

Mandrake Linux 8.1

Installation and User Guide

MandrakeSoft

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<http://www.mandrakelinux.com/>

Mandrake Linux 8.1 : Installation and User Guide

by MandrakeSoft

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Preface

1. Legal Notice

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2. About Mandrake Linux

Mandrake Linux is a *GNU/Linux* distribution supported by **MandrakeSoft S.A.** **MandrakeSoft** was born in the Internet in 1998 with the main goal to provide an easy-to-use and friendly *GNU/Linux* system. The two pillars of **MandrakeSoft** are open-source and collaborative work.

2.1. Contact Mandrake community

Following are various Internet links pointing you to various **Mandrake Linux** related sources. If you wish to know more about the **MandrakeSoft** company, connect to its web site (<http://www.mandrakesoft.com/>). There is then the site for the **Mandrake Linux** distribution (<http://www.mandrakelinux.com/>) and all its derivatives.

First of all **MandrakeSoft** is proud to present its new open help platform. MandrakeExpert (<http://www.mandrakeexpert.com/>) isn't just another web site where people help others with their computer problems in exchange for up-front fees, payable regardless of the quality of the service received. It offers a new experience based on trust and the pleasure of rewarding others for their contributions.

In addition, MandrakeCampus (<http://www.mandrakecampus.com/>) provides the *GNU/Linux* community with open education and training courses on all open software-related technologies and issues; and teachers, tutors, and learners with a place where they can share knowledge.

There is a site for the “mandrakeholic” called Mandrake Forum (<http://www.mandrakeforum.com/>): a primary site for **Mandrake Linux** related tips, tricks, rumors, pre-announcements, semi-official news, and more. This is also the only interactive web-site hosted by **MandrakeSoft**, so if you have something to tell us, or something you want to share with other users, search no longer: this is a place to do it!

In the philosophy of open-source, **MandrakeSoft** is offering many means of support (<http://www.mandrakelinux.com/en/ffreesup.php3>) for the **Mandrake Linux** distributions. You are invited in particular to participate in the various Mailing lists (<http://www.mandrakelinux.com/en/flists.php3>), where the **Mandrake Linux** community demonstrates its vivacity and keenness.

2.2. Support Mandrake

By popular request, **MandrakeSoft** proposes that its happy customers make a donation (<http://www.mandrakelinux.com/donations/>) to support the forth-coming developments of the **Mandrake Linux** system. Your contribution will help **MandrakeSoft** provide its users with an ever better distribution, ever safer, easier, up-to-date, and with more supported languages.

For the many talented, your skills will be very useful for one of the many tasks required in the making of a **Mandrake Linux** system:

- Packaging: a *GNU/Linux* system is mainly made of programs picked-up on the Internet. These programs have to be packaged so that they will hopefully work together.
- Programming: there are many many projects directly supported by **MandrakeSoft**: find the one that most appeals to you, and offer your help to the main developer.
- Internationalization: translation of the web pages, programs and their respective documentation.
- Documentation: last but not least, the book you are currently reading requires a lot of effort to stay uptodate with the rapid evolution of the system.

Consult the contributors page (<http://www.mandrakesoft.com/labs/>) to learn more about the way you can contribute to the evolution of **Mandrake Linux**.

2.3. Purchasing Mandrake Products

For **Mandrake Linux** fans wishing to benefit from the ease of on-line purchasing, **MandrakeSoft** now sells its products worldwide from its MandrakeStore (<http://www.mandrakestore.com/>) e-commerce web site. You will find not only **Mandrake Linux** software — operating systems and network tools (firewall), but also special subscription offers, support and updates (MandrakeFreq), as well as other goodies related to **MandrakeSoft**.

3. Authors and translators

The following people contributed to the making of the **Mandrake Linux** manuals:

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- Roberto Rosselli Del Turco
- Christian Roy
- Stefan Siegel
- All authors of documents we reproduced here (see list at *Legal Notice*, page 1)

Also participated at various degrees: Philippe Ambon, Jay Beale, Hoyt Duff, Carsten Heiming, Till Kampetter, Damien Dams Krotkine, Robert Kulagowski, François Pons, Guillaume Poulin, Pascal Pixel Rigaux, John Rye.

4. Tools used in the making of this manual

This manual was written in *DocBook*. *perl* and *GNU make* were used to manage the set of files involved. The SGML source files were processed by *openjade* and *jadetex* using Norman Walsh's stylesheets. Screenshots have been taken using *xwd* and *GIMP* and converted with *convert* (from the *ImageMagick* package). All this software is available on your **Mandrake Linux** distribution, and all parts of it are free software.

5. Note From the Editor

As you may notice while you go from one chapter to another, this book is a composite document from various authors. Even though much care has been taken in insuring the technical and vocabulary consistency, the style of each author is obviously preserved.

Some of the authors write in English even though it is not their native language. Therefore, you may notice strange sentence constructions; do not hesitate to let us know if something is not clear to you.

In the open-source philosophy, contributors are much welcomed! You may provide much help to this documentation project by different means. If you have a lot of time, you can write a whole chapter. If you speak a foreign language, you can help with the internationalization of this book. If you have ideas on how to improve the content, let us know - even advice on typos is welcomed!

For any information about the **Mandrake Linux** documentation project, please contact the documentation administrator (mailto:documentation@mandrakesoft.com).

6. Conventions Used in this Book

6.1. Typing Conventions

In order to clearly differentiate special words from the text flow, the documentation team uses different renderings. The following table shows an example of each special word or group of words with its actual rendering and what this means.

Formatted Example	Meaning
<i>inode</i>	This formatting is used to stress a technical term explained in the <i>Glossary</i> .
<code>ls -lta</code>	Indicates commands or arguments to a command. This formatting is applied to commands, options and file names. Also see the section about “ <i>Commands Synopsis</i> , page III”.
<code>ls(1)</code>	Reference to a man page. To get the page in a <i>shell</i> (or command line), simply type <code>man 1 ls</code> .
<code>\$ ls *.pid imwheel.pid</code>	The documentation team uses this formatting for text snapshots of what you may see on your screen. It includes computer interactions, program listings, etc.
<code>localhost</code>	This is literal data that does not generally fit in with any of the previously defined categories. For example, a key word taken from a configuration file.
<i>Apache</i>	This is used for application names. The example used is not a command name but, in particular contexts, the application and command name may be the same but formatted in different ways.
<u>F</u> iles	This is used for menu entries or graphical interface labels in general. The underlined letter indicates the keyboard shortcut, if applicable.
<i>SCSI-Bus</i>	It denotes a computer part or a computer itself.
<i>Le petit chaperon rouge</i>	This formatting identifies foreign language words.
Warning!	Of course, this is reserved for special warnings in order to stress the importance of words; read out loud :-)

6.2. General Conventions

6.2.1. Commands Synopsis

The example below shows you the symbols you will find when the writer describes the arguments of a command:

```
command <non literal argument> [-option={arg1,arg2,arg3}] [optional arg. ...]
```

These conventions are standard and you may find them at other places such as the man pages.

The “<” (lesser than) and “>” (greater than) symbols denote a **mandatory** argument not to be copied verbatim, but to be replaced according to your needs. For example, <filename> refers to the actual name of a file. If this name is foo.txt, you should type foo.txt, and not <foo.txt> or <filename>.

The square brackets “[]” denote optional arguments, which you may or may not include in the command.

The ellipsis “...” mean an arbitrary number of items can be included.

The curly brackets “{ }” contain the arguments authorized at this specific place. One of them is to be placed here.

6.2.2. Special Notations

From time to time, you will be directed to press, for example, the keys Ctrl+R, which means you need to press and hold the Ctrl and tap the R key as well. The same applies for the Alt and Shift keys.

Also about menus, going to menu item File→Reload user config (**Ctrl+R**) means: click on the File text displayed on the menu (generally horizontal on the top of the window). Then in the pull-down menu, click on the Reload user config item. Additionally, you are informed that you can use the key combination Ctrl+R, as described above, to achieve the same result.

6.2.3. System Generic Users

Whenever possible, we used two generic users in our examples:

Queen Pingusa		This user is created at installation time.
Peter Pingus		This user is created afterwards by the system administrator.

Chapter 1. Introduction to the Installation Guide

Welcome, and thank you for using **Mandrake Linux**! This book is divided into two parts: an *Installation guide* and a *User Guide*. The *Installation guide* will help you install and configure your **Mandrake Linux** distribution by describing the preparation, installation and post-installation procedures. Have fun :-)

1.1. Welcome!

The aim of this part is to help you to install **Mandrake Linux** on your computer. The setup program used is the graphical setup program: *DrakX*. If, for one reason or another, you cannot or prefer not to use the graphical installation, you will be able to use a text version; how to access it is explained at the beginning of the section "*Installation with DrakX*", page 15.

You will first be given instructions for steps to take before proceeding to the installation, such as: finding information about your hardware, configuring your *BIOS*, and, if needed, creating a *bootdisk*.

For those of you who want a customized installation, you will find help with partitioning issues. A whole section will be devoted to the concepts behind partitioning a hard disk with details on how to partition your disk for special uses. This should help you when you have to partition your hard drive, although *DrakX* is designed to handle this automatically.

Then comes the long-awaited chapter about the installation itself.

Finally, we will be introducing some post-installation procedures useful for full system configuration.

I. Installation guide

Chapter 2. WARNING – README

This manual covers the installation in both Recommended and Expert mode. If you have *Windows* installed on your system, and have never installed *GNU/Linux* before, *DrakX* will have to resize your *Windows* partition (if any). This operation can be harmful to your data, therefore you **must** perform the following steps before proceeding:

- You must run `scandisk` on your *Windows* partition; the resizing program can detect some obvious errors, but `scandisk` is better suited for this task;
- For maximum data security, you should also run `defrag` on your partition. This further reduces the risk of data loss; this is not mandatory, but is highly recommended and doing so will make resizing much faster and easier;
- The ultimate insurance against problems is to always **back up your data!**

If neither `scandisk` nor `defrag` are installed within *Windows*, please refer to the *Windows* documentation for instructions on installing them.

Chapter 3. Before setup

3.1. Configuring your BIOS

The *BIOS* (*Basic Input/Output System*) is used to boot up a computer. Specifically, it is used to find the device on which the operating system is located and start it up. It is also used for the initial configuration of the hardware.

The appearance of *plug'n'play* and its widespread use means that all modern *BIOS* can initialize these devices, but you still have to ask it to do so. If your *Windows 9x* OS is initializing these devices instead of the *BIOS*, this will need to be changed for use under *GNU/Linux*.

Changing your *BIOS* settings is usually performed by holding down the DEL key just after the computer is switched on. Unfortunately, there are many types of *BIOS*'s, therefore you will have to look for the appropriate option for yourself. The option to look for is often called PNP OS installed (or Plug'n'Play OS installed). Set this option to No and the *BIOS* will then initialize any *plug'n'play* devices. That can help *GNU/Linux* recognize some devices in your machine which it would not otherwise be able to initialize.

If your *BIOS* can boot from the CD-ROM and you want to perform a standard installation of **Mandrake Linux**, you can also set your *BIOS* to boot from the CD-ROM before searching the hard disk. Look for Boot sequence in the BIOS features setup.

Note: If you want to use a printer locally connected to your machine: make sure that the parallel port mode is set to ECP+EPP (or at least one of them) and not to SPP. If it's not set this way, you will still be able to print, but your printer will not be auto-detected so you will have to configure it by hand. Also make sure that the printer is powered-on and properly connected to your machine beforehand.

3.2. Creating a "boot-disk"

If you cannot boot from the CD-ROM, and if *Windows* is not installed on your computer, you will need to create a "boot disk".

The CD-ROM contains all of the image files and utility programs needed. You will also need to create a "boot-disk" if you wish to use a boot-loader other than *LILO* or *grub*. If *Windows* is installed on your computer, you will not need a boot-disk, so you may skip this step and go on to "Installation with DrakX", page 15.

The boot images are in the images directory on the CD-ROM. For this method of installation, the significant file is named `cdrom.img`.

We use the image `cdrom.img` when you install the distribution from a CD-ROM. However, many other images are available to perform installs:

- `cdrom.img`: to install from a local IDE or SCSI CD-ROM drive. This has to be used in case where you cannot boot your computer directly from the CD-ROM, by changing *BIOS* settings.
- `network.img`: to install from a NFS, FTP, HTTP repository. The network configuration of the machine to be installed may be manual or automatic.
- `pcmcia.img`: if the installation media is reached through a PCMCIA card (network, CD-ROM, ...)
- `hd.img`: use this image in the case where you were not able to perform the install from a CD-ROM. You just need to copy the content of the CD onto the hard drive (either on a FAT ext2fs or reiserfs partition), and boot with the floppy containing that image.
- `usbnet.img`: this image allows you to perform a network installation, but through a USB port.
- `other.img`: this installation image provides less common drivers such as NET and SCSI drivers. Try this image if the others failed.

3.2.1. Under Windows

You need to use the program called `rawwrite`. This can be found on the CD-ROM `dosutils` directory (figure 3-1).

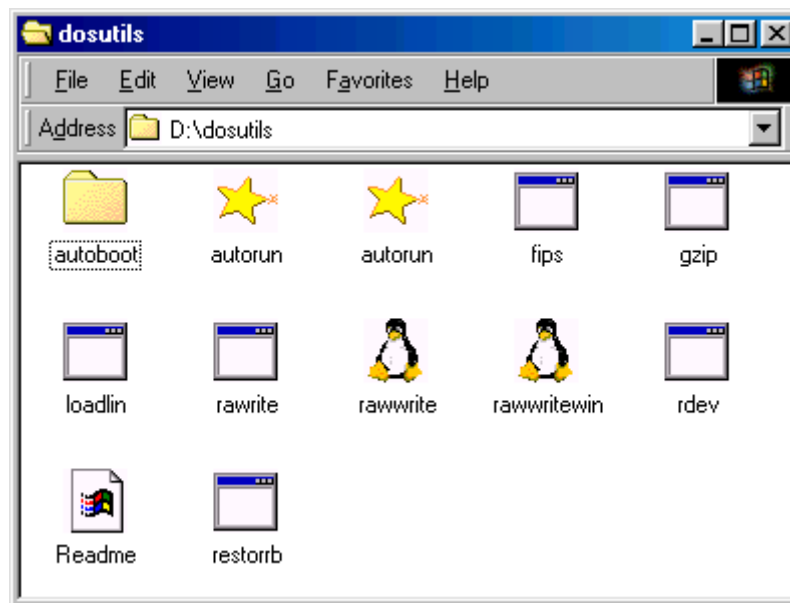


Figure 3-1. The dosutils directory

Note: in this example, the CD-ROM drive is designated by the letter D:; you will naturally have to choose the letter designating the CD-ROM drive on your own machine.

You may have noticed that there is a *DOS* version, *rawwrite*, of the same program. It is, in fact, the original version of the program: *rawwrite* is a graphical front-end to it.

Start the program, as shown in figure 3-2.

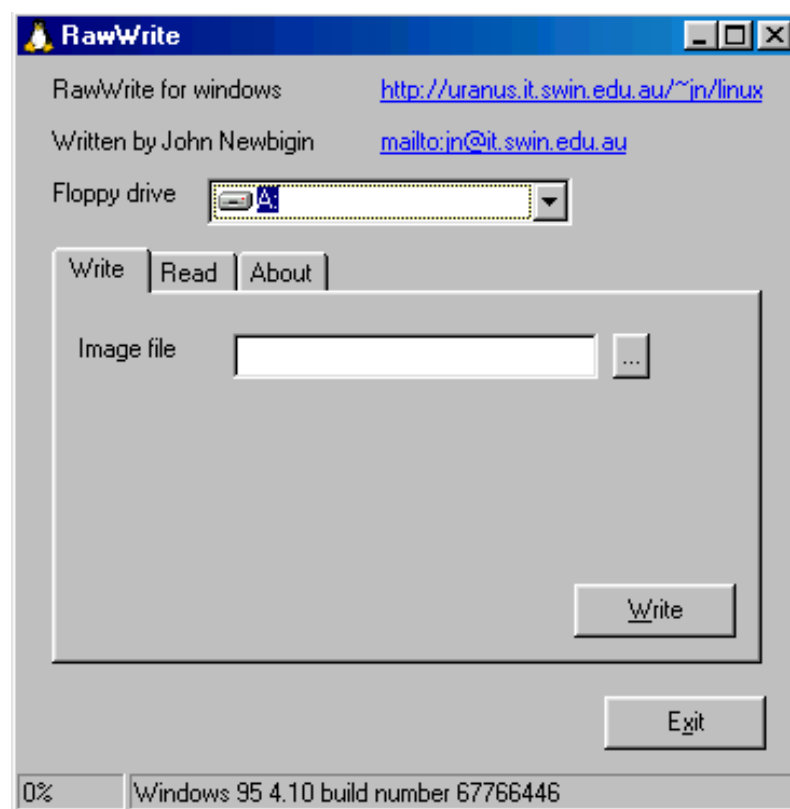


Figure 3-2. The rawwrite program

Select the boot image to copy and the target device (here A: as illustrated in figure 3-3).

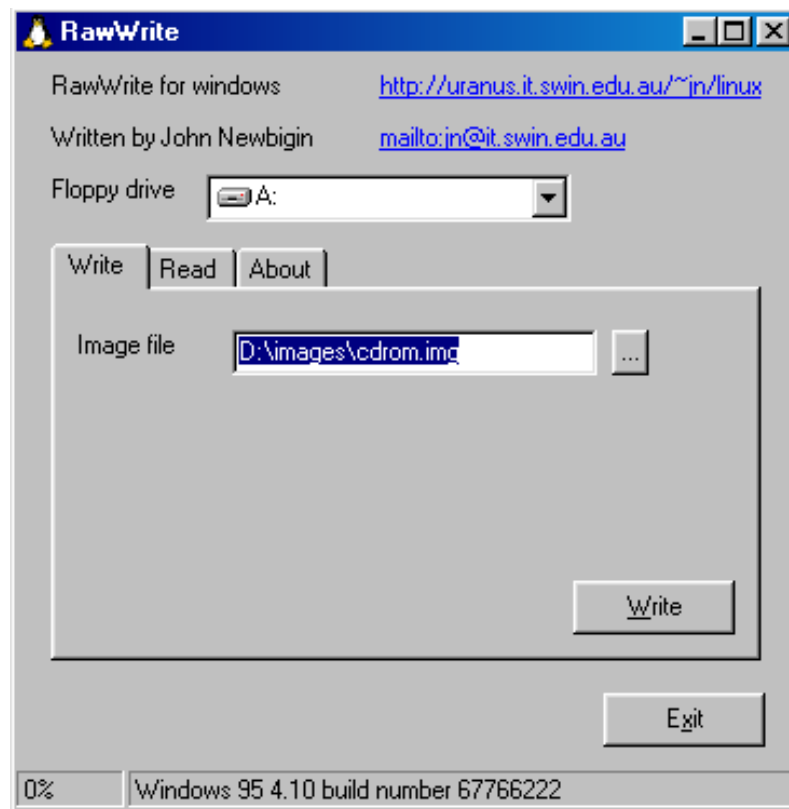


Figure 3-3. An example of using rawwrite

Then, if you haven't already done so, insert an empty disk into your chosen floppy drive and click on Write. When completed, click on Exit, you have a boot disk to install your **Mandrake Linux** distribution.

3.2.2. Under GNU/Linux

If you already have *GNU/Linux* installed (another version, or on another machine, for example on that of a friend who has lent you his **Mandrake Linux** CD), then carry out the following steps:

1. mount the CD-ROM. Let us suppose that the mount point is `/mnt/cdrom`;
2. log in as root;
3. insert an empty disk into the drive and type:

```
$ dd if=/mnt/cdrom/images/cdrom.img of=/dev/fd0
```

Note: Replace `/dev/fd0` by `/dev/fd1` if you are using the second floppy drive and, of course, the name of the image with the one you want. When completed, your boot disk is ready.

3.3. Supported hardware

Mandrake Linux can handle a large number of hardware devices, and the list is far too long to be quoted in its entirety here. Nevertheless, some of the steps described in this chapter will help you to find out if your hardware is compatible and configure some of the problematic devices.

You may consult an up-to-date list of supported hardware on our web-site (<http://www.mandrakelinux.com/en/hardware.php3>)

Warning

Legal disclaimer: The **Mandrake Linux** Supported Hardware List contains information about hardware devices that have been tested and/or have been reported to function properly with **Mandrake Linux**. Due to the wide variety of system configurations, **MandrakeSoft** cannot guarantee that a specific device will work properly on your system.

3.3.1. What's not supported

Some types of hardware cannot presently be handled by *GNU/Linux*, either because the support is still in an experimental stage, because nobody has written a driver for the devices in question, or because it has been decided for valid reasons that they cannot be supported. For example:

- *winmodems*, also called controller-less modems or software modems. Support for these peripherals is currently very sparse. Drivers do exist, but are binary only and for a limited range of kernel versions. The difference between a "hardware" modem and a *winmodem* is that a *winmodem* cannot function without a special driver which emulates a large number of a hardware modem's functions. You can communicate with a hardware modem by sending it a series of commands, this cannot be done with a *winmodem* without special drivers (this also explains why *GNU/Linux* does not need drivers for external modems: it only gives access to the serial port, with an external program sending the commands). If your modem is PCI, it is most likely, but not necessarily, a software modem...

If your modem is a PCI modem, as the root user look at the output of `cat /proc/pci`. This will tell you the I/O port and the IRQ of the device. Then use the `setserial` command (for our example, the I/O address is 0xb400 and the IRQ is 10) as follows:

```
setserial /dev/ttyS3 port 0xb400 irq 10 UART 16550A
```

Then see if you can query your modem using `minicom` or `kppp`. If it doesn't work, you may have a software modem. If it does work, create the file `/etc/rc.d/rc.setserial` and place the appropriate `setserial` command line in it.

A recent project is trying to make software modems work under *GNU/Linux*. If you happen to have this type of hardware in your machine, you may have a look at Lin-modems (<http://linmodems.org/>) and modems and win-modems (<http://www.o2.net/~gromitkc/winmodem.html>).

- USB devices: support for USB is now extensive. Most peripherals are fully supported, you can get the list of supported hardware at Linux-USB device (<http://www.qbik.ch/usb/devices/>).

3.3.2. Collecting information on your hardware

GNU/Linux' hardware resources are now much better supported and, apart from the devices mentioned in the previous section, you can expect the rest of your hardware to work correctly.

Some types of devices are still problematic with *GNU/Linux*, especially ISA *plug'n'play* devices: but you can use *Windows* to discover their working configuration. If you intend to install **Mandrake Linux** while leaving a version of *Windows* on your machine, you can ignore this section at first, and then come back here if you experience problems under *GNU/Linux*.

For this, boot under *Windows*, right-click on the My Computer icon, choose Properties, select the tab Device Manager, then select View devices by connection (figure 3-4).

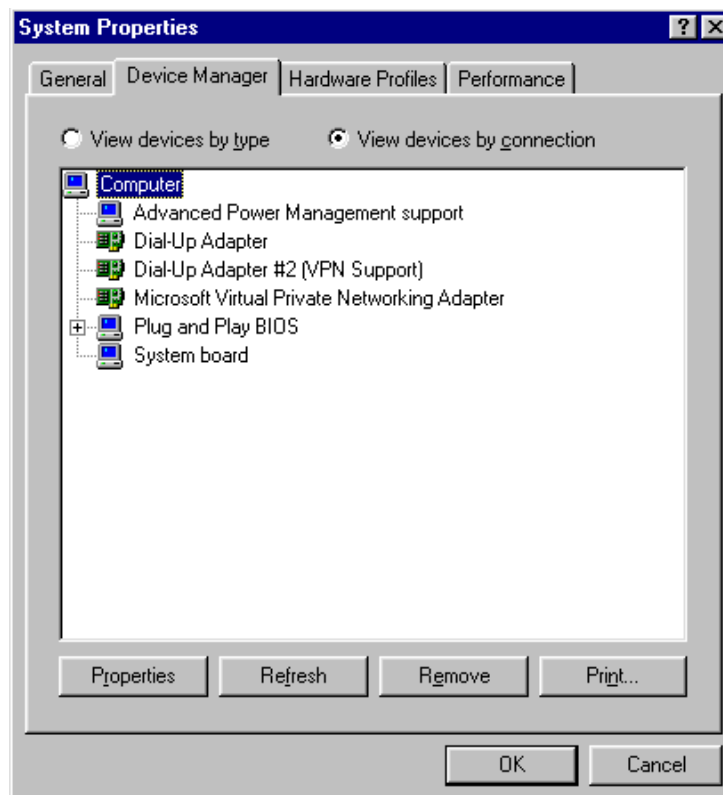


Figure 3-4. The Windows Device Manager

If you have ISA devices, you can view them when you bring up the directory structure (figure 3-5).

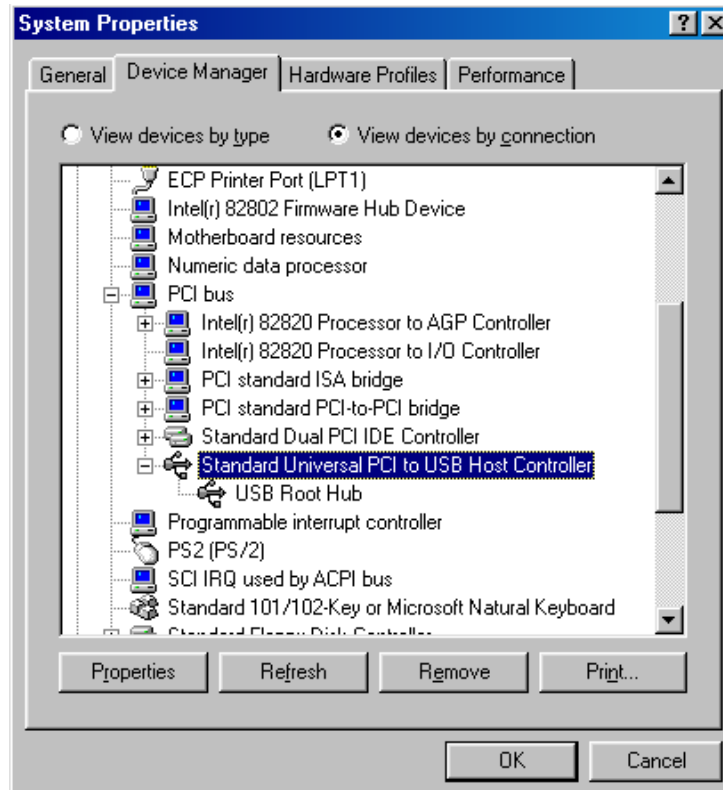


Figure 3-5. Directory structure for ISA Bus

You will be able to find the ISA devices in this part of the directory structure. If you only see one entry for the data port, ignore it. If there are devices present, and if there is no conflict, you can then select and click on the button Properties (figure 3-6).

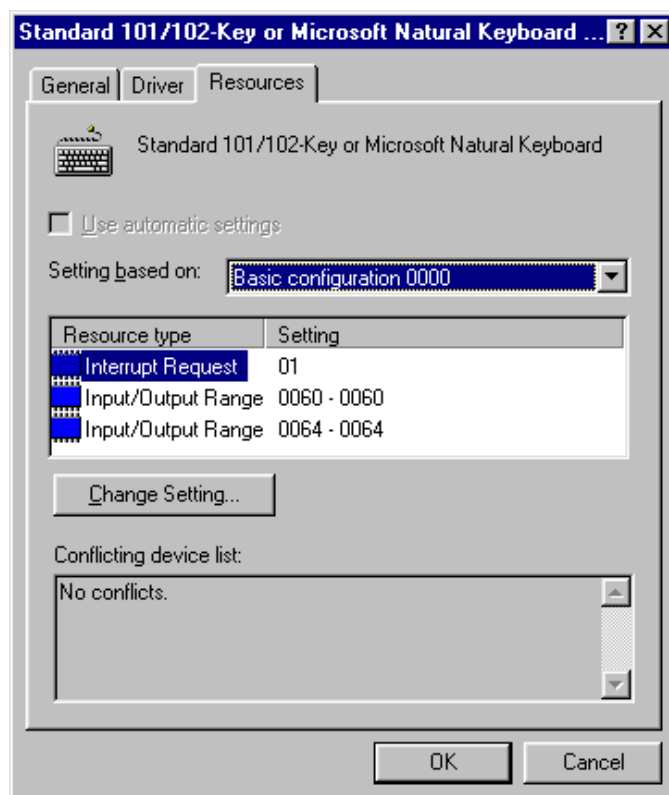


Figure 3-6. Keyboard resources

You will have to write down the base address(es) (Input/output range) used, together with the IRQ(s). Also write down the DMA channel(s) used for the sound cards.

If your ISA card is *plug'n'play*, you will have to configure your *BIOS* properly, as instructed in the preceding section. But even if you do so, *GNU/Linux* may not find it. However, you can disable *plug'n'play* for the particular device. If the manufacturer has provided one, you should have a disk containing a program enabling you to reset the card to non-*plug'n'play*. The manufacturer provides a setup program which does this. If you have this sort of program (or can get it from the manufacturer's web-site), start it up, set the device's configuration with the parameters used by *Windows* and disable the *plug'n'play*. After that, *GNU/Linux* can then see it during the installation process.

Don't worry too much about sound cards, though. They are in most cases automagically configured, and you can re-configure them after installation and not during installation. See chapter *Configuring your hardware*, page 128.

Chapter 4. Disks and partitions

If you are reading this chapter, it means that you have decided on an expert installation of **Mandrake Linux**, which will require you to understand partitioning. Or you are simply curious and that's OK too. :-)

This section provides a complete description of the *PC* partitioning scheme. It is only useful to you if you intend to manually set the partitions of your hard drive. If you do not understand what we are talking about, you may safely ignore this section; the installer can do everything automatically for you.

4.1. Structure of a hard disk

Basically, a disk is physically divided into little sectors. A sequence of sectors can form a partition. Roughly speaking, you can create as many partitions as you wish; each of them is regarded as a single hard drive.

4.1.1. Sectors

To simplify, a hard disk is merely a sequence of *sectors*. A sector is the smallest data unit on a hard disk, and its size is typically 512 bytes. The sectors on a hard disk of (*n*) sectors are numbered from (0) to (*n*-1).

4.1.2. Partitions

The use of multiple partitions enables you to create many virtual hard drives inside your real physical drive. This has many advantages:

- Different operating systems use different disk structures (called file systems); this is the case for *Windows* and *GNU/Linux*. Having multiple partitions on a hard drives allows you to install various operating systems on the same physical drive.
- For performance reasons, a single operating system may prefer different drives with different file-systems on them because they are used for completely different things. It is the case for *GNU/Linux* which requires a second partition called "swap" and used for virtual memory.
- Finally, it may prove very useful to separate the different parts of your OS into different partitions, even if they use the same file-system. In the most simple configuration, you can split your files into two partitions, one for your personal data, and another for programs. This allows you to update your OS, completely erasing the programs partition while keeping the data partition safe.
- Physical errors on a hard disk are generally located at adjacent sectors and not scattered among the disk. Distributing your files into different partitions will limit data loss in case of hard disk physical damages.

Normally the partition type specifies the file-system which the partition is supposed to contain. Each operating system recognizes some of the types, but not others. See the chapter about *GNU/Linux* file-systems in the *Reference manual* for more information.

4.1.3. Define the structure of your disk

4.1.3.1. The most simple

Is where you have just two partitions: one for the swap space, the other for the files¹.

Tip: The rule of thumb for the swap partition size is to choose double of the size of your RAM memory. However for large memory configurations (>512 MB), this rule is not valid, and smaller sizes are preferred.

1. the file-system used currently for *GNU/Linux* files is called `ext2`

4.1.3.2. Another common scheme

is, as we previously discussed, when you choose to separate data from programs. To be even more efficient, one usually defines a third partition called the “root” and labelled as /. It will handle the programs necessary to startup your system and the basic maintenance programs.

So we could define four partitions:

Swap

A partition of type swap, which is roughly equivalent to twice the memory size.

Root: /

It is the most important partition. It not only contains the most important data and programs for the system, but will also act as a mount point for other partitions.

The needs of the root partition in terms of size are very limited, 300MB is generally enough. However, if you plan to install commercial applications, that usually reside in /opt, you will need to increase that size. Another option is to create a separate partition for /opt.

Static data: /usr

Most packages install most of their executables and data files under /usr. The advantage of having it on a separate partition is that you can share it easily with other machines over a network.

The size depends on the packages you wish to install. It varies from 100MB for a lightweight installation to several GB for a full install. A compromise of one or two GB (depending on your disk size) generally suffices.

Home directories: /home

Here are kept the personal directories for all the users hosted on the machine. It also generally hosts the directories served by HTTP or FTP (respectively for web browsing and file transfers).

Here the partition size depends on the number of users (or services) hosted and their needs.

A variant to that solution is to not use a separate partition for the /usr files: /usr will simply be a directory inside the root / partition.

4.1.3.3. Exotic configurations

When setting-up your machine for specific uses such as a web server or a firewall, the needs are radically different than for a standard desktop machine. For example, a FTP server will probably need a big separate partition for /var/ftp, while the /usr will be relatively small. For such situations, you are encouraged to carefully think about your needs before even beginning the install.

Tip: If after a period of time using your system, you notice that you should have chosen different sizes and partitions, it is possible to resize most partitions without the need to reinstall your system, it is even generally data-safe. See *Managing your partitions*, page 137.

With a little bit of practice, you will even be able to move a crowded partition to another brand new hard drive. But that's another story...

4.2. Conventions for naming the disks and partitions

GNU/Linux uses a logical method for naming partitions. First, when numbering the partitions, it ignores the file-system type of each partition that you may have. Second, it names the partitions according to the disk on which they are located. This is how the disks are named:

- the primary master and primary slave IDE devices (whether they be hard disks, CD-ROM drives or anything else) are called `/dev/hda` and `/dev/hdb` respectively;
- on the secondary interface, they are called `/dev/hdc` and `/dev/hdd` for the master and slave respectively;
- if your computer contains other IDE interfaces (for example, the IDE interface present in some Sound-Blaster cards), the disks will then be called `/dev/hde`, `/dev/hdf`, etc.
- SCSI disks are called `/dev/sda`, `/dev/sdb`, etc., in the order of their appearance on the SCSI chain (depending on the increasing *IDs*). The SCSI CD-ROM drives are called `/dev/scd0`, `/dev/scd1`, always in the order of their appearance on the SCSI chain.

The partitions are named after the disk on which they are found, in the following way (in the example, we have used the case of partitions on a primary master IDE disk):

- the primary (or extended) partitions are named `/dev/hda1` through `/dev/hda4` when present;
- logical partitions, if any, are named `/dev/hda5`, `/dev/hda6`, etc. in their order of appearance in the table of logical partitions.

So *GNU/Linux* will name the partitions as follows:

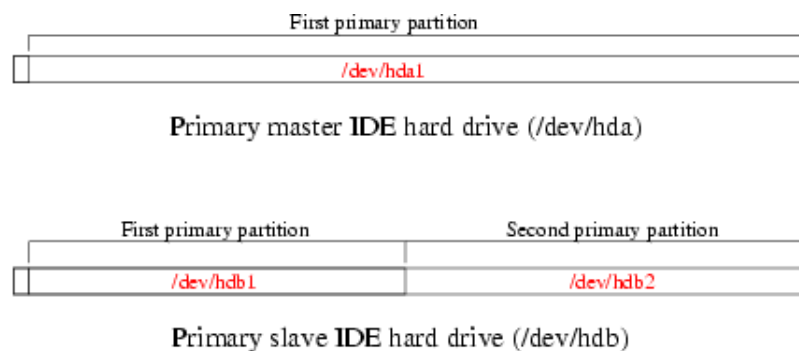


Figure 4-1. First example of partition naming under GNU/Linux

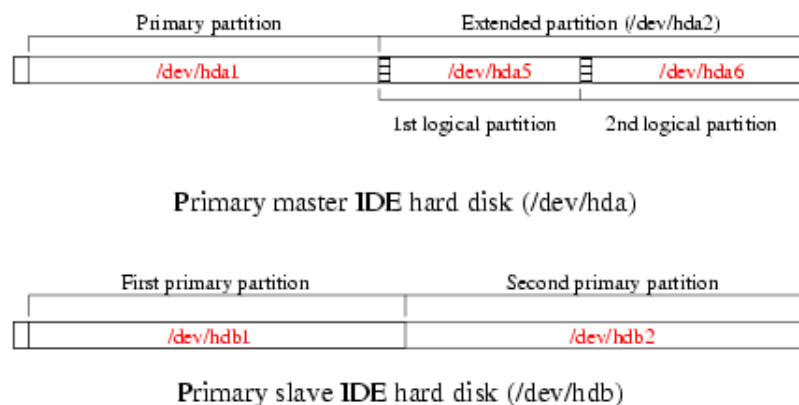


Figure 4-2. Second example of partition naming under GNU/Linux

So now you can cite the name the various partitions and hard disks when you need to manipulate them. You will also see that *GNU/Linux* names the partitions even if it does not know how to manage them initially (it ignores the fact that they are not native *GNU/Linux* partitions).

Note: For current 2.4 kernels, **Mandrake Linux** uses the Linux Devfs (Device File System) (<http://www.atnf.csiro.au/~rgooch/linux/docs/devfs.html>). This system ensures full compatibility with the scheme described above, but this compatibility may disappear in the future. Actually, each device is dynamically added to the system as soon as it becomes available or needed.

For example, the first IDE hard drive now becomes:

```
[root@localhost root]# ll /dev/hda
lr-xr-xr-x  1 root    root          32 Sep  2 17:14 /dev/hda
              -> ide/host0/bus0/target0/lun0/disc
```

Chapter 5. Installation with DrakX

5.1. Introduction to the Mandrake Linux Installer

DrakX is **Mandrake Linux**'s installation program. It possesses a graphical user interface and is very easy to use. It allows you to go back at any time to previous configuration steps, even choosing the type of installation that you want (depending upon your skill level).

Warning

In order to ensure the installation occurs in the best possible conditions, make sure to plug in and power-on all the devices which will be used on your computer: printer, modem, scanner, etc. Hence, *DrakX* will automatically detect and configure them.



Figure 5-1. Very First Installation Welcome Screen

When you begin the installation – either from a CD-ROM or a floppy disk, you will first get a screen which offers help (figure 5-1). Doing nothing will simply begin the installation in normal mode. Pressing F1 will open a help screen (figure 5-2). Here are some useful options to choose from:

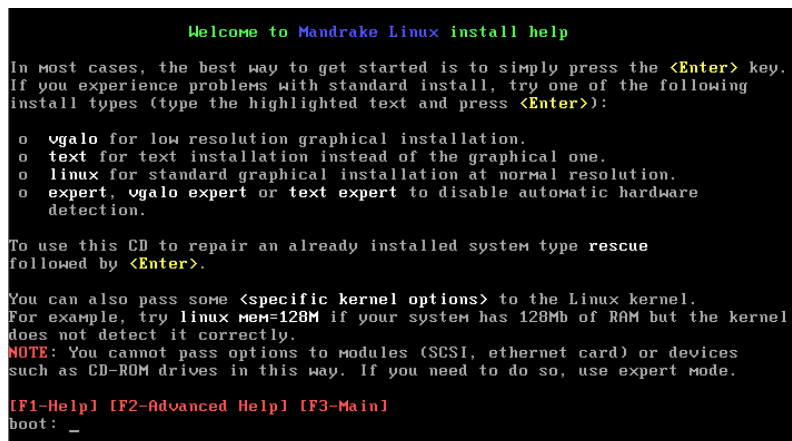


Figure 5-2. Available Installation Options

- **vga10**: if you tried a normal installation and could not get the normal graphical screens as shown below, you may try the installation in low resolution, simply by issuing **vga10** at the prompt presented here.
- **text**: if your video card is really old, and graphical installation does not work at all, you can always choose the text mode installation.

- **expert mode:** in some rare cases, hardware detection may freeze your computer. Should that happen, use this mode to prevent it from happening. However, you will need to provide hardware parameters by hand. expert is an option to the previous modes (or linux, the common mode).
- **kernel options:** you can pass on these command-line parameters to the installation kernel. It is particularly useful for machines on which the installation program cannot determine the amount of memory installed. Then, you just need to specify it manually here as an option to the installation modes with `mem=xxxM`. For example, to start the installation in normal mode with a computer having 256 MB of memory, issue at the command line:

```
boot: linux mem=256M
```

On the left, you can see the various installation steps. Depending on the installation's progress level, some stages may or may not be available. If they are available, they will be highlighted when you move the mouse cursor over them.

The buttons representing the various stages can also be of different colors:

- **red:** this installation phase has not yet been carried out;
- **orange:** the installation stage which is currently being processed;
- **green:** this installation stage has already been configured. However, nothing stops you from going back to it if you need or want to.

This guide assumes that you are performing a standard, step-by-step installation, as shown in the following screenshots.

5.2. Choosing your Language

The first step is to choose your preferred language.



Please choose your preferred language for installation and system usage.

Clicking on the Advanced button will allow you to select other languages to be installed on your workstation. Selecting other languages will install the language-specific files for system documentation and applications. For example, if you will host users from Spain on your machine, select English as the main language in the tree view and in the Advanced section click on the grey star corresponding to Spanish|Spain.

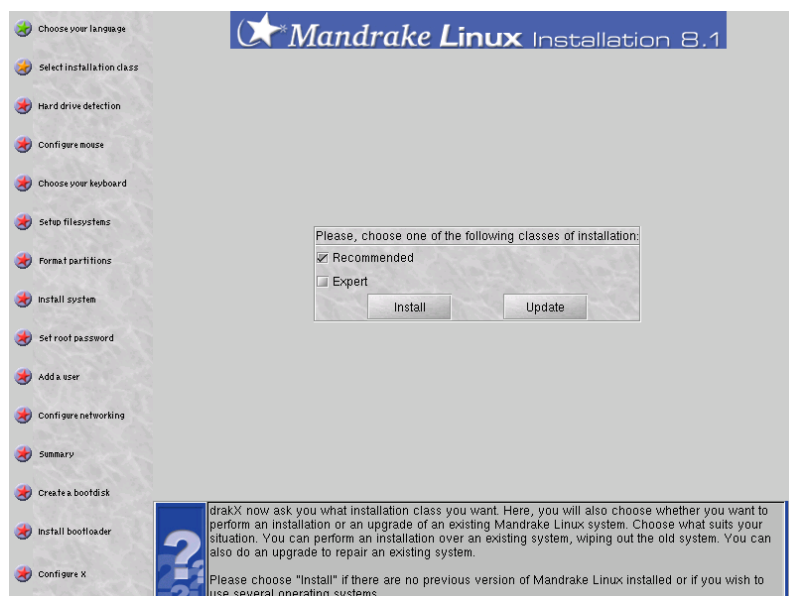
Note that multiple languages may be installed. Once you have selected any additional locales click the OK button to continue.

5.3. License Terms of the Distribution



Before continuing you should read carefully the terms of the license. It covers the whole Mandrake Linux distribution, and if you do not agree with all the terms in it, click on the Refuse button which will immediately terminate the installation. To continue with the installation, click the Accept button.

5.4. Installation Class



DrakX now needs to know if you want to perform a default (Recommended) installation or if you want to have greater control (Expert). You also have the choice of performing a new install or an upgrade of an existing Mandrake Linux system. Clicking Install will completely wipe out the old system. Select Upgrade if you are upgrading or repairing an existing system.

Please choose Install if there are no previous version of Mandrake Linux installed or if you wish to boot between various operating systems.

Please choose Update if you wish to update or repair an already installed version of Mandrake Linux.

Depending on your knowledge of GNU/Linux, please choose one of the following to install or update your Mandrake Linux operating system:

- Recommended: choose this if you have never installed a GNU/Linux operating system. The installation will be very easy and you will only be asked a few questions.

- Expert: if you have a good knowledge of GNU/Linux, you can choose this installation class. The expert installation will allow you to perform a highly customized installation. Answering some of the questions can be difficult if you do not have a good knowledge of GNU/Linux so do not choose this unless you know what you are doing.

This manual will document the full Expert installation class. If you choose the Recommended class, simply ignore the steps presented here which only apply to the Expert installation class.

5.5. Disk Detection and Configuration

Note: This step is generally ignored for Recommended mode.



DrakX is now detecting any IDE devices present in your computer. It will also scan for one or more PCI SCSI card(s) on your system. If a SCSI card is found *DrakX* will automatically install the appropriate driver.

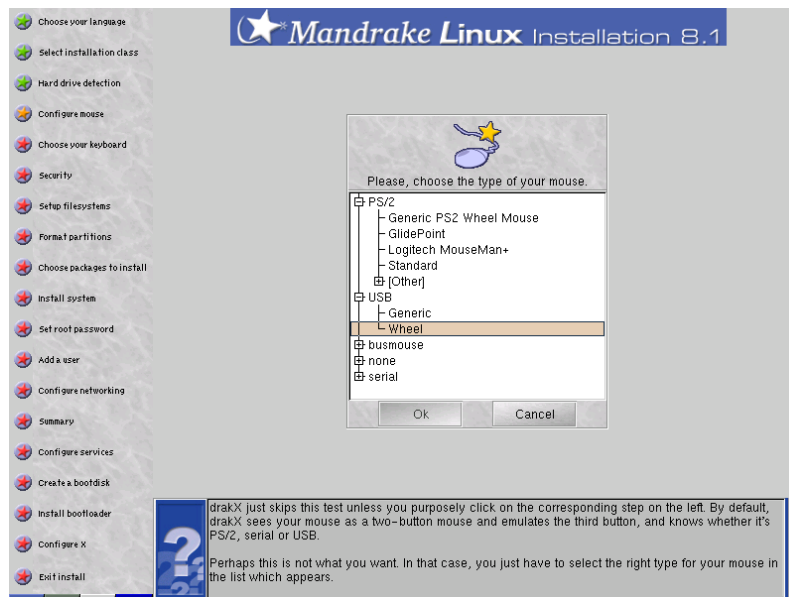
Because hardware detection will sometimes not detect a piece of hardware *DrakX* will ask you to confirm if a PCI SCSI card is present. Click Yes if you know that there is a SCSI card installed in your machine. You will be presented a list of SCSI cards to choose from. Click No if you have no SCSI hardware. If you are unsure you can check the list of hardware detected in your machine by selecting See hardware info and clicking OK. Examine the list of hardware and then click on the OK button to return to the SCSI interface question.

If you have to manually specify your adapter, *DrakX* will ask if you want to specify options for it. You should allow *DrakX* to probe the hardware for the card-specific options that the hardware needs to initialize. This usually works well.

If *DrakX* is not able to probe for the options that need to be passed, you will need to manually provide options to the driver. Please review the *User Guide* (chapter 3, section "Collecting information on your hardware") for hints on retrieving the parameters required from hardware documentation, from the manufacturer's web site (if you have Internet access) or from Microsoft Windows (if you used this hardware with Windows on your system).

5.6. Configuring your Mouse

Note: This step is generally ignored for Recommended mode.



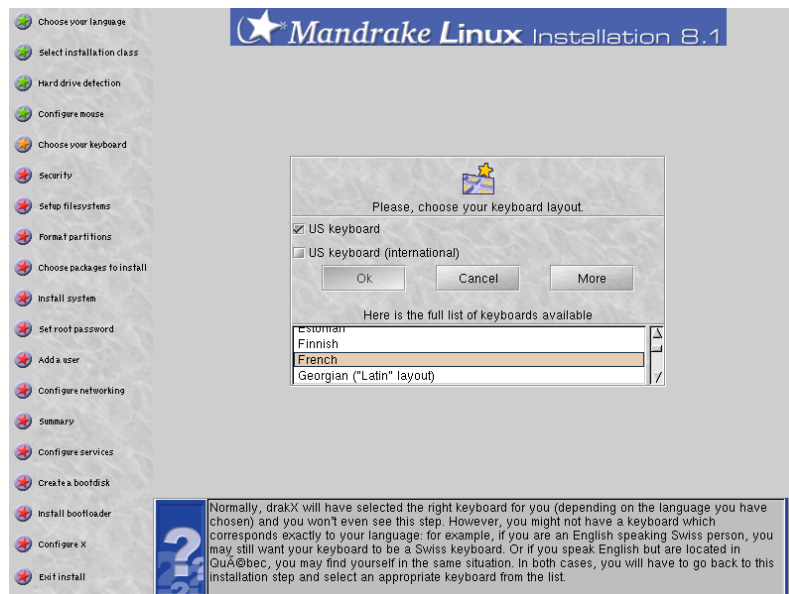
By default, *DrakX* assumes you have a two-button mouse and will set it up for third-button emulation. *DrakX* will automatically know whether it is a PS/2, serial or USB mouse.

If you wish to specify a different type of mouse select the appropriate type from the list provided.

If you choose a mouse other than the default you will be presented with a mouse test screen. Use the buttons and wheel to verify that the settings are good. If the mouse is not working correctly press the space bar or RETURN to "Cancel" and choose again.

5.7. Configuring the Keyboard

Note: This step is generally ignored for Recommended mode.



Normally, *DrakX* selects the right keyboard for you (depending on the language you have chosen) and you will not even see this step. However, you might not have a keyboard that corresponds exactly to your language: for example, if you are an English speaking Swiss person, you may still want your keyboard to be a Swiss keyboard. Or if you speak English but are located in Québec, you may find yourself in the same situation. In both cases, you will have to go back to this installation step and select an appropriate keyboard from the list.

Click on the More button to be presented with the complete list of supported keyboards.

5.8. Security Level

Note: This step is generally ignored for Recommended mode.



At this point, it is time to choose the security level desired for the machine. As a rule of thumb, the more exposed the machine is, and the more the data stored in it is crucial, the higher the security level should be. However, a higher security level is generally obtained at the expenses of easiness of use. Refer to the MSEC chapter of the *Reference Manual* to get more information about the meaning of these levels.

If you do not know what to choose, keep the default option.

5.9. Selecting the Mount Points



At this point you need to choose where on your hard drive to install your Mandrake Linux operating system. If your hard drive is empty or if an existing operating system is using all the space available on it, you will need to partition it. Basically, partitioning a hard drive consists of logically dividing it to create space to install your new Mandrake Linux system.

Because the effects of the partitioning process are usually irreversible, partitioning can be intimidating and stressful if you are an inexperienced user. Fortunately, there is a wizard which simplifies this process. Before beginning, please consult the manual and take your time.

If you are running the install in Expert mode, you will enter DiskDrake, the Mandrake Linux partitioning tool, which allows you to fine-tune your partitions. See the DiskDrake chapter of the manual. From the installation interface, you can use the wizards as described here by clicking the Wizard button of the dialog.

If partitions have already been defined, either from a previous installation or from another partitioning tool, simply select those to install your Linux system.

If partitions are not defined, you will need to create them using the wizard. Depending on your hard drive configuration, several options are available:

- Use free space: this option will simply lead to an automatic partitioning of your blank drive(s). You will not be prompted further.
- Use existing partition: the wizard has detected one or more existing Linux partitions on your hard drive. If you want to use them, choose this option.
- Use the free space on the Windows partition: if Microsoft Windows is installed on your hard drive and takes all the space available on it, you have to create free space for Linux data. To do that, you can delete your Microsoft Windows partition and data (see "Erase entire disk" or "Expert mode" solutions) or resize your Microsoft Windows partition. Resizing can be performed without the loss of any data. This solution is recommended if you want to use both Mandrake Linux and Microsoft Windows on same computer.

Before choosing this option, please understand that after this procedure, the size of your Microsoft Windows partition will be smaller than at the present time. You will have less free space under Microsoft Windows to store your data or to install new software.

- Erase entire disk: if you want to delete all data and all partitions present on your hard drive and replace them with your new Mandrake Linux system, choose this option. Be careful with this solution because you will not be able to revert your choice after confirmation.

Warning

If you choose this option, **all** data on your disk will be lost.

- Remove Windows: this will simply erase everything on the drive and begin fresh, partitioning everything from scratch. **All** data on your disk will be lost.

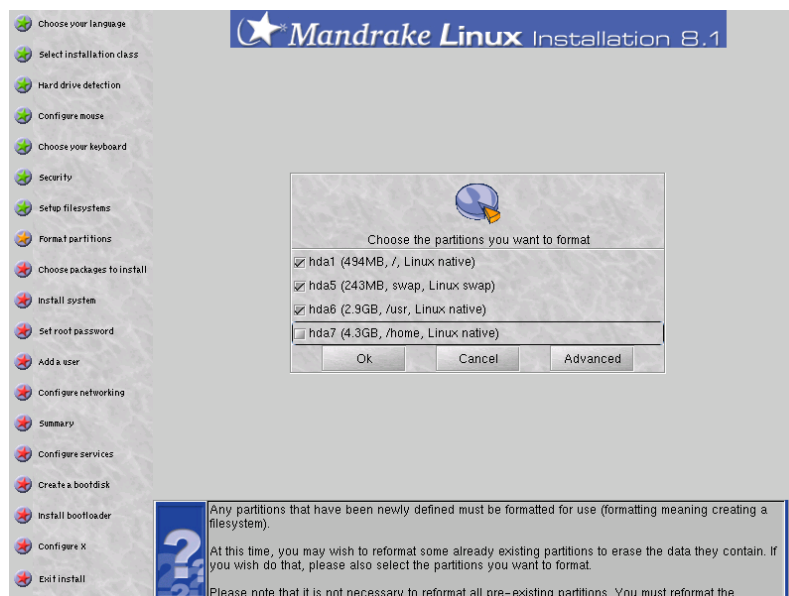
Warning

If you choose this option, **all** data on your disk will be lost.

- Expert mode: choose this option if you want to manually partition your hard drive. Be careful - it is a powerful but dangerous choice. You can very easily lose all your data. Hence, do not choose this unless you know what you are doing.

5.10. Choose Partitions to Be Formatted

Note: This step is generally ignored for Recommended mode.



Any partitions that have been newly defined must be formatted for use (formatting means creating a file system).

At this time, you may wish to reformat some already existing partitions to erase any data they contain. If you wish to do that, please select those partitions as well.

Please note that it is not necessary to reformat all pre-existing partitions. You must reformat the partitions containing the operating system (such as `/`, `/usr` or `/var`) but you do not have to reformat partitions containing data that you wish to keep (typically `/home`).

