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New PC System Specifications

As new computer system prices have declined and their power and utility have increased, the number of system purchases has similarly increased. The question arises each time what components and capabilities to acquire, leading the buyer into an extensive alphabet soup of choices and considerations. Here we take a look at the components to consider and some thoughts around what to purchase to maintain the bang for the buck.

The target use for the theoretical system is average and general business, excluding minimum basic operation and top of the line/state of the art choices. In other words, we will consider the system for most of us under common use.

CPU - We start with the CPU, the brain of the system. The highest class available is what Intel calls the 'P4'. The previous class 'P3' has been available for several years now. This component also has a speed factor to consider. Think of these elements as the number of cylinders [P3 vs P4] and horsepower of an engine [speed measured in Megahertz]. A faster P3 serves almost all applications more than adequately although a modest speed P4 markedly outperforms fast P3s. The 'obsolescence factor' requires consideration of the higher-class chip. That is, several years after purchase, the useful life of the system naturally is longer for the higher-class chip. The P4 motherboard includes several design enhancements for the higher-class chip and new technology developed since the P3 motherboard. Software that will use the specific design of the P4 will be available in the coming months.

As usual you get what you pay for. A middle-speed P4 costs about $200 more than a higher speed P3. It is the writer's opinion that the cost difference is worth the investment when considering the entire useful life of the system even though at the outset the initial cost savings may appear desirable.

RAM [Memory] - This component's main consideration is quantity and secondly it's speed. Memory requirements have increased significantly over the years as memory cost has declined. This matches the increase in the standard amount of memory included with packaged systems. Usually the amount of memory can be easily increased at a future date but with the current low cost it is worthwhile to consider a greater amount than otherwise. Without theorizing on specific requirements of various programs, 128MB is an adequate amount for above average use in today's programs with some to spare. 64MB works, but will probably need to be increased in the future. 256MB might never be needed or useful in the life of the system. However some are saying the most recent release of Microsoft's desktop application package can benefit from 256MB even though Microsoft's stated memory requirements are not near that amount.

As to memory speed, more is better. For a P3 system, look for 133MHz memory. For P4 memory technology, 800MHz is what to look for.

Hard Disk Storage - It is assumed that the target system does not access all its programs over a network and thus benefits from a measurable amount of local storage. Like almost all other components in today's systems, storage requirements have also decreased significantly over the last few years. In fact the largest disks available a couple years ago are not even made anymore. Today, 20GB is very common and 30GB is available for a small additional cost.

There are two primary technologies available, IDE and SCSI. IDE is very common and less expensive than SCSI. If cost were not a consideration, SCSI is faster but not a great value for our purposes.

Video Memory - There are two specifications in this component, memory and data path width. As to memory, 16MB and 32MB cards are common and 64MB is available. The 32MB capacity represents the approximate price/performance break point today. The data path width choices are 64-bit and 128-bit. Some applications benefit from the greater capability but each option costs approximately $30, not a large amount but quite a percentage difference. Another consideration is that upgrading the video system usually requires a full replacement of the adapter, pressing the case to reduce the chance of requiring an upgrade later by opting for greater capabilities at the outset. If budget allows, the better capabilities are recommended, as applications are currently available that benefit from this – 64MB, 128-bit video cards are available for under $150

Monitor - With today's video capabilities, larger screen sizes are useful. The most common smallest monitor measures 15" and is not recommended. The largest commonly available size is 21" and not worth the extra cost. A 19" monitor runs $325-350 and is very desirable if budget allows, 17" is definitely recommended and available under $200.

Rewriteable CD - Commonly available these days are CD-ROM drives that can be written, or 'burned' as the operation is commonly referred. This can be a very useful capability for data backup and storage purposes, or any other large data uses. By the end of this year, watch for a new CD-RW technology that will greatly increase the storage capacity beyond the current 650MB. The other specification parameter is the burn speed, referred to by a numeric "X" factor, the price break occurring at 12x. This rewritable device has fallen under $100, extremely economical in historical terms.

Sound - Sound is usually a standard feature but can be excluded for a nominal cost savings. It is strongly recommended that at least standard sound be included. For quality purposes only, the user can consider a speaker upgrade for $20-50 but this isn't necessary. If the budget is tight, that extra speaker upgrade cost is better put into one of the other options discussed.

Network Adapter - Most newer systems are coming with built in networking capability. Even for home stand-alone use, this can eventually be useful even if not at the outset. Don't be afraid of it or exclude it if it's included in a standard system package. However, it need not be added if there is not a known need over the projected life of the system.

Case Size - Merely from personal experience, the seemingly attractive dimensions of the 'mini' towers are not worth the inconvenience of later upgrade or service access or drive-bay capacity. Conversely, the larger full-sized cases are also inconvenient, leaving the recommendation for the so-called 'mid' sized cases. With the case comes a power supply, their capacity measured in watts. Look for 300 watts if available, otherwise 250 watts can work unless a large number of options are installed.

Uninterruptible Power Supply - Also referred to as battery backup, this can be very useful and potential insurance against system damage from power spikes, brownouts or outages. Some program errors can also occur from uneven power, which these units protect against. Look for at least 450-watt capacity for most computer boxes and their one monitor. These should be available for under $100 and are easily installed which is simply a matter of plugging the UPS in the wall and the protected devices into the UPS.

Conclusion - There are many choices for all the components in new systems today that have been complicated by advancing and new technology. However, the most common and moderately priced systems are very powerful for almost all general needs and uses. The discussion here tweaks the initial purchase process to increase the chance for more satisfied use over the life of the system.