

# Tinker Time



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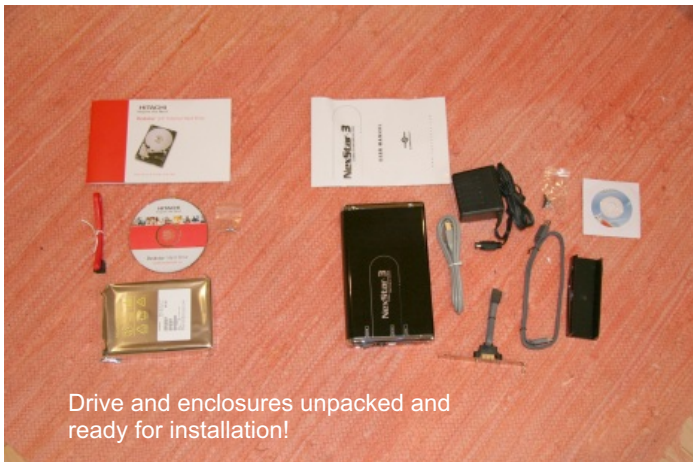
I used to joke with some of my customers, in the early days of computing, that they better make sure they put their computer in the place where they would not have to move it ever again, because once they started filling the hard drive full of data, the machine would become too heavy to move. This was in the days when a 5 or 10 **megabyte** drive cost about the same as a well-appointed car. If filling the hard drive with data really added weight to the drive, then I have just moved into the realm where I need to pour a massive concrete pad to support

**my two new terabyte drives!**  
A terabyte is 1,000,000,000,000 or  $10^{12}$  bytes of information which is not the same as we computer people measure data (we think a terabyte is 1,099,511,627,776 or  $2^{40}$  bytes). Either way that's a lot of data! According to the packaging on the drive, that's enough for 250,000 songs, 1000 hours of video and more than 333,000 digital photos. I heard somewhere that it was enough to hold every conversation a person would ever have in their lifetime. Why the need for so much data and why 2 drives?

Digital living! We have a server with all our photos, ripped music and movies (yes, we legally own the originals), video, documents, artwork, finances, plans, software etc. all online for instant access from the ever-growing number of computers around the house. All that data was, for the last 2 years, stored on a 250 gigabyte drive. At last check, there were "only" 7 gigabytes left. The reason for the second drive (and there was also a second 250GB drive) is to backup the primary drive! I use a great piece of software called **Synckback** (<http://www.2brightsparks.com>) to keep the drives in synch. I usually only backup the drive on a weekly basis or after a large data infusion and prefer to keep the backup drive off and disconnected (should be offsite really) in case of emergency. From a cost perspective, it makes more sense to buy a couple of 500GB or even 750GB drives as opposed to a single terabyte drive. Heck, you could probably buy 3 or even 4 drives for the price of one, but setting up, powering, storing, managing and backing up multiple drives is not worth the (significantly) lower cost. The other reason is that rather than actually mount the

drive inside the machine being used as a server, and because of the kind of machine I use as a server, the drive is mounted in it's own enclosure and connected to the server using USB 2.0. This has a great advantage in that you can pick up the drive and take it with you and connect it to a laptop when you travel! I also keep the drive in plain site so that in the event of an emergency, assuming I have time, I can simply unplug it and run!

So what did I get? I ordered a pair of Hitachi Deskstar SATA2 1TB drives with 32MB cache. I also ordered a pair of very slick looking SATA to eSATA/USB 2.0 enclosures made by Vantec called the "Nextstar." I figured Deskstar and Nextstar would complement each other well. I ordered online from **NCIX.com**, an outfit in Vancouver, BC and while I knew shipping would cost a bit, I would save on the Ontario Sales Tax. I chose ground shipping but in hindsight could have gone with air as I would still be ahead on the taxes. Everything arrived well packed and undamaged in just under a week. Not too bad. And not soon enough as my wife, Mascha, a teacher, is in the process of scanning documents and writing



report cards - occasionally giving me a funny look as we watch the remaining space on our current drive tick down. I have also been holding off ripping some new music and movies to disk in order to preserve the now almost invisible sliver of magenta when I check the current drive's properties.

The external enclosures were what I expected. A Chinese manufacturing special but I will give the company kudos in that the manual (which I used as a work surface to not scratch the table) seemed well suited to the task. The enclosure also came with 4 mounting screws for the drive, a pair of screws to close the case, a USB cable and surprisingly an eSATA cable and a bracket to bring the internal SATA connector to the outside world. Although the drives are SATA2, the enclosure only supports SATA good enough for what I needed as the USB 2.0 interface is the ultimate bottleneck anyway. The only part of the enclosure package I did not like was the power adaptor. The wall-wart supplies both 5V and 12V to the enclosure rather than a single voltage that is regulated by the enclosure itself. The connector also looks proprietary (kind of like a mouse/keyboard/S-video connector) so if the supply ever went it would be hard to replace - although the pins are labeled. The supply itself is tagged for 100VAC through 240VAC. The enclosure also came with a mini-CD driver disk probably for Windows 95/98 and Mac OS but I did not use it.

The drives themselves are extremely well packaged and padded with thick foam all

around. Surprisingly, each drive only came with 2 mounting screws (but 4 mounting holes per drive) so I used the ones that came with the enclosures. There was also a driver disk and a SATA cable both of which I did not use. The one thing I did notice is that the drives seemed *much* heavier than other drives I have used. I guess it's all the extra platters and heads for storage - makes me nervous - all that data on a single spindle!

Installing the drives and connecting everything was a cinch. I was ready with both drives in about 30 minutes. I decided to quick-format one drive and do a full format on the other. Big mistake! On a 64Bit Dual Core AMD the full format took about 3.5 hours. The drive I quick-formatted was on the server; an Intel based Dual Core Mac Mini running windows XPSP2 (oh get over it!). It took under 1 minute. The one thing I noticed right away was the lack of noise from the drives these things are quiet! I was initially worried because when I first powered up the drives there was no light or indication of activity

on the enclosure. I subsequently discovered that the controller in the enclosure waits for the drive to come up to speed and ready before notifying the computer of the drive's existence or flashing the enclosure's panel light. The other thing that quickly became apparent was that the drive going through the full format became very warm - not hot - but warm! This was as expected and has been mentioned on other websites. The enclosures themselves do not have any cooling fans and this is somewhat of a concern for long-term reliability of the drives. The backup one is only turned on as needed, but the one on the Mac Mini server is on 24/7. I did leave the drive on overnight to see how hot it actually got, but the drive draws much less power in stand-by mode and was much cooler by morning. The enclosures are aluminum so they do a fair job of dissipating the heat. Somewhat reassuring but still something I will have to look into a little further - and soon. Transferring the data (over a Gigabit LAN) from the 250GB

drive to the Terabyte drive (935GB formatted) took another 3 hours but once that was done we were off to the races. I enabled the new share on the new drive and disconnected the old 250GB drive. The share on the new drive is named the same as on the old one so I did not have to modify any of the mapped drives on the machines around the house. As an aside, all the machines' "MyDocuments" folders are mapped to the server so that there is no "real" data other than programs stored on the machines' local drives. This way everybody's documents get backed up! *Note to software creators (Quicken!): Hard-coding your software to look for "MyDocuments" on drive C: is a bad idea!* Did I mention I'm still nervous about all that data on one drive? There is no long-term reliability report on the newer "perpendicular recording" process the drives use. I guess that's the price I pay for being bleeding edge. I'll provide an update once we have used the drives for a while! - T