Please be careful when selecting partitions. After formatting, all data on the selected partitions will be deleted and you will not be able to recover any of them.

Click on OK when you are ready to format partitions.

Click on Cancel if you want to choose another partition for your new Mandrake Linux operating system installation.

Click on Advanced if you wish to select partitions that will be checked for bad blocks on the disc.

5.11. Choose Packages to Install



It is now time to specify which programs you wish to install on your system. There are thousands of packages available for Mandrake Linux, and you are not supposed to know them all by heart.

If you are performing a standard installation from CDROM, you will first be asked to specify the CDs you currently have (in Expert mode only). Check the CD labels and highlight the boxes corresponding to the CDs you have available for installation. Click OK when you are ready to continue.

Packages are sorted in groups corresponding to a particular use of your machine. The groups themselves are sorted into four sections:

1. Workstation: if you plan to use your machine as a workstation, select one or more of the corresponding groups.
2. Development: if the machine is to be used for programming, choose the desired group(s).
3. Server: if the machine is intended to be a server, you will be able to select which of the most common services you wish to see installed on the machine.
4. Graphical Environment: finally, this is where you will choose your preferred graphical environment. At least one must be selected if you want to have a graphical workstation!

Tip: Moving the mouse cursor over a group name will display a short explanatory text about that group.

You can check the Individual package selection box, which is useful if you are familiar with the packages being offered or if you want to have total control over what will be installed.

If you started the installation in "Update" mode, you can unselect all groups to avoid installing any new package. This is useful for repairing or updating an existing system.



Finally, depending on your choice of whether or not to select individual packages, you will be presented a tree containing all packages classified by groups and subgroups. While browsing the tree, you can select entire groups, subgroups, or individual packages.

Whenever you select a package on the tree, a description appears on the right. When your selection is finished, click the Install button which will then launch the installation process. Depending on the speed of your hardware and the number of packages that need to be installed, it may take a while to complete the process. A time to complete estimate is displayed on the screen to help you gauge if there is sufficient time to enjoy a cup of coffee.

Warning

If a server package has been selected either intentionally or because it was part of a whole group, you will be asked to confirm that you really want those servers to be installed. Under Mandrake Linux, any installed servers are started by default at boot time. Even if they are safe and have no known issues at the time the distribution was shipped, it may happen that security holes are discovered after this version of Mandrake Linux was finalized. If you do not know what a particular service is supposed to do or why it is being installed, then click No. Clicking Yes will install the listed services and they will be started automatically by default.

Note: The Automatic dependencies option simply disables the warning dialog which appears whenever the installer automatically selects a package. This occurs because it has determined that it needs to satisfy a dependency with another package in order to successfully complete the installation.

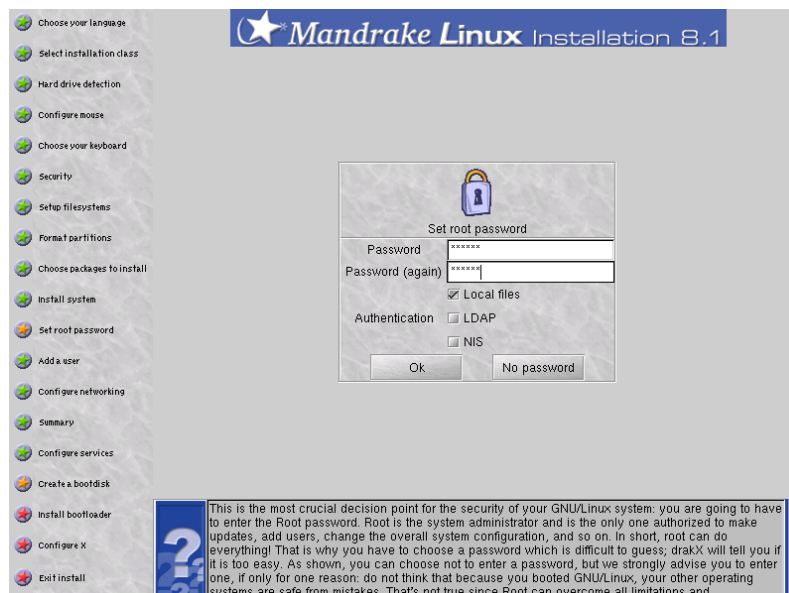
Note: The tiny floppy disc icon at the bottom of the list allows to load the packages list chosen during a previous installation. Clicking on this icon will ask you to insert a floppy disk previously created at the end of another installation. See the second tip of last step on how to create such a floppy.

5.12. Multiple CD-ROM Installation



The Mandrake Linux installation is spread out over several CDROMs. *DrakX* knows if a selected package is located on another CDROM and will eject the current CD and ask you to insert a different one as required.

5.13. Root Password



This is the most crucial decision point for the security of your GNU/Linux system: you have to enter the root password. root is the system administrator and is the only one authorized to make updates, add users, change

the overall system configuration, and so on. In short, root can do everything! That is why you must choose a password that is difficult to guess - *DrakX* will tell you if it is too easy. As you can see, you can choose not to enter a password, but we strongly advise you against this if only for one reason: do not think that because you booted GNU/Linux that your other operating systems are safe from mistakes. Since root can overcome all limitations and unintentionally erase all data on partitions by carelessly accessing the partitions themselves, it is important for it to be difficult to become root.

The password should be a mixture of alphanumeric characters and at least 8 characters long. Never write down the root password - it makes it too easy to compromise a system.

However, please do not make the password too long or complicated because you must be able to remember it without too much effort.

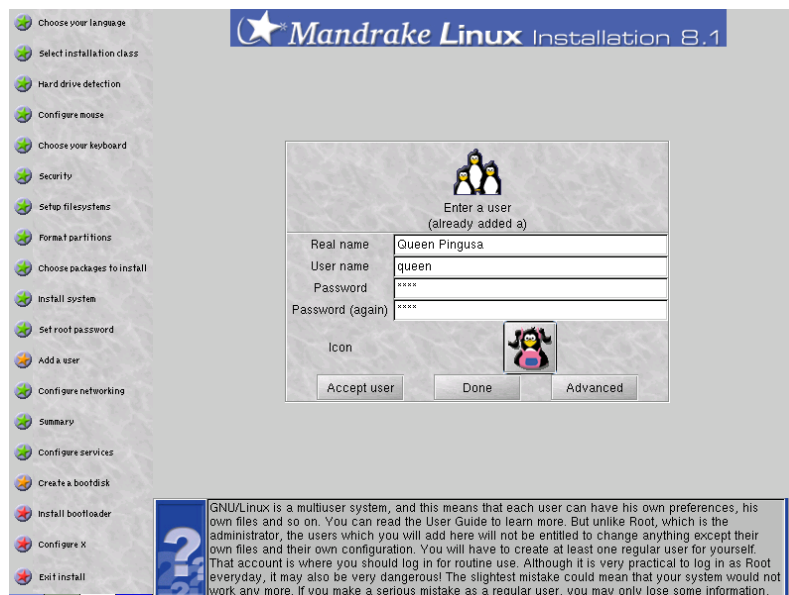
The password will not be displayed on screen as you type it in. Hence, you will have to type the password twice to reduce the chance of a typing error. If you do happen to make the same typing error twice, this "incorrect" password will have to be used the first time you connect.

In expert mode, you will be asked if you will be connecting to an authentication server, like NIS or LDAP.

If your network uses LDAP (or NIS) protocol for authentication, select LDAP (or NIS) as authentication. If you do not know, ask your network administrator.

If your computer is not connected to any administrated network, you will want to choose Local files for authentication.

5.14. Adding a User



GNU/Linux is a multiuser system, and this means that each user can have his own preferences, his own files and so on. You can read the *User Guide* to learn more. But unlike root, which is the administrator, the users you will add here will not be entitled to change anything except their own files and their own configuration. You will have to create at least one regular user for yourself. That account is where you should log in for routine use. Although it is very practical to log in as root everyday, it may also be very dangerous! The slightest mistake could mean that your system would not work any more. If you make a serious mistake as a regular user, you may only lose some information, but not the entire system.

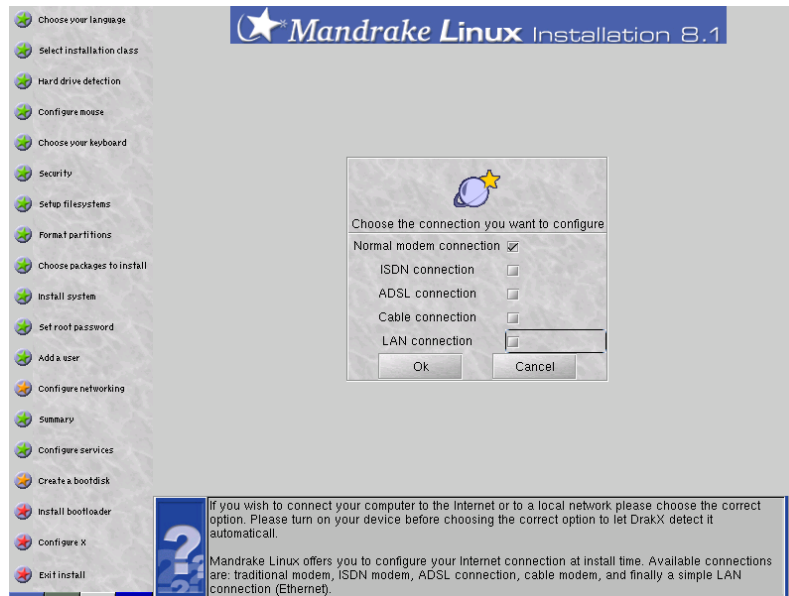
First, you have to enter your real name. This is not mandatory, of course - as you can actually enter whatever you want. *DrakX* will then take the first word you have entered in the box and will bring it over to the User name. This is the name this particular user will use to log into the system. You can change it. You then have to enter a password here. A non-privileged (regular) user's password is not as crucial as that of root from a security point of view, but that is no reason to neglect it - after all, **your** files are at risk.

If you click on Accept user, you can then add as many as you want. Add a user for each one of your friends: your father or your sister, for example. When you finish adding all the users you want, select Done.

Tip: Clicking the Advanced button allows you to change the default shell for that user (*bash* by default).

5.15. Configure your Network

Note: This step is generally ignored for Recommended mode.



If you wish to connect your computer to the Internet or to a local network, please choose the correct option. Please turn on your device before choosing the correct option to let *DrakX* detect it automatically.

Mandrake Linux proposes the configuration of an Internet connection at installation time. Available connections are: traditional modem, ISDN modem, ADSL connection, cable modem, and finally a simple LAN connection (Ethernet).

Here, we will not detail each configuration. Simply make sure that you have all the parameters from your Internet Service Provider or system administrator.

You can consult the manual chapter about Internet connections for details about the configuration, or simply wait until your system is installed and use the program described there to configure your connection.

If you wish to configure the network later after installation or if you have finished configuring your network connection, click Cancel.

5.16. Check Miscellaneous Parameters

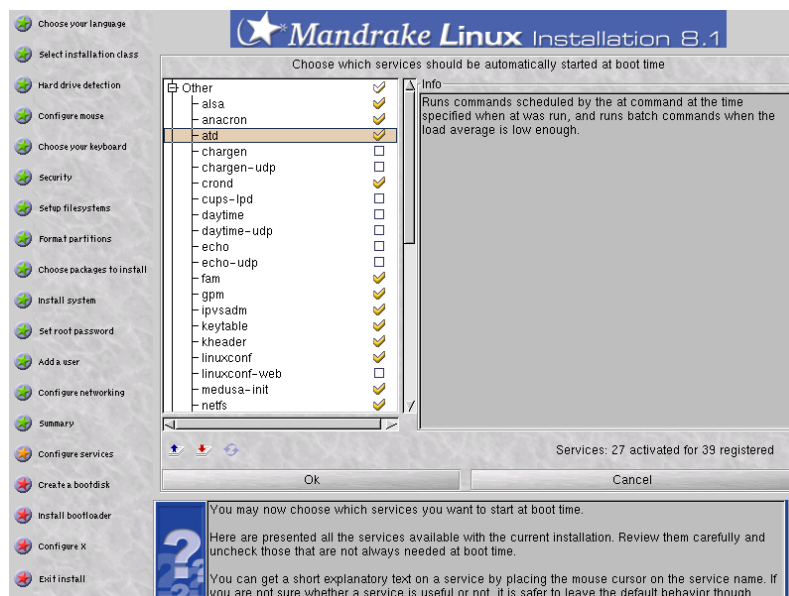


Here are presented various parameters concerning your machine. Depending on your installed hardware, you may - or not, see the following entries:

- Mouse: check the current mouse configuration and click on the button to change it if necessary.
- Keyboard: check the current keyboard map configuration and click on the button to change that if necessary.
- Timezone: *DrakX*, by default, guesses your time zone from the language you have chosen. But here again, as for the choice of a keyboard, you may not be in the country for which the chosen language should correspond. Hence, you may need to click on the Timezone button in order to configure the clock according to the time zone you are in.
- Printer: clicking on the No Printer button will open the printer configuration wizard.
- Sound card: if a sound card is detected on your system, it is displayed here. No modification possible at installation time.
- TV card: if a TV card is detected on your system, it is displayed here. No modification possible at installation time.
- ISDN card: if an ISDN card is detected on your system, it is displayed here. You can click on the button to change the parameters associated to it.

5.17. Selecting Available Services at Boot Time

Note: This step is generally ignored for Recommended mode.



You may now choose which services you wish to start at boot time.

Here are presented all the services available with the current installation. Review them carefully and uncheck those which are not always needed at boot time.

Tip: You can get a short explanatory text about a service by selecting a specific service. However, if you are not sure whether a service is useful or not, it is safer to leave the default behavior.

At this stage, be very careful if you intend to use your machine as a server: you will probably not want to start any services that you do not need. Please remember that several services can be dangerous if they are enabled on a server. In general, select only the services you really need.

5.18. Boot Disk

Note: This step is generally ignored for Recommended mode.



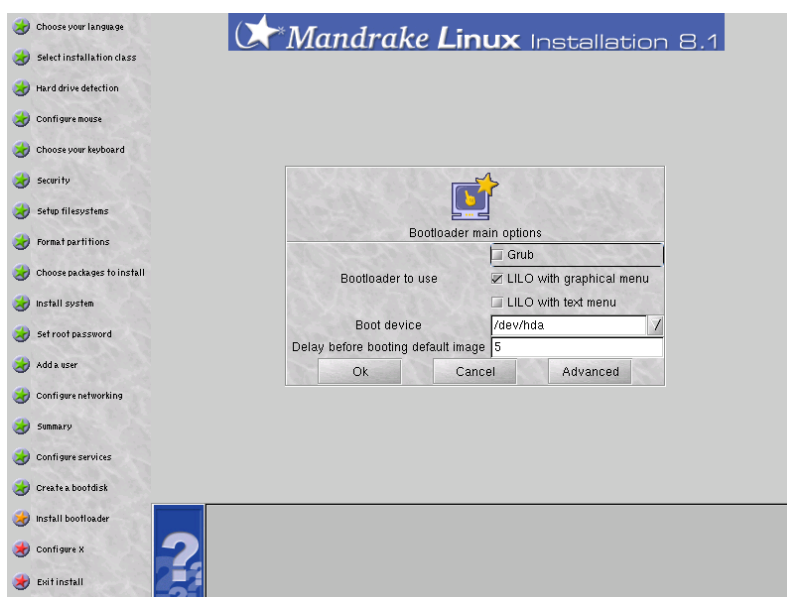
The Mandrake Linux CDROM has a built-in rescue mode. You can access it by booting from the CDROM, press the F1 key at boot and type `rescue` at the prompt. But in case your computer cannot boot from the CDROM, you **should** come back to this step for help in at least two situations:

- when installing the boot loader, *DrakX* will rewrite the boot sector (MBR) of your main disk (unless you are using another boot manager) so that you can start up with either Windows or GNU/Linux (assuming you have Windows in your system). If you need to reinstall Windows, the Microsoft install process will rewrite the boot sector, and then you will not be able to start GNU/Linux!
- if a problem arises and you cannot start up GNU/Linux from the hard disk, this floppy disk will be the only means of starting up GNU/Linux. It contains a fair number of system tools for restoring a system, which has crashed due to a power failure, an unfortunate typing error, a typo in a password, or any other reason.

When you click on this step, you will be asked to enter a disk inside the drive. The floppy disk you will insert must be empty or contain data which you do not need. You will not have to format it since *DrakX* will rewrite the whole disk.

5.19. Installing a Boot Loader

Note: This step is generally ignored for Recommended mode.



LILO and GRUB are boot loaders for GNU/Linux. This stage, normally, is totally automated. In fact, *DrakX* analyzes the disk boot sector and acts accordingly, depending on what it finds here:

- if Windows boot sector is found, it will replace it with a GRUB/LILO boot sector. Hence, you will be able to load either GNU/Linux or another OS;
- if a GRUB or LILO boot sector is found, it will replace it with a new one;

If in doubt, *DrakX* will display a dialog with various options.

- Boot loader to use: you have three choices:
 1. LILO with graphical menu: if you prefer LILO with its graphical interface.
 2. GRUB: if you prefer GRUB (text menu).
 3. LILO with text menu: if you prefer LILO with its text menu interface.
- Boot device: in most cases, you will not change the default (`/dev/hda`), but if you prefer, the boot loader can be installed on the second hard drive (`/dev/hdb`), or even on a floppy disk (`/dev/fd0`).
- Delay before booting the default image: when rebooting the computer, this is the delay granted to the user to choose - in the boot loader menu, another boot entry than the default one.

Warning

Beware that if you choose not to install a boot loader (by selecting Cancel here), you must ensure that you have a way to boot your Mandrake Linux system! Also be sure you know what you do before changing any of the options.

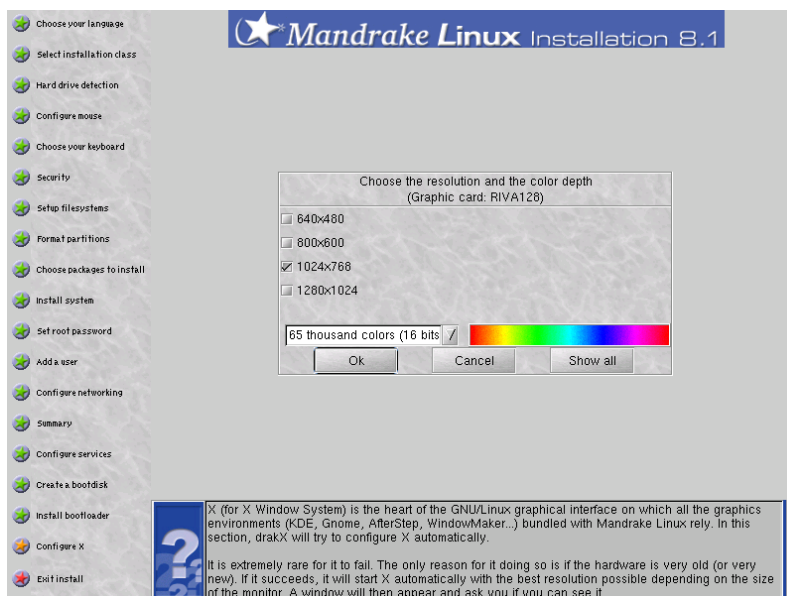
Tip: Clicking the Advanced button in this dialog will offer many advanced options, which are reserved to the expert user.

Mandrake Linux installs its own boot loader, which will let you boot either GNU/Linux or any other operating systems which you have on your system.

If there is another operating system installed on your machine, it will be automatically added to the boot menu. Here, you can choose to fine-tune the existing options. Double-clicking on an existing entry allows you to change its parameters or remove it; Add creates a new entry; and Done goes on to the next installation step.

5.20. Configuring X, the Graphical Server

Note: This step is generally ignored for Recommended mode.

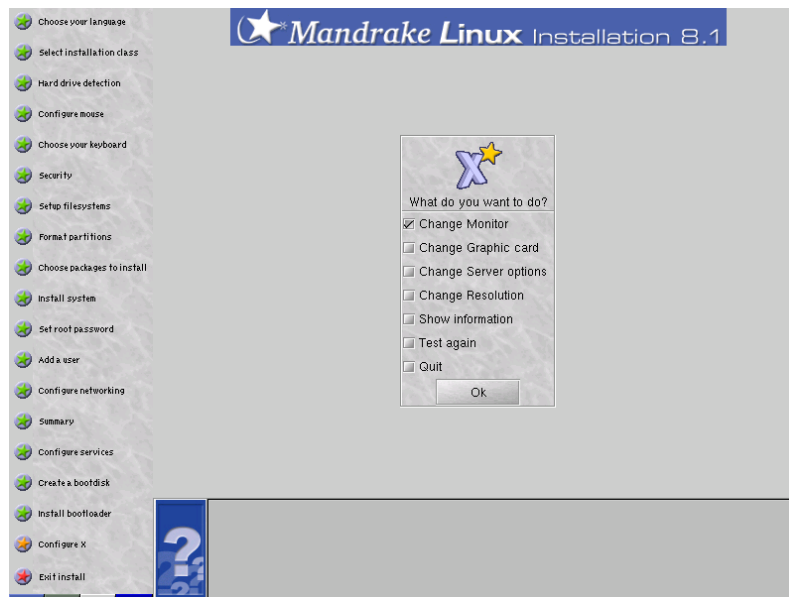


X (for X Window System) is the heart of the GNU/Linux graphical interface on which all the graphics environments (KDE, Gnome, AfterStep, WindowMaker...) bundled with Mandrake Linux rely. In this section, *DrakX* will try to configure X automatically.

It is extremely rare for it to fail, unless the hardware is very old (or very new). If it succeeds, it will start X automatically with the best resolution possible depending on the size of the monitor. A window will then appear and ask you if you can see it.

If you are doing an Expert install, you will enter the X configuration wizard. See the corresponding section of the manual for more information about this wizard.

If you can see the message and answer Yes, then *DrakX* will proceed to the next step. If you cannot see the message, it simply means that the configuration was wrong and the test will automatically end after 10 seconds, restoring the screen.



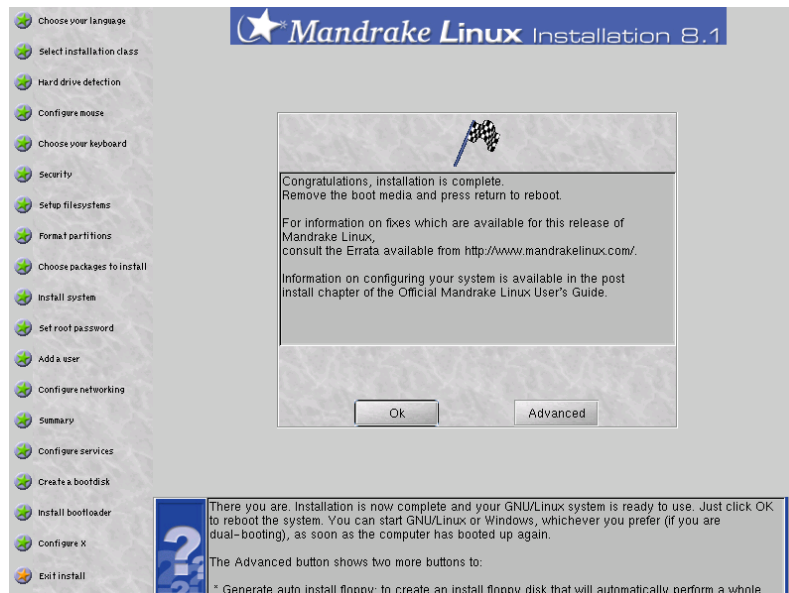
The first time you try the X configuration, you may not be very satisfied with its display (screen is too small, shifted left or right...). Hence, even if X starts up correctly, *DrakX* then asks you if the configuration suits you. It will also propose to change it by displaying a list of valid modes it could find, asking you to select one.

As a last resort, if you still cannot get X to work, choose Change graphics card, select Unlisted card, and when prompted on which server you want, choose FBDev. This is a failsafe option which works with any modern graphics card. Then choose Test again to be sure.



Finally, you will be asked whether you want to see the graphical interface at boot. Note this question will be asked even if you chose not to test the configuration. Obviously, you want to answer No if your machine is to act as a server, or if you were not successful in getting the display configured.

5.21. It's Finished!



There you are. Installation is now complete and your GNU/Linux system is ready to use. Just click OK to reboot the system. You can start GNU/Linux or Windows, whichever you prefer (if you are dual-booting), as soon as the computer has booted up again.

Tip: The Advanced button (in Expert mode only) shows two more buttons to:

1. generate auto-install floppy: to create an installation floppy disk which will automatically perform a whole installation without the help of an operator, similar to the installation you just configured.

Note that two different options are available after clicking the button:

- Replay. This is a partially automated install as the partitioning step (and only this one) remains interactive.
- Automated. Fully automated install: **the hard disk is completely rewritten, all data is lost.**

This feature is very handy when installing a great number of similar machines. See the Auto install (http://www.mandrakelinux.com/drakx/auto_inst.html) section at our web site.

2. Save packages selection¹: saves the packages selection as made previously. Then, when doing another installation, insert the floppy inside the driver and run the installation going to the help screen by pressing on the **F1** key, and by issuing `linux defcfg="floppy"`.

5.22. How to Uninstall Linux

Well, that is not recommended, as you may regret it soon, but, that's your right :-)

The process is made in two simple steps:

1. delete all partitions on your hard drive and replace them by a single FAT partition through *Managing your partitions*, page 137>;
2. uninstall the boot loader (generally *grub*) from the Master Boot Record (MBR). To do so, boot under *DOS* and run the `fdisk /mbr` command.

If you have another OS, consult its documentation to know how to do same thing efficiently.

Goodbye, and thank you for using **Mandrake Linux :-)**

1. You need a FAT-formatted floppy (to create one under GNU/Linux, type `mformat a:`)

Chapter 6. Connecting for the First Time with Mandrake Linux

In this chapter, we will discuss the tasks one should perform just after a system is installed. In fact, those tasks should be regarded as part of the installation process.

We assume that you are already logged in the system; either because you chose auto-login during the installation (*Adding a User*, page 25), or because you manually logged in. If you do not know how to log in, please read first *Beginning and Ending your Session*, page 39.

6.1. Mandrake First Time Wizard

When a user logs into a newly installed **Mandrake Linux** system for the first time, a one-time configuration wizard automatically shows up. This wizard will help you to configure three points:

1. **Desktop Theme.** This step enables you to choose both the visual appearance of your graphical environment and the way you interact with it, so that it better fits your expectations.
2. **Internet Configuration.** If you did not do it during the installation, the wizard saw at “*Configuring Internet Connections*”, page 109 will be launched to help you configure your Internet connection.
3. **Mandrake Registration.** This wizard guides you in the process of registering yourself as a **Mandrake Linux** user. This step requires you to provide personal information; please read carefully the “Mandrake Privacy Policy” shown before you are asked for the data.

After you completed this step, you will receive a confirmation *e-mail*. See also next section: *MandrakeOnline Services*, page 33.

6.2. MandrakeOnline Services

MandrakeOnline is a new service brought to you by **MandrakeSoft**. What is it? A subscription offer bringing you extra services in order to make your **Mandrake Linux** even easier to work with.

This offer consists of three main features:

1. **E-mail Alerts.** According to the packages and their version installed on your machine, you will receive *e-mail* alerts about potential security threats and security updates. The solution brought directly to you in minimum time ensures maximum security for your system.
2. **Rebates on MandrakeExpert** (<http://www.mandrakeexpert.com/>). Subscribing to *MandrakeOnline* automatically entitles you to rebates on the purchase of support incidents.
3. **E-mail Alias.** Finally you are given a cool *e-mail* alias of the form <YourName@mandrakeonline.net>, pointing to the *e-mail* address you provided at subscription time.

Launch the *MandrakeOnline* wizard from the icon on the desktop to discover this service for a free trial period.

This wizard first asks you if you already registered your account during the *Mandrake First Time Wizard*, page 33. If not, check the box and follow the subscription process. You will then be asked to log in, using the information provided by the confirmation *e-mail* received soon after the subscription is completed. When this is done, your machine’s configuration information is sent to our servers, after you agree of course.

6.3. Other Optional Configurations

If your machine is meant to always be connected to the Internet or even quite often, you should really consider installing a firewall on it. Consult the chapter “*Securing Your Machine*”, page 115 for an easy and efficient firewall setup.

In case you wish to use this brand new **Mandrake Linux** system as a LAN (Local Area Network) server, you can launch the server wizards detailed in the *Reference manual*. They will guide you through the configuration of many useful services for your LAN hosts.

Chapter 7. Introduction to the User Guide

Welcome, and thank you for using **Mandrake Linux**! This *User Guide* will help you use your **Mandrake Linux** system on a daily basis. Here is a summary of each chapter of the *User Guide*.

The first chapter, “*Linux for Beginners*”, page 39, is aimed at those of you who have no or very little knowledge about *GNU/Linux*. It is really basic level information. If you have previously used a *GNU/Linux* system with a graphical interface, just ignore this chapter.

The next chapter is dedicated to the use of *KDE*, the default graphical environment of **Mandrake Linux**. You will see that it is a powerful working environment, very intuitive and fully configurable. You will probably be amazed by what it can do.

You will then encounter a chapter on *GNOME*, another favorite graphical interface. It will guide you through its numerous features, personalization and much more.

Next is a chapter called “*Everyday Applications*”, page 71 which describes key applications such as Internet work, *StarOffice* and *GIMP*.

Reading further, you will find chapters dedicated to system configuration tools especially designed for you by **Mandrake Linux**. These tools are organized into four chapters: first, how to configure an Internet connection, then *Bastille* tools used to secure your machine. After that many little graphical tools all accessible from **MandrakeSoft's Control Center**. Finally, we will explain how to manage your software packages.

The next section is devoted to documentation. Apart from introducing you to the documentation available on your *GNU/Linux* system, we provide some useful links to Internet sites.

Finally as appendices, you will find the texts of the *GPL* and the *GFDL*, which are the licenses for most *GNU/Linux* applications and for this manual respectively. At the end of the book, you will find an extensive glossary.

II. A new world

Chapter 8. Linux for Beginners

8.1. Introduction

This chapter is written for inexperienced beginners. If you know how to create an icon on the desktop, skip ahead to the next chapter. If not, read on :-)

If we took for granted that all users know how to operate *Windows*, it would have been easier to write this chapter. Instead, we decided to write everything from scratch. Hence, any user, experienced or not (who barely knows how to move the mouse pointer across a screen), can launch programs, properly close them and shut down the computer. After reading this chapter, all subsequent ones will make much more sense to you.

We assume that you are sitting in front of a running **Mandrake Linux** computer which, when turned on, automatically displays the graphic login screen. The latter shows a little box in the middle of your screen and holds two fields tagged as login and password. This is what you should see if you previously followed the *Installation Guide* procedure.

Given the large number of graphical interfaces available under *GNU/Linux*, it is impossible to document them all. We will discuss two of the most popular ones: *KDE* and *GNOME*.

8.2. Beginning and Ending your Session

It is important to understand the terms “to log in” and “to log out” since it is unlikely you will find these terms in a typical dictionary, though you might find them in a cyber dictionary. To log in means the computer system you are trying to utilize will recognize you as a user. After logging in, the system takes a number of actions in order to give you access to the system’s resources. By logging in, you start a so-called “session”.

To log out means you are telling the system you no longer need to use it. Therefore, the resources you were using are made available for someone else.

Note: Although these definitions are valid within the scope of this chapter, they are oversimplified and technically wrong. As you read the following chapters, you will better understand these concepts.

8.2.1. Identify Yourself

At this point, you need to fully comprehend both login and password notions. The former identifies you (it is generally your name or nickname) while the latter is your **secret** so no one accesses your computer and grossly fools your “hacking companion”. If you carefully conducted your installation, you already have your login and password. If this is not the case, you must ask the people whom installed your computer to help you out urgently!

Enough chit-chat – let’s act! You are currently in front of the following display (figure 8-1). Of course, it appears slightly different as the user names displayed under the penguin *icons* are probably different.

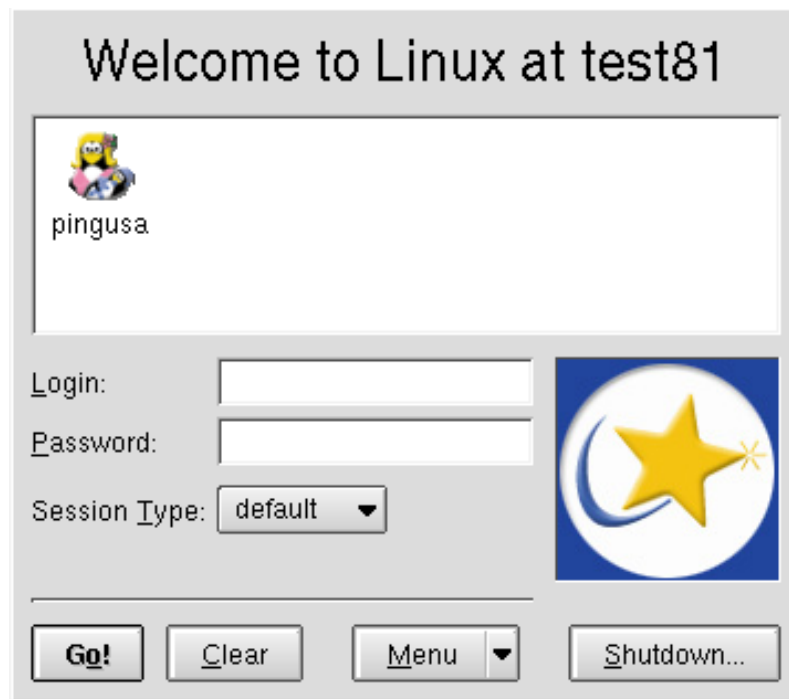


Figure 8-1. The Login Window

The login procedure takes place in four simple steps:

1. Place the mouse pointer on the icon corresponding to your login name and press the left button of your mouse. ¹.
2. Verify that your login name correctly appears in the login field just below and now type your secret password.

Warning

You will notice that the letters do not appear while you type them in the password field; they are replaced by little stars (*), so nobody behind you can see your secret password. This is a common computer behavior whenever you enter a password. Because of this, make sure you type the correct keys since you can not check them visually. Remember: passwords are case sensitive, which means that if your password is `Very_Secret` and you type `Very_secret`, your access will be denied!

3. This step is optional and allows you to choose a specific graphical environment. Basically, the latter defines the appearance of your screen and the way you interact with the system. We encourage you to try various graphical environments so you can choose the one you prefer.

As you can see in the Session Type field, the default environment is *KDE*. You can change it by simply choosing another one from the *pull-down menu*. However, we advise you to start with either *KDE* or *GNOME*.

1. This action will be abbreviated as “click” from now on. If you need to click on the mouse’s right button, we will refer to a “right-click” and so on.

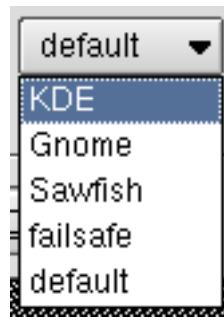


Figure 8-2. The Pull-Down Session Type List

4. Finally, simply click on the Go! button to begin your session. Be patient! It may take a few seconds before your desktop is ready to be used.

Note: If it is the first time you log-in onto a freshly installed machine, you will see the *Mandrake First Time* wizard. See *Mandrake First Time Wizard*, page 33 for more information.

8.2.2. Close your Session

If all went well, you are now in front of your real working environment. In this section, we will not describe the various components any further since this will be done later in the following chapters. Depending on the environment you previously chose, you will see of one of the following screens:

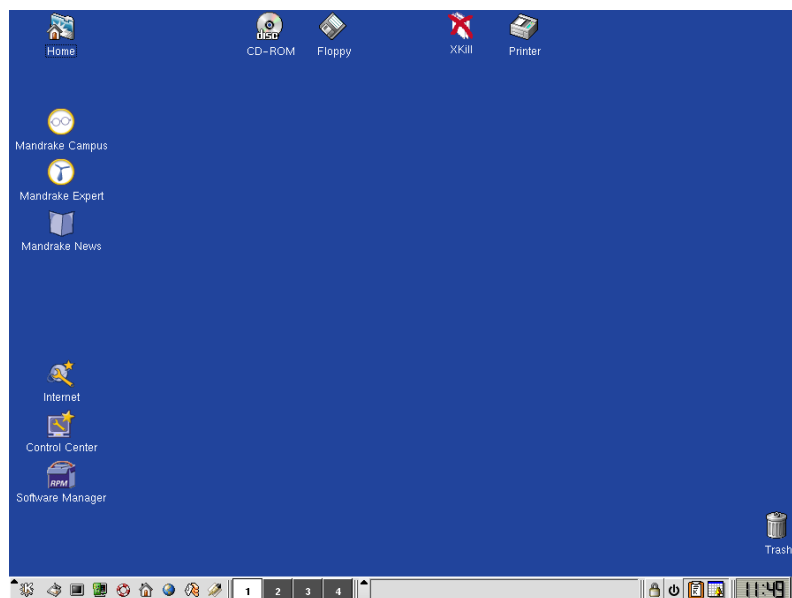


Figure 8-3. First Time KDE

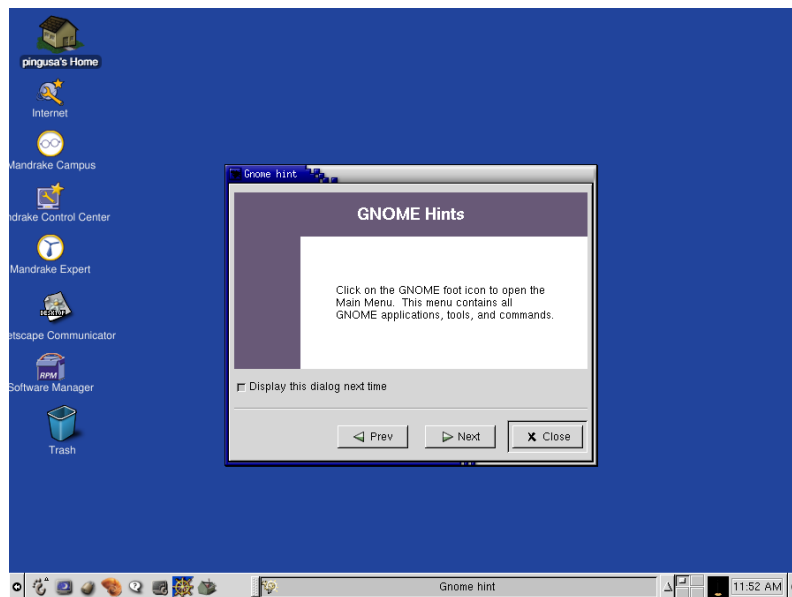


Figure 8-4. First Time GNOME

You may now explore your brand new toy: enjoy!

When you are finally done or simply tired, do not forget to tell the system you are leaving, that is to **log out**. This will free the resources you were using, making them available to other users.

Logging out can be carried out in many ways in both *KDE* and *GNOME*. You can use the K/foot menu, log out icons, and right-clicking pop-up menus (only in *KDE*). Let's see the different procedures:

Under *KDE*

- Using the K menu.

Click on the K menu and select Logout. A window like the one shown below will appear, asking you for confirmation.



Figure 8-5. KDE Log Out Confirmation

Tip: If you want to have the applications you were using automatically opened the next time you log in, just check the Restore session when logging in next time check box. Please note that not all applications support this feature.

- Right-clicking on the desktop.

You can right-click on the desktop in an “empty” place and a pop-up menu, like the one shown below, will appear.

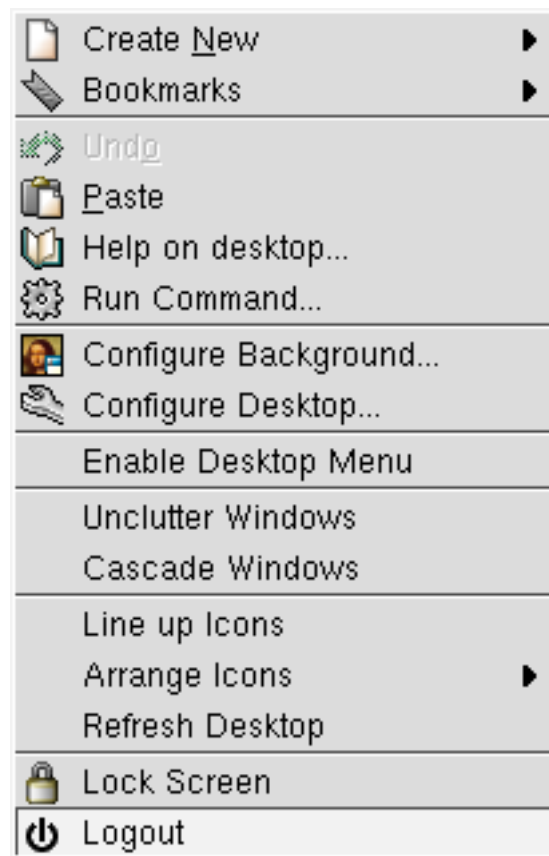


Figure 8-6. Logging Out Using the Pop-up Menu under KDE

Just click Logout and the confirmation window will appear.

- Using the log out icon.

You can click on the log out icon on the task bar in order to log out. As always, the confirmation window will appear.

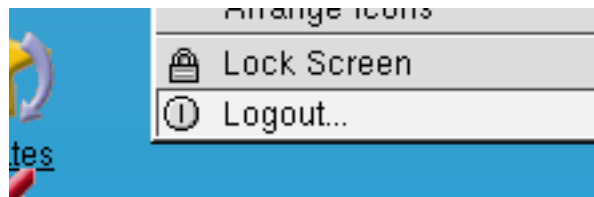


Figure 8-7. KDE's Log Out Icon.

Under *GNOME*

- Using the Foot menu.

Click on the foot menu and select Log out. A window will pop up asking you for confirmation before logging out.

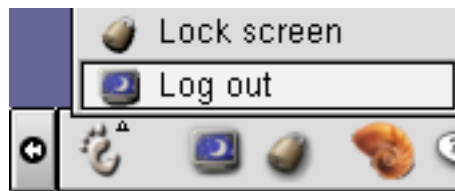


Figure 8-8. GNOME's Log Out Menu

- Using the log out icon.

Click on the log out icon shown in figure 8-9. A window will pop up asking you to confirm before logging out.



Figure 8-9. GNOME's Log Out Icon

After clicking on the icon, the screen will shade and a little box will pop up with options. Simply ignore the messages and options for now and click the Yes button.

8.2.3. Some Notes About Security

It is important to assimilate a few security notions in regards with your **Mandrake Linux** box. Some of them might seem a little bit obvious to some people, but here they are:

- Do not write down your password on any piece of paper (a post-it for example) that can be seen by anyone.
- Always make sure your password is complex enough to keep people from guessing it, but simple enough for you to remember it :-). Try to use a mix of numbers and letters with mixed case for your passwords.

Tip: It is a good idea to think of a sentence you can remember easily. Then, take the first letters and/or numbers of every word in the sentence to form a password. For example, the sentence: "I was born on September 10th 1973" would make up the password: IwboS101973 which is easy to remember (hey, it is your birth date after all...) and not so easy to guess.

- When you do not want to use your computer anymore, it is better to close it completely. That is, do not just log out of it, but shut it down. This can be done using the Shutdown button in the login window. In a *Terminal*, "su" to root and then type `shutdown now -h` or `halt`.

The list above is not extensive at all. There are **many** things you can think of in order to make your system more secure. A more detailed analysis of security under **Mandrake Linux** is done in msec – Mandrake Security tools of the *Reference manual*.

8.3. Using Your Graphical Environment

This chapter introduces a few basic concepts and skills about using your computer. You may choose to use *KDE* or *GNOME* during the login process explained above.

8.3.1. Elements Displayed

On your screen are displayed many elements we will now describe.

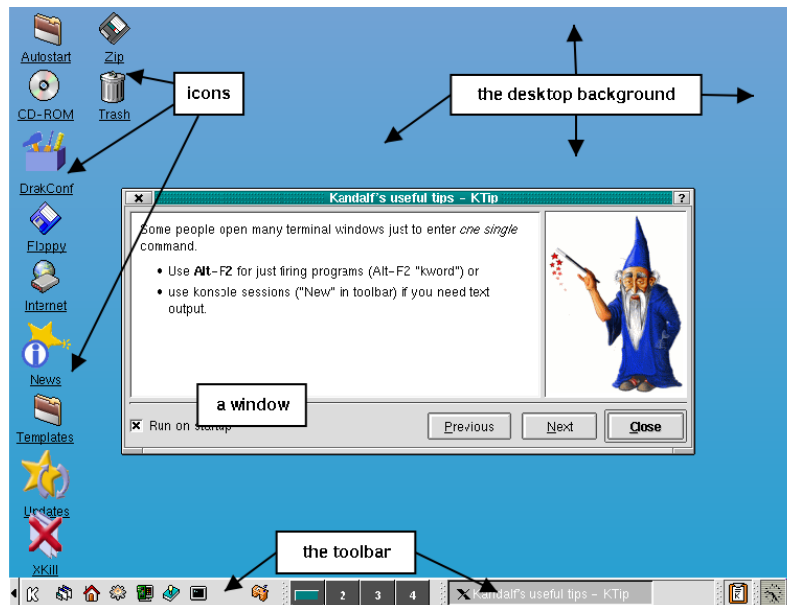


Figure 8-10. The KDE Desktop

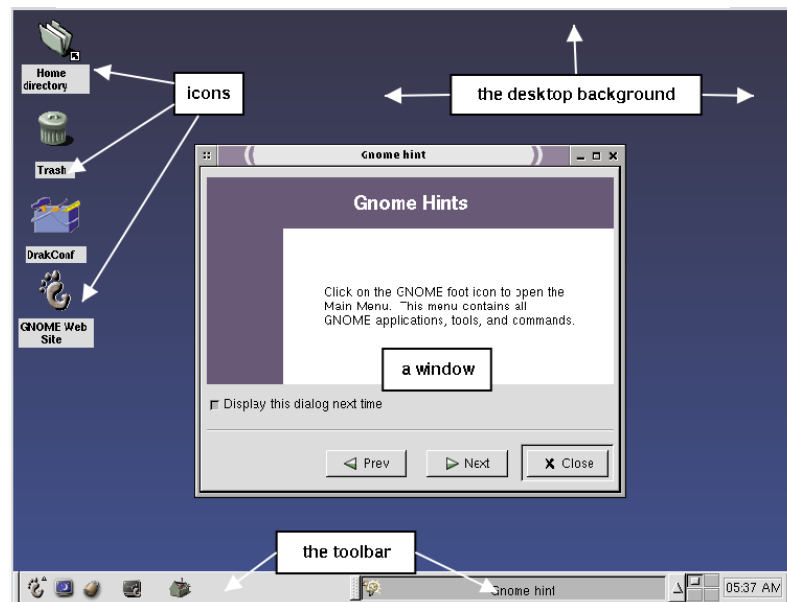


Figure 8-11. The GNOME Desktop

1. On the left of the screen are “icons”, that is little drawings usually enhanced with a short text beneath it representing the icon’s title or name. Each icon allows you to open a window, within which a program will run, for instance, a game or a window displaying personal data. In our example, the icon shown above gives you access to a configuration tool created by **MandrakeSoft**.

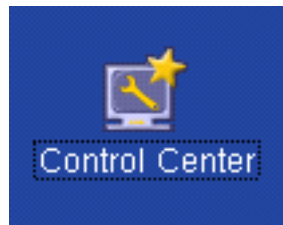


Figure 8-12. Access to Mandrake Control Center

2. In the lower part of the screen is the “tool bar”. Each icon symbolizes an application (or program). Just move your mouse cursor on one of them and leave it there for a few seconds. A yellow help balloon will appear. It describes the icon’s function. The tool bar is retractable; click on the arrow target...

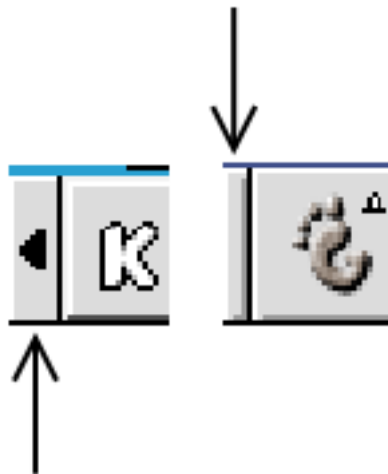


Figure 8-13. KDE and GNOME Retractable Tool Bar

... and the tool bar will automatically shrink. This makes you gain desktop space. Click again for it to reappear.

3. The icons and the tool bar are not floating on the screen: they are “stuck” on something called the “*desktop*”, also called “background” or “root window”. In a sense, the desktop is where everything you see or use lives. Bring your mouse cursor on the desktop (i.e. on “nothing”) and click on either one of your mouse buttons: a pull-down menu appears, giving you access to several functions.

Now we can start playing with all this stuff.

8.3.2. Managing Windows and Desktops

Click on the icon



on the desktop (usually, at the left side of the screen). You can hear your hard drive spinning a bit, then something like this appears:

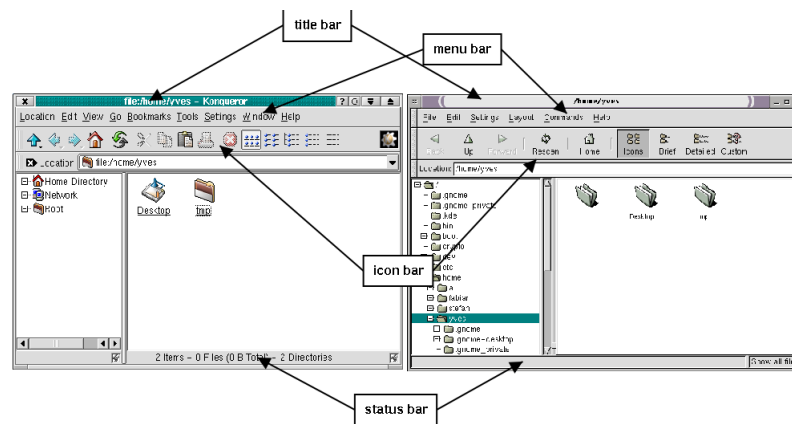


Figure 8-14. KDE and GNOME File Managers

You just launched a program (here, a file manager) which runs inside a window.

The window is composed of several parts. On the top is the “title bar”. It shows the name or title of the program you launched and possibly, the document you are working on.

It can be in two different states:

active, which means you are currently using it, while **inactive** signifies the program is still running, but you are not currently interacting with it. Usually, the active title bar is full-colored, whereas the inactive title bar is shaded or grey.

Just under the title bar is the “menu bar”. In our example, it says (from left to right) File, Edit, and so on. Click on File. A list of items appears, each of which gives you access to a program’s function. This list of items is called a “pull-down menu”.

Also under the menu bar is the “icons bar”, also called the “application’s tool bar”. It is simply one or more rows of icons, each one equivalent to an item in a pull-down menu: you can see them as a short-hand access to program features, which you would find somewhere in the menu bar.

The “status bar” usually sits at the bottom of the window. There, the running program displays informations about what the program is doing. Not all programs offer this feature, but if the one you are using does, remember to check it if you are lost...

We introduced the word *desktop*. Now, look at the tool bar at the bottom of the screen. You can see a group of four “buttons”:



Figure 8-15. Buttons for Virtual Desktops

These buttons give you access to “*virtual desktops*” which allow you to open several windows and to organize them as you wish. More on virtual desktop handling and usage in “*The Desktop According to KDE*”, page 51 (for *KDE*) and “*Using GNOME*”, page 63 (for *GNOME*).

Sometimes you may find the window you opened is not where you want on your screen. You may move it to see another window, or simply for convenience.

You can do this very simply with your mouse. Bring the mouse cursor to the window’s title bar, then press and hold the left button. Just move the mouse (while still pressing the button). The window will simply follow the movement of your mouse. This is called “dragging” the window. When you reach a position that pleases you, just release the mouse button: you just fixed the window to a new position.

You can also change the virtual desktop the window is in. This may be handy to logically organize your work by desktop.

You will need to use your mouse again. With *KDE*, right-click on the window’s title bar and a pull-down menu appears with an item named Move to. Just point to this item and a list of your virtual desktops will appear. Simply choose the virtual desktop you want your window to appear in. Easy enough *n’est-ce pas?*

With *GNOME*, right-clicking on the window's title bar gives you a pull-down menu in which is included the Send Window To item. Then, you can select to move or copy it to another desktop (previous or next).

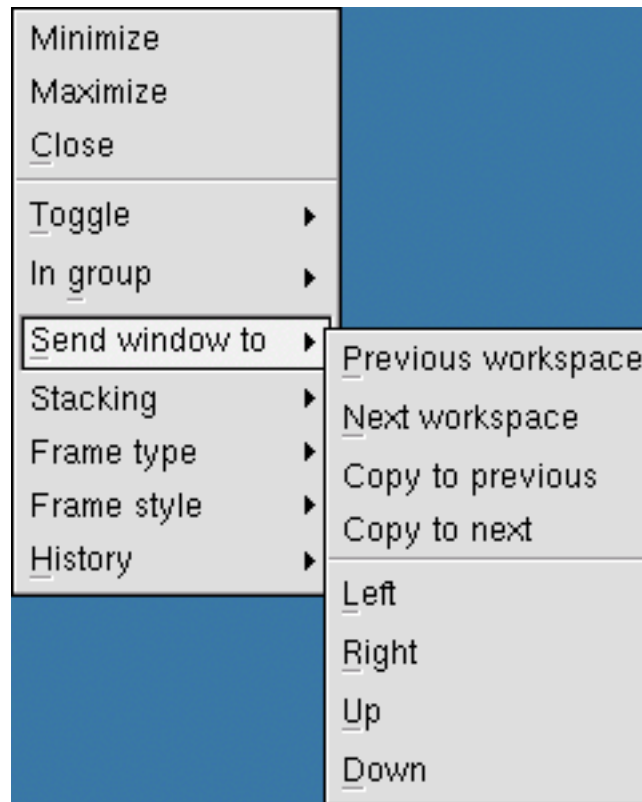


Figure 8-16. Moving a Window to Another Desktop

You will often find your window is in the right place but it is too small or too big. Click on this button in the title bar.



Figure 8-17. Maximizing Windows for KDE and GNOME

Now your window fits your screen! This operation is called “maximizing” a window. Click again on the same button to bring the window back to its original size.

