10 things you should do when building a new PC

Takeaway: Building a custom system lets you tailor the components to meet your needs, while holding down the costs. Here are a few things to consider before you get started.

Oftentimes, the only way to get what you really want out of a new computer is to build it yourself. Although there is nothing inherently difficult about building a PC, there are a number of considerations you need to take into account before you begin ordering the parts. This article outlines 10 such considerations.

1: Decide what is really important to you

Even though computer hardware prices have dropped dramatically over the last few years, it is still possible to spend several thousand dollars building a PC. Assuming that you want to keep the total cost reasonable, stop and think about how the computer will be used. This will help you best determine how to allocate your budget. For example, if the computer is going to be used as a gaming machine, you might choose to spend a good part of your budget on a high-end video card or two. On the other hand, if the computer will serve as a virtualization host, you might be better off spending the money on extra memory.

2: Plan for the future

Computers evolve at a feverish pace, and there is no way to future-proof your hardware. The eventual obsolescence of your computer is a sad fact of life, no matter how high end the machine might be today. One thing you can do to help extend the lifespan of your new computer is to purchase a high-end system board. The system board as the one component that arguably limits your computer more than anything else. For example, your system board limits the total amount of memory that can be installed on the computer and dictates the system's CPU architecture. Spending a little bit extra on a system board now might make it easier to upgrade your computer down the road.

3: Don't skimp on the fans

One lesson I have learned the hard way is that heat kills. If a computer gets too hot, the heat can damage the CPU. This can be an issue for almost any PC, but the problem of heat dissipation comes more pronounced on higher-end systems because they generally produce more heat. Consider the problem of heat dissipation when you're designing your new system. Be sure to plan for an adequate number of fans and maybe even some liquid cooling.

4: Determine up front if you will need any extra connectors

While I am on the subject of cooling, I want to mention that it is important to determine up front how you will power the cooling fans. Many of the cooling fans that are available today are designed to attach to a four-pin Molex connector (normally used for powering legacy disk types). However, some of the newer fans use a PWM connector instead. These fans are designed to plug directly into the system board, which can monitor the fan's rotational speed. While this might sound good in theory, system boards have a limited number of fan connectors.

For example, I recently built several new systems. The case I used had four fans installed, but my system board had connectors for only three fans (plus the CPU fan). As a result, I had to order an adapter for each machine that would allow me to plug the fan into a disk power connector.

5: Perform periodic maintenance

As previously mentioned, higher-end systems need plenty of fans to keep the internal components cool. However, installing lots of fans alone isn't enough. It's also necessary to do some periodic maintenance to make sure that the fans are doing their jobs.

To give you a more concrete example, I have a fairly high-end PC that has nine case fans. The problem is that the computer sits underneath my desk, relatively obscured from sight. A few months ago, the computer's air intake became clogged with dust. This prevented the nine fans from moving enough air, and the computer overheated as a result. My failure to keep the air intake clean resulted in having to purchase a new processor.

As a side note, it is also a good idea to periodically make sure that the fans installed in your new computer are actually working. Many of the case fans on the market are cheaply made and sometimes stop working.

6: Choose power supplies carefully

When picking out a power supply for your new computer, you should first make sure that the power supply delivers adequate wattage to power the computer. Unlike the days of old, however, wattage should not be your only consideration.

You also need to consider the types of connectors provided by the power supply. A basic, low-end PC will probably be fine using a power supply that provides only system board and disk connectors. But higher-end systems may require that certain components be powered directly by the power supply. For example, some AMD video cards require an 850 watt (or higher) power supply with two 150 watt eight-pin and two 75 watt six-pin PCI Express power connectors.

Another concern with regard to your power supply is the length of the power cables. If you're building the PC in a large, full-tower case, you may find that some disk power cables are simply too short to reach all of the drive bays.

7: Shop around for the best price on memory

When I was shopping for parts to build my latest PC, I noticed that memory prices were all over the place. I compared prices with three online vendors and found that one vendor's price for memory was double that of the lowest-priced vendor for exactly the same product. It goes without saying that different vendors will often have different prices, but I was really surprised by just how drastic the price differences were for memory.

8: Don't buy more case than you need

When building a computer, it can be tempting to spend a few extra bucks and get a case that is flashy and eye-catching. Sometimes, though, the higher-end cases could end up being overkill. For example, I recently found a case that had 15 Internal drive bays. But a case like that would seriously been overkill since I was planning to install only six drives.

9: Verify that your case has the appropriate USB headers

When picking out a case, you should also make sure that it has the appropriate USB headers. Most of the newer system boards have a connection for USB 3.0 headers. The physical design of this port prevents the connection of USB 2.0 headers. So it's important to look for a case that fully supports USB 3.0.

10: Have a plan for cable management

Finally, make sure that you have a plan for cable management. The more components you install in a computer, the more cables you'll generally have to deal with. For instance, every drive requires a data cable and a power cable, and you might also need power cables for things like case fans and video cards. All those cables can get messy — and a clutter of cables can restrict airflow through the case, resulting in excessive heat. Develop a plan for keeping the cables neat and tidy before you start building.