

# The beginner's handbook



**debian** *without headaches*

Debian <sup>8</sup> Jessie

Last update: 20 December 2016

<https://lescahiersdudebutant.fr/index-en.html>

## About this manual

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"**The beginner's handbook**" is a simplified manual to install and take-over the Debian system.

You will find in the following pages **the answers to your first questions** concerning the **Debian GNU/Linux** system, its history, how to obtain it, to install it, to take-over it, to configure and administrate it.

You will be able to **go further** and obtain information concerning the privacy protection, the backing up of your data, and the various actors of the Free Software world.

Usually, the manuals begin by teaching you the theoretical basis and the usage of the terminal. This manual takes the very side of the "graphical environment": it is designed to let you start quickly with Debian, screen powered on, fingers on the keyboard and the mouse nearby 😊.

**The mission of this manual is not to be comprehensive.**

For a more detailed documentation, please visit the official Debian Wiki:

<https://wiki.debian.org/FrontPage>

If you need a complete Debian manual, please read the **Debian Administrator Handbook** from

Raphaël Hertzog and Roland Mas <https://debian-handbook.info/browse/stable/>



## How to use the beginner's handbook ?

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*Come and pick* 🍷 !! That's the principle: a beginner's question about Debian ?

Take the time to consult this manual and the appropriate section before you ask the question on a forum; you will learn faster by doing it yourself, you will be more and more familiar with system, you will master your installation, and *the penguins will fly high* 🐧.

A lot of external links are available in this manual. Don't hesitate to click on them in order to read more detailed information.

To modify this handdbook and tailor it to your own situation (derivative distribution, association, school ...) simply export the following page in the .ODT format and edit it with your favourite word processor.

















Note : this is the first english release; Don't hesitate to contact us for feedbacks or comments.



The beginner's handbook on Debian: <https://lescahiersdudebutant.fr/index-en.html>

# Main chapters

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# 1. Debian ? What's that ?



**Debian** (pronounce /'dɛbiən/) is an operating system **libre** (as in free speech), **gratis** (as in free beer) and an **alternative** solution to other proprietary and commercial systems (Microsoft Windows® or Apple OS® )

Debian allows your computer to function and offers you a full set of **Free Software**, with their regular updates, for all the usual practices (surfing the Web, sending emails, playing multimedia files, doing office kind of tasks), and more ...

This collection of Libre Software comes to a large extent from the GNU project<sup>1</sup>, launched on September 27 1983 by Richard M. Stallman<sup>2</sup> (friendly called *RMS*).

The **GNU project** was still missing a kernel<sup>3</sup> when it was brought in 1991 by a finish student, Linus Torvalds<sup>4</sup>, who developed the **Linux Kernel**.



*GNU & Tux by Péhä (CC-BY-SA)*

And so, the distribution is called **Debian GNU/Linux**. It was started by Ian Murdock<sup>5</sup> (rip) in August 1993 as a new distribution with an open design, in the spirit of the Linux and GNU projects.



*Debian text logo*

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1 <http://www.gnu.org/home.en.html>  
2 [http://en.wikipedia.org/wiki/Richard\\_Stallman](http://en.wikipedia.org/wiki/Richard_Stallman)  
3 [http://en.wikipedia.org/wiki/Linux\\_kernel](http://en.wikipedia.org/wiki/Linux_kernel)  
4 [http://en.wikipedia.org/wiki/Linus\\_Torvalds](http://en.wikipedia.org/wiki/Linus_Torvalds)  
5 [https://en.wikipedia.org/wiki/Ian\\_Murdock](https://en.wikipedia.org/wiki/Ian_Murdock)

**Debian** is carefully and thoroughly implemented, maintained, and administrated, which explains its reputation of great stability. Everything started with a little, but solid, group of *free software* hackers, which grew up to become a big and well organized community of developers and end users.

**Debian** is developed by a thousand of volunteers<sup>6</sup> spread around the world<sup>7</sup>. Few of them actually had *face-to-face* meetings (In Real Life): they mainly communicate via electronic mails (distribution list on lists.debian.org) and IRC (channel #debian on irc.debian.org).

The **Debian project**, by itself, is a well defined structure<sup>8</sup>: for more information about what happens behind the scene, don't hesitate to browse the developer's corner<sup>9</sup>.

And to know everything about the whens' and the hows', please have a look at the historic details<sup>10</sup>.

## 1.1.Free software ?

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So, **Debian** is a *complete set of free software*. But what is exactly a free software ? This concept was developed in the early 80's under the leadership of R.M. Stallman (yes the initiator of the **GNU** project) who created the *Free Software Foundation*.



*FSF logo (cc-by-nd)*

A **free software** gives the end users the freedom in **using, studying, sharing** and **modifying** that software, without breaking the law (the 4 freedoms of the free software<sup>11</sup>). To achieve this, it is necessary for the developer to distribute the source code and authorize the end-user to exercise its rights granted by a **free license**.

6 <https://www.debian.org/devel/people>

7 <https://www.debian.org/devel/developers.loc>

8 <https://www.debian.org/intro/organization>

9 <https://www.debian.org/devel/>

10 <https://www.debian.org/doc/manuals/project-history/>

11 <https://www.gnu.org/philosophy/free-sw.en.html>

## 1.2.The social contract of Debian

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Debian implements this principle in its Social Contract<sup>12</sup>, and particularly in the Free Software Guidelines<sup>13</sup> according to Debian.

This contract states that the Debian project will contain only free Software. Thus, during the installation of a *Debian* distribution, **neither non-free drivers will be install by default**. However the contract recognizes that some users might need "non-free" components to run their systems, like some peripheral drivers, or some applications decoding some music or video files, for example. The project provides mechanisms and infrastructures (servers) to install as easily as possible these "non-free" components. The distributed software is separated in 3 sections:

- **main** for the free software packages available by default,
- **contrib** for the packages respecting the free software guidelines by themselves, but are depending on non-free software, which do not comply with these guidelines,
- **non-free** for packages which do not comply with the free software guidelines.

One of the major interests of the free software is that it allows competent people to audit the program code, to insure notably that it does only what it is supposed to do. It is possible, for example, to verify that it does not send your personal data without your knowledge. So it is

additional barrier **to protect your privacy.** 

## 1.3.The universal operating system

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**Debian** claims to be "*The universal operating system*". Therefore, it is available for a very large number of computer types (often referred as architectures [chap.4.1](#)). There are about 35 000 packages (software are stored within *packages*) covering all the needs, from web servers to computers in research labs, from medical imaging to personal computers, which will interest us here more specifically.

This **large software variety** offers choices that do not exist in the non-free operating systems (the desktop environments for example) and allows the selection of the program which is the most suitable to your wishes, and also to the performance of your machine. Thereby it is possible to run ageing and/or poorly performing computers without the need to buy new computer equipments (save the planet 🌍).

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<sup>12</sup> [https://www.debian.org/social\\_contract.en.html](https://www.debian.org/social_contract.en.html)

<sup>13</sup> [https://www.debian.org/social\\_contract.en.html#guidelines](https://www.debian.org/social_contract.en.html#guidelines)

Debian is developed very thoroughly. **Every new stable version** is carefully tested by users before it is released. And this release happens *when it is ready*. Hence **few maintenance work** is required once the system is installed and facing problems is very rare.

However one implication of this methodology is that applications are available in relatively older versions than the one provided by distributions released at fixed dates, or continuously embedding new programs (referred as *rolling releases*).

Having said that, there are quick and simple means to obtain more up-to-date versions of your preferred applications. You will discover some of them in this handbook 😊.

## 1.4. Debian and viruses

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Like numerous other free distributions, Debian is not very sensitive to malware (like viruses Trojan horses, spyware ...) and for several reasons:

First this large variety of software is available from repositories hosted on servers controlled by the project. Therefore, it is not necessary to search programs to be installed on dubious sites which distribute virus and unwanted programs in addition to the one you were looking for.

In addition, like with living organisms, the diversity of the various distributions makes difficult to write a virus able to function *everywhere*.

Finally, the *administrator* and the *user* rights are clearly separated, which helps a lot in limiting the damages: In case of a viral infection, only the user's documents are affected. This clear separation of the rights limits also the risks of error made between the keyboard and the chair.

More details on the rights in [chapter 3.7](#).



**The back-up** of you data on a regular basis remains the best insurance to protect them against potential viruses or technical issues, but also against your own mistakes (chap.9).

## 1.5. Where to find help

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Do you need help ? The first reflex, if you can, is to consult the documentation. Next comes the various user's forums, and then a GNU/Linux Group (LUG), if you are lucky enough to be located nearby. There are also several events dedicated to the free software in various associations: you will be able to define appointments not far from your home by consulting agendas of the Libre software ( [https://en.wikipedia.org/wiki/List\\_of\\_free-software\\_events](https://en.wikipedia.org/wiki/List_of_free-software_events) ).



The **documentation embedded in the system** itself: in general, the installed applications include a manual available from the command line ([chap.3.8](#)) by typing `man application_name` and/or from the graphical menu with the "Help" button of the application.

The **on-line documentation**: when you use a GNU/Linux distribution like Debian, you can access a detailed on-line documentation, with a list of the functionalities of the embedded applications. Debian provides you an official documentation: <https://wiki.debian.org> .

Self-help and **support forums**: the free software community is divided into a host of forums, sites and blogs of information. To find your way in this abundance of communication is sometimes tricky, and you should rather prefer the sites dedicated to your own environment or distribution. Concerning Debian 2 main self-help forums are available to support you:


- Debian User forum: <http://forums.debian.net/>
- Debian Help forum: <http://www.debianhelp.org/>

**Associations and LUGs**: if you are lucky, you are living not too far from a Linux users group or an association where members meet on a regular basis. In this case don't hesitate to pay them a visit for a little chat.

- Linux User Group definition: [https://en.wikipedia.org/wiki/Linux\\_user\\_group](https://en.wikipedia.org/wiki/Linux_user_group)
- LUG lists: <http://www.tldp.org/HOWTO/User-Group-HOWTO-3.html>

### **1.5.1.About forums, geeks, and the terminal**

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The self-help and support GNU/Linux community mainly consists of **passionate volunteers**  who share their knowledge with big pleasure. They are also very technical and are friendly called the geeks (usually wearing a beard) with several years of computer practice behind them. This experience leads them to master the terminal, which is the most efficient tool to manage a GNU/Linux system: therefore, the very first answers found on the forums will naturally be given in the form of a set of command line operations. Don't be scared: in most of the cases a graphical solution (using the mouse within a window) exists. Ask kindly and you will get an explanation 😊.

**To be able to ask a question on a self-help and support forum** you should usually register first. You need a valid email address to register with, and receive a confirmation request message, as well as your answers notifications once registered.

**Before you ask a question**, please remember to look first into the Questions/Answers already solved: most of the forum include a search function by keyword, which will help you find out if your problem is already described in there and has a documented solution.

Don't forget that a forum is usually maintained by **volunteers**, not to be confused with a post-sales customer service organization 😊.

## 1.6. Contribute to Debian

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Contributing to a project like Debian may seem complicated, and to tell you the truth, contributing to the very heart of the distribution is rather complex.

However contributing does not always mean writing lines of code: participating to the Debian project can be accomplished at all the experience levels, from the end-user up to the top developers:

**Participate to self-help forums of the community:** this is the first manner to contribute. Being part of the community and answering questions when one can. All experience is valuable in the computer world, and even if you think that you are not at the right level, keep in mind that you surely know a trick which will be useful for somebody else.

**Participate to the documentation:** the Wikis, the manuals, what you are reading right now, are the reference mediums of the free distributions. So when you read a Wiki or a piece of documentation, if you spot an error, don't move on, but please spend the time to report it to the site administrators, or even better, join the redaction team and correct it yourself.

**Participate to the translations:** as a matter of fact, computers speak English natively. So, by necessity, manuals and documentation are written first in English. This could be a difficult hurdle to overcome for non-English speaking people. If you are fluent in another language, don't hesitate to contact the Debian project team, or even directly a software developer to propose a little translation of your own; it will be useful to a lot of people.

**Mention Debian on your blog:** it is a contribution ... because the proprietary systems in place (Windows® and Apple®) completely took over the market, consumers don't even know, in general, that they could use different solutions.

**Contributing to development** can be done without coding: an very important contribution lies in filing bugs and reporting users experiences. The Debian team cannot test everything and on all possible systems. Even if extreme care is devoted to the distribution quality, some bugs might still remain. Don't hesitate to report them: this helps a great lot !

## 1.7. Few links before moving on

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- The Free Software Foundation [https://www.fsf.org/?set\\_language=en](https://www.fsf.org/?set_language=en)
- About Debian <https://www.debian.org/intro/about.en.html>
- Introduction to Debian <https://www.debian.org/intro/index.en.html>
- The official Debian Wiki <https://wiki.debian.org/DebianIntroduction>
- The joy of coding <https://twitter.com/joyofcoding> 😊

## 2.A simplified introduction to computer systems



We begin here a scary page... Let's start with a simple statement: Software developers and end-users do not speak the same language...



But then ... how are we going to make it ? *Easy: we read the beginner's handbook!* 🤔


Within a short period of time, computers became an essential tool of the modern life. One issue is that information and education don't follow the technical progress at the same pace, nor the needs of the users.

Therefore, it is difficult for a "new user" to discover the full capabilities of its computer. Moreover we use generally only few applications.

We will try to simplify this universe as far as possible, in order for you to make the most of your computer and to enjoy the capabilities of Debian.

### How does a computer work ?

One launches applications, clicks on icons, types text in ... One needs a computer, a screen, a keyboard, a mouse.

In this handbook, we will explain to you the basic manipulations in order to use your mouse 

and your keyboard .

## **What use for a computer?**

It seems difficult to summarize in few sentences the whole scope of information technology.

However its usage is somewhat clear:

- **watch a movie:** whether it is for your summer vacation footage, or a DVD, or a video file downloaded from Internet, Debian offers you several multimedia players. An example in this manual with [VLC](#) (chap.6.7)
- **listen to music:** enjoy your audio CD, your direct radio streaming, or your digital music library with [Rhythmbox](#) (chap.6.8) and no trouble at all.
- **search for something on Internet:** browse the Net, visit pages, contribute to Internet, by using several Debian web applications let's take [Firefox](#) as an example (chap.6.6).
- **read or write electronic mails:** communicate with your family, your contacts, using either [your email client](#) or your web browser (chap.6.4)
- **work on formatted documents or presentations:** Debian includes several applications, but the [LibreOffice suite](#) (chap.6.9) will let you perform all kinds of office work using compatible formats.
- **walk through your family pictures:** your memories in one click, simply using the the image viewers integrated on all the Debian desktop.
- **print documents or images:** Debian uses the [CUPS](#) (chap.6.2.2) printing server, and its common configuration tool, but you can also use an integrated utility for a [printer simplified configuration](#) (chap.6.2.1)

And this is exactly the knowhow you are going to learn with **the beginner's handbook** 🤪.

## **2.1.Test your level of computer skills**

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Keep in mind that this manual is not cast in stone ... Our advices are only suggestions regarding your computer knowledge ...

First of all, you are free 🤪 !

Importantly, be as honest as possible: we are all beginners in one domain or another (personally, I am unable to change the injectors in the carburettor of my car) and it is not a fault. The issue is raising only because computers are taking a large space in our lives, and penalize the newbies. But we are here to change all that !

The goal of this manual is not to transform you in GNU/Linux sysadmin (short for system administrator), but simply give you the tools to **utilize your computer as you want !**

## Outright beginner ?

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🤔? You never or rarely used a keyboard ? You still wonder why you must "open a window" and what is this "drag and drop" concept ? Please continue reading this manual and follow its guidance

😊. You will learn how to:

- use your mouse and keyboard: the tools to directly interface with the machine,
- recognize the basic elements of your desktop environment: menus, panels, windows, virtual desktop ...
- and then discover Debian and its functionalities 😊.

## Novice user ?

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You are a Windows® user and/or you have a little experience with GNU/Linux, but you never installed it: it is the right time to [choose your Debian](#) (chap.4) and discover the main interface of your future system.

## Basic user ?


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You have already used a Debian derivative and/or another free distribution, and you know exactly what you need. Let's jump directly to [the serious stuff](#) with the actual installation in chapter 5.

## 2.2.The mouse

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The mouse is the **physical interface** which let you move the **pointer** on the screen: the mouse

moves are synchronized with those of the of the little arrow (the pointer)  on your desktop.

There are different types of mouse<sup>14</sup>; We will take here the example of the classical mouse with two buttons and a scrolling wheel.

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<sup>14</sup> [https://en.wikipedia.org/wiki/Computer\\_mouse](https://en.wikipedia.org/wiki/Computer_mouse)

## 2.2.1. Identify the clicks depending on their positions

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### 2.2.1.1. Left-click and double-click

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The **left-click**  (or simple-click) is the most common and is used to **point to** (or select) either a folder, or a file or an image, which can then be **open** with a **double-click** (done by quickly pressing twice the mouse left-button). This left-click is also used to send commands to the computer (validating a choice for example) when one presses on the "button" or something else sensitive to the click (like the cross closing a window, for example).


### 2.2.1.2. Right-click

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The **right-click**  is used to open a contextual menu (a variable list of options, depending on the software used and the "object" pointed at by the mouse) in order to modify a file, a folder, a configuration ...

### 2.2.1.3. Middle-click

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The **middle-click** or **scrolling-wheel**  is used for scrolling and quick copy. If your mouse has neither a middle button nor a scrolling wheel, the "middle-click" can be emulated by pressing on the two (left and right) buttons at the same time.

## 2.2.2. Actions executed with the mouse

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One thing that you **SHOULD NEVER DO** is to click several times on a button if you think that nothing happens. It is very possible that an application won't start "immediately", it is very depending on your hardware and the application being launched. As an example, a web browser takes significantly more time to start up, than the file manager.

Note that most of the actions executed with the mouse are also possible with the keyboard: either directly with a function key, or by using a keyboard shortcut ([see chap.2.3.2](#)).

### 2.2.2.1. Closing a window

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To close a window, left-click on its "close" button, usually symbolized by a cross in the top right corner of the window.



*Closing a window with the mouse*

### 2.2.2.2. Moving a window

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To move a window on your screen simply move your pointer on the **title bar** (the top banner of the window) then press and hold the left-click

The pointer will then change its usual look: from  to 

The window will then follow the mouse motion until you release the left button.




If you don't have access to the title bar, you can use the special [Alt] key on your keyboard together with the mouse left-click to grab and move your window.

### 2.2.2.3. Resizing a window

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Windows are automatically open on the screen with a certain size. To close them, we have seen already that we need to click on the close button symbolized by a cross.

**To resize a window**, you need to move your cursor on the borders of the window or , even better, on one of the bottom corners.

The pointer will then change its usual look: from  to  or  depending on its left or right position. When the look of the pointer changes, press the left-button and move the mouse to resize the window like you want.

An alternative solution consists in using use the special [Alt] key on your keyboard. Move the pointer inside the window, then press together the [Alt] key and the right-button of the mouse. Then you will be able to resize the window.

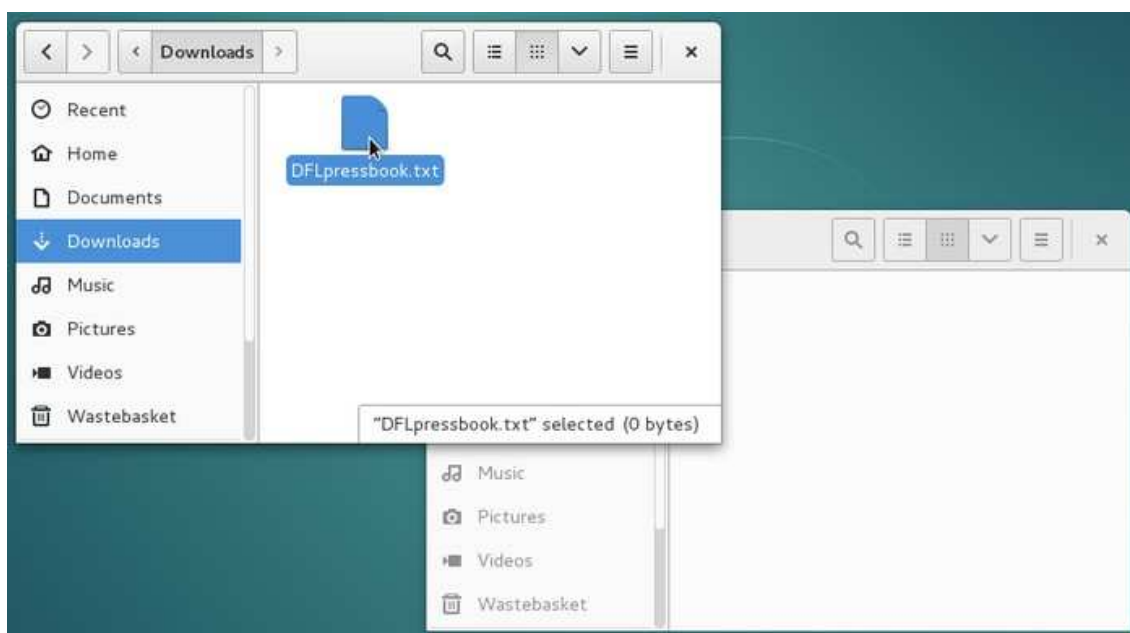
**To maximize a window**, double-click (click twice quickly with the mouse left-button) on the title-bar (when using the GNOME environment) or use the maximize button located next to the close button, if present (and it is the case on most of the desktops).

### 2.2.2.4. Drag-and-drop

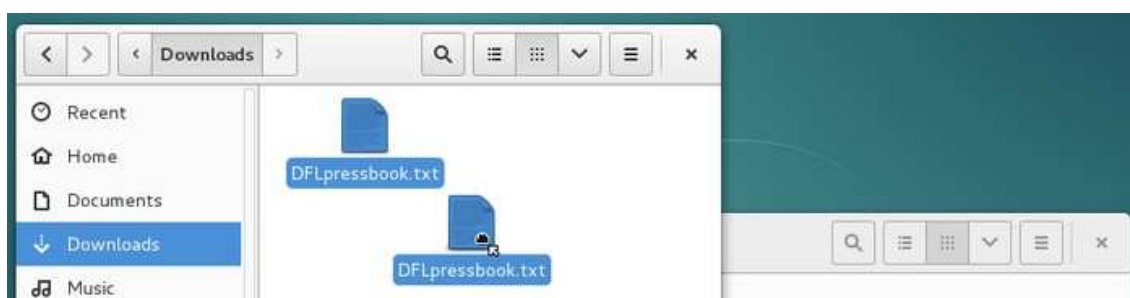
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To graphically move or copy your data, it is enough to "drag" them across the screen and "drop" them where you want (this is the graphical equivalent of the **mv** command).

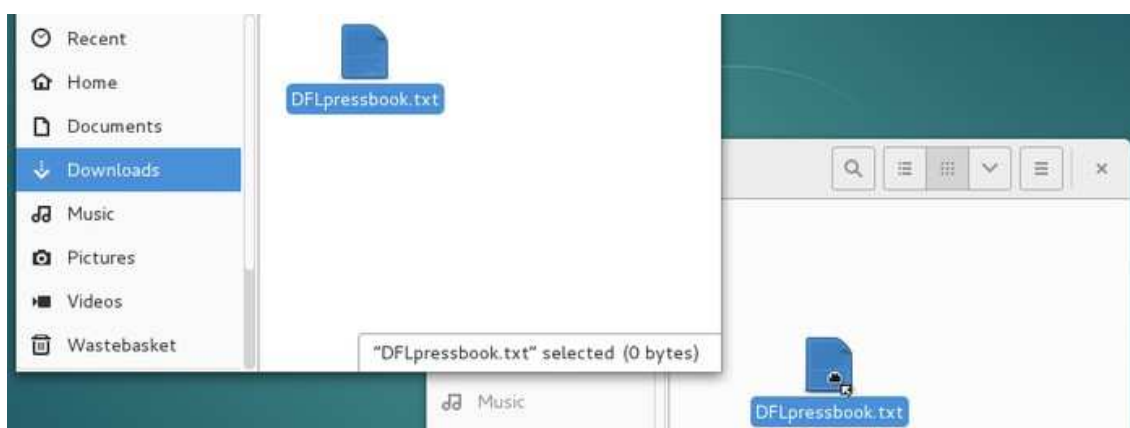
Example: to move a file you just downloaded into another folder, press the left-button the file in question, and while you hold the right-button, you move the mouse into the destination folder and then you release the mouse button:



*drag and drop: point to the file to be moved*

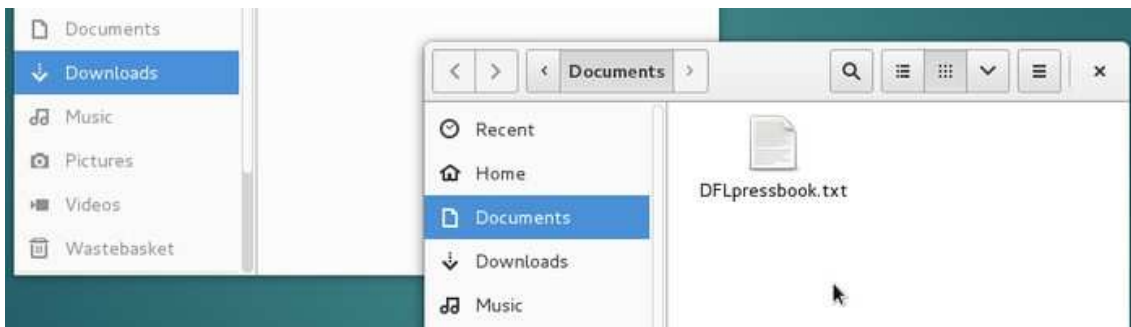


*drag and drop: hold the button while moving the mouse*



*drag and drop: move the mouse into the destination folder*





*drag and drop: release the button*

### 2.2.2.5. Text selection

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Put the cursor at the beginning or at the end of the text segment you want to select, then hold the left-button, and move the mouse over the text you want selected. Then release the mouse button.

You can also double-click (click twice quickly on the mouse left-button) on the first word you want to select and then move the cursor.



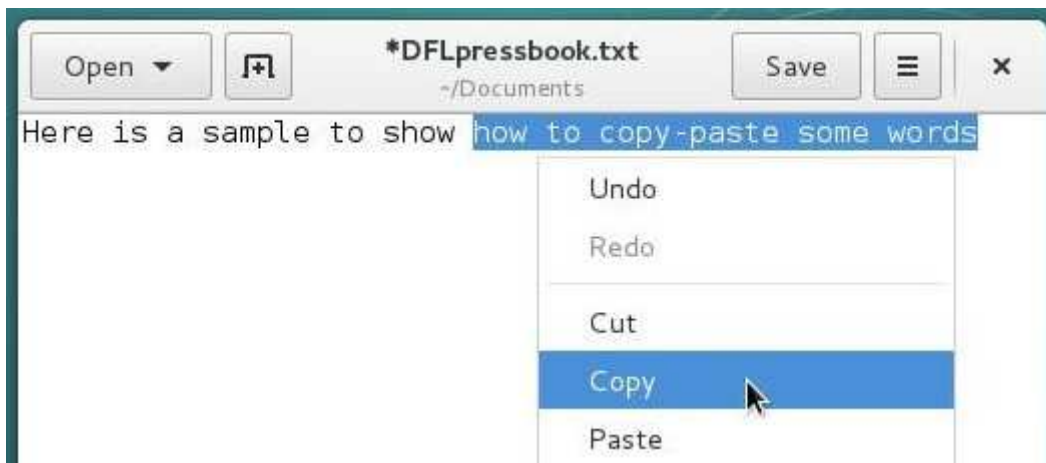
*text selection within the Gedit application*

If you are fast enough, a triple-click will select the entire line or paragraph.

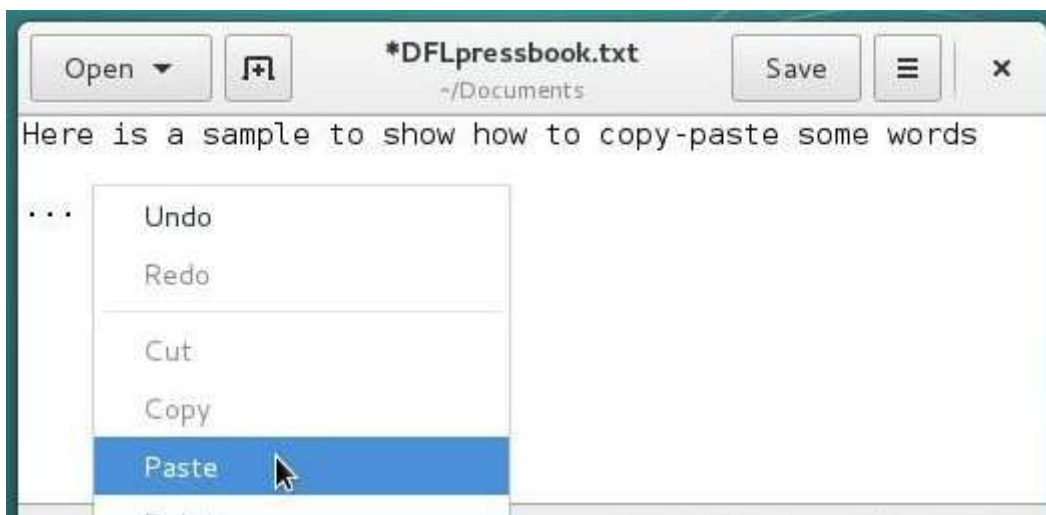
### 2.2.2.6. Copy and paste a selection

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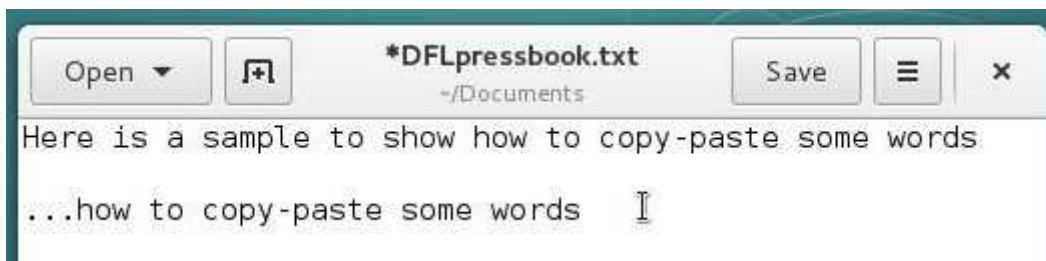
**With the right-button:** a right-click will display a contextual menu giving you the choice among several actions, one of them being the requested copy/paste. Put the cursor within the selected segment, right-click and choose the "copy" action. Then move the cursor where you want to paste the selected text, right-click again and choose "paste".



*Copy and paste a text segment: copy the selection*



*Copy and paste a text segment: cursor on destination, right-click > paste*



*Copy and paste a text segment: selection pasted*

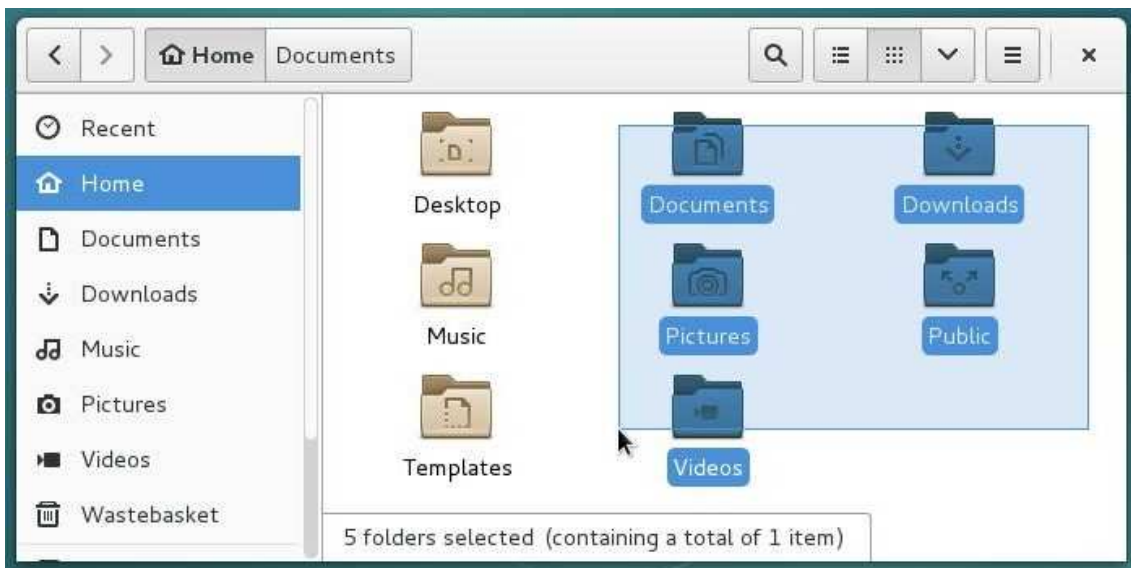
**With the middle-button:** this is the fastest method. Once the text segment is selected, you just need to move the pointer where you want to paste the selection and do a middle-click. The copy is immediate.

### 2.2.2.7. Selection of several items

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If you want to move or delete several items within a folder, you can select them together.

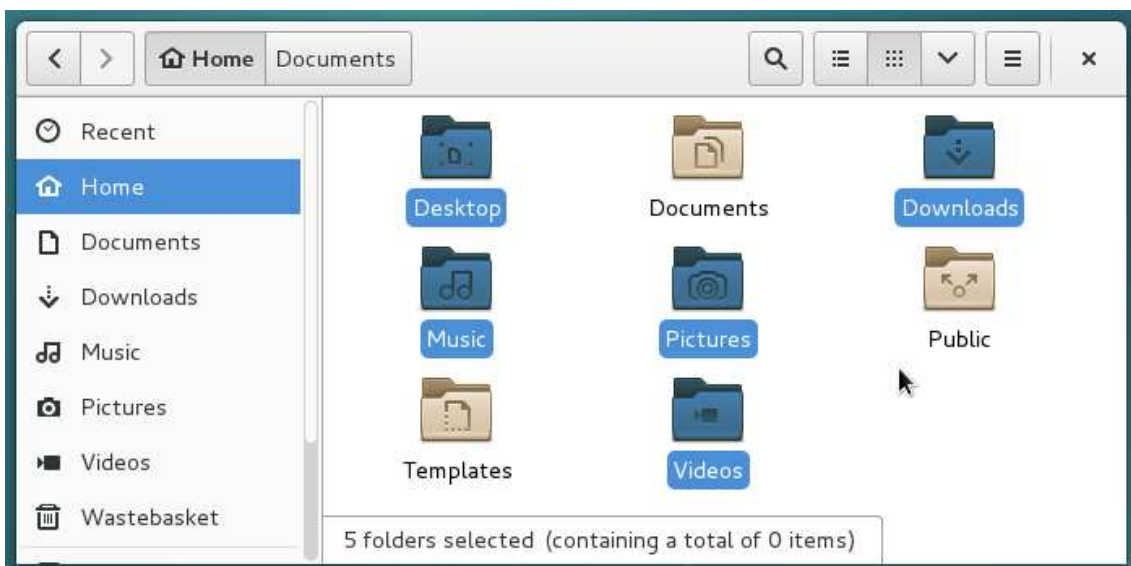
To select a group of contiguous items: press and hold the left-button, move the mouse to drag a frame around them and release the button when they are all selected. Then you can act on the selection like explain previously (copy/paste or contextual menu)



*Selecting several folders under Gnome*

To select non contiguous items, you can:

- either select each item one by one with a combination of the [Ctrl] key on the keyboard and the left-button of the mouse: hold the [Ctrl] key down and left-click on each element you want to select.
- or select all the elements and then "remove" the undesirable ones using a combination of the [Ctrl] key on the keyboard and the left-button of the mouse: hold the [Ctrl] key down and left-click on each element you want to remove from the selection



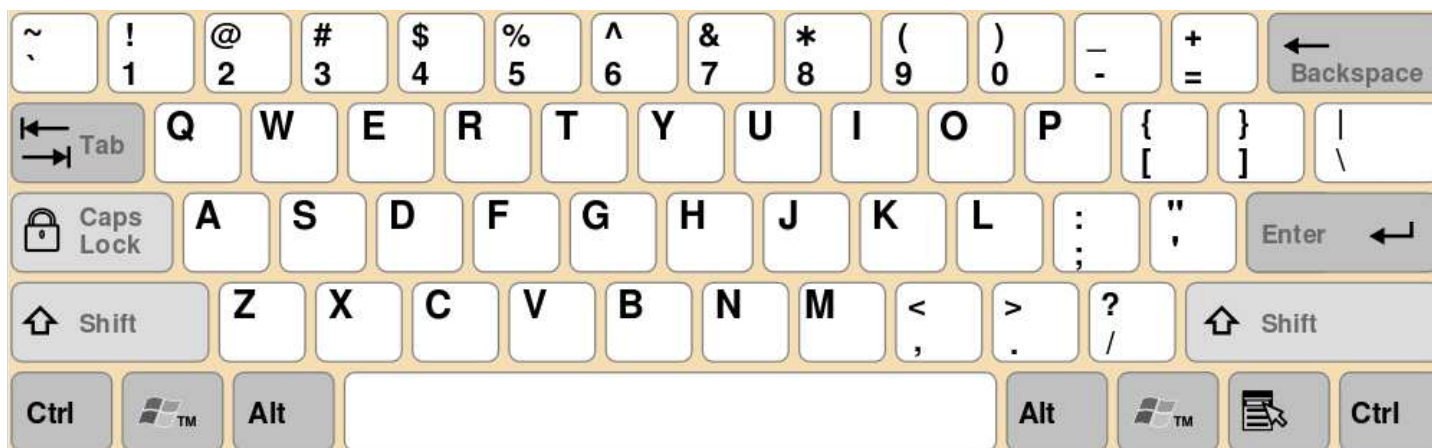
*Selection of several non-contiguous items in a Nautilus window*

## 2.3.The keyboard

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The keyboard is **the main physical interface to enter data** in your computer. But it is not the just the device which let you enter some words in the Internet search bar, or work with a word processor. It includes also some special keys, called **modifier keys**, which allow you to execute quick actions by modifying the behavior of the "normal" keys. The combinations of some "special" keys with other "normal" keys form the **keyboard shortcuts**.

### Default QWERTY keyboard layout



*Example of layout for an English keyboard (cc-by-sa)*

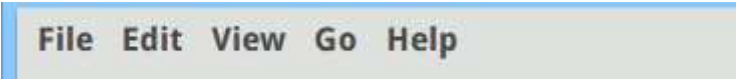
### 2.3.1.The modifier keys

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The "non-alphanumeric" keys of the keyboard give you access to extended functionalities during action or edition phases. From the simple carriage return within a text editor with the [Enter] key, to the launch of a Help window with the [F1] key, find hereafter some descriptions of these special keys:

- **[ENTER]:** The first "special" key, which is not really a modifier key.  
This is the most important key of your keyboard since it let you end a command line, launch a search request. Basically this is the key saying "Yes" to the computer.  
When a dialog window opens on the screen, either to confirm a download or delete an application, take the time to read the message before pressing [Enter] or clicking on the "Yes" button.
- **[Ctrl] or [Control]:** Located at the bottom of your keyboard, on both sides of the space bar, it is by default the key used for the shortcuts.
- **[Alt] or [Function]:** By default this key displays the specific shortcuts of an application.  
Within an open window, pressing the [Alt] key reveals the shortcuts to navigate through the menus or trigger some actions. These shortcut keys are identified by an underscore.

If you press and hold the [Alt] key while pressing also the underscored key, you will display the corresponding menu:



File Edit View Go Help

In this example pressing together the key [Alt] and "f" will open the "File" menu, [Alt] and "e" the "Edit" menu, [Alt] and "v" the "View" menu, etc ... You can also navigate in the menu with the direction arrows of the keyboard.

- **[AltGr] or [Alt Graphics]:** let you use the hidden characters of the keyboard. More information in the special characters section (chap.2.3.3).
- **[ESC] or [Escape]:** This key cancels the latest entry of a modifier key, or closes a dialog box asking the user to make a choice (like click on the "Cancel" button in the dialog box).
- **[Tab] or [Tabulation]:** Key symbolized by two opposite horizontal arrows. It allows you to complete a command or navigate through the various fields of menus or in windows list.
- **[Shift] or [Uppercase]:** Key symbolized by a wide up-arrow. let you type capitalized characters, and sometimes numbers (depending on your keyboard layout).
- **[CapsLock] or [Capital Lock]:** Key symbolized by a lock or a larger [Shift], causes all letters to be generated in capitals until deactivated. Equivalent to a [Shift] key down permanently.
- **[F1], [F2]...[F12]:** Execute various functions ... by definition. The [F1] key is often used to launch the Help function within applications, [F11] to switch to full-screen mode ... For example.

### 2.3.2.Keyboard shortcuts

---

Note that the shortcuts are made by pressing down the keys together, at the same time: to copy a selection, press and hold the [Ctrl] key, then press the [c] key. You can then release both keys, a clone of your selection is stored in the "clipboard" (a special buffer located in the memory of the operating system).

shortcut	action
[Ctrl]+[c]	Copy the current selection (in the "clipboard")
[Ctrl]+[x]	Cut the current selection (and save it in the "clipboard")
[Ctrl]+[v]	Paste the latest copy/cut selection (the current content of the "clipboard")
[Ctrl]+[f]	Find a word or an expression
[Ctrl]+[+/-] or [Ctrl] +Mouse-scrolling-wheel	Zoom in/out of the screen display
[Alt]+[F4]	Close the active window
[Alt]+[Tab]	Jump from open window to the next one
[F1]	Open the Help function of the active application
[F11]	Switch to full-screen mode



Note that some functionalities are not only available on text segments (like copy/paste), but on files also: if you select several pictures in your 'Pictures' folder, make a [Ctrl]+[c] and then a [Ctrl]+[v] on your desktop, your selected pictures will be copied there 😊. In the same way, [Ctrl]+mouse-scrolling-wheel will zoom in or out the content of your Internet navigator, as well as the content of a system file manager window.

### 2.3.3.Special characters

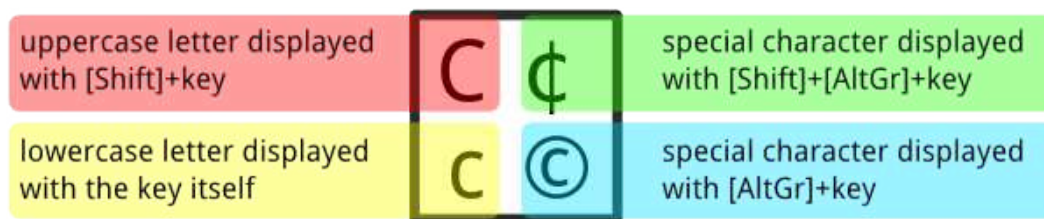
Keyboards can't contain as many keys as available characters. In order to write the particular characters in English, it is necessary to combine the keys like the shortcuts (simultaneous pressing of the keys)

First, a preview of the QWERTY's hidden keys:



*special characters available on QWERTY keyboard layout (cc-by-sa)*

Each symbol is associated with a key combination. So to write "®", you'll have to simultaneous press [AltGr] & [r].



*Available characters on [c] key*

If you are not comfortable with simultaneous pressure exercises, you can always copy and paste special characters from a characters table<sup>15</sup> or from one listed above.

Alphabetic characters																									
ÿ	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	Ø	Œ	Š
ÿ	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï	ð	ñ	ò	ó	ô	õ	ö	ø	œ	š

<sup>15</sup> <http://www.jchr.be/html/caracteres.htm#>



## ROOT

---



Only one user has all the rights, it is the *administrator*. This special user is able to execute some tasks (in particular for the system administration) that other *normal* users cannot perform by themselves. But a single mistake in an operation made by this *root* user could potentially break the whole system.

At home, on your desktop computer, you can use your computer both as a *normal user* and as an *administrator*. Some well defined actions have to be made in order to switch from one role to the other, like entering the root administrator password ([see chap.3.8.3](#)).

## Separate to secure

---



This clean distinction, which, by the way, does not always exist under other operating systems, strengthens the stability and security of the Debian GNU/Linux system, as mentioned at the beginning of this manual. When working as *simple/normal* user you cannot make your computer unusable (brick it), and the potential viruses cannot infect the whole system.

**More details on rights and permissions [in the chapter 3.7](#).**



## 3.The graphical environment

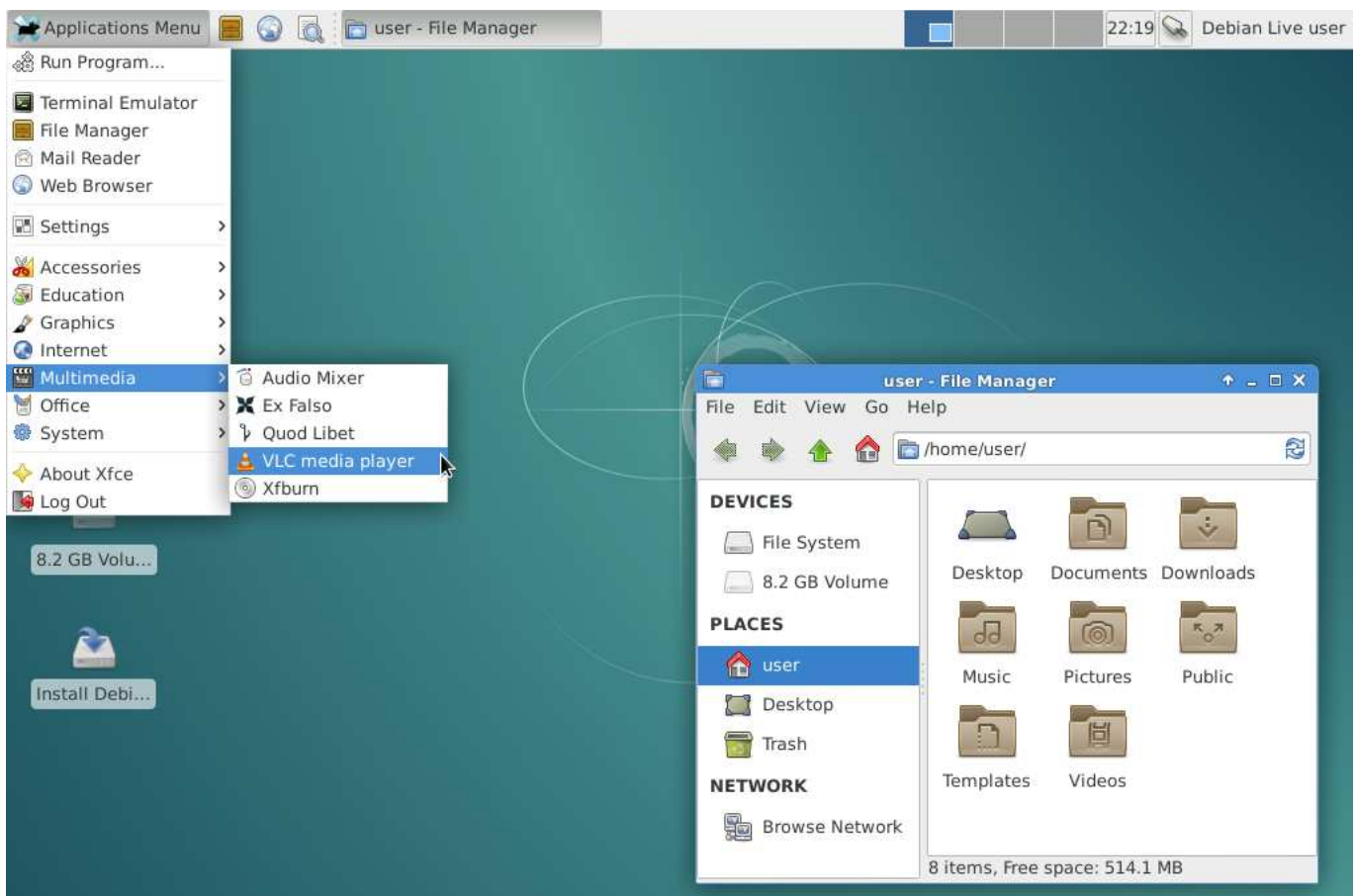


Let's start by looking at the various elements displayed on the screen. On this simple image, you can already identify the first elements which are explained below in this handbook:

The "panel" or task bar (at the top of the screen, in this example, but can be moved wherever you wish)) which includes, from left to right:

- the "application menu" listing your installed software,
- a collection of launchers (small icons) for your favorite applications,
- the list of the currently open windows,
- the list of virtual desktops,
- the time,
- the notification area, (showing the wired network connection),
- the user button which allows you to quit your working session, stop or restart your computer,

a file manager window which displays the folders contained in your home directory.



*The Xfce desktop with the application menu and Thunar*



One word about the **graphical libraries**.

To display on the screen the graphical interface, each desktop uses a rendering engine depending upon certain libraries. All the desktops, available by default on Debian, operate with the **GTK** rendering engine, except KDE which operates with **Qt**.

This difference in the usage of the graphical libraries, generates the doubling of the dependencies when installing on a GTK system, an application which was developed for the KDE environment (and vice versa).

Take good care to select applications fitting with your main environment, in order to avoid overloading the graphical libraries.

### 3.1.The task bar

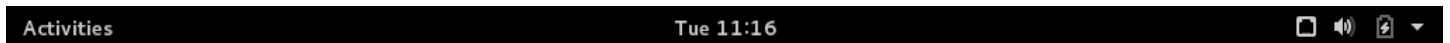
---

The "panel", the task bar, the notification area... all these words to talk about the information and launcher interface of your system.

Usually, it is a banner located at the top or the bottom of your screen, displaying several types of information, launchers, menus to quickly access your data or your applications, but also to inform you (new email has arrived, what time it is, a USB disk was just plugged in ...) via the notification area.

Here after a quick overview of the various "panels" on the Debian desktops:

- The Gnome-Shell panel



- The Xfce panel, and the dock by default at the bottom of the screen



- The LXDE panel



- The two MATE panels (at the top and bottom of the screen)



- The Cinnamon panel



- The KDE panel



Irrelevant of the type of desktop, the task bar displays, at least, the following elements:

**An application menu**, allowing you to access to the installed software.. In genral, the applications are sorted and grouped by categories (Multimedia, Office ...) and are launched by a left-click on their labels or icons.

**A list of active windows** or at least the title of the active windows. Depending on the context, a left click on the corresponding button will minimize, restore or bring to the foreground the target application.

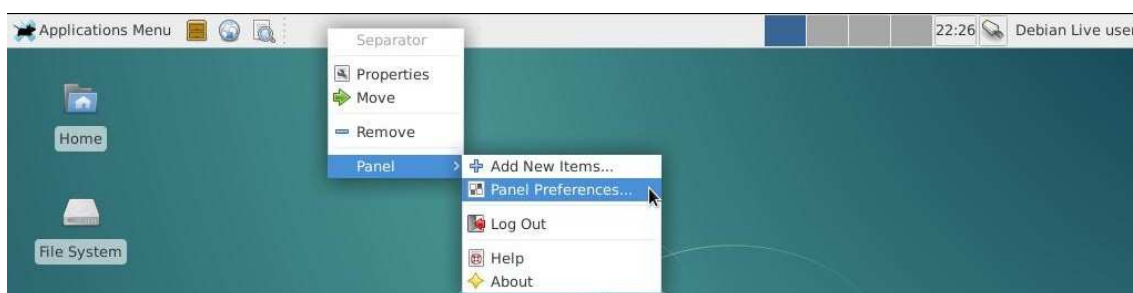
**The time with the date** also displayed when the cursor hovers on the area. On some desktops an agenda is open by a left-click on the time.

**A notification area** with more or less information, depending on the desktop, intended to display messages coming from your applications (new email, network connection ...)

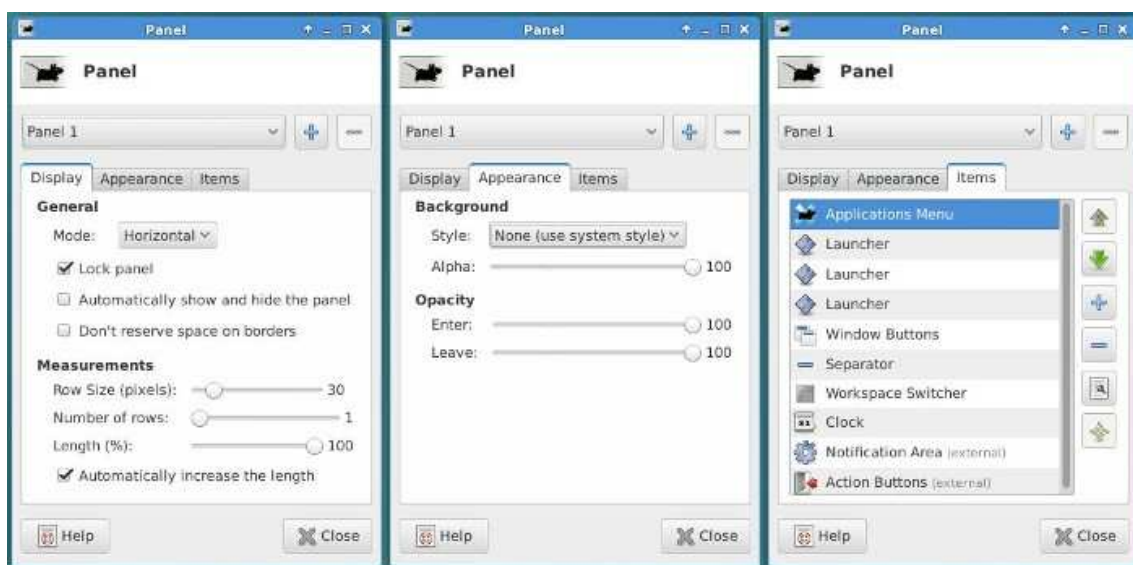
**An action button** to quit the working session, to suspend, stop or restart your computer. Depending on your configuration you might switch user, with this button, and take advantage of the multi-user mode of the Debian GNU/Linux systems.

Like almost all the elements of the GNU/Linux desktops, the task bar can be configured and embellished by plug-in (little specialized modules) or simply removed !

A right-click on the "panel " opens a drop down menu allowing you to change its configuration (except for the Gnome-3 desktop). Hereafter an example of configuration for the Xfce panel:



*Accessing the Xfce panel configuration with a right-click*



More details in the GNU/Linux [desktop discovery](#) section (chap.4.2)

## 3.2.Menus

---

The various applications installed in your system are available through several vectors: launchers on the desktop, or in the task bars, and more generally using the **menus**.

In the menus, your programs are **listed and sorted by categories**. A left-click on the menu icon displays the application and section entries. A left-click on a program icon launch the corresponding application. Each desktop has its own specific menu:

- Cinnamon menu by category:



- Classic drop down Xfce menu:



- Gnome-Shell full screen menu:



## 3.3.Windows

---

Your applications, your data, your USB keys, are usually displayed within a decorated frame. Each desktop environment decorates windows its own way, but most of the times they implement the same functions:

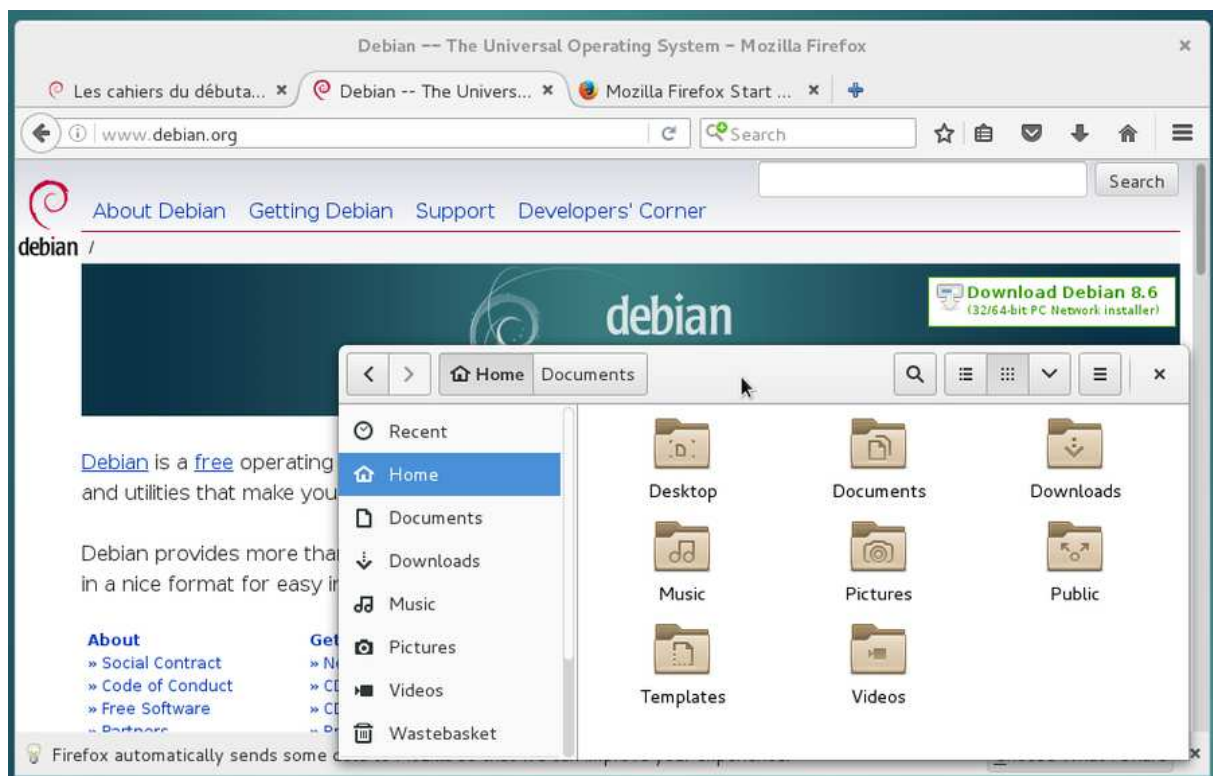
- **the title bar** at the top displays the window title and the action buttons (minimize/maximize/close)
- **the decorations** around the window, which include two areas at the bottom to resize the window using a mouse left-click
- **the status area**: some applications display informations at the bottom of the window (like free space available in the active partition, size of the file currently pointed at ...)

### Actions on windows:

- **close** the window with a left-click on the cross symbol
- **move** the window with a press and hold left-click and a cursor displacement (or with [Alt] +left-click)
- **resize** the window with a maintained left-click on its corners (or with [Alt]+right-click)
- **maximize** the window with a double-click on the title bar

You will find a detailed description of these operations in the [chapter on Thunar](#) (chap.3.6).

Hereafter an example of windows on the Gnome desktop:



*The Firefox web browser and the file manager under Gnome*

## 3.4.Virtual desktops

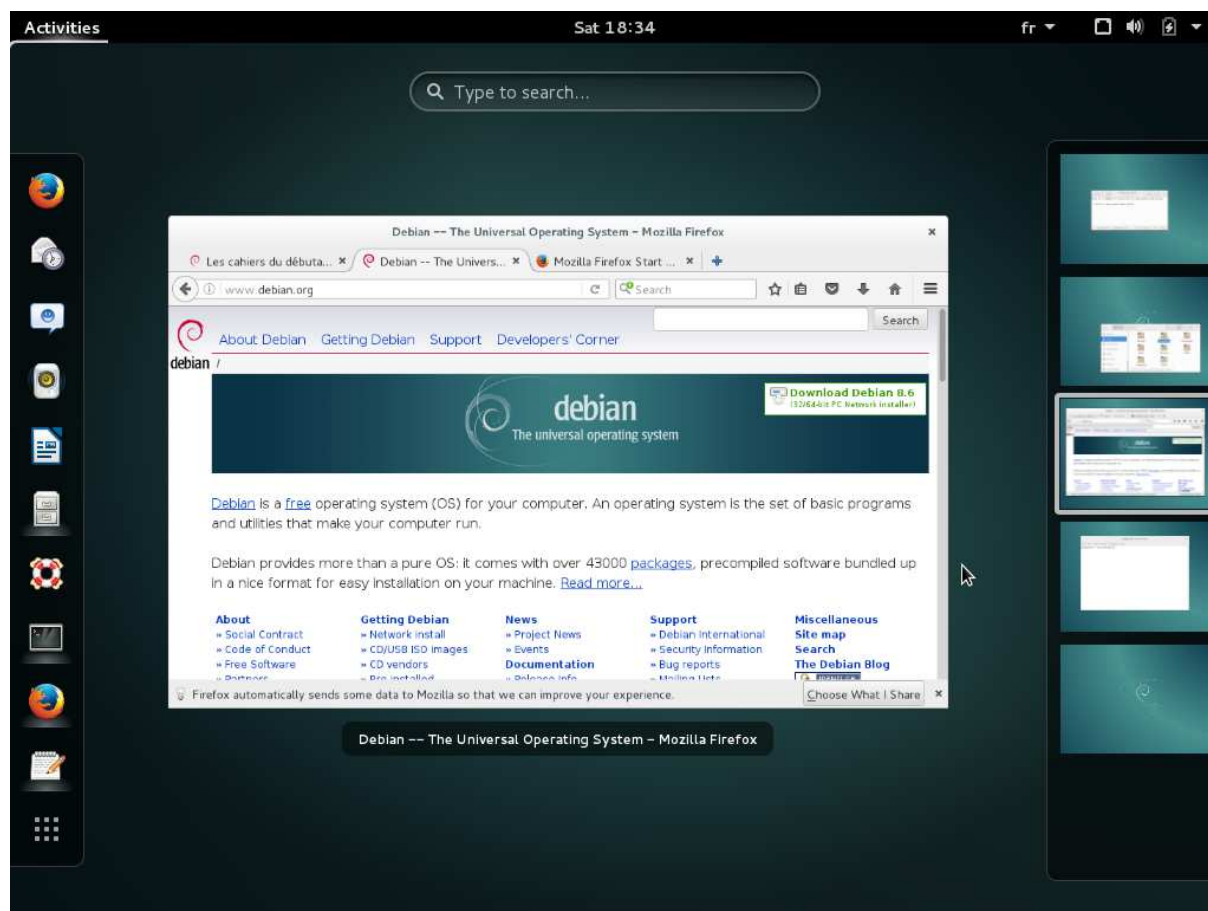
To avoid overloading your workspace, the Debian GNU/Linux environments support, since several years, the virtual desktop concept: the elements displayed on your screen lay upon a "desktop". You can have several of them, which means that if you move to another "desktop", it will be empty at first. If you return back to the previous desktop, you will find it with your applications open.



... "Several desktops" ... What do you mean exactly ??

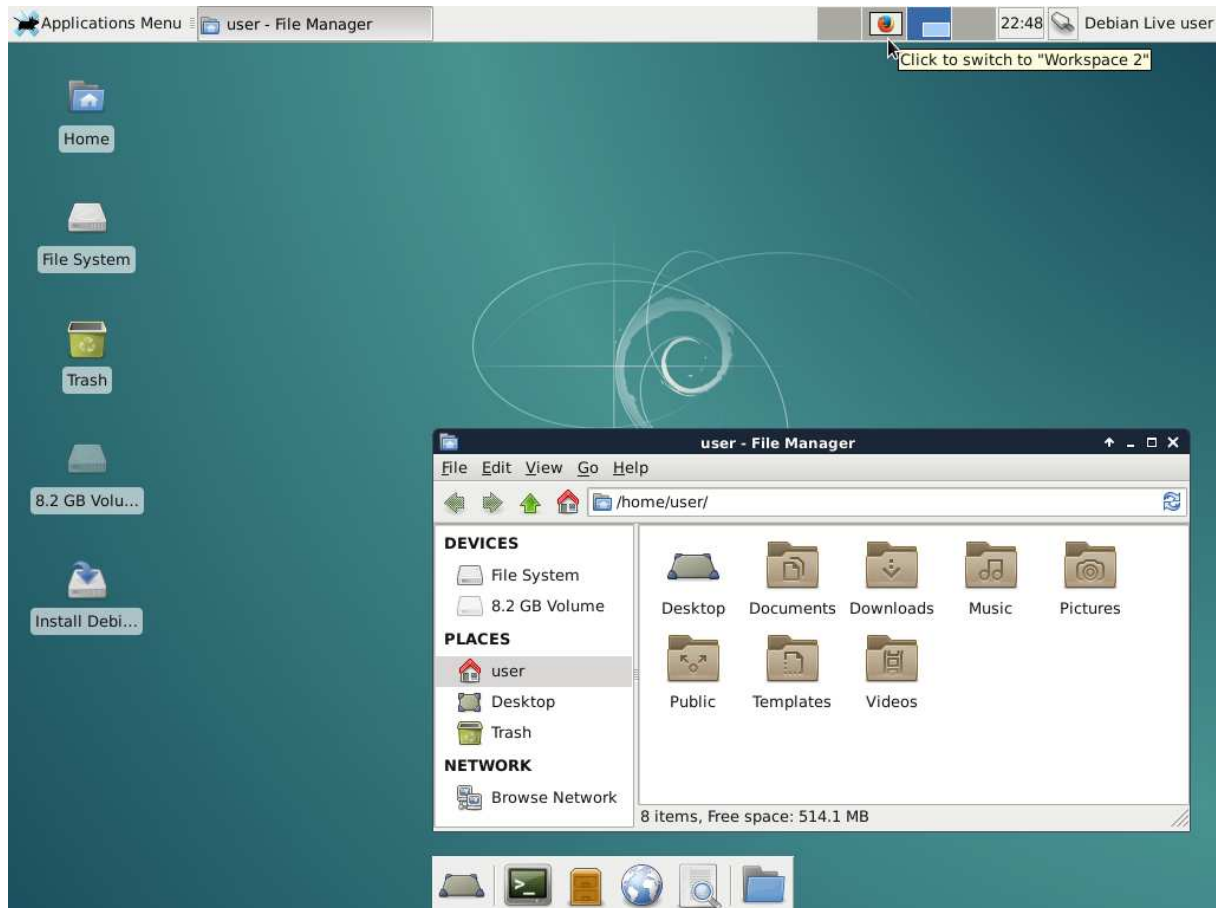
Well, it's like having **several screens** for your computer, lined up **behind each other**, with the capability to change their order at will. You open the Internet navigator full screen on the first virtual desktop, then you feel like having a look at your latest family pictures. So you **go to the next desktop** which happens to be empty, and you can then display there your pictures also in full screen mode, and return back to the first desktop and enjoy the full real estate for the comfort of your navigation. It is also a nice mean to get **organized with your tasks**: the first desktop is reserved for the Internet applications, the second for the multimedia, the third for the office work and so on, allowing you to leave open your work in progress, for future modifications, without impacting the other activities. Each environment has its own way to represent the virtual desktops:

- **Gnome** displays shrunk desktops on a side panel:



*Gnome and 5 virtual desktops displayed on the right panel*

- **Xfce** displays the virtual desktops in its top panel, within frame shapes representing the different workspaces.



*Xfce and 4 virtual desktops shown in the panel*

### 3.5. File management on GNU/Linux

All your data, your videos, your documents, your pictures, are regarded by Debian GNU/Linux as files, and these files are organized into folders.

Debian is an operating system (the big piece of software making your computer functional) which organizes the data according to their respective addresses, that is the path to follow, in order to access them, from the general starting point (the system root identified by the "/" symbol).



... the picture of grandma is a "file" having an "address" relative to a "root" ???

Imagine your computer is like your house. If your favorite book is located in a certain place, this "place" is like an address relative to the "house". For example, if the book stands in the second drawer of your nightstand, one can define its address (the path to follow in order to reach it) like this:

Home,bedroom,nightstand,2nd drawer,favorite book.



To separate the various "items" we use the "/" symbol, which gives the following address in computer language: /home/bedroom/nightstand/2nd drawer/favorite book.

The "root of the system is symbolized by a simple "/". The main folder containing all the users data is symbolized by "/home/", and your personal folder is named "/home/Alice/".

If we come back to the favorite book example, its address could be:

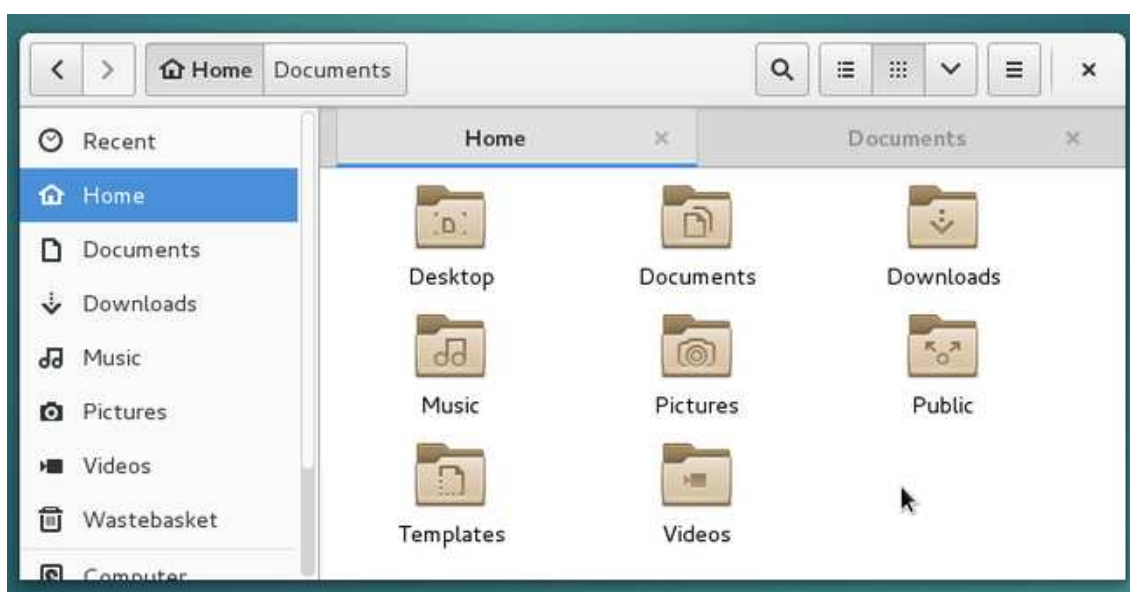
`"/home/Alice/Documents/books/my_favorite_book.pdf"`

### 3.5.1. Your personal data

---

Your personal data are stored within your *personal folder*, whose address is `"/home/your_user_name"`. They are organized within folders to ease the finding and consulting of the files, by yourself or by some programs (it is very logical for a photo viewer to open first in the "Pictures" folder).

To help you better organize your data, Debian is distributed with few folders already defined in your personal folder: Desktop, Documents, Downloads, Music, Pictures and Videos.



*The system file manager Nautilus, on Gnome, with two open tabs*

**NOTE:** Most of the objects you find in the computer file system are either files, or folders.

In the following sections of this manual we will use the word "Item" when the distinction between "File" and "Folder" is irrelevant.

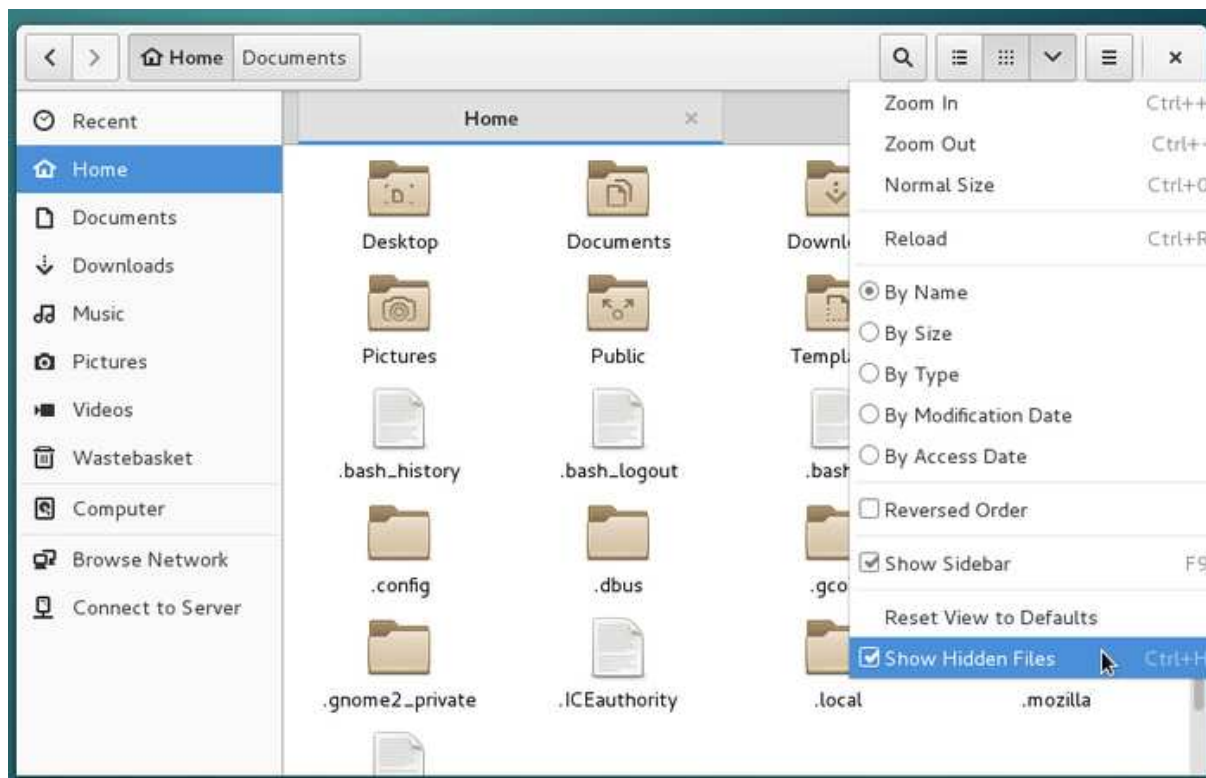
### 3.5.2. Your hidden files

---

Some items within your personal folder, relate to your interface configuration, the various fonts you are using, your passwords stored in Firefox, etc.

This type of data does not need to be always displayed on the screen when you consult your photos or documents: this is why these items are *hidden*.

They are identified by the form `"/home/your_user_name/.hidden_file"`. Please note the `"."` (dot) symbol in front of the file name. When you want to display them press together `[Ctrl]+h` (h obviously for "hidden"), or from the menu of your file manager window goto `"View" > "Show Hidden Files"`:



*Show hidden files in Nautilus on Gnome*

### 3.5.3. System files

---

Debian GNU/Linux includes a collection of programs to navigate on the Internet, inside your personal folder, among all your photo albums, etc. These programs are stored inside "system folders".

These folders are write-protected and some are also read-protected: this means that you can consult some of them, but you may not modify any of them, as being a simple user. In order to modify these items, you need to use the system administrator account: "root" (see [chap.3.8.3](#)).

## 3.6. An example of system file manager: Thunar

---



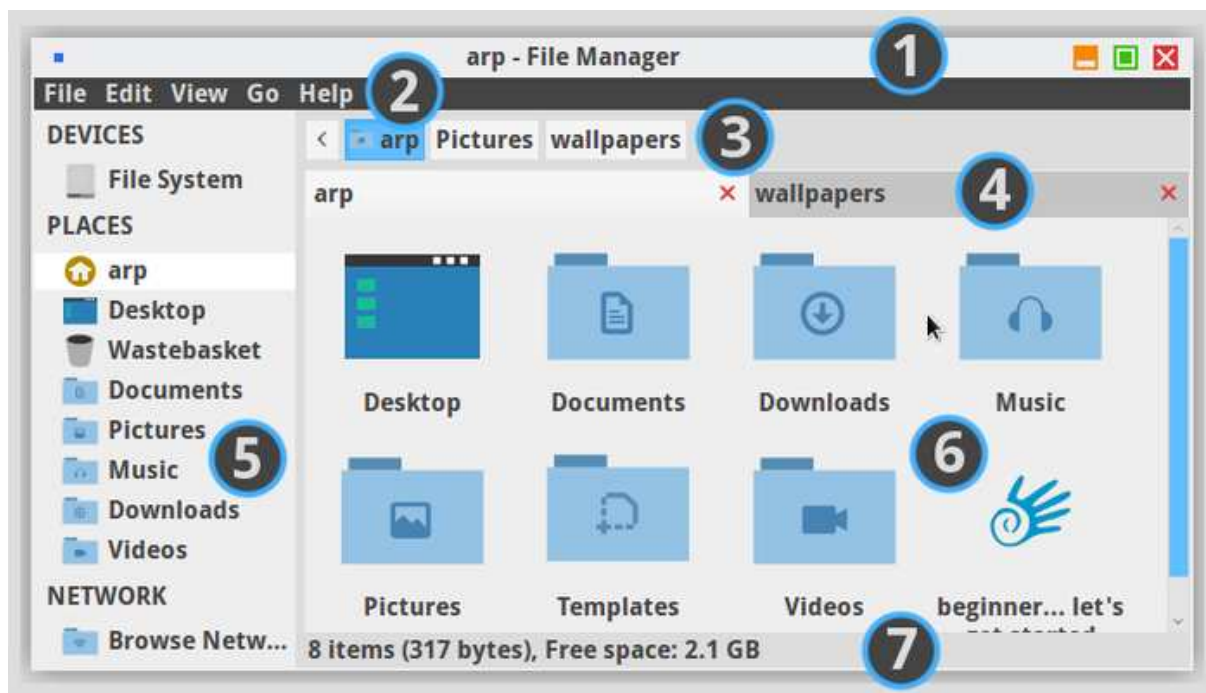
**Thunar** is the file manager by default with the **Xfce** desktop. This program let you navigate through your various folders, "Pictures", "Documents", etc. by using the mouse (double-click on a folder to look into its content) or the keyboard (navigate among the folders with the arrows

keys, and press [Enter] to open the selected one).The role of a file manager is to display on screen the content of these folders: your personal data. Thunar is accessible from the Xfce application menu in the task bar, under the name "file manager".

### 3.6.1.Simplified presentation of Thunar

---

When Thunar displays your personal folder, a number of information and tools are already available to you:



*Presentation of the file manager Thunar*

**#1 The title bar:** displays the folder being viewed and the program which was launched. It includes the "action buttons" allowing you, with a mouse left-click, to minimize the window (then it will be parked in the task bar), to maximize the window (it will occupy the full screen), to close the window or any other actions available with the window manager in use.

**#2 The menu bar:** each menu gives you the possibility to act on items (copy/paste/delete/rename, etc.), to change the location, the view style (Icons, Detailed List, Compact List), and even to close the window, always with a left-click.

**#3 The location bar:** tells you which folder you are currently in, and, if there is enough space, the latest visited folder(s).

**#4 The tab bar:** tells you which folders are open in the active windows. Thunar tabs operate like those in your Internet navigator.

**#5 The side pane:** displays the main folders (personal folder, wastebasket, file system, desktop), your shortcuts (favorite folders) and the external volumes (USB keys or hard disk drives plugged as

USB devices); A left-click on the label will display the selected folder. A middle-click will open the folder in a new tab (handy to copy or move data).

The side pane can also display the tree structure of your system, that is the complete set of your folders and files sorted hierarchically. You can mask/display the side pane with the keyboard shortcut [Ctrl]+b.

**#6 The main pane:** displays the folder content. If this folder includes other folders, they are positioned before the "simple" files (like photos, PDF documents, etc.) and, by default, sorted by alphabetic order.

**#7 The status bar:** display the number of items in the concerned folder, and the free remaining space in the current file system, or indicates if one or several items are selected.

### **3.6.2.Usage and functionality of Thunar**

---

Thunar will let you consult your data, sort them, and modify them.

Note that other file managers have a different look and feel (GTK3), like placing the application menu directly in the title bar (like [Gnome](#) for example).

#### **3.6.2.1.Consulting your data**

---

Consulting your data is very easy. Launch Thunar which opens by default on your personal folder. You can then decide to open another specific folder depending on the type of data you are looking for.

**To open or explore a folder,** put the mouse pointer over it: a double-click with the left button will open this folder in the same window. A middle-click will open the folder in a new window tab.

You can also click on the shortcuts located in the left side pane of the Thunar window.

**To open a file,** put the mouse pointer over it: a double-click with the left button will open this file with the application assigned to it by default. A right-click will display a contextual menu which, among other things, allows you to open the file with another application of your choice.

#### **3.6.2.2.Data selection**

---

To select several items move the mouse cursor in an empty area of the window, left-click,hold and simply move over all the items that you want selected. Then release the button. After this, you can remove one or several items from the selection using the shortcut [Ctrl]+left-click on each of them.

More details in [the simplified initiation](#) (chap.2.2.2.7).

Once selected, you can apply the modifications to these items as detailed in the "Modifications" chapter below.

### 3.6.2.3. Classifying the data

---

You are going to say: "*I can do whatever I want with my own data*" ... and **you are damn right** 😊! However some applications will access your data more easily if they are stored in their specific folders. Thus, the screen capture program will record its shots in the "Pictures" folder, the Internet navigator will record your downloaded files in the "Downloads" folder, the music player will look into the "Music" folder ... And so on.

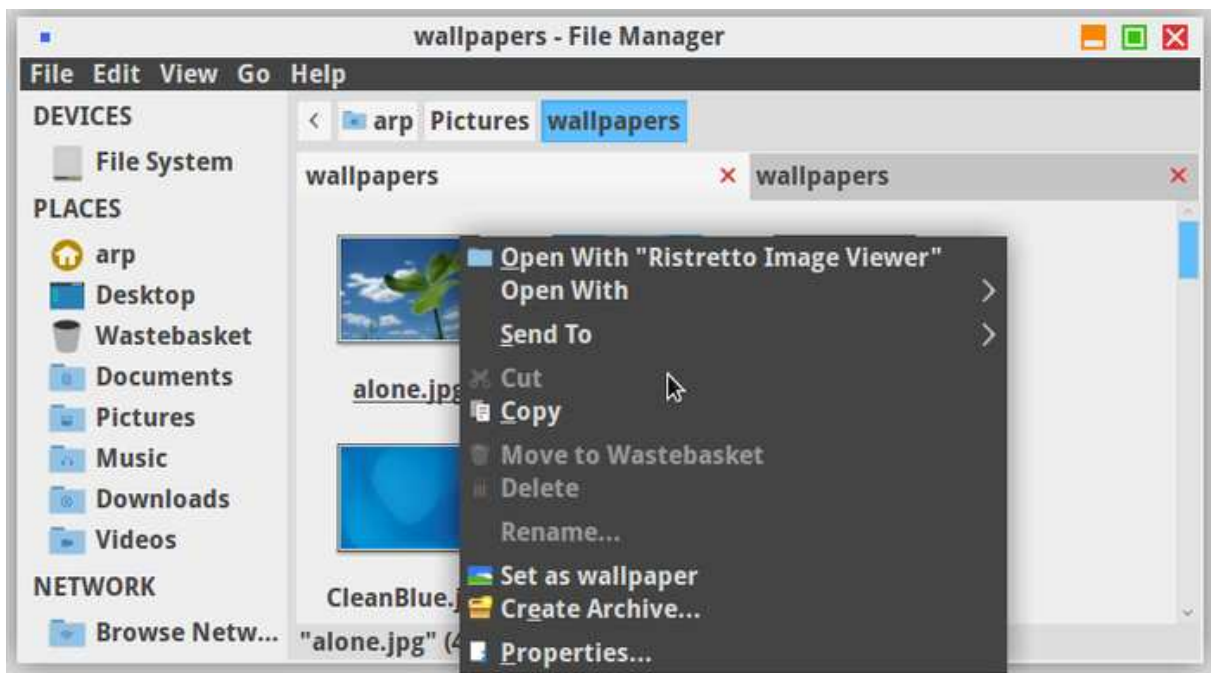
**Thunar** allows you to create shortcuts to ease the access, the classification and thus the retrieving of your data.

**To create a shortcut**, just "drag and drop" the wanted folder in the side pane. This folder will then be always accessible with a simple click.

### 3.6.2.4. Data modification using the contextual menu

---

A contextual menu shows up when right-clicking on an item (I.E. either a folder or a file), and then, let you make a number of actions/modifications on this selected item.



*Contextual menu in Thunar*

In our example the contextual menu proposes the following actions:

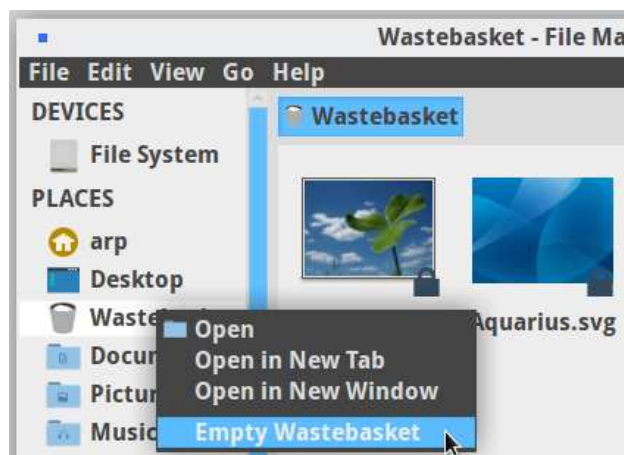
- **Open with the default application**, here the Ristretto image viewer.

- **Open with** another application: if you choose this option, another window will open and let you navigate in the system to select a different application (start searching in /usr/bin/app\_name).
- **Send To** is a menu to share this item via email, or create a link on the desktop, or other different actions depending on the type of item selected.
- **Cut**: this action will **remove** the selected item with the goal of **pasting** it somewhere else. It is then enough to navigate into the **destination folder**, to make a right-click on an empty area of the window and to pick the "**Paste**" action in the menu.
- **Copy**: this action leaves the selected item in its original folder, but let you copy (clone) it into the destination folder, following the same procedure as the one described in the "Cut" action above.
- **Move to Wastebasket**: this action **remove** the selected item from its folder and move it directly into the Trash Bin (see next chapter)
- **Delete**: definitely delete the selected item from the system.
- **Rename**: this action let you modify the name of the selected item.
- **Set as wallpaper**: is rather explicit and appears only if a image type file is selected.
- **Create Archive**: this action allows you to compress one or several selected item(s). In the window that opens, you can choose the destination folder, by navigating in the side pane, enter a name for this archive and select its type. Then click on the "New" button to start the archive process.
- **Properties**: this action let you modify the name of a file, the default application when you open it, assign an "emblem" to it or manage the access rights and "Permissions" of the selected item.

### 3.6.2.5.Data removal

---

The famous "Trash bin" (or "Wastebasket") is reachable directly from the side pane of the Thunar window. The "full bin" icon indicates that some items are currently in the wastebasket.



To empty the **Wastebasket** and remove definitively all the items in there, left-click on its proper icon and take the "Empty Wastebasket" action. You can also use the "File" menu and then click on "Empty Wastebasket".

## 3.7.Rights and permissions

---

Debian is a **multi-user** GNU/Linux system. It is therefore necessary to put in place a mechanism to protect the items belonging to each user, so that user *Alice* could not modify the "tax & due" list of user *arp*, for example.

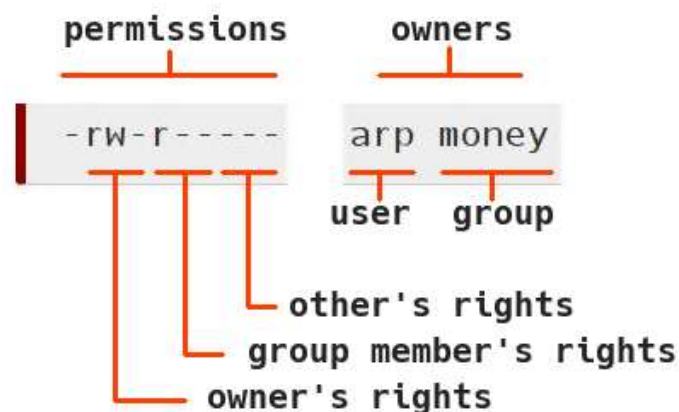
To achieve this goal, each file and each folder belongs to one *owner* and to one *users group*.