On the contrary, if you want to hide your window but keep the program running, click on this button.



Figure 8-18. Minimizing Windows for KDE and GNOME

The window seems to disappear. In fact, you resized it to its minimal possible size: the icon's size. This is called “minimizing” a window. You cleared the screen-space it was using but the program is still running. You can still see it there on the “task bar”:

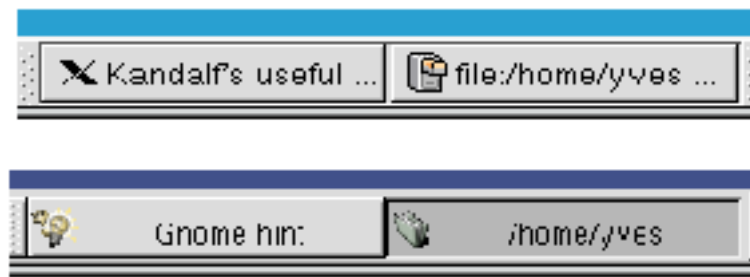


Figure 8-19. The Task Bar Under KDE and GNOME

To view the window on your desktop once more, just click on the icon associated with it.

In most cases, you do not want to maximize nor minimize the window. You just want some sort of “middle range” where you can adjust the window’s size according to your needs.

You can achieve this with your mouse and the boundary borders of the window.

Bring the mouse cursor to the right edge between the desktop and the running program. Your cursor will change to a double-arrow.



Now act like you did when moving the window, pressing the left button and keeping it pressed while moving. The window resizes and its contents rearranges. When you are satisfied with the new size, just release the mouse button.

We did this using the right-hand border of the window. You can do the same thing with the bottom, top or left-hand borders. You can even do it with the window’s corners, in which case you can resize the window in two directions simultaneously.

Note that not all windows can resize this way and usually, minimum and maximum (although rare) sizes are defined.

As a final note about the buttons in the window’s title bar, consider this:



Figure 8-20. Closing a Window for KDE and GNOME

If you click on this button, you simply stop the running program: you terminate it, you quit it. This button is called the “close button”.

8.3.3. Personalizing Your Desktop

A lot of things can be changed under both *KDE* and *GNOME* to suit your personal taste, like the background, the windows and background colors, the “themes”, the way windows and icons behave, etc.

If you are under *KDE*, please refer to *Desktop Personalization*, page 55. If you are under *GNOME* please refer to “Using *GNOME*”, page 63 for more information about how to customize your desktop.

8.3.4. Accessing Programs

You may be wondering how to access all the software you installed during the installation process. This is rather easy. On the left of the tool bar, you can see a big icon like this:



Figure 8-21. Software Menu for KDE and GNOME

Just click on this icon (slightly different whether you work with *KDE* or *GNOME*) and you will see a pull-up menu listing the programs you can run. They are organized by categories, so finding the program you are looking for is easy.

We explore a few more items in the next chapter.

Chapter 9. The Desktop According to KDE

Along with *GNOME*, *KDE* is one of the two most sophisticated graphical environments. We will now discover *KDE*'s possibilities in every-day work.

9.1. First Steps

9.1.1. Discovering your Universe

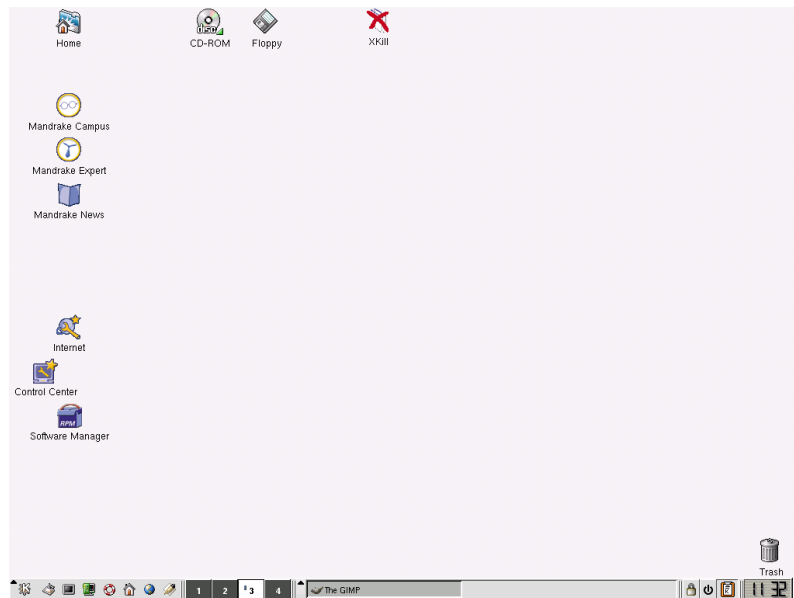


Figure 9-1. The KDE Desktop

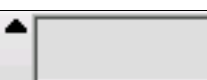
Here is the whole *KDE* (the colors are lightened for printing reasons). The tool bar will be evoked later on. Different **icons** are directly available on the desktop:

	Here you get the <i>Mandrake Control Center</i> , described at “ <i>Mandrake Control Center</i> ”, page 123.
	Configuring or monitoring your Network access (please see “ <i>Configuring Internet Connections</i> ”, page 109).
	Access to all MandrakeSoft documentation.
	Mandrake News.
	Mandrake Expert.
	Mandrake online services (Mandrake Online).
	Mandrake Store, the online MandrakeSoft shop.

	Printing configuration and control.
	Launches the file manager from your home directory (please refer to <i>Konqueror: the File Manager</i> , page 77).
	Launches the file manager in order to browse the CD-ROM's contents.
	Launches the file manager in order to browse the floppy disk's contents.
	Tool used to “kill” rapidly an application which is not working correctly.

Table 9-1. The KDE Desktop's Icons

9.1.2. The Tool Bar

	The K menu used to access the software installed on your machine.
	Click on this icon to minimize all your windows. Click again to maximize them.
	Launches the <code>konsole</code> program to use the command line (please refer to the <i>Reference manual</i> for extensive information on the use of the command line).
	Launches KDE's Control Center used to configure your environment. Please refer to <i>Changing Styles</i> , page 58.
	The lifebuoy which allows to access the integrated help system. It will be detailed in the next section.
	Another icon used to launch the file manager from your home directory.
	Launches the Konqueror web browser.
	Launches <i>KDE's</i> mail client.
	A powerful text editor which holds sophisticated features.
	These buttons allow to switch from one virtual desktop to another. Virtual desktops are detailed on <i>Manipulating Virtual Desktops</i> , page 53.
	The task bar holds a button for every application you have launched.
	This button allows to lock your keyboard and mouse. Hence, no one can use it while you are away.
	Click on this button to quit <i>KDE</i> .

	The clipboard and its parameters.
	The clock, which also displays the date. Click on it to get a complete calendar.
	Click on this button to “roll up” the tool bar on the right of the screen.

Table 9-2. The KDE Tool Bar

9.2. KDE’s Internal Help

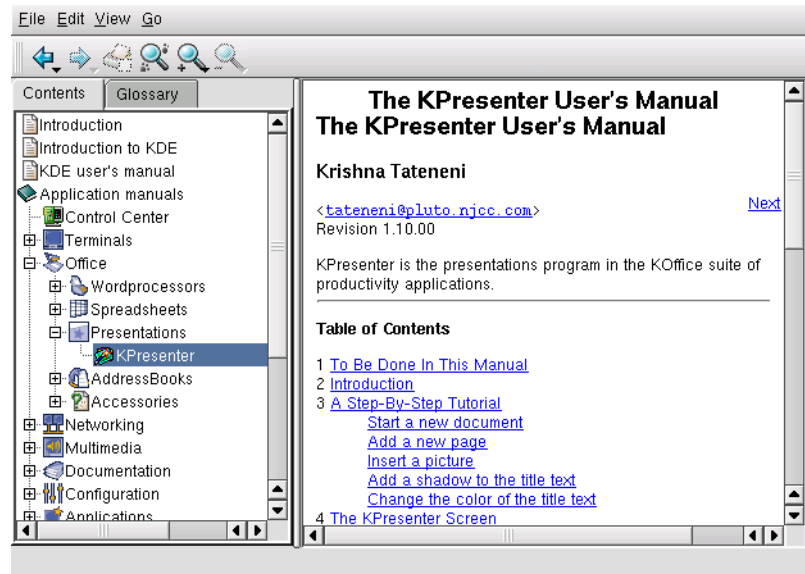


Figure 9-2. KDE’s Internal Help Window

Click on the lifebuoy to get the *KDE*’s internal, on-line help. You can also launch it by accessing the K menu, then successively Documentation→Help. It is a complete help center, very helpful when you need information.

The left side of the window holds the different available rubrics. In the example mentioned above, we clicked successively on Application menu, then Office, and lastly KPresenter. The contents are shown on the right of the window. In the text, the words in red are **hyperlinks**. Simply click on one of them to move to another part of

the document. Since it is easy to get lost using this process, the  arrow allows to go back one or many steps.

9.2.1. Unix’s Info and Manual Pages

These two categories are not *KDE*-specific. They exist on practically every *Unix*-type systems. The **manual pages** (commonly referred to as **man pages**) are the historical and internal help pages under *Unix*, and are provided with those systems almost since they were conceived. They are an inexhaustible information source about system commands, its internal functions, configuration file formats... Click on this rubric to browse the covered topics.

The **info pages** hold almost the same thing, but their presentation is different. They were developed within the GNU project’s framework in order to compensate for some of the man pages weaknesses.

9.3. Manipulating Virtual Desktops

9.3.1. A Little Bit of Practice

Normally, the internal help window is displayed by default in the first virtual desktop.

Now click on the second virtual desktop's button, then on the  icon to launch the text editor. Reduce the window a bit (let's say to a quarter of the screen), and place it in the lower right corner.

When this is done, go to the third virtual desktop by clicking on the number 3 button. Then, launch the *Konqueror* file manager by clicking on the . Notice that the screen seems to empty itself when you switch virtual desktop.



The virtual desktop's button bar takes the aspect shown above: each button is a tiny representation of each desktop's contents. Click on the second desktop: you will find the text editor in its corner. Press on **Ctrl+F1**: you will go back to the first desktop, where the internal help window is waiting for you.

9.3.2. Sticking or Transferring Windows



In the internal help, choose any rubric. Then, click on the  thumbnail on the right of the title bar: it becomes , and the virtual desktops' buttons change aspect.

Now go to the second virtual desktop: you will find **exactly** the same window. Change the displayed help section, then switch to the fourth desktop, for example. The displayed section is the one you just selected. It is one and only one window, not many help windows.

Click again on the thumbnail to unstick the window.

However, it often happens that a window is in the way, this may be cumbersome. Naturally you can reduce its size, but here is another possibility. Click on the right button of the help window's title bar and choose To Desktop→Desktop 1.

The window disappears! But you did not close it. If you look at the buttons on the virtual desktop, you will see that its silhouette is now in the first desktop. Go in that desktop and without a doubt, you will find it. You **transferred** it.

9.3.3. Number and Naming of Virtual Desktops

According to your activities, you can estimate how many default virtual desktops you need. Right-click on the virtual desktop and choose Preferences in the contextual menu.

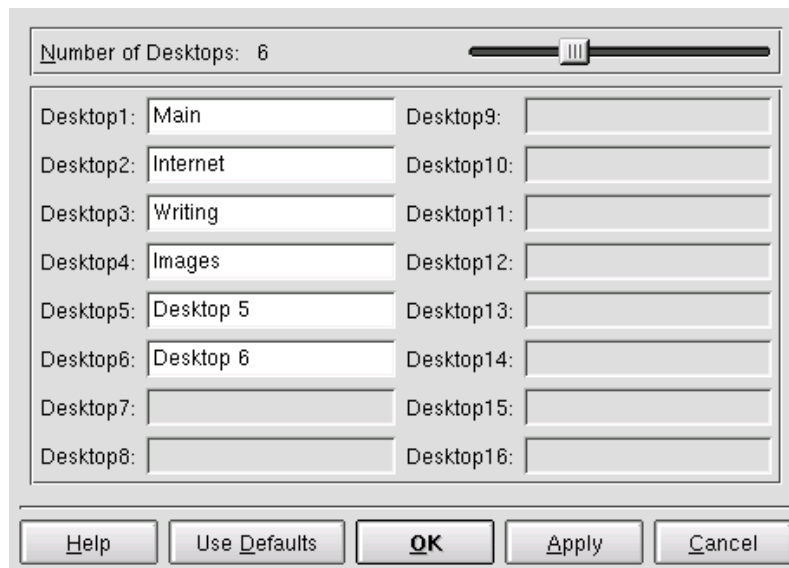


Figure 9-3. Configuring Virtual Desktops Under KDE

On the upper-right part of the window is a slider which allows you to define the number of virtual desktops. In the example, six have been set, but you can set up to 16 desktops (however, this does consume a lot of memory).

Moreover, you can attribute a name to each desktop: here, the first four have been given names to describe their roles. This possibility enables you to organize your work easily and clearly. To see the names of your desktops in the buttons, you must first validate the preceding window. Then, right-click on the desktop's buttons and choose Name. You will then see the names appear in the buttons. However this disables the desktops contents.

9.4. Desktop Personalization

9.4.1. Creating Icons

To create an icon, simply click on the desktop's background. A pull-down menu will appear, in which you must choose Create from a Template. Another menu will pull down in which will be listed the objects you can create on your desktop:

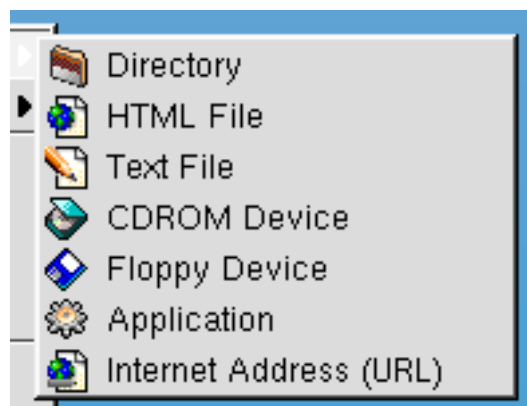


Figure 9-4. Creation Menu Under KDE

9.4.1.1. Icons Pointing Towards a File or a Folder

As you can see, you can create directories, many types of files... In fact, it is not recommended to create files or directories on a desktop: it is much more preferable to create them in the normal manner, that is from an appropriate program.

You can create a desktop icon by pointing at a folder or a file and simply **dragging** the icon from the file manager onto the desktop. This technique is detailed in the *Copying, Moving or Linking Files*, page 82, dedicated to *Konqueror*, the file manager.

9.4.1.2. Icons Pointing Towards Applications

We will now create an icon pointing towards an application. In the Create from a Template menu, choose Application. This dialog box appears:

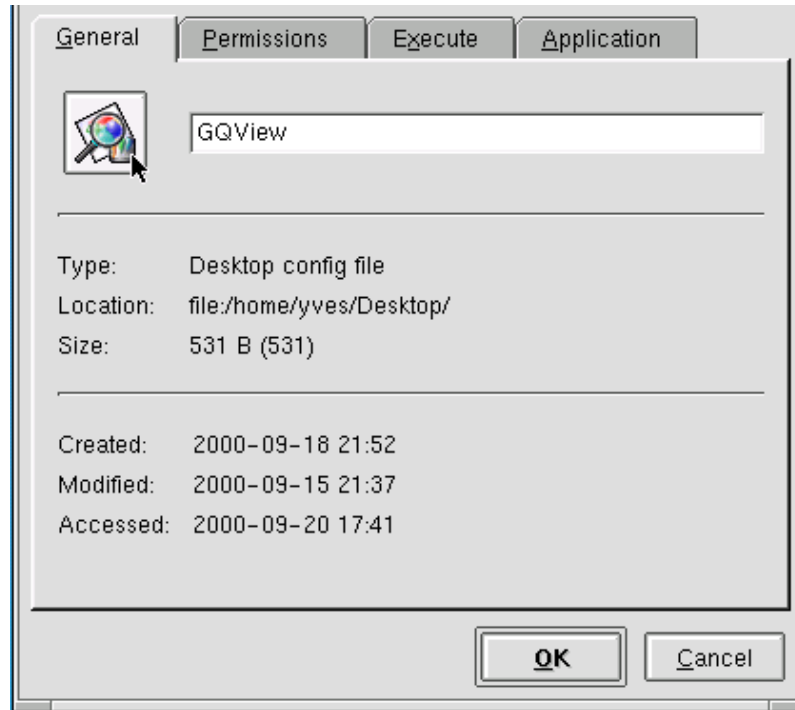


Figure 9-5. Creating an Application Icon Under KDE

The upper-field is the place where you must enter the icon's name. For example, let's create an icon for *gqview*, an image viewer. Type GQview in the said field.

For the moment, let's not bother with the Permissions and Application tabs:

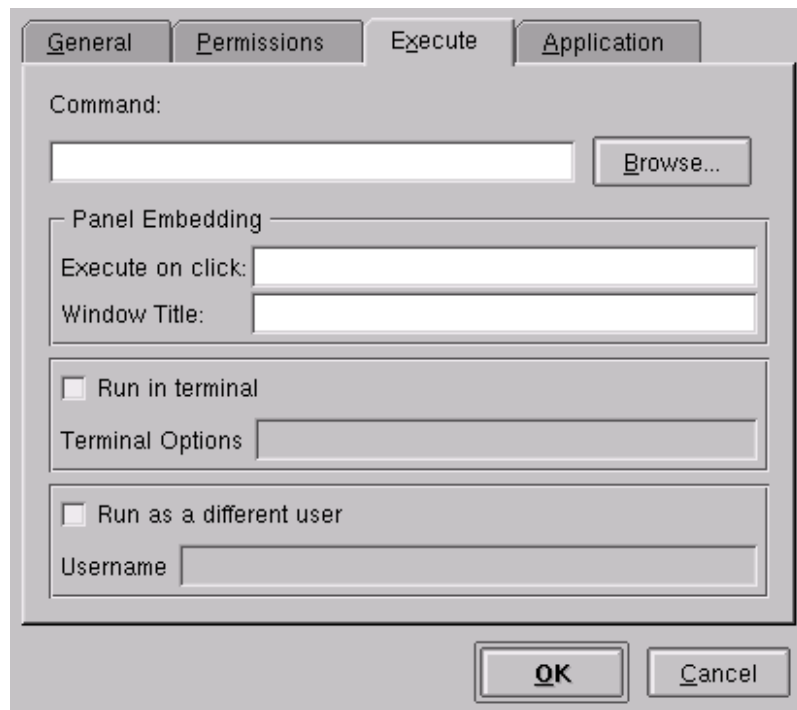


Figure 9-6. Program to Create an Application Icon Under KDE

Here, you must indicate to *KDE* which program you want to execute. If possible, enter the complete path toward a program. You can also use the *Browse...* button to find the file you need. Now type `/usr/bin/gqview`. Again, discard for the moment the other parameters. When you are finished, click on *OK*.

The new icon appears on the desktop: click on it to launch the program associated with it.

9.4.1.3. Icon Linking to a Web Site

Now, we will create an icon for an Internet site: choose *Link to Location (URL)* in the *Create New* menu. A dialog box will pop up and you will need to enter the web address. For example, we chose the *Linux Documentation Project* web site:



Figure 9-7. Creating an Icon for a Web Site Under KDE

Click on *OK* when you have entered the correct address. The icon will then appear on the desktop: click on it to launch the web browser which will display the corresponding page (of course, you need to be connected to the Internet in order to do so).

9.4.1.4. Deleting or Modifying Icons

If you do not like the default image or name of the icon, you can change it (like you can change any icon's parameters). Right click on the icon and choose *Properties* in the pull-down menu. You will get a window very similar to the one we saw when we created an icon pointing at an application.

In the text field, enter the icon's new name. The big button allows you to choose another icon. Click on it and you will get this window:

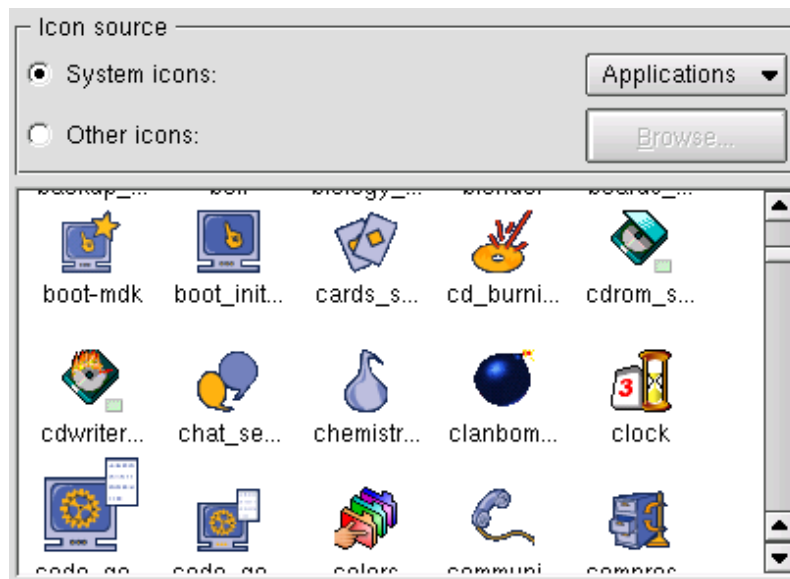


Figure 9-8. Choosing an Icon Under KDE

The icons can come from different sources: use the pull-down list on the right to change your source. Then just click on one of the icons. On the other hand, if you choose Other Icons, you can choose any image for your icon's graphic look: use the Browse button in order to do so.

Like always, press on OK when you are done.

9.4.2. Changing Styles

This time, we will use a module held by the *KDE Control Center*. Launch it by clicking on  on the tool bar. This program will allow you to access practically every configurable aspect of *KDE*.

The parameters you can change are sorted by categories, which helps your research. Each name is pretty explicit. To start, you can use the LookNFeel category. You will be able to control the manner in which your graphical environment is drawn. Choose the Style module which will display this window:

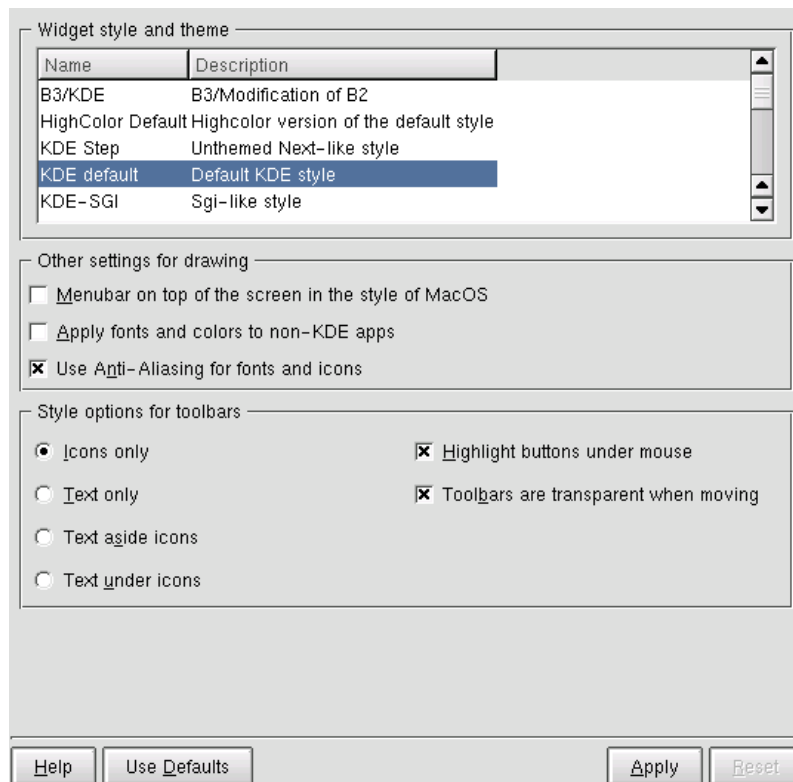


Figure 9-9. KDE's Default Style

Style controls the manner in which the different graphical elements are drawn: the buttons, check-boxes, etc. These elements are usually designed as **widgets**.

In the upper-list, select for example the Marble and validate with the Apply button. You get:

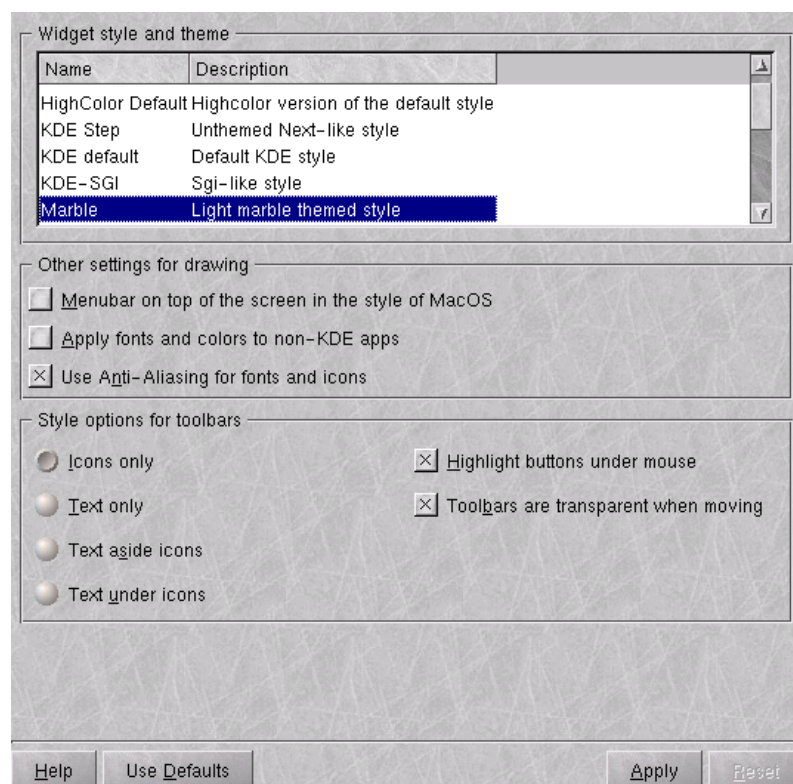


Figure 9-10. The Marble Style for KDE

Special, isn't it? Use the list to find the style you prefer. You can always go back to the default style by clicking on the Use Defaults button and then Apply. Click on OK when you are finished.

The Other settings for drawing deal more with the whole desktop:

Menu bar on top of the screen in the style of MacOS

This option enables your desktop to work in a MacOS fashion. The pull-down menus of an application are shown at the top of the screen, instead of being at the top of the window.

Apply fonts and colors to non-KDE apps

If you use applications which were not written for *KDE*, this feature will try to apply *KDE*'s visual parameters. Note that this feature may not always function.

Use Anti-Aliasing for fonts and icons

This allows you to soften the characters' and icons' antialiasing effect on the screen, which might be easier on your eyes. However, this is resource-intensive and may slow your computer down.

Finally, the Style options for toolbars allow you to modify the tool bars' aspects in *KDE* applications. For example, if you select Text aside icons, the text editor's tool bar will resemble this:



Figure 9-11. Text aside Icons Under KDE

If, however, you choose Text under icons, this same tool bar becomes:



Figure 9-12. Text Under Icons in KDE

9.4.3. Background

Still in *KDE Control Center*, in the LookNFeel rubric, choose Background. You can also obtain this module by right-clicking on the desktop's background.

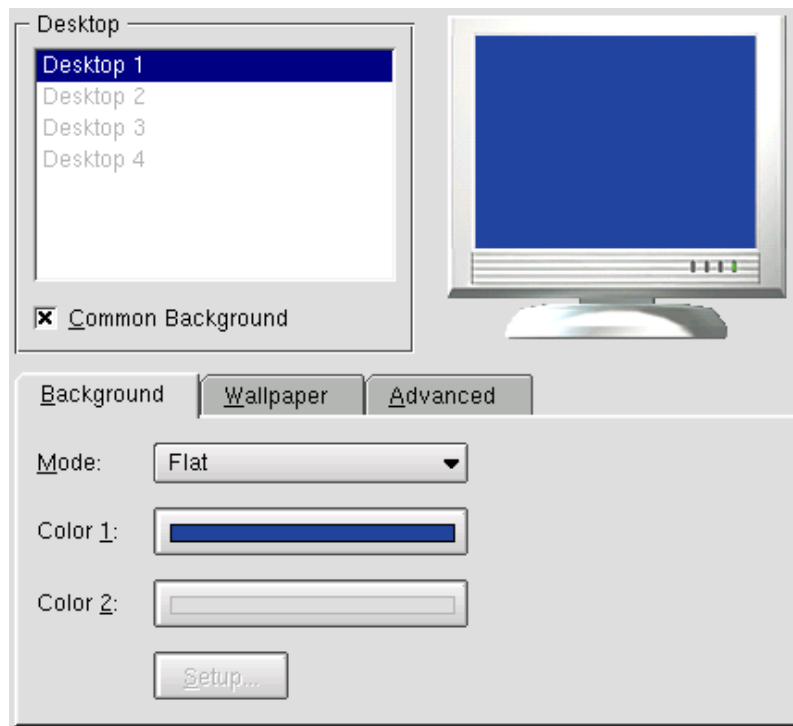


Figure 9-13. Configuring the Background

At the top, you can see a list of your virtual desktops. You are configuring the one which is highlighted. Each desktop can have its own configuration. If you want a unique configuration for all of your desktops, click in the Common Background check-box. In real time, you will get a preview of your configuration on the upper-right corner of the window.

The first tab, Background, is used for a “simple” configuration. With the Mode tab, you can either define a flat or different vertical or horizontal gradients. You can even choose a Background Program, that is a program which will update periodically your background: click on the Configure button to choose your program.

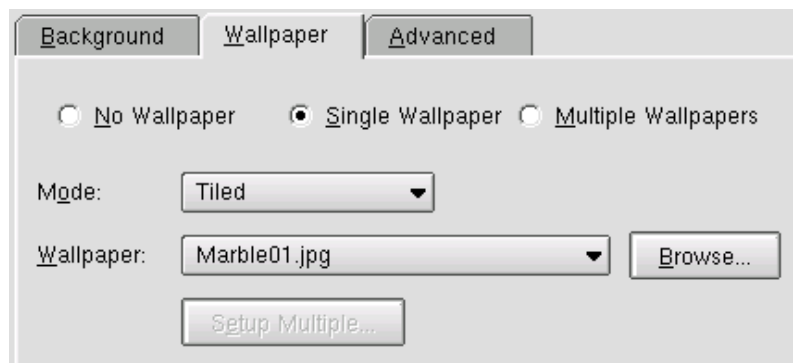


Figure 9-14. Configuring the Wallpaper for the Background

The second tab, Wallpaper, allows to display an image on the background. This time, the Mode list controls the manner in which the image is displayed: tiled, if the image is too small for the screen; or scaled, to adjust it to the screen’s size. You can choose a Wallpaper or use the Browse button to choose from your personal images.

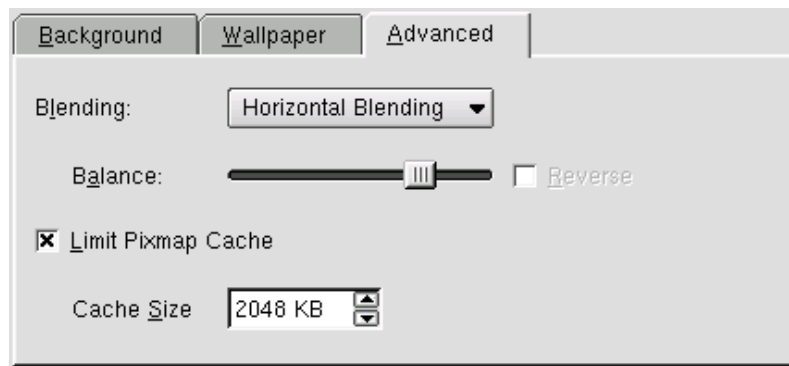


Figure 9-15. Background Advanced Effects

Finally, the third tab, Advanced, allows to realize a Blend of the background (first tab) towards the second wallpaper (second tab). The background is a vertical gradient from white to gray, and the wallpaper is a tiled image. The image on the left shows the wallpaper without blending, whereas the image on the right applies a Horizontal Blending.

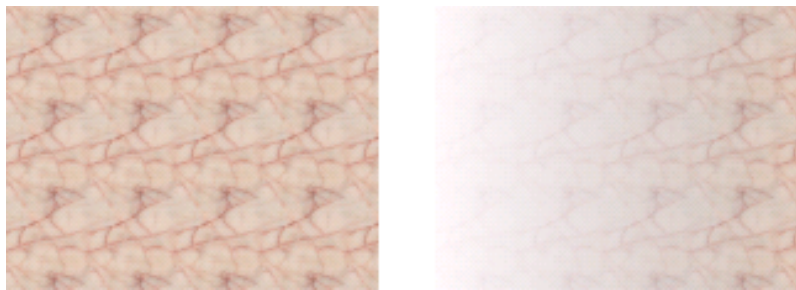


Figure 9-16. Example of Advanced Effects

Chapter 10. Using GNOME

This chapter is dedicated to *GNOME*, another favorite graphical user interface. Although its features resemble a lot those of *KDE*, the user interface is a bit different to what you might be accustomed to. On the other hand, you will rapidly notice that it is much sexier than anything you previously used!

10.1. Getting Help

GNOME comes with a built-in



Help browser which is very useful for new users. The intermediate (maybe experienced) user may also find this tool of use since it holds a good index of *GNOME* applets and programs. You will find it on your panel (the task bar at the bottom of your screen): it is easily recognizable since it is represented by an interrogation mark (?).

The Help section works like a browser. Therefore, surfing through it is very easy through hyperlinks. As an example, you will find definitions for the clock, CD player and CPU applets in the GNOME Documents section. This is an excellent starting point and it will give you a good idea of what *GNOME* can do for you, as well as why and how you should/can utilize it. Feel free to frequently surf its pages: you will surely become a better user once you master this user-friendly browser-based tool.

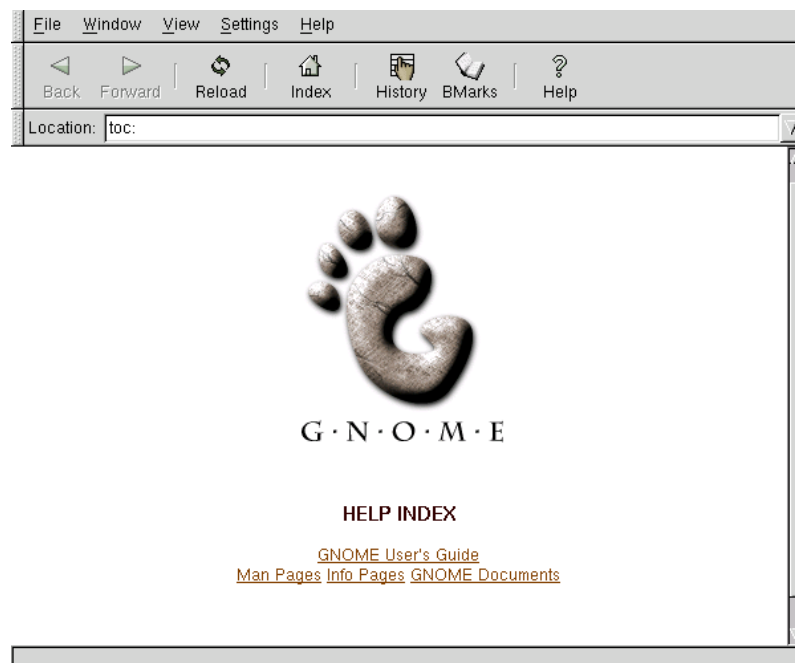


Figure 10-1. Help Center under GNOME

Now that you are a bit more comfortable with your new environment, we will briefly describe the Help browser's three main sections.

GNOME User's Guide

Pretty self-explanatory, no? This section contains the complete GNOME User Guide. It is an essential tool for all *GNOME* users. Its ease of use and explicit definitions will surely help you better understand this GUI (Graphical User Interface).

Man Pages

Now, something a bit more complex... The Man Pages will answer almost every question you may have about programs, functions and administration utilities. They are targeted to intermediate and experienced users who master the **evil** command line. As an example, if you have a problem copying a file, simply

type `man cp` (“cp” stands for copy) in a command line and it will return all the available options for that command. The *GNOME* Man Pages held in the Help browser are an exact replica of what you get when you type `man` followed by a precise command (“cp” in our example).

Info Pages

The more you explore the Help browser, the better a user you will become. The Info Pages holds a set of tutorials about GNU-based software and utilities. If you wish to master *Emacs*, a powerful editor, fear not! The Info Pages will help you learn more on this amazing software application.

GNOME Documents

This section holds a series of fascinating user guides and tutorials. You did not find a free software equivalent to your usual spreadsheet? Browse the GNOME Documents and look for the *gnnumeric* hyperlink. Those documents are the best way to quickly learn and feel comfortable with a *GNU/Linux* desktop.

10.2. GNOME’s File Manager: Nautilus

We strongly suggest that you use the command line to manage your files, since it allows for a much greater range of control over them. But if are shaking at the idea of opening your *Terminal*, you may utilize the more user-friendly *Nautilus*. For more information about this program, please refer to the *Nautilus File Manager*, page 88.

10.3. Setting up your Panel

Now that you understand how the *Help Browser* and Nautilus File Manager work, we will describe the many features of the *GNOME* panel. It sits at the bottom of your screen and is very useful in order to manage your daily utilities and programs, as well as virtual desktops. Let us start with a couple of definitions. The *GNOME* panel is usually divided into two sections. On the left, you find the *GNOME* menu icon.



Figure 10-2. GNOME Panel



As you can see in the figure, essential applets and programs are included in the panel. Starting on the left-hand side is the *GNOME* menu, where all your applications (whether text editors, multimedia or games) lie.

Note: If you wish to add programs or applets to your panel, simply go in the *GNOME* menu, select the desired application and right-click on it. A pop-up menu will show an Add this launcher to panel item. Release your mouse on the that message and the program/applet will be added to your panel.



Next to it is the Log-Out Applet. It allows you to log out of your session, either because your leaving work, or to let other users utilize the computer, etc. Now, the word “session” may bewilder you. A session is the length of time contained between the moment you log in and log out. If you click on it, it will prompt you to save the changes you made to your session (or simply log out if you configure it properly in the

GNOME Control Center, which we will discuss later on) and a box holding all the computers' users (root, your_user_name, etc.) will appear after the X server restarts.



The next applet icon is called the Lock Screen. As you probably noticed, most *GNOME* application and applet names are extremely logical. This feature allows you to lock your screen while you are away from your computer, therefore avoiding unpleasant surprises or colleague pseudo hacking...



The two little screens next to the Lock Screen are called Screen Shooters. They allow you to take snapshots of your screen. After clicking on the blue screen, two little screen appear. The one on the left allows to select a particular window, while the other grabs the entire screen. This applet is very useful for... user guides since it enables precise grasping of screen displays.



This is one of our favorites. It maximizes the space on your panel by reducing the size of applets/applications. You can include as many as you want (in our example: 5). In it, we inserted the Help browser, the *GNOME* Control Center, a *GNOME*-specific calculator called *GNOME Calc*, a Save your Session icon ¹ and finally, the not-so-evil command line also known as the *GNOME terminal*, which is a *GNOME*-specific *Terminal*

Note: Many *Terminals* exist. If you explore the *Terminal* section in the *GNOME* menu, you will find many options for command lines, such as *eterm*, *xterm*, etc.

GNOME Control Center

This is the application to use in order to configure your graphical environment to your liking. Feel free to explore it as it contains many options. Personalizing your theme, panel, background, appearance, default start-up applications, etc.: it's all in there! Snoop around. If you get lost, refer to the Help browser.

1. We use this applet to avoid the annoying prompt when we log out. When you log out, a splash screen asks you if you want to save the settings you may have changed during your session. You can simply click on Save or not if you do not wish to save your new settings, if any. You may also configure it in the *GNOME Control Center*.

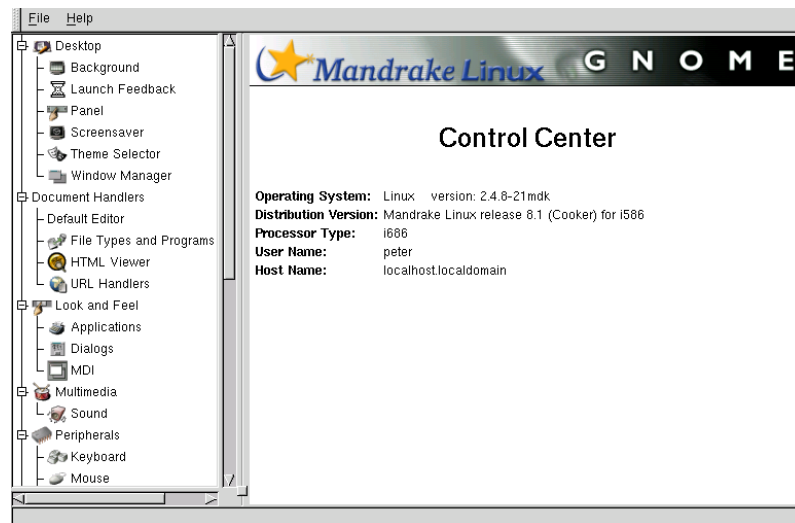


Figure 10-3. GNOME Control Center

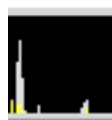


This *GNOME pager* allows you to split your work area into several virtual desktops. In our example, four are set up. In your daily work, you can separate your applications logically: in the first desktop, you could place your communication applications (Internet, chat, e-mail); in the second one, your favorite text editor. To surf through them, simply click on the one of the four desktops and your physical desktop (the one you are looking at right now) will change and show the applications you are using for each one of them.

Note: If you wish to add applets to your panel, you will find them in the Gnome menu→Applets and right-click on the desired applet. If you delete your pager by mistake, you will find it in Gnome menu→Applets→Utility: its name is the Desk Guide.

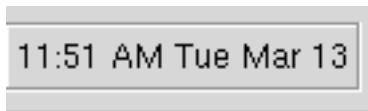


The *GKB International Keyboard* enables you to choose many languages to switch your keyboard to. If you are trilingual, you can easily select, per example, French, English and Spanish as your main keyboard languages. The flag (Québec in our screen shot) represents the language you are currently using. Simply click on the icon to change your keyboard's language. To add or modify it, right-click on the icon and choose Properties.



Next is the Load Average icon, which indicates your processor's load state. If you see it skyrocket and get green, yellow and gray, it means one or many of your applications is freaking out... We will see later how to fix this in the *Reference manual*.

Note: If this icon is not on your panel, you may retrieve it in the Gnome menu→Panel→Add to panel→Applet→Monitors→CPU Load. Many CPU indicators exist: try them out!



Finally, the clock. You may change its properties by right-clicking on the icon and choosing Properties: you can change it to 12/24 hour and a couple of simple options. However, you may select another clock in the Gnome menu→Panel→Add to panel→Clocks. Some clocks even have a mail-check option.

10.4. GNOME Menu

The *GNOME* menu holds everything you need to fully utilize your new **Mandrake Linux** system. Let us start with the basics.

First off, do not be surprised if you think you saw some of the utilities previously. In fact, we have already covered the Panel and Log-Out buttons, only to name those. So when you open your *GNOME* menu, the first items you should see are the Log out, Lock screen and Panel sub-menus. The latter allows you to configure it, whether it be colors, location, size, etc. And if you choose the Global Preferences sub-menu, you will end up in the GNOME Control Center, where you can set the essential panel parameters. Surf through the different options to fully personalize them to your liking.

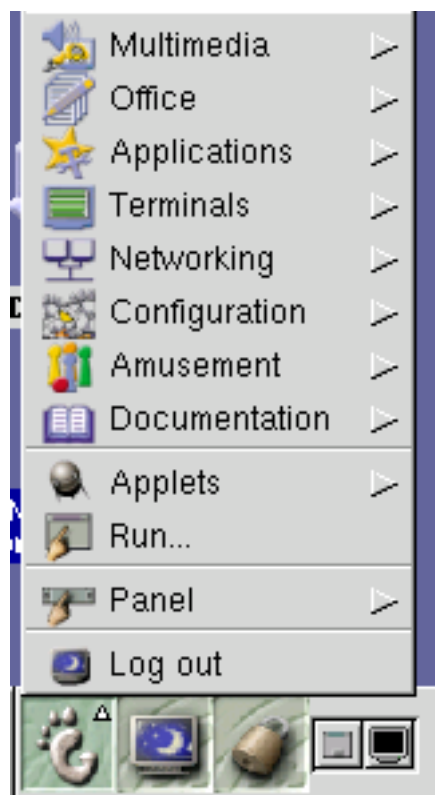


Figure 10-4. Getting Around the GNOME Menu

Run Program

This sub-menu enables software launching. Say you want to run *Emacs*, simply click on the Run menu and type *emacs* in the blank field and **voilà**, *Emacs* is launched.

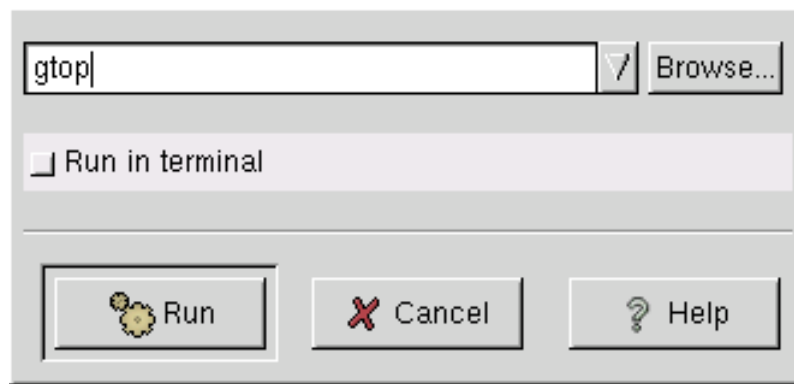


Figure 10-5. Run your Favorite Applications

Applets

This category of utilities/programs is split into six sub-menus: Amusements, Clocks, Monitors, Multimedia, Network and Utility. You can add those applets to your panel or launch them by leaving your mouse cursor on the applet of your choice.



Figure 10-6. Add Applets to your Panel

Documentation

Two items are located in this sub-menu: About Gnome and Help System (the latter we detailed earlier). The About Gnome sub-menu leads you to an interface which gives you three choices: GNOME News Site, GNOME Main Site and GNOME Developer's Site.

Amusements

Guess what? Linux holds a set of fun games, such as GNOME Chess, Xgammon and Kasteroids, etc.

Configuration

Wishing you could modify configuration parameters? Explore this sub-menu as you will find useful applications to better manage your **Mandrake Linux** system. Included are *KDE*, Boot & Init, *GNOME*, Hardware, Printing, Packaging and Networking sub-menus. Be careful what you do in the Configuration menu, you may damage your station. In doubt, please ask a qualified system administrator.

Networking

If your main computer use is Internet-related, this is the section for you. Here you will find IRC, WWW, Chat, Mail, News, Remote access, Instant messaging and File transfer sub-menus. Remember: many programs exist for all of those items. Feel free to test a few clients before using by default software such as *netscape*. You may prefer the *Konqueror* browser for example or *KMail* as a mail client. This is one of *GNU/Linux*'s strong point: you have a wide array of software applications from which you can choose.

Terminals

As stated, many command line (*Terminal*) exist. Once again, choose the one you feel most comfortable with.

Applications

With the Office sub-menu, this is one you are more likely to explore in depth. The list of applications is pretty long. Let us quote a couple of interesting sub-menus such as Text Tools, Communications, Editors and Publishing.

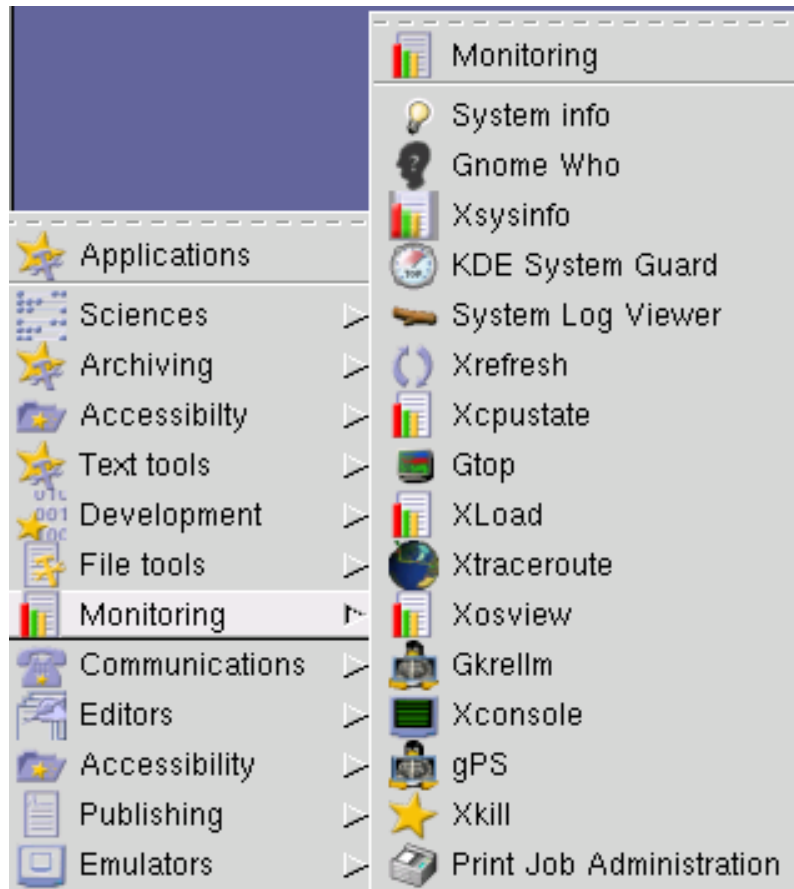


Figure 10-7. A Vast Array of Applications to Choose From

Office

Typical office tools are contained in this sub-menu: spreadsheet, text editor, PDF viewer clients.

Multimedia

MP3 aficionados and graphic artists, this is your hot corner. There you can opt for *XMMS*, your MP3 player *par excellence*, *GIMP* to edit your favorite images and personal graphic work and different sound mixers, etc.

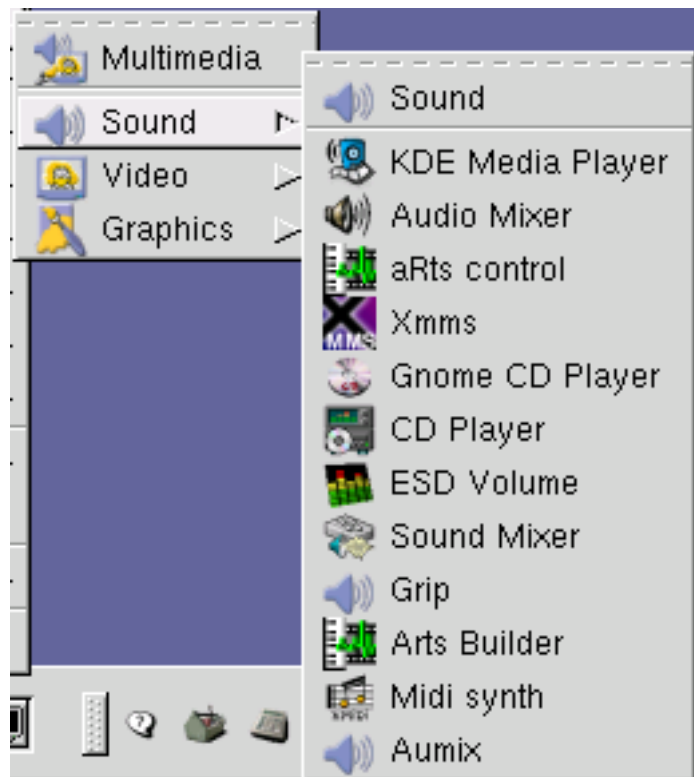


Figure 10-8. Multimedia: XMMS, GIMP, etc.

That's all for our *GNOME* tour. The only way to master *GNOME* is to read, practice, read, practice, read... You understand :-)

Chapter 11. Everyday Applications

Now that you have successfully installed your **Mandrake Linux** distribution, it is time to attack serious stuff: the tools you use everyday. In this chapter, we will cover basic stuff and applications, that is *StarOffice*, general Internet use and multimedia applications such as *XMMS*. If you feel you already master those applications, you may simply skip this chapter. Then again, you might learn a few tips.

11.1. StarOffice

StarOffice was conceived by Marco Börries in 1985 and was so successful with this office suite that he decided to offer it to a wider range of users, that is *GNU/Linux*, *MacOS* and *Windows* users alike. In this chapter, we will refer to the 5.2 version, which is different from the *openoffice* suite developed by **Sun Microsystems** and the open-source community. The latter, however, will be completely GPL when fully developed, whereas the one we describe is still in binary form, therefore proprietary. This may mean absolutely nothing to you. If you feel dazzled, please refer to the chapter *The GNU General Public License*, page 169.

StarOffice can be used for many purposes. It acts as a WYSIWYG (What You See Is What You Get) text-editor, a spreadsheet, a presentation software, etc. And you can even retrieve your mail from it. Now that you know what *StarOffice* can do for you, let us describe its basic utilities and features.

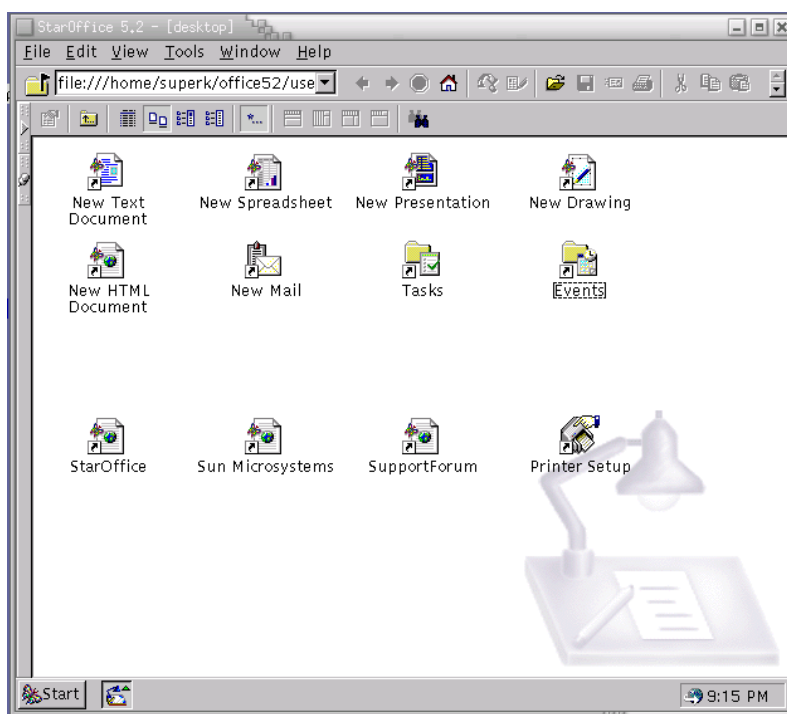


Figure 11-1. The StarOffice Desktop

As you can see in the *StarOffice* desktop image, it combines almost all the software pieces you might need in an every day work. However, for the purpose of this book, we will only talk about the text editor.

