

BACKUPS MADE EASY

Contents

INTRODUCTION	1
BACKUP TERMINOLOGY	1
CONSIDERING YOUR BACKUP OPTIONS	3
BACKUP STRATEGIES AND PROCEDURES	5
DETERMINING BACKUP FREQUENCY	5
DECIDING HOW AND WHAT TO BACK UP	5
BACKING UP YOUR COMPUTER.....	6
<i>Using The Windows Back Up Tool</i>	<i>6</i>
<i>Scheduling a Backup with Windows Back Up Tool</i>	<i>10</i>
<i>Performing Online Backups.....</i>	<i>12</i>
<i>Disk Imaging.....</i>	<i>12</i>
BEST PRACTICES & TIPS.....	13
SOFTWARE AND HARDWARE RESOURCES	14
BACKUP SOFTWARE	14
BACKUP HARDWARE	14
GENERAL INFORMATION	14

Introduction

Taking the time to understand and regularly perform backups is necessary to protect the valuable data on your PC and to protect your business. This document discusses backup options and terminology, and outlines procedures and tips for performing backups of your critical data.

Backup Terminology

- **Hard Drive** - The physical magnetic disc located inside your computer. It stores all the files and folders you probably work with everyday. It also stores all the programs like Microsoft Office and Internet Explorer as well as the Windows operating system itself.

- **Flash Disk, Jump Drive or Thumb Drive** – The small (thumb-size) drives that are commonly used for transferring files from computer to computer. These drives plug into your computer's USB port.



- **CD/DVD Drive** – A drive in your computer that plays CD's or DVD's. Many of these drives in modern computers also let you record files to blank CD or DVD media. These types of drives are commonly referred to as CD-R, CD-RW, DVD-R, DVD+R or DVD-RW.

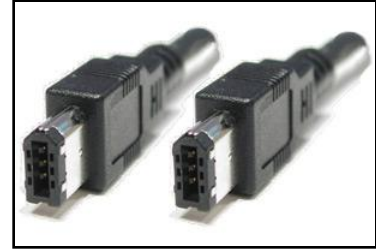
- **External Drive** – A hard drive based backup device that is enclosed in a separate case and connected to your computer via a USB or Firewire cable. Some external drives are also CD or DVD drives.



- **USB** – Universal Serial Bus is a very common high speed protocol for transferring data between your computer and external devices like thumb drives, external drives, keyboards, digital cameras and mice. The plug is a rectangular shape approximately $\frac{3}{4}$ inch wide on one end $\frac{1}{4}$ inch wide on the other. Most modern computers have at least two USB ports located on them. USB comes in two speeds, the older 1.1 speed and the much faster 2.0.



- **Firewire** – Firewire is a high speed protocol for transferring data between your computer and external devices. It is most commonly used on digital video cameras and external drives. The plug is a square shape with a rounded top approximately 1/2 inch wide. Firewire is less common on PCs.



- **Tape Drive** – An external hardware device that stores backed up data on magnetic tape.
- **System & Program Files** – The files on your computer that are required to make it run, these consist primarily of the Microsoft Windows operating system files and files that make the programs on your computer run; such as Microsoft Word, Excel, Outlook, Act, Goldmine, etc.
- **Business Critical Files** – Files that you work with and/or modify on a day to day basis. These would include Word documents, Excel spreadsheets, contact management database files, email files, Internet Explorer Favorites, etc. The **Documents and Settings** folder on your computer normally stores most, but not all, of these files.
- **“C” Drive** – On most computers; this is the primary drive where System, Program and Business Critical files are stored in folders or outside of folders. In Windows Explorer, the "C" drive is labeled (C:).
- **Partition** – Some computer hard drives are “virtually” divided into 2 or more partitions. This can be done by the manufacturer or by using special commands or software. The partitions are still located on the same physical hard drive, but Windows “sees” them as two different drives and assigns them a drive letter, for example “D”, “E”, or “F.”
- **Full or Mirror Backup** – A complete backup of the entire contents of your computer’s hard drive(s).
- **Incremental Backup** - An incremental backup stores all files that have changed since the last FULL backup. The advantage of an incremental backup is that it takes the least time to complete. However, during a restore operation, each incremental backup must be processed, which could result in a lengthy restore job.
- **Disk Image** – A full snapshot of the entire content’s of your computer’s hard drive(s). This requires special imaging software such as Symantec’s Norton Ghost.TM
- **Encryption** – A security feature that translates your files into a secret code so they cannot be read by unauthorized users.

