# Computer Solutions

## Achieving Successful Backups

### by Joe Stoddard

One thing I've learned over the years: Backups have to be totally automatic, or they probably won't get done the way they should. Automating backups requires two things: backup media with enough capacity to hold *all* of your critical data without having to physically change tapes or disks in the middle of a run, and backup software that can be scheduled to run in the background. That means making some choices about what you'll back up and how. Structure your backups with the idea of allowing your company to return to work quickly, rather than restoring every last personalized screen saver or Windows background image.

### Centralize Your Data

Getting your data all in one place makes backing up much easier. Use the "preferences," "settings," or "options" menus (different names for the same thing) inside your applications to redirect all your data to folders you set up inside of My Documents — the built-in Windows data catchall. Figure 1 shows the process in Microsoft Word. (For a complete discussion of organizing files and folders, see *Computer Solutions*, 7/99 and 8/99.)

It doesn't usually make sense to back up anything that can be reinstalled from the original program disks or downloaded files. What *should* be backed up is all of your project documents, contact or project databases, general business documents, accounting data, critical e-mail, customized CAD libraries, dictionaries, and program updates and patches that you've downloaded. Don't forget to include any templates, start-up files, customized dictionaries, and anything else whose loss would cause disruption to your business.

Part of your backup strategy should be documenting your software inventory so you can reinstall it if disaster strikes. Use an Excel spreadsheet (Figure 2), a Word document, your contact database, even a plain text file (see *Computer Solutions*, 9/01). Store your inventory worksheet inside of the My Documents folder so it becomes part of your regular backup routine and take a

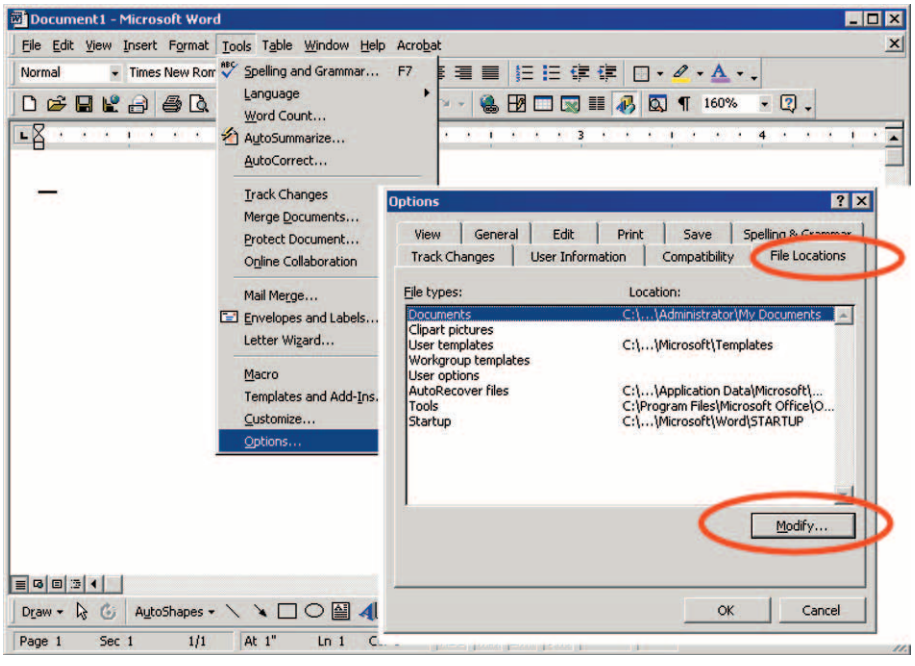


**Figure 1.** Before backing up, it's important to migrate as much of your data as possible into the My Documents folder. In addition to obvious document types, don't forget templates, dictionaries, and any other user-defined files.

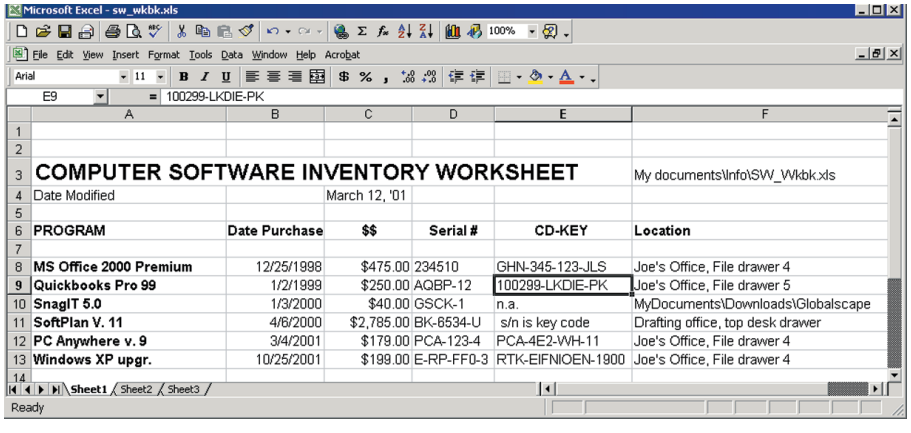


**Figure 2.** A spreadsheet is a good way to keep track of where your software CDs or downloaded files are stored, as well as any serial numbers or other installation codes. Save the file inside of My Documents, so it gets backed up with everything else, and take a printed copy off site.

printed copy off site for safekeeping. List purchase date and price paid, serial number, CD-key, any other authorization codes you would have to reinstall, and, just as important, where everything is physically stored.

