

## Modem Jack

A modem jack connects a telephone line to the computer. It is the same type of connector as a telephone jack. A computer with an internal modem has 2 modem jacks.

## Hardware Components

There are only 6 groups of computer hardware components:

- \* Input device
- \* Output device
- \* Processor / motherboard
- \* Storage device
- \* Adapters / Peripherals
- \* Power supply

### Input Device →

These are used to input various forms of data or information into the computer for processing purposes. These devices can be connected to the computer as per requirement. These are the following input devices such as keyboard, mouse etc.

### Output Device →

These are used to show the results of processing either on a screen or in a printed form using a printer. These are the following output devices as:

Memory Management Unit:

It handles the addressing and search where data store in system memory whenever the CPU needs something from memory. It manages memory segmentations and paging, allocations and translate all logical addressing into physical addressing.

Bus Interface Unit:

It supervise the transfer of data over the bus system between the other components of the computer and the CPU. It also serves as an interface point for the CPU with external bus as well as handle the data transfer out of the computer.

Basic Components of PC System board:

It connects all the components of computer system. Example - CPU, Ram, video components and other different components.

2 types of System Board:

\* Non Integrated System Board \*

It is assembled from expansion board. This board is easily identified because of each expansion slot is usually occupied is own physical space. It is classified by there design.

All the components had to attach

settings the C-mos chip requires power ~~continuously~~.  
Constantly.

Jumpers and DIP switches:

These are used to configure various hardware options on the motherboard. Processor use a different voltage and  $\rightarrow$  multipliers to achieve those target voltage and frequency.

Power Supply \*

The device in the computer that provides the power to the power supply.

A power supply converts 110 volt AC current into the voltage of a computer needs to operate.

On a motherboard these are  $\pm 3$  board (V),  $+5$  board (DC),  $-5$  board (V),  $+12$  board (DC).

Components in modern PC do not use the negative voltage.

SMPS:

Switch mode power supply. In SMPS the AC mains input is directly rectified and then filtered to obtain in DC voltage.

The resulting DC voltage is then switch on and off at a high frequency by electronic switching circuitry. Switch mode power supply are usually regulated and to keep the output voltage constant.

## 1) Hard Disk :

Hard disk system is used for permanent storage and quick storage. Hard disk typically reside inside the computer (although they are internal and removable hardless). It can hold more information than other form of devices. The hard disk system contains 3 critical components -

### \* Controller :

It controls the drive. It understands how the drive operates. It sends signal to the various motors in the disk. It receives signal from the sensors in the drives.

### \* Hard Disk :

It is a physical storage medium. Harddisk system store information on small disk.

### \* Host Adapter :

It is a translator converting signals from the hard drive and controller to signal that ~~that~~ computer can understand.

## Floppy Drive:-

A floppy disk is a magnetic storage media that use the flexible diskette made of the thin plastic. It is covered in a protection plastic. The floppy disk itself enables that information to be transferred from one computer to other easily. There are two types of floppy disk.

- i)  $5\frac{1}{4}$
- ii)  $3\frac{1}{2}$

A floppy drive is used to read and write information. The advantage of these drive is that they allow portability of data.

| Floppy drive size | No. of tracks | Capacity |
|-------------------|---------------|----------|
| $5\frac{1}{4}$    | 40            | 360 kb   |
| $5\frac{1}{4}$    | 80            | 1.2 mb   |
| $3\frac{1}{2}$    | 80            | 720 kb   |
| $3\frac{1}{2}$    | 80            | 1.44 mb  |
| $3\frac{1}{2}$    | 80            | 2.88 mb  |

## CD-ROM:-

Most computers have a CD-ROM drive. The compact disk virtually the same as those used in CD players. The CD-ROM stores data for long term storage. CD-ROM are read only that once information is written on a CD. It can be arranged, erased, and changed.

2) The secondary purpose of backup is to recover file from an earlier time. According to a user define data policy. If the typically configure within a backup application for how long copies are required properly backup mechanism in a simple form of disaster recovery and the other complex configuration such as the computer cluster, Active directory.

In general backup and recovery refer to the various steps and procedures involved in protecting your database against data loss. And Reconstructing the database after any kind of data loss. There are two types of backup:

- 1) Physical Backup
- 2) Logical Backup

Physical Backup:

Physical Backup are backup of physical file used in storing and recovering your database such as data files, Control files and Redo log files.

Every physical backup is the copying of file storing database information some other location whether on disk or some offline storage such as Tape monitor (magnetic)

2) Logical Backup:

It contains logical data for example:

Table or procedure, export from

a database and store in a binary file for later reimporting into database using the corresponding utility software.

