Simple Backup Strategy for Home Computers

Corey's Postulate of Data Loss: "If you want to lose it, keep only one copy of it."
In other words, "Keep a backup copy of your data or you will lose it!"

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One aspect of Information Security is having "access" to your important data when you need it. As such, backing up the information on your computer is critical! (Just ask anyone who has lost years' worth of irreplaceable photos, important documents, financial info, or homework they have spent hours on, just because they thought their hard drive would never fail, that files cannot get corrupted or overwritten, or that they would never be a victim of ramsomware.) Your backup plan can range from something very simple to very elaborate, but you need to have a **plan** to back-up **regularly** (and **automatically**) with the confidence that you can **restore** your data if your computer crashes or gets stolen. Create a plan that works for you. Don't get caught in the "it-won't-happen-to-me" syndrome; just start backing up today!

Executive Summary – "The Bottom Line"

Mac Users:

Option 1 – Local Disk:

(1) Buy and attach an external hard drive (1 or 2 Terabytes).

(2) Turn on the built-in "Time Machine" program. Whenever your external hard drive is plugged in, the backup will happen automatically in the background. You're backed up!

* Make sure to click the "Encrypt Backups" option so that your backup will be encrypted and thus not accessible to others if stolen.

(An alternative to using Time Machine is to purchase Acronis True Image for Macs; it has more features and options, but is not as easy to use.)

Option 2 – Cloud/Online:

(1) Purchase a subscription from one of the recommended Cloud backup vendors (listed below) and allow your Mac to be backed up continually. (Acronis True Image for Macs has a Cloud option that would allow you to backup both locally and to the Cloud.)

Windows PC Users:

Option 1 – Local Disk:

(1) Buy and attach an external hard drive (1 or 2 Terabytes).

(2) Some external hard drives come with "backup software". If desired, you can use that software to back up your computer. Otherwise, I recommend you purchase the full-featured backup software "Acronis True Image".

Install it and either:

(a) Allow it to back up your entire system; set the schedule to backup weekly.

Or (b) turn on the "Continuous Backup" so your files are backed up as they are changed.

* Again, make sure to encrypt your backup so that it will be encrypted and thus not accessible to others if stolen.

Option 2 – Cloud/Online:

Purchase a subscription from one of the recommended Cloud backup vendors (listed below) and allow your Mac to be backed up continually.

Option 3 – Local Disk and Cloud:

Both "Acronis True Image" and "Carbonite" allow the option to backup both to a local disk and the Cloud for extra protection.

Recommended Cloud Backup Providers

The options listed below are all very good and secure Cloud backup providers (listed in alphabetical order). Choose what works best for you based on price and features. (The details listed here are accurate as of April 2019; please confirm before you purchase.)

NOTE: For any Online Service (including backup services), make sure to use strong/secure passwords (not shared with other online accounts) and consider turning on two-factor authentication. Data in the Cloud is more accessible than if stored locally and you want to make sure it is not accessed by unauthorized people. You should put in your own "encryption password" so only you can get to your backup information.

1) Acronis True Image: www.acronis.com
   a) $50/year for one device for 250GB
   b) Can backup locally and in the Cloud
2) BackBlaze: www.backblaze.com
   a) $60/year for one device for unlimited data
   b) Options to mail physical USB or Disk if a restore is needed.
3) Carbonite: www.carbonite.com
   a) $72/year for one device for unlimited data
4) SpiderOak One: spideroak.com/one
   a) $69/year for unlimited devices for 150GB

Cloud/ Online Backup Discussion - Windows PC or Mac

An alternative to backing up your data to an external hard drive is to use an "online" or "Cloud" service.

Advantages:
1) Software is usually **easy to configure**; no need to purchase anything else, just purchase a subscription, download the software, and away you go.
2) A copy of your data is stored "**offsite**", at an external location. In case your computer is lost, stolen, or destroyed, or your backup device is lost, stolen, or destroyed (like in a fire), you still have a backup of all your critical data.
3) Some online services allow you to access your files from mobile devices (e.g. Smartphones, iPad, etc.) over the Internet.