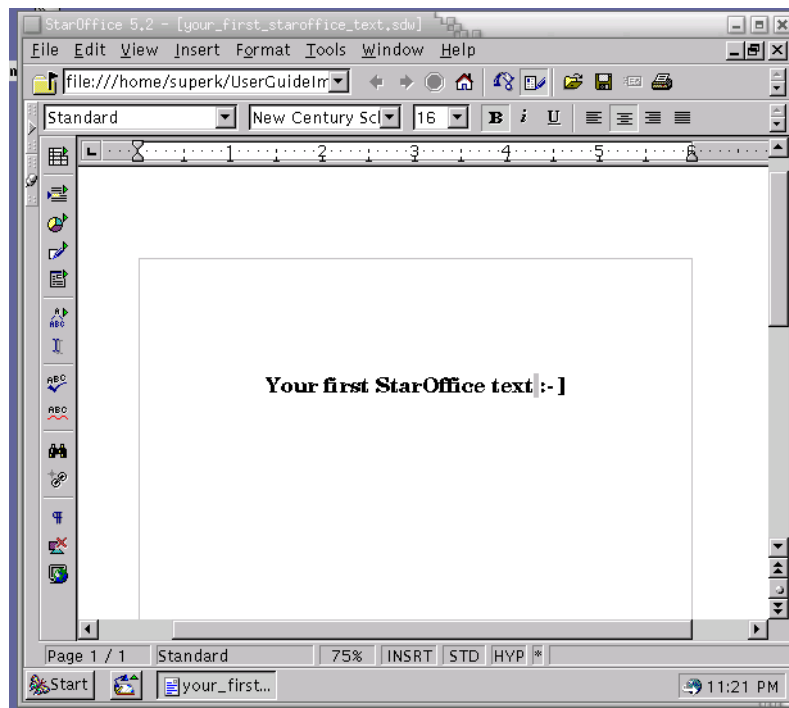


Figure 11-2. Writing Documents

Let us go through the menu in order for you to grasp *StarOffice*'s capabilities. But first, to launch *StarOffice*, click on your *KDE* menu icon, choose the Office sub-menu *StarOffice*. You can also create a symbolic link on your desktop. To do so, right-click anywhere on your desktop and choose Create New→Link to Application.

Note: For *GNOME* users, the method is very similar. Right-click anywhere on your desktop and choose New→Launcher, type in the Name, Comment, Command (full path) and make sure to choose the Application type. Then, select the appropriate Icon.

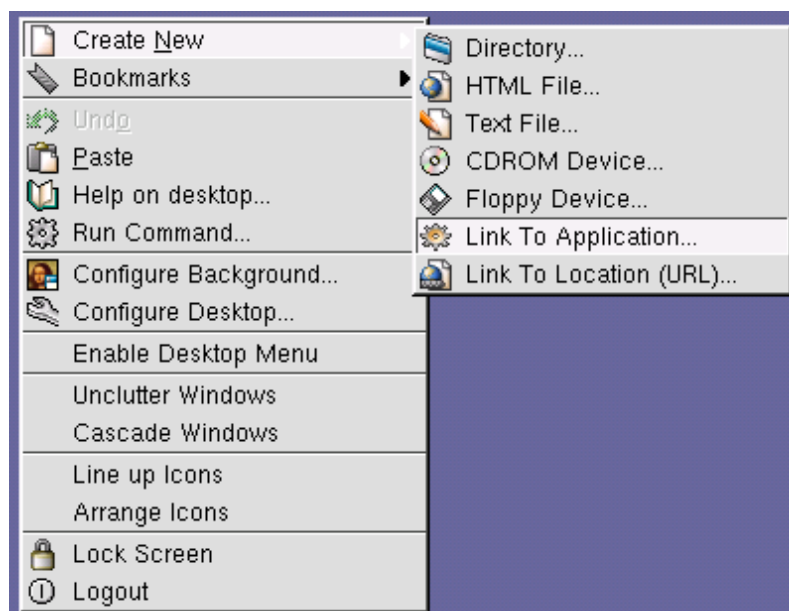


Figure 11-3. Linking to StarOffice

Then, write the name of the application in the dialog box followed by the extension `.desktop` and choose an icon by pressing on the default one. Also, in the Execute tab, you must set the path for the application to be launched. It should be:

```
/home/your_user_name/office52/soffice
```

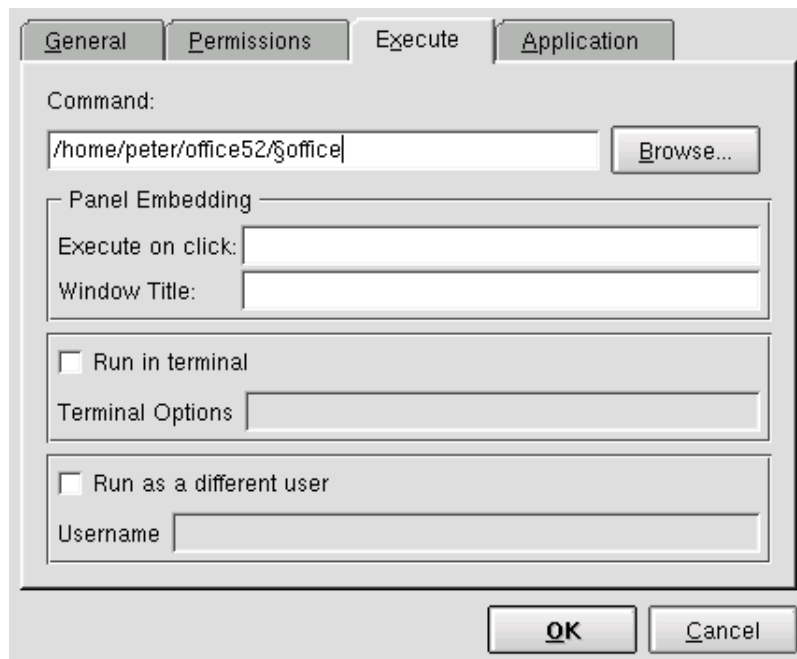


Figure 11-4. Linking Properties

Note: A little comment about keyboard shortcuts... Many of us are still fascinated by this little two-or-three button thing called the mouse. Keyboard shortcuts allow to execute simple commands and apply them for specific meanings, hence leaving your hands on the keyboard and accelerating the rhythm at which you can make your work progress. As an example, **Ctrl-O** opens a document, **Ctrl-C** copies a piece of document which you want to copy elsewhere, etc. Browse through the menus, you will see that shortcuts are set for most major functions,

File Menu

It enables simple commands such as Open, Close, Print, etc. This is probably the mostly used menu since it holds the utmost basic commands. It is also through this menu that you access the latest opened documents.

Edit Menu

Since it contains the famous Cut & Paste commands, it is also largely utilized. The very practical Find & Replace option is also found in this menu. **Ctrl-H** pops up this familiar window.

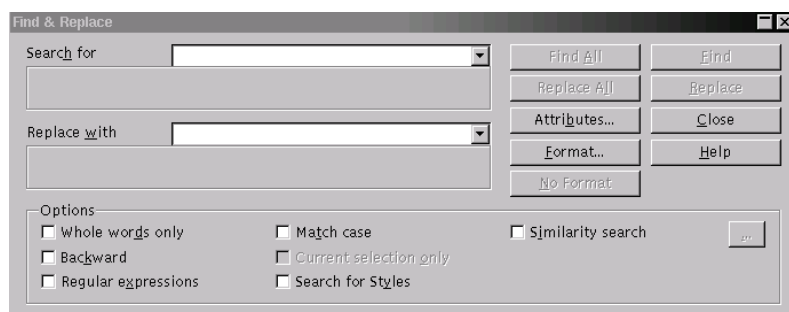


Figure 11-5. Finding and Replacing Words

Note: Notice the little underscore under each menu item. This is another rapid way to access commands. For example, **Alt-E** (Edit Menu) and the **b** character is a shortcut for your address book.

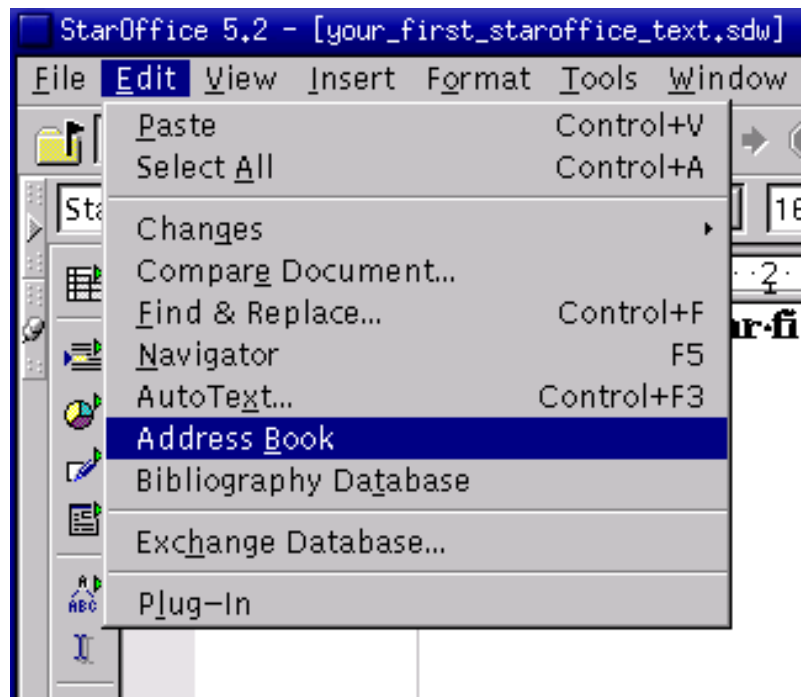


Figure 11-6. Address Book

View Menu

The Zoom, Toolbars, Nonprinting character are within this handy menu. If you have the unfortunate bad luck of owning a 14" screen, you will surely appreciate the zoom option... By configuring your tool bar, if you are a mouse aficionado, remove the buttons you never use and replace them with more often-utilized ones. As for the Nonprinting character, it facilitates basic letter and document layout, in order to be very precise.

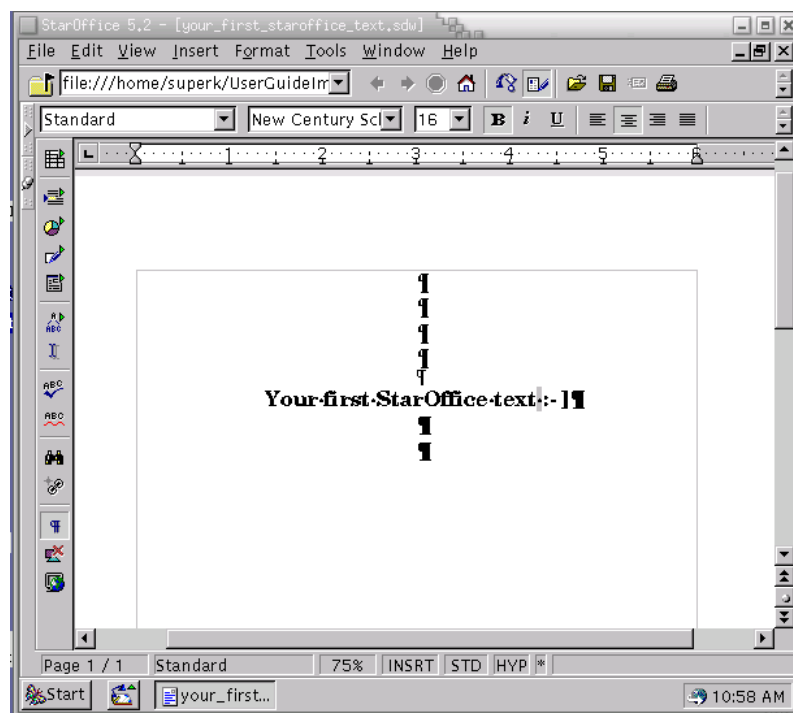


Figure 11-7. Nonprinting Characters

Note: By clicking on the little arrow next to the style-level window, you open a tree view of *StarOffice*-based utilities, as well as your complete computer tree structure. Therefore, you can access your files through the Explorer option, carefully selecting your `/home/your_user_name` directory or which ever directory you wish to access.

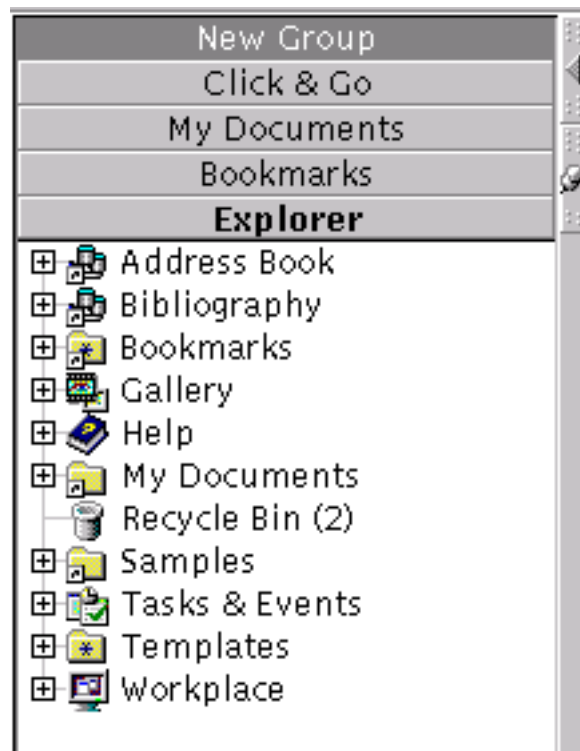


Figure 11-8. Find your Files with StarOffice Explorer

Insert Menu

This menu holds very practical features such as Manual Break, Headers & Footers and the Indexes. The first one is often used when you prepare documents in which you want the sections to start at the top of a page, not halfway through. Note that **Ctrl+Enter** gives you the same result. The Headers & Footers option avoids repeating the same document title at the beginning or end of a document, which is, you will admit, tedious to say the least. When you are responsible for medium-to-large documents, you might want to index them and create a table of contents, which you can create through the index sub-menu.

Note: To insert tables, files or images, this is the menu. **Alt+I** and the **t** character pops up a dialog window in which you choose the number of table rows and columns you wish to insert.

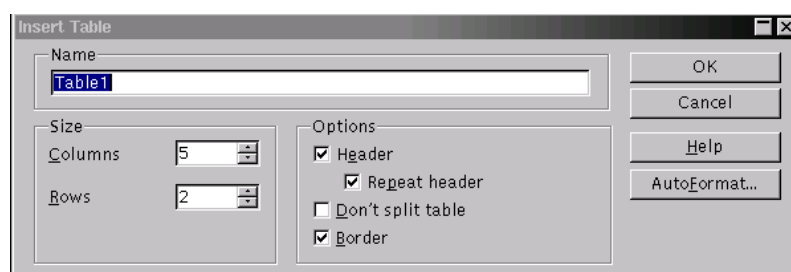


Figure 11-9. Create Tables for your Documents

Format Menu

This menu contains essential formatting features, such as Character, Page and Paragraph. The first one applies font, style and size parameters, amongst others, to your document. Click on the different tabs and you will find font effects, hyperlinks and background features. In the Paragraph sub-menu, you determine background colors, indent and spacing, tabs, etc. The Page sub-menu, as its name clearly states, allows general and more advanced page formatting.

Tools Menu

A writer's best friends reside in this menu: Spellcheck, Thesaurus and Options. When you select the Spellcheck option (or F7), you launch a corrector which indicates what words are badly spelled. Note that the language must properly be set **before** trying to correct a document. The changes, if necessary (i.e.: you want to correct an English document but the French dictionary is active: mission impossible). As for the Thesaurus option, it also pops a window from which you can select same-family words or even synonyms.



Figure 11-10. Spellchecking Documents

The Options menu, however, is the most important personalization tool. There, you can set the correct paths for opening directories directly instead of having to browse your entire tree to find a file.

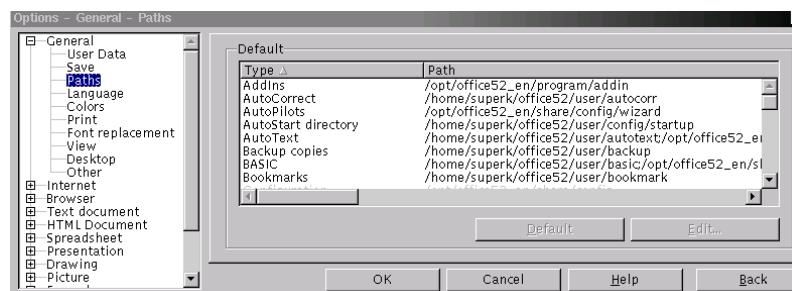


Figure 11-11. StarOffice Options

Windows Menu

This one lets you organize your document windows like you desire, either in cascade fashion, vertically or horizontally setting one next to the other.

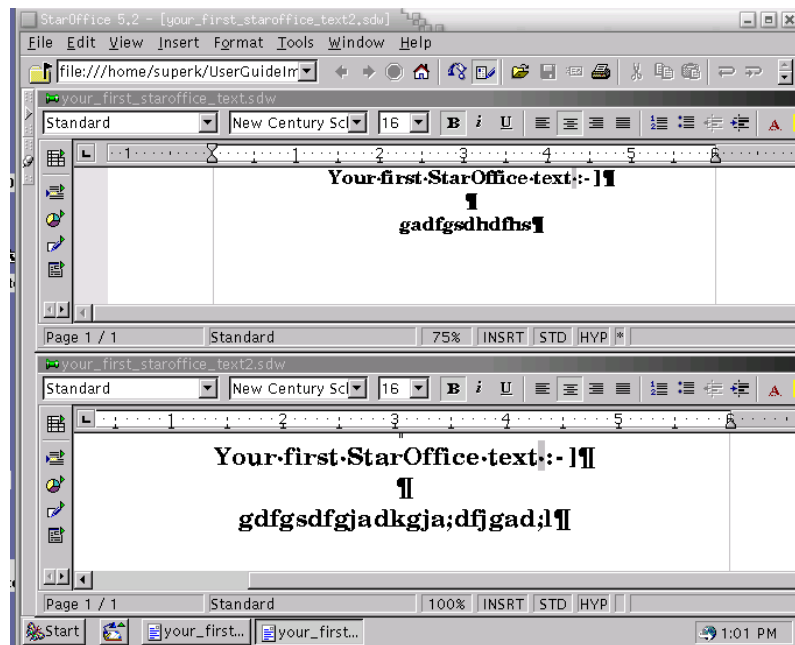


Figure 11-12. Splitting your Windows

Help Menu

Finally, this is the one to go to if you need specific help on anything concerning *StarOffice*. Say you have a question about hyperlinks. Just select that topic in the index. If you are not accustomed to software such as the one we are describing, maybe you should enable the tips and extended tips. Once you remember the operations you do everyday, however, you will soon want to disable them since they can get annoying...

11.2. File Managers

11.2.1. Konqueror: the File Manager



To manipulate your personal files, *KDE* offers *Konqueror*. To launch it, click on the icon in the tool bar. You can also find it on the desktop.

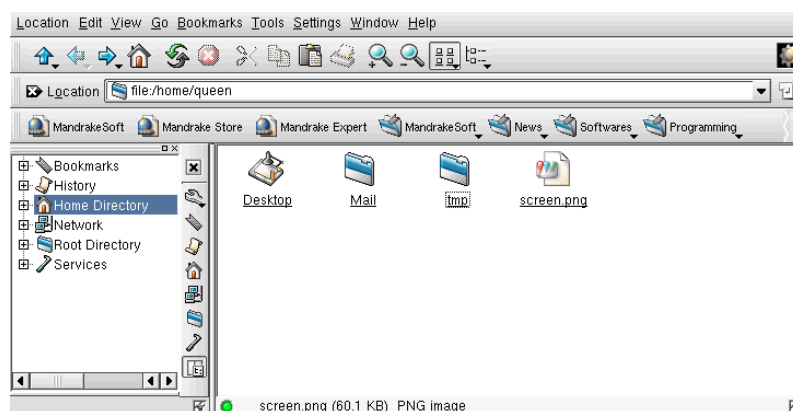


Figure 11-13. Konqueror: the File Manager under KDE

The left side of the window shows your files in a tree structure, while the right side displays the current folder's contents (when you launch *Konqueror*, the default folder is your **home directory**. Each file or sub-directory is represented by an icon. You can always set the folder's **full path** in the URL line on top of the window.

Note: Small precision: in this book, we use indifferently the terms **folder** and **directory**. These two terms refer to the same thing, that is a file holder, even a... folder or directory holder.

In the example mentioned above, you notice the recognized file types have specific icons associated to them. Hence, Mail and temp are folders.

««««< everyday_apps_chapter.sgml ««««< everyday_apps_chapter.sgml
 =====> 1.25 =====> 1.30
 In that case, the file is represented with this icon. *Konqueror* does not always recognize the file type.

11.2.1.1. Folders on the Left of your Konqueror Window

The folders on the left of your *Konqueror* window are:

Home Directory

The folder in which you organize your work. Each user possesses one and, normally, only he can access it. This folder is designed on the desktop as Queen's home.

Root Folder

This folder is at the base of the tree structure: all other folders are directly or indirectly held by the root folder. In principle, only the system administrator should manipulate that folder.

History

Here, you find the system folders and Internet sites you visit frequently (since *Konqueror* has "two faces").

Network

If you are in a local network environment, the files shared by the other computers on the network should be displayed here.

Bookmarks

Here are listed the places you visit the most often, whether it be system folders or Internet sites.

11.2.1.2. The Tool Bar

Konqueror's tool bar offers numerous features which are easy to access. Here they are, along with their associated icons.

	It moves you to the parent folder. This function places you one level higher in the tree structure, hence the parent directory.	Alt+Up
	Brings you back to the folder or web site you just visited.	Alt+Left
	If you used the preceding button, this one does the opposite: it moves you in the opposite direction.	Alt+Right
	Use this icon when you are lost. It brings you directly to your home directory, the root of all your data, your house .	Ctrl+Home

	If you click on this icon, you force <i>Konqueror</i> to reload the current directory's contents. This is very useful in a network environment or if you delete files "outside" of <i>Konqueror</i> , that is in a <i>Terminal</i> or in another file manager.	F5
	Stop the work <i>Konqueror</i> is currently doing. For example, exploring a folder which holds numerous (too many) files, or the very long loading of a web page.	Esc
	"Cut": deletes the selected files, but places them in a temporary memory space called the clipboard .	Ctrl+X
	"Copy": stores the selected files into the clipboard.	Ctrl+C
	"Paste": extracts the files held by the clipboard and places them in the current folder.	Ctrl+V
	Obviously enough, this icon allows to print files or web pages.	Ctrl+P
	Use this icon to increase icon or character font sizes. Very useful if you have a large screen and trouble to read tiny fonts.	
	On the contrary, this icon reduces the size of icons and characters.	
	Use the icon-type display: press and hold your finger down on your mouse in order to get other options.	
	Use the list-type display: press and hold your finger down on your mouse in order to get other options.	
	When the wheel turns (on the upper-right part of your window), <i>Konqueror</i> is working... Hence, you can survey the software's activity. If you click on it, another <i>Konqueror</i> opens up.	

Table 11-1. *Konqueror*'s Icons

11.2.1.3. Moving Around in your Documents

The tree structure on the left of your window is one way to move around within your documents. To see the sub-folders contained in a folder, simply click the symbol  on the left of each folder name. Hence, you can view your folder's contents. If you click again, you only get a folder view, without the contents.



You can also move around in the right side of your window. Simply click on the icons which represent the documents, like the one shown above.

11.2.1.4. Selecting Files

You only need to click to open a file or change directory. Then, how can you select one or many files? If, for some reason, files are already selected, click on *Konqueror*'s background (where there is **nothing**) to cancel all active selections. The **Esc** key also possesses the same virtues.

To select only one file, click on its icon while pressing the **Ctrl** key.

You can also select many files with the mouse. Click on the right window's background then move the mouse while pressing and holding its button: a rectangle will be drawn and everything contained in it will be selected, as illustrated below.

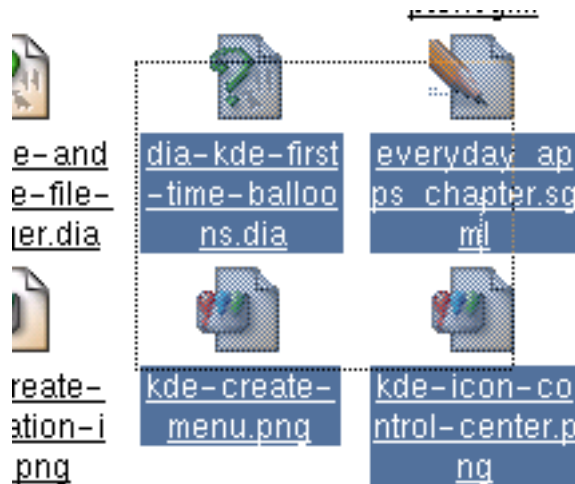


Figure 11-14. Selecting with your Mouse in Konqueror

Selecting many files which follow each other in the tree structure is done by selecting the first document, then while holding the **Shift** key click on the last document you want to select.

Finally, you can select isolated documents by clicking on each one of them while holding the **Ctrl** key. The image below shows you the use of **Shift** on the left and **Ctrl**'s use on the right.

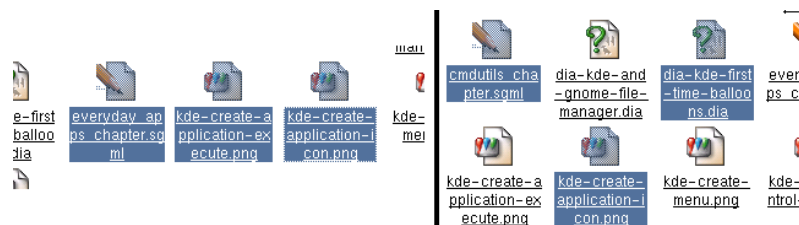


Figure 11-15. Selecting Many Files in Konqueror

11.2.1.5. Handling Files

Now that we know how to select files, it is time to handle them a bit.

11.2.1.5.1. Creating a File or a Directory

Right-click on the right window's background (while avoiding the icons): you get a menu which offers many functions. Choose Create from a template → Folder.



Figure 11-16. Creating a New Directory

In the displayed dialog box, type the name you want to give to the directory and hit the Enter key (or simply click OK, which amounts to the same thing).



The Create from a template menu also allows to create different file types. For example, create a text file by selecting Text file: like before, give it a name, for example text.txt. Once it is created, your file appears in the right side of your window and is represented with a pencil on a white sheet.

Note: It is not necessary to give a file extension (the group of letters which follow the period) to your file. However, it is preferable to do it systematically since it is a way to identify the file's type. Here, by convention, the extension of a text file is .txt.

11.2.1.5.2. Opening a File

If you click on the icon of the file you just created, *Konqueror* will recognize its type (a text file) and display it, that is: nothing. In fact, you simply created an empty file. This time, right-click on the icon and choose Open with.

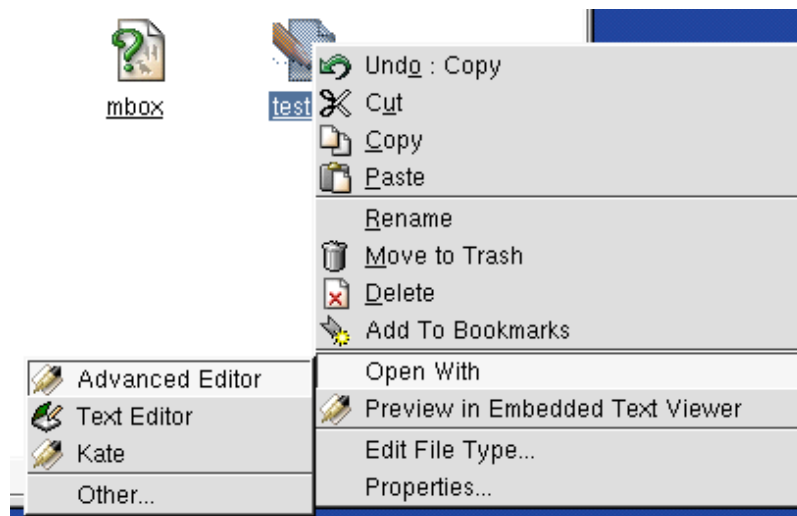


Figure 11-17. Opening a Text File

Many applications adapted to modify this file type will then be proposed. Choose Advanced editors, which we already saw in *KDE's* tool bar, "*The Desktop According to KDE*", page 51



Type a few lines in the displayed window, what you write is not important. Click on the what you just typed. If you do not do it, the editor will alert you when you try to quit it.



Now go back in the *Konqueror* window and use this icon (or the F5 key) to refresh the display of the folder's contents. Then, bring the mouse pointer on your text file's icon. You will notice, in the information bar at the bottom of the window, that its size is not equal to zero anymore.

Click on your file. This time the window is not empty. It holds what you just typed. To go back to the file list,



simply click on the button on *Konqueror's* tool bar.

11.2.1.5.3. Renaming a File

Renaming a file is very simple. Right-click on the icon and choose the Rename pop-up menu. Then, type the new name and validate with the Enter key.

You can also select it and then press on the F2 key.

Finally, the last possibility is to right-click on the file and to select Properties. You just need to change the file name in the appropriate field, at the top of the window.

11.2.1.5.4. Copying, Moving or Linking Files

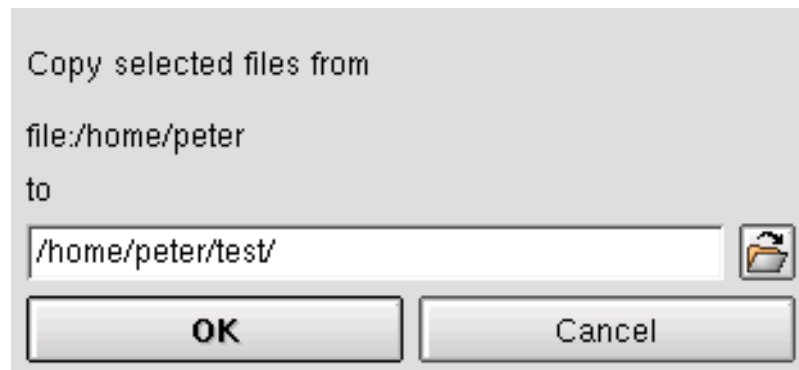


Figure 11-18. Choosing the Destination Folder

Select the files or folders you wish to copy or move. Then, use the F7 (for **copy**) or F8 (to **move**) keys: a little window will appear, in which you can type the destination folder. The Choose button allows to choose the folder.

Here is another method. Start by using the tree view on the left of the screen in order to see the destination folder. However, do not display its contents, just its **name**. Then, select the files or folders you wish to manipulate.



Figure 11-19. Drag'n'Drop with Konqueror

Now move your pointer on one of the selected elements. Then, while leaving your finger pressed on the mouse button, **drag** your selection towards the destination folder, which should be visible on the left part of your window. The preceding image showed two files which are dragged towards the home directory's tmp directory.

When the mouse pointer is on the destination folder, the latter is highlighted. Release the button and once the pop-up menu appears, choose the operation you wish to do.

Note: **Copy a file** duplicates the contents in another file. **Move** copies the file and then deletes the original. **Link a file** creates in the destination folder an access point towards a file, which resembles a shortcut. If you delete the link, this does not imply that you delete the original file as well.

Finally, you can also use the **clipboard**. To **copy** selected files, use **Ctrl+C** to place them in the clipboard. Then, place your mouse pointer in the destination folder and launch the copy process with **Ctrl+V**. To move files, use **Ctrl+X** instead of **Ctrl+C**.

11.2.1.5.5. Deleting a File

Sooner or later, you will want to remove files, either to gain disk space or simply to clean up your working environment. Simply select the files or directories you wish to delete, then right-click on one of them.

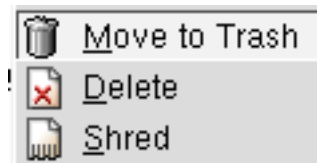


Figure 11-20. Three Methods to Remove Files

You can delete files and directories in three different ways: the secure, the classical and the real method. The secure method is named Move to trash: the files are not really removed. They are simply moved in the trash can. Hence, you can recuperate them, until you empty the trash can... The trash can's icon is on the desktop:



Figure 11-21. The Trash Icon, Empty or Full

Click on it to see the files it holds. A new *Konqueror* window will open. You can then retrieve files you placed in it. To do so, click on them and move them where ever you wish (whether on the desktop or in another *Konqueror* window). You can always recuperate stuff you placed in the trash can, until you empty it...

To remove a file like it is generally done under *Unix*, you must right-click on your file and choose Delete. You will have to confirm you really want to delete this file. If you answer yes, its name will be deleted and the space it took on your hard disk will be freed. However, it is still possible to recuperate part of the file, if you ask an expert.

Last method, you can Shred your file. This means *Konqueror* will **compress** the disk space it took with random data, in order to make sure the content will not be reconstructed. The file is then completely deleted and there is no way of retrieving it.

To do so, select the file you wish to shred by clicking just below the file's icon and by dragging your pointer upwards until your file is highlighted, hence selected. Then, access the Edit menu, then Shred.

11.2.1.5.6. Finding Files

Konqueror offers a powerful tool to search for files according to different criteria. In the Tools menu, select Find file. The following block appears on top of the right side of the window:

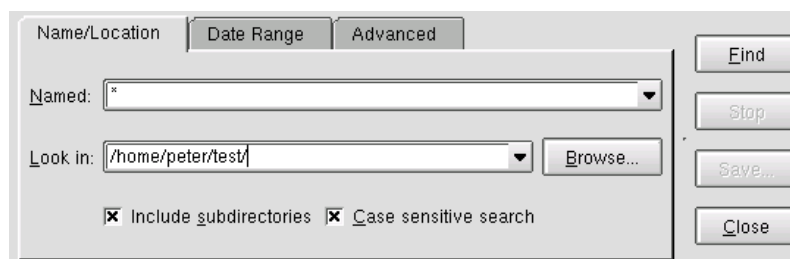


Figure 11-22. Finding Files with Konqueror

You can use generic characters such as ? and * in the Search field. For example, to find all the files with .txt extensions, type *.txt. To find all files starting with the letter C, type C*.

Note: Keep in mind that Linux distinguishes uppercases from lowercases. For example, in a directory, you could have a Courier.txt file and a courier.txt file: they are two different files. You will not find the latter if you look for C*.

The other tabs allow to pinpoint a search. For example, you can take into account the last modification date, the file type, the presence of a certain text inside a file... Click on Find when you have chosen your criteria.

The result of the search is displayed in the lower part of the right side window. All common actions are possible: opening a file, copying or deleting it, etc. Click on Close to go back to the normal display.

11.2.1.6. Modifying the Display

Konqueror's principal display options are grouped in the View menu.

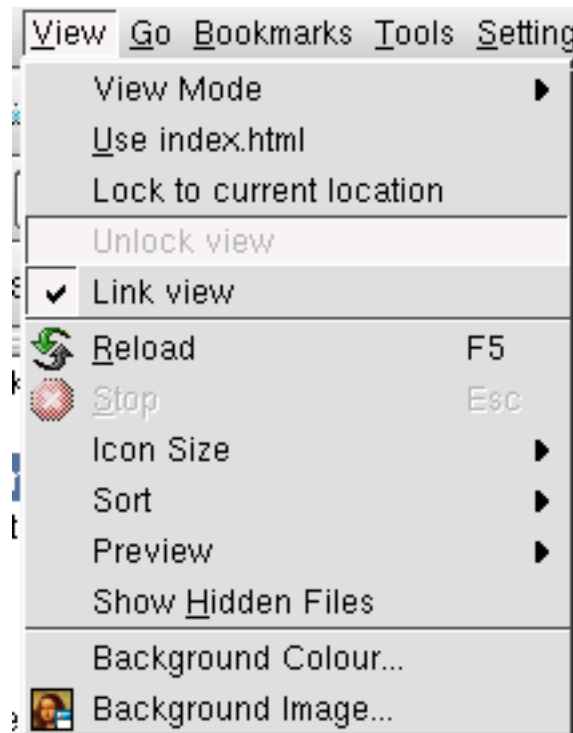


Figure 11-23. Konqueror's Window Menu

11.2.1.6.1. Display Type

This controls the way files are represented. you will find the same choices from the corresponding icons on *Konqueror's* tool bar.



The default type is Icons: large icons, the file name under each icon, the ensemble ordered from left to right and from top to bottom.



In the MultiColumn View type, the file names appear on the right of the icons. The latter are organized in columns from left to right and from top to bottom.



Figure 11-24. MultiColumn View under Konqueror

☐ --
☐ -- The Tree View mode gives the same aspect to both sides of the window. However, the files are shown with many details about them.

☐ -- Desktop	4.0 KB	Directory	09/13/01
☐ -- test	4.0 KB	Directory	09/13/01
Mandrake Campus.desktop	137 B	Desktop config file	09/13/01
Mandrake Control Center.desktop	335 B	Desktop config file	09/13/01
Mandrake Expert.desktop	137 B	Desktop config file	09/13/01
☐ -- tmp	4.0 KB	Directory	09/13/01

Figure 11-25. Tree View under Konqueror

☐ --
☐ -- The Detailed List View displays the same details as the preceding mode, but does not use the tree view.

Nom	Taille	Type de fichier
CVS	4.0 ko	Directory
Desktop	4.0 ko	Directory
doc	4.0 ko	Directory
RpmDrake	4.0 ko	Directory
seti	4.0 ko	Directory
test	4.0 ko	Directory
tmp	4.0 ko	Directory
cmdline_chapter.sgml	49.4 ko	SGML
cmdutils_chapter.sgml	36.7 ko	SGML
dia-kde-and-gnome-file-manager.dia	1.5 ko	Dia diagram
dia-kde-first-time-balloons.dia	1.4 ko	Dia diagram
everyday_apps_chapter.sgml	40.1 ko	SGML
kde-create-application-execute.png	6.2 ko	PNG image
kde-create-application-icon.png	7.1 ko	PNG image
kde-create-menu.png	5.2 ko	PNG image

Figure 11-26. Detailed List View under Konqueror



Finally, the most stoical type is the Text one. It displays information rapidly and exhaustively, but without the icons and other decorations.

/ Corbeille	4.0 KB	Directory	09/13/0
CD-ROM.desktop	978 B	Desktop config file	09/13/0
Documentation.desktop	367 B	Desktop config file	09/13/0
Floppy.desktop	177 B	Desktop config file	09/13/0
Home.desktop	2.5 KB	Desktop config file	09/13/0
Internet.desktop	289 B	Desktop config file	09/13/0
Mandrake Campus.des...	137 B	Desktop config file	09/13/0
Mandrake Control Cen...	335 B	Desktop config file	09/13/0
Mandrake Expert.deskt...	137 B	Desktop config file	09/13/0
Mandrake News.desktop	138 B	Desktop config file	09/13/0
Software manager.des...	418 B	Desktop config file	09/13/0
XKill.desktop	362 B	Desktop config file	09/13/0

Figure 11-27. Text View under Konqueror

11.2.1.6.2. Using index.html

If you browse frequently through files containing HTML, for example your distribution's documentation, these files generally hold a file called `index.html`. It is a very common name which gives you access to many files.

Let's take `/usr/share/doc/mandrake/en/` as an example. If you do not activate the Use `index.html`, you will only get a list of files and directories contained in that folder. If you activate the option, *Konqueror* displays the contents of the `index.html` file, and you can easily browse through the documentation, as if you were on the web.

11.2.1.6.3. Sort

The usual file display order is alphabetical, with the directories shown first. You can choose to ignore or not the **case**, that is the difference between upper- and lowercase letters. If you ignore it, you will get a dictionary-like order. If you do not, then the uppercase letters will be displayed **before**. For example, a file starting with the letter **Z** will be displayed before one which starts with the letter **a**.



If you use the list-display mode, you can click on the column's titles to define on which file characteristic to sort (for example, the size) as well as the sort's order (for example, descending order). This is what the header shows here: the arrow's presence, on the right of the title, indicates that the element is taken into account in the sort action, and its upward direction signifies ascending order. Click again on the title to change direction or sorting order.

11.2.1.6.4. Contents Preview

Instead of file representation through icons, *Konqueror* can display a miniature preview of certain file types (if you use one of the two large-icon display types). The Preview sub-menu allows to select the file types you want to display in tiny aspect. Here is an example of preview displays:

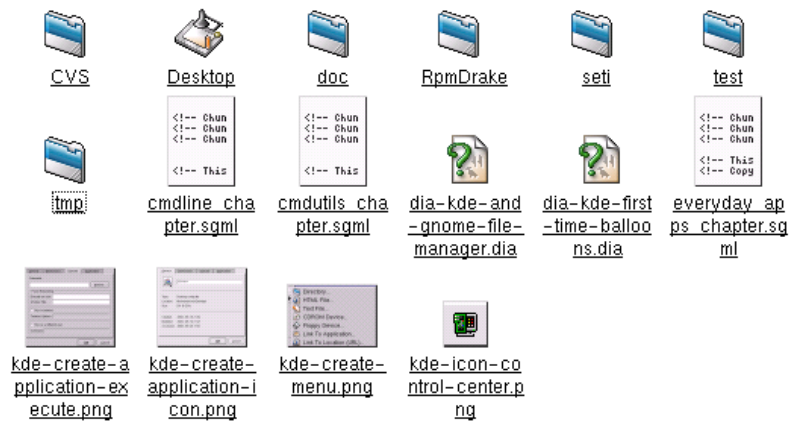


Figure 11-28. Preview of a File's Contents with Konqueror

This option is as esthetic as it is practical. However, it requires more power from your machine.

11.2.1.6.5. Hidden Files

Select this option. Suddenly, numerous files will be displayed! They are **hidden files** which are not normally displayed.

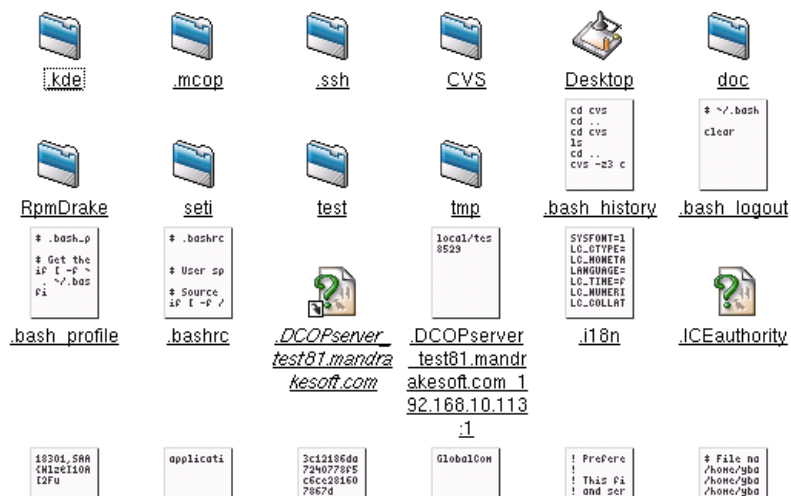


Figure 11-29. Viewing Hidden Files with Konqueror

Naturally, you can act upon those files like on any other. However, beware. Generally speaking, they are used to back up your personal parameters and configurations.

11.2.1.6.6. Splitting Windows

Right-click on the bar at the bottom of the right-side window, the one which holds a big green button. You obtain this menu:



Figure 11-30. Acting Upon Displays with Konqueror

In this menu, choose Split View Top/Bottom. The window is split into two, each one possessing its own information bar, each one is independent. Only one window can be active at a time: click on the information bar to activate the one you wish to interact with. To close a window, right-click on the information bar and choose Remove View.

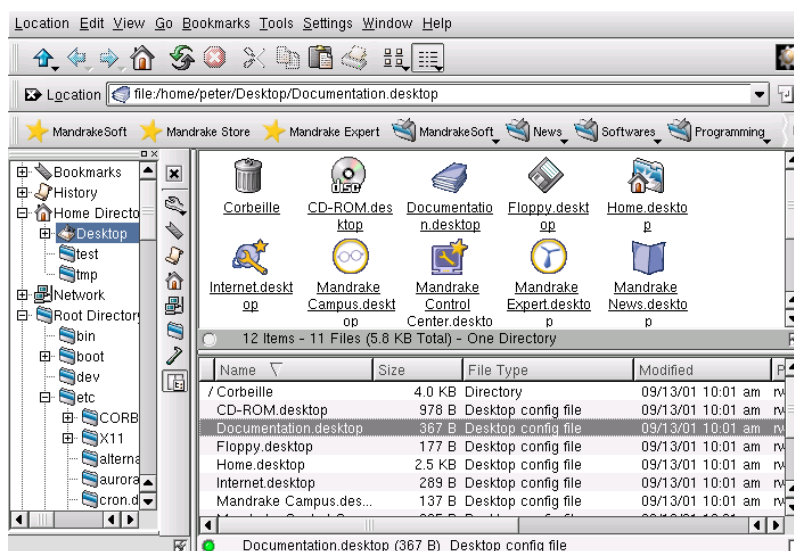


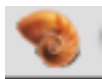
Figure 11-31. Splitting the Konqueror Window



It can be interesting to link many windows into one group, in order for them to display the same folder. For example, it is the case for both the left and right tree structures. However, the window we created earlier is linked to no other window. To link it, click on the check box on the right of the information bar. You will see a little chain inside the check box. This links it to the other windows, and when those other windows change their displays, the new linked window will also follow that display.

Window splitting is also very practical to copy and move files from a folder to another: you can visualize the contents of many folders at a time, and move many files from a window to another.

11.2.2. Nautilus File Manager



GNOME's default file manager now is *Nautilus*. With it, you can manage your files and browse the web. It was originally developed by **Eazel** but it unfortunately ceased its operations. However, since it is an open-source project, many developers still maintain and enhance it.

Note: Since *Nautilus*' main features function in a similar manner to those of *Konqueror*, we will only describe functionalities specific to *Nautilus*. Please refer to the section about *Konqueror* above if you need more information.

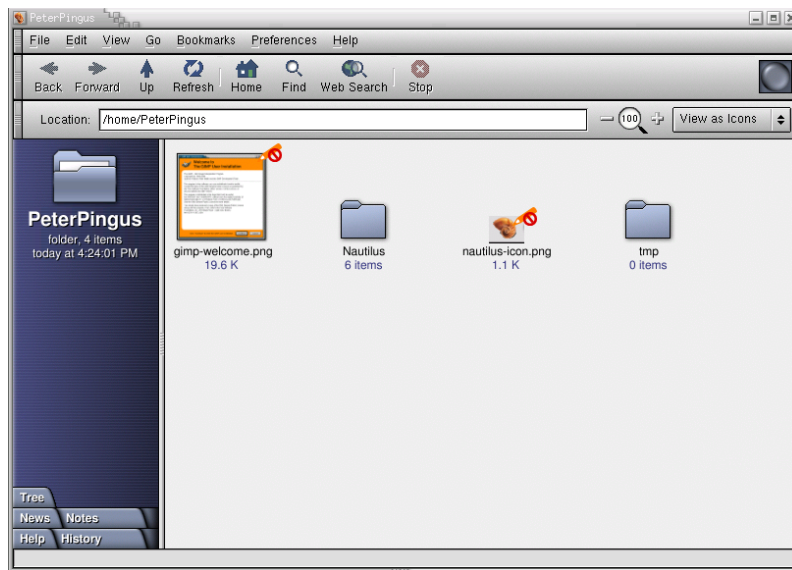


Figure 11-32. Nautilus's Main Window

11.2.2.1. Exploring the Left Side of Nautilus

The left part of the window gives you a few options. In fact, you can have a single folder showing you where you are in your tree structure. It includes basic information such as the file type, the number of items it holds and the last access date.

The other options are:

- standard tree structure. You can access it through the Tree tab.
- notes. It allows you to write notes directly in the yellow window. Click on the Notes tab to try it out.
- history. This option allows to see a history of the folders visited. Hence, by clicking on the **History** tab, you will get something like this:



Figure 11-33. Nautilus' History Window

- news. With this function, you can add news web sites such as Linux Today (<http://linuxtoday.com>) and access them directly through hyperlinks.

In our example, we added Linux Today (<http://linuxtoday.com>) and Linux Weekly News (<http://lwn.net>). After this operation is over, you get a resume of these sites in your sidebar:



Figure 11-34. Nautilus News

To add news sites, simply click on the **Select Sites** tab. You will get a list of popular Linux news sites. Simply click on the check box or site name to add them to the news you wish to view. When you are finished, click on the **Done** button.

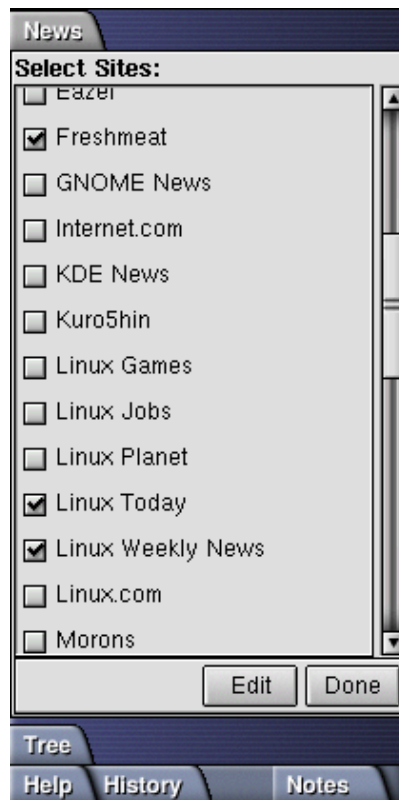


Figure 11-35. Adding News Web Sites

If the news site you wish to add is not in the site list, you may add it by choosing **Edit** and this window will appear:



Figure 11-36. Editing News Web Sites

- help. If you need more information about *Nautilus* or *GNOME*, click on the **Help** tab where you will find useful information.

11.2.2.2. Exploring the Right Side of Nautilus

Most file managers use the right-part of the window to display files contained in directories, and *Nautilus* is no exception to that. And like many file managers, you can change the look'n'feel of your window. To do so, we will go through *Nautilus*' Preferences menu.

11.2.2.3. Nautilus' Preferences

To access the Edit Preferences menu, you can use the **Alt-P-E** keyboard shortcut or simply click on the Preferences menu and then on Edit Preferences. This window will then be displayed:

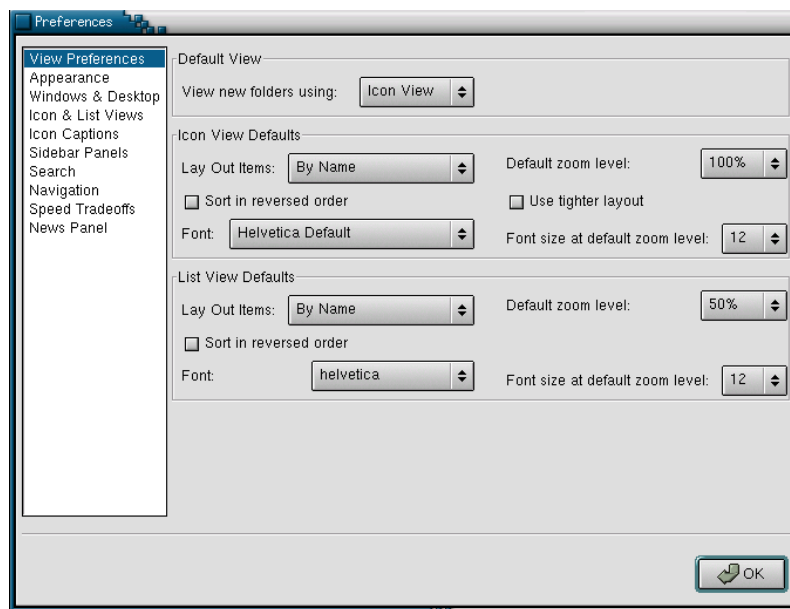


Figure 11-37. Nautilus Preferences

11.2.2.3.1. View Preferences

As you can see, the main preferences are located in the View Preferences window. Here you can change basic graphic looks such as your preferred font and its size, as well as the view mode (either icon or list view, web view for a web page).

11.2.2.3.2. Appearance

Next is the Appearance window. You can define your Default smooth font: this will affect the left window's tabs such as History, Help, News, etc.



Figure 11-38. Changing Default Smooth Fonts

This example shows *Nautilus*' sidebar with the *DerDmonschriftkegel* font.

Changing *Nautilus*' theme can be fun, although the difference between each theme is, to say the least, quite subtle. Try them out. You can also Add New Themes.