## Pick Your Media

The "right" backup media could be as simple as a single floppy disk, or as complex as a rack of auto-loading digital tape machines, depending on how much data you need to back up. To find out, right-click on My Documents and select "Properties." Select a media type with enough capacity to back up your entire My Documents folder *uncompressed* without having to change a disk or a tape (Figure 3).

There has been a parade of media formats over the years, most of which never caught on, leaving users stuck as they faded into obscurity. Removable backup media should be readily available, widely used (so it won't suddenly become obsolete), reasonably priced, and easy to manage. Today, the various drives by Iomega (Zip, Jaz, Peerless) fit the bill, as do CD-R and -RW disks. The newest USB (Universal Serial Bus) interface makes external drives a snap to hook up. The table below shows the uncompressed capacity and relative cost of various popular removable media.

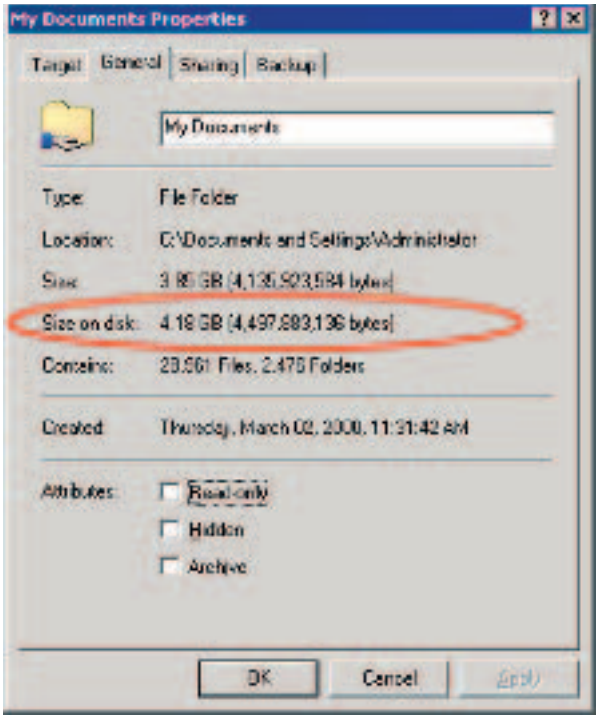


**Figure 3.** To determine what backup media you need, right-click the My Documents icon on your Windows desktop and select "Properties." Choose backup media that will hold the entire folder, uncompressed, with room to spare. This example is 4.18GB — a 6GB removable disk or 10GB tape would be required.

Complicated "incremental" backup schemes involving dozens of tapes and daily rotation used to be the norm, but for small businesses it's much simpler to simply copy the entire My Documents folder every night. Buy enough backup media to have at least three complete backups on hand at all times.

I wish I had a nickel for every time I've heard of backup tapes getting burned up in a fire and leaving the business with no data. The solution? Take every other backup you do home with you, and put every Friday backup in a safe deposit box at the bank, so you've got your tapes spread among three locations.

The other component to a successful backup strategy is automation. Any backup software worth its salt will let you schedule unattended backups, say at night or during lunch. Iomega supplies a decent backup package with its

## Relative Cost of Backup Media

| Type of Drive/Disk | Approximate Capacity | Drive Cost | Media Cost | Cost per GigaByte of storage |
|---|---|---|---|---|
| 3.5" floppy | 1.44MB (MegaBytes) per floppy | $20 | $0.25 | $180 |
| Hard drives (HDD) | Up to 80GB (GigaBytes) | $100-$400 | n/a | $10 for removable drive, $4 for fixed EIDE |
| Zip drive | 100MB or 250MB per disk | $75-$150 | $10-$20 | $80-$100 |
| Jaz drive | 1GB or 2GB per disk | $250-$400 | $70-$110 | $60-$80 |
| LS-120 | 120MB per disk | $75-$200 | $10-$15 | $55-$70 |
| CD-R/CD-RW | 480MB/700MB | $150-$250 | $0.40-$1.50 | $0.60-$3 |
| DVD recordable | 2.6 to 17GB per disk | $199-$995 | $11-$70 | $4-$7 |
| Backup tape | Up to 100GB per disk | $150-$1,000 | $5-$100 | $1 |
| Magneto-optical (MO) | 540MB to 9GB | $250-$2,000 | $10-$100 | $10-$20 |

removable media drives, or you can use Microsoft Backup, which comes free with any Windows operating system. While not the most sophisticated solution, it will get the job done (Figure 4).

