CSC 201 Week Eight Lecture Note

NETWORKS

Definitions: An Interconnected collection of autonomous processors. A Network is a group of two or more computers connected to each other by a cable, over telephone lines or through wireless communication. When you are connected to a network, you can share resources on your computer such as documents, programs, printers, modems and use other resources from other computer. The key idea of a Network is that users need equal access to resources such as data, but they do not necessarily have to have equal computing power.

LANs, WANs and 'Client Server" concepts are perhaps the most important trend in modern computing.

There are two types of Networks

- LOCAL AREA NETWORK (LAN)
- WIDE AREA NETWORK (WAN)

LOCAL AREA NETWORK (LAN)

Definition: A network of computers located in a single building or an a single site.

A LAN may also include a **Bridge** which is a connection to another similar LAN and a **Gateway** which is a connection to a different types of network outside the LAN.

WIDE AREA NETWORS (WANs)

- Network on a number of sites, perhaps on a wide geographical scale.
- WANs often use minicomputers or mainframe as the "pump" that keep the data messages circulating, whereas shorter distance LANs normally use PCs for thin task.

Airlines are a typical WAN network.

DIFFERENCES BETWEEN LANs AND WANs

- The geographical area covered by WANs network is greater, not limited to a single building or site.

- WANs will send data over telecommunication links, and so will need MODEMS. LANs uses direct cables only for transmitting data.

- WANs will often use a lager computer a larger computer as a file serve.

- WANs will often be larger than LANs, with more terminals or computer linked to the network.

- WANs can link two or more LANs using GATEWAYS.

* Connection may be lease – where there is a high volume of inter-office communication.

* Connection may be made over the public telephone network. Standard call changes will apply.

This is beneficial where communication levels are relatively low.

CLIENT – SERVER COMPUTING
- A client –server system allow computer power to be distributed to where it is most needed.
- A client is a machine which requests a service, e.g. A PC running a spreadsheet application which the user whishes to print out.
- A server is a machine which is dedicated to providing a particular function or services requested by a client
- Servers include file servers, print servers, e-mail servers and LAN servers.
- The servers provide services such as shared printers, communication links, special-purpose processing and database storage.

BENEFIT
- It reduces network communications costs,

- It allows the central computer to be used for administrator tasks such as network management.

- The technological flexibility allows the use of sophisticated applications such as multimedia and document image processing (DIP).

ORGANISATION OF NETWORK (NETWORK TOPOLOLIES)
Definition: The physical arrangement of nodes in a Network.

- A Node is any device connected to a Network, it can be a computer, or a peripheral device such as a printer.
- Basically, there are four types of LAN system configuration:

* BUS NETWORK   *STAR NETWORK

*RING NETWORK   * TREE NETWORK

BUS NETWORK
- Messages are sent out from one point along a single communication channel, and the messages are received by other connected machines. Machines only receive messages which contain their unique identifying code.

RING NETWORK
-The cable and computer are joined in a ring. There may or may not be a server.

- Data transmission is normally in one direction only; each interface only copies the data and passes it to its own device if it recognize the packets destination as its own.

STAR NETWORK
- Here a central disk file and program stored is controlled by dedicated mini computers, or micro computers, and a cable linking this control computer to the other micro computers.
-The terminal cannot communicate directly with one another, but most send messages to the central mode

HIERARCHICAL NETWORK (TREE NETWORK)
Hierarchical Network consists of nodes organised like a family tree. The top node is a central computer that is connected to several other nodes which may also be computers. Each of these nodes may be connected to several other nodes.

- Large-scale processing is done by a mainframe, or Mini-computer, and lower-level processing by mini computers or micro-computers

LANS Success is attributed to

- Personal computers of sufficient power and related software e.g. UNIIX
- Availability of Network at a fairly low price.