Here is an example of the GNOME theme:

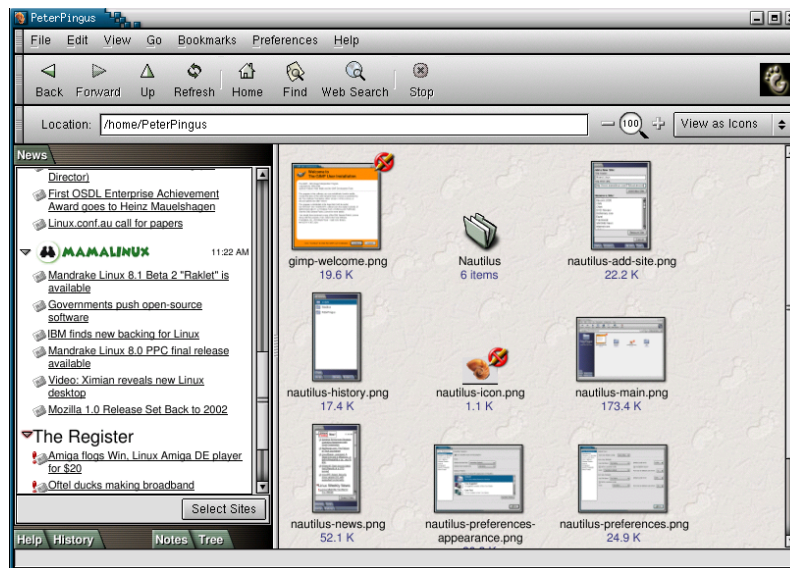


Figure 11-39. GNOME Theme for Nautilus

11.2.2.3.3. Windows and Desktops

This is the window to tweak if you do not want *Nautilus* to draw your desktop. However, if you do unclick the Use Nautilus to draw the desktop, you will lose all your desktop icons!

By default, if you click on an icon (or on text, depending on the view you choose) in the left or right side of *Nautilus*, the file's contents will be displayed in the same window. In the Windows and Desktops window, you can modify this by clicking on Open each file or folder in a separate window. The same principle applies to the other options offered in this window.

11.2.2.3.4. Icon & List View

The features in this window are very useful. Here you can activate items with a single click (instead of the default double click), show hidden files (the ones that start with a period. You can view those in a *Terminal* using `ls -a`) and backup files (the ones which end with a tilde). You can also list folders before files, which is very helpful when a directory holds many files.

11.2.2.3.5. Icon Captions

This window has only one function. Here you determine in what order information about files is shown. You find the typical size, date modified, type, etc.

11.2.2.3.6. Sidebar Panels

Here you define which tabs you want to see in your sidebar (which is the left side of the window). Click or unclick on the different options to see them appear or disappear. You may also choose to see only folders in your tree structure. Hence, you would see the folders in the sidebar and the contents in the right side of the window.

11.2.2.3.7. Search

Define your search options in this window. You can either choose to search "by file name only" or "by file name and file properties". You can select your default search engine (Google (<http://www.google.com>) by default).

11.2.2.3.8. Navigation

The Navigation window is where you determine your home page (your_account by default). You can also set your Proxy settings, if you use one. Finally, you can disregard bookmarks created by *Nautilus* by clicking on the Don't include the built-in bookmarks in the Bookmarks menu.

11.2.2.3.9. Speed Tradeoffs

Here are located options concerning information displayed about icons. You can set *Nautilus* to show text in icons, to list the number of items in a folder, to display thumbnails for image files and even to preview sound files, which launches an audio player such as *XMMS*.

11.2.2.3.10. News Panel

Two options are offered here:

- maximum items per site;
- update minutes.

The first one allows you to set the number of news which will be displayed in the sidebar's news tab (default is six news). The second one lets you set the update frequency (default is five minutes).

11.2.2.4. Browsing the Web

Like *Konqueror*, *Nautilus* acts as a file manager and a web browser. Simply type a web address in the Location Bar and off you go!

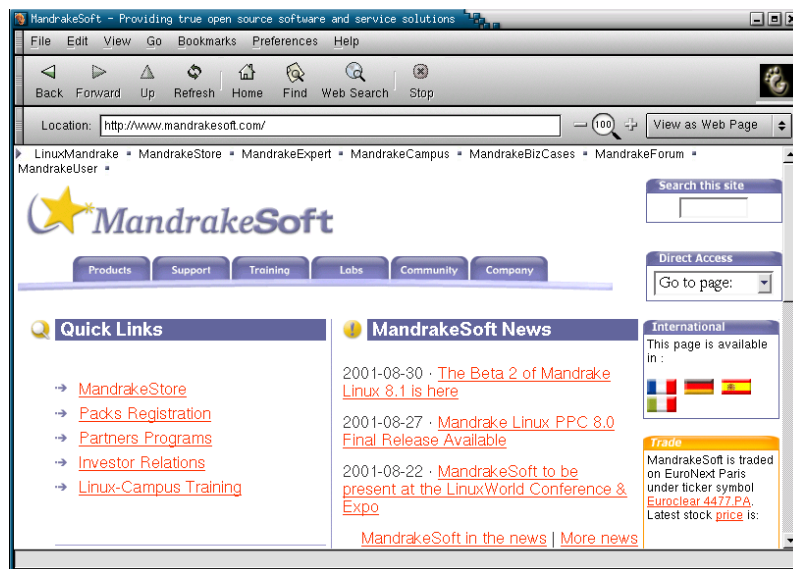


Figure 11-40. Browsing the Web with Nautilus

In order to view only the web page you typed, go in View→Hide Sidebar

11.2.2.4.1. Searching the Web

Simply click on the Web Search button located in the tool bar and your defined web search engine's page will automatically open. You can also access this feature by pressing on the **Shift-Ctrl-F**.

11.3. General Internet Use

If you feel your general knowledge of Internet is low, then this section is for you. Others may want to browse those pages but keep in mind that this section will reveal only basic stuff about how to browse, write mails, etc.

Note: Many web browsers and mail clients exist. For the purpose of this book, we will speak about *netscape*, which is arguably the most commonly used. All browsers and mail clients work in very similar fashions so, generally speaking, the information contained in this section applies to most web browsers and mail clients.

11.3.1. Configuring your Mail Client

To open *netscape*, access your *GNOME* or *KDE* menu and then go in the Networking→E-Mail→Netscape Messenger.

Then, you need to configure your mail client and browser in order to go any further. For this, you need your user name, your password, your *POP* /*IMAP* server name, your *SMTP* server name and your *NNTP* server name. If you do not have this info, get it!

11.3.1.1. Identity

To configure your mail client, go in the Edit menu and select the Preferences sub-menu. There you will find a Mail & Newsgroups category. Select the first one, that is Identity. Fill in the blanks: your name, *e-mail* address (the two latter fields are mandatory), reply-to address, organization and signature file items. You can create a signature file which will identify you. To do so, open your favorite text editor and write what you want your fellow web surfers to know you as. Then Save the file as *.signature.txt* and you are up and running.

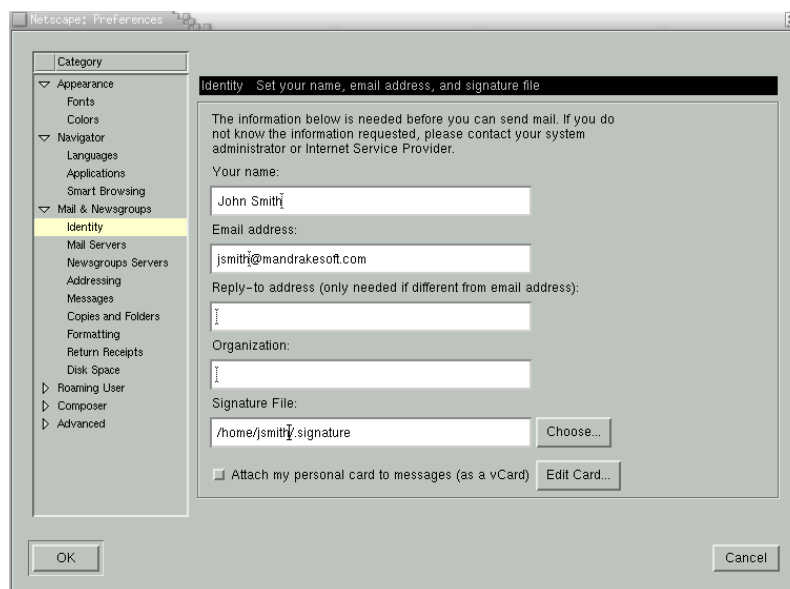


Figure 11-41. Your Identity

Note: The following sections are all configured in the Edit→Preferences sub-menu. We will not repeat this throughout since it would be pretty redundant, don't you think?

11.3.1.2. Mail Servers

In order to log on to the Internet, you must go through a mail server. For it to work properly, choose the Edit button and type in your server's name (i.e.: Mandrakesoft.com). If you are using a *POP* mail server, you may only use one mail server and your mail will be held on your computer. On the other hand, if you use an *IMAP* mail server, you may utilize as many mail servers as you like while your mail is kept on the server. Finally, you write your user name in the appropriate field and you may enable the mail client to remember your password, although this is not secure. This information is provided by your ISP. The latter must also give you a *SMTP* mail server name for outgoing mail.

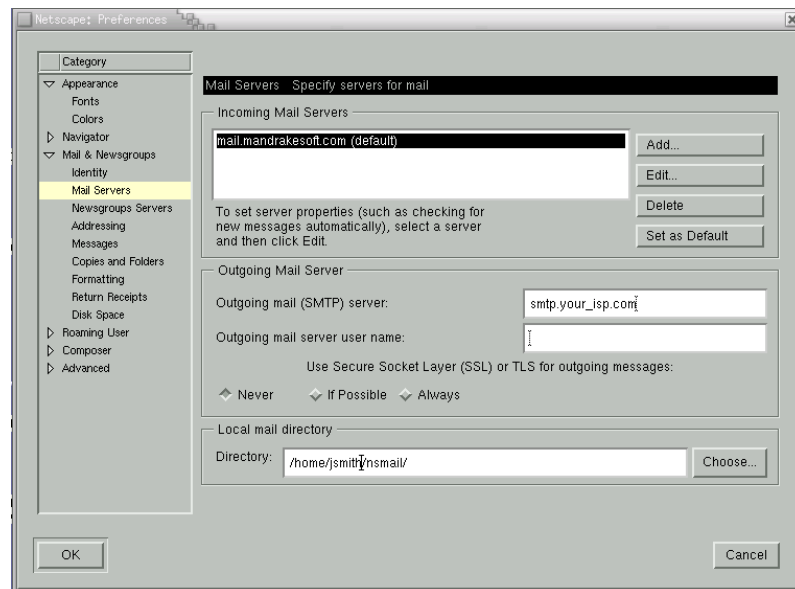


Figure 11-42. Configuring your Mail Server(s)

11.3.1.3. Newsgroups Servers

If you understood the latter paragraph, well, it's about the same thing for this type of server. Your ISP provides you with a similar server name but for news this time. You may also subscribe to other newsgroups via the File→Subscribe menu.

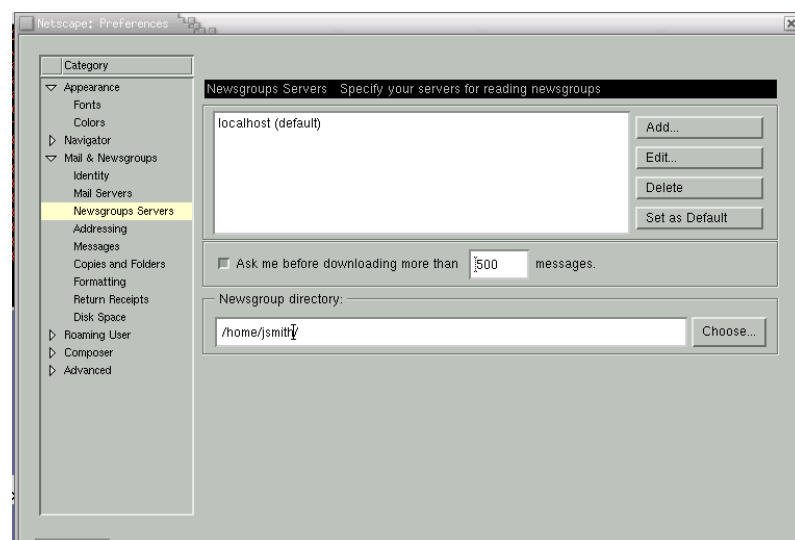


Figure 11-43. Configuring your Newsgroups Server(s)

11.3.1.4. Addressing

The Addressing sub-menu is very helpful since it allows your mail client to recognize a few essential assets of *e-mail* writing. If you tell the mail client to search in your address book when you type in a name, it will automatically give you a choice of users if more than one person has a similar name (i.e.: John Smith and John Woods). Your mail client will give you the choice between those two users when you start typing them and you want to finish your typing with the **tab** key.

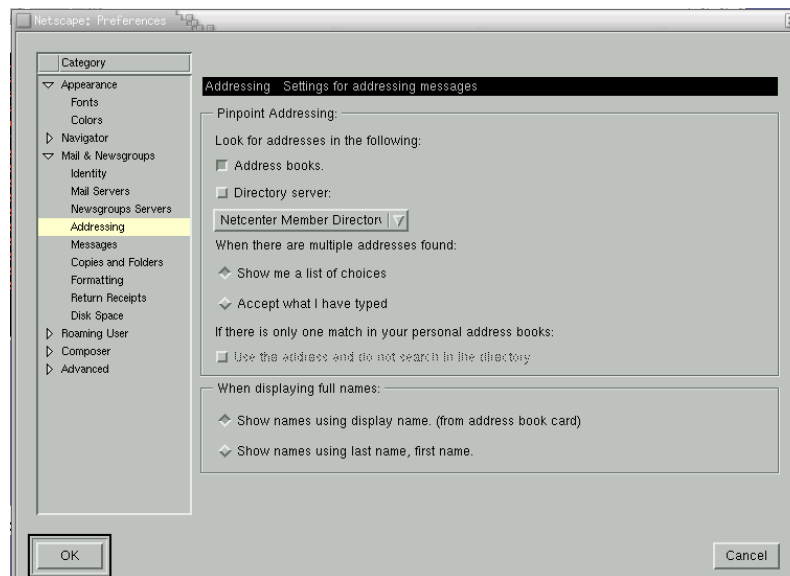


Figure 11-44. Short-Cutting your Way through E-mails

11.3.1.5. Messages

This sub-menu enables personalization in regards with the look of your messages. When you reply to an *e-mail*, you may choose to quote (or not) automatically the original message. The best feature, however, is the Wrap Longlines: did you ever try to read an *e-mail* and had to browse horizontally with your mouse pointer? Not very exhilarating... This feature formats your *e-mail* with a maximum of 72 characters per line.

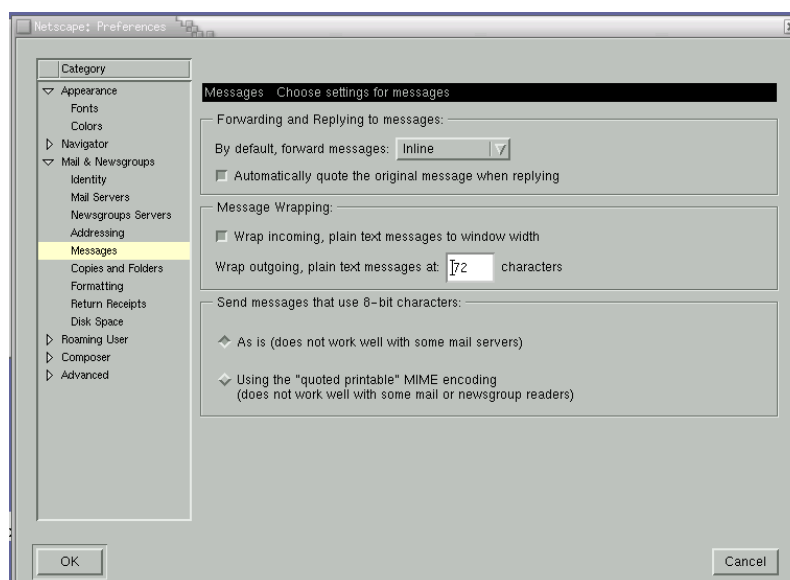


Figure 11-45. Make your Messages Look Good!

11.3.1.6. Copies and Folders

This feature allows you to send “blind-carbon copies” (or Blind Carbon Copy) to whoever you like. For instance, you might want to send yourself all the *e-mails* you send out instead of having them accumulate in your sent directory.

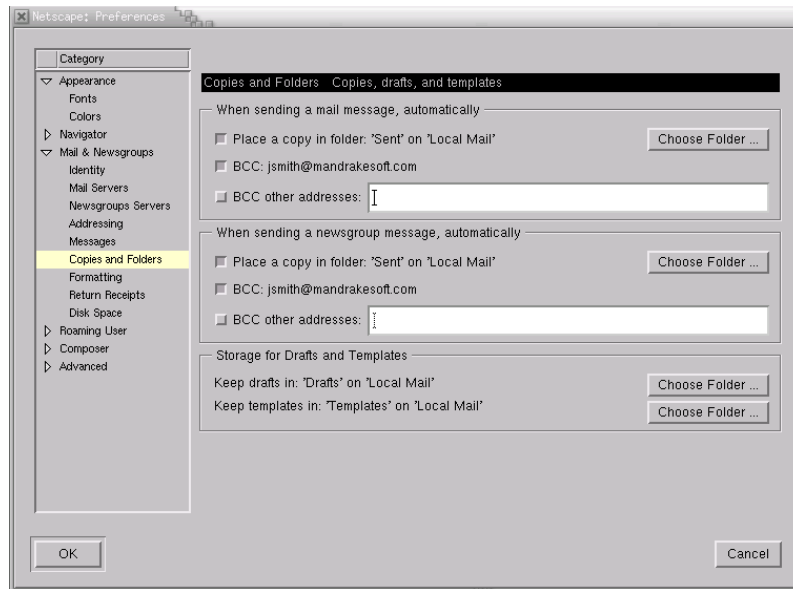


Figure 11-46. Send all those E-mails... Intelligently

11.3.1.7. Formatting

Now, some users prefer to receive *e-mails* in text mode, others in HTML. Which ever you like better does not really matter, but the recipient’s opinion is important... For instance, some users hate to receive HTML-based *e-mails*: they might simply delete it because it is too long to download. Others do not care, etc. You know your *e-mail* partners better than we do, so make sure the format you use suits them.

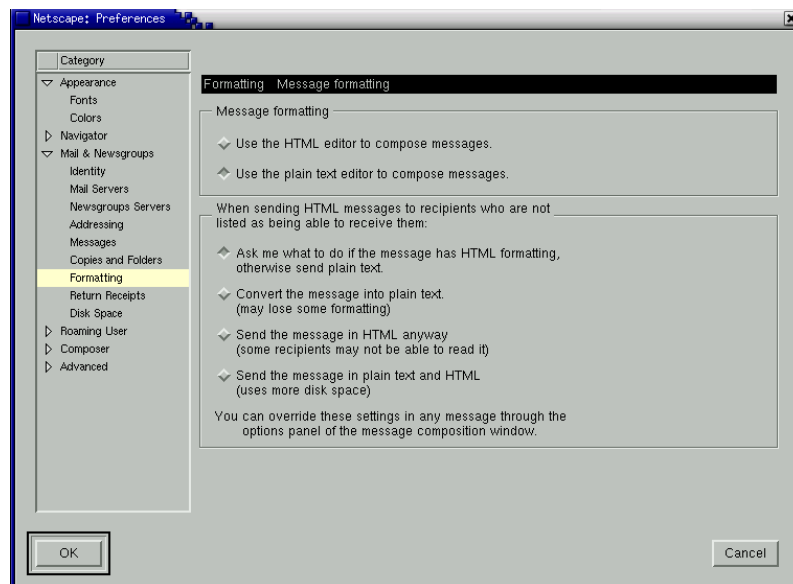


Figure 11-47. Respect your Recipient

11.3.1.8. Return Receipts

This option insures that your recipient acknowledges that he received your message. Then again, users can choose not to send a receipt even if asked for, but for important/confidential documents, we strongly recommend you use this feature.

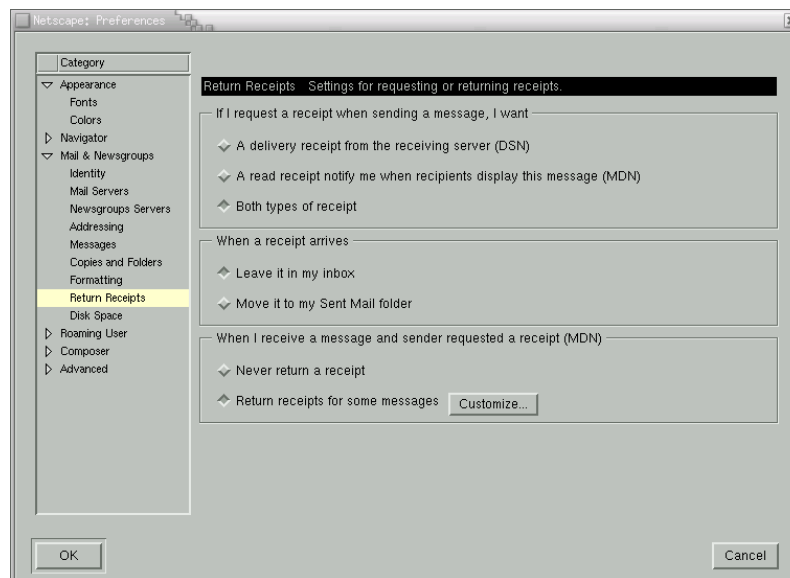


Figure 11-48. Proof of Delivery

11.3.1.9. Disk Space

Depending on how many *e-mails* you receive every day, you might want to limit the number of messages you keep on your server. It is also important to limit the size of your *e-mails* so you do not end up with 5-megabyte messages in your Sent folder...

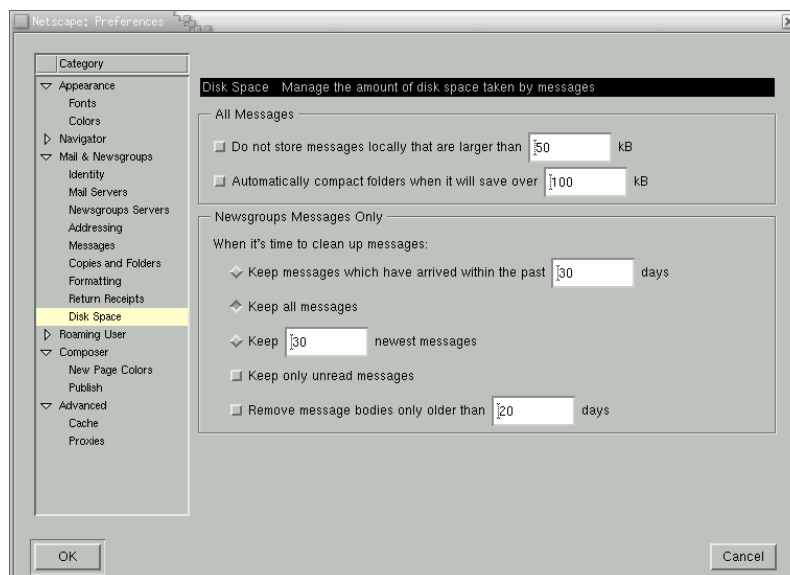


Figure 11-49. Save up on Disk Space

11.3.2. E-mail

If you never sent an *e-mail* or participated to any mailing lists, what were you waiting for! Seriously, *e-mail* permits fast information flow and is now present in most businesses. Even at home, people are more and

more connected to the Internet and, depending on the country from which you originate, fast connections are available, such as DSL.

To open your *netscape* mail client, access your *GNOME* or *KDE* menu, then Networking→Mail→Netscape Messenger.

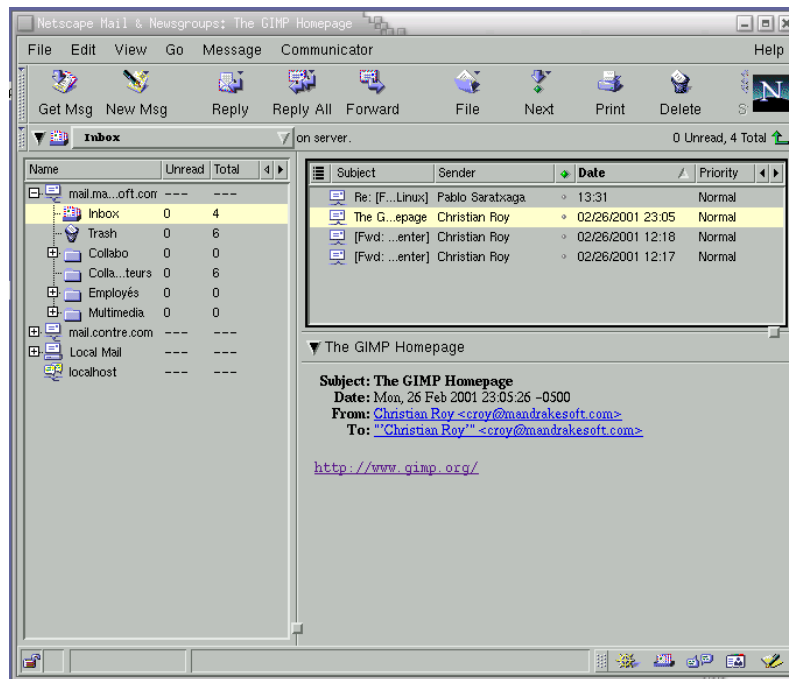


Figure 11-50. Netscape E-mail Client

The latter figure shows a typical *netscape* mail client. On the left is a list of your directories while on the right, *e-mail* contents are shown. Since not many keyboard shortcuts exist in neither the mail client nor the web browser, you will have to use your mouse to go through the menus. However, some of the key functions do have keyboard shortcuts: Reply (Alt-R), New message (Alt-M), New browser (Alt-N), Cut (Ctrl-X), Copy (Ctrl-C) and Paste (Ctrl-V). Try these out and you will see how quickly you can go about sending *e-mails* without your hands leaving the keyboard.

The task bar located under the file menu, however, is pretty helpful. There you will find all the major *e-mail* client functions such as Get message, New message, Reply, etc.

11.3.2.1. Sending an E-mail

Sending *e-mails* is very easy. To do so, simply click on New message. A dialog box pops up.

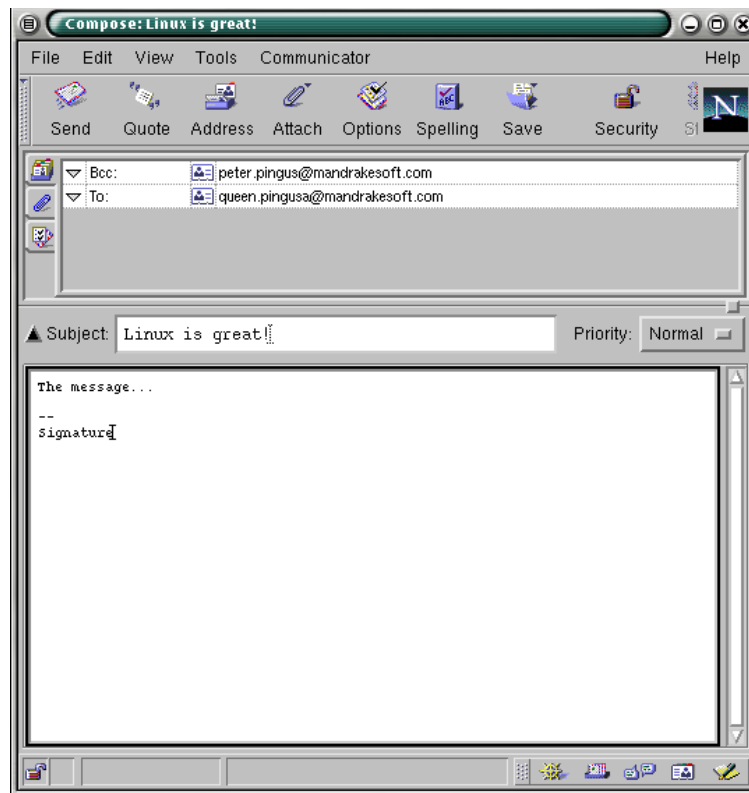


Figure 11-51. Netscape New Message

As you can see, we are sending an *e-mail* to Queen Pingusa while Peter Pingus will receive a Blind Carbon Copy, which means Queen Pingusa will not know a copy was sent to Peter Pingus. This may be helpful if you want a copy of the *e-mails* you send. You can add as many Carbon Copy or Blind Carbon Copy recipients as you like/need.

When writing an *e-mail*, use a self-explanatory title, for many Internet users now receive over 50 *e-mails* a day. You may also select a priority level. At the right of your new message window is a little pull-down menu where you can choose an appropriate priority level. Then, when you finish writing the message, simply press on the Send button or Ctrl-Enter.

Now, let us go through the menus a bit more.

File Menu

The simplest commands are contained in this menu such as Print, Close, Quit, etc. Note that the Close option terminates your mail client while the quit option closes all *netscape* browsers and clients alike. Use the Subscribe option if you wish to subscribe to existing mailing lists on the server(s) you are using.

Edit Menu

Held in this menu are the Cut & Paste options plus a few very handy sub-menus. The Preferences' one is, to our opinion, the most critical. This is where you set your mail server addresses, your identity, *e-mail* address, return *e-mail* address if different from the one you are currently using, etc. You can also select your mailing lists servers.

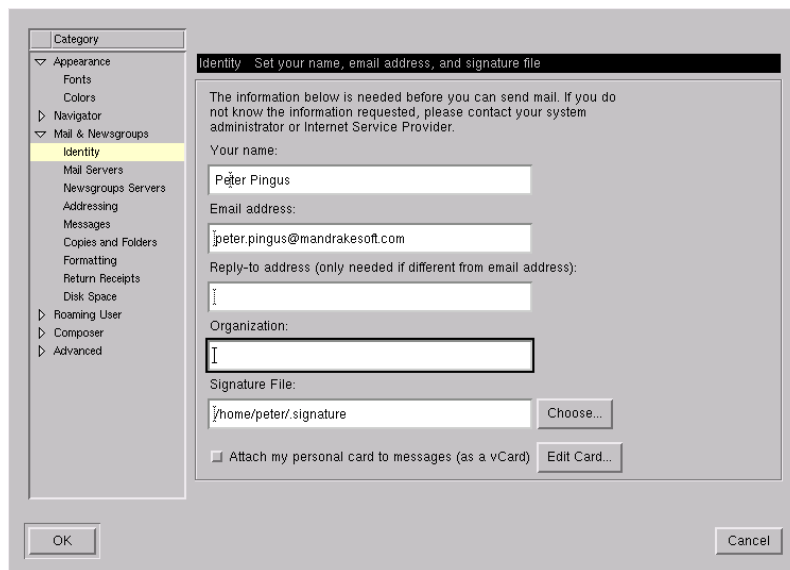


Figure 11-52. Netscape Preferences

The Filter option is also very interesting for those who receive a lot of *e-mails* on a daily basis and wish to sort them out directly into sub-folders, hence liberating the “poor” inbox from loads of *e-mails*.

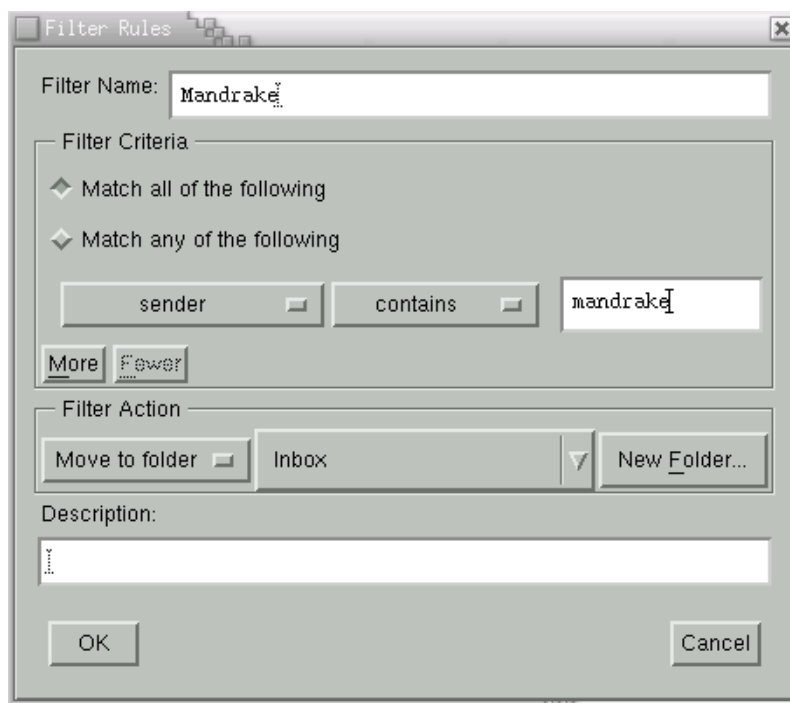


Figure 11-53. Netscape Filters

View Menu

Now, this menu is “for your eyes only” :-). In fact, two options are very practical: View Attachments Inline and Wrap Long Lines.

Go Menu

This one permits you to surf through your mails in a precise directory or sub-directory: you can browse with your mouse or utilize the very practical Alt+Down (or Up).

Message Menu

You can do almost anything inside this menu: move files, forward, reply, edit messages as new (this feature is very handy if you want to reply to someone without the ugly “>” all over your *e-mail*).



Figure 11-54. Manage your Messages through this Menu

Communicator Menu

Finally, this menu holds all the necessary web components. In it, you can open a mail client, web browser, your address book, edit your bookmarks, etc.

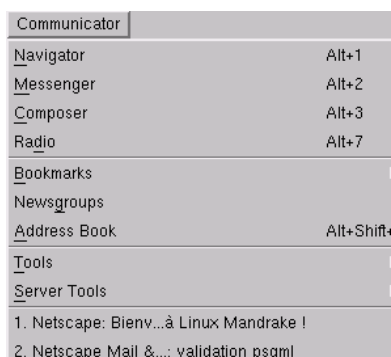


Figure 11-55. An All-in-One Menu

11.4. Multimedia Center

If you can not live without your MP3, this section is for you :-) Here we explore the wonderful world of multimedia, especially *XMMS* and the various multimedia tools available under your **Mandrake Linux** distribution.

11.4.1. Using Xmms

First off, *XMMS* stands for “X Multimedia System” With it, you can play a variety of audio sources, such as regular music CDs and MP3s. And one of the sexiest features of *XMMS* is you can change its “skin”, that is the way it looks. Let us start with the basics.

Note: We assume that you have used a CD-ROM player before so we will not describe the play, rewind, etc. keys.

First, to launch *XMMS*, go in your *KDE* or *GNOME* menu and choose Multimedia+Sound→Xmms. You can also create a desktop link as previously described. For command-line aficionados, simply type `xmms &`.

The main menu you will certainly use is the Options one. To access it, right-click on the main window. On the same main window, you can select the EQ button which pops up a little equalizer you can adjust to your liking. The PL button stands for “play list”, that is the songs you wish to listen to.



Figure 11-56. XmmS Main Window with Equalizer and Playlist

Note: As you can see in the latter figure, we chose the Chaos skin (look at the title bar), but you may choose one of several skins by right-clicking on the main *XMMS* window and choosing Options+Skins and a pop-up window will appear (you can also access it with Alt-S). It includes all available skins (usually, the skins path is /home/your_user_name/.xmmS/Skins). If you wish to download other skins, check out XmmS Site (<http://www.xmmS.org/>).

Now, to listen to music, you must add the files in your playlist. You can do this with several means: right-clicking on the play button pops up your files’ tree where you select the ones you crave to ear, either as files, directories or URLs. You can also access your files through the playlist by clicking on the add button and choosing dir (directory) or URL. To delete files, same principle, except you click on the sub button.

If you select the misc button, you can sort your playlist as you like: random, precise choice of songs, etc. Speaking about playlists, you may want to save a series of songs you particularly prefer. To do so, select the list button on the playlist and choose save or new if you want to listen to an already fixed playlist.

As stated earlier, the Options menu is the most interesting one for daily use. In it, try a couple of features such as Sticky (Ctrl-S), which sticks your *XMMS* player in every desktop. Therefore, you can access it anywhere. If you feel the player is too small, you can double its size (Ctrl-D), you may choose Remaining or Elapsed Time, etc. Feel free to personalize it the way you want, there are far too many possibilities for us to go into detail.

The preferences sub-menu of the Options menu is, however, the most important. In fact, if your preferences are not correctly chosen, it will be impossible to listen to your music. First, check out that you selected the right.

Finally, two keyboard shortcuts you will surely like: for a song or a selection of songs to repeat, simply click the r character while your mouse is on the main XmmS window. For song shuffling, simply click on s.

11.4.2. The Gimp

First of all, if you never heard about *GIMP*, you probably wonder what it stands for: GNU Image Manipulation Program. There you go. Now, this is probably the most complex of the basic tools. A note of advice: many tutorials exist on the web (on the *GIMP*’s site at www.gimp.org (<http://www.gimp.org/>)) and the excellent *Grokking The Gimp* book written by Carey Bunk and published at New Riders. However, here are a few simple features.

To start it up, go in your *KDE* or *GNOME* menu and select Multimedia→Graphics→The GIMP. You can also create a desktop link as previously described (*StarOffice*, page 71). In a *Terminal*, just type gimp &.

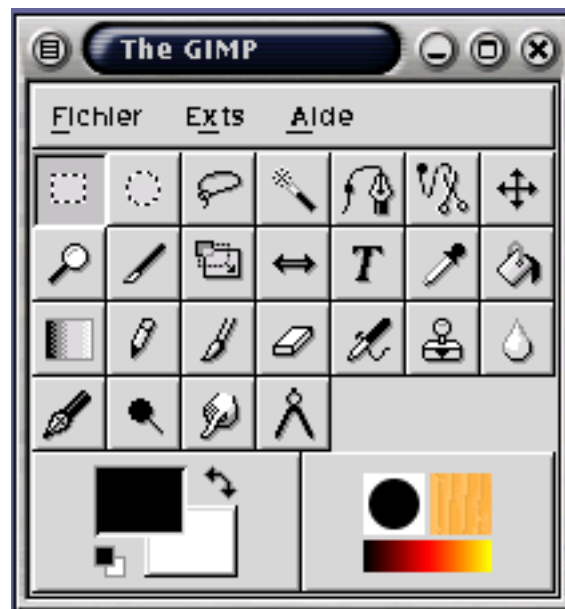


Figure 11-57. THE Image Manipulator

As you can see, the window is rather small, but do not be fooled by its size: you will be surprised of its powers! First, check out the main window. If you put your mouse cursor on each picture, a pop-up menu will tell you what you are pointing at. All your main options are contained in this window.

Now you might wonder how to do simple operations such as Save or open the Layout window. Most of *GIMP*'s options are obtained by right-clicking on a dialog (or window).

Note: If you use the GIF format for your images, you must first convert your images to indexed colors (see the Image→Mode menu).

Let us check out the layers window. *GIMP* essentially works with numerous image layers which are superimposed. So take any image you have and create a new layer. You can then change the colors and shapes as well as the overall look of the image.

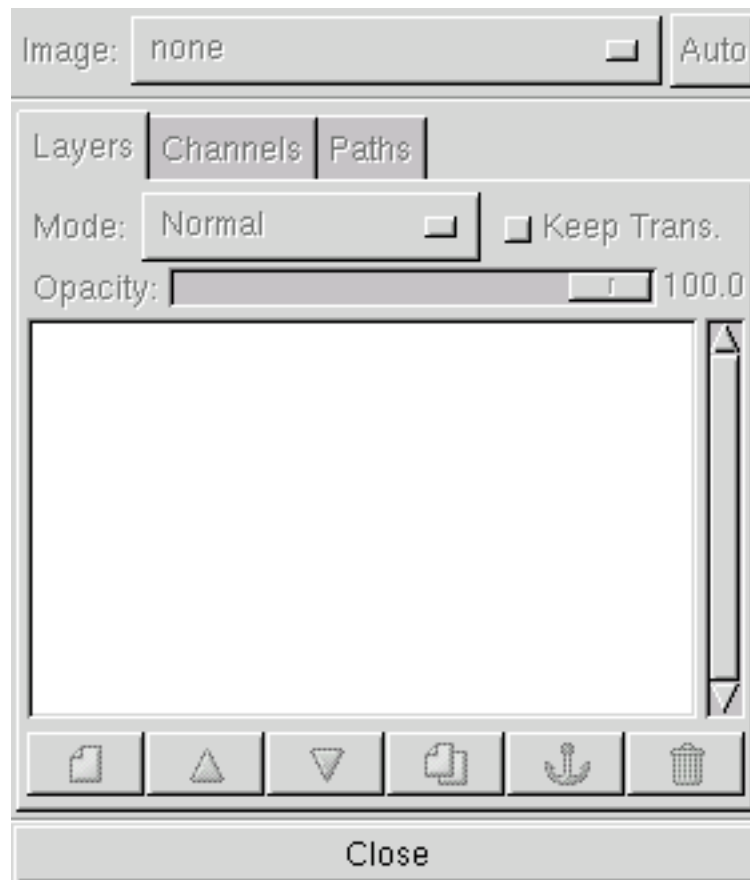


Figure 11-58. GIMP Layers

Well, that's all we are squeezing in for the moment. Be sure to check out those *GIMP* tutorials :-)

Chapter 12. Configuring Internet Connections

Your **Mandrake Linux** system contains a tool which allows easy *Internet* services configuration. It also helps you connect to the Internet in a few different ways. To launch it, first open *Control Center* and click on Network & Internet, then on Connection. Here is a look at the main interface (figure 12-1):

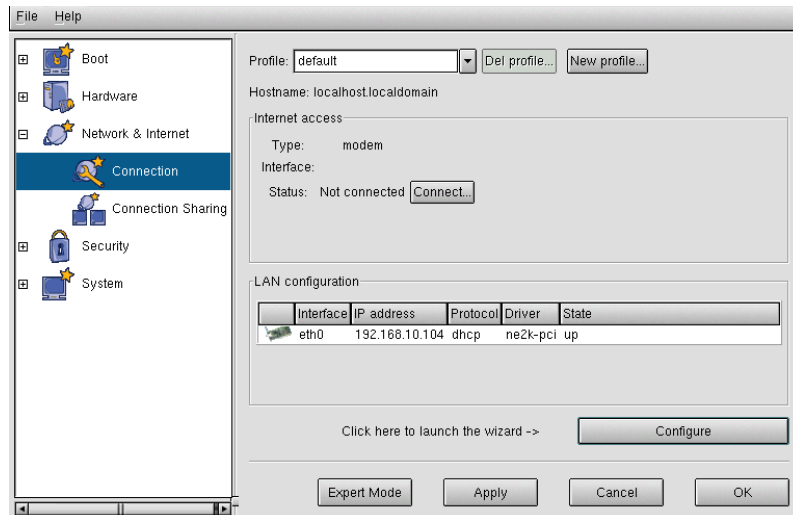


Figure 12-1. Connecting to the Internet

Let's review the different elements available:

- Profile combo box: if your machine is likely to be connected to different environments (typically a laptop moving from a modem connection at home from LAN at the office), you can choose here the correct profile.
- Del profile: to suppress the selected profile.
- New profile: to create a new connection profile. You will then have to configure it with the connection wizard.
- Disconnect or Connect button: for non-permanent accesses, allows you to control the state of your connection.
- Configure: launch the configuration wizard described below.
- Expert Mode: non documented, allows to you configure access without using the wizard.
- OK: validates choices and exits the application.
- Apply: validates choices without exiting the application.
- Cancel: exits the application and discards all modifications.

Here are some words about the Internet access configuration wizard. You will get a screen asking whether you wish to detect interfaces (say no if you notice any problem after clicking on yes), and then the list of available connection types.

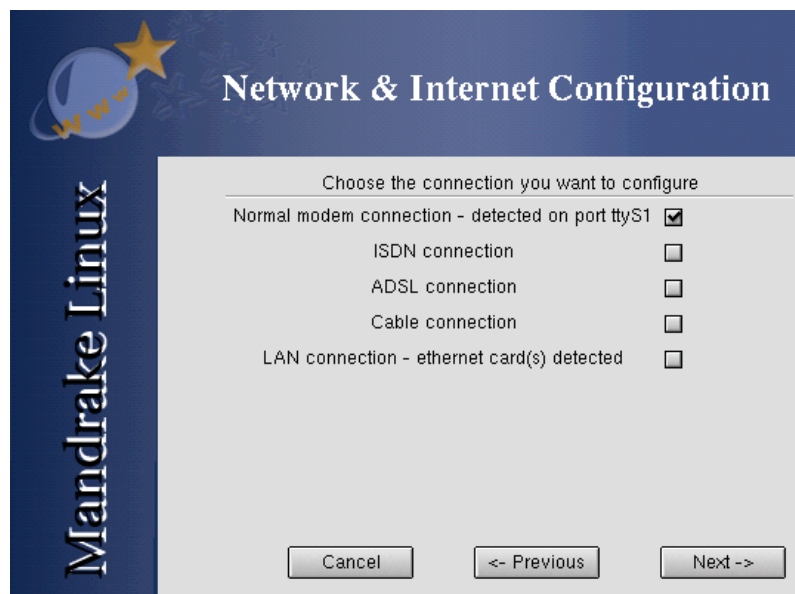


Figure 12-2. Choosing the Internet Connections to configure

You will be then presented with a list of detected devices (figure 12-1) where you can check the box(es) corresponding to the connection types you wish to configure. Click then OK, and you will go to the configuration dialog.

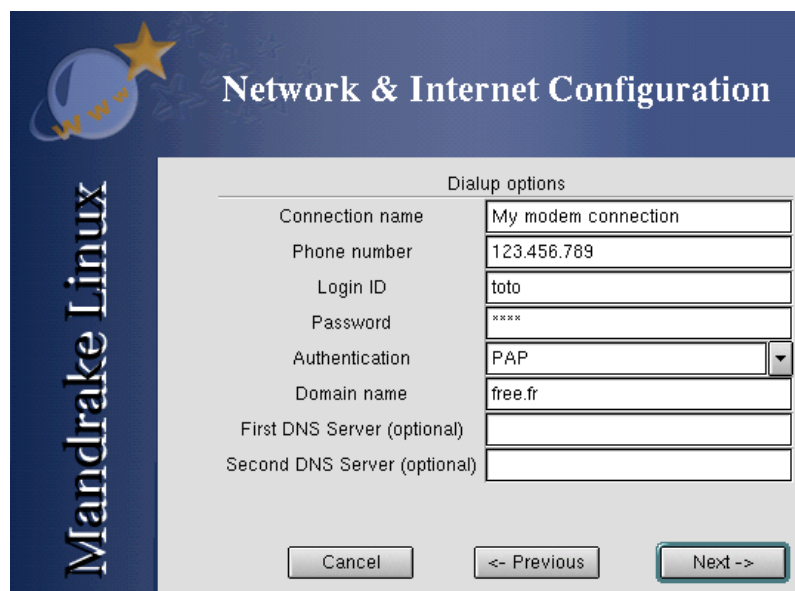


Figure 12-3. Configuring the Internet Connection

Fill all required fields with the parameters provided by your Internet service provider. Depending on the connection type chosen, the parameters may differ.

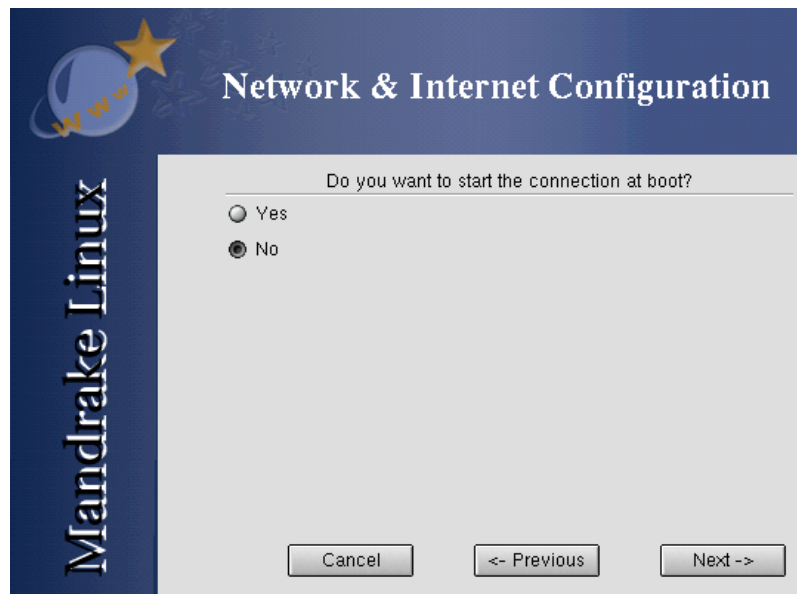


Figure 12-4. Always bring up the connection at boot time?

You are then asked whether you want to automatically bring the Internet connection up at each boot time. Choose Yes only for flat rate Internet connections like DSL.

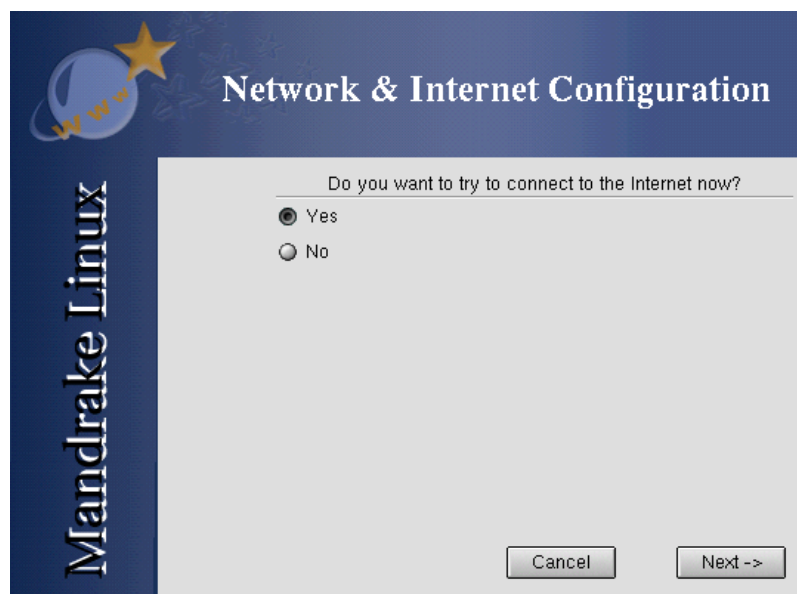


Figure 12-5. Try the Internet Connection

You can then test your Internet configuration to ensure it actually works. It is advisable to do so, so that you can correct possible errors right now.

After the configuration is done, you can bring the Internet connection up and down by using the Connect/Disconnect buttons of the main dialog (figure 12-1).

III. Build your world

Chapter 13. Securing Your Machine

Mandrake Linux ships the *Bastille* security tools suite. It is a set of two tools — one for basic configuration, and one allowing complex settings, which should make your machine much more secure. It is highly recommended that you run one of those tools just after installing your machine, and even before connecting it to the network.

13.1. Easy Configuration

The *BastilleChooser* tool allows inexperienced users to easily secure their machine, while not imposing too many constraints on the daily use of the machine. The tool is a little wizard whose steps we are now going to describe. To launch it, you need to run the command *BastilleChooser* from a *Terminal* as root. It is part of the *Bastille-Chooser* RPM package.

- 1. Introduction (figure 13-1): Click Next to go to first step, or Cancel to abort the wizard.

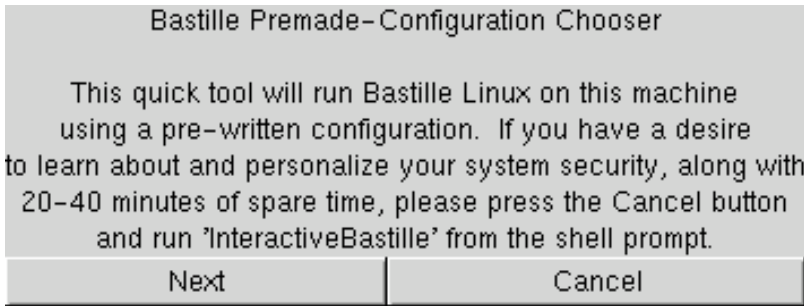


Figure 13-1. Introduction to the BastilleChooser wizard

- 2. You can see figure 13-2 the first step to using the wizard is to select the level of security to be applied to your machine. As the text states, a high level of security has to be balanced against the ease of use - the 'friendliness' of your system.

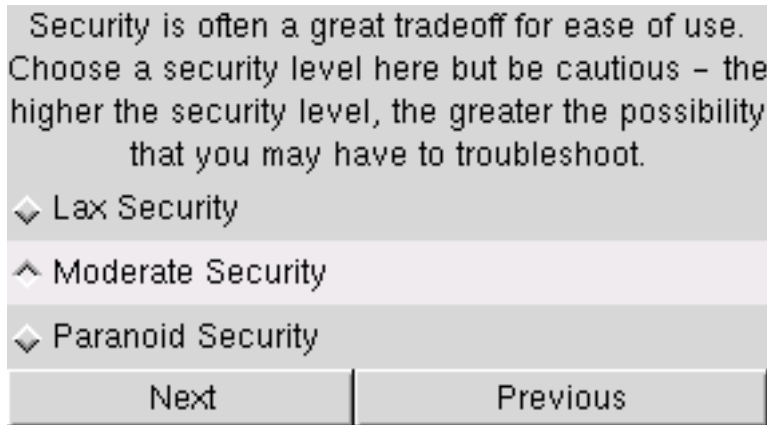


Figure 13-2. Choosing a Security Level

- 3. When this is done, you are asked whether your machine will act as a server or not (see figure 13-3). If you choose No here, all ports on the machine will be closed, and the wizard will finish. If you choose Yes, you will be presented with another dialog, where you can choose which services which will be used by the machine.

See *Security Levels in Details*, page 117 for explanations on the different security levels for both workstation and server uses.

Workstations tend to be single-user multipurpose machines, while servers tend to have a small number of specific functions like Web serving, DNS, etc.

Is this machine a server?

☐ No

☐ Yes

Finish Previous

Figure 13-3. Is your machine acting as a server?

4. As you chose Yes in the previous wizard, you are now asked to select the services allowed to get in your machine (figure 13-4). Check the corresponding choice for each available service, and click the Finish button. The firewall will allow requests concerning the services marked as Yes in this dialog.

Which services is this machine running?

Web	☐ No	☐ Yes
DNS	☐ No	☐ Yes
Mail	☐ No	☐ Yes
FTP	☐ No	☐ Yes
DHCP	☐ No	☐ Yes

Finish Previous

Figure 13-4. Choosing allowed services

That's all! If you found that this wizard does not offer all the options you would have liked to configure, read the next section.

13.2. Advanced security configuration

We are now presenting *InteractiveBastille*, a much more advanced tool, which allows even inexperienced people to make choices on a large number of security-related parameters. Running all the wizards available may take up to an hour if you wish to do it carefully. But what is an hour compared to a break-in in your system?

