Building or Buying a Computer 11/23/08 updated
By Bart Koslow

Is it better to build or buy a new computer? I have always felt it is better to build one. Why?

When I build I get exactly what I want and do not pay for what I do not desire. I often use some drives, keyboards, monitors, modems. etc. from an earlier computer saving money, but still getting what I want. There are other reasons. Name brand computers have drawbacks. They do not come with the usual (at this time) Windows XP operating system disk, but with two or three disks which include Windows and proprietary software. If you have a major problem, instead of reloading Windows and retaining all of your program connections you may have to start all over again adding all the programs, etc. that you installed after buying the computer – not a pleasant prospect. They often have little room for expansion in the event you wish to add drives, internal cards or memory. The motherboards and other hardware may be proprietary which means you must go back to the manufacturer if you have a problem or need a replacement, and you can bet the replacement will cost you more than similar non-proprietary hardware.

Many of us would rather buy a computer for the convenience of not having to build, particularly if they are not technologically or mechanically oriented. There are others of us who could easily build one if they had the courage. If you are a computer club member, help and advice is always available if you get stuck. So why not try?

Whether you build or buy, there are many things you should know before you proceed. I usually do not buy state of the art due to the expense and that today's state of the art is passé in six to twelve months. Instead, I look for the best price/performance ratio. Let's begin with the computer case. Almost all cases support both AMD and Intel motherboards. You want a case that has room for expansion. I suggest at least eight bays, three 5 ¼" external bays, two external 3 ½" bays and three internal 3 ½" bays for hard drives. My Antec case has eight bays with front panel USB connections and holds a standard size ATX motherboard. It would have been nice if it had front panel audio or Firewire connections as well. It has a large (and quiet) 120 mm fan and places for two more 80 mm fans which I installed to keep the motherboard and CPU cool. Incidentally, air flow of the fans should be from bottom front of your case to top rear. A nice feature of the case is the two hand removable screws that enable removing all the case covers without using a screwdriver or nut driver. I never stand my case on the carpet as there often is some air circulation from the under the case or from the bottom front which may be blocked. I place a 1" x 8" (or two 1" x 4"s) on the carpet and stand the case upon it. You should make sure you have a power supply with ample wattage. Otherwise, you may have problems that are due to insufficient power. I installed a heavy duty 500 watt ATX v2.0 power supply with a quiet 120mm fan, which complies with the newer power saving requirements, and which I recommend as a minimum.

Next and most important is the motherboard. I tend to use motherboards that support AMD CPUs since the price to performance ratio is better than for Intel CPUs. Today you should look for a motherboard (or computer) that supports Dual Core, Tri-Core or Quad Core CPUs, dual channel 800-1600 mhz DDR2 or DDR3 memory, has PCI-Express slots and PCI slots, and has built in audio and Ethernet capabilities. Some motherboards also have built in graphics. The downside is that these use some of the CPU power. The upside is that it is cheaper than buying a separate graphics card. I prefer the separate card since prices are very low today. The motherboard should support two to four Serial ATA 2 hard drives that run at a maximum of 3 Gb/s, at least two IDE devices (hard drives, DVD, CD drives) and at least eight USB ports. PCI-Express is the latest bus architecture that is faster than the older PCI bus and eliminates the use of AGP slots for graphics cards. PCI-Express 2 is coming soon. Most of the newer boards do not have an external parallel

port, so if you have a parallel port printer you wish to use be careful. However, they usually have an internal parallel port connection on the mother board which you may use to connect to an external parallel port. You must supply the external parallel port connector. You may also buy a USB to parallel adapter, instead. Many boards still come with a floppy drive connector, and mouse and keyboard connectors, a serial port, and some come with an external Firewire connection. Buy a quality motherboard. I have used Asus boards for many years. I recently found out they are the largest motherboard manufacturer in the world.

What about the CPU? I suggest a minimum of a dual core (two CPUs on one core) AMD processor. They come at speeds of 3800+ and up. I purchased a dual core 4200+ retail boxed processor a few years ago. The retail box includes a heat sink and fan assembly matched to the CPU. For most of us this is the way to go. With the dual core or better you will be ready for Windows.

What is dual channel memory? Instead of buying a recommended minimum one 2 GB module you buy two 1 MB modules which work in tandem and supposedly run 20% faster. The price is the same. Again buy DDR2 800 mhz memory or faster depending upon what your motherboard supports. When you buy the memory modules make sure your buy heat spreaders (for a few dollars) for each module. They should be installed before you place the memory on the motherboard. Before you purchase memory read the manual to find out which memory is supported by the motherboard. Then go to the motherboard manufacturer's web site and find out which manufacturer's memory has been tested and recommended by the motherboard manufacturer. If you buy other memory make sure you can return it or exchange it in the event it does not work properly in your motherboard.