Disadvantages:
1) Be aware that backing up over an Internet connection is **much slower** than connecting to a local hard drive. Backing up lots of data (like photos, etc.) will take considerably **longer** than to a local drive. Depending on the speed of your internet connection, backing up all your data (many gigabytes) may be completely unfeasible, or at least take numerous days to complete.
2) **Restoring** all your data in the event you lose your computer (or data gets lost or corrupted), may take a considerable amount of time if you have a slower internet connection or have lots of data. If that is the case, one factor in your choosing a Cloud Backup provider may be their ability to send your data to you on a flash drive or hard drive.
3) Storing more than a few gigabytes on one of these online services may also be expensive and cost you a **monthly/yearly subscription fee**, as opposed to the one-time cost of your external hard drive and backup software.
4) The online options **do not backup your entire system with Programs**. Although it is easy to restore a file or an entire folder, if you lose your computer or it crashes, you will need to reinstall all Programs before restoring your data.

Other Alternative Online Backup Solutions

Some online backup solutions offer free services that allow you to backup up a few gigabytes (e.g. 2 to 5) or less for free. This is not a good, comprehensive backup solution, but will allow you to keep versions of critical files easily backed up.

- For instance, although <u>Dropbox</u> is not meant primarily to be a "backup" software, it is a great way to backup 2 Gigabytes online for free. However, please confirm that the security features of Dropbox match your risk profile. You can also get to these files from a website interface or have them automatically copied to (and kept in synch with) another computer – Mac or PC. (www.dropbox.com) Just be aware that if you delete these files (or they are corrupted) on your local drive, then they will be deleted from your online version (although usually older versions are available for restore).

SmartPhone (iPhone, Android), Tablet (iPad, etc.), iPod Touch:

Please be aware that if you have a SmartPhone/iPad/iPod, you should regularly back it up by synching it with your computer, backing up to the Cloud, or using a third-party utility.

iPhone: A great, free way to backup your iPhone is to sync/backup your phone to your PC/Mac through iTunes or just allow it to backup in iCloud (although you will need to purchase more iCloud storage for $12/year. (If you backup to iCloud, make sure to have a strong password on your account!)

Android: If you want to backup your Android, I suggest either Titanium Backup, MyBackup Pro, or Helium for backup (for a small cost).)See www.androidpit.com/how-to-back-up-everything-on-android for more info.)

* The newest version of Acronis True Image Home says that it allows you to backup all mobile devices to your local computer. I have not tried this feature yet, but if you use Acronis, you also have this feature.
* For home or small business users, for a cost, iDrive has some great features to backup your Androids/iPhones: www.idrive.com/mobile
- I have never used it, but hear that McAfee's Mobile Security is a great security and backup program that will lock your smartphone, back it up, and allow you to track it down, or wipe it remotely if it is lost or stolen: m.wavesecure.com

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You only need to read below if you want more details than what is provided above. (Or if you want more details about Acronis.) Chances are you can just choose an option listed above and then go for it. The detailed information listed below was originally created at a time when doing a backup was much more complicated.

Detailed Overview of My Simple Backup Strategy

In order to be ready for the time when you will need to rebuild your computer, (and it *will* happen, whether out of necessity or by choice) keep all of your **Program CDs and Serial Numbers** in one spot. This includes all <u>Operating System</u> CDs/Serial Numbers (such as Windows, Mac OS X, etc.) and installation media for all application <u>programs</u> you run on your computer (such as MS Office, etc.) (Or know where you can download them from the Internet.). If you lose your <u>serial numbers</u> you may have to spend a lot of money to re-purchase software you technically already own.
An <u>overview</u> of the steps to protect all your data includes:

1) (If using Windows) Keep all your documents in one location on your computer (e.g. "My Documents").

2) Purchase and setup backup <u>hardware</u> and <u>software</u> (or sign-up for <u>online/Cloud</u> backup). (Details below.)

3) Configure the backup to occur regularly (automatically if possible). Decide how often you need to backup, based on your needs.

    3) (a) 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!")

4) Before you are done with your initial program setup, test to make sure you can restore one file from your backup; that way you know your data was backed up successfully.