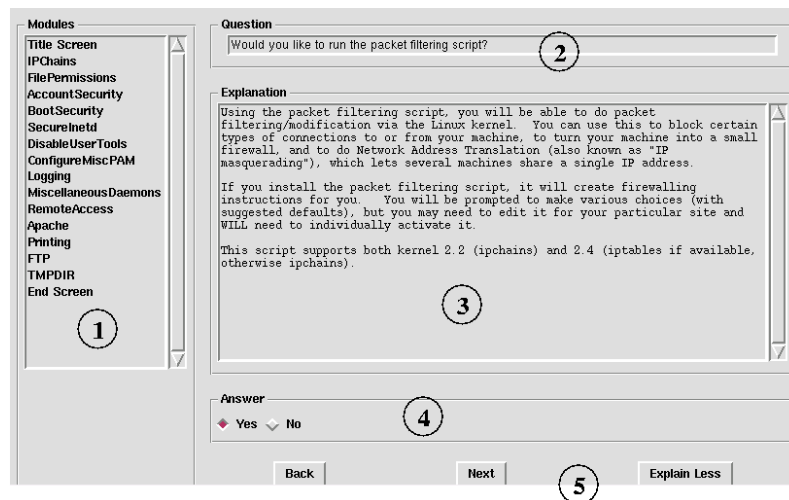


Figure 13-5. A typical InteractiveBastille screen

To launch this tool, you need to run the command `InteractiveBastille` from a *Terminal* as root. It is part of the *Bastille* RPM package.

This tool is made of 14 wizards, each one in charge of a particular security aspect. The screen, an example of which you can see in figure 13-5, is made of five parts:

1. The menu has 16 entries: one for the title screen, 14 corresponding to the 14 wizards, and an End screen, where you can validate the choices made in all wizards and make them active on the machine.
2. The question asked.
3. An explanatory text about the question, read it carefully before answering.
4. The answer is either a simple Yes/No choice or a field to fill with values, as explained in the explanatory text.
5. The navigation buttons:
 - Previous: will return to the previous screen of the current wizard,
 - Next: goes to the next question of the current wizard,
 - Explain Less/More: ask for more or less information.

This then, is the preferred way to proceed:

1. Open each wizard in turn. You probably do not need to run them all, as the first question generally determines whether you need to run that wizard or not.
2. At the End Screen answer Yes to make your changes effective.
3. Test the main features of your machine, test that access is denied for unauthorized services. In a nutshell check that your new settings act as you expect them to act and that there are no annoying side effects.
4. You may have to run the tool again until you get the desired result.

13.3. Security Levels in Details

Here we review the details of the three security levels: *Lax*, *Moderate* and *Paranoid* used in the security level settings either during the install or afterwards using *BastilleChooser*.

13.3.1. Workstation Configuration

13.3.1.1. Lax Security Level

- No firewalling
- Disables SUID status to the news server tools and DOSEMU
- Setup password aging – old unused accounts will be disabled, though the owners will be warned
- Password protects single-user mode
- Applies limits to any one program/user's resource usage, to block Denial of Service attacks.
- Configures additional logging
- Deactivate the DHCP Server daemon
- Disable the SNMP daemons
- Disable the VRFY/EXPN data mining commands in Sendmail
- Deactivate the DNS server
- Deactivate the Apache server
- Deactivate Apache Server Side Includes (SSI)
- Set umask to 022
- Set security level to 2
- Apply file permission level 2
- Restrict "." from the PATH variable
- Deactivate telnet
- Deactivate ftp
- Activate security checks

13.3.1.2. Moderate Security Level

- Moderate firewalling
- Disables SUID status to dump, restore, cardctl, rsh, rlogin and rcp
- Disables SUID status to the news server tools and DOSEMU
- Disables rsh/rlogin access to this machine
- Sets up password aging – old unused accounts will be disabled, though the owners will be warned
- Password protects single-user mode
- Applies limits to any one program/user's resource usage, to block Denial of Service attacks.
- Configures additional logging
- Deactivates the APMd daemon
- Disables NFS and Samba
- Disables GPM
- Deactivates the DHCP Server daemon
- Disables the SNMP daemons
- Deactivates Sendmail's network listening mode, so this WORKSTATION doesn't operate as a mail server
- Disables the VRFY/EXPN data mining commands in Sendmail
- Deactivates the DNS server
- Deactivates the Apache server
- Deactivates the Apache Server Side Includes (SSI)

- Sets umask to 022
- Sets security level to 3
- Applies file permission level 3
- Restricts "." from the PATH variable
- Deactivates telnet
- Deactivates ftp
- Disables FTP's anonymous mode capability
- Activates security checks
- Applies TMPDIR protection

13.3.1.3. Paranoid Security Level

- Tight firewalling
- Disables SUID status to mount, umount, ping, at, usernetctl, and traceroute
- Disables SUID status to dump, restore, cardctl, rsh, rlogin and rcp
- Disables SUID status to the news server tools and DOSEMU
- Disables rsh/rlogin access to this machine
- Restricts use of cron to root account
- Disables the pcmcia startup script
- Sets up password aging – old unused accounts will be disabled, though the owners will be warned
- Password protects single-user mode
- Applies limits to any one program/user's resource usage, to block Denial of Service attacks.
- Configures additional logging
- Deactivates the APMd daemon
- Disables NFS and Samba
- Disables GPM
- Deactivates the DHCP Server daemon
- Disables the SNMP daemons
- Deactivates Sendmail's network listening mode, so this WORKSTATION doesn't operate as a mail server
- Disables the VRFY/EXPN data mining commands in Sendmail
- Deactivates the DNS server
- Deactivates the Apache server
- Deactivates the Apache Server Side Includes (SSI)
- Deactivates the Apache Server follow-symbolic links behavior
- Deactivates the Apache Server CGI's
- Deactivates all remaining daemons, with the exception of crond, syslog, keytable, network, gpm, xfs and pcmcia
- Sets umask to 077
- Sets security level to 4
- Applies file permission level 4
- Restricts "." from the PATH variable
- Deactivates telnet
- Deactivates ftp
- Disables FTP's anonymous mode capability

- Disables FTP's user mode capability
- Activates security checks
- Applies TMPDIR protection

13.3.2. Server Configuration

The server configurations include three security levels. They start with the following major servers turned off: DNS, Mail, web, FTP and DHCP. and then modify them, based on which of the five major server types the user asks for.

13.3.2.1. Lax Security Level

- No firewalling
- Disables SUID status from dump/restore, cardctl, dosemu, news server programs
- Enforces password aging
- Password protects single user mode
- Adds additional logging
- Disables apmd, NFS, Samba, pcmcia, DHCP server, news server, routing daemons, NIS, SNMPD
- Disables VRFY/EXPn data mining commands in sendmail
- Deactivates named (dns)
- Deactivates apache (web)
- Deactivates apache Server Side Includes (SSI)
- Sets umask to 022
- Sets security level to 2
- Applies file permission level 2
- Deactivates telnet
- Deactivates ftp
- Activates security checks

13.3.2.2. Moderate Security Level

- Moderate firewalling
- Disables SUID status from dump/restore, cardctl, dosemu, news server programs
- Disables SUID status from rsh, rlogin
- Disables rhost-based authentication
- Enforces password aging
- Password protects single user mode
- Adds additional logging
- Disables apmd, NFS, Samba, pcmcia, DHCP server, news server, routing daemons, NIS, SNMPD
- Disables gpm
- Disables VRFY/EXPn data mining commands in sendmail
- Deactivates named (dns)
- Deactivates apache (web)
- Deactivates apache Server Side Includes (SSI)
- Deactivates apache CGI script execution

- Disables FTP user mode
- Disables FTP anonymous mode
- Sets umask to 022
- Sets security level to 3
- Applies file permission level 3
- Restricts "." from the PATH variable
- Deactivates telnet
- Deactivates ftp
- Activates security checks

13.3.2.3. Paranoid Security Level

- Strong firewalling
- Disables SUID status from dump/restore, cardctl, dosemu, news server programs
- Disables SUID status from rsh, rlogin
- Disables SUID status for mount, umount, ping, at, usernetctl, traceroute
- Disables rhost-based authentication
- Disables cron use to everyone but root
- Enforces password aging
- Enforces limits on resources to prevent DoS attack
- Password protects single user mode
- Adds additional logging
- Disables apmd, NFS, Samba, pcmcia, DHCP server, news server, routing daemons, NIS, SNMPD
- Disables gpm
- Disables VRFY/EXPN data mining commands in sendmail
- Deactivates named (dns)
- Deactivates apache (web)
- Deactivates apache Server Side Includes (SSI)
- Deactivates apache CGI script execution
- Deactivates apache's following of symlinks
- Disables printing
- Disables FTP user mode
- Disables FTP anonymous mode
- Activates TMPDIR protection
- Sets umask to 077
- Sets security level to 4
- Applies file permission level 4
- Restricts "." from the PATH variable
- Deactivates telnet
- Deactivates ftp
- Activates security checks

Chapter 14. Mandrake Control Center

Mandrake Control Center is the main configuration tool for your **Mandrake Linux** distribution. It enables the system administrator to configure the hardware and services used for all users. The tools accessed through the Control Center greatly simplify the use of the system, notably by avoiding the use of the evil command line. :-)

Not all tools accessible from Control Center are described in this chapter: notably “*Package Management*”, page 155 and “*Configuring Internet Connections*”, page 109.

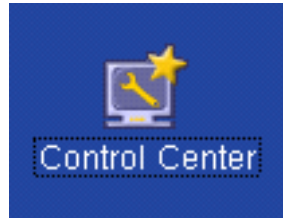


Figure 14-1. The Control Center icon

Note: *Control Center* is also available from the command line in text mode by running `DrakConf` or `mcc`.

The following image shows you the window that pops-up when you click on the *Control Center* icon on the desktop (figure 14-1).

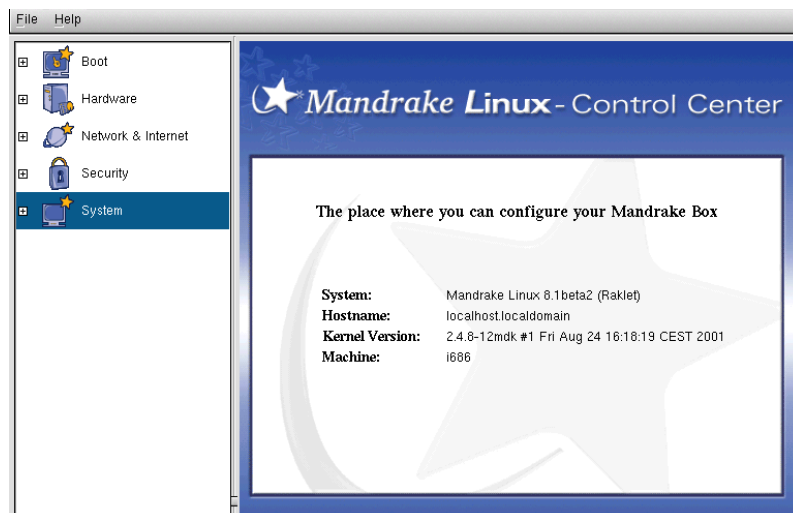


Figure 14-2. The Control Center main window

The tools are sorted into five categories to form a tree view on the left of the window. You can open a branch by clicking on the `[+]` label. Following are all the tools and references to the corresponding manual sections.

Boot	Create a boot disk, page 124
	Change your boot-up configuration, page 124
	Create a Boot Disk for a (semi-)Automated Installation, page 125
Hardware	Change the Resolution of your Display, page 126
	Configuring your hardware, page 128
	Changing your mouse, page 132
	Configure a new printer, page 132
	Changing your keyboard layout, page 136

	<i>Managing your partitions</i> , page 137
Network & Internet	<i>"Configuring Internet Connections"</i> , page 109
	<i>Configuring your machine as a Gateway</i> , page 141
Security	<i>Setting your security level</i> , page 141
	<i>Configuring a Basic Firewall</i> , page 141
System	<i>Customize your Menus</i> , page 143
	<i>Configuring Startup Services</i> , page 145
	<i>Managing the fonts available on your system</i> , page 146
	<i>Adjust date and time</i> , page 151
	<i>"Package Management"</i> , page 155
	<i>Searching through the log files</i> , page 152
	<i>Access to the Console</i> , page 152

Table 14-1. A fast review of Mandrake graphical tools

14.1. Create a boot disk

If you did not create one at install time, this tool allows you to create a boot disk. This rescue disk allows you to perform some maintenance tasks on your system in case of failure.

See the section "Using drakfloppy to create a boot disk" of the *Reference manual* to get more information on the use of this tool.

14.2. Change your boot-up configuration

This tool allows you to change two aspects of the boot process. The boot mode: text or graphical, and the System or login mode.

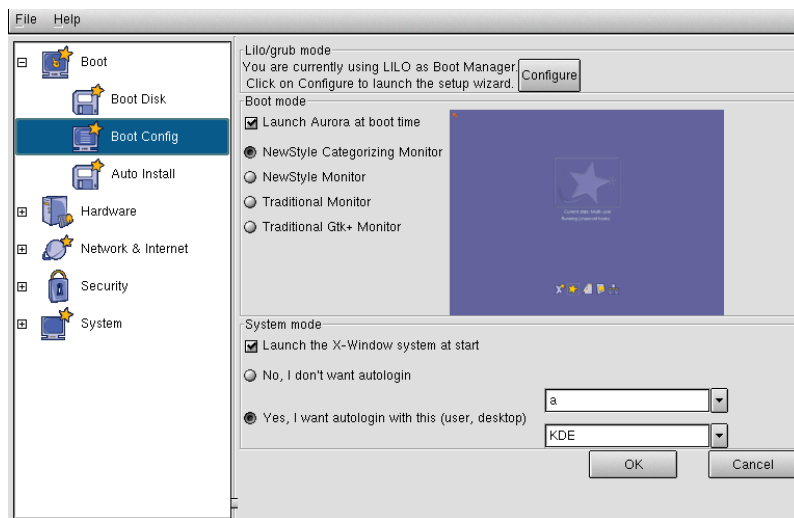


Figure 14-3. Choosing the boot mode

The main dialog is divided into three zones, each corresponding to a special configuration of the boot process:

14.2.1. Configuration of the Boot Loader

Clicking the Configure button of the first zone launches the boot loader setup. You will be presented two dialogs, the first one enables you to switch from one boot loader to another, and to its physical location. The second allows you to manage the different entries available through the boot loader.

Note: Unless you really know what you are doing, it is not recommended to change those settings as this may prevent you from booting your machine next time you try to power it on.

14.2.2. Configure the boot mode

In the upper part of the dialog, check the Launch Aurora at boot time box if you wish to have the graphical bootup screen instead of the usual text boot messages.

If you choose the graphical boot, you are then given different *Aurora* looks. A preview of each option is shown on the right.

14.2.3. Configure the login mode

Here, you can control the way people can log on to the machine. There are two aspects:

- 1. Graphical interface: If you wish to have the X-Window (graphical display) system at boot time, check the box Launch the X-Window system at start. If you leave it unchecked you will be presented the text login.
- 2. Autologin: If you are the only one to use your machine and nobody else has access to it, you may choose to be automatically logged in at boot time. If you check Yes, I want autologin, just choose the user to be automatically logged in in the first combo box, and the preferred Window manager in the second.

14.3. Create a Boot Disk for a (semi-)Automated Installation

This tool allows a system administrator to replicate an installation on many machines while not having to reconfigure all steps by hands for each machine.

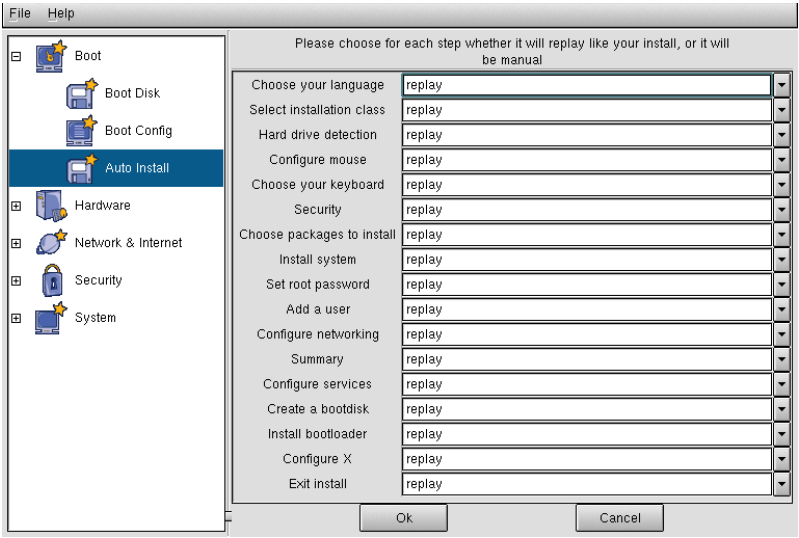


Figure 14-4. Choosing the steps to replay or not

After a warning screen about what we are going to do, we get a list of most steps of the installation. To each step is associated a two entries menu choice:

- replay: choose this if you want to reuse the choices you made during the manual installation for the automated installation.
- manual: choose this if you prefer to manually reconfigure this step during the automated installation.

When you have made your choice for each installation step, click the OK button. You will be asked to insert a blank floppy disk (all data will be erased).

After clicking OK again, the boot floppy disk will be created with the following characteristics:

- The installation method (from CD-ROM, via NFS, FTP, etc.) is the same as the one used during the install of the machine currently worked on,
- All the steps marked as replay will be replayed with all choices set to the ones made during the installation of the current machine,
- All the steps marked as manual will have to be manually configured during the installation,
- The partitioning and formatting steps will be always manual for security reasons.

Then all you have to do is insert the resulting floppy in the machine you want to replicate the installation on, turn it on, and configure the few remaining manual steps, saving you a lot of time.

14.4. Change the Resolution of your Display

14.4.1. X Configuration Simple Mode

This little tool allows you to change the video resolution of your screen, if the one you configured at install time does not fit your needs. You get two choices on the window (figure 14-5): resolution (in pixels) and depth (number of colors) of your system. Simply choose the one you wish to use and click the OK button.

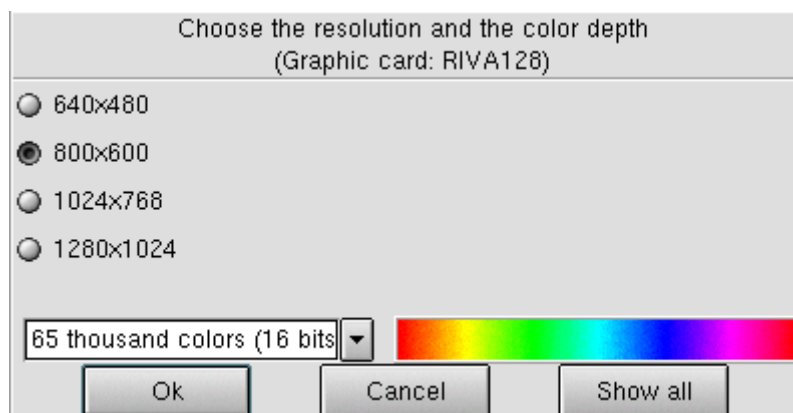


Figure 14-5. Choosing a new video resolution

Then a new dialog will ask you whether you wish to test the new choices or not (figure 14-6). It is highly recommended that you do test, because if it doesn't work it will be harder later to recover a working graphical environment.

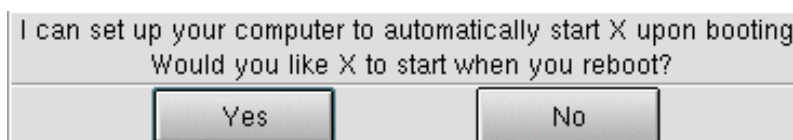


Figure 14-6. Test the new video mode?

The changes will be activated after you quit and restart *KDE*.

14.4.2. X Configuration Expert Mode

You can access a more advanced tool to even modify the screen or video card in use. Simply click the Expert Mode button while in simple mode. You will be presented various screens, each one corresponding to an aspect of the graphical configuration:

Change server

Depending on your video card, you may first be asked which graphical server you wish to use. You may have the choice between various versions or 3D/2D accelerations depending on your graphical card. You may have to try various servers to find the one that best matches your hardware and needs. If your video card supports various displays (multi-head), you will also have that option available.

Change resolution

This is similar to the options given in Simple mode, apart from a Show all button, which gives you access to more resolutions and color depths.

Test the configuration

It is highly recommended that you do test, because if it doesn't work it will be harder later to recover a working graphical environment.

X at startup

Answer No if you prefer to have a text login at boot time. Selecting Yes will launch the graphical login manager.

Should the graphical test not work, you are presented a menu allowing you to change more parameters, in order to find those which will work:

Change monitor

This option displays a tree with all major monitor brands and models. First expand the branch corresponding to your monitor brand, then choose the model that you are using.

Change video card

Same principle as for monitors, choose your video card brand and model.

Change resolution

This choice simply presents resolution and color depth combo boxes.

Show information

This is a simple window summing up the current hardware choices,

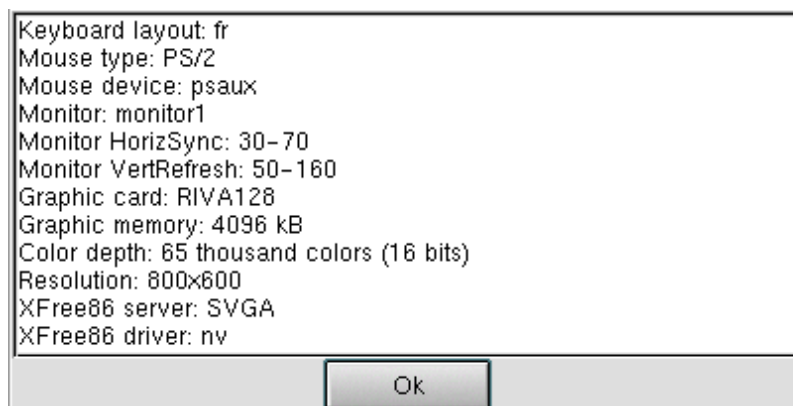


Figure 14-7. The X information window

Test again

It is recommended that you make a final test of your configuration before closing *xfdrake*; this will ensure that you'll have no problems when rebooting the graphical server.

14.5. Configuring your hardware

14.5.1. Introduction

The *harddrake* project has been developed to simplify hardware configuration under *GNU/Linux* by providing an easy-to-use interface.

harddrake is composed of two parts,

1. A main tool called *harddrake*, used to configure hardware by launching
2. a *harddrake* Wizard or external configuration tool(s) (which can be configured).

14.5.2. harddrake

14.5.2.1. Description

When was the last time you had to install a new sound card on your *GNU/Linux* system and just couldn't quite get it to work? Sure you know which model it is and can even guess which driver supports it and may even have some idea as to the IRQ DMA and I/O port it uses.

Here comes *harddrake*.

harddrake is a fully GUI-based tool which ties together many of the tools already included in a *GNU/Linux* distribution to automate and simplify the process of installing new hardware. Some items will be detected, others can be selected from a drop down list. The various I/O, IRQ and such X86 annoyance settings can be adjusted from within this interface.

On one hand, *harddrake* is used to display information. On the other hand, it can launch configuration tools as well. With an easy interface, you will be able to browse (hopefully) all the hardware your system consists of.

harddrake uses the detect library, so if your new hardware isn't detected, you only need to upgrade detect itself.

14.5.2.2. Usage

To launch *harddrake*, you can start it from:

- *Control Center*: Just click on the HardDrake icon.
- a terminal: Type *harddrake*, doing it this way you can pass parameters, as well.
- *GNOME* and *KDE*: Go to the start panel. The *harddrake* entry is in the Configuration/System group.

After a wait screen (indicating the detection process), you'll see a window like figure 14-8.

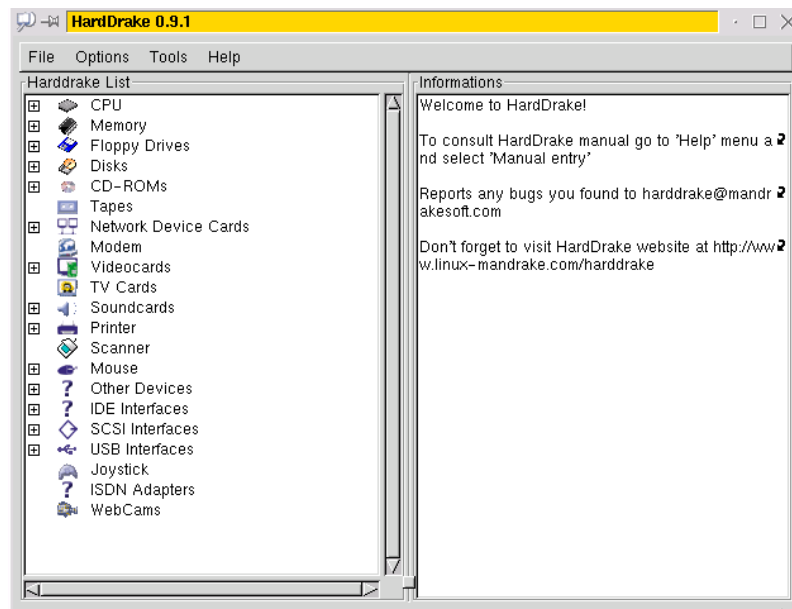


Figure 14-8. harddrake main window

On the left, you can see the device tree showing you all categories.

For some categories, you will notice a “[+]” symbol. By clicking on it, the subtree will be expanded and all detected hardware of this category will be listed. figure 14-9 shows such a window.

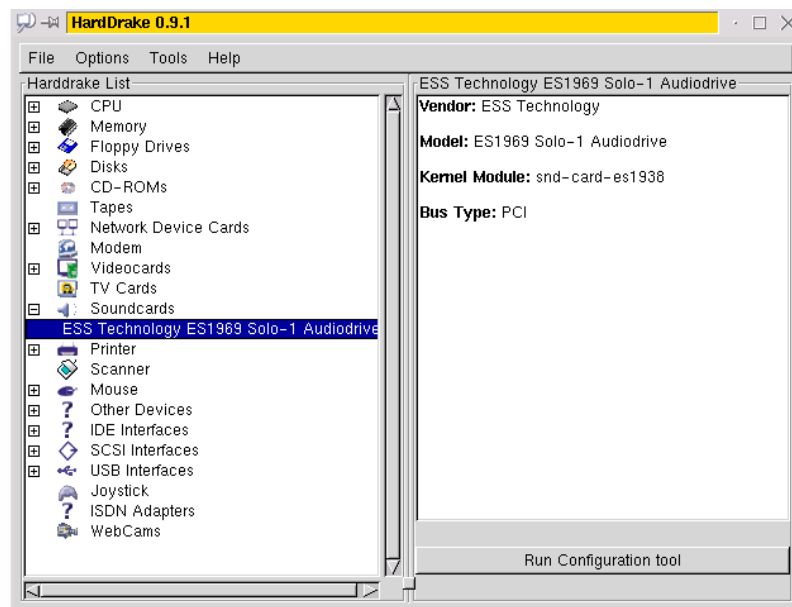


Figure 14-9. harddrake - selected device

If you select a device, you will get some useful information about it. In some cases you will see a configuration button, which will allow you to configure the selected device. In figure 14-9, we have expanded some parts of the tree and selected a device of one category. On the right you can see information about the selected card. If you press the Run Configuration tool button, the configuration tool associated with this device appears and lets you configure this card.

There is a special category called “Other Devices”, which contains all currently unknown hardware in your system. There is information available on how to help us to add this unknown hardware to our database. By reporting the requested information, you can hope to see your hardware recognized in future versions!

In figure 14-10, you can see a special case where the user is asked to report an ID to the harddrake team (mailto:harddrake@mandrakesoft.com). In most cases you will be asked to send the output of a “pnpdump”.

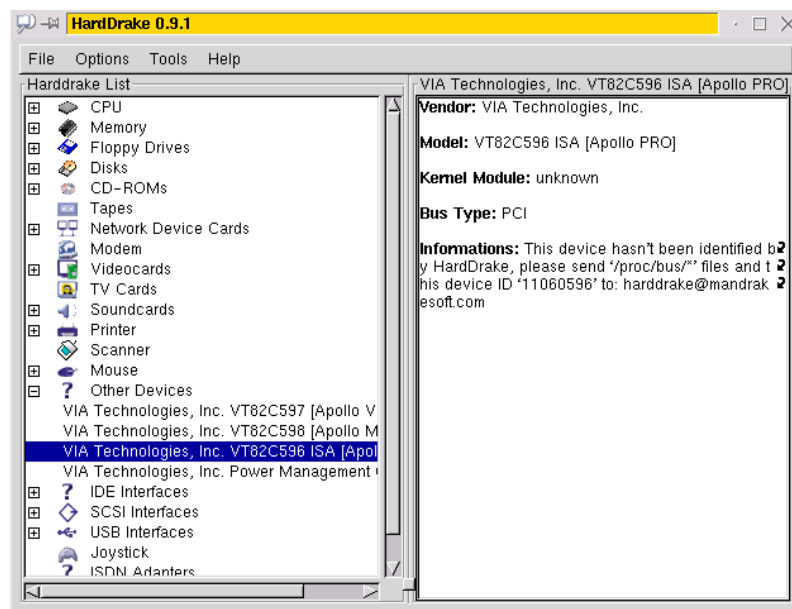


Figure 14-10. harddrake - unknown device

At the top of the window, there's a menu providing four items. First, there's the "File" menu with four actions. "Save report file" is used to write a system report to disc. "Load report file" is used to load the report file generated. "Reload" and "Exit" let the user restart and exit *harddrake*, respectively.

The second item, the "Options" menu, is for configuring *harddrake*. The first menu entry "Probing Options" allows for the disabling of some tests and for configuring actions associated with the Run Configuration Tool button and the "Tools" menu. So you can easily select your preferred configuration program for a category of hardware.

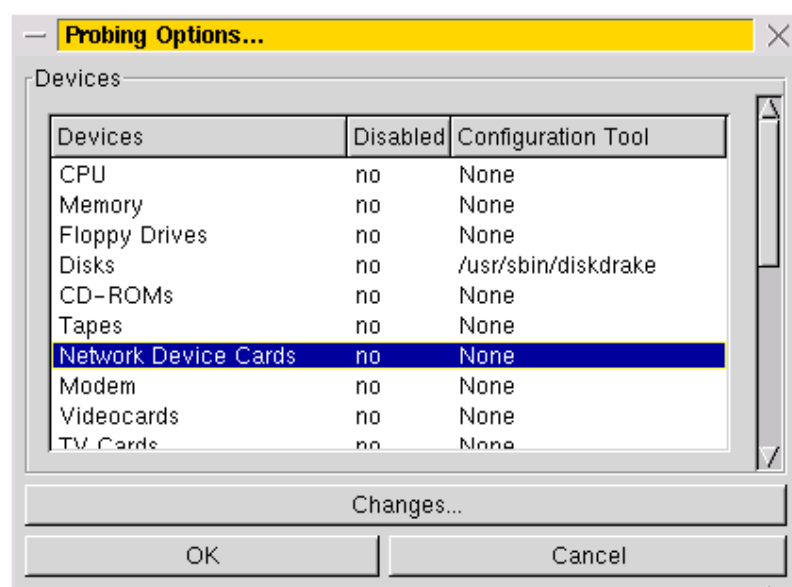


Figure 14-11. harddrake - probing options window

The last menu, is the *harddrake* help.

14.5.3. harddrake Wizard

14.5.3.1. Introduction

The *harddrake Wizard* is a generic configuration tool. It replaces the former configuration tools *etherdrake* and *sounddrake*.

14.5.3.2. Usage

As an example we'll focus on the *Sound-Wizard* now.

The *Wizard*, if available for a certain component class, is launched from *harddrake* by pressing the Run Configuration Tool button. After a few moments, a window like this figure 14-12 should appear.

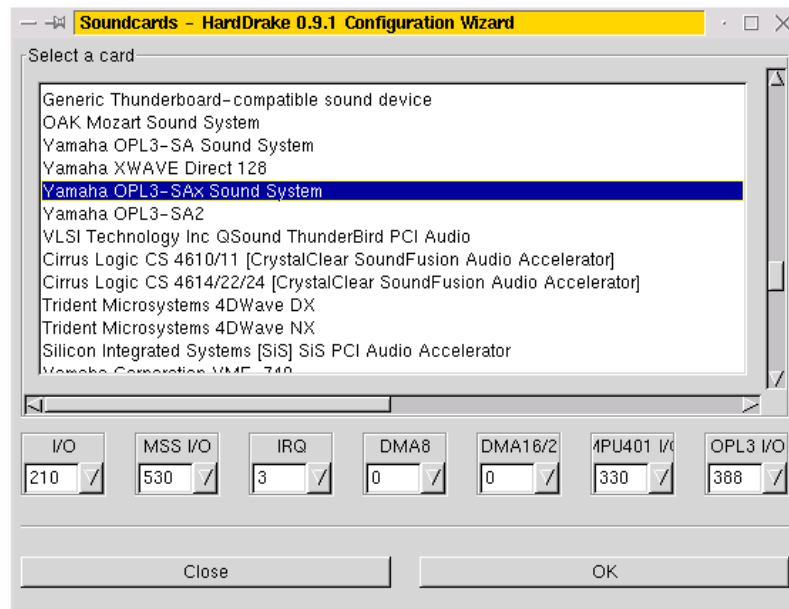


Figure 14-12. *harddrake* - Sound-Wizard

You can change the current selection, but in most cases it is not a good idea, as the detected device is already highlighted. For an ISA card you need to specify the I/O and IRQ settings if the values proposed by default are not correct. After checking configuration, press the OK button to test the configuration. Three samples should be played (if MIDI is available and you have a sound-card supporting 16 bit DMA channels). If you didn't hear them without any error messages, it may be due to one of the following reasons:

- Your speaker volume is too low.
- A hardware problem, maybe your sound-card is damaged?
- Your sound-card is installed incorrectly.

An error message may occur because of the following problems:

- Bad settings (I/O, IRQ, DMA ...).
- Old sound modules from another configuration are still in memory. In this case, unload them by running "modprobe -r <module_name>" from a terminal.

If you heard proper sound samples, you can press OK to confirm the configuration. Check sound configuration by starting a program which uses sound (specially from a non-root account). After these tests, you should reboot your system and check that the modules are loaded correctly at boot time.

14.5.4. Problems/Troubleshooting

If your hardware isn't recognized or your system freezes, contact the *harddrake* team (<mailto:harddrake@mandrakesoft.com>) and use the subject "[Detect]".

If you think it's a bug related to *harddrake* (bugs with the user interface), contact the same email address but use "[harddrake]" as the subject.

14.5.5. Other information

- *The harddrake home page* (<http://www.linuxmandrake.com/harddrake/>) (for news, updates, information ...)
- *The harddrake FTP archive* (<ftp://www.linuxmandrake.com/pub/harddrake/>) (download *harddrake*, old versions, tools)
- *IsaPnPTools home page* (<http://www.roestock.demon.co.uk/isapnptools>) (used by the detect library)

14.6. Changing your mouse

This dialog figure 14-13 allows you to setup another mouse, in case the mouse you are using is different to the one you chose at install time.

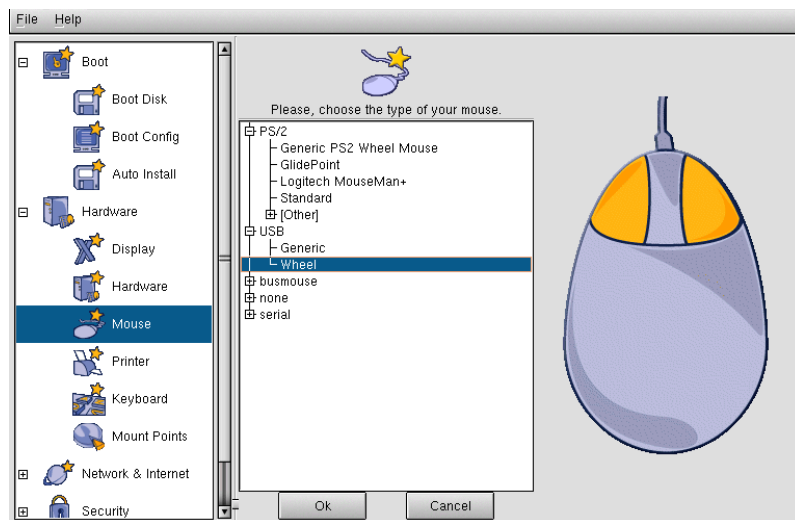


Figure 14-13. Choosing a different mouse

Mice are sorted in a tree view by connection type and by model. Highlight the mouse of your choice. Changes made are effective immediately after clicking the OK.

14.7. Configure a new printer

This tool allows you to configure a printer newly installed on your machine, or to configure your machine to act as a server for a printer newly connected to your local network.

If there are no printers configured on your machine, the first screen that appears is figure 14-15. If not, the first screen presents a menu with all printers already configured plus three additional options:

- **Printers on Remote Servers:** To browse all printers served by other *cups* servers on the local network. Those printers are accessible for printing, without reconfiguring them.
- **Add Printer:** To configure a new printer
- **Done:** For when you have finished configuring or reconfiguring the printers.

Additionally, there are two buttons:

- **OK:** To accept the choice,

- Expert mode: If you want to choose an uncommon driver for a printer, or get some more functionalities. We will not speak any more about this mode here.

Choosing a printer and clicking OK displays a menu where you can choose actions to take on that printer, as shown in figure 14-14. Each option gives access to a particular step of the wizard we are going to describe here in the case of a new printer, but with predefined values in all fields, which you may update.

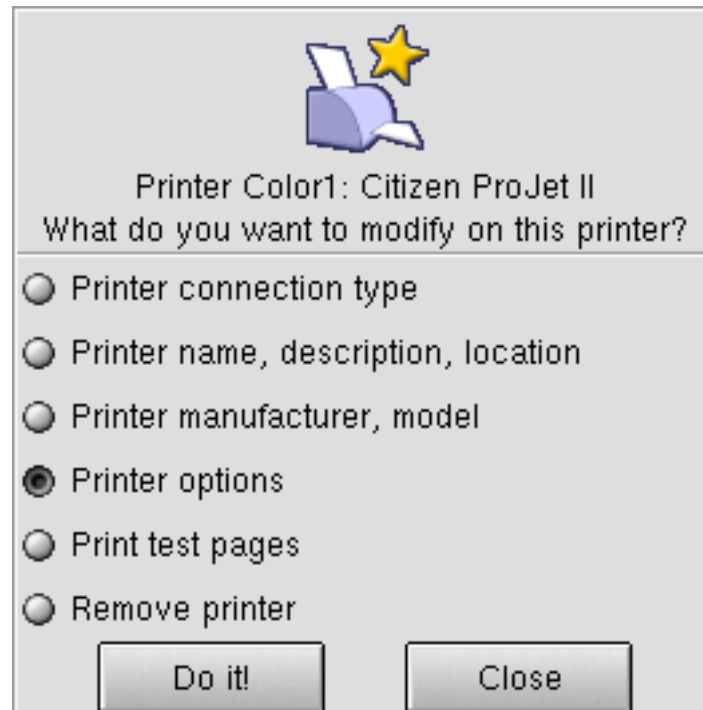


Figure 14-14. Modifying an existing printer

Choosing Add starts the new printer wizard: to go from one step to the next one, click the OK button. You will first be presented the list of available connections (figure 14-15). We assume here that you have a local printer connected to the parallel port (the most common scenario). Choose the connection that fits the printer you wish to install, and then move to the next step.

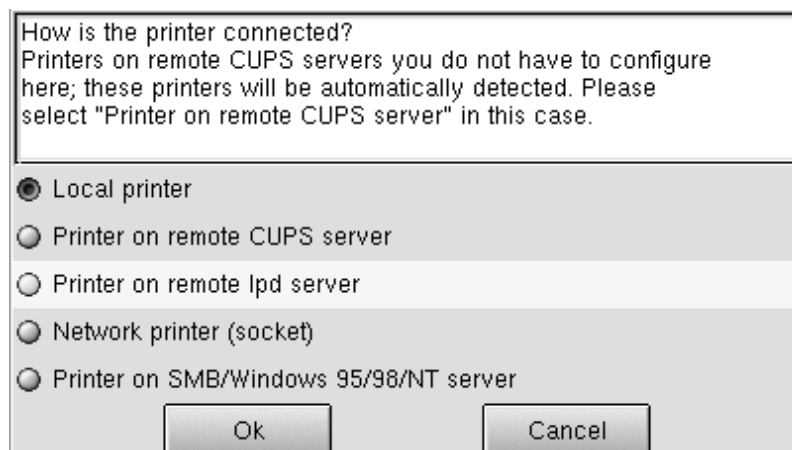


Figure 14-15. The printer connection type

- local printer: a printer directly connected to a serial/parallel/USB port of your computer. In most cases the printer model will be auto-detected.

- Printer on remote CUPS server: a printer already served by another machine on a *cups* server¹.
- Printer on remote lpd server: a printer already served by another machine on a *lpd* server.
- Network printer (socket): a printer directly connected to your local network.
- Printer on SMB/Windows 95/98/NT server: for printers already connected to a computer running an OS that serves printers with the *SMB* protocol, including *Samba* printers (the *Samba* package has to be installed in this case).

Then, you need to provide a name for your printer, to easily identify it if you need to, and optionally a Printer description and a Physical location (figure 14-16).

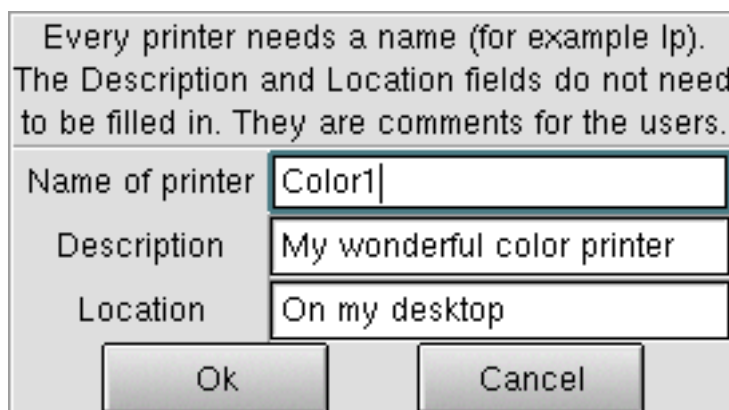


Figure 14-16. Choose a name for your printer

You are then presented the list of supported printers. It is a tree view with the manufacturer's name first and then the printer's model. Select the printer you have or a compatible one (figure 14-17).

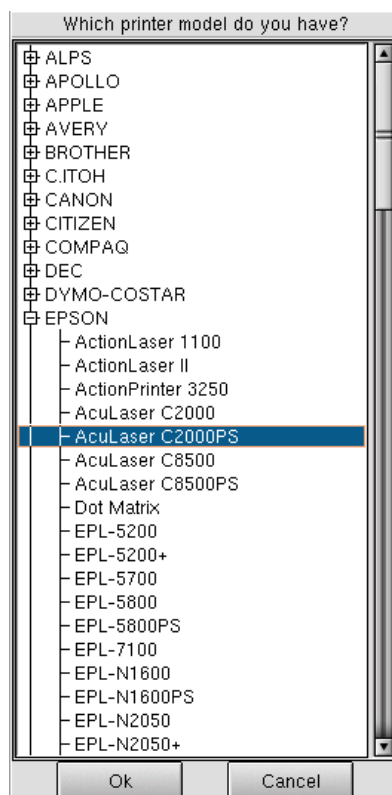


Figure 14-17. Choose the printer model

1. If the printer is already served by another *cups* server on the network, it is not necessary to reconfigure it on your machine: it will be automatically accessible from your applications. It is enough to configure your default printer with, for example, *qtcups*, or *XPP*.

After that you are presented the options associated to the chosen driver (figure 14-18). It is important you select the proper paper type and the ink type currently installed. Indeed, if those settings are not correct, the printing may fail.

Note: For settings regarding the printout quality, keep in mind that higher quality levels make the printer substantially slower.

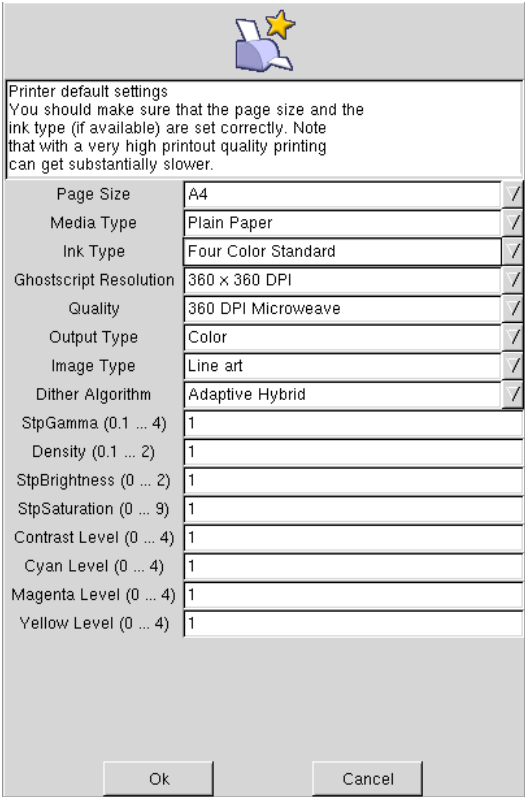


Figure 14-18. Configure the printer's options

Note: If you have already one or more configured printers, you will then be asked whether you want to use the printer being configured as the default or not. If you say No, the former printer default will remain.

Finally, you are asked whether you want to test the printer or not. It is advisable to do so, so that you can immediately correct the parameters if something goes wrong (figure 14-19). After a moment, the printer should begin to print, and you will be asked whether the printing was successful or not.

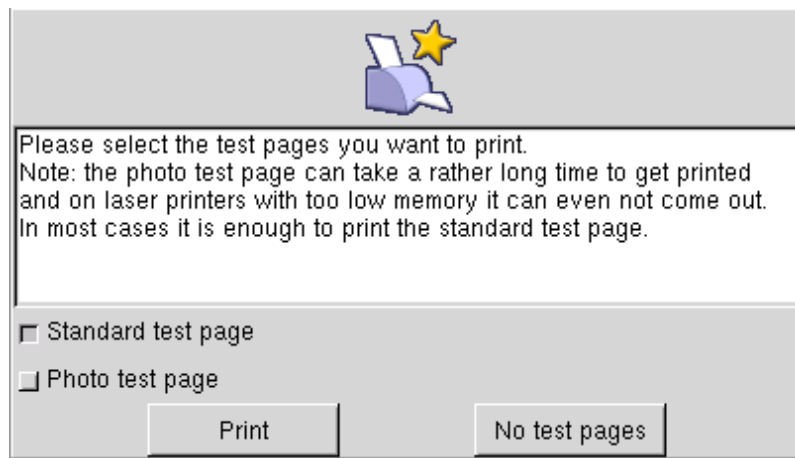


Figure 14-19. Test the printer

If the printing was successful, answer Yes, and you will be returned to the printers list, congratulations, you are ready to print! If not, you'll get into the printer configuration menu (figure 14-14) so that you can correct any setting.

Your printer will then appear on the list of configured printers.

14.8. Changing your keyboard layout

This dialog figure 14-20 simply allows you to define another keyboard layout, in case the keyboard you are using is different from the one you choose at install time.

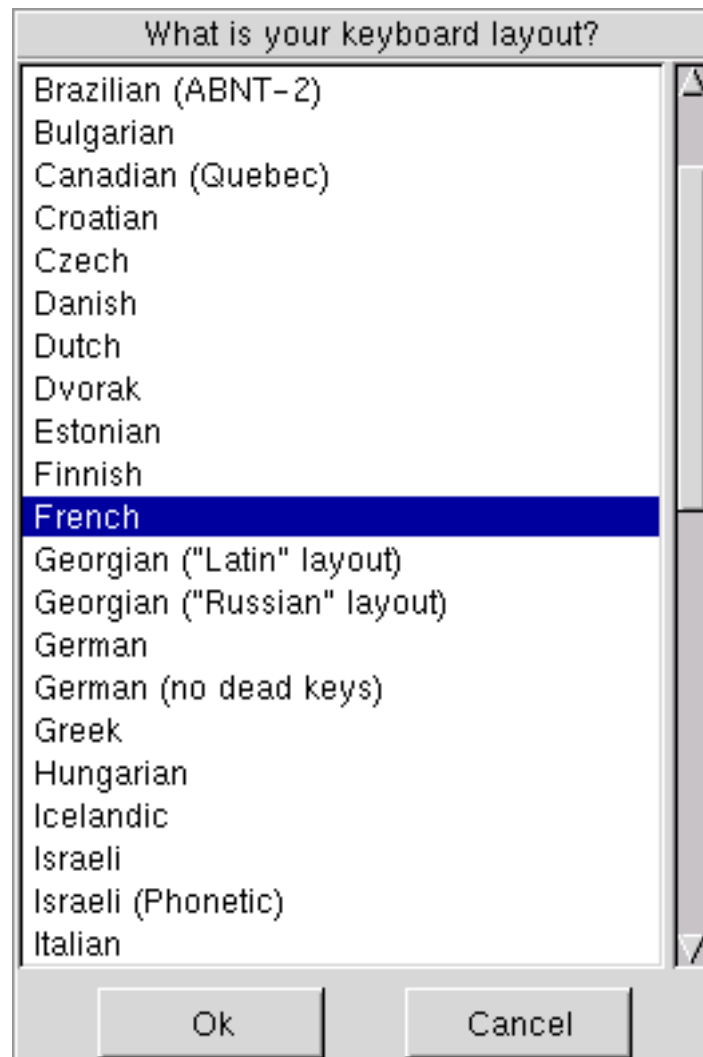


Figure 14-20. Choosing a different keyboard layout

Changes made are effective immediately after clicking OK.

14.9. Managing your partitions

We already learned from “*Structure of a hard disk*, page 11” what partitions are used for; and you initially set up your partitions during the install process. *DiskDrake* allows you, to some extent, to resize your partitions, move them, etc.

Warning

DiskDrake is a very powerful, and therefore dangerous tool. Misuse of it can very easily lead to loss of data in your hard drive. Consequently, you are advised to take some protective measures before using it:

1. Backup your data: transferring them on another computer, ZIP disks, etc.
2. Save your current partition table (the table describing the partitions hold on your hard drive(s)) on a floppy disk (see *A note about the expert mode: save the partition table*, page 141).

14.9.1. The interface

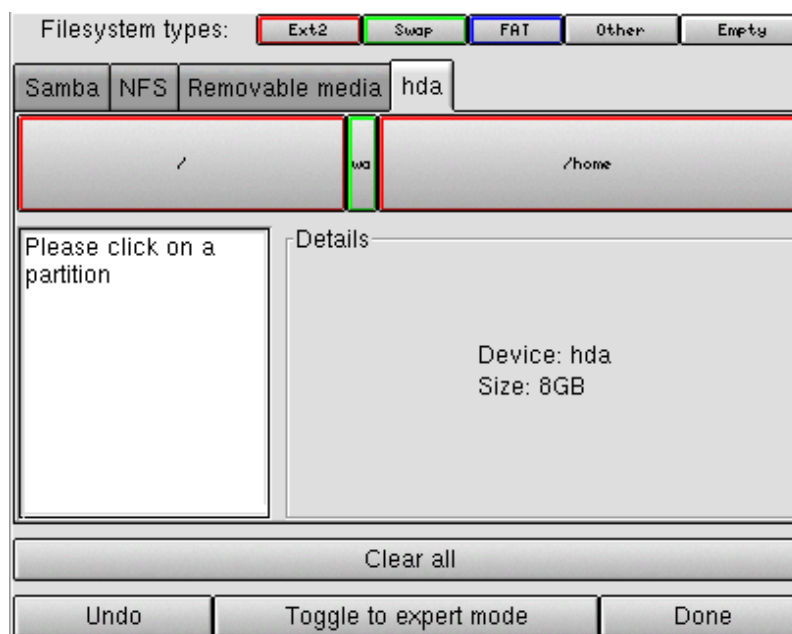


Figure 14-21. The DiskDrake main window

DiskDrake enables you to configure four types of disks on your machine, each one accessible through a different tab:

- Samba: allows to mount on your local machine distant folders served by a *Samba* server, typically a *windows* server.
- NFS: same as above but for directories served by NFS type servers (all *Unix* OSs.)
- Removable devices: control most options that affect removable devices as floppy and CD disks.
- hda: this tab is in fact repeated for each physical hard drive on the machine. The name of the tab is the name of the drive in *Linux* notation. The tool available here allows you to control the partitioning of that drive; this is what we are describing below.

The hard disks partitioning tab (figure 14-21) is divided in four zones:

- On the top: The structure of your hard drive(s). When you launch *DiskDrake* it shows the current structure of the drive, and is modified in real time when you modify your partitions. Note however that changes are not made effective on the drive until you press the Done button.
- On the left: a menu applying to the partition currently selected in the above diagram.
- On the right: a description of the selected partition.
- At the bottom: buttons for taking general actions. Note that the Toggle to expert mode button allows you to access expert (even **more** dangerous) functions.

14.9.2. In practice: resize an old partition and create a new one

In this section, we are going to do a little exercise that will use the more useful features of the tool. Let's imagine that we suddenly decide to use our machine as an FTP server. We then choose to create a separate `/home/ftp` partition in order to host the FTP files.

So this is what the current `/home` partition looks like (figure 14-22), before any modification. We choose to shrink this partition in order to create the new one on the freed space.

