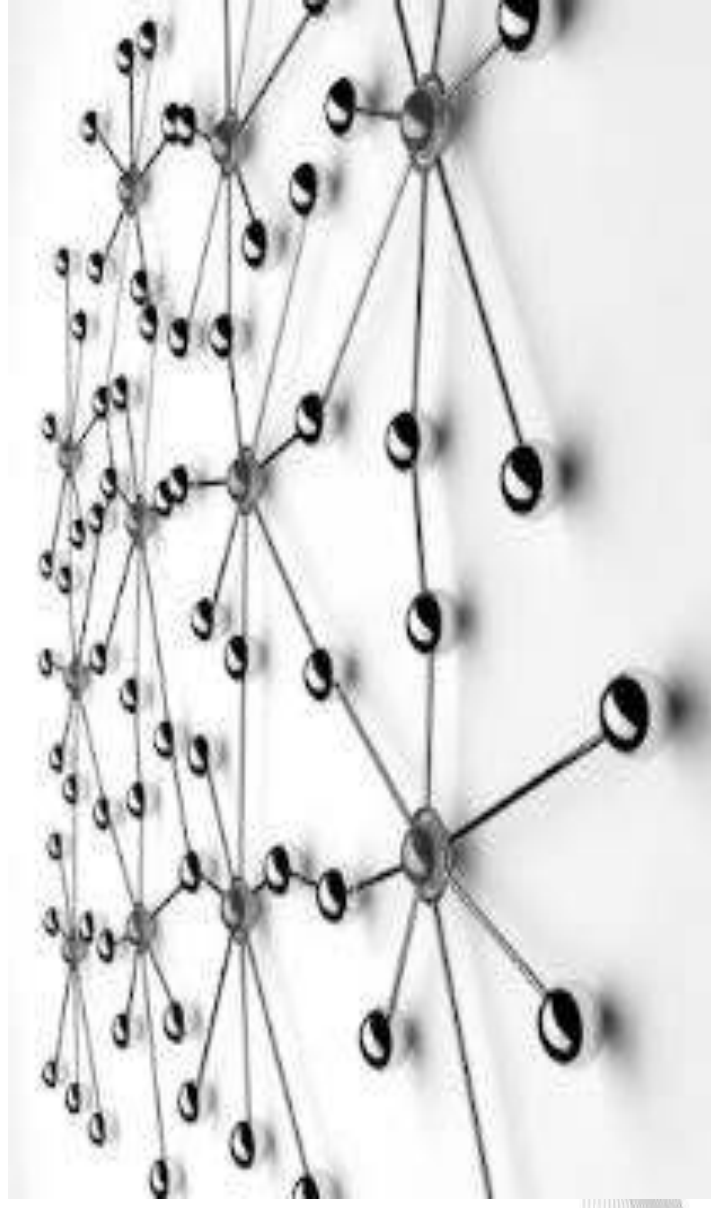


Network



Agenda

- What is Network?
- Importance of Network
- Types of Network

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What is Network???

A group of two or more computer systems linked together.

A computer network is

- a group of computer systems + other computing devices
- linked together through communication channels
- to facilitate communication and resource-sharing

Networks are Used to

Facilitate communication via email, video conferencing, instant messaging, etc.

Enable multiple users to share a single hardware device like a printer or scanner

Enable file sharing across the network

Allow for the sharing of software or operating programs on remote systems

Make information easier to access and maintain among network users

Types of Network

Local Area Networks(LAN)

Wide Area Network (WAN)

Short Range Network (Bluetooth)

Metropolitan Area Networks (MAN)

Virtual Private Network (VPN)

Internetworks

Internet Backbone

Storage Area Network (SAN)

Local Area Networks (LAN)

Spans a relatively small area

Most LANs are confined to a single building or group of buildings

Each *node* (individual computer) in a LAN has its own CPU with which it executes programs, but it also is able to access data and devices anywhere on the LAN.

Many users can share expensive devices (E.g. laser printer), data and can also use the LAN to communicate with each other (E.g. e-mail or Chatting)

Transmits data at very fast rates, much faster than a telephone line;

Limited by Distance

Limited computers that can be attached to a single LAN.

WLAN: A type of LAN that uses high-frequency radio waves rather than wires to communicate between nodes.

HAM - A Home Network is contained within a user's home that connects a person's digital devices that are wired into the network.

CAN - A Campus Area network or Corporate area network is made up of an interconnection of LANs within a limited geographical area.

Wide Area Networks (WAN)

Spans a relatively large geographical area.

One LAN can be connected to other LANs over any distance via telephone lines and radio waves. A system of LANs connected in this way is called a *wide-area network (WAN)*.

WAN = LAN + LAN + LAN

Computers connected to a wide-area network are often connected through public networks, such as the telephone system. They can also be connected through leased lines or satellites. The largest WAN in existence is the Internet.

Short Range Networks (Bluetooth)

Computer network used for communication among computer and different information technological devices close to one person.

E.g. Devices that are used in a PAN are personal computers, printers, fax machines, telephones, PDAs, scanners, and even video game consoles.

wired and wireless devices.

Limited to 10 meters.

wireless - Bluetooth

Metropolitan Area Network (MAN)

Larger than LAN, but smaller than WAN.

A large computer network that usually spans an area of a few city blocks to the area of an entire city, possibly also including the surrounding areas or a large campus.

Very high-speed connections using fiber optical cable or other digital media

Wireless MANs.

Virtual private network (VPN)

VPN is a network that is constructed by using public wires — usually the Internet — to connect to a private network, such as a company's internal network.

A virtual private network (VPN) is an overlay network in which some of the links between nodes are carried by open connections or virtual circuits in some larger network (e.g., the Internet) instead of by physical wires.

These systems use encryption and other security mechanisms to ensure that only authorized users can access the network and that the data cannot be intercepted.

Internetworks

Network of Networks.

Connecting a computer network with other networks through the use of gateways that provide a common method of routing information packets between the networks.

Can be extremely complex.

Involves connecting networks that use different protocols.

Accomplished with routers, bridges, and gateways.

Internet Backbone

A backbone network is part of a computer network infrastructure that provides a path for the exchange of information between different LANs or sub-networks.

A backbone can tie together diverse networks within the same building, across different buildings, or over a wide area.

For example, a large company might implement a backbone network to connect departments that are located around the world. The equipment that ties together the departmental networks constitutes the network backbone. When designing a network backbone, network performance and network congestion are critical factors to take into account.

The backbone network's capacity is greater than that of the individual networks connected to it.

Another example of a backbone network is the Internet backbone, which is the set of WANs and core routers that tie together all networks connected to the Internet.

Storage Area Network (SAN)


High-speed sub network of shared storage devices.

Used to make storage devices accessible to servers so that the devices appear like locally attached devices to the operating system.

Provides block-level storage that can be accessed by the applications running on any networked servers.

All storage devices available to all servers on a LAN or WAN. As more storage devices are added to a SAN, they too will be accessible from any server in the larger network.

A Storage Area Network can be anything from two servers on a network accessing a central pool of storage devices to several thousand servers accessing many millions of megabytes of storage.



Thank You!!!

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