Backup your system before updating it in Linux Mint

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Many cutting edge distributions offer a migration path from release n to release n+1. For Linux Mint, there is not yet a guaranteed migration validated to update the 13th edition called Maya to the latest stable Nadia release. In order to ease the migration, though, Linux Mint provides a tool called Mint Backup to backup your personal data and systems settings before updating the system. We will have an overview of the tool in this article and see how it can help you in rapidly finding back your system up and running.

User data backup

Mint Backup was tested in the Linux Maya Mate edition, in order to migrate the original system to the latest Mint and Cinnamon re-

Figure 1. *Mint backup welcome screen. Using the wizard, you will be able to backup easily your personal and if needed system files but also take a snapshot of the software collection installed in your system*

lease, as provided in the magazine. We will have a short overview of the steps needed to upgrade safely your system. First, launch Mint Backup from the menu (*Menu –> Administration –> Backup Tool*), the wizard offers to backup your system settings, your data, but also the software selection installed in your computer (Figure 1).

Start the wizard with "Backup files" and input your user password since the execution of some steps will require root access through the "sudo" mechanism. Since the user is perceived as being "root", the /root directory is primarily shown. Use the file manager to change this directory to your own home dir, for instance /home/stephane for the "stephane" user. We will backup the files in /tmp/stephane, as presented in Figure 2. If you are willing to totally wipe out the system root, you will have to copy the backup files in a temporary media like a hard drive, an USB stick or another disk partition. Do not consider this unique backup as a safe solution, except if you conform to the "two media, two locations" general backup rules: if you want to use the tool only for getting a backup of your system, move this backup to another media and if possible to another place so, in case of robbery or fire, your data will still be available.

Open the advanced settings to choose the backup file type: use tar only if you want to backup your files on a dedicated machine, otherwise use the format "tar.gz" or "tar.bz2" to compress additionally your data. If disk space is a concern, use the bz2 algo-

rithm which will bring you a smaller archive but at the cost of more computer compression and decompression time, otherwise use the more common "tar.gz" format which will offer a better trade-off between compression time and archive size. You can also select the restore action upon archive usage: no file replacement if there is a mismatch between the file date or its SHA1 control sum. You can bypass this default behavior and always use the file present in the archive. We will use the default choices making use of SHA1sums and no systematic file replacement.

The next step offers you to exclude files or directories, this is particularly useful when you know directories are already managed by alternatives means like online storage solutions such as Dropbox, Google Drive, Ubuntu One... On our system, the Mint iso file is present in the personal directory, since this file is easily available on the internet, and present on the magazine's media, we discard this directory to avoid increasing our archive size (Figure 3).

We have kept all other directories inside the archive except for the directory $HOME/.gvfs where $HOME is the location of your home dir, /home/stephane here. This virtual filesystem is not readable by any user, even via the sudo access and is responsible for errors during the backup process. You can find a detailed explanation of this virtual filesystem role and how it is used at *http://en.wikipedia.org/wiki/GVFS*

Before performing the actual backup, a summary page is presented so you can double check the actions to be performed (Figure 4).

Once you are satisfied with the chosen parameters, you can launch the backup tool by pressing the *Apply* button.

The tool lists the files to be backed up and writes the archive or copy files, according to the options you have previously selected using the advanced menu at the start of the wizard. Depending on the number and size of files, the tool will deliver you more or less rapidly the ar-
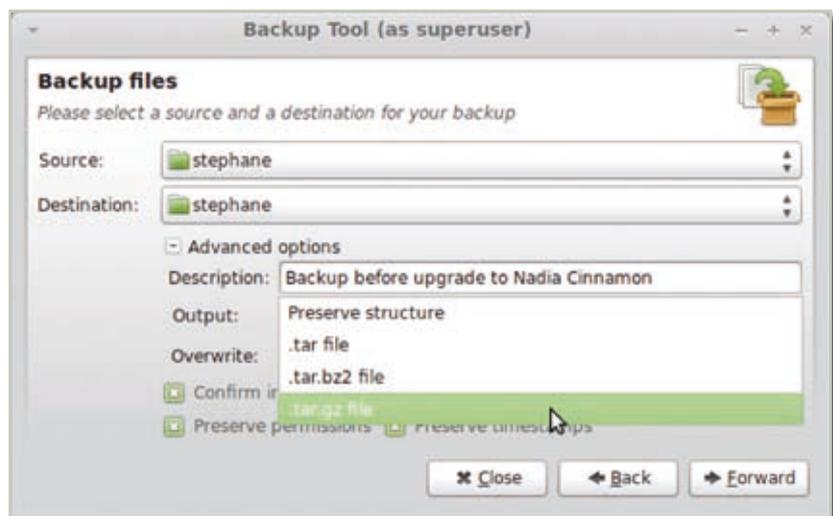

