

## **Purchasing a Home Computer**

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Aspiring PC users regularly ask for guidance on what to look for when purchasing a new computer. Selecting a computer can be overwhelming, and it's easy to buy more or less computing power than needed. Today's market prices make it possible for everyone to own a computer. And it's a must for households with children who are growing up in this technology driven era.

There are many expert opinions and buyers' guides on this subject. But, it can still be hard to determine which advice to follow. Don't get confused. Determine how you plan to use your computer and then do your homework. Resources are available to you both on the Internet and via various computer magazines. To help you get started, this month's column summarizes key elements to be considered.

### **What do I need to know about buying a computer?**

*Plan for the next three years.* What applications will you use in the near future? E-mail, Web surfing and word processing don't take a lot of horsepower, but photo retouching requires a lot of memory and hard drive space, and video editing even more so. Games need blazing speed and a video board with a lot of video memory. What peripherals will you use (e.g., printer, scanner, Palm Pilot or Pocket PC)? How will they connect to the computer? Do they all need to connect at once? What type of Internet connection will you use? What backup strategy will you use (will you need a zip drive for example)? Will everyone in the household use this computer? Make a list of your needs before you begin looking at computers.

*Wait as long as possible to make your purchase.* Computers get cheaper and more powerful monthly, and sometimes weekly. If you don't have an immediate need, put it off a little longer, and you'll either get the same technology for less money or more technology for the same money.

*Do not buy cutting-edge technology.* Whether it's DVD+RW (Digital Video Re-Writable disk) or 1,000-MHz Pentium III, it is always the coolest thing around. There are two problems with cutting-edge technology: a.) It's expensive—you are paying a premium to be the first in line; and b.) it's unproven. Intel's first Pentiums had math problems; the software that runs new video boards ("drivers") often has glitches. If you go with yesterday's technology, the actual difference in performance will be small but you'll save some money and not have to work as an unpaid tester for some corporation.

*Your new computer is already obsolete.* But, it will still be good for the next three years. The day you buy your computer, some new technology will be announced. In three years, your zippy new computer will seem as slow as a slug and its storage capacity will seem microscopic, but it will still run all of today's software as well as it does today. After three years, two things will happen: You'll want to run newer software that requires or benefits from newer technology; and, after watching the latest computers in action, you'll no longer be willing to wait for your old machine to load and run your favorite applications.

*Count interfaces.* One network card, one video card, one serial card—and my new computer is out of

accessory slots. If I want to add a DVD drive, I'm out of luck. Don't let this happen to you. Think hard about the peripherals (printers, scanners, palm pilot etc.) you have now and what you might reasonably expect to add in the next few years, and make sure your computer is prepared.

*Pay attention to bundled software.* Software is expensive when bought at retail, but a great bargain when bundled with a computer purchase. The other side of the coin is that, bundled software is no bargain if you don't want or need it.

*Purchase the nicest monitor you can.* You'll spend a lot of time staring at it, so do your poor eyes a favor. Monitors don't improve as rapidly as computers, nor do prices fall as quickly. Nicer doesn't always mean bigger, but it should be big enough and as bright and clear as possible.

### **What should I be looking for under the hood?**

There are several key technology considerations to factor into your decision when purchasing a computer. All of the factors noted below deal with performance. Selecting performance options are dependent on how you plan to use your computer. The following technologies are the most critical to understand:

*Processor* Central Processing Unit (CPU) processor performance can be roughly measured by "clock speed," or the "megahertz" number the system is advertised at (e.g., 400 MHz, 600 MHz, etc.) The clock speed determines how fast the CPU executes instructions, so the higher the number the faster your programs will run. Virtually every new computer will contain a processor manufactured by Intel; some low-end systems and a few high-end systems will contain AMD processors (the K6 in cheaper models, and the Athlon in more expensive systems). For all practical purposes, there is no reason to select Intel processors over AMD, or vice versa.

