

Feature

Simming at Sea: A Tale of Heartbreak and Resurrection

by **Chunx**



Flashback to January, 2001

At home in the High Desert of California, I power up my first home-built computer.

Jeff, an old high school buddy of mine, lives and works at the same base I am stationed at and also happens to be quite a computer wiz (and gamer). I should hope so, since he writes the computer code that forms the operating systems for the U.S. military's tactical aircraft! Over the course of late 2000 he helps me select and assemble the components I would need to build a new computer, a PC intended for a single purpose — to play high-end simulations. I am excited about the prospects. Assembled for the install are the following components:

- Intel Pentium 3, 933MHz processor (Slot 1)
- ABIT SH6 Motherboard
- 384 MB of PC133 SDRAM
- ATX 300W power supply
- 2 x 40 GB IBM Ultra ATA 100 HD
- Voodoo 5 5500 (a year later this was replaced with a GeForce 4 Ti 4400)
- SB Live! Value
- Sony 48x CD-ROM
- Iomega 250 MB Zip Drive
- US Robotics 56K Modem
- Intel 10/100 Ethernet NIC
- Windows 98SE

This PC rocks. Over the next two-and-a-half-years, I derive literally hundreds of hours of enjoyment from classic sims like Grand Prix Legends, MiG Alley, Falcon 4.0 and a new game called Ghost Recon in the glory of a new graphics technique called "Full Scene Anti-Aliasing" and love every minute of it. I also gain exposure to multiplayer gaming with this rig, and that adds a whole new dimension to my hobby. My wife, however, is less than enthusiastic about the new computer. Imagine that.



Fast Forward to Summer, 2003

Somewhere in the Philippine Sea: It's month number 6 of the longest aircraft carrier deployment I've ever been on, and home is a long, long ways away in both time and distance.

So far, I've been able to break away from my work duties and squeeze in an hour or two of Grand Prix Legends, NASCAR Racing 2002 Season, IL-2 or Ghost Recon (with the Navy SEALs 2.0 Mod) every few days, and the fleeting opportunities to enjoy one of my off-duty hobbies has been a great stress reliever for me as I spend these endless months away from home, family and friends. There's no internet connectivity for my personal computer, but at least I have stand-alone, single player capability to entertain me.

As soon as I had received orders to the Carrier Group Staff, I considered what I would need to equip my stateroom for the arduous months at sea. A few quick trips to Office Depot and Fry's yielded an APC UPS, a comfortable office chair and a small computer workstation that would fit in my tiny living quarters.



For the first nine months of my tour, my home-built PC is working well in its role as the entertainment center of my stateroom. But, while our Carrier Strike Group plies the waters of the Western Pacific region, a problem arises. The desktop display looks fine, but something is clearly wrong. It boots quite normally to the desktop, but 5 to 8 seconds after it gets there everything locks up. The mouse and keyboard cease to function. Even Num Lock on the keyboard doesn't respond. A few dozen attempted reboots (and cursing) later, the problem remains. With no mail-order delivery at sea, limited internet access and no computer store down the road to drive to, acquiring what I need to repair my rig will be problematic.

I quickly got on the e-mail and posted my woes to my high school buddy Jeff and to guod here at SimHQ. Everyone was very helpful, and I cannot begin to explain how much their support meant to me while I was thousands of miles from home and isolated from most normal forms of PC troubleshooting. We sent dozens of e-mails back and forth, trying various techniques and troubleshooting plans to get the PC restarted.

For a few days, I was able to boot the PC in Safe Mode and manipulate data (mostly saving key files onto my slave HDD), making me think that I my copy of Win98SE had become corrupted. A re-install of Win98SE (with the help of a civilian tech rep onboard the ship) proved that theory totally wrong, as the exact problem remained. In fact, after a week or two of Safe Mode operation the PC's unhealthy symptoms took another turn for the worse. It could no longer get past the RAM check during POST. Instead the initial DOS / POST / RAM check page displays the disheartening message: "CPU invalid. Please check your BIOS options." Everything in the ABIT BIOS is set as desired, but the message now pops up every time I boot. It looked like either my mobo or CPU (or both) are toast. So much for a little simming at the end of a hard workday at sea.

My beloved gaming PC is now just a big paper weight in my stateroom.

