Starter Guide

Limited Edition 2005

Mandrakesoft

http://www.mandrakesoft.com

Starter Guide: Limited Edition 2005
Published April 2005
Copyright © 2005 Mandrakesoft SA

by NeoDoc (`http://www.neodoc.biz`)Camille Bégnis, Christian Roy, Fabian Mandelbaum, Roberto Rosselli del Turco, Marco De Vitis, Alice Lafox, John Rye, Wolfgang Bornath, Funda Wang, Patricia Pichardo Bégnis, Debora Rejnharc Mandelbaum, Mickael Scherer, Jean-Michel Dault, Lunas Moon, Céline Harrand, Fred Lepied, Pascal Rigaux, Thierry Vignaud, Giuseppe Ghibò, Stew Benedict, Francine Suzon, Indrek Madedog Triipus, Nicolas Berdugo, Thorsten Kamp, Fabrice Facorat, Xiao Ming, Snature , Guylhem Aznar, Pavel Maryanov, and Annie Tétrault

Tools Used in the Making of this Manual

This manual was written in DocBook XML. The set of files involved were managed using the Borges Collaborative Content Creation System (C3S) (`http://sourceforge.net/projects/borges-dms`). The XML source files were processed by xsltproc, and jadetex using a customized version of Norman Walsh's stylesheets. Screen shots were taken using xwd or GIMP and converted with convert (from the ImageMagick package). All these programs are free software and most of them are available in your Mandrakelinux distribution.

Table of Contents

List of Tables

Preface

1. About Mandrakelinux

Mandrakelinux is a GNU/Linux distribution supported by Mandrakesoft S.A. which was born on the Internet in 1998. Its main goal was and still is to provide an easy-to-use and friendly GNU/Linux system. Mandrakesoft's two pillars are open source and collaborative work.

1.1. Contacting the Mandrakelinux Community

The following are various Internet links pointing you to various Mandrakelinux-related sources. If you wish to know more about the Mandrakesoft company, connect to our web site (`http://www.mandrakesoft.com/`). You can also check out the Mandrakelinux distribution web site (`http://www.mandrakelinux.com/`) and all its derivatives.

Mandrakeexpert (`http://www.mandrakeexpert.com/`) is Mandrakesoft's support platform. It offers a new experience based on trust and the pleasure of rewarding others for their contributions.

We also invite you to subscribe to the various mailing lists (`http://www.mandrakelinux.com/en/flists.php3`) where the Mandrakelinux community demonstrates its vivacity and keenness.

Please also remember to connect to our security page (`http://www.mandrakesoft.com/security`). It gathers all security-related material about Mandrakelinux distributions. You will find security and bug advisories, as well as kernel update procedures, the different security-oriented mailing lists which you can join, and Mandrakeonline (see "*Mandrakeonline Services*", page 189). A must for any server administrator or user concerned about security.

1.2. Join the Club

Mandrakesoft offers a wide range of advantages through its Mandrakeclub (`http://www.mandrakeclub.com`):

- download commercial software normally only available in retail packs, such as special hardware drivers, commercial applications, freeware, and demo versions;
- vote for and propose new software through a volunteer-run RPM voting system;
- access more than 50,000 RPM packages for all Mandrakelinux distributions;
- obtain discounts for products and services on Mandrakestore (`http://store.mandrakesoft.com`);
- access a better mirror list, exclusive to Club members;
- read multilingual forums and articles.
- access Mandrakesoft's Knowledge Base (`https://kb.mandrakeclub.com`), a wiki-based site which holds documentation on many subjects such as administration, connectivity, troubleshooting, and more;
- chat with the Mandrakelinux developers on the Club Chat (`https://www.mandrakeclub.com/user.php?op=clubchat`);
- enhance your GNU/Linux knowledge through Mandrakesoft's e-training lessons (`http://campus.mandrakesoft.com`).

By financing Mandrakesoft through the Mandrakeclub you will directly enhance the Mandrakelinux distribution and help us provide the best possible GNU/Linux desktop to our users.

1.3. Subscribe to Mandrakeonline

Mandrakesoft offers a very convenient way to keep your system automatically up-to-date, keeping away bugs and security holes. Consult "*Mandrakeonline Services*", page 189 Visit the Mandrakeonline Web site (`https://www.mandrakeonline.net/`) to learn more about this service.

1.4. Purchasing Mandrakesoft Products

Mandrakelinux users may purchase products on-line through the Mandrakestore (`http://store.mandrakesoft.com/`). You will not only find Mandrakelinux software, operating systems and "live" boot CDs (such as Move), but also special subscription offers, support, third-party software and licenses, documentation, GNU/Linux-related books, as well as other Mandrakesoft goodies.

1.5. Contribute to Mandrakelinux

The skills of the many talented folks who use Mandrakelinux can be very useful in the making of the Mandrakelinux system:

- **Packaging.** A GNU/Linux system is mainly made of programs picked up on the Internet. They have to be packaged in order to work together.

- **Programming.** There are many, many projects directly supported by Mandrakesoft: find the one which most appeals to you and offer your help to the main developer(s).

- **Internationalization.** You can help us in the translation of web pages, programs and their respective documentation.

Consult the development projects (`http://www.mandrakesoft.com/labs/`) page to learn more about how you can contribute to the evolution of Mandrakelinux.

2. About this User Guide

Welcome and thank you for choosing Mandrakelinux! This manual was written in order to give you a better understanding of the Mandrakelinux system. In it we will focus on graphical applications which will allow you to perform your daily tasks, such as writing documents and e-mails, surfing the web and listening to music. We will also show you how to configure your desktop to your liking, install software, and finally, we will give you some tips and tricks to help you fix common — and not so common — problems.

This book is divided into 5 parts. We start off with *Installing Mandrakelinux*, where you will learn what you need to know **before** you actually install Mandrakelinux onto your system (see "*Installation Warning*", page 7, and "*Before Installation*", page 9). Then we will show you how to correctly install and configure your Mandrakelinux distribution ("*Installation with DrakX*", page 13) by describing the preparation, installation and post-installation procedures.

The next part (*Discover*) is an introduction to Linux basics. We discuss the Linux paradigm by comparing it to other OSes in "*Migrating to Linux from Windows® and Mac OS® X*", page 31. In order to help new users, we wrote "*Linux for Beginners*", page 35. In it we describe the first steps a new user must master and we explain concepts such as "logging in and out", security tips, and more. The following chapter ("*Accessing Documentation*", page 41) will guide you through a fairly exhaustive list of documentation sources which you can consult in order to attain a better understanding of Linux. A Mandrakelinux-specific section points to numerous in-house resources which you can find on the Net. We close this part by speaking about the popular KDE graphical environment (see "*Using KDE*", page 45).

We then tackle Internet applications (*Using the Internet*). We explain how to send e-mails using the KMail component of the Kontact suite ("*Writing E-mails with KMail*", page 53) and how to browse the web using Firefox ("*Surfing the Web with Firefox*", page 61).

Everyday applications is the topic of the next part (*Use*). We discuss the OpenOffice.org suite (see *Word Processor*, page 71, and *Spreadsheet*, page 73), file managers (see *Konqueror File Manager*, page 77) and printers (see *Printing and Faxing from Applications*, page 80). We then explore the world of multimedia by reviewing audio and movie applications (see *Audio Applications*, page 87, and *Movie Applications*, page 91), as well as CD burning (see *CD Burning*, page 93).

Finally we go through more technical aspects of the Mandrakelinux system (*Advanced Uses*):

- **Mandrakelinux Control Center.** This is your main graphical configuration tool (see *MCC's Components*, page 103). With it you can configure your software sources ("*Package Management through Rpmdrake*", page 107), your hardware ("*Hardware Setup*", page 117), and your network ("*Setting up your Network and Accessing the Web*", page 145). You can also set up your general system settings ("*Personalizing your System*", page 151) such as customizing your menus (see *Customizing your Menus with MenuDrake*, page 151) and your start-up services (see *Configuring Start-Up Services*, page 154). More complex issues like configuring your mount points ("*Parameterizing your Mount Points*", page 169) and general system security ("*Securing your Linux Box*", page 179) are also addressed. Finally, you can tune up your boot options ("*Boot Device Configuration*", page 185).

- **Package Management.** Mandrakelinux offers different ways to update your system with normal software updates and security fixes. This can be done through the Rpmdrake Software Manager ("*Package Management through Rpmdrake*", page 107) which allows you to install and remove software packages, set up Mandrakeupdate sources as well as other media such as Cooker. The urpmi program (combined with its counterpart urpme) allows the same functionality but through the command line.