## Other Data Protection Strategies

The best backup strategy might not involve tapes, disks, or even software but rather an online backup service. Probably the most viable today is @backup (www.backup.com). Allan Edwards, a custom home builder in the Houston area, recently had this to tell me: "Last weekend there was a power surge at my office, and I lost most of my hard drive. In the ten years since I computerized, this is the first time I have ever lost so much. Fortunately, I have used the online @backup service for some time now. Once I bought new computers, reinstalled the software, I was able to do a restore online and recover my data. It was pretty disruptive, but it could have been disastrous. The service I use costs $200/year and it backs up automatically every day."

***RAID.*** While it's true that computers are full of bugs, RAID is not for exterminators. It stands for Redundant Array of Independent Disks, and when properly used it can provide protection from catastrophic hard drive failure, as well as improving system performance. There are several types of RAID, but small businesses will be most interested in RAID level 1, sometimes called Disk Mirroring. RAID-1 writes data to two hard drives at the same time, creating identical clones. If one drive fails suddenly, the other one takes over automatically, creating "fault tolerance." In theory, if you're running Windows NT4, 2000 (and presumably XP) server edition, you can set up a RAID system using only the operating system. But don't do it that way — you'll get better performance and have more flexibility if you install a dedicated RAID controller card in your computer. Decent ones like those from Adaptec (www.adaptec.com) start at well under $100 (without the hard drives).

***Auto recovery.*** Auto-recovery programs like Roxio's GoBack (www.goback.com) take continuous snapshots of the hard drive while you work, allowing you to "turn back the clock" to a time before the latest major screwup. GoBack costs around $40 — well worth it, particularly if you know someone who uses the computer just enough to be dangerous. The only real downside is a slight decrease in system performance. While great for fixing user errors, GoBack won't help you if your hard drive fails, so it's not a substitute for regular backups.

***Disk imaging.*** Programs like Norton Ghost (www.symantec.com) and PowerQuest Drive Image (www.powerquest.com) take a snapshot of your operating system, applications, settings, and data and write it to removable media like a CD-R or Zip disk. So why not just use these "cloning" programs in lieu of conventional backups? Because the drive image has to be restored on the same computer it was made with, or pretty much an exact replica — great if you're a corporation with fleets of identical computers, but not much good if you buy your computers one at a time. Plus, reloading a stored drive image can take longer than just reinstalling your software from the original CDs. Disk imaging has its place, but it also is not a replacement for a regular backup strategy.

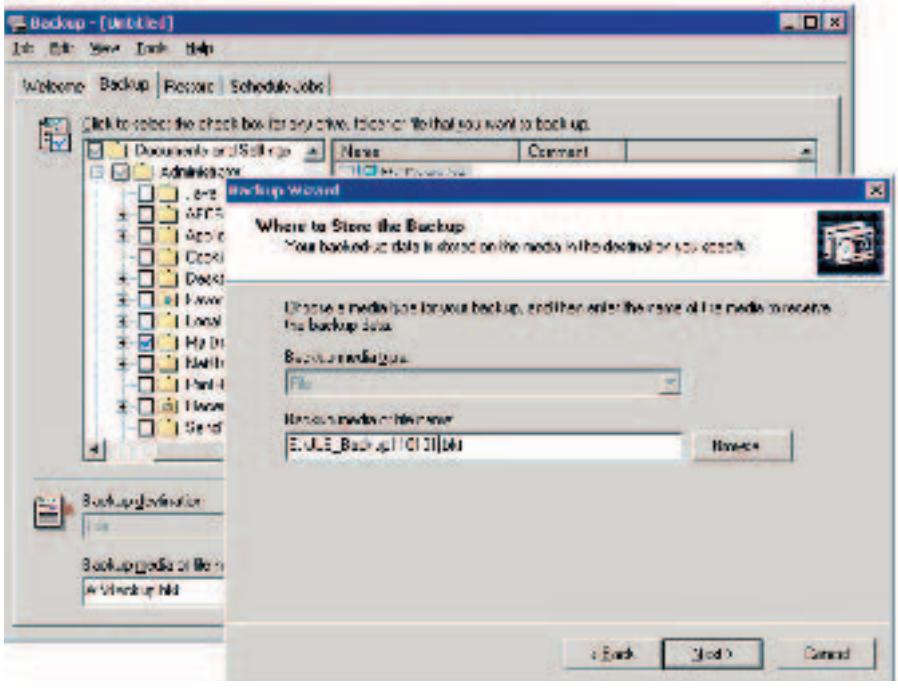


**Figure 4.** Microsoft Backup is a free utility that ships with all versions of Windows. You can schedule daily backup jobs and save them to tape or other removable media.

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