The time had come to upgrade my system. Conveniently, LOMAC was



about to go gold, so while unexpected and abrupt, the concept of an upgrade was not totally unwelcome or unexpected (except to my wallet). I turned to my fellow hobbyists and friends on the SimHQ staff for advice and counsel on new PC hardware. Since my rig held an antiquated Slot 1 CPU and mobo, any upgrade that I did would have to involve a new mobo, CPU, and RAM. Since I didn't have the cash to build a new PC from scratch, some of the gear from the old system would have to be carried over (at least initially) until I could afford a replacement. So, I elected to keep the Hard Drives, the CD-ROM and the GeForce 4 Ti 4400.

Talking to my SimHQ friends, I polled them for parts recommendations that were high-end but not bank-busters, and here's what they recommended:

- Intel Pentium 4 3.0GHz CPU
(Retail, with heat sink and fan)
- Asus P4C800 Deluxe motherboard
- 1 GB of Corsair 3200/400 DDR Ram
(2 x 512MB DIMMS)
- Antec TruePower 480 Watt power supply
- Creative Audigy 2 ZS sound card
(added later on, when I could afford it)

Fall, 2003

My buddy Jeff purchased the mobo and retail CPU for me in November at the **LA Computer Fair**, a computer vendor's show where good prices are easily had. Later in the month he would box them up and FedEx them to me. I bought the Antec power supply at Fry's. The RAM and Audigy 2 would come later, as described below.

Since I had only obtained the GeForce 4 Ti4400 in the Summer of 2002 (with MasterFung's welcome assistance) and had been very pleased with it's performance, I elected keep it for the time being. I also kept the two 40GB IBM 7200 rpm, ATA 100 Hard Drives for carry over to the new rig. As I wasn't going to be needing my Intel Ethernet card (the ASUS P4C800 Deluxe has a built-in 10/100 Ethernet NIC), the modem or my SB Live! Value (I had heard of problems with this card and WinXP attributable to latency) I put them in the "spares" box for future uses (okay... so I'm a pack rat). Finally, I got rid of the old power supply because I couldn't be sure that it didn't have something to do with the failure of my mobo / CPU, and I wanted extra power and reliability afforded by the Antec 480W power supply. All these legacy items went into my spares box, perhaps to build a basic rig for my kids someday. Maybe.

The new hardware all arrived in the late November/early December timeframe, but having just returned home from an 8-plus month overseas deployment I was quite busy with other family activities, holidays, visiting relatives, social functions, "honey-do" lists, etc. It wasn't until nearly 3 months later that I was able to spread the new components out on the workbench and get serious about putting the gaming PC back together.

Mid December, 2003

The hardware swap was surprisingly easy.

I'm convinced just about anyone can bring the parts of a PC together. The key is to look carefully at what you need to do for each step, think through the action, and then proceed with care and patience. While computer assembly is not too hard, with delicate components costing upwards of \$300 that are sensitive to static discharge, shock, and stress, its better to be safe than sorry and proceed at a slow and measured pace.

I started by taking out all the AGP and PCI cards from the old mobo, as well as the RAM DIMMS. Then I took out the Disk drives (CD, Floppy and HDDs) and their associated ribbon cables and power plugs. After that, the old mobo/CPU came out as a single unit. Finally I removed the old ATX PS. For all this work all I needed was a Craftsman Phillips head screwdriver.

Rebuilding the rig was just as easy.

Concerned that I might screw up the CPU install and break a pin or CPU Fan clip, I took the time to read and re-read the CPU install instructions listed in both the CPU and mobo users guides. I did all this with the parts on the workbench in front of me so I could look at and handle them before I put metal to circuit board. I was also concerned about applying the heat sink “goop” to the CPU and CPU heat sink fan, because I noticed a patch of gray material on the retail CPU heat sink. A quick check and I learned that this was an Intel provided “goop” that obviated the need for the squeeze bottle goop (for those who didn’t intend to overclock their CPU). With this knowledge in hand, I set about mounting CPU to mobo and CPU Fan to CPU, following the written instructions to the letter, and test fitting each part before latching any handles, etc.

All of it went in without a hitch, and the only tool needed was a flathead screwdriver to help the CPU fan latches over the mobo mounting bracket hooks. The Antec PS had many, many cables and required purchase of two sizes of zip ties to help bundle and contain the wiring in order to keep the airflow smooth inside the case and to reduce clutter. My only issue with the install of the mobo was some confusion as to which way the CPU power button and LED wires should plug into the mobo (ie, which wire was ground).

At this point in our story, we were about to receive visiting relatives, and so the half-assembled computer chassis got a towel thrown over it and had to await final assembly after our guests had departed.