- **Troubleshooting.** For most users, switching to GNU/Linux is a challenging experience. And this manual wouldn't have been complete without a chapter dedicated to helping you solve what might go wrong during your GNU/Linux experience ("*Troubleshooting*", page 195). It will give you tips and tricks if "all hell breaks loose": needless to say, this chapter cannot be exhaustive.

3. Note from the Editor

In the open-source philosophy, contributors are always welcomed! Updating the Mandrakelinux documentation pool is quite a task. You could provide help in many different ways. In fact, the documentation team is constantly looking for talented volunteers to help us out accomplish the following tasks:

- writing or updating;
- translating;
- copy editing;
- XML/XSLT programming.

If you have a lot of time, you can write or update a whole chapter; if you speak a foreign language, you can help us translate our manuals; if you have ideas on how to improve the content, let us know; if you have programming skills and would like to help us enhance the Borges Collaborative Content Creation System (C3S) (`http://sourceforge.net/projects/borges-dms`), join in. And don't hesitate to contact us if you find any mistakes so we can correct them!

For any information about the Mandrakelinux documentation project, please contact the documentation administrator (`mailto:documentation@mandrakesoft.com`) or visit the Mandrakelinux Documentation Project Pages (`http://www.mandrakelinux.com/en/doc/project/`).

> Please note that since June 2004 the Mandrakelinux documentation and the development of Borges is handled by NeoDoc (`http://www.neodoc.biz`).

4. Conventions Used in this Book

4.1. Typing Conventions

In order to clearly differentiate special words from the text flow, we use different renderings. The following table shows examples of each special word or group of words with its actual rendering, as well as its signification.

Formatted Example	Meaning
inode	Used to emphasize a technical term.

Formatted Example	Meaning
`ls -lta`	Used for commands and their arguments. Also used for options and file names (see *Commands Synopsis*, page 4).
ls(1)	Reference to a `man` page. To read the page, simply type `man 1 ls`, in a command line.
`$ ls *.pid`	Formatting used for text snapshots of what you may see on your screen including computer interactions, program listings, etc.
`localhost`	Literal data which does not generally fit in any of the previously defined categories. For example, a key word taken from a configuration file.
OpenOffice.org	Defines application names. Depending on context, the application and command name may be the same but formatted differently. For example, most commands are written in lowercase, while applications names usually begin with an uppercase character
Files	Indicates menu entries or graphical interface labels. The underlined letter, if present, informs you of a keyboard shortcut, accessible by pressing the **Alt** key plus the letter in question.
SCSI-Bus	Denotes a computer part or a computer itself.
Le petit chaperon rouge	Identifies foreign language words.
Warning!	Reserved for special warnings in order to emphasize the importance of words. Read out loud.

Highlights a note. Generally, it gives additional information about a specific context.

Represents a tip. It can be general advice on how to perform a particular action, or hints at nice features which could make your life easier, such as shortcuts.

Be very careful when you see this icon. It always means that very important information about a specific subject will be dealt with.

4.2. General Conventions

4.2.1. Commands Synopsis

The example below shows the symbols you will see 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 elsewhere such as in the `man` pages.

The "<" (lesser than) and ">" (greater than) symbols denote a **mandatory** argument not to be copied as is, which should 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`, not `<foo.txt>` or `<filename>`.

The square brackets ("[ ]") denote optional arguments, which you may or may not include in the command.

The ellipsis ("...") means an arbitrary number of arguments can be included.

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

4.2.2. Special Notations

From time to time, you will be asked to press, for example, the keys **Ctrl-R**, which means you need to press and hold the **Ctrl** key and tap the **R** character right after as well. The same applies for the **Alt** and **Shift** keys.

Regarding menus, going to menu item File→Reload user config (**Ctrl-R**) means: click on the File text displayed on the menu (generally located in the upper-left of the window). Then in the pull-down menu, click on the Reload user config item. Furthermore you are informed that you can use the **Ctrl-R** key combination (as described above) to get the same result.

4.2.3. System-Generic Users

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

Queen Pingusa	queen	This is our default user, used through most examples in this book.
Peter Pingus	peter	This user can be created afterward by the system administrator and is sometimes used to vary the text.

Chapter 1. Installation Warning

This guide only covers the most common steps of the installation process. If you plan on using Windows® as well as GNU/Linux by dual-booting (meaning being able to access either OS on the same computer), please note that it is easier to install Windows® **before** GNU/Linux. If Windows® is already set up on your system, and you have never installed GNU/Linux before, DrakX — Mandrakelinux's installation program — will have to resize your Windows® partition. This operation can be harmful to your data. Therefore, you **must** perform the following steps before proceeding:

- Run `scandisk` on your Windows® computer. The resizing program can detect some obvious errors, but `scandisk` is better suited for this task;

> Before using `scandisk` (or `defrag`) make sure your screen saver and any other program that might write to the hard disk is turned off. To obtain even better results, you should run `scandisk` or `defrag` from Windows®'s "Safe Mode".

- For maximum data security, also run defrag on your partition. This further reduces the risk of data loss. This isn't mandatory, but it's **highly recommended**. Doing so will make the resizing process much faster and easier.
- The ultimate insurance against problems is to always **back up your data**! Of course, you should back up your data on **another** computer, upload your back-ups on the web, on a friend's computer, etc. **Do not** back it up onto the computer on which you want to install GNU/Linux.

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

> **NTFS Partitions.** Windows® 2000, NT and XP users should remain careful: even though DiskDrake (through the ntfsresize application) is able to resize NTFS partitions, it's highly recommended that you back up your data before starting the installation. Please see the Linux-NTFS site (`http://linux-ntfs.sourceforge.net/info/ntfs.html#2.6`) as well as the NTFS Resize FAQ (`http://mlf.linux.rulez.org/mlf/ezaz/ntfsresize.html`) for more information on the subject.

> Windows® users can also use Norton Partition Magic™ (`http://www.symantec.com/partitionmagic/`) to resize their NTFS partitions under Windows®.

Chapter 2. Before Installation

This chapter covers issues which should be addressed **before** you start your new Mandrakelinux installation. Make sure you read it completely since it will save you a lot of time. Also back up your data (on a different disk to the one you will install the system into) and plug in and turn on all your external devices (keyboard, mouse, printer, scanner, etc.).

2.1. Configuring your BIOS

The BIOS (*Basic Input/Output System*) is used to find the device on which the operating system is located and starts it up. It's also used for the initial hardware configuration and low-level hardware access.

The appearance of plug'n'play devices and their widespread use means that all modern BIOSes can initialize these devices. In order for Linux to recognize plug'n'play devices, your BIOS must be configured to initialize them.

Changing your BIOS' settings is usually performed by holding down the **Del** key (some BIOSes use the **F1**, **F2**, **F10** or **Esc** keys instead) right after the computer is switched on. Unfortunately, there are many types of BIOSes. Therefore you will have to look for the appropriate option yourself. It's 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, which helps Linux to recognize them.

All recent systems can boot from a CD-ROM. Look for Boot sequence or First boot device in the BIOS' features setup, and set the CD-ROM as the first one. If your system can't boot from a CD-ROM you will need to use a floppy boot disk.

> If you want to use a parallel printer connected locally to your machine, make sure the parallel port mode is set to ECP+EPP (or at least to one of ECP or EPP) and not to SPP, unless you have a **really** old printer. If the parallel port is not set this way you might still be able to print, but your printer will not be detected automatically and you will have to configure it by hand. Also make sure the printer is properly connected to your machine and powered on beforehand.

2.2. Creating a Floppy Boot Disk

If your system cannot boot from the CD-ROM you will need to create a **floppy boot disk**. The CD-ROM contains all of the image files and utility programs needed to do so.

The floppy boot disk images are in the CD-ROM's `install/images/` directory.

The following is a list of different images and their respective installation methods:

`cdrom.img`

> To install from a local IDE or SCSI CD-ROM drive.

`network.img` and `network_drivers.img`

> To install from an NFS, FTP, HTTP repository on your local LAN or from one across the world, via the Internet. The network configuration of the machine on which you wish to install may be manual or automatic. Please make sure that you make **both** floppies.

`pcmcia.img`

> Use this image if the installation medium is reached through a PCMCIA card (network, CD-ROM, etc.).

> Some PCMCIA devices use common network drivers. If the PCMCIA device does not work, try again with `network.img` and `network_drivers.img`.