Considering Your Backup Options

Before you begin to backup your computer, you should take some time to consider different backup options and invest in the solution that's best for your business. Depending on your approach, the typical cost range for a small office to implement a backup solution is \$50 - \$60 for hardware (such as an external hard drive or flash drive) and \$0 - \$60 for the necessary software.

Generally speaking, when shopping for a backup software you should consider:

- Support for Windows 2000 or greater
- Full and incremental backup capabilities
- Scheduling of backups
- Support for back up to a separate hard drive or partition, external drive, recordable CD/DVD or network server
- Ease of use
- Disaster recovery

When shopping for backup hardware you should consider:

- Enough capacity to store all the data you will be backing up
- USB 2.0 and/or Firewire support (External drives)
- Encryption, either built in or that can be applied
- Portability (external drives)

The following table lists the "pros and cons" of different types of backup hardware you can use to backup your data.

Backup Hardware Comparison						
Storage Type	Pros	Cons	Approx. time to back up 20GB	Cost per backup	Notes	Tips
CD/DVD	Compact and stable; media is readily available, inexpensive, and easy to transport for off-site storage.	Middling capacity may mean no unattended full backups; media is sensitive to heat and direct sunlight.	2 hours plus time for disc swaps	About 10 to 20 cents per gigabyte	DVD's will hold up to 4.7GB per disc and CD's hold up to 700MB per disc. Good choice for small amounts of data.	To back up the entire contents of a typical computer's hard drive, will require that multiple discs be inserted.
External hard drive	Extremely fast; high capacity for unattended, automated backups; can be unplugged and stored off-site.	Susceptible to shock (don't knock it over!) and heat; expensive.	17 minutes	About \$1 per gigabyte	Good choice for medium to small/independent offices. External drive sizes can range from 20GB to 300GB.	External drives can be purchased at technology retailers. Some are configured for "One-Touch" backup.
Online	Very safe; good security; easily automated; simple file sharing.	Pricey and slow, especially without a broadband Internet connection.	30 hours plus (Depends on speed of upstream connection)	\$2 to \$10 per gigabyte, per month	Best for off-site backup of small amounts of vital data; mobile backup; file sharing	A fast upstream connection is essential to the successful implementation of this approach
Server	Very safe; good security; moderately easy to automate by IT professionals. Expensive if client/server configuration is not available.	Requires access to a server through colleagues or an OSJ office.	30 minutes with standard 100mbps Ethernet network	Dependent on your business' IT solution	Good choice for larger offices with multiple reps located geographically nearby.	Additional storage space may be needed on the server, but can often be added inexpensively.

Backup Strategies and Procedures

Now that you have an understanding of backup terminology, let's talk about some strategies for backing up your files and data.

Determining Backup Frequency

How often you back up depends on your individual situation. If losing data would seriously impede your day-to-day operations, you should perform frequent backups, for example daily at close of business. If you do most of your work online and do not regularly create new files or emails, then once a week should be sufficient.

When it comes to backup frequency, the important point is to *set and adhere to a schedule*. To help you maintain your schedule, most backup software tools have scheduling functionality built in. For example, when you configure your backup software, you could set your computer to back up every Friday at the end of the day.

Deciding How and What to Back Up

Perform a full system backup when making significant changes to your system, such as adding/removing hardware, installing a service pack, upgrading the operating system, installing encryption solutions, or at the recommendation of software manufacture.

If you decide not to perform a full system backup, you should, at minimum, back up your critical business files. Many of these files are located in your user folder (C:\Documents and Settings\[your user name]). This folder contains numerous sub-folders including; **My Documents, Favorites, Cookies**, and several settings folders. Backup the folder with your user name. If more than one person uses your computer, backup their user folders, too.

