

BUG-BYTES

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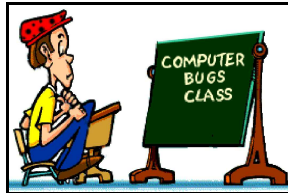
SHOPPING FOR A NEW COMPUTER?

HERE ARE SOME HELPFUL HINTS

If you are not shopping for a new computer, skip to the next article. However, if you are thinking of a new computer, there are some good things to consider.

MAKE, BUY LOCALLY, OR BUY FROM AN ONLINE VENDOR?

Whether you make your own computer, buy from a local source, or buy your new computer from an online vendor, **do some serious research ahead of time**. Know what is out there, and the approximate cost to buy what you want. Decide how you want to use your computer, and then what hardware and software are required to meet your needs.



A very basic entry level computer will work well if your needs are solely for e-mail, web browsing, a word processor, and maybe a spreadsheet. Windows Solitaire, too. Those applications put a very light load on a computer.

A digital-entertainment (media center) works well for editing photos, playing music, burning CD and DVD, and doing all of the basic stuff.

A high-end computer is designed for the heavy demands of 3-D games, authoring movies and other multimedia chores. High end system can handle multiple applications and everything Vista can throw at it, including the Vista Aero interface.

DESKTOP OR A LAPTOP COMPUTER?

Desktop computers are often the choice for people who plan to keep their computer in one place and to hook it up to a nearby printer.

Laptops are popular with people who are on the go and want to take their computer with them, or people who have a limited amount of space for a computer. Laptops are also popular as a second computer using wireless access to a shared printer and broadband access to the Internet.

The term desktop is a misnomer. The term once signified a low profile computer that set on top of a desk. Now days most computers come with a tower or mini tower case that is usually placed under the user's desk.

WHAT IS A GOOD STARTING POINT?

Research your buying projects online. A good place to start is with one of the popular online computer manufacturers, such as Dell or HP. Both sites allow custom configurations of their computers. You add or subtract items from a list of components to fit your requirements, then, click a recalculation button. Thus, you see what is included in the price, including the type of processor, the type and amount of memory, and what peripherals are included in the quote. You can include software packages in your calculations.

If nothing else, these sites help you as you refine your want list, so you don't miss any important items. For example, whether a monitor or flat panel display is included, which operating system comes already installed, the size and number of hard drives, amount of memory, etc.

Such information is invaluable to you whether you purchase locally, or decide to build your own computer.

SHOULD YOU BUILD YOUR OWN COMPUTER?

The answer to that question depends on how adventure-some you are, and whether or not you have tackled similar projects before, like putting together a hi-fi system. Building your own computer can be very satisfying, or very frustrating. Generally, you won't save money, and your warranties include only individual components, not the whole system. The primary advantage of building your own system is that you can pick and choose exactly which components you want included in your computer. You also have the keen satisfaction of knowing that you built it, and you customized it to do what you want it to do. You can't blame anyone else if something goes wrong, but you can take great pride if everything runs great. You did it!

BUY LOCALLY?

Some users prefer to buy locally. That way, they deal face to face with the merchant, and if they have a problem, they know where and how to return the merchandise. Local merchants generally offer fewer choices. Its take it or

leave it. When you are ready to buy, usually you can take the merchandise home immediately.

BUY FROM AN ONLINE MANUFACTURER OR VENDOR?

Buy from a reputable vendor with a reputation for reliable products, computers that are well built using quality components, good after purchase support, and a reasonable return or exchange policy.

Computer magazines provide excellent sources of information about popular computer manufacturers, and rate their most recent product releases. Look for a vendor's track records over time.

Online manufactures offer more models and configurations than local stores can reasonably stock. Thus, you are much more likely to get exactly what you want, with few if any compromises.

You can supplement your vendor specific research information with data from buying sites. They include product information, computer magazine editor reviews, and reviews by computer users. For instance . . .

<http://www.resellerratings.com/>

<http://shopper-zdnet.com.com/>

<http://www.pcmag.com/category2/0,1874,4,00.asp>

<http://www.pcworld.com/reviews/index/0,00.asp>

I can tell you that I've purchases all my computer equipment and digital cameras from online sources for years. I am pleased with the service, the quality of the goods, and the prices I paid. There were no hassles.