Early January, 2004

The last component to arrive was the Corsair DDR RAM, purchased from an online vendor. It arrived via UPS a day later than expected due to bad weather in the region. Installation, as typical for RAM, was a snap. The only trick to DDR RAM is ensuring that the sticks are in matching DIMM slots. ASUS made that easy for me, by color-coding the DIMM slots according to their matching DDR pairings. The Hardware install was now complete. I still didn’t have my Creative Audigy 2 ZS sound card, but I figured that I could just use the on-motherboard sound option until I could afford a new Audigy 2. For now I would live without premium sound.

The next day I took the PC to a local mom-and-pop PC repair store to have them do a quality check of my handiwork. While I was confident that I had followed the mobo and CPU instructions to the letter, I didn’t want to gamble my novice PC assembly skills against the cost of all those components. At no charge, the folks at my local PC repair store did a full check of all my handiwork as I watched over their shoulders. All was well, except that the technician at the store reversed my CPU power LED wire connector, telling me that I had it in backwards. No biggie if it was, except the light wouldn’t work. The technician and I then fired up the PC, and — IT WORKED! I felt like Dr. Frankenstein — my creation was ALIVE! I was a very happy camper and most pleased that I had passed my “PC assembly” test! We set the BIOS for my system components, and I took the PC home. The QA check was done at no charge, and I was in and out of the repair shop in 15 minutes. Sweet!

I took the computer home and the next night installed WinXP Pro and Service Pack 1 with a phone assist from guod. I formatted the hard drive to NTFS format. The only part that was tricky is making sure you select the correct options.

During the build I unplugged my slave HD, because as a newbie I was paranoid about accidentally reformatting it during the Windows XP install process (it had all my backup files on it). After finishing the OS install, I plugged it back in and all worked fine, although it’s a FAT 32 drive rather than NTFS. After I install a CD-RW or DVD-RW in my rig, I’ll burn a CD/DVD of all my backed up files and reformat this drive as well. But that’s for another day.

With the WinXP install complete, I turned to the Asus install CD to see what I might need to install. I had little idea what all the different applications were on their CD, but I did know that my PC was running fine without adding a single item from the Asus CD, so I figured that, for what I would use it for, I wouldn’t need very much off the CD. Of course, it might have helped to actually read about the contents of the install CD in their very comprehensive user guide, rather than just guess. Maybe I was feeling a bit too cocky after the successful hardware build and OS install, but whatever the reason I was deviating from my planned “care and caution” approach to PC assembly.

At first all I installed were the AC 97 codec for onboard sound (since I didn't have the Audigy 2 in hand yet) and USB 2.0 software. Little did I realize that I needed the Asus/Intel 875 Chipset INF files, since the computer seemed to be running quite happily without them. Although the PC worked, it wasn't working at full capacity, as I found out later. I finished up with an install of the NVIDIA WHQL 53.03 drivers from their site. I now had a resurrected home-built computer!

Courtesy of another phone conversation with guod, I got a walkthrough on optimizing XP for gaming. When finished, I proceeded to install my first game on the PC — Papyrus' NASCAR Racing 2003 Season. The game installed without a hitch and I updated to the 1.2.0.1 patch version, as well as installing my player, car set and replay file folders from my wife's PC (a Dell Dimension 8300, 875P chipset, P4 3GHz CPU with 1 GB of DDR RAM and a Radeon 9800. It also rocks, but is optimized for my wife's home office needs as opposed to computer gaming). Having installed NR 2003 on her similar-spec'd rig, I had a way to make direct comparisons in gameplay quality to judge just how much my new rig would be able to rock my racing and flight simulation world.

The first thing I noticed when I started up some replays in NR 2003 was that my home-built's frame rate was horrible! How could that be? What did I do wrong? First, I went to the Asus manual and read up on the install CD like I should have done in the first place. I found that I should have installed the chipset INF files in order to optimize XP to my mobo. I did this and it smoothed out my gaming to a degree. Next, I also realized I had neglected to update my Direct X from 8.1 to 9.0 as is required for NR 2003, so I went to one of my recent issues of PC Gamer and pulled out the accompanying CD, installing DX9.0b from the "Extras" section. This also improved NR2003's frame rate. Not satisfied, I reinstalled the NVIDIA 53.03 drivers, and then spent hours fiddling with the display settings for the card. In the end, I got the game to run consistently in the 35-50 fps range and in so doing I discovered the real FPS bottleneck in my new home-built PC wasn't something I had failed to install – it was the GeForce 4 Ti4400. By keeping the (relatively) older GeForce 4 card I had built in a weak point in my computer's ability to display graphics. On the wife's Dell, I ran NR 2003 at 1024x768@32 bit resolution, with 4x FSAA and 2x Anisotropic filtering, achieving 35-70 FPS while racing. In order to get 35-50 FPS out of my GeForce 4 Ti4400 during races, I am running NR 2003 at 1024x768@32 bit resolution, with 2x FSAA and Anisotropic filtering disabled. Using the weaker, DX8 4x AGP graphics card has also forced me to turn off a couple of the more fancy shadow features in the game in order to make those frame rates a reality. But the game still looks very good, and I now know what I'll be buying this Summer — a new video card. (for a good comparison of the relative capabilities of the GeForce 4 and Radeon 9800 cards, see the HardOCP Radeon 9800XT comparison here: <http://www.hardocp.com/article.html?art=NTUy>).