Some software does not store critical files in your user folder or its sub-folders. For example, if you use customer relationship management (CRM) software such as ACT or GoldMine[®], the database containing your clients' information may be stored in another folder on your hard drive. Research your critical business applications to locate these types of files. You can conduct research by:

- Reading the manual. Most user guides document the locations of critical files. If you cannot find a print version of a user guide, the manual may also be available on your computer as an Adobe .pdf field that was automatically installed with your software.
- Searching the application's online help topics. Usually, the information contained in a user guide is also available as an electronic help file topic. In the application, use the **Help** menu to search for topics regarding the application's critical files.
- Checking the software itself. What folder does it save files to? You may also find this information by looking through the software's menus for preferences or options. These kinds of menus may also list commands for backing up critical files.
- Check the manufacturer's website. Check the support section or search any available FAQs for critical file locations. You can also contact the manufacturer directly by support phone numbers or support email addresses listed on the website.

Backing Up Your Computer

Many external drives feature a single button process for backing up your data. For details on this type of feature, refer to the product documentation. However, you can also use the step-by-step procedures in this section to back up your computer to most storage devices, for example an external hard drive, flash drive, or server. For definitions of key words, phrases, and concepts, see “Backup Terminology” on page 1.

Using The Windows Back Up Tool

One of the least expensive and most straightforward backup solutions is to use the Microsoft Windows built in back up utility and an external hard drive. This option is recommended to perform the initial and scheduled backups of critical business files. However, it is not appropriate for completing a full system full backup because it requires that the operating system be installed prior to restoring files. It can save files to another partition or an external drive, but not to a recordable or rewritable CD or DVD. This section shows the general steps you will need to follow to use Windows XP’s built in back up tool and an external hard drive. Some specifics may vary depending on your computer software and hardware configuration.

If you use Windows XP Professional, the Windows backup utility (Ntbackup.exe) should be ready for use. You do not need to install it. However, if you use Windows XP Home Edition, use the following steps to install the utility.

To install the Windows backup utility:

1. Insert your Windows XP CD into your computer’s CD drive.
Usually, a window is automatically displayed listing the contents of the CD. However, you can also manually explore the CD by double-clicking **My Computer** and then clicking the CD’s icon.
2. On the **Welcome to Microsoft Windows XP** screen, click **Perform Additional Tasks**.
3. Click **Browse this CD**.
4. In Windows Explorer, double-click the **ValueAdd** folder.
5. Double-click the **Msft** folder.
6. Double-click the **Ntbackup** folder.
7. Double-click **Ntbackup.msi**.

The Windows backup utility is installed.

Once the backup utility is installed, or if you are using Windows XP Professional, complete the following procedure.

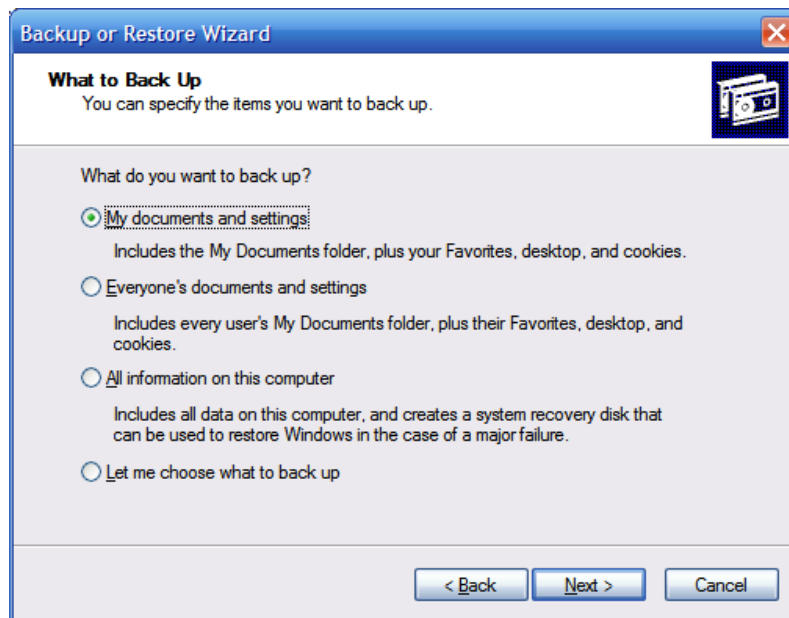
To back up your computer:

1. In the Windows taskbar, click **Start**.
The Windows **Start** menu is displayed.
2. On the Windows **Start** menu, click **All Programs**.
3. Point to **Accessories**.
4. Point to **System Tools** and then click **Backup**.