BUY WITH OR WITHOUT A MONITOR/FLAT PANEL DISPLAY?

If you recently purchased a replacement monitor or flat panel display, then you can purchase a new computer without a monitor or flat panel display. However, if your monitor/LCD is getting long in the tooth, you will save money by buying the monitor/LCD as part of your computer bundle. **Vendors offer big discounts on bundled computer systems.** They often include bundled software, such as Microsoft Office and security software at reduced prices.



CRT computer monitor



The price of flat panel displays keeps dropping, and their price is closer to that of CRT monitors. LCDs primary advantage is that they take up less desk space then monitors with their very deep

back dimensions. Also, LCD's (liquid crystal displays) use much less energy than monitors and throw off little heat. The newer models provide very fast response with little or no ghosting for complex games. However, they generally cost more than CRT (cathode ray tube) monitors.

COMPUTERS COME IN BOXES

Don't be intimidated by the fact that computers come packed in boxes. That is to ensure that you can transport them safely in your car, or by common carrier.

When you get your computer, just follow the easy instructions. Check that you have received everything and then setup your computer. Usually, the cable ends are color coded. For instance, you plug in the color coded keyboard cable in the similarly color-coded connector on the back of your computer. It is like painting by the numbers. What could be easier?

CELERON AND SEMPERON CHIPS

What are Celeron™ (Intel) and Semperon™ processors (AMD) processors? Intel and AMD compete with each other. These processors have smaller on-die caches than their more powerful brothers. Therefore, they are used in low-end computers. The cache is used to store information in anticipation of its use by the CPU (central processor unit). Memory caches bridge between the main memory and the CPU.



A large cache speeds the transfer of data. However, as cache sizes rise, their yield from silicon blanks decreases. Therefore, their cost is greater because there are fewer successful chips per silicon blank. Conversely, processors with small caches are cheaper to produce because more of them occur per silicon blank.

CPU SPEED VERSUS HEAT

As the speed of CPUs increase, so does the heat that they produce. This is especially noticeable as you reach speeds as you approach 4 gigahertz for a single CPU on a die. To solve this problem Intel and AMD have come up with lower power models for laptops, since laptops are especially sensitive to heat build-ups in their confined spaces. Heat sinks and special fans are needed to cool the CPU.

One recent development was the introduction of dual core processors. For instance two cores each operating at 2GHz would theoretically produce the performance of a single CPU core operating at 4GHz, but with a fraction of the power requirement and producing much less heat. This makes it easier to cool the CPU and produces less noise.

WHAT IS THE DEAL WITH COMPUTER SPEED RATINGS?

As the speed of processors increases, it takes less time to process data. Faster hard drives, faster main memory, broadband, and faster CPUs translate into much more responsive computers. In the case of CPUs, it has been said that you need to double the speed of a processor to notice a big difference. Speed in this case is subjective as well as real. As the speed of CPUs increases, or more advanced models are produced, the count of transistors increases significantly. This translates into millions of instructions per second. More speed equals more millions of instructions per second (MIPS).

One computer feels peppy and another feels pokey. When you are used to things happening very quickly, minor delays may become minor irritations. It is a matter of what we are used to experiencing. If you use a modem that is lucky to achieve 28 Kilobits per second of data transfer, then a broadband connection at 3000 Kilobits per second is astonishing. If you are using a hard drive that rotates at 4,500 RPM, you will notice a significant difference in the time it takes to write data to a 7,200 RPM drive.

Match what you want to do with a computer that has the horsepower to do what you want to do. If all you want to do is cruise the interstate, a basic computer will do just fine. However, if you have more demanding tasks in mind, like editing VHS tapes, authoring movies, capturing movies and time shifting them, creating a music library, watching DVD movies on your computer, controlling entertainment from your computer, and doing major photo editing, then you will need more horsepower, and you will benefit from more computer horsepower.

If you are into 3-D games, be aware that they push the state of the art. That is because they require very high-end graphics engines and high-end CPUs to ensure high frame rates.



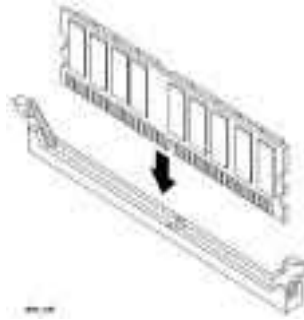
High frame rates and pixel shaders help produce smooth and very realistic visual effects.