`hd_grub.img`

> Use this image if you want to perform the installation from a hard disk. You need to copy the contents of the CD onto the hard drive (either on a FAT, ext2FS, ext3FS or ReiserFS partition). At the hd_grub customization site (`http://qa.mandrakesoft.com/hd_grub.cgi`) there is a little tool which may prove helpful for customizing your boot floppy.

2.2.1. Creating a Boot Disk With Windows

In order to do so, you need to use the `rawwrite` program. You will find it in the CD-ROM's `dosutils/` directory.

You may have noticed that there is a DOS version of the same program called `rawrite`. In fact, this is the original version of the program. `rawwrite` is a graphical front-end to it.

Start the program, as shown in figure 2-1.
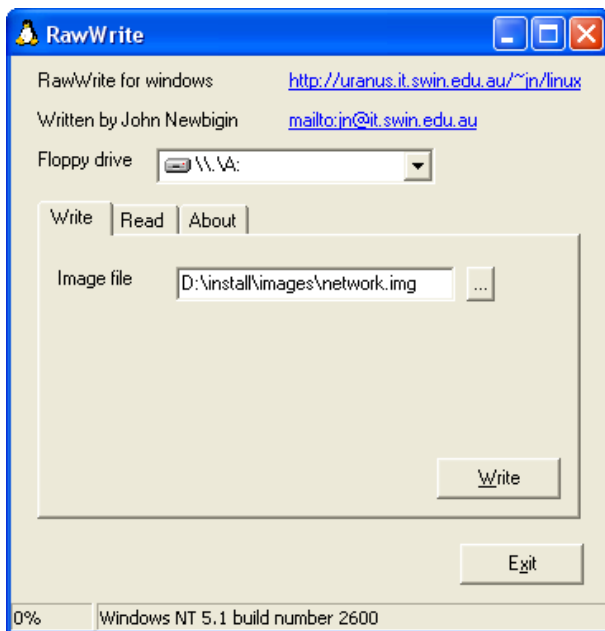
Figure 2-1. The Rawwrite Program

Select the boot image to be copied and the target device. In almost every case, the target device is the `A:` drive (that is, the first floppy disk drive).

Then if you have not already done so, insert an empty disk into your chosen floppy drive and click on the Write button. When completed click on the Exit button: you now have a floppy boot disk to install your Mandrakelinux distribution.

2.2.2. Creating a Floppy Boot Disk From GNU/Linux

If you already have GNU/Linux installed (another version, or on another machine, etc.), then carry out the following steps:

1. Mount the CD-ROM, if needed. Let us suppose that the mount point is `/mnt/cdrom`.

2. Log in as `root` (to do so, open a terminal window, run the `su` command and enter `root`'s password).

3. Insert an empty diskette into the floppy drive and type:

   ```
   $ dd if=/mnt/cdrom/install/images/cdrom.img of=/dev/fd0 bs=512
   ```

   When this operation is completed, your floppy boot disk will be ready for use.

Replace /dev/fd0 with /dev/fd1 if you are using the second floppy drive and, of course, the name of the image with the one you want.

2.3. Supported Hardware

Mandrakelinux can handle a large number of hardware devices, and the list is far too long to be quoted in its entirety. Nevertheless some of the steps we describe will help you to find out if your hardware is compatible. It will also guide you in configuring some problematic devices.

You may also consult an up-to-date list of supported hardware on the Mandrakelinux Hardware Database (`http://www.mandrakelinux.com/en/hardware.php3`) web site.

Legal Disclaimer: The Mandrakelinux *Hardware Database* contains information about hardware devices which have been tested and/or have been reported to function properly with Mandrakelinux. Due to the wide variety of system configurations, Mandrakesoft cannot guarantee that a specific device will work properly on your system.

USB devices: support for USB 1.x and USB 2.0 is now extensive. Most peripherals are fully supported. You can obtain the list of supported hardware on the Linux-USB device overview (`http://www.qbik.ch/usb/devices/`) site.

2.3.1. Notes About Winmodems

winmodems are also called controller-less modems or software modems. Support for these peripherals is improving. Drivers do exist, but most of them are in binary form and available only for newer kernel versions.

If you have a PCI modem, look at the output of `cat /proc/pci` run as the `root` user. 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`, the IRQ is `10` and the modem will be the 4th serial device) as follows:

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

Then try to query your modem using `minicom` or kppp. If it does not work, you may have a software modem. If it does work, create the /etc/rc.d/rc.setserial file and place the appropriate `setserial` command line in it.

If you happen to have a software modem in your machine, and you have a Mandrakeclub account, you might find an RPM package that supports your modem. You can also take a look at the linmodems (`http://linmodems.org/`) and the Winmodems are not modems (`http://start.at/modem`) web sites.

Chapter 3. Installation with DrakX

3.1. The Mandrakelinux Installer

With the DrakX installation program, it doesn't matter whether you're a newbie or a GNU/Linux guru. The job of DrakX is to provide you with a smooth installation and an easy transition to Mandrakelinux's latest version.

> DrakX will work best if all of your hardware is connected to your computer and powered on during the installation. Printers, modems, scanners and joysticks are just a few examples of peripherals which DrakX can automatically detect and configure as Mandrakelinux is being installed.

Figure 3-1. Very First Installation Welcome Screen

The first screen you see offers to run the installation with special options if the standard mode was not suited for your hardware. So to begin with, let the installation start automatically with no options. If something goes wrong, see *Installation Options*, page 13.

3.1.1. The Installation Process

When the installer starts, you will see a nice graphical interface (see figure 3-3). On the left will be the various installation steps. The installation will occur in two phases: installation, then configuration. The list on the left displays all the steps. The current step is marked by a highlighted bullet.

Each step may present various screens. Surfing between those screens is made possible through the Next and Previous buttons. Additionally an Advanced button may be available to show more advanced configuration options. Note that most of the latter should only be used by **expert** users. But there's no harm in looking at them!

> The Help button will display explanations concerning the current installation step.

3.1.2. Installation Options

If something goes wrong during the first installation attempt, pressing **F1** at the welcome screen (see figure 3-1) will open a help window (see figure 3-2). Here are some useful options to choose from:

Figure 3-2. Available Installation Options

- vgalo: if you tried a default installation and didn't see the graphical interface (see figure 3-3), you can try to run the installation in low resolution mode. This happens with certain types of video cards. With Mandrakelinux you are given a number of options to work around problems related to older hardware. To try the installation in low resolution mode, type **vgalo** at the prompt.

- text: if your video card is very old and the graphical installation doesn't work at all, you can always choose to install in text mode. Since all video cards can display text, this is the "last resort" kind of installation. However don't worry: it's unlikely that you will need this option.

- noauto: in some rare cases, your PC may appear to freeze or lock up during the hardware detection phase. If that happens, adding the word noauto as a parameter will tell the installation program to bypass hardware detection. With that option DrakX won't scan for hardware. Therefore you will need to manually specify hardware parameters later in the installation process. The noauto parameter can be added to the previous modes, so depending on your hardware you may have to specify **vgalo noauto** to perform a low-resolution graphical installation without DrakX performing a hardware scan.

- kernel options: most machines don't require specific kernel options. Due to bugs in the design or in the BIOS, there have been a few cases of motherboards incorrectly reporting the amount of memory installed. If you need to manually specify the amount of RAM installed in your PC, use the mem=xxxM parameter. For example, to start the installation in normal mode with a computer containing 256 MB of memory, your command line would look like **linux mem=256M**

3.2. Choosing your Language

The first step is to choose your preferred language.

Figure 3-3. Choosing the Default Language

First open the tree relative to the continent you are located in, and then choose the language you speak. Your language choice will affect the installer, the documentation, and the system in general.

Use the list at the bottom of the tree to select other languages to be installed on your workstation, thereby installing the language-specific files for system documentation and applications. For example, if Spanish friends are to use your machine, select English as the default language in the tree view and Español in the list view.

> About UTF-8 (unicode) support: Unicode is a character encoding intended to cover all existing languages. However full support for it in GNU/Linux is still under development. For that reason, Mandrakelinux's use of UTF-8 will depend on the user's choices:
>
> 1. If you choose a language with a strong legacy encoding (latin1 languages, Russian, Japanese, Chinese, Korean, Thaï, Greek, Turkish, and most iso-8859-2 languages), the legacy encoding will be used by default.
>
> 2. Other languages will use Unicode by default.
>
> 3. If two or more languages are to be installed, and those languages are not using the same encoding, then Unicode will be used for the whole system.
>
> 4. Finally, Unicode can also be forced for use throughout the system at a user's request by selecting the Use Unicode by default option independently of which languages have been chosen.