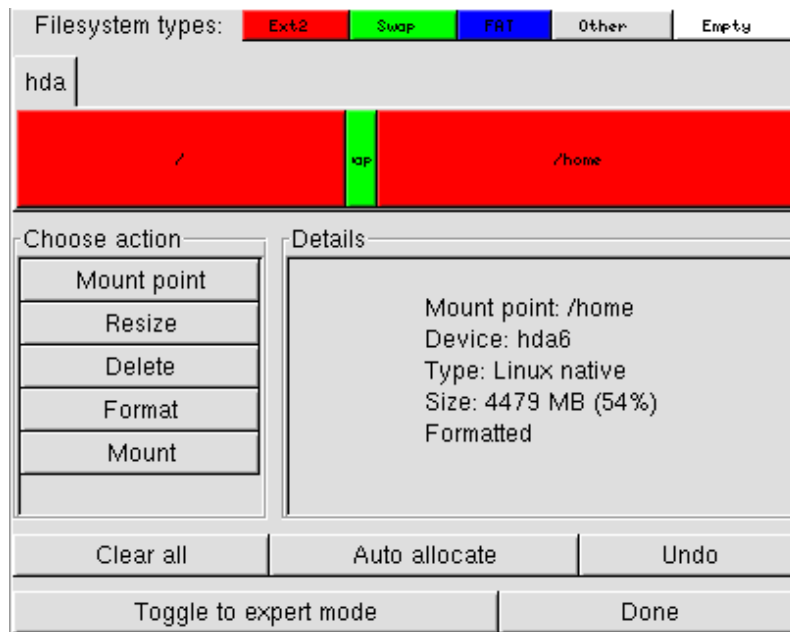


Figure 14-22. The /home partition before resizing

As you may have guessed, just click on the Resize button. A dialog will appear (figure 14-23), in which you choose a new size for that /home partition.



Figure 14-23. Choosing a new size

When this is done, you will notice that the graphic representation of your hard-drive has changed, the /home partition became smaller, and an empty space appeared on the right. Click on that empty space and then on the button Create that just appeared. A dialog (figure 14-24) where you can choose the parameters for the new partition pops up. Change the start sector if you want to leave a new free space between the two /home and /home/ftp partitions. Define the needed size, choose the file system you want (generally Linux native) and then enter the mount point of that partition, in our case /home/ftp.

Figure 14-24. Defining the new partition

This is what our projected partition table looks like now (figure 14-25).

Figure 14-25. The new partition table

Warning

Up until now, we have not really modified the partition table, we just redesigned and rejected it. Further steps will effectively make our changes active, so if you do not intend to modify your system, click on the Undo button until you come back to the beginning.

You finally need to format (prepare to host files) the newly created partition: click on it, then on the Format button. Confirm the writing of the partition table, and then the formatting of the partition. You may be asked to reboot the computer to make changes effective.

Figure 14-26. Confirm the writing of partition table

14.9.3. A note about the expert mode: save the partition table

Among many available features, the save and restore from file is one of the more interesting. It allows you to save the current partition table to a file on a disk (floppy for example) and then restore it in case you totally messed up your partition table. It can prove useful as long as you did not reformat partitions, otherwise data will be lost.

14.10. Configuring your machine as a Gateway

This tool configures your system so that it will act as a gateway for other machines connected to it via a LAN. To do so you will need an already configured connection to the Internet as well as a network connection to your LAN. This implies at least two Interfaces, for example, a modem and an *Ethernet* card.

After you complete this wizard, all computers on the network will be able to access the Internet as well.

Basically, a *DHCP* server is installed on the machine. Then you simply tell all the clients on the local network to use it by configuring the clients to use automatic IP configuration (DHCP). This way they can auto-configure themselves to use the **Mandrake Linux** machine as a gateway to the Internet.

14.11. Setting your security level

There is a graphical interface to *MSEC*, called *draksec*. It is available through *Control Center* and allows to change the security level of your system.

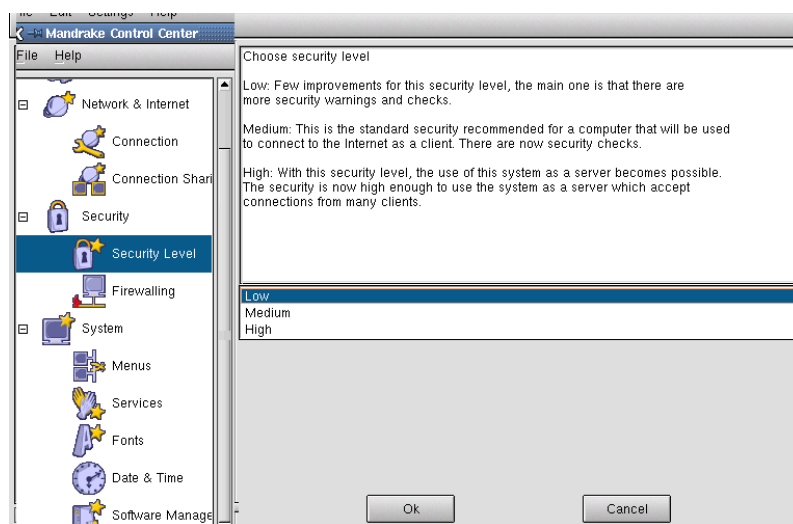


Figure 14-27. Choosing the security level of your system

You simply click on the button corresponding to the security level you need, the effect is immediate. You should very carefully read the help text so that you know what a specific security level involves for you and your users.

There is also a *libsafes* check-box. Check this option if the machine you are currently configuring is acting as a server for the Internet. This library can prevent attacks of type "Buffer Overflow". Consult the *libsafes* home page (<http://www.research.avayalabs.com/project/libsafes/>) for more information.

Note: Depending on your installation mode (Recommended or Expert, you will be presented with different security options.

14.12. Configuring a Basic Firewall

This wizard will guide you through the process of setting up a firewall on your machine. It is a good idea to run it just after installing your machine and before connecting to the Internet, it will minimize the risks of your machine being cracked.

In *Control Center*, click the Configure button to launch the wizard. It is made of many screens, each screen asking a question with corresponding explanations.

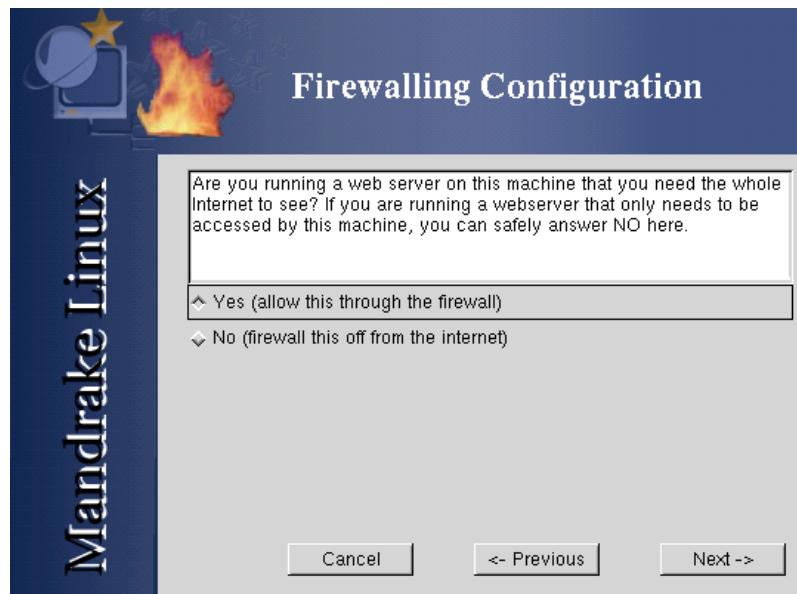


Figure 14-28. A sample firewall wizard screen

Use the button:

- Cancel to abort the firewall installation, all changes are discarded.
- <- Previous to come back to previous step and change it.
- Next -> to validate current choice and go on to next question.

The example figure 14-28 shows the screen leading to the closing or opening of the web service on this machine.

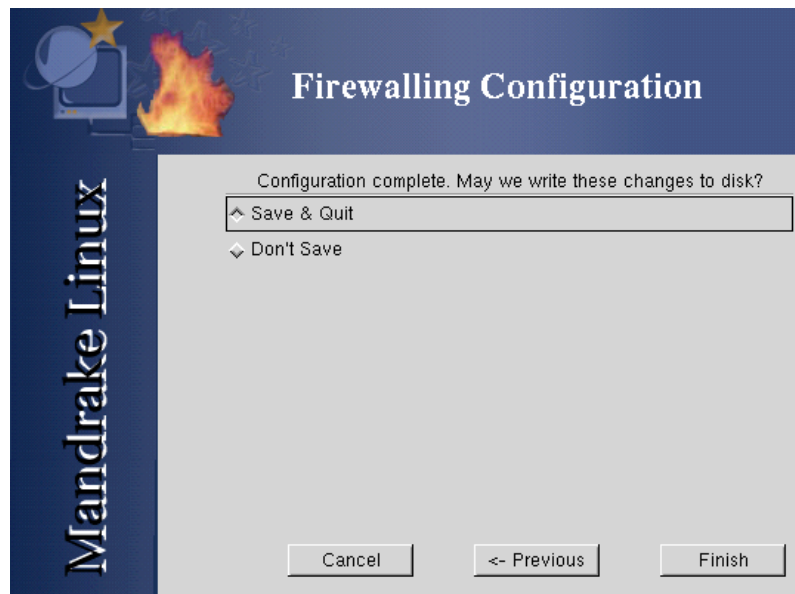


Figure 14-29. Accept the options and activate the firewall

After you have completed all steps, you are asked whether you wish to finally activate the firewall. Check the Save & Quit box and then the Finish button if you want to run the firewall with the configuration you just made.

14.13. Customize your Menus

In order to help you manage the main menu of your preferred Window Manager, **Mandrake Linux** provides you with a menu-editor that ensures menus from all desktop environments (like *KDE* or *GNOME*) are coherent.

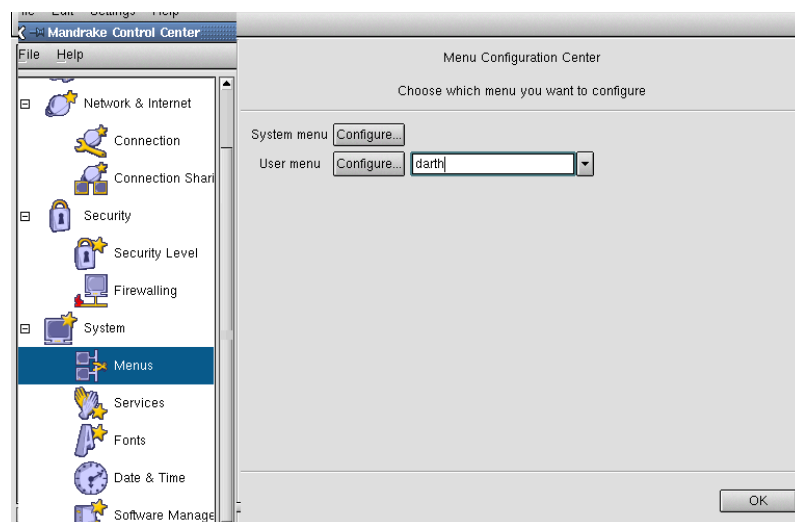


Figure 14-30. Launch menudrake in System or User mode

menudrake can be started in two different modes: either changing menus for all users, or customizing your own menus. Click on:

- System menu Configure: if you want to make changes on the menu available for all users of the system,
- User menu Configure: if you want to customize a menu for a single user. In that case you need to select the user in the combo box before clicking the Configure button.

When you launch *menudrake*, it first scans your current menu structure and displays it. The main window (figure 14-31) is divided in two parts: the menu itself on the left, and on the right a form about the highlighted menu item.

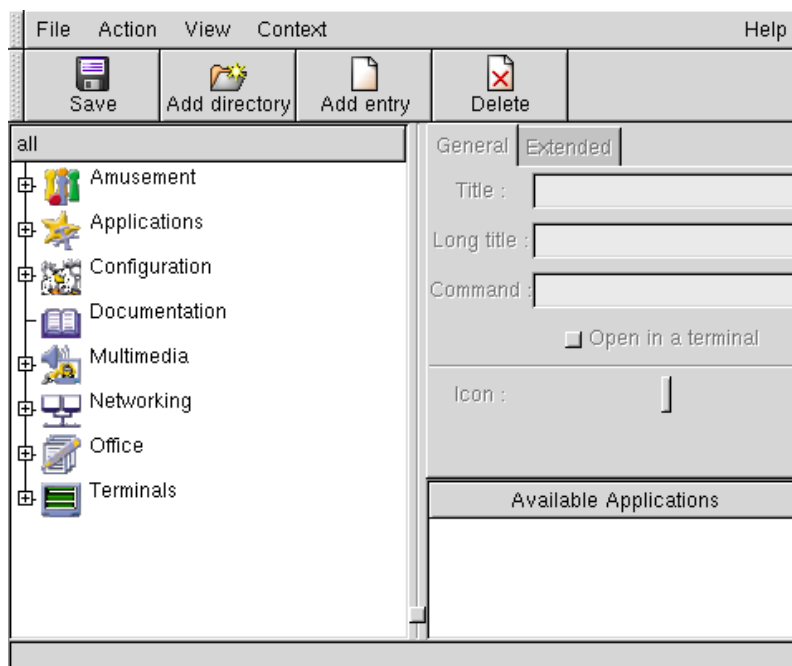


Figure 14-31. The menudrake main window

You can click on the + signs of the tree to view the content of the related directory, - to hide it.

Warning

You may see in your tree entries that do not appear in your menu. These are empty directories which are not displayed.

14.13.1. Add a new menu entry

This should seldom happen as all **Mandrake Linux** graphical applications should provide a menu entry. However, if you want to add a menu entry for a package you have compiled, or for a console mode program, you may use this function. Let us imagine you want to check your home directory disk usage through a menu entry in Applications+Monitoring.

Select the Monitoring directory, and click on the Add entry on the tool bar. An entry called Application 1 appears, you need now to edit it to what you want. First change the title to say "Home usage", this is the name that will appear in the menu. Then enter a more detailed description Long menu if you wish to, it will appear on the explication balloon, let's put "Displays the size of your home directory". Finally you need to provide the action to be executed by the system (Command:): "du -shc". Do not forget to check the Open in a terminal box, as du is not a graphical application.

If you wish, you can also choose an icon for your entry from the list you get by clicking on the icon itself. figure 14-32 reflects the above modifications. Once you are satisfied, click on the Save icon.

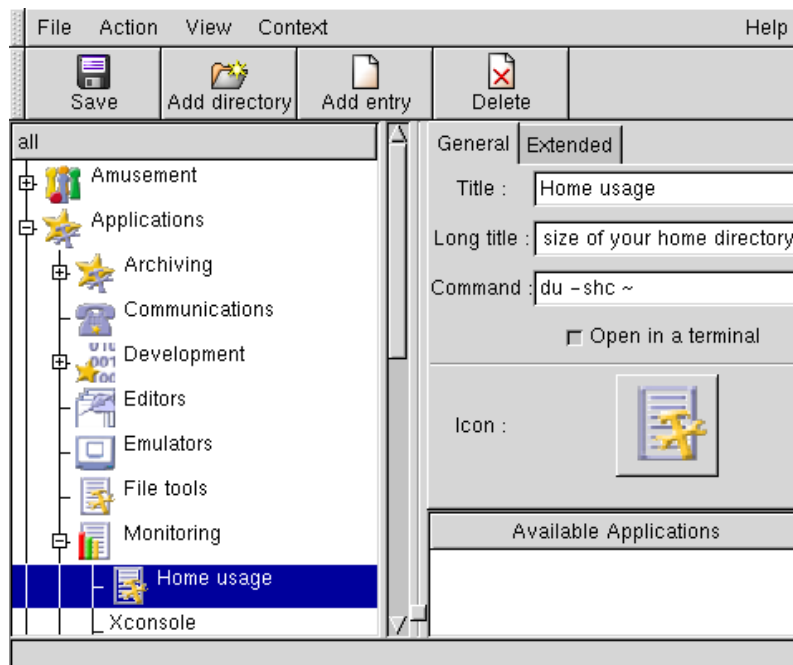


Figure 14-32. Adding a new menu entry with `menudrake`

Tip: If you think you have made a big mess of your menus and wish to come back to the previous state, you can go to **File**→**Reload user config (Ctrl+R)** (this reload the menus as they were at the last save) or **File**→**Reload system menu** to load the virgin menus as they were at system install.

Finally, to activate your changes, click on the **Save** button, and voila, Congratulations! You can now test your work by going to the real menu and launching your new creation.

Note: Depending on the window manager you currently use, the changes on your menu may not be shown immediately. In some cases, you may need to logout and login again for the changes to take effect.

14.13.2. Advanced features

14.13.2.1. About the Context menu

The entry we just added to the menu is now available in all graphical managers' menus. It is also possible to make modifications to a specific menu by switching the **Context** you are working with. For example, if you wish to add an application that should be available only in the *KDE* menu, simply switch from context **all** to **kde**.

All entries that apply to the selected context only appear in blue in the tree structure on the left.

14.13.2.2. Moving and removing entries

`menudrake` entries support the drag-and-drop feature. That means that you can take an entry from a directory and move it to another simply by clicking on the entry and dragging it to the new directory without releasing the mouse button.

Similarly, you may have noticed that whenever you remove an application from the menu, it appears in the "attic": the Available applications list on the bottom right corner. If you ever wish to add them again, you simply have to drag them again to the desired directory.

14.14. Configuring Startup Services

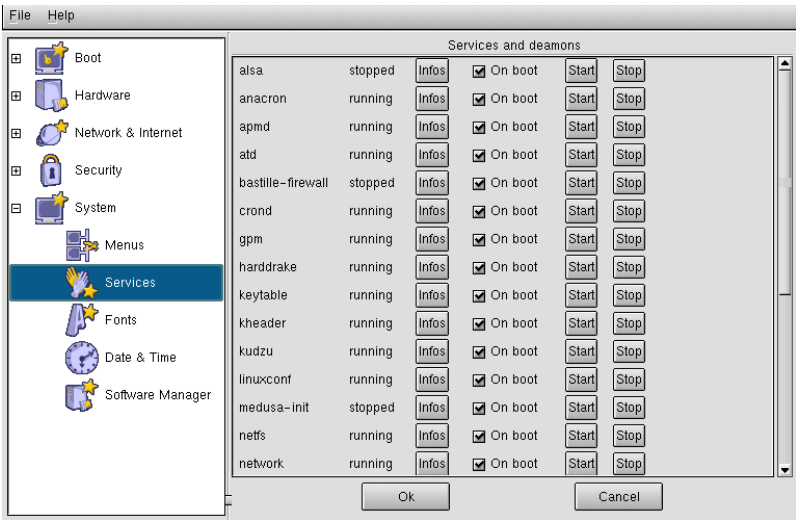


Figure 14-33. Choosing the services available at system startup

For each service, this is the list of items found in each column:

- Service name
- Current Status: either running or stopped
- Info: Click on that button to get a little explanatory text on that service
- On Boot: Check this box if you wish that this service be automatically brought up at boot time²
- Start: immediately starts the service, or restarts it (stop+start) if it is already running
- Stop: immediately stops the service

14.15. Managing the fonts available on your system

This tool allows one to review the different font families, styles, and sizes available on the system. The main window (figure 14-34) even renders a visual appearance of all font combinations.

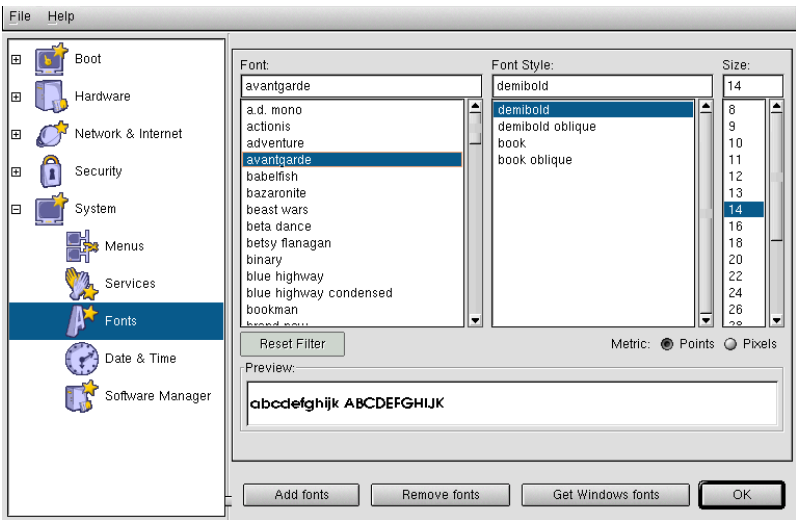


Figure 14-34. The drakfont main window

2. Generally in *runlevels* 3 and 5

It allows you to add fonts you have downloaded from the Internet for example, and to remove fonts in order to save space. But the most interesting feature is probably the one that allows you to use the fonts that are available somewhere else on your machine in your *Windows* installation. Simply click on Get Windows fonts, a list of all fonts available on your *Windows* partitions will be displayed. You may then choose to install some or all of these fonts.

Tip: To select a range of fonts click on the first font you wish to select, move to the last to select and click on it while keeping the **Shift** key pressed. To select individual fonts, hold the **Ctrl** key down as you click on the selections.

14.16. Managing users on your system

userdrake is an advanced utility for **Mandrake Linux** which allows the System Administrator to easily add users to the system, to remove others, to arrange users in groups, and to manage groups in the same manner.

We will focus on users only here, group management is very similar.

14.16.1. The interface

Launching *userdrake* will display the main window (figure 14-35), which lists the users currently defined on the system. You can switch from users to groups going to View→View groups.

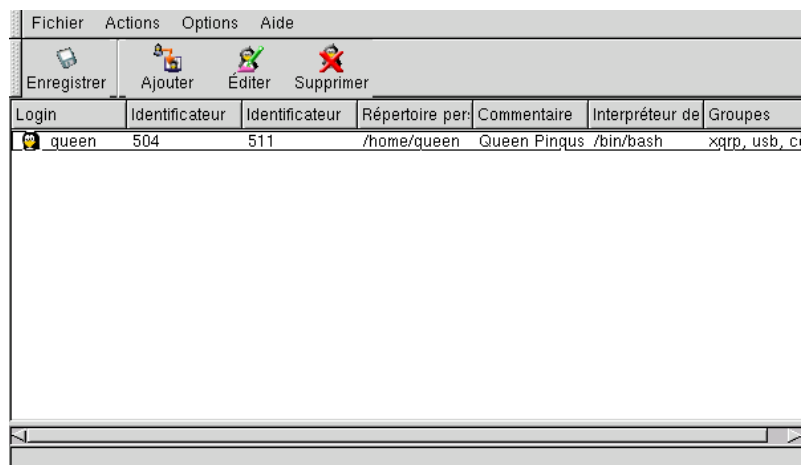


Figure 14-35. The users list in userdrake

The topology of the window is standard, the three buttons Add, Edit and Remove are also accessible from the Action menu.

You can make as many changes as you wish, the effect on your user database will be effective only after pressing the Save button. You can go back to the current users database at any time by going to File→Reload menu entry.

14.16.2. Let's add a new user

We created the standard user Queen Pingusa, at installation time, and now we need to create a new user called Peter Pingus, and then make them both members of the group urpmi, so that they can install packages without having root password.

Click on the Add button, the dialog to add a new user will pop-up (figure 14-36). The only field required is the *login*, you can also choose to add a comment, generally this is the full name of the user.

Identity Groups

Login: peter

uid: 507

Comment: Peter Pingus

Shell: /bin/bash

Home dir: /home/peter

Password

passwd: *****

Retype passwd: *****

Ok Cancel

Figure 14-36. Adding a new user in the system

We have now two users in our list, select both of them with your mouse (clicking the first one, and move the cursor to the second without releasing the button), and click the Edit button. The dialog which displays now (figure 14-37), shows the list of available groups on the right, and the list of groups of which the selected users are members. look for the `urpmi` group on the right, highlight it by clicking on it and click the Add button between the two lists.

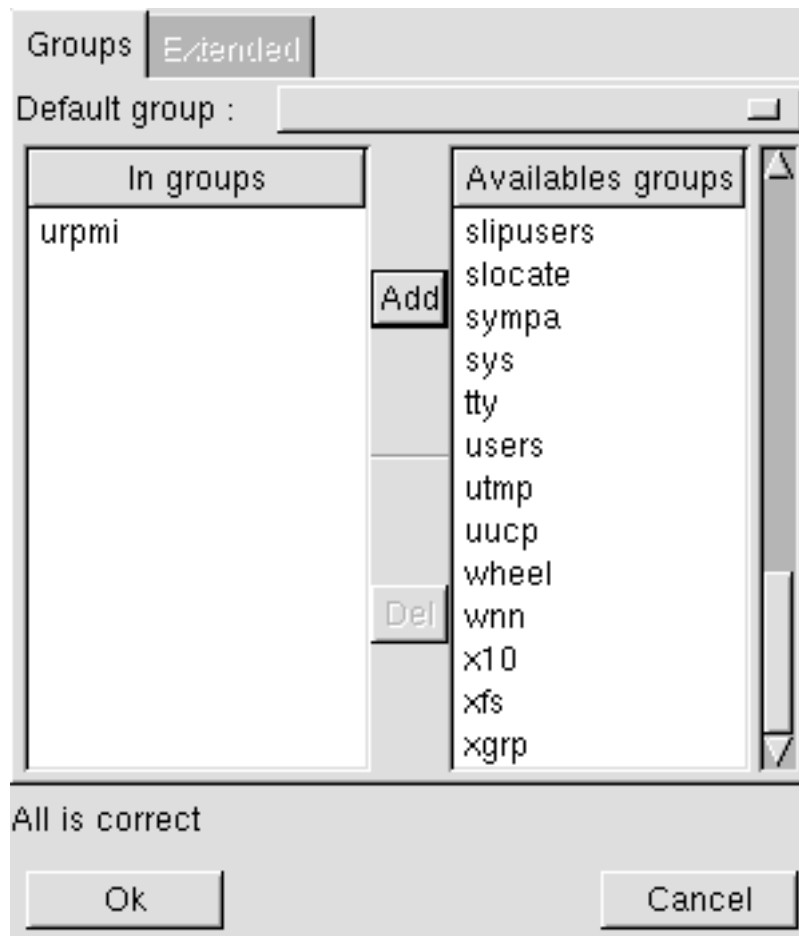


Figure 14-37. Affect users to a group

Note: All dialogs under *userdrake* have a little message just above the buttons. It generally says All is correct, but if you choose something ambiguous or which is not allowed, this message will warn you.

After clicking OK, you can check on the users list, that the last field Groups does contain the group urpmi.

14.16.3. Other features

The parameters dialog (figure 14-38) accessible through View→Edit Parameters (**Ctrl-P**), allows you to tune the way lists are displayed and some other options.

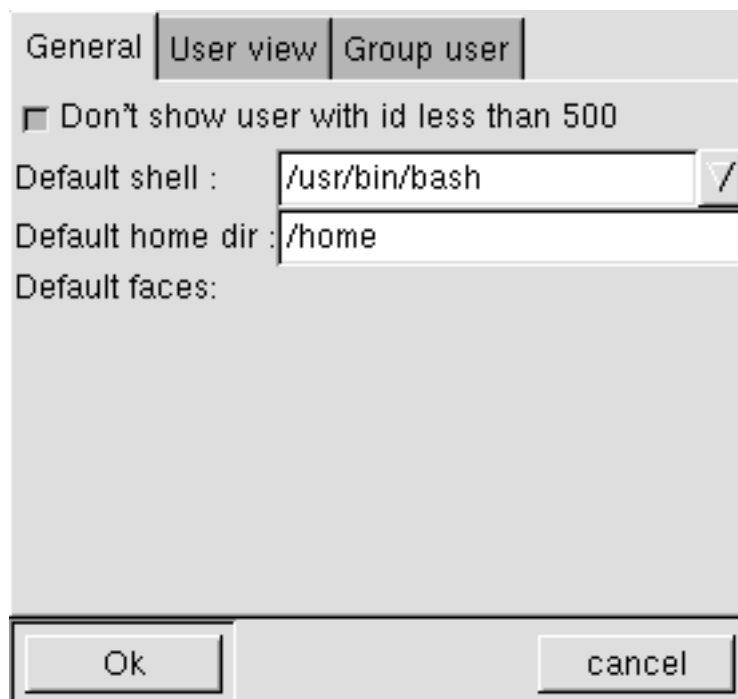


Figure 14-38. The userdrake parameters window

First of all, users whose UID is lower than 500 are the virtual users used by the system and are not valid for real users. You can choose to display them or not in the users lists here. This dialog also allows you to choose default options for new users.

The following User view tab (figure 14-39), allows you to select the fields to display in the users list. Simply deactivate the check box associated to the fields you are not interested in. The Group view tab has the same goal.

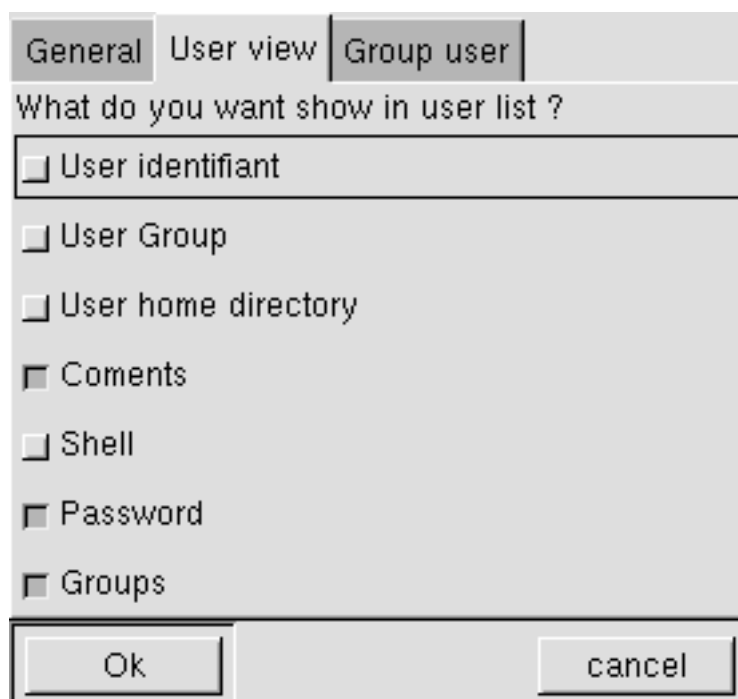


Figure 14-39. The userdrake user view parameters

Note: When you select various users and click the Edit button, if the groups to which they belong are different, then the display will be slightly different (figure 14-40): in that case, only the user Peter Pingus is a member of the group audio, then the item audio appears in light grey in both lists.

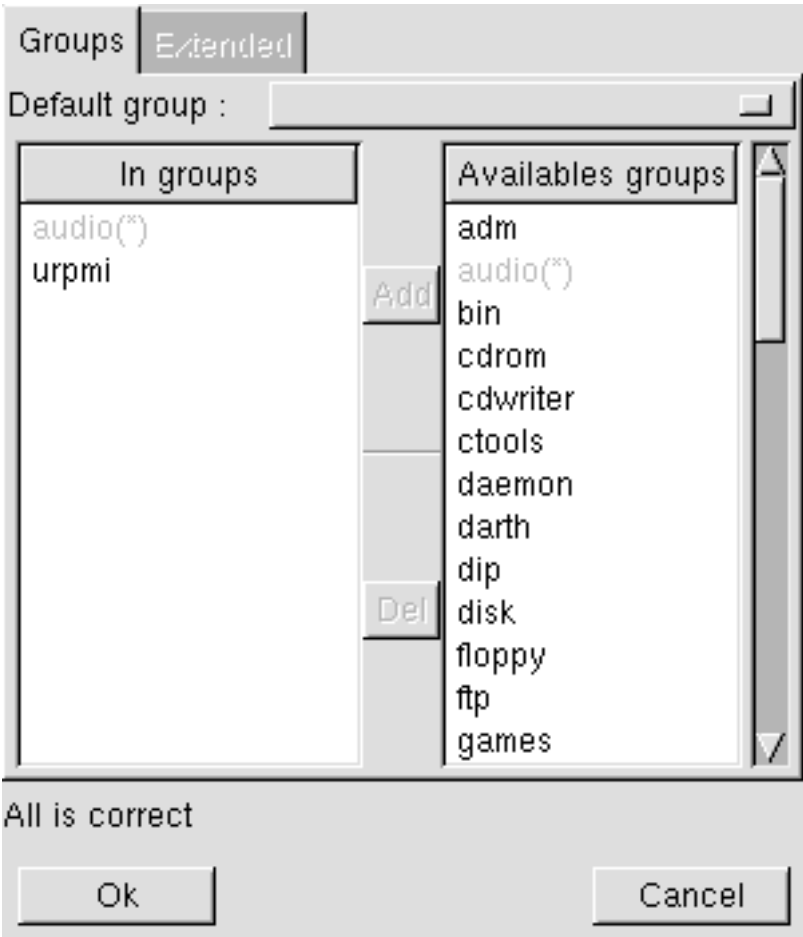


Figure 14-40. Groups are different for two users

14.17. Adjust date and time

This little tool allows you to setup the correct internal date and time for your system.

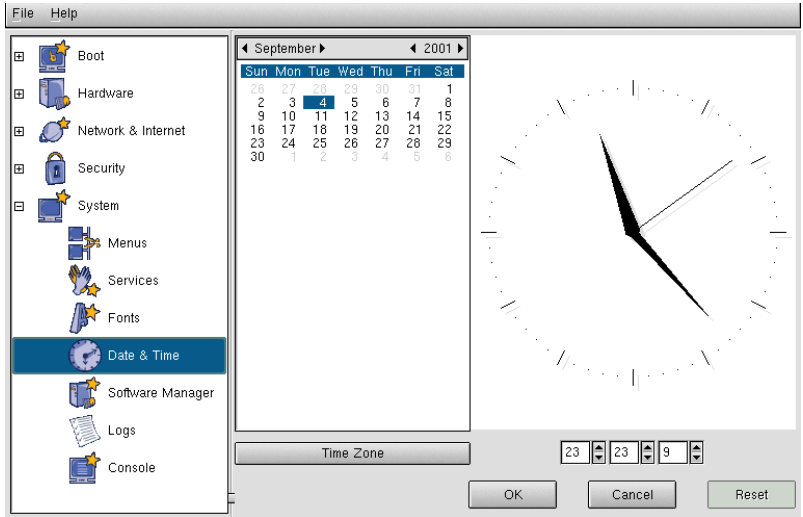


Figure 14-41. Date and time changing

You can set the date on the left and the time on the right:

- To change the year, click the little arrows on each side on the year.
- To change the month, click the little arrows on each side on the month.
- This updates the month view where you can click on the current day to highlight it.
- It is recommended to check the time zone settings are correct for your physical location. Click on the Time Zone button and select the correct place in the tree view.
- To change the time you can then either move the hour, minute and second hands of the analog clock or change the numbers below.

When you have finished, click OK to apply your settings or Cancel to close the tool, discarding changes. If you want to come back to current settings, click Reset

14.18. Searching through the log files

This tool allows you to search for specific entries in various log files, thus facilitating the search for particular incidents or security threats.

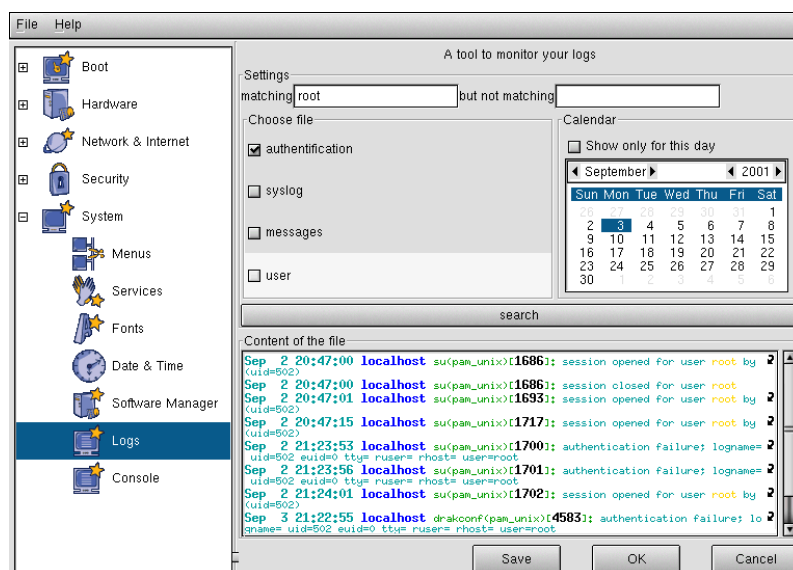


Figure 14-42. Browsing and searching through system logs

To browse or make a specific event search into the system logs, these are the steps:

1. You can first choose to match lines containing specific words filling the matching field; or not containing others thanks to the but not matching field.
2. You then need to choose the file you want to perform the search in, into the Choose file area; simply check the corresponding box.
3. Optionally, you can restrict the search to a specific day. In that case, choose the desired day in the calendar on the right, and check the Show only for this day box.
4. When all is set up, click the search button, the result will appear in the content of the file area at the bottom.

14.19. Access to the Console

This menu entry will simply open a console for root user. You can use it to issue any command, but be careful! There are here no restrictions on the actions you can take on the machine, and you could end-up with an unusable system.

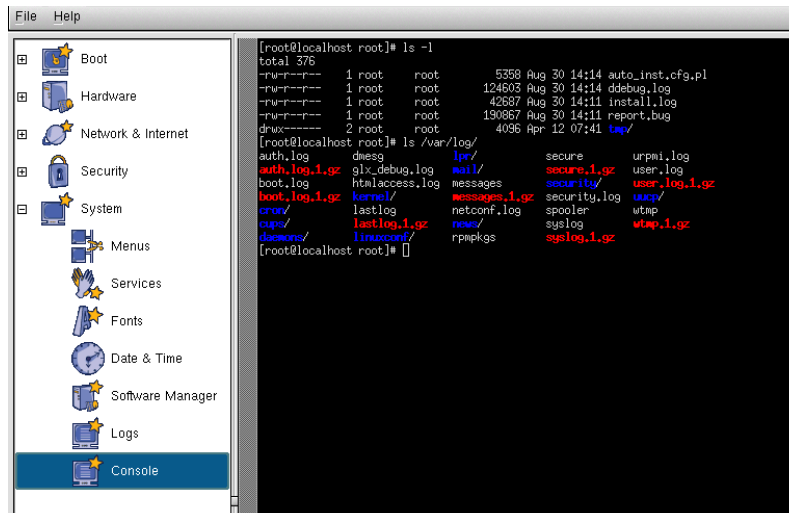


Figure 14-43. Accessing the command line interface

Chapter 15. Package Management

Maybe you have already noticed that your system is made of a large number of small pieces, in the same way a house is made of bricks. Here, we do not call these pieces “bricks”, but **packages**. A package can then be seen as a box containing all the elements necessary to install and run a specific software.

In this chapter, we will speak about package management, which includes the installation of new packages (i.e.: adding software to your system), updating already installed packages when new releases or corrections appear, and also removing packages from your system. This management is eased through the use of a few tools. Nevertheless, these actions are not available to users, so you have to be the super-user to use the tools described below.

15.1. The Main Tool: RpmDrake

RpmDrake is the main package-management tool. You can launch it from the *Control Center*, by selecting Software Manager under the System tree node.

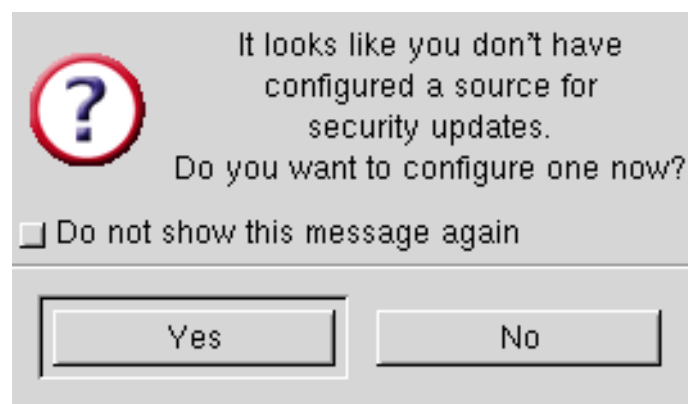


Figure 15-1. First RpmDrake's message

When you launch it for the first time, a dialog box appears offering you to configure a “source” for “security updates”. We'll explain these concepts later, so for now simply answer NO to this question.

15.1.1. The Main Window

When launched, *RpmDrake* does some analyses and configuration checking, which can take some time. Finally you see the main window, showed in this figure:

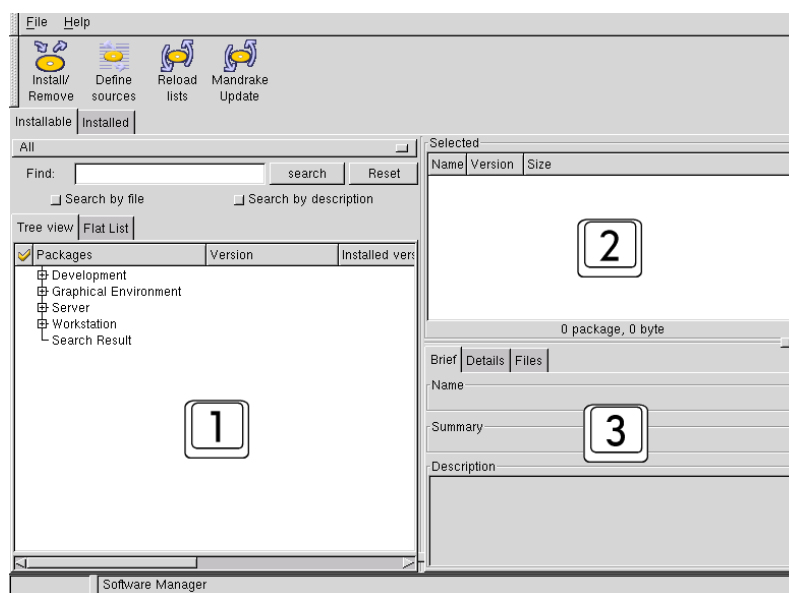


Figure 15-2. RpmDrake's Main Window

As you can see, *RpmDrake*'s main window is basically divided into three parts:

1. On the left, a tree showing package names (sorted and grouped by categories) along with some other information; note that you can change the view to a flat, alphabetically ordered list, just by clicking on the Flat list tab.
2. At the top-right, a box listing the packages you have selected (yes, you can select packages: more on that later).
3. At the bottom-right, various information about the currently highlighted package, such as name, detailed description, file list, and so on.

Take a random package in a category (remember, you just have to click on the + sign to expand a tree branch), then click on its name. The bottom-right block displays general package information as well as the packager's name. In the File list, you get a tree view of the files contained in the package, as shown below.

Brief Details Files			
?	Name (88 files in 9 dirs)	Size	Deep size
	/	0	936108
	usr	0	936108
	bin	210201	210201
	aclocal	10765	
	automake	199436	
	share	0	725907
	aclocal	21793	21793
	automake	406940	406940
	doc	0	261355
	automake-1.4	261355	261355
	info	35819	35819
	automake.info-1.bz2	14045	
	automake.info-2.bz2	13708	
	automake.info-3.bz2	6702	

Figure 15-3. A package's file list

If you click on the first column's label, the question mark , then *RpmDrake* will check if the files contained in the package already exists on your system. If so, they will be marked by a green mark . If the files are not present, then they are marked by a red mark .

Let's have a look at the Deep size column. You can see it shows only for directories. The **size** of a directory is defined as the sum of the files' sizes contained in it. If the directory does not contain any sub-directory, that's enough. Now, if a directory contains one or more sub-directories, then the **depth size** is defined as the directory's size, **plus** the depth size of each of its sub-directories.

On the above example, the directory `usr` has a size of zero: it's because it doesn't contain any files. **But** it contains sub-directories (`bin` and `share`): therefore its depth size is the sum of the depth sizes of each sub-directories. On the other hand, if the directory `bin` contains some files but no sub-directory: then its depth size is the same as its size.

Now we will select a package. Simply click in the little square box on the left of the package name: immediately, this package is added in the Selected block, located in the window's top-right corner (actually, you can double-click anywhere on a line associated with a package and that package will be added to the Selected packages).

You can select as many packages as you want. You may also simply browse through the packages, choosing some on the way for later use. Notice that if you click on a package, its description is displayed in the block below the Selected box.

Finally, let us talk a bit about the Find text field: as you may have already guessed, this will look for a word through all the packages' names. Simply type in a word, then click the Search button. Packages whose name contain the given word are then displayed under the Search Result tree node in the tree view, or only listed packages in the Flat List view. Also note that if you want to use the plus sign ("+") in your search (as in "C++", for instance), you have to prefix it with a backslash sign, for example : "C\\+\\+".

Note: For expert users, the Find field supports standard `regexps` (regular expressions), as defined in `regex(7)`.

If you type another word and then click Search again, the result of your second inquiry replaces those of your first one. If you want to clear your search results, use the Reset button.

15.1.2. Installable and Installed Packages

Two kinds of *RpmDrake* packages exist: the Installables, which holds the not as yet installed packages and the upgradable ones, while the Installed RPMs are, you guessed it, already installed on your **Mandrake Linux** system but unfortunately, there are no upgrades available. Click on the according tab (just under the button bar) to switch between the two lists.

When you start *RpmDrake*, you see the list of installable packages by default, according to what is written just below the tab. This can be a rather long list, so for your convenience, use the box just below the tabs, which says All by default. Click on it, then select Updates only: this time, you get a list of the packages installed on your machine but for which there exists a more up-to-date release of the sources (more later about sources and updates). Notice that those "updating packages" are displayed with a symbol on the left of their name.

For example, the symbol  shows updates that come from Cooker, the development version of **Mandrake Linux**.

On the other hand, if you select Uninstalled only in the list instead of All or Updates only, you will see the packages that are not yet installed on your system.

15.2. Let's Install a Package

Now that you are familiar with the global interface, we will install a package. We'll choose a clear example, but it may be possible that this package is already installed on your system. If this is the case, it does not matter, just use another one in order to experiment. Of course, to experiment we must choose a package in the Installable packages list. So select this list if you have not done so yet.

As an example, we'll chose the `emacs-pcomplete` package. To find it more easily, use the Flat List, which is alphabetically ordered, or the search field. Once you have found it, select it by clicking in the square box next to its name. It then appears in the Selected block on the right-hand side, and various information are given such as the package's version and size.



Now, to install it, simply click on the button labeled Install / Remove, on the left of the button bar at the top of the window. *RpmDrake* will then invoke `RpmInst`, the wizard which will guide you through the various steps for installing the package.

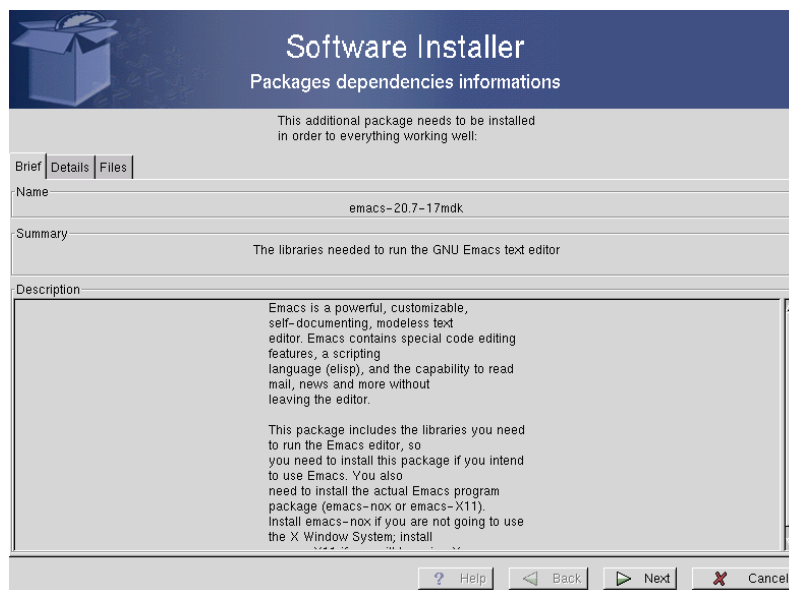


Figure 15-4. RpmInst replacing RpmDrake

After a few seconds, you see the wizard's window covering the area of the *RpmDrake*'s window. When launched from *RpmDrake*, *RpmInst* starts by giving you information about the needed dependencies: either a list or a short text telling you everything is fine. If there are dependencies, you'll see either only one package or a list, with information displayed in the same fashion as the bottom-right in *RpmDrake*.

"But", you ask, "What is a dependency?" Some packages can not work if other packages are not installed. In our example, the *emacs-pcomplete* package can not work if the *emacs* package is not installed. In this case, we say that *emacs* belongs to *emacs-pcomplete*'s dependencies. This is what is displayed in the above window. This information is provided by *urpmq*, a command-line tool (you can find more information about *urpmq* in the associated man page: *urpmq(8)*).

In some cases though, all the package's dependencies you want to install are already installed. In those cases, you won't even see this page, and start at the next page.



Figure 15-5. Install in progress under RpmInst

Now the installation really begins (at last!). You see in the window three rows, to show you what's happening and the overall progression: these rows come from *urpmi* (another command-line tool, see *urpmi(8)* for more details). During the process, some events may occur:

- If the package you want to install is on a CD-ROM, the program may ask you to insert it: click OK when you are done.
- You may also receive a message, telling you that a package is not signed or has an incorrect signature. The signature is used to make sure a package can be safely installed, from a security point of view: it has been validated by someone, and not altered by a malicious user. If you get this message, then make sure you know where the package comes from. You can install it, but do so at your own risk!

When the installation is done, you can exit the wizard and go back to *RpmDrake*.

15.3. Uninstalling Packages

Uninstalling a package means removing it from your system. This is useful to gain disk space. Of course, you can only remove already installed ones: so select a package in the Installed list. For example, let us try to

uninstall the *emacs* package, which has been installed so *emacs-pcomplete* can work. Again, use the flat list to find it easily, then select it. You can also use the Find tool.

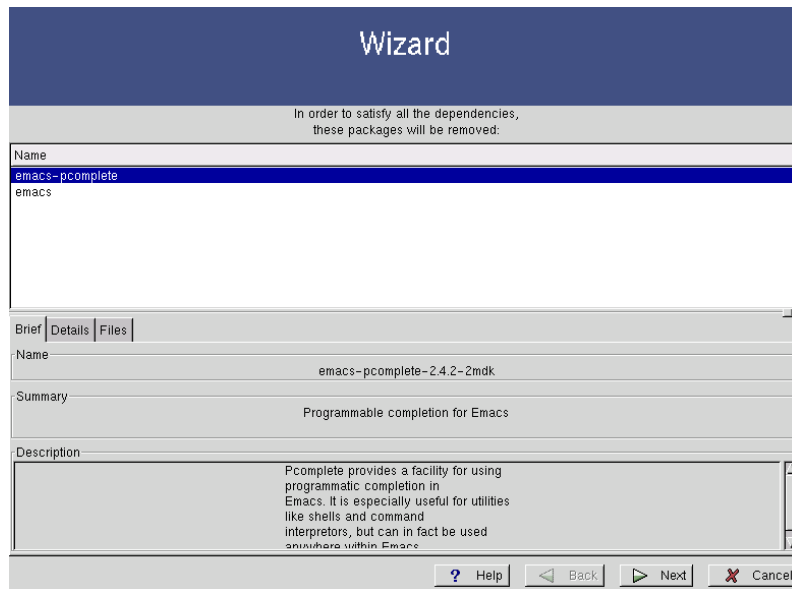


Figure 15-6. Uninstalling packages

When this is done, click on the same button you clicked on to install a package. The *RpmDrake* window is replaced by another wizard, which tells you that (at least) another package will be removed, in our example *emacs-pcomplete*. This makes sense: we've been told earlier that *emacs* was necessary for *emacs-pcomplete* to work. If we remove *emacs*, then *emacs-pcomplete* won't work any more, so we should also remove it – to keep the whole system consistent.

At this point, if you click the Next, the packages are removed from your system. Note that you can still install them again, if you wish to use them after all... Just click on Quit to get back to *RpmDrake*.

15.4. Sources management

Sources are package repositories where you can find packages to install on your **Mandrake Linux**. It can be a local directory on your hard drive, a CD-ROM, or even a remote directory somewhere on a network - the Internet, for example. There is always a specially defined source: the one from which you installed your system. Now we will explore sources management.

15.4.1. Adding sources



Imagine you find a wonderful CD-ROM with plenty of packages, or a directory on the web. This is clearly a new source of packages and you would like to use it with *RpmDrake*, wouldn't you? Then you must define a new source by clicking on the Define sources button.

In the new pop-up window, click on New to define a new source. You then see the following dialog:



Figure 15-7. Adding a source in RpmDrake

In every case, you must give your source a name: this name will be used to identify the source later.

You can define several different source types, such as:

- **Removable.** This is a generic name for sources like CD-ROM, *ZIP*, and so on. You must tell *RpmDrake* the appropriate device (i.e.: which drive) and its mount point.
- **Local.** If your computer directories contain packages, you can “register” them here. Just give the full, absolute path to the directory.
- **FTP or HTTP.** These types are for remote package repositories. In both cases, you must give the full remote directory URL, beginning with `ftp://` or `http://` according to the type. Also, give the `hdlist` file path, which contains a compact description of what is available in regards with the previously given path. A typical example would be `../base/hdlist.cz`. This means you can only use “Mandrake-compliant” remote repositories, where a `hdlist` is present. If unsure, ask the remote site’s administrator. The only difference is that you must provide a user name and a password for FTP sources.
- **Security Updates.** This describes remote repositories (like FTP and HTTP) where you can find package updates in regard to security issues. You should use a trusted mirror for that: the Update the list of mirrors button gives you a list of trusted mirrors, try to use one located as near you as possible. Note you may have to give a user name and a password, if the mirror uses the FTP protocol.
- **Cooker.** These packages are for those who want to closely follow the evolution of the software: they are the very latest releases. So, be sure you know what you are doing! These packages are mostly of development type, therefore prone to unstability. These repositories work similarly to the security updates ones.

15.4.2. Updating sources and packages

From time to time, the packages contained in a source may change, especially if it is not a CD-ROM: some RPM files may be deleted or added. To keep the internal database synchronized with the actual state of your various sources, it is necessary to **update** them (the sources).



You can achieve this operation very easily by clicking on the Reload lists button. But note that it can take a rather long time: as each package is being checked to see if it needs to be updated, and the dependencies are recalculated to reflect the changes.

Now suppose the content of a source has changed. Usually, it means some packages were added or changed: a package is changed when the “old” release is buggy or insecure, or simply because there is a new and better release available. It is possible that some old packages were installed on your system, due to a lack of available, updated packages.