For each item, one can give **R**ead, **W**rite and **eX**ecute rights distinctly to its owner, its group or all the others (I.E. persons which are neither the owner nor a member of the proprietary group).

To display these information, one can use the "ls" (*list directory content*) command, with the option "-l", within a terminal window (that you will discover in the next chapter):

```
ls -l
-rw-r----- 1 arp money 1794 Nov 20 14:46 tax_and_due.txt
```

Here, one can see that the user *arp* has the "read" and "write" rights, on the file 'tax\_and\_due.txt', while the members of the *money* group (which user *Alice* is part of) can only "read" this file, but not modify it, and the others cannot even open it ("-", means no right).

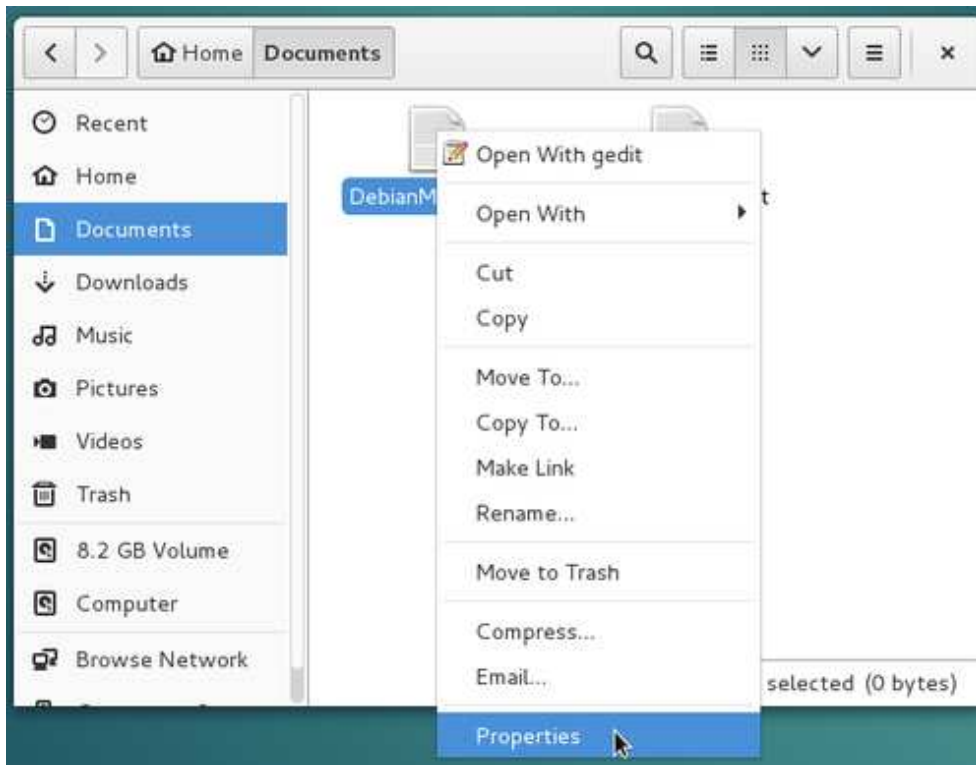


Note that the first position in the permission string is reserved for the file type indicator.

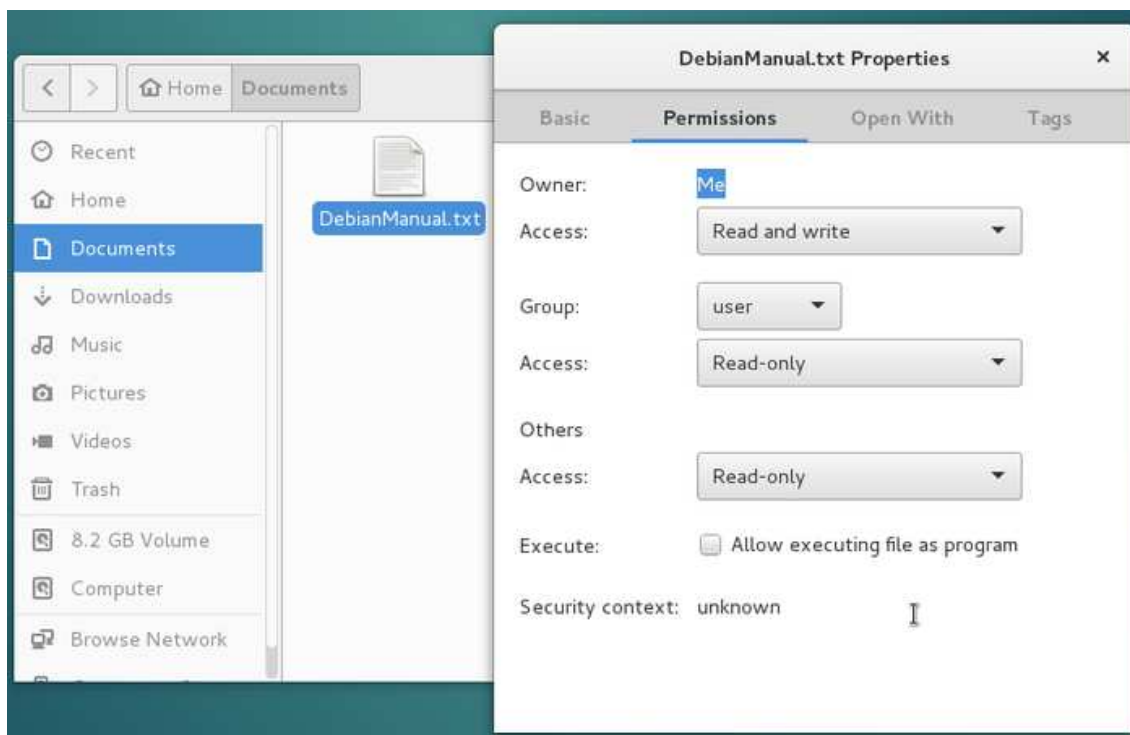
### 3.7.1.Rights and permissions from the contextual menu

---

The file managers integrated in the various Debian desktops let you also display and/or modify the rights and permissions of your system folders and files "with the mouse only" 😊. To do so, you need to open the contextual menu with a right-click on the file/folder you are interested in, and click on "Properties":



In the new window which opens, click on the "Permissions" tab:



*Edition of rights and permissions from the contextual menu*

In this example, the file belongs to "Me" (arpinux), who has the Read and Write access, while the other users or groups have a Read only access right.



## 3.8.The terminal

---



When you launch an application from the menu, or when you move a file from a folder to another by using your mouse, you send instructions to your computer in graphical mode.

These instructions can also be sent directly, without going through a menu or launching an application, thanks to the **Terminal** which gives you access to **the command line**. This tool is more accurate than the graphical interface because it lets you use all the options available in your application. It is also your last resort when the graphical session is gone.

The only concern is that this little black box, full of strange signs, is somewhat frightening ... But we are going to demystify all this and show you that the terminal can become your new friend 😊.

In case of doubts, don't hesitate to ask your questions on [the support and help forums](#) (chap.1.5).



**Never run terminal tests in administrator mode !!**: some very useful commands like

"rm" (**remove**) allow you to bypass the "wastebasket" principle, but could be devastating on the entire system when you are running them in administrator mode.



*Geek girl, by Péhä (CC-BY-SA)*

### 3.8.1.Presentation

---

Let's simply start with what you see written in the terminal window:

```
arp@debian: ~  
File Edit View Search Terminal Help  
arp@debian:~$
```

— prompt, waiting for a command  
— path, "~" means personal folder  
— hostname (your computer)  
— login (who is on line)

*Terminal presentation*

- **the user**, its you, or more exactly the one who is logged in and uses the terminal
- **the host name**, is the name of the machine on your local network, a name you entered during the system installation
- **the path** is the place where you are currently in the file system (here the personal folder '/home/arp/' symbolized by the tilde "~")
- **the prompt delimiter** (symbolized here by the "\$" sign) after which you will enter in the command line. Its output (or "feed back") will be displayed on the following line(s) of the terminal.

The configuration of the full prompt string resides in the '~/.bashrc' (hidden file in your personal folder) "bash" interpreter configuration file. The bash program is handling the commands entered in the terminal (to make a long story short); it enables you to send commands, typed in the terminal, to the computer system in order to give it various instructions or obtain some information back.

### 3.8.2. User mode example

---

To tame the beast, we are going to start with a simple "cd" (standing for "**c**hange **d**irectory"), which let you walk through the system file.

When you open a Terminal, you are by default in the personal folder of the user logged-in (here it is the /home/arp/home folder). This folder includes the sub-folders Pictures, Downloads, etc.

To go down into the 'Pictures' sub-folder, I type in the words "cd Pictures" - without the quotes - (and the uppercase is of importance here, hence the necessity to clearly identify the item names one is looking at ...) then I press [Enter] to *send* the command. To reach this 'Pictures' folder from anywhere in the file system, you need to provide its full path '/home/arp/Pictures' (replace arp by your user name):



```

arp@debian: ~/Pictures
File Edit View Search Terminal Help
arp@debian:~$ cd /home/arp/Pictures/
arp@debian:~/Pictures$ █

```

*Using "cd" to navigate the file system in the Terminal console*

You can see here that, within the command prompt prefix, the path "~" has been changed to "**~Pictures**", because you changed the folder you were in, and this is exactly like opening a folder with your graphical file manager.

However, when you open a folder with the file manager, you "see" all the items in there. Within a terminal you need to list the items with the "ls" command:



```
arp@debian: ~/Pictures
File Edit View Search Terminal Help
arp@debian:~$ cd /home/arp/Pictures/
arp@debian:~/Pictures$ ls
wallhaven-457985.jpg wallhaven-458019.jpg wallhaven-458043.png
wallhaven-458015.jpg wallhaven-458022.jpg wallhaven-458048.jpg
wallhaven-458017.jpg wallhaven-458025.jpg wallhaven-458049.jpg
wallhaven-458018.jpg wallhaven-458032.jpg
arp@debian:~/Pictures$
```

*List of existing folders and files with "ls"*

... easy, isn't it ? See, you did not break anything 😊. Yes, but you are going to tell me that this stuff is rather useless ...

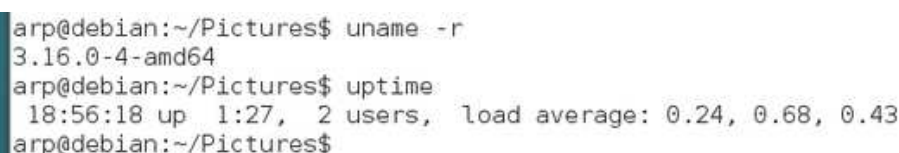
OK, lets move on to cooler commands:

- '**uname -r**' gives the version of the active Linux kernel.



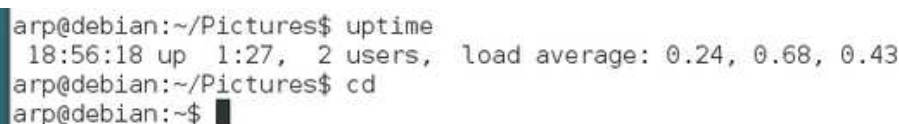
```
arp@debian:~/Pictures$ uname -r
3.16.0-4-amd64
arp@debian:~/Pictures$
```

- '**uptime**' gives the current time, since how long the system is running, how many users are currently logged in, the system load average for the past 1, 5, 15 minutes, in order to see if the process waiting list is not too long. If the load is over 1 (for old computers) or 2 (for dual-cores and +) this means that one process is running while another one is waiting.



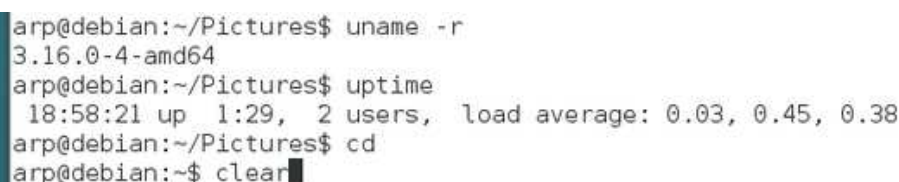
```
arp@debian:~/Pictures$ uname -r
3.16.0-4-amd64
arp@debian:~/Pictures$ uptime
18:56:18 up 1:27, 2 users, load average: 0.24, 0.68, 0.43
arp@debian:~/Pictures$
```

- Return back in your personal folder ? Just a small and simple '**cd**' and you are @home.



```
arp@debian:~/Pictures$ uptime
18:56:18 up 1:27, 2 users, load average: 0.24, 0.68, 0.43
arp@debian:~/Pictures$ cd
arp@debian:~$
```

- Your screen is a bit crowded ? A small '**clear**' will empty the console.




```
arp@debian:~/Pictures$ uname -r
3.16.0-4-amd64
arp@debian:~/Pictures$ uptime
18:58:21 up 1:29, 2 users, load average: 0.03, 0.45, 0.38
arp@debian:~/Pictures$ cd
arp@debian:~$ clear
```

### 3.8.3. Administrator mode example

---

To run a command as administrator, Debian uses the command "**su**". You will be asked to enter the administrator password, and nothing is displayed on screen when you type it in. This is done on purpose.

Debian can also use "**sudo**" (do as superuser). When using sudo, you will be asked, this time, to enter your own password.

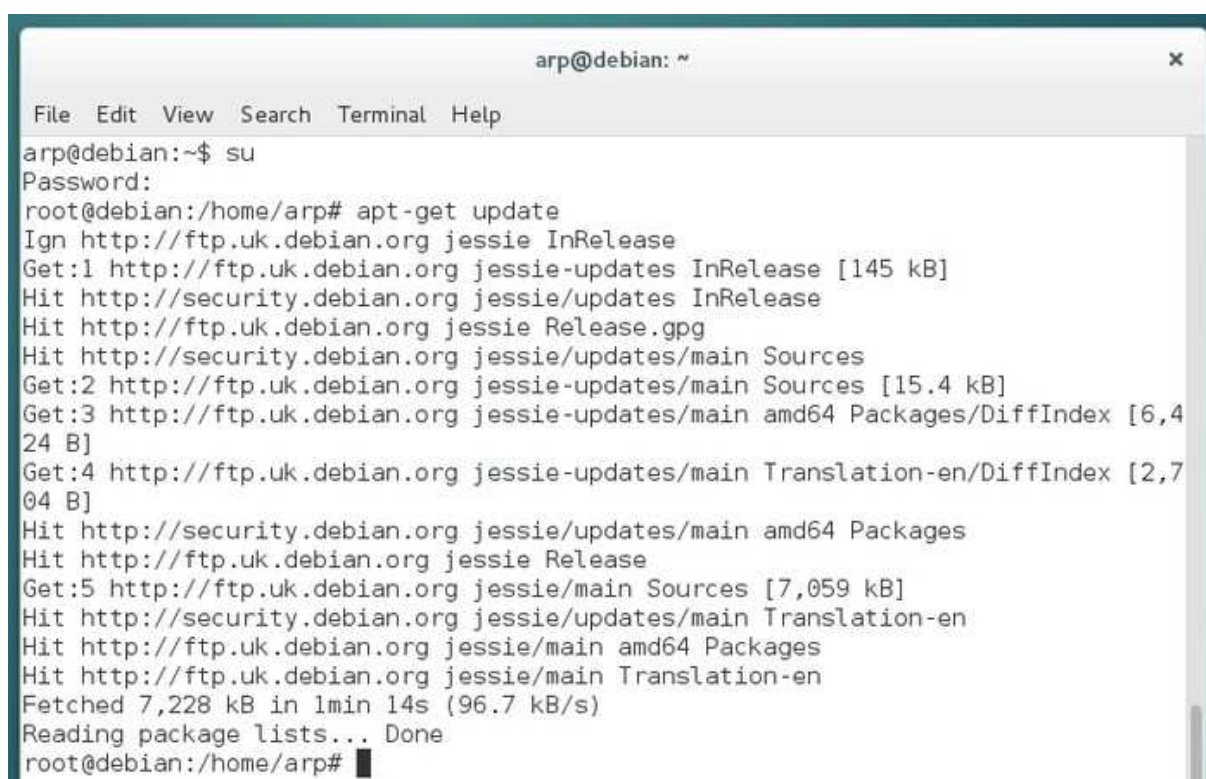


```
arp@debian: ~  
File Edit View Search Terminal Help  
arp@debian:~$ su  
Password:  
root@debian:/home/arp#
```

*Switch to administrator mode with 'su'*

You note that the "\$" sign (the command prompt delimiter), as been replaced by the "#" sign, indicating the "**root**" administrator account.

Once connected as "root" in the terminal session, you can launch system administration commands, for example here, a package repository update within a Gnome terminal, using the command "apt-get update":



```
arp@debian: ~  
File Edit View Search Terminal Help  
arp@debian:~$ su  
Password:  
root@debian:/home/arp# apt-get update  
Ign http://ftp.uk.debian.org jessie InRelease  
Get:1 http://ftp.uk.debian.org jessie-updates InRelease [145 kB]  
Hit http://security.debian.org jessie/updates InRelease  
Hit http://ftp.uk.debian.org jessie Release.gpg  
Hit http://security.debian.org jessie/updates/main Sources  
Get:2 http://ftp.uk.debian.org jessie-updates/main Sources [15.4 kB]  
Get:3 http://ftp.uk.debian.org jessie-updates/main amd64 Packages/DiffIndex [6,424 B]  
Get:4 http://ftp.uk.debian.org jessie-updates/main Translation-en/DiffIndex [2,704 B]  
Hit http://security.debian.org jessie/updates/main amd64 Packages  
Hit http://ftp.uk.debian.org jessie Release  
Get:5 http://ftp.uk.debian.org jessie/main Sources [7,059 kB]  
Hit http://security.debian.org jessie/updates/main Translation-en  
Hit http://ftp.uk.debian.org jessie/main amd64 Packages  
Hit http://ftp.uk.debian.org jessie/main Translation-en  
Fetched 7,228 kB in 1min 14s (96.7 kB/s)  
Reading package lists... Done  
root@debian:/home/arp#
```

*Terminal in administrator mode: package list update using "apt-get update"*

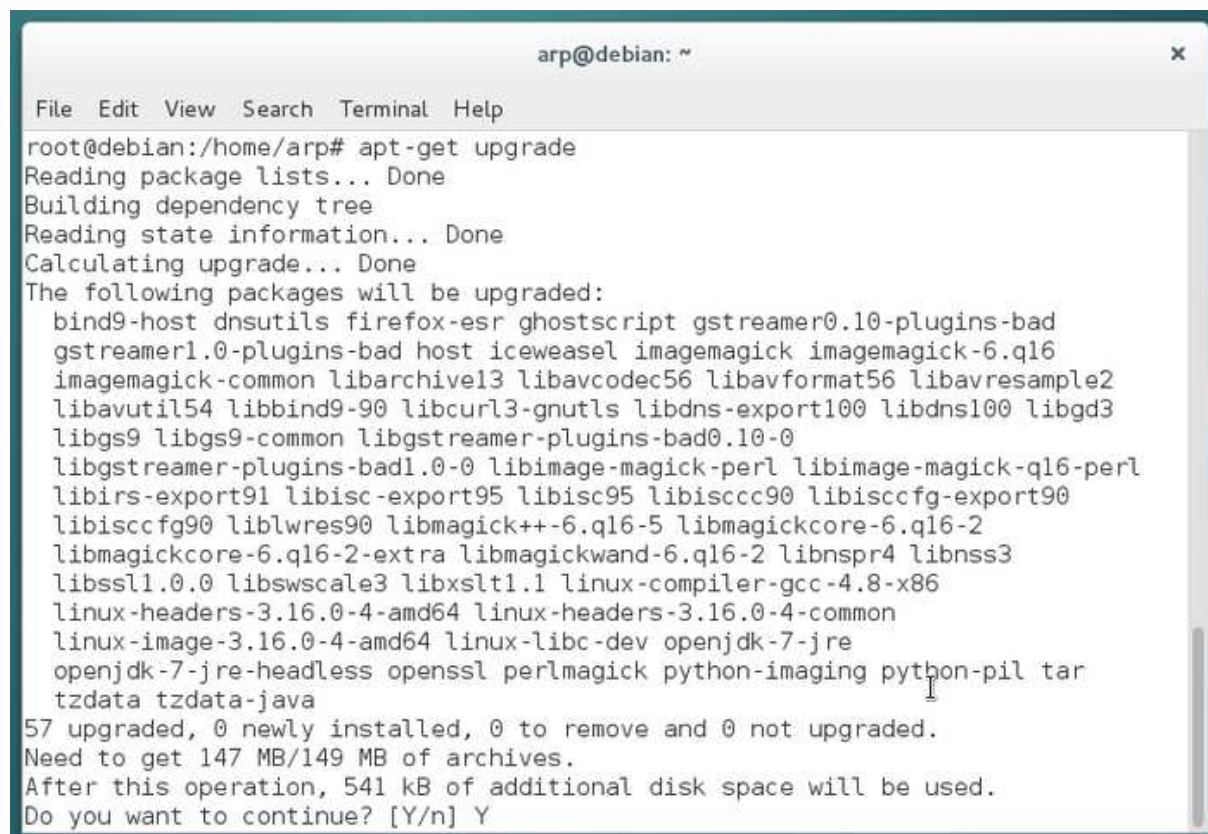
Look again at this package list update example, that is the retrieval of the latest information on packages and potential updates. After the completion of this package list update (verifying the

repositories), we launch "apt-get upgrade" to execute the available updates for the software you have installed.

```
Hit http://security.debian.org jessie/updates/main amd64 Packages
Hit http://ftp.uk.debian.org jessie Release
Get:5 http://ftp.uk.debian.org jessie/main Sources [7,059 kB]
Hit http://security.debian.org jessie/updates/main Translation-en
Hit http://ftp.uk.debian.org jessie/main amd64 Packages
Hit http://ftp.uk.debian.org jessie/main Translation-en
Fetched 7,228 kB in 1min 14s (96.7 kB/s)
Reading package lists... Done
root@debian:/home/arp# apt-get upgrade
```

*Terminal in administrator mode: package update using "apt-get upgrade"*

On Gnu/Linux, when a process must modify the system, it usually asks you a confirmation. Here the terminal informs you about the type of the expected changes and wait for your agreement, either by simply pressing [Enter] if you accept the default option (here "Yes") or by typing "y" to accept or "n" to decline.



```
arp@debian: ~
File Edit View Search Terminal Help
root@debian:/home/arp# apt-get upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following packages will be upgraded:
 bind9-host dnsutils firefox-esr ghostscript gstreamer0.10-plugins-bad
 gstreamer1.0-plugins-bad host iceweasel imagemagick imagemagick-6.q16
 imagemagick-common libarchive13 libavcodec56 libavformat56 libavresample2
 libavutil54 libbind9-90 libcurl3-gnutls libdns-export100 libdns100 libgd3
 libgs9 libgs9-common libgstreamer-plugins-bad0.10-0
 libgstreamer-plugins-bad1.0-0 libimage-magick-perl libimage-magick-q16-perl
 libirs-export91 libisc-export95 libisc95 libisccc90 libisccfg-export90
 libisccfg90 liblwres90 libmagick++-6.q16-5 libmagickcore-6.q16-2
 libmagickcore-6.q16-2-extra libmagickwand-6.q16-2 libnspr4 libnss3
 libssl1.0.0 libswscale3 libxslt1.1 linux-compiler-gcc-4.8-x86
 linux-headers-3.16.0-4-amd64 linux-headers-3.16.0-4-common
 linux-image-3.16.0-4-amd64 linux-libc-dev openjdk-7-jre
 openjdk-7-jre-headless openssl perlmagick python-imaging python-pil tar
 tzdata tzdata-java
57 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Need to get 147 MB/149 MB of archives.
After this operation, 541 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
```

*Terminal in administrator mode: Confirmation of the update*

If you accept the changes, you will see the complete process of downloading, configuring and installing the concerned packages. Then the terminal will "give the control back to you" by displaying the command prompt:

```
Setting up linux-compiler-gcc-4.8-x86 (3.16.36-1+deb8u2) ...
Setting up linux-headers-3.16.0-4-common (3.16.36-1+deb8u2) ...
Setting up linux-headers-3.16.0-4-amd64 (3.16.36-1+deb8u2) ...
Examining /etc/kernel/header_postinst.d.
run-parts: executing /etc/kernel/header_postinst.d/dkms 3.16.0-4-amd64
Setting up linux-libc-dev:amd64 (3.16.36-1+deb8u2) ...
Setting up openssl (1.0.1t-1+deb8u5) ...
Setting up perlmagick (8:6.8.9.9-5+deb8u5) ...
Setting up python-pil:amd64 (2.6.1-2+deb8u3) ...
Setting up python-imaging (2.6.1-2+deb8u3) ...
Processing triggers for libc-bin (2.19-18+deb8u6) ...
Processing triggers for menu (2.1.47) ...
root@debian:/home/arp#
```

*Terminal in administrator mode: executing the update*

That's it, you just updated your system using the terminal 😊!

The single commands tend to be boring after a while ... But then it is a lot more fun if you associate several of them together in a "**script**", which enables the automation of series of processes.

For more information on scripts, and if you want to "learn the shell", see the dedicated page on linuxcommand.org: [http://linuxcommand.org/lc3\\_learning\\_the\\_shell.php](http://linuxcommand.org/lc3_learning_the_shell.php) .

A short summary of the GNU/Linux commands is proposed [at the end of this manual](#) (chap.11).



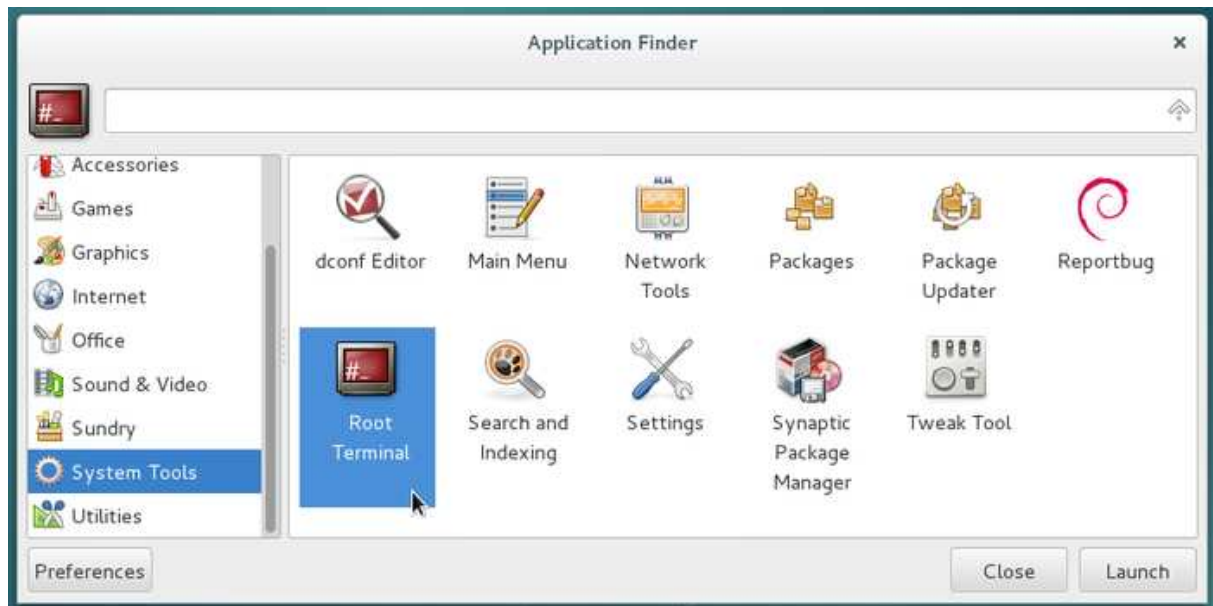
You must be extremely strict when you send commands in *administrator* mode. To avoid errors, use the auto-completion feature. This mechanism allows the computer to complete the commands you started typing (3 characters are enough), or their corresponding arguments. This is accomplished by pressing on the [Tab] key. If several choices are possible, they will be proposed to you as well.

Some applications in graphical mode require the administrator rights. **You should not** launch them with **su** or **sudo**, otherwise that might break the graphical session. You should use instead the command **gksu** (on *gtk* type desktops) or **kdesu** (for KDE) depending on your desktop environment.

### 3.8.4.Launching an "administrator terminal"

---

Like you have seen in the previous section, one uses "su" (or "sudo") in a terminal to enter a command in administrator mode. You can also launch directly your terminal in "administrator" mode using a menu entry or the application list:



Be aware that within this kind of terminal, all the commands entered are executed with the "root" account, and in case of mistake or cockpit error, the system can become unstable. None of the commands used in this manual requires to be identified as "root", except when clearly otherwise indicated.

## 4.Pick your Debian



Debian is an operating system offered in several versions, and you will need to make a choice depending on your tastes, your needs and your hardware.

### You want to try the Debian journey

---

Let's go 🍷 ! The rest of this manual will help you to:

- [choose the processor architecture](#) (chap.4.1),
- [choose your main interface](#) (chap.4.2),
- [launch the installation](#) (chap.5).



### Choosing a Debian derivative ?

---

There are a lot of Debian derivatives out there, more or less stable and/or supported. This manual and the indications in there can be used for all the Debian Stable "Jessie" derivatives.



The GNU/Linux distributions are not all supported by a community the way Debian is. Sometime, a single person handle the entire distribution. The different distributions do not provide the same level of documentation and support. They also do not offer the same durability. Choosing a "mother" distribution like Debian insures you to receive stable and regular updates.

If you want to test other distributions based on Debian, we suggest you consult the Debian derivatives official page<sup>16</sup>.



If you want to consult a more comprehensive list, visit the Distrowatch<sup>17</sup> site which enumerates almost all the available active distributions.

<sup>16</sup> <https://wiki.debian.org/Derivatives/CensusFull>

<sup>17</sup> <https://distrowatch.com/?language=EN>



## 4.1.Choosing the architecture

---

**The processor**, which is the compute and control unit of your computer, functions under a specific type of architecture, I.E. it handles data according to its own type (32 or 64 bits, PowerPC ...).

We encourage you to use an ISO image of type "[netinst](#)" (chap.5.2.1.1), which gives you access to the most up-to-date software versions by downloading directly the applications during the installation process (you need an active and stable Internet connexion during the install). This version will let you install the desktop of your choice.

You can also use an ISO image already including a ready-to-use environment (Gnome, KDE, Xfce ...).

But you must choose an ISO corresponding to your processor architecture. In other words, decide between a 32 bits or a 64 bits version, or again between an i386 or an amd64 version.

Note that the "32 bits" version will run on a "64 bits" computer, but not vice-versa.

### 4.1.1.To make it easy

---

- If your computer has a sticker indicating "coreDuo", "core2duo", or was built after the year 2005, you can take an "amd64" ISO.
- If your computer proudly displays the sign "Pentium IV M" or was born before 2003, take an "i386" version.
- In case of doubts, you can take the 32 bits "i386" version, it functions everywhere.
- In case of a huge doubt, [ask the question on a forum](#) (chap.1.5)

### 4.1.2.Checking the architecture

---

**Using a GNU/Linux distribution** in an autonomous "live" session ([Debian Live](#) in chap.5.2.1.4 for example), open a terminal, and in order to find out the 32 or 64 bits compatibility, type the following command:

```
lscpu | grep -i "mode(s)"
```

which returns the explicit result, here an example when using an 'amd64' processor:

```
CPU op-mode(s): 32-bit, 64-bit
```

**Using a Windows®** system, your processor model is displayed in the "General" tab of the menu Start Button > Configuration Panel > System

## 4.2.Choosing your GNU/Linux desktop

---

Debian let you adopt one or several desktop environment directly from the installer interface:

[Gnome](#), [KDE](#), [Mate](#), [Cinnamon](#), [Xfce](#) et [LXDE](#)



... **But why several Gnu/Linux "desktop" ?**

**The computer is only a tool**, and even if we ask you sometime to learn a couple of tricks to make an effective use of it, it is still your tool, and as such it must be highly adaptable to your taste, your working habit, and to your own way to have fun.

With this perspective, each desktop has its own organization, its setting method, its various functionalities. And it is not a superfluous diversity, designed by the brain mazes of some bearded geeks (although ...), but rather a strength of the **free software**: knowing how to **propose rather than impose** !

Hereafter the description of the main characteristics of this various environments, to help you decide which one to use. And then you will be able to add more of them, according to your needs and preferences.

The two main desktops are Gnome and KDE, but they are also the more "resource-hungry" solutions, so don't hesitate to test other environments.

### Integrated applications

Each desktop environment is designed to offer a minimal functionality for the personal usage of your computer. So, within all the desktops presented here, you will find an Internet browser, a system file manager, a text editor, an office suite, a multimedia player (except on MATE DE, but it's easy to add one) and an access to a software library in order to maintain, update or make changes in your installation.

### 4.2.1.Gnome

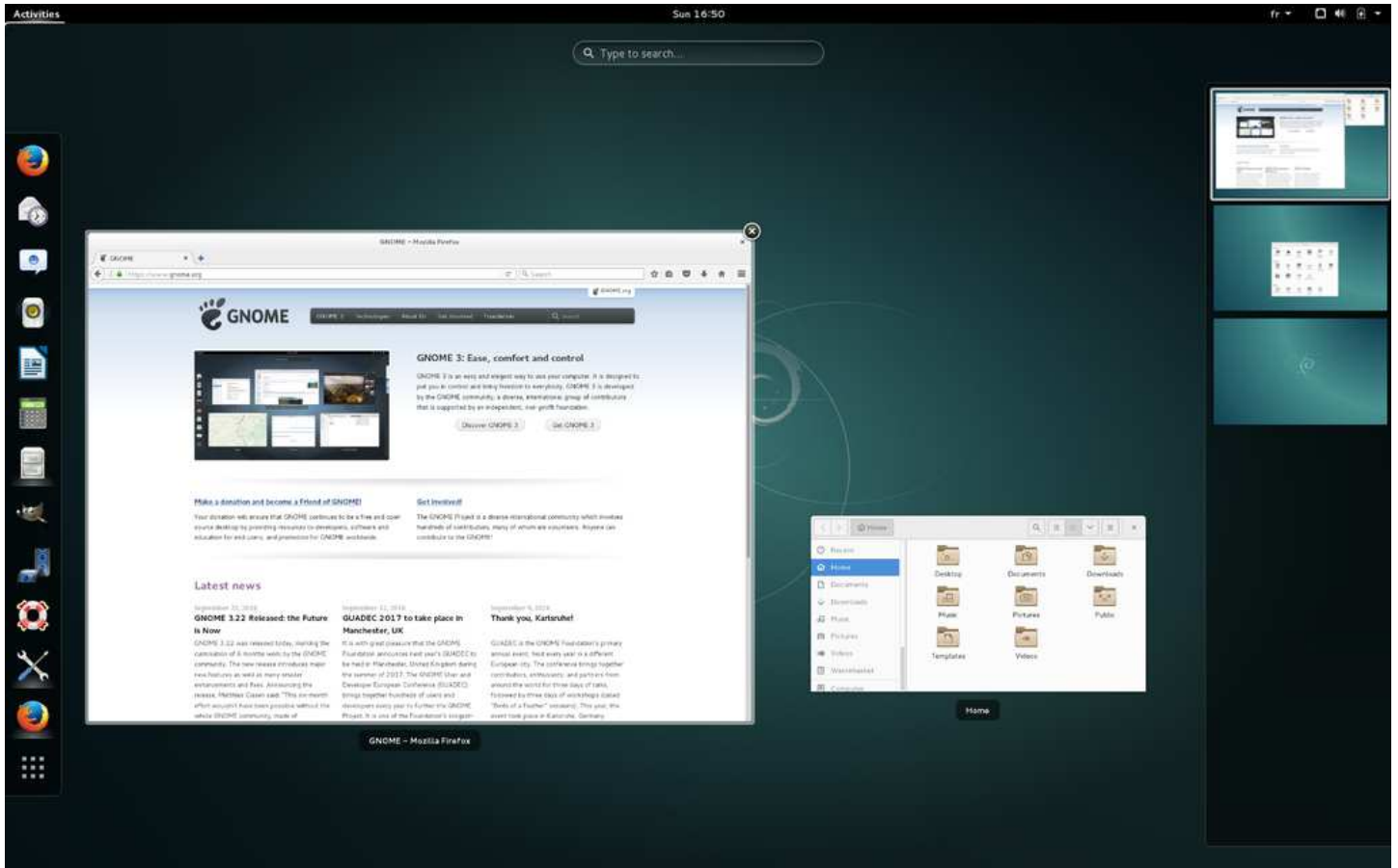
---

Gnome 3.14 is the Gnome version embedded in Debian 8 Jessie. The Gnome-Shell interface is the default desktop for Debian and offers:

- **The Activities Overview**", which is a separate view designed to enable users to get an overview of their current activities and to enable effective focus switching. It can be accessed via the activities button at the left of the top bar or by pressing the **Win** key of the keyboard. This view includes:
  - A series of application launchers (that you can easily add or remove using the drag and drop method, or by using a right-click on the "dock").

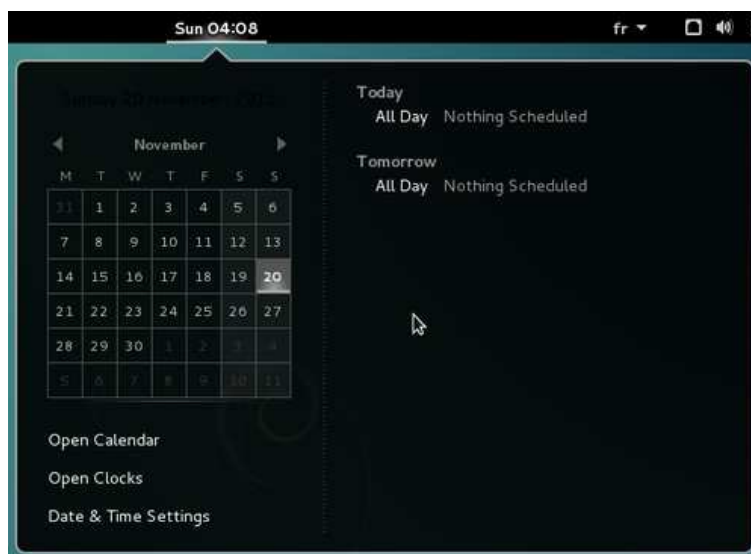


- All the open applications.
- The capability to dispatch the applications to several virtual desktops (visualized on the right side pane).
- A search engine for applications, files or even contacts.



*Gnome: desktop presentation*

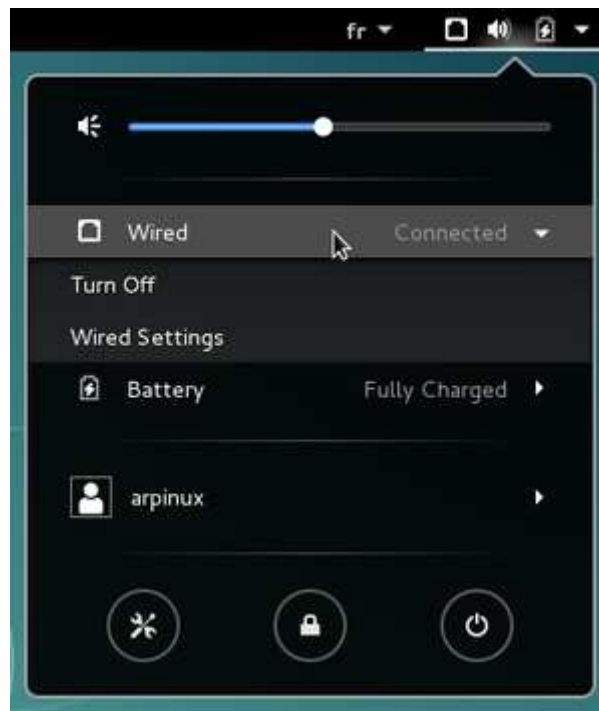
- **The Time manager**, at the center of the top bar, has an on click calendar, linked to Evolution<sup>18</sup>, the personal information manager handling emails, calendar and contacts.



*Gnome: the Time manager*

<sup>18</sup> <https://wiki.gnome.org/Apps/Evolution>

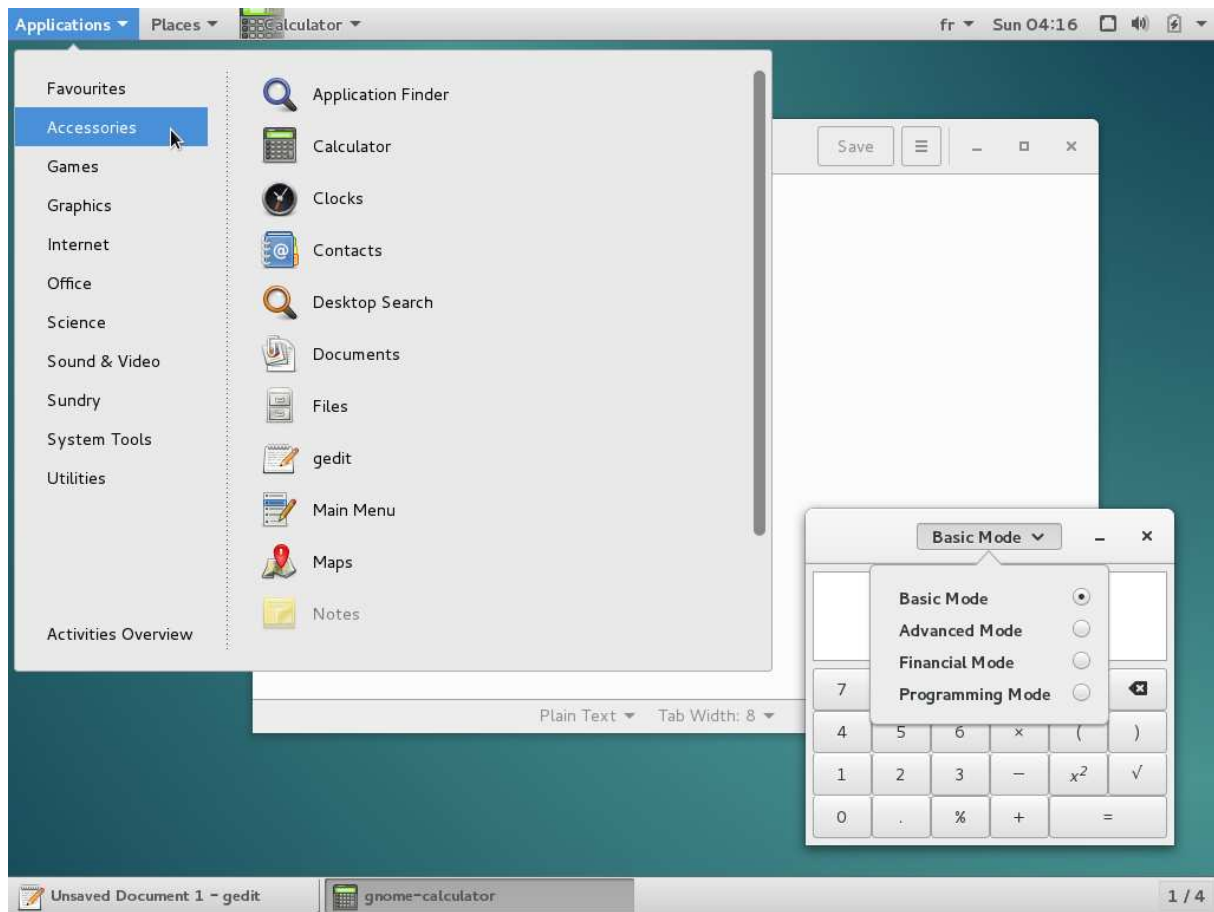
- **The System manager** at the right of the top bar, including:
  - The settings of the local network parameters
  - The settings of the sessions parameters
  - Access to the system parameters settings



*Gnome: the System manager*

## Gnome classic

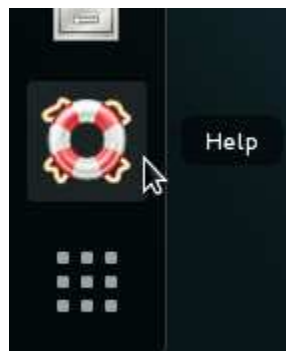
Gnome 3, with its new Gnome-Shell interface, represents a radical interface change compared to Gnome 2. However, in order to maintain some continuity for the users practices, the Gnome team developed a set of extensions which gives back to this interface, the Gnome 2 look and feel. This interface is accessible in the settings, when you open a session, under the name of **Gnome Classic**.

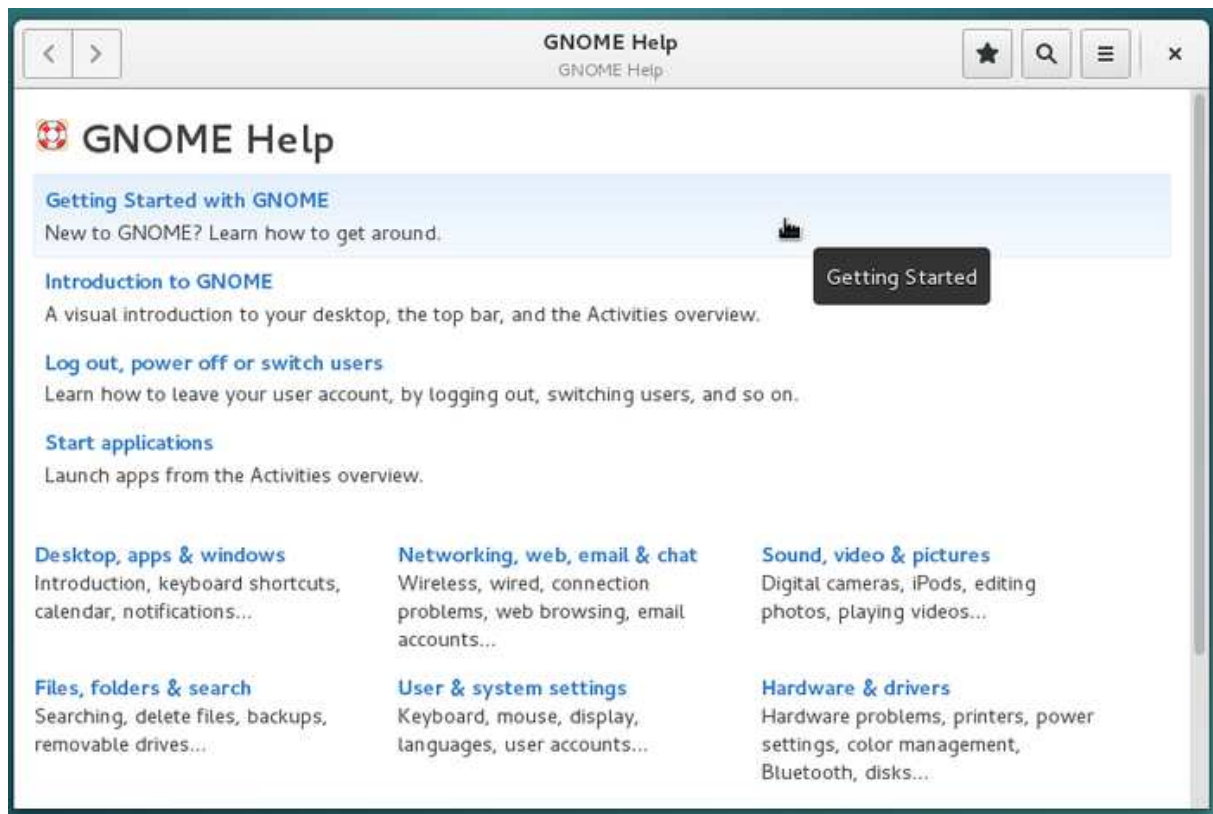


*Gnome: Gnome-Classic interface*

## **Integrated comprehensive help**

Gnome includes a general detailed help mechanism, that you can access via the dock, by default, and this should reassure all the beginners, and make them a lot more comfortable:





*Gnome: integrated comprehensive help*

## Technical details:

- Main applications:
  - Internet navigator: [Firefox](#) (chap.6.6)
  - Internet communications: Evolution and Empathy<sup>19</sup>
  - Office suite: [LibreOffice](#) (chap.6.9)
  - Video player: Totem<sup>20</sup>
  - Audio player: [Rythmbox](#) (chap.6.8)
  - System file manager: Nautilus<sup>21</sup>
- Minimum RAM needed to start up: 440 MB
- Minimum RAM needed to surf the web: 520 MB
- Minimum user level: extreme beginner / beginner
- Gnome project home page: <https://www.gnome.org/>

More details in the [dedicated section of this manual](#) (chap.7.1.1).

<sup>19</sup> [https://en.wikipedia.org/wiki/Empathy\\_%28software%29](https://en.wikipedia.org/wiki/Empathy_%28software%29)

<sup>20</sup> <https://wiki.gnome.org/Apps/Videos>

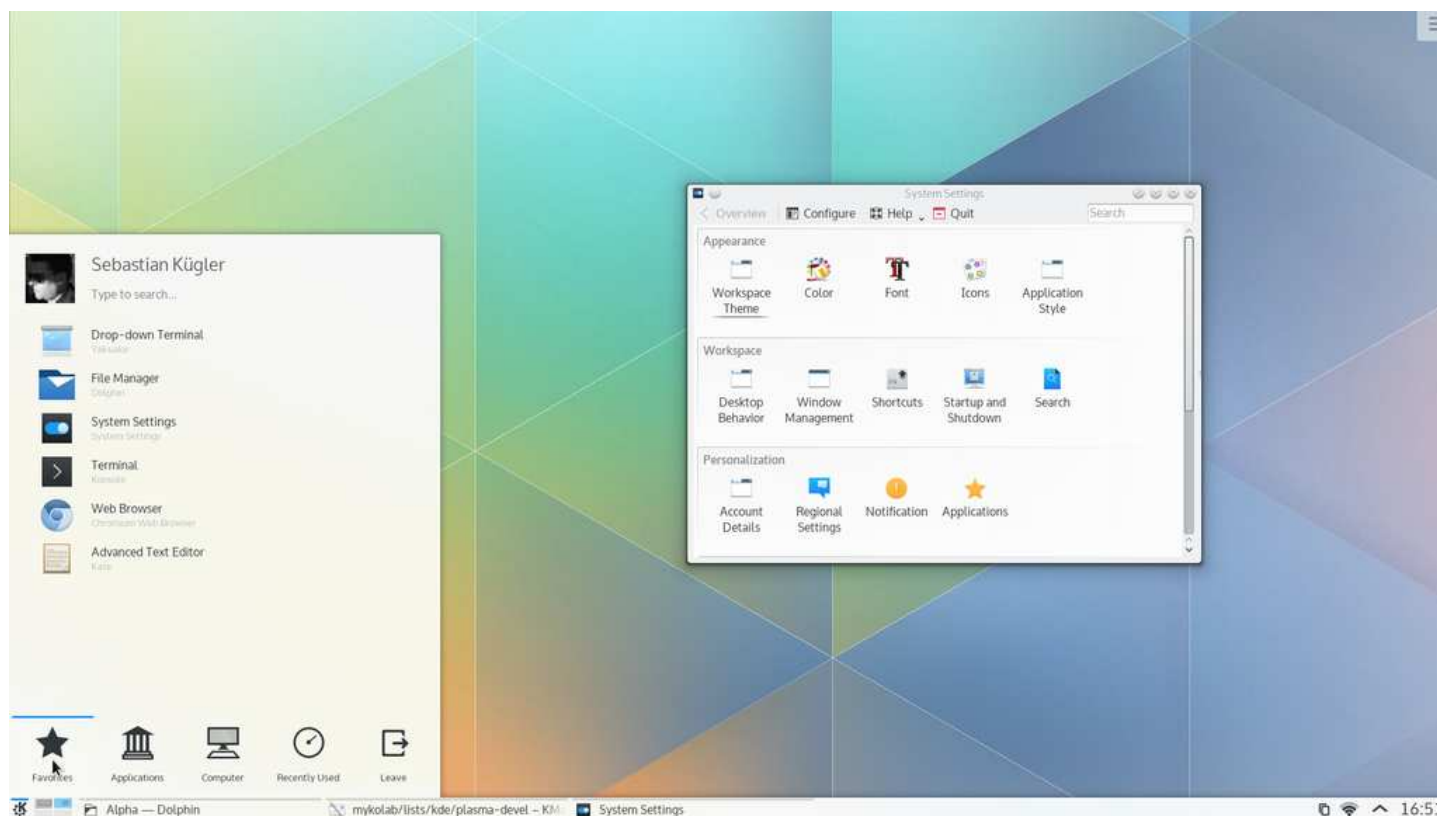
<sup>21</sup> <https://wiki.gnome.org/Apps/Nautilus>

## 4.2.2.KDE

KDE4<sup>22</sup> is a project delivering a graphical environment (called "Plasma") and a full set of applications. KDE4 is highly configurable, both in terms of desktop environment and supported applications. KDE has so many capabilities that some people even find difficult to deal with it.



Note that you can use KDE without any particular configuration tuning. It can be fully functional with its "out-of-the-box" settings.



*The KDE4 Plasma desktop on Debian 8*

The KDE4 environment is visually close to Windows®, and offers:

- **KDE Kickoff:** the menu giving you access to the entire system.
- **Graphical components:** the modules you can place anywhere on your desktop to enjoy additional functionalities.
- **Activity manager:** a banner which integrates your pending tasks, your appointments ... another way to help with your daily work.
- **Configuration panel:** this is the place where you are going to tweak your computer, including the Debian system.
- **Help center:** like Gnome, KDE is a comprehensive desktop which includes a very detailed help mechanism.

<sup>22</sup> [https://userbase.kde.org/An\\_introduction\\_to\\_KDE](https://userbase.kde.org/An_introduction_to_KDE)

- **Plasma:** KDE4 is delivered with a pack of applications integrated in the "plasma" desktop, and providing a fluid and consistent graphical experience.

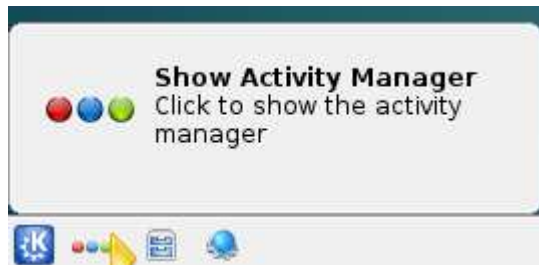
Like the other GNU/Linux desktops, you can customize KDE4 to fit your needs and desires. To add a graphical component, right-click on the desktop and select "Add Widgets...". A banner including all the available widgets is open at the bottom of the screen: help yourself !



*Widgets on KDE4*

The Activity manager let you organize your tasks and keep an eye on them. To access it, left-click on the three points of the panel:



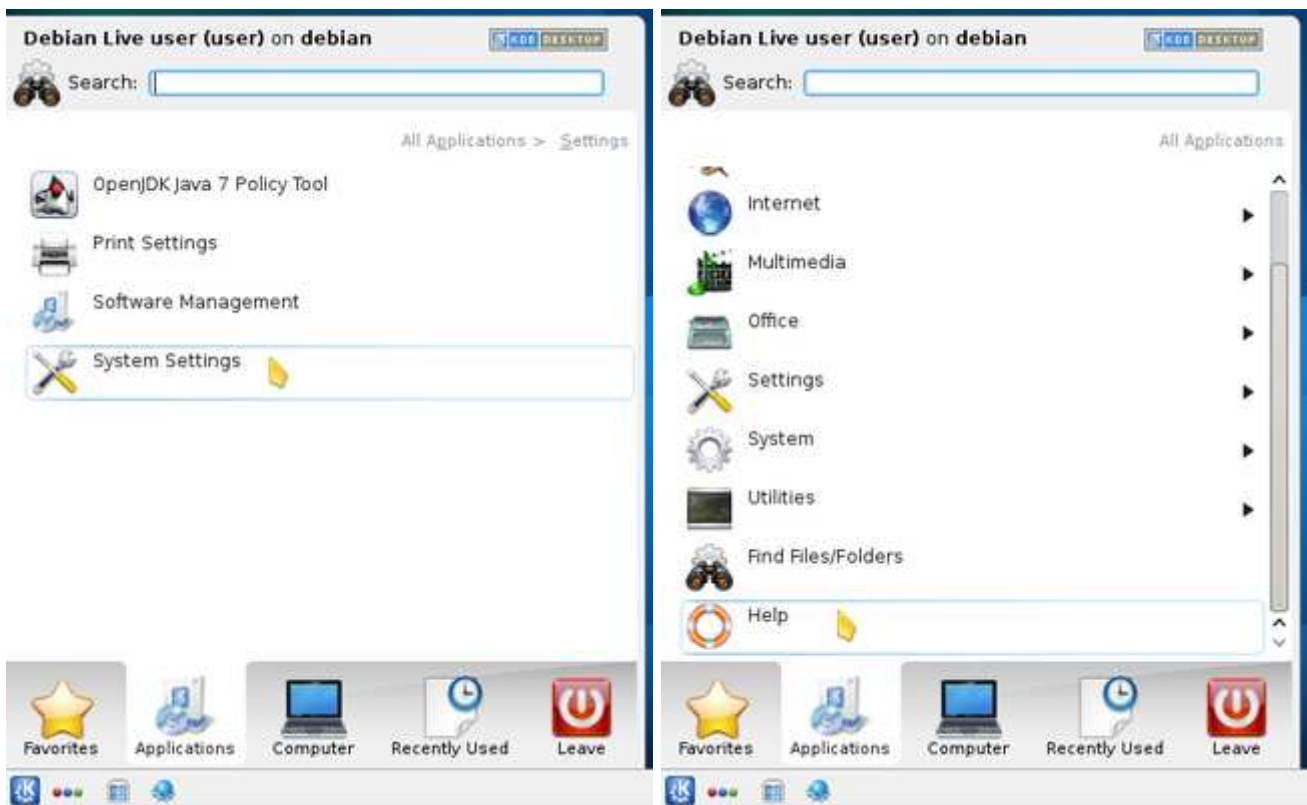


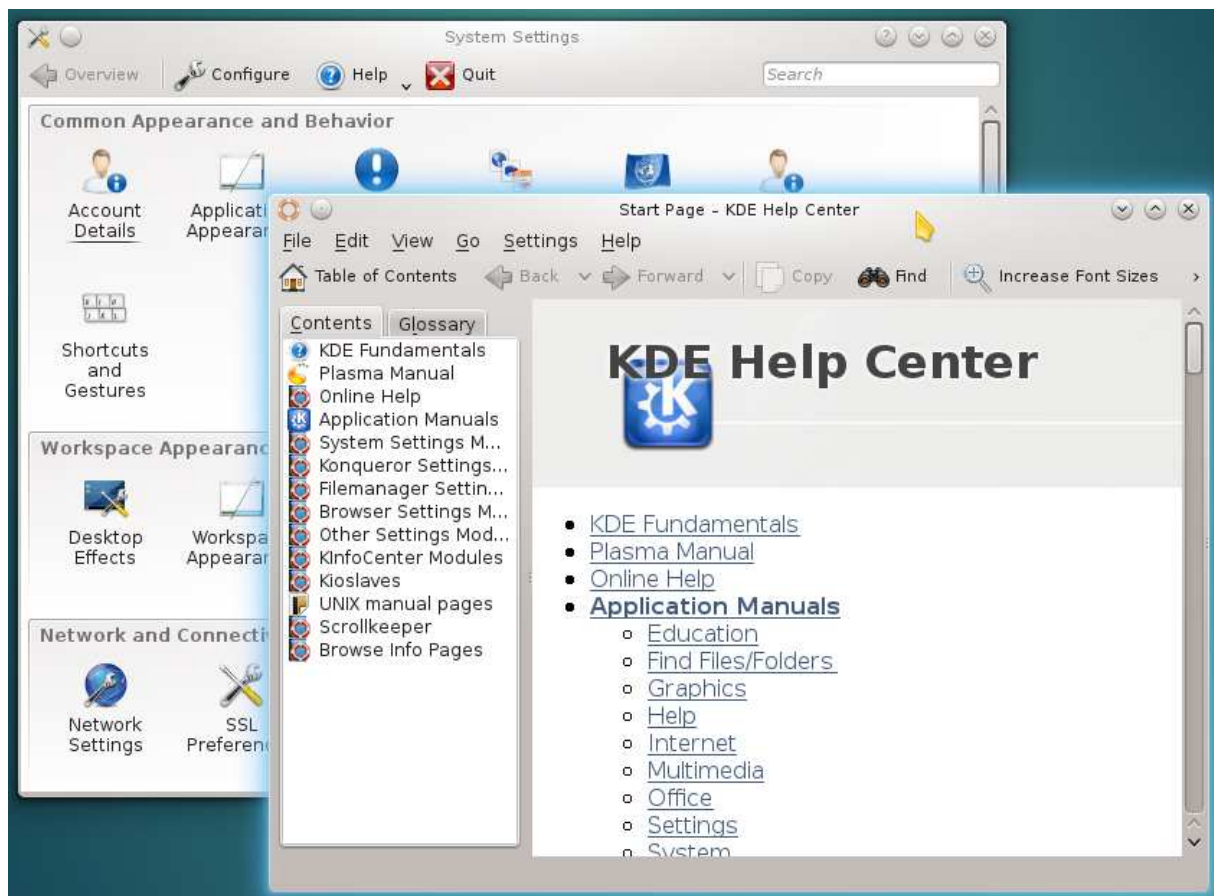
*Banner of the activity manager on KDE4*

Like Gnome, KDE is a very comprehensive environment and includes a system settings panel as well as an integrated help center.

To reach the system settings, follow the path Kickoff menu > Applications > Settings > System settings.

The help center is available directly at the bottom of the main application list.





*System settings panel and help center on KDE4*

### Technical details:

- Main applications:
  - Internet Navigator: [Firefox](#) (chap.6.6) & Konqueror<sup>23</sup>
  - Internet communications: Kmail<sup>24</sup>, Kopete<sup>25</sup>
  - Office suite: [LibreOffice](#) (chap.6.9)
  - Video player: [VLC](#) (chap.6.7) & Dragon Player<sup>26</sup>
  - Audio player : Juk<sup>27</sup>
  - File system manager: Dolphin<sup>28</sup>
- Minimum RAM needed to start up: 460 MB
- Minimum RAM needed to surf the web: 570 MB
- Minimum user level: beginner / experienced
- KDE project home page: <https://www.kde.org>

More detailed information on the KDE Debian wiki<sup>29</sup>

<sup>23</sup> <https://konqueror.org/>

<sup>24</sup> <https://userbase.kde.org/KMail>

<sup>25</sup> <https://userbase.kde.org/Kopete>

<sup>26</sup> <https://www.kde.org/applications/multimedia/dragonplayer/>

<sup>27</sup> <https://juk.kde.org/>

<sup>28</sup> <https://www.kde.org/applications/system/dolphin/>

<sup>29</sup> <https://wiki.debian.org/KDE>

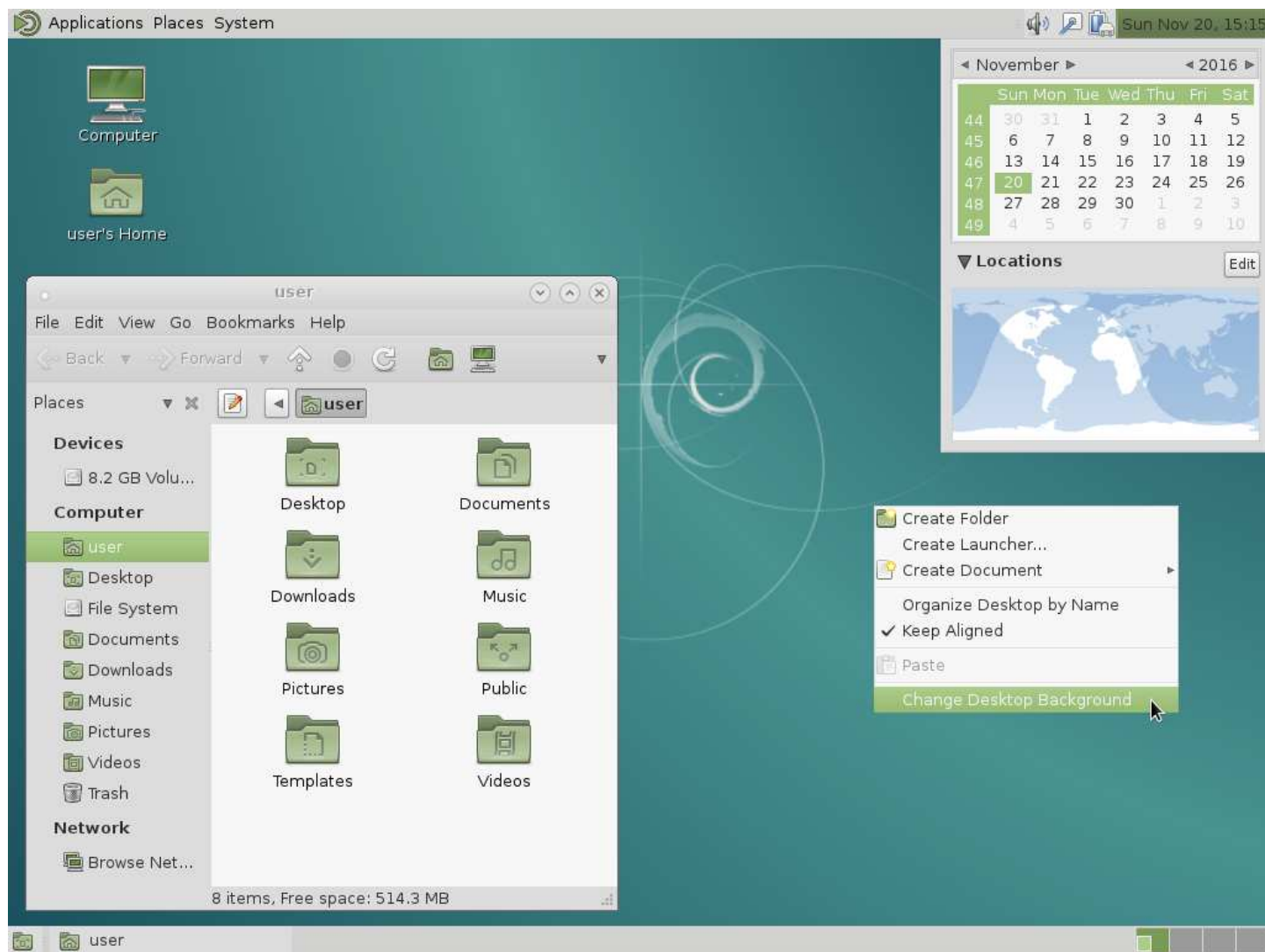
## 4.2.3.Mate

MATE<sup>30</sup> is a fork of GNOME 2. This means that this desktop environment was started from a copy of GNOME 2 and then modified independently.



This is the perfect environment for people who do not want to change all the work habits they acquired when using GNOME 2. This is also a good system for the computer aided music and the resource-intensive applications going with.

Mate aims to be lighter than GNOME 3, and as such, is more suitable for aging or resource limited computers. It's clearly is a good compromise between GNOME 3 and Xfce 4.



*MATE desktop on Debian 8*

Mate offers a "traditional" interface with its two task bars:

- The top panel includes, on the left, the main applications, the main folders and the system setting menu.
- The right part of the top panel is reserved to the notification area and the quick settings (Audio volume, keyboard configuration, small agenda)

<sup>30</sup> <http://mate-desktop.com/>

- The bottom panel includes the desktop button (to mask all the application windows), the list of the active windows, and the virtual desktops selector.

To configure Mate you open the control center ("system" menu > Control Center) and you have access to the various components of this interface:



*Control Center of the MATE desktop*

### Technical details:

- Main applications:
  - Internet Navigator: [Firefox](#) (chap.6.6)
  - Office suite: [LibreOffice](#) (chap.6.9)
  - System file manager: Caja (fork de Nautilus)
- Minimum RAM needed to start up: 260 MB
- Minimum RAM needed to surf the web: 360 MB
- Minimum user level: extreme beginner / beginner

Mate project home page: <http://mate-desktop.org/>

More details on the Mate Debian wiki<sup>31</sup>

<sup>31</sup> <https://wiki.debian.org/Mate>

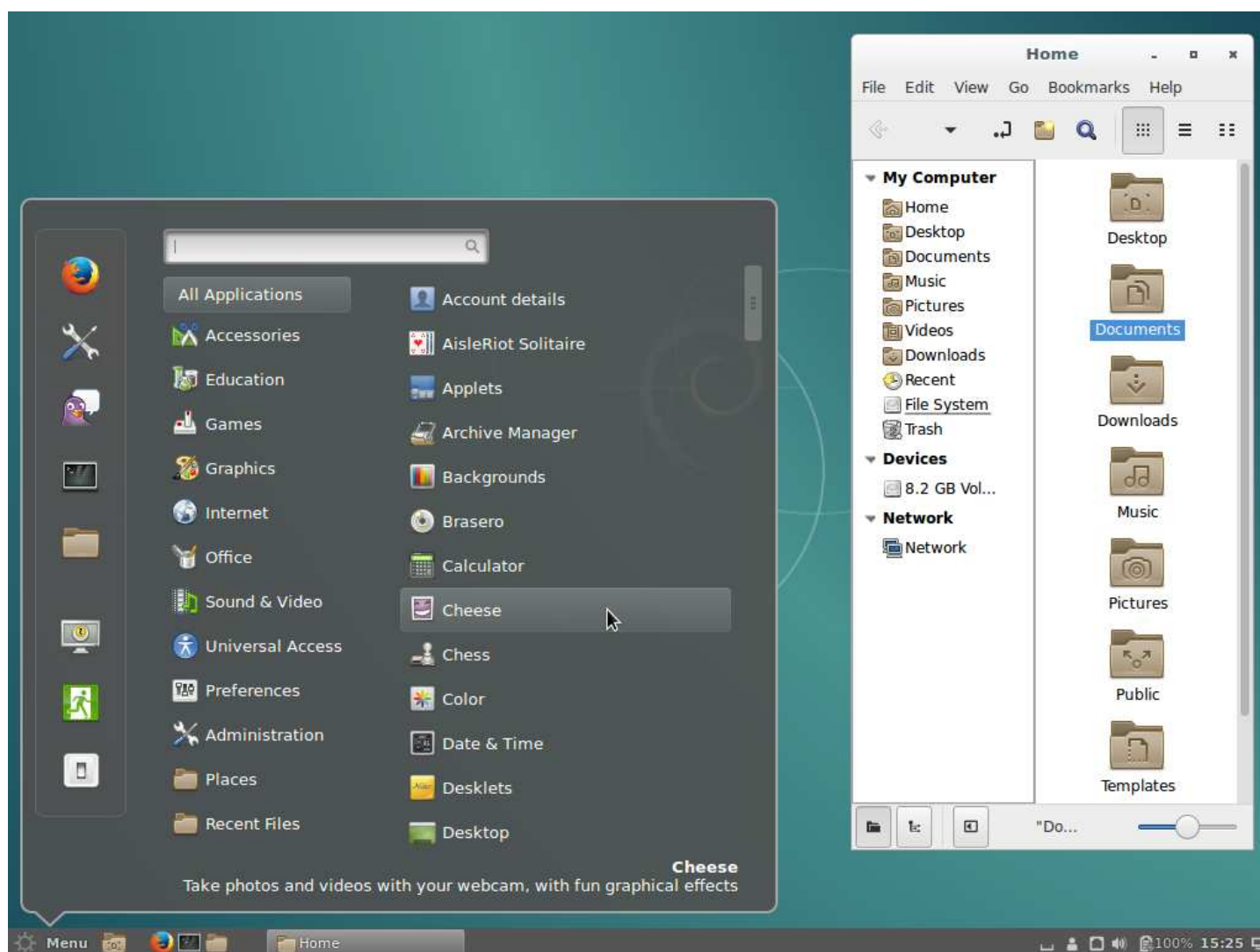
## 4.2.4.Cinnamon

Cinnamon<sup>32</sup> is a desktop environment derived from the Gnome-Shell project. It moved away from this latter all-in-one interface, to adopt a more traditional interface (dash board along with a menu where Icons are sorted by categories).



Cinnamon is developed by the Linux Mint<sup>33</sup> team, and is one of the leading desktop environments of this specific GNU/Linux distribution.

Cinnamon uses the Nemo system file manager, a fork from Nautilus 3.4, which reinstates some functionalities removed by the latter: compact view, open in a terminal, open as root, capability to manually edit the absolute file path, etc.



*Cinnamon desktop on Debian 8*

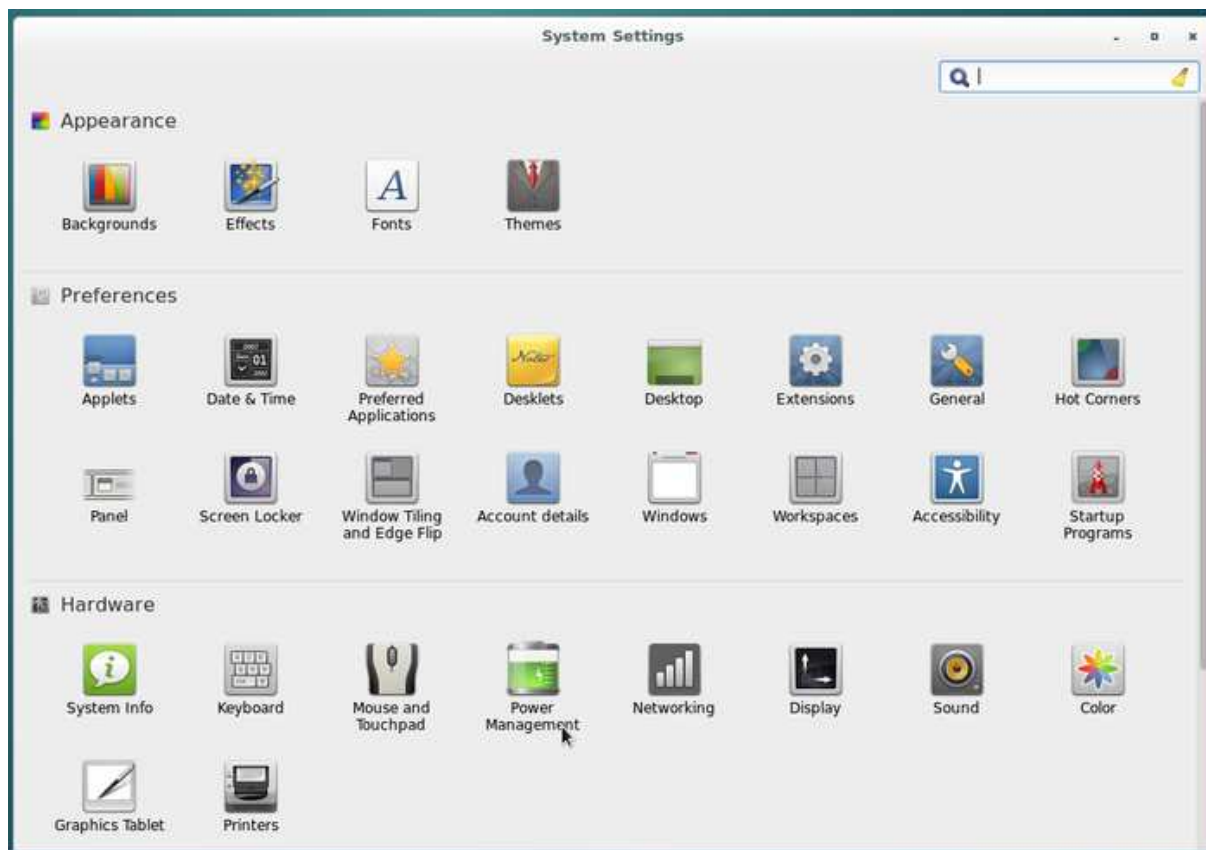
Cinnamon offers a complete desktop with all the helpful (or not) applications for your daily usage: in the screen capture above, you can see the graphical applications, and under the Internet category, for example, you will find the Firefox navigator, the email client Icedove, the multi-

32 <https://github.com/linuxmint/Cinnamon>

33 <https://www.linuxmint.com/about.php>

protocol chat client Pidgin, the Bittorrent Transmission client, a remote desktop access software, and the IRC client Xchat.

The Cinnamon configuration is delegated to the system settings panel which centralized all the system and user settings:



*Cinnamon: system settings panel*

### Technical details:

- Main applications:
  - Internet Navigator: [Firefox](#) (chap.6.6)
  - Internet communications: Icedove<sup>34</sup> & Pidgin<sup>35</sup>
  - Office suite: [LibreOffice](#) (chap.6.9)
  - Video player: Totem
  - Audio player: [Rythmbox](#) (chap.6.8)
  - System file manager: Nemo<sup>36</sup>
- Minimum RAM needed to start up: 400 MB
- Minimum RAM needed to surf the web: 490 MB
- Minimum user level: extreme beginner / beginner

Cinnamon project home page: <https://github.com/linuxmint/Cinnamon>

More detailed information on the CinnamonTeam <https://wiki.debian.org/CinnamonTeam>

<sup>34</sup> <https://wiki.debian.org/Icedove>

<sup>35</sup> <https://www.pidgin.im/>

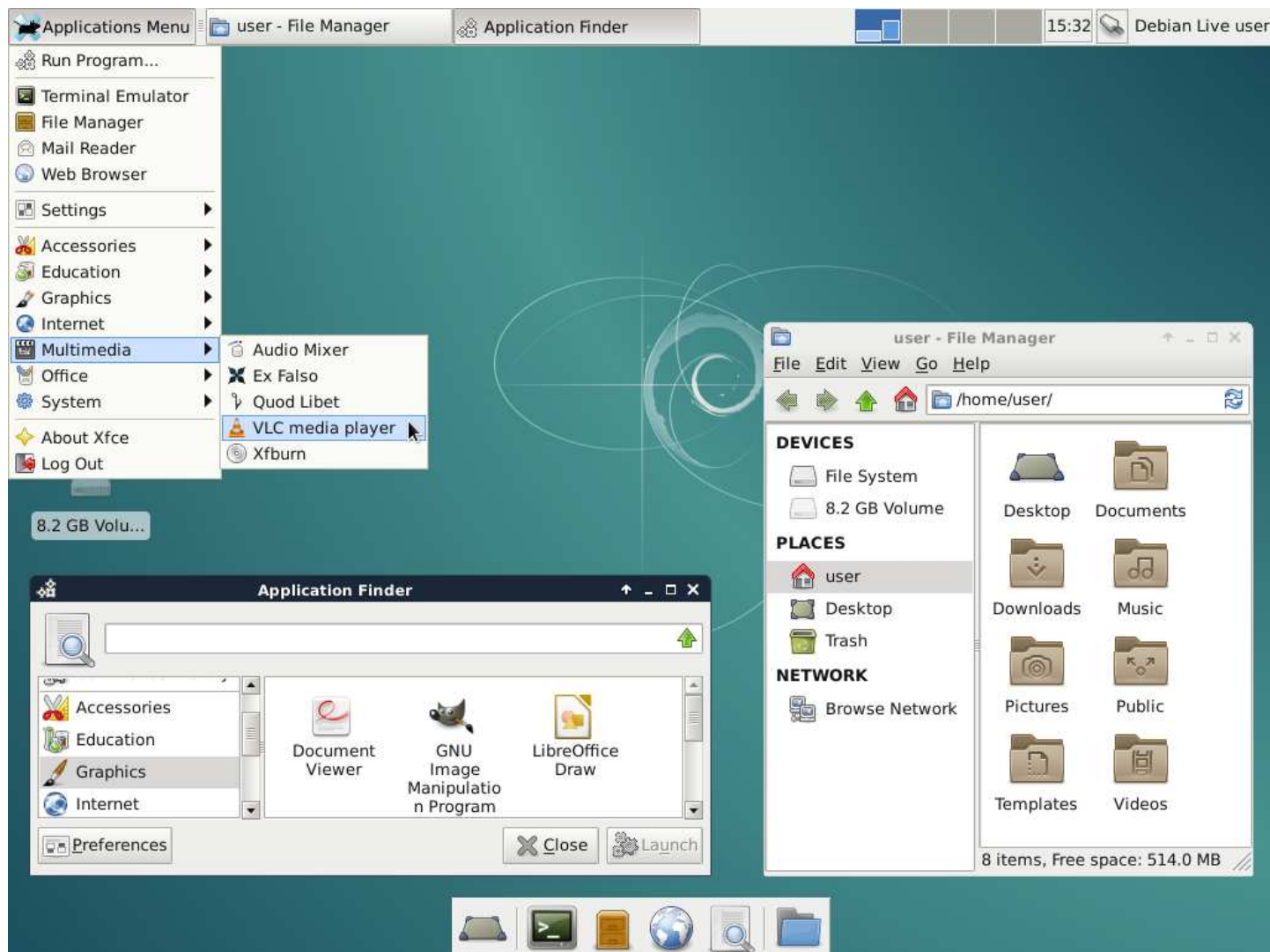
<sup>36</sup> [https://en.wikipedia.org/wiki/Nemo\\_%28file\\_manager%29](https://en.wikipedia.org/wiki/Nemo_%28file_manager%29)

## 4.2.5.Xfce

Xfce<sup>37</sup> is a lightweight desktop environment for Unix type operating systems. Its goals are to be fast, little greedy in machine resources, but visually attractive and user friendly. It is expandable, thanks to numerous available plug-ins, and embeds a volume control application (xfce4-mixer), its own window manager supporting transparency, shades ... (xfwm4), an integrated archive manager (thunar-archive-plugin), and disk, battery network, processor and memory monitorings, as well as various themes and miscellaneous pug-ins.



This interface is clear and traditional: you won't be surprised during your first meeting with it.



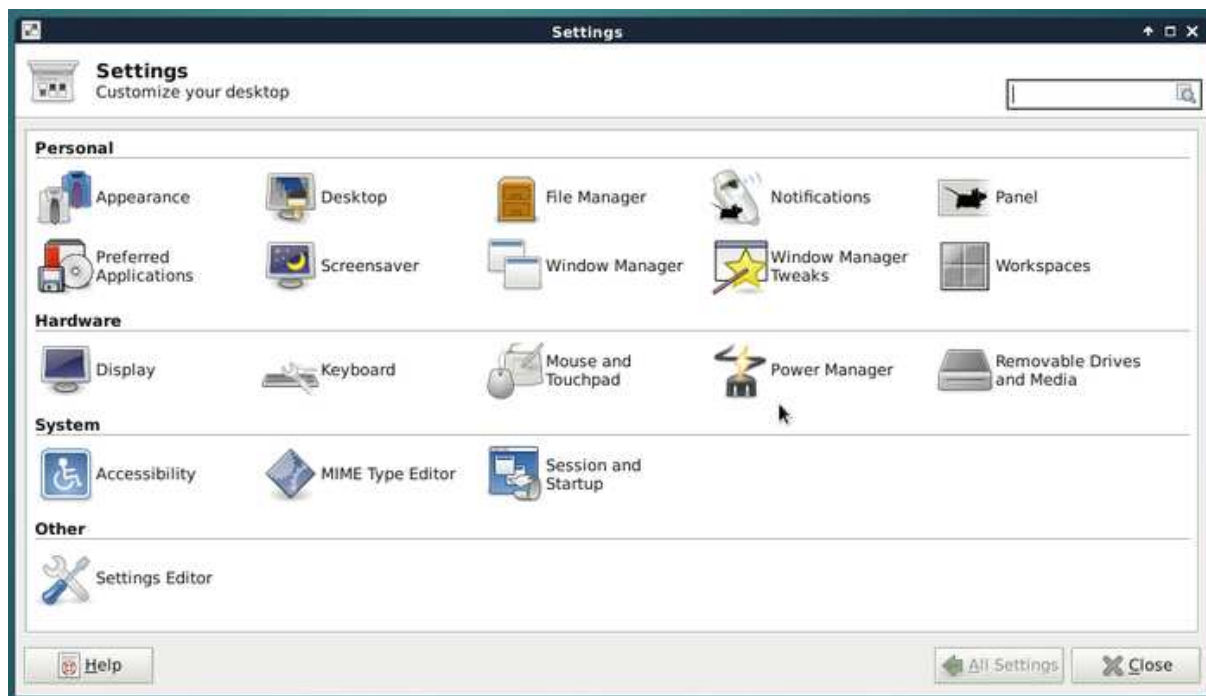
*The default Xfce under Debian 8*

Xfce has the significant advantage to be fully modular, because it is released with different independent plug-ins. Xfce also allows the integration of applications coming from other environments, and is able to launch, during the system start-up, the Gnome and/or KDE services by default.

<sup>37</sup> <http://www.xfce.org>

**It is a perfect environment for beginners**, offering a great stability, a complete graphical handling ("with the mouse only"), and evolution capabilities with no real limit.

Like the other previously seen environments, Xfce centralizes its configuration settings to ease the customization. Note that each elements can also be configured from its specific interface (like a right-click on the panel to add a new launcher, for example).



*The Xfce setting center on Debian 8*

### Technical details:

- Main applications:
  - Internet Navigator: [Firefox](#) (chap.6.6)
  - Office suite: [LibreOffice](#) (chap.6.9)
  - Video player: [VLC](#) (chap.6.7)
  - Audio player: Quod Libet<sup>38</sup>
  - System file manager: [Thunar](#) (chap.3.6)
- Minimum RAM needed to start up: 207 MB
- Minimum RAM needed to surf the web: 280 MB
- Minimum user level: extreme beginner / beginner

Xfce project home page: <https://www.xfce.org/>

More detailed information on the Xfce Debian wiki<sup>39</sup>

<sup>38</sup> <https://quodlibet.readthedocs.io/en/latest/>

<sup>39</sup> <https://wiki.debian.org/Xfce>



## 4.2.6.LXDE/Openbox

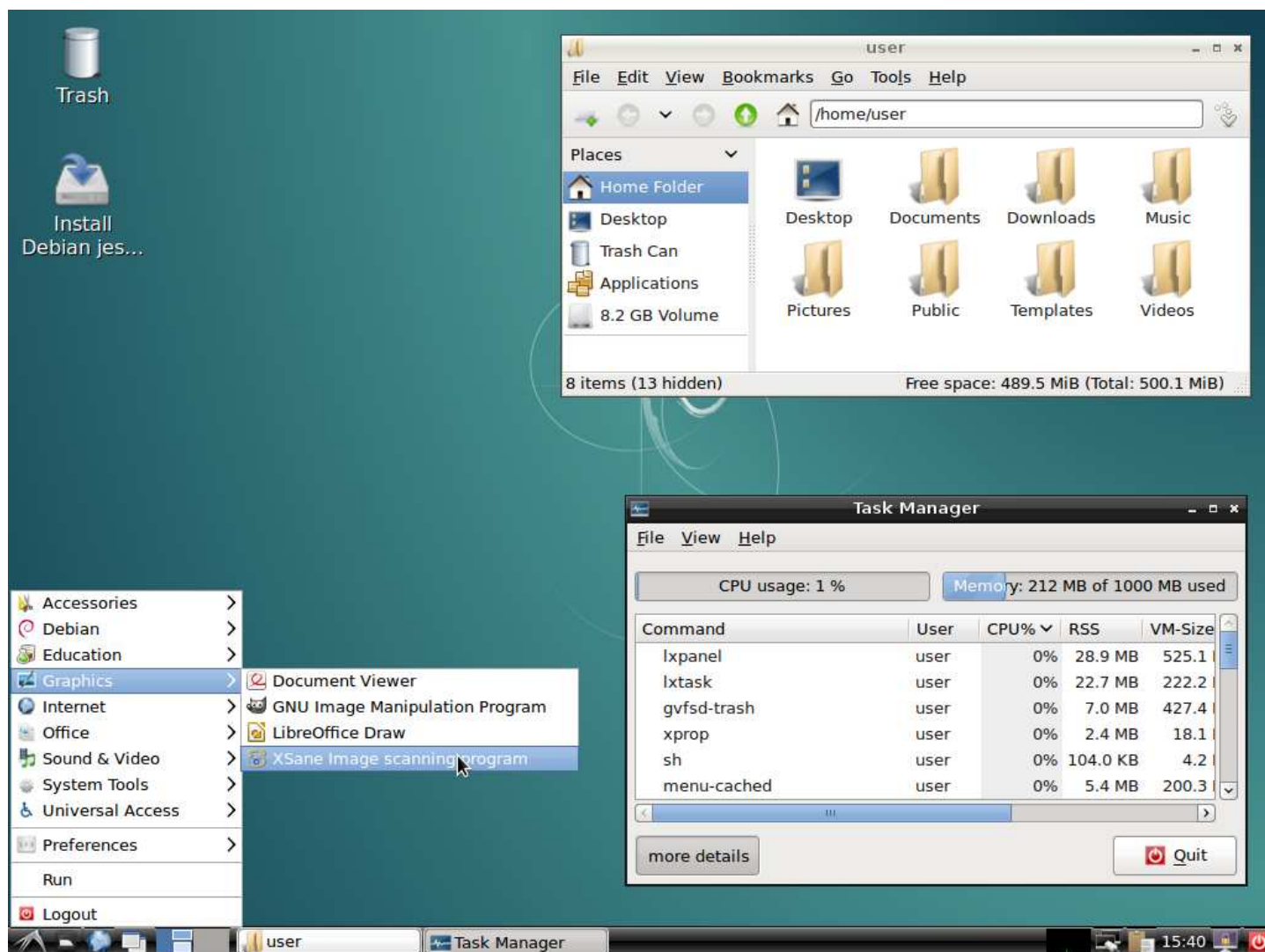
LXDE<sup>40</sup> LXDE1 is a free desktop environment for Unix like systems, and other systems which are compliant to the POSIX standard, like Linux or BSD (Berkeley Software Distribution ). The LXDE name is the acronym for "Lightweight X11 Desktop Environment".