Note that you're not limited to choosing a single additional language. You may choose several, or even install them all by selecting the All languages box. Selecting support for a language means translations, fonts, spell checkers, etc. will also be installed for that language. Make sure you select all languages which are likely to be useful on the machine now, it may be difficult to configure support for languages not chosen at install time at a later time.

> To switch between the various languages installed on your system, you can launch the `localedrake` command as `root` to change the language used by the entire system. Running the command as a regular user will only change the language settings for that particular user.

3.3. License Terms of the Distribution
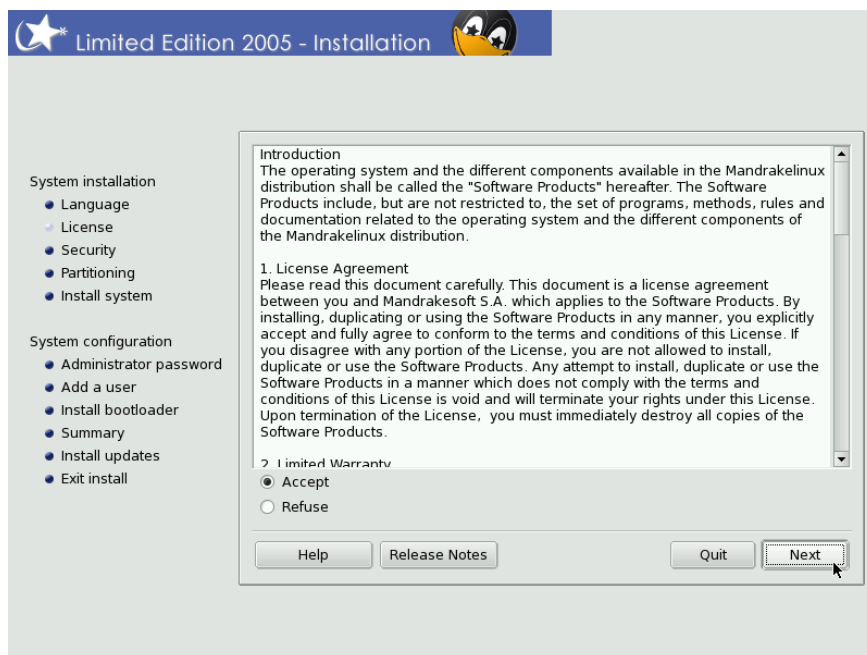
Before continuing, you should carefully read the terms of the license. It covers the entire Mandrakelinux distribution. If you agree with all the terms it contains, select Accept and click on Next. If not, clicking on Quit will reboot your computer.

> If you are curious about any technical changes which have occurred in the distribution since the last release, you can click on the Release Notes button to display them.

3.4. Installation Class

This step is shown only if an existing GNU/Linux partition is found on your machine.
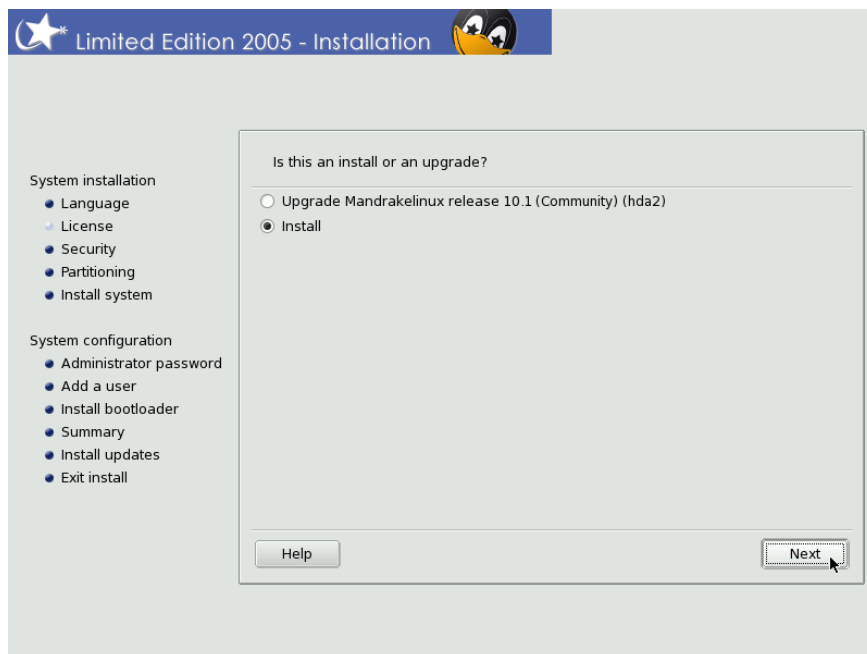
DrakX now needs to know if you want to install from scratch or upgrade your existing Mandrakelinux system:

- Install. For the most part, this completely wipes out the old system. However, depending on your partitioning scheme, you can prevent some of your existing data (particularly `/home` directories) from being overwritten. If you wish to change how your hard drives are partitioned, or to change the file system, you should use this option.

- Upgrade.This installation class allows you to update the packages currently installed on your Mandrakelinux system. Your current partitioning scheme and user data won't be altered. Most of the other configuration steps remain available and are similar to a standard installation.

> Using the "Upgrade" option should work fine on Mandrakelinux systems running version `9.2` or later. Performing an upgrade on prior versions is not recommended.

3.5. Configuring the Keyboard

> This step only shows if your language settings do not match one single keyboard. Otherwise, your keyboard map is automatically selected.
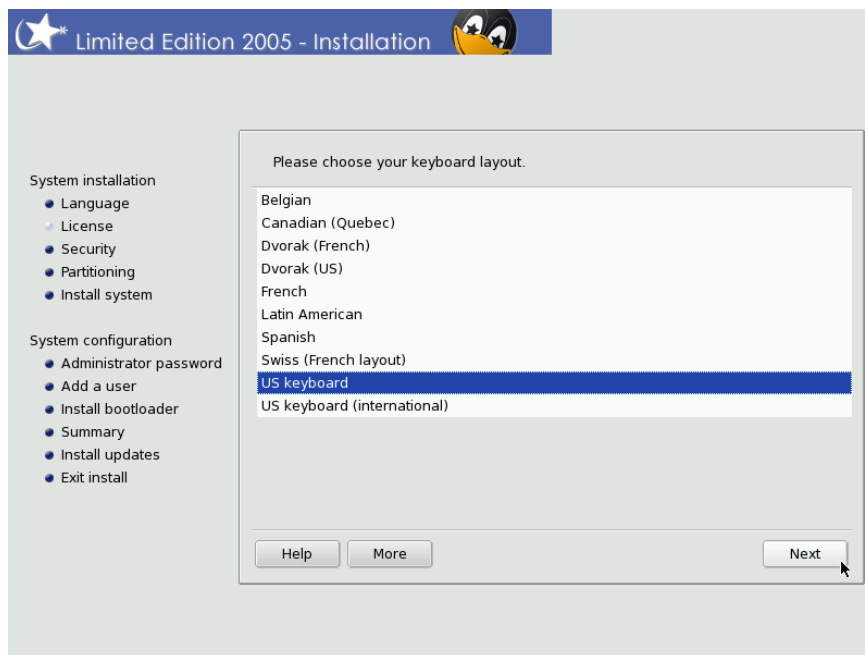
Depending on the language you choose (see *Choosing your Language*, page 14), DrakX automatically selects a particular type of keyboard configuration. Verify that the selection suits you or choose another keyboard layout.

Also, you may not have a keyboard which corresponds exactly to your language: for example, if you are an English-speaking Swiss native, you may have a Swiss keyboard. Or if you speak English and are located in Québec, you may find yourself in the same situation where your native language and country-set keyboard don't match. In either case, this installation step will allow you to select an appropriate keyboard.

Click on the More button and a list list of supported keyboards will be displayed.

If you choose a keyboard layout based on a non-Latin alphabet, the next dialog will allow you to choose the key binding which will switch the keyboard between the Latin and non-Latin layouts.