Figure 2. *Since the wizard is launched through sudo, the system displays the /root directory by default. Adjust these settings to have your personal data included in the default "Source" directory and its destination in "/tmp/stephane" (adjust to your needs and create the directory if it is missing). The wizard offers the possibility to add a commentary to this archive, do not hesitate to fill the form with something useful so you'll easily identify the archive content when you will look for a specific file in one year or two*
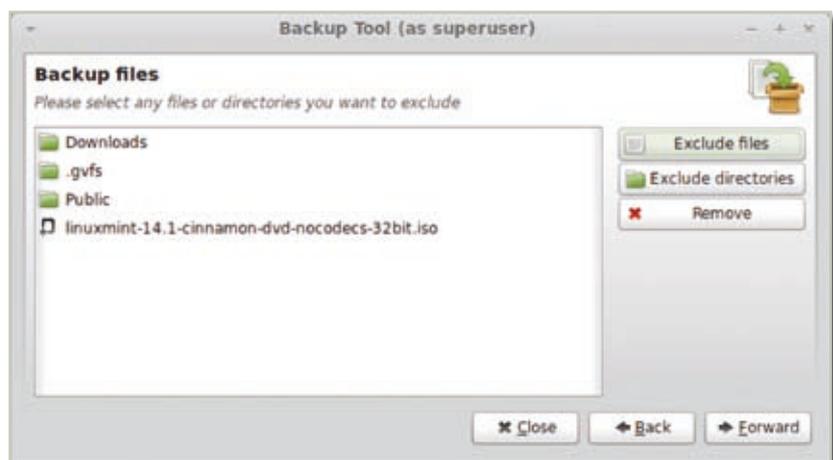

Figure 3. *Even if at first it is tempting to include all directories in the archive, this is certainly a good idea to double check the archive content to exclude some easily retrievable big files*
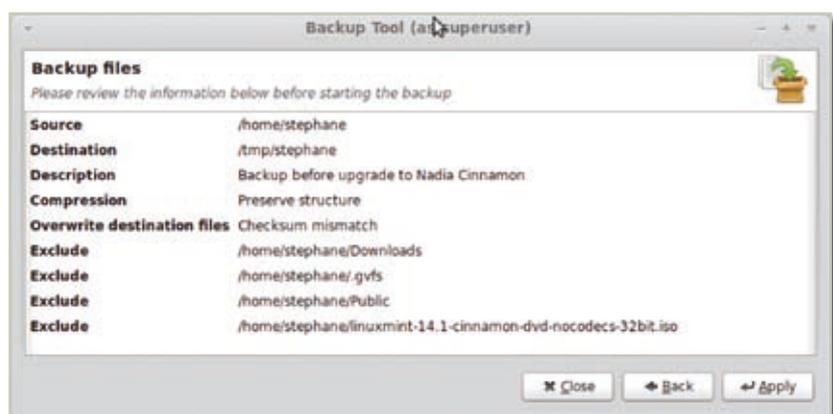

Figure 4. *A summary of the options selected previously is presented prior performing the real backup, press back if you missed a step or forgot to exclude a directory/file*
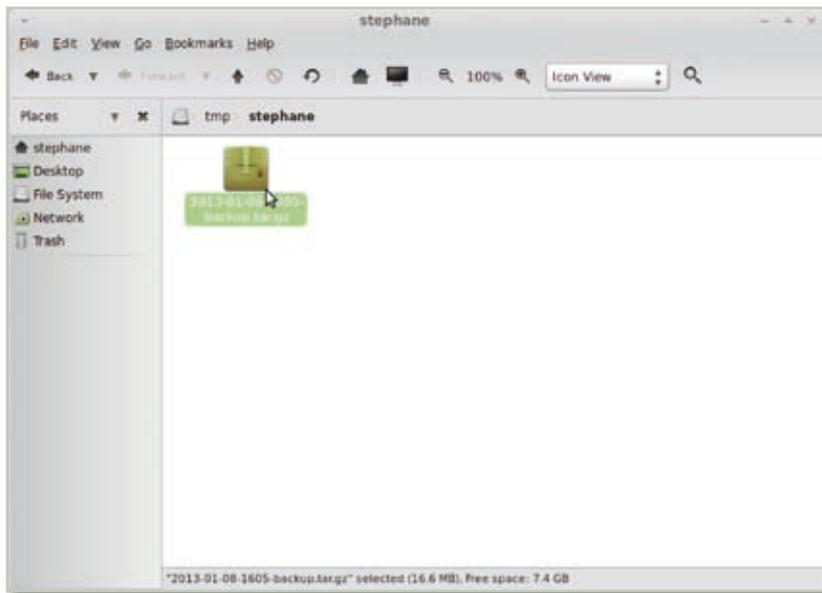
Figure 5. *The archive is written in "/tmp/stephane" and its filename is derived from the current date and hour. The "-backup" suffix is added to immediately remember the role of this archive*

