

# Best Practice Backups for your Operating System

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Last month in *PC Update* we published an article by Dan Douglas on backing up in Windows. While this presented a method that would work if members followed the advice, there are more up to date methods that can be used. Also members of Melbourne PC User Group use other operating systems like Linux and Mac OS, and so this month we present the best practice you can use on each operating system for backing up your computer.

## Linux

No matter what Linux distribution you use, Linux includes a tool called rsync that makes it easy to keep the contents of one location in sync with another location. These locations can be remote from one another (copying from your computer to another computer, or from your computer to a NAS [networked attached storage] device) or local to each other (copying from one drive on your computer to another drive on your computer). Each time rsync runs it will ensure that both locations are a mirror of one another.

Rsync is executed from the command line in Linux and it can then be scheduled using cron (a cron job) at whatever frequency you find desirable.

Of course, if you are a fairly new Linux user then you may not be too keen on touching the command line. If you fall into this category then there is a utility called Back In Time that provides a graphical front end to the rsync command and helps you create a cron job. Most distributions include this program in their repositories, so you can just search in your package manager (software store) to install it.

When it comes to restoring in Linux you don't need to restore your whole system. The best practice is to reinstall your distribution, reinstall your applications (so keep a list of the applications you do use and the relevant package names) and then restore your Home folder. This simply requires reinstalling Back In Time, selecting the snapshot and then running the restore process. Restoring your Home folder will restore all the settings for your applications so you'll be up and running again after this.

Another option you can use for Linux is Deja Dup. This will also backup your Home folder on a schedule in much the same way that Back In Time will. The other feature that Deja Dup offers is the ability to backup to Google Drive, which gives you the added peace of mind of having your backups located off site easily. Deja Dup is also available in the repositories of most Linux distributions. So try out Back In Time and Deja Dup and see which one you prefer.

## Mac OS

If you are a Mac user then your best solution is Time Machine, which is built into the operating system. Time Machine takes regular backups of your entire drive (usually at hourly intervals) when the computer is on. It is pretty much set and forget, and once you have configured it, you only have to ensure that a backup drive is connected to the computer or the NAS or Time Capsule is powered on and online.

Restoring individual files on a Mac involves entering the Time Machine. To do this, you need to firstly open Finder and navigate to the folder that you want to restore files to. Then you need to click on the Time Machine icon in the upper right section of your screen and from the menu that appears choose 'Enter Time Machine'. This will bring up the Time Machine interface that will enable you to navigate back

in time until you see the files that you are wanting to restore. Then you simply select them and press Restore to begin the process.

If you need to restore your whole system on a Mac, or even migrate to a new Mac, within the standard installation process for Mac OS there is an option to restore from a Time Machine backup. You simply select this and the Mac OS installer will copy your applications, documents and settings back and you will end up with your system being how you remember it.

## Windows

When it comes to Windows, unfortunately it isn't as organised as Mac or Linux when it comes to the separation between applications, settings and documents. So really the only way you can restore a fully working system easily is with an image backup. If you only backup your User files then you will have to reinstall Windows, reinstall all your applications (which can be time consuming using individual install processes if you have a lot of applications), and then restore your User files. So the best solution is to use an image backup, which takes a snapshot of your entire hard drive each time you run it. My favourite application for doing this is Macrium Reflect.

Macrium Reflect is free for non-commercial use. To use it you simply select your hard drive, choose that you want to create an image of it, and then go through the setup routine which will prompt you to set a schedule for performing full images (i.e. if your hard drive has 280gb of used space, then this image file will be close to 280gb, although Macrium does use some compression) and differential images (if you've changed 10gb of files since your last backup then this image file will be 10gb). You can setup Macrium Reflect to backup to an external hard drive or to a NAS (networked attached storage) device.

When it comes to restoring from Macrium Reflect, if you want to simply restore a few files that you have lost then you can use the program to mount your most recent image backup as a hard drive you can access in Windows Explorer. From there you can simply navigate to the folders and files you need and copy them back to your hard drive.

If you happen to suffer a major issue and need to restore your entire system then Macrium Reflect gives you the option of creating a rescue USB stick or DVD, which you should create when you first set up the program (in the event you have forgotten you can use another Windows PC with Macrium installed to create the rescue media). This will let you boot into a special version of Macrium Reflect where you can access your image backups and restore your hard drive. This will normally get you back to a bootable version of Windows with all your applications and files restored. If you find that Windows doesn't boot after you do the restore, then Macrium includes a utility that will recreate the Master Boot Record (MBR) and get you back up and running again.

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