G4 Upgrade of a Beige Power Mac G3

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Upgrade at a Glance:

Upgrading:	A Beige 266 Mhz G3
Product:	Encore 500 MHz G4 with 1 MB L2 Cache
Vendor:	www.sonnettech.com
Ease of Installation:	Some Experience Recommended
Instructions:	Fair
Tech Support:	Excellent
Performance:	Good
Price:	$299.95

I recently decided it was time to upgrade my faithful beige G3 mini tower system to something a little quicker. Unlike many models, the Power Mac G3 computer came with a 266 Mhz G3 processor installed in a ZIF (Zero Insertion Force) socket, designed to make processor upgrades easy.

I chose the Sonnet Technologies Encore 500 Mhz G4 upgrade kit. This is an important step -- choose carefully to make sure you order a model that fits your computer.

Sonnet's motto is "Simply Fast", and they advertise no control panels or DIP switches. This was close to my experience, but I could easily have been disappointed.
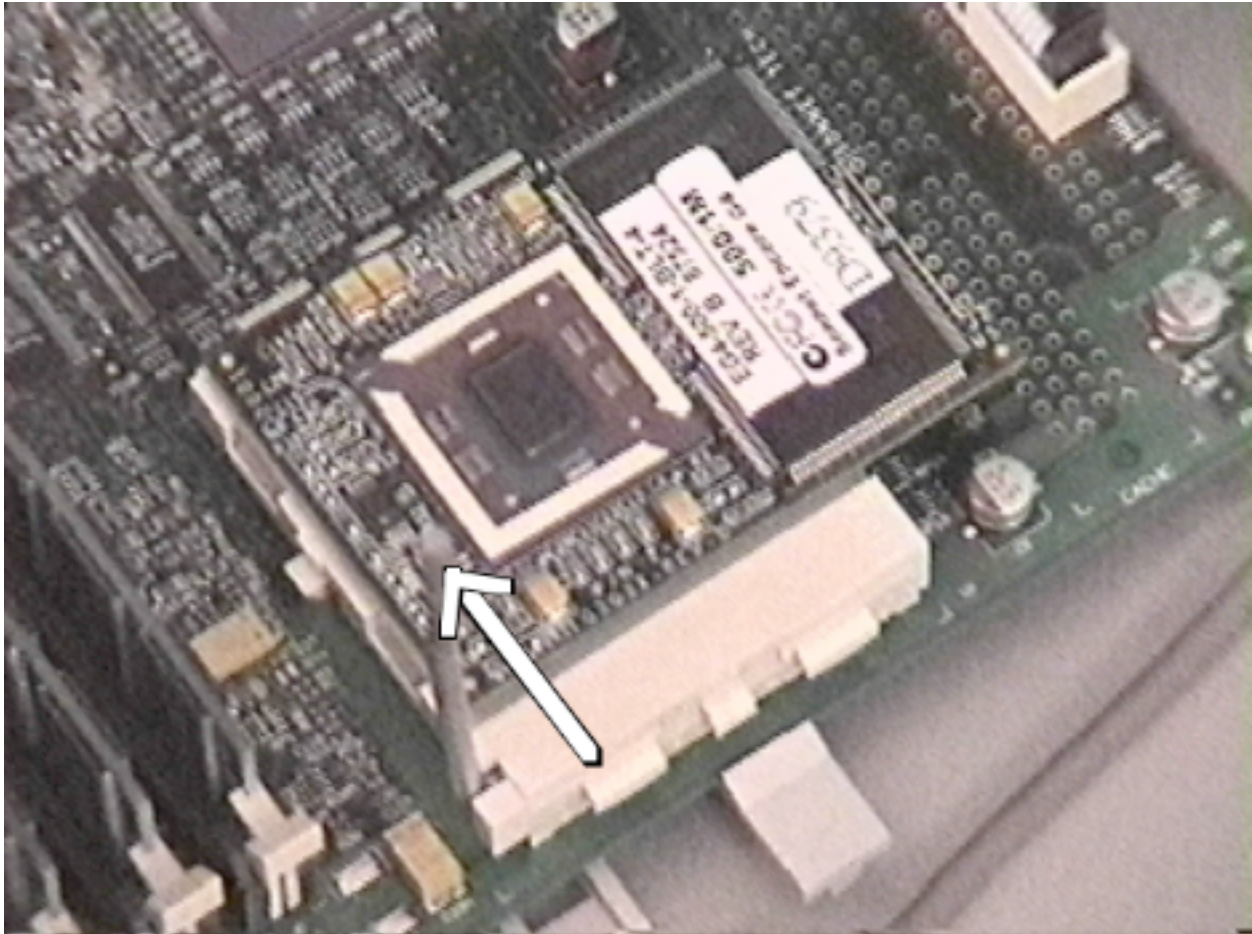
On opening the package, I found a special warning to owners of beige G3s. Apparently some beige G3s have a voltage regulator that is incompatible with the upgrades. If yours is one of these models, you must buy a new voltage regulator for $75 before installing the upgrade. I wondered why they couldn't have put this on their web site so I could check before ordering the upgrade. I looked again, and it is on the web site, but in a fairly obscure place. Luckily, my voltage regulator did not need replacement. To avoid disappointments, read the fine print carefully before ordering!