And as its name implies, the goal of this project is to propose a fast and lightweight desktop environment.

As opposed to other desktop environments, the various components are not tightly linked together. Instead they are rather independents and each of them can be used without the others, with very few dependencies (packages used during the installation).

LXDE uses by default Openbox<sup>41</sup> as window manager, and PCManFM<sup>42</sup> as system file manager.



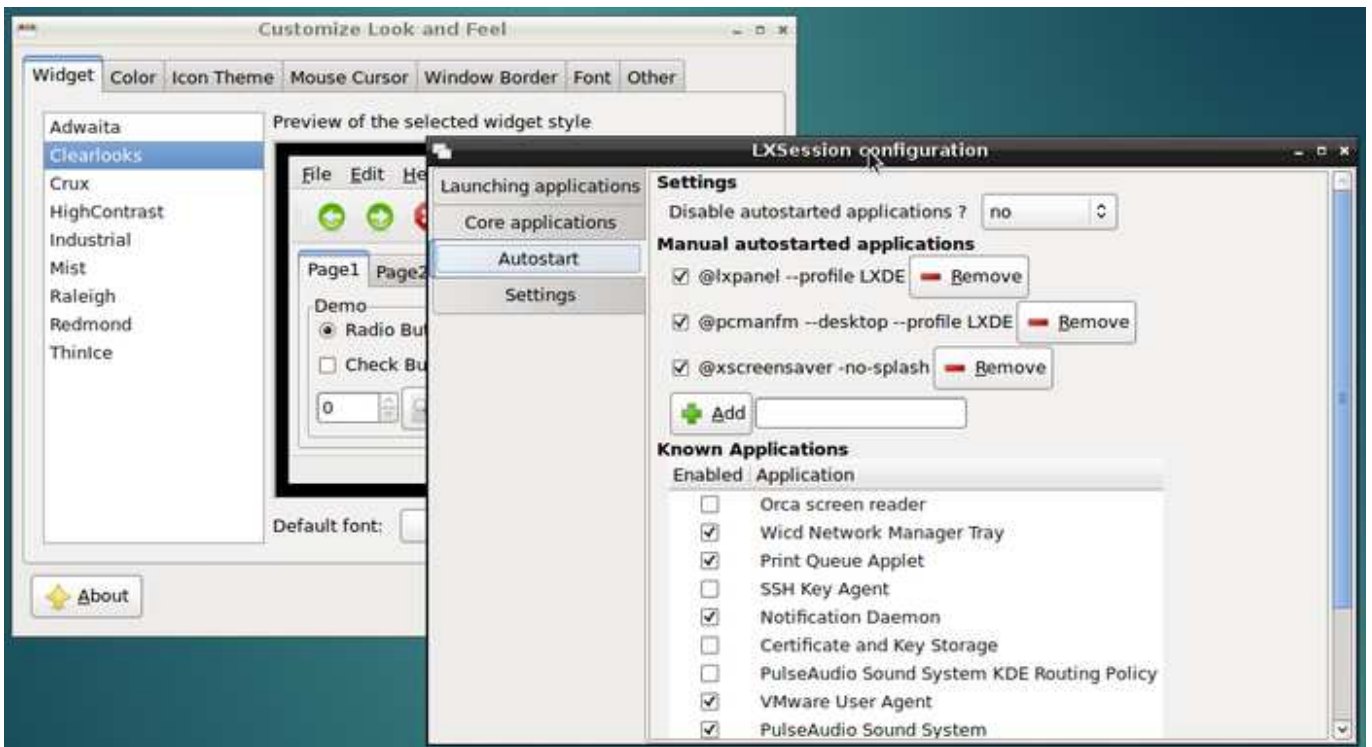
*The LXDE desktop and PCManFM on Debian 8*

<sup>40</sup> <http://wiki.lxde.org/fr/Accueil>

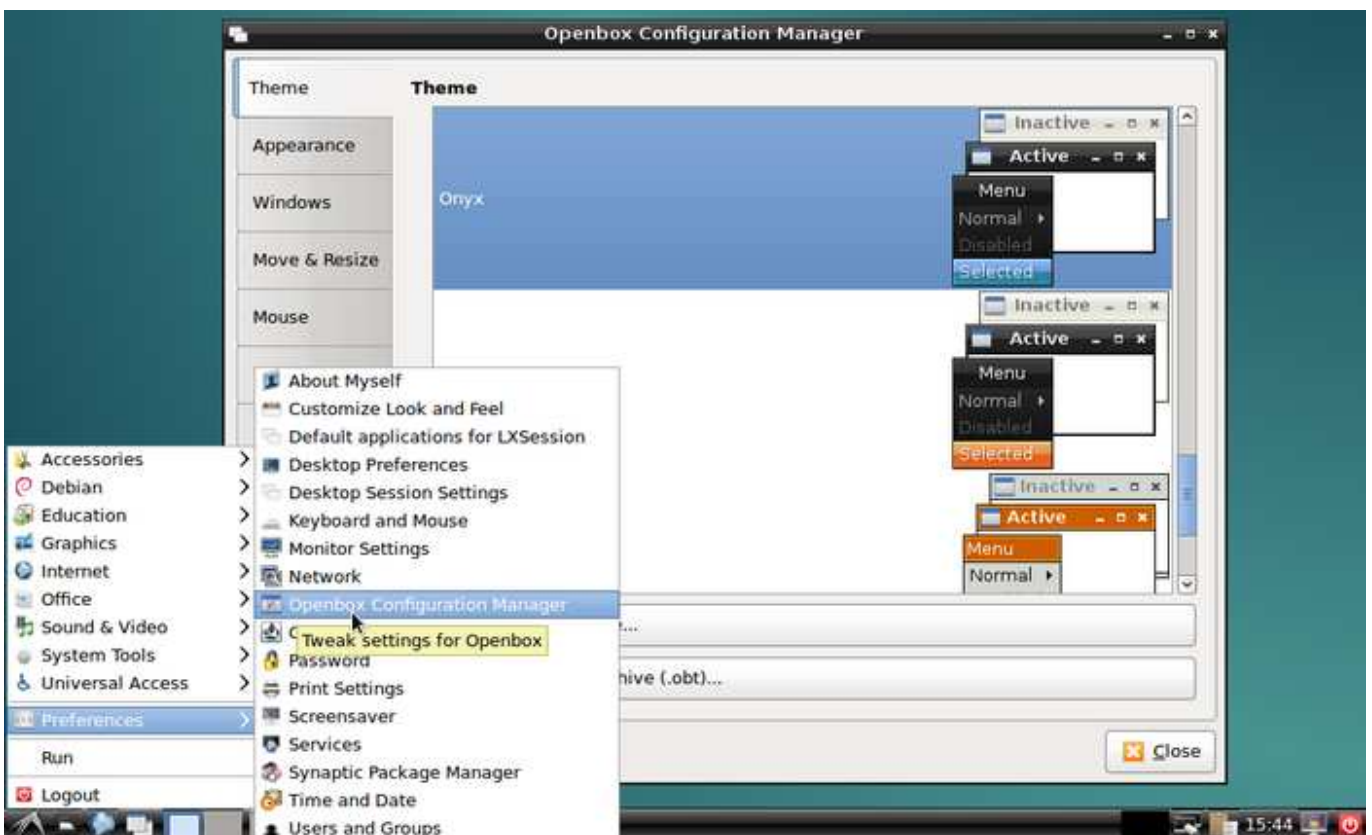
<sup>41</sup> [http://openbox.org/wiki/Main\\_Page](http://openbox.org/wiki/Main_Page)

<sup>42</sup> <https://wiki.lxde.org/en/PCManFM>

The LXDE design model implies that the configuration of each element needs to go through an interface designed for this specific application. You will not find a "Control Center" akin to the Gnome one, but rather a suite of lightweight tools to customize your environment.



*LXDE Appearance and Session configuration panels on Debian 8*



*Preference menu and Openbox configuration tool on LXDE*

Note that the elements being configured, display their modifications on the fly which makes the customization very easy.

LXDE is notably light, making it an ideal solution for small hardware configurations and computers refurbishing, but it requires a little more time to learn and use its different elements.

Having said that, the LXDE/OpenBox couple will let you earn your first stripes on Debian as a "g33k" (this is the way the geeks<sup>43</sup> write sometime their own name).

### Technical details:

- Main applications: [Firefox](#) (chap.6.6)
  - Office suite: [LibreOffice](#)(chap.6.9)
  - Video player: Gnome Mplayer, the graphical interface of MPlayer<sup>44</sup>
  - Audio player: LXMusic<sup>45</sup>
  - System file manager: PCManFM
- Minimum RAM needed to start up: 120 MB
- Minimum RAM needed to surf the web: 190 MB
- Minimum user level: beginner / experienced

LXDE project home page: <http://lxde.org/>

More detailed information on the LXDE Debian wiki<sup>46</sup>

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43 <http://www.catb.org/jargon/html/G/geek.html>

44 <https://en.wikipedia.org/wiki/MPlayer>

45 <https://wiki.lxde.org/en/LXMusic>

46 <https://wiki.debian.org/LXDE>



About time to take the plunge ...

The following sections describe the two modes of the classical installation:

- **Single-boot installation:** Debian will be the only distribution residing on your hard disk and the install process will be automatic (assisted partitioning, with the whole Debian system in a single partition).
- **Dual-boot installation:** Debian will be installed next to another system (GNU/Linux or Windows®) in automatic mode (assisted partitioning of the free space, with the whole Debian system in a single partition).



**This manual is intended for beginners**, and does not cover all the install capabilities of the Debian system. If you are in a particular situation not covered here, look at the on-line Debian installation manual<sup>47</sup>.

For installations in a different context (separated /home partition, Logical Volume Management, Encryption, Multi-boot, etc.) you will find the links to the specific documentations [in chapter 5.5](#).

### 5.1.Before installing

---

Most of the users never had to install a system previously (computers are usually delivered with an operating system already installed) ... And that could be a little freaking ... Take the time to be well prepared, take a breath of fresh air, and everything is going to be all right 😊 .

#### 5.1.1.Hardware compatibility

---

One of the first question when you wish to install Debian concerns the hardware compatibility:  
*is Debian going to run smoothly on my computer ??*

A fast and simple way to check this out, is to type "Debian" followed by your machine type, within your favorite search engine: look for "Debian IBM T60", for example. In case of doubts, don't hesitate to ask on a support-and-help forum (chap.1.5).

In order to be really sure, you can use a distribution offering a test capability through a "live" session, like [Debian live](#) (chap.5.2.1.4).

---

<sup>47</sup> <https://www.debian.org/releases/stable/installmanual>

## 5.1.2.Backing up your data

---

If you anticipate to overwrite your hard disk with Debian, verify first that none of your personal data is in there: everything will be lost.

Also, if you anticipate to install Debian in "dual-boot" mode, next to another system, remember to back-up your data before you start messing with the partitions:

- [visit the Dual-boot section](#) (chap.5.4)
- [visit the section on backing-up your data](#) (chap.9)

## 5.1.3.Disk space requirement

---

A Debian distribution occupies 4 GB in average, but you should still plan for a minimum of 6GB, to be able to download the updates. For greater safety and if you plan to add few applications, reserve 12 GB and you will be comfortable.

## 5.1.4.Installation time duration

---

**To install Debian** from a "net-install" ISO requires some time because the software is downloaded from the Debian servers during the process: the time duration needed for the installation then depends on the speed and quality of your Internet connexion and may vary from 40 up to 90 minutes.

**To install a derivative** or from a Debian Live support, takes far less time (around 20 minutes, depending on your computer power), because the packages are already included within the downloaded ISO image. However, a system update will then be necessary after the installation, because the embedded packages are dating back to the time when the ISO image was burned.

## 5.1.5.Preparing the hard disk

---

If you anticipate to install Debian as the unique operating system on your machine, you don't have to do anything special: the embedded installer includes the tools needed to prepare (I.E. to format) the disk(s)

If you anticipate to install Debian next to another operating system, take good care of preparing your hard disk (like defragmenting the Windows® partition for example). More details in [the section dedicated to Dual-Boot](#) (chap.5.4).

## 5.2. Downloading Debian

---

Debian ISO images are available for each desktop, in several architecture declinations, and supported by various media like netinst, CD, DVD, ...

### 5.2.1. Which image to download?

---

Here after the different ways to obtain a Debian ISO image. If you have other questions, read the Debian FAQ: <https://www.debian.org/CD/faq/index.en.html>

#### 5.2.1.1. Debian Netinst

---

If your Internet connection is stable, we encourage you to download an ISO image of type "netinst" multi-arch which includes everything you need to install Debian on any modern 32 or 64 bits (i386 or amd64) computer, with all the desired options: you will be able choose your main interface during the installation process. This is the ISO image used in the installation section of this manual.

To get hold of the "Netinst" ISO image, you can visit this page:

<https://www.debian.org/CD/netinst/index.en.html>. You will find there the torrent links (to share and relieve the main servers) and the direct "HTTP" to the ISO images depending on your architecture.

Below the torrent link to a 64 bits ISO image:

Official netinst images for the "stable" release

Up to 300 MB in size, this image contains the installer and a small set of packages which allows the installation of a (very) basic system.

netinst CD image (via [bittorrent](#))

[amd64](#), [arm64](#), [armel](#), [armhf](#), [i386](#), [mips](#), [mipsel](#), [powerpc](#), [ppc64el](#), [s390x](#)

netinst CD image (generally 150-300 MB, varies by architecture)

[amd64](#), [arm64](#), [armel](#), [armhf](#), [i386](#), [mips](#), [mipsel](#), [powerpc](#), [ppc64el](#), [s390x](#)

#### 5.2.1.2. Debian on CD/DVD

---

To obtain a classic bootable ISO image, pre-configured with a specific desktop, you can look at this page: <https://www.debian.org/CD/http-ftp/index.en.html>.

This ISO file does not let you test your system, through a "live" session, to check the hardware compatibility with your PC.

It only allows to install Debian on your computer, which is already cool, and let you install directly your preferred desktop, without a stable Internet connection at your disposal 😊.

#### 5.2.1.3. Debian torrent

---

To relieve the main Debian servers and, at the same time, share your ISO image with other community members, you can use the BitTorrent<sup>48</sup> protocol.

---

<sup>48</sup> <https://en.wikipedia.org/wiki/BitTorrent>

To obtain the list of the available "torrents", you can visit this page:

<https://www.debian.org/CD/torrent-cd/index.en.html>.

#### 5.2.1.4. Debian Live

---

Other images, called "autonomous", are also available: they let you check your particular environment through a "live" session. They include also an installation launcher on the desktop, which, once your test is completed, let you install Debian directly from the session you are in. To get hold of a live image, you can visit this page: <https://www.debian.org/CD/live/index.en.html>.



**The principle of the Live CD** is the capability to use/test a distribution on a computer without any risks for your personal data. The Live also let you check the distribution compatibility with your hardware.

The Debian software is "compressed" within a special file (the 'squashfs.filesystem' file) and embedded in the downloaded ISO image. This same special file is "uncompressed" during the Live utilization, and will later be copied on your hard disk during the installation process.

#### 5.2.2. Verifying the ISO image integrity

---

In order to verify the integrity of the image, Debian computes the "**md5sum**" (short form of "md5 check sum"). This check can be used on all kind of data, but is particularly useful when downloading ISO image.

##### 5.2.2.1. Checking md5 on GNU/Linux

---

The **md5** checking tool is integrated in almost all the GNU/Linux distributions. To verify the md5 checksum of a file, just type the following command in a terminal emulator, including the path of the file to be checked:

```
md5sum debian-xx-amd64-i386-netinst.iso
```

which will return a result of the type:

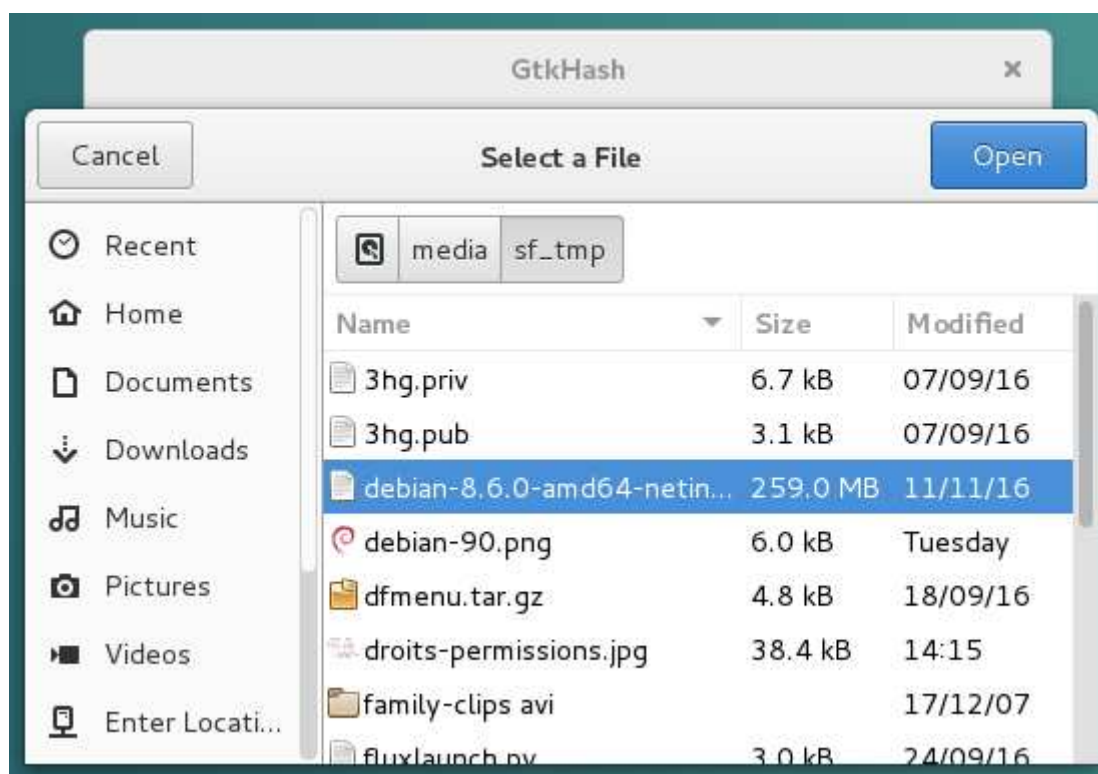
```
6753c353cef5f5336079d94562ad15c3  debian-xx-amd64-i386-netinst.iso
```

to be checked against the md5sum given by the download site.

##### Verification in graphic mode ("with the mouse").

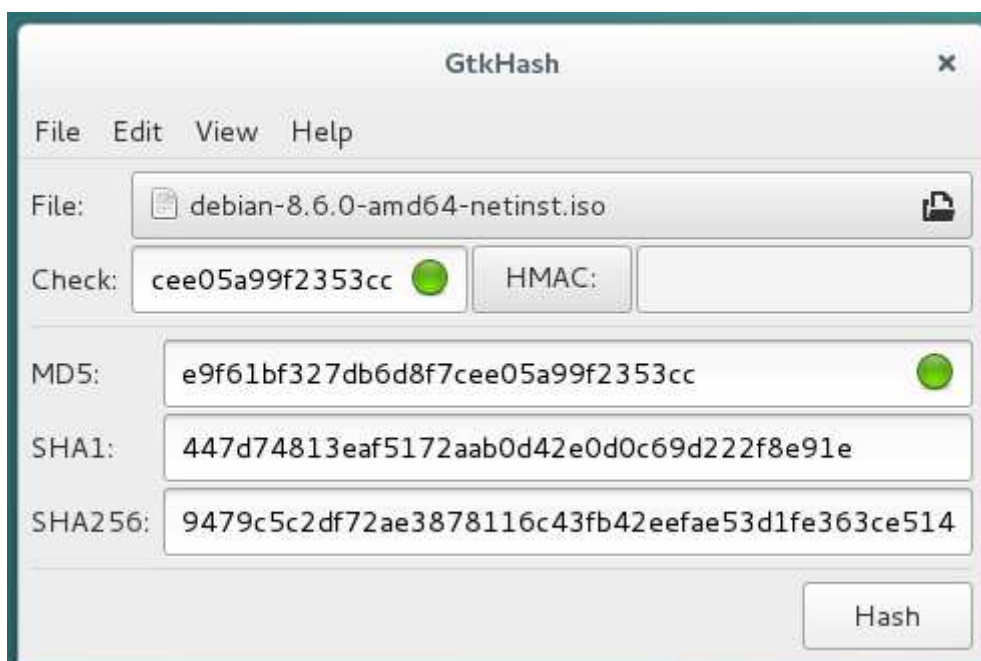
The Gtkhash program let you also check the md5 signature, but with a graphical interface.

- Install 'gtkhash' (using a Terminal command or the Synaptic package manager).
- Launch GtkHash from the application menu.
- In the *File* field: look for the ISO file to be checked.



*GTKHash: selecting the ISO image file to be checked*

- In the *Check* field: paste the checksum retrieved from the Internet site.
- Click on the *Hash* button.
- The digital fingerprints (I.E. checksums) will show-up for each hash functions (MD5, SHA1, SHA256,...)
- If the integrity checksum is exactly matching, a (green) validation symbol will be displayed at the right of the field, and in the corresponding one in the computed hash field.



*GTKHash: verifying the md5 checksum*

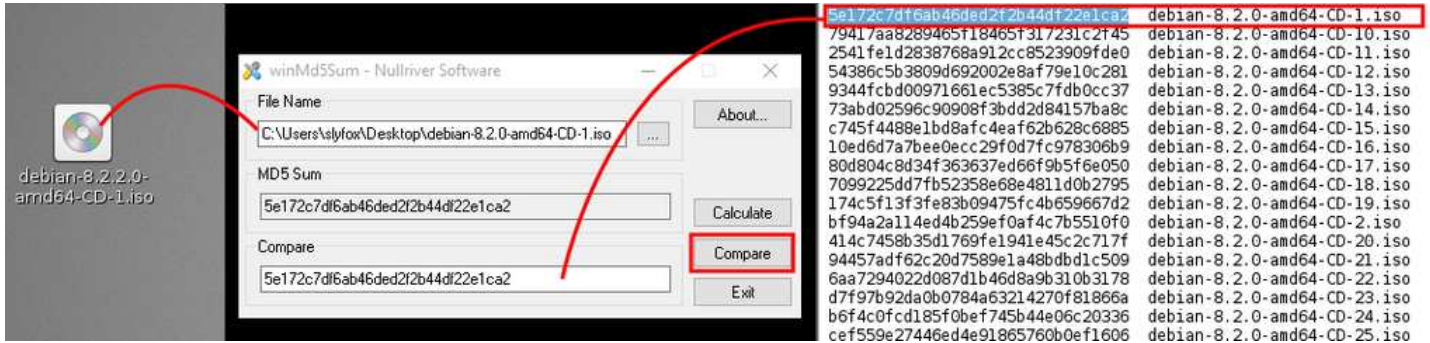


### 5.2.2.2.Verifying md5 on Windows®

---

To graphically verify the md5 checksum using a Windows® PC, you can use the WinMd5Sum software, to be downloaded here: <http://www.nullriver.com/downloads/Install-winMd5Sum.exe>

Once installed, launch it. A small graphical interface is open. In the "File Name" field paste or open the Debian image.iso downloaded file. In the "Compare" field, make a copy/paste of the md5 checksum retrieved from the site given by Debian (see above) and click on the "Compare" button.



*the winMd5Sum software in action on a Debian ISO image*

That's all. The md5 checksum is computed within a minute or so (depending on the size of the file) and if found to be correct, you can proceed to the next step.

### 5.2.3.ISO transfer on a CD/DVD

---



To burn your Debian ISO on a CD/DVD on a computer under GNU/Linux, simply open your favorite burning application, indicate the path of the 'debian-xx-iso' downloaded file, and start the media burning.

For the Microsoft® users, read this tutorial made for the Windows®7/8 systems:

<http://www.digitalcitizen.life/burning-iso-or-img-disk-images-windows-7>

### 5.2.4.ISO transfer on a USB key

---



The USB key is the most convenient way to install GNU/Linux distributions, because you can change them as often as you want and even test several of them in parallel.

The key also secures your tests because once the session is over, no trace is left on the key nor on the computer which booted from it 😊.

#### 5.2.4.1.From a GNU/Linux system

---

##### With a terminal: the recommended method.

Plug your USB key in and launch a terminal in "root" administrator mode ([see chap.3.8.3](#)). We are going to identify the USB key to be used, with the command:

```
blkid
```

which returns information of this type:

```
/dev/sda1: LABEL="system" UUID="3d378712-1b6e-4f66-b9e8-2a6673c62199"  
TYPE="ext4"  
/dev/sdb1: UUID="F9B8-E691" TYPE="vfat"
```

Here, our key is identified as UUID="F9B8-E691", is formatted in "vfat" and includes the **sdb1** partition. Note carefully this **sdb1** value, to avoid erasing by mistake a partition on your internal hard disk (here **sda1** is another partition on this disk).

The Debian ISO file should be located in the Downloads folder. Let's move in there to act on this ISO file (the "\$Home" variable replaces the address "/home/your\_loginID"):

```
cd /$HOME/Downloads
```

Now, we are going to transfer the ISO content to the USB key, thanks to the "dd" command. **Take good care of naming the USB key "sdb" and not "sdb1"** (in our example), because it is the disk device name which is requested, not the partition, and don't forget to change the xx in the 'debian-xx.iso' file by the corresponding version number.

Within a terminal in "root" administrator mode ([see chap.3.8.3](#)):

```
dd if=debian-xx.iso of=/dev/sdb bs=4M && sync
```

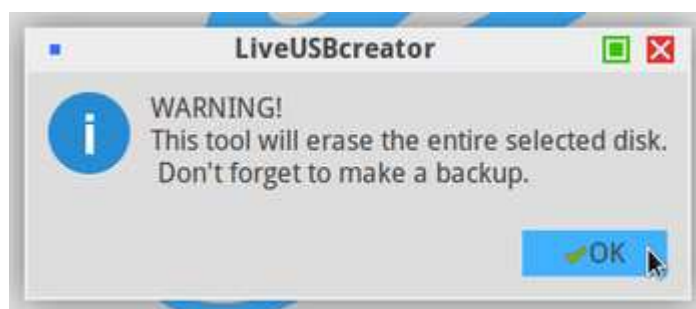
The transfer duration on the USB key is obviously depending on the size of the ISO and on the transfer rate of your USB port. This operation usually lasts from 10 to 15 minutes without any sign of activity within the terminal window. Once the transfer is completed, the control will be given back to you, that is a new command prompt line will be displayed in the terminal.

### With liveUSBcreator: the graphical way

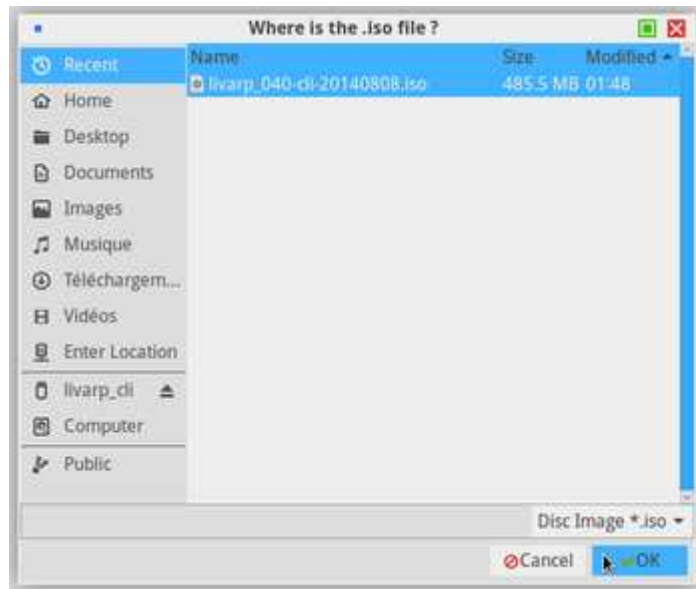
Thuban and coyotus have made a little graphic tool to transfer ISO image to an USBkey easily.

LiveUSBcreator is available in binary package here: <https://lescahiersdudebutant.fr/tools/>

- **launch:** liveUSBcreator is launched from the Applications List or menu, "System" section
- **warning:** the scary message:



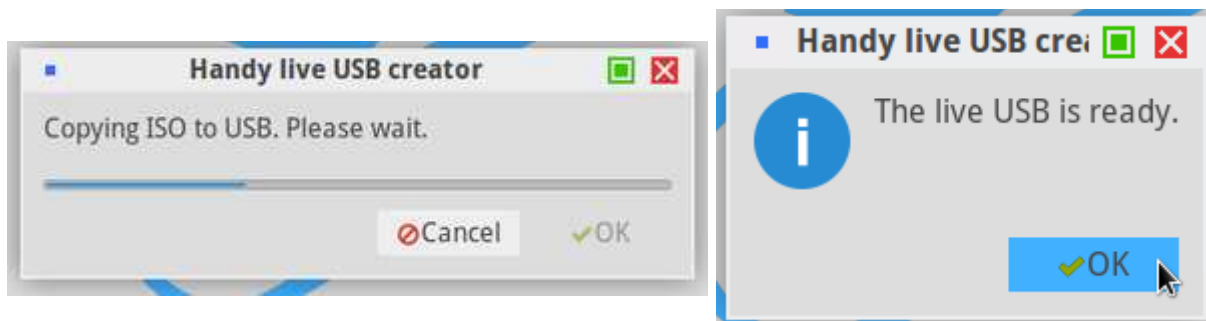
- **where is the ISO:** first, you have to choose the ISO file to transfer:



- **where is the USBkey:** select the removable drive to copy the ISO to. **WARNING:** liveUSBcreator will erase all the data on the USB to copy the ISO file. If doubts, take a screenshot then come to [a support forum](#) (chap.1.5).



- **copying ISO:** if you checked the previous step, the transfer begins. You can follow whole process. A message will be displayed when your USB live is ready to use:



You can now use this USBkey to start [installing Debian](#) (chap.5) 😊!

#### 5.2.4.2. Using Rufus on a Windows® PC

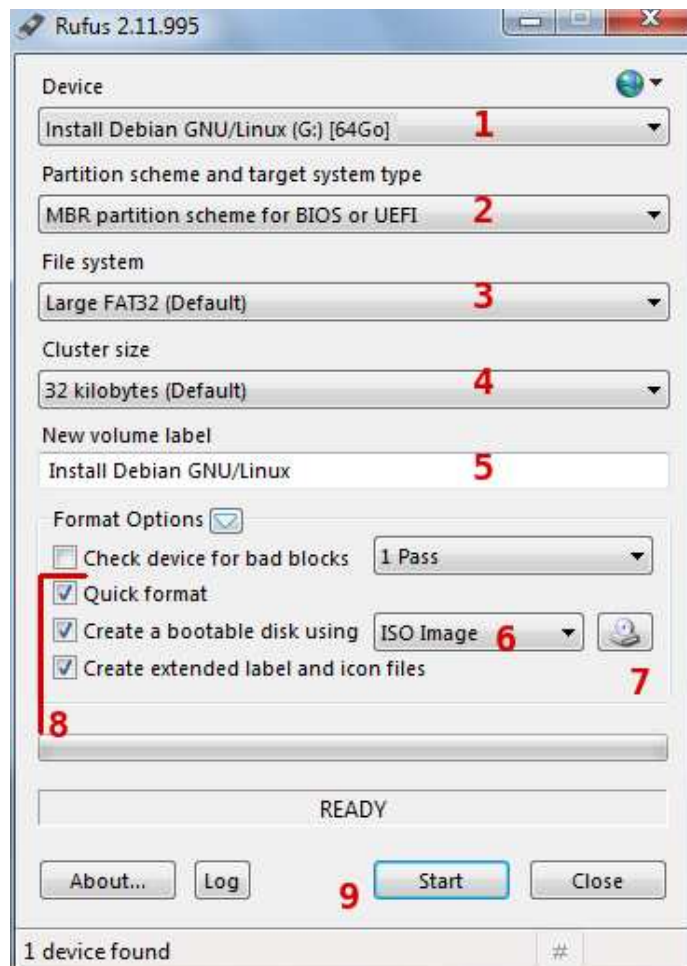
**Rufus** is a software utility allowing you to format and create bootable USB mediums, like USB keys, Flash memories, etc ...

This software is recommended to transfer ISO from a Windows® PC.

- First, plug your USB key into your computer

**All data on this key will be erased by Rufus. If you have important data in there, we strongly suggest you copy them immediately on another medium.**

- Download the Rufus software from the dedicated page: <https://rufus.akeo.ie/> .
- Launch Rufus and fill the fields in like this:
  1. "Device": select the USB key ready to receive the new distribution.
  2. "Partition scheme and target system type": select the option "MBR partition scheme for BIOS or UEFI"
  3. "File system": leave the option "Large FAT32" (Default)".
  4. "Cluster size": leave the option "xxx kilobytes (Default)".
  5. "New volume label": enter, for example, "Install Debian GNU/Linux".
  6. "Create a bootable disk using": select the option "ISO Image" (if you did download an ISO file, which is usually the case).
  7. Click on the CD icon and pick the ISO file recently downloaded.
  8. Tick the options "Quick format", "Create a bootable disk", "Add extended label and icon files"
  9. Click on the "Start" button to launch the process.



Wait for a little while, and you will have at your disposal, a brand new Debian bootable USB key !  
You just need to reboot your computer from this bootable key, and launch the installation.

## 5.2.5. Booting from the CD/DVD or the USB device

---

To proceed now with the Debian installation, using your CD/DVD or USB medium, you need to ask the computer to boot from this device. If your computer does not boot automatically from the desired installation medium, you need to access the "Boot menu" or modify the "Boot order" in the BIOS.

Some computers have a function key that let you boot directly from a peripheral device, without having to modify the BIOS parameters. Usually, but not always, pressing the F12 key at start-up gives you access directly to the boot options. On the other end, to access the BIOS configuration you need to tap one key like DEL, ESC or F2 during the start-up phase.

More information at: [http://www.boot-disk.com/boot\\_priority.htm](http://www.boot-disk.com/boot_priority.htm)

### 5.2.5.1. The Boot Menu

---

As mentioned above, the key to access the Boot Menu at start-up may vary from one computer to another. This specific key as well as the key to access the BIOS configuration is usually indicated during the boot sequence for one or two second (more details at [howtogeek](http://howtogeek.com)<sup>49</sup>)

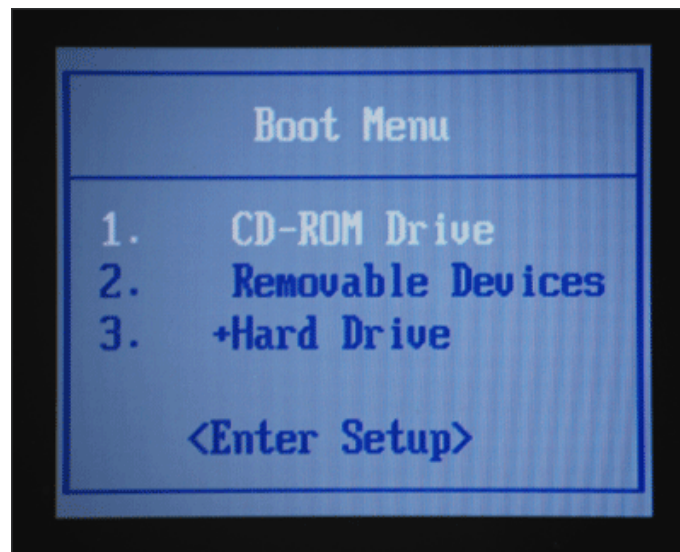


---

<sup>49</sup> <http://www.howtogeek.com/129815/beginner-geek-how-to-change-the-boot-order-in-your-computers-bios/>



The boot menu let you select the boot peripheral without going into the BIOS configuration



Use the keyboard direction arrows to select the right peripheral (in this example the USB key is the "Removable Devices").

### 5.2.5.2. BIOS configuration

---

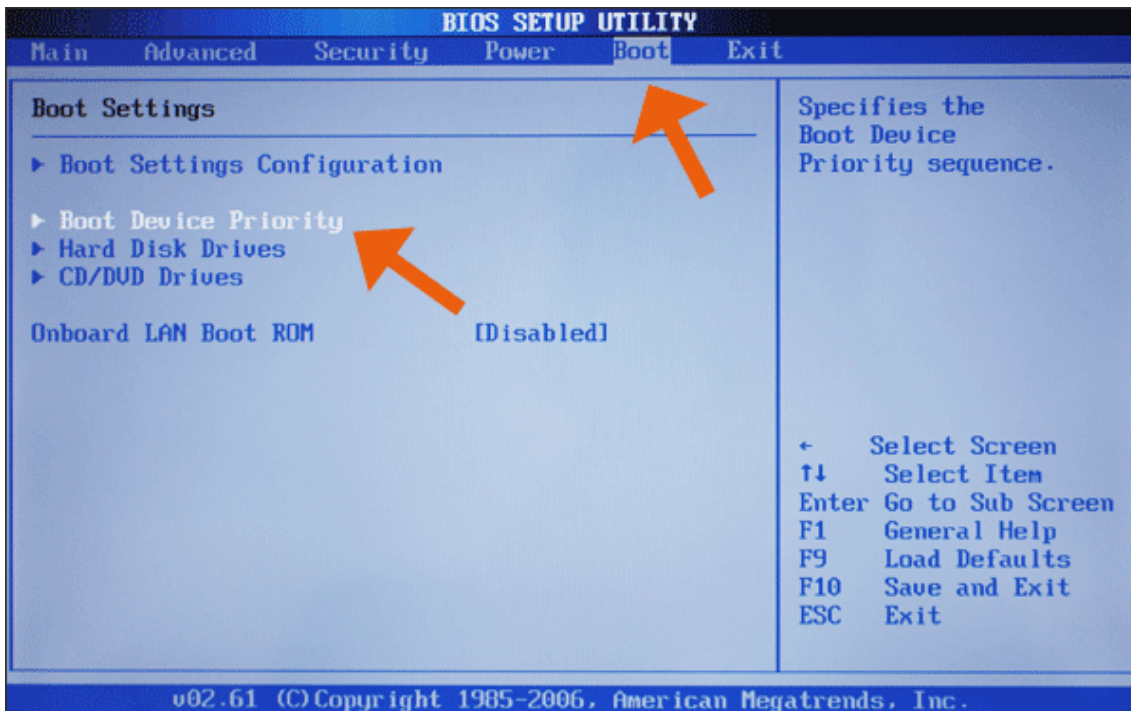
If the Boot-order menu is not available, you must modify the Boot priority inside the BIOS.

Once entered in the BIOS settings, the operations to execute are very simple, but you should be extremely careful to not modify other parameters. Hopefully, in case of mistake, the program let you quit without recording the changes, by pressing the ESC (or Escape) key. Other keys like F9 or F10 will let you reload the default parameters, or to record the changes before quitting:

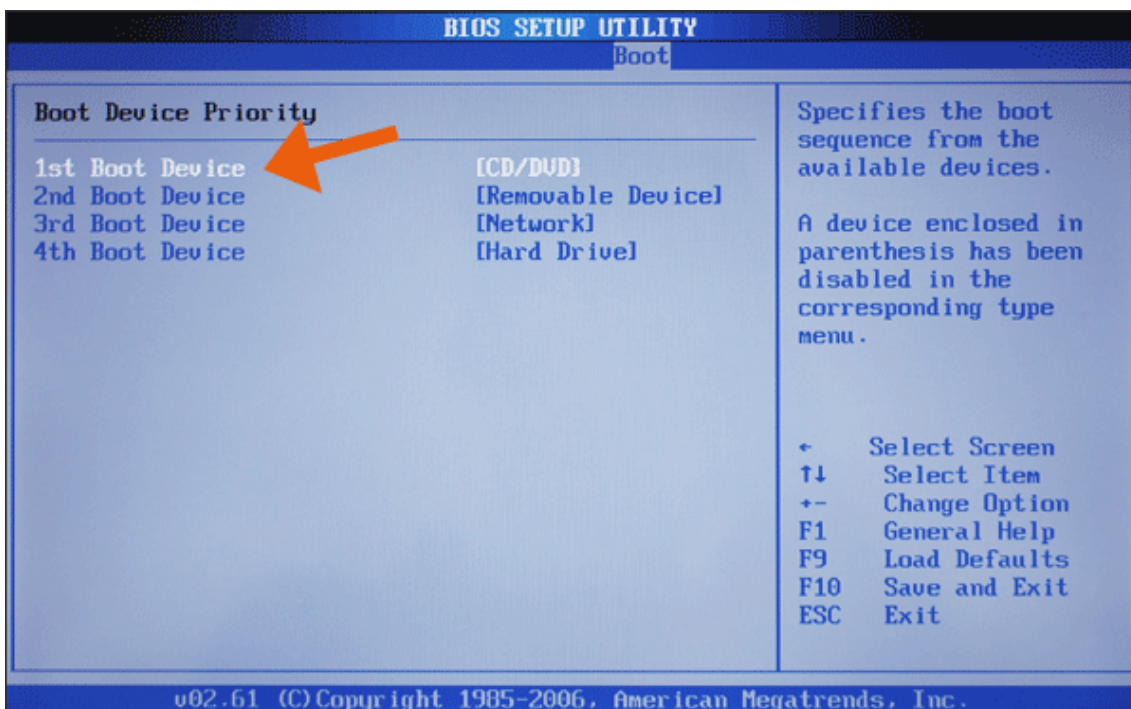
- **F9**: reload default parameter (or factory setting)
- **F10**: Record the modifications and quit
- **ESC**: cancel the modifications and quit.

The navigation is done by using the directional arrows on the keyboard. One validate or enter inside an option using the **ENTER** key. In most of the BIOS models, you move until the **Boot** menu is highlighted, then find the peripheral selection for the boot (boot device, boot sequence, boot

priority) and finally put the various devices in the first, second, third etc ... positions, reflecting the boot order you wish.



*BIOS: reaching the Boot Device Priority menu*



*BIOS: setting the Boot order*

Hereafter some peripheral names, like they might appear in your BIOS settings:

- A **Cd-Rom** reader will usually appear as **CD/DVD** or **CD-ROM**
- A **Hard disk** will usually appear as **HDD** or **HARD DRIVE** or **HARD DISK** or even **IDE~ ...**
- A **USB** peripheral will usually appear as **USB DRIVE** or **USB DEVICE** or **Removable Device**.

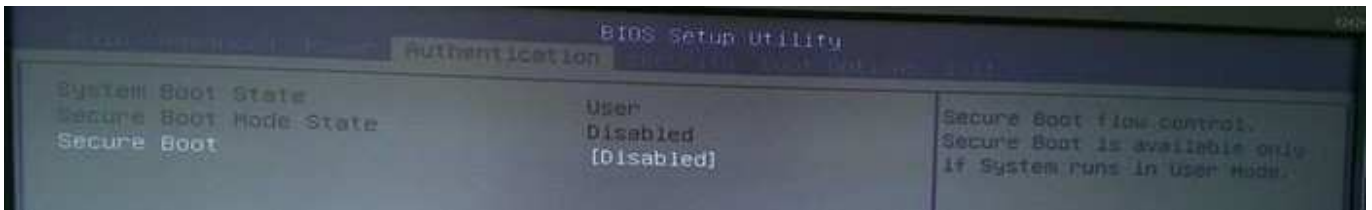
### 5.2.5.3.BIOS/UEFI/Secure Boot configuration

If your machine uses a BIOS/UEFI equipped with the wonderful "Secure Boot", the handling is slightly different.

Each manufacturer has its own UEFI, and the following images and explanations might be different at your place.

#### Disable the secure boot

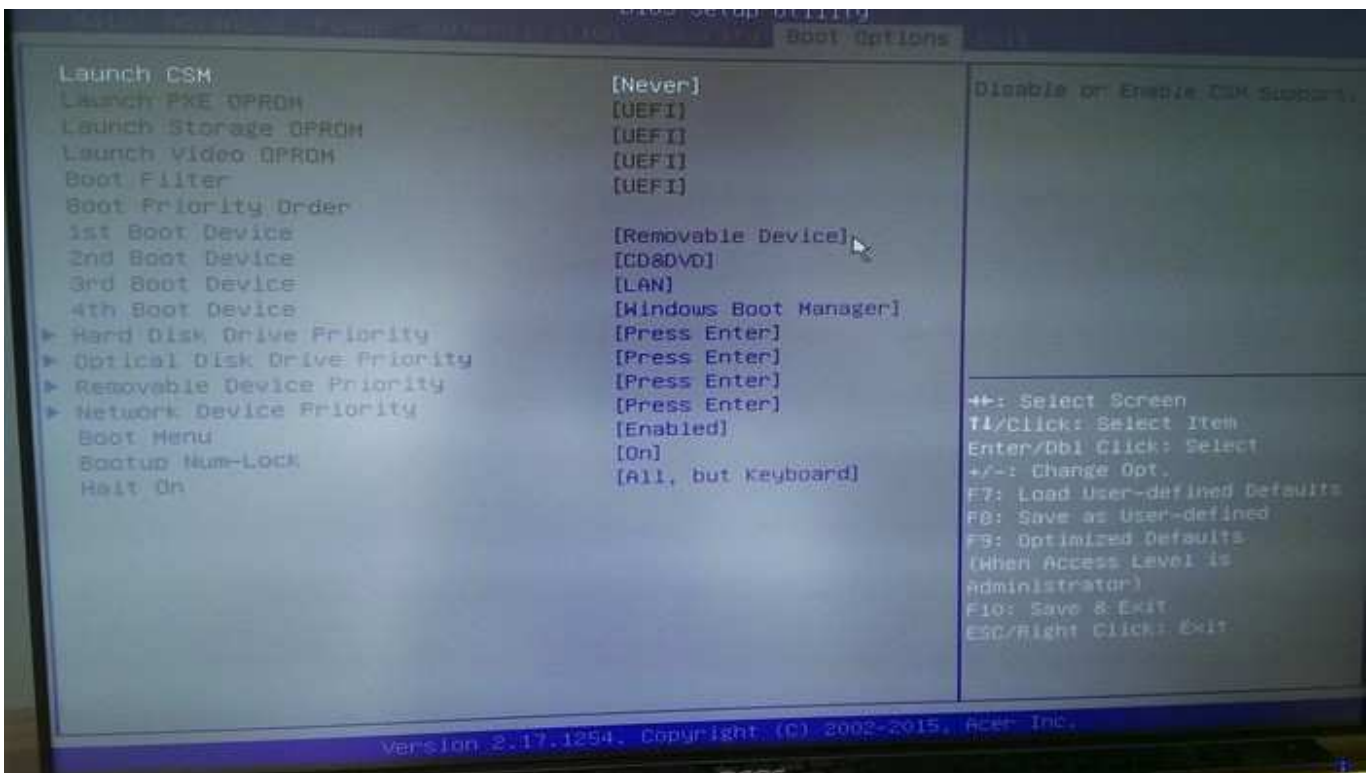
Using the mouse or the navigation arrow keys, select the "Security" or "Authentication" tab. Verify that the "Secure Boot" is "Disabled".



*SecureBoot: Disabling this option*

#### Change the boot order

Now we must change the boot order so that the computer starts first from the USB (or the DVD). Click on the "Boot" tab and modify the order, if necessary, so that your medium becomes the first of the list.



*SecureBoot: Boot order setting*

Now, you save your changes and you start the Debian installation.




## 5.3. Single-boot installation

---



Here comes the long-awaited moment, the actual installation of the Debian GNU/Linux system on your machine ... Are you ready to begin the journey ?

Hereafter a visual step by step explanation on how to easily install Debian, using the graphical installer. This method erases the whole disk and installs Debian as the unique operating system on your machine. The ISO image is of the type "netinst".

The Debian installer displays an explanation at every step of the process: with GNU/Linux  there is no advertising, so please take few seconds of your time to read the little messages which talk about your future system 😊 .

### 5.3.1. Starting the installation

---

When the installer begins, we select the installation mode:



If your motherboard boots under UEFI, the display might be slightly different:



More information on UEFI in the Debian wiki<sup>50</sup>.

During the start-up, the installer proposes a choice of several installation modes:

- The **Install** mode proposes a text in gray color on a blue background, and cursor move possible only by using the keyboard arrows, the TAB key and the Space bar to tick options on/off.
- The **Graphical Install** mode offers a prettier interface, enabling the mouse usage.

Each installer pane displays a clear explanation message. When you don't know the answer, take the default setting. However, pay great attention during the partitioning phase, since this operation could erase the existing data on your hard disk(s).

## 5.3.2. Selecting your language and your geographical location

### 5.3.2.1. Select your language

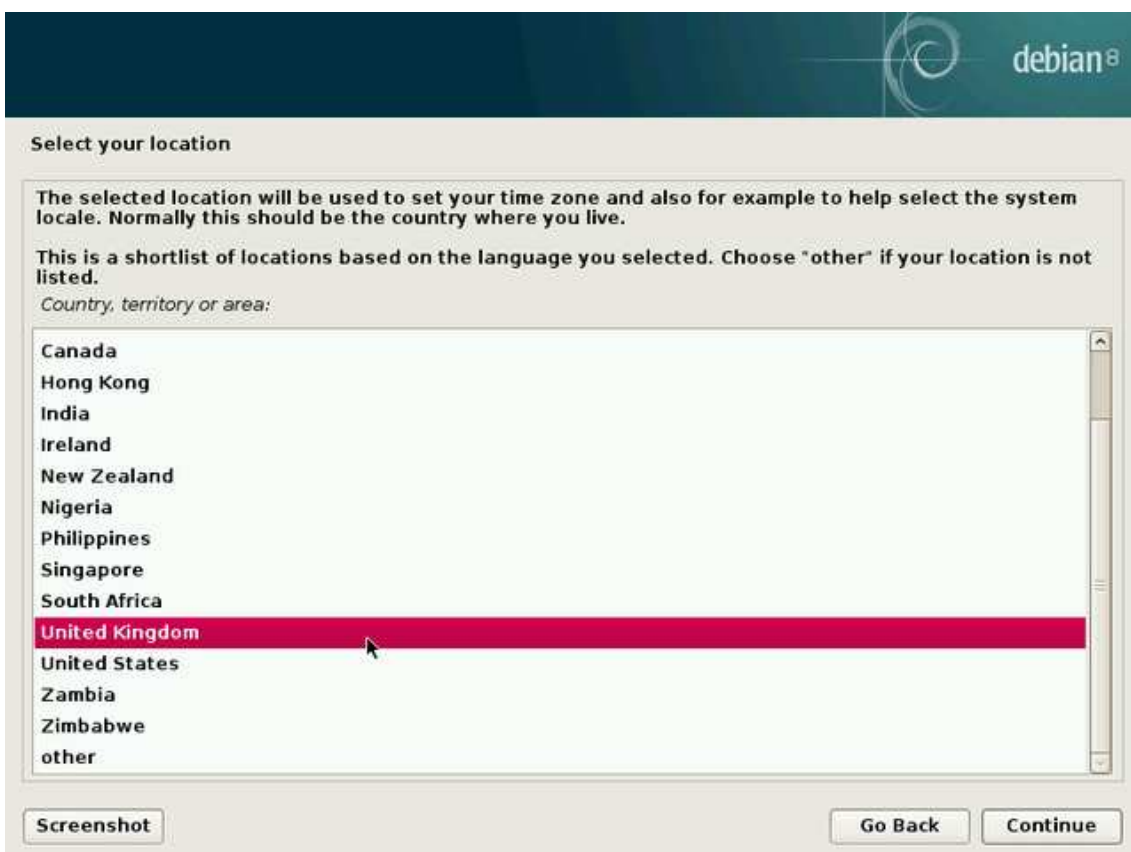
Selection of the system language by default: this choice will also modify the installer language itself, which then will display its own messages in English (if you chose "English").

<sup>50</sup> <https://wiki.debian.org/UEFI>



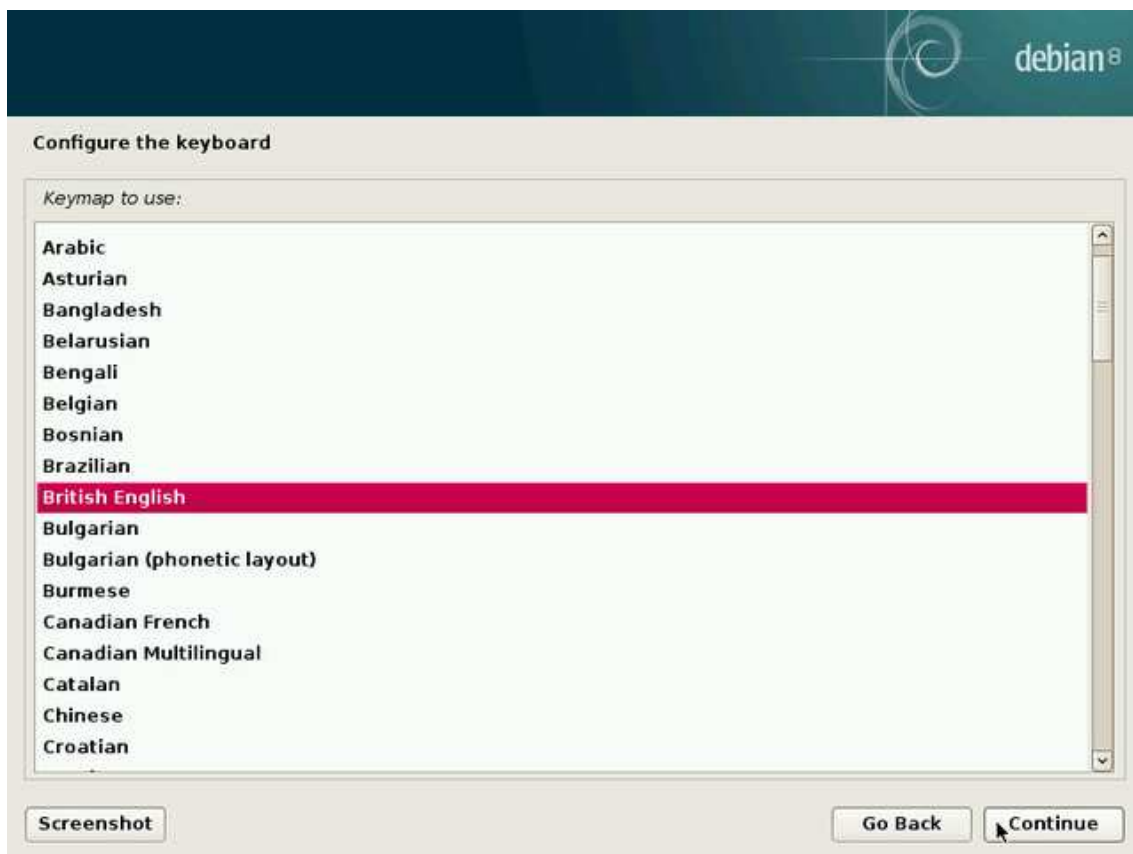
### 5.3.2.2. Select your geographical location

This information allows the system to automatically set the date and time of your system, using a remote time server.



### 5.3.2.3. Configure your keyboard

---



### 5.3.3. Network configuration

---

#### 5.3.3.1. System name setting

---



### 5.3.3.2.Domain name setting (if necessary)

---

Leave this field empty if you don't know the answer.



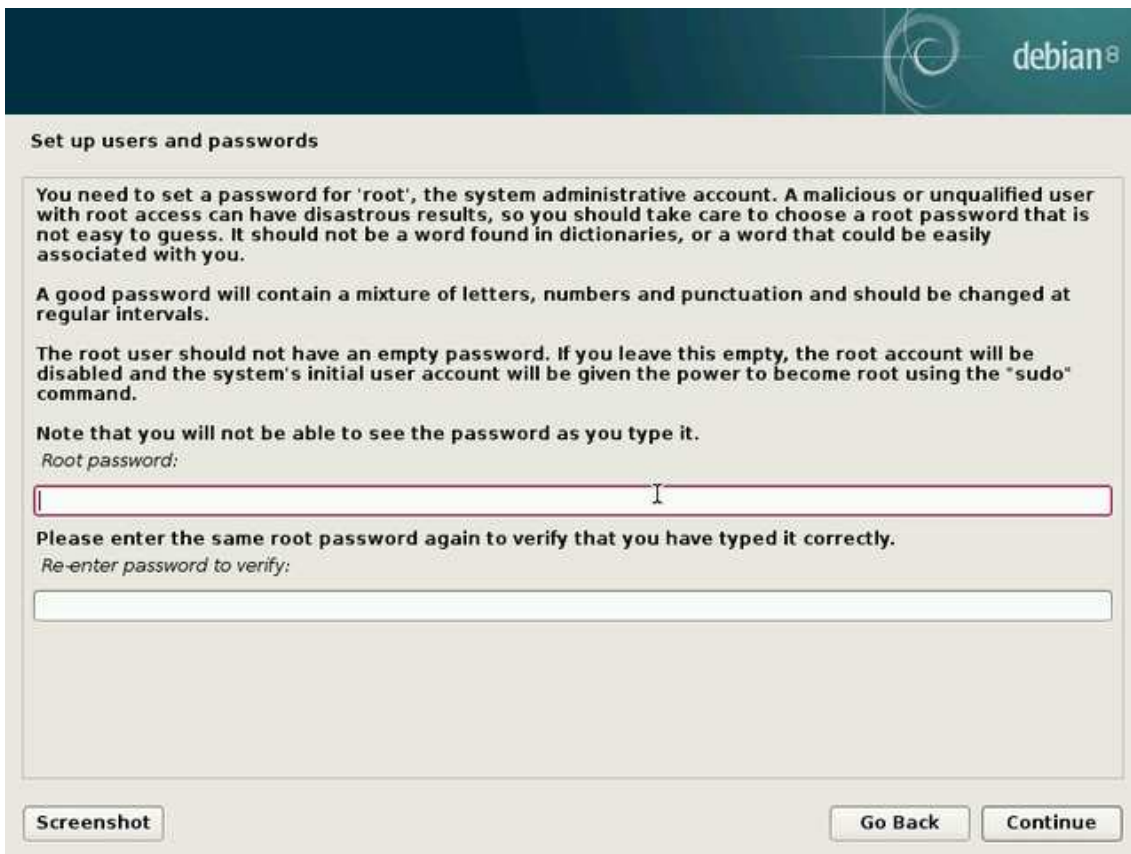
### 5.3.4.Creating User accounts

---

#### 5.3.4.1.Root account creation

---

Enter the administrator password (twice to confirm). Like indicated in the information message, creating a "root" administrator account is not mandatory. If you leave the fields empty, the first user will receive all the rights (from the ancestral brain of the omniscient power ... "sudo")



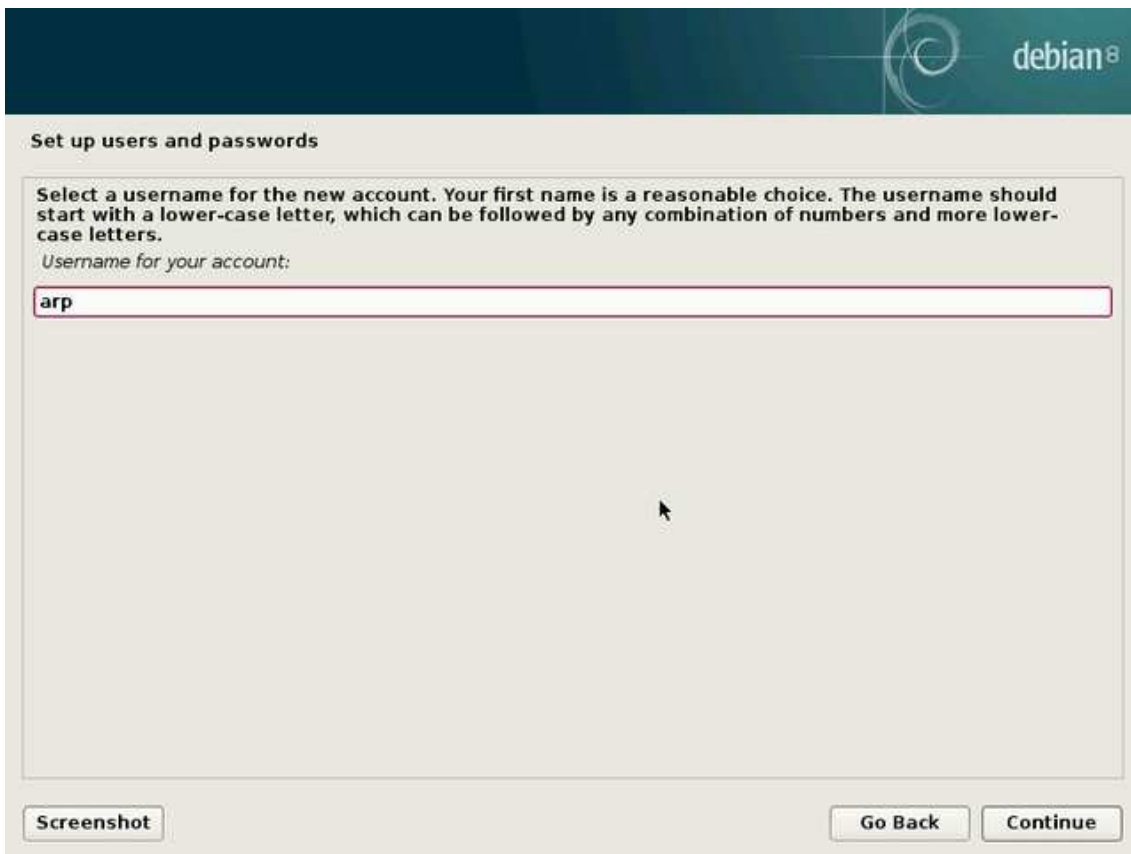
### 5.3.4.2. First user account creation

---

Start by entering the full name of the main user:



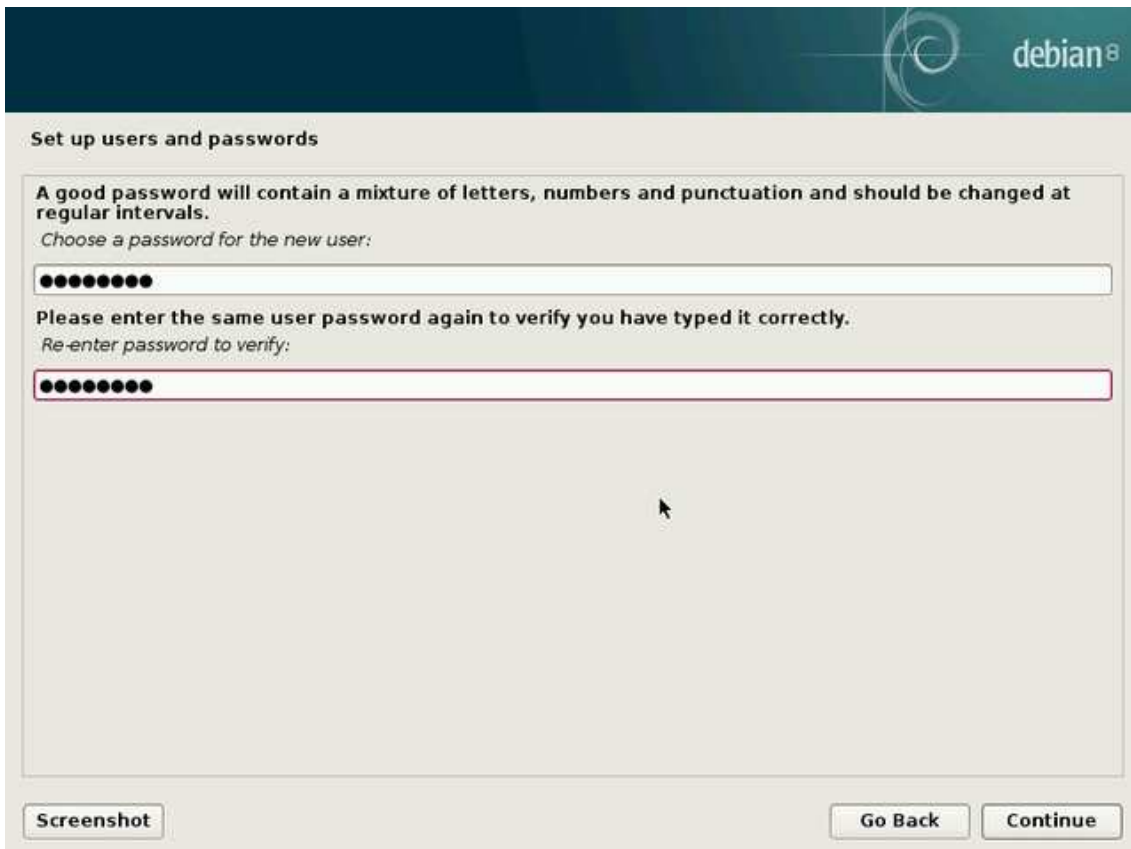
Then enter its **identifier**: the pseudo which will be used during the connection (login) to a session:



### 5.3.4.3. First user password setting

---

Like for the administrator account, you need to enter the password twice for confirmation.



## 5.3.5. Hard disk partitioning to receive the installation

---



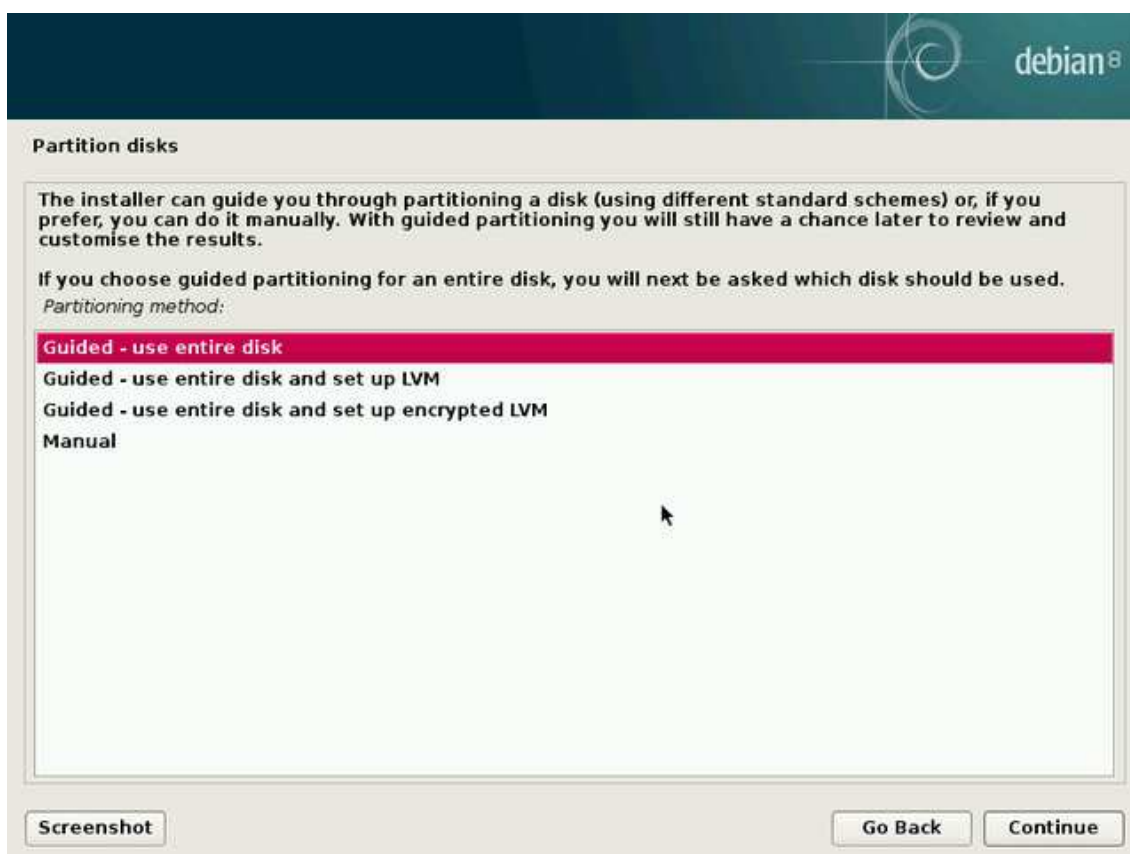
... "Partitioning" ... What's that ?

The partitioning process consists in organizing different partitions on your system. Partitions are non-overlapping area defined on your hard disk(s), each one of them having its specific properties (file system type, unique identifier, size, etc.). In order to function correctly, Debian GNU/Linux needs at least one partition to install the operating system. An additional exchange partition (called SWAP) is highly recommended, to deal not only with insufficient memory space, but also with the suspend or hibernation functionality.

The guided partitioning scheme proposes 2 partitions (system + swap), but you can opt for a scheme proposing a separated `/home` partition, and use another hard disk to store your personal data (as an example).

### 5.3.5.1. Selecting the guided or manual partitioning scheme

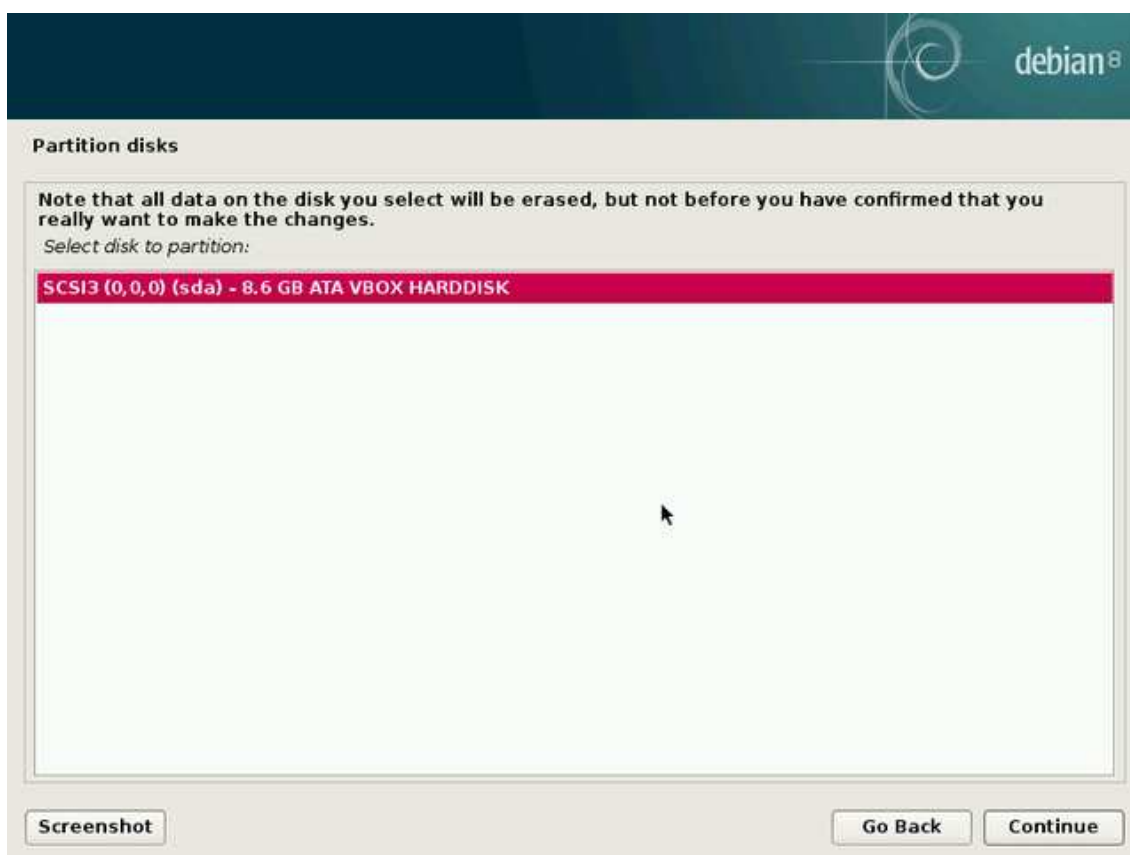
---





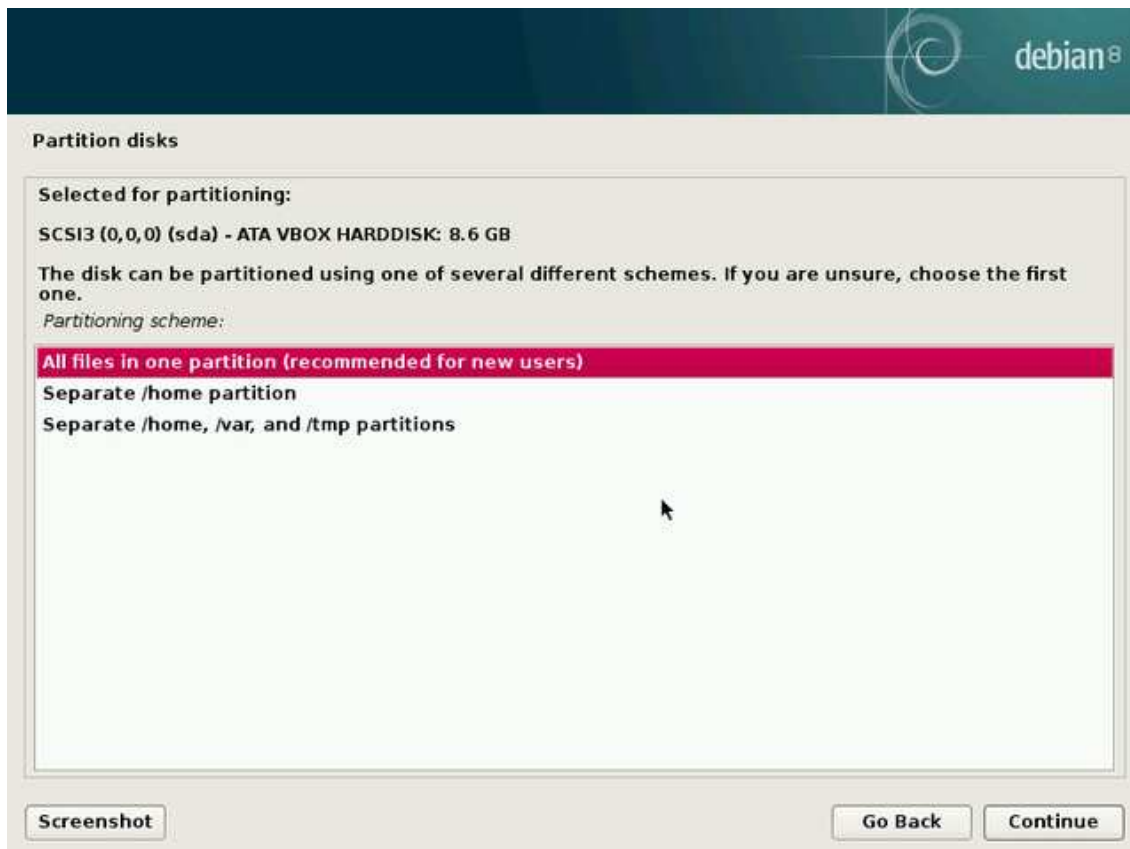
### 5.3.5.2. Selecting the disk to partition

---

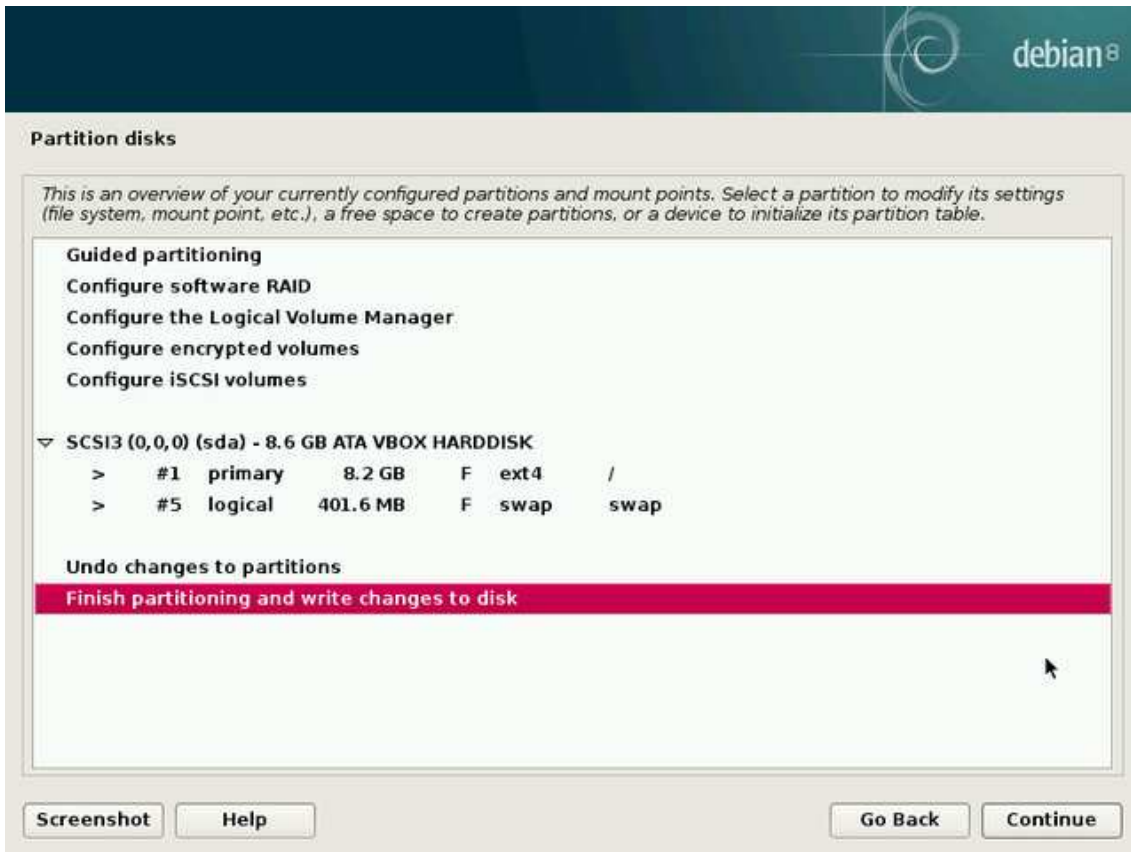


### 5.3.5.3. Partitioning scheme selection

---



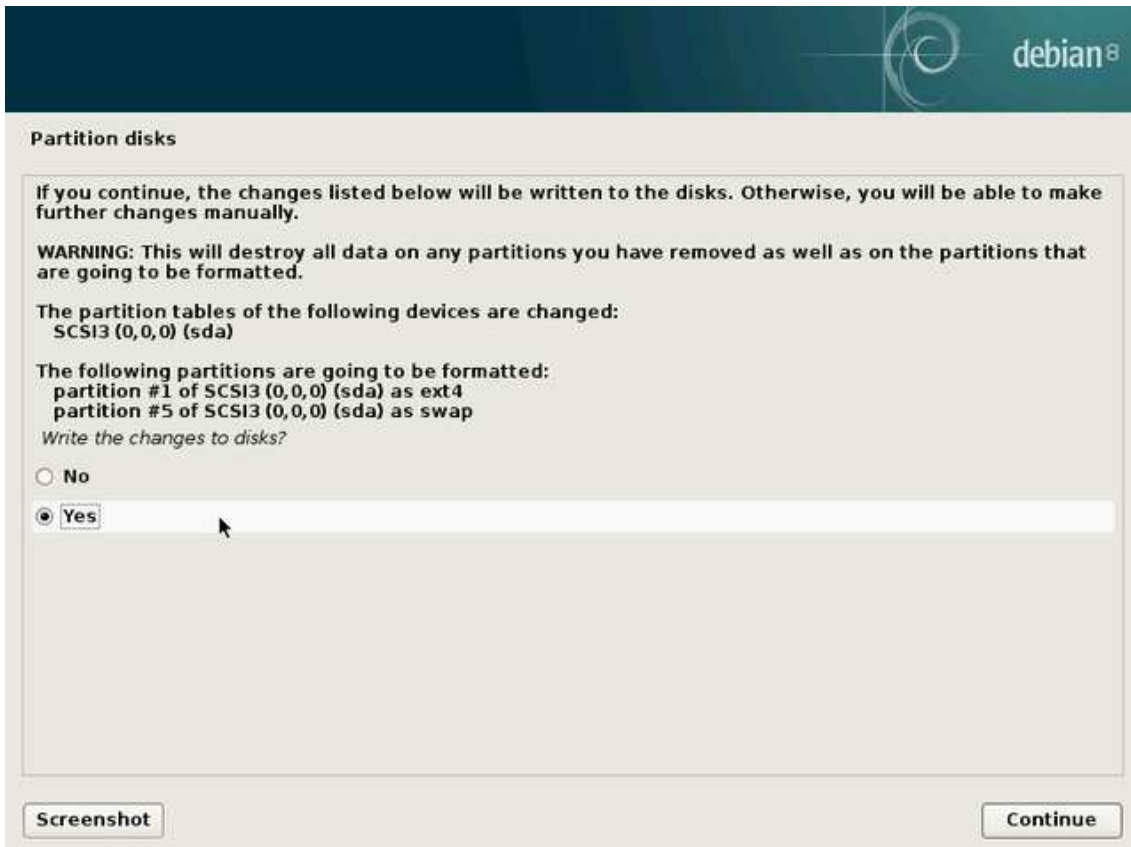
### 5.3.5.4.Modify or finish the partitioning



### 5.3.5.5.Partitioning overview and formatting process launch



**Warning: this is the step during which the installer will format the partitions. The data on the selected disk will be erased !**



## 5.3.6. Package management configuration

---

A package is an archive which can include software, documentation, configuration files or plenty of other things (cf. Wikipedia<sup>51</sup>).

### 5.3.6.1. Analysis of the CD/DVD complementary contents (if necessary)

---

Optional: Had you opted for a Debian CD set including all the packages needed for the installation, you would now insert the second CD (and tick the "Yes" option).

### 5.3.6.2. Using the repository mirrors

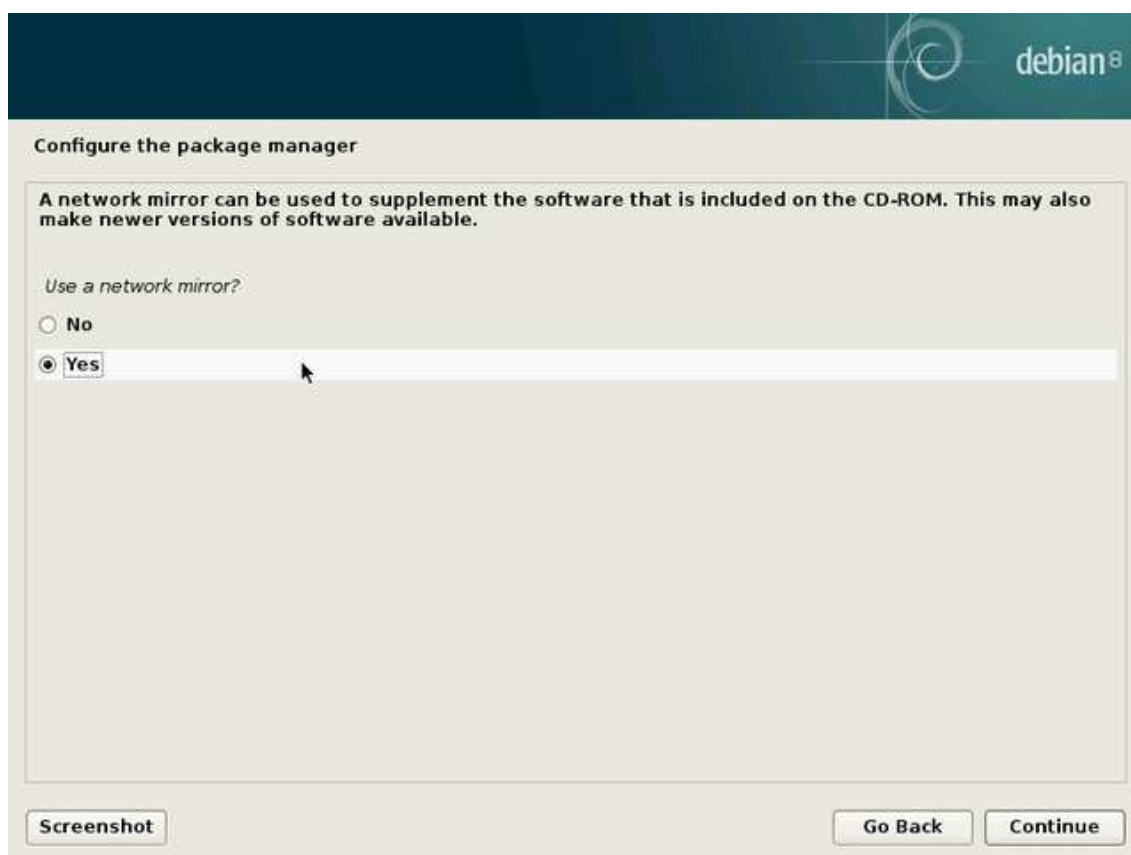
---



... where should I put this mirror ?

"A **repository mirror**" is a computer server, available on-line, hosting the full set of the Debian packages. If you don't have all the CDs on hand, Debian will grab the software or the packages you need on the network mirror servers.