*PCI bus speed* Another measurement of interest is "PCI bus speed," which is the speed at which data moves between the CPU and other components within the computer. Again, faster is better, and most modern systems move data over the PCI bus at 100 to 133 MHz.

*Memory* Random Access Memory (RAM) holds and transfers data between the hard drive and the CPU. The CPU operates in megahertz and the hard drive in milliseconds, and uses RAM as an intermediary between them. More RAM enables faster communication between the CPU and hard drive, which in turn enhances performance, speed and access time of your computer. When a computer is turned on, the operating system and startup software are loaded into RAM. RAM is measured in megabytes or MB. For typical home systems, 64 megabytes (MB) of RAM is plenty; if you intend to work with memory-intensive applications such as databases, graphics or graphics-intensive games, upgrading to 128 MB or beyond may be in order.

*Hard drive* If you want to micromanage the performance of your new computer system, here is where you should be concentrating your efforts, because more than anything else, the performance of the hard disk determines the overall speed of your system. Several factors should be considered—access time, rotational speed, internal drives and capacity.

*Access time* is frequently used to describe the speed of disk drives. Disk access times are measured in milliseconds (thousandths of a second), often abbreviated as ms. Fast hard disk drives for personal computers boast access times of about 9 to 15 milliseconds.

*Rotation rate* tells you how fast the disk spins under the drive head. Typical rates are between 4,000 rpm and 5,400 rpm. High-performance drives often offer 7,200 rpm, and some offer 10,000 rpm. The faster the rotation rate, the more data will move under the drive head in a given amount of time.

*Internal drives* for desktop systems come in two basic choices: IDE (Integrated Device Electronics) and SCSI

(small computer systems interface). Most desktop systems come with IDE interfaces; inexpensive and fairly fast connection between the computer and the disk drive. Higher-performance systems will use "SCSI" controllers and connections to move data much faster; however, SCSI comes at a fairly steep upcharge.

*Capacity = storage space* Today, hard disk space is measure in gigabytes. Buy the biggest hard drive you can afford. The incremental cost is low, and hard drives fill up quickly.

*Communications* Depending on where you live, you may have access to high-speed data services such as cable-modem or digital subscriber line (DSL) service. These are full-time, high-speed connections to the Internet, and will usually interface to your computer via an Ethernet network interface card. Cable-modem service is provided over the same wire as your cable TV service; typically your cable provider will supply you with a cable modem compatible with their network. DSL comes in over a telephone wire, and again will involve a DSL modem or router provided by the DSL service provider. Both of these will typically require your computer to have an Ethernet adapter installed, and TCP/IP networking software added to the operating system. If you are sure that cable-modem or DSL is in your future, you might want to invest \$20 or so in an inexpensive 10Base-T Ethernet card.

If you need to use a modem to connect to your Internet service provider, consider using an external 56k modem. Installation is very easy and does not involve opening the case of your computer, and if you upgrade computer hardware or borrow someone else's system (especially a laptop), you can use the modem you already have. However, if you do choose to go with an internal modem, stay away from "Winmodems" or boards with modems and sound cards combined. These modems attempt to cut costs by making your CPU do more of the communications work, and there are enough compatibility problems to make a Winmodem or combo card more trouble than it's worth.

### **Making the Selection**

To make your computer selection, consider the following steps:

- Create your list of computing needs (include software and peripherals, such as printers and scanners);
- Talk to friends and family members who have recently purchased a computer and find out what they bought and why;
- Check out computer reviews on the following Internet sites: [www.zdnet.com](http://www.zdnet.com), [www.cnet.com](http://www.cnet.com), [www.pcworld.com](http://www.pcworld.com);
- Develop your system configuration specifications (i.e., how much processing speed, RAM, and hard disk storage space, and communication technology method.)
- Go comparison-shopping (on the Internet, in-person or both) and when you feel you are ready, buy your new computer.

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