3.6. Security Level
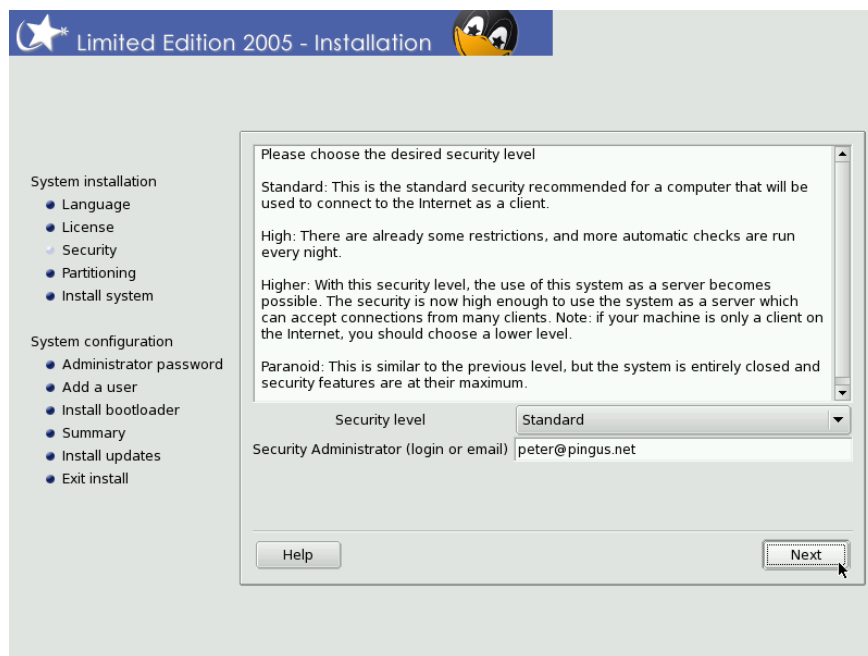
At this point, DrakX allows you to choose your machine's security level. As a rule of thumb, the security level should be set higher if the machine is to contain crucial data, or if it's to be directly exposed to the Internet. The trade-off is that a higher security level is generally obtained at the expense of ease of use.

If you don't know what to choose, keep the default option. You'll be able to change it later with the draksec tool (see *Securing your Machine through DrakSec*, page 179).

Fill the Security Administrator field with the e-mail address of the person responsible for security. Security-related messages will be sent to that address.

3.7. Partitioning your Disk
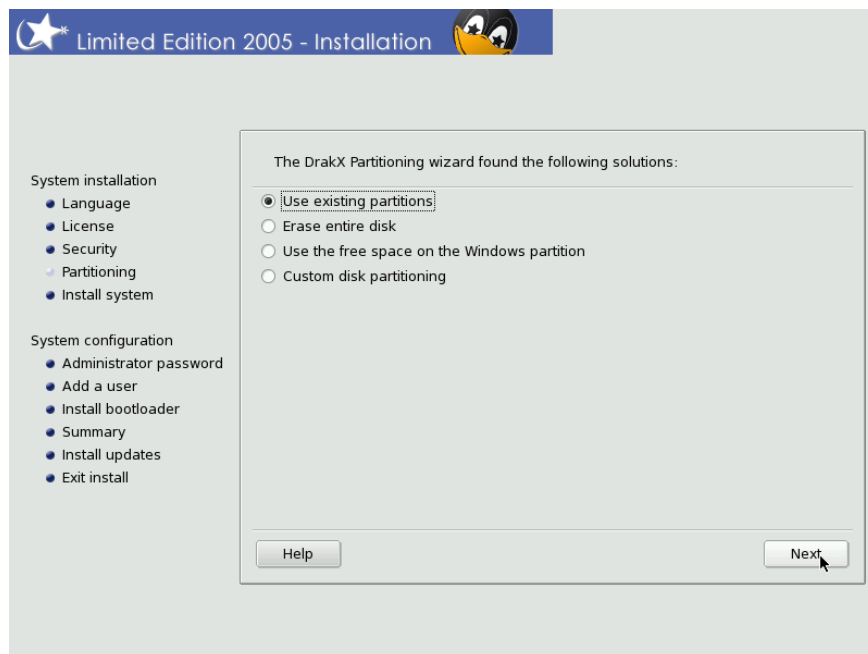
You now need to decide where you want to install Mandrakelinux on your hard drive. If your hard drive is empty or if an existing operating system is using all the available space you will have to re-partition the drive. Basically, partitioning a hard drive means to logically divide it in order to create the space required for your new Mandrakelinux system.

Because the process of partitioning a hard drive is usually irreversible and can lead to data loss, partitioning can be intimidating and stressful for the inexperienced user. Fortunately, DrakX includes a wizard which simplifies this process. Before continuing with this step, read through the rest of this section and above all, take your time.

Depending on the configuration of your hard drive, several options are available:

- Use free space. This option will perform an automatic partitioning of your blank drive(s). If you use this option there will be no further prompts.

- Use existing partitions. The wizard has detected one or more existing Linux partitions on your hard drive. If you want to use them, choose this option. You will then be asked to choose the mount points associated with each of the partitions. The legacy mount points are selected by default, and for the most part it's a good idea to keep them. You will also be asked to choose the partitions to be formatted or preserved.

- Use the free space on the Windows partition. If Windows® is installed on your hard drive, you might have to create free space for GNU/Linux. To do so, you can delete your Windows® partition and data (see the "Erase entire disk" solution below) or resize your FAT or NTFS partition. Resizing can be performed without the loss of any data, **provided you've previously defragmented the Windows® partition. Backing up your data is strongly recommended**. Using this option is recommended if you want to use both Mandrakelinux and Windows® on the same computer.

  Before choosing this option, please understand that after this procedure, the size of your Windows® partition will be smaller than when you started, which means you will have less free space 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 Mandrakelinux, choose this option. Be warned that you won't be able to undo this operation after you confirm.

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

- Remove Windows(TM). This option appears when the hard drive is entirely taken by Windows®. Choosing this option will simply erase everything on the drive, partitioning everything from scratch.

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

- Custom disk partitioning. Choose this option if you want to manually partition your hard drive. Be careful: it is a powerful but dangerous choice and you can very easily lose all your data. That's why this option is only recommended if you have performed custom disk partitioning before, and have enough GNU/Linux experience. For more instructions on how to use the DiskDrake utility, refer to *Managing your Hard Drive Partitions with DiskDrake*, page 169.

3.8. Choose Packages to Install

Depending on the installation media you are currently using, you may be first asked to select the CDs you actually have at hand.

3.8.1. Choose Package Groups to Install
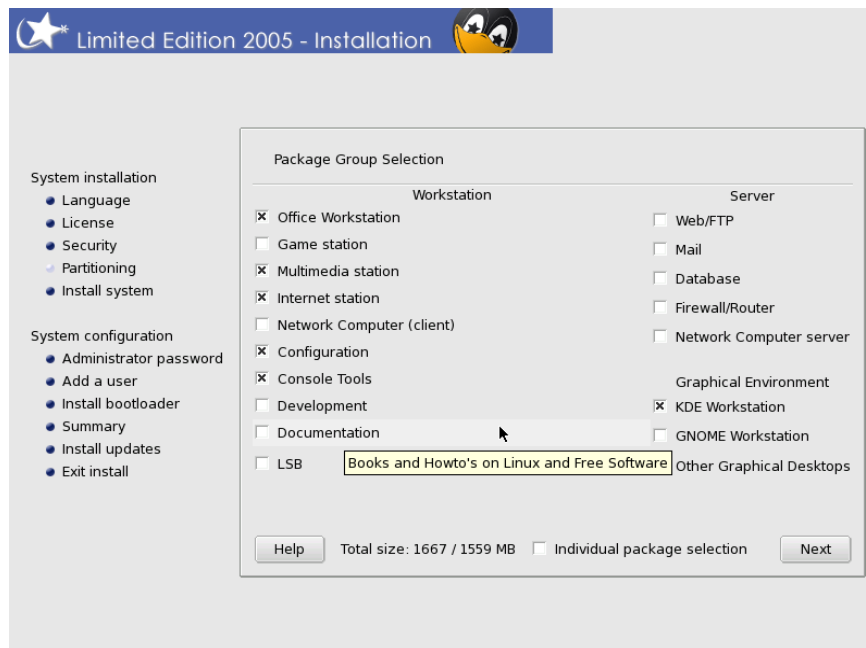
It's now time to specify which programs you wish to install on your system. There are thousands of packages available for Mandrakelinux, and to make it simpler to manage, they have been placed into groups of similar applications.

Mandrakelinux sorts package groups into categories. You can mix and match applications from the various categories, so a Workstation installation can still have applications from the Server category installed.

1. Workstation: if you plan to use your machine as a workstation, select one or more of the groups in this category. The special LSB group will configure your system so that it complies as much as possible with the Linux Standard Base Project (`http://www.linuxbase.org/`) specifications.

2. Server: if your machine is intended to be a server, select which of the more common services you wish to install on your machine.

3. Graphical Environment: this is where you will choose your preferred graphical environment. At least one must be selected if you want to have a graphical interface available.