Microsoft will release Flight Simulator X in October. Flight Simulator is the granddaddy of modern 3-D flight games. It includes a number of different planes.

Plan and buy accordingly.

IF YOU JUST NEED MORE MEMORY

MEMORY IS RELATIVELY CHEAP AND EASY TO ADD



If your memory slots are not already filled, then adding additional memory is easy and cheap. Adding main memory is probably the most cost effective upgrade you can make to your computer. Most computers are more responsive after the addition of memory, especially if only the minimum amount of memory was

installed consistent with your version of the operating system.

Align the small slot on the bottom of the memory stick with the matching key in an open slot in your bank of memory. Push down gently but firmly to seat the memory. If there are white plastic locks at the end of each memory bank, splay them outwards. As you push in the memory, they will automatically move inward to lock the memory in place.

If you are installing dual channel memory in pairs, pay close attention to the colors of the bank of memory. That is, if there are four banks, two may be blue and two another color. Install matched memory in the same color banks. This will ensure that you get the full benefits of your dual channel memory.

WHAT MEMORY DO YOU NEED?

If you do not have software, such as the free version of Sandra (www.sisoftware.net) to tell you what memory is installed in your computer, use the following method.

Use a memory configurator to help you choose the right kind of memory for your computer. The following single link provides links to six different memory manufacturers.

http://www.pcmall.com/pcmall/shop/custom/memory_deals/deals.asp You enter the manufacturer of your computer or motherboard, the product description (laptop, desktop, or a motherboard), and the model number. The configurator you choose comes back with the specifications for the memory used in your computer, and recommends the memory that fits that specification.

Buy either the memory online, or shop for comparable memory from a local source.

IF YOU BUILD A CUSTOM COMPUTER

LOOK FOR THE CPU SWEET SPOT

The latest and fastest CPUs go for premium prices. Yet similar CPUs that are only slightly slower, or maybe six months older sell for much less. **Look for the sweet spot if you are buying a high end processor.**

Compare specifications by going to the CPU vendor's web site.

Rely on the information from these sites to correctly match your motherboard with a CPU which will work well with that particular board.

www.amd.com

www.intel.com



ASUS motherboard Cooler Master slide-in tray



Check either of these sources to compare the prices of the various CPU offerings.

http://www.tigerdirect.com/applications/Category/category_cpu.asp

<http://www.sharkyextreme.com/guides/WCPG/index.php>

WHAT'S INVOLVED IN BUILDING YOUR OWN COMPUTER?

See the URL link below for detailed information. It offers excellent how-to information in a well thought out format. It is a good place to start before you buy a single component.

<http://www.pcguides.com/byop/>

WHAT'S THE LATEST ON THE COMPUTER SCENE?



WHAT IS NEW TO SOME MEMBERS MAY BE OLD HAT TO OTHER MEMBERS

Depending on the age of your computer, the changes in computers since you bought yours may be truly astounding to just very interesting.

CD/DVD DRIVES

For instance, your computer may have come with a CD drive that reads CDs but that can't write to a CD. Newer CD ROM. drives both read and write, and write in a small fraction of the time it took the early models. They are good

for backups (including music and photos), and for archiving little used data. You can burn your favorite music tracks to them for playback on your computer, your car CD, or by a home CD player.

The first DVD players came out in single-layer versions, whereas double-layer versions are now available. A double-layer version can record a whole movie in high quality. Single-layer versions can only hold a whole movie by using special compression schemes, often with a loss of quality or picture size.



DVDs are very useful for backup since they hold much more data than a CD. CDs hold up to 800MB of data versus 4.7GB of data for a single-layer DVD. Dual layers hold not quite twice as much data (8.5GB).

Ideally, you would like to save all of your data on a single DVD, or at least minimize the number of DVD disks that are required to store that much data.

With the appropriate software you can watch prerecorded DVD movies on your computer. For example, Windows XP's Media Player will play movies.

VIDEO CAPTURE

Video capture boards, or USB plug-in devices have gone through a number of changes. They can be used to transfer home movies, and to record TV show live, including movies. See <http://www.hauppage.com/> for some popular offerings in this category.