The manual was less than ideal. At first, I flipped through the entire manual, and not seeing a word of English, decided that the whole thing was in French. All the left hand pages contain French and Spanish instructions, and English instructions are on the right. The instructions for opening the computer and installing the upgrade were clear and complete. The only problem with that section, was that my heat sink had a ground wire attached to it by a screw, that was not mentioned in the instructions.

Before upgrading, I had already installed OS 9.1 and OS X on the G3. If I had followed the instructions for software installation, I would have spent a lot of time reinstalling OS 9. Older versions of system 9 required that you rerun the installer to get the alti-vec libraries installed to take advantage of the unique capabilities of the G4 processor. This is no longer necessary, according to Sonnet tech support. The

software instructions need updating for recent versions of MacOS 9.

The only problem I had with the hardware installation was a surprising one. The new processor board is shipped with its pins stuck into a piece of black antistatic foam. Removing this foam from the pins without bending any pins was amazingly difficult. The foam was very dense and sticky. By slowly working one edge at a time, back and forth, I was able to get the foam off in about 15 minutes. Once loose from the foam, many of the pins still had black residue clinging to them. I scraped it off carefully with a small screwdriver.

ZIF Socket with new G4 Installed. Push lever as shown by arrow to lock it in place.
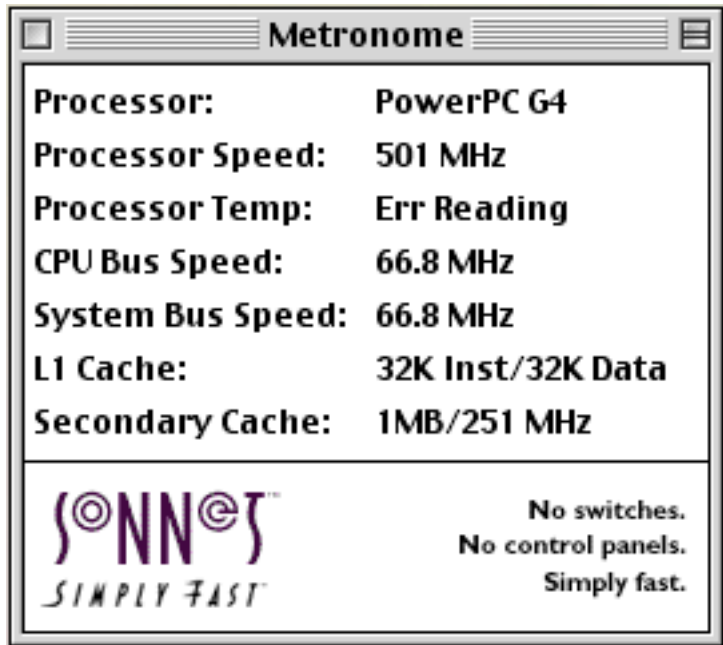
Sonnet apparently knows about this problem, because the manual recommends using compressed air to blow foam particles off the pins. There is no need for the foam to be so difficult to remove. It would be easy to overlook the residue on the pins, which could cause some very difficult problems later on.

