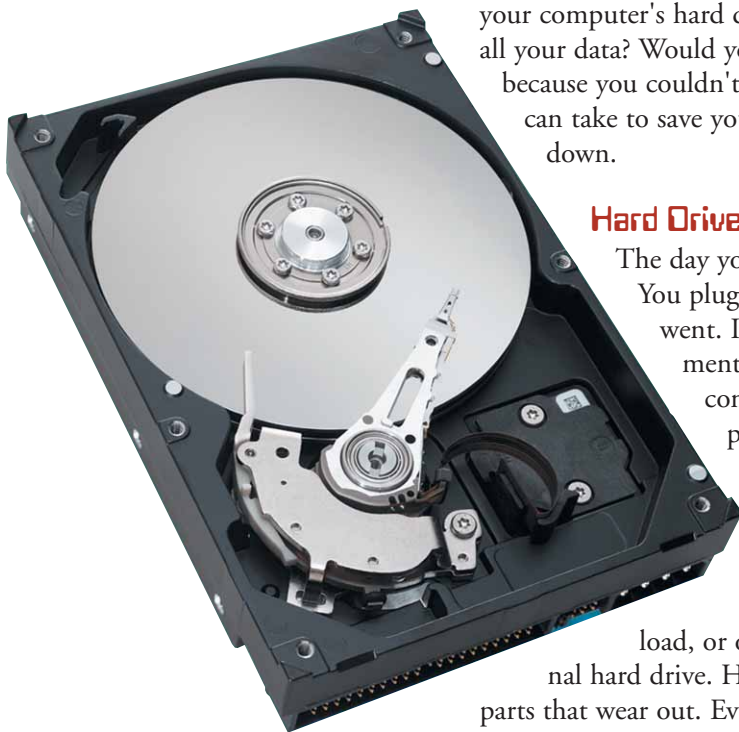


Guarding Against

Your hard drive freezes up, fire damages your plant, a hurricane strikes. You're insured, but how can you keep your invaluable data files from being lost?



Data stored on internal hard drives need to be backed up on external devices if you want to make sure your information won't be lost.

In today's modern frame production facility, computers play an integral role. Whether they're controlling output, creating new designs, managing inventory or customer communications, they can't be beat. Gone are the days of the overflowing Rolodex or rubber-banded business cards from suppliers and distributors.

But owning such a piece of technology is not without consequences. Computers can be just as unreliable as they are reliable. And there are times you rue the day you adopted such technology. Computers in the workshop are susceptible to many kinds of abuse, such as physical vibration, power spikes, drastic temperatures, or just plain dust. In reality, it is the vital data on your computer's hard drive that makes it worth owning. But what if you lost all your data? Would you go out of business? Would you lose a big client because you couldn't deliver a job on time? Fortunately, there are steps you can take to save you from experiencing a complete information meltdown.

Hard Drives 101

The day you bought your computer, all was well with the world.

You plugged it in, maybe installed some software, and away you went. If you read the instruction manual or warranty documents, you might have seen the phrase, "this computer company is not responsible for data loss." That's the computer manufacturer's way of telling you to back up your data. The reasons for backing up important files are clear. What you may not be aware of is the imminent failure of your computer's hard drive (also called a hard disk).

During daily use, all files you create, save, download, or otherwise store on your computer are kept on its internal hard drive. Hard drives are mechanical devices that have moving parts that wear out. Even though manufacturers rate their hard drives to last a number of years, many fail in a much shorter period of time—sometimes right out of the box. The fact is, every hard drive manufactured today is going to die.

There are several other ways you can lose your vital data as well. These include user error, virus infection, directory damage, intentional destruction, theft, accidents, and natural disasters. These situations may be unavoidable. Backing up your data is the surest way to protect yourself.

Backup: Above and Beyond

Backing up data is often looked upon as tedious and time-consuming. The reality is, no one can make you back up your data. But the day your hard

Data Loss

By John Christopher



This Samsung USB flash drive offers 256 Mb of easy and affordable data storage.

drive stops working and takes with it everything you've ever created, you may change your thinking.

What is a backup? Maybe you've heard the term and have your own ideas about what it means. Essentially, the definition of a backup is to make an identical copy of critical files on computer storage media independent of your computer's hard drive. Making a copy of a file and saving it on your hard drive doesn't count. Data stored on a disk that is kept next to your computer doesn't count either. For backups to be effective, they must be performed daily to alternating kinds of media. And they must be stored offsite.

Basic Backups

If you haven't yet created a backup strategy, now is the time. Start by deciding what to back up. Most of your important files probably "live" in a folder on your hard drive called "My Documents." For Macintosh users, it's the "Home" folder. Although many of your important files are stored in these folders, they do not contain everything you should back up. Some necessary files may actually be invisible. Still, you can make a basic backup of these files to a rewritable CD or DVD if your computer has the right kind of drive.

There are a variety of backup devices to choose from. A backup device can be anything from a floppy disk, a CD or DVD (and drive), or a USB flash media (key-chain-type drive) all the way up to high-capacity tape and external hard drives. It all depends on how much data you need to back up.

A good way to determine what kind of backup

device you need is to explore how much data you need to back up. You can do this in a Windows operating system by right-clicking and selecting "properties." On a Mac, select the folder and "Get Info."

