

# Detailed Backup Strategy for Home Computers

By **Corey Keating**

This document is intended for home computer users. If you are running a business you will most likely need more rigorous plans, programs, and schedules. Feel free to contact me or a computer support professional if you need a business-level backup solution. (If this document seems too detailed and you just want an overview and directions for implementing a simple backup strategy, then please see my other document: "[Simple Backup Strategy for Home Computers](#)". This document contains most all of that info there plus more, but is not updated as regularly.)

For a great article (as of June 2008) that discusses all aspects and details of backing up and gives reviews of hardware, software, and online products (discussed below), please see the PC Magazine article at: [www.pcmag.com/article2/0,2817,2322030,00.asp](http://www.pcmag.com/article2/0,2817,2322030,00.asp)

## The Simple Strategy

In order to be ready for the time when you will need to rebuild your computer, (whether by choice or out of necessity) keep all of your **Program CDs and Serial Numbers** in one spot. This includes all Operating System CDs/Serial Numbers (such as Windows XP, Vista, etc.) and all programs you run on your computer. If you loose your serial numbers you may have to spend a lot of money to repurchase software you technically already own.

- 1) Keep all the documents you want to backup in one location on your computer (e.g. "My Documents")
- 2) Purchase and setup backup media and software (or sign-up for online backup). (Or use software you probably already have - see below.)
- 3) Backup the data you want to keep!
- 4) Set the backup to occur regularly (automatically if possible). Decide how often you need to backup, based on your needs.
- 5) Before you are done, test to make sure you can restore one file from your backup; that way you know your data was successfully backed up.
- 6) Periodically check the log files for the backup software to ensure that your automatic backups have completed successfully. (Worse than "not having a backup" is "thinking you have one when you actually don't!")

## Motivation for Backing Up (if you need it)

Did you know that, as an electronic component, hard drives are "rated" by MTBF? This stands for "Mean Time Between Failures", which is the same rating as a **light bulb**. It is not "if" it will fail, but "when". My made-up "proverb" that I tell people about all the files, photos, emails, and other information you have on your computer is: "If you want to loose it, keep one copy of it." Having done technical support and network administration for most of my life, I was the one that people always came crying to when files were lost, corrupted, overwritten, or destroyed by viruses; I have seen a relatively large engineering company almost go out of business because they did not do proper backups. I have had relatives, friends, and co-workers loose years worth of work. One of my Ph.D. professors had to pay over \$1,000 to get his hard drive recovered, and even then did not recover all of his dissertation work. Quit taking chances with fate and backup your data! As with so many things in life, don't think, "It won't happen to me." I hope you never go through the pain of loosing years' worth of valuable information; why not take this step to ensure that does not happen?

## What Operating System Do You Have?

If you own an Apple Macintosh running **Mac OS X 10.5** (Leopard), then your life is easy. Just purchase an external hard drive (see below) and turn on the "Time Machine" program. It will automatically backup everything on your local drive to the external hard drive. (Great job Apple!). You don't need to read the rest of this document. For more info see: [support.apple.com/kb/HT1427](http://support.apple.com/kb/HT1427) Macs can pay for online backup services through [www.apple.com](http://www.apple.com) or [www.mozy.com/home](http://www.mozy.com/home) (If you own an older OS, like Tiger, then you will also need to install a separate backup program and follow the directions for the PC below. I suggest either: SilverKeeper or SuperDuper!)

If you use Microsoft **Windows XP** or **Vista**, then please read the sections below to formulate and implement a backup strategy. If you run any version of **Linux**, I assume you are enough of a techie to know what you need to do to backup your files. The principles of this document will apply to you, but not necessarily the software details.

## At a Minimum, At Least Do This!

Now, even if you don't read any more of this document and convince yourself that you are just too busy to get the proper hardware/software and to set up a monthly schedule to do backups, I urge you to at least do this: if you have high-speed Internet just go to [www.mozy.com/home](http://www.mozy.com/home) and backup up some or all of the documents in the "**My Documents**" folder online for free (up to 2 gigabytes) -- this works for both PCs and Macs. Make sure to backup the file that holds all your **email** (e.g. in MS outlook, copy the .pst file.).

