the domain name. This refers to the mail server address, most usually having a individual IP address. The final part of an email address includes the top-level domain (TLD). For the above address this is 'com', which is for commercial sites based in the UK.

❖ search engines

Search engines are programs that search documents for specified keywords and returns 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 etc! Search that enable users to search for documents on the World Wide Web.

Types of Search Engines

- Crawler-Based Search Engines
- Directories
- Hybrid Search Engines
- Meta Search Engines
- Specialty Search Engines
- Crawler-Based Search Engines

Crawler-based search engines, such as Google, create their listings automatically. They "crawl" or "spider" the web, then people search through what they have found. If you change your web pages, crawler-based search engines eventually find these changes, and that can affect how you are listed. Page titles, body copy and other elements all play a role.

Examples of crawler-based search engines are:

- Google (www.google.com)
- Ask Jeeves (www.ask.com)

• Directories

A 'directory' uses human editors who decide what category the site belongs to; they place websites within specific categories in the 'directories' database. The human editors comprehensively check the website and rank it, based on the information they find, using a predefined set of rules.

There are two major directories at the time of writing:

- Yahoo Directory (www.yahoo.com)
- Open Directory (www.dmoz.org)

• Hybrid Search Engines

Hybrid search engines use a combination of both crawler-based results and directory results. More and more search engines these days are moving to a hybrid-based model. Examples of hybrid search engines are:

Examples of Hybrid search engines are:

- Yahoo (www.yahoo.com)
- Google (www.google.com)

• Meta Search Engines

Meta search engines take the results from all the other search engines results, and combine them into one large listing.

• Specialty Search Engines

Specialty search engines have been developed to cater for the demands of niche areas. There are many specialty search engines etc,

Example

- Shopping

Flipcart.com

Olex.com

Yahoo Shopping (www.shopping.yahoo.com)

- Freeware & Shareware Software Search

CNET Download.com (www.download.com)

❖ What is The Web (World Wide Web)?

Researcher Tim Berners-Lee led the development of the original World Wide Web in the late 1980s and early 1990s. He helped build prototypes of the above Web technologies and coined the term "WWW." Web sites and Web browsing exploded in popularity during the mid-1990s.

The term WWW refers to the World Wide Web or simply the Web. The World Wide Web consists of all the public Web sites connected to the Internet worldwide, including the client devices (such as computers and cell phones) that access Web content. The WWW is just one of many applications of the Internet and computer networks.

The World Web is based on these technologies:

- HTML - Hypertext Markup Language
- HTTP - Hypertext Transfer Protocol
- Web servers and Web browsers

The World Wide Web, or simply Web, is a way of accessing information over the medium of the Internet. It is an information-sharing model that is built on top of the Internet. The Web uses the HTTP protocol, only one of the languages spoken over the Internet, to transmit data. Web services, which use HTTP to allow applications to communicate in order to exchange business logic, use the Web to share information. The Web also utilizes browsers, such as Internet Explorer or Firefox, to access Web documents called Web pages that are linked to each other via hyperlinks. Web documents also contain graphics, sounds, text and video.

❖ Remote login

The remote access enables users on one computer to see and interact with another computer. Setting up remote desktop support involves configuring software on both the host (local computer controlling the connection) and target (remote computer being accessed). When connected, this software opens a window on the host system containing a view of the target's desktop.

❖ E-Governance

The word "electronic" in the term e-Governance implies technology driven governance. E-Governance is the application of Information and Communication Technology (ICT) for delivering government services, exchange of information communication transactions.

E-Governance provide services between **Government-to-Citizens (G2C)**, Government-to-Business (G2B), Government-to-Government (G2G).

Through the e-Governance, the government services will be made available to the citizens in a transparent manner. The three main target groups that can be distinguished in governance concepts are (1) Government (2). citizens and (3).businesses/interest groups.

In e-Governance there are no distinct boundaries. Generally four basic models are available as follows

- (1) Government to Customer (Citizen),
- (2) Government to Employees,
- (3) Government to Government
- (4) Government to Business.

New information and communication technologies can make a significant contribution to the achievement of good governance goals. This 'e-governance' can make governance more efficient and more effective, and bring other benefits too. This paper outlines the three main contributions of e-governance: improving government processes (e-administration); connecting citizens (e-citizens and e-services); and building external interactions (e-society).

❖ E-Commerce and E-Business

Originally, electronic commerce was identified as the facilitation of commercial transactions electronically, using technology such as Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT). These were both introduced in the late 1970s, allowing businesses to send commercial documents like purchase orders or invoices electronically. The growth and acceptance of credit cards, automated teller machines (ATM) and telephone banking in the 1980s were also forms of electronic commerce. Another form of e-commerce was the airline reservation system typified by Sabre in the USA and Travicom in the UK. Beginning in the 1990s, electronic commerce would include enterprise resource planning systems (ERP), data mining and data warehousing.

Electronic commerce, commonly known as e-commerce or e-comm, is the buying and selling of products or services over electronic systems such as the Internet and other computer networks. Electronic commerce draws on such technologies as electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems.

Modern electronic commerce typically uses the World Wide Web at least at one point in the transaction's life-cycle, although it may encompass a wider range of technologies such as e-mail, mobile devices and telephones as well.

Electronic commerce is generally considered to be the sales aspect of e-business. It also consists of the exchange of data to facilitate the financing and payment aspects of business transactions.

Electronic business, commonly referred to as "E-business" or "e-business", is sometimes used interchangeable with E-commerce. E-commerce constitutes the narrower definition of buying, selling, transferring or exchange of products and services, between businesses, groups and/or individuals using the internet, and intranets. It is an essential activity of business today. E-business covers a broader definition and includes e-commerce, customer relations management (CRM), business partnerships, "e-learning and conducting electronic transactions within an organization".

The term "e-business" was coined by IBM's marketing and Internet teams in 1996. Electronic business methods enable companies to link their internal and external data processing systems more efficiently and flexibly, to work more closely with suppliers and partners, and to better satisfy the needs and expectations of their customers. In practice, e-business is more than just e-commerce. While e-business refers to more strategic focus with an emphasis on the functions that occur using electronic capabilities, e-commerce is a subset of an overall ebusiness strategy. E-commerce seeks to add revenue streams using the World Wide Web or the Internet to build and enhance relationships with clients and partners and to improve efficiency using the Empty Vessel strategy. This article provides insufficient context for those unfamiliar with the subject. Please help improve the article with a good introductory style. (May 2011). Often, e-commerce involves the application of knowledge management systems. E-business involves business processes spanning the entire value chain: electronic purchasing and supply chain management, processing orders electronically, handling customer service, and cooperating with business partners. Special technical standards for e-business facilitate the exchange of data between companies. Ebusiness software solutions allow the integration of intra and inter firm business processes. E-business can be conducted using the Web, the Internet, intranets, extranets, or some combination of these. Basically, electronic commerce (EC) is the process of buying, transferring, or exchanging products, services, and/or information via computer networks, including the internet. EC can also be beneficial from many perspectives including business process, service, learning, collaborative, community. EC is often confused with e-business.

Models

- E-shops
- E-commerce
- E-procurement
- E-malls
- E-auctions