Mid January, 2004

Well, they don't call it "sea duty" for nuthin'!

My carrier strike group is back at sea once more, only 3 months after our return from our last deployment. Luckily I completed my computer rebuild just in time to bring it with me on the ship. After setting the PC up in my stateroom, I brought in a pilot buddy of mine who's also a big NR2003 fan and online racing partner. I wanted to show him my new Officer Stateroom Entertainment System in all its glory. We watched one race replay, then I decided to alter my in-game graphics settings with the game's graphics settings program. When I got back in the game, I discovered to my horror that the cars were all poorly rendered, with large strings of texel triangles replacing all the sharp lines and color demarcations on each car. The game looked horrible, like some modern art interpretation of a NASCAR race! Resetting my graphics to the original resolution didn't fix the problem. I started wondering if I had damaged the mobo or graphics card somehow, or if I had botched the Windows install.

After hours of fruitless troubleshooting, I tried using some NR 2003 graphics tweak tips from a web site devoted to

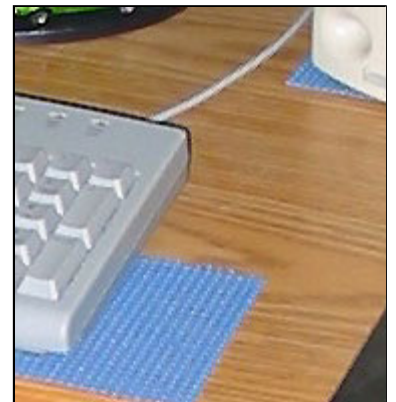
racing sims. Making some of their suggested changes to the player.ini and d3d render.ini files in the game regarding texture sizing, I got the good looks and clean lines of the cars back. Somehow the graphics engine had put in a bogus entry to the .ini files during its test of my graphics card, and my alteration to them fixed the problem. I am still at a loss to explain how this happens (and it still does). At least it wasn't a hardware problem, and I now know how to fix it. Perhaps an update to Windows will fix this problem — or a new graphics card.

Having tried a few races in NR 2003 season, I noticed that the in-game sounds on my rig were, well, awful. Having played the game on my wife's Dell, I was aware of NR 2003's penchant for the occasional snap, crackle and pop during races (much like the sounds on an old LP record, for those that can remember such things). While I also had these artifacts on my home-built's sound, the sound coming through my on-board sound chip had even more issues. It was very flat in tone, and I was unable to discern tire noise above the engine sounds being generated. The sound card didn't seem to be able to generate all the various sound in NR 2003 at the varied output levels commanded by the game. Since the sounds in NR 2003 provide critical car performance cues in a race as a way of compensating for the lack of "seat of the pants feel" (much like the airframe buffet cues in MiG Alley or IL-2 FB), you can't very well race at peak performance without them. On top of that, my sound card couldn't decide how to present the engine noises, so it frequently made random "burping" noises about 10 dB greater than the nominal sounds, with a lot of distortion added in for good measure. This inability to present the sounds of NR 2003 in any acceptable manner was a no-go for me, so I opted to purchase my new Audigy 2 ZS at my next liberty port of call. As our next port call timed perfectly with my payday, a quick trip to a local computer hardware warehouse store was all that was needed to pick up a new Audigy 2.



Late January, 2004

We're back out to sea, and I found a few hours to break away from my job and install the Audigy 2 ZS card. Having done audio card replacements in the past, I have to say that this was the most painless installation of an audio card I have ever done. I started by uninstalling the onboard sound AC97 drivers and control panel via Window's ADD/REMOVE programs function. Then I rebooted the PC, entering the BIOS to disable the AC97 codec. Theoretically this isn't required since the mobo is supposed to prioritize the PCI sound card over the onboard sound, but I wanted to ensure there were no conflicts within the system. I then powered down and unplugged my PC, installed the sound card in PCI #2 (as per Asus' recommendation in their mobo guide) and reassembled the PC. Upon powering up Windows saw the new card and asked me to provide the drivers via the Creative install CD. After getting the basic drivers installed I rebooted and installed the EAX, Audio Control panels and other bits and bobs. Everything seemed to be working good, I re-booted one more time, set up my volume and mixer controls, and I was ready to rock.