Sonnet excludes bent and broken pins from their warranty. This seems reasonable, except for the problem with the foam, which I imagine has caused many bent pins. Basically, if you break off a pin, your brand new upgrade is now trash!

The G4 processor was a drop-in replacement for the original G3. I had no problems reinstalling the heat sink, and closing everything up.

The system started right up after the upgrade. Upgrading from a G3 to a G4, is one case where Sonnet requires some software to be installed along with the hardware.

The CD installs the Metronome status application which confirms what type of processor you have, and its speed. It is supposed to also measure the temperature of the CPU, but Sonnet tech support says that doesn't work on Motorola's latest chips.

Sonnet's Metronome application after installation of the G4.

I also received *Sonnet X Tune Up 1.2*. This is very important, as I found out the first time I tried to set my startup disk from my OS 9 partition to the OS X partition. It didn't work! Neither did holding the option key during startup. I had in fact run *Sonnet X Tune Up*, but it hadn't had its full effect. This was explained well by Sonnet tech support:

> ... download a copy of v9.2.1 of the Startup Disk control panel (if you don't already have that installed). You can find that here:
>
> http://www.info.apple.com/kbnum/n120024
>
> A beige G3 with a G3 in it is an approved machine for OS X. A beige G3 with a G4 is not. Apple enforces this through the Startup Disk control panel. If it detects a G4, it won't save your selection of your OS X partition. You can see this for yourself by selecting your OS X install in Startup Disk. Close it without restarting. Now open it again. Notice your selection didn't "stick."

What our Tune Up software does under OS 9 is convert v9.2.1 of the Startup Disk to Startup Disk X which has this little block removed. You'll use that from henceforth to switch into OS X. You also run our software [*meaning Sonnet X Tune Up*] under OS X and it'll install a kernel extension that activates the L2 cache on our card. Without it, OS X runs rather poorly.

What I had missed was that you must have Startup Disk v9.2.1 *exactly*, for this to work. I had v9.2.2. This is one case where newer is not better.

