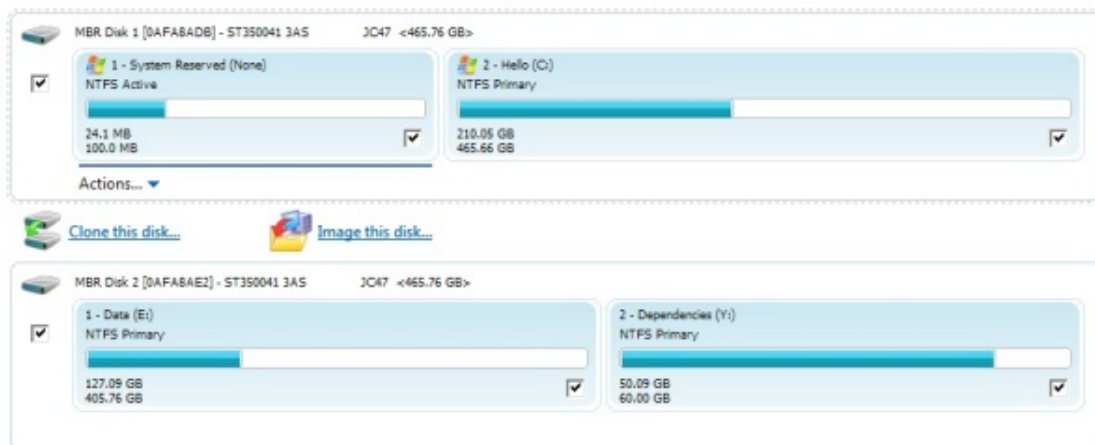


Introduction to Macrium Reflect

This article is for anyone who might describe themselves as "non-technical" and wishes to gain a basic understanding of the terminology, workings and concepts of backup and Macrium Reflect.

Inside your PC

Within your PC, laptop or tablet, the operating system, applications and all of your files are stored on some form of storage device. This may be a conventional disk drive, SSD (Solid-State Drive), flash drive or similar. A physical disk is partitioned into one or more volumes. To the user these appear in Windows as C: drive, D: drive and so on. In Macrium Reflect, the main screen shows the layout of the disks and the volumes contained on each disk. See below:



Here, we have a system with two disks, MBR Disk 1 and MBR Disk 2.

Disk 1 contains a System Reserve volume, and C: which is an NTFS Primary volume.

Disk 2 contains E: and Y: in two additional volumes.

Backup, Imaging and Cloning

There are three words associated with the world of backup which are often misused or misunderstood. We shall therefore look at each in turn:

Imaging

Imaging with Macrium Reflect allows you to recover your system in the event of a hard disk crash or catastrophic system failure. During the imaging process, Macrium Reflect copies entire volume contents and disk structures to an image file (.mrimg). This image file is usually stored on an external hard drive, network drive, set of CD / DVDs or pen drive to be used at a later time if the system needs to be restored. You can read more about how to use Macrium Reflect to Image your PC in our knowledgebase article [How to create a disk image](#). We strongly recommend that at the very minimum you create an image of your system on a regular basis.

Cloning

Cloning is often confused with imaging. The process is identical except that instead of storing volume contents and disk structures to a file, they are replicated onto a target disk. Once the cloning process is complete, the target disk is identical to the original and contains a duplicate of all volumes, files, operating systems and applications. You should be aware that any data on the target disk prior to the cloning process will be erased.

Cloning a disk is particularly useful to upgrade an existing hard disk. Also, in the event of a hard drive failure, you can simply replace the failed disk with a clone and have your system up and running again in minutes. It is not a very efficient way of backing up data that changes frequently as the cloning process can take some time and is expensive in that it requires a whole second disk.

Please note that Windows will not boot from external USB drives. If you clone your system onto an external USB drive, then you will need to remove the disk from the USB enclosure to an internal port in order to boot.

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There is more information on how to clone your disk in our knowledgebase article [How to clone a disk](#).

Backup

In the context of Macrium Reflect, we tend to refer to 'Backup' as a File and Folder backup. Reflect allows you to specify specific directories and files to be backed up and stored in a backup file (.mrbak). The benefit to storing them in a single file is that they can be compressed, encrypted and stored elsewhere with ease. This method is ideal if you only wish to backup specific documents, photos or music, rather than your whole system.

More information on how to backup files and folders is in our knowledgebase article [How to backup files and folders](#).

Only backup changes since the last backup

When you image a volume for the first time, it is referred to as a **Full** image. A full image file contains all the data stored in the volume. Macrium Reflect provides two alternative methods of backing up your data after the initial full has been completed.

A **Differential** image backs up all the data that has changed on the volume(s) since the last full image was taken.

An **Incremental** image backs up all the data that has changed on the volume(s) since either the last image was taken - that could be a Full, Incremental or Differential image.

The advantage of using these methods is that they significantly reduce the amount of disk space and time required to create the image files. You can also restore your system from intermediate points within the backup chain. In order to restore a

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differential image, you must have the original full and the differential image you wish to restore. To restore an incremental image, you must have the original full and all subsequent incremental images. If you wish to know more information about differential or incremental imaging, please see the following Wikipedia entries:

[Differential Backup](#)

[Incremental Backup](#)

If you wish to learn how to create differential or incremental backups using Macrium Reflect, please see [How to create Incremental and differential disk images](#).

To learn more about backup sets, please see [How are backup sets created and maintained](#).

Restoring

Restoring files and folders

There are a number of ways to restore image and backup files. You can restore individual files i.e. accidentally deleted spreadsheets or lost photos by [Browsing an Image or File and Folder Backup](#). The process opens the image in an Explorer window and you can then click and drag files wherever you like.

You can also directly restore the contents of a file and folder backup using the Macrium Reflect file and folder restore feature. This process is documented in the article [How to restore a file and folder backup](#).

Restoring your system

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If your whole system becomes corrupt, the problem is "How do I load Reflect to restore my image when I can't boot Windows in the first place?" The solution is simple. [Create a Macrium Reflect rescue CD](#) and boot that instead. The rescue CD contains a version of Windows called PE. Macrium Reflect will automatically load after the CD has booted and you can then go about restoring your corrupted system.

The restore process is documented in the article [How to restore a backup image](#).

Macrium KB

<http://kb.macrium.com/KnowledgebaseArticle50217.aspx>