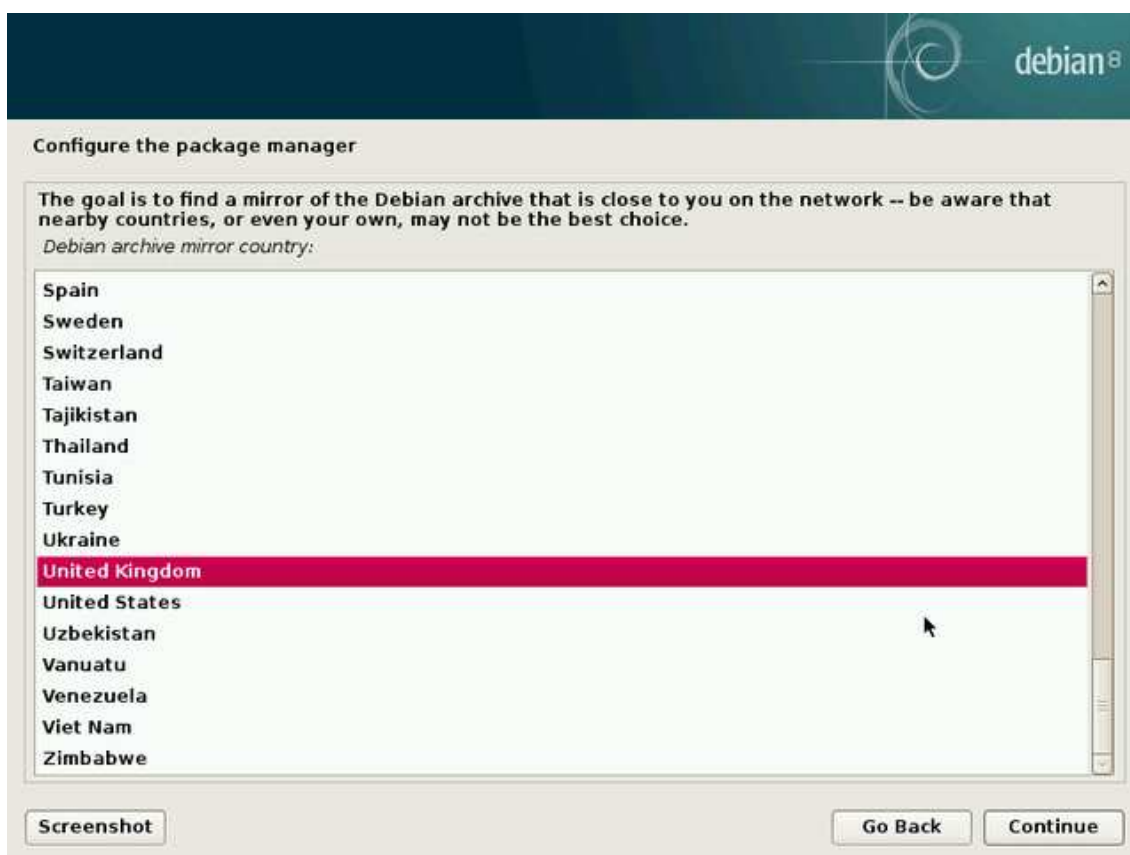
There are repository servers all around the world, each one being the exact copy (mirror) of the others. In this example we select "Yes" and in the following section we will pick an Internet mirror located in the United Kingdom.



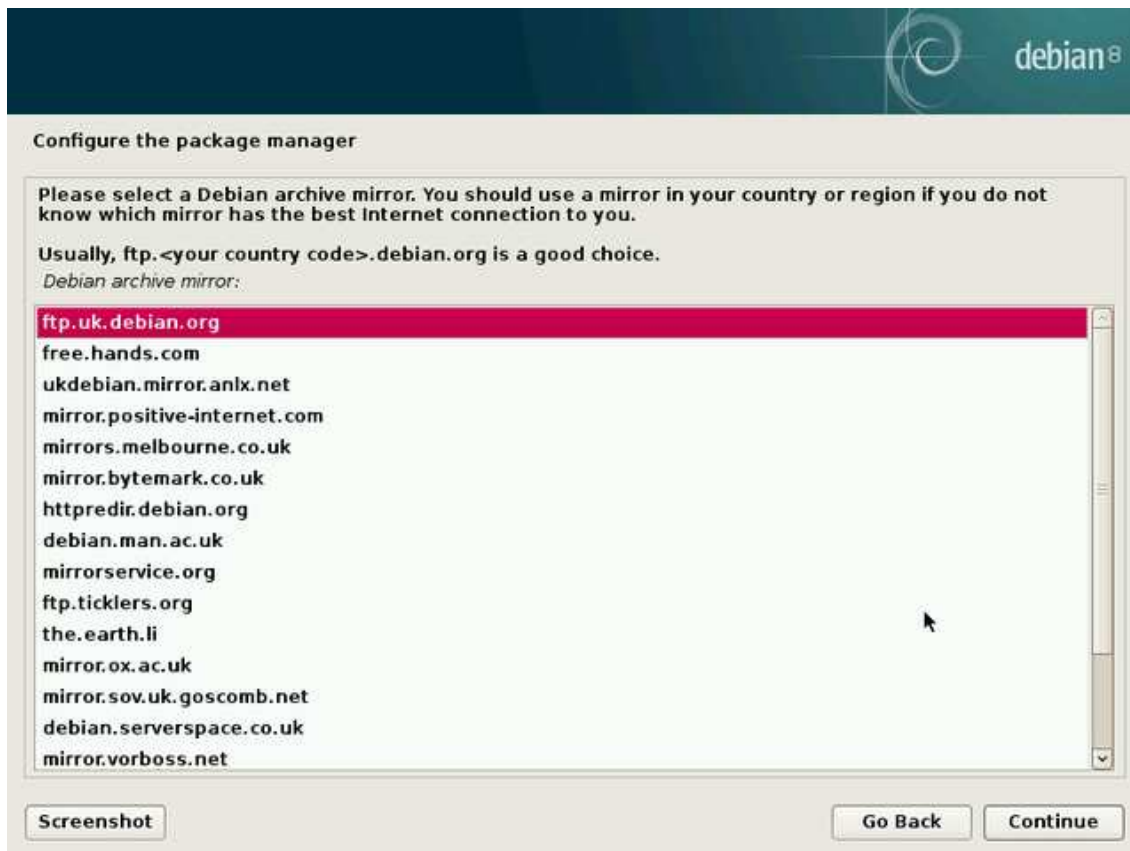
Note that later on, you will be able to optimize the access to the various repositories by using [httpredir](http://httpredir) (see chap.8.1.3.1).

<sup>51</sup> [https://en.wikipedia.org/wiki/Package\\_manager](https://en.wikipedia.org/wiki/Package_manager)

### 5.3.6.3. Selecting the network mirror country



### 5.3.6.4. Selecting the server hosting the archive mirror

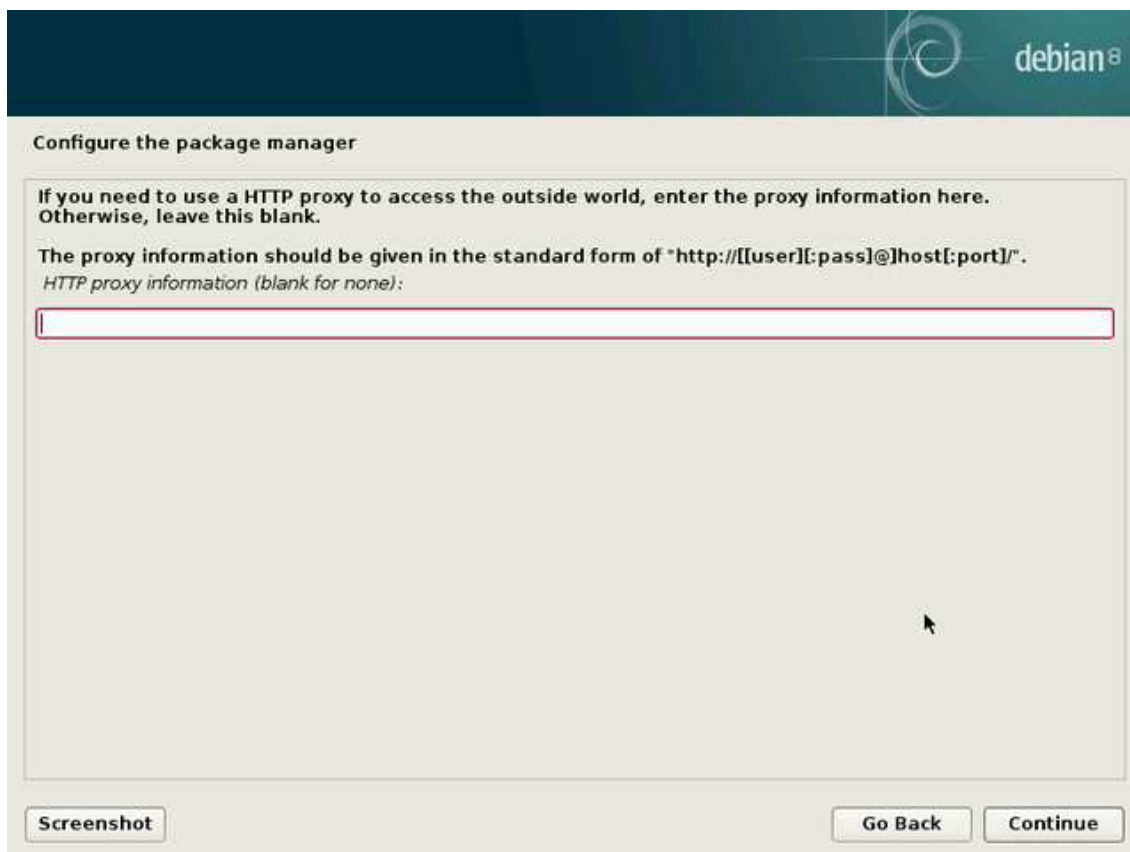


The server proposed by default is usually a good choice.

### 5.3.6.5. Configuring a proxy server (if necessary)

---

Leave this field empty, if you don't know.



### 5.3.6.6. Participating - or not - to the Debian popularity-contest

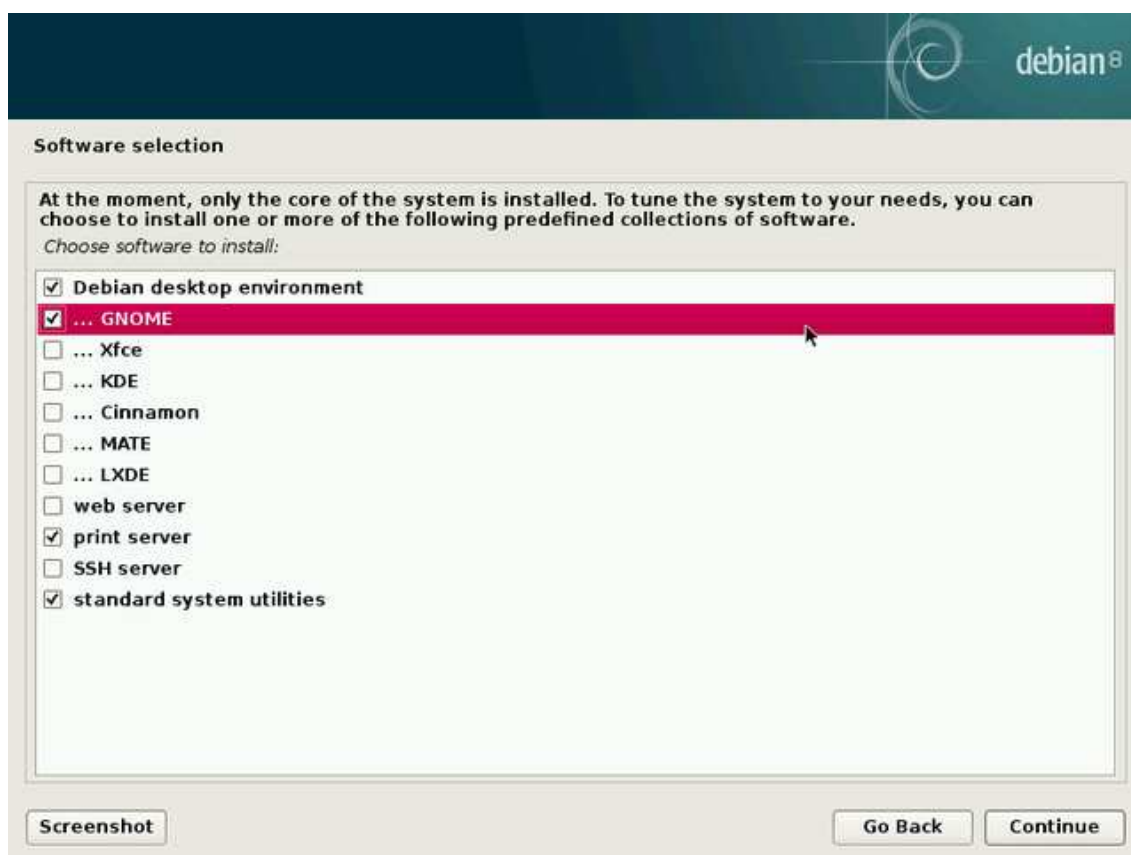
---



This can be useful to the community, but it is not mandatory.

### 5.3.6.7. Selecting software

---



Now, it is time to select your main desktop interface, as well as the main services to be installed by default. Note that you can select several desktops in view of directly installing several environments. Hereafter a summary description of the proposed choices:

- **Debian desktop environment** let you install, or not, a desktop. The desktop environment installation can be done later on, or never, and it is not indispensable, for example on a server. But if you are a beginner, a graphical interface will be easier to master 😊. Among the various available desktops, you can find: [Gnome](#), [Xfce](#), [KDE](#), [Cinnamon](#), [MATE](#) et [LXDE](#)
- **web server** includes a preselection of packages dedicated to Web servers.
- **print server** includes a preselection of packages dedicated to Print servers.
- **SSH server** allows you to activate the ssh protocol, and computer remote control.  
**Warning !** Enabling the SSH service might create a security breach if it is not correctly configured. For **experienced users** only.
- **standard system utilities** includes a collection of applications to manage your operating system.

### 5.3.6.8. Packages installation

---

Time to take a little pause. Downloading and installing the packages may take quite some time, depending on the power of your computer and the Internet connection bandwidth.



## 5.3.7. Finishing the installation

---

### 5.3.7.1. Installing Grub, the boot loader

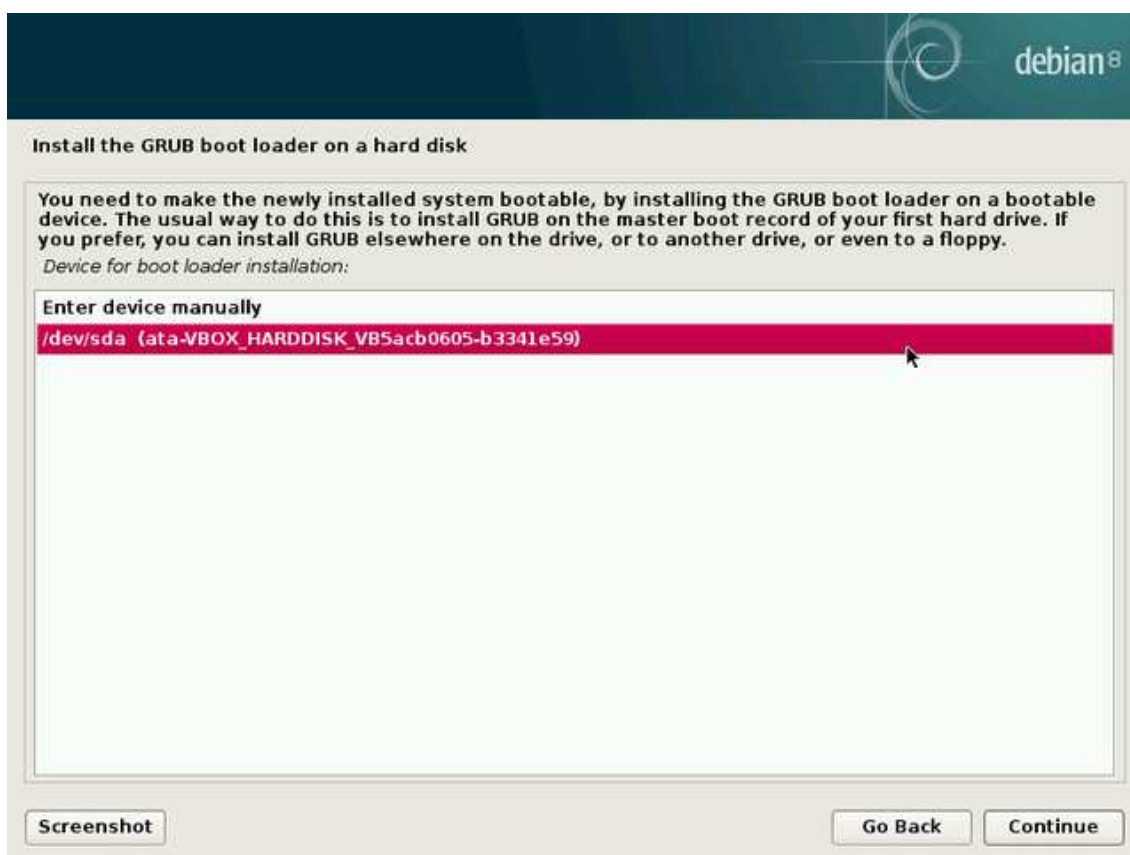
---



### 5.3.7.2. Selecting the Grub location

---

When the system installation is of type "simplified single-boot", you should install Grub on your machine **main disk**, usually identified under the nice `"/dev/sda"` name.



### 5.3.7.3. Installation complete

---



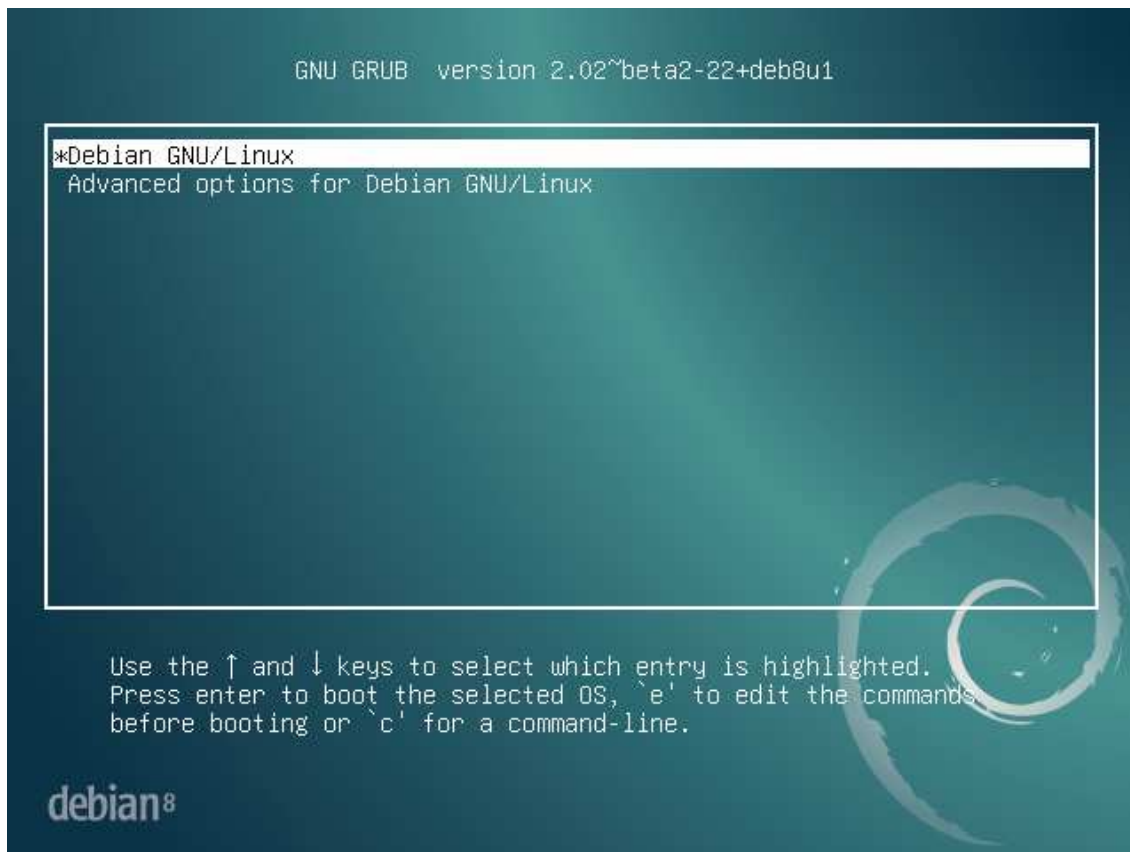


Don't forget to remove the CD or USB key to avoid re-launching the installer during the next boot. Then complete the installation process by pressing the *Continue* button.

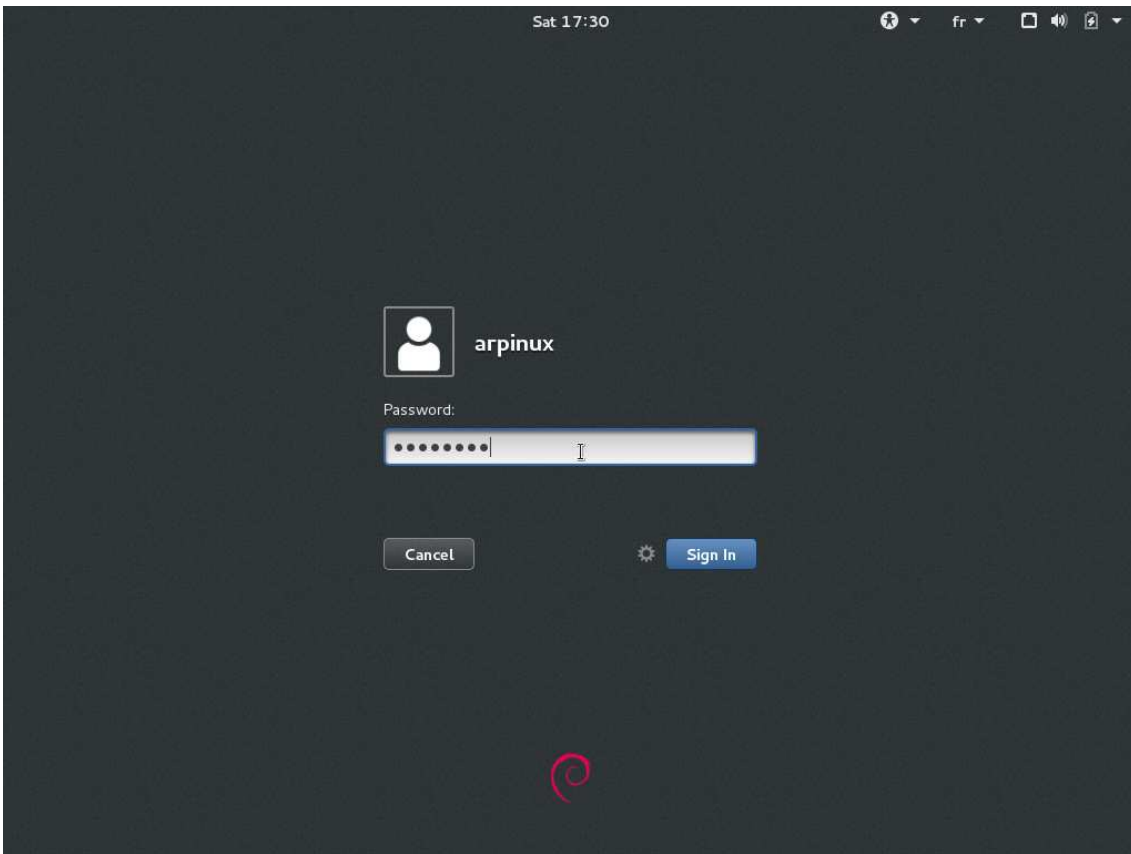
### 5.3.8. Debian first start-up

---

Grub boot loader selection menu:



Gnome login:



Interface by default on the Debian Gnome 3.14 desktop:



## 5.4. Dual-boot installation

---

The **Dual-boot** mechanism let you install side-by-side two independent operating systems, and doing so, allows you to select, at boot time, which one you want to launch.



**This is not the recommended method:** there are inherent risks for your data during the partition resizing. If you choose this solution to get started on Debian, please remember that you can very well test it first by using a [Live session](#) (chap.5.2.1.4) with no risks for your data.

More information of the Debian Dual-Boot Wiki<sup>52</sup>

### 5.4.1. Back-up the original system

---

**The very first thing to do**, if you foresee a Debian installation next to another operating system (Windows® or Linux), is to **back up your data and/or the entire system**, just in case of problems, or if, later, you wish to return to the previous situation and restore your original system on the hard disk.

The most secure method is to clone your entire system using [CloneZilla](#) (chap.9.4)

- This will give you the opportunity to restore your system to the exact same state it was before. And you will not lose any data, including the MBR and the partition table.
- You can expect a transfer time of about 3 to 4 hours, in order to clone a 320 GB hard disk. After that, you can resume your normal activity.
- Small caution: don't start such operation under stormy weather conditions ...

This warning is not there to tell you that everything should break ! But partition resizing is always subject to risks, let it be a hardware problem (main switch going off, kids running over the power cords) or a software one (stupid crash of the application, right in the middle of the partitioning). This happens rarely, but you don't want to be part of the bad side of the statistics.

If you don't judge necessary to save the entire system, at least copy your personal data on an external medium ([chap.9.3](#)).

### 5.4.2. Preparing the disk before installation

---

Once your system is cloned and/or your personal data secured (case of ...), we can move to the preparation steps before the installation: we need to make some room for Debian.

This part is relevant only if the dual-boot is to be installed on the same hard disk. If you plan to install Debian on its own separated disk, you can jump to the actual installation.

---

<sup>52</sup> <https://wiki.debian.org/DualBoot>

The preparation boils down to a simple two steps process:

1. **Defrag** your hard disk from the Configuration panel. Please note that the defragmentation process leads to a premature wear of your SSD hard disk: verify first with the defrag tool that this procedure is really needed to gain some disk space.
2. **Free some space** by reducing the size of the 'C:' partition on your disk, by using the disk manager.

#### 5.4.2.1. Defragmenting under Windows®

---

To defragment your disks, according to the Microsoft support team<sup>53</sup>:

- Open the Disk Defragmenter tool by clicking the *Start* button. In the search box, type Disk Defragmenter, and then click *Disk Defragmenter*, in the list of results
- Under *Current status*, select the disk you want to defragment.
- To determine if the disk needs to be defragmented or not, click on *Analyze disk*. If you are prompted for an administrator password or confirmation, provide password or confirmation.

Once Windows® is done analyzing the disk, you can check the percentage of fragmentation on the disk in the *Last Run* column. If the number is above 10%, you should defragment the disk.

- Click on *Defragment disk*. If you're prompted for an administrator password or confirmation, provide password or confirmation.

Disk Defragmenter might take from several minutes to a few hours to complete, depending on the size and degree of fragmentation of your hard disk. You can still use your computer during the defragmentation process.

#### 5.4.2.2. Freeing space for Debian

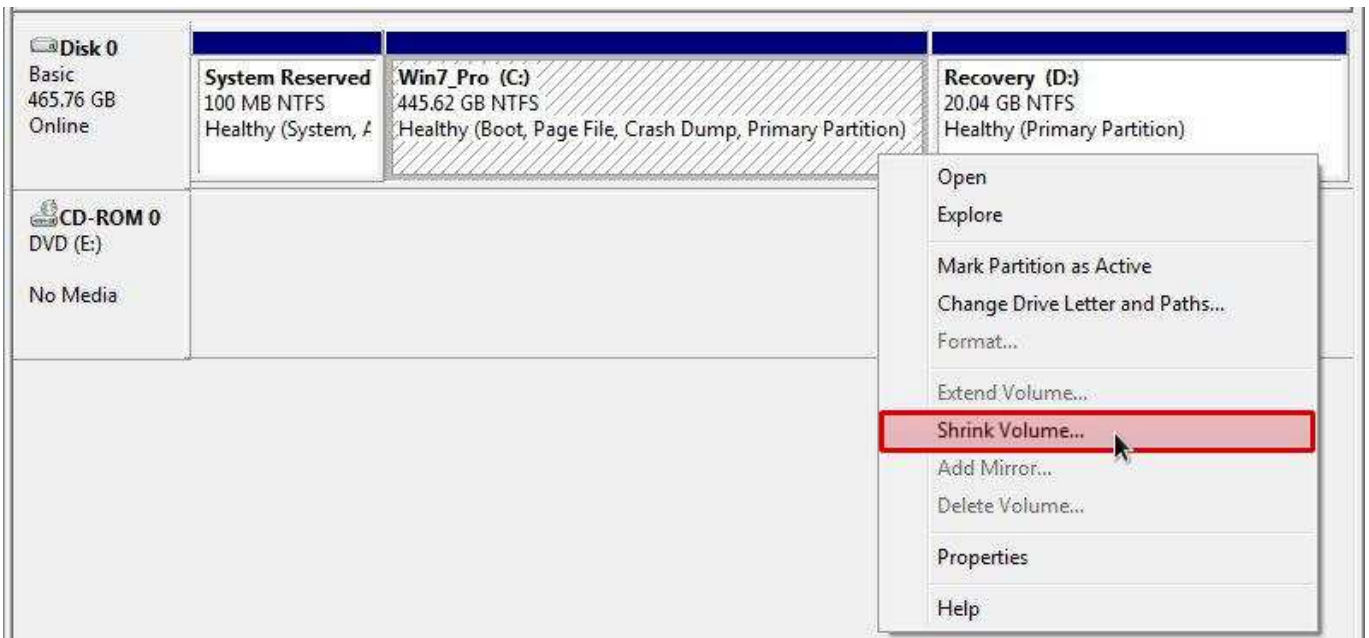
---

From your Windows® system, launch the Disk Management tool by clicking on the *Start* button and type "partition" in the search box. From the results click on "Create and format hard disk partitions".

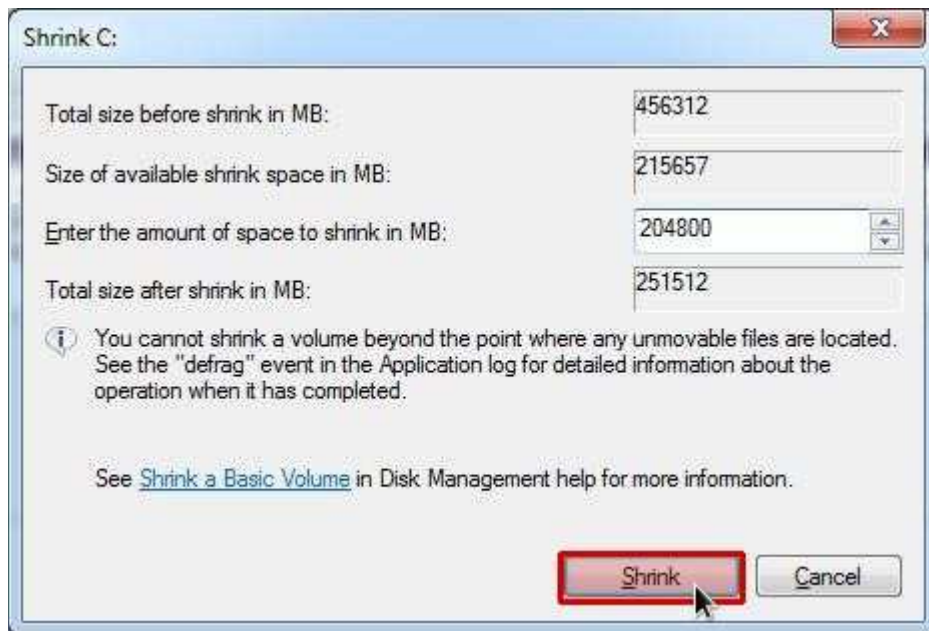
A new window which is open, displays all the disks and partitions of the system. Select the partition you want to reduce to make room for Debian, and then right-click > "Shrink volume":

---

<sup>53</sup> <https://support.microsoft.com/en-us/help/17126/windows-7-improve-performance-defragmenting-hard-disk>



A new window lets you adjust the partition settings. Double check them and press "Shrink".



You can check, in the main disk manager window, that the requested Debian space has been correctly freed.



### 5.4.3.Launch the Debian installation

---

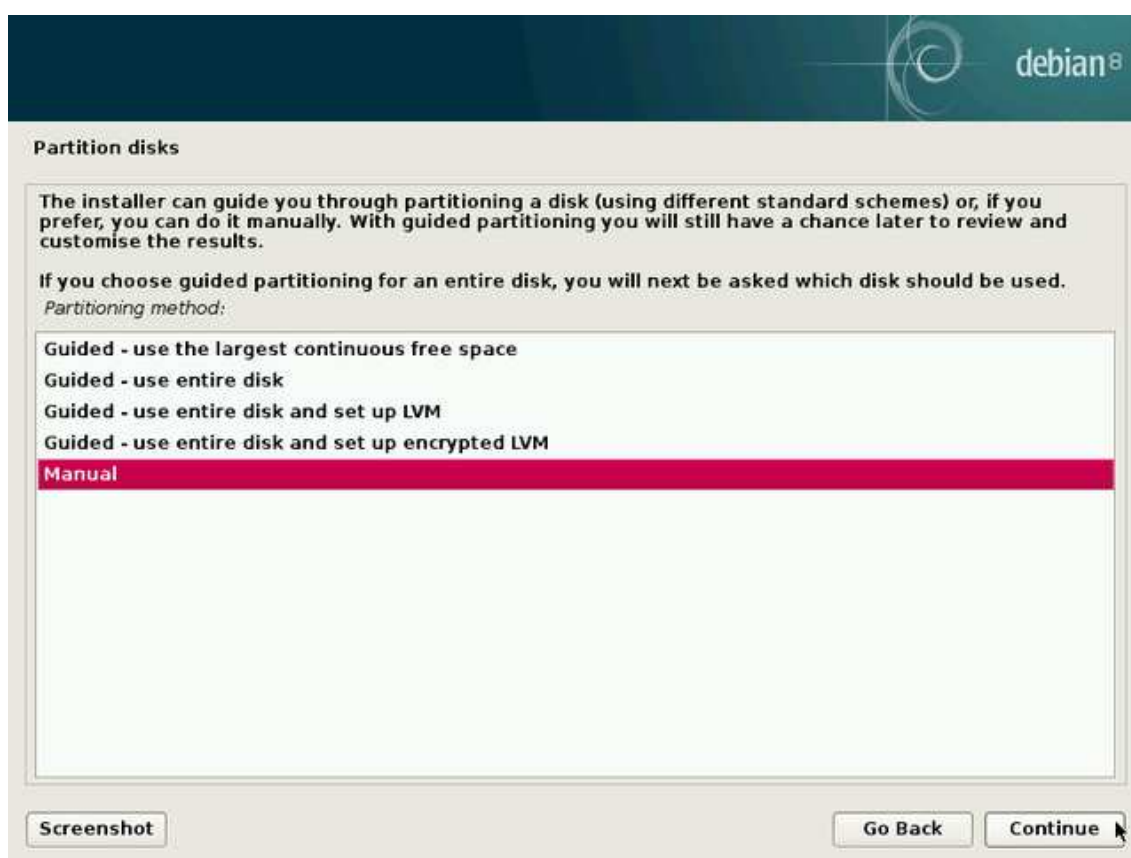
The process begins the same way as for the [Simple Boot](#) installation, until the [partitioning](#) step (chap.5.3.5).

The pictures presented hereafter do not display the values as seen in the previous chapter. They are here only to show an example of dual-boot partitioning. (Screen captures realized by using VirtualBox<sup>54</sup>)

#### 5.4.3.1.Manual hard disk partitioning

---

Depending on your situation you can select the "Guided - use the largest continuous free space" option, or the "Manual" one. We are choosing this second option to avoid mistakes, and make sure we select the right disk in the following step.

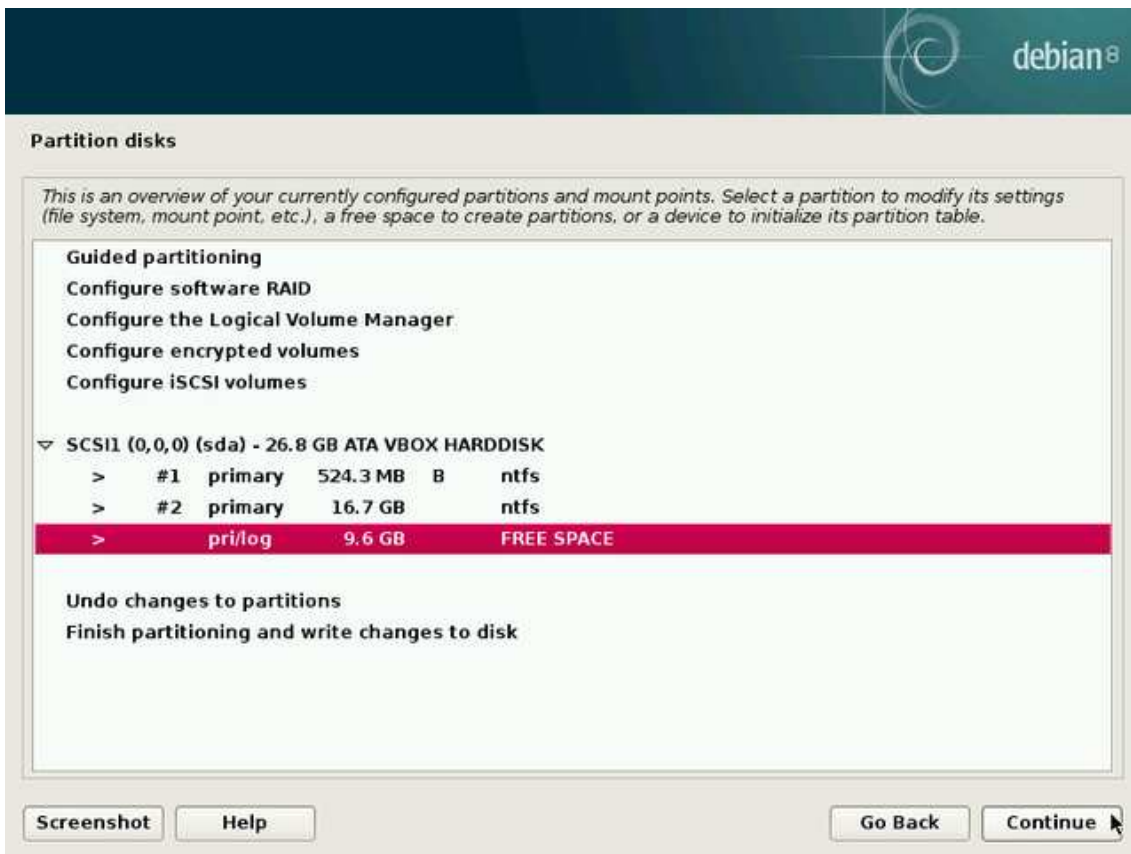


#### 5.4.3.2.Selecting the free space

---

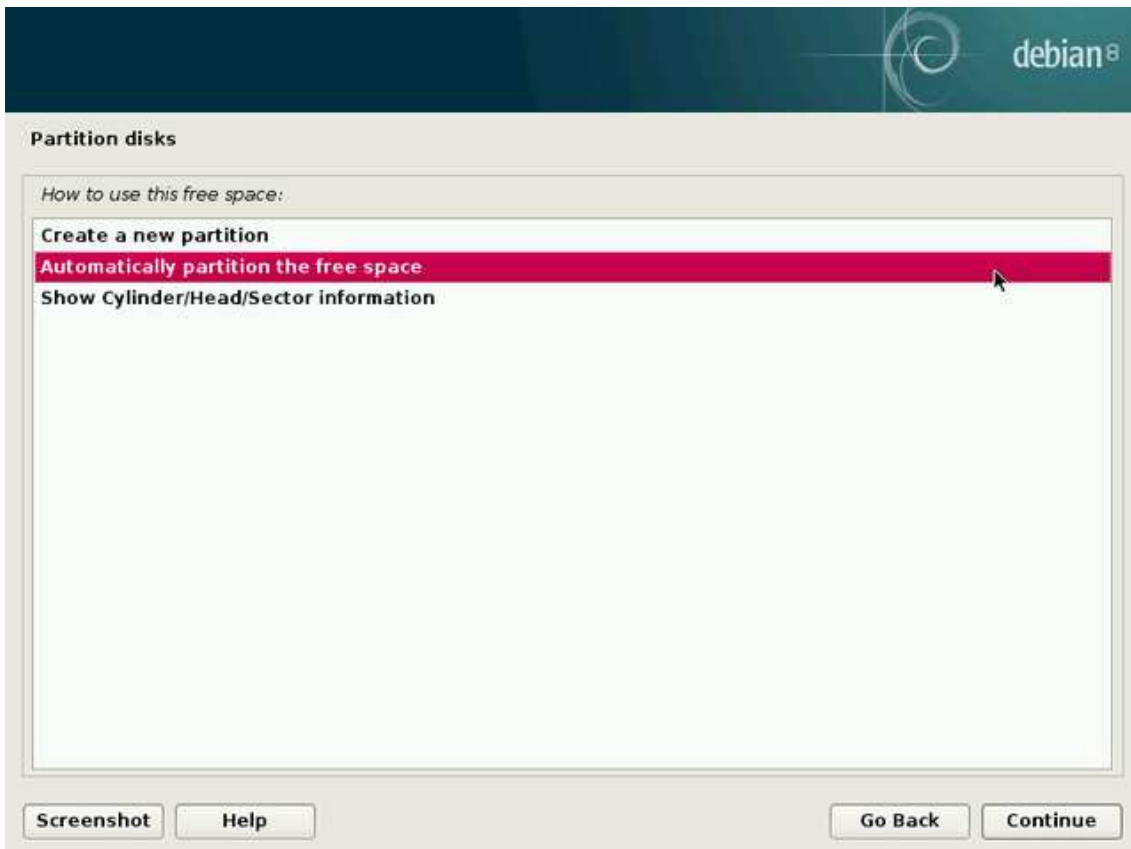
Select now the free space you have released during the disk preparation under Windows®

<sup>54</sup> <https://wiki.debian.org/VirtualBox>



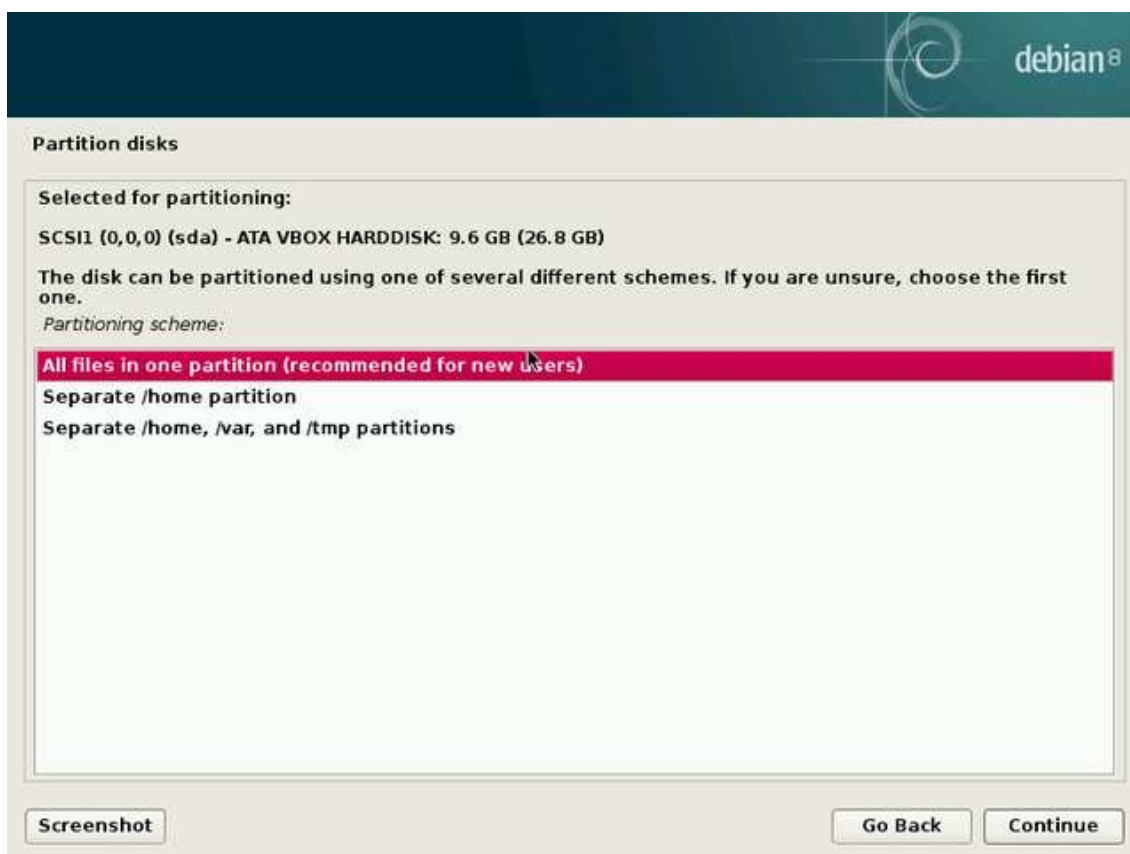
### 5.4.3.3. Automatic partitioning of the free space

We leave it up to Debian to configure the free space ...

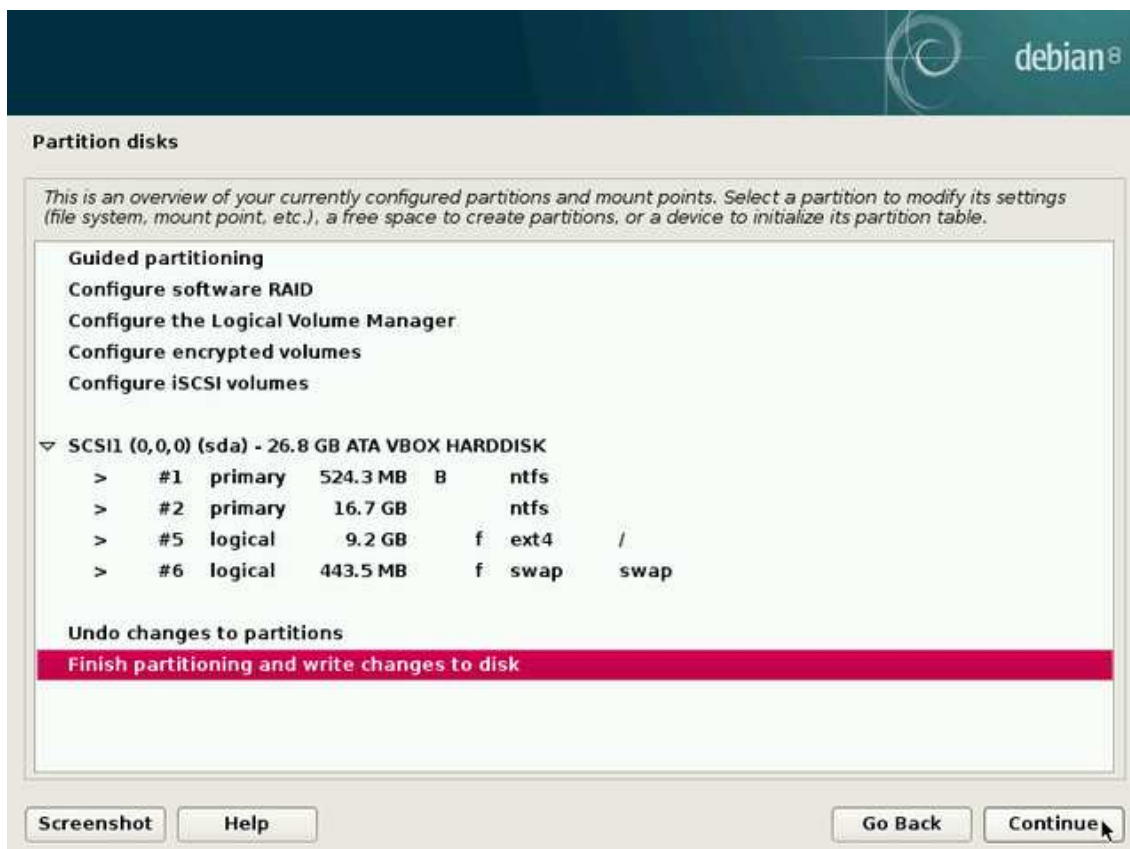


### 5.4.3.4. Selecting the partitioning scheme

Debian will create an "Extended partition" within which the "Logical partitions" of the new system are going to be integrated. The option "All files in one partition ..." is a *reasonable* choice.



### 5.4.3.5. Checking the proposed partitioning

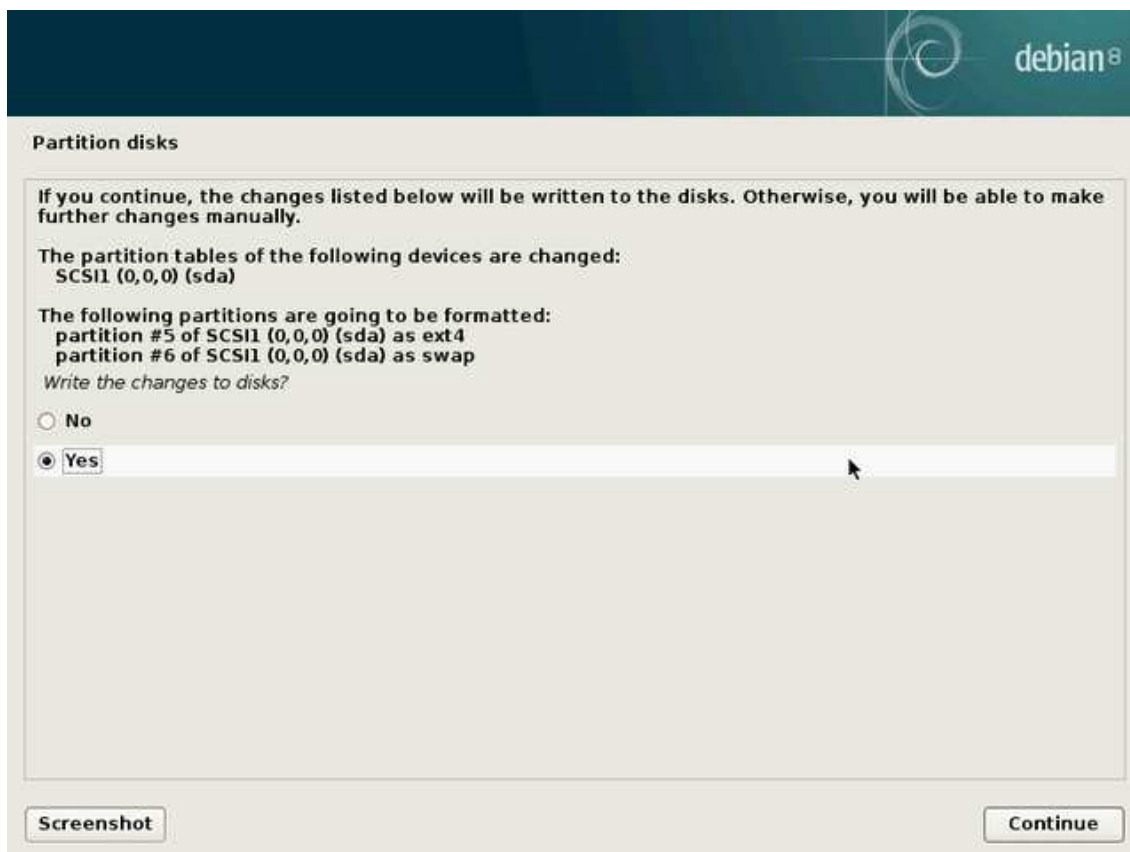




### 5.4.3.6. Accepting the partitioning

---

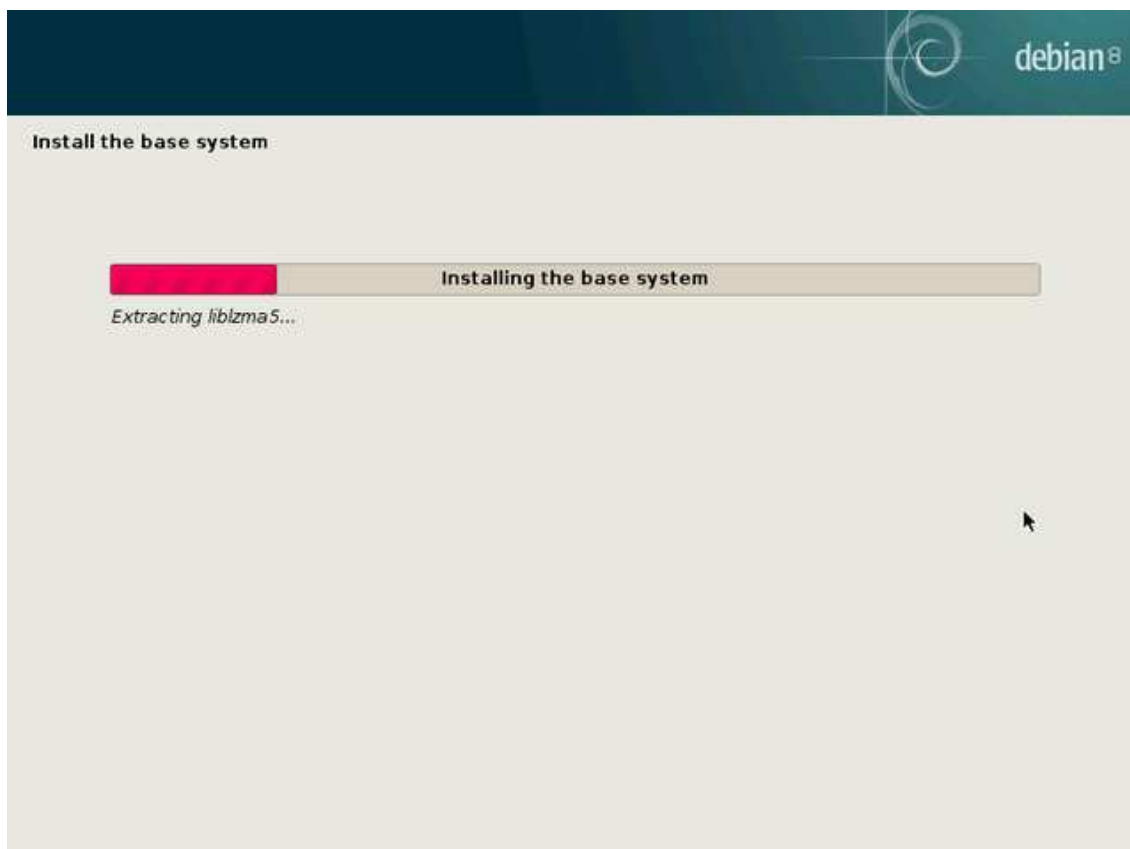
Warning ! The real partitioning begins at this stage, and Debian is taking place on your hard disk.



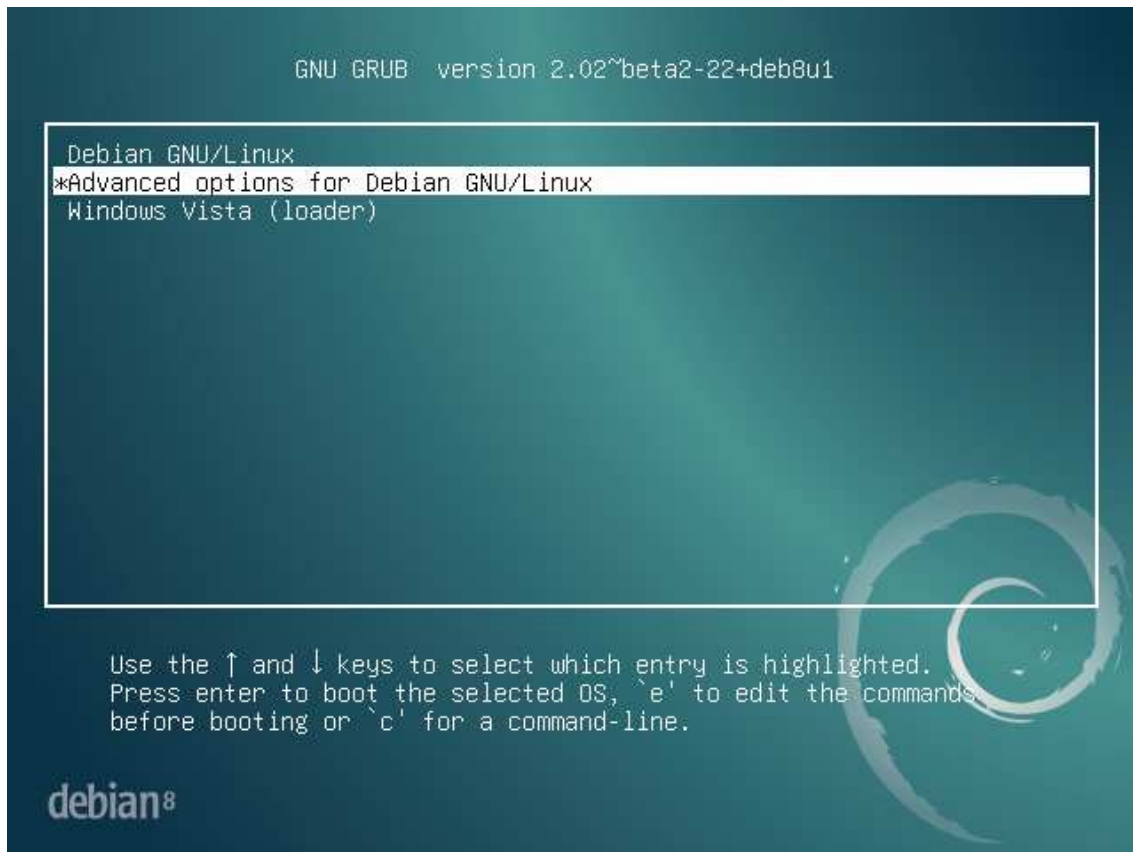
### 5.4.3.7. Basic system installation

---

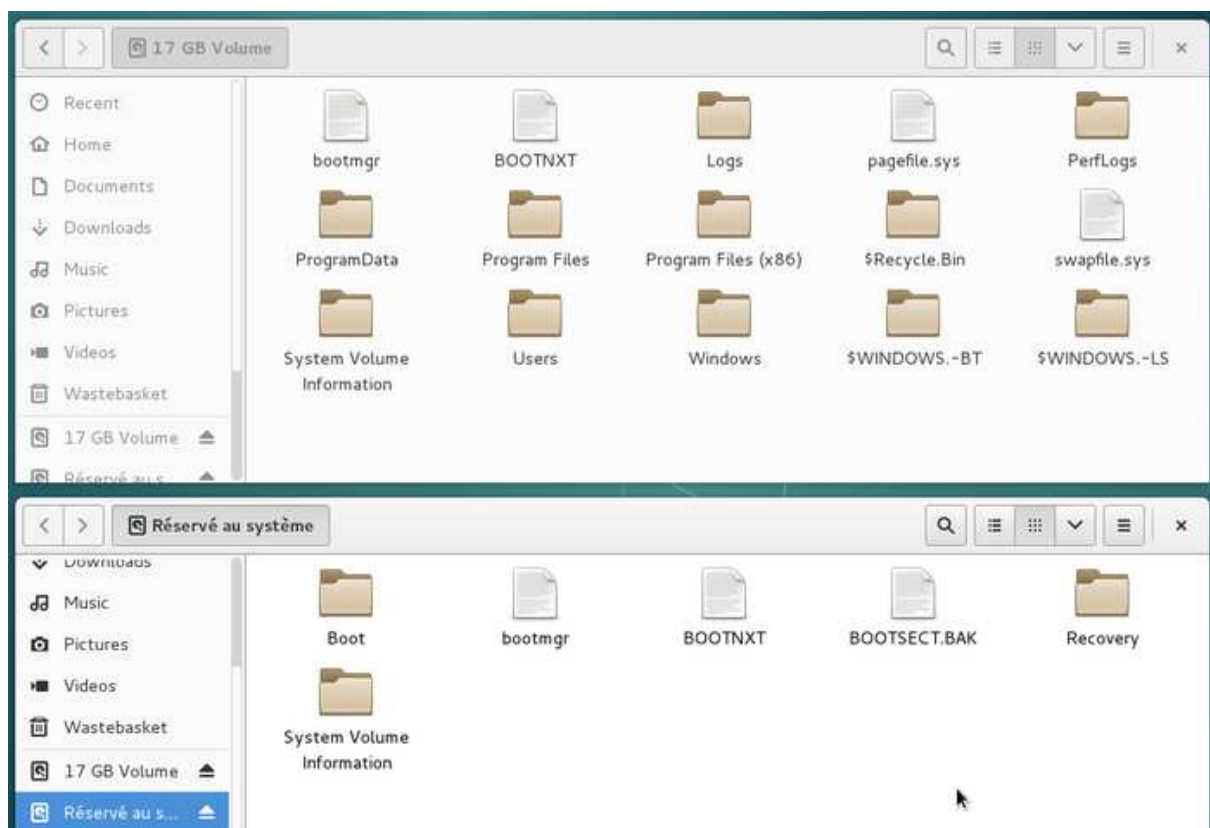
The installation starts like for the Simple Boot method ([chap.5.3.5.5](#)).



At the end of the process, the Grub boot loader menu will list your new Debian system as well as the previously used system. You will have the choice (here with Debian and Windows®):



Once you get on your Debian working session, you have a complete access to the data stored in the other system.



## 5.5.On-line installation details

---

Debian offers more possibilities than just the two methods explained in the previous chapters.

But this manual being intended for the beginners, the more complex installation modes are detailed in the official Debian documentation:

<https://www.debian.org/releases/stable/installmanual>

Just to give you a flavor of the other installation modes:

### 5.5.1.LVM ... what's that?

---

**LVM** is an acronym for **L**ogical **V**olume **M**anager.

Its usage consists in:

- Create a specific partition of type "LVM" (which corresponds to a mounted **disk**)
- Within this partition we can create "Logical Volumes" (corresponding to **partitions**) that we can modify at will, themselves sized and formatted to our own convenience.

So, the "Logical Volumes" utilization, replaces straight out the usual disk "partitioning", and provide a more flexible way to manage disk space by allowing modifications on them at any point of time.

It is possible, as well, to keep one part of the LVM partition without installed "Logical Volume" pending further decisions.

More details on the dedicated Debian LVM Wiki: <https://wiki.debian.org/LVM>

### 5.5.2.Encryption ... what's for ?

---

The confidentiality of personal data is a pretty hot topic these days. In order to better protect your data, you can opt for an **encrypted installation**; With this kind of installation, even in the case of theft of your computer, or the removal of its hard disk, no data access is possible with the password !

The Debian Administrator's Handbook provide us with more details<sup>55</sup>:

"This feature can be added underneath any filesystem, since, as for **LVM**, Linux (and more particularly the "dm-crypt" driver) uses the Device Mapper to create a virtual partition (whose content is protected) based on an underlying partition that will store the data in an encrypted form (thanks to **LUKS**, *Linux Unified Key Setup*, a standard format that enables the storage of encrypted data as well as meta-information that indicates the encryption algorithms used)."

---

<sup>55</sup> <https://debian-handbook.info/browse/en-US/stable/sect.installation-steps.html#sect.install-partman>

To put it simply, LUKS creates a container to host an encrypted volume protected by a password.

For more information and a complete guide, visit the digital self-defense guide:

<https://ssd.eff.org/en>

### 5.5.3.RAID ... does it hurt ?

---

Wikipédia<sup>56</sup> is my friend ...

**RAID** is the acronym of redundant *array of independent disks*.

**RAID** is a data storage virtualization technology that combines multiple physical disk drive components into a single logical unit for the purposes of data redundancy, performance improvement, or both.

Please note that the Debian installation in RAID mode, uses the RAID software (thanks to the *mdadm* tool) and not the RAID hardware (handled by a physical RAID controller).

For more details and installation tutorial see the official Debian wiki

<https://wiki.debian.org/SoftwareRAID> or the dedicated section of the Debian Administrator's HandBook<sup>57</sup>

---

<sup>56</sup> <https://en.wikipedia.org/wiki/RAID>

<sup>57</sup> <https://debian-handbook.info/browse/stable/advanced-administration.html#sect.raid-soft>



The first things to do after the installation.


Remember that before proceeding with the real installation, it is highly recommended to run a test in "Live session" mode to check your hardware compatibility (network connection, screen resolution, peripherals ...) with the system.



... but what is exactly a "Live session" ?

Recall that we presented this feature in the [section 5.2.1.4](#). This is a session that let you test the operating system without risk. The system is installed from a CD or USB key, directly into the computer RAM. Then you can test your WI-fi connection, your printer etc ... None of the settings made during this session will be saved after the computer shutdown.

### 6.1. Network connection setting

 Using either an Ethernet wired connection or a Wi-fi wireless connection, your Debian system is expected to access the network. The Ethernet connection is recognized natively. As far as the Wi-fi is concerned, it is sometimes necessary to use a non-free driver.

- **If your Wi-fi connection is recognized natively**, jump directly to the Network manager sections (for the Gnome, Mate, Cinnamon or Xfce desktop), Wicd (for the LXDE desktop) or the connection editor under KDE.
- **If you network device is not functioning**, you need to go to the "material recognition" section.

#### 6.1.1. Check if the driver is present

In order to check if the driver is present, we are using the command:

```
/sbin/ifconfig
```

which should return a result like:

```
eth0      Link encap:Ethernet  HWaddr xx:xx:xx:xx:xx:xx
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 lg file transmission:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
```

```

lo          Link encap:Boucle locale
            inet adr:127.0.0.1  Masque:255.0.0.0
            adr inet6: ::1/128 Scope:Hôte
            UP LOOPBACK RUNNING  MTU:65536  Metric:1
            RX packets:552 errors:0 dropped:0 overruns:0 frame:0
            TX packets:552 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 lg file transmission:0
            RX bytes:37827 (36.9 KiB)  TX bytes:37827 (36.9 KiB)

wlan0      Link encap:Ethernet  HWaddr xx:xx:xx:xx:xx:xx
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:638993 errors:0 dropped:0 overruns:0 frame:0
            TX packets:412031 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 lg file transmission:1000
            RX bytes:617235341 (588.6 MiB)  TX bytes:42145548 (40.1 MiB)

```

If the interface named "wlan0" or "eth1" does not appear in the list, this means that the Wi-fi driver is missing.

## 6.1.2. Identifying a network device, and installing its driver

---

If your network connection is not functioning, it is usually a driver issue. In order to select the right one, we need to identify first the network device.

Within a terminal, in user mode, launch the command:

```
lspci | grep -i "net" | cut -d: -f3
```

which will return a result like:

```
Intel Corporation 82567LM Gigabit Network Connection (rev 03)
Broadcom Corporation BCM4322 802.11a/b/g/n Wireless LAN Controller ...
```

Here, the detected Wi-fi device is the **Broadcom BCM4322**

If I run a simple Internet search, like "*Debian Broadcom BCM4322*", I found quickly the right page<sup>58</sup> which tells me to install the **firmware-b43-installer**.

The Wi-fi connection setting is a very touchy subject for the GNU/Linux distributions, due to the non-free nature of the drivers to be installed.

More information on the Debian Wi-fi Wiki: <https://wiki.debian.org/WiFi>

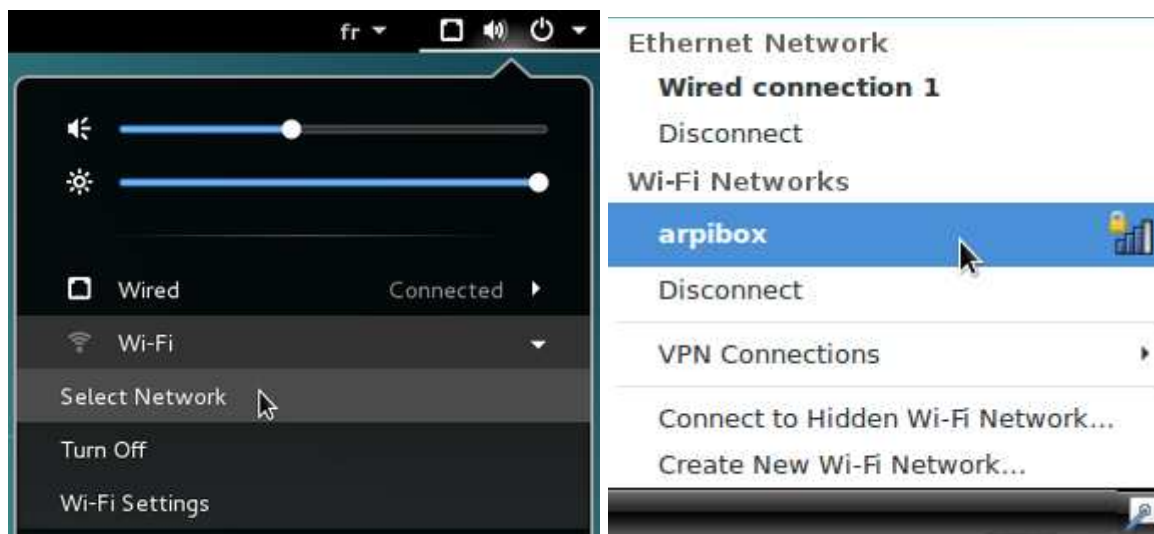
<sup>58</sup> <https://wiki.debian.org/fr/bcm43xx>

## 6.1.3. Network-manager-gnome

---

This is the network manager delivered with Gnome, Mate, Cinnamon, and Xfce.

It is accessible from its icon within the notification area:

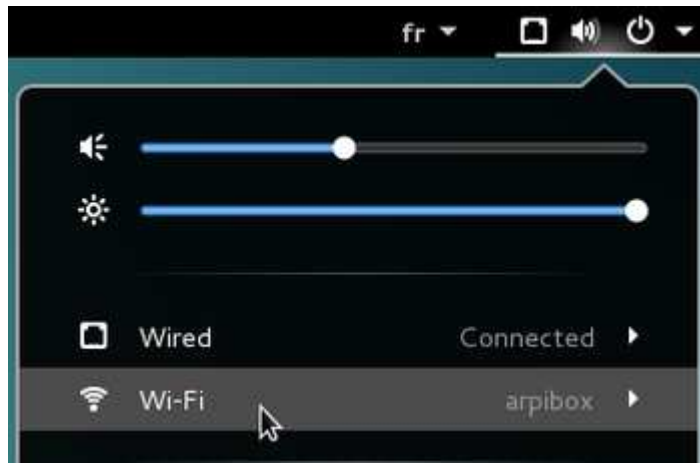


*Network management on Gnome and Xfce*

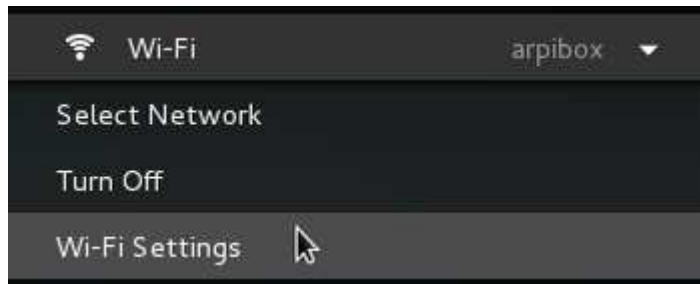
All the active or inactive connections are listed here, and the Wi-fi networks are detected as well. Left-click on the network you want to connect to, and a dialog box will pop up. Select your network then "Connect". A password is then required (the one given by your Internet Service Provider). Here on the Gnome desktop:



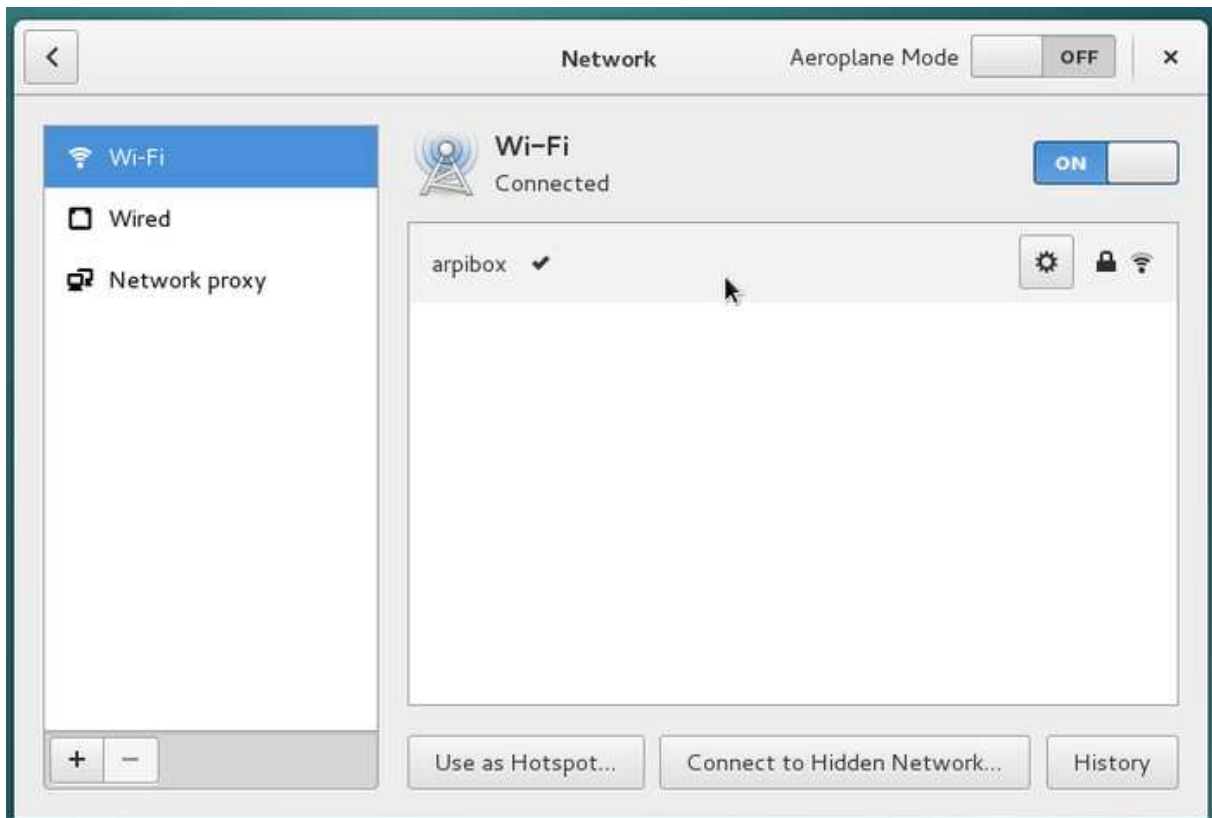
Then enjoy your Wi-fi connection:



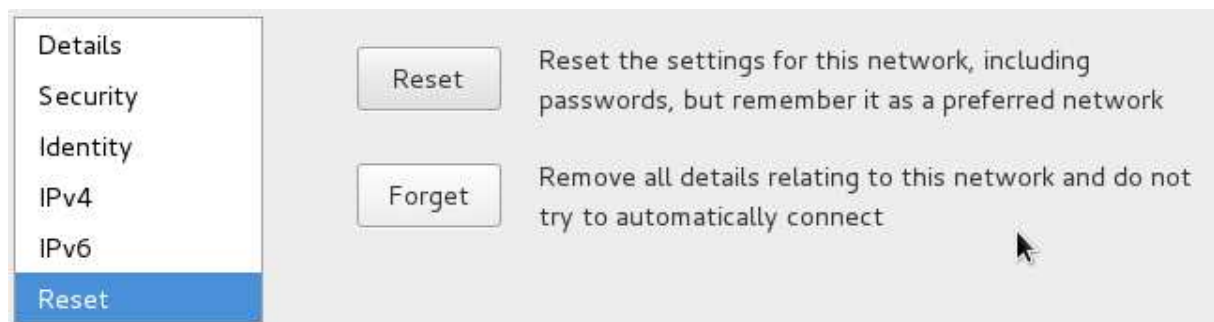
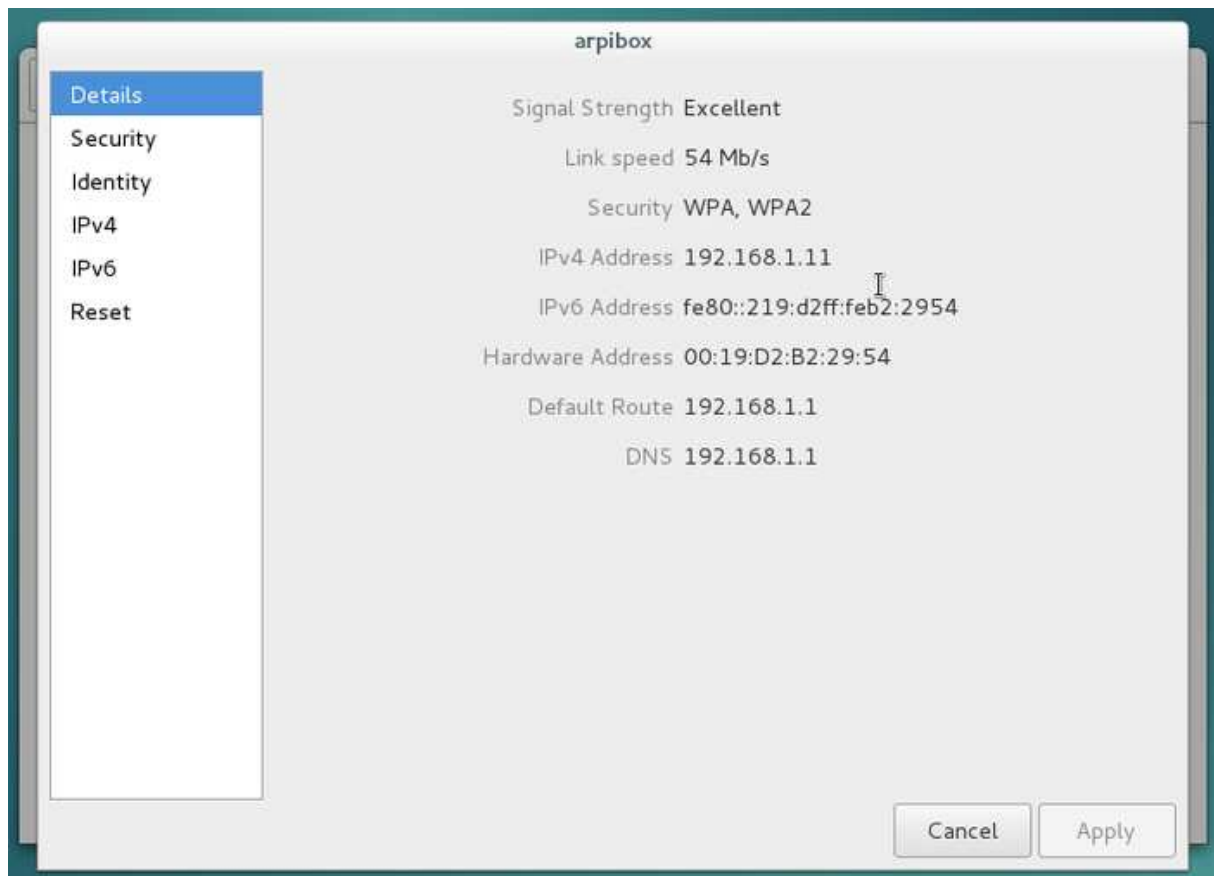
To tweak the Wi-fi settings, select the dedicated entry in the main menu:



You will be able to modify the connection settings, and even "Forget" it:







*Wi-fi connection settings on Gnome-Shell*

### 6.1.4.Wicd

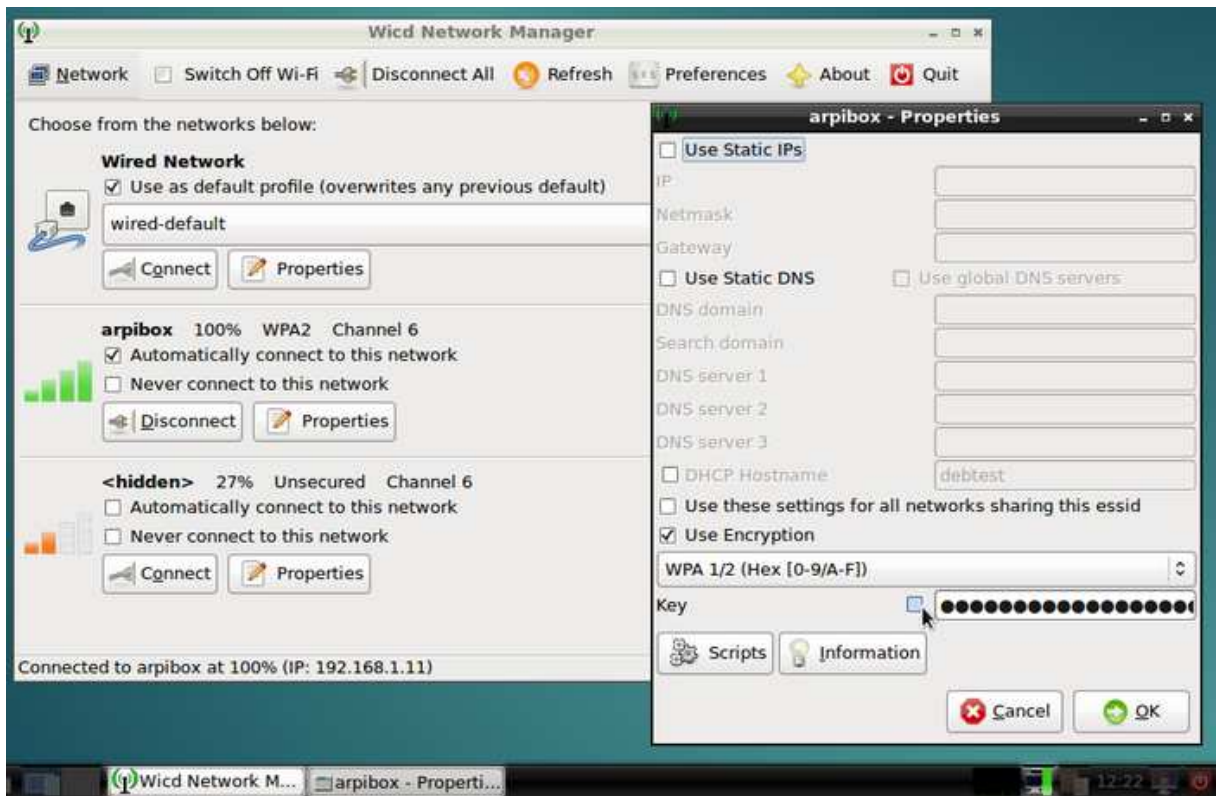
**Wicd**<sup>59</sup> (**W**ireless **I**nterface **C**onnection **D**aemon) is an independent network manager delivered with LXDE.

However, it can be used on any other desktop.

Its interface is slightly different compared to the one of the Gnome manager, but the functionality is the same.

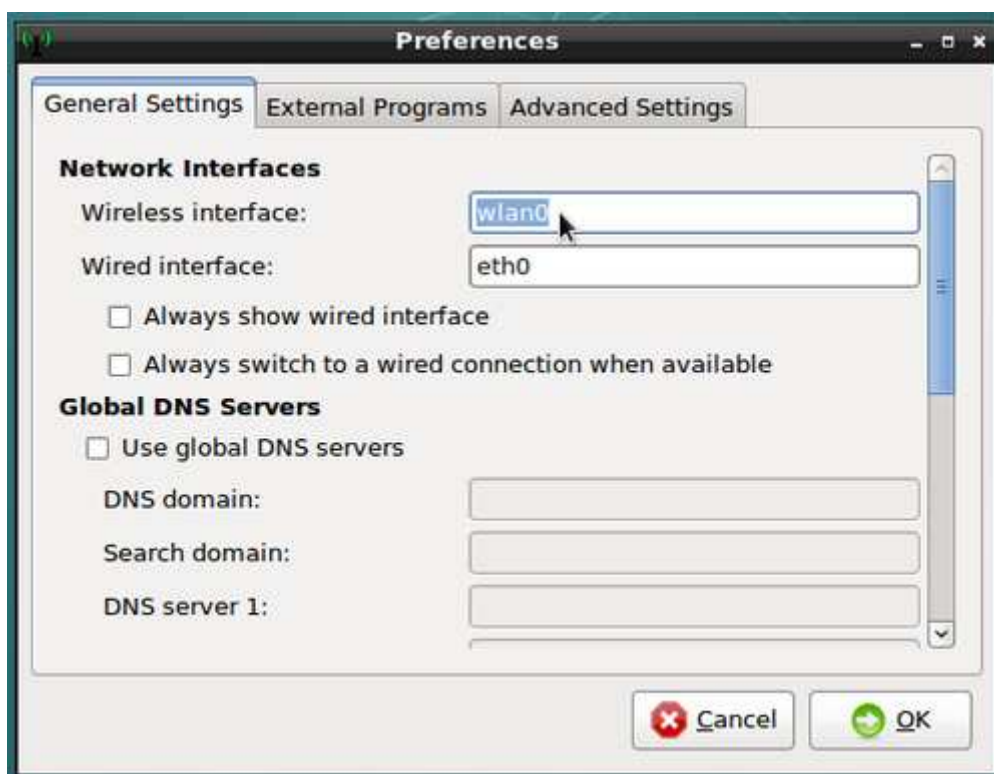
Wicd is available from its icon in the task bar (usually at the bottom right, in the notification area); A left-click opens the main interface which let you select your network access:

<sup>59</sup> <https://wiki.debian.org/WiFi/HowToUse#Wicd>



*Wicd:connection properties*

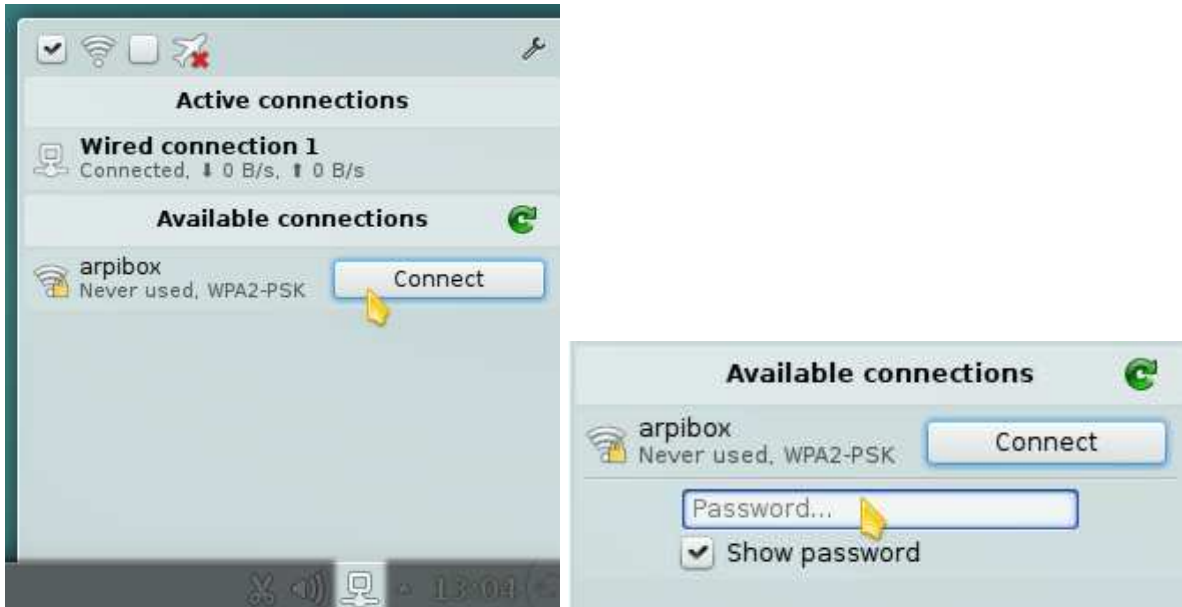
If the network does not show up, verify first that in the Wicd "Preferences", the right interface (the very one found in the previous chapter: "wlan0" for example) is selected for the Wi-fi network.