## Restore

It means to return something to its former condition therefore when you restore a computer or other electronic device you return it to a previous stage, restoring a computer often called a System Restore.

This process also erases any new data that has been added since the previous stage. Therefore you should always backup your data before restoring a computer.

There are two types of Backup:

- \* File Backup
- \* System Image

### File Backup:

It is used to save the zip file. There are two types of file backup are supported:

- i) Normal Backup
- ii) Incremental Backup

Normal Backup:

It stores everything selected for Backup.

Incremental Backup:

It stores only files that are change after a previous backup.

System Image:

System Image is a disk image. There are two types:

- \* Disk Image
- \* Differential Image

System image is a disk image of Backup Image of a system of the backup system same as block by block in a VHD file. Block base data is more efficient at performing differential Backup as only the backup that have been change need to be backup.

Windows Backup Services responsible for backup and restore operation. The WB (Windows Base) admin Command Line utility also be used.

Display Device

Display System Convert Computer signal into touch and picture and display them on T.V. screen today we use Cathode Ray

3) Mouse Keyboard:

Enable the Num-Lock, keyboard  
Auto delete mouse.

4) Drive Configuration:

Configure hard drive, CD-ROM  
and floppy disk drive.

5) Memory:

Direct the BIOS to shadow a specific  
memory address.

6) Security:

set a password for accessing  
the computer.

7) Power Management:

Select whether to use power  
management or not as set the amount of  
time for a stand by suspend.

8) Exit:

Save your changes, discard your changes  
or restore default settings.

The BIOS uses CMOS technology to save  
any changes made to the computer settings.  
With this technology a small lithium battery  
on supply in a power to keep the data.

1 long 2 short

video Error

## Solutions

\* One long 2 short

check the video is properly connected or not  
replace the video card.

\* One long 8 short

video card

\* One long 3 short

check the RAM properly connected or not.

\* Eleven short

check that cache memory chip is properly connected  
or not / replace.

\* Ten short

Replace the CMOS chip / replace the  
motherboard.

\* Eight short

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## Read/Write Head:

Hard drive and floppy drive have a read/write head. Most hard drive have two head for each platter. One head is used to read/write data to top of the platter and on other hand it is used to read and write to the bottom side of the platter.

## Tracks:

A hard drive platter is divided into many drives. The platter is the entire race track. The tracks are separate lanes running parallel to each other in a circle. The first track is 0. It is located closest to the outside edge of the platter. Floppy disk also have 80 tracks.

## Sector:

The smallest area on a hard drive is a sector. A sector can hold maximum 500 words of information. Each sector contains the same amount of data. A platter typical hard disk contain approximately 63 sectors per track. A group of sector is called cluster.

## Cylinder:

Cylinder area logical grouping of similar no. of tracks on all platters combined. For example, if you have 6 platters you would have total no. 12 surface.

## Accessing Data from Hard Disk:

Data bits are recorded on the tracks of a rotating disk surface and read from the surface by moved read/write heads. These are two basic type of this system.

- 1) Moving head
- 2) Fixed head

The moving head system has the read/write head for each disk surface. In this system each read/write head moves independently across the surface of the disk and able to access the each track in the disk.

In the fixed head system the access is as fixed large number of read/write head distributed disk surface.

## Hard Drive Partition and Formatting:

Two primary methods are used to prepare for supporting operating system and applications and formatting.

### Partitioning:

It is the process of dividing one physical hard drive into separated area of storage. In another words you can create several logical hard drive out of one physical

are used by the system and by the initial users of the system. In order to gain some access, these accounts are created to grant basic services.

- \* ~~local~~ local
- \* Domain

These accounts are also created in domain controllers automatically when active directory is installed.

1) Administrator:

Cannot be deleted or disabled and should be a permanent user.

2) Guest

File Sharing

Sharing is always accessible and to fill on the network computer. Users have access to share will determine if they can pass through the network.

Sharing Permissions :-

- \* Full Control (Read/Write, Delete)
- \* Permissions for Read
- \* Permissions for Delete

Level 1:

Mirroring / duplicating

Level 2:

Striping with ECC (Error Correction Code)

Level 3:

Striping with a dedicated parity disk

Level 4:

Independent data disk with whole parity disk

Level 5:

Independent data disk with distributed parity blocks

Level 6:

Second parity

Plug and Play features of Windows 2000

Plug and play is a computer feature that allows the addition of a new device normally a peripheral without requiring re-configuration or manual installation of device drivers.

It is an add on feature to the IBM PC, Intel, ISA Bus that allows the addition of a new peripheral without requiring that a user choose an unoccupied input/output addresses manual configuration

all line reservation network.

