memory module

A narrow printed circuit board that holds memory chips (RAM chips). The common architecture for desktop computers is the dual in-line memory module (DIMM), which transfers 64 bits at a time. Because of space limitations, laptops use small outline DIMMs (SODIMMs). The modules are keyed with notches in different places so they cannot be inserted into the wrong slots (see below). See **RAM**.

Error Detection and Correction
Most desktop and laptop computers use RAM chips that hold eight bits per byte, while high-end servers and workstations typically have nine bits. The ninth bit is a parity bit for detecting errors. See **ECC memory** and **RDIMM**.

Upgrading Memory - Read the Manual (RTFM!)
A single DIMM can often be used, but pairs of DIMMs increase performance in machines that support dual channel DDR SDRAM. When upgrading memory, read the motherboard manual to find out which module combinations can be used. See **MT/sec**, **SDRAM**, **memory types**, **memory card** and **Hybrid Memory Cube**.

SMPS

A **switched-mode power supply** (**switching-mode power supply**, **switch-mode power supply**, **switched power supply**, **SMPS**, or **switcher**) is an electronic power supply that incorporates a switching regulator to convert electrical power efficiently.

Like other power supplies, an SMPS transfers power from a DC or AC source (often mains power, see AC adapter) to DC loads, such as a personal computer, while converting voltage and current characteristics. Unlike a linear power supply, the pass transistor of a switching-mode supply continually switches between low-dissipation, full-on and full-off states, and spends very little time in the high dissipation transitions, which minimizes wasted energy. A hypothetical ideal switched-mode power supply dissipates no power. Voltage regulation is achieved by varying the ratio of on-to-off time (also known as *duty cycles*). In contrast, a linear power supply regulates the output voltage by continually dissipating power in the pass transistor. This higher power conversion efficiency is an important advantage of a switched-mode power supply.

Switched-mode power supplies can also be substantially smaller and lighter than a linear supply because the transformer can be much smaller. This is because it operates on the switching frequency which ranges from several hundred kHz to several MHz in contrast to the 50-60Hz which is typical for the mains AC frequency. Despite the reduction in size, the power supply topology itself and the requirement for electromagnetic interference (EMI) suppression in commercial designs result in a usually much greater component count and corresponding circuit complexity.

Internal Storage Devices

Some storage devices are classed as 'internal' which means they are inside the computer case.

Most computers have some form of internal storage. The most common type of internal storage is the hard disk.

At the most basic level, internal storage is needed to hold the operating system so that the computer is able to access the input and output devices.

It will also be used to store the applications software that you use and more than likely, the original copies of your data files.

Internal storage allows the data and applications to be loaded very rapidly into memory, ready for use. The data can be accessed much faster than data which is stored on an external storage device. This is because internal storage devices are connected directly to the motherboard and its data bus whereas external devices are connected through a hardware interface such as USB, which means they are considerably slower to access.

Internal storage also means that if the computer is moved around, it will still retain its most commonly used data.

The main disadvantage of internal storage is that when the hard disk fails (and it will), all the data and applications may be lost.

This can be avoided to some extent by using more than one hard disk within the machine. Each hard disk has a copy of all the data, so if one fails the other can carry on. This is called a RAID array. An alternative is to use external drives for backup

Operating System Installation Tasks

The following is an overview of the procedures that are needed to install a new operating system (OS).

1. Set up the display environment.

   If you are not using the optional DVD drive for preparing the system for OS installation and installing the OS, see [Accessing the Server Output During Installation](#)

2. Erase the primary boot disk.

   If you have an operating system preinstalled on the server, you will need to remove it before installing a new operating system. See [Erasing the Primary Boot Hard Disk](#).

3. Set up the BIOS.

   You need to make sure that the BIOS is set up for the operating system that you plan to install. See [Setting up the BIOS for Operating System Installation](#).

4. Install the operating system.

   See the chapter in this document that corresponds to the operating system that you plan to install.

5. Configure your server for RAID.

   If you plan to configure your server for RAID operation, you will need to perform some setup tasks before installing the operating system. See [Configure Your System for RAID](#).

6. Install the operating system, update the drivers, and run operating system updates, as necessary. See [Choosing an Operating System Installation Method](#) and the chapter that corresponds to the operating system that you want to install.

Introduction to Motherboard

The motherboard is defined as a circuit board for the computer system, also

called logic board or mainboard. In the computer system, the biggest

component is the motherboard that controls all the components of the

computer system and establishes a link between all components. From the

motherboard, different components like ROM, CPU, RAM, PCI slots, USB ports,

and other components are connected. The controller's device is also attached

to the motherboard like DVD< hard drive, mouse, and keyboard. The

computer system starts using the motherboard and these components act as

the backbone for starting the system.

Components of Motherboard

In the below section, some of the important components of the motherboard

are defined below:

1. Keyboard and mouse

There are mainly 2 types of mouse and keyboard connectors. The first connector is known as PS/2 & the second connector is known as USB.

2. Universal Serial Bus (USB)

The USB port is used for connecting the computer system. In the computer system, there is various type of devices that are connected with the USB port like keyboard, mouse, camera, scanner, printers, and another device. The main use of a USB port is to connect the peripheral devices and computer motherboards. The peripheral device connected to the computer system can be inserted or remove without system restarts that can be the main advantage of a USB port.

3. Parallel port

The old printers that are used in past use the parallel port to connect with the computer system. In the parallel port, multiple wires are used to send or receive multiple bits of the data in a single instance. On the other hand, serial ports use only one wire at a time. In the parallel port, 25 pins female DB type connector is used.

4. CPU chip

The central processing unit is the processor that controls all the functions of the computer system. The overall flow of task and functions are controlled by the central processing unit. For the computer system, the central processing unit is called the brain of the computer system.