

Image – the ultimate PC protection

Image or backup?

To make an exact copy of your drive, including your Windows operating system, you must use 'disk imaging' software. Disk imaging copies the entire disk , or disk partition (the parts that are used) bit-by-bit.



Disk imaging isn't generally the best answer to backing up your data for a number of reasons.

Your Windows operating environment is constantly changing. Programs are installed, updated, uninstalled, and settings are changed. Many important security specific applications are also regularly and automatically updated. Anyone for example who uses their computer to connect to the Internet should have in place Anti-Virus, Firewall, and Anti-Spyware programs that often update many times a week.

If you change your computer then it's very possible that you won't be able to restore from a disk image as that disk image contains all the drivers and settings for your previous computers hardware, which is probably completely different (e. g. different motherboard).

These issues, combined with the longer, time it takes to image and the significantly larger space required for a disk image inevitably means that for the average user, disk imaging is carried out far less frequently than the kind of backup that only copies your documents and information (usually under the 'My Documents' folder). Always remember that making regular backups to a different location is the key to an effective backup strategy.

People who use disk imaging often use file backup programs as well. For example, they take a snapshot of their hard disk using the disk imaging software, e. g. every week, month, or at ad-hoc times, but use the file backup program to make regular backups of their important files, e. g. scheduled every day or even hourly. When doing a restore they first restore the disk image then restore their files using the file backup program.

I have a rigorous back regime for all my personal files and documents. As these files are quite large (7Gb) I keep them on a separate partition. This means they will not be included in an image of my C:Drive, and significantly reduces the size and time to make an image of my C:Drive

What is an image

- A bit by bit copy of an entire disk or partition. Can't select parts of a partition.
- A single file that may be broken down into pieces (to fit on CD's for instance)
- IS OS independent
- Must be saved to different disk or partition.

Why make an image

- After a fresh install of OS and main programs
 - ◆ many hours to do a fresh install plus all updates and personal settings
 - ◆ can be restored in 20 mins!
- Can transfer your system to a new hard drive
- Before installing a major new program
- Regular (monthly) image allows restoration to only a month ago in case of disaster
 - ◆ Disk failure
 - ◆ Serious spy or virus infection.

Requirements/limitations of imaging

- Must have separate partition, preferably a separate hard drive (internal or external)
- Can also create an image on a set of bootable CD's or preferably, DVD's
- Lots of disk space for the image
- Must have ability to restore from outside of your "normal" Windows – this is a major limitation on ease of use. But clearly, it's not possible to restore your C:Drive if you are using the C:Drive.
- Can create an image of the C:Drive from within Windows. However, it's necessary to "lock" the files so the image represents a point in time. Best not to use the computer whilst making an image.
- When restoring an image to a partition/drive, it must be the same size or larger than the drive from where the original image was made.

Programs to use

There are many Image management software programs available, from freeware to quite expensive programs. This workshop will work with three programs, one freeware (RSJ Image) and two shareware (Terabyte Unlimited Image for Windows and also their BootIt NG). On the CD is also the trial version of Acronis True Image, along with it's manual. Acronis is generally regarded as one of the top imaging software programs for the home user and has a list price of \$49.

RSJ Image

This is a free, Windows program that creates an image of the selected drive to either another drive or to a set of CD's or DVD's. If the CD/DVD option is selected, the set will be made bootable – means that the image can be restored directly from the CD/DVD set.

If the image is created on another drive, and the image was of the C:Drive, it's necessary to run the restore program from a Windows environment that's external to the C:Drive being restored. To achieve this, we will use Bart's PE – another freeware program that provides a Windows XP environment running directly from the CD. I have prepared, a Bart CD for each of you, with not only the programs we will need today, but also a lot of other useful utilities for helping with disaster recovery. If there's time, I'll cover these at the end.

Image for Windows (from TeraByte unlimited)

This program is shareware and is very similar to RSJ Image. In the unregistered version, it will not create a bootable CD/DVD. I've included this program as it's the one I've used for many years – without any problems. (I have high confidence in this program). It can be restored using the Bart PE CD mentioned above, or using the next program – BootIt NG. The advantage here, is that the image can be created from within Windows and restored from BootIt NG (which loads much faster than Bart PE)

BootIt NG (also shareware from TeraByte Unlimited)

This powerful program can be run from a bootable CD, or actually installed onto your hard drive. For occasional use (once week) I recommend using it from the CD. You will need to buy a registration key if you want to install it on your hard drive. Besides creating and restoring images, BootIt NG can also create and manage partitions as well as provide multiboot capability (up to 256 different boot options!).

The CD's

- There is one CD with the 3 programs we'll be trying plus Acronis, complete with their manuals.
- There is one bootable CD with Bart PE, including RSJ Image and Image for Windows (plus many other utilities).
- There is one bootable CD with BootIt NG

External HD

If you have one, plug in your external hard drive on which we will save our image. Open My computer and make a note of the drive letter for this drive. If you don't have an external drive, use the F: or Image drive on the center computers to store our images.

We will not be creating an image of our C:Drive today (time constraints) but will be making an image of the E: drive, which is the My Documents folder for these computers.