The Backup or Restore Wizard is displayed.

5. Click **Next** .
6. Make sure the **Back up files and settings** option button is selected and click **Next**.

The **What to Back Up** page of the Backup or Restore Wizard is displayed:



7. On the **What to Back Up** wizard page, specify the type of backup to perform.

For most users, the **My documents and settings** option is a good choice. This selection preserves your data files (including e-mail messages and address books) and the personal settings stored in the Windows Registry.

If several people use your computer, select the **Everyone's documents and settings** option. This option backs up personal files and preferences for every user with an account on the computer.

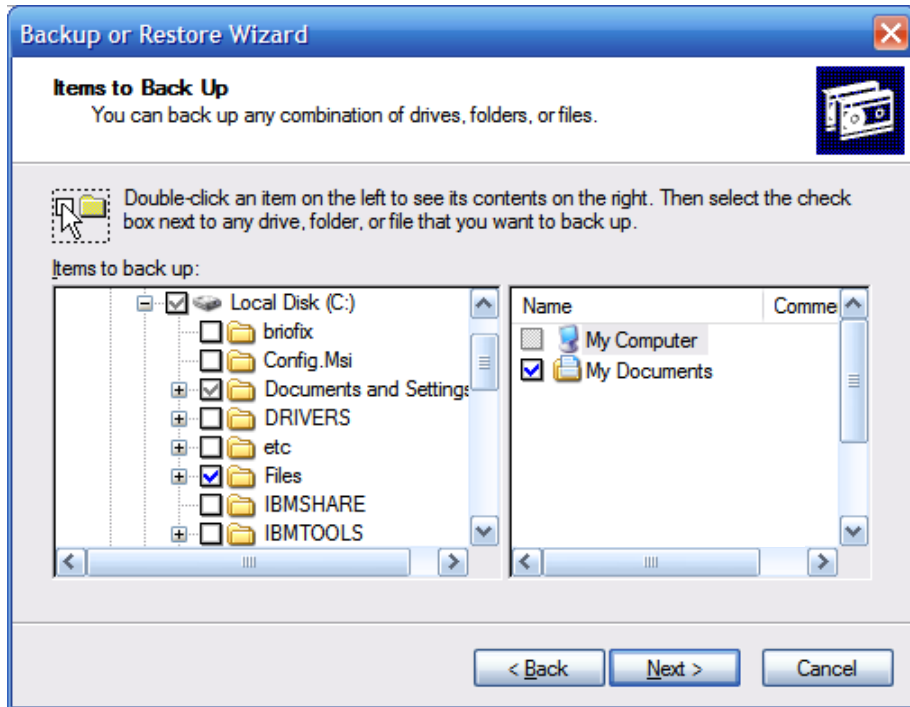
If you know that you have data files stored outside your user folder (outside of C:\Documents and Settings\[your user name]), select **Let me choose what to back up**.

8. Click **Next**.

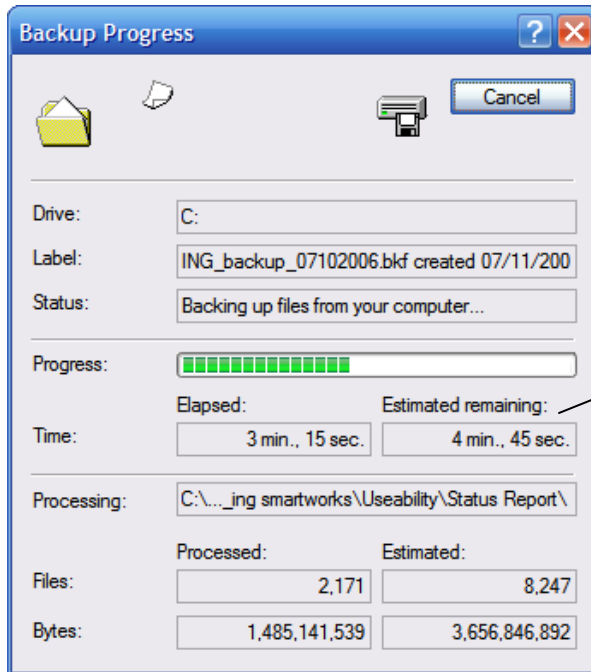
If you selected the My documents and settings or the Everyone's documents and settings option, the Backup Type, Destination, and Name page is displayed. Skip to Step 11.

