

(Approx. 1,771 words)

Backup...Backup...Backup

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February 2014 issue, PC Monitor

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I know you've all heard this before, but it is very true. Backup your data and backup your system. When we talk about the Backup activity, we mean copying the files that you definitely want to have, should you lose your computer. But first, I'd like to discuss some Backup Philosophy. There are many levels of backup. The correct amount of backup is that level that lets you sleep at night. (Kind of like a well balanced portfolio.) You have to have enough backed up and you need enough backup copies. No doubt this can be taken to the extreme, as I'm sure it is by many obsessive-compulsive types. But, everyone needs to make these decisions;

1. What shall I backup
2. How often shall I backup, and
3. How many backup copies do I need.

Before we answer these questions, a few words on why we back up. In a perfect world we would not need to backup anything. Every time we turned on our computer, it would turn on without a hesitation or problem. And, there would never be cause to worry about viruses, spyware or any such malware, because they would not exist. Unfortunately this is not a perfect world and we have to be concerned with potential hardware and software problems. Hardware sometimes fails, and software problems and malware do exist. So, backup is protection against some hardware failures, namely hard drive failures. And backup is protection against software problems or an infection of malware. In either case not having your data and system backed up may force you to re-load your system and begin from a fresh start, and/or spend a lot of time reproducing the data that was lost.

Now back to those questions. The first one, what to backup? Generally, the answer is: all of the data that you have produced and is difficult to re-create, and your system (Operating System and applications that you are using). So this really has two components, data and system. Data backup is the easier. Just copy all the files you want to backup to another drive (internal, not on the same physical drive, or external), or to other memory devices such as CDs, DVDs, and flash memory devices. The amount of data to be backed up helps determine the backup media. For small amounts of data, CD or flash memory devices work just fine. For large amounts of data, a second internal hard drive, or an external hard drive is probably a good choice. (External hard drives seem to becoming the best choice for most backup needs.)

Data Backup

So, what exactly are we backing up?

1. All of your digital pictures. These are usually .jpg or .bmp file types. Actually, there are many other file types that could be pictures or graphics. But with modern digital cameras, most of the pictures are going to be .jpg (or .jpeg, or .jpe) file types. These are probably in a general "photos" folder.
2. All of the data that you have created using "Office like" applications. Such as .doc, .xls, .ppt, .pps, .docx, .xlsx, .rtf file types. These files usually include personal and financial data that you have created for convenience. These could be in a general "Personal Information" folder or they could be spread out among a few folders.
3. All of the video files you have created or collected. Again, there are many video file types. Some of the more common ones are .mov, .avi, .mpg, .vob, .wmv, .swf. Many of these are created by digital cameras shooting video, or video cameras. These are probably in a general "video" folder.
4. All of the music files that you have bought, created, collected, or ripped from CDs. Some common file types are .mp3, .wma, .m3u, aac. There are many other audio file types that could be produced by common applications in use. These are probably in a general "music" folder.
5. Any other data that you feel you cannot live without, such as Quicken or Money backup files, or the data files from TurboTax or TaxCut. These may be spread out among many folders.

How often to backup is the next decision. Basically, as soon as a file is created or changed, it is a candidate for backup, but, let's be practical. If during the day, there were a large number of files created or changed, then they are probably reason enough to backup at the end of the day. If there are very few changes from day to day, then daily backups are probably not necessary. So, some days you might backup certain folders and some days you may not. But, at the end of the week, it is time for a weekly backup. (This doesn't have to be any specific day of the week, but must happen at least once a week.) With this philosophy, in the worst case, all of your data is only one week old, and your important data is only one day old. This should let you sleep pretty well.

Now, on to the decision of how many backup copies? This is a very personal decision. For many, one copy on an external hard drive will more than suffice. That can be augmented by copying all of the files, once or twice a year to DVDs. That way, if the external hard drive goes down, and you haven't replaced it, in the worst case, you have the latest DVD copies to go back to, although that data could be 6 month old. For guaranteed safety, two external hard drives, one updated weekly, and the other updated once or twice a month, and a set of DVDs every six months should make almost anyone feel good and sleep well. An even greater precaution taken by most businesses and some people is to take one set of Backup files (External or DVDs) and store it off-site, in a bank vault or a friend or relative's house. (For businesses, this is almost a necessity.)

Now, for the question, how to implement a backup strategy? If you only have a few files, you can just copy them to the backup device on the schedule that you have established. If you have a large to medium collection of files, you will probably need the assistance of a software application to make it palatable. The first backup is simply a copy of all of the files to be backed up. Each backup after the first need only to be a copy of the new files created and the files that have changed since the last backup. This is called an incremental backup. As your number of files to be backed up grows, you will grow to appreciate the incremental backup. The software will determine which files, in the folder to be backed up, are either new or changed and then only copy those files to the backup device. Some applications call this “synchronizing” the files. Synchronizing can be done in a few different ways and the application will allow you to choose the one that is right for you. For backup, make a selection that will not change the source files. Source files are those to be backed up, and target or destination files are the backup copies.

System Backup

So far, we’ve only backed up our data files. Now, on to backing up the system. The whole system has to be backed up, in total. The system is not backed up by a simple copy of the system files. The system must be backed up by saving the system as an “image”, using imaging software, specifically designed for this purpose. Normally, the system doesn’t change as frequently as the data files. However, each time you get an update from Microsoft, the system changes, albeit slightly. The system also changes each time you install (or uninstall) an application, peripheral device (like a printer), or hardware driver.

So, how often should we backup the system, another very personal decision. A good strategy for the system backup is to “take an image” every time a big change is made (a software installation, a software un-installation, or a Service Pack installation), or a fixed amount of time has passed, say 3 months. Taking an image takes a good bit of time, so you don’t want to do this too often. If you have many large software applications on your system, it may take hours to take an image. Images are usually saved compressed, and the amount of compression is usually adjustable, for example low, medium, or high. The low compression choice will take an image quicker, with a larger image file being created. The high compression choice will be the slowest, but the file created will be the smallest. Medium will be somewhere in between. Highly compressed image files can be from 2 to 10 GB, so you need to have a good bit of storage just for the images. These images should be stored on a different physical drive from the drive that your C: drive is on. Saving them on another partition on the same physical drive will not help you if the drive goes down.

Just how many copies of the system image backup should be kept? Considering the size of the image files, you may want to keep only a few, maybe 3 or 4, and some that were taken at key points. These key images might be the initial load of the operating system, or the initial load of the operating with the initial applications installed, or before any critical application was installed and checked out. Actually, any image that you are confident is reliable, and would be a worthwhile starting point, can be kept.

Once your backup philosophy is established and a backup strategy is put in place, and you execute the strategy, that is, you routinely backup your data and your system, you will be able to sleep more soundly at night, never having to worry about “what happens if”.

If a hard disk failure occurs, your backup data can quickly and easily be copied to the new hard drive. If your C: drive with the system goes down, the last image can be restored to the new C: drive. If a software problem or malware infection occurs, the last image can be restored and you are back up and running. All of these problems are now less a problem because you can recover from them without any question and in a reasonable amount of time.