**Or** go out and buy either an external hard drive or a flash drive and copy all the documents in the "My Documents" folder onto the drive. (If you don't know what the term "flash drive" means, please see this link: [www.webopedia.com/TERM/U/USB\\_flash\\_drive.html](http://www.webopedia.com/TERM/U/USB_flash_drive.html))

**Or** burn a copy of all your documents and emails to a CD or DVD.

At least you will only loose all files you create after this point if your hard drive crashes. Just do it!

## Details for a Suggested Strategy

There are many different strategies, based on your individual needs, the type of data you keep on your computer, how much data you have, etc. You should most likely **backup all your files at least \*once per month\***. Maybe just give yourself a reminder to do it at the beginning of each month. My backup strategy is to keep ALL my files (that I want to keep) in ONE place on my computer (i.e. in "My Documents"). So when I backup my computer monthly, all I need to do is back up that one folder (and all sub-directories). Please note that some programs will put their data-files in various locations, like under the Programs directory. For instance, if you run Quicken, where are your files kept? Make sure these files are included in your backup.

Even better, you should set the **backup to happen automatically**, without your intervention. This works very well if you use an external hard drive (that remains plugged into your computer) or if you use the online backup method (see below for details). If you do this, you should periodically/monthly check to make sure the backup actually took place. Using other media types makes this option more difficult. With automatic backup enabled, you may want to do a complete backup once every month or two, and then only backup the changes every week.

If you do a complete backup of your data files (or complete computer) when you start backing up, then you only will need to backup the files that have changed since that initial time. So, subsequent backups will be much quicker than the first time you backup. (This is called a "differential" or "incremental" backup. Without going into all the details or reasons, I much prefer a "**differential**" backup after that initial one; unless you have a reason to do otherwise, just do that.)

Some people like to do a **complete backup once a month**, and then do a **differential backup each week**. You need to decide what is best for you and the amount of pain you are willing to tolerate (like loosing almost a month's worth of changes and files).

If you are working on important files (like school assignments, financial documents, etc.) that you would not want to loose or have to re-create if your computer did crash, then it might be a good idea to make backup copies of these **particular files onto a flash drive** \*each time\* after you work on them. I often do this every hour as I am working on important school work. An alternative to this may be to have a backup program scheduled to backup your files every day.

After you complete and implement your backup strategy, you still have one more step. You must **test doing a restore** of at least one file from your backup. Assume one of your files got corrupted or lost. Test restoring that file from your latest backup. This way you know your backup actually worked and you also learn how to do a restore. If you do an "image" backup (as described below), then probably doing a "verify" in your backup software will suffice for this step.

**Worse than not having a backup at all is thinking you have a usable backup when you don't!**

## What to Backup?

Make sure to backup:

- 1) All the files and data you want to keep (e.g. My Documents, etc). (This should include all your documents, photos, music, etc. Again, make sure all your files are stored in this one location, otherwise you need to backup multiple places.)
- 2) Email address book
- 3) Email (if you store emails locally and want to keep them - e.g. using MS Outlook/Express)
- 4) Internet Bookmarks
- 5) Passwords (which should be kept in a secure program; see my "[Essential Security](#)" doc for details.)
- 6) Serial Numbers of all software that you will need to re-install if your disk crashes.

## Backup Media - Hardware

You need to determine what is the most appropriate media for you to use to do backups. Some options for you are: flash drive, CDs, DVDs, or external hard drive. There are advantages and disadvantages to each. (**Unless you have a preference, I suggest you use an external hard drive.**)

1) **External Hard Drives** can hold a lot of data and are very fast for reading and writing. Make sure your external drive is at least **double the size** of your internal hard disk. External drives can keep multiple copies of your data in the same place. You can get a fairly large drive for a reasonable price. It may include full-featured backup software so you don't need to buy anything else. This is probably what I would suggest for most home users. Your hard drive should most likely attach to your computer through a USB or Firewire port.