If you selected the **Let me choose what to back up** option on the **What to Back Up** page, the **Items to Back Up** page is displayed. Continue to the next step.

9. If you selected the **Let me choose what to back up** option, select the check boxes of the folders you want to back up.



10. Click **Next**.
The **Backup Type, Destination, and Name** page is displayed.
11. On the **Backup Type, Destination, and Name** page of the wizard, click **Browse**.
The **Save As** dialog box is displayed.
12. Click **My Computer**.
The **Save As** dialog box refreshes to display a list of available drives, including any connected external hard drives, flash (jump or thumb) drives, and mapped server drives.
13. From the list of available drives, select the drive on which you want to back up your files.
Do not select the "C" drive (C:).
If desired, you can create a folder on the external drive to hold your backup files.
14. Click **Save**.
The drive is selected, and the **Save As** dialog box is closed. On the **Backup Type, Destination, and Name** page of the wizard, the selected drive is selected in the **Choose a place to save your backup** drop-down list.
15. Type a name for the backup file in the **Type a name for this backup** field.
16. Click **Next**.
The **Completing the Backup or Restore Wizard** page is displayed.
17. Click **Finish**.
The backup begins, and the **Backup Progress** window is displayed.



Estimated Remaining field

If you are transferring the backup file to an USB 2.0 external drive, the backup is fast. Usually, data is transferred to these devices at about 400 megabytes/minute. Basically, it takes about 10 minutes to back up 4 gigabytes of data. To determine how much time your backup will take, reference the **Estimated Remaining** field.

When the **Backup Progress** window closes, the files you selected are backed up and the **Completing the Backup or Restore Wizard** page is displayed again.

Do *not* click **Finish**.

Once you complete your initial backup, you can use this wizard page to set your computer to automatically perform backups regularly. For details, see "Scheduling a Backup with Windows Back Up Tool " on page 10.

To make sure the files were transferred, double-click **My Computer** on your desktop. Then, in Windows Explorer, click the back up drive and look for the backup file.

Scheduling a Backup with Windows Back Up Tool

You can use the Windows back up tool to schedule a regular backup, for example each week. This feature automatically performs a backup to the drive you selected earlier in the Windows Back Up tool, removing an item from your everyday "to do" list.

To schedule regular backups:

1. On the **Completing the Backup or Restore Wizard** page of the Windows backup tool, click **Advanced**.

The **Type of Backup** wizard page is displayed.

2. Make sure that **Normal** is selected in the **Select the type of backup** drop-down list.
3. Click **Next**.

The **How to Back Up** page is displayed.

4. Select the **Verify data after backup** check box.
5. Click **Next**.

The **Backup Options** page is displayed.

6. Make sure the **Append this backup to the existing backups** option is selected.

This setting makes sure the backup is completed as quickly as possible. When the backup is performed, only new or changed files are added to your existing backup.

7. Click **Next**.

The **When to Back Up** page is displayed.

8. In the **When do you want to run the backup?** field, select the **Later** option button.

The **Scheduling** pop-up window appears.

9. Click **Yes**.

The **Schedule Job** dialog box is displayed.



10. Use the **Schedule Job** dialog box to create your backup schedule.

You can schedule your backup to occur regularly each day or week. For example, in the above image, the backup is scheduled to occur at the end of business every Friday.

11. Once you finish scheduling your regular backup, click **OK**.

Your backup schedule is created.

Important: *If you are backing up to an external drive, for example an external hard drive or flash drive, make sure the external drive is connected to your computer when the backup is scheduled to occur.*

Performing Online Backups

You can also back up your files to an online server. There are multiple online companies that offer secure online storage. Open an account with one of these companies. Then, use the procedure outlined in "Using The Windows Back Up Tool" on page 6 to back up your critical business files. Then, upload the backup file to a secure website.

