

Learning Report: Constructing a PC Gaming System

By Brandon Ojaste 12/8/08

These are the problems I encountered and solved while building my first PC gaming system.

Ordering Parts

Initially I ordered the parts from TigerDirect, and they sent some of them. When they failed to deliver certain critical parts, I switched to NewEgg.com. However, I encountered problems at NewEgg, as well, due to an issue with the credit card. Eventually, I got the video card at the local Best Buy. Note: Even though I canceled the original TigerDirect order, they eventually shipped me the parts anyway, due to an apparent clerical error.

Setting Up

First I had to set up a static free work environment. This is a challenge because I own two dogs. To try and create this environment, I placed a painted card-board on my bedroom carpet, and then proceeded to move the glass table from the living room into my bedroom to work on the parts and placement. I locked the dogs out of the room.

Placing CPU fan, CPU & Ram

Where to place the RAM: the RAM chips and slots were color-coded.

Where to place the CPU: Instructions came with the CPU. Each CPU has a mark in one of its corners, this is to show where the pins are missing (Some CPUs have pins in different slots to indicate the socket type.)

Placing the CPU fan: There were no instructions for placing the CPU fan, and it wasn't immediately obvious where to put it. So, I Googled "CPU fan placement" and discovered several instructional videos that applied to my situation. These videos described where to put the fan and how to install it.

Mounting the Motherboard

In order to mount my motherboard, I referred to instructions on the inside of my PC case. I had to place small nut-like things called spacers inside my case. Each case is different and each motherboard can be mounted in a different format depending on size. Mine was ATX, meaning I insert the spacers into different number-coded holes into the case.

Per the instructional videos about building PC's, I removed the I/O panel in that came with the case, and placed the one that came with my motherboard.

Now it was time to mount the motherboard. I aligned the screws to the board as best I could, but it appeared that a few of the spacers were bent. This caused an improper alignment of the motherboard to the case. I dismantled and re-installed the board several times, bending each spacer slightly each time with a wrench.

Eventually, I managed to get all but the bottom right spacer in place. After successfully placing the motherboard it was time to install the power supply and fans.

Installing the Fans and Power Supply

Where to place the Fans: Simple snap-in areas inside of my case.

Power Supply: Placed it into the back of my case.

These steps were relatively easy.

Installing the HDD & DVD/CD/BD Drive

I pretty much just followed the instructions, placing a screw here, snapping this and that into place. I did have a few problems, but I didn't discover that until later. See "Installing the Graphics Card" for more information on these issues.

Wiring

Connecting the wires: At first this was a bit hard, only due to the fact a few parts had not come with their own set of wires. I had ordered spare SATA cables and power connectors pre-empting this.

The only part I had a problem connecting was the HDD. The wire was just too short. I then took two M/F SATA Power connectors and placed them together, giving me enough length to reach my motherboard's SATA power slot.

Installing the Graphics Card

Oh boy, this was probably the worst problem aside from the motherboard. The cards I had purchased from my local Best Buy were the 9800 GTX+ OC Edition. These were about an inch bigger than the 9800 GTXs that I had originally tried to order from TigerDirect and NewEgg. This was frustrating as I had double-checked with the sales manager at Best Buy, who had assured me it would fit with no trouble. He was obviously wrong.

These seemed to simply not be able to fit my mid-tower case. After attempting to widen the back casing (which did not work out as planned) I decided to sleep on it. I figured I may have to pick up another case the next day.

As it turns out, the next morning when I inspected the case, I found the HDD Bay could be moved. This was an important realization, because it created space for the card.

Ultimately I decided to allow my case to be slightly unstable by the market's standard in exchange for allowing space for my graphics card. I removed the six screws on the bottom of my case's HDD bay (Two inside the case bolting it to the side of it and four on the bottom) and found that it could be held in place by two screws angled across from each other. Awesome, it seemed to work!

Now that the card fit and I had connected the PCI 6 Pins to the power supply, it was time to boot up.

Booting up and Bios Configuration

When I first turned the PC on, I could get neither a USB or PS-2 keyboard to work. Additionally, the bios configuration told me that my graphics card had to be moved from slot 2 to slot 1. (What a pain this was, given all the graphics card issues!). I opened the case and moved the card, but this didn't solve the keyboard problem.

As it turns out, the power cable connecting to the motherboard wasn't in all the way. The PC was not getting enough power to use USB slots. I figured this out by using Google to search for known bios errors with USB keyboards. Turns out some people don't place the Molex in all the way and have this happen to them.

Installing the OS.

This was just like installing any PC game that had some sort of product key. Just click next until you get to the key entry.

Drivers

This was basically the same process as installing the OS.

Graphics Card Settings

Here's where things got a bit complicated. At first after installing the drivers, my graphics card drivers told me my PC could not handle the card at full settings (This was not true for the parts I ordered).

So I tried to adjust the settings using Nvidias nTune. It didn't work, the card still said it had no power.

I tried updating the drivers, but despite my efforts, it looked like it was a hardware problem. At this point I decided to open up my case again. Now after looking around inside, I realized I had neglected to connect one of the 6-PIN PCIE connectors.

The six-pin was loose inside the case and was causing my problem. I popped it back into place, booted up, and tah-dah it was working properly!

Monitoring Heat

Now it was time to make sure the thing wouldn't blow up on me. I ran a program built into nTune called nMonitor, to monitor PC Heat. Overall everything was okay, except that the graphics card was running at 60C when idle.

That's not quite right. A idle graphics card should only be around 40C or less, ever. It turns out my fan wasn't spinning at correct levels inside of the card. Every time I attempted to fix this, windows denied my settings and returned them to normal.

Now here's where some of my previous searching to overclock my graphics card came in handy. I knew about a program called Riva Tuner. This program allowed you to bypass windows safety settings for all of your hardware. I turned the fan up to 70% and it dropped the heating down to about 35C, much cooler right?

Finished!

Well, those were all of the problems I had, but now everything is working fine! So far, anyhow. It should stay that way, unless of course my HDD bay decides to move, slamming into my motherboard and frying everything by creating an open circuit, but otherwise it's done!