5) If you use a method to backup other than the ones recommended here (below), then make sure you feel comfortable with the "restore" process since you might not easily be able to get help from someone who is familiar with the backup method you have selected.

Backup Details - If you have an Apple Macintosh Computer

Mac OSX Backup Option 1 - Local Disk: If you have a Macintosh with the **Leopard**, **Snow Leopard**, or **Lion OS X**, then buy an <u>external hard drive</u> that is at least twice as large as your internal hard drive (or a minimum of 500 Gigabytes, preferably 1 or 2 Terabytes). Plug it in and initiate the **Time Machine** program. Plug in the hard drive whenever you are home or plug it in once a day if you are on the go. Your job is done; let Time Machine do its job! It will keep a current backup of all files that change on your computer. If you ever have to restore your computer, the Mac will ask you if you want to restore from a Time Machine backup at the time of install.

(When using Time Machine, your external hard drive needs to be <u>dedicated to backups</u>; don't try to use it for copying other files to since Time Machine needs full control of that drive. There are ways to partition a hard drive for shared use with Time Machine, but that is complicated and beyond the scope of this document.)

If you own an older version of OS X, like **Tiger**, then you will need to install a separate backup program (instead of using OS X Time Machine) and follow the directions for backing up a Windows PC (above). I suggest using either SilverKeeper or SuperDuper! as your backup software.

Mac OSX Backup Option 2 – Cloud Backup: Please see above under "Online/Cloud Backup Discussion" for information on the advantages/disadvantages of using a Cloud backup solution and choose a program listed under the section "Recommended Cloud Backup Providers."

1) Download and install your Cloud Backup software

2) Create an online account and configure it to backup all of your personal files.

3) See the instructions listed with your software, but you most likely leave all the defaults, which will most likely be to backup once/day.

4) Make sure to set up the email notifications so it will inform you if the backup fails.

As above, please note that Cloud backups only keep copies of your files, photos, music, and other data. They do not backup the programs on your computer. In case of a disk failure, corruption, or ransomware, you will need to first need to reinstall your operating system and all your programs, and then you can restore your data from the Cloud.

Backup Details - If you have a Windows PC

Make sure you keep all your data in the "**My Documents**" area of your computer and backup this folder to your external device regularly. Make sure to also backup your <u>email address book</u> (and **emails** if they are stored locally) and your **Internet Favorites** (bookmarks). Alternatively, if you have room on your backup drive, you can just backup your entire computer, not just your data.

Windows PC Option 1 - Backup all data (only) to External Hard Drive with Acronis
1) Buy an external hard drive to connect to your computer; it should be at least twice as large as your internal hard drive (or a minimum of 500 Gigabytes, but 1 to 2 Terabytes is best).
2) Download and purchase Acronis True Image (www.acronis.com).
3) Create an online account, and configure it to backup all of your personal files to the local, external drive.
4) You can leave all the defaults, which will most likely be to backup once/day.
5) Make sure to set up the email notifications so it will inform you if the backup fails.

Acronis True Image will do a complete "image" backup of your computer, simplifying the restore process.

Windows PC Option 2 - Backup all data (only) to the Cloud
Please see above under "Online/Cloud Backup Discussion" for details on the advantages/disadvantages of using a Cloud backup solution and choose a program listed under the section "Recommended Cloud Backup Providers."
5) Download and install your Cloud Backup software
6) Create an online account and configure it to backup all of your personal files.
7) See the instructions listed with your software, but you most likely leave all the defaults, which will most likely be to backup once/day.
8) Make sure to set up the email notifications so it will inform you if the backup fails.

As above, please note that Cloud backups only keep copies of your files, photos, music, and other data. They do not backup the programs on your computer. In case of a disk failure, corruption, or ransomware, you will need to first need to reinstall your operating system and all your programs, and then you can restore your data from the Cloud.