### 3) Metropolitan Area Network (MAN):

It is a Network that interconnects users with computer resources in a geographical area or region larger than that covered by even a LAN but smaller than the area covered by a WAN. It is a data network design for a town or city. MAN's are usually featured by very high speed connections using fiber optics cable or other digital media. A MAN can support both data and voice and might even be related to the local cable television network. It uses several protocols namely FDDI, DQDB.

### VAN (Value Added Network)

It is a Communication Channel least from a telephone Company to offer customers with modem access to network services through a local or toll free No.

### Campus Area Network (CAN)

The computers are within a limited geographical area such as a campus or military base.

## Client Architecture

Each Computer or process on the network is either a client or a server. Each Client or server Connected to a network can also be referred to as a node. The most basic type of Client server architecture is employees only - two types of Nodes Client and server. It is also called 2 tier Architecture. It also allows device to share files and resources each instance of the Client software can send data. The request to one or more Connected in turn the server can accept each request process it and return the request info to the client although this concept can be applied for a variety of reasons to many different kinds of applications. An example of Client server application is web application. That is designed for Internet Information Service (IIS) using a combination of server side Active Server Page (ASP) programming and client side scripting ASP script run on the web server while client side script run on the client web browser.

## Features of a Client:

- \* Activate the master Computer.
- \* Initiate Request

piece of software in a router use the OS and the routing protocol. It use logical and physical addressing to connect two or more logically separate networks. They accomplish this network segments or sub networks. Each of these sub networks is given a local ~~static~~ address, which allow the network to be separate but still access each other and exchange data when necessary.

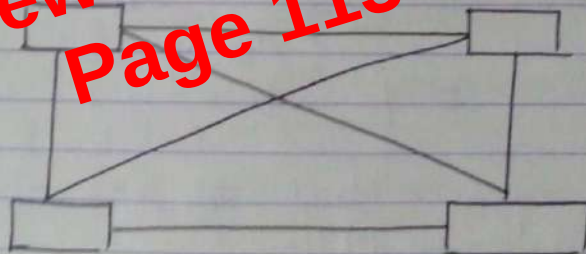
### Router Operations

Routing is a function of network layer of the OSI model (Open System Interconnection). Routing means finding route to the next hop. A device called Router does the routing function. It use a table called Routing Table. To find the route to the packets for destination. Routing Table contain a information about the potential path that a data packet should take to travel through the Internet work and reach its destination. A Router has to read the header of each packet that arrive and extract the destination address of the packet. The Router then sends the packet out on the appropriate transmission path based on a calculation of the optimum route to the destination. There are two functions:

#### 1) Forwarding Functions

## Mesh Topology

In this topology every computer is connected with every other computer with separate cable segments. This requires the maximum amount of cable length but the advantage is reliability. Failure of any network does not affect the functioning of the network because of alternative paths for the signal except for marginal degradation in the performance. The topology becomes extremely complex to implement and manage when no. of computers are large. This topology is good for small networks and is particularly used in Peer to Peer networks.



## Hybrid Topology

Hybrid Topology is simply a mix of other topologies. It would be impossible to illustrate/define it because there are many combinations. In fact, most computers today are not only hybrid but heterogeneous.

## Local Network Area Network Media

It can be developed using various types of media based on the functionality distance coverage and bandwidths of media. There are two basic categories

- 1) Electrical Media
- 2) Optical Media

### Electrical Media :-

It includes those media wires which communicate data in terms of electrical pulses. In a digital network 5 volts for 5 milliseconds represent a binary width 1 and absent of voltage for 5 milliseconds represents binary 0. These includes:

- 1) STP (Shielded Twisted pair) Cable
- 2) UTP (Unshielded Twisted pair) Cable
- 3) Coaxial Cable :-

There are two features:

- 1) Thin wire Coaxial Cable
- 2) Thick wire Coaxial Cable

address a network administrator borrows bits from the host field and designate them as the subnet field. The minimum no. of bits that can be borrowed is 2.

If only one bit was borrowed to create a subnet then there ~~can~~ would only be a network number and the broadcast number. The maximum number of bits that can be borrowed can be any number that leaves at least 2 bits remaining for the host number. Any combination of these borrows is known as Subnet mask except all 0's and all 1's.

The all 0's Subnet address is equal to the total network address and broadcast address and the all 1's Subnet is a broadcast address of total network that is why these subnets are known as Unusable Subnets. All other subnets are known as Usable Subnets.

| Class   | Minimum bits borrowing | Maximum bits borrowing |
|---------|------------------------|------------------------|
| Class A | 2                      | 22                     |
| Class B | 2                      | 14                     |
| Class C | 2                      | 6                      |