chive containing your precious files (Figure 5).

This archive contains all the files selected previously but also a specific ".mintbackup" file containing a listing of the archive content, as selected in early steps of the wizards. The Script 1 presents the archive content.

Restore the archive

In order to validate our existing archive, we used the tool on our existing installation and created a custom directory "from_backup" in our home dir. Start again Mint Backup

Figure 6. *Although the tool seems reliable, this is always a good idea to double check the archive content prior wiping out your existing installation. If a file is missing or the archive is corrupted, you'll see it before destroying any data*

but press this time the *Restore files* button, and select the previously created archive (Figure 6).

To ensure the destination directory will not be empty, we have copied the content of $HOME in it and removed the mate configuration directories ".mate2, .mateconf, .mateconfd". Since we have selected the overwrite option *Checksum mismatch*, only the files not contained or modified in the destination directory are re-positioned. This behavior allows a fast archive restore. If everything went properly, you will receive a success message.
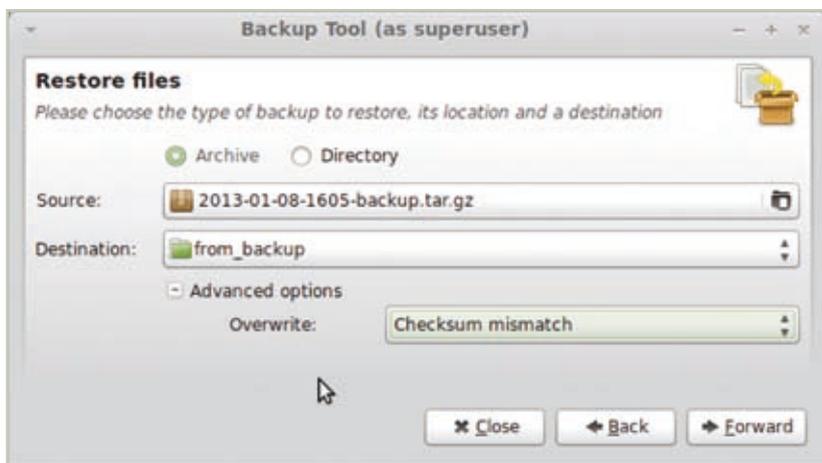
Script 1. *Content of the .mint-backup file created in parallel of archive files*

```
cat .mintbackup
source: /tmp/stephane
destination: /home/stephane
file_count: 1253
description: Backup before ↵
   upgrade to Nadia Cinnamon
```

Remark: the tool will only include and verify files using their checksum for comparison. If you select the checksum mismatch, the files differing from the archive will be overridden even your latest file on disk should be kept. In order to avoid this error, be sure to copy the latest file in another location than the restore folder and to copy them back once the backup tool has been run.

Software selection backup

Aside of data files which can more easily backed up or isolated on a separate partition, the most annoying step while installing a new system is to fine-tune the software collection to remove unused programs and update the list for your favorite applications. Mint Backup helps you here in gathering the list of installed packages for a further usage. Click on the *Backup software selection* button and select the directory where this list will be saved, click on *Forward* and proofread the presented list to fit your needs if needed, or keep the default one (Figure 7).

Depending on your needs, you can decide to keep the complete selection or to deselect all and keep only the relevant software needed. This list of software will add to any existing installation, so you can neat pick only your favorite software for a later usage, as the standard installation will already bring you the base system and all needed packages for a default and usable desktop. If you are unsure about the selection to make, just select mostly what you need and press the *Apply* button to validate your choices. The tool will

write a file containing one package per line with the keyword "install". If you know the package name or want to adjust this short list to your needs after running the tool, simply edit the file with your favorite editor and adjust the selection as needed.