This option is dependent upon the upload speed of your internet connection. For example, a 2 gigabyte backup file containing your business critical files would take approximately 3-5 hours to upload over a typical high-speed internet connection. A full backup of 20 gigabytes may take 30 hours or more over a connection with the same speed. If you have a dial-up internet connection, you should not consider this option.

Online backup solutions should provide 128-bit encryption of your backup file(s). So, your data should remain safe and confidential. If your data is lost on your computer, some online storage companies send you recovery CDs or DVDs containing your backed up files.

Disk Imaging

Disk imaging takes an exact copy of your computer's hard drive and all of the files stored in it. Disk imaging is like taking a "snapshot" or picture of your hard drive. This picture contains all of the folders, files, and applications on your hard drive.

It would take approximately 30 minutes to image a 30 gigabyte hard drive. Usually, the disk image is about one half to two thirds the size of the files on your computer.. For example, the disk image of a full, 30 gigabyte hard drive would be approximately 15 to 20 gigabytes in size. You can store a disk image on a separate hard drive or partition, external drive, recordable CD/DVDs or network server.

As you can imagine, disk imaging is an excellent option if you want to create a full "disaster recovery" copy of your computer. In the event that your computer must be fully restored, the disk image can be copied back to the hard drive. However, to create a disk image, you need to buy additional software. Microsoft Windows does not feature a disk imaging utility.

Best Practices & Tips

Backup needs vary from business to business. Depending on the needs of your individual business, use the following tips to implement a successful backup solution:

- Identify what you absolutely cannot afford to lose, for example spreadsheets, address books, Laser App data, contact management database files, photos, and presentations. Make sure these kinds of files are backed up regularly.
- Do you have the installation CDs for all your software? If not, you will need an image of your system and all of its applications.
- Schedule a full-system backup once a week and smaller, incremental backups (that store only changes to files) daily or nightly.
- Use caution when overwriting older backup files. If you encounter file problems, the most recent backup of that file may have the same problems.
- Note that most solutions cannot restore individual e-mail messages, because they see your whole mailbox as a single file.
- Storing backups on a separate partition of your hard drive makes them easily accessible, but won't protect you from a physical disaster.
- Separate your business files from your operating systems and applications. Ideally, you should save data files on a separate drive or partition. This precaution makes protection easier. For example, you can restore your system to a previous state without reversing your data to that point in time.
- Purchase an external USB 2.0 hard drive for your backups. It's a worthwhile investment that pays for itself with one system recovery. Dedicate the drive to backup; don't use it for anything else.
- Distinguish between protecting your system (operating system, settings, and applications), so you can recover from a crash, and protecting your data (documents, digital pictures, music, settings). Some backup tools work better for system files; some work better for data.
- Typical consumer backup products don't save open files. So if you never close your mail file, or you keep a status-report spreadsheet open all the time, it may never get properly backed up.
- Test restoring your system. It is possible to configure the backup software incorrectly and discover when it's too late, that nothing was actually written to the disk.

Software and Hardware Resources

For additional information on backup hardware and software, you can reference the following resources.

Backup Software

Windows XP Backup Made Easy:

http://www.microsoft.com/windowsxp/using/setup/learnmore/bott_03july14.mspx

Acronis True Image Home (Disk Imaging):

<http://www.acronis.com/>

Norton Ghost (Disk Imaging)

<http://www.symantec.com/norton/ghost>

Backup Hardware

Seagate External Hard Drives

<http://www.seagate.com/www/en-us/products/external/>

Maxtor OneTouch™ External Hard Drives

<http://www.maxtor.com/en/external-drives/backup-and-storage-devices/>

General Information

PC World December 2005 – Keep Your Data Backups Safe, Simple and Fast

http://www.pcworld.com/article/123796/backup_tips_keep_your_data_backups_safe_simple_and_fast.html

Entrepreneur.com March 2007 – Backup Plan

<http://www.entrepreneur.com/magazine/entrepreneur/2007/march/174670.html>