I brought my NASCAR buddy back to listen to the new card. The difference in sound quality is immediately noticeable and quite pleasing to the ears. The game sounded great! Almost like really being at the races. Best of all I could hear my tire noises quite clearly now, and that was a very good thing for immersion (and racing success). Although I had thought I'd see a frame rate improvement over the onboard sound, I didn't. But the new sound card showed me just how important good sound quality is to the enjoyment of a high-end simulation.

In the coming weeks I hope to find the time to install some of my other game titles, which include IL-2 Forgotten Battles, Flight Simulator 2004, LOMAC and my favorite tactical simulation, Ghost Recon. Now, when I need to suspend my reality of living in a big, gray metal box, I can relax for a few hours and live the life of a NASCAR driver, or WW II fighter pilot, or A-10 driver (like Andy). And that's a good thing to have going to counter the monotony of life on the 'Boat.

Screenshots from the new gaming system.
Click on a thumbnail for the enlarged image.
The Hurricane skin is by Compan.



Based on my recent experiences in the realm of home PC assembly here are some of my Lessons Learned:

- Computer components die. And they don't do it on a schedule. It just happens, even if you take meticulous care of your PC.
- The friends I have made in the online simulation community and computer hobby are great people and unselfish friends. I am lucky to have them and grateful for their time and assistance in helping me get smarter on this hobby. I can never say thanks enough for their stalwart support of me and patient tolerance of my computer

ignorance, both when I am at sea and at home.

- No matter what you build or buy, a week later you'll learn it's outdated or obsolete. I am reading in this month's issue of Maximum PC magazine about new mobos, new CPUs, the BTX chassis standard, DDR2 RAM and the death of AGP, all of which spell quick obsolescence for my 875P mobo and Corsair DDR RAM.
- Sound is very important to simulation's immersion factor, and is a very underrated part of many gaming systems. While adding a top of the line Sound Card didn't improve my home-built's frame rate (by handling more sound processing on the card vice the mobo/CPU), it did improve the quality of my gaming experience.
- Graphics cards go obsolete very quickly. It irks me that you can pay \$300 or more... much more... for a good graphics card, only to have it turn in a less than stellar performance on games that hit the streets a mere 8 months later. I thought my GeForce 4 Ti4400 was new enough to provide a quality visual picture on the new system. It had done a stellar job on my P3 933 rig. But on the 3 Gig system, it immediately became the bottleneck in my quest for immersive graphic quality. Not to mention that a few weeks on my wife's Radeon 9800 equipped Dell had spoiled me to just how good a game can look with a state-of-the-art graphics card. This will definitely be my next upgrade component in the coming months — as soon as I can save my pennies for one!
- Building your own PC is really not that challenging. Although my wife's Dell is a nice rig, I bought her a Dell for a simple reason: She's a complete computer-phobe. I needed a system that was fairly bulletproof (her previous Dell P2 400MHz has lasted for 5 years and is still running, sort of), and one that had full warranty and tech support. For me, the more I build and tweak a PC, the more comfort I have in troubleshooting them and repairing them. It's just a bit more costly to replace failed components (unless they die under warranty, which they never seem to do).
- One sub-standard component can seriously degrade your gaming quality. A great graphics card does you no good if your CPU is a generation or two old. And a state of the art mobo/CPU/Sound card combo will not make up for an out of date graphics card. You can tweak your way to a good picture, but a great picture is only there if the key components are all of the same vintage (mobo, RAM, CPU, graphics, sound).
- A quality PC simulation can help you forget your troubles of the day by forcing you to concentrate and immerse yourself into the challenge and reward of a good gaming experience.

Okay, that's enough for now, it's high time for me to get back to my real job. For this generation of my home-built PC, I will be adding the capability to conduct some of my office work on it. I've found that sometimes it's easier to take care of the piles of staff "administrivia" paperwork from the seclusion and comfort of my stateroom, rather than in an office surrounded by a distracting cast of thousands. I'll try to update this article in the summer— if and when I get a new graphics card. Until then I'll be at sea, working hard... and perhaps doing a little gaming when time permits.



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