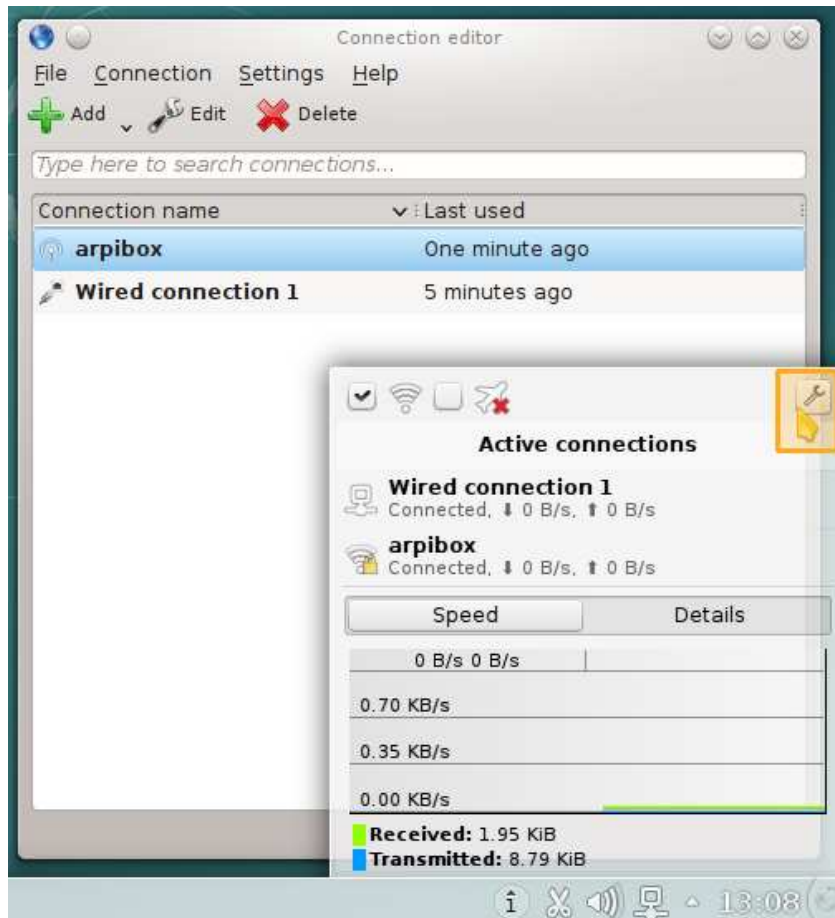
*Wicd: Connection manager preferences*

## 6.1.5.KDE Connection editor

On KDE, the network connections are managed like on the other desktops: through a graphical interface. A left-click on the network icon in the notification area and you access to the list of available networks. A click on "Connect" and KDE ask you to enter the network Wi-fi key:



When this is done, you can connect your computer using this Wi-fi network and/or modify its settings.



*KDE: network connexion editor*

## 6.2. Configuring your printer

---



C.U.P.S.<sup>60</sup>, is an acronym for *Common Unix Printing System*, and as its name suggests it, a printer management system created by Apple Inc. for OSX and other Unix-like systems. It is used by default on Debian to manage printers. To achieve this, CUPS uses the Internet Printing Protocol (ipp) to drive both the local and the network printers.

What is enough to remember is that CUPS is the tool managing the printers 😊

If you chose an exotic installation, you might need to install yourself some Debian packages.

Within a terminal in administrator mode (thanks to "su" [see chap.3.8.3](#)):

```
apt update && apt install --install-recommends task-print-server
```

### Compatibility

Likewise Wi-fi devices, printers need external drivers. However their detection by default is much better, which enables Debian to embed a simplified printer setting interface (detailed in the first section of this chapter). Methods may vary from one manufacturer to another.

- **for Brother:** visit the dedicated page <sup>61</sup>,
- **for Epson:** [add the following repository](#) (chap.8.1.3) to your "sources.list" file:

```
deb http://download.ebz.epson.net/dsc/op/stable/debian/ lsb3.2 main
```

- **for HP:** make sure the `hplip` package is installed on your machine. If your printer is very recent, visit the dedicated page<sup>62</sup>, download the packages corresponding to your printer for the Debian system (file ending by ".deb") and install these packages using either the `dpkg` or `gdebi` tool (see chap.8.7).

To check your printer compatibility, you can visit the dedicated page of the [openprinting.org](https://www.openprinting.org) site:

<https://www.openprinting.org/printers>



Regardless of the chosen method, don't forget to plug the power cord at both ends, to verify that the paper tray is not empty, to connect the printer either directly to your computer, or to the local network, and turn its power on. 😊

### 6.2.1. Simplified graphical method with system-config-printer

---

The Debian GNU/Linux desktops include the **system-config-printer** tool, a simplified graphical manager to add and configure your printer.

<sup>60</sup> [https://wikipedia.org/wiki/Common\\_Unix\\_Printing\\_System](https://wikipedia.org/wiki/Common_Unix_Printing_System)

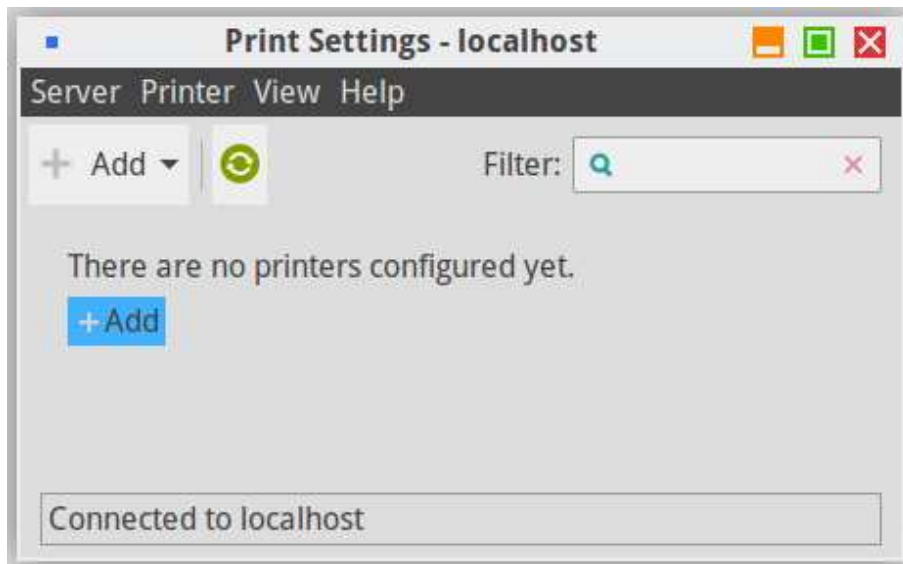
<sup>61</sup> [http://welcome.solutions.brother.com/bsc/public\\_s/id/linux/en/download\\_prn.html](http://welcome.solutions.brother.com/bsc/public_s/id/linux/en/download_prn.html)

<sup>62</sup> <http://hplipopensource.com/hplip-web/index.html>

If you followed the Debian classic installation procedure, this tool is already present on your system and can be found usually at "System > Print Settings", or in the Control Centers for Gnome or KDE. If you don't find it, simply open a terminal and launch:

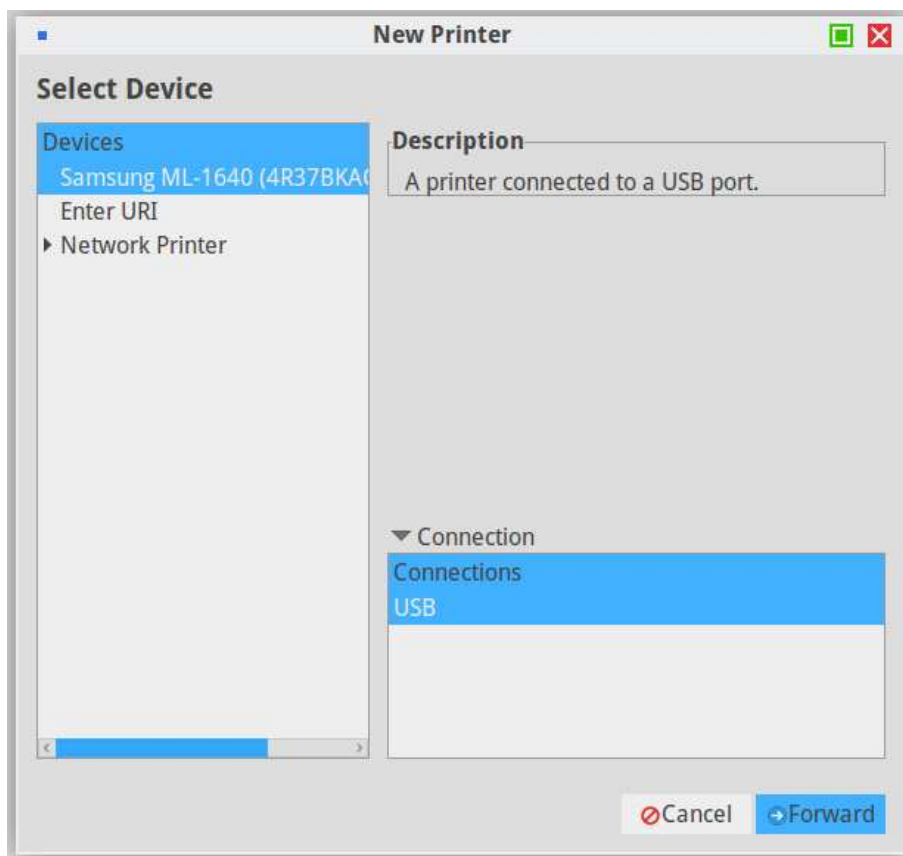
```
system-config-printer
```

In the first window which opens you can press the "Add" button to add a printer.

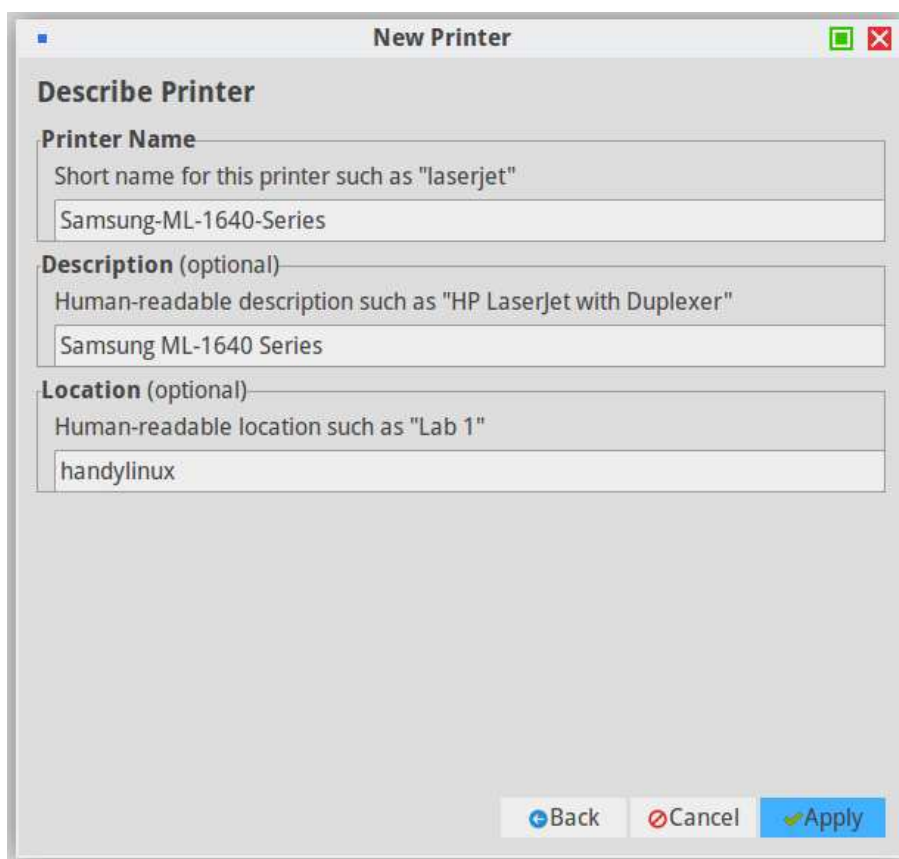


*System-config-printer: interface by default*

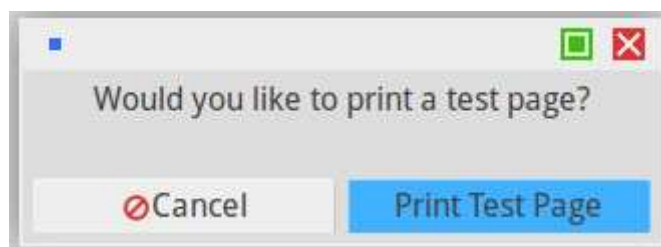
Then you access the "New Printer" window which presents the local or network "Detected Devices" list. Select your printer and click the "Forward" button:



If your printer was correctly detected, its driver has been selected for you. You can describe your printer in the next window. Once you are done with the modifications click on the "Apply" button:

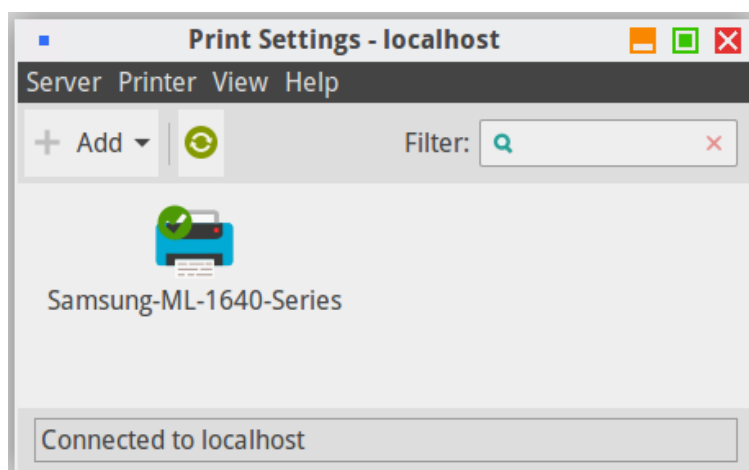


The installer then ask you if you want to test the printer:



The printer is now correctly added to your machine. It is available for the printing tasks executed by any of the installed applications on your system (LibreOffice, Evince (for pdf files), etc.).

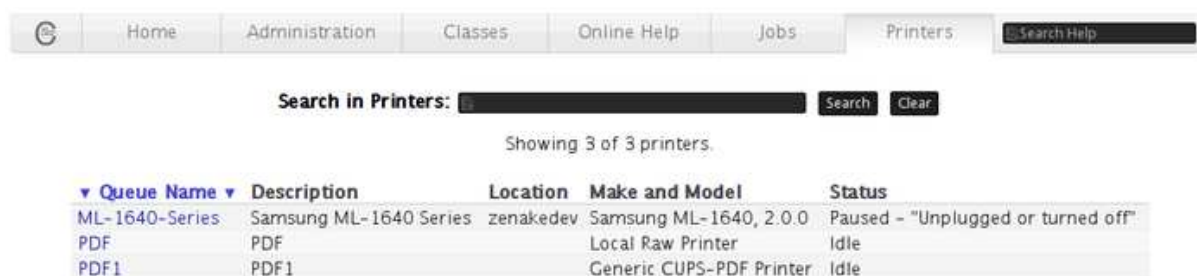
To change your printer settings, double-click on its icon:



Small hint: to change the printer behavior in case of error, go to your printer settings, click on the "Policies" category, and select the "**Abort job**" option (instead of "**Stop printer**") in the "Error policy" field.

## 6.2.2. Universal graphical method with CUPS

The simplified interface is handy, but the classic CUPS interface is no longer as austere as it used to be. You can access it from your Internet navigator since CUPS is a *print server* offering a web interface. So let's meet on the page <http://localhost:631/printers/> which displays all the detected printers (don't forget to connect your printer either directly to your computer, or to the local network, and to turn its power on).

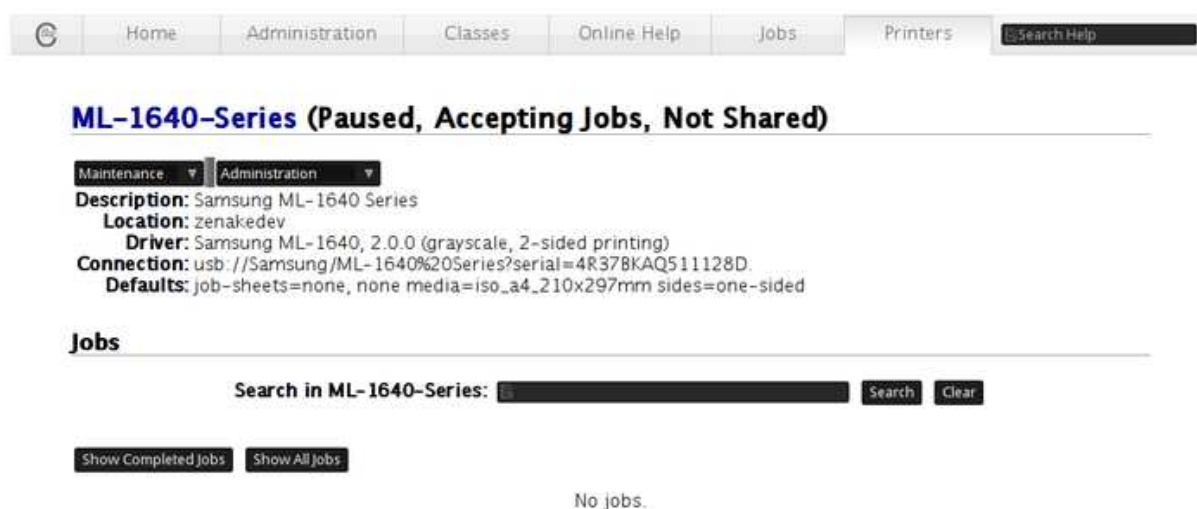


The screenshot shows the CUPS web interface with the 'Printers' tab selected. The navigation bar includes Home, Administration, Classes, Online Help, Jobs, Printers, and Search Help. A search bar is present with the text 'Search in Printers:'. Below the search bar, it says 'Showing 3 of 3 printers.' A table lists the printers:

Queue Name	Description	Location	Make and Model	Status
ML-1640-Series	Samsung ML-1640 Series	zenakedev	Samsung ML-1640, 2.0.0	Paused - "Unplugged or turned off"
PDF	PDF		Local Raw Printer	Idle
PDF1	PDF1		Generic CUPS-PDF Printer	Idle

CUPS: "Printers" tab of the web interface

A left-click on your printer opens the dedicated page:



The screenshot shows the CUPS web interface for a specific printer, 'ML-1640-Series (Paused, Accepting Jobs, Not Shared)'. The navigation bar is the same as in the previous screenshot. Below the printer name, there are two tabs: 'Maintenance' and 'Administration'. The 'Administration' tab is selected, showing the following information:

**Description:** Samsung ML-1640 Series  
**Location:** zenakedev  
**Driver:** Samsung ML-1640, 2.0.0 (grayscale, 2-sided printing)  
**Connection:** usb://Samsung/ML-1640%20Series?serial=4R378KAQ511128D  
**Defaults:** job-sheets=none, none media=iso\_a4\_210x297mm sides=one-sided

Below this information, there is a 'Jobs' section with a search bar and buttons for 'Search' and 'Clear'. There are also buttons for 'Show Completed Jobs' and 'Show All Jobs'. The text 'No jobs.' is displayed below these buttons.

which includes the "Maintenance" and "Administration" menus. Depending on the selected operations, the administrator password will be requested.

Maintenance	Administration
Print Test Page	Modify Printer
Resume Printer	Delete Printer
Reject Jobs	Set Default Options
Move All Jobs	Set As Server Default
Cancel All Jobs	Set Allowed Users

More information of the Debian SystemPrinting Wiki: <https://wiki.debian.org/SystemPrinting>

## 6.3. Check for updates

---



**Debian updates** have nothing to do with *Windows' updates...*

The GNU/Linux system updates are the **direct evidence of one of the free software strengths: the public sources.**

As opposed to the proprietary systems, hiding their software flaws (since they sell it) as long as possible, the free distributions publish their software flaws as soon as they are discovered and fix them immediately.

So, when a small window suddenly pops up and invite you to update your system, say yes, of course, and your computer will thank you a all lot.

- [Updates using a terminal](#) (chap.6.3.1)
- [Updates using the Synaptic](#) package manager (chap.8.3.3)
- [Updates using Apper on KDE](#) (chap.8.4.1)
- [Updates with the simplified Debian software center](#) (chap.8.5.2)

### 6.3.1. Update with a terminal

---

The terminal, this little box which frightens you so much, whereas it is actually your friend ... yes yes ... your friend 😊.

You want a proof ? Easy: we are going to update the entire system using just one line.

We start by opening a terminal and log in as administrator. That is (depending on your environment) from the Applications menu > System > "Administrator Terminal", or in the more classic way, open a terminal and type the command:

```
su
```

In both cases, the administrator password is requested ([see chap.3.8.3](#)). Once connected as "root" in the terminal, cut and paste this line:

```
apt update && apt dist-upgrade
```



**... wait a minute, what does that mean exactly ?**

- "apt": the command to invoke Debian package manager ;
- "update": reload the information concerning the available packages ;
- "&&": once this is done without error, launch what follows ;
- "apt": the same application verifies and applies the modifications ;
- "dist-upgrade": execute a complete update of the installed applications,

adding or removing packages as necessary. A confirmation to proceed will be requested. For a complete example have a look on the [Administrator example](#) in chapter 3.8.3.

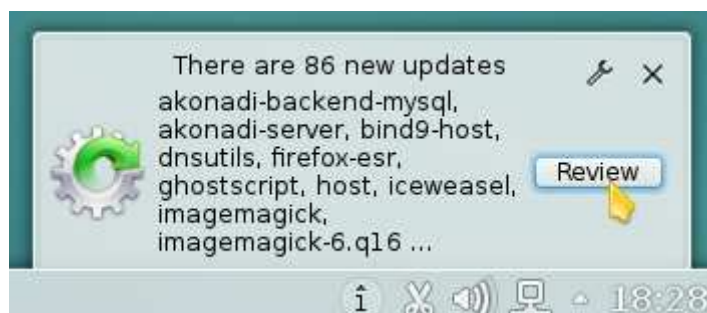


## 6.3.2. Updates notification

---

The GNU/Linux desktops use **APT** (standing for "Advance Package Tool") on the Gnome, Xfce and LXDE interfaces, or **Apper** (package management tool using *PackageKit*) on the KDE interface, and both tools include a **notification** function.

Thus, your system checks the repositories on a regular basis (when the network is available, of course), without even bothering you and displays a notification at the beginning of a new session when some updates are available. It is enough to accept the updates, or to click on the notification bubble opening up, to display the update manager tool integrated in your system.




*Update notification on the KDE interface*

If you want to **manually check** for available updates, you can use the procedure listed at the beginning of this chapter.

## 6.4. Retrieve your email account

---

 If you have an **online messaging service** like gmail.com or free.fr, you can access it from your Firefox web browser (launches from the application menus in the "Internet" section). Enter the address of your online account provider (openmailbox.org, yahoo.fr, orange.fr, google.com ...) in the address bar and launch by pressing [Enter].

If you are using a **local email client**, a dedicated Thunderbird-like software, Debian offers **Icedove**, which is the free equivalent.

### 6.4.1. Icedove: your free mail client

---



**Icedove** is primarily an **emailer**, but it is also a communication hub that allows you to read and write within newsgroups, chat with others (discussion group), and read RSS feeds provided by some websites.

If you have two or more email accounts, it might not be very practical to access each of them using the browser! Icedove is an application that brings together all the mail boxes of all your email accounts, in one single convenient interface.

**Icedove** is a **clone of Mozilla Thunderbird**, the eMail client of ,the Mozilla foundation. Due to legal issues around its icon copyrights, Thunderbird is not integrated into Debian but Icedove provides exactly the same functionality.

To open Icedove, from an application list or a menu, select the "Mail client" from the "Internet" category.

### 6.4.1.1.Icedove setup

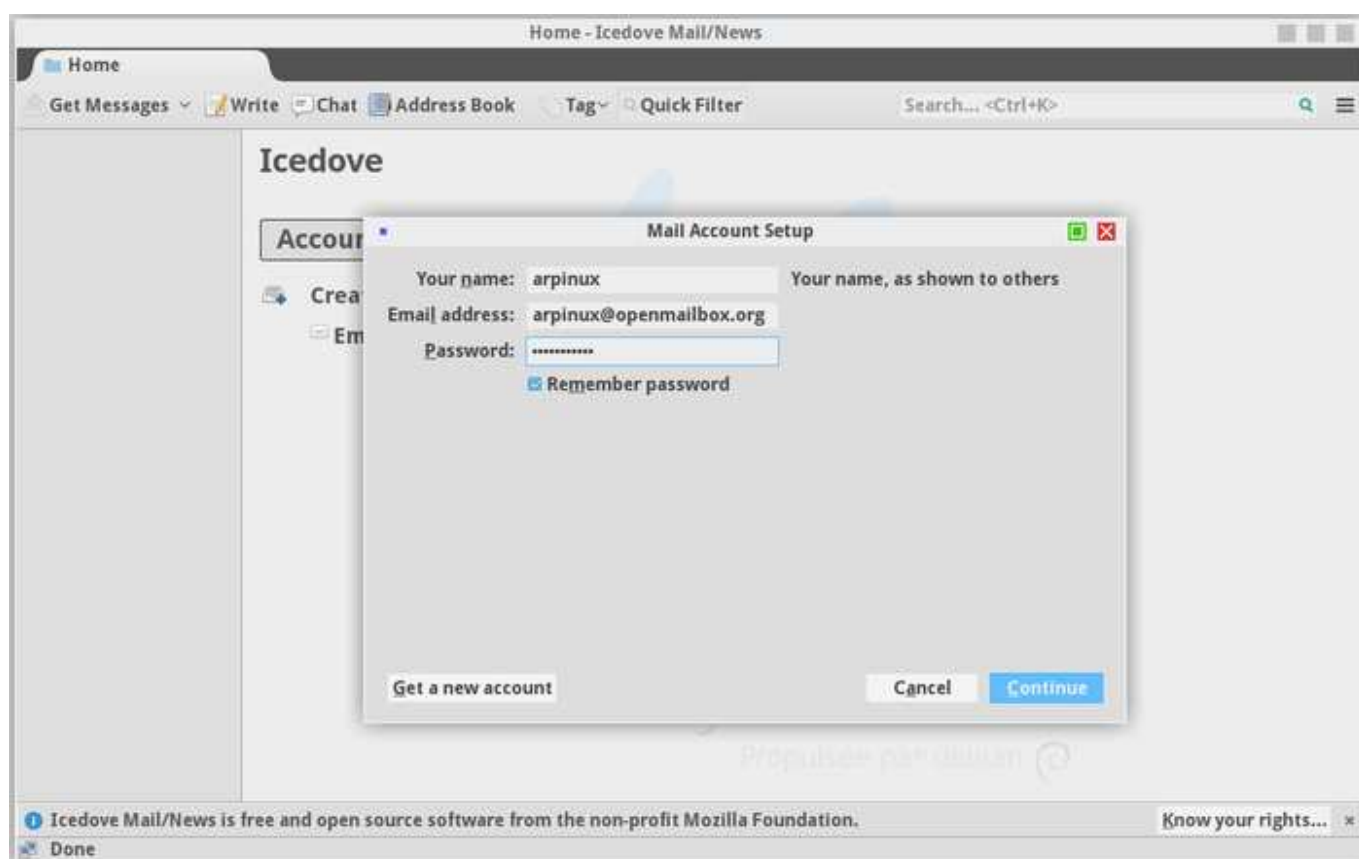
---

At first startup, Icedove provides temporary configuration interface and a foreground window that allows you to create an account with two suppliers and partners.

If you want to take advantage of this option, fill in the fields and let you guide, the configuration will be automatic.

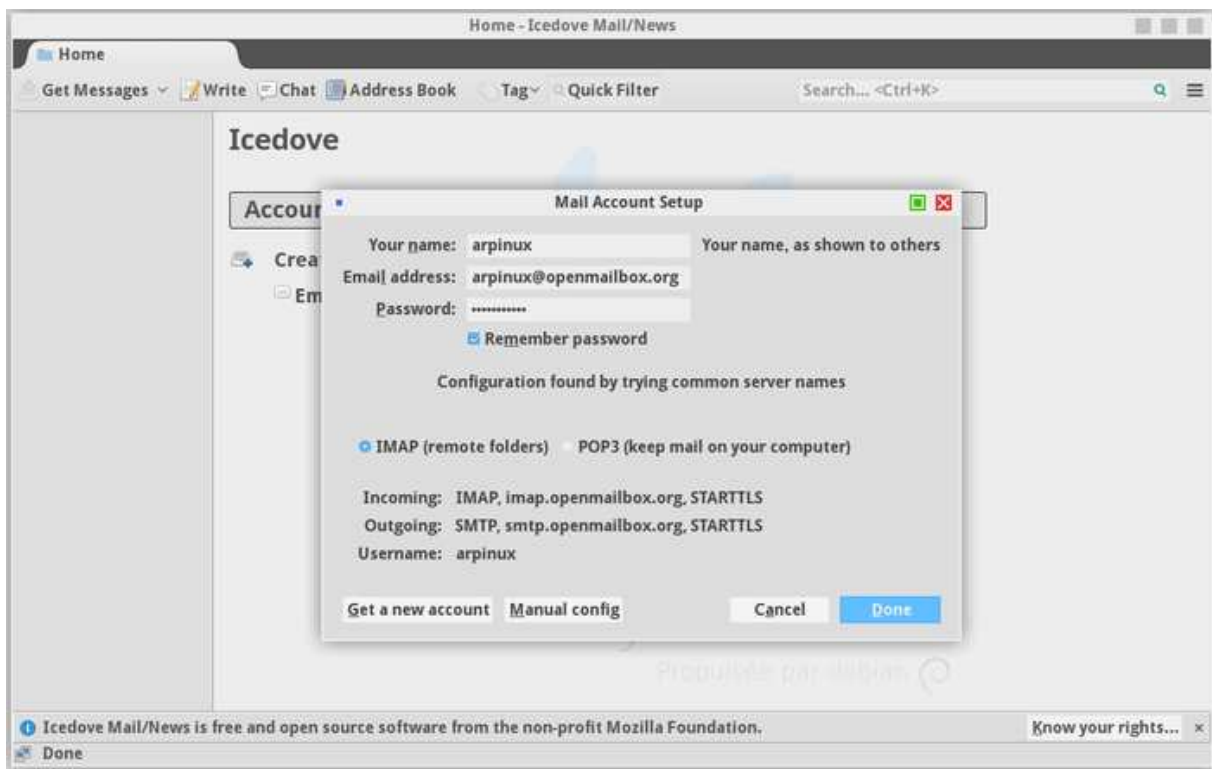
If you are not interested you can click on "Skip this step and use my existing address".

Another window opens. Then provide the requested information about your account. You can choose whether Icedove must remember the password. If you uncheck this option, you must enter your password each time you connect.



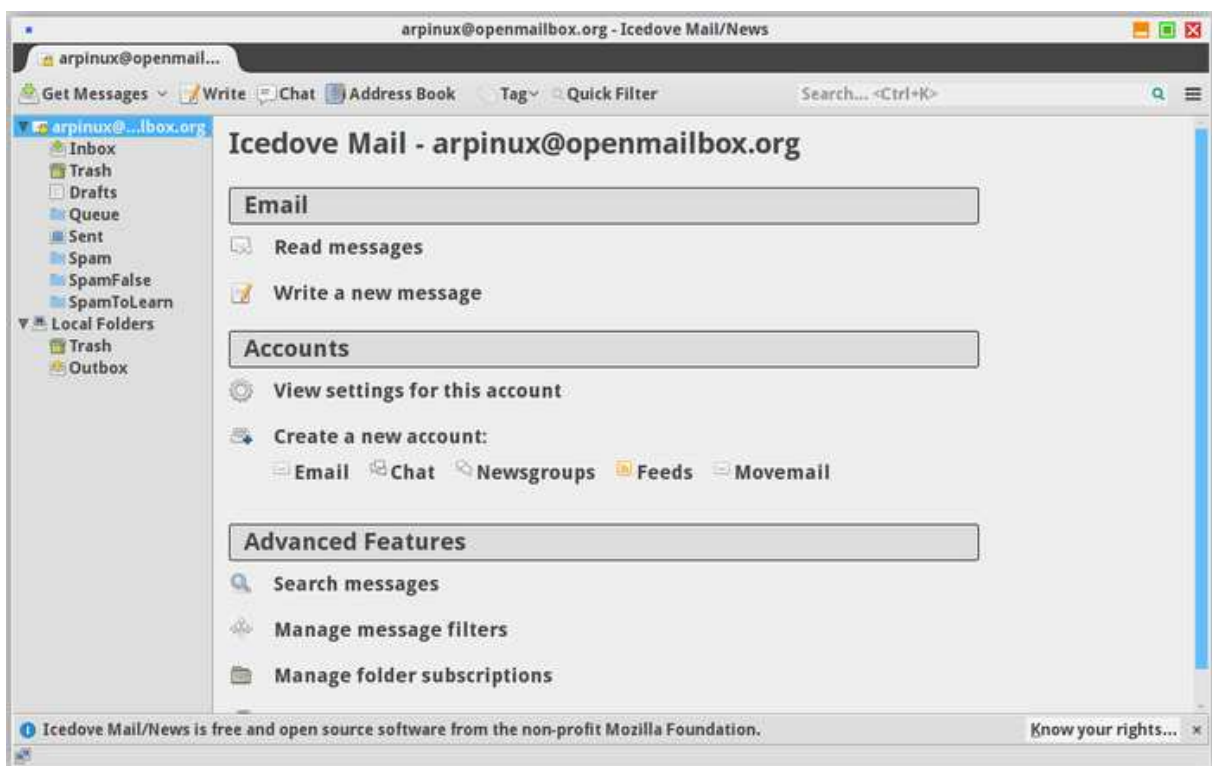
*Icedove: mail account configuration*

Click on "continue". Icedove then searches in its database then specific parameters for your email account. When finished click on "done".



*Icedove: mail account verification*

Icedove now displays your account details in the right column, starts downloading all your emails and, depending on your provider, all your contacts (this may take sometime). Now click on your account in left pane to unfold it, then on "Inbox". The interface takes its normal appearance:



*Icedove: default display*

### 6.4.1.2.Icedove interface

---

The Icedove interface is relatively intuitive. In the top tool bar you can check your mail, compose a new message, open a chat session, access your address book, put a label on a message, or filter your messages.

At the right of the menu bar you can find the Icedove menu, represented three small horizontal bars, from which you set your preferences, and launch various actions.

For example if you click on the Message menu (or right-click on given message), a list of actions is proposed like Reply, Forward, Archive, Mark as Junk, etc ...

If you are **looking for a specific message** you have several options:

- Type few characters in the search field of the top menu bar;
- Click on one of the column headers ("Subject", "From", "Date", "Attachments", "Star", "Tag" if you tag your messages, Read/Unread status, etc.): your messages will be sorted immediately according to the selected criterion (defined by the header name), which will let you find quickly an old message rather than scrolling through an endless list of emails. By clicking a second time on the column header the sort will be done in reverse order. Thus, by using this tool, you can customize the way your messages are presented according to your own criteria.

### 6.4.1.3.Retrieve other email account(s)

---

If you have more email accounts you want to access via Icedove, click on the Icedove menu (the three small horizontal bars at the right of the tool bar) and select "New Message" > "Existing Mail Account ..." and continue the Mail Account Setup procedure like explained above.

### 6.4.1.4.Icedove settings

---

In the modern presentation of Icedove (as well as other communication tools like Firefox and Chromium, for example) the application menu is define by the three small horizontal bars at the top right of the window. From this menu you have access to the parameters of the application. If you prefer the classic presentation, with the menu bar at the top of the window, click on this Icedove menu and then "Preferences" and tick "Menu Bar" on.

It is advisable to visit the Preferences setting window, where you can define the handling of junk mails, define a master password for all your account, customize your tag list, among all the settings available in there.

### 6.4.1.5. Protect your new and forwarded e-mails

---



#### ... Encrypt your e-mails ... what does that mean?

Let us take the example of the regular mail, sent via post-mail. You send a postcard to your mother-in-law for example, you know that what is written on it can be read by the postman or anyone else. Well, with your e-mails, it's exactly like the postcard, if you do not encrypt them.

*"Does not matter"* you say, *"I don't care if someone knows that I wrote to my mother-in-law that the weather is fine during our vacations"*. Perhaps. But you can write more than just mundane wordings in your messages, and you never know what can happen to them. You are not convinced? I ask you to reconsider if you really have nothing to hide by visiting this page on the FSF website: <https://emailselfdefense.fsf.org> .



**To effectively protect your electronic exchanges, use EnigMail!** <https://www.enigmail.net>

## 6.5. Login configuration

---

GNU/Linux systems follow the principle of rights and permissions by default. When you install Debian, a password is requested for the primary user. This password is requested at the beginning of the session.



*Gnome: authentication at session startup*

If you are using Debian in single-user mode, you can disable this password request in order to begin your working session directly when the computer is started. Debian uses three different default connection managers: **GDM** (on Gnome & Cinnamon), **LightDM** (on MATE, LXDE & Xfce) and **KDM** (on KDE).

## 6.5.1. Autologin with GDM

**GDM3**<sup>63</sup> is the default Gnome Display Manager for the default desktop environment on Debian 8 "Jessie". To enable automatic login, you need to edit its configuration file in administrator mode (see chap.3.8.3). The GUI way *with the mouse* just follows 😊 :

- Open a "**root**" terminal with the "**su**" command, the administrative password will be asked.
- Copy (to backup) then edit the appropriate file with this command:

```
cp /etc/gdm3/daemon.conf /etc/gdm3/daemon.conf.bak && nano
/etc/gdm3/daemon.conf
```

At the beginning of the file, locate the following lines:

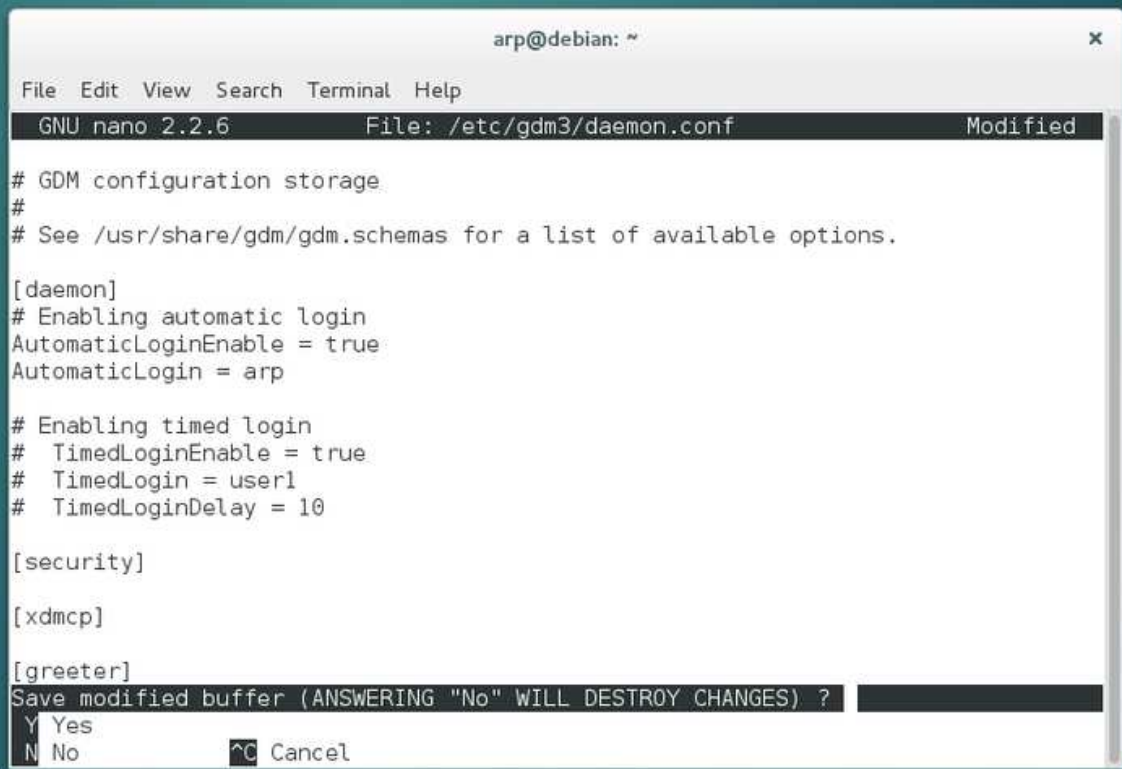
```
[daemon]
# Enabling automatic login
# AutomaticLoginEnable = true
# AutomaticLogin = user1
```

Edit it to obtain this result:

```
[daemon]
# Enabling automatic login
AutomaticLoginEnable = true
AutomaticLogin = my_login
```

Don't forget to adapt "my\_login" to your login.

Save the file with [Ctrl]+x then answer "Y" for "yes":



```
arp@debian: ~
File Edit View Search Terminal Help
GNU nano 2.2.6 File: /etc/gdm3/daemon.conf Modified
# GDM configuration storage
#
# See /usr/share/gdm/gdm.schemas for a list of available options.

[daemon]
# Enabling automatic login
AutomaticLoginEnable = true
AutomaticLogin = arp

# Enabling timed login
# TimedLoginEnable = true
# TimedLogin = user1
# TimedLoginDelay = 10

[security]

[xdmcp]

[greeter]
Save modified buffer (ANSWERING "No" WILL DESTROY CHANGES) ?
Y Yes
N No ^C Cancel
```

*GDM: editing configuration file in Nano CLI editor*

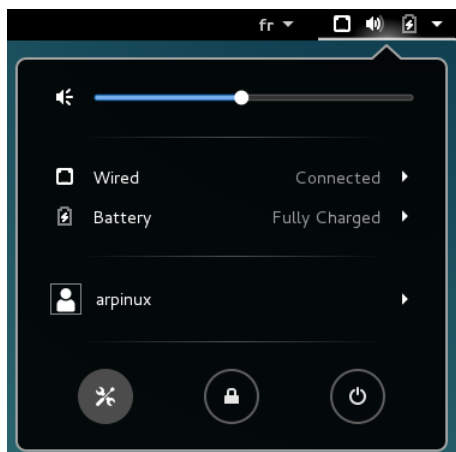
<sup>63</sup> <https://wiki.debian.org/GDM>

You can close your terminal, the next time you restart, you will not be prompted for your password.  
In case of problem, you can retrieve your original file with this command in administrator mode:

```
mv -f /etc/gdm3/daemon.conf.bak /etc/gdm3/daemon.conf
```

### 6.5.1.1. The graphical method

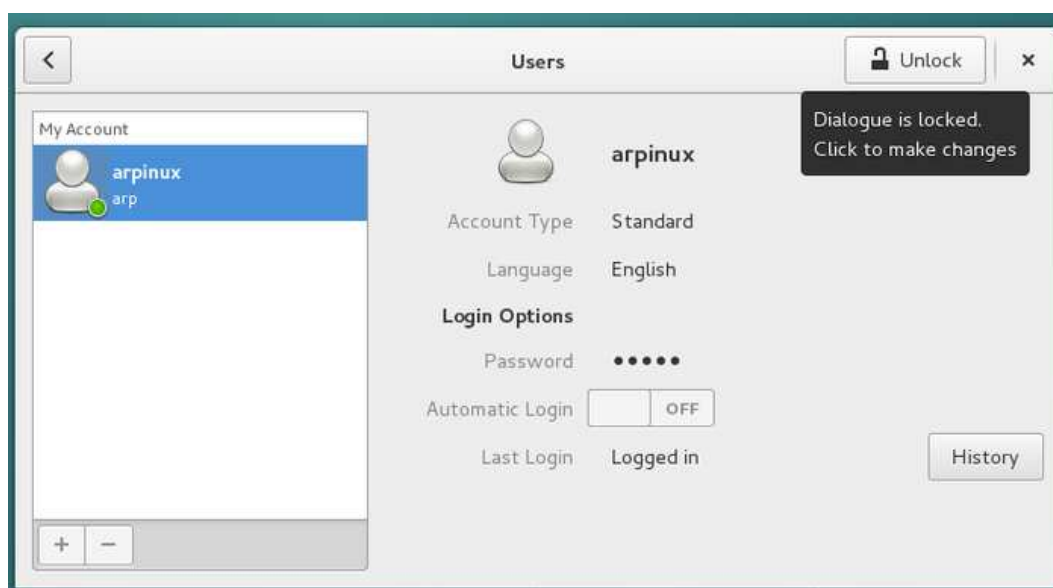
- From the system widget, click on the Gnome "Settings" icon:



- In the Settings window, select "Users"



- Unlock the application, the administrative password will be asked.



- Activate the automatic login:



## 6.5.2. Autologin with LightDM

You can setup **LightDM**<sup>64</sup> by editing its main configuration file. To enable autologin, you'll have to edit it with a root terminal ([see chap.3.8.3](#)).

Open a terminal and become root with the "**su**" command. The administrator password will be asked. Once connected in root terminal, copy (to backup) and edit the dedicated file with:

```
cp /etc/lightdm/lightdm.conf /etc/lightdm/lightdm.conf.bak && nano /etc/lightdm/lightdm.conf
```

This command opens the configuration file in the CLI **Nano** editor. Use arrows to scroll and locate those lines:

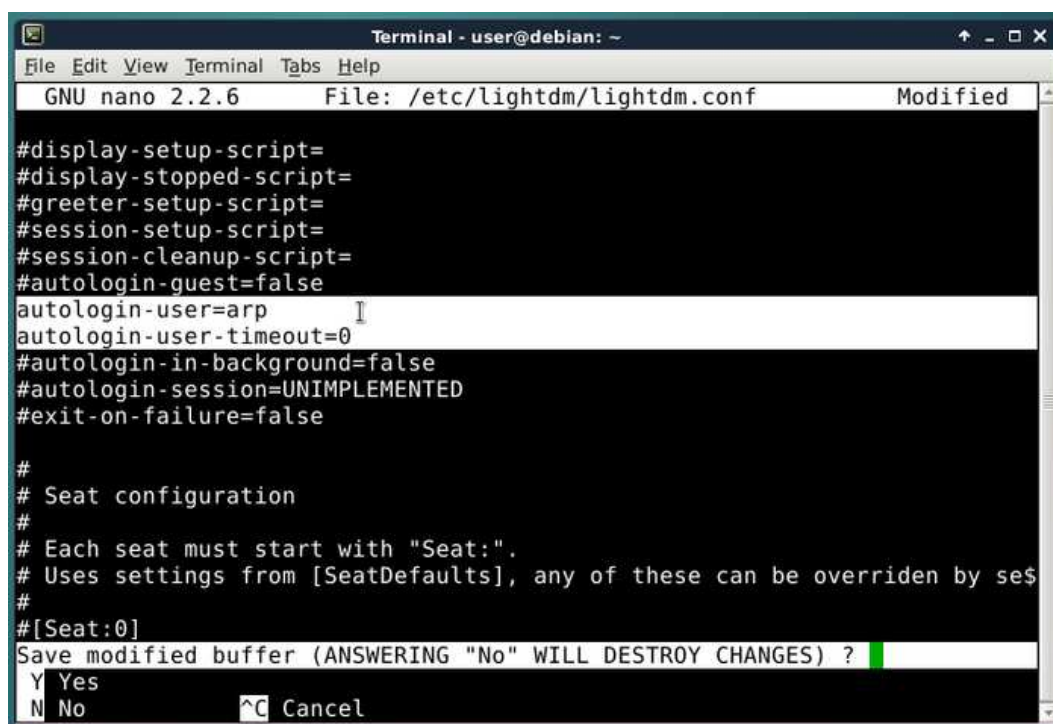
```
#autologin-user=  
#autologin-user-timeout=0
```

Remove the "#" in front of each line then add your login like that:

```
autologin-user=my_login  
autologin-user-timeout=0
```

With "my\_login" replaced by your login.

Save the file with the [Ctrl]+x shortcut, the answer "Y" for "yes":



```
Terminal - user@debian: ~  
File Edit View Terminal Tabs Help  
GNU nano 2.2.6 File: /etc/lightdm/lightdm.conf Modified  
#display-setup-script=  
#display-stopped-script=  
#greeter-setup-script=  
#session-setup-script=  
#session-cleanup-script=  
#autologin-guest=false  
autologin-user=arp  
autologin-user-timeout=0  
#autologin-in-background=false  
#autologin-session=UNIMPLEMENTED  
#exit-on-failure=false  
  
#  
# Seat configuration  
#  
# Each seat must start with "Seat:".  
# Uses settings from [SeatDefaults], any of these can be overridden by se$  
#  
#[Seat:0]  
Save modified buffer (ANSWERING "No" WILL DESTROY CHANGES) ?  
Y Yes  
N No ^C Cancel
```

*LightDM: edition of the configuration file in Nano CLI editor*

You can close your terminal: your password won't be asked anymore at login time.

In case of troubles, just enter this command in administrator mode to restore your previous LightDM configuration:

```
mv -f /etc/lightdm/lightdm.conf.bak /etc/lightdm/lightdm.conf
```

<sup>64</sup> <https://wiki.debian.org/LightDM>



### 6.5.3.KDM configuration on KDE desktop

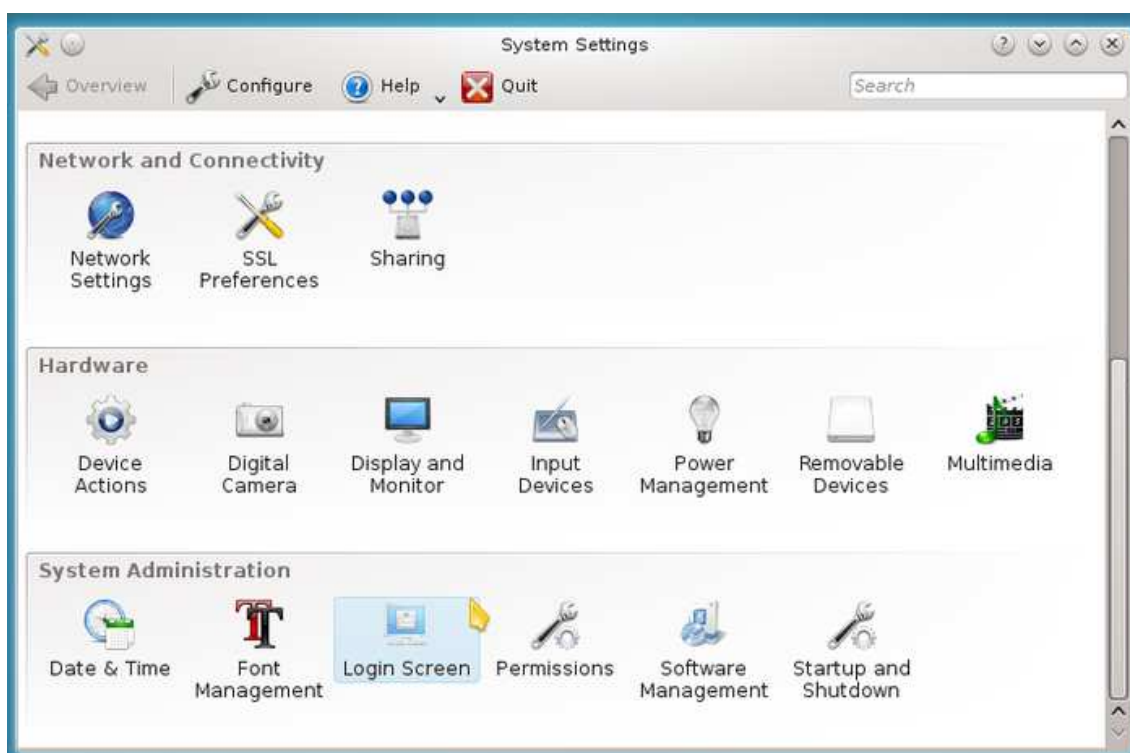
---



*KDM: KDE login screen on Debian 8*

**KDE** is a truly complete environment and **KDM**<sup>65</sup> provides you with a graphical interface to configure your login screen. The configuration tool will allow you to manage the wallpaper, the language used, some options and of course, the automatic connection.

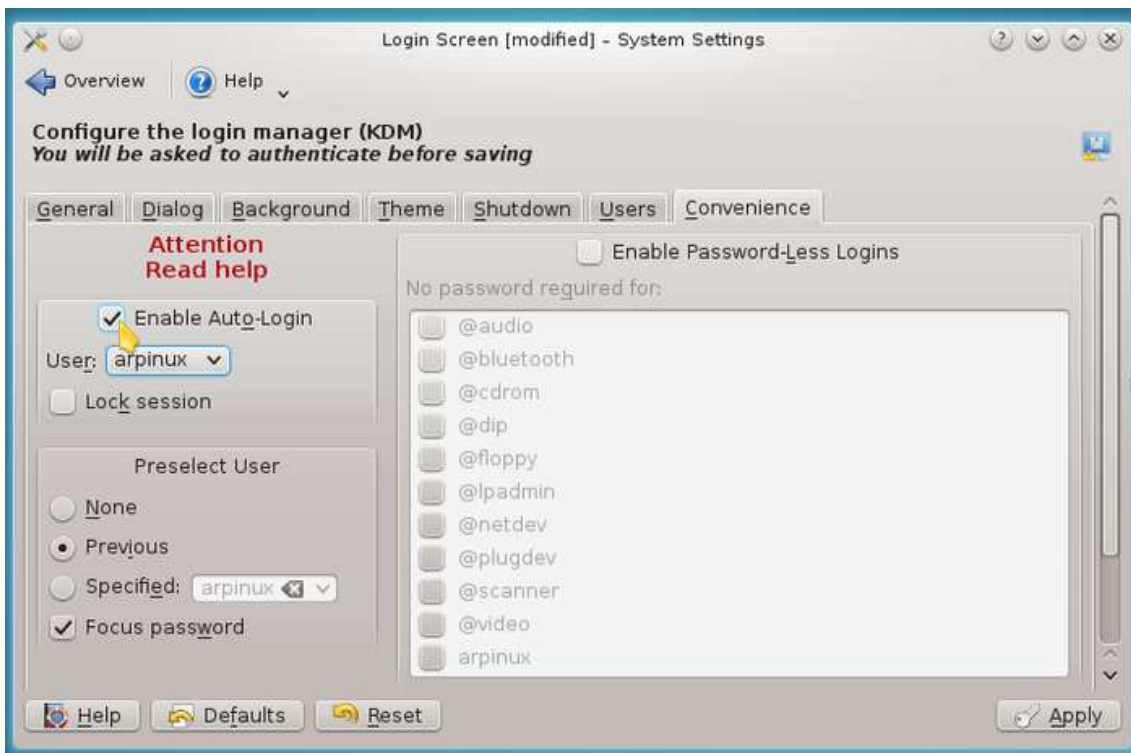
So open KDE's **KickOff menu** > Applications > Settings > System settings > System administration > Login screen.



*KDM: login screen configuration launcher on KDE*

Enable autologin from the "Convenience" tab:

<sup>65</sup> <https://docs.kde.org/stable4/en/kde-workspace/kdm/configuring-kdm.html>



*KDM: configuration interface*

Tick the case "Enable Auto-login" then select the user into the "User" drop-down menu. As this configuration is part of the system settings, the root password will be asked:



*KDE: administrator password request*

Your password won't be asked anymore at login time.



*KDE: init desktop*

## 6.6.Navigate on Internet

---

### 6.6.1.About Internet browser

---



The primary function of a web browser is to let you consult information available on the Web (World Wide Web).

The user gives the browser the web address of the resource to consult. There are three ways to give a web address:

- **Type yourself the web address** in the address bar of the browser,
- Select a favorite in your **list of bookmarks**, knowing that each is associated with a favorite web address,
- **Follow a link** on a web page, knowing that each link is associated with a web address.

The browser connects to the web server hosting the target resource. The communication protocol commonly used is HTTP or HTTPS (secure version).

- If the resource is an HTML page, a compatible video file, or a PDF file, the browser display a page.
- If the resource is unknown or not handled by the browser, the choice is yours: download or open the resource with an external application.

### 6.6.2.Firefox: a free web browser

---

**Mozilla Firefox**<sup>66</sup> is an open and free web browser, developed and distributed by the **Mozilla Foundation**<sup>67</sup> with the help of thousands of volunteers using the free software/open source development methodology (dixit wikipédia<sup>68</sup> ).

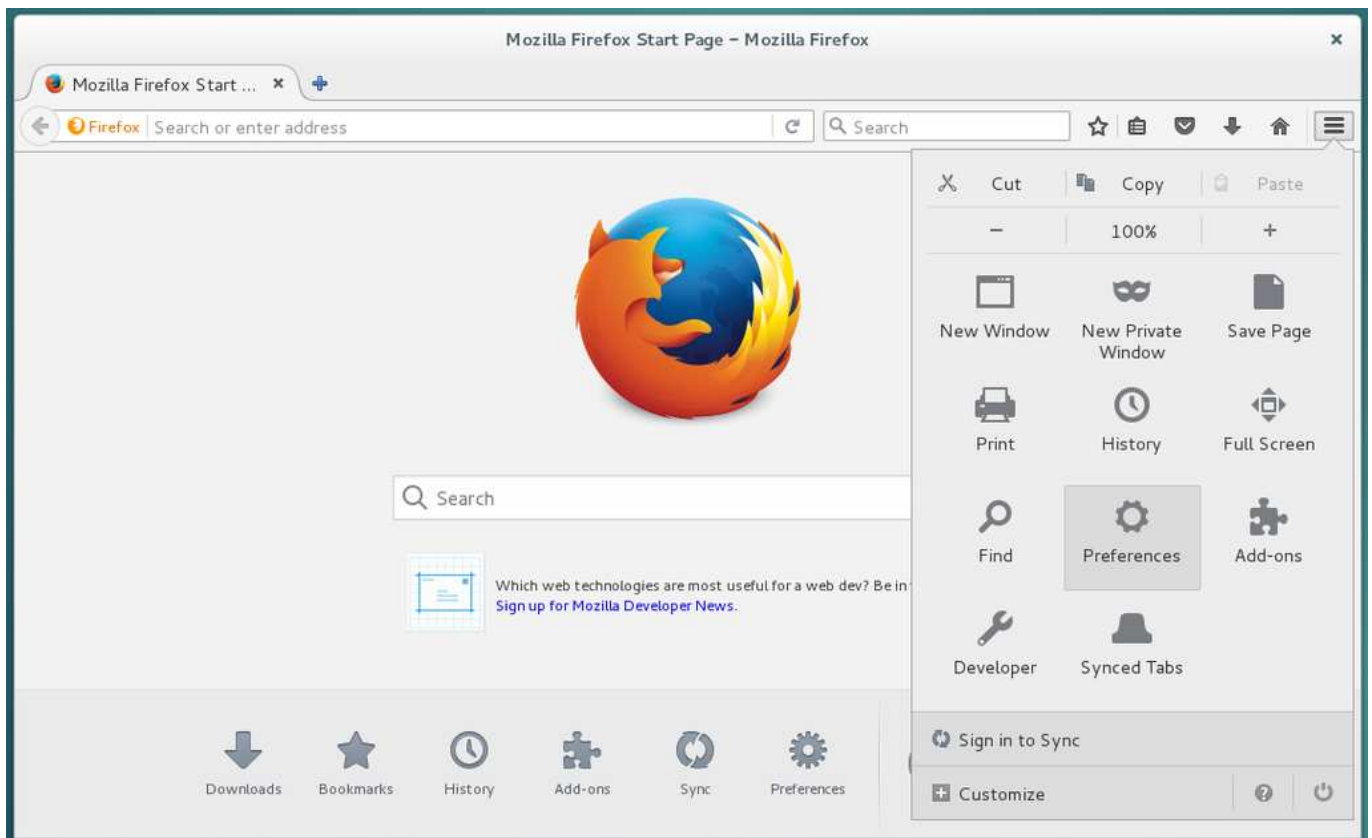
Debian integrates **Firefox-ESR**, the "Extended Support Release" version, aimed at large organizations (and small ones) for mass deployments. This version is maintained for 10 months from its release date and only benefits from security updates, ensuring a stable and secure browser.

---

<sup>66</sup> <https://www.mozilla.org/en/firefox/desktop/>

<sup>67</sup> <https://www.mozilla.org>

<sup>68</sup> [https://wikipedia.org/wiki/Mozilla\\_Firefox](https://wikipedia.org/wiki/Mozilla_Firefox)



*Firefox on Debian*

The main window consists of the following elements (from top to bottom):

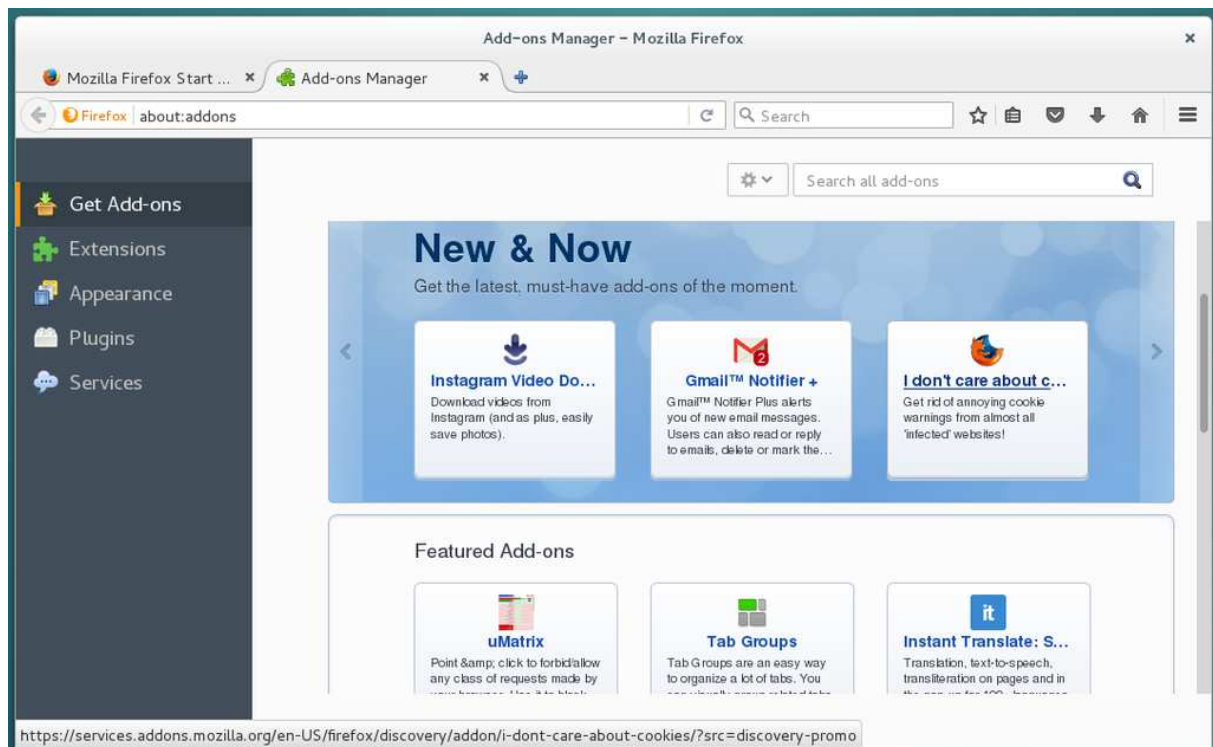
- **The tab bar** displays the open Internet pages and allows you to switch from one to another with a single click.
- **The tools bar** displays: the forward button, the address bar, the search field, bookmarks button, the main Firefox menu.
- **the browsing pane** displays the web pages contents.
- **Customize and configure** Firefox through its main menu that appears when clicking on the 3 bar menu icon (at the right end of the tool bar):
  - The first line of the menu allows you to perform **common editing operations** (cut/copy/paste).
  - Then comes the **zoom line**... it's explicit.
  - Several **tools** are available to navigate in "private mode", view your history or directly print a web page.
  - The **Preferences button** takes you to the main configuration menu: 8 tabs with explicit entries.
  - The **Addons button** takes you to the extensions configuration menu (active or inactive).
  - The **Customize** button launches the "edit mode" of Firefox: the left pane presents "Additional Tools and Features" that you can move either to the Firefox main menu

(currently open) or directly in the tool bar, and vice versa ... Well, you tweak the look of the browser by just dragging and dropping items in the interface.

When you are done click on "Exit Customize" at the bottom of the main menu.

- The "?" button takes you to the official Firefox on-line help. Mozilla contributors have worked well. Online help<sup>69</sup> is comprehensive and detailed: you can explore there all the possibilities of your browser.

To add features to your Firefox browser, navigate to Preferences > Add-ons. In the tab that opens, select "Get Add-ons" and choose from the available modules<sup>70</sup>.



*Firefox: Add-ons catalog*



The default version of Firefox on Debian "stable" can be a bit old (v45). If you wish to obtain a more recent version (v49), use the external repositories of the Mozilla Foundation ([see chap.8.1.3.2](#)).

## 6.7.Watch a video

---



Debian GNU/Linux comes with a video player on each Desktop Environment (DE like Gnome or Xfce). Debian natively recognizes most common video formats (ogv, mkv, mp4, avi, webm...).

Once your system is installed (or in Live session), a double-click on a video file will open it with the default player of your DE.

<sup>69</sup> [https://support.mozilla.org/en/products/firefox?as=u&utm\\_source=inproduct](https://support.mozilla.org/en/products/firefox?as=u&utm_source=inproduct)

<sup>70</sup> <https://addons.mozilla.org/en/firefox/extensions/>

For Gnome or Cinnamon, it's the "Videos" player (Totem) that is automatically launched when double-clicking on a video:



*Totem: "Videos" and "Places" windows on Gnome-Shell*

Its use is very simple and intuitive. At the slightest movement of the pointer, the playback menu is displayed and allows you to browse the video file, set loop playback (the vertical bar formed by 3 points) or adjust the volume. The main menu gives you access to other functions:



*Totem: video player menu*

Each DE integrates its own player, all featuring the same basic functions, largely enough for a first use of a Debian system. As usual on Debian, you can add the multimedia software of your choice. I'll let you visit the list of applications available on the Debian wiki<sup>71</sup>.

The Xfce desktop comes with a multi-platform media player widely used by Windows®: **VLC**, a way to get started on Debian without changing your habits.

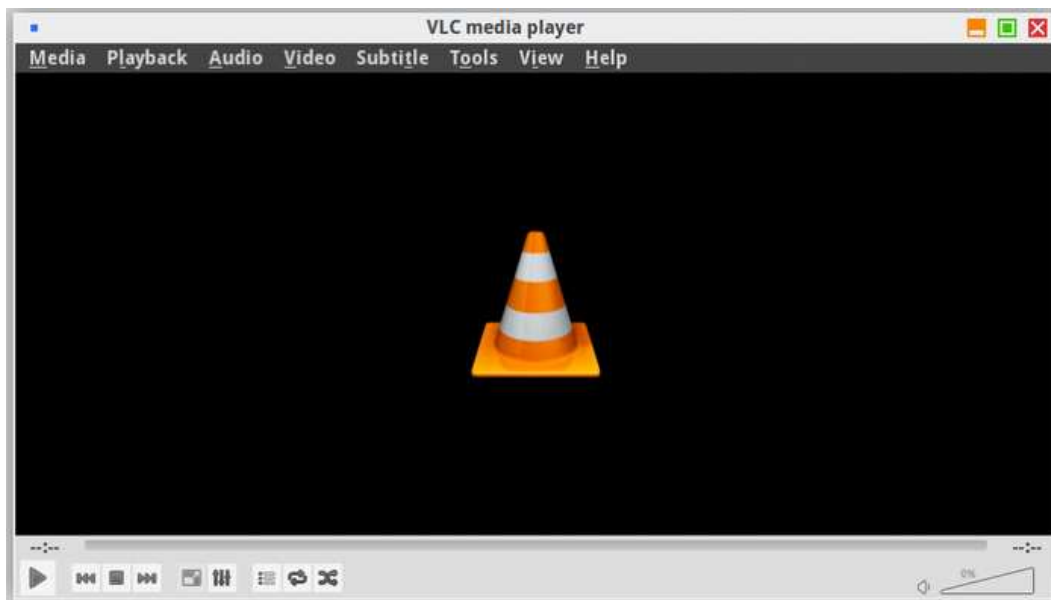
<sup>71</sup> <https://wiki.debian.org/Multimedia>

## 6.7.1.VLC: a multimedia player

---

**VLC**<sup>72</sup> is a free media player and a system capable of playing most multimedia files as well as DVDs, Audio CDs, VCDs, and various broadcasted protocols.

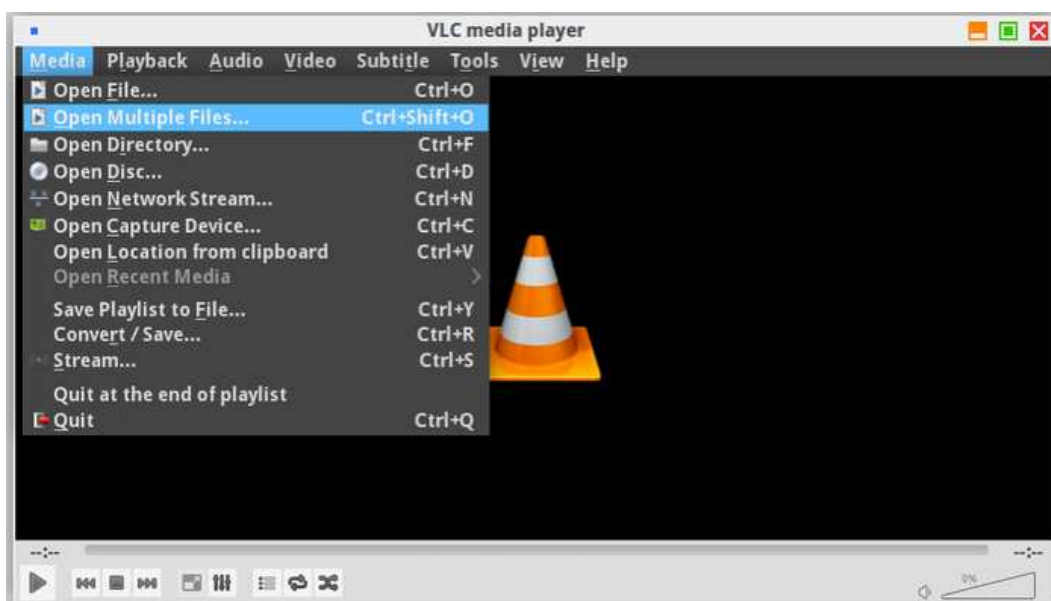
VLC opens with a double-click on a video file (if this is the default application defined for this action and this type of file) or from the applications menu > Multimedia > VLC Media Player.



**To open a video media:** click on the "Media" tab.

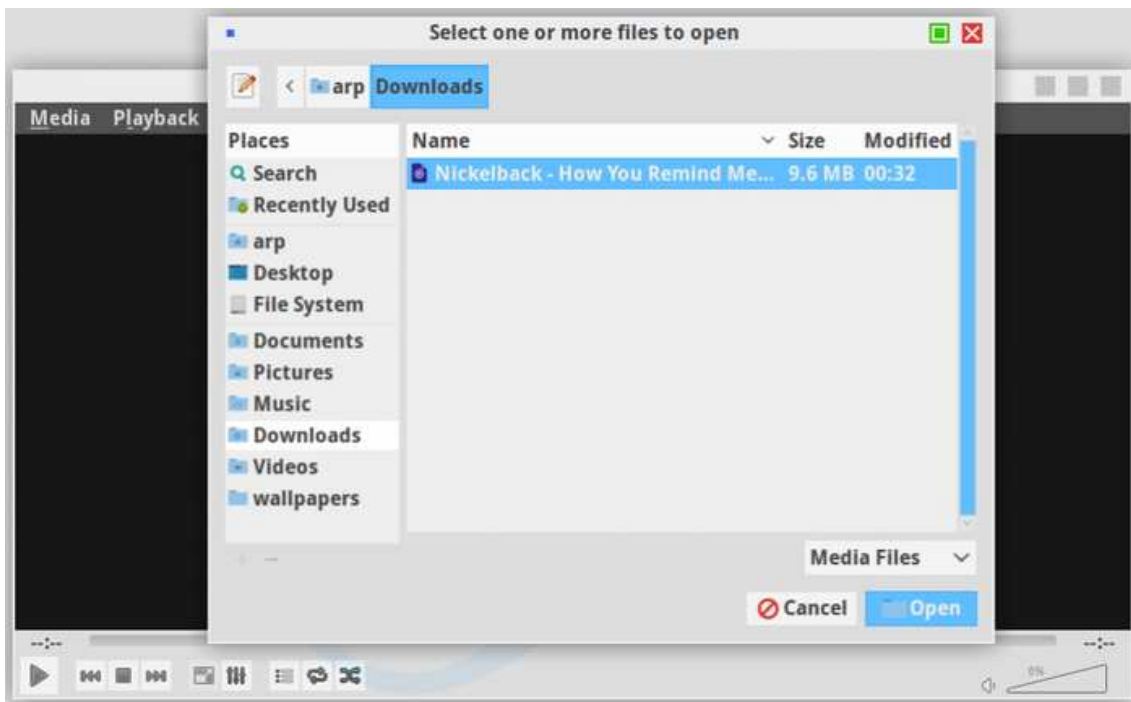
VLC is able to:

- play a file on disk,
- list and play all media files in a specific directory,
- read a DVD,
- handle an incoming video stream.



*VLC: open a media from the "Media" menu*

<sup>72</sup> <https://www.videolan.org/vlc/>



*VLC: select the media you want*



*VLC in player mode*

VLC can also play network streams (podcasts), listen to an online radio, capture the screen, as well as encode a stream to save it.



## 6.8.Listen to music

---



Debian GNU/Linux comes with a media player for each DE. Some allow the management of a large music library, including sort management, play lists, cover artwork, etc (such as Amarak<sup>73</sup> or Rhythmbox described in the following section), others are simple, lightweight and easy to master (Such as Audacious<sup>74</sup> or XMMS<sup>75</sup> ).

### 6.8.1.About audio format natively recognized

---

Wikipedia<sup>76</sup> is my friend ...

An audio file format is a file format for storing digital audio data on a computer system. The bit layout of the audio data (excluding metadata) is called the audio coding format and can be uncompressed, or compressed to reduce the file size, often using lossy compression. The industry has produced many formats for either production or distribution

The program element which transforms the signal into a file and the file back into a signal is called a codec<sup>77</sup>, an abbreviation for **coder-decoder**.

Debian recognizes (among other things) the 4 main default formats (mp3, ogg, flac, wav). If you need to install codecs or non-free audio software, you will need to modify your repositories ([chap.8.1.3](#)) to add the "contrib" and "non-free" sections.

### 6.8.2.Rhythmbox: your music player

---

**Rhythmbox**<sup>78</sup> is the default music player in the Gnome environment, which allows you to play and organize your music collection.

Here are its main features:

- Sort by artists, albums or genres..
- Playlist management.
- Display of jackets and lyrics.
- Management of podcasts and web-radios.
- Integration of Jamendo<sup>79</sup>, Magnatune<sup>80</sup> and Last.fm<sup>81</sup>.
- Support for portable players (MTP or iPod).

---

73 <https://amarok.kde.org/>

74 <http://audacious-media-player.org/>

75 [https://xmms2.org/wiki/Main\\_Page](https://xmms2.org/wiki/Main_Page)

76 [https://en.wikipedia.org/wiki/Audio\\_file\\_format](https://en.wikipedia.org/wiki/Audio_file_format)

77 <https://wikipedia.org/wiki/Codec>

78 <https://wiki.gnome.org/Apps/Rhythmbox>

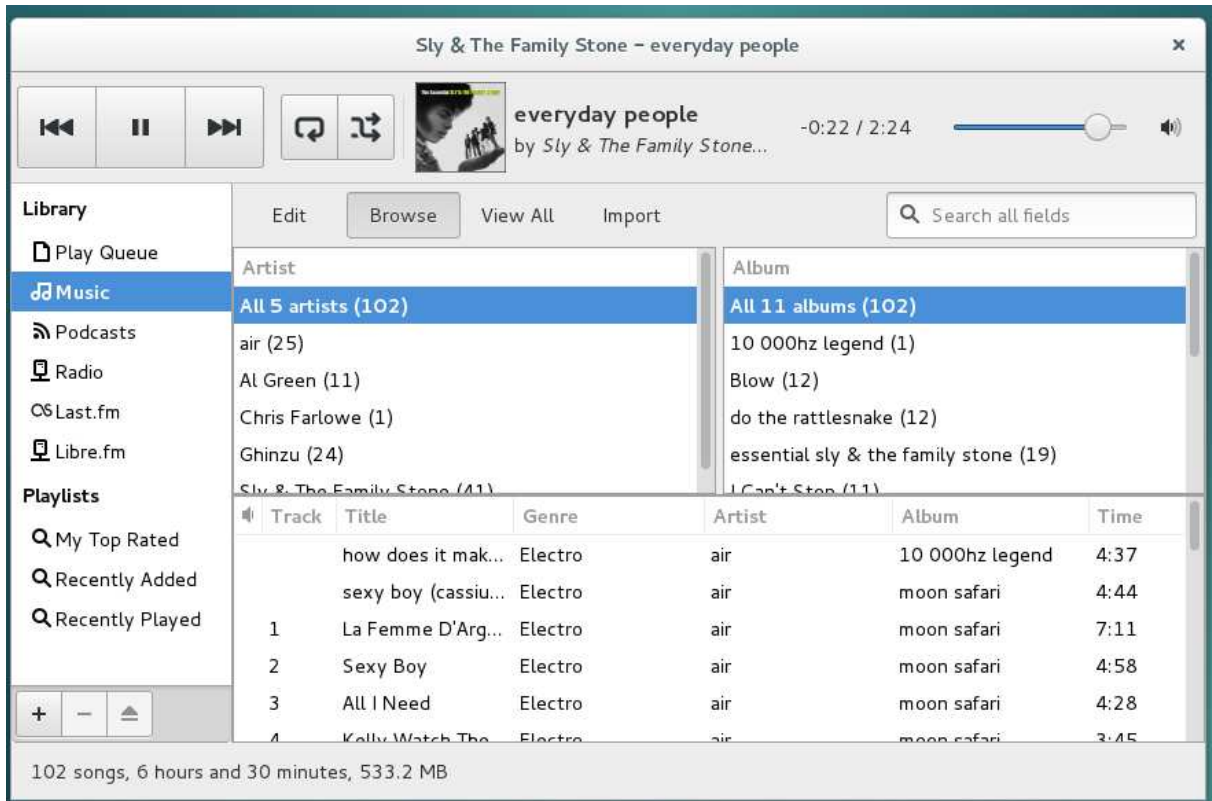
79 <http://www.jamendo.com>

80 <http://www.magnatune.com/>

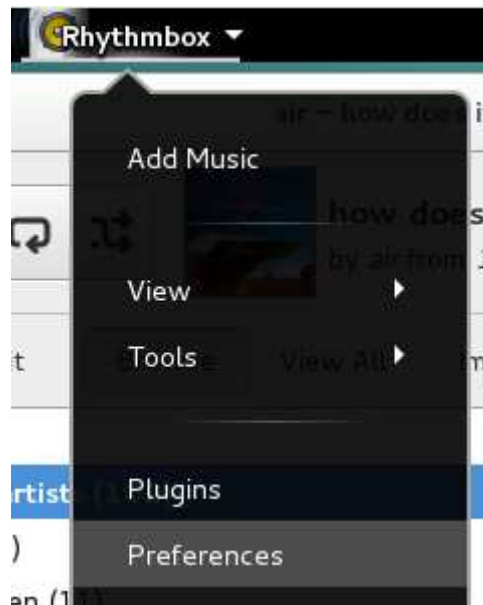
81 <http://www.lastfm>

- Support infrared remote controls.
- Sharing and playing music on a local network.

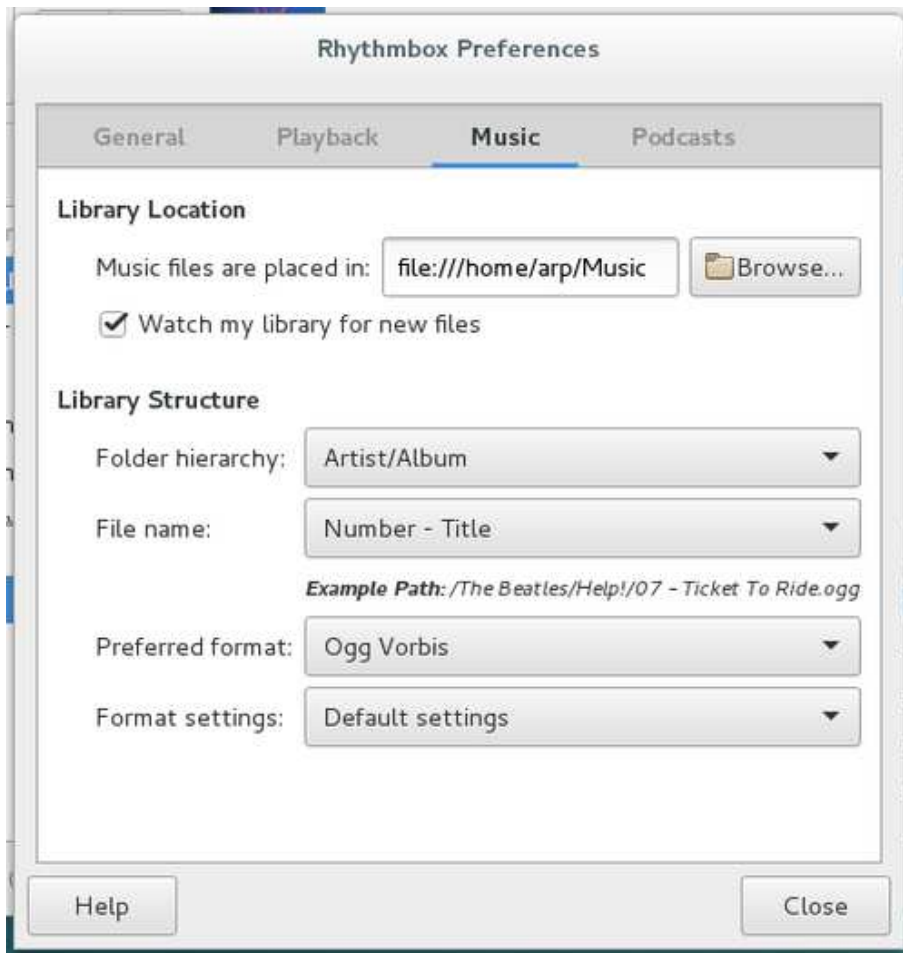
At first launch, Rhythmbox scans your "Music" folder, but you can add more folders to your music library.



*Rhythmbox: default view*

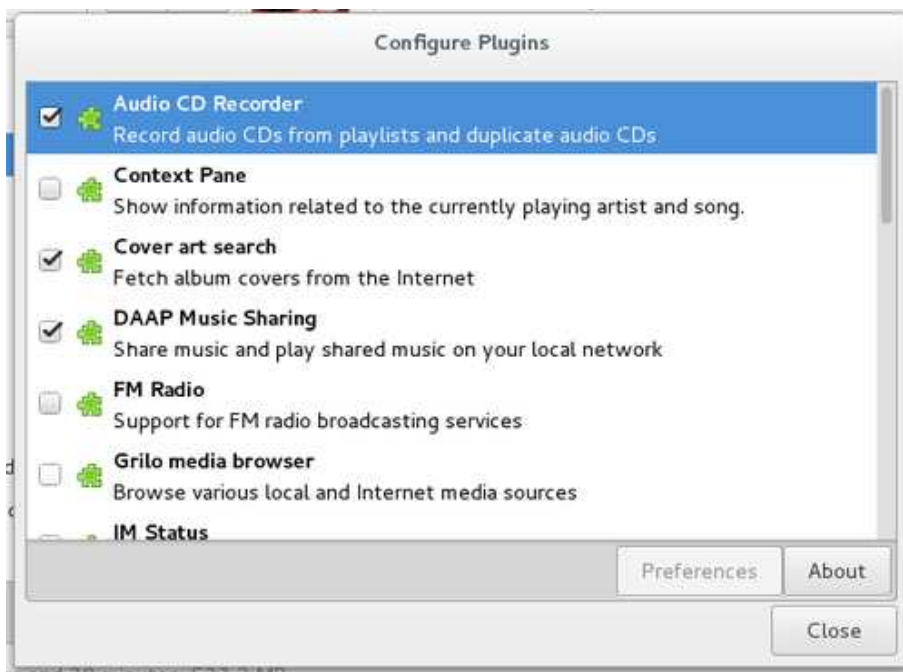


*Preferences menu*



*Rhythmbox: preferences settings*

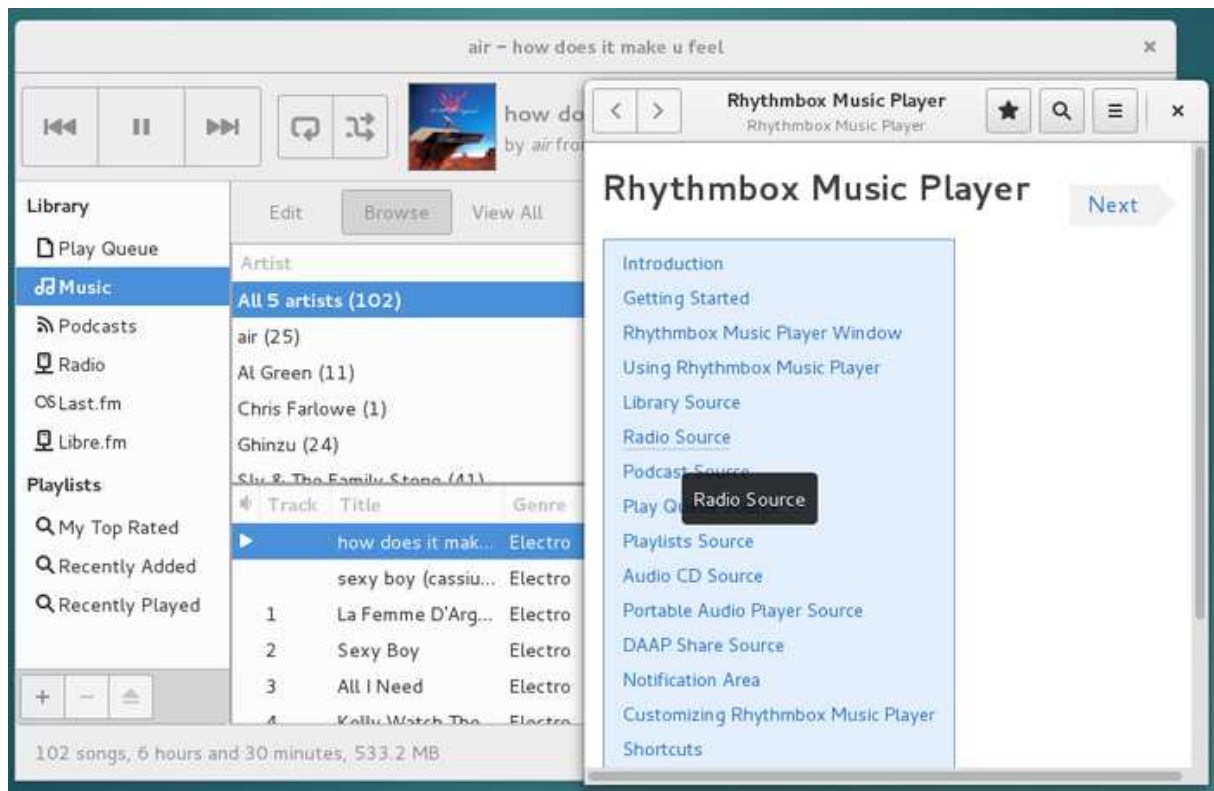
Rhythmbox integrates a plugin<sup>82</sup> system that adds functionality to the player.



*Rhythmbox: configure plugins*

Default audio player of the Gnome desktop, it benefits from a complete integrated help:

<sup>82</sup> <https://wikipedia.org/wiki/Plugins>



*Rhythmbox: complete help*

Main Desktop Environment have their own player: **Xfce** uses QuodLibet<sup>83</sup> and **KDE** includes Amarok<sup>84</sup>.