> 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're familiar with the packages being offered or if you want to have total control over what will be installed.

If you start the installation in Upgrade mode, you can deselect all groups and prevent the installation of any new packages. This is useful for repairing or updating an existing system.

Minimal Installation

If you deselect all groups when performing a regular installation (as opposed to an upgrade), a new dialog shows after pressing the Next button, suggesting different options for a minimal installation:

- With X: install the minimum number of packages possible to have a working graphical desktop.

- With basic documentation: installs the base system plus basic utilities and their documentation. This installation is suitable for setting up a server.

- Truly minimal install: installs the absolute minimum number of packages necessary to get a working Linux system. With this installation you will only have a command-line interface.

3.8.2. Choosing Individual Packages to Install
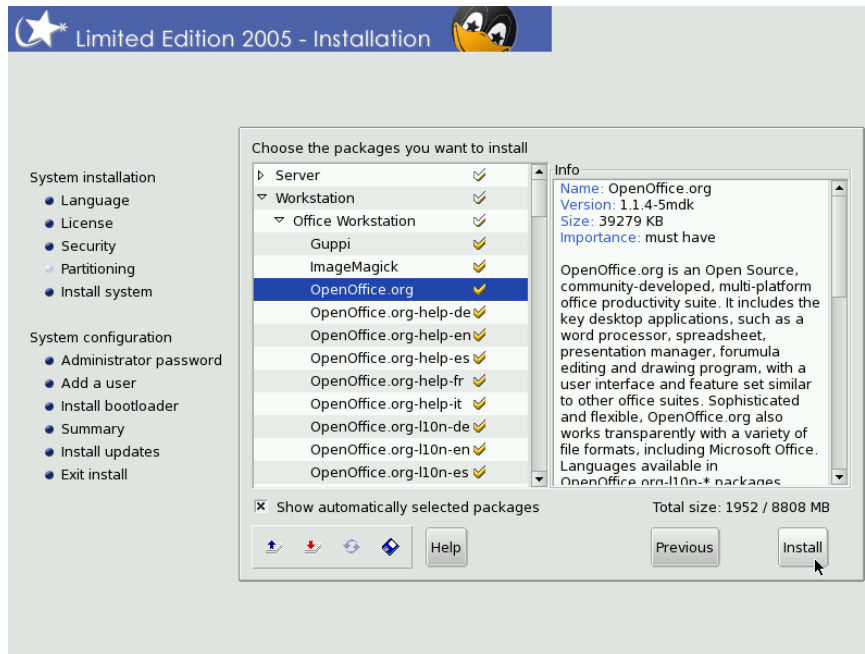
If you choose to install packages individually, the installer will present a tree structure containing all packages classified by groups and subgroups. While browsing the tree, you can select entire groups, subgroups, or individual packages.

Whenever you select a package on the tree, a description will appear on the right to let you know the purpose of that package.

> If a server package has been selected, either because you specifically chose the individual package or because it was part of a group of packages, you will be asked to confirm that you really want those server packages to be installed. By default Mandrakelinux will automatically start any installed services (servers) at boot time. Even if they are safe and have no known issues at the time the distribution was shipped, it is entirely possible that security holes were discovered after this version of Mandrakelinux was finalized. If you don't know what a particular service is supposed to do or why it's being installed, then click No.

The Show automatically selected packages option is used to disable the warning dialog. Those appear whenever the installer automatically selects a package to resolve a dependency issue. Some packages depend on others and the installation of one particular package may require the installation of another one. The installer can determine which packages are required to satisfy a dependency and to successfully complete the installation.

The little floppy disk icon at the bottom of the list allows you to load or save the packages list. This is useful if you have a number of machines that you wish to configure identically. Click on this icon and select whether you wish to Load or Save the packages list, then select the medium in the following screen and click on the Ok button.

3.9. Multiple CD-ROM Installation

The Mandrakelinux installation is distributed on several CD-ROMs. If a selected package is located on another CD, DrakX will eject the current CD and ask you to insert the required one. If you do not have the requested CD-ROM at hand, just click on Cancel, and the corresponding packages will not be installed.

3.10. Root Password
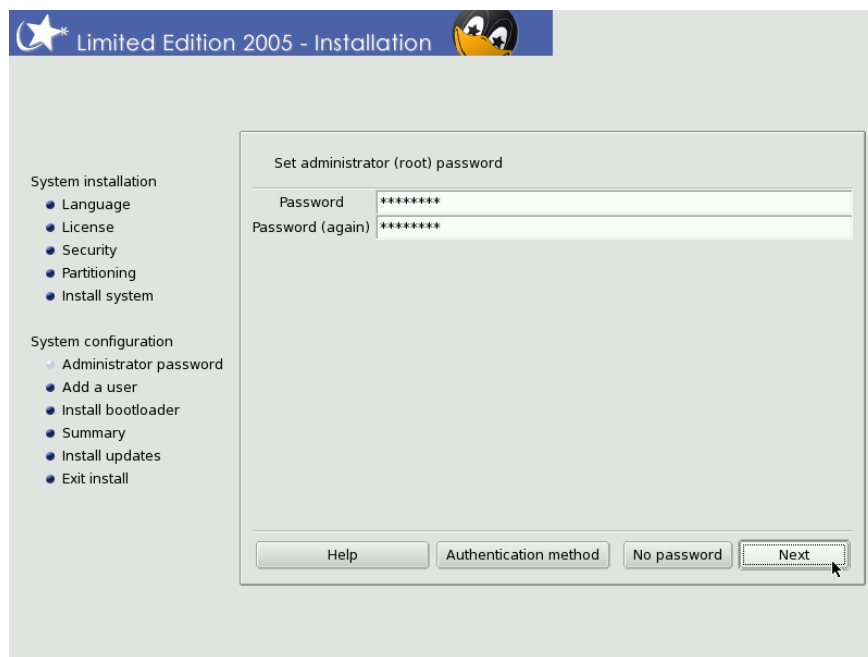
This is the most crucial decision point for the security of your GNU/Linux system: you must enter the `root` password. `Root` is the system administrator and is the only user authorized to make updates, add users, change the overall system configuration, and so on. In short, `root` can do everything! That's why you must choose a password which is difficult to guess: DrakX will tell you if the password you chose is too simple. You're not forced to enter a password, but we **strongly** encourage you to do so. GNU/Linux is just as prone to operator error as any other operating system. Since `root` can overcome all limitations and unintentionally erase all data on partitions by carelessly accessing the partitions themselves, it is important that it be difficult to become `root`.

The password should be a mixture of alphanumeric characters and at least 8 characters long. Never write down `root`'s password — it makes it far too easy to compromise your system.

One caveat: don't make the password too long or too complicated because you must be able to remember it!

The password won't be displayed on screen as you type it. To reduce the chance of a blind typing error you will need to enter the password twice. If you do happen to make the same typing error twice, you will have to use this "incorrect" password when you try to connect as `root`, at least for the first time.

You can change the way users are authenticated on your computer by clicking on the Authentication method button. The following authentication methods are available:

- Local file. Use a local file for all authentication and user information. This is the default method.
- LDAP. Use an LDAP server for some or all authentication needs. An LDAP directory consolidates certain types of information within your organization.
- NIS. Authenticates users against a NIS domain. This allows you to run a group of computers in the same NIS domain using a common password and group file.
- Windows Domain. Uses a Windows® domain controller to provide authentication services through Active Directory, Microsoft's implementation of LDAP.

If you select a method other than Local file, you will be asked to provide some parameters, which vary from one method to the other. If you don't know those parameters, you should ask your network administrator.

If you happen to have problems remembering passwords, or if your computer will never be connected to the Internet and you absolutely trust everybody who uses your computer, you can choose to have No password. Please bear in mind that this is an insecure option, and it is not recommended.

