**INTRODUCTION TO COMPUTER NETWWORKS**

**Computer network**

It is a system containing combinations of computers, ,printers, terminals ,audio or visual display devices ,or telephones interconnected by telecommunication equipment or cables

Also can be two or more computers connected to a cable a wire or a space ( any wireless connection) which resources is shared.

Network can be expanded for types of uses

They are used to transmit or receive information.

**Reasons for networking**

**S**haring of technology resources e.g printers and system

Sharing of data .Enable virtual teams to share data efficiently.

To have distributed data =a client server system must be stored on the server where client get distributed data, eg google

Marketing output -eg youtube, ads areused to market companies products.

**Types of network**

**They are classified on what clients want**

Examples

* LAN-Local Area Network

Within a building or organization, privately owned.

* WAN-Wide Area Network

Can be private or public and covers wider geographical area.

* WLAN-Wireless Local Area Network
* PAN-Personal Area Network

Close distance example phone and a laptop connection

* SAN-Storage Area Network
* GAN-Global Area Network
* MAN-Metropolitan Area Network

Private or public and it covers moderate area

* CAN-Collar Area Network
* DAN-Desk Area Network
* VPN-Virtual Area Network
* Distinction between LAN, WAN, MAN

|  |  |  |  |
| --- | --- | --- | --- |
| Parametres | LAN | WAN | MAN |
| Ownership of network | private | Private or public | Private or public |
| Geographical area covered | small | Very small | moderate |
| Design and maintenance | easy | Not easy | Not easy |
| Communication medium | Coaxial cable | PSTN or satellite links | Coaxial cables, PSTN, optical fibres, cables, wireless |
| Bandwidth | Low | high | moderate |
| Data rate (speed) | high | low | moderate |

**Network Classification by Their Component Rule**

Local area network. Network within a building

Personal area network. Within few meters around people

One area network.

Metropolitan area network

Classified into 2:

* **Peer to peer network** ;

When 2 devices are connected directly.

There serve based (involves many cables- computers connected to one computer) and P2P network(Computers directly connected to each other)

Characteristics

* Each computer responsible for making its own resource available to other computer on the network.
* Each computer responsible fo rsetting up and maintaining its own security .
* Each computer can function as both client and server
* It is useful for small networking containing less than 10 computers on single LAN
* Also each computer is responsible for accessing the required network resources from peer to peer relationship.
* They don’t have central system
* Peer networks are amplified into home group

Advantages

* Use less expensive computer hardware serve , routers, switches are not necessary
* Easy to administer – every computer is responsible for its own security
* No NOS required
* More built in redundancy -has a backup
* Easy set up and low cost

Disadvantages

* Not very secure
* No central unit for storage
* Hard to maintain version control
* Additional load on computer is required.
* Client server network;
* In client-server network relationships, certain computer act as server and other act as a clients. A server is simply a computer that avail the network resources and provide services to other computers when they request it.

Someone getting information from server.

Available networks are centrally managed and hosted and then accessed by client.

It is defined by presence of servers on network that provide security and administration of network

Advantages

* Very secure
* Better performance
* Centralized backup
* Very reliable

Disadvantages

* Requires professional administration
* More hardware intensive
* More software intensive
* Extensive dedicated software

Types of servers

* File server

It provides service for storing, retrieving and moving data.

* Print server

Used for controlling and managing printing on network

* Application server

It acts as a host for software and applications.

* Message server

Used to coordinate the interaction between users, documents and applications

* Data server

It is a type of application server

**Application of Computer Network**

* Sharing of resources
* Sharing of expensive software’s data base
* Sharing of information
* Exchange of data and information among users
* Communication from one computer to another

**Components of a computer Network**

* 2/more computers
* Cables
* A network switch interfacing card on each computer
* Switches
* Operating system

**Network benefits**

Categorized into;

* Sharing
* Connectivity

**Sharing resources**

**TYPES;**

Hardware - a network allows users to share many hardware device

Software - sharing software reduces the cost of software installation, saves space on hard disk

Other benefits of Computer Network

Increased speed

Reduced cost

Improved security

Electronic mail

Flexible access

**Disadvantages of computer networks**

High cost to install

Time consuming

Failure of server

Cable faults

**Point to Point connection-**communications connection between 2 communication endpoint

**Broad over power lines-**provide internet access over ordinary power lines

**Shared channel network-**access to information by more than one person through more than one device at the same time/different times.

**Switching systems-**collection of switching elements

**Internet devices**

* Router
* Fibre optics
* Communicating vehicles
* Internet of things