## 6.9.Work on word processor

---



**Debian** integrates by default the full office suite LibreOffice which allows you to work on documents of any type format coming from different office suites.

If you don't need such a comprehensive tool suite, you can use the **Abiword**<sup>85</sup> or **Gnumeric**<sup>86</sup> tools, lighter while maintaining a high level of compatibility.

### 6.9.1.LibreOffice the free office productivity suite

---

**LibreOffice**<sup>87</sup> is a free (as in freedom) office suite that offers tools for word processing (Writer), spreadsheet (Calc), presentation (Impress), drawing (Draw), database (Base) and editing mathematical formulas (Math).

<sup>83</sup> <https://quodlibet.readthedocs.io>

<sup>84</sup> [https://en.wikipedia.org/wiki/Amarok\\_%28software%29](https://en.wikipedia.org/wiki/Amarok_%28software%29)

<sup>85</sup> <https://packages.debian.org/jessie/abiword>

<sup>86</sup> <https://packages.debian.org/jessie/gnumeric>

<sup>87</sup> <http://libreoffice.org/>



*Libreoffice: default view*

There are many possibilities embedded in LibreOffice. The official Wiki of the community is very well done and will provide you with an efficient and complete help:

<https://wiki.documentfoundation.org/Faq>

Good reading 😊.



The version of LibreOffice offered by default on Debian "stable" can be a bit old (v4). If you want to install a newer version (v5), use the "backports" ([see chap.8.2.3](#)).

## 6.10. Edit your photos with the Gimp

---

Debian includes the graphic manipulation software **the Gimp**.



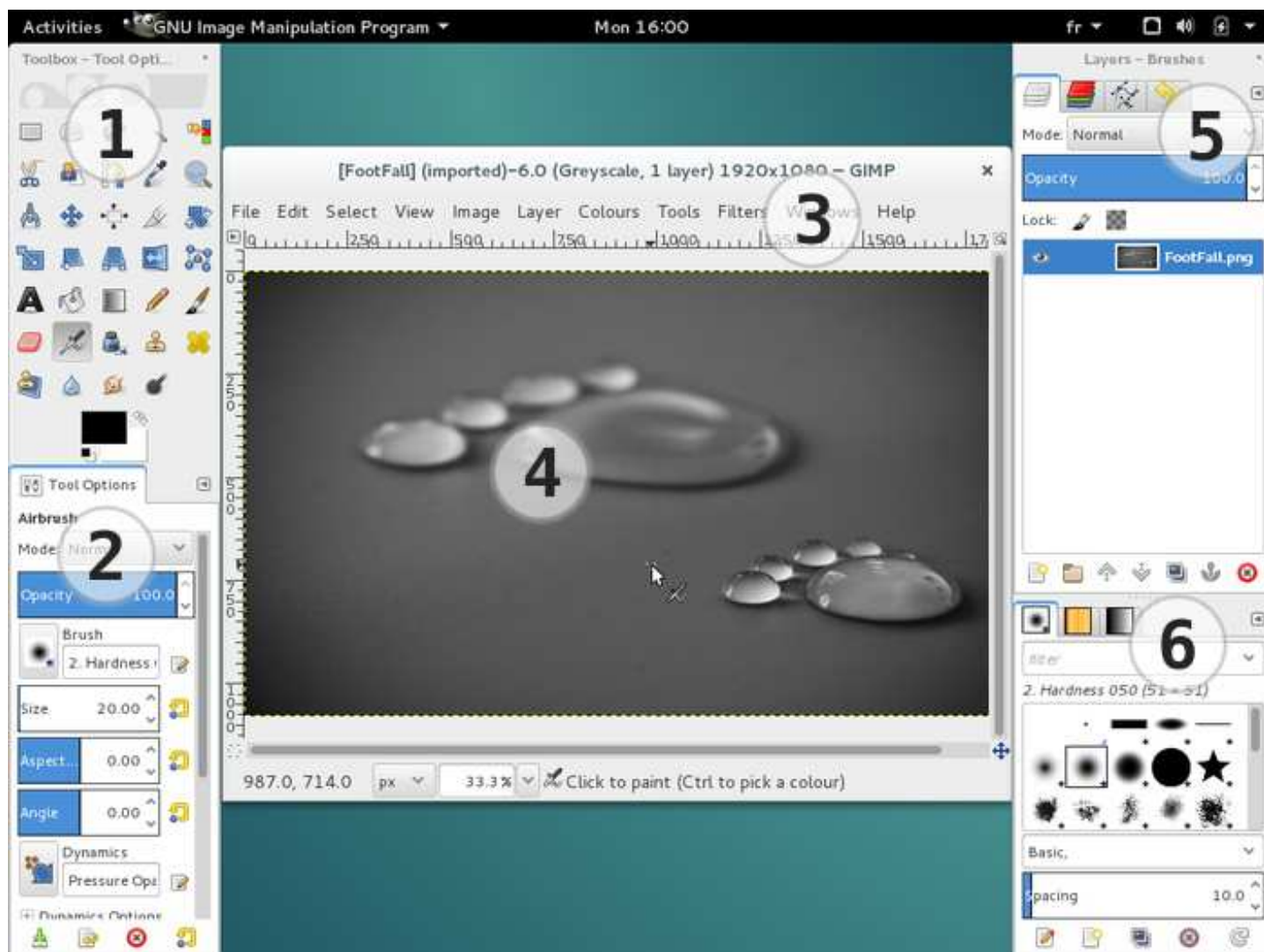
**GIMP**, standing for **GNU Image Manipulation Program**, is an image processing software. Often considered as a competitor of Adobe™ photoshop™, it is, at any rate, a safe alternative with all the same functionalities, and, on top of it, it is free! 😊

Available for a whole range of OS, it runs naturally on Linux, MacOSX, \* BSD and Windows®.

There are already very good documentation concerning The GIMP, and this page is only to gather, in few lines, the most basic hints, without having to browse through dozens of sites hoping to find its happiness.

## 6.10.1. Interface Overview

At first launch, Gimp displays 3 windows with several elements:



*The Gimp on Gnome-Shell*

**1** The tools box - **2** The tools options - **3** The Gimp menu bar - **4** The active picture - **5 & 6** The tabs displaying the values of tools and layers.

- **The toolbox** contains the icons for the various Gimp tools. You can add or remove them from the menu bar > Edit > Preferences > Toolbox. The function of each tool is displayed on a pop-up window if selected.
- **The tool options** show the parameter values of the tool being used: the size and hardness of the brush, for example, or the opacity of the filling...
- **The menu bar** gives you access to all functions and possibilities of the Gimp.
- **The active image** is displayed in the main window: the changes made are directly visible.
- The right window contains various tabs that you can modify or delete from the small arrow at the top right of the tab.

By default, the first tab displays the active layers in the image.



... What does those "layers" exactly means??

**Gimp uses the principle of layers**, ie the superimposition of images for a final rendering. It is the same principle as recording a piece of music: the instruments are all recorded on separate "audio tracks", the voices also, then "mixed" all together to obtain the final piece of music.

For the layers of Gimp, it is the same: you separate the different elements on layers and the final image will be exported in the format of your choice (JPEG, PNG ...).

**The default format of Gimp is ".xcf"**, a format that allows to preserve the independence of the layers and thus, to be able to modify an element without touching the other layers.

### 6.10.2.First Tips

---

**Prepare a folder with a copy of the images to modify:**

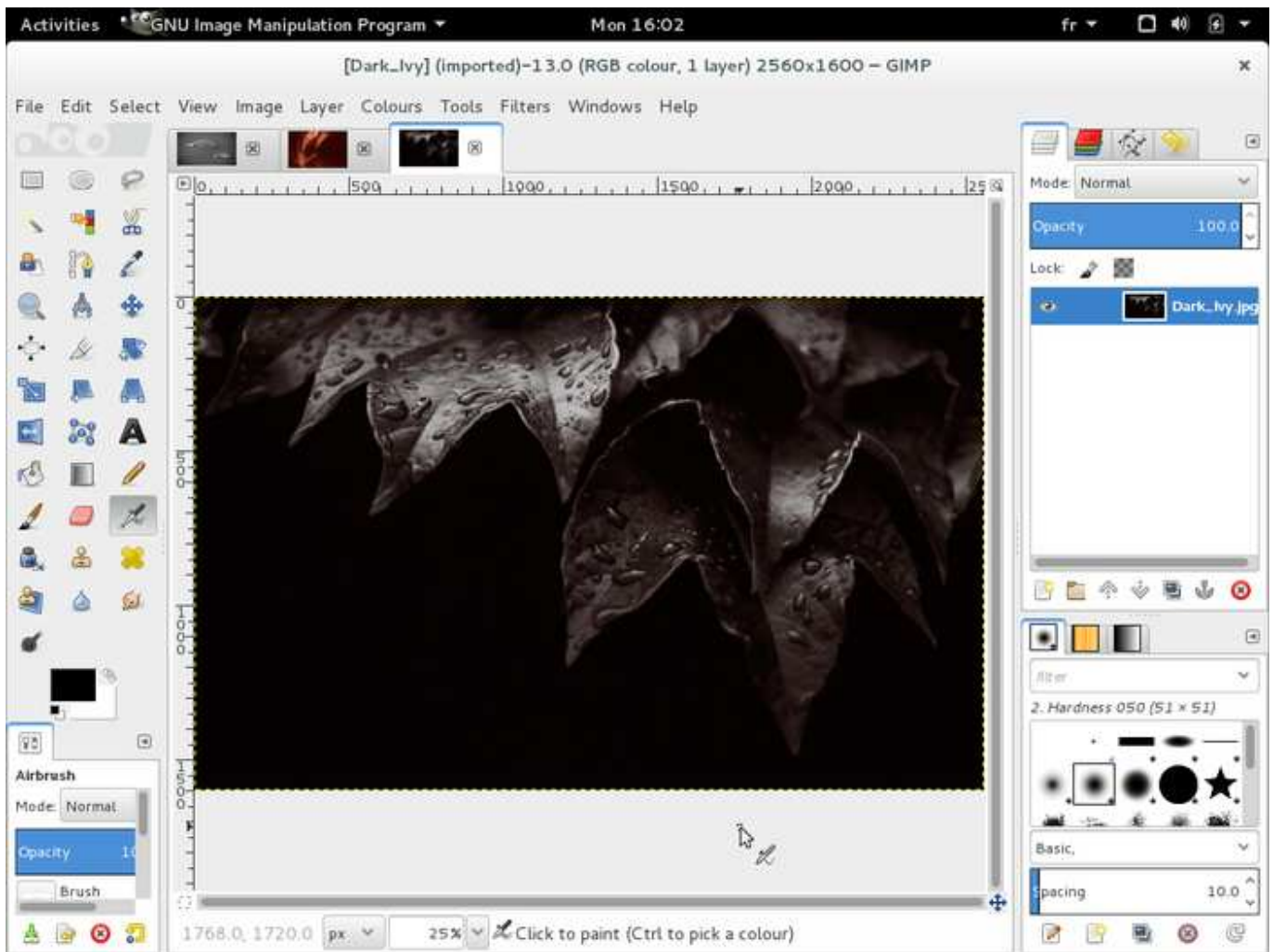
It is often said, **the backup is your friend** and it is also true for image editing. Before working on your project, create a folder where you will place a copy of your original image as well as all the elements you want to add (other images to process, modify, your graphics resources in short).

**Record your work regularly in ".xcf" format:**

Gimp uses the default "xcf" format to save your project. This format allows to save the layers and therefore, permits a fine modification of your work. **To save** in xcf format, direction the menu "File"> "Save". Once your project is finalized, you can **export your project** in a compressed format (jpeg, png, gif) from the menu bar: "File" > "Export as".

**Switch to single-window mode:**

If the default interface with its 3 windows disturbs you, Gimp has provided a "single-window" mode available from the menu "Windows" > "Single window mode".



*The Gimp in "single window" mode*

## Have Fun !

One way to discover **the Gimp** is to test, try, have fun editing your family photos for fun... Create a folder to play with Gimp and place your favorite photos or images and start to *gimp-it* 😊!

## Tutorial

The Gimp website provides a large choice of tutorials where you could start to play:

<https://www.gimp.org/tutorials/>

## Print an image

If Gimp prints only white pages, and the preview is desperately showing a blank page too, you can fix this problem by installing the gimp-gutenprint package in administrator mode ([see chap.3.8.3](#)):

```
apt install gimp-gutenprint
```

Then, to print a image, all you have to do is: "File > Print with Gutenprint". A page is open where you can set up your printer and print layout.





Do you feel you took control of your system ? Now we are going to tweak the configuration of your workstation.

Basically, you can modify everything you want on the Debian GNU/Linux desktops and tailor your environment to make it fit your personal needs and tastes.

To achieve this, the right-click is the *quasi-ultimate* weapon !

### 7.1. User interface

---



The GNU/Linux environments are known for their great flexibility in terms of configuration. However, some desktop are more flexible than others, because of their main interface.

Grossly speaking, they all work the same way: a "Control Center" to handle them all in the same place, and the right-click for the settings of individual elements.

Most of the functionalities have been addressed during the [presentation of the desktops](#) (chap.4.2). But let's return to the two Debian main desktops: Gnome and KDE.

#### 7.1.1. The Gnome-Shell interface

---

**Gnome is the default desktop** for the Debian installations. This desktop features an "all-in-one" interface which makes it a fluid and intuitive environment.

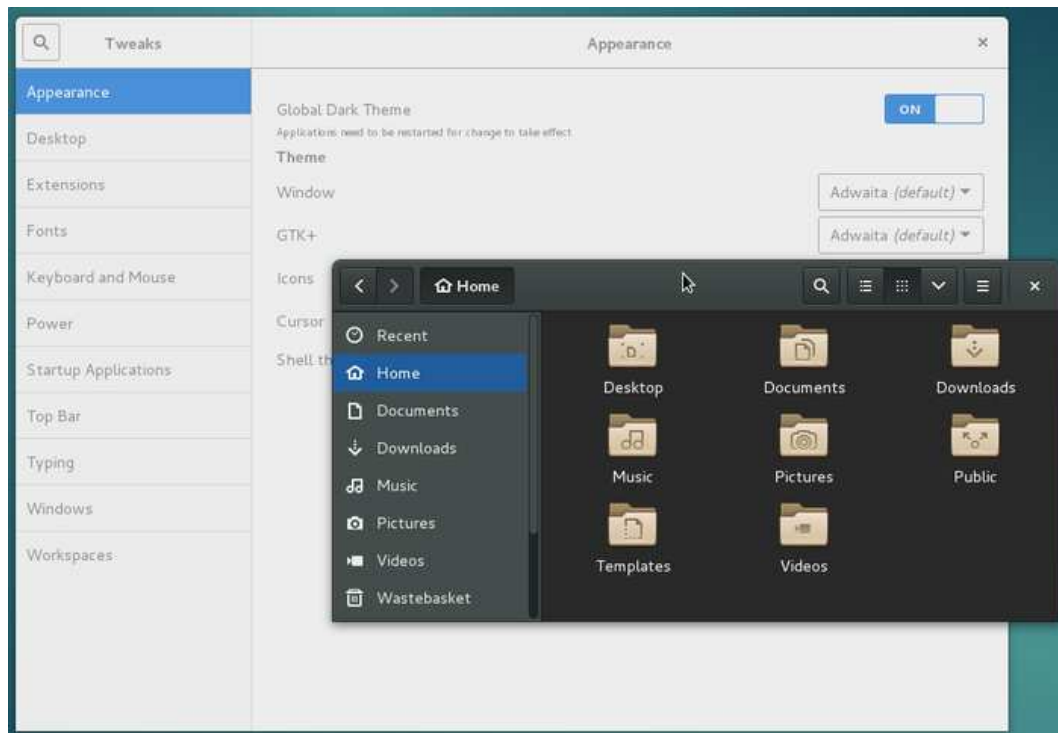
Gnome-Shell<sup>88</sup>) provides a "uniform" interface: this is what brings this great fluidity. This means also that you will not be able to modify everything you want, like on the other desktops built with a modular design. But instead of talking about the few things you cannot make, let's talk about all the settings available to you 😊.

Let's take the direction Gnome Activity menu > "Tweak Tool".



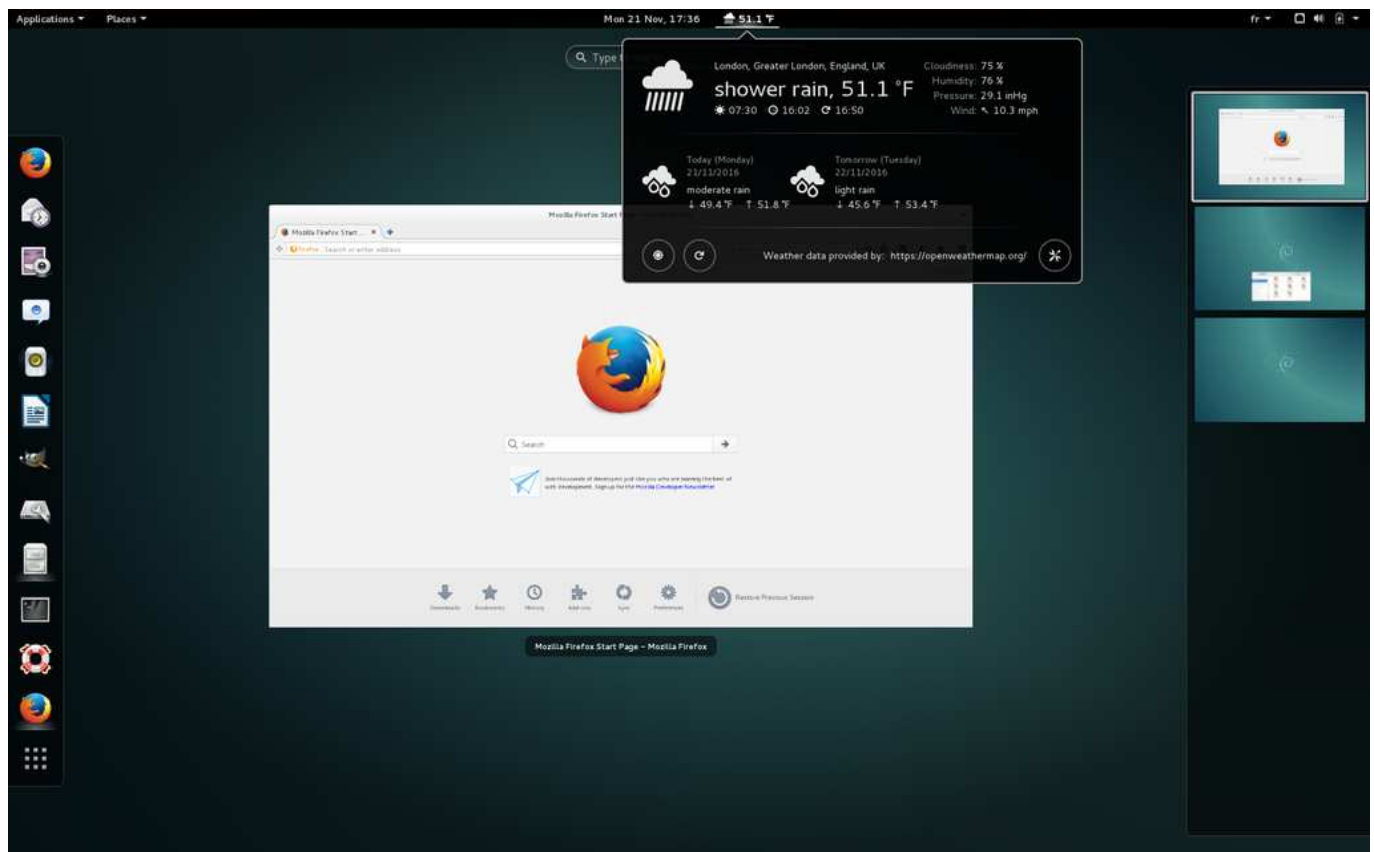
<sup>88</sup> <https://wiki.debian.org/GnomeShell>

The opening window includes all the elements of your Gnome-Shell desktop. The changes are applied and visible immediately.



*Gnome-Shell: configuring the interface*

After few "clicks" on the various categories, you will easily understand how to install, in the top bar, the Application menu, the Places menu or the weather forecast.



*Gnome-Shell: Gnome desktop configured with theses extensions*

### 7.1.1.1. Adding Gnome-Shell extensions

You can **add extensions** to Gnome-Shell directly from the on-line Gnome catalog<sup>89</sup>. In the configuration window, and the "Extensions" section, click on the "Get more extensions" link at the bottom right.



*Gnome-Shell: adding extensions*

You will be redirected to an Internet page which displays a list of the available and directly installable extensions. Start by allowing the "Gnome Shell Integration"




*Gnome-Shell: authorize the on-line service*

Then enjoy all the Gnome-Shell extensions:



*Gnome-Shell: activation of the "Window List Display" from the on-line catalog*











The site takes into account the modules already installed on your system and let you also configure them by using the appropriate icon tool: .

<sup>89</sup> <https://extensions.gnome.org>

### 7.1.1.2.Gnome-Shell keyboard shortcuts

---

In order to be more efficient, and even if Debian is "mouse-click-oriented", we suggest you use the keyboard shortcuts: pressing the "Windows" key, for example, switch between the Activities overview and desktop. The overview displays the open activities, the dock and the virtual workspaces.

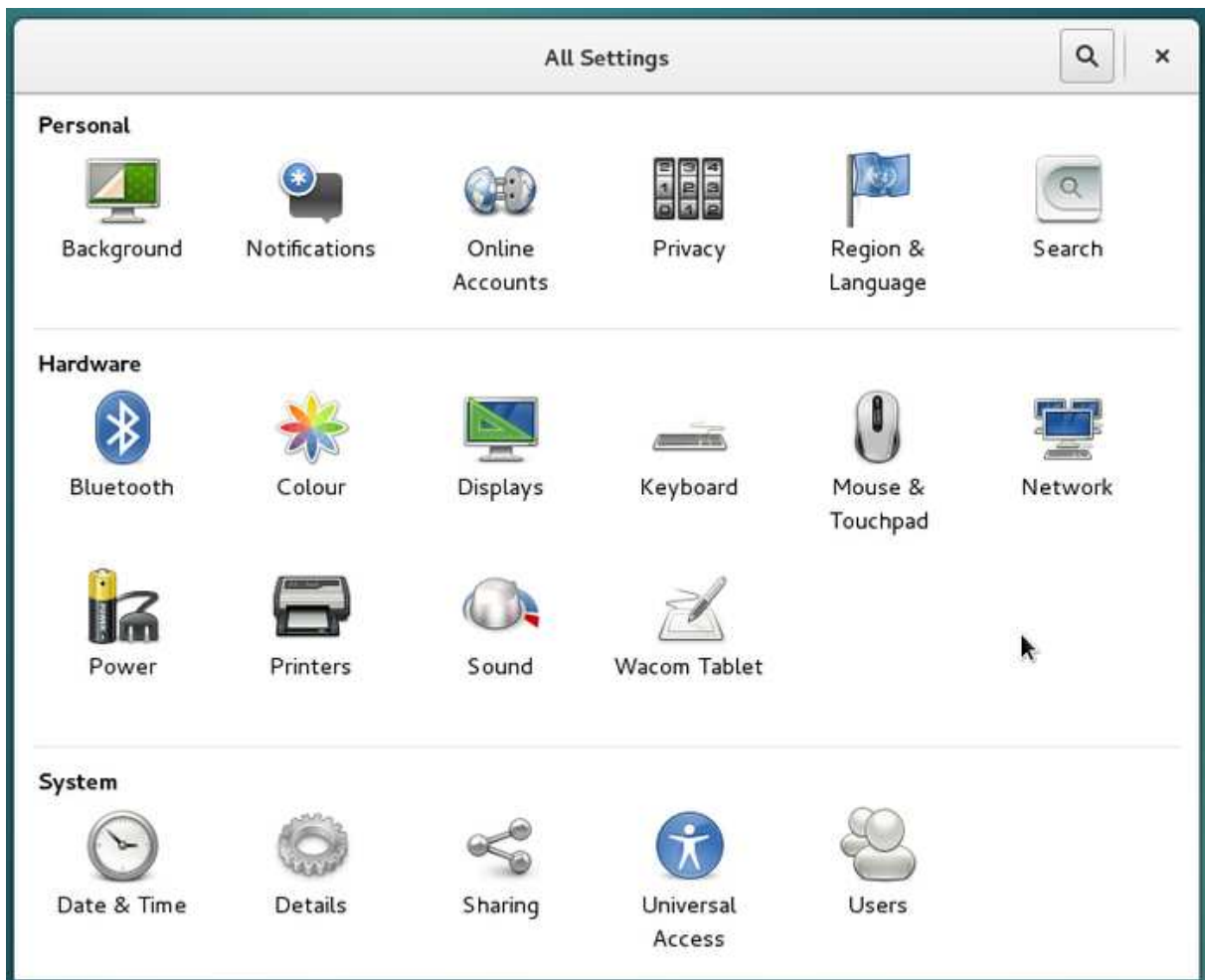
Shortcuts	Actions
Alt+F1 or  Win	Switch between the Activities overview and desktop
Ctrl+Alt+Tab 	Give keyboard focus to the top bar: the Activities overview.
Space	Display the Activities search field
Alt+F2	Pop up command window (for quickly running commands)
Alt+Tab 	Quickly switch between windows.
Alt+Shift  +Tab 	Idem, but in reverse order
Alt + `	Switch between windows from the same group
Ctrl+Alt + PgUp  / PgDn 	Switch between workspaces
Ctrl+Alt+Shift  +  / 	Move the current window to a different workspace.
Ctrl+Del	Delete file

### 7.1.1.3.All Settings panel of the Gnome Desktop

---

Your desktop "All Settings" panel is available from the Parameter launcher and gives you access to all the settings of your environment.

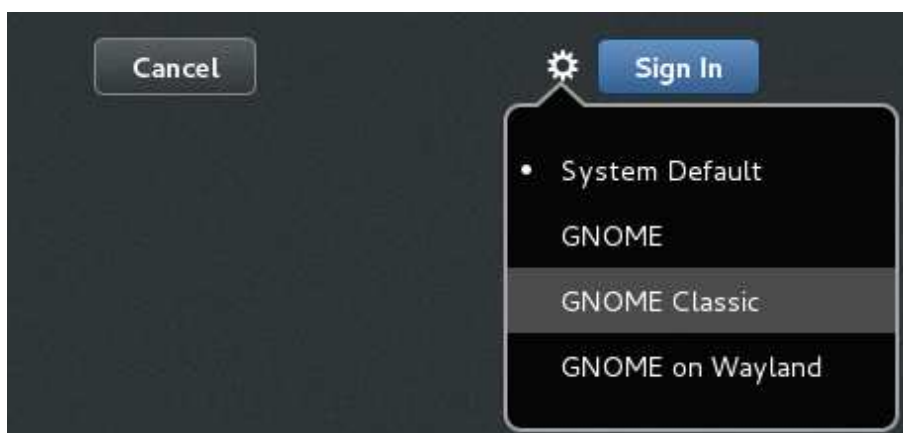




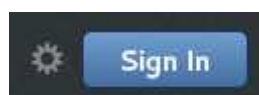
*Gnome-Shell: All Settings Panel*

#### 7.1.1.4. The Gnome Classic interface

If you want to use a more "classical" interface, you can take this option during your session sign in: click on the little gearwheel to select the "Gnome Classic" option before pressing the "Sign In" button:

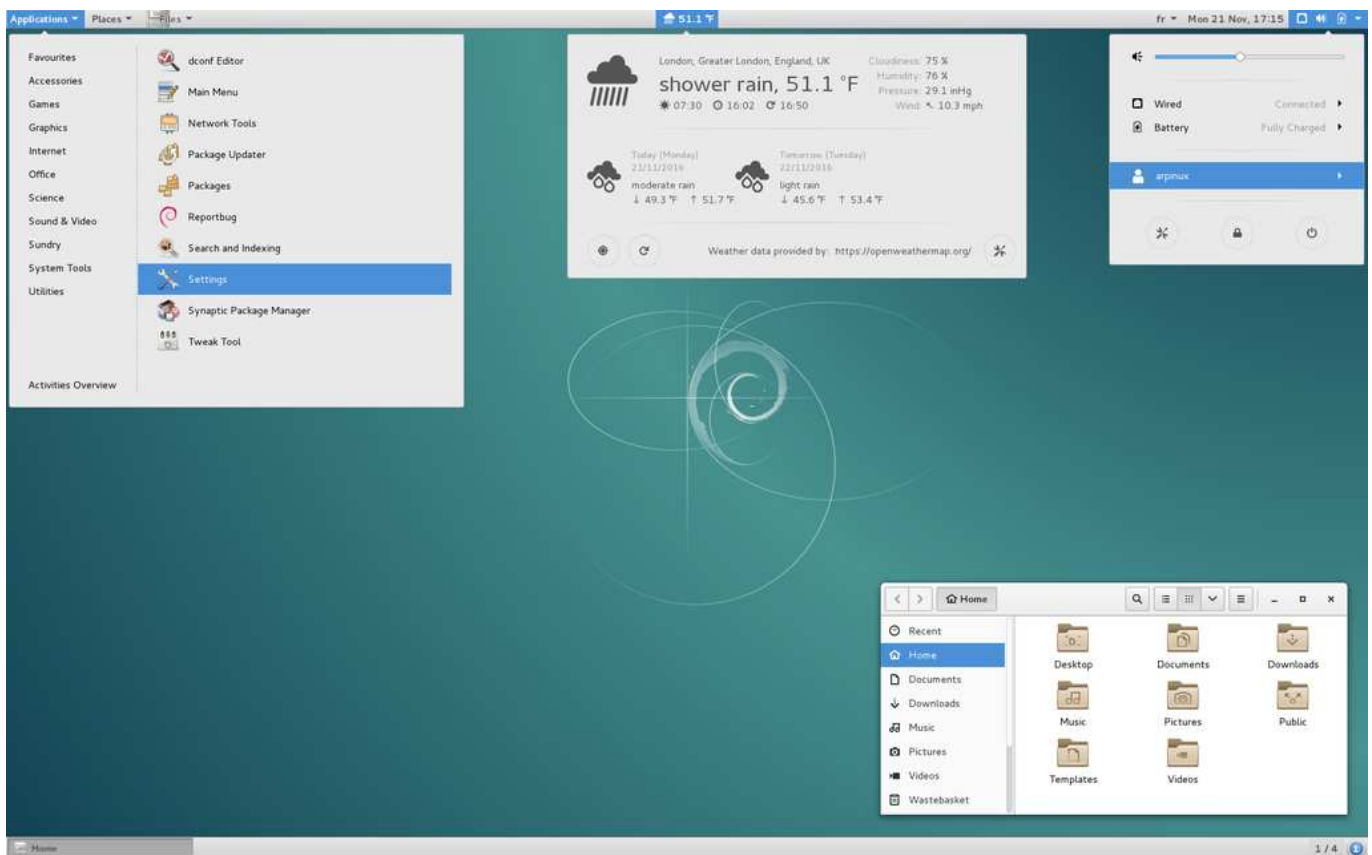


*Gnome classic: Environment selection during Sign In*



Your session then opens with a more conventional version of Gnome, but you keep your main settings and your tools.

The "Classical" interface is lighter, but offers less visual effects (usefull or useless, depending on the view point)



*Gnome Classic desktop on Debian 8 Jessie*

In order to come back to the default Gnome-Shell interface, select the "Gnome" option of the gearwheel menu, next time you Sign In.

## **7.1.2.The KDE Plasma interface**

---

**KDE** is one historical desktop for the GNU/Linux environments, and did always put the emphasis on its extreme customization. The transition to the Plasma<sup>90</sup> rendering engine did not change a bit on that point: everything on KDE is modular, movable, configurable, and accessible from a very detailed **System Setting Center**.

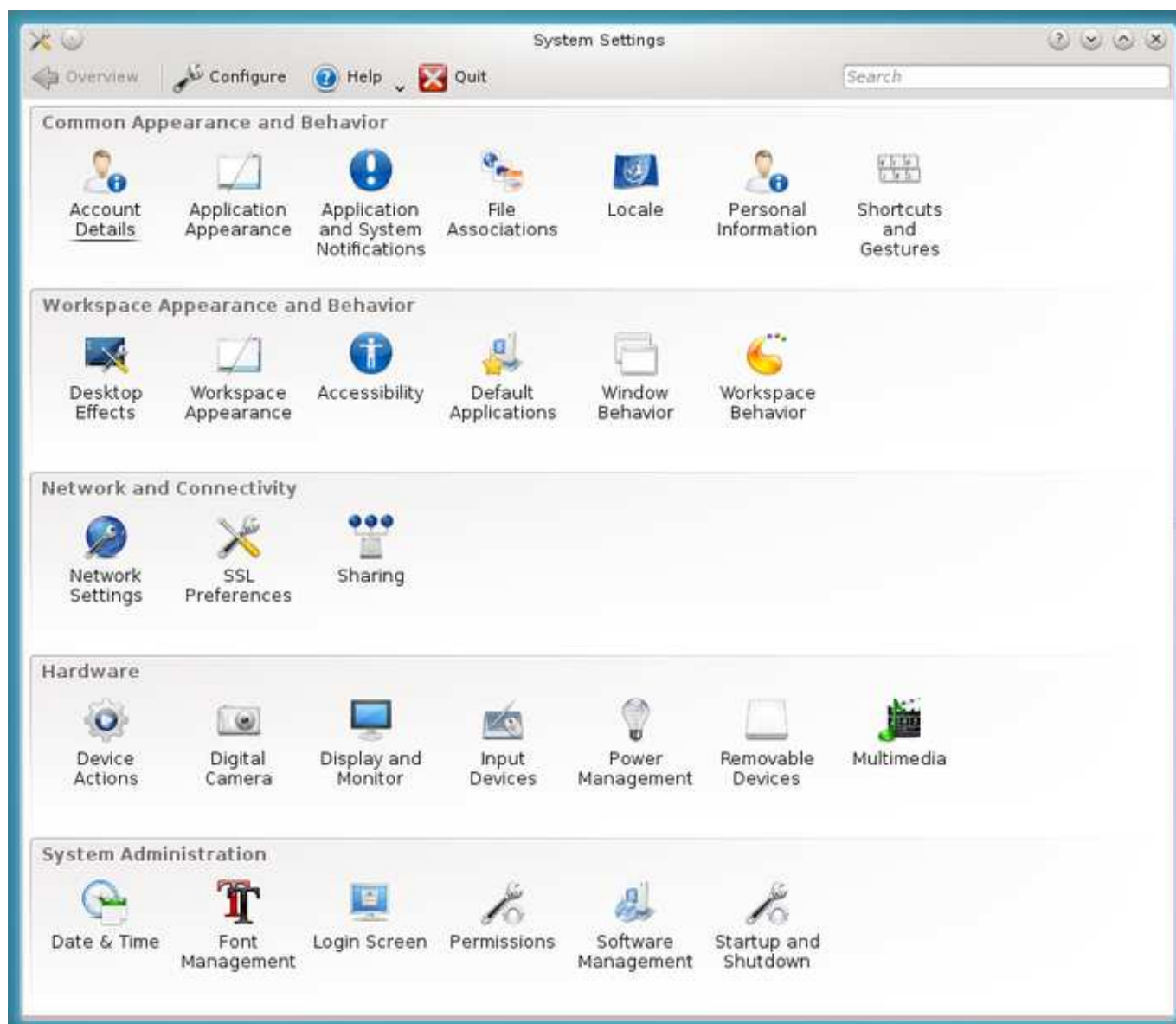
### **7.1.2.1.The System Settings panel**

---

This is where you are going to tweak all your computer and Debian system settings.

<sup>90</sup> <https://www.kde.org/workspaces/>

Network, audio, video, window appearances, default language, and also the way you sign in, and a lot more ... Virtually everything is configurable from this panel. Even some desktop special effects integrated in KDE, in Compiz style, can be managed from here.



*KDE: Debian System Settings on KDE Plasma*

To obtain a **lighter KDE4** you can uncheck the *Strigi* file indexer as well as the *Nepomuk* semantic desktop in the *Desktop Search* tab of the *Workspace Appearance and Behavior* section. You can also uncheck some desktop effects (windows transparency, for example).

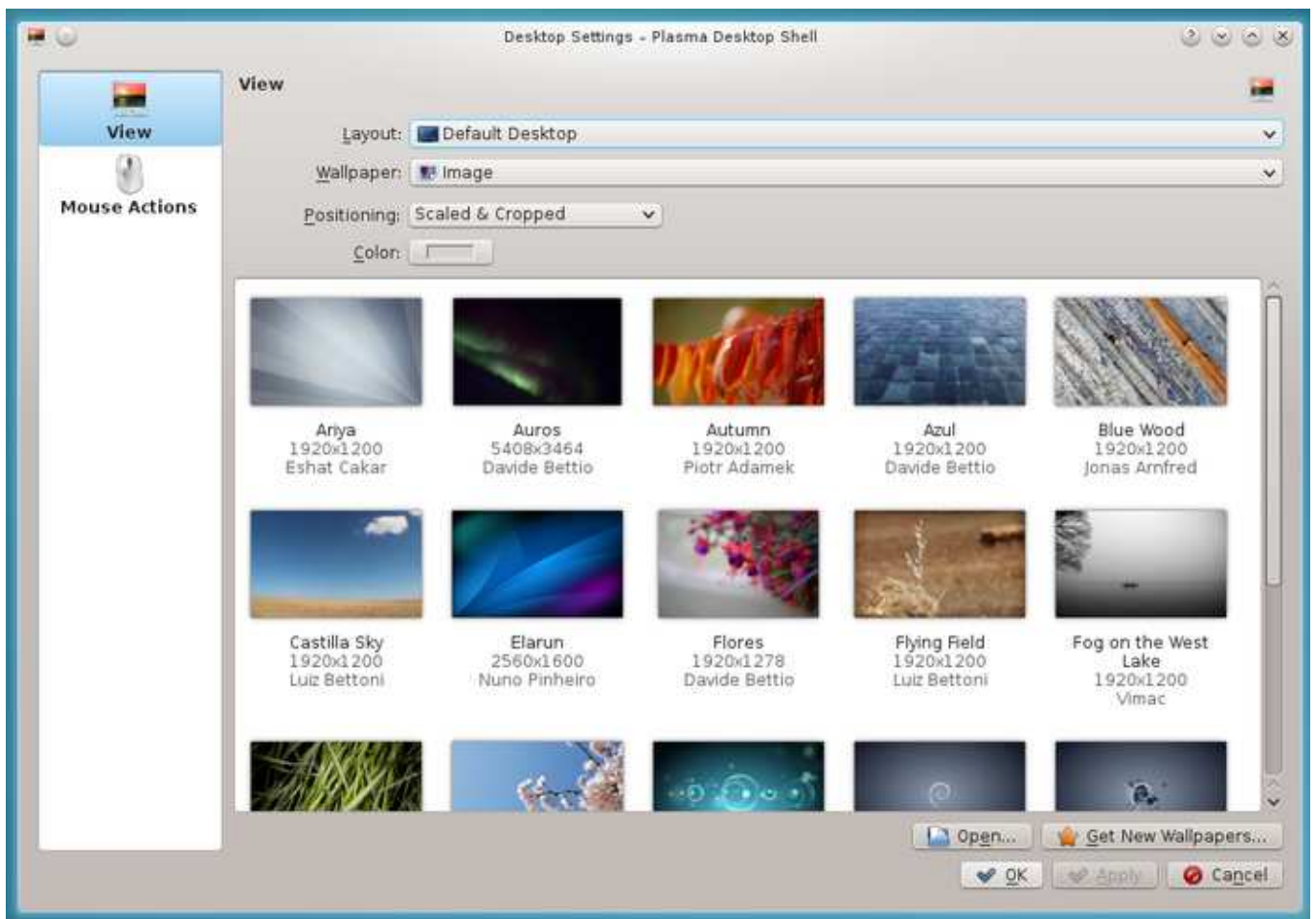
If you wish a more "out-of-the-box" like environment, and if your computer configuration allows it, you should prefer Gnome or Cinnamon which offer less detailed (and less complex) interfaces.

### **7.1.2.2. "Desktop layout" on KDE**

KDE allows a pre-configured layout of your workspace. Start with a right-click on the desktop > "Default Desktop Settings"

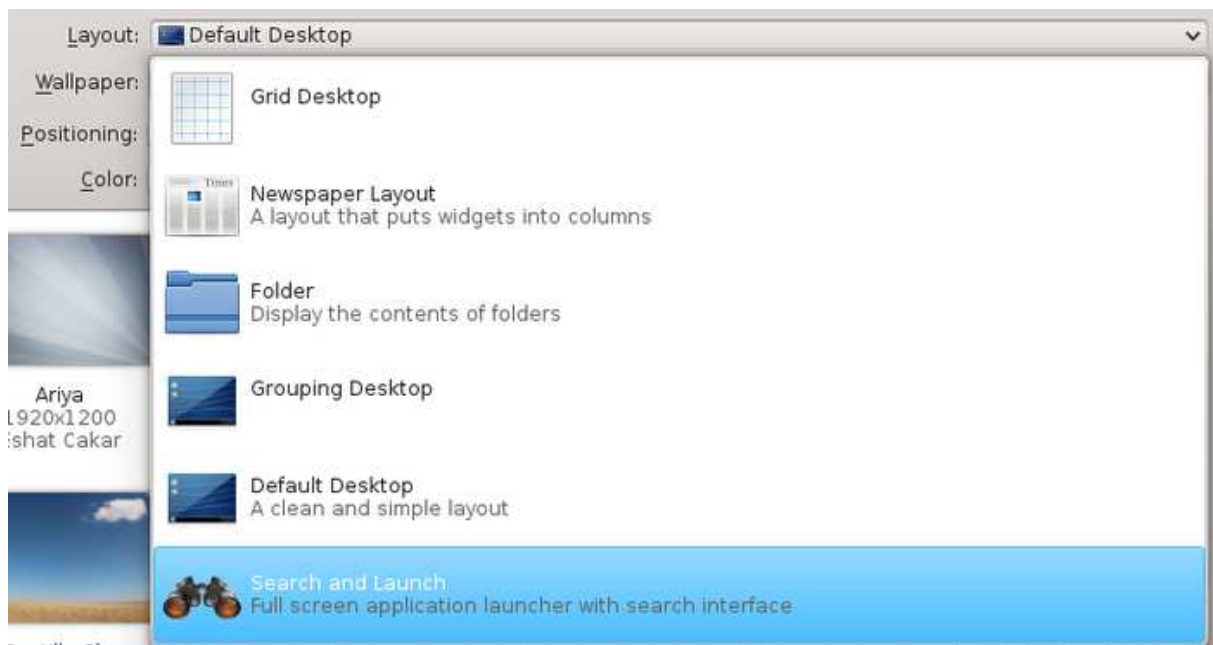


In the window which opens, besides the wallpaper settings, you can access to different desktops from the appropriate drop-down menu:

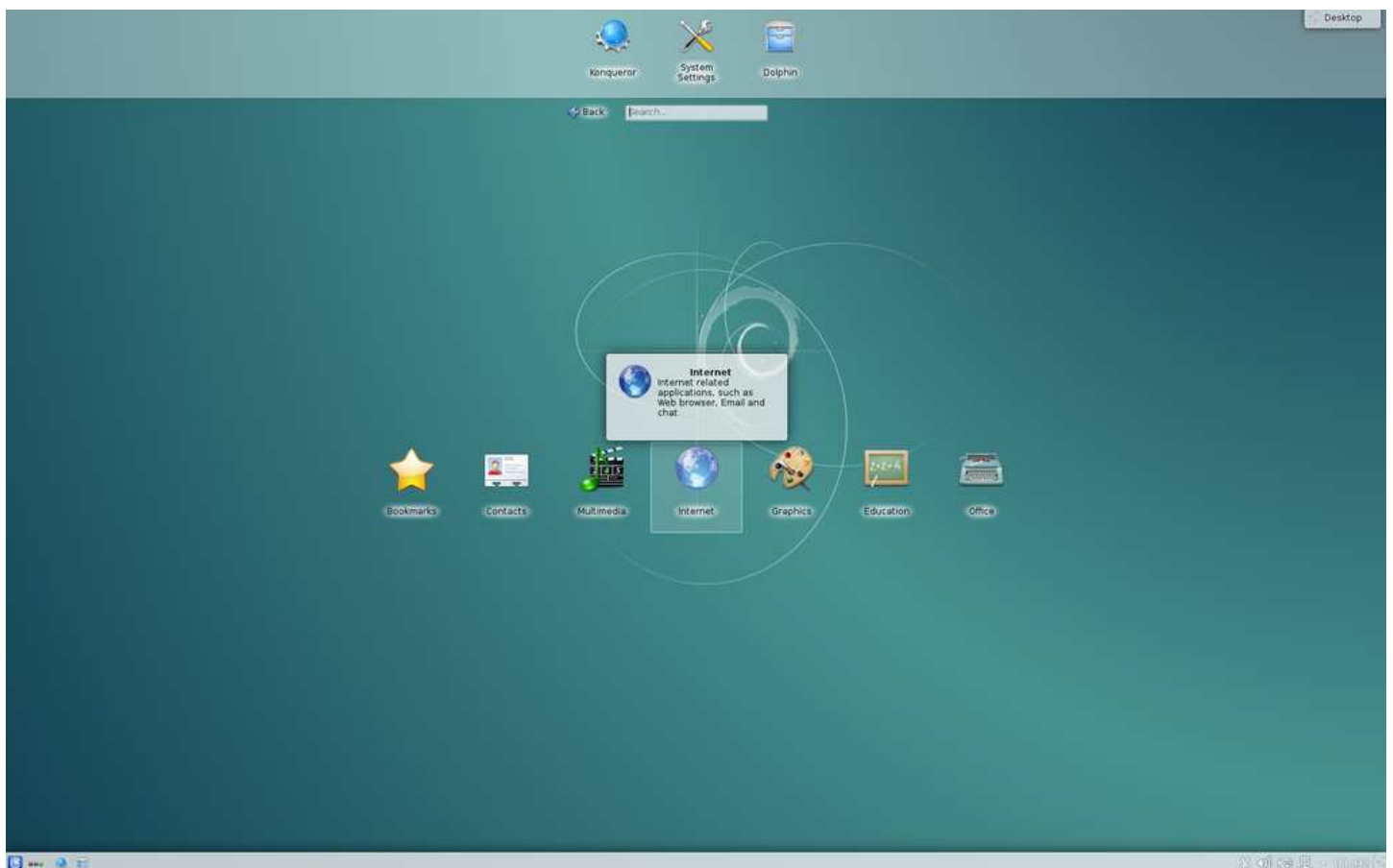


*KDE: configuration of the "desktop layout"*





The default desktop can be replaced by the "Search and Launch" desktop:



*KDE: "Search and Launch" desktop*

With KDE, the possibilities are very numerous and I invite you to visit the detailed external documentation or be adventurous and play with your mouse to snoop all over the system interface.

For more detailed information, visit the KDE.org summary page<sup>91</sup> of the KDE4 Plasma functionalities.

<sup>91</sup> <https://www.kde.org/workspaces/plasmadesktop/>

## 7.2. System Preferences

---



The configuration of your system directly impact you user experience. Instead of writing a complete chapter about the different ethical and technical concepts which led to the Debian software organization, we are going to examine their consequences on your daily usage.

In the rest of this chapter, you might be asked to activate the "contrib" and/or "non-free" sections of the Debian repositories, in order to access some "less-free" software. In that case, follow the method [documented in the chapter 8.1.3](#).

### 7.2.1. Root-User / su-sudo

---

During the installation, Debian ask you to enter the password for the "root" administrator account. This account is common to all the GNU/Linux systems and allows to execute administrative tasks on the system.

However, this account is not mandatory. During the installation process, you can pass over the the "root" account configuration (leave empty the root password fields), and doing so, avoid its creation.

In this case, this is the *first* user registered during the installation who will assume the "root" role.

*OK .... and then ?*

Then, this changes the way you launch commands to administrate the system: in this manual, every time we ask you to execute a command in "root" mode, we use the "**su**" command. But if the "root" account was not created, you must use instead the "**sudo**" command, which switch you and "root", and give your own password.

**In a nutshell** to launch an administrative command:

**If the "root" account was created**, use "su" + administrator password + command launch:

```
su + admin password
apt update && apt upgrade
```

**If the "root" account was *NOT* created**, use "sudo + command" + your user password:

```
sudo apt update && sudo apt upgrade
[sudo] password for user:      <= Enter your password
```

## 7.2.2. Read a commercial DVD

---

The DVDs sold commercially are "copy protected" and usually are not readable by default on free systems.

The Entertaining Companies consider that we do not have the right, on a free system, to make a private copy of the DVDs we bought 🙄.

To remedy that, if you really need this functionality, you must install the **libdvdcss2** package. This package is not present by default in the Debian repositories, but you can find it in the repositories of Videolan (the site of VLC, the well known multimedia player).

**The principle** consists in adding the Videolan repositories to your system, adding the signature keys to secure the communication with these repositories and finally installing libdvdcss2.

**In practice:** 3 commands and that's it !

1. Open a terminal in administrator mode ([see chap.3.8.3](#)) with **su**, then launch this command to add the Videolan repositories in a separate file:

```
echo "deb http://download.videolan.org/pub/debian/stable/ /" >
/etc/apt/sources.list.d/videolan.list
```

2. Add the repositories signature key:

```
wget -O - http://download.videolan.org/pub/debian/videolan-apt.asc | apt-key
add -
```

3. Reload the repositories and install libdvdcss2:

```
apt update && apt install libdvdcss2
```

You can realize these modifications in graphical mode only, by using the Synaptic package manager, but it takes a lot of time to click with the mouse all over the places ...

Your Debian GNU/Linux system is now able to read the "protected" commercial DVDs, and to make private copies of them.

## 7.2.3. Using FlashPlayer

---

**Adobe Flash Player** is a **non-free** platform used to add animation, video, and interactivity to Web pages. Flash is frequently used for advertisements and games.

A free reader exist: Gnash<sup>92</sup>. It is an alternative to the Adobe reader but does not allow to have access to all the Flash functionalities. You can find it in the "backports" repositories of Debian-8 Jessie.

<sup>92</sup> <https://packages.debian.org/jessie-backports/gnash>

Be aware that the current trend for site developers is to **move away from flash** in favor of HTML5<sup>93</sup>, thus it is more and more easy to survive on the Internet without the proprietary flash player.

This manual being intended for beginners, we are not going to ask you to remove all the bookmarks pointing to sites still using the flash reader (although that could help making a faster transition), so we will detail below how to install the flash player by default, because yes, on top of that, there is several of them ...

### 7.2.3.1. Installing the generic Flash Player

---

In order to install the non supported default version of the Flash Player for Linux, you should modify your repository sources to add the "contrib" section.

- Open a terminal in administrative mode ([see chap.3.8.3](#)) with the "su" command and then edit the repositories:

```
apt edit-sources
```

- **Modify the sources** as follow (add "contrib" after "main"):

```
##### Debian Main Repos
deb http://ftp.fr.debian.org/debian/ jessie main contrib
deb-src http://ftp.fr.debian.org/debian/ jessie main contrib

##### Debian Update Repos
deb http://security.debian.org/ jessie/updates main contrib
deb-src http://security.debian.org/ jessie/updates main contrib
deb http://ftp.fr.debian.org/debian/ jessie-updates main contrib
deb-src http://ftp.fr.debian.org/debian/ jessie-updates main contrib
```

Save the changes with [Ctrl]+x then answer "Y" for "Yes" in the nano text editor.

- Launch the following command to reload the repositories and install the Flash Player:

```
apt update && apt install flashplugin-nonfree
```

- **To update the Flash Player**, always in "root" mode:

```
update-flashplugin-nonfree --install
```

- **To remove** the Flash Player:

```
update-flashplugin-nonfree --uninstall
apt-get remove flashplugin-nonfree
```

More detailed information about the other available plugins on Debian dedicated page<sup>94</sup>

<sup>93</sup> <https://en.wikipedia.org/wiki/HTML5>

<sup>94</sup> <https://wiki.debian.org/FlashPlayer>

## 7.2.4.Installing a graphic card driver

---

The Debian GNU/Linux system includes free drivers and some firmware in order to operate the integrated graphical functions (chipsets) of the motherboard or the external graphical card.



**... I need a driver to manage the card of my mother ??**

Your computer is designed around its "motherboard", a plastic board on which the various elements of the processor (the central compute unit) are fixed, as well as the chipsets, the graphical component being part of them (the graphical display computer, to make a long story short).

In order to send the right instructions to these elements the GNU/Linux kernel (the program managing the interactions of the hardware with the system) uses pieces of code, called drivers (and sometimes "firmware" to be loaded on smart devices during the initialization phase). The Linux kernel includes by default a set of free drivers. These drivers are usually sufficient to manage the screen display. But it may happen that proprietary drivers are needed to optimize the screen resolution.

You can try to install these proprietary drivers if, during a live session or once your system is installed, you find out that:

- resolution is wrong, with stretched and distorted images,
- the screen remains black after start-up, even if the system was installed without any errors.
- the colors are badly handled
- the system is heating too much when watching videos
- returning from the "suspend" mode is somewhat erratic ...

Please note that installing proprietary drivers is a non-free alternative, and as such, not followed by the Debian developers. If your computer is very recent, don't hesitate to ask the support of the community before tinkering with your system 😊 ([see chap.1.5](#)).

### 7.2.4.1. Identifying your hardware

---

The first thing to do is to identify your graphic device (or graphic card). Open a terminal as simple user, and enter the following command:

```
lspci | egrep "3D|Display|VGA"
```

which will display this kind of result for a nVidia controller:

```
01:00.0 VGA compatible controller: NVIDIA Corporation G96GLM [Quadro FX 770M]  
(rev a1)
```

or this kind of result for an ATI controller:

```
01:00.0 VGA compatible controller [0300]: Advanced Micro Devices, Inc. [AMD/ATI]
Barts PRO [Radeon HD 6850] [1002:6739]
```

("lspci" lists the devices connected to the PCI bus, and "egrep" selects only the information we are interested in, rather than displaying everything. Here we are looking only at graphical components).

As you can see the identification is rather easy ... we got the manufacturer and the model on the same line. Should you have the slightest doubt concerning the installation of additional drivers, don't hesitate to ask the [Free Community](#) for help (chap.1.5).

### 7.2.4.2. Installing the generic firmware

---

In all cases, and before the installation of any proprietary driver, you should add the *non-free firmware* delivered by Debian. (More information on firmware here:

<https://www.debian.org/releases/jessie/i386/ch02s02.html.en>)

To add the Debian non-free firmware to your system, start with [modifying your repositories](#) (chap.8.1.3) by adding the *contrib* and *non-free* sections to your sources.

- Open a terminal in administrative mode ([see chap.3.8.3](#)) with the "su" command (the administrator password is requested), then launch the command:

```
apt edit-sources
```

- Modify the sources.list file by adding the contrib and non-free section, like this:

```
##### Debian Main Repos
deb http://ftp.fr.debian.org/debian/ jessie main contrib non-free
deb-src http://ftp.fr.debian.org/debian/ jessie main contrib non-free

##### Debian Update Repos
deb http://security.debian.org/ jessie/updates main contrib non-free
deb-src http://security.debian.org/ jessie/updates main contrib non-free
deb http://ftp.fr.debian.org/debian/ jessie-updates main contrib non-free
deb-src http://ftp.fr.debian.org/debian/ jessie-updates main contrib non-free
```

(The mirror address indicated here '<http://ftp.fr.debian.org>' might well be different in your case) Save your modifications with [Ctrl]+x in the Nano text editor, then "Y" for "Yes".

- Reload the repository information, and install the non-free firmware:

```
apt update && apt install firmware-linux firmware-linux-nonfree
```

- Restart your machine to test again your screen display before installing the proprietary drivers.

If no real improvement is noticed, continue with the following sections ... The *sources.list* file is already set for the next steps.

### 7.2.4.3.ATI/AMD card configuration

---

#### ATI driver

This is the "generic" driver to install if your card is not listed in the specific sections (Radeon, Catalyst).

To install it from an administrator terminal ([voir chap.3.8.3](#)):

```
apt install libgl1-mesa-dri xserver-xorg-video-ati
```

Restart your computer to load the microcode (firmware) of the graphic peripheral.

#### Radeon driver

the Radeon driver of Debian 8 "Jessie", supports the graphic processors from R100 to Hawaii (Radeon 7000 - Radeon R9 290). See the Radeon package page<sup>95</sup> to verify your card.

To install it from an administrator terminal ([see chap.3.8.3](#)):

```
apt install libgl1-mesa-dri xserver-xorg-video-radeon
```

Restart your computer to load the microcode (firmware) of the graphic peripheral.

#### AMD Catalyst driver

The proprietary "AMD Catalyst Linux Graphics Driver" (alias **fglrx**) delivers a hardware acceleration optimized for the OpenGL applications. It is suitable for the graphic processors of the Radeon R9 200, Radeon R7 200, Radeon HD 8000, Radeon HD 7000, Radeon HD 6000 and Radeon HD 5000 series (see the complete list<sup>96</sup>)



This driver is not compatible<sup>97</sup> with the Gnome desktop, because it does not support the EGL interface. It is advised to use instead the Radeon free driver.

To install it from an administrator terminal ([see chap.3.8.3](#)):

```
apt install fglrx-modules-dkms fglrx-driver linux-headers-$(uname -r) fglrx-control
```

To configure the graphic server:

```
aticonfig --initial -f
```

To take the modifications into account, restart your computer.

<sup>95</sup> <https://packages.debian.org/jessie/xserver-xorg-video-radeon>

<sup>96</sup> <https://support.amd.com/en-us/kb-articles/Pages/AMDCatalyst14-9LINReleaseNotes.aspx>

<sup>97</sup> <https://www.debian.org/releases/jessie/amd64/release-notes/ch-information.en.html#gnome-fglrx>

To verify that the microcode/firmware was correctly loaded, enter in a terminal:

```
glxinfo | grep 'direct rendering'
```

Which should return a line like:

```
direct rendering: Yes
```

For more detailed information, visit the official Debian documentation<sup>98</sup>.

#### 7.2.4.4.nVidia card configuration

---

Debian uses a software tool to detect and indicate the driver to be installed: *nvidia-detect*. To install and use it, open a terminal in administrator mode ([see chap.3.8.3](#)), then launch:

```
apt update && apt install nvidia-detect
```

To launch the detection, simply launch the command:

```
nvidia-detect
```

which will return this kind of result:

```
Detected NVIDIA GPUs:
01:00.0 VGA compatible controller [0300]: NVIDIA Corporation G96GLM [Quadro FX
770M] [10de:065c] (rev a1)
Your card is supported by the default drivers and legacy driver series 304.
It is recommended to install the
    nvidia-driver
package.
```

In this example, the card is natively supported by the default driver and by the "legacy series 304" driver; Depending on your machine, you can install two types of drivers: the 340.xx series (for the GeForce 8x and more) and the 304.xx series (for the GeForce 6x and 7x). Older models are supported natively by the free driver.

For a **complete list of the supported cards**, visit the dedicated documentation: 340.xx series page<sup>99</sup> - 304.xx series page<sup>100</sup>

**Installation of the 340 series driver:** for the GeForce 8xx or newer model

- Open a terminal in administrator mode ([see chap.3.8.3](#)), and install the drivers:

```
apt update
apt-get install linux-headers-$(uname -r) nvidia-kernel-dkms nvidia-driver
```

<sup>98</sup> <https://wiki.debian.org/ATIProprietary>

<sup>99</sup> [http://us.download.nvidia.com/XFree86/Linux-x86\\_64/340.65/README/supportedchips.html](http://us.download.nvidia.com/XFree86/Linux-x86_64/340.65/README/supportedchips.html)

<sup>100</sup> <http://us.download.nvidia.com/XFree86/Linux-x86/304.125/README/supportedchips.html>



- Creation of a configuration file *xorg.conf*: since the driver is not auto-detected, you need to declare it, always from a terminal in administrator mode:  
create the appropriate configuration file:

```
mkdir /etc/X11/xorg.conf.d
```

Fill the file directly from your terminal with:

```
echo -e 'Section "Device"\n\tIdentifier "My GPU"\n\tDriver\n\t"nvidia"\nEndSection' > /etc/X11/xorg.conf.d/20-nvidia.conf
```

- Restart your computer to automatically blacklist (I.E. tell the kernel NOT to load it) the free driver, and use the one which was just installed.

### Installation of the 304 series driver: for the GeForce 6xx or 7xx

- Open a terminal in administrator mode ([see chap.3.8.3](#)), and install the drivers:

```
apt-get update  
apt-get install linux-headers-$(uname -r) nvidia-legacy-304xx-kernel-dkms  
nvidia-legacy-304xx-driver
```

- Creation of a configuration file *xorg.conf*: since the driver is not auto-detected, you need to declare it, always from a terminal in administrator mode:  
create the appropriate configuration file:

```
mkdir /etc/X11/xorg.conf.d
```

Fill the file directly from your terminal with:

```
echo -e 'Section "Device"\n\tIdentifier "My GPU"\n\tDriver\n\t"nvidia"\nEndSection' > /etc/X11/xorg.conf.d/20-nvidia.conf
```

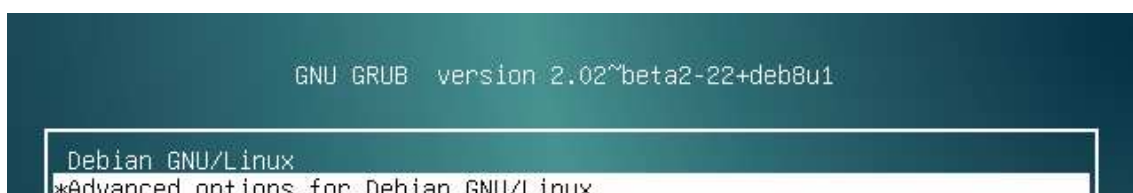
- Restart your computer to automatically blacklist (I.E. tell the kernel NOT to load it) the free driver, and use the one which was just installed.

### 7.2.4.5. Loss of the graphical session

---

If, following a driver installation, you are facing a black screen, you need to return to the previous configuration.

**Boot in "recovery mode"**: from the Grub loader menu, select the "Advanced options" entry and then the "recovery mode" entry.



```
GNU GRUB version 2.02~beta2-22+deb8u1
Debian GNU/Linux, with Linux 3.16.0-4-amd64
*Debian GNU/Linux, with Linux 3.16.0-4-amd64 (recovery mode)
```

The system launches a console and invite you to continue the startup sequence (by using the [Ctrl]+d short-cut to quit the console) or enter the administrator password, and this is what you do:

```
Welcome to rescue mode! Type "systemctl default" or ^D to enter default mode.
Type "journalctl -xb" to view system logs. Type "systemctl reboot" to reboot.
Give root password for maintenance
(or type Control-D to continue):
root@debian:~# _
```

**Removal of the xorg.conf configuration file:** during the installation of the proprietary driver, you created a X configuration file located in /etc/X11/xorg.conf and/or /etc/X11/xorg.conf.d/xxx.conf. It must be removed.

Always from the console and depending on the file created, remove it with the command: "rm":

```
rm /etc/X11/xorg.conf.d/20-nvidia.conf
```

Here this is the file corresponding to nVidia which was removed, to be adapted to your situation.


**Uninstallation of the proprietary drivers:** The same way you were able to install a driver, you can uninstall it, here an example with the nVidia driver, to be adapted to your situation:

```
apt remove nvidia-kernel-dkms nvidia-driver
```

**Restart your computer** with a simple "systemctl reboot"

## 7.3.Adding a new user

---

 If you are not the only user of your computer, you can create new user accounts in order to **preserve your data and preferences**. By adding a new user, a new folder will be created in the system. This folder, named by the pseudo of the new user, will receive the default parameters delivered during the system installation.

It will be readable (you can consult the data of the other user) but not writable (you cannot create or modify its data).

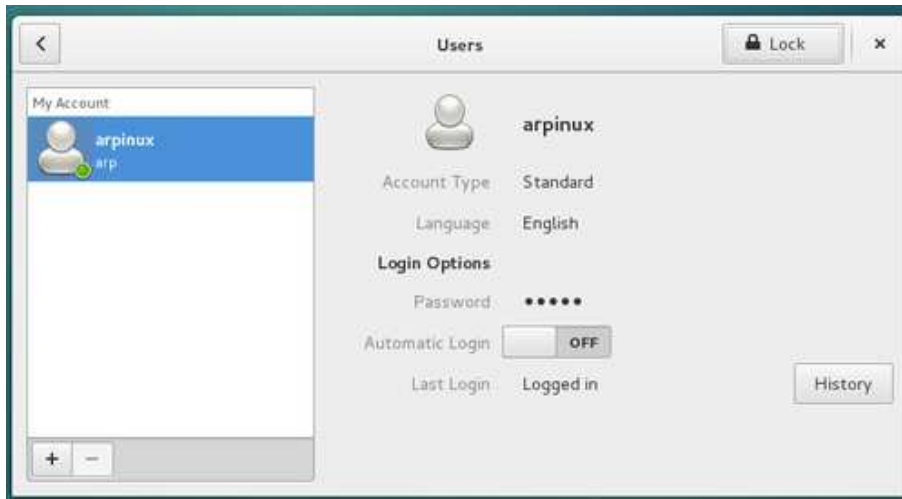
Debian includes a simple graphical tool to execute this task, but you can also use the terminal and the "adduser" command (described in the next section).

From a menu or the application list, "System" category, select "Users and Groups":

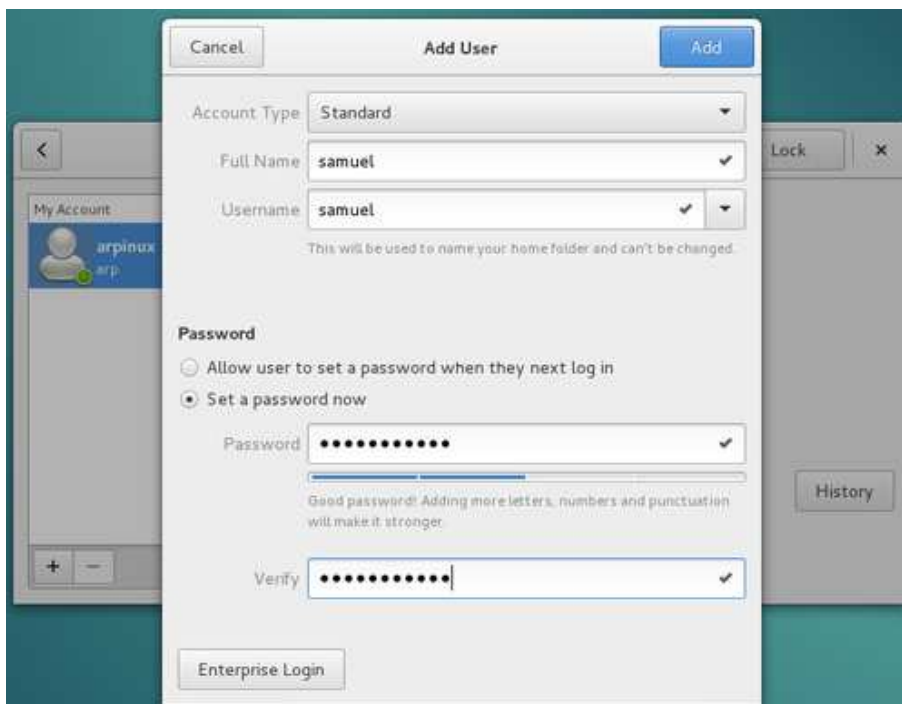


The window which opens, displays the detailed information of your user account. You can then modify the parameters of your account, or create a new account. But you need first to "unlock" the application by clicking on the *lock* button at the top, and enter the administrator password.

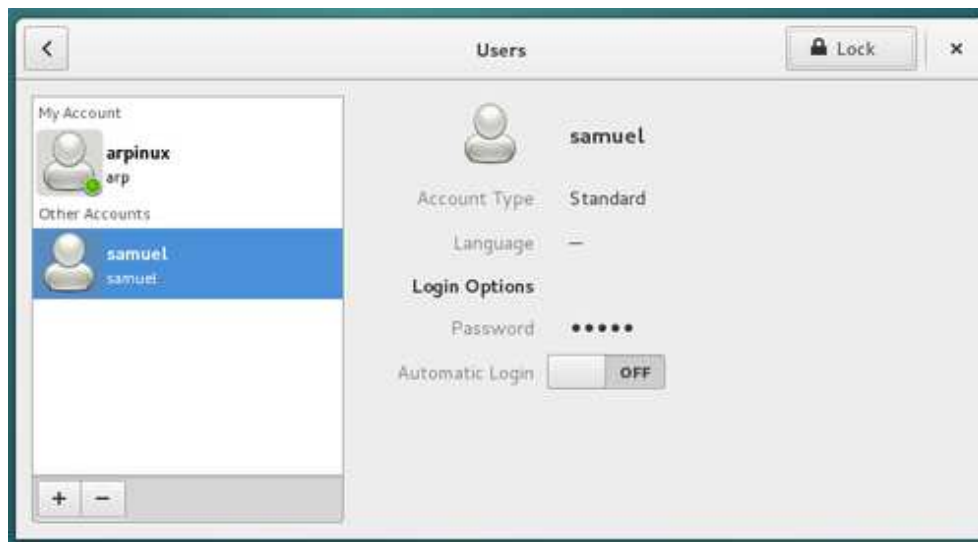
**To add a new account**, click on "Add" (or the "+" button) at the bottom of the left pane:



You must enter the full name of this new user, as well as its username (the pseudo or login name used when connecting to a new session). On the Gnome system, you can let the user to define its password during the first connection, or enter it immediately:



The user account is created ... and here you go:



Advanced settings allow you to define the rights and permissions for each user.

### 7.3.1. Adding a new user using the terminal

---

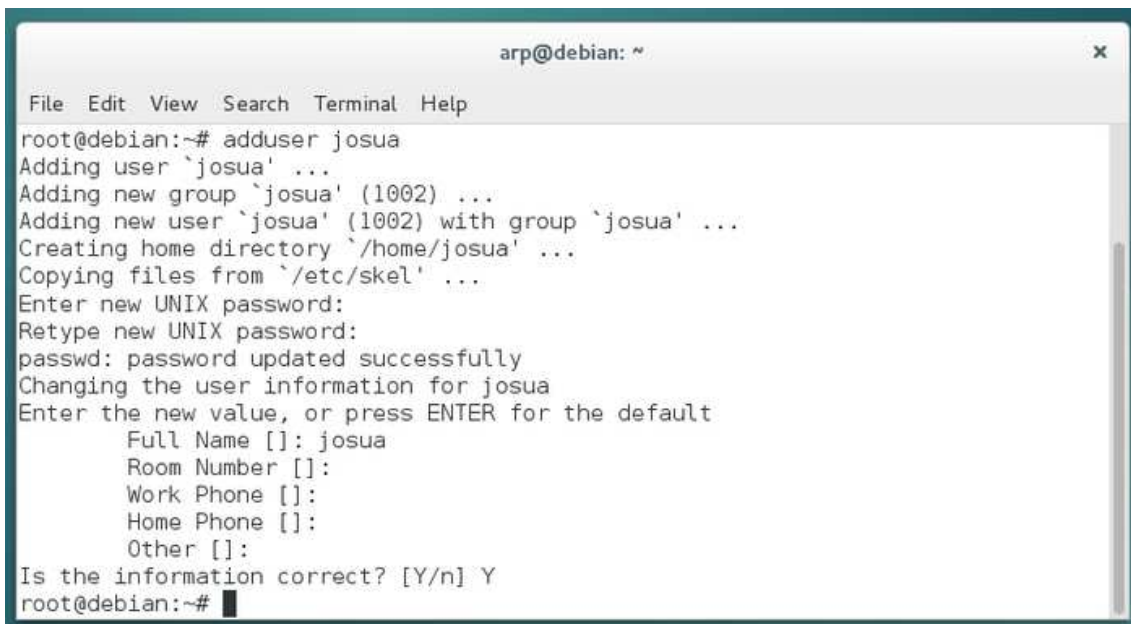
- Open a terminal in administrator mode ([see chap.3.8.3](#)).
- In the terminal window, enter the command which creates the new "username" account.  
*Note that you should enter here the user ID (or pseudo), not the full name which will be asked later on.*

```
adduser identifiant_du_nouvel_utilisateur
```

```
arp@debian: ~
File Edit View Search Terminal Help
root@debian:~# adduser josua
Adding user `josua' ...
Adding new group `josua' (1002) ...
Adding new user `josua' (1002) with group `josua' ...
Creating home directory `/home/josua' ...
Copying files from `/etc/skel' ...
Enter new UNIX password: █
```

The user account creation process is started and you must enter the password twice (without any echo, its normal).

- Once the account is created, we can enter additional information: full name, room number, work phone, home phone, and any comments in the "Other" field.  
Once done, a confirmation is requested. If these information are correct you can type [Enter] or [Y] to finish the account creation process:




```
arp@debian: ~
File Edit View Search Terminal Help
root@debian:~# adduser josua
Adding user `josua' ...
Adding new group `josua' (1002) ...
Adding new user `josua' (1002) with group `josua' ...
Creating home directory `/home/josua' ...
Copying files from `/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for josua
Enter the new value, or press ENTER for the default
    Full Name []: josua
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] Y
root@debian:~#
```

This new user will be able to login with its username and password at computer startup. It will be able to store and manage its data and configure its environment without any risks for your own data and preferences.



## 8.1. The software sources

 Debian GNU/Linux uses the repository methodology to distribute applications. This methodology allows the software centralization and the usage of simple interfaces to administrate and upgrade your system: you have no need to visit the software sites themselves.

### 8.1.1. The sources.list file

The Internet addresses of the Debian repositories are stored in the `/etc/apt/sources.list` and the files of the type `/etc/apt/sources.list.d/xxx.list`.

```
GNU nano 2.2.6      File: /etc/apt/sources.list
#
# deb cdrom:[Debian GNU/Linux 8 _Jessie_ - Official Snapshot amd64 LIVE/INSTALL Bin$
deb cdrom:[Debian GNU/Linux 8 _Jessie_ - Official Snapshot amd64 LIVE/INSTALL Binar$
deb http://ftp.uk.debian.org/debian/ jessie main
deb-src http://ftp.uk.debian.org/debian/ jessie main
deb http://security.debian.org/ jessie/updates main
deb-src http://security.debian.org/ jessie/updates main
# jessie-updates, previously known as 'volatile'
deb http://ftp.uk.debian.org/debian/ jessie-updates main
deb-src http://ftp.uk.debian.org/debian/ jessie-updates main

^G Get Help      ^O WriteOut     ^R Read File    ^Y Prev Page    ^K Cut Text      ^C Cur Pos
^X Exit          ^J Justify      ^W Where Is     ^V Next Page    ^U UnCut Text   ^T To Spell
```

*The default 'sources.list' file on Debian 8.5*

Details concerning the various information found in the 'sources.list' file (the lines beginning with a "#" are just comments):

- "deb": means a binary repository (the compiled software itself)
- "deb-src": means a source repository (the program code files used to compile the software)
- "http:...": the Internet address of the repository server
- "jessie", "jessie/updates": the branch in the repository tree
- "main": the repository section.



## ... why "jessie" and not "stable" since the system is based on Debian Stable ??

"jessie" is the precise version name of the installed system. It sets a given version of each packages included in the "jessie" repository (the version of the generic kernel, for example).

"stable" is the generic name of the currently stable.

For the time being, "jessie" is the "stable" version, thus you could used either designation. But when the Debian "stable" version becomes "stretch", then "jessie" will change to "oldstable".

Using the precise name of your version allows you to control if and when you want to upgrade your system to the next version, as opposed to some systems which want to impose their upgrades 😊

For more detailed information, I invite you to visit the dedicated Debian wiki page<sup>101</sup>

### 8.1.2.About repositories, branches and sections/components

---

Debian organizes its software within repositories. These repositories are divided into branches and sections/components. To learn more about the "testing" and "unstable" branch read the [chapter 8.8](#). One word, however, about the sections/components in the repositories.

There are 3 sections in the official Debian repositories:

section	component selection criteria for the packages
main	complies to the DFSG* without any "non-free" dependency
contrib	complies to the DFSG* with some "non-free" dependencies
non-free	does not comply to the DFSG*

\* **DFSG** stands for **Debian Free Software Guidelines**<sup>102</sup>

Only the packages within the **main** section/component are officially supported by the Debian project and are 100% free software. Rather, those proposed in *contrib* and *non-free* are partially or totally non-free.

Having said that, and depending on your type of hardware, it is very possible that some services do not function correctly without using specific (proprietary) drivers. In that case, you need to modify the `/etc/apt/sources.list` file (details in the following chapter)

More details about the Debian versions in the Debian Wiki: <https://wiki.debian.org/DebianReleases>.

- For more details on sources.list it's here: <https://wiki.debian.org/SourcesList>.
- For a complete documentation on the Debian package management, it's there: <https://www.debian.org/doc/manuals/debian-reference/ch02.html>.

<sup>101</sup><https://www.debian.org/releases/index.html>

<sup>102</sup>[https://www.debian.org/social\\_contract.html#guidelines](https://www.debian.org/social_contract.html#guidelines)

### 8.1.3. Modifying the Repositories

---

Before you start modifying the software sources of your system, you must be conscious of the risks you are taking by using the "contrib" or "non-free" components of the archived branch.

- lack of freedom for this kind of packages
- lack of support by the Debian project (you cannot maintain a piece of software without having the source code at your disposal)
- the contamination of your fully free Debian system.

Now, that you are warned that the non-free people kill the pink rabbits, let's move on:

To modify your software sources, it is enough to edit the 'sources.list' file. Open a terminal in terminal mode ([see chap.3.8.3](#)), and enter:

```
apt edit-sources
```

This command opens the appropriated file with the default text editor (nano or vim). Once you are done with your modifications, save the file ("[Ctrl]+x" with nano, or ":wq" with vim).

**Example of line entry for the free packages:**

```
deb http://ftp.fr.debian.org/debian/ stable main
```

**Example of line entry for the free packages and the proprietary packages:**

```
deb http://ftp.fr.debian.org/debian/ stable main contrib non-free
```

Now you can help yourself in the 3 package sections and install the non-free codecs and drivers.

Note also that you can modify your software sources by using the graphical **Synaptic package manager** (see chap 8.3).

#### 8.1.3.1. Access the nearest repositories with httpredir

---

In order to obtain the software it needs, your system grab the packages on a Debian archive mirror, that is a server hosting a clone of the original Debian repositories.

During the installation process, we already configured your mirror address, but it may happen that this mirror became unreachable for some technical reasons, preventing you install or update your software. To avoid this situation, use "httpredir" 😊.

**httpredir**<sup>103</sup> is a service which aims to solve the problem of choosing a Debian mirror. It uses the geographic and network location of the user and the mirrors, the architecture of the requested

---

<sup>103</sup><http://httpredir.debian.org/>



files, IP address family, the availability and freshness of the mirrors, and a few other things. The result: it selects the best mirror for your needs(<http://httpredir.debian.org/demo.html>)).

## Installing in the sources

In order to utilize the httpredir functionality, it is enough to replace your currently configured Debian mirror in sources.list by "httpredir", **except for the "security" repositories!**

To edit your software sources, using a terminal in administrator mode ([see chap.3.8.3](#)):

```
apt edit-sources
```

Then modify the sources.list file as follows: **Do not modify the "security" lines !**

```
deb http://httpredir.debian.org/debian jessie main
deb-src http://httpredir.debian.org/debian jessie main

deb http://security.debian.org/ jessie/updates main
deb-src http://security.debian.org/ jessie/updates main

deb http://httpredir.debian.org/debian jessie-updates main
deb-src http://httpredir.debian.org/debian jessie-updates main
```

Save by typing [Ctrl]+x in the Nano text editor, followed by "Y" (for "yes")

Reload your repositories and execute an control update:

```
apt update && apt upgrade
```

That's it; your system is now configured to fetch its software information from the repositories hosted by the nearest available mirror.

### 8.1.3.2.Using external sources: Firefox and the Mozilla repositories

---

To benefit from **more recent versions** or from applications not distributed by Debian, you can add **external repositories** to your software sources, providing they remain compatible with your current Debian version.

By default, Debian includes the *ESR* (Extended Support Release) version of Firefox, stable but fixed version distributed by the Mozilla foundation.

As an example, find below how to proceed in order to get the **Firefox latest version**. This procedure request to use a terminal. Each command is detailed below.

1. Close your firefox-esr if it is currently open. If you are reading this page on-line, copy these instructions and paste them into a text file 😊.
2. Open a terminal in administrator mode, using the application list or menu > system > Administrator Terminal ([see chap.3.8.4](#)).
3. Add the Mozilla foundation repository address in a specific file (/etc/apt/sources.list.d/mozilla.list) with this command:

```
echo "deb http://mozilla.debian.net/ jessie-backports firefox-release" > /etc/apt/sources.list.d/mozilla.list
```

(here the ">" sign tells the system to copy the text between quotes in the file coming next after).

4. Update the available package list, always in the administrator terminal:

```
apt-get update
```

A message tells you that a public key is missing in the given repositories. This is solved with the next point.

5. Add the authentication key of the Mozilla repositories in your trusted keyring:

```
apt-get install --allow-unauthenticated pkg-mozilla-archive-keyring
```

6. Refresh the package list taking care of the new key:

```
apt-get update
```

7. Remove the obsolete version of Firefox, and install the latest one:

```
apt-get remove firefox-esr* && apt-get install firefox
```

A confirmation is requested.

That's it. Next time you launch Firefox, you will retrieve all your bookmarks, and your preferences, but with a more recent navigator, which will remain up-to-date thanks to the Mozilla repositories 😊.



## 8.2.APT in a terminal

---



The following sections present the graphical interface of the **APT (Advanced Package Tool)** program. This application is also available directly from the command line, allowing a better fine tuning of your system.

This section presents the basic APT commands to manage the Debian packages from a terminal.

Debian supports also "aptitude", another package manager, with a different syntax and behavior.

This manual being intended for beginners, no need to explicit these commands here: to learn more about them, visit the dedicated Debian Aptitude Wiki<sup>104</sup>.

### 8.2.1.'User' command to search and display information

---

These commands can be executed as simple user, because they do not impact your system.

Command	Description
<code>apt show xyz</code>	display information about the package "xyz"
<code>apt search &lt;regular expression&gt;</code>	look for packages corresponding to the <regular expression>
<code>apt-cache policy xyz</code>	display the available version of "xyz"

```
4:53 arp > apt search pacman
Sorting... Done
Full Text Search... Done
childisplay/stable 2.6.5-1 all
  Suite of educational games for young children

gtkboard/stable 0.11pre0+cvs.20@3.11.02-7 amd64
  many board games in one program

hannah/stable 1.0-2 amd64
  pacman-like game, child oriented

hannah-data/stable 1.0-2 all
  pacman-like game, child oriented - data files

njam/stable 1.25-8 amd64
  pacman-like game with multiplayer support

njam-data/stable 1.25-8 all
  pacman-like game with multiplayer support -- data files

pacman/stable,now 10-17 amd64 [installed]
  Chase Monsters in a Labyrinth

pacman4console/stable,now 1.3-1 amd64 [installed]
  ncurses-based pacman game

xscreensaver-data-extra/stable,stable-updates 5.30-1+deb8u2 amd64
  Extra screen saver modules for screensaver frontends
```

*Terminal: looking for "pacman" with apt*

<sup>104</sup><https://wiki.debian.org/Aptitude>

## 8.2.2. 'Administrator' mode commands for system maintenance

---

These commands must be executed with the "root" administrator rights, because they impact the system. To move into the administrator mode from a terminal, type "su -": the administrator password is requested.

Command	Description
apt update	Update the repositories metadata.
apt install xyz	Install the xyz package and its dependencies
apt upgrade	Secured update of the installed packages.
apt dist-upgrade	Update of the installed packet, by adding/removing other packages if necessary
apt remove xyz	Remove the package xyz, but leave the configuratrion files.
apt-get autoremove	Automatically remove the packages which are no longer necesssary.
apt purge toto	Purge the package xyz as well as its configuration files.
apt-get clean	Clean the local cache of the installed package.
apt-get autoclean	Clean the local cache of the obsolete packages.
apt-mark showmanual	Mark a package as being manually-installed.

For more detailed information and the apt/aptitude equivalence, visit the dedicated page<sup>105</sup> of the Debian manual.

**All-in-One** command line (in administrator mode) to update the repositories information + update your system + clean the packages in cache:

```
apt update && apt dist-upgrade && apt-get autoclean
```

Which goes to show that managing your system with a terminal is not that complex 😊.

### Apt vs Apt-get

The Apt program is currently going through some streamlining and offers now a simplified syntax for its commands and options. Thus, you will find both syntax (apt and/or apt -get) in this manual as well as in most of the GNU/Linux documentations.

## 8.2.3. Backport packages

---

Debian offers also some special repositories called **backports**, which contain **more recent versions** of some applications. These repositories are not activated by default, but do not present any particular risks for your system: the "regular" repositories have the highest priority during the update process, only the applications installed from the backports will look into these specific repositories.

---

<sup>105</sup><https://www.debian.org/doc/manuals/debian-reference/ch02.html>



... what do you mean exactly by "backports" ?

Nothing to do, in fact, with the "backdoors" used to spy on your machine running proprietary systems 😊

The **backport** is a mechanism allowing an application currently hold in the Debian development repositories, to be *ported back* to the "stable" version.

For example, the Debian developers take in the development repositories the most recent version of LibreOffice, and re-compile (re-build) the package holding the application, while taking care of all the dependencies existing in the "stable" version.

### Example: install a newer version of LibreOffice

---

To take advantage of the "back-ported packages", you need to **activate the backports repositories**, and then indicate to the Apt package manager which applications will be taken from these backports.

This procedure requires a terminal usage, and each command is detailed hereafter.

1. Open a terminal in administrator mode from the application list or menu > system > Administrator Terminal ([see chap.3.8.4](#)).

2. Add the "backports" repositories to the list of active repositories (listed in the /etc/apt/sources.list file):

```
echo "deb http://http.debian.net/debian/ jessie-backports main" >>
/etc/apt/sources.list
```

The "»" sign tells the system to add the text between quotes into the file specified just after it.

3. Reload the repositories metadata, always from the terminal in administrator mode:

```
apt-get update
```

4. Update LibreOffice from the new repositories:

```
apt-get install -t jessie-backports libreoffice libreoffice-gtk
```

A confirmation will be asked, with the list of the pending changes.

That's it, you can enjoy the new version of LibreOffice 😊.



These repositories are not specific to LibreOffice, and numerous other applications can also benefit from newer versions.

For more information on the backports, you can consult the Debian Backports Wiki<sup>106</sup>.

If you are looking for specific application, you have two solutions: use the search package tool<sup>107</sup> or the search by category<sup>108</sup>.

