

NEW USERS ORIENTATION TO DATABASE TECHNOLOGY:
EVALUATING THE SOFTWARE

HARDWARE CONSIDERATIONS

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The first consideration when buying hardware is - what does your software need. BUY YOUR SOFTWARE FIRST because in order to work, the hardware must be compatible with the software.

In evaluating hardware, the old adage "You get what you pay for" holds true. Cost in hardware is affected by:

- capacity - how much can it handle/how big
- speed - how fast is it
- reliability - service, reputation, brandname and other intangibles

Given the same reliability, the cost of the machine will increase as either the capacity and/or the speed increases.

Before going into detail, however, there is one more compatibility issue. In addition to being compatible with the software you plan to buy, also consider compatibility with either software you currently have or would like to have, and other hardware used in the office and/or at home. Think about:

Media compatibility - disk size; for example, it is difficult to fit a 5 1/4 inch disk in a 3 1/2 inch slot, or, an IBM PC AT can write to a double density disk, but a PC cannot read that disk.

Operating System Compatibility - hardware must use the same operating system, and the same revision of that operating system.

Hardware Compatibility - programs might require a graphics display or a special type of printer, etc.

Claims of compatibility are not always what they seem; always test to make sure it works.

Now let's look at the hardware, itself.

A computer system is made up of different components. For each of these components, you must evaluate how much capacity and speed is needed for your software.

The five components are:

- The CPU - Central Processing Unit
- Memory
- Storage Devices
- Input Devices
- Output Devices

CPU

The CPU is the part of the computer which does the work. It is where the arithmetic and logical operations are performed, and instructions are decoded and executed. What determines the capacity of the CPU is the design of the machine itself. When talking about capacity, you are talking about how much information the CPU can look at at once. The terminology used to describe the capacity of the CPU is 8 bits, 16 bits, 32 bits, etc.

Speed is also a consideration with the CPU. Measures of speed include clock speed and mips (millions of instructions per second). These both describe the functioning of the hardware, but the software design also affects the speed of the CPU.

MEMORY

Memory capacity is measured in bytes or characters of storage accessible by the CPU. Memory is the space within the computer where information is stored while being actively worked on. Memory is expandable on most machines up to an upper limit set by the CPU and operating system. You should purchase the maximum amount of memory used in your software application. This amount might be less than the maximum capacity of the machine. There is no advantage to having more memory than your software can use.

STORAGE DEVICES

Storage devices store large amounts of data on a magnetic media such as a disk or a tape. Storage devices cannot be read as quickly as data in the main memory, but the storage area is not erased when the machine is turned off.

Disks - floppies, hard disks and optical disks - are used to store and retrieve data. Tapes are used to archive data, for back up copies, or for information that needs to be saved but rarely used.

Storage capacity is how much information can be accessed, or, with a database, what size of database can be accessed. What sounds like a lot of storage capacity when you buy it is not all that much six months later. Computers are like flat surfaces, they collect stuff.

Storage capacity is measured in bytes or characters. A standard floppy disk holds 360 K. A 1.2 megabyte floppy can hold 1.2 million characters. Hard disks range in size from 10 megabytes to 100's of megabytes.

In a Database System, speed in data storage and retrieval is usually the overall limiting factor in the speed of the software application. A good demonstration of the software is imperative. The software cannot be effectively evaluated with a small sample database or with simple queries. How the data is organized will greatly affect the access time, regardless of the type of storage device.

What seems fast initially appears slower the longer you use any

system. A response time of over 1 1/2 to 2 seconds actually slows down the user.

Hard disks are many times faster than floppies. However, all hard disks are not created equal; some are 100's of times faster than others. Remember, cost increases with speed.

INPUT DEVICES

The keyboard is the major input device in use today. The speed of input is limited by the person typing and the design of the software.

OUTPUT DEVICES

Terminals and printers are both output devices. Capacity and speed need not be considered when buying printers. Capacity on printers applies to the ability to do graphics, and how much, if any, data can be stored in the printer buffer.

The speed of printers is important. Speed is measured in characters, lines, or pages per second. Often there is a discrepancy between the manufacturer's rated speed and the actual speed, so a demo is again important.

Those are the five parts of the computer and the importance and effect of speed and capacity on each. Looking at the hardware specified by a software package can help you to evaluate that software. By knowing the limits of the capacity of the hardware, you can know the limits of the software. If you cannot get a full demonstration of the system, then get specific information on how long it takes to use each part of the software, given your parameters.