Restore software selection

In order to validate the procedure, we have previously installed the "sunflow" package for image manipulation, saved the application list selecting only this package and removed the package from the system. After starting the restore wizard in Mint Backup, just upload the saved file, the tool automatically calculates the difference of packages and present only the software needed to be installed back (Figure 8).

This tool can also be used to "clone" a lot of machines since you only need to configure one system completely, save its package list and then update every other machine using this tool, without further digging inside configuration files or using the command line. On the opposite, the package list is a raw text file, so it is easy to modify, update or delete a package and therefore do not require the tedious task of enabling or disabling the packages one by one using the graphical interface.

If you are willing to perform this action using the command line, you can also use the saved list to complete your new system with:

```
sudo  apt-get  install  <   ↵
   software_selection_user@ ↵
   system-package.list; sudo ↵
   apt-get dselect-upgrade
```

Conclusion

The Mint backup tool is meant to be used for a complete backup at a given time. Do not consider it as a complete backup solution if you are willing to use it on a daily basis, since it is not smart enough to compute differences between the archive and the existing content neither than updating only a selection of files. There are other tools like the simple deja-dup utility, or more complete such as
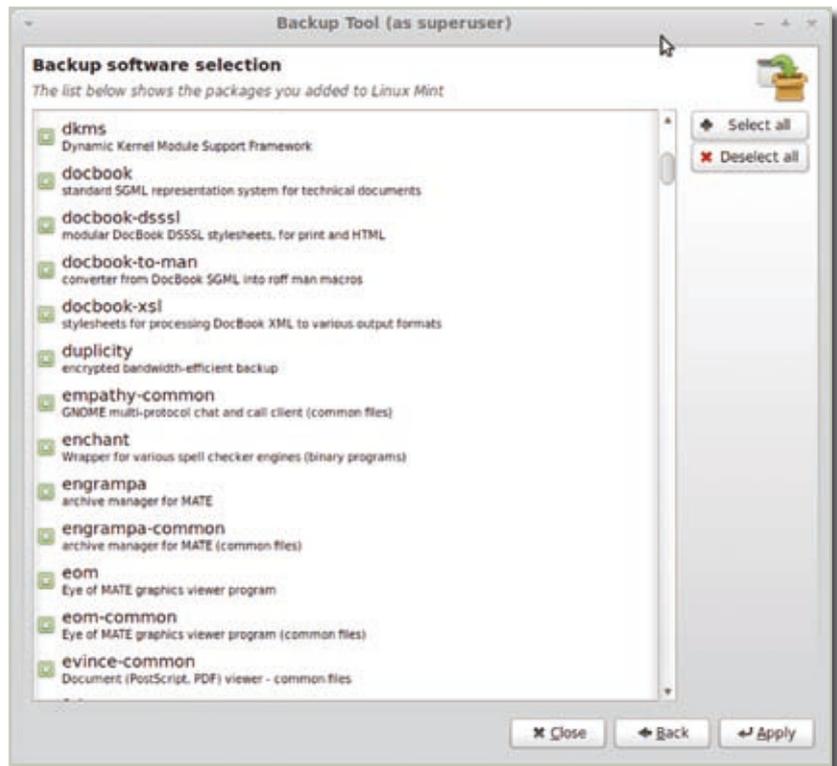

Figure 7. *The list of installed software is important since in any given GNU/Linux system, there are packages for the base system (kernel, libc, ...) but also desktop applications linked to GNOME such as Eye of MATE for an easy access to your collection of pictures*

the bacula suite, rdiff-snapshot, etc., but their complexity raise with the level of services provided. Mint backup is the recommended solution for updating your existing Mint edition to the next release since there are no guaranteed update path. If you have tweaked your systems and are willing to rapidly recover your environ-ment after the Nadia installation, use as presented here Mint Backup, update your system, and recover back your settings and data. If you still need more advice before updating your system, have a look at *http://community.linuxmint.com/tutorial/view/2*, and come to our forums to discuss any issue. ■

Figure 8. *The restore software function will automatically present to the user the difference between the existing software collection and the packages needed to be installed/upgraded. This allows a rapid visual validation of the steps needed to recover rapidly a completely functional system without a lot of technical skills*