<sup>106</sup><https://wiki.debian.org/Backports>

<sup>107</sup><https://backports.debian.org/Packages/>

<sup>108</sup><https://packages.debian.org/jessie-backports/>

## 8.3.Synaptic: the comprehensive package manager



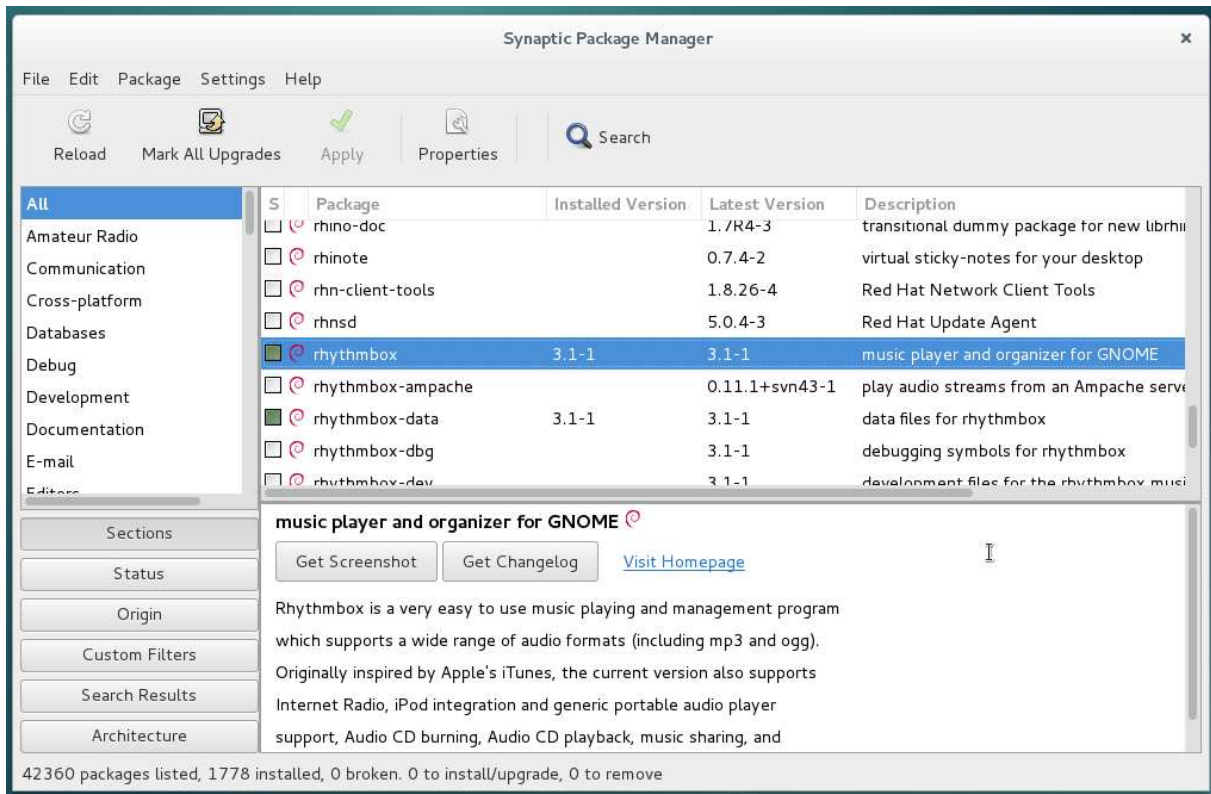
**Synaptic**<sup>109</sup> is the comprehensive graphical interface of the Debian package manager. It allows a total vision of the proposed packages, whether installed or not. It is a lot more detailed than the Software Center, or Apper (see the following chapters) since it displays the **full set** of available packages (including the libraries).

- Provide the same functionality as apt or apt-get.
- You need to provide the administrator password to open and use Synaptic.
- An active Internet connection is also needed to install or update your software.

### 8.3.1.Main interface

The Synaptic window is divided into 4 areas: the tool bar at the top, the left pane allowing different ways of sorting and selecting the packages, the center pane displaying the package list itself, and below the pane hosting the description of the currently selected package (the selection is done with a click).

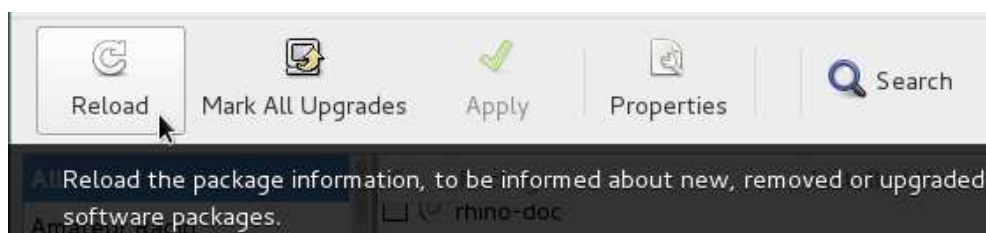
In front of each package, you notice a little box (white for non-installed packages, green when they are installed, red when they are broken). Next to this status box, a Debian logo indicates that this package is "free" (as in freedom).



*Synaptic: the default interface of the package manager*

<sup>109</sup><https://wiki.debian.org/HowToSynaptic>

**The very first thing to do** when you launch Synaptic, is to **click on the "Reload" button** in order to update all the information (metadata) concerning the repositories, the packages and the available applications.



Don't hesitate to click on all the menus to explore Synaptic and become more familiar with it. It is a good way to discover its numerous functionalities.

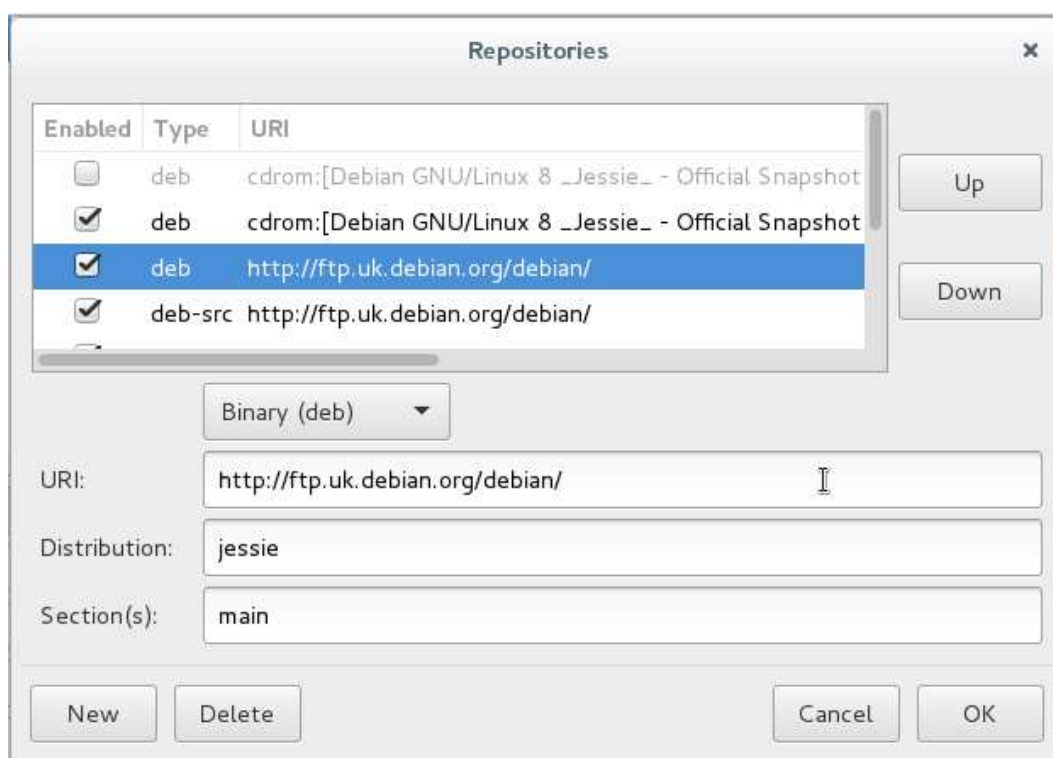
Don't be afraid to break your system since nothing will really happen until you click on the "Apply" button. On top of that, a message asking for confirmation will always be displayed first.

### 8.3.2. Managing the repositories

---

The repositories allow to update and install additional packages.

Open the Synaptic package manager (menu System > Synaptic package manager). In the top menu bar, click on "Settings, then "Repositories":



*Synaptic: managing repositories*

You'll notice that the list corresponds to the contents of the `/etc/apt/sources.list` file mentioned in chapter 8.1.1.

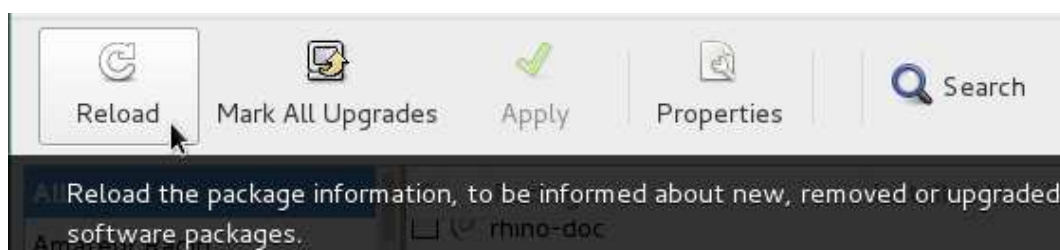
Now, you can modify your repository sources at your entire convenience. Simply click on a source to modify it, or on the "New" button to add a new source.

Once your modifications are validated, the application will invite you to reload the repositories list in order to take your changes into account.

### 8.3.3.Updating the system

---

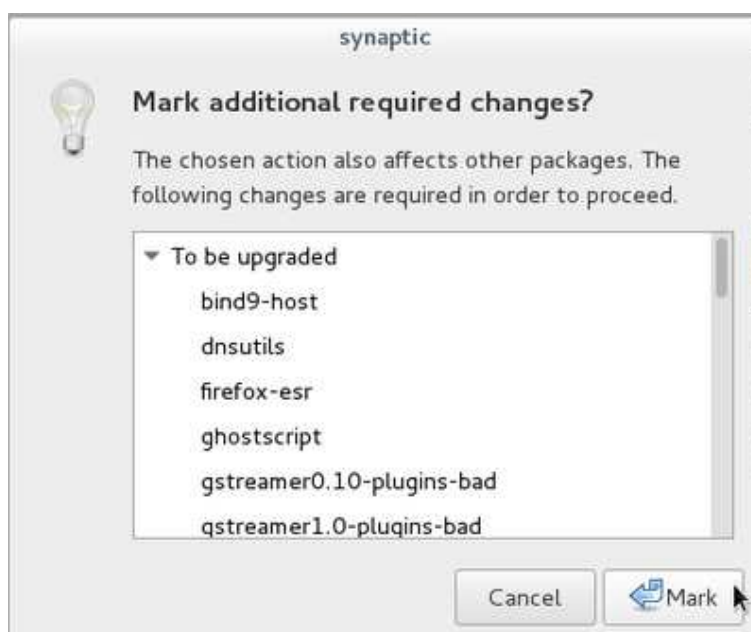
Before updating the system, it is necessary to "Reload" the package list, by clicking on the corresponding button, or by going in the menu "Edit > Reload Packages Information" (or even [Ctrl] +r if you want to use a keyboard shortcut). This action checks if the version of the packages residing on your system is the most recent or not.



Then click on "Mark All Upgrades" or menu "Edit > Mark All Upgrades...".

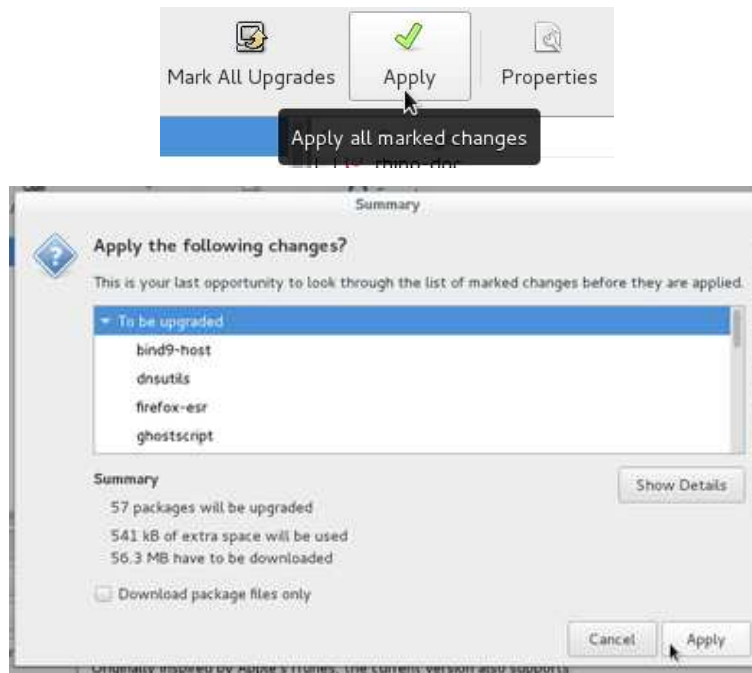


A new window appears with the list of the packages to be upgraded as well as the additional dependencies, if some are required:

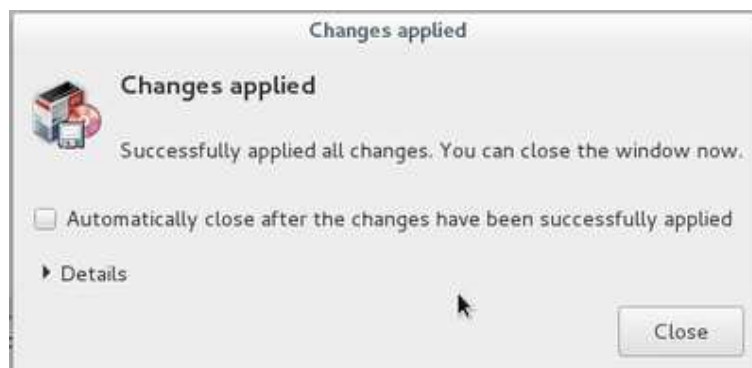
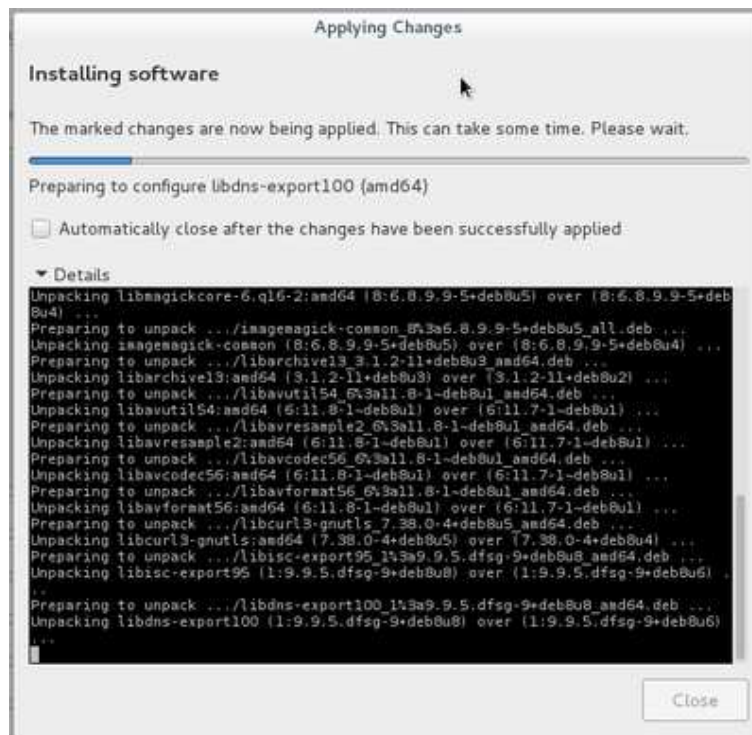




You only have to click on the "Apply" button, and accept the requested confirmation:



The system updating process begins with the package downloading, and continues with their installation. A message informs you that all the changes were applied.



## 8.3.4. Searching for a software

---

**If you don't know the name of the package** you need, you can parse the list using the filtering by sections, status, origin, etc ...

By example, if you are looking for a game, click on Sections in the bottom part of the left pane, scroll down to the "Games and Amusement" section, click on it, and the packages concerning games and amusement are listed in the center pane.

**If you know the name of the package** or if you are looking precisely for something, click on the search button (in the top bar) and enter the keywords of your search in the window which opens.

Other "Custom Filters" are available. Click on the button to explore them.

### 8.3.4.1. Look at a package detailed information

---

By clicking on a package, its description is displayed on the bottom center pane of Synaptic. To obtain even more information on a package, right-click on it, and select Properties, or go to menu "Packages > Properties".

Then you will know everything - positively absolutely everything - on this package ; dependencies, installed files, size and version.

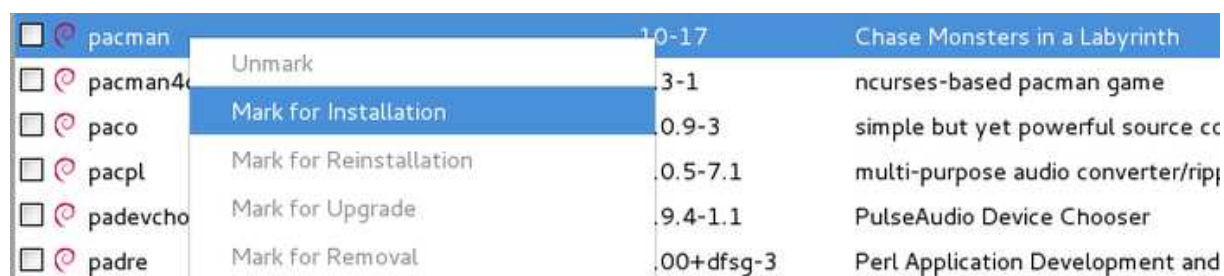
## 8.3.5. Installing / uninstalling softwares

---

### 8.3.5.1. Installing a package

---

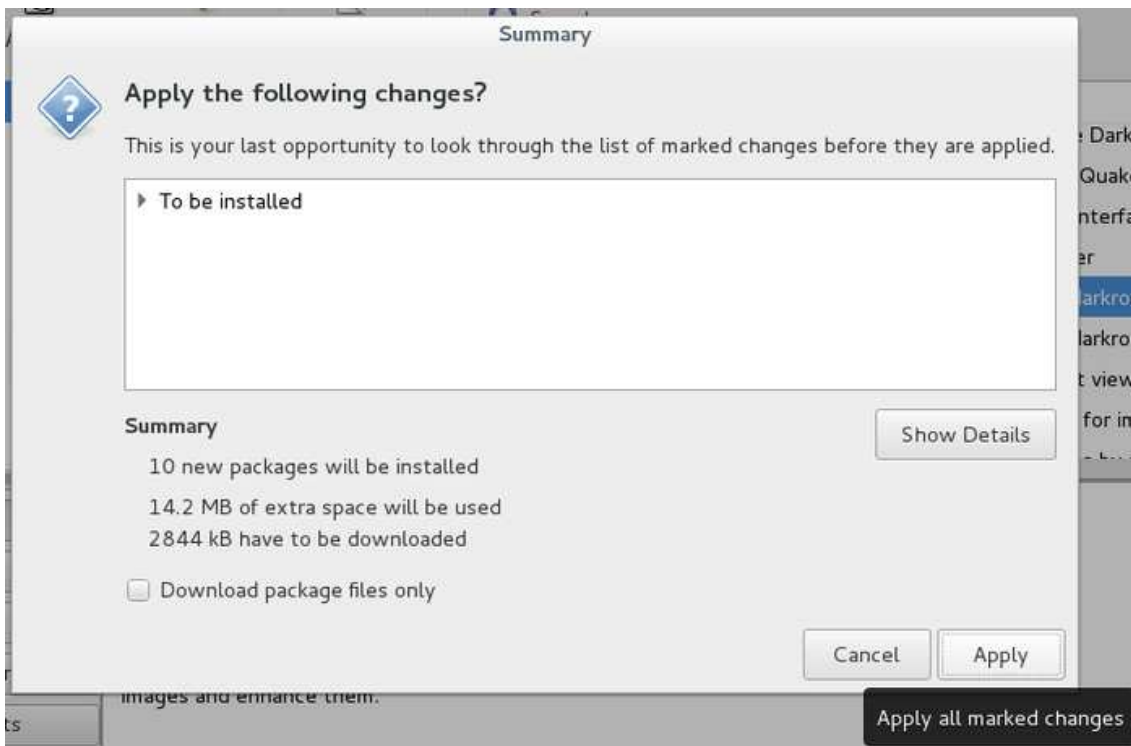
**To install** one or several packages, right-click on the little box in front of the package name, and select the "Mark for Installation" option.



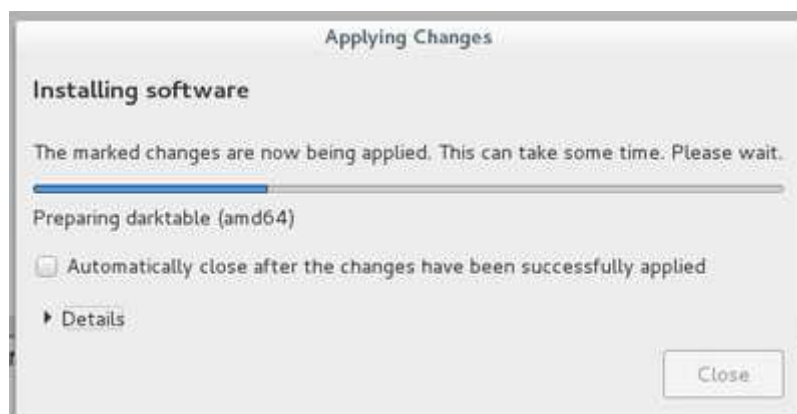
*Synaptic: marking a package for installation*

If, in order to be functional, this package requires the installation of other packages (the famous dependencies) they are automatically added to the selection.

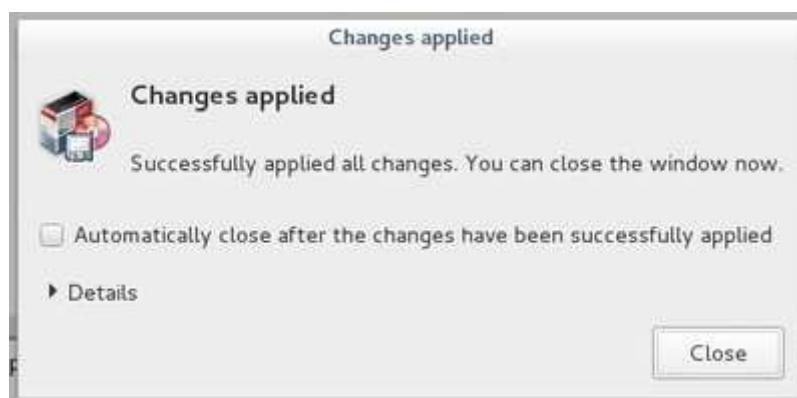
Then, you simply need to click on the "Apply" button, and confirm the summary of the changes to be applied.



*Synaptic: summary of the pending changes*



*Synaptic: changes being applied*



*Synaptic: installation of pacman*

### 8.3.5.2. Uninstalling a package

---

Like for the installation, right-click on the little box in front of the package name, and select the "Mark for Removal" option. Then click on "Apply".

**The simple removal** keep the package configuration files on your system, in case you would like to re-install it, later on.

**To remove also the configuration files** select the "Mark for Complete Removal" option (equivalent to the "purge" in a terminal command line)

### 8.3.5.3.Reinstalling a package

---

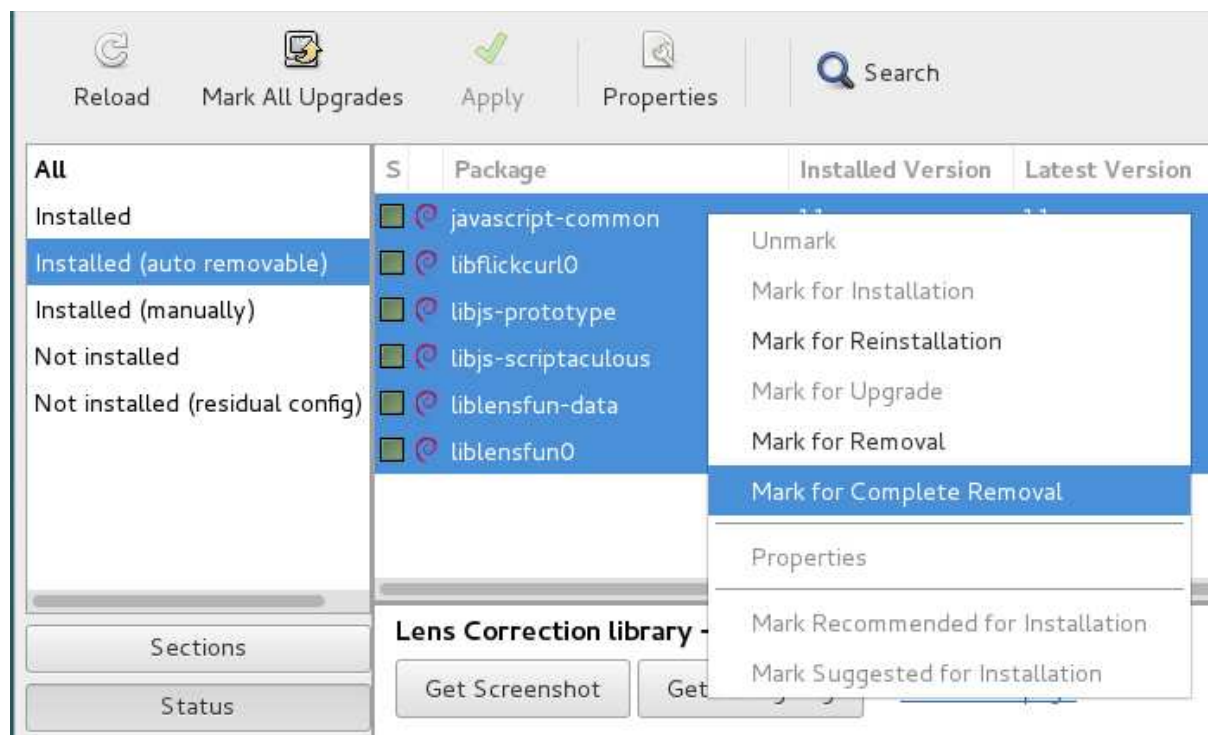
Sometimes we want to re-install a package which is already installed. In that case select the "Mark for Reinstallation" option. This allows, for example, to update the flashplayer plugin within the Firefox navigator: *flashplugin-nonfree*.

### 8.3.5.4.Cleaning useless packages

---

Often, when software is uninstalled, some packages (the dependencies) remain in the system while no longer useful, since all the packages needing them are gone. These useless packages can be easily removed with Synaptic.

When Synaptic is launched, click on the "Status" button at the bottom of the left pane. If the "Installed (Auto removable)" category shows up, click on it to display the corresponding package(s) (see image below):



*Synaptic: auto removable packages*

All you have to do next is a right-click on each package in the center pane, and select the "Mark for Complete Removal" option. Once all the packages are marked, click on the "Apply" button.

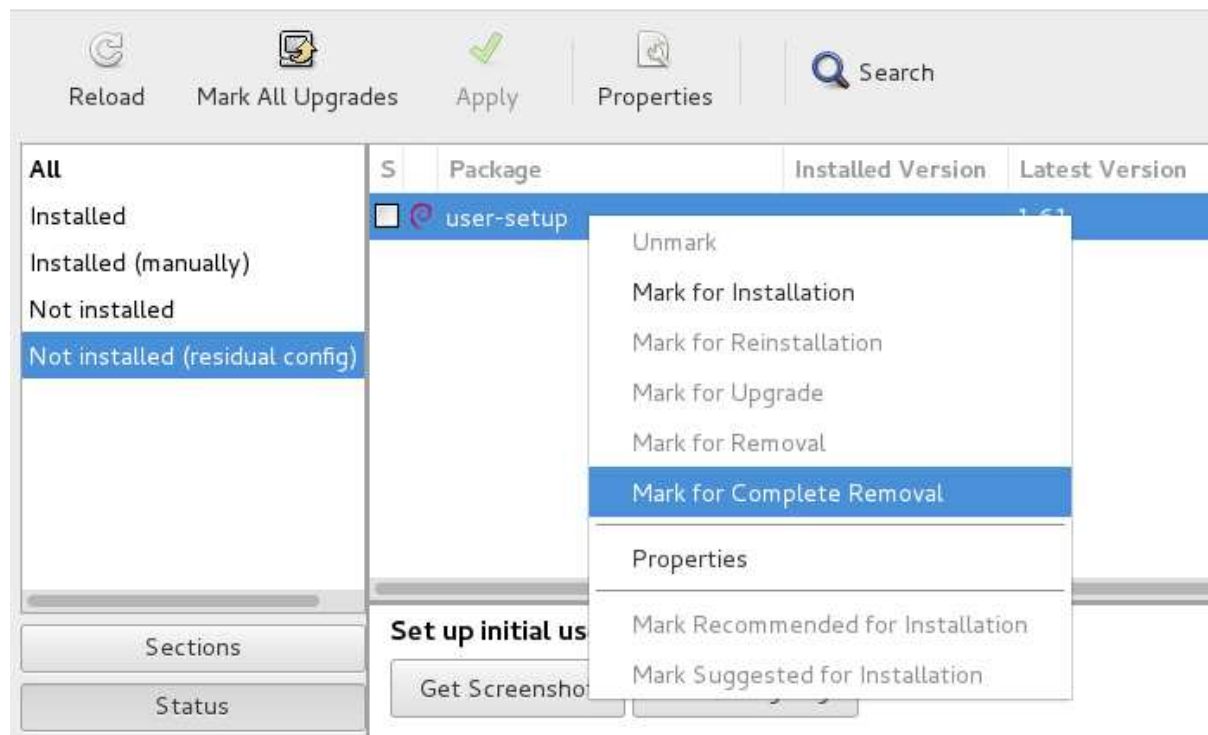
(sources: <https://raphaelhertzog.fr/2011/10/18/>)

### 8.3.5. Removing configuration residues

---

Although one choose to completely remove a software, some configuration residues might still remain in the system, bur they can be removed with Synaptic.

Click on the "Status" button at the bottom of the left pane. If the category "Not installed (residual config)" shows up, select it (see image below):



*Synaptic: removing configuration residues*

All you have to do next is a right-click on each package in the center pane, and select the "Mark for Complete Removal" option. Once all the packages are marked, click on the "Apply" button.

(sources: <https://raphaelhertzog.fr/2011/08/16/>)

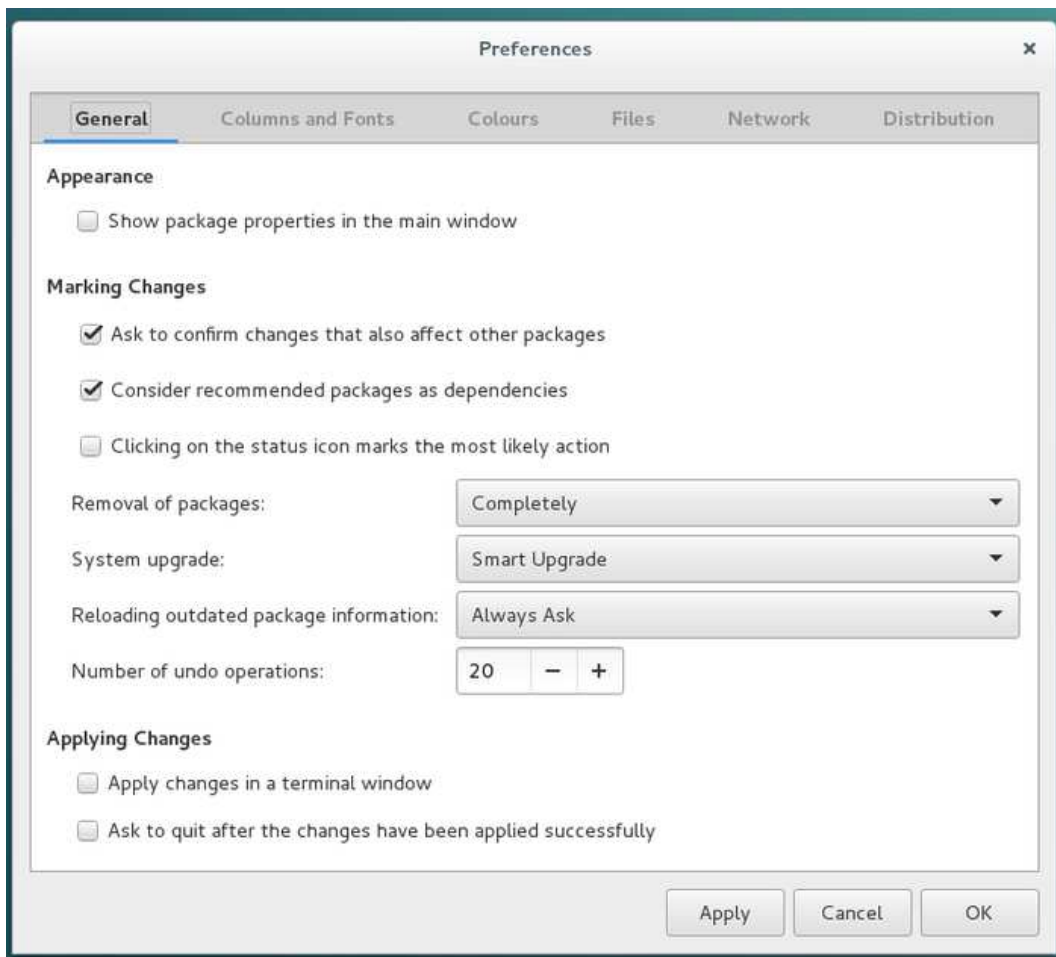
### 8.3.6. Synaptic preferences

---

"Preferences" is a well-named category, existing in most applications, and which is also present here ...

**But keep in mind that Synaptic is a very special case:** it manages the full set of software installed on your system. When you remove a program, it does not go in the wastebasket (where you could have potentially retrieved it) !

After these scary warnings, let's move to the settings available for Synaptic. the Preferences window (launched via menu Settings > Preferences) displays 6 different tabs:



*Synaptic: Preferences window*


**General:** the options in there are rather explicit. Note: it is possible to un-tick the option "Consider recommended packages as dependencies", if that helps you keeping an ultra-light system. But this could induce problems when installing future new packages. Thus an option to be handled carefully.

- **Columns and Fonts:** allows you to display/mask some columns in the package list, and define the font, if necessary.
- **Colors:** you can define here the package colors according to their status.
- **Files:** When you install a piece of software, it is first stored in the *cache* (which is a specific folder of the file system) before being uncompressed and installed. These packages can occupy more and more disk space as you make usage of your computer. Here you can delete them immediately or configure an automatic action.
- **Network:** This is the way Synaptic connects to Internet. You should know if your situation requires a modification of these parameters.
- **Distribution:** Defines the package upgrade behavior and is very explicit. **In case of doubts, do not modify**

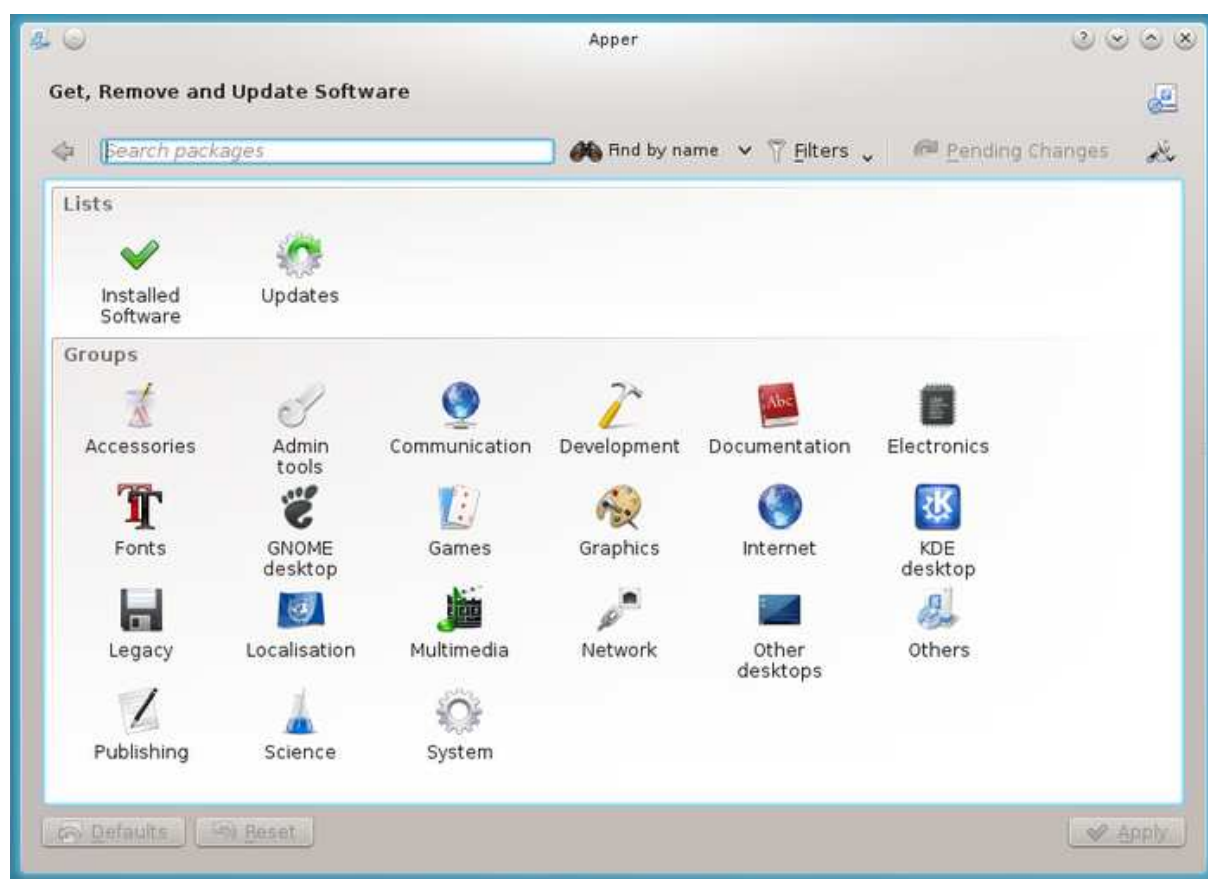
**Remember:** by using a [terminal](#) (chap.8.2) you can achieve the same results more quickly and with less manipulations.

## 8.4.Apper: the KDE package manager

---

 **KDE** does not use the Synaptic package manager presented in the previous chapter. You could install it though, but you don't need it because **Apper** is there to help you manage your applications.

To launch it, go to KDE **KickOff** button > Applications > System > Software Management



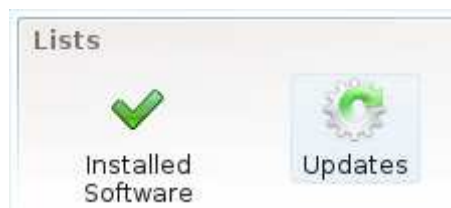
*Apper: default software management interface on KDE*

### 8.4.1.Updating applications with Apper

---

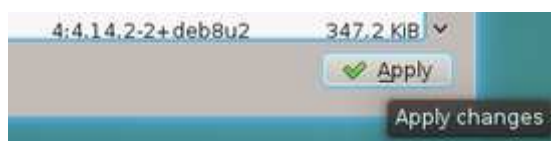
To maintain a stable and secure system, you need to update the software ... Yes we told you that already ... but this is very true !

Anyway, to check the changes in the repositories, and retrieve the software updates, click on the "Updates" button, then click on "Check for new Updates". Then you just need to select all the package updates by ticking the top box:



*APTer: update manager on KDE*

Then left-click on the "Apply" button at the bottom of the window to execute the modifications.



And a message informs you when the process is complete.



Your system is up to date

Verified 49 minutes and 30 seconds ago

## 8.4.2. Install or remove software with APTer

---

To install software with APTer you can either:

- use the search field at the top of the window: enter one or several keywords and launch the search:





*APter: looking for software*

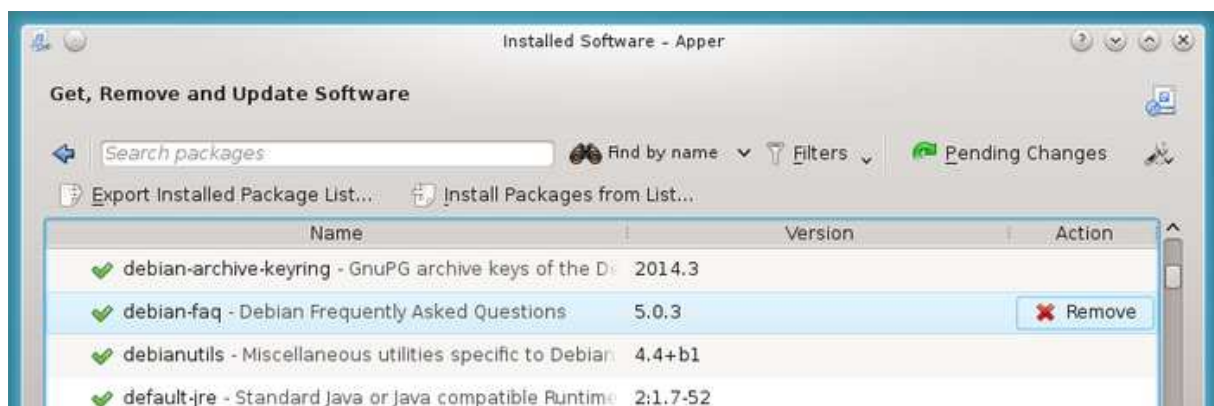
- or look into the application list organized by category and select an application. Here we click on "Graphics"



*APter: marking software for install*

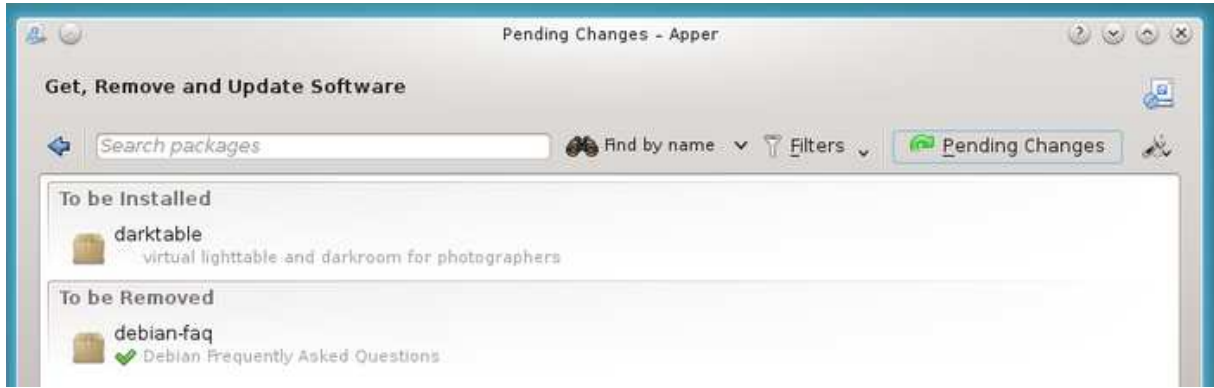
Once you are done with the selection, click on the "Apply" button at the bottom right of the window, and the software will then be installed. The administrator password is required.

**To remove software** with APTer, click on the "Installed software button" then navigate to your application. When you hover the mouse pointer over it, the Remove option is proposed: click to accept !

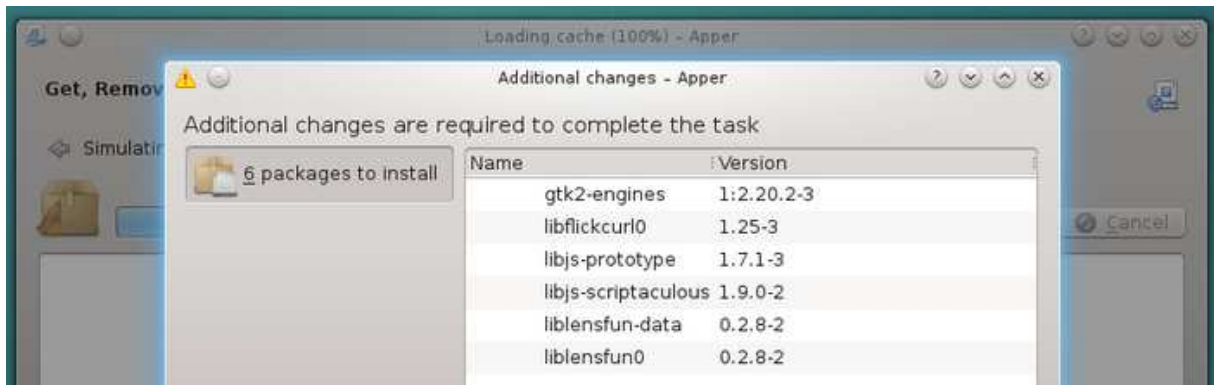


*APter: marking software for removal*

Like for the installation, you then click on "Apply". A confirmation window opens (because on GNU/Linux one keeps you fully informed):



*Apper: list of the pending changes*



*Apper: list of the additional requested dependencies*

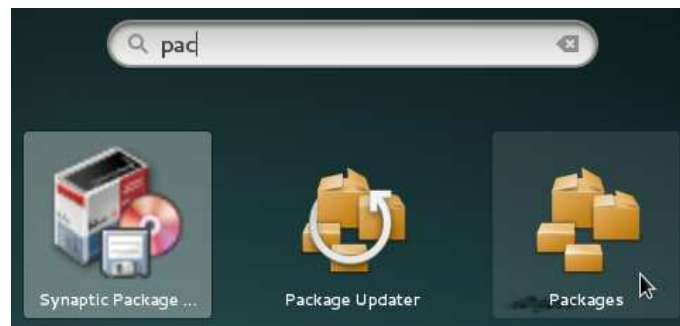
You can watch the various downloading, installing and/or removing steps directly on the main Apper window.

## 8.5.Packages: the simplified installation interface



The majority of the Debian GNU/Linux desktops uses the "Packages" program to manage the software packages. The simplified Gnome Software Center allows you to execute on your system all the package administration tasks.

To launch it, click on the Gnome "Activities" button then enter the beginning of the application name in the search field:

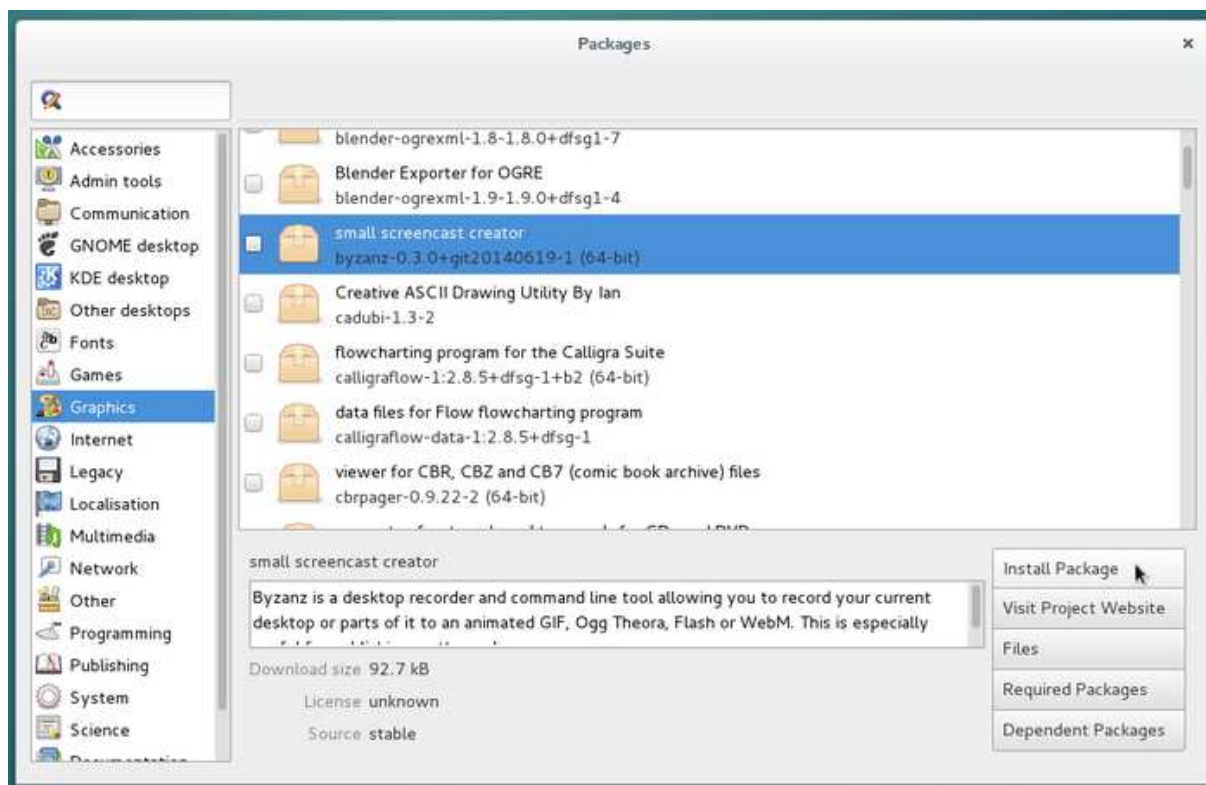


*Packages: launching from the Gnome-Shell*

To launch it from the classic menus (Xfce, LXDE, Mate Cinnamon), open the application menu > "System" category > "Packages" application.

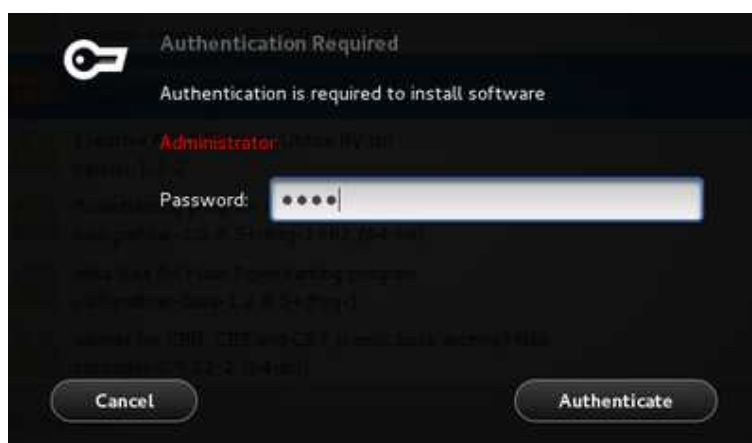
### **8.5.1. Install or remove software with the "Packages" application**

The "Packages" simplified interface allows you to look for an application by name (using the search bar at the top left of the window), or by category. When you select an application, either it is installed and "Packages" propose you to remove it, or, in the opposite case, propose to install it ... it's that easy:



*Packages: install or remove an application*

Like for all the administrative tools, the "root" password is requested, and a confirmation message will require your acceptance.



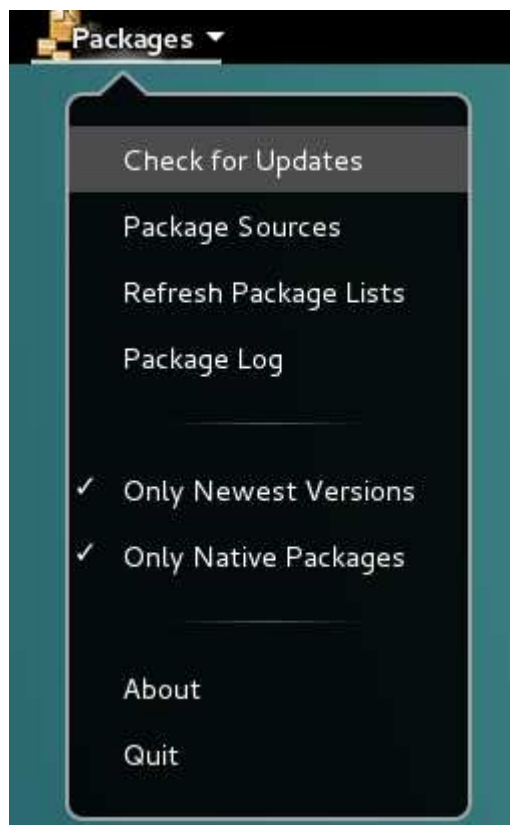
*Gnome-Shell: administrator password request*

**Packages** also allows you to display additional information concerning the software included in the Debian repositories, to access its main page or to list the additional software needed to install it (the dependencies).

## 8.5.2. System updates with "Packages"

---

"Packages" allows you also to check for and apply system updates. To do this, you go in the "Packages" menu > "Check for Updates" (here with Gnome-Shell):




*Packages: updating the system*

Note that you can also check for *updates* from the main menu > System > "Software Updater".

## 8.6. Cleaning the system

---

 Even if the capacity of hard disks increased dramatically during the last years, you might need some free space. Several scripts automate the disk cleaning process, however I prefer to check before using the **rm** command (standing for **remove**. [see chap.11.2](#)) 😊.

### 8.6.1. Disk space information

---

The first thing to do, of course, is to find out the used space on your disk. Several tools are available to you:

- **Disk space in terminal mode:** a summary of the disk space usage for each system mount points (disks and partitions):

```
df -h
```

- **List your folders sorted by decreasing size:**

```
du -ks * | sort -nr
```

- **Ncdu:** disk space analyzer in console mode. To launch it, simply type "ncdu" in your terminal. To install this software (in administrator mode):

```
apt update && apt install ncdu
```

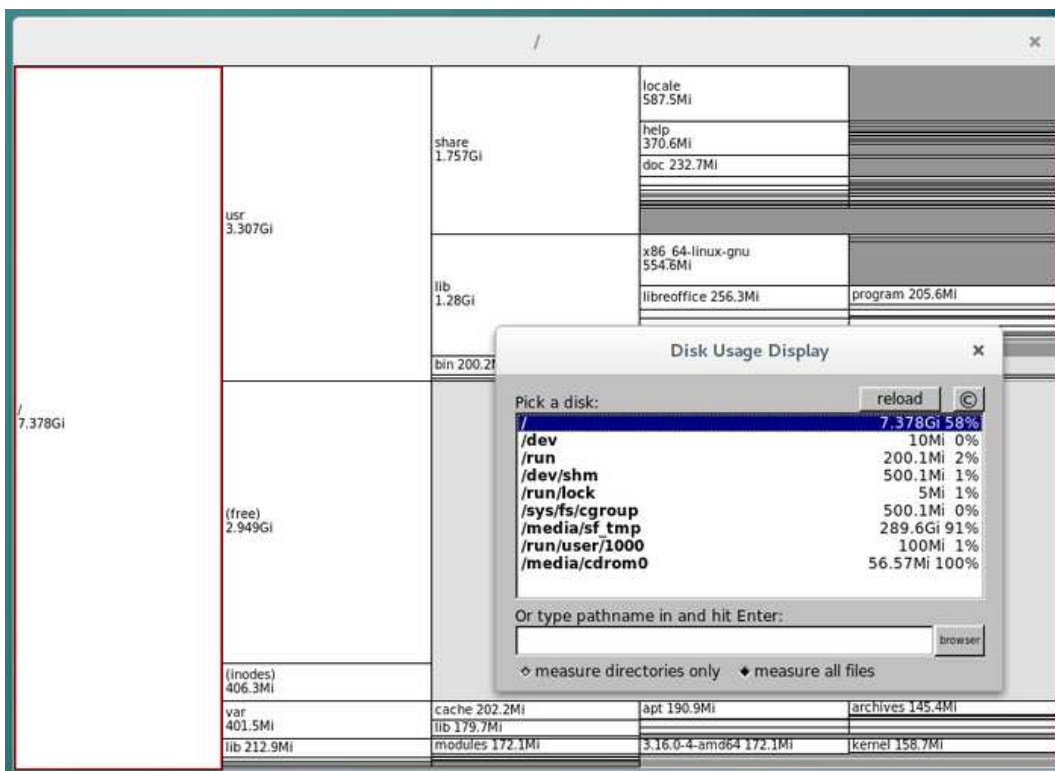
```

arp@debian: ~
File Edit View Search Terminal Help
ncdu 1.10 ~ Use the arrow keys to navigate, press ? for help
--- /home/arp -----
13.7MiB [#####] /.mozilla
11.4MiB [##### ] /.cache
1.9MiB [#] /.config
1.1MiB [ ] /.local
524.0KiB [ ] /.gimp-2.8
176.0KiB [ ] /.thumbnails
16.0KiB [ ] /.gconf
16.0KiB [ ] /.gnupg
12.0KiB [ ] /.dbus
8.0KiB [ ] /.gnome2
e 4.0KiB [ ] /Videos
e 4.0KiB [ ] /Templates
e 4.0KiB [ ] /Public
e 4.0KiB [ ] /Pictures
Total disk usage: 29.0MiB Apparent size: 28.1MiB Items: 601

```

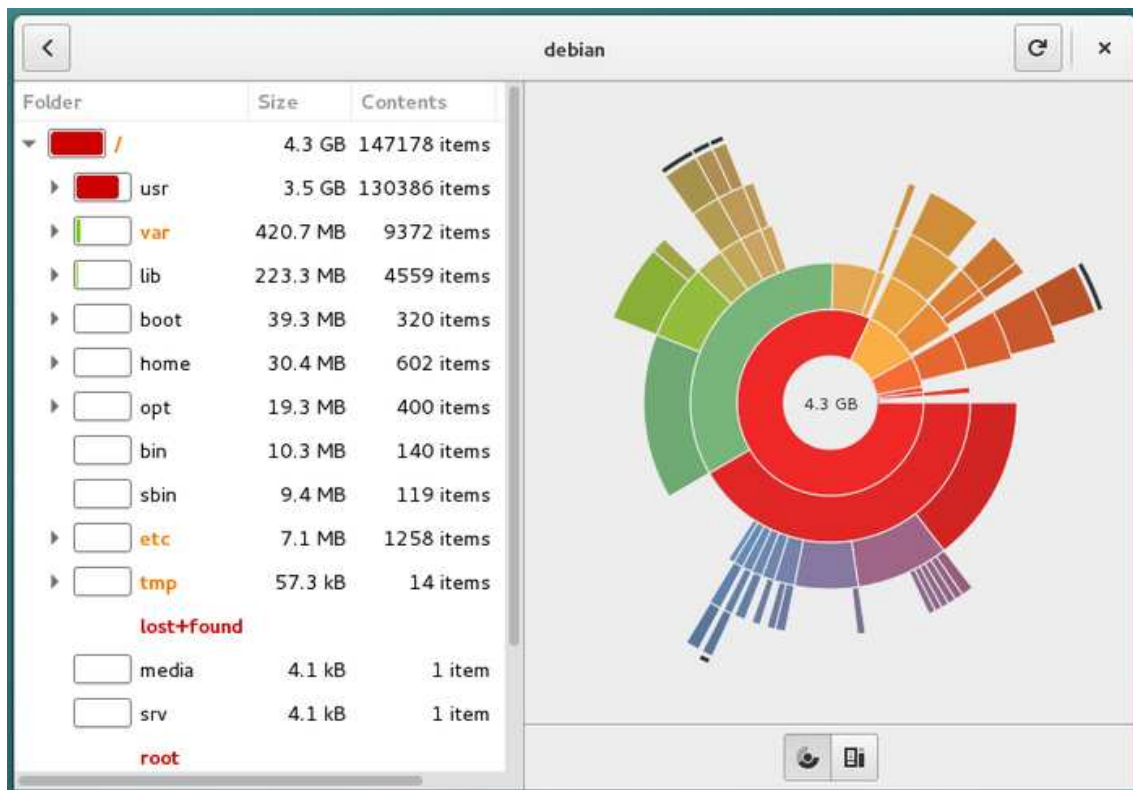
*Ncdu launched in the user personal folder*

- **Xdiskusage:** disk space analyzer (old style) using **du**.



*Xdiskusage in action*

- **Baobab**: disk space analyser in graphic mode, integrated in Gnome



*Baobab: disk space analyzer on Gnome*

- **Fslint**: utility to find and clean various forms of unwanted extraneous files in your file system, like duplicates, broken links, empty folders, wrong encoding, etc ... To be manipulated with extreme caution: double check carefully the pending changes before validating the whole process.

## 8.6.2.Cleaning the packages

**Apt**/aptitude/dpkg are the usual Debian package managers. When you install a package its archive-source/deb file is stored in your system (in the /var/cache/apt/archives/ folder) to enable a potential re-installation without Internet connection. To clean the "apt cache" use a simple command in administrator mode ([see chap.3.8.3](#)):

```
apt-get clean
```

Once the cache of the installed packages is cleaned, you can also remove the useless packages from your system, as well as the configuration files. **Warning** ! Remember to check carefully the list of the packages planed for removal, before accepting the operation:

```
apt-get autoremove --purge
```

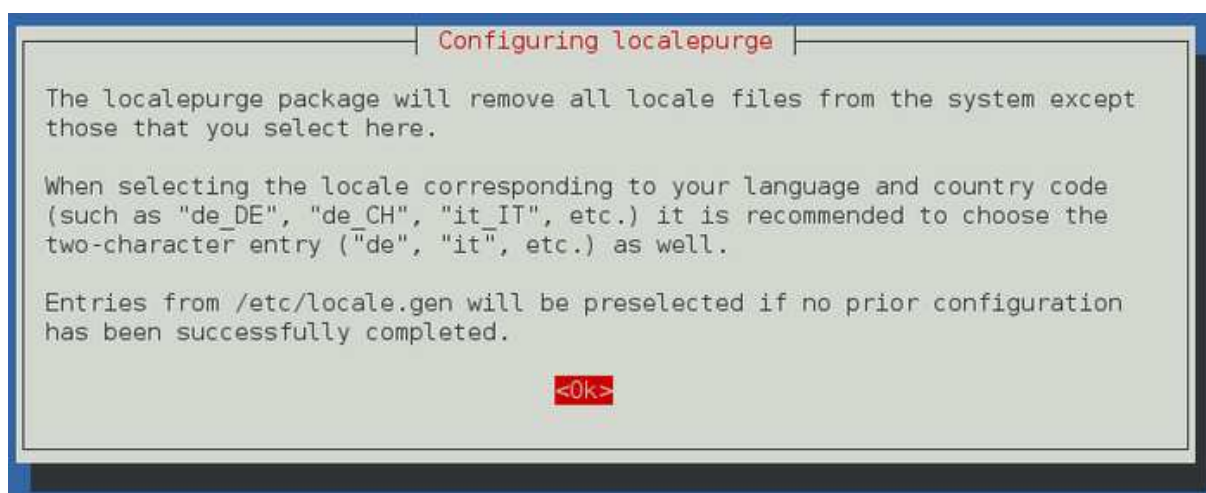
## 8.6.3.Cleaning locales

---

The Debian packages are installed with the complete set of available languages. But usually only one or two are really needed. To clean up the useless language translations of your system, as well as the configuration files, we suggest you install the **localepurge** package in administrator mode ([see chap.3.8.3](#)):

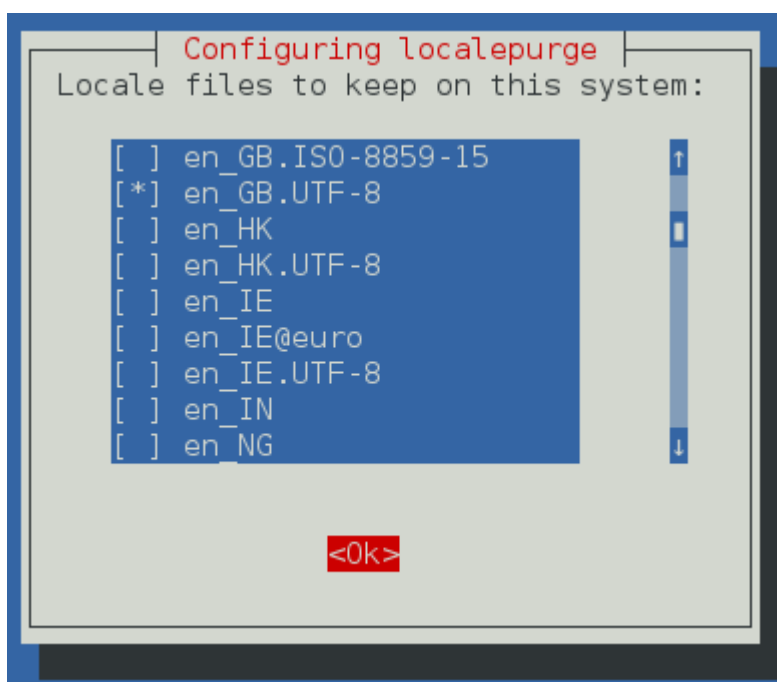
```
apt install localepurge
```

During its installation, **localepurge** gives you information on how it functions, and ask you to select the languages you want to keep, using an interface of type "dialog".



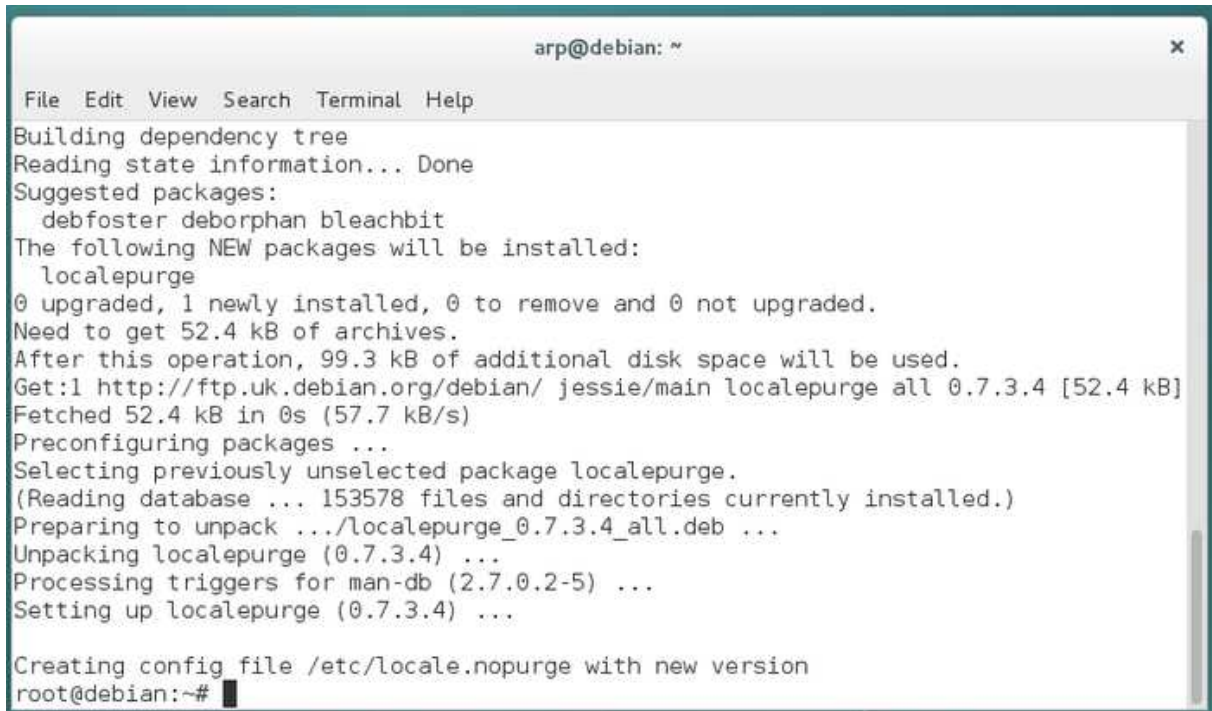
*Localepurge: installation message*

You can navigate in the installed language list with the keyboard direction arrows, and then select the languages you want to retain using the space bar.



*Localepurge: selecting the languages to retain*

Once the selection of the language(s) is complete, press on the [Tab] key to jump the "<Ok>" button and validate your list. Then the terminal display comes back:



```
arp@debian: ~
File Edit View Search Terminal Help
Building dependency tree
Reading state information... Done
Suggested packages:
  debfoster deborphan bleachbit
The following NEW packages will be installed:
  localepurge
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 52.4 kB of archives.
After this operation, 99.3 kB of additional disk space will be used.
Get:1 http://ftp.uk.debian.org/debian/ jessie/main localepurge all 0.7.3.4 [52.4 kB]
Fetched 52.4 kB in 0s (57.7 kB/s)
Preconfiguring packages ...
Selecting previously unselected package localepurge.
(Reading database ... 153578 files and directories currently installed.)
Preparing to unpack ../localepurge_0.7.3.4_all.deb ...
Unpacking localepurge (0.7.3.4) ...
Processing triggers for man-db (2.7.0.2-5) ...
Setting up localepurge (0.7.3.4) ...

Creating config file /etc/locale.nopurge with new version
root@debian:~#
```

### *Localepurge: installation*

During each package installation, **localepurge** will run automatically in order to clean the useless locales/man/doc.

## 8.6.4. Emptying the trash bins

---

Three different bins must be taken into account:

- **The user wastebasket:** `~/.local/share/Trash/` . You can empty it with the system file manager, or with a terminal:

```
rm -Rf ~/.local/share/Trash/*
```

- **The administrator wastebasket:** `/root/.local/share/Trash/` . To empty it with the proper manner, use a terminal in administrator mode:

```
rm -Rf /root/.local/share/Trash/*
```

- **The external wastebaskets:** locates on your external disks, they are usually named `'/media/your_id/your_disk/.Trash_1000'`, where `your_id` corresponds to your login name.

## 8.6.5. Purging application caches

---

Some applications use a "cache" folder, where they store images, videos, and miscellaneous information in order to run faster. Usually these data do not occupy too much disk space, however



if (using the tools described above) you detect that a folder becomes too fat, don't hesitate to remove it.

Each application has its own way to manage its own cache: some purge it systematically when they close, others store their data in the /temp folder, which will be cleared during the session logout, others keep all their information in a specific folder.

For Firefox, as an example, you can purge the cache from the preferences menu, and even automate this action every time the application is closed.

### 8.6.6.Purging the thumbnails

---

Every time you open a folder containing pictures or videos, thumbnails are created to represent these graphic files. These thumbnails are stored in a specific folder to reuse them, rather than being forced to recompute them, every time you access this kind of file.

The problem raised when you delete a graphic file, because its thumbnail is kept in the system, and this leads to a certain amount of disk space used to store obsolete thumbnails 😊.

To purge them, it is enough to remove their corresponding folder:

```
rm -Rf ~/.thumbnails
```

This folder will be created again, the next time the system needs to store a newly generated thumbnail.

## 8.7.Installing external ".deb" packages

---

Debian GNU/Linux uses the package repository system to better manage the software and increase the security of your system. But it may happen that you need an external package of the ".deb" format



... but who is this "deb" ??

**deb** is the short for "debian", the mother company 😊. To distribute its software, Debian uses a specific archive file format: ".deb". It is a compressed format, like the ".zip" that you use to save your data. These ".deb" archives are recognized by the different Debian package managers (APT and its graphical interface Synaptic) and thus can be handled more easily.

### 8.7.1.Installation in graphic mode with gdebi

---

gdebi is a graphical utility with allows the installation of external packages of the ".deb" format, while managing the dependencies.

To install it, look for "gdebi" in your favorite package manager (Synaptic, Apper, Packages) or more simply from a terminal in administrator mode (using "su" [see chap.3.8.3](#)):

```
apt update && apt install gdebi
```

When you download a Debian external package, right-click on it and select "Open with gdebi".

## 8.7.2. Installation in terminal mode with Dpkg

---

Dpkg is a software utility handling the packages like apt, but it does not manage the dependencies. This means that if you use dpkg to install external packages, you need to install the "dependent" packages one by one from your terminal. Dpkg is integrated in Debian by default, and must be used in administrative mode.

**To install an external package:**

```
dpkg -i package_address.deb
```

An error message will let you know if some dependencies are missing, an error message will let you know, and then simply install them the classic way with apt:

```
apt install dependent_package_1 dependent_package_2 ...
```

Then relaunch the installation of your external package:

```
dpkg -i package_address.deb
```

**To remove an external package**

```
dpkg --purge name_of_the_software
```

## 8.8. Who is this Sid guy?

---

First of all, one must know that **several Debian distribution branches** exist in parallel.

Namely the **oldstable**, **stable**, **testing** and **unstable** distributions, as well as an **experimental** branch.

The **Stable distribution** is the Debian official distribution, the one released at this moment, with is maintained and updated par the Debian teams. The only changes made concern the security updates and the bug fixes. It is recommended to favor this Version.

The **Oldstable distribution** is the previous stable version. It is usually supported by the Debian teams during one year after the release of the new stable version. Then it might live longer if

enough individuals or companies continue to assure its maintenance. Then it is called a LTS (standing for Long Term Support) distribution: we extend its life span.

The **Testing distribution** is the future Stable version. It is used to prepared the next stable version. When everything is OK, when all the bit and pieces are functioning well together, when all the features targeted by the Debian teams are included, and after a period of software freeze and bug hunting, then the Testing version becomes the official new Stable distribution.

The **\*Unstable distribution**, *nicknamed Sid* is the version which receives all the new packages versions, and sits at the cutting edge of innovation, but is not very stable: it's a research lab. Nevertheless some brave adventurers use it on a daily basis.

The **Experimental distribution** is not a Debian distribution *per se*, but rather a repository where alpha or beta software versions are tested.

All these distributions are given a name picked among the characters of the Toy Story ® cartoon. Currently, the name of the **stable version is Jessy**, the name of the **testing version is Stretch**, the name of the **oldstable version is Wheezy**, the Experimental as no nickname.



The name of **unstable is Sid**, but who is this Sid guy ?

Sid is the little boy, in the Toy story® cartoon, who breaks all his toys<sup>110</sup>.

More detailed information on the dedicated Debian Wiki<sup>111</sup>.

---

<sup>110</sup>[http://pixar.wikia.com/wiki/Sid\\_Phillips](http://pixar.wikia.com/wiki/Sid_Phillips)

<sup>111</sup><https://wiki.debian.org/DebianUnstable>



No matter where your expertise level is, or the current state of your hardware, nobody is immune to a bad cockpit error, a technical failure, a heavy thunderstorm, a cup of tea/coffee spilt on the keyboard, or the cat messing around with the central unit ...

The hard disk drive capacities are increasing every day and we are tempted to store on them more and more data (family pictures, videos, private copies of movies, etc ...). The risk of losing a large amount of data also increase at the same time, and that's why we advise you to execute regular backups of your personal data, as well as your passwords and email messages.

This section will endeavor to provide you with simple keys to avoid the loss of your favorite files during a hardware or software failure.



The "cloud" is fashionable these days. Several on-line services are at your disposal to save your data on an external server... 😊

First of all, you are not immune to a server failure, and secondly, you have no real control on what your data are going to be used for. The "cloud" is actually the computer of someone else, as user Bibi told us recently.

I strongly advise you, in case of doubts (all services are not subsidiaries of the NSA ...) to backup your data locally, that is on your own physical medium which you fully control.

### 9.1. Choosing the medium

---



Backups used to be made on floppy disks, then on CDs and then on DVDs. Even if you can still use this kind of support, the technology now gives you access to larger capacities at little cost.

Depending on the amount of the data to backup, you can find external disk from 1GB (USB key type) to 2TB (2000GB), being powered directly over the USB cable, or by an external power supply. The prices range roughly from 5 to 200 US\$, depending the capacity.

Of course, if the size of your data is below 700MB, you can use a CD-RW (re-writable CD-Rom) for your backups.

## 9.2. Graphical mode applications

---



Debian hosts in its repositories several utilities<sup>112</sup> in the "copy and synchronization" section, each of them offers a graphical interface or "client". Here we present one of the simplest backup tool: Déjà-Dup.

**Déjà Dup** is more than enough to backup your personal data, but if you want to execute a "full system backup" (including your application and the whole installation) you must use more complex software, as described in the Debian documentation<sup>113</sup>.

### 9.2.1. Backing Up with Déjà-Dup

---

**Déjà-Dup**<sup>114</sup> is a "simplified backup tool", which is a graphical interface to the **Duplicity** software<sup>115</sup>. It allows building secured backups of your data within a local folder, an external disk, a local network, a remote network or somewhere in the "cloud".

It also allows the **complete encryption** and **password protection** of your backup files.

**Déjà-Dup** offers a **clear interface** which does not require any computer knowledge.

#### Installation

Déjà-Dup can be found in the Debian repositories. To install it using a terminal in administrator mode ([see chap.3.8.3](#)):

```
apt-get update && apt-get install deja-dup
```

Or using the [graphical interfaces](#) (chap.8.3), look for "deja-dup".

#### First launch and configuration

**Déjà-Dup** will be accessible from the application menu > "Utilities" > "Backups". During the first launch, the Déjà-Dup settings let you define how to automatically execute the future backups, where to save, what to save and with which frequency.

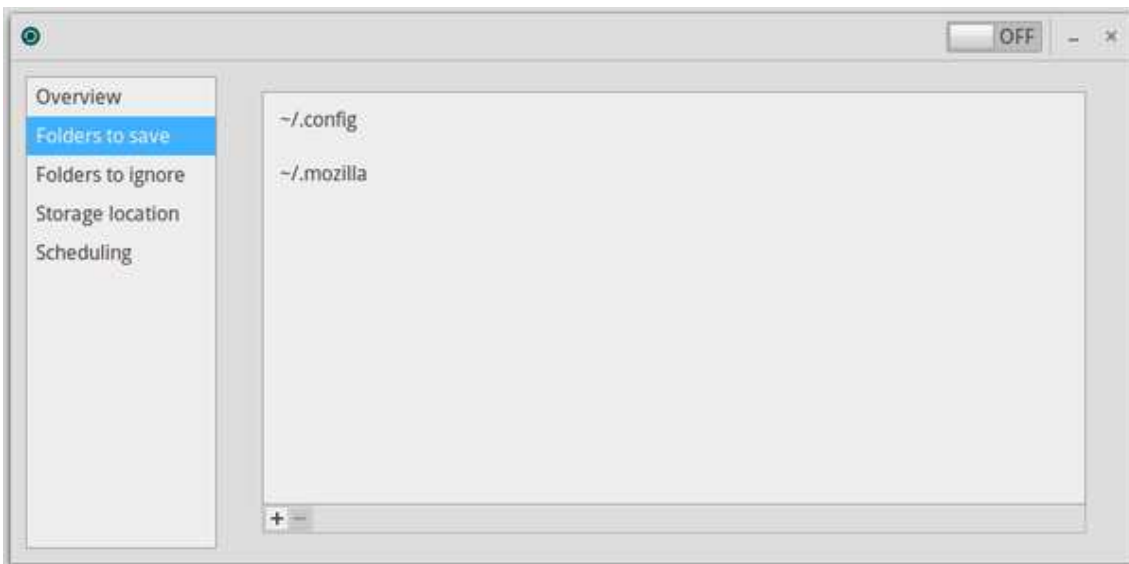
---

<sup>112</sup>[https://www.debian.org/doc/manuals/debian-reference/ch10.html#\\_copy\\_and\\_synchronization\\_tools](https://www.debian.org/doc/manuals/debian-reference/ch10.html#_copy_and_synchronization_tools)

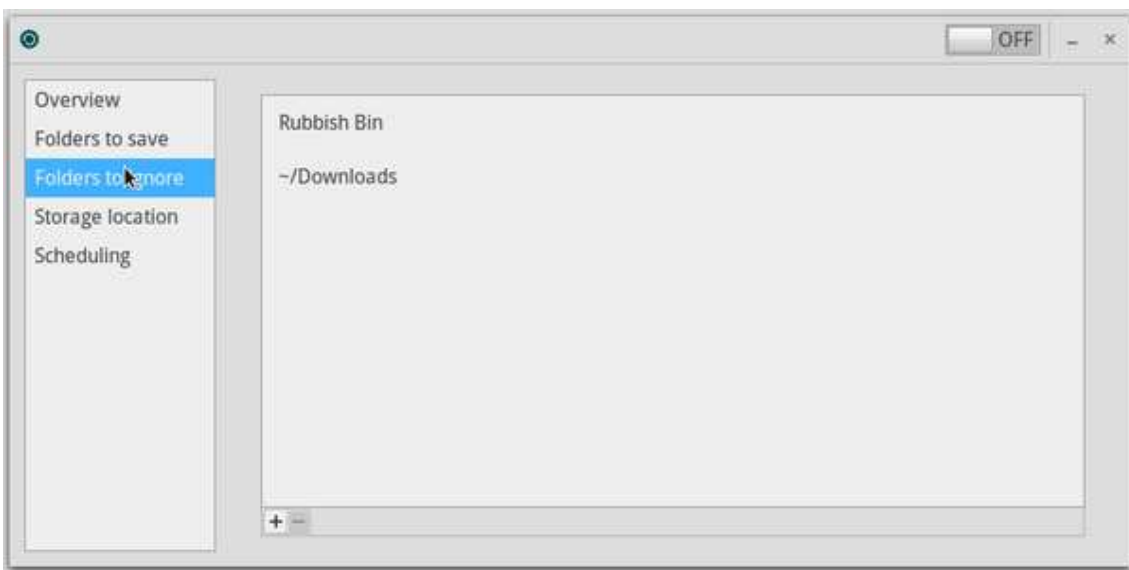
<sup>113</sup><https://wiki.debian.org/BackupAndRecovery>

<sup>114</sup><https://wiki.gnome.org/Apps/DejaDup>

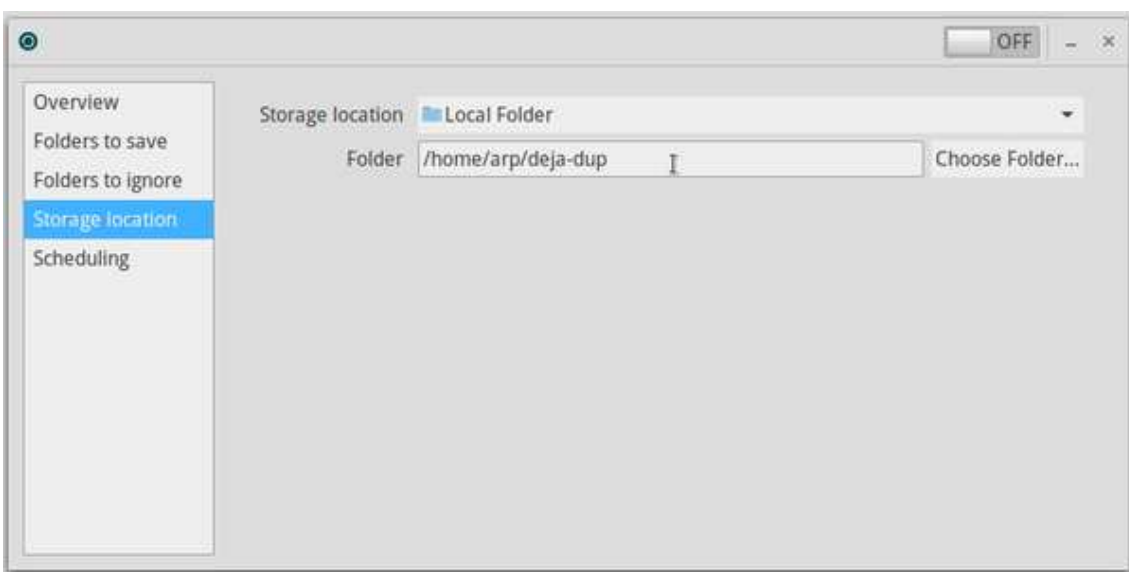
<sup>115</sup><http://duplicity.nongnu.org/>



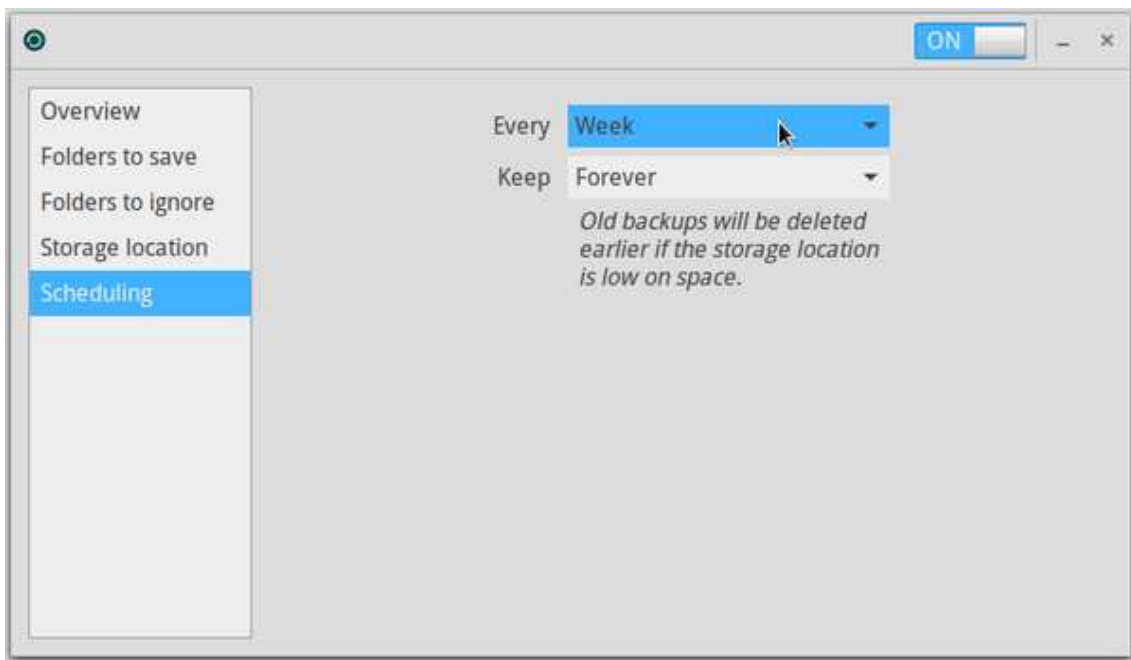
*Déjà-Dup: selection of the folders to save*



*Déjà-Dup: selection of the folder to ignore*



*Déjà-Dup: selection of the storage location*



*Déjà-Dup: scheduling the backups*

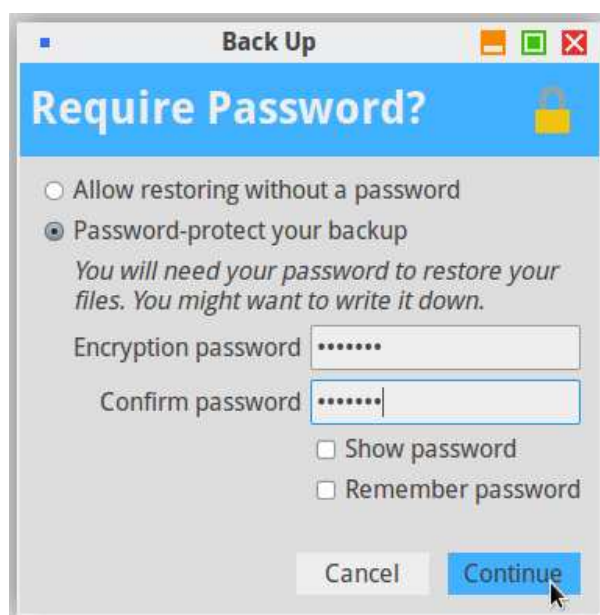
## Saving your data

Once the settings are done, **launch the first backup** by clicking on the "Back Up Now" button residing under the "Overview" tab.

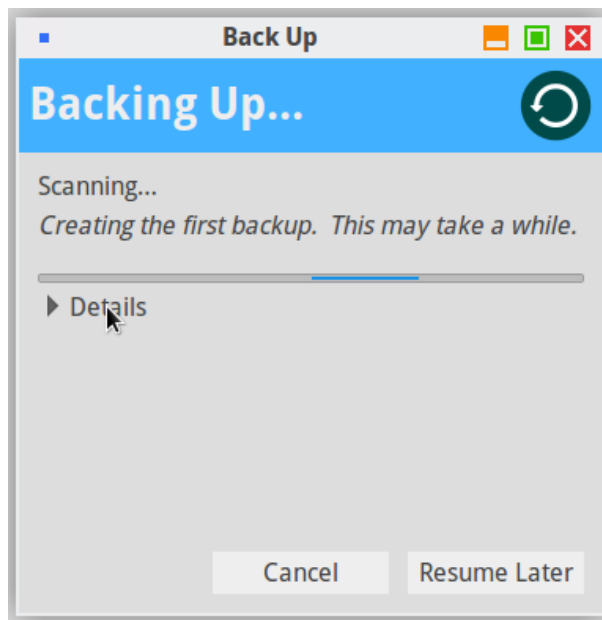


The very first backup execution will take some time, depending on the size of the data to be saved, but the following runs should be a lot faster since they will save only the modified files: this is the incremental backup.