So, after updating the source, you have the opportunity to update some packages installed on your system and to take advantage of various new releases: you can see them in the Installable list: they appear in a different color. Simply select and install them, and there no need to say that we strongly suggest you to do this...

15.5. Updating your system



There’s an easy way to update all your system, with the latest available software release: it’s *MandrakeUpdate*. This tool will query known and trusted packages repositories, then list the available new packages. To launch the *MandrakeUpdate* wizard, click on the button in *RpmDrake* tool bar.

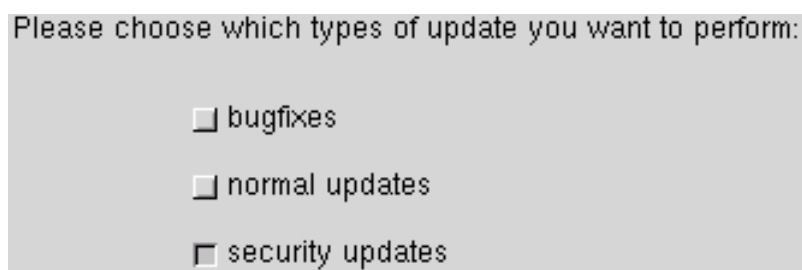


Figure 15-8. Updates types in MandrakeUpdate

First, you need to choose which type of update you want, among:

- **bugfixes.** These updates are related to misbehavior in softwares. Choose this if some of your tools doesn't work properly, you may find an update which corrects the problem.
- **normal updates.** Simply a new release of a software package, with new features.
- **security updates.** These updates are related to security, i.e. to prevent crackers gaining unauthorized access to your system. You're strongly advised to always check these, even if you don't spend your life on a network.

You then get a window much like *RpmDrake*'s one. Available updates are listed, you only have to check the ones you want. Select any that have information about it displayed in the now familiar, three-tab box at the bottom. When you have selected some updates, click Next: and the installation wizard will be launched, as usual.

If you're interested, you can see the list of mirrors used by MandrakeUpdate on this page: <http://www.mandrakelinux.com> (<http://www.mandrakelinux.com/mirrorsfull.list>).

Appendix A. Where to Get Documentation

Apart from the manuals included with **Mandrake Linux**, documentation is available from many sources. The next few pages will offer you some suggestions which you might find useful.

A.1. The Documentation Included In Mandrake Linux

A.1.1. The Man Pages

This is a primary source of information on a day-to-day basis. Each command corresponds to a manual page, or almost. Plus, certain configuration files, library functions for programmers and others, also possess their own manual pages.

Their contents are arranged in different sections. References to these sections are made in the following manner: for example, `open(2)`, `fstab(5)` will respectively refer to the `open` page in section 2 and the `fstab` page in section 5.

To display a manual page, type `man`. Its syntax will be as follows:

```
man [options] [section] <manual page>
```

Even for `man` itself, a command is available: `man man`. Manual pages are formatted, then displayed using the `less pager` by default.

The names of the manual pages and their relevant sections appear at the top of each page. At the bottom are given references to other pages with related subjects (in general in the **SEE ALSO** section).

You can start by consulting the pages related to the different commands covered in this manual: `ls(1)`, `chmod(1)`, etc.

If you cannot find the right manual page - for example, you want to use the `mknod` function in one of your programs but you end up on the `mknod` command page -, make sure you spell out the section explicitly. In our example: `mknod(2)`. If you forgot the exact section, `man -a mknod` will read through all the sections looking for pages named `mknod`.

A.1.2. Info Pages

`info` pages complete the documentation included in the manual pages. The command for accessing `info` pages is `info`.

The `info` pages have a tree structure, the top of which is called `dir`. From there, you can access all of its `info` pages.

`info` may be called up in two ways: either by omitting any argument, which will place you at the very top of the tree structure, or by adding a command or a package name, which will open the relevant page, if it exists. For example:

```
info emacs
```

In the `info` pages:

```
* Buffers::
```

will indicate a link. Moving the cursor to this link (using the arrow keys) and pressing `Enter` will take you to the corresponding `info` page.

You may use the following keyboard shortcuts:

- **u**: for *Up*, takes you up one level;
- **n**: for *Next*, brings you to the next `info` page on the same tree-structure level;
- **p**: for *Prev*, takes you back to the previous `info` page.

A great number of commands may be listed by typing: `?`.

A.1.3. HOWTOs

HOWTOs, published by the LDP (Linux Documentation Project), and available in many languages, will help you configuring many aspects of your system. As long as the proper packages is installed (the `howto-html-en` package for the English edition), *HOWTOs* will provide you with an answer to a specific question or a solution to a problem on your hard disk. The documentation is located in the `/usr/share/doc/HOWTO/HTML/en/` directory. These are text files in their primary form, although they are also readable in HTML with a web browser, and printable with *PostScript*.

The list is quite exhaustive. Get an idea of its length by consulting the index from the main menu: Documentation→HOWTOs English. When met with a complex problem, start by reading the corresponding *HOWTO* (if it exists of course!). Not only will you be given a solution to your problem but you will also learn a great deal at the same time. Among others, examples of what is covered range from networking (NET-3-HOWTO), sound card configuration (Sound-HOWTO), the writing of media CD (CD-Writing-HOWTO) as well as NIS and NFS configuration.

An important step is to check the modification dates of the *HOWTO* documents - i.e. the publication date located at the beginning of the document - to make sure they are up-to-date. Otherwise, their contents may be invalid. Watch out for old *HOWTOs* relating to hardware configuration especially, as Linux evolves very fast in that specific area. Remember also that, in the free software world, the term “old” carries even more weight than in IT in general: free software may be considered old after being around for fifteen days!

Note: *HOWTOs* are available online on the LDP (<http://linuxdoc.org/>) web site and likely to be slightly more up-to-date there. Have a look at the following as well: (classified by categories (<http://linuxdoc.org/HOWTO/HOWTO-INDEX/categories.html>)); and FAQs (<http://linuxdoc.org/docs.html#faq>).

A.1.4. The `/usr/share/doc` Directory

Some packages include their own documentation in one of `/usr/share/doc`'s subdirectories and named after the specific package.

A.2. Internet

Internet information sources are widespread and web sites devoted to *GNU/Linux* and its use or configuration numerous. However, there are other places than web sites.

Your preferred source of information should be the **Mandrake Linux** (<http://mandrakelinux.com/>) official Web site. In particular, check out the support (<http://mandrakelinux.com/en/ffreesup.php3>) section.

A.2.1. Web Sites Devoted to GNU/Linux

A.2.1.1. MUO

MandrakeUser.org (MUO) is the **Mandrake Linux** users database. With over 200 pages and growing, it is arguably the largest collection of **Mandrake Linux**-related documentation on the web. Apart from the online version of our present wonderful handbook, that is... :-)

MUO collects submissions by **Mandrake Linux** users. It also features a discussion forum and a community newsletter. The articles are targeted towards beginners and semi-advanced users. They do not simply repeat what may be read somewhere else. Their aim is to be practical. In short, they do their job!

Topics range from administrative issues, like the handling of the *shell*, to the tweaking of *X*'s performances, *GNU/Linux*'s graphical subsystem.

It may be found at MUO (<http://mandrakeuser.org/>)

Note: If you are familiar with **Mandrake Linux**'s web sites, you probably know Mandrake Forum (<http://mandrakeforum.com/>). For those who are unaware of that site, it acts as a forum for **Mandrake Linux** users. There, you will find suggestions, questions as well as news related to **Mandrake Linux** and *GNU/Linux*. Please note that these two platforms (MUO and Mandrake Forum) will be merged very soon.

A.2.1.2. Demos and Tutorials

A specific section of the **Mandrake Linux** web site is devoted to numerous demos and tutorials (<http://www.mandrakelinux.com/en/demos/>). They discuss, among other topics, installation and graphical environments; many aspects of the configuration of your system such as network, packages maintenance, server configuration, etc. Some of the tutorials are also accessible from the installation CD in the tutorial directory.

A.2.1.3. Security Related Web Sites

<http://www.securityportal.com/> (<http://www.securityportal.com/>)

This site is devoted to general security issues on the Internet and contains some very interesting articles covering many aspects of the topic. A weekly newsletter is also available.

Another service (with a charge) is the customized sending of security threats.

<http://www.securityfocus.com/> (<http://www.securityfocus.com/>)

A very well organized site which reviews current attacks, gives out vulnerability advisories for a remarkably great number of products, including **Mandrake Linux's**.

<http://www.linuxsecurity.com/> (<http://www.linuxsecurity.com/>)

This one is entirely devoted to Linux and includes news, advisories, newsletters, and many resources such as documentation, forums, tools, etc.

<http://linux.com/enhance/> (<http://linux.com/enhance/>)

An excellent site regularly fed with articles on present security issues. This section of the Linux.com (<http://www.linux.com/>) also features articles about desktop issues, sound, etc.

A.2.1.4. Other Linux Web Sites

Out of the multiple existing web sites, here are some of the most exhaustive:

<http://www.linux.org/> (<http://www.linux.org/>)

one of the very first sites devoted to Linux which contains a whole slew of links to other useful sites.

<http://freshmeat.net/> (<http://freshmeat.net/>)

this is the place to visit to get the latest applications available in the Linux world.

<http://www.linux-howto.com/> (<http://www.linux-howto.com/>)

info and more info :-)

<http://www.linuxgazette.com/> (<http://www.linuxgazette.com/>)

a well done online publication with interesting articles about new projects and present issues, tutorials, etc.

And, of course, remember about your favorite search engines. Generally speaking, it is the most practical information seeking tool. A few carefully chosen keywords in a search engine will often produce the needed answers to your specific problem. In Google, you can even make a *GNU/Linux*-oriented search by typing <http://www.google.com/linux/> (<http://www.google.com/linux/>).

A.2.2. Mailing Lists

Mailing lists still remain very popular in spite of the multiplication of other means of communication. Almost every piece of *GNU/Linux* software has its own mailing list geared towards users, developers, announcers, etc.

The **Mandrake Linux** project has its own support lists (<http://www.mandrakelinux.com/en/flists.php3>).

Here, we can not give out a list of addresses but bear in mind that it very often is the best mean to get in touch with the best experts on a particular subject. Some pieces of advice, however:

- Do not post questions which are off-topic. Carefully read the guidelines generally posted when you first subscribed or where you found the address of the list. We also recommend that you read this version of the Email Etiquette (<http://www.iwillfollow.com/email.htm>), also known as **Netiquette**, where some precious hints are available. If you have spare time, you may also consider reading the corresponding RFC (<http://www.rfc-editor.org/>)s.

Note: IMPORTANT: remember to always keep the first *e-mail* you receive from a mailing list since it normally tells you how to unsubscribe, if you wish to do so.

- Respect the general rules applicable to *e-mails*: in particular, do **not** send HTML messages: text only.
- Mailing lists usually have archives: check them out! Your question may have been debated just before you subscribed to the list.
- God helps those who help themselves.

A.2.3. Newsgroups

Before asking for help on newsgroups, it is advisable to find out if your problem has already been covered (or solved) on *Dejanews* (http://groups.google.com/googlegroups/deja_announcement.html), which has been acquired by Google. If nothing is relevant to your question, access this newsgroup entirely devoted to **Mandrake Linux** (`news:alt.os.linux.mandrake`). Or you may also join many other groups in the `comp.os.linux.*` "hierarchy":

- `comp.os.linux.setup` (`news:comp.os.linux.setup`): questions about Linux configuration (devices, configuration of applications) and resolution of miscellaneous problems.
- `comp.os.linux.misc` (`news:comp.os.linux.misc`): whatever does not fit in any other group.
- and others...

Before posting to one of these groups, make sure you did your homework and read the available documentation on your specific issue. If you have not, you will most likely get the following answer: RTFM. And nothing more!

A.3. General Guidelines for Solving a Problem under Mandrake Linux

Here are the different means available in your problem-solving quest. Try the first option and only then, if that did not work, try the second, and so on. As a last resort only, and only if nothing else has worked for you, start thinking about the possibility of... throwing your machine through the window :-)

A.3.1. RTFM

“Read The F***ing Manual!” (We could not resist, sorry!)

“The manual” means that very manual **and** all the manuals and literature available on that subject. Our previous sections offer you good starting points. Only when all these resources have been exhausted, you may start thinking you have indeed stumbled over a real problem.

A.3.2. Search the Internet

The various Internet sites previously mentioned are other excellent starting points. They deal with general **and** very specific aspects of your potential problems. Finally, try a general search engine such as Google (<http://www.google.com>) or, as mentioned above, the Linux-specific (<http://www.google.com/linux/>) Google search engine. And do not hesitate to use the Advanced search (http://www.google.com/advanced_search) option.

A.3.3. Mailing Lists and Newsgroups Archives

The previous searches may lead you to general answers which hide the results of your specific inquiry among many others. To refine your search, this is what you should do:

First, try to find a list which seems specifically linked to your problem, then perform a search in its archive pages.

Example

You noticed a strange behavior while trying to use *grub* with a *minix* partition.

A search using “grub mailing list” keywords in Google gives as a fourth result the link to an archive’s message of the GRUB mailing-list July 1999 (<http://mail.gnu.org/pipermail/bug-grub/1999-July/003129.html>). Once there, you get the URL for the archive’s root: GRUB mailing list archive (<http://www.mail-archive.com/bug-grub%40gnu.org/>). It even suggests a search engine. Thus, searching for “Minix” will lead you directly to a patch.

Note however that all archives do not propose an embedded search engine. However, you can easily use the field `return results from the site` to limit your search to the specific site hosting the archive.

For a newsgroups search, this reference, *Dejanews* (http://groups.google.com/googlegroups/deja_announcement.html) – which has been acquired by Google, holds the archives for an amazing number of newsgroup channels.

A.3.4. Questions to Mailing Lists and Newsgroups

See the related section above: *Mailing Lists*, page 165 and *Newsgroups*, page 166. Reading *How To Ask Questions The Smart Way* (<http://www.tuxedo.org/~esr/faqs/smart-questions.html>) may be of great help.

A.3.5. Directly Contacting the Person in Charge

Use this option as a very last resort and in really extreme situations – unless you want to offer your collaboration! Software developers generally receive mountains of *e-mails*. Therefore, your anguished question on the use of the `cd` command will most likely... be ignored!

The addresses will be found either on the home page of a project’s site or in the software documentation.

That’s all for now! A last word however: do not underestimate your neighbors’ skills or those of your local LUG (Linux Users Group). And, please, do not throw your computer through the window as of yet. If your problem is not fixed today, it will be tomorrow...

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Glossary

APM

Advanced Power Management. A feature used by some *BIOS*es in order to make the machine enter a standby state after a given period of inactivity. On laptops, APM is also responsible for reporting the battery status and, if it is supported, the estimated remaining battery life.

ASCII

American Standard Code for Information Interchange. The standard code used for storing characters, including control characters, on a computer. Many 8-bit codes (such as ISO 8859-1, the Linux default character set) contain ASCII as their lower half (See *ISO 8859*).

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0																
1																
2		!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
3	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6	'	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7	p	q	r	s	t	u	v	w	x	y	z	{		}	~	

Figure 1. ASCII-Table

BSD

Berkeley Software Distribution. A *Unix* variant developed at the Berkeley University computing department. This version has always been considered more advanced technically than the others, and has brought many innovations to the computing world in general and to *Unix* in particular.

CHAP

Challenge-Handshake Authentication Protocol: protocol used by ISPs to authenticate their clients. In this scheme, a value is sent to the client (the machine who connects), the client calculates a *hash* from this value which it sends to the server, and the server compares the *hash* with the one it has calculated. It is different from PAP in that it re-authenticates on a periodic basis after the initial authentication.
See Also: PAP.

CIFS

Common Internet FileSystem The predecessor of the SMB filesystem, used on *DOS* systems.

DHCP

Dynamic Host Configuration Protocol. A protocol designed for machines on a local network to dynamically get an IP address from a DHCP server.

DMA

Direct Memory Access. A facility used on the *PC* architecture which allows for a peripheral to read or write from main memory without the help of the CPU. PCI peripherals use bus mastering and do not need DMA.

DNS

Domain Name System. The distributed name/address mechanism used in the Internet. This mechanism allows you to map a domain name to an IP address, which is what lets you look up a site by domain name without knowing the IP address of the site. DNS also allows reverse lookup, that is you can get a machine's IP address from its name.

DPMS

Display Power Management System. Protocol used by all modern monitors in order to manage power saving features. Monitors supporting these features are commonly called "green monitors".

ELF

Executable and Linking Format. This is the binary format used by most *GNU/Linux* distributions nowadays.

ext2

short for the “Extended 2 filesystem”. This is *GNU/Linux*’ native filesystem and has all characteristics of any *Unix* filesystem: support for special files (character devices, symbolic links...), file permissions and ownership, and so on.

FAQ

Frequently Asked Questions. A document containing a series of questions/answers about a specific topic. Historically, FAQs appeared in newsgroups, but this sort of document now appears on various web sites, and even commercial products have their FAQ. Generally, they are very good sources of information.

FAT

File Allocation Table. Filesystem used by *DOS* and *Windows*.

FDDI

Fiber Distributed Digital Interface. A high-speed network physical layer, which uses optical fiber for communication. Only used on big networks, mainly because of its price.

FHS

Filesystem Hierarchy Standard. A document containing guidelines for a coherent file tree organization on *Unix* systems. **Mandrake Linux** complies with this standard in most aspects.

FIFO

First In, First Out. A data structure or hardware buffer from which items are taken out in the order they were put in. *Unix* pipes are the most common examples of FIFOs.

FTP

File Transfer Protocol. This is the standard Internet protocol used to transfer files from one machine to another.

GFDL

The GNU Free Documentation License. It is the license that applies to all **Mandrake Linux** documentation.

GIF

Graphics Interchange Format. An image file format, widely used on the web. GIF images may be compressed or animated. Due to copyright problems it is a bad idea to use them, replace them as much as possible by the far advanced PNG format instead.

GNU

GNU's Not Unix. The GNU project has been initiated by Richard Stallman at the beginning of the 80s, and aimed at developing a free operating system (“free” as in “free speech”). Currently, all tools are there, except... the kernel. The GNU project kernel, *Hurd*, is not rock solid yet. *Linux* borrows, among others, two things from GNU: its *C* compiler, *gcc*, and its license, the GPL.
See Also: GPL.

GPL

General Public License. The license of the *GNU/Linux* kernel, it goes the opposite way of all proprietary licenses in that it gives no restriction as to copying, modifying and redistributing the software, as long as the source code is made available. The only restriction, if one can call it that, is that the persons to which you redistribute it must also benefit from the same rights.

GUI

Graphical User Interface. Interface to a computer consisting of windows with menus, buttons, icons and so on. The vast majority prefer a GUI over a CLI (*Command Line Interface*) for ease of use, even though the latter is more versatile.

HTML

HyperText Markup Language. The language used to create web documents.

HTTP

HyperText Transfer Protocol. The protocol used to connect to websites and retrieve HTML documents or files.

IDE

Integrated Drive Electronics. The most widely used bus on today's *PC*s for hard disks. An IDE bus can contain up to two devices, and the speed of the bus is limited by the device on the bus which has the slower command queue (and not the slower transfer rate!).
See Also: ATAPI.

IP masquerading

is when you use a firewall to hide your computer's true IP address from the outside. Typically any outside network connections you make beyond the firewall will inherit the firewall's IP address. This is useful in situations where you may have a fast Internet connection with only one IP address but wish to use more than one computer that have internal network IP addresses assigned.

IRC

Internet Relay Chat. One of the few Internet standards for live speech. It allows for channel creation, private talks, and also file exchange. It is also designed to be able to make servers connect to each other, which is why several IRC networks exist today: **Undernet**, **DALnet**, **EFnet** to name a few.

IRC channels

are the "places" inside IRC servers where you can chat with other people. Channels are created in IRC servers and users join those channels so they can communicate with each other. Messages written on an channel are only visible to those people connected to that channel. Two or more users can also create a "private" channel so they don't get disturbed by other users. Channel names begin with a #.

ISA

Industry Standard Architecture. The very first bus used on PCs, it is slowly being abandoned in favor of the PCI bus. Some hardware manufacturers still use it, though. It is still very common that SCSI cards supplied with scanners, CD writers, ... are ISA. Too bad.

ISDN

Integrated Services Digital Network. A set of communication standards for allowing a single wire or optical fiber to carry voice, digital network services and video. It has been designed in order to eventually replace the current phone system, known as PSTN (*Public Switched Telephone Network*) or POTS (*Plain Ole Telephone Service*). Technically ISDN is a circuit switched data network.

ISO

International Standards Organization. A group of companies, consultants, universities and other sources which enumerates standards in various topics, including computing. The papers describing standards are numbered. The standard number iso9660, for example, describes the filesystem used on CD-ROMs.

ISP

Internet Service Provider. A company which sells Internet access to its customers, whether the access is over telephone lines or dedicated lines.

JPEG

Joint Photographic Experts Group. Another very common image file format. JPEG is mostly suited for compressing real-world scenes, and does not work very well on non-realistic images.

LAN

Local Area Network. Generic name given to a network of machines connected to the same physical wire.

LDP

Linux Documentation Project. A nonprofit organization which maintains *GNU/Linux* documentation. Its mostly known documents are *HOWTOs*, but it also maintains FAQs, and even a few books.

MBR

Master Boot Record. Name given to the first sector of a bootable hard drive. The MBR contains the code used to load the operating system into memory or a bootloader (such as *LILLO*), and the partition table of that hard drive.

MIME

Multipurpose Internet Mail Extensions. A string of the form type/subtype describing the contents of a file attached in an e-mail. This allows MIME-aware mail clients to define actions depending on the type of the file.

MPEG

Moving Pictures Experts Group. An ISO committee which generates standards for video and audio compression. MPEG is also the name of their algorithms. Unfortunately, the license for this format is very restrictive, and as a consequence there are still no *Open Source* MPEG players...

NCP

NetWare Core Protocol. A protocol defined by **Novell** to access Novell NetWare file and print services.

NFS

Network FileSystem. A network filesystem created by **Sun Microsystems** in order to share files across a network in a transparent way.

NIC

Network Interface Controller. An adapter installed in a computer which provides a physical connection to a network, such as an *Ethernet* card.

NIS

Network Information System. NIS was also known as “Yellow Pages”, but **British Telecom** holds a copyright on this name. NIS is a protocol designed by **Sun Microsystems** in order to share common information across a NIS **domain**, which can gather a whole LAN, part of this LAN or several LANs. It can export password databases, service databases, groups information and more.

PAP

Password Authentication Protocol. A protocol used by many ISPs to authenticate their clients. In this scheme, the client (you) sends an identifier/password pair to the server, which is not encrypted.

See Also: CHAP.

PCI

Peripheral Components Interconnect. A bus created by **Intel** and which is today the standard bus for *PC* architectures, but other architectures use it too. It is the successor of ISA, and it offers numerous services: device identification, configuration information, IRQ sharing, bus mastering and more.

PCMCIA

Personal Computer Memory Card International Association. More and more commonly called “PC Card” for simplicity reasons, this is the standard for external cards attached to a laptop: modems, hard disks, memory cards, *Ethernet* cards, and more. The acronym is sometimes humorously expanded to *People Cannot Memorize Computer Industry Acronyms...*

PNG

Portable Network Graphics. Image file format created mainly for web use, it has been designed as a patent-free replacement for GIF and also has some additional features.

PnP

Plug’N’Play. First an add-on for ISA in order to add configuration information for devices, it has become a more widespread term which groups all devices able to report their configuration parameters. As such, all PCI devices are Plug’N’Play.

POP

Post Office Protocol. The common protocol used for retrieving mail from an ISP.

PPP

Point to Point Protocol. This is the protocol used to send data over serial lines. It is commonly used to send IP packets to the Internet, but it can also be used with other protocols such as Novell’s IPX protocol.

RAID

Redundant Array of Independent Disks. A project initiated at the computing science department of Berkeley University, in which the storage of data is spread along an array of disks using different schemes. At first, this was implemented using floppy drives, which is why the acronym originally stood for *Redundant Array of Inexpensive Disks*.

RAM

Random Access Memory. Term used to identify a computer’s main memory. The “Random” here means that any part of the memory can be directly accessed...

RFC

Request For Comments. RFCs are the official Internet standard documents, published by the IETF (*Internet Engineering Task Force*). They describe all protocols, their usage, their requirements and so on. When you want to learn how a protocol works, pick up the corresponding RFC.

RPM

Redhat Package Manager. A packaging format developed by **Red Hat** in order to create software packages, it is used in many *GNU/Linux* distributions, including **Mandrake Linux**.

SCSI

Small Computers System Interface. A bus with a high throughput designed to allow for several types of peripherals. Unlike IDE, a SCSI bus is not limited by the speed at which the peripherals accept commands. Only high-end machines integrate a SCSI bus directly on the motherboard, *PC*s need add-on cards.

SMB

Server Message Block. Protocol used by *Windows* machines (*9x* or *NT*) for file and printer sharing across a network. See also **CIFS**.

SMTP

Simple Mail Transfer Protocol. This is the common protocol for transferring email. Mail Transfer Agents such as *sendmail* or *postfix* use SMTP. They are sometimes also called SMTP servers.

SVGA

Super Video Graphics Array. The video display standard defined by VESA for the *PC* architecture. The resolution is 800×600 × 16 colors.

TCP

Transmission Control Protocol. This is the most common reliable protocol that uses IP to transfer network packets. TCP adds the necessary checks on top of IP to make sure that packets are delivered. Unlike UDP, TCP works in connected mode, which means that two machines must establish a connection before exchanging data.

URL

Uniform Resource Locator. A string with a special format used to identify a resource on the Internet in a unique way. The resource can be a file, a server or other item. The syntax for a URL is
 protocol://server.name[:port]/path/to/resource.
 When only a machine name is given and the protocol is `http://`, it defaults to retrieving the file `index.html` on the server.

VESA

Video Electronics Standards Association. An industry standards association aimed at the *PC* architecture. It is the author of the SVGA standard, for example.

WAN

Wide Area Network. This network, although similar to a LAN connects computers on a network that is not physically connected to the same wires and are separated by a greater distance.

account

on a *Unix* system, the combination of a name, a personal directory, a password and a *shell* which allows a person to connect to this system.

alias

mechanism used in a *shell* in order to make it substitute one string for another before executing the command. You can see all aliases defined in the current session by typing `alias` at the prompt.

arp

Address Resolution Protocol. The Internet protocol used to dynamically map an Internet address to physical (hardware) addresses on local area networks. This is limited to networks that support hardware broadcasting.

assembly language

is the programming language that is closest to the computer, which is why it's called a "low level" programming language. Assembly has the advantage of speed since assembly programs are written in terms of processor instructions so little or no translation is needed when generating executables. Its main disadvantage is that it is processor (or architecture) dependent. Writing complex programs is very time-consuming as well. So, assembly is the fastest programming language, but it isn't portable between architectures.

ATAPI

("AT Attachment Packet Interface") An extension to the ATA specification ("Advanced Technology Attachment", more commonly known as IDE, *Integrated Drive Electronics*) which provides additional commands to control CDROM drives and magnetic tape drives. IDE controllers equipped with this extension are also referred to as EIDE (*Enhanced IDE*) controllers.

ATM

This is an acronym for **Asynchronous Transfer Mode**. An ATM network packages data into standard size blocks (53 bytes: 48 for the data and 5 for the header) which it can convey efficiently from point to point. ATM is a circuit switched packet network technology oriented towards high speed (multi-megabits) optical networks.

atomic

a set of operations is said to be atomic when it executes all at once, and cannot be preempted.

background

in *shell* context, a process is running in the background if you can type commands while said process is running.

See Also: job, foreground.

backup

is a means of saving your important data to a safe medium and location. Backups should be done regularly, especially with more critical information and configuration files (the prime directories to backup are */etc*, */home* and */usr/local*). Traditionally, many people use *tar* with *gzip* or *bzip2* to backup directories and files. You can use these tools or programs like *dump* and *restore*, along with many other free or commercial backup solutions.

batch

is a processing mode where jobs are submitted to the processor, and then the processor executes them one after the other till it executes the last one and it's ready for another list of processes.

beep

is the little noise your computer's speaker does to warn you of some ambiguous situation when you're using command completion and, for example, there's more than one possible choice for completion. There might be other programs that make beeps to let you know of some particular situation.

beta testing

is the name given to the process of testing the beta version of a program. Programs usually get released in alpha and beta states for testing prior to final release.

bit

stands for *BI*nary *di*giT. A single digit which can take the values 0 or 1, because calculation is done in base two.

block mode files

files whose contents are buffered. All read/write operations for such files go through buffers, which allows for asynchronous writes on the underlying hardware, and for reads, not to read again what is already in a buffer.

See Also: buffer, buffer cache, character mode files.

boot

the procedure taking place when a computer is switched on, where peripherals are recognized one after the other, and where the operating system is loaded into memory.

bootdisk

a bootable floppy disk containing the code necessary to load the operating system from the hard disk (sometimes it is self-sufficient).

bootloader

is a program that starts the operating system. Many bootloaders give you the opportunity to load more than one operating system by letting you choose between them at a boot menu. Bootloaders like *grub* are popular because of this feature and are very useful in dual- or multi-boot systems.

buffer

a small portion of memory with a fixed size, which can be associated with a block mode file, a system table, a process and so on. The coherency of all buffers is maintained by the buffer cache.

See Also: buffer cache.

buffer cache

a crucial part of an operating system kernel, it is in charge of keeping all buffers up-to-date, shrinking the cache when needed, clearing unneeded buffers and more.

See Also: buffer.

bug

illogical or incoherent behavior of a program in a special case, or a behavior which does not follow the documentation or accepted standards issued for the program. Often, new features introduce new bugs in a program. Historically, this term comes from the old days of punch cards: a bug (the insect!) slipped into a hole of a punch card and, as a consequence, the program misbehaved. Ada Lovelace, having discovered this, declared “It’s a bug!”, and since then the term has remained.

byte

eight consecutive bits, interpreted in base two as a number between 0 and 255.

See Also: bit.

case

when taken in the context of strings, the case is the difference between lowercase letters and uppercase (or capital) letters.

character mode files

files whose content is not buffered. When associated to physical devices, all input/output on these devices is performed immediately. Some special character devices are created by the operating system (`/dev/zero`, `/dev/null` and others). They correspond to data flows.

See Also: block mode files.

client

program or computer that periodically connects to another program or computer to give it orders or ask for information. In the case of **peer to peer** systems such as SLIP or PPP the client is taken to be the end that initiates the connection and the remote end, being called, is taken to be the server. It is one of the components of a **client/server system**.

client/server system

system or protocol consisting of a **server** and one or several **clients**.

command line

what is provided by a shell and allows the user to type commands directly. Also subject of an eternal “flame war” between its supporters and its detractors :-)

command mode

under *V_i* or one of its clones, it is the state of the program in which pressing a key (this above all regards letters) will not insert the character in the file being edited, but instead perform an action specific to the said key (unless the clone has remappable commands and you have customized your configuration). You may get out of it typing one of the “back to insertion mode” commands: **i**, **I**, **a**, **A**, **s**, **S**, **o**, **O**, **c**, **C**, ...

compilation

is the process of translating source code that is human readable (well, with some training) and that is written in some programming language (*C*, for example) into a binary file that is machine readable.

completion

ability of a *shell* to automatically expand a substring to a filename, user name or other, as long as there is a match.

compression

is a way to shrink files or decrease the number of characters sent over a communications connection. Some file compression programs include *compress*, *zip*, *gzip*, and *bzip2*.

console

is the name given to what used to be called terminals. They were the users machines (a screen plus a keyboard) connected to one big central mainframe. On *PC*s, the physical terminal is the keyboard and screen.

See Also: virtual console.

cookies

temporary files written on the local hard disk by a remote web server. It allows for the server to be aware of a user’s preferences when this user connects again.

datagram

A datagram is a discrete package of data and headers which contain addresses, which is the basic unit of transmission across an IP network. You might also hear this called a “packet”.

dependencies

are the stages of compilation that need to be satisfied before going on to other compilation stages in order to successfully compile a program.

desktop

If you're using the X Window System, the desktop is the place on the screen inside which you work and upon which your windows and icons are displayed. It is also called the background, and is usually filled with a simple color, a gradient color or even an image.

See Also: virtual desktops.

directory

Part of the filesystem structure. Within a directory, files or other directories are stored. Sometimes there are sub-directories (or branches) within a directory. This is often referred to as a directory tree. If you want to see what's inside another directory, you will either have to list it or change to it. Files inside a directory are referred to as leaves while sub-directories are referred to as branches. Directories follow the same restrictions as files although the permissions mean different things. The special directories `.` and `..` refer to the directory itself and to the parent directory respectively.

discrete values

are values that are non-continuous. That is, there's some kind of "spacing" between two consecutive values.

distribution

is a term used to distinguish one *GNU/Linux* manufacturers product from another. A distribution is made up of the core Linux kernel and utilities, as well as installation programs, third-party programs, and sometimes proprietary software.

DLCI

The DLCI is the Data Link Connection Identifier and is used to identify a unique virtual point to point connection via a Frame Relay network. The DLCI's are normally assigned by the Frame Relay network provider.

echo

is when the characters you type in a username entry field, for example, are shown "as is", instead of showing "*" for each one you type.

editor

is a term typically used for programs that edit text files (aka text editor). The most well-known *GNU/Linux* editors are the GNU Emacs (*Emacs*) editor and the *Unix* editor *Vi*.

email

stands for Electronic Mail. This is a way to send messages electronically between people on the same network. Similar to regular mail (aka snail mail), email needs a destination and sender address to be sent properly. The sender must have an address like "sender@senders.domain" and the recipient must have an address like "recipient@recipients.domain." Email is a very fast method of communication and typically only takes a few minutes to reach anyone, regardless of where in the world they are located. In order to write email, you need an email client like *pine* or *mutt* which are text-mode clients, or GUI clients like *kmail*.

environment

is the execution context of a process. It includes all the information that the operating system needs to manage the process and what the processor needs to execute the process properly.

See Also: process.

environment variables

a part of a process' environment. Environment variables are directly viewable from the *shell*.

See Also: process.

escape

in the shell context, is the action of surrounding some string between quotes to prevent the shell from interpreting that string. For example, when you need to use spaces in some command line and pipe the results to some other command you have to put the first command between quotes ("escape" the command) otherwise the shell will interpret it wrong and won't work as expected.

filesystem

scheme used to store files on a physical media (hard drive, floppy) in a consistent manner. Examples of filesystems are FAT, *GNU/Linux*' ext2fs, iso9660 (used by CD-ROMs) and so on. An example of a virtual filesystem is the /proc filesystem.

firewall

a machine or a dedicated piece of hardware which, in the topology of a local network, is the unique connecting point to the outside network, and which filters, or controls the activity on some ports, or makes sure only some specific interfaces may have access to them.

flag

is an indicator (usually a bit) which is used to signal some condition to a program. For example, a filesystem has, among others, a flag indicating if it has to be dumped in a backup, so when the flag is active the filesystem gets backed up, and when it's inactive it doesn't.

focus

the state for a window to receive keyboard events (such as key-presses, key-releases and mouse clicks) unless they are trapped by the window manager.

foreground

in shell context, the process in the foreground is the one which is currently running. You have to wait for such a process to finish in order to be able to type commands again.

See Also: job, background.

framebuffer

projection of a video card's RAM into the machine's address space. This allows for applications to access the video RAM without the chore of having to talk to the card. All high-end graphical workstations use framebuffers, for example.

Frame Relay

Frame Relay is a network technology ideally suited to carrying traffic that is of bursty or sporadic nature. Network costs are reduced by having many Frame Relay customer sharing the same network capacity and relying on them wanting to make use of the network at slightly different times.

full-screen

This term is used to refer to applications that take up the whole visible area of your display.

gateway

link connecting two IP networks.

globbing

in the *shell*, the ability to group a certain set of filenames with a globbing pattern.

See Also: globbing pattern.

globbing pattern

a string made of normal characters and special characters. Special characters are interpreted and expanded by the *shell*.

hardware address

This is a number that uniquely identifies a host in a physical network at the media access layer. Examples of this are **Ethernet Addresses** and **AX.25 Addresses**.

hidden file

is a file which can't be "seen" when doing a `ls` command with no options. Hidden files' filenames begin with a `.` and are used to store the user's personal preferences and configurations for the different programs (s)he uses. For example, *bash*'s command history is saved into `.bash_history`, which is a hidden file.

home directory

often abbreviated by "home", this is the name for the personal directory of a given user.

See Also: account.

host

refers to a computer and is commonly used when talking about computers that are connected on a network.

icon

is a little drawing (normally sized 16×16, 32×32, 48×48 and sometimes 64×64 pixels) which represents, under a graphical environment, a document, a file or a program.

inode

entry point leading to the contents of a file on a *Unix*-like filesystem. An inode is identified in a unique way by a number, and contains meta-information about the file it refers to, such as its access times, its type, its size, **but not its name!**

insert mode

under *Vi* or one of its clones, it is the state of the program in which pressing a key will insert that character in the file being edited (except pathological cases like the completion of an abbreviation, right justify at the end of the line, ...). One gets out of it pressing the key **Esc** (or **Ctrl-I**).

Internet

is a huge network that connects computers around the world.

IP address

is a numeric address consisting of four parts which identifies your computer on the Internet. IP addresses are structured in a hierarchical manner, with top level and national domains, domains, subdomains and each machine's personal address. An IP address would look something like 192.168.0.1. A machine's personal address can be one of two types: static or dynamic. Static IP addresses are addresses that never change, but rather are permanent. Dynamic IP addresses mean your IP address will change with each new connection to the network. Dial-up and cable modem users typically have dynamic IP addresses while some DSL and other high-speed connections provide static IP addresses.

ISO 8859

The ISO 8859 standard includes several 8-bit extensions to the ASCII character set (see *ASCII*). Especially important is ISO 8859-1, the "Latin Alphabet No. 1", which has become widely implemented and may already be seen as the de facto standard ASCII replacement.

ISO 8859-1 (figure 2) supports the following languages: Afrikaans, Basque, Catalan, Danish, Dutch, English, Faroese, Finnish, French, Galician, German, Icelandic, Irish, Italian, Norwegian, Portuguese, Scottish, Spanish, and Swedish.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
8																
9																
A		¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	­	®	¯
B	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
E	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Figure 2. ISO-8859-1 Table

Note that the ISO 8859-1 characters are also the first 256 characters of ISO 10646 (Unicode). However, it lacks the EURO symbol and does not fully cover Finnish and French. ISO 8859-15 (figure 3) is a modification of ISO 8859-1 that covers these needs.

The full set of ISO 8859 alphabets includes:

Name	Language(s)
ISO 8859-1	west European languages (Latin-1)
ISO 8859-2	east European languages (Latin-2)
ISO 8859-3	southeast European and miscellaneous (Latin-3)
ISO 8859-4	Scandinavian/Baltic languages (Latin-4)

Name	Language(s)
ISO 8859-5	Latin/Cyrillic
ISO 8859-6	Latin/Arabic
ISO 8859-7	Latin/Greek
ISO 8859-8	Latin/Hebrew
ISO 8859-9	Latin-1 modification for Turkish (Latin-5)
ISO 8859-10	Lappish/Nordic/Eskimo languages (Latin-6)
ISO 8859-11	Thai
ISO 8859-13	Baltic Rim languages (Latin-7)
ISO 8859-14	Celtic (Latin-8)
ISO 8859-15	west European languages with Euro symbol (Latin-9)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
8																
9																
A		ı	ç	£	€	¥	Š	§	š	©	ª	«	¬	–	®	-
B	°	±	²	³	Ž	µ	¶	·	ž	¹	º	»	ƒ	œ	Ÿ	¿
C	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
E	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Figure 3. ISO-8859-15 Table

- job**
in *shell* context, a job is a process running in the background. You can have several jobs in the same shell and control these jobs.
See Also: foreground, background.
- kernel**
is the guts of the operating system. The kernel is responsible for allocating resources and separating processes from each other. It handles all of the low-level operations that allow programs to talk directly to the hardware on your computer, manages the buffer cache and so on.
- kill ring**
under *Emacs*, it is the set of text areas cut or copied since the beginning of the editor, which may be recalled to be inserted again, and which is organized like a ring.
- launch**
is the action of invoking, or starting, a program.
- library**
is a collection of procedures and functions in binary form to be used by programmers in their programs (as long as the library's license allows them to do so). The program in charge of loading shared libraries at run time is called the dynamic linker.
- link**
reference to an inode in a directory, therefore giving a (file) name to the inode. Examples of inodes which don't have a link (and hence have no name) are: anonymous pipes (as used by the shell), sockets (aka network connections), network devices and so on.
- linkage**
last stage of the compile process, which consists in linking together all object files in order to produce an executable file, and matches unresolved symbols with dynamic libraries (unless a static linkage has been asked, in which case the code of these symbols will be included in the executable).

Linux

is a *Unix*-like operating system which runs on a variety of different computers, and is free for anyone to use and modify. Linux (the kernel) was written by Linus Torvalds.

login

connection name for a user on a *Unix* system, and the action to connect.

lookup table

is a table that puts in correspondance codes (or tags) and their meaning. It is often a data file used by a program to get further information about a particular item.

For example, *harddrake* uses such a table to know what a manufacturer's product code means. This is one line from the table, giving information about item CTL0001

```
CTL0001 sound    sb      Creative Labs    SB16 \
                HAS_OPL3|HAS_MPU401|HAS_DMA16|HAS_JOYSTICK
```

loopback

virtual network interface of a machine to itself, allowing the running programs not to have to take into account the special case where two network entities are in fact the same machine.

major

number specific to the device class.

manual page

a small document containing the definition of a command and its usage, to be consulted with the `man` command. The first thing one should (learn how to) read when hearing of a command he doesn't know :-)

minor

number identifying the specific device we are talking about.

mounted

A device is mounted when it is attached to the *GNU/Linux* filesystem. When you mount a device you can browse its contents. This term is partly obsolete as with the "supermount" feature, users do not need any more to manually mount removable medias.

See Also: mount point.

mount point

is the directory where a partition or another device is attached to the *GNU/Linux* filesystem. For example, your CD-ROM is mounted in the `/mnt/cdrom` directory, from where you can explore the contents of any mounted CDs.

MSS

The Maximum Segment Size (**MSS**) is the largest quantity of data that can be transmitted at one time. If you want to prevent local fragmentation MSS would equal MTU-IP header.

MTU

The Maximum Transmission Unit (**MTU**) is a parameter that determines the largest datagram than can be transmitted by an IP interface without it needing to be broken down into smaller units. The MTU should be larger than the largest datagram you wish to transmit unfragmented. Note, this only prevents fragmentation locally, some other link in the path may have a smaller MTU and the datagram will be fragmented there. Typical values are 1500 bytes for an ethernet interface, or 576 bytes for a SLIP interface.

multitasking

the ability for an operating system to share CPU time between several processes. At low level, this is also known as multiprogramming. Switching from one process to another requires that all the current process context be saved and restored when this process is elected again. This operation is called context switch, and on Intel, is done 100 times per second; therefore it's fast enough so that a user has the illusion that the operating system runs several applications at the same time. There are two types of multitasking: preemptive multitasking is where the operating system is responsible for taking away the CPU and pass it to another process; cooperative multitasking is where the process itself gives back the CPU. The first variant is, obviously, the better choice because no program can consume the entire CPU time and block other processes. *GNU/Linux* does preemptive multitasking. The policy to select which process should be run, depending on several parameters, is called scheduling.

multiuser

is used to describe an operating system which allows multiple users to log into and use the system at the exact same time, each being able to do their own work independent of other users. A multitasking operating system is required to provide multiuser support. *GNU/Linux* is both a multitasking and multiuser operating system, as any *Unix* system for that matter.

named pipe

a *Unix* pipe which is linked, as opposed to pipes used in shells. See also **pipe**, **link**.

naming

a word commonly used in computing for a method to identify objects. You will often hear of “naming conventions” for files, functions in a program and so on.

newsgroups

discussion and news areas that can be accessed by a news or USENET client to read and write messages specific to the topic of the newsgroup. For example, the newsgroup `alt.os.linux.mandrake` is an alternate newsgroup (alt) dealing with the Operating System (os) *GNU/Linux*, and specifically, **Mandrake Linux** (mandrake). Newsgroups are broken down in this fashion to make it easier to search for a particular topic.

null, character

the character or byte number 0, it is used to mark the end of a string.

object code

is the code generated by the compilation process to be linked with other object codes and libraries to form an executable file. Object code is machine readable.

See Also: compilation, linkage.

on the fly

Something is said to be done “on the fly” when it’s done along with something else, without you noticing it or explicitly asking for it.

open source

is the name given to free source code of a program that is made available to development community and public at large. The theory behind this is that allowing source code to be used and modified by a broader group of programmers will ultimately produce a more useful product for everyone. Some popular open source programs include *Apache*, *sendmail* and *GNU/Linux*.

operating system

is the interface between the applications and the underlying hardware. The tasks for any operating system are primarily to manage all of the machine specific resources. On a *GNU/Linux* system, this is done by the kernel and loadable modules. Other well-known operating systems include *AmigaOS*, *MacOS*, *FreeBSD*, *OS/2*, *Unix*, *Windows NT*, and *Windows 9x*.

owner

in the context of users and their files, the owner of a file is the user who created that file.

owner group

in the context of groups and their files, the owner group of a file is the group to which the user who created that file belongs to.

pager

program displaying a text file one screenful at a time, and making it easy to move back and forth and search for strings in this file. We advise you to use `less`.

password

is a secret word or combination of words or letters that is used to secure something. Passwords are used in conjunction with user logins to multi-user operating systems, web sites, FTP sites, and so forth. Passwords should be hard-to-guess phrases or alphanumeric combinations, and should never be based on common dictionary words. Passwords ensure that other people cannot log into a computer or site with your account.

patch, to patch

file holding a list of corrections to issue to a source code in order to add new features, to remove bugs, or to modify it according to one’s wishes and needs. The action consisting of the application of these corrections to the archive of source code (aka “patching”).

path

is an assignment for files and directories to the filesystem. The different layers of a path are separated by the "slash" or '/' character. There are two types of paths on *GNU/Linux* systems. The **relative** path is the position of a file or directory in relation to the current directory. The **absolute** path is the position of a file or directory in relation to the root directory.

pipe

a special *Unix* file type. One program writes data into the pipe, and another program reads the data at the other end. *Unix* pipes are FIFOs, so the data is read at the other end in the order it was sent. Very widely used with the shell. See also **named pipe**.

pixmap

is an acronym for "pixel map". It's another way of referring to bitmapped images.

plugin

add-on program used to display or play some multimedia content found on a web document. It can usually be easily downloaded if your browser is not yet able to display or play that kind of information.

porting

a program is translating that program in such a way that it can be used in a system it was not originally intended for, or it can be used in "similar" systems. For example, to be able to run a *Windows*-native program under *GNU/Linux* (natively), it must first be ported to *GNU/Linux*.

precedence

dictates the order of evaluation of operands in an expression. For example: If you have $4 + 3 * 2$ you get 10 as the result, since the product has more precedence than the addition. If you want to evaluate the addition first, then you have to add parenthesis like this $(4 + 3) * 2$, and you get 14 as the result since the parenthesis have more precedence than the addition and the product, so the operations in parenthesis get evaluated first.

preprocessors

are compilation directives that instruct the compiler to replace those directives for code in the programming language used in the source file. Examples of *C*'s preprocessors are `#include`, `#define`, etc.

process

in the operating system context, a process is an instance of a program being executed along with its environment.

prompt

in a *shell*, this is the string before the cursor. When you see it, you can type your commands.

protocol

Protocols organize the communication between different machines across a network, either using hardware or software. They define the format of transferred data, whether one machine controls another, etc. Many well-known protocols include HTTP, FTP, TCP, and UDP.

proxy

a machine which sits between a network and the Internet, whose role is to speed up data transfers for the most widely used protocols (HTTP and FTP, for example). It maintains a cache of previous demands, which avoids the cost of asking for the file again if another machine asks for the same thing. Proxies are very useful on low bandwidth networks (such as modem connections). Sometimes the proxy is the only machine able to access outside the network.

pulldown menu

it is a menu that is "rolled" with a button in some of its corners. When you press that button, the menu "unrolls" itself showing you the full menu.

quota

is a method for restricting disk usage and limits for users. Administrators can restrict the size of home directories for a user by setting quota limits on specific filesystems.

read-only mode

for a file means that the file cannot be written to. You can read its contents but you can't modify them. See Also: read-write mode.

read-write mode

for a file, it means that the file can be written to. You can read its contents and modify them.

See Also: read-only mode.

regular expression

a powerful theoretical tool which is used to search and match text strings. It lets one specify patterns these strings must obey. Many *Unix* utilities use it: *sed*, *awk*, *grep*, *perl* among others.

root

is the superuser of any *Unix* system. Typically root (aka the system administrator) is the person responsible for maintaining and supervising the *Unix* system. This person also has complete access to everything on the system.

root directory

This is the top level directory of a filesystem. This directory has no parent directory, thus '..' for root points back to itself. The root directory is written as '/'.

root filesystem

This is the top level filesystem. This is the filesystem where *GNU/Linux* mounts its root directory tree. It is necessary for the root filesystem to reside in a partition of its own, as it is the basis for the whole system. It holds the root directory.

route

Is the path that your datagrams take through the network to reach their destination. Is the path between one machine and another in a network.

run level

is a configuration of the system software that only allows certain selected processes to exist. Allowed processes are defined, for each runlevel, in the file */etc/inittab*. There are eight defined runlevels: 0, 1, 2, 3, 4, 5, 6, S and switching among them can only be achieved by a privileged user by means of executing the commands *init* and *telinit*.

script

shell scripts are sequences of commands to be executed as if they were entered in the console one after the other. *shell* scripts are *Unix*'s (somewhat) equivalent of *DOS* batch files.

security levels

Mandrake Linux's unique feature that allows you to set different levels of restrictions according to how secure you want to make your system. There are 6 predefined levels ranging from 0 to 5, where 5 is the tightest security. You can also define your own security level.

server

program or computer that provides a feature or service and awaits the connections from **clients** to execute their orders or give them the information they ask. In the case of **peer to peer** systems such as **slip** or **ppp** the server is taken to be the end of the link that is called and the end calling is taken to be the client. It is one of the components of a **client/ server system**.

shadow passwords

a password management suite on *Unix* systems in which the file containing the encrypted passwords is not world-readable, whereas it is when using the normal password system. It also offers other features such as password aging.

shell

The *shell* is the basic interface to the operating system kernel and is what provides the command line where users enter commands to run programs and system commands. All shells provide a scripting language which can be used to automate tasks or simplify often-used complex tasks. These *shell* scripts are similar to batch files from the *DOS* operating system, but are much more powerful. Some example shells are *bash*, *sh*, and *tcsh*.

single user

is used to describe a state of an operating system, or even an operating system itself, that only allows a single user to log into and use the system at any time.

site dependent

means that the information used by programs like *imake* and *make* to compile some source file depends on the site, the computer architecture, the computer's installed libraries, and so on.

socket

file type corresponding to any network connection.

soft links

see “symbolic links”.

standard error

the file descriptor number 2, opened by every process, used by convention to print error messages to the terminal screen by default.

See Also: standard input, standard output.

standard input

the file descriptor number 0, opened by every process, used by convention as the file descriptor from which the process receives data.

See Also: standard error, standard output.

standard output

the file descriptor number 1, opened by every process, used by convention as the file descriptor in which the process prints its output.

See Also: standard error, standard input.

streamer

is a device that takes “streams” (not interrupted or divided in shorter chunks) of characters as its input. A typical streamer is a tape drive.

switch

Switches are used to change the behavior of programs, and are also called command-line options or arguments. To determine if a program has optional switches that can be used, read the `man` pages or try to pass the `-help` switch to the program (ie. `program -help`).

symbolic links

special files, containing nothing but a string that makes reference to another file. Any access to them is the same as accessing the file whose name is the referenced string, which may or may not exist, and the path to which can be given in a relative or an absolute way.

target

is the object of compilation, i.e. the binary file to be generated by the compiler.

telnet

creates a connection to a remote host and allows you to log into the machine, provided you have an account. Telnet is the most widely-used method of remote logins, however there are better and more secure alternatives, like `ssh`.

theme-able

a graphical application is theme-able if it is able to change its appearance in real time. Many window managers are theme-able as well.

traverse

for a directory on a *Unix* system, this means that the user is allowed to go through this directory, and possibly to directories under it. This requires that the user has the execute permission on this directory.

username

is a name (or more generally a word) that identifies a user in a system. Each username is attached to a unique and single UID (user ID)

See Also: login.

variables

are strings that are used in `Makefile` files to be replaced by their value each time they appear. Usually they are set at the beginning of the `Makefile`. They are used to simplify `Makefile` and source files tree management.

More generally, variables in programming, are words that refer to other entities (numbers, strings, tables, etc.) that are likely to vary while the program is executing.

verbose

For commands, the verbose mode means that the command reports to standard (or possibly error) output all the actions it performs and the results of those actions. Sometimes, commands have a way to define

the “verbosity level”, which means that the amount of information that the command will report can be controlled.

virtual console

is the name given to what used to be called terminals. On *GNU/Linux* systems, you have what are called virtual consoles which enable you to use one screen or monitor for many independently running sessions. By default, you have six virtual consoles which can be reached by pressing **ALT-F1** through **ALT-F6**. There is a seventh virtual console by default, **ALT-F7**, which will permit you to reach a running X Window System. In X, you can reach the text console by pressing **CTRL-ALT-F1** through **CTRL-ALT-F6**.

See Also: console.

virtual desktops

In the X Window System, the *window manager* may provide you several *desktops*. This handy feature allows you to organize your windows, avoiding the problem of having dozens of them stacked on top of each other. It works as if you had several screens. You can switch from one virtual desktop to another in a manner that depends on the window manager you’re using.

wildcard

The ‘*’ and ‘?’ characters are used as wildcard characters and can represent anything. The ‘*’ represents any number of characters, including no characters. The ‘?’ represents exactly one character. Wildcards are often used in regular expressions.

window

In networking, the **window** is the largest amount of data that the receiving end can accept at a given point in time.

window manager

the program responsible for the “look and feel” of a graphical environment, dealing with window bars, frames, buttons, root menus, and some keyboard shortcuts. Without it, it would be hard or impossible to have virtual desktops, to resize windows on the fly, to move them around, ...