RSJ Image

- Install RSJ image from the CD. Notice that it also includes an image Mounter, that allows individual files to be extracted from the image.
- On the CD are three pdf files – Installing, Making an Image and Restoring an Image.
- Now open RSJ Image Creator and select Expert.
- Select the E:Drive
- Backup to a regular file. If you wanted a DVD set, you would select here. Saving and restoring to a DVD is quite slow (20-40min per DVD)
- Now click on ellipsis and find the external drive (or F:Drive) and create a new folder called RSJ Image and a file name of today's date.
- Use Volume Shadow should be checked, and then Finish

That's it, the image is made!

Image for Windows

- Load Image for Windows from the CD. When the install screen appears, we want to install Image for Windows, Phylock (to lock the files for consistency) and TBI viewer – allows individual files to be extracted from the image. Notice it also has the utilities to create a bootable CD using dos or linux that allow the C:Drive image to be restored. However, these use the dos version of Image for Windows - so no GUI interface. Hence, we'll use Bart PE Windows with Image for Windows to restore the C:Drive
- The pdf version of the manual is also on the CD.
- Open Image for Windows and select backup
- Then select the Hard Drive/Partition to back up
- To select destination, select File and click browse, go to the external drive (or E:Drive) create a new folder called IfW and name the file today's date.
- Finally select file size and finish

Another image created!

Delete the files in My Documents (we'll restore)

Restore (assuming it's our C:Drive)

- Make sure external drive is plugged in before rebooting
- Put Bart PE CD in CD drive and restart the computer
- When asked if "Need Network Support" – click No
- Click Start>Programs>RSJ Image to open the RSJ Restore program
- Follow wizard to restore the image we created (External Drive or F:Drive and RSJ Image folder) – called today's date. To E:Drive **IMPORTANT – make sure you've selected E:Drive NOT C:Drive!!!**
- Can now do the same using Image for Windows

Remove CD and turn off computer with power button

Start computer and check that we've restored My Documents

BootIt NG

- Put BootIt CD in CD Drive and reboot (again, make sure external drive is plugged in before rebooting)
- In window, click cancel. Only click ok to install the software.. Now in maintenance mode.

Will demo rest of usage.

Create a compressed partition image

- On the desktop, click **Partition Work**.
- In the **Partitions** list, select the partition or volume that you want to create a compressed image of, and then click **Image** under **Actions**.
- In the **Image** dialog box, click **Create Image** to create a new image, and then click **OK**. At the bottom of the **Work with Partitions** window, BootIt NG displays the **Paste Pending for Image Create** message.
- In the **Partitions** list, click the free-space entry, CD/DVD R/RW drive, NTFS or FAT/FAT32 partition or volume where you want to paste the copied partition image, and then click **Paste** under **Actions**. If you are pasting to a free-space *volume* and you use the same extended partition with DOS/Win9x/WinME then, for correct operation of the OS, you must ensure that the last volume in the extended partition is supported by the OS - i.e. FAT or FAT32. DVD-RW discs must be new or fully blanked (not quick blanked) or the write process will fail.
- Do one of the following:
 - ♦ If you are pasting to a free-space entry, in the **Paste Image** dialog box under **Partition Information**, type the **Name** of the partition that you want to create.
 - ♦ If you are pasting to a CD or DVD drive, the image will span as many disks as needed.
 - ♦ If you are pasting to an NTFS or FAT/FAT32 partition or volume, in the **Save As** dialog box under **File Name**, type the name of the file to be created. This name must be 8 or less characters with no spaces.
 - ♦ If you are pasting to an NTFS or FAT/FAT32 partition or volume, BootIt NG lets you adjust the file size being created so that you can copy the image files to a CD or DVD using another program. If you don't plan on copying the image files to a CD or DVD, then it's best to limit the image files to 2 GB because 4 GB is only valid with certain operating systems such as Windows NT, 2000, XP, and 2003.
- When BootIt NG asks if you want a validation, click **Yes** or **No**. If you click **Yes** with the **Byte for Byte** check box selected, BootIt NG rereads all of the source data again and compares it with the compressed image; otherwise, BootIt NG performs a normal **Validation** to ensure that the new file is valid (and that the crc/checksum matches).
- Click **OK**.

Restore a compressed partition image from a file

- On the desktop, click **Partition Work**.
- In the **Partitions** list, select the location of the compressed partition or volume (or CD/DVD drive) that you want to restore, and then click **Image** under **Actions**. If you are restoring from a CD, DVD, or image partition type, BootIt NG displays the **Image Pending for Restore** message and you can skip to step 5.
- In the **Image** dialog box, click **Restore from file** to restore an existing image from a file, and then click **OK**.
- In the **Open** dialog box, type the **File Name** of the image file to be restored, and then click **OK**.
- In the **Partitions** list, click the free-space block or an existing partition large enough to contain the restored image, and then click **Paste** under **Actions**. To see the exact required size, while the **Paste Pending for Image Restore** message is displayed, press and hold down both the **Ctrl** key and the **Shift** key.
- If overwriting a partition, BootIt NG asks if you would like to validate the image; this is used to ensure that the image crc/checksum is valid. (If the process aborts on the actual restore, the partition boot sector is cleared.)