Graphics cards are becoming much cheaper. PCI-Express motherboards support dual (two) linked graphics cards, either NVidia SLI or ATI Crossfire. Make sure if you buy dual cards that they match SLI or Crossfire, whichever is supported by your motherboard. The dual cards are powerful and extremely fast. Good if you are a gamer, but much too rich for me. If you buy one card it does not matter if it is an ATI or an NVidia card. You do want a card that has both an analog VGA and a digital (DVI or DVD) input. The digital input is essential if you are ever going to use an LCD monitor. (See my explanation under LCD monitors below). Look for at least 256MB of DDR2 memory on the graphics card. My motherboard supports dual SLI cards You may buy a decent graphics card online today for about $25-$35.

Most computers until recently supported IDE (Ultra DMA) hard drives that ran at a maximum of 1 to 1.33 Gb/s. Serial ATA (SATA) 1 runs at 1.5 Gb/s and SATA 2 runs at 3.0 Gb/s. A SATA connection on the motherboard will support both speed SATA drives. Only buy SATA 2. I still use an old external 160 GB IDE USB 2 drive to backup. Today, you may buy a 500GB SATA 2 drive for $70 to $75. I would not go for less.

I transferred my two DVD burners, a Fax/Modem, a mouse, a keyboard, a Firewire card, a printer, a scanner and a four port USB 2 card from an older computer to my new computer. I still use the Fax/Modem to send and receive faxes. The modem and Firewire card use PCI slots. I also purchased a 7 in 1 Sony internal card reader which I installed in a 3 ½" external bay. The motherboard came with two round SATA cables and flat ribbon IDE and floppy cables. I purchased two round IDE cables and one round floppy cable. The round cables are better as they do not interfere with air circulation in the case. You may still use Windows XP. Some people even prefer it. If I build a new computer from here on in I would probably go for Vista Home Premium or better.

What about the monitor? I bought a 22” Acer LCD monitor, and am very happy with it. Recently, I helped my daughter buy a 24” Dell monitor from Costco online. In my book bigger is better. There are a number of things you should be aware of when buying an LCD monitor. The earlier LCDs only had analog connections. Now, many have both an analog and a digital connection. Do not buy an LCD monitor unless it has a digital connection, as the apparent resolution is much better using the digital connection. All LCD monitors have a native resolution which is usually the one advertised. Important! Your video card must support the native resolution of the monitor for best results. An older computer may not support a new LCD monitor in digital mode and at its native resolution. Many manufacturers consider it OK if the LCD has eight or less bad pixels. If you get one or more, especially in the middle of your screen, you may not like it. Or you may not like the monitor in general once you try it out. That is why I would only buy an LCD monitor locally, where I have a return privilege for any reason. Some monitors can swivel vertically, which gives you a longer page view. Others have height and additional adjustments. LCD monitors come in 15”, 17”, 19”, 20”, 21”, 22”, 24” and greater sizes. The ones larger than 19” have a 16 to 9 aspect ratio instead of the older 4 to 3 ratio, and some 19” ones have the 16 to 9 ratio. Every one has different native resolutions. Some LCD monitors come with a digital cable, but most do not. You must have the correct digital cable for the monitor, and LCD monitors do vary. Go to www.datapro.net/techinfo/dvi_info.html for a lucid guide to the Digital Video Interface and which cable to use in each situation. You will find buying cables is much cheaper online. The $6 cable is just as good as the MONSTER $141 one, so don’t get ripped off.

You still need a printer, and I need a scanner for copying and faxing. The choices are innumerable. I like and use a ten year old HP 4P laser printer for the bulk of my printing. It looks better, is cheaper to run, and like the Energizer bunny just runs and runs and runs. I paid $810. I recently bought a Samsung Laser printer for $50. It is much faster than my old HP. That’s progress! If you buy a laser printer watch out for the ones that need drum replacements replacements, in addition to toner cartridge replacements, after a certain volume of use. You will end up paying more than the original printer cost. If you require color printing there are many inkjet and color laser printers available or you may buy an all in one that combines printing, copying, scanning, and faxing. I leave the choices to you.

If you have a little adventure in your soul you can build a new computer and obtain help from fellow computer club members. If not, you know what to look for. In any event, Happy Computing.