3.11. Adding a User
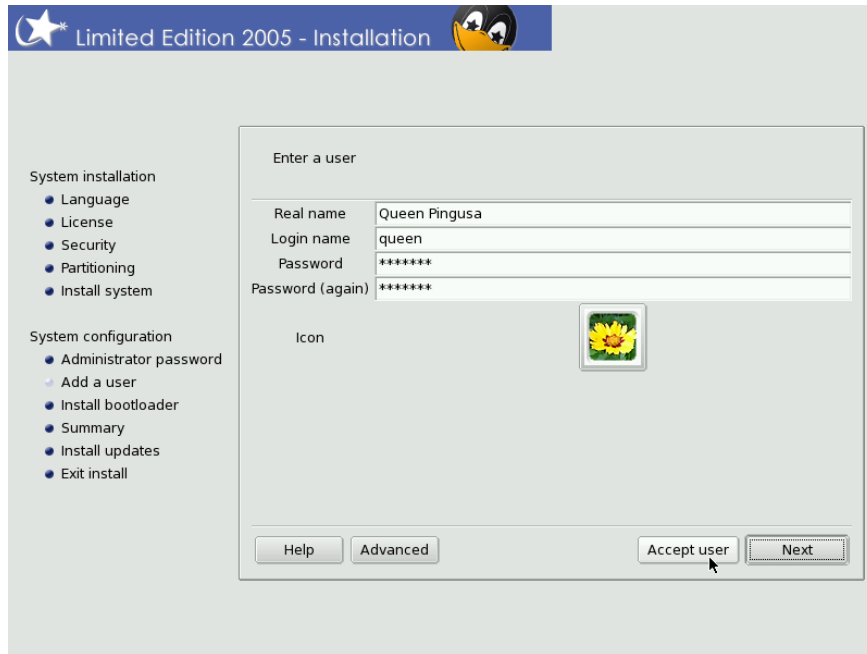
GNU/Linux is a multi-user system which means each user can have his or her own preferences, own files and so on. But unlike `root`, who is the system administrator, the users you add at this point won't be authorized to change anything except their own files and their own configurations, protecting the system from unintentional or malicious changes which could have a serious impact on it.

You will have to create at least one regular user for yourself — this is the account which you should use for routine, day-to-day usage. Although it's very easy to log in as `root` to do anything and everything, it may also be very dangerous! A very simple mistake could mean that your system won't work any more. If you make a serious mistake as a regular user, the worst that can happen is that you'll lose some information, but you won't affect the entire system.

The first field asks you for a real name. DrakX will use the first word you type in this field and copy it, all in lowercase, to the Login name field, which is the name this user will enter to log on to the system. You can override it and change the Login Name. The next step is to enter a password. From a security point of view, a non-privileged (regular) user's password is not as crucial as the `root` password, but that's no reason to neglect it by making it blank or too simple: after all, **your** files could be the ones at risk.

Once you click on Accept user you can add other users. Add a user for each one of your friends, your father, your sister, etc. Click Next when you're finished adding users.

> Clicking the Advanced button allows you to change the default `shell` for that user (bash by default).
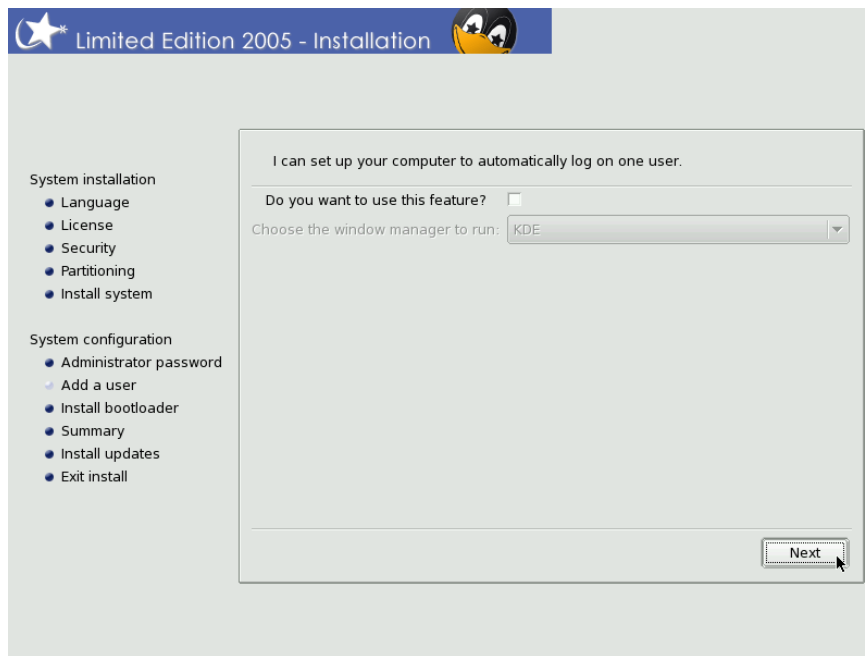
When you're finished adding users, you'll be asked to choose a user who will be automatically logged into the system when the computer boots up. If you're interested in that feature (and don't care much about security), choose the desired user (if more than one regular user is defined) and select a window manager, then click on Next. If you're not interested in this feature, uncheck the Do you want to use this feature? box.

3.12. Installing a Bootloader
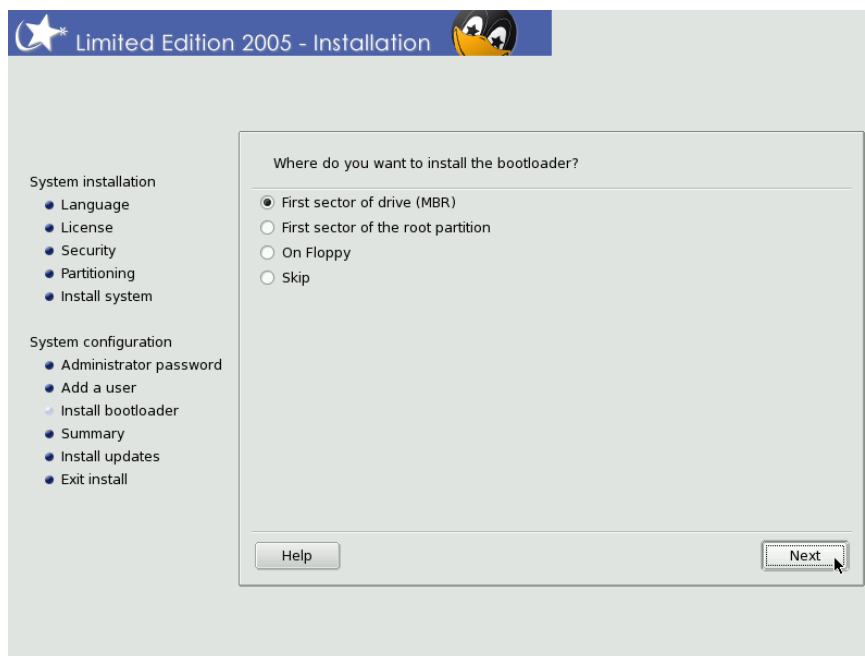
A bootloader is a small program which is started by the computer at boot time. It's responsible for starting up the whole system. Normally, the bootloader installation is totally automated. DrakX will analyze the disk boot sector and act according to what it finds there:

- If a Windows® boot sector is found, it will replace it with a GRUB/LILO boot sector. This way you will be able to load either GNU/Linux or any other OS installed on your machine.

- In any other case it will ask you where it should place the boot loader. Generally, the First sector of the drive (MBR) is the safest place.

Choosing Skip won't install a bootloader. Use this option only if you know what you're doing.

3.13. Checking Miscellaneous Parameters

3.13.1. Summary
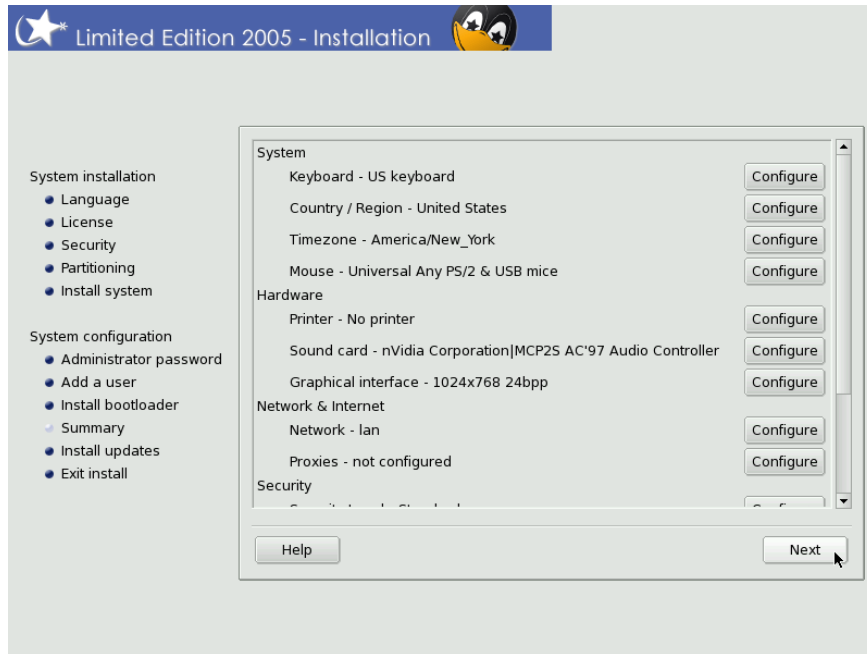
As a review, DrakX will present a summary of information it has gathered about your system. Depending on the hardware installed on your machine, you may have some or all of the following entries. Each entry is made up of the hardware item to be configured, followed by a quick summary of the current configuration. Click on the corresponding Configure button to make any changes.