NEW GRAPHIC CARDS

The state-of-the-art have advanced significantly over earlier graphic cards with high performance features of special interest to gamers and those wanting a richer visual graphic experience. Vista Aero, makes use of middle- to high-end graphic engines to properly display the advanced graphics offered by the premium program. The average user benefits as prices fall over time and they get more capable graphic engines, with faster response times.

HARD DRIVES SIZZLE

Newer hard drives read and write data to disk in a fraction of the time it took earlier hard drives. They are able to store much more data on drives of the same physical size. At the same time, the cost per megabyte/gigabyte has fallen dramatically. This is good news for all users, but especially for those who are running out of storage space.



Hard Drives

FLAT PANEL DISPLAYS/LCDs

Flat panel displays have become very popular. Because they take up very little room on a desktop from front to back, they can be used in situations where the desktop is not very deep. They also look better from the side, in a decorating sense, than bulky CRT monitors. These newer displays come with sound bar accessories or built-in speakers, and some include extra USB connectors.

Look for models with fast millisecond response times and high contrast ratios.

USB 2.0 IS STILL NEWS

Earlier computers came with USB 1.0 or no such ports. USB 2.0 offers much higher data transfer rates (480 megabits-per-second versus 12 megabits per second for USB 1.0). Universal Serial Bus devices are referred to as plug-and-play. Normally, you just plug in a USB device, it is recognized by the operating system, and you start right to work with that device. Sometimes, you have to provide the CD that came with the device because its driver is not in Microsoft's library of signed drivers.



THUMB DRIVES ARE BIG NEWS



Thumb drives are small solid state storage devices that can be carried on a key chain. They facilitate the transfer of data between computers and take the place of the so called "sneaker-net." Before thumb drives, it was necessary to save data to floppy

disk, CD, tapes, or some other media. The data was then walked (hence the sneaker term) from one computer to another. Business presenters, or home users can conveniently carry important files with them. For example I keep my computer software tool kit on my thumb drive.

WIRELESS INTERNET

Broadband modems and wireless Internet make connecting to the Internet a breeze. A combination wireless access point/router enables you to share your internet connection and a printer with other family members. Each computer needs an Internet Interface Card or Network Adapter whether wired or wireless. A small network card plugs into the side of laptop computers. Small USB wireless network adapters are available. Plug-and-play.



DIGITAL CAMERAS WITH IMAGE STABILIZATION

A digital camera has become a very popular computer accessory. Pictures are transferred from the camera via a supplied cable, or better yet, via an attached USB film reader that remains connected to the computer. While the camera is not an integral part of the computer, the computer plays an important role in managing the large library of pictures, and in editing and printing pictures.

Some of the newer digital cameras provide **image stabilization**. That is a fancy word for built-in anti-shake technology that enables you to hand-hold your camera while taking pictures at slower than normal speeds, or longer focal lengths with your zoom lens. This tends to eliminate fuzzy pictures due to unwanted camera movement.

NEW MEMORY TYPES

Random Access Memory (RAM) continues to evolve with faster memory chips, and lower cost. DDR III (Double Data Rate Three Synchronous Dynamic Random Access) memory is just now coming to market. It is the successor to DDR2 and promises to lower power requirements by 40%. New motherboards are required to use the memory.

NEW MOTHERBOARDS

A motherboard, along with the CPU and add-in cards is the heart of a computer. Newer motherboards contain the latest BIOS versions, and latest chipsets and circuitry. They are designed specifically to work with certain CPUs and memory types, and to support new services such as Serial ATA Raid hard drives. When building a computer or replacing one, carefully review the specifications for the board to be sure it will meet your needs, and work with the hardware you have or intend to purchase.

NEW COMPUTER CASES

New computer cases offer quieting features, better cooling, and style. Medium- and high-end cases include features not found on low-end cases. Examples include a removable motherboard tray, top or front access with USB and Firewire ports, heavier construction, tool-less access to the inner workings of the computer, tool-less add-in slot covers, and a high quality power supply with better voltage regulation. Gaming cases come with interior lights and liquid cooling.



COOLERMASTER WAVE

THE LATEST SOFTWARE VERSIONS

The latest software editions are written to take advantage of the newest hardware, and the reverse is true.