Windows PC Option 3 - Backup your Entire Computer to External Hard Drive with Acronis
1) You will need to buy a backup program to manage the backup to the external device. I recommend purchasing Acronis True Image; it may cost $50, but it will (1) create a backup "image" of your computer (which makes restoring very easy), (2) will maintain multiple copies of your data, and (3) make it easy to backup your email.
   a) Please see the end of this document for detailed directions on how to use Acronis software.
   b) If you choose to use a free program (like Windows Backup or one that comes with your external hard drive), instead of a program like Acronis, then please be aware that someone else may not easily be able to help you if you need to do a restore. Make sure you understand the restore process before there is an emergency.
2) If you don't have the option to choose the "Acronis Continuous Backup" option (described below), then configure your software to backup on a regular schedule (probably once per day, week, or month, based on the question, "How hard would it be for me to re-create all this information if my hard drive crashed?" Or to replace those pictures? What if I lost all the emails from this last week?). You may also choose to backup critical files that change frequently to a flash drive.
   a) Besides that Continuous backup, you also may want to backup your entire System (including all Programs) once per month.

Appendix A - Details for Acronis Backup Software with Windows PC

1) First, create a Bootable Rescue Media CD to Prepare for a Complete Restore
If you downloaded Acronis, you will want to create a bootable rescue media CD. If your system crashes, you will be able to boot from this CD, run the Acronis program (stored on the CD), and choose to restore

your computer from a disk image that you will create (explained below). To create this CD, choose "Create Bootable Rescue Media" and choose to create it (burn it) to a CD.
Important: After creating your rescue CD, follow the directions in the User Guide for testing your bootable rescue media.

2) Backup the System Partition Image using "One-Click Backup"
Before starting the Acronis program, plug in your external hard drive. You should then initiate the One-Click Backup (by double-clicking the One-Click Backup icon on your Desktop, or through Tools & Utilities from the Acronis program). If you are prompted, choose to backup all "partitions". This will backup your entire system partition, creating a **Disk Image** of your hard disk which includes *everything* on your hard disk (including your Windows operating system, your applications, and all your data files). In case of a major disk crash, this disk image can be used to restore your system back to the current state at the time of the backup. Although you can schedule to make new system images with the One-Click Backup, a better option after this first one is just to allow further backups to be managed by the Continuous Backup as described below.

3) Turn on the "Acronis Continuous Backup" Service
Before starting the Acronis program, plug in your external hard drive. Turn on the Continuous Backup feature of Acronis. It will automatically backup the partition/disk you choose (i.e. C:\) and will back up all files on that drive every 5 minutes until your external drive is full (at which point you need to tell it to erase the oldest backups). (Because it uses disk space intelligently, it should not fill up that fast if you have a large external hard drive.)
With the Continuous Backup turned on, you are able to either do a complete restore of your hard drive (in the case of a major disk crash or operating system corruption) or you can restore any file from any date you chose since the time your backup has been active.

Comments about Restoring with Acronis on Windows PC

If you need to do a "restore" of your computer from your backup, here are some things to consider. Before you enter a crisis, you should watch the tutorials on restoring listed below (Videos 7 and 9).

Disk Image Restore: Use this option if you backup a disk image of your computer ("My Computer" in Acronis). If your computer crashes and you want to do a restore your disk image, then you would first restore your original complete disk image and then restore the latest differential backup of your computer. Restoring the initial image will put your computer back to the original state (including your operating system, programs, and old data files) and restoring the differential backup will reinstate all changes made since the time the initial image was created.

Data File Restore: Use this option if you backup your data files and email ("My Data" and "My Email" in Acronis) rather than doing a Disk Image ("My Computer" in Acronis). If you need to reload your computer, then you would install your Windows operating system and all application programs from the original CDs. In order to get your data from your backup, you would then restore your original "full backup" of your data files and then restore the latest "differential" backup of your data files. (You need to repeat this process for restoring email.)

Starting with Disk Image then Adding Data File Restore: If you started your backup regimen with a backup of your entire computer to create a Disk Image ("My Computer" in Acronis), but after some time switched to backing up only your data files ("My Data" and "My Email" in Acronis), then you have two options for reloading your computer, as follows:
(1) You can reload your computer from CDs and then restore your data files (as described in "Data File Restore" above) or **(2)** you can choose to restore the original Acronis "Disk Image" (as described in "Disk Image Restore" above) and then restore your most recent data file backup (both the "original" data file and the latest "differential"), overwriting the old data from the original image.