

HOW TO BUILD AN EXTERNAL HARD DRIVE AND SAVE CASH

by Andy Kulie

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For years, the idea of an external hard drive has been viewed as archaic and slow. Of course, the original hard drives for PCs were external, being linked to the slow Serial bus of the day, or in a few cases, the speedier parallel printer port. As PCs progressed, the internal IDE bus took over as a faster, more efficient way to hook up a fixed disk to a given system. It also saved desk space by placing the drive inside of the system's case. Thus, the bulky and slow external drives were relegated to the dusty basements with the rest of the 8088 parts.

In this day however, portability is often an issue for data mongers such as myself. Also, many motherboards in the past few years have only shipped with the standard two IDE channels: that's two CD drives and two hard drives, and you're done. The desire for more space can be satiated with the addition of extra IDE controllers, including the newer RAID, SCSI, and Serial ATA cards. This solution does not solve the problem of portability though, unless you have a huge case and are willing to install a removable hard drive bay. This solution is also flawed simply because you cannot use this type of setup universally: the case is especially true with laptops.

External hard drives, in the case of portability and expandability, are the way to go. Buying one of these will cost you an arm and a leg, however: Maxtor's 120 GB 7200 rpm external Firewire hard drive will run you about \$226 on newegg.com. A similar drive for internal IDE use will run you about \$100 at the same location. There is, however, a definite money-saving solution available to users of both Firewire and USB 2.0. This solution is to do-it-yourself. I have successfully completed my own homebrew external Firewire hard drive, and I'm going to help you do the same.

To construct an external hard drive, there are two main necessary parts. These parts are the drive itself and an external enclosure. For my drive, I purchased a 5400 rpm Maxtor 120 GB drive. I would definitely recommend a 7200 rpm drive; although external drives can sometimes bottleneck in performance, the prices on these drives are so much lower now that it only makes sense to purchase a speedy one. A 7200 rpm, 120 GB Maxtor drive can run as low as the aforementioned \$100. The second part necessary to complete this task is an external enclosure. For my purposes, I purchased the generic ME-320 series 3.5"/5.25" enclosure, which works with both Firewire and USB 2.0 and has an Oxford controller chipset inside. This device, which runs for \$65-70, has a newer model available that supports 250 GB hard drives (the model I purchased does not). This particular enclosure can be used for 5.25" IDE drives (CD or DVD drives) as well. There are also other enclosures available that do exactly the same as this. Enclosures for tiny 2.5" laptop hard drives are also available for the space-conscious, but keep in mind that such hard drives are rather expensive for the limited amount of data they can currently hold. Shopping around for the features you desire and the price you can afford is essential.

I chose this particular enclosure because of its multitude of uses: its size allows for future use with a CD/DVD drive if I should so desire, and its USB 2.0 (also USB 1.1 backward compatible) and Firewire dual-support allows it to be used on nearly any system. The enclosure itself is definitely a generic product. While its construction is not

exactly shoddy, it's not exactly high-class either. The plastic enclosure is metal-lined to prevent electromagnetic interference, and its 5v/12v mini power supply is actively cooled with a small fan. It's definitely a very plastic case, but its sturdy once its fully constructed. The product comes complete with Firewire and USB 2.0 cables, plus a driver disc for USB use (Firewire use, at least under Windows XP does not require extra drivers).

Assembly was quick and nearly painless. The super-short IDE cable inside the case can make for an annoyance when hooking up the drive, but once this cable and the power cable are connected, mounting the drive through the base screw holes is quite simple. This particular enclosure includes snap on side pieces to hide the seam between the top and bottom. It is also held together with screws. It also includes stickers for resellers to place on the base (which include the lovely "no user serviceable parts" emblem) in order to prevent users from accessing the drive screws. It took a mere ten minutes to fully assemble the drive, plug in its power cord and Firewire cable, and hook it to my machine. I must note here that this enclosure, as well as most others, will require an extra power outlet, simply because a drive of this sort cannot be powered over the Firewire or USB buses. This may hinder on-the-go laptop users, but is not a problem for people who want to transport their data between workstations.

Getting the drive to work in Windows XP is equally painless. I powered on the drive, hooked it up, went into Computer Management (an administrative tool in XP Pro), and partitioned and formatted the drive easily right there. Keep in mind you will need administrative rights to do this. You can also use Fdisk and format if you are so DOS-inclined, but I don't recommend these options if you're using a newer NT operating system, since both 2000 and XP include such handy disk management tools.

USB support from this given drive is negotiable: my computer doesn't support USB 2.0 and having tried it on a friend's USB 1.1-only laptop, I can't say I found any success. Thus, I cannot report accurately on USB use for this particular enclosure. I've written before about the virtues of Firewire, so naturally I'd recommend this bus for its speed and ability to handle up to 63 devices (imagine how many external hard drives you could have). Another problem, or at least annoyance, I found with this particular setup is the fan noise. Sometimes when first starting up the drive, the fan will make a loud, somewhat grating noise for a few minutes and then go back to normal. Perhaps the unit I have just has this quirk, but keep in mind that in any case this is going to increase your computer's total noise output. Other enclosures with external, passively cooled power supplies can eliminate this complaint. Once again, shop around for the enclosure and drive that would most suit your needs.

There you have it: an external hard drive for around \$170, as opposed to \$220. That's a definite savings. However, if you're a big fan of technical support and additional software, the prepackaged drives may be the ones for you. For the computer geek such as myself (and we're all computer geeks deep inside, right?) a self-built solution is much more cost-effective and useful. Simply the ability to choose the components to create such a drive is a great advantage to building your own unit. And as you can see, it's definitely not a very difficult undertaking. Nowadays anyone can own their own external mass storage.