Another advantage of using an external hard drive is having the ability to configure an automatic backup schedule, whether daily, weekly, or monthly. This can be done with other media types, but can be a little more challenging.

If you have multiple computers on a network at home (or for a small office), you might consider getting a Network Attached Storage (NAS) device like the LaCie Disk Mini with Gigabit Ethernet; it will attach to your network and allow you to backup multiple machines across your network (or will allow a local USB2 connection). For other NAS options see this link:

<http://www.pcmag.com/article2/0,2817,2322170,00.asp>

2) **Flash drives** are great, but they may not be big enough to use as your primary backup media if you store a lot of photos or music files. You will pay more for larger amounts of storage. I use a flash drive every day as a quick backup for important files I am working on.

3) **CDs or DVDs**. Obviously you need to have a computer that will write to CDs or DVDs, which is very common for newer computers. Writing to DVD is better than to CDs since a CD will only hold about 700 megabytes of data, whereas a DVD will hold over 4 gigabytes. An advantage to this kind of media is that it is fairly cheap. The disadvantage is that it is not reusable and you may need multiple disks to make even one full backup. You then have to manage where you store them and keep track of which is the most recent. I suggest you write on them with a water-based felt-marker. (Acetone-based markers will eventually destroy the media.) This also makes completely automated backups impossible since you still need to manually insert a CD/DVD for the backup to take place.

4) One option, instead of using any local physical media, is to use an **Online Backup Service**. As long as you have a high-speed Internet connection (e.g. DSL, Cable Modem, etc), then it may be a good option to consider. However, an online backup solution should probably be used as an "alternate/fail safe/last ditch backup" as opposed to your primary means of backup. I use this to daily backup all changes I make to my very important documents. The other advantage to this method is that by definition you are keeping an "offsite" backup of your data. Only use this method to backup data, not programs, since online backup may take a long time.

Some of the best services seem to be SOS Online Backup ([www.sosonlinebackup.com](http://www.sosonlinebackup.com)), Acronis Online Backup ([www.acronis.com](http://www.acronis.com)), or **MozyHome** ([www.mozy.com/home](http://www.mozy.com/home)). MozyHome (or MozyPro for business users) is **\*free\*** for you to backup up to 2 gigabytes, offers encryption for your files so no one can access them, is both PC and MAC compatible, and gets great review ratings. SOS Online Backup is PC Mag Editor's Choice and is reasonably priced. It only offers 15 gigabytes of storage, but you probably should not backup that much online anyway. Acronis Online Backup is controlled from the Acronis True Home Software but also has a monthly fee. Both SOS and Acronis give you the option to chose the date of the file you want to restore. For more information see [www.consumersearch.com/www/internet/online-backup-services/](http://www.consumersearch.com/www/internet/online-backup-services/) and <http://www.pcmag.com/article2/0,2704,2322171,00.asp>

## **A Backup Program - Software**

Although it is possible just to copy all your information to an external disk in order to obtain your backup, it is recommended that you get backup software made for this purpose. Here are a couple of suggestions. (**Unless you have a preference, I suggest you spend the money to buy a specialized backup program [such as Acronis], as discussed in numbers 1 and 2 below.**)

1) **Specialized Backup Software to Create "Image"** - The advantage of using one of these specialized backup programs is that many can make a complete "image" of your entire computer, which includes all your data, programs, configuration, email, bookmarks, etc. If your hard drive crashes and you need to rebuild your computer, you only have to re-image your computer with that image, and it will be restored to the same state as before the crash. Very nice! Your monthly backup will only include the changes you have made since you created that initial image.

Obviously the disadvantage of using these programs is that they are not free and must be purchased.