An additional feature is the optional password setting during the configuration, which allows the encryption of the full set of backups:



*Déjà-Dup: protecting your backup*



*Déjà-Dup: launching the backup*

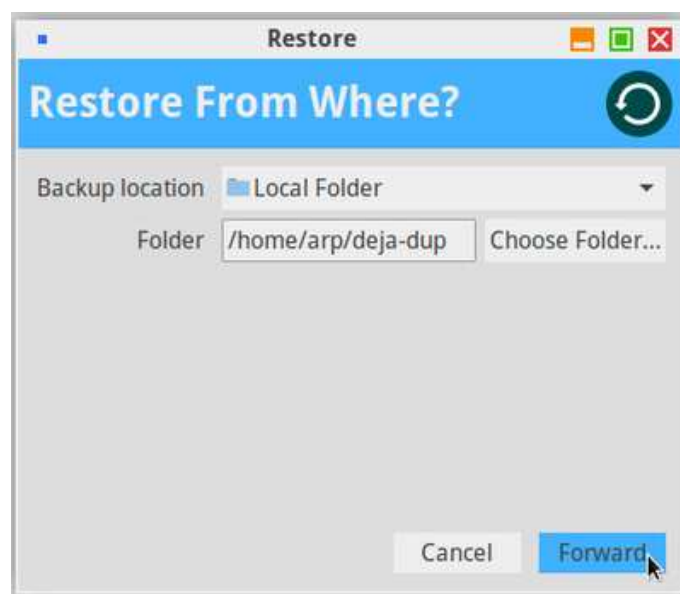
## Restoring your data

To **restore a backup** on a newly installed system, for example, simply install **Déjà-Dup** on it, launch it and select "Restore" in the main window.



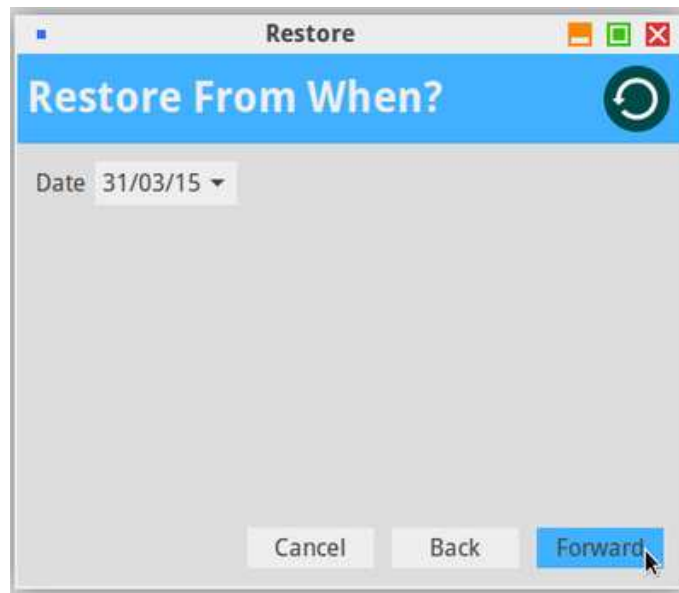
A series of simple windows will help you to find and restore your data:

- Define the restore from which location:

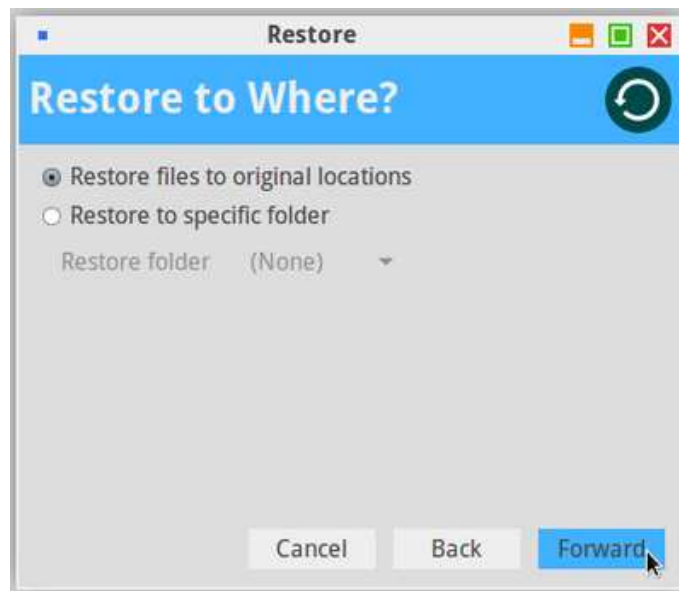


- Define the restore from which creation time (when several backups are available):

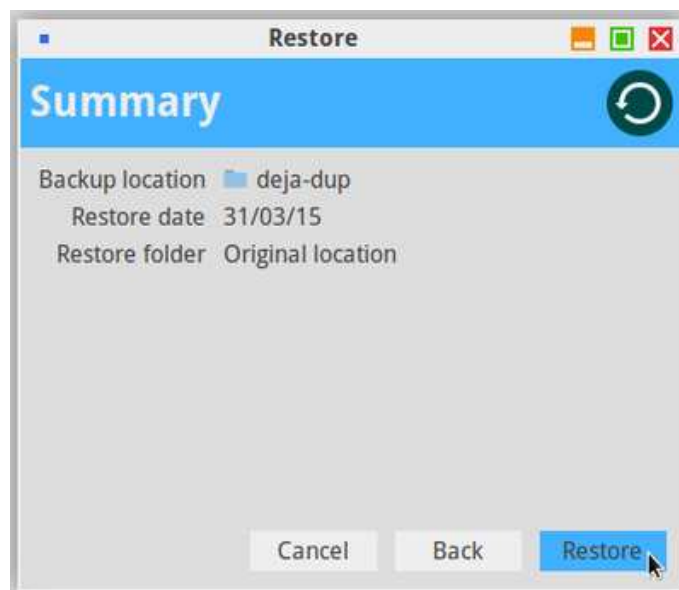




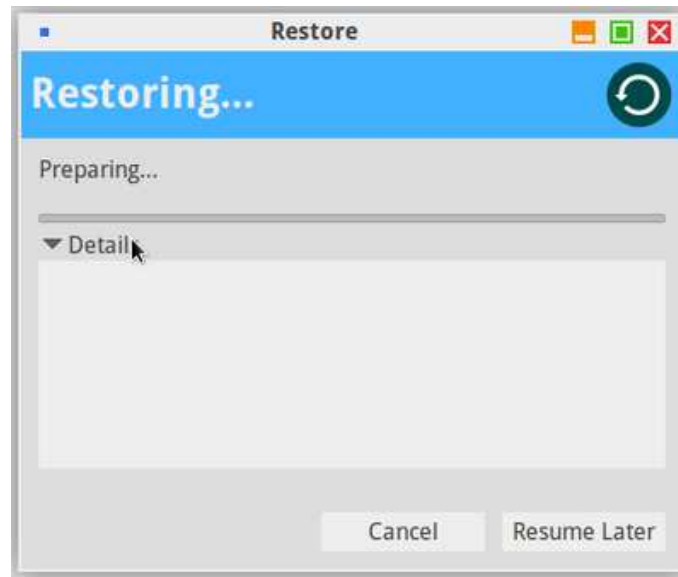
- Define the restore destination:



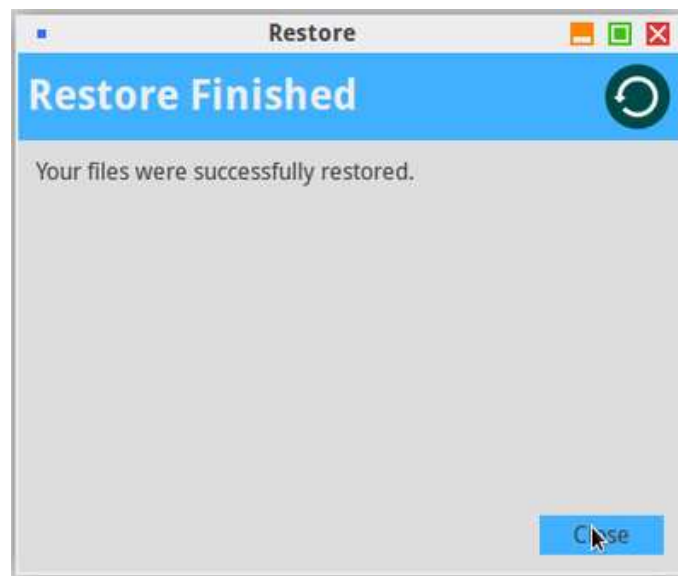
- confirm the restore parameters:



- If the backup has been encrypted, the password will be required, then the restore process will begin. An information window is displayed at the end of the process.



*Déjà-Dup: restoring data*



*Déjà-Dup: restore process completed*

## 9.3. Manual method

---



If you want to save just one folder or few of them, you can simply use the file system manager, or your archive manager (to reduce the storage space through compression).

The latter produces "real" archives: for subsequent consultation of these data, you need to uncompress the archive.

From the file manager, select the folders to be saved, then right-click and take the "Compress..." (or "Archive") action.

Then you just have to move the archive on an external medium.

## 9.4. Cloning the system

---



This is the complete solution ensuring a total safety for your data: cloning the entire hard disk.

**Clonezilla Live**<sup>116</sup> is a Live CD based on the Debian GNU/Linux distribution, which includes the **Clonezilla2** software. It allows the user to directly execute from its machine:

- **A Backup:** copy the entire disk copy , or one or several partitions, under the form of an image and save it on any kind of storage.
- **A Restore:** restore an image from its storage location (to the same disk, another disk, another machine, a USB key, a network, etc.).
- **A Copy:** direct copy from an original disk to another destination disk.

This Clonezilla version is able to connect to different servers: SSH server, Samba server, NFS server ...

As its name suggests it, it works like a Live CD (CD-ROM, DVD-ROM) but can also be executed from a USB key, an external disk, etc. (source Wikipédia<sup>117</sup> )

You can find an English tutorial on this page<sup>118</sup>.

---

<sup>116</sup><http://clonezilla.org/>

<sup>117</sup><https://en.wikipedia.org/wiki/Clonezilla>

<sup>118</sup><https://www.howtoforge.com/back-up-restore-hard-drives-and-partitions-with-clonezilla-live>



The news are crystal clear: is being wire-tapped. It is not to alarm or frighten you, but you have to realize that the "Internet" is not your private living room, and that each picture or text used on the web is potentially recoverable.

## 10.1. Protect your system

---

### 10.1.1. Physical security

---

This is obvious, but let's say it but once and for all: if you want to protect your data, **don't leave your laptop everywhere ! don't leave your computer in self-service at your home !**

Your computer hosts your passwords (bank, administration, work ...) your documents (administrative forms, pictures, etc.), your browsing history (the sites you visited and when), etc. You may think that these information are seemingly harmless, but they allow - for the best - to define your consumer profile, or - for the worst - to use your computer as a gateway to crack in other persons systems 😞

If you want to present your distribution, or simply share tour resources, we strongly suggest you create another user account ([see chap.7.3](#)) who will not be able to access your data, nor to mess with your system administration.



If your computer is always on the road, we suggest you use the direct encryption during the system installation like mentioned in the chapter 5.5.2. By this way, even if your computer is lost or stolen, it will be extremely difficult to extract the data from your hard disk 😊.

### 10.1.2. Updates

---

The software **updates** bring new functionalities, fix bugs, and, above all, **correct potential security flaws**.

This is the big strength of the Libre-Software: **the program sources are available**, thus when a flaw is uncovered, it is publicized and fixed immediately.

This practice to be opposed to the proprietary systems, whose flaws are being kept secret, and continue to affect the daily life of all their users.

The **security updates** should not be considered as optional ones: you must install them as soon as possible.

### 10.1.3.Passwords

---

Each year, tens of thousands of email accounts, Wi-fi access codes, phone PIN ... are easily cracked, because users picked passwords too easy to guess. The top worst password for the year 2013 was "123456", but there are other crazy sequences like "QWERTYUIOP", "0000", animal names, birthdays ...

**All these passwords, too easy to guess, must be avoided !**

And, by the way, putting together two weak passwords, does not create a strong one !

"Independance1783" might be difficult to guess for a human being, but a "computer robot" will decipher it in the blink of an eye.

To **increase the robustness of your password**, in other words to increase its resistance against deciphering attacks, use as many characters as possible and mix their types (lowercase and uppercase letters, numbers, special characters).

There are simple tools which allow you to keep and organize your passwords like KeePassX<sup>119</sup>.



**...The stronger my password is, the more difficult to memorize it. Isn't it ?**

You can use a "**pass-phrase**". Here we are talking about a long sentence, difficult to uncover, but easy to remember: few words put together produce a meaningless string, but which has a well defined sense for yourself.

For example, the sentence "grandma loves French pickles in her soup", can easily becomes a robust password: "GrandmaLovesFrenchPicklesInHerSoup" ...

especially if one replaces few vowels by numbers ("i" by "1", "e" by "3" and o by "0") 🤖

"GrandmaL0v3sFr3nchP1ckl3sInH3rS0up".

## 10.2.Protect your data

---

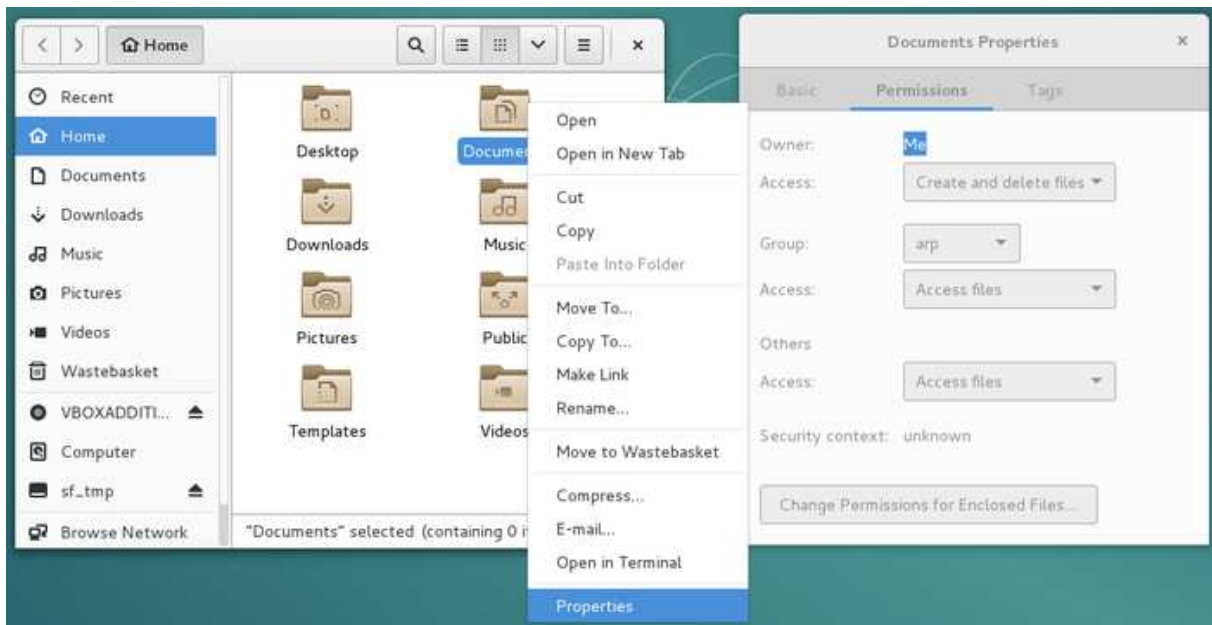
### 10.2.1.Limit the access rights of others on your data

---

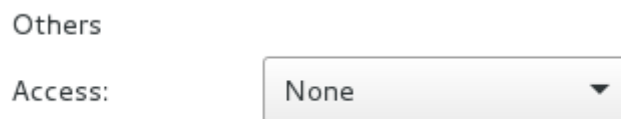
If you use Debian in "multi-user" mode, the data of the other users are readable by you, and yours too, by necessity. You may want to restrict the access rights to some of your data for the other users. The graphical procedure is easy (no need to open a terminal): right-click on the folder > properties > "Permissions". hereafter an example with the "Documents" folder.

---

<sup>119</sup><https://www.keepassx.org/>



Select the "None" option for the "Others" access rights:



A window will ask you if you want to apply these modifications to all the files and folders embedded within the concerned folder, and we advise you to accept, in order to protect the full set of data included inside this folder.

### 10.2.2.Backup your data

---

You certainly ran into these warning messages talking about backing up your data ... and this is not for nothing ! Please refer to the [chapter 9](#) and get into **the habit of saving your data on an external medium and on a regular basis.**

### 10.3.Antivirus software

---

Admittedly, the GNU/Linux systems are much less sensitive to virus attacks, but it is possible to find a virus on a GNU/Linux machine.



For the time being, updates are the only efficient protections against potential viruses, and adding an antivirus software on your system does not improve its security. Viruses embedded within documents originating from proprietary systems do not target the GNU/Linux environments, and as such, are totally harmless for your data.

However, if you want to monitor and control your data, **ClamAv**<sup>120</sup> is the reference antivirus software. Note that it does not run continuously in the background, and the user should explicitly request a *folder scan* to verify its contents.

More information on the DebianHelp site<sup>121</sup>

## 10.4. Parental control

---

Yes, one can find everything on Internet: the best and the worst, and often inappropriate images and contents for our children. In order to let them enjoy safely the digital world, you can use different parental control systems.



**However, keep in mind that YOU are the best parental control !**

### 10.4.1. From your ISP

---

The Internet Service Providers usually propose different parental control software. This method allows you to control all the devices on your home network, but does not exempt you to activate the parental control on your Web Browser.

More information on the site <https://www.internetmatters.org/parental-controls/interactive-guide/>

### 10.4.2. From your computer

---

The settings of the parental control is reserved to the experienced users, because the procedure is rather complex ... and is not 100% effective. In addition, the list of "prohibited" sites must be updated on a regular basis. The **Fox Web Security** addon module can be effectively installed in the Firefox navigator extensions<sup>122</sup> in order to filter inappropriate "adult content".

An alternative solution is to use a search engine whis is going to filter the proposed results, like Qwant Junior: <https://www.qwantjunior.com/?l=en>

## 10.5. Privacy on Internet

---

It is difficult to remain completely anonymous on Internet. Unless you are a well equipped experienced user, you will always leave a trail behind you.

The most beautiful fingerprint you leave, on a daily basis, is your IP address. In fact, each device connected to Internet must have an IP address, which allows to know not only your ISP, but also

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<sup>120</sup><http://www.clamav.net/about>

<sup>121</sup><http://www.debianhelp.co.uk/clamav.htm>

<sup>122</sup><https://addons.mozilla.org/en-US/firefox/addon/fox-web-security/>

your precise geographical location ... A small test ? Visit this page to know your public IP address:  
<http://whatismyipaddress.com/>

In addition, even if you are not a great pastry chef, you are giving away a lot of "cookies" to all the sites you are visiting. Cookies are connection witnesses: they keep, for a given site, information like your preferences, your identifier, your password, your chosen language, the content of your digital shopping cart, etc. not only on your computer but also on the servers in the cloud. Thus, when you start a search request on a site, it is very capable to register this information.

Advertising companies come join the party, and automatically create your profile by looking at your browsing history.

Don't be alarmed, Numerous advices and software tools are at your disposal to become easily discreet.

### 10.5.1.Social networks

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Remember that the social networks, in their vast majority, are not there to help you, quite the contrary: they are big advertising agencies which collect everything they find about you. Then, these personal information are resold to advertisers, in order for them to better target your "needs".

Intelligence on the social networks does not stop there: they continue to trace you on plenty of sites by using - for example - the "like" or "G+" buttons.

Furthermore, the latest scandals unveil the fact that personal data can be collected by several governmental intelligence agencies, even if you are not doing anything suspicious.



If you cannot resist to the temptation of opening an account on a social network (and I fully understand you: virtual encounters are very cool 😊), you can test the **Diaspora\*** journey and discover a decentralized network, which is **respectful of your private life and data**; Diaspora\* is designed on the "node network principle", which means that several connecting poits are available. here is one to start with: <https://www.joindiaspora.com/>

As far as the other "less social" networks are concerned, find hereafter few simple advices:

- Use a pseudo instead of your name and forename.
- Limit your network to the persons you know in the real life.
- Modify your privacy settings in order to be seen by your "friends" only.
- Don't enter any personal information: address, phone number ...
- Avoid uploading pictures of yourself or your relatives, let alone tagging them (with the name of the persons on the photo).



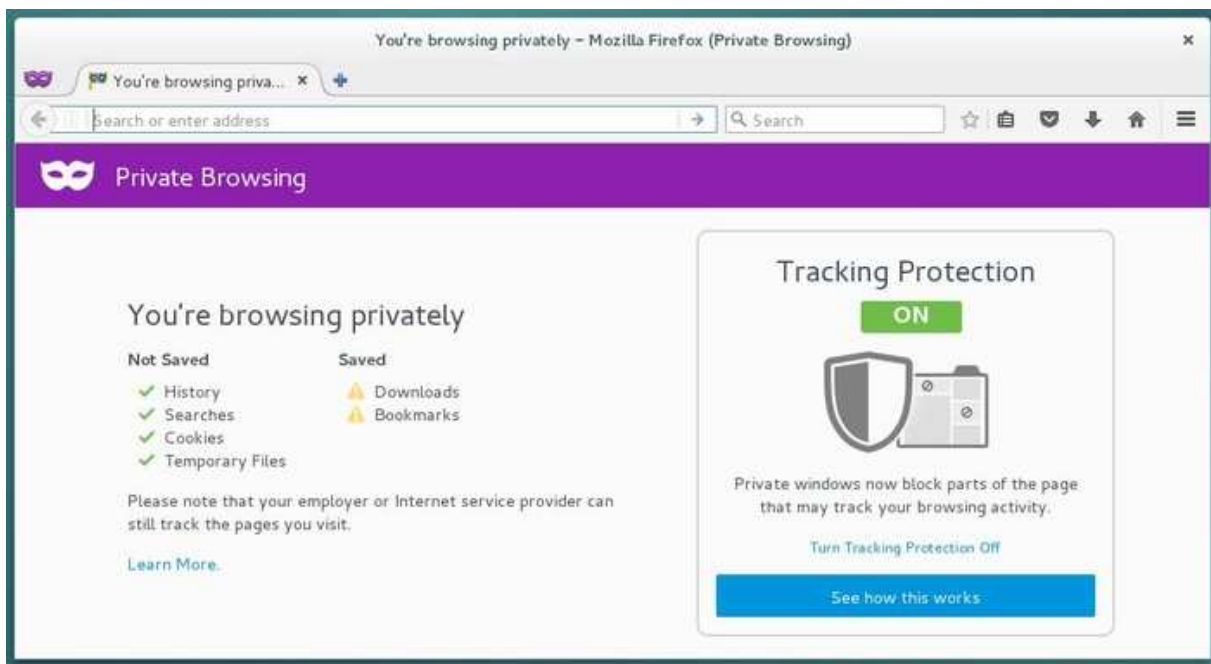
## 10.6. Private navigation within your browser

---

If you want to surf the Web without leaving traces on your computer, the latest versions of the Internet navigators include a "**private browsing**" feature. This mode functions very simply: once launched, the navigator does not keep the history of the visited sites, nor the cookies distributed by these sites, nor the passwords entered during this "private" session.

However, the visited sites keep track of your IP address: you don't navigate in an "anonymous" way.

For Firefox, click on the menu (the 3 band top left button) then select the "New Private Window" option.



*Firefox: private navigation window*

Note: it is very possible that some Internet sites do not function well if some cookies are disabled. Thus, it is best not to use this mode all the time.

## 10.7. Private navigation on Internet

---

### **Warning: private does not mean anonymous !**

First avoid using non-free navigators, whose source codes cannot be analyzed by the first expert that comes along. The non-free navigators (Internet Explorer, Safari, Chrome ...) can potentially spy on your navigation without your knowledge.

The two main free navigators you can trust are Firefox and Chromium (sharing the base code of Chrome, without transferring information to Google, except when you use the Google tools ...)

**The private navigation** allows the removal of all navigation traces on your computer and can add few more protections against the tracking. It cannot guarantee your anonymity when facing some advanced tracking technology like the fingerprinting<sup>123</sup>.

### 10.7.1. Search engines

---

Stop doing like everyone else, even if supposedly "you have nothing to hide".

- **Do not make all your search requests on Google or Bing** ... even if they function very well, you might not want these companies to keep for tens of year your web search on "solution against hemorrhoids", or even to sell this information to drug companies, your mutual insurance company ...
- **Use search engines respecting your privacy** like Startpage<sup>124</sup> (using the power of Google, but hiding your identity to it), DuckDuckGo<sup>125</sup> or QwantLite<sup>126</sup>.
- Enhance your free navigators with extensions fighting against the leakage of your data.

## 10.8. Anonymous navigation on Internet

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If you want to become anonymous and mask completely your IP address, the best idea is to use **TOR**<sup>127</sup>. To achieve this, we are going to descioibe two methods: installation of the **Tor-Browser** or the usage of the **Tails** *anonymous distribution*.



... What's this **Tor** stuff ??

**TOR** stands for **The Onion Router**, and is a software allowing us to become anonymous on the net by communicating with other TOR users. The principle is to define a random and indirect route on the network, between you and the exit node, which makes impossible the tracking of your IP address.

In addition, the data circulating on the TOR network are encrypted, which makes even more difficult to identify the flows, although they are spied on 😊.

This functionality must not prevent the common sense ... If you connect to an account, whatever it might be, with your usual pseudo and password, you will be quickly identified, even if you use TOR 😊.

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123[https://en.wikipedia.org/wiki/Canvas\\_fingerprinting](https://en.wikipedia.org/wiki/Canvas_fingerprinting)

124<https://www.startpage.com/eng/#hmb>

125<https://duckduckgo.com/>

126<https://lite.qwant.com>

127<https://www.torproject.org/index.html>

## 10.8.1.Tor-Browser, an anonymous navigator

Tor offers its web browser under the form of an independent archive (no need for administrator rights):

- You begin by downloading the right version on the main site(<https://www.torproject.org/projects/torbrowser.html.en>) by selecting the language and the architecture:

Software & Services: [Arm](#) • [Orbot](#) • [Tails](#) • [TorBirdy](#) • [Onionoo](#) • [Metrics Portal](#) • [Pluggable Transports](#) • [Shadow](#) • [Tor2Web](#)

### What is Tor Browser?

The **Tor** software protects you by bouncing your communications around a distributed network of relays run by volunteers all around the world: it prevents somebody watching your Internet connection from learning what sites you visit, it prevents the sites you visit from learning your physical location, and it lets you access sites which are blocked.

**Tor Browser** lets you use Tor on Windows, Mac OS X, or Linux without needing to install any software. It can run off a USB flash drive, comes with a pre-configured web browser to protect your anonymity, and is self-contained (portable).

Installation Instructions  
[Windows](#) • [Mac OS X](#) • [Linux](#)

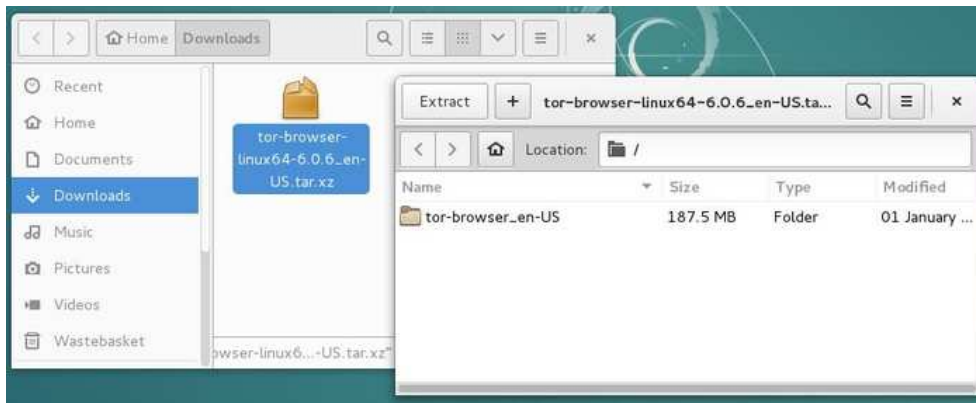
Do you like what we do? Please consider making a donation »

### Stable Tor Browser

Language	Microsoft Windows (6.0.6)	Mac OS X (6.0.6)	Linux (6.0.6)
English (en-US)	<a href="#">32/64-bit (sig)</a>	<a href="#">64-bit (sig)</a>	<a href="#">32-bit (sig)</a> • <a href="#">64-bit (sig)</a>
العربية (ar)	<a href="#">32/64-bit (sig)</a>	<a href="#">64-bit (sig)</a>	<a href="#">32-bit (sig)</a> • <a href="#">64-bit (sig)</a>
Deutsch (de)	<a href="#">32/64-bit (sig)</a>	<a href="#">64-bit (sig)</a>	<a href="#">32-bit (sig)</a> • <a href="#">64-bit (sig)</a>

*TorBrowser: the downloading page*

- Once the archive is downloaded, uncompressed it wherever you want (but in a permanent folder) and open the newly created folder (tor-browser\_en-US):



*TorBrowser: uncompressing the archive*



*TorBrowser: opening the TorBrowser folder*

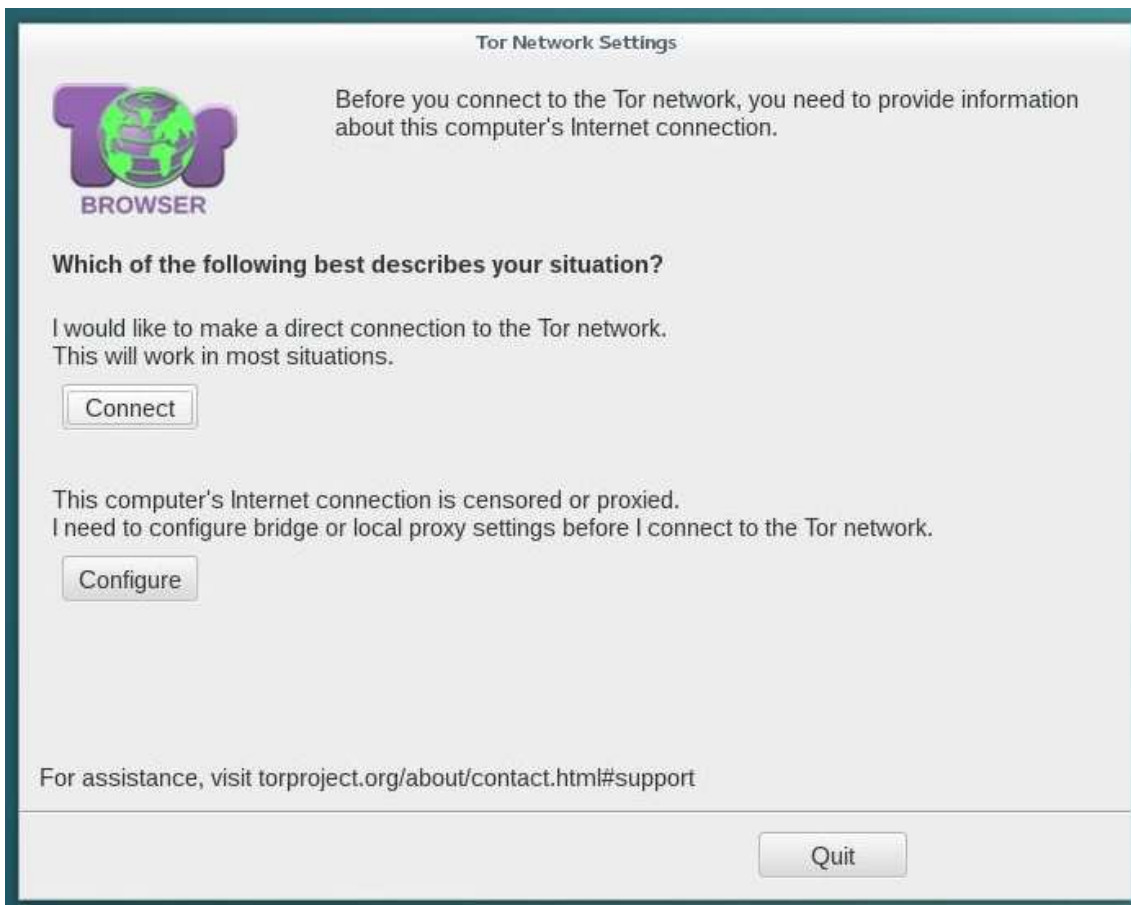
- Double-click on the "Tor Browser Setup" icon:



*TorBrowser: Browser settings*

- If your connecting site is behind a proxy, you must "Configure" the Tor connection. But in most of the cases, you can just click on the "Connect" button.

The Tor service is started and look for relay nodes:

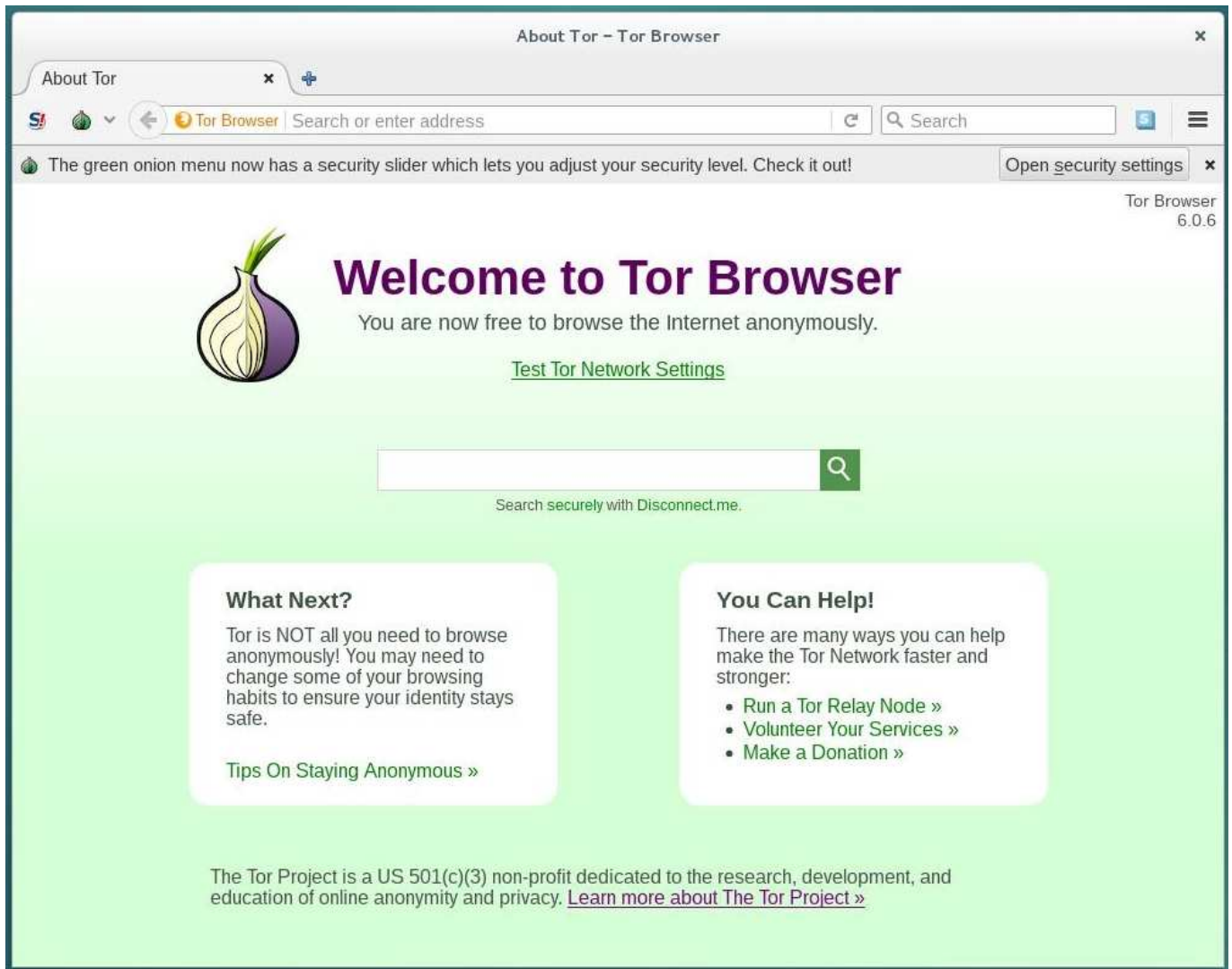


*TorBrowser: Tor connexion settings*



*TorBrowser: connecting to the Tor network*

- You can enjoy now the anonymous Internet navigation.



*TorBrowser: default interface*

- If you want to have a quick access to the Tor Browser, drag-and-drop its icon on the launcher panel, or create on link on your desktop.

Please note that using Tor might slow down your Internet navigation.

### 10.8.2. Tails: the anonymous distribution

---

**Tails** is a GNU/Linux distribution based on Debian. It allows you to be **totally anonymous** on the net. It is installed on a DVD or a USB key, and like with the other Debian Live (autonomous) images, nothing is saved on your DVD or USB key between two working sessions, and, in addition, you enjoy an anonymous navigation on Internet 😊.

On the main site, you can read ...



Tails is a live (autonomous) operating system that you can start on almost any computer from a DVD, USB stick, or SD card.

It aims at preserving your privacy and anonymity, and helps you to:

- **use the Internet anonymously** and **circumvent censorship**;  
all connections to the Internet are forced to go through the Tor network;
- **leave no trace** on the computer you are using unless you ask it explicitly;
- **use state-of-the-art cryptographic tools** to encrypt your files, emails and instant messaging.

For more information, you can visit the Tails download page<sup>128</sup>.



Note that the TOR navigation is often slowed down, and that some site or functionalities will not be reachable, due to their embedded scripts or their "privacy" policies ...

Is it the right time to sort out through all your bookmarks ? 😊



*the Pirate Day Wall by Péhä (CC-BY-SA)*

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<sup>128</sup><https://tails.boum.org/install/download/index.en.html>



Debian GNU/Linux systems have all the graphical applications needed to perform your daily tasks, so why use the command line?

- it's faster,
- not all options are present in the graphical interfaces,
- use the command line without GUI saves resources,
- it makes learning the Debian GNU/Linux system easier.

This section gathers some basic commands. For a more complete list, visit the Debian documentation: <https://wiki.debian.org/ShellCommands>.

*The ultimate command:* **man**

## 11.1. Browse directories

---

command	action
<code>pwd</code>	Print Working Directory
<code>cd rep</code>	Change Directory to <i>rep</i>
<code>cd</code>	Change Directory to <code>/home/\$USER</code> or <code>~/</code>
<code>cd ..</code>	Browse the parent directory
<code>ls rep</code>	List information about file(s) in <i>rep</i>
<code>ls -a</code>	<b>ls</b> with hidden files displayed
<code>ls -l</code>	<b>ls</b> with size and rights

## 11.2. Action on files or directories

---

command	action
<code>mv source target</code>	move the file from <i>source</i> to <i>target</i>
<code>cp source target</code>	copy the file from <i>source</i> to <i>target</i>
<code>cp -R source target</code>	copy the directory <i>source</i> to <i>target</i>
<code>ln source link</code>	create a hard link from <i>source</i> to <i>link</i>
<code>ln -s source lien</code>	create a symbolik link from <i>source</i> to <i>link</i>
<code>touch file</code>	create the file <i>file</i> or update its modification date
<code>mkdir rep</code>	create a repertory <i>rep</i>
<code>mkdir -p rep/rep2</code>	<b>mkdir</b> with creation of parent directory if needed
<code>rm file</code>	remove <i>file</i>
<code>rm -f file</code>	remove the write-protected <i>file</i>
<code>rmdir rep</code>	remove an empty directory
<code>rm -R rep</code>	remove a directory
<code>du -h file or rep</code>	display size of the file <i>file</i> or the directory <i>rep</i>



## 11.3.View/Compare files

---

command	action
<code>wc file</code>	Print byte, word and line counts of <i>file</i>
<code>cat file</code>	display the contents of a <i>file</i>
<code>more file</code>	displays <i>file</i> page by page. 'Space'=next page, 'Enter'=next line, 'u'=up
<code>less file</code>	displays <i>file</i> with fine navigation Left/Right/Up/Down/PageUp/PageDown
<code>head -n x file</code>	displays 'x' first lines of <i>file</i>
<code>tail -n x file</code>	displays 'x' last lines of <i>file</i>
<code>tail -f file</code>	dynamicaly display last line of <i>file</i>
<code>diff file1 file2</code>	Displays differences between two text files
<code>diff -u file1 file2</code>	Displays differences between two text files with <b>patch</b> syntax
<code>comp file1 file2</code>	compares two binary files
<code>comp file1 file2 n N</code>	compare two files, <i>file1</i> from the octet <b>n</b> , and <i>file2</i> from octet <b>N</b>

## 11.4.Users and groups

---

command	action
<code>whoami</code>	Print the current user id and name
<code>who</code>	Print all usernames currently logged in
<code>id</code>	Print user and group id's (uid & gid)
<code>id user</code>	Print <i>user</i> and group id's (root only)
<code>finger user</code>	Print informations about <i>user</i>
<code>write user</code>	Print a message on <i>user's</i> terminal
<code>tty</code>	Print the current terminal's name
<code>su - sudo</code>	Switch to administrator mode, superuser
<code>passwd</code>	Change the password of the current user
<code>adduser</code>	add a user
<code>deluser</code>	delete a user
<code>addgroup</code>	add a group
<code>delgroup</code>	delete a group

## 11.5.Process

---

command	action
<code>ps</code>	Process Status. Lists running process
<code>ps ax</code>	Print all running processes
<code>ps aux</code>	Print all process identified by users
<code>pstree</code>	Print all process in a tree
<code>top</code>	List processes running on the system in a semi-graphical table
<code>kill signal pid</code>	kill a process using its <b>pid</b>
<code>pkill signal name</code>	kill a process using its <b>name</b>

**Signals** used *kill/pkill*

signal	action
-1 (HUP)	Reload the process configuration file
-2 (INT)	Interrupt the process
-3 (QUIT)	Quit the process
-9 (KILL)	Kill the process (to avoid, try '-15' first)
-15 (TERM)	Complete the process properly
-18 (STOP)	Freeze the process
-20 (CONT)	Resume execution of a frozen process

## 11.6.Hardware

---

command	action
lsusb	Lists connected USB devices
lspci	Lists connected <i>pci</i> devices
cat /proc/cpuinfo	Displays processor information
cat /proc/partitions	Displays mounted partitions

**Examples:** (sources linuxtrack)

command	action
lspci   egrep "3D Display VGA"	Display the model of the graphics card
lspci   grep -i "net"   cut -d: -f3	Show the model of the Wifi card
lspci   grep -i audio   cut -d: -f3	Show the soundcard model

## 11.7.Network

---

command	action
hostname	Print or set system name
ping <i>machine</i>	send a <b>ping</b> to a <i>machine</i> on the network (local or not)
traceroute <i>machine</i>	displays a <b>traceroute</b> through <i>machine</i>
netstat	Displays the use of the network by the processes
netstat -a	<b>netstat</b> with the display of the server processes
lsdf	Detailed list of file and network usage
ifconfig	Displays the configuration of the network interfaces
ifconfig <i>interface IP masque</i>	configure the network identified by <i>interface</i>
route	Displays the routing table

command	action
curl ifconfig.me	display its public IP
ip address show eth0   grep "inet "   tr -s " " ":"   cut -d: -f3	displays its local IP on eth0
/sbin/ifconfig eth0   grep "inet "   tr -s " " ":"   cut -d: -f4	
ip address show eth0   grep "inet "   tr -s " " ":"   tr -s "/" ":"   cut -d: -f3	

## 11.8.Search

---

command/option	action
locate <i>pattern</i>	search for file with a <i>pattern</i> name
updatedb	update <b>locate</b> database
find <i>path options</i>	search for file corresponding to <i>options</i> in <i>path</i>
find -name <i>pattern</i>	search for file with a <i>pattern</i> . ex: find -name '*.html'
find -type <i>f/d/l</i>	search by filetype where f=file, d=directory et l=link
find -exec <i>cmd</i>	execute <i>cmd</i> to found files

**Example:** search for all *png* files in the 'Images' directory, then copy all files to *tmp* directory ( '{}' stands for found files).

```
find $HOME/Images -name "*.png" -exec cp {} $HOME/tmp/ \;
```

## 11.9.Archives

---

format	compress	extract
.tar.bz2, .tbz2	tar -cvjf archive.tar.bz2 <i>directory</i>	tar xvjf
.tar.gz, .tgz	tar -cvzf archive.tar.gz <i>directory</i>	tar xvzf
.bz2	bzip2 <i>file</i>	bunzip2
.rar	-	unrar x
.gz	gzip <i>file</i>	gunzip
.tar	tar -cvf <i>archive.tar files</i>	tar xvf
.zip	zip -r <i>archive.zip files</i>	unzip
.Z	compress <i>files</i>	uncompress
.7z	7z a <i>files</i>	7z x
.xz	xz -z <i>directory</i>	unxz

## 11.10.Kernel

---

command	description
cat /proc/version	Version of the Linux kernel used, its name, the version of the compiler used.
uname -r	Version of the Linux kernel used.
dpkg -l   egrep "linux-(header image)"	List all kernels installed on your machine.

## 11.11.Links and references

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- Dedicated page on Debian-Facile<sup>129</sup> (fr)
- The "antiseche" Debian-Facile<sup>130</sup> (fr)
- Dedicated Debian documentation<sup>131</sup>
- Commands list<sup>132</sup> (fr)

<sup>129</sup>[https://debian-facile.org/doc/systeme:commandes:gnu\\_linux](https://debian-facile.org/doc/systeme:commandes:gnu_linux)

<sup>130</sup><https://debian-facile.org/viewtopic.php?id=6190>

<sup>131</sup><https://www.debian.org/doc/manuals/debian-reference/ch01.html>

<sup>132</sup><http://www.epons.org/commandes-base-linux.php>



You can find hereafter a list of the sites providing more detailed information concerning the Free Culture (in general) and the Free Software (in particular).

### The web sites

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#### Free Software Foundation

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<https://www.fsf.org/>

The Free Software Foundation (FSF) is a nonprofit with a worldwide mission to promote computer user freedom. We defend the rights of all software users.

Free software developers guarantee everyone equal rights to their programs; any user can study the source code, modify it, and share the program. By contrast, most software carries fine print that denies users these basic rights, leaving them susceptible to the whims of its owners and vulnerable to surveillance.

#### The GNU project

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<https://www.gnu.org/>

Philosophy of the GNU Project: Free software means that the software's users have freedom. (The issue is not about price.) We developed the GNU operating system so that users can have freedom in their computing.

Specifically, free software means users have the four essential freedoms: (0) to run the program, (1) to study and change the program in source code form, (2) to redistribute exact copies, and (3) to distribute modified versions.

Software differs from material objects—such as chairs, sandwiches, and gasoline—in that it can be copied and changed much more easily. These facilities are why software is useful; we believe a program's users should be free to take advantage of them, not solely its developer.

#### The Linux Foundation

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<https://www.linuxfoundation.org/>

The Linux Foundation partners with the world's leading developers and companies to solve the hardest technology problems and accelerate open technology development and commercial adoption. Founded in 2000, The Linux Foundation today provides tools, training, and events to scale any open source project, which together deliver an economic impact not achievable by any one company.

# The Wikimedia Foundation

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You all know **Wikipedia** the free on-line encyclopedia.

But actually Wikipedia is part of a large family, under the benevolent umbrella of the [Wikimedia Foundation](http://www.wikimedia.org/). <http://www.wikimedia.org/>

The [Wikimedia Foundation](https://wikimediafoundation.org/wiki/Home) is a global movement whose mission is to bring free educational content to the world. Quoting the foundation home page :

*"Imagine a world in which every single human being can freely share in the sum of all knowledge. That's our commitment."* <https://wikimediafoundation.org/wiki/Home>

## Wikipedia

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[Wikipedia](https://en.wikipedia.org/wiki/Main_Page) , the free encyclopedia. [https://en.wikipedia.org/wiki/Main\\_Page](https://en.wikipedia.org/wiki/Main_Page)

Wikipedia is a free online encyclopedia that aims to allow anyone to edit any article and create them. Wikipedia is the largest and most popular general reference work on the Internet and is ranked among the ten most popular websites. Wikipedia is owned by the nonprofit Wikimedia Foundation.

## Wikimedia Commons

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[Wikimedia Commons](https://commons.wikimedia.org), the multimedia library. <https://commons.wikimedia.org>

Wikimedia Commons, which is often referred to as *Commons*, is a media file repository making available public domain and freely-licensed educational media content (images, sound and video clips) to everyone, in their own language.

## Wiktionary

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[Wiktionary](https://en.wiktionary.org) the dictionary. <https://en.wiktionary.org>

Wiktionary was initially designed as the lexical companion to Wikipedia, the encyclopedia project, Wiktionary has grown beyond a standard dictionary and now includes a thesaurus, a rhyme guide, phrase books, language statistics and extensive appendices. We aim to include not only the definition of a word, but also enough information to really understand it. Thus etymologies, pronunciations, sample quotations, synonyms, antonyms and translations are included.

## Wikiquote

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[Wikiquote](https://en.wikiquote.org), the free quote compendium. <https://en.wikiquote.org>

The Wikiquote collaborative project, is a free online compendium of sourced quotations from notable people and creative works in every language, translations of non-English quotes, and links to Wikipedia for further information.

## Wikisource

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[Wikisource](https://en.wikisource.org), the free library that anyone can improve. <https://en.wikisource.org>

Wikisource is a project to create a growing free content library of source texts, as well as translations of source texts in any language. This work is done by voluntary contributors.

Some things Wikisource includes are: Source texts previously published by any author, Translations of original texts, Historical documents of national or international interest, Bibliographies of authors whose works are in Wikisource.

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## Wikibooks

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[Wikibooks](https://en.wikibooks.org), the open-content textbooks collection. <https://en.wikibooks.org>

Simply, Wikibooks<sup>133</sup> is a collection of open-content textbooks. Wikibooks is for textbooks, annotated texts, instructional guides, and manuals. These materials can be used in a traditional classroom, an accredited or respected institution, a home-school environment, as part of a Wikiversity course, or for self-learning.

## Wikijuniors

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[Wikijunior](https://en.wikibooks.org), the free textbooks for children. <https://en.wikibooks.org>

Wikijunior produces non-fiction books for children from birth to age twelve. These books could take the form of macropedias, textbooks, or primers. These Wikijunior

<sup>133</sup>[https://en.wikibooks.org/wiki/Wikibooks:What\\_is\\_Wikibooks](https://en.wikibooks.org/wiki/Wikibooks:What_is_Wikibooks)

books are written with children in mind. The subjects of these books are chosen because they are appealing to kids. These books are richly illustrated with photographs, diagrams, sketches, and original drawings.

## Vikidia

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**Vikidia, the free encyclopedia for children.** <https://en.wikidia.org>

Vikidia is an English encyclopedic project, based on wiki technology, for 8-13 year-old readers and contributors, but not only.

The website is independent from Wikimedia Foundation which owns Wikipedia. It was launched in November 2006 in French and in 2013 in English. Vikidia is handled by the Association Vikidia, a non-profit-organization located in France.

## Wikiversity

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**Wikiversity, the open learning community.** <https://www.wikiversity.org>

Wikiversity is a Wikimedia Foundation project devoted to learning resources, learning projects, and research for use in all levels, types, and styles of education from pre-school to university, including professional training and informal learning.

Teachers, students, and researchers are invited to join Wikiversity in creating open educational resources and collaborative learning communities.

## Wikispecies

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**Wikispecies, the free species directory.** <https://species.wikimedia.org>

Wikispecies is a wiki-based on-line project supported by the Wikimedia Foundation. Its aim is to create a comprehensive free content catalog of all species; the project is directed at scientists, rather than at the general public. Wikispecies is available under the GNU Free Documentation License and CC BY-SA 3.0.

## Wikivoyage

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**Wikivoyage, the free travel guide.** <https://www.wikivoyage.org>

Wikivoyage is a free web-based travel guide for travel destinations and travel topics written by volunteer authors ("Wiki-travelers" from all around the world). It is a sister project of Wikipedia and supported and hosted by the same non-profit Wikimedia Foundation. Wikivoyage has been called the "Wikipedia of travel guides".

## Wikinews

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**Wikinews, the free news source.** <https://en.wikinews.org>

Wikinews is a free-content news source Wiki and a project of the Wikimedia Foundation. The site works through collaborative journalism. Wikipedia co-founder Jimmy Wales has distinguished Wikinews from Wikipedia by saying "on Wikinews, each story is to be written as a news story as opposed to an encyclopedia article." The neutral point of view policy espoused in Wikinews distinguishes it from other citizen journalism efforts. In contrast to most projects of the Wikimedia Foundation, Wikinews allows original work under the form of original reporting and interviews.

## Wikidata

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**Wikidata, the free and open knowledge base.** <https://www.wikidata.org>

Wikidata is a collaboratively edited knowledge base operated by the Wikimedia Foundation. It is intended to provide a common source of data which can be used by Wikimedia projects such as Wikipedia, and by anyone else, under a public domain license. This is similar to the way Wikimedia Commons provides storage for media files and access to those files for all Wikimedia projects, and which are also freely available for reuse. Wikidata is powered by the software Wikibase.

This project was launched by Wikimedia Deutschland. It was presented during the Semantic Tech & Business Conference in February 2012, and the site was open to the first contributions on 30 October 2012.

## Wiki Meta-wiki

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**Meta-Wiki, the global community site for the Wikimedia projects.**

<https://meta.wikimedia.org>

Meta (or Wikimedia's Meta-Wiki) is a wiki-based web site that is auxiliary for coordination of all the Wikimedia Foundation projects.

Meta currently serves as one of the major avenues of discussion for Wikimedians including Wikipedians, the others being the mailing lists, the IRC channels, and the talk pages of individual articles and users. Meta is an independent and autonomous project from the English language Wikipedia and thus has its own policies and customs, which often differ from those here.

Originally focused on the English language version of Wikipedia, Meta has, since its upgrade to Wikipedia's custom MediaWiki software, become a multilingual discussion forum used by all Wikimedia language communities.



## Wiki Incubator

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[Wikimedia Incubator](https://incubator.wikimedia.org), where possible new languages for existing projects are tested. <https://incubator.wikimedia.org>

The Wikimedia Incubator founded on 2 June 2006, is a wiki-based website hosted by the Wikimedia Foundation. It serves as a platform where anyone can build up a community in a certain language edition of a Wikimedia project (Wikipedia, Wiktionary, Wikibooks, Wikinews, Wikiquote and Wikivoyage) that does not yet have its own sub-domain, provided that it is a recognized language.

This is where potential Wikimedia project Wikis in new language versions can be arranged, written, tested and proven worthy of being hosted by the Wikimedia Foundation.

## MediaWiki

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[MediaWiki](https://www.mediawiki.org), is a free software open source Wiki package, supporting all the Wikimedia projects. <https://www.mediawiki.org>

MediaWiki<sup>134</sup> is free server-based software, licensed under the GNU General Public License (GPL). It's designed to run on a large server farm for a website that gets millions of hits per day.

## The GNU/Linux distributions

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### Debian

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[Debian](https://www.debian.org), the universal operating system, aka the "Mother" of numerous children distributions. <https://www.debian.org>

By the way, Debian provides more than a pure OS: it comes with over 43000 packages, precompiled software bundled up in a nice format for easy installation on your machine.

Debian is also a democratic community organization, which aims at the development of operating systems exclusively based on free software.

### Emmabuntüs

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[Emmabuntüs](http://www.emmabuntus.org) a distro for all seasons. <http://www.emmabuntus.org>

Emmabuntüs<sup>135</sup> is a distribution designed to facilitate the refurbishing of computers given to humanitarian associations, in particular the Emmaüs community<sup>136</sup> (hence,

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<sup>134</sup>[https://www.mediawiki.org/wiki/Manual:What\\_is\\_MediaWiki%3F](https://www.mediawiki.org/wiki/Manual:What_is_MediaWiki%3F)

<sup>135</sup><https://en.wikipedia.org/wiki/Emmabunt%C3%BCs>

<sup>136</sup><http://www.emmaus-international.org/en/>

the name of the distribution), to help the discovery of the **GNU/Linux** world by beginners, and limit the the electronic wastes generated by the hardware overconsumption, by extending the lifespan of aging computers.

## Entirely free distributions

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[Free GNU/Linux distribution list.](#)

This page lists the GNU/Linux distributions that are entirely free as in freedom.

The Free Software Foundation seems quite tough in what concerns the real freedom ... But can we put the blame on an organization which is seeking a situation that should be commonplace. <https://www.gnu.org/distros/free-distros.en.html>

## Free software alternatives to proprietary software

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- Equivalence between proprietary software.

A list of free alternatives proposing functionalities close to those of proprietary software, well established in their application domain. This list is far to be comprehensive, and does not have the goal to spotlight particular software, but rather to present different (proprietary or free) software within the same application domain.

[http://wiki.linuxquestions.org/wiki/Linux\\_software\\_equivalent\\_to\\_Windows\\_software](http://wiki.linuxquestions.org/wiki/Linux_software_equivalent_to_Windows_software)

- The Free Software Directory

FSD, or simply Directory is a project of the Free Software Foundation (FSF). We catalog useful free software that runs under free operating systems — particularly the GNU operating system and its GNU/Linux variants. [https://directory.fsf.org/wiki/Main\\_Page](https://directory.fsf.org/wiki/Main_Page)

## Compatible hardware

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[h.node](#) : This project aims at the construction of a hardware database in order to identify what devices work with a fully free operating system. The h-node.org website is structured like a Wiki in which all the users can modify or insert new contents. The h-node project is developed in collaboration and as an activity of the Free Software Foundation (FSF).

<https://h-node.org/home/index/en>

Aller à: [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

## A

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### Administrator

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⇒ With great power comes great responsibility...

The administrator is a person in the IT department who is responsible for managing the company server. He takes care of the system updates, verifies its proper functioning, creates new accounts, sets permissions and configures file sharing, emails, backups, security scheme ...

On a computer for private use, the administrator is the one who has the system management rights: in this case, yourself.

### ADSL

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ADSL means broadband Internet. ADSL (Asymmetric Digital Subscriber Line) is practically deployed throughout most of the industrial countries the French and allows you to take advantage of speeds up to 30 Megabits/s, which permits you to watch videos, download files and navigate the Web very easily.

### ALSA

---

ALSA (Advanced Linux Sound Architecture) is a Linux kernel module which gather the function of several different sound drivers into one. It is used to detect sound cards whatever they are; it is very popular and very efficient. It greatly simplifies the management of sound on Linux and is often updated.

### Apt

---

Apt (Advanced Packaging Tool) is the Debian package manager using the .deb package formats. There are graphical interfaces like Synaptic or Adept for those who are not comfortable with the command lines in the the terminal window.

### Aptitude

---

Aptitude is an alternative to Apt. It offers other options such as the construction of dependency tree, update of package status and many others. If Aptitude does not care about broken packages on your system, Aptitude will try to repair it during the next update or upgrade, by presenting

alternative solutions as well as their consequences and let you decide what to do.

Finally, it is also interesting to see the behavior of Aptitude when removing software: it computes useless dependencies and deletes them. On the other end, Apt only does only what you clearly ask for.

## **Arobase @**

---

The "at" symbol ( @ )is the little "a" with a circle curling around it. It is used to form email addresses (eg user@isp.com). This symbol is not used in the web addresses, only for electronic mail. .

## **Audio Format**

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An Audio format is a data format used to represent sounds, music and voices in digital form, with the purpose of either store or transport them.

## **Autonomy**

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Autonomy is the time that a battery enables a mobile unit to operate without having to be recharged by an electric outlet. The autonomy of a laptop is a few hours and that a mobile phone a few days in theory.

## **B**

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### **Beast**

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Computer name when it's big and powerfull.

### **BIOS**

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BIOS stands for Basic Input Output System. The BIOS is the software (firmware) embedded on the motherboard which allows you to perform basic tasks when you turn the computer on (eg read a sector of a hard disk).

### **Boot manager**

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This is the program that launches at startup, allowing the choice of booting the computer with one among several operating. The most popular, Lilo and Grub are usually installed in the MBR (Master Boot Record) of the hard drive. Although Windows has a similar piece of software, it is more difficult to use, when implementing a dual-boot Linux/Windows (for example), than using Grub.

## **Browser**

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Software used to navigate the Web.

## **Bug**

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A bug is unwanted operation in a computer or a computer program. We are talking about bug when the software does not do what you asked, it stops or do something weird or shutdown...

## **C**

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## **C**

---

The computer language (following the A and B languages) which has become one of the most widely used programming languages of all time.

## **C++**

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An evolution of the C programming language. Warning : C+ does not exist!

## **Chat**

---

Live chat rooms on the Internet are spaces where you share information via text with a group of other users. The ability to converse with multiple people in the same conversation differentiates chat rooms from instant messaging programs, which are more typically designed for one-to-one communication.

## **Click**

---

A click is the action of pressing and releasing (almost) immediately one of the mouse buttons. An unspecified "click" actually means a "left-click".

## **Client/Server**

---

Common type of architecture on the Internet and more generally in computer science: A server contains information, clients connect to it and submit a request. Corresponding treatments are performed by the server and the results are sent back and displayed on the client computer. The Web is a good example of client/server application.

## **Cloud Computing**

---

Cloud computing is concept gaining wide acceptance : rather than installing a program on our computer, which is going to take some space, the current trend is to do the work online, without the need to download the software. This is a way to do office work with Google Docs without installing anything on the computer, a browser is enough.

## **Code (to)**

---

to write a program, or to speak the "machine language" (no, it does not mean "make beep beep beep" ...).

## **Code (Source)**

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The source code is the text file written by the software developer, which can be understood by the compiler and transformed into a directly executable program. Some source codes are freely available to developers in particular in the context of free software.

## **Compile (to)**

---

Start a command that converts source code into an executable program.

## **Console**

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Also named terminal, it is (or not) a graphical window giving access to the shell interpreter allowing you to type command lines to be executed.

## **Cookie(s)**

---

~~Chocolate chip cookie or nugget. small dry round chocolate chip cookie originating in the United States.~~ Files sent by some websites and stored on your hard drive. On subsequent connections, your computer let the Web site retrieve data that you previously entered. Cookies can only be read by the website that issued them and may contain only data that the user voluntarily provided to the site, or that can be retrieved from the connection itself (source IP address, etc). They can not read the disc's contents or contain an executable program. You can set your browser to reject cookies, but you lose an interesting usability (like storing your preferences or passwords).

## **Copy and paste**

---

Copy and paste represents the action to duplicate a file from one location to another. The file is cloned into a new destination. The copy-paste operation is done, for example, by right-clicking on a

selection and choosing the "Copy" action, and then right-clicking in the destination folder and choosing the "Paste" action. The keyboard shortcuts for these two actions are the popular [Ctrl]+C and [Ctrl]+V.

## **Core dump**

---

A program crashing under Unix has the effect of copying its entire memory contents into a file named "core". Not a good news ... but becoming seldom these days.

## **Cut and paste**

---

Cut and paste, moves a file without duplicating it: the file will no longer exist in its original location, but only in its destination. The keyboard shortcuts for these actions are [Ctrl]+X and [Ctrl]+V.

## **Cursor**

---

⇒ arrow, the movements of which you have a hard time to follow on the screen...

The cursor is following on the screen the movements of your mouse. Often symbolized by a slanted arrow cursor, it lets you point an element: an icon, a menu, a button to click on in order to activate a function.

## **D**

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### **Debian**

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⇒ The mommy of many distributions

Debian is a community and a democratic organization whose purpose is the development of operating systems based exclusively on free software.

Debian differs from most of the distributions based on it by its non-commercial nature and the cooperative governance of the association managing the distribution.

### **Dependencies**

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It is said that there is a dependency, when a package depends on another one to be installed and/or running.

### **Desktop Environment**

---

In the Unix world, a DE is a set of programs that provide a user friendly graphical interface to the operating system. It usually consists of a window manager and a lot of software that fit well with

the environment, first and foremost file managers, control panels, web browsers, text and image editors, games, and even office and messaging suites.

## **Device**

---

A device is a piece of hardware that is connected to a computer. USB key, keyboard, mouse, printer ... are all devices.

## **Dialog**

---

A dialog box is a small window that appears when the system or an application wants you to make a choice. You must therefore read the message and click the button that corresponds to your choice (Yes or No, Save or Cancel, ...).

## **Distribution**

---

Distribution is a GNU/Linux system with a collection of software, which forms a complete operating system, ranging from the command line up to the graphical environment. The goal is to put together a stable and coherent set of software aiming at a particular audience. Distribution provides different tools to easily obtain and install the software.

Some distributions are commercial, that is to say, manufactured and distributed by companies, which adhere, more or less, to the free software spirit. Others, only developed by volunteers, are completely free.

## **Drag and drop**

---

Drag and drop is the action of moving the cursor on an icon, pressing and holding a mouse button, moving the mouse cursor to another location, and then releasing the button: the selected files follows the mouse and moves directly into this new location.

## **E**

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### **Email**

---

An email can be written in plain text or in HTML format. In the HTML case, some text enrichments are possible (bold, color, image, tables) but some mail client software (increasingly rare) do not read messages in HTML format.



## Ergonomics

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Ergonomics refers to the ease of handling, understanding and using an equipment (eg a phone, a software or a website). More ergonomic it is, and faster the end user will master it. An ergonomic system is intuitive.

## F

---

### File Manager

---

A file manager or file browser is a computer program that provides an user interface to work with file systems. The most common operations performed on files or groups of files include creating, opening (e.g. viewing, playing, editing or printing), renaming, moving or copying, deleting and searching for files, as well as modifying file attributes, properties and file permissions. Folders and files may be displayed in a hierarchical tree based on their directory structures. Some file managers contain features inspired by web browsers, including forward and backward navigational buttons. Some file managers provide network connectivity.

### File system

---

A file system (FS) , represents the way data are organized in a disk partition. GNU/Linux has its own FS, called ext2, ext3, ext4, ReiserFS, btrfs ... and handles a multitude of file systems from other architectures, including FAT , VFAT (ie FAT32), NTFS (DOS/Windows file systems), ISO 9660, etc. A file system is called "journalized " when it keeps a record (log) of the operations being performed, and then saves them on the disk.

These types of file systems (for example ext3/4 or Reiserfs and also NTFS) are more tolerant to system crashes because they keep the system consistent (no need anymore to use *fsck scandisk* at start-up).

### Firewall

---

The firewall is a software protection located at the entry point of a computer, or a local network, to prevent intrusions from the outside. It controls the inputs and outputs and transmits only the authorized signals.

### Firmware

---

A firmware is a program used to connect smart devices (hard drive, DVD burner, scanner, ADSL modem) to your computer. It is written in the language understood by the electronic device. We can

compare the firmware of a device to the BIOS of a computer. It is responsible for initializing the device and then executes the commands received from more advanced programs.

## **Fonts**

---

A font represents a range of characters with a particular size, weight and style of a typeface.

## **Fork**

---

It is often used in a figurative sense to designate a "branch" or a "differentiation" from a common root. It is often through this differentiation process that new Linux distributions emerge. More precisely the whole idea is to take a basic known kernel or program, to modify it according to some purpose and to redistribute it.

## **FTP**

---

File Transfert Protocol. Protocol used to transfer files over the Internet. Also the name of the program implementing this protocol. It is necessary to have a specialized program for access the FTP servers (Example : Filezilla)

## **G**

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### **Geek**

---

Although the word may have a broader connotation, a geek is a computer enthusiast, usually passionate about other subjects (Eg. science fiction) and generally curious. Geek does not mean technology obsessed: geek do not like to only use the technology, they love to understand how that works and they do have a critical mind.

### **Graphics card**

---

The graphics card is a component of the central unit responsible for the on-screen display. Powerful graphics cards also handle the rendering of 3D displays (for video games). The main manufacturers of graphics cards are Nvidia and ATI.

## **GUI**

---

The graphical user interface refers to how the software is presented on the screen to the user. It is the positioning of the elements: menus, buttons, features in the window. A well defined graphical

interface is ergonomic and intuitive: designed in such a smart way that the user understands it immediately.

## **Gnome**

---

GNOME stands for **GNU Network Object Model Environment**. It is a user friendly free graphical environment which goal is to make the GNU operating system usage available to the greatest number of people. This interface is currently very popular on the GNU/Linux systems and runs also on most of the UNIX-like systems.

## **GNU**

---

The GNU project ("GNU's not Unix") is a community initiated in 1983 by Richard Stallman to create a free alternative to the Unix operating system.

GNU is particularly known in the software world because it made major contributions such as the development of the GNU compiler collection (GCC), the improvements of existing Unix commands or the definition of the free GNU General Public License (GPL).

GNU has also worked on a kernel called HURD, but ultimately it is Linux which emerged and became the kernel enabling the usage of all the other bricks of the project.

## **H**

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### **Hack or Trick**

---

An inelegant but effective solution to a computing problem. Sometime also called a workaround.

### **Hard Drive**

---

The hard (disk) drive is an important component of a computer. It is the computer shed, since its role is to store data. The hard drive contains partitions that contain your installed system and your personal data

⇒ note : Soft Drive does not exist ...

### **Hardware**

---

The collection of physical elements that comprise a computer system (the beast, cards, chips, drives, processor, etc.), as opposed to the **Software** part.

## High definition

---

High Definition is the successor of the television set as we knew it before. HDTV is a television system providing an audio quality and an image resolution which are substantially higher than that of standard-definition television. The difference is really obvious. Video games (PS3 and Xbox360) and Blu-Ray (successor to the DVD) also benefit from this technology. However you will need some money and compatible hardware to enjoy it (compatible HDTV set, HDMI cable, Blu-Ray player ...).

## HDMI

---

HDMI stands for High-Definition Multimedia Interface. HDMI is a standard for connecting together High Definition devices. It is replacing the Scart socket. You can connect a Blu-Ray player for example to an HDTV with an HDMI cable, and even a PS3 or a Xbox 360.

## I

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### Icon

---

An icon is a pictogram, accompanied by a name, representing an element: folder, file, software, shortcut ... clicking on an icon will launch a predefined action: open the file, launch the software, display the content...

## IM

---

IM stands for Instant Messaging, and refers to a software where you can communicate directly (or chat) with friends and family, possibly share files, using the microphone to talk and the webcam to see each others. Unlike a chat, instant messaging lets you talk with some people of your contact list, and not just anyone on the web.

## Internet

---

Internet includes all interconnected (wired and wireless) networks in the world and their associated websites. With an Internet access, you can access visit all the websites of the world in one click, listen to music, communicate, watch videos, learn ... let it be from your computer, your tablet or your smart phone.

## IN/OUT

---

Inputs/Outputs (or I/O) characterize the exchange of information between the processor and its associated devices. In practice, within an operating system, the inputs are the keyboard, the mouse,

the disks, the incoming data from the network. When the outputs are the screen, the disks, the printer, the outgoing data to the network etc ...

## **IP Address**

---

Single address across the Internet network, to uniquely identify a machine. It is usually represented by a group of four numbers. If your computer is connected to the Internet, it has an IP address that is usually provided at the beginning of the connection by your Internet Service Provider (ISP).

## **ISP**

---

Internet Service Providers which let you enjoy Internet. Each of them provides an interface allowing you to connect to the Internet, to have an unlimited land-line phone and even access to digital TV programs.

## **IRC**

---

Internet Relay Chat. Discussion System in real time on the Internet. There are several IRC networks themselves divided into "channels" themes.

## **J**

---

### **Java**

---

Multi-platform programming language by Sun. The principle is that a program written once in Java can run on any computer as long as it has the specific runtime environment called "Java Virtual Machine". This converts Java virtual machine instructions into specific instructions to your computer while requiring it to meet certain safety rules.

Java programs can be embedded within web pages, and in that case they are executed while the container page is being displayed. They are named Applet.

You should be extremely careful, because Java applet can be used as malware on your computer.

### **JPEG**

---

graphics file format producing an impressive compression ratios compared to previously defined formats, but at the expense of image quality. Actually, the compression method is usually lossy, meaning that some original image information is lost and cannot be restored, possibly affecting image quality. The corresponding file extension is JPG.

# K

---

## Kernel

---

The core of an operating system, or simply the kernel, is one (if not the most) important part of the system. It manages the computer resources and allows different components - hardware and software - to communicate with each other.

## Keyboard Shortcut

---

A keyboard shortcut is a combination of keys pressed simultaneously on the keyboard to perform a specific action on the computer. The most commonly used keyboard shortcuts are for saving ([Ctrl] + S), to copying ([Ctrl] + C), pasting ([Ctrl] + V), or closing a window ([Alt] + F4) ...

## Kiss

---

The KISS principle, "Keep it Simple Stupid", is a method which advocates seeking simplicity in design and avoiding unnecessary complexity. Example: Give me a KISS.

# L

---

## Lag (to)

---

Run ... very ... slowly. Lagging like a snail.

## Live CD

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A live CD (or a live USB key) is a bootable medium. The system starts booting the computer and then runs the OS without installation. It actually uses the volatile memory (RAM) to run, and does not affect the permanent memory (hard disk).

## Free Software

---

"Free Software" is a concept of free applications and operating systems, whose source codes are left open by the developers, in order for everybody to inspect and improve them. One example is the GNU/Linux initiative which regroups free and gratis operating systems like Debian, but also the LibreOffice suite, the free alternative to Microsoft™ Office, or Firefox and Chromium the free alternatives to Microsoft™ Internet Explorer.

## **Long (it's not gonna be)**

---

Sentence used by the computer people to say that they still have 2 hours to finish (the time to compile, test, fix, compile, test, fix, compile ...)

## **M**

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### **Mail**

---

mail refers to a letter sent by Internet via email software (Eg. Icedove). The mails are free, usually limited to 10MB, which can be accompanied by attachments (images, documents ...) and sent to recipient(s) (At :) and potentially people in copy (CC :). Unwanted mails are called junk or spam.

### **Memory card**

---

A memory card is a small device able to permanently store digital data, likewise a USB key. The memory card is intended to be plugged into digital cameras or camcorders. It can store photos and movies, and can be read back by computer featuring a memory card slot. Among the most popular formats, we find the MemoryStick card for Sony devices, and SD for most others. A recent memory card can store thousands of photos.

### **Motherboard**

---

The motherboard is the main component of the CPU. Its role is to centralize and process all the data exchanged between the processor and the peripheral. The motherboard therefore manages the hard disk, the CD/DVD drive, the keyboard, the mouse, the network, the various USB ports ...

## **N**

---

### **No Life**

---

Nolife is an insane geek or nerd so passionate by his computer activity that he:she spends all his time with his/her passion neglecting everything else and in consequence has no (or very few) social life. No comment ... 😄

### **Noob**

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The "Noob" term (derived from "newbie" or novice) refers to a computer novice. It is not necessarily a pejorative term.

## **Notification Area**

---

The notification area is located in the taskbar at the bottom (or the top) right of the screen. You can usually find in there, the time, the network indicator, the sound volume. This is where the messages appear when the system has something to tell you (eg the battery is running empty, updates are available ...)

## **O**

---

### **Operating System**

---

This is the set of software that manages the computer hardware and provides common services for the application programs. By extension, it is also viewed as the main interface with the end users. Some examples of operating systems : GNU/Linux, Windows, Mac OS X, FreeBSD.

## **OS**

---

Operating System.

## **P**

---

### **Package Manager**

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A package manager is the software which installs, updates and uninstalls the system packages. On Debian, Synaptic is the graphical front-end of the APT\* Debian package manager.

## **Partition**

---

To use certain media such as hard disks, we need to structure them, to break them down into rather large subsets: partitions. In turn, each partition is then structured as a separate file system. Splitting a hard drive into multiple partitions allows, for example, the coexistence, on the same disk, of two different operating systems like GNU/Linux and Windows, which use different file systems.

## **Phishing**

---

Phishing is a scam practice which tricks an user by sending him an email with a forged sender address and including a link to a fake website mimicking its bank site, or an e-commerce site, and asking him to update its information ... If the user get trapped (or phished) then his sensitive information (private data, bank account details, ...) can be used to evil ends.



## Pixel

---

A Pixel is the smallest controllable element of a picture represented on the screen. A pixel can display one color at a time. Thus the screen is composed with million of these pixels, spread in both directions (height and width), and they come together to form the screen image. A pixel is so small that you can barely see it with the naked eye. The more pixels compose an image and the sharper it is.

## Plugin

---

A plugin is a software component that adds a specific feature to an existing computer program. Allowing for example a web browser to read more image, video, animation or sounds formats. Sometimes also called "addon".

## PS/2 Port

---

PS/2 port represents a couple of plugs located in the rear of the system unit. The purple plug connects the keyboard, while the green one connects the mouse.

Having said that, we should mention that the PS/2 port not used very often and replaced by the universal USB ports. One of the big disadvantage of this port is that it is not a hotplug : a device connected after the computer startup won't be recognized.

## Processor

---

The processor, also named Central Processing Unit (CPU), is the electronic circuitry within a computer that carries out the instructions of a computer program by performing the basic arithmetic, logical, control and input/output (I/O) operations specified by the instructions. In particular, it handles the data exchanges between the various components of the system (hard drive, memory, mouse, graphics card ...) and performs all the computation needed to interact with the you through the data displayed on the screen.

There is also the Graphics Processor Unit (GPU) which is a special component of the graphics card which accelerates the creation of images in a frame buffer intended for output to a display.

## Q

---

### Queue

---

Used in the sense of "waiting line". For example different files to be printed are put first in the printer spooler queue.

## **Quit (to)**

---

Terminate the execution of a program. Example : give me a pay raise or a quit my job.

## **R**

---

### **RAM**

---

RAM stands for Random-Access Memory. ~~It is the worst Daft Punk album~~ It is the computer volatile data storage. Its major advantage is the speed at which one can read from or write to it, as opposed to other direct access data storage media where the time required to read and write data items varies, depending on their locations and/or some mechanical limitations such as the media rotation speeds and arm movement delays.

### **Right-click**

---

A right-click is the action of pressing and releasing (almost) immediately the mouse right button. A right-click will display a contextual menu corresponding to the pointed element. In particular, it allows to copy, move, delete and rename the pointed element when it is a file or a folder.

### **RTFM**

---

Means "Read The Fucking Manual". This is an abbreviation that is thrown wildly at the head of someone who asks a question to encourage him to do first his home work in the documentation. This is because people sometimes ask trivial questions, whose answers are readily available in the man pages or on the Internet, and often these people are not used to the power of the documentation in the Unix world.

## **S**

---

### **Search Engine**

---

A search engine is a large software system, hosted by a website and which is designed to search for information on the World Wide Web. It lets you ask questions or type key words to be searched for. The engine will then return the most relevant results.

## Shortcut

---

A shortcut is an icon placed anywhere and providing a quick access to a software or a location on your computer. Most of the time a shortcut is used to launch a program. Deleting a shortcut does not uninstall the program it is associated with, and does not delete either the linked file.

## Software

---

Everything that makes a computer running, except the hardware part. Applications are software, for example.

## T

---

### Tab

---

Generally present in modern Internet browsers, tabs allow to browse multiple sites simultaneously. To switch from one site to another, you just have to click on its corresponding tab. Tabs are represented like tabs in a workbook.

## Terminal

---

We call a terminal, the command line console which is available and essential in all GNU/Linux distributions.

Even though many GUIs are available for virtually any application, nothing is more efficient, for example, than updating your entire system by typing single command line.

Note : a terminal is a very useful tool to debug a program.

## Troll

---

In the world of Usenet, forums of all kinds, mailing lists, IRC, and all these places open to online discussions, a troll is a person who sows discord by starting arguments or upsetting people, by posting inflammatory, extraneous, or off-topic messages with the intent of provoking readers into an emotional response. By extension the subject of the argument itself.

Known examples : "GNU/Linux or Windows", "Women in Free Software".

# U

---

## Unit (Central)

---

For a desktop, the central unit is the box containing all the electronic equipment that allows the computer to operate. The Keyboard, mouse, monitor, speakers etc. are all connected to it. The hard disk drive is located in this central unit, for example.

For a laptop, there is no Central Unit. All the electronic components are grouped under the Keyboard.

## Unix

---

Unix is a multitasking, multi-user computer OS. The original Unix system was developed in 1969. Several versions were created later on, and today, GNU/Linux is taking its inspiration from this family and continues with the same philosophy.

Unix systems are characterized by a modular design that is sometimes called the "Unix philosophy," meaning that the OS provides a set of tools, each of which performing a well-defined function, and an unified file system to perform complex work-flows.

The main Unices are : the BSD family (NetBSD, FreeBSD, OpenBSD), AIX, Solaris, HP-UX, Mac Os X.

## Update

---

An update is a new version of a program that fix a problem existing in its the previous version. The update may fix a security hole, add a new functionality, solve an algorithm error ...

## URL

---

The URL (Uniform Ressource Locator) points to the address of a website like "http://www.debian.org". By typing an URL in the browser address bar, you go directly to the desired site, without having to go through a search engine. You never need to type the "http://www." address header, simply enter "debian.org".

## USB

---

USB stands for Universal Serial Bus. It is the cable with a rectangular connector that wants to be universal: almost all current hardware devices are connected to your computer via USB. Computers now have USB ports on the back, on the front of the Central Unit, and even sometimes on your monitor.

## V

---

### Virtual Desktop

---

It is the full set of the workspaces available on a GNU/Linux desktop. It is like having on hand several desktops (with task bar and included windows). Very handy to get organized !

### VGA

---

Video Graphics Array (VGA) refers to the display hardware first introduced with the IBM PS/2 in 1987. The term can also mean either an analog computer display standard, the 15-pin D-subminiature VGA connector or the 640x480 resolution itself. While this resolution was superseded in the personal computer market in the 1990s, mobile devices have only caught up in the last few years.

### VPN

---

Stands for Virtual Private Network, and refers to an encrypted network on the Internet, which allows a company whose premises are geographically dispersed to communicate and share documents in a completely secure manner, as if they were all connected in a local area network.

## W

---

### Web

---

Web means Internet and refers to all the interconnected networks that run across the whole world and connect computers together in the manner of a spider web.

Surfing the Web means : browse the Internet.

### Web Browser

---

An Internet browser is a software application that allows you to visit websites, download files and make some research.

### Wiki

---

A wiki (Hawaiian word meaning "quick") is a web site whose pages are editable by visitors, enabling the creation of collaborative contents. (And aren't you afraid to give the keys to strangers ?).

## **Window**

---

A window is a rectangular area that appears on the screen to display, for example, the contents of a folder, or a text file, or some software output. The window can take all the space (full-screen) or only a part of the screen real estate. It is possible to view multiple windows simultaneously and drag items from one to another using the drag and drop technique.

## **Window Manager**

---

The window manager is the X (graphical) client software that controls the placement and appearance of windows (title bar, framing, moving, resizing, etc..) within a windowing system in a graphical user interface. Most window managers are designed to help provide a desktop environment.

Applications, handle the inside of the window they created and manage their content and the interaction with the user.

It is possible to change the window manager and see all the look and feel of the screen change completely.

When the window manager can do many other things in addition to what has been described here, it is a desktop environment like XFCE.

## **WWW**

---

Initials of the World Wide Web.

## **X**

---

### **X Window**

---

X Window System, commonly called X Windows, X11 or just X is the graphics subsystem of GNU/Linux. X Window is not only a driver for the video card, it is mainly an interface (API) for applications, so that they appear on the screen and receive input from the keyboard and mouse.

### **X Org**

---

Free X server used by GNU/Linux distributions.

## Y

---

### Yes We Can

---

Yes We can make you understand your computer, use it to do what you want and share knowledge...

## Z

---

### Zen

---

«Stay zen», means keep calm. Zen Buddhism has always been appreciated by hackers. This is a fundamental virtue of good programmer, especially in the debugging phase ...

### Zip

---

The most popular file compression format. Requires a specific program for decoding (expanding) the compressed file.

### Zombie

---

[Unix] program that ended but whose father has not been informed of its death. Its data are somewhat available, so it is still a bit alive ... A program whose father was destroyed in turn is an orphan.

---

### Links

---

- The Jargon Lexicon: <http://www.catb.org/jargon/html/go01.html>
- WhatIs.com: <http://whatis.techtarget.com/>
- Techopédia: <https://www.techopedia.com/dictionary>



A complete archive with the different distributed formats is freely available on the main page:

<https://lescahiersdudebutant.fr/index-en.html#sources>

## 14.1. Software used

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- Editing Online Sources: Dokuwiki<sup>137</sup>
- Editing offline sources: LibreOffice<sup>138</sup> & Calibre<sup>139</sup>
- Capture images: scrot<sup>140</sup>
- Image editing: Gthumb<sup>141</sup> & the Gimp<sup>142</sup>
- Editing images & logos: Inkscape<sup>143</sup> & the Gimp
- PDF Optimization: Ghostscript<sup>144</sup> & Exiftool<sup>145</sup>

## 14.2. References


---

**The various sources that helped me in the development of this manual:**

- Ebook-facile v1<sup>146</sup> par l'équipe Debian-Facile (fr)
- Debian Administrator HandBook<sup>147</sup>
- Debian main site<sup>148</sup>
- HandyLinux Manual<sup>149</sup> (fr)

## 14.3. Coordination & License

---

The beginner's handbook scribbled by **3hg team**<sup>150</sup>  under [WTFPLv2](#)<sup>151</sup> (*unless otherwise stated*), With the support of the **Debian-Facile**<sup>152</sup> community (fr) .

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137 <https://www.dokuwiki.org>

138 <https://libreoffice.org>

139 <https://calibre-ebook.com>

140 <https://en.wikipedia.org/wiki/Scrot>

141 <https://wikipedia.org/wiki/GThumb>

142 <https://www.gimp.org>

143 <https://inkscape.org>

144 <https://wikipedia.org/wiki/Ghostscript>

145 <https://en.wikipedia.org/wiki/ExifTool>

146 <https://debian-facile.org/gitweb/?p=docs/ebook-facile.git;a=summary>

147 <https://www.debian.org/doc/manuals/debian-handbook>

148 <https://www.debian.org/>

149 <http://wiki.handylinux.org/user>

150 <http://3hg.toile-libre.org>

151 <http://www.wtfpl.net/>

152 <https://debian-facile.org>



**Speakers** aka thx a lot:

bendia, nIQnutn, Atapaz, Severian, deuchdeb, martinux\_qc, mercredi, nazmi, chalu, bruno-legrand, Thuban, Starsheep, arpinux, smolski, Trefix, desmoric, nono47, yanatoum, PenguinPdt, èfpé, fiche, BibiSky51, titiasam, Firepowi, dcpc007, rhyzome, Péhä, Caribou22.

**Translation** french > english: **Saby43**, dyp, arpinux.

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**Special thx 2 Péhä** for his drawings (under CC-BY-SA) and his free spirit 😊

<https://lesptitsdessinsdepeha.wordpress.com>



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<sup>154</sup>[https://commons.wikimedia.org/wiki/GNOME\\_Desktop\\_icons](https://commons.wikimedia.org/wiki/GNOME_Desktop_icons)

<sup>155</sup>[https://commons.wikimedia.org/wiki/Tango\\_icons](https://commons.wikimedia.org/wiki/Tango_icons)

<sup>156</sup><http://www.spi-inc.org/>

<sup>157</sup><https://www.debian.org/license>

<sup>158</sup><https://www.debian.org/trademark>



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Vous prendrez bien un p'tit dessert 😊 ... en (re)découvrant "Citizen Four"<sup>159</sup>.



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<sup>159</sup>[http://arpinux.org/public/g33k\\_GNU\\_Linux/CitizenFour\\_vostfr.ogv](http://arpinux.org/public/g33k_GNU_Linux/CitizenFour_vostfr.ogv)