In all, I E-mailed Sonnet for tech support twice. Both times I received prompt and very helpful replies. I think E-mail is probably the best way to get many tech support questions answered. It's easier for the customer, and for the company.
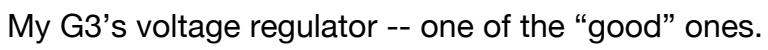
It's clear that there is a continuing battle of wits between Apple and Sonnet. Apple really would rather you buy a new computer instead of upgrading, but they don't want to completely alienate their customers, so they deliberately drop a few minor obstacles to upgrades. Sonnet seems to be right on top of it, though. For instance, they are already advertising compatibility with OS 10.2, (Jaguar), which just came out a few days ago.
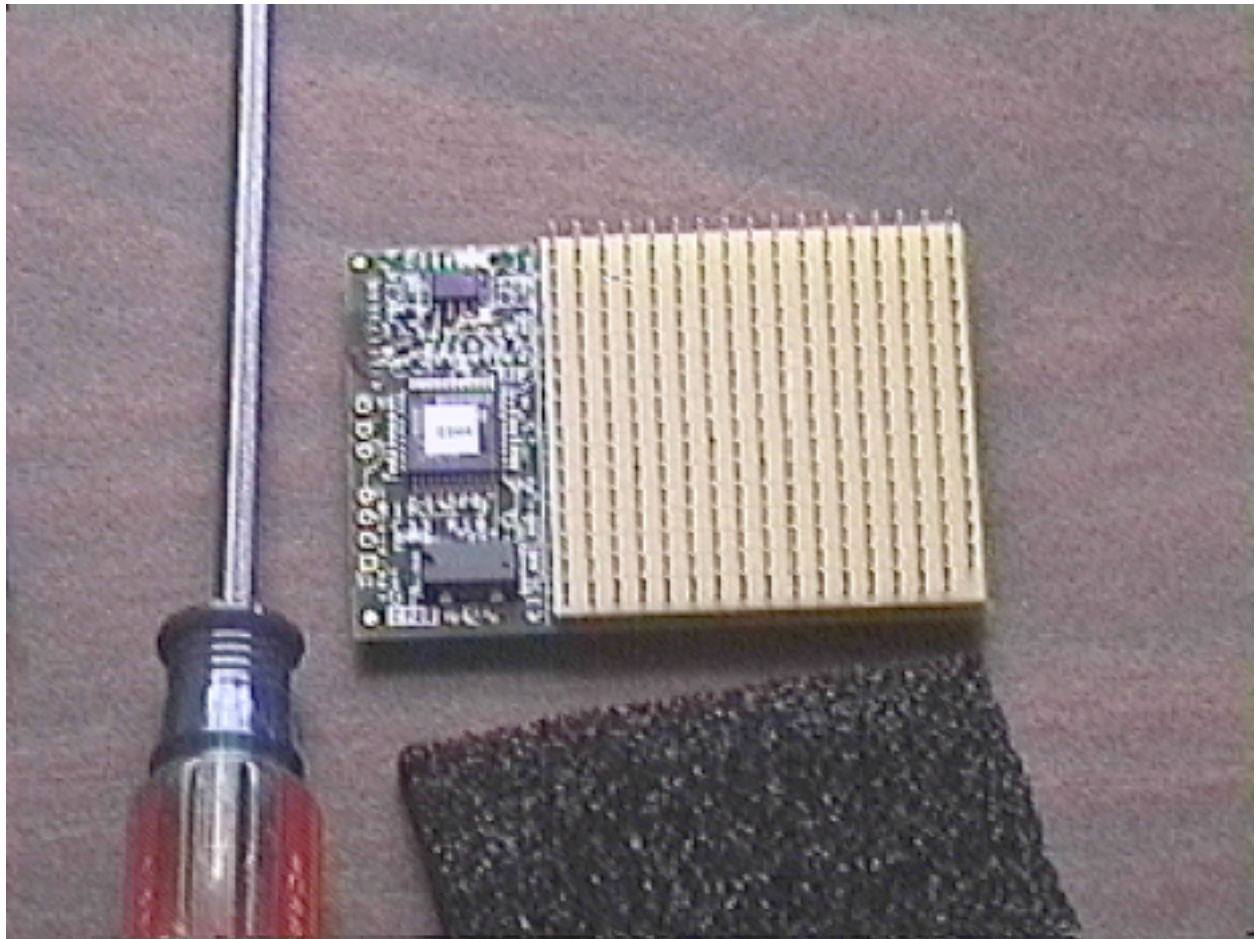
The purpose of the upgrade for me was to make my computer faster in OS X, and extend its useful life a while. The upgrade seemed to make a bigger difference under OS 9 than under OS X. While OS 9 was already relatively fast, it got really zippy with the new processor. OS X, in my opinion went from barely useable, to just okay, for most tasks. The upgraded computer starts up quite a bit faster in both systems. Under OS 9, you wait a while until the Sonnet extension loads, and the rest of the extension icons zip by a good deal faster than previously.

If you have a G4, whether upgraded or not, you should get a copy of *Altivec Fractal 1.1.1.* It is a free download from versiontracker.com. This is a Mandelbrot set program which takes advantage of the G4, and of multiple processors, if you have them. It also shows your system's performance in Gigaflops. I remember waiting overnight for computations of images that this software can now compute in just a few seconds on a G4. Wow!

Some things are improved more than others. iPhoto is supposed to take advantage of the G4, and seems pretty fast manipulating the "organize" view.

Ultimately, other limitations to an older system become more important than processor speed, such as system bus speed, hard disk speed, and video performance. OS X, in particular demands a lot of speed from your display card for really fast operation. Anybody know an accelerated graphics card for a beige G3 that will work under OS X?

My G3's voltage regulator -- one of the "good" ones.

Pin grid on back of G4 and sticky black foam, next to a screwdriver for scale. Note black gunk on some pins.