A) **Acronis True Image**. One advantage of using Acronis is that it will perform an "image" backup of your entire hard drive, or it can be used to backup just your files, email, Internet

bookmarks, etc. (See [www.acronis.com](http://www.acronis.com) ) **Some directions for using Acronis** as your backup solution are available from this website.

B) **ShadowProtect Desktop** is another program that gets very high reviews for creating images of your hard drive. (See [www.storagecraft.com/products/ShadowProtectDesktop/](http://www.storagecraft.com/products/ShadowProtectDesktop/) )

2) **Specialized Backup Software to Backup Only Files and Folders** - An alternative to getting a program described in number 1 above is to get a program that will backup all the files and folders (data) on your computer, but not in an "image" type format. If your hard drive crashes, you will need to re-install the operating system, all your programs, and then all your data contained on the backup. This process can take much longer than just restoring an image of your entire hard drive (as described above). However, some people may want to use this method for various reasons.

A) **Acronis True Image**. This program (described above in #1) can also be used to backup just the files and folders, email, etc. on your computer, instead of creating an image. Nice flexibility.

B) **Genie Backup Manager** will not create an image of your entire hard drive, but is an excellent program for creating backups of all your data files and folders. It includes "pre-built backup categories" for simplifying the process, can write the backups to DVDs, and has many other great features. (See [www.genie-soft.com/products/gbm/default.html](http://www.genie-soft.com/products/gbm/default.html) )

C) **Second Copy** is another program that will only backup data files and folders, but is much cheaper than the other options here for a four user license. (See [www.centered.com](http://www.centered.com) )

3) If you choose the **Online Backup Services** talked about above, it will use its own software. You don't need anything else.

4) If you buy an **external hard drive** it may come with some **backup software**. Feel free to use it.

5) **Microsoft Windows XP, Vista, and Windows 7** include a free, built-in, backup program called "**Backup**". (If have Win XP \*Home\* edition, you must install it from your CD or download it from the Internet since it is not installed by default). Although this program is free, there may be are some disadvantages, based on your backup media and strategy. One disadvantage is that it may not do a seamless backup of your emails and address book. Here is a link that explains exactly how to backup with MS Backup on Windows XP: "Windows XP Backup Made Easy" - [http://www.microsoft.com/windowsxp/using/setup/learnmore/bott\\_03july14.msp](http://www.microsoft.com/windowsxp/using/setup/learnmore/bott_03july14.msp)

## **Miscellaneous Issues**

The importance of doing regular backups is intensified if have a **laptop**. Laptops are more prone to being lost, dropped, stolen, etc. Just implement a realistic plan ahead of time and stick with it.

This probably seems intuitive, but you must backup to an **external disk**, other than your C: drive! If your drive crashes or your computer is stolen, you need your data in a different location. :-) Speaking of which, what if your home burned down? (God forbid.) You may want to take your monthly backup **off-site**; maybe to a family member's house. I know of one company who left all backup disks next to the computer they were backing up; when that computer was stolen, so were all the backups!

Which brings up the matter of **security**; your backup is a copy of all your data. If you keep personal information on your computer, then the copy of your data includes all that same

information that could be stolen or exploited. Guard your backups! (and/or back them up in an encrypted format).

(For more information on computer security, please see my other document entitled, "[Essential Security Measures for Home Computers](#)".)

### **Other resources and training**

- A great Tutorial: <http://www.ugr.com/PBA/PerfectBackupApproach.htm>

- Tutorials and Newsletters at: <http://www.ugr.com/Resources.html>

- Acronis help: <http://www.ugr.com/questions.html>

- This page has a list that tells how to use all the different versions of Acronis as well as other things such as the Perfect Backup Approach: <http://www.ugr.com/newsletters.html>

- If use Windows Backup Utility, see directions here:

[http://www.microsoft.com/windowsxp/using/setup/learnmore/bott\\_03july14.msp](http://www.microsoft.com/windowsxp/using/setup/learnmore/bott_03july14.msp) or download from here: <http://www.winxptutor.com/ntbackup.htm>