

## An Upgrade Need Not Be Expensive

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Well, maybe a little more than \$5.00, but if you are willing to do a little work and spend a little time, you can get quite a value. You have to be willing to assemble the parts yourself, and it is just about guaranteed that, if you do, you will also learn a lot about computers. Here is my recent experience with the process.

I have two computers in my office. My main machine is a Pentium 166 MMX with a big screen and all the bells and whistles. I actually purchased it ready made a few years ago, using funds from a windfall I did not expect. It cost over \$2,500 at that time. A good machine, it has given me excellent service, and was on the "cutting edge" when I purchased it. My second computer was a 486 – 100 MHz unit that I used for database, some graphics and general DOS work. It was very handy, since I could be writing an article on the Pentium, then pause and use the 486 to do a drawing or other task necessary for the article without shutting down the file in my primary machine. In early January, I decided it was time to upgrade the 486 to a Pentium (which I am using right now to write this article).

I got on the web and looked around for components. One of the places I looked was Surplus Auction, recently taken over by EggHead, which used to be a chain of software outlets around the country. You can bid on items offered there (<http://www.surplusauction.com>), which turned out to be my source of all upgrade parts except for memory and a fan. I purchased memory locally at Best Buy, and a heatsink/fan for the CPU (an absolute necessity for the CPU – it gets HOT) at a local Computer Gallery store. Here is a list of the items I bid on and won (at different times over the period of a month or so), and the prices I paid (note that the prices shown INCLUDE shipping charges):

| ITEM  | COST    |
|---|---------|
| Pentium motherboard with 1 Mb cache, 2 USB, 2 SER, 1 PAR port, etc. | \$53.95 |
| Intel Pentium 233 MHz CPU   | 104.95  |
| ATX Mini-mid tower case w/250 watt power supply                     | 63.95   |
| CD ROM (24X)  | 26.95   |
| Creative Labs Blaster Video Board, 4 Mb 100 MHz SG RAM)             | 26.95   |
| Heatsink and fan for CPU  | 15.84   |
| 64 Mb parity SDRAM 168 pin, (price shown is after rebate of \$20)   | 96.15   |
| TOTAL   | 388.74  |

The only other items used not listed above were the hard drive, keyboard, mouse, 1.2 Mb floppy drive, 1.44 Mb drive and monitor, all of which I had on hand from the 486. Actually, I had a video board and CD ROM drive on hand too, but elected to upgrade both these items in the process (my old CD ROM was only double-speed, and the old video board had only half a meg of memory on it).

Not a bad price for an upgrade. Moreover, the new machine is easily 25% faster than my other Pentium, and several times as fast as the 486. It really smokes along!

Some things to watch for. 1. If you plan to use your old case and power supply, be sure the new motherboard is compatible. For example, ATX form motherboards use a power supply connector that is different from the old 2-plug style. 2. Be sure you understand exactly what type of memory the new motherboard requires. For example, just because a 168 pin DIMM memory module will plug into a new board doesn't mean it will work. There are a number of different types of memory modules even within one physical style. Be sure to get the right one. 3. Get your motherboard first. It may well have one or two IDE connectors or serial and parallel (and USB or FireWire) ports and even video cards built right into the board. What is there and what is not will dictate what additional cards you need to buy, or which ones you can use from the old computer. 4. Get the fastest CPU that the motherboard will support – it will pay in the long run. 5. Don't even think of getting less than 64 Mbytes of RAM. You can get along with 32 Mbytes in Windows 95 or 98 only if you plan to do nothing but word processing. Memory is too inexpensive right now to hobble the machine by getting too little. 6. Have fun with it! 7. Happy computing!