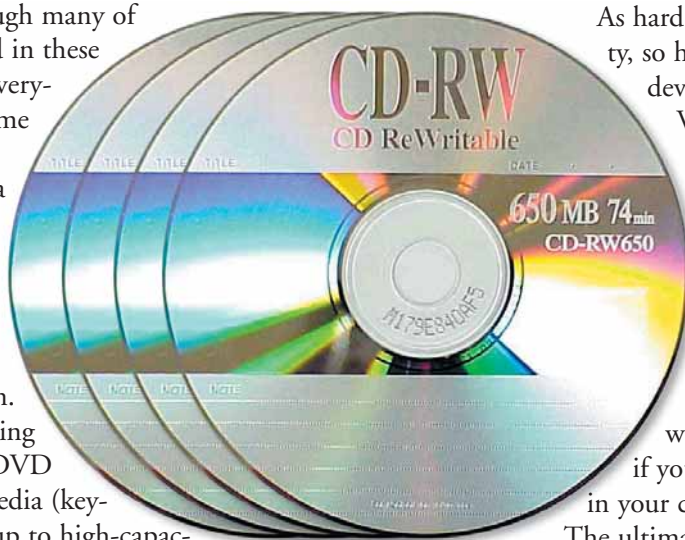
For example a floppy disk can hold roughly a megabyte of information. They're great for a handful of Microsoft Word documents, but not large enough to handle graphics files of drawings or photos.

Computers made around 10 years ago offered built-in, bare bones CD-ROM drives. These drives could only read from CDs that contain music or programs. Since then, companies have added drives that can "burn" a CD, allowing files to be written to discs and used for backing up. CD-R (compact disc recordable) allowed writing data to a compact disc just once. Later came the CD-RW (compact disc rewritable) allowing the disc to be rewritten and used over and over again.

As a backup device, CD-RW can store about 700 megabytes of information per disk. Large amounts of data can be spanned across multiple discs using special backup software. Rewritable disks are low-cost (about \$1.30 apiece at leading retailers) and can easily be replaced after they wear out or become damaged.

As hard drives have grown in capacity, so has the need for larger backup devices. Thus DVDs (Digital Versatile Disc) can hold 4.7 gigabytes of data. DVD-R (recordable) and DVD-RW (rewritable) drives now come built into many computers. Rewritable DVDs currently cost \$2 to \$3 apiece. The capacity of a DVD is worth considering—especially if you already have a DVD drive in your computer.

The ultimate in a portable, high capacity, low-cost backup solution is an external hard drive, which can be connected to a computer's USB or IEEE 1394 (FireWire) port. Prices vary from \$1 to \$2 per



gigabyte for external drives, based on capacity and manufacturer.

One type of storage device that has gained a lot of attention lately is the tiny USB flash memory drive. At about the size of a pack of gum, these compact devices currently have a maximum capacity of 8 gigabytes. They're relatively fast and use the same kind of technology found in media used with digital cameras.

If you have huge amounts of data (hundreds of gigabytes or more) that you must back up, your best option is a tape. There are many different formats and capacities with names like DLT, QIC, AIT, and LTO. There are numerous drives and formats available. However, the one thing that all tape technologies share is that they're expensive. For ultra-high capacities, tape may be the only option.

Backup Software

To make backups as painless as possible, you should use software that enables your backups to run automatically every day. Most commercial software packages offer a way to schedule backups to run at specific times and days.

Some very basic backup programs may be included with your computer's operating system. Windows XP comes with its own Windows XP Backup Utility, which you may have to install from a separate disk. Apple offers its Backup program when you subscribe to its online service. Beyond these, you can purchase others like EMC's Retrospect (Mac and Windows) and Norton Ghost from Symantec (Windows).

Backup Plans

It's important to think about how you'll put your device to optimal use. For backups to be efficient, they must be done every day. It's also important to make multiple backup copies on alternating media. The reason you need to do this is to further protect yourself from potential losses.

For example, you might back up to a disk on Monday night and on Tuesday discover a nasty virus wiped out your computer's hard drive overnight. If you restored your data from Monday night, you'd also run the risk of restoring the virus, which might have been saved along with your backup files. If you were using different backup disks, you would have the option of



This Seagate external hard drive offers 160 Gb of memory of hard disk storage.

restoring data from the previous Friday night's backup, which was not virus-infected.

On a side note, you should always install virus protection on your computer. It is also important to download the online updates, which are available on an ongoing basis to protect you against new viruses.

Vital to the success of your backup plan is to store backup disks or drives away from your computer. This will protect you if your facility experiences an accident or disaster like fire or flood. Backing up your data won't do any

good if the backup media is destroyed, even by something as simple as a broken sprinkler pipe.

If the Worst Happens

Data recovery is a specialized service you may find is the absolute last resort when everyone and everything else has failed to save the precious files you didn't back up.

By using proprietary software and years of experience, specialized companies can coax lost data from hard disks and other types of media when no one else can. The leading companies in this field are DriveSavers (www.drivesavers.com) and Ontrack Data International (www.ontrack.com). Successful recoveries can even be achieved from drives destroyed in floods, fires, and natural disasters.

Before using a service of this kind, evaluate your data loss and consider the amount of time and money necessary to re-create it. Ask yourself such questions as: Is it more cost-effective to hire temporary personnel to re-input the missing data? Do printed copies of the material exist? How quickly is the current project needed? Data recovery is not inexpensive, but the reality is that no one can put a price on the loss of critical data.

A Final Note

Computers are the lifeblood of business. Without properly protecting the vital information they harbor you may be gambling away your livelihood. Just three words of advice: backup, backup, backup! ■



Bulk media tape backups typically offer the greatest amount of data storage and retrieval.