- Keyboard: check the current keyboard map configuration and change it if necessary.

- Country / Region: check the current country selection. If you're not in the country selected by DrakX, click on the Configure button and choose another. If your country isn't in the list shown, click on the Other Countries button to get a complete country list.

- Timezone: by default, DrakX deduces your time zone based on the country you have chosen. You can click on the Configure button here if this is not correct.

- Mouse: verify the current mouse configuration and click on the button to change it if necessary.

- Printer: clicking on the Configure button will open the printer configuration wizard. Consult *Configuring Printers with PrinterDrake*, page 123 for more information on how to set up a new printer. The interface presented in our manual is similar to the one used during installation.

- Sound card: if a sound card is detected on your system, it will be displayed here. If you notice the sound card isn't the one actually present on your system, you can click on the button and choose a different driver.

- TV card: if you have a TV card, this is where information about its configuration will be displayed. If you want to try a different driver for your TV card, or its detection wasn't accurate you can click on Configure to try to configure it manually.

- Graphical Interface: by default, DrakX configures your graphical interface with a resolution that best matches your video card and monitor combination. If that doesn't suit you, or DrakX could not automatically configure it (not configured is displayed), click on Configure to reconfigure your graphical interface. You can click on Help from within the configuration wizard to benefit from full in-line help.

- Network: if you wish to configure your Internet or local network access, you can do so from here. Refer to the printed documentation or use the Mandrakelinux Control Center after the installation has finished to benefit from full in-line help.

- Proxies: allows you to configure HTTP and FTP proxy addresses if the machine you're installing on is to be located behind a proxy server.

- Security Level: this entry allows you to redefine the security level as set in a previous step (see *Security Level*, page 17).

- Firewall: if you plan to connect your machine to the Internet, it's a good idea to protect yourself from intrusions by setting up a firewall. Consult *Securing your Internet Access via DrakFirewall*, page 182 for details about firewall settings.

- Bootloader: if you wish to change your bootloader configuration, click this button. This should be reserved to advanced users. Refer to the printed documentation or the in-line help about bootloader configuration in the Mandrakelinux Control Center.

- Services: with this entry you can fine tune which services will be run on your machine. If you plan to use this machine as a server it's a good idea to review this setup.

3.13.2. Time Zone Options
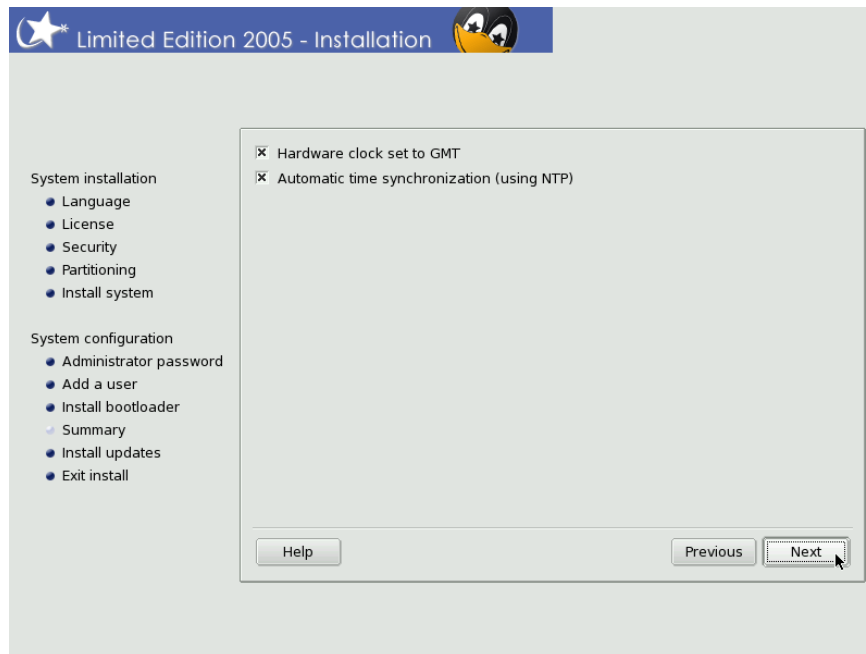
This dialog appears after selecting a new time zone in the time zones list. After you've chosen the location nearest to your time zone, two more options are shown.

GNU/Linux manages time in GMT (Greenwich Mean Time) and translates it to local time according to the time zone you selected. If the clock on your motherboard is set to local time, you may deactivate this by deselecting Hardware clock set to GMT, which will let GNU/Linux know that the system clock and the hardware clock are in the same time zone. This is useful when the machine also hosts another operating system.

The Automatic time synchronization option will automatically regulate the system clock by connecting to a remote time server on the Internet. For this feature to work, you must have a working Internet connection. We recommend that you choose a time server located near you or the generic World Wide entry which will select the best server for you. This option actually installs a time server which can be used by other machines on your local network as well.

3.13.3. Configuring X, the Graphical Server
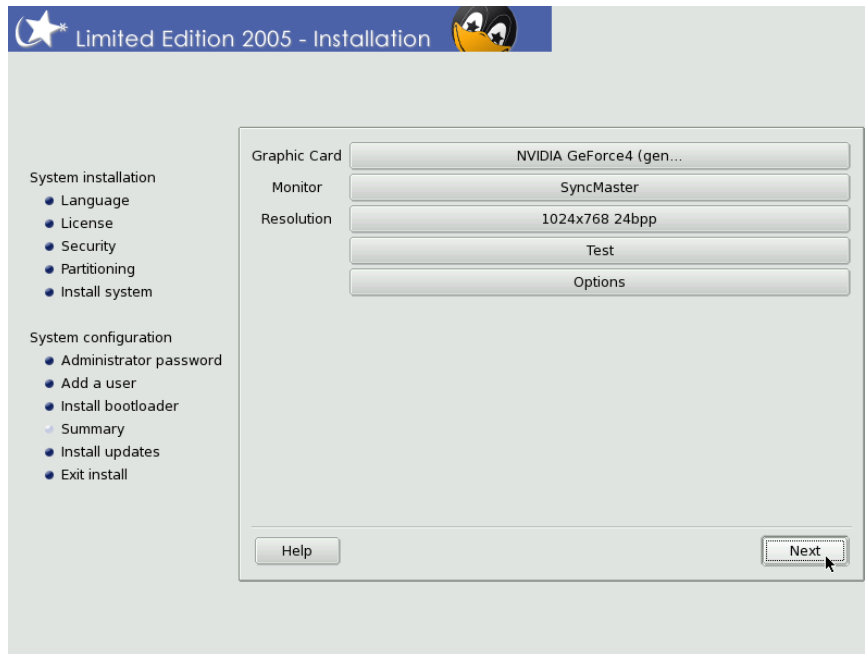
X (for X Window System) is the heart of the GNU/Linux graphical interface on which all the graphical environments (KDE, GNOME, AfterStep, WindowMaker, etc.) bundled with Mandrakelinux rely on.

You will see a list of different parameters which you can change in order to optimize your graphical display.

Graphic Card

> If everything works fine, the installer should detect and configure the video card installed on your machine. If the detection or configuration is incorrect, you can choose the card installed on your system from a list.

Monitor

> If the installer fails to detect or configure your monitor properly, you can choose from this list the monitor which is connected to your computer.

Resolution

> Here you can choose the resolutions and color depths available for your graphics hardware. Choose the one which best suits your needs (you will be able to make changes after the installation). A sample of the chosen configuration will be shown in the monitor picture.

Test

> Depending on your hardware, this entry might not appear.

> The system will try to open a graphical screen at the desired resolution. If you see the test message during the test and answer Yes, then DrakX will proceed to the next step. If you don't see it, it means that some part of the auto-detected configuration was incorrect and the test will automatically end after a few seconds and return you to the menu. Change settings until you get a correct graphical display.

Options

> This step allows you to choose whether you want your machine to automatically switch to a graphical interface at boot. Obviously, you may want to select the No option if your machine is to act as a server, or if you were not successful in getting the display configured.

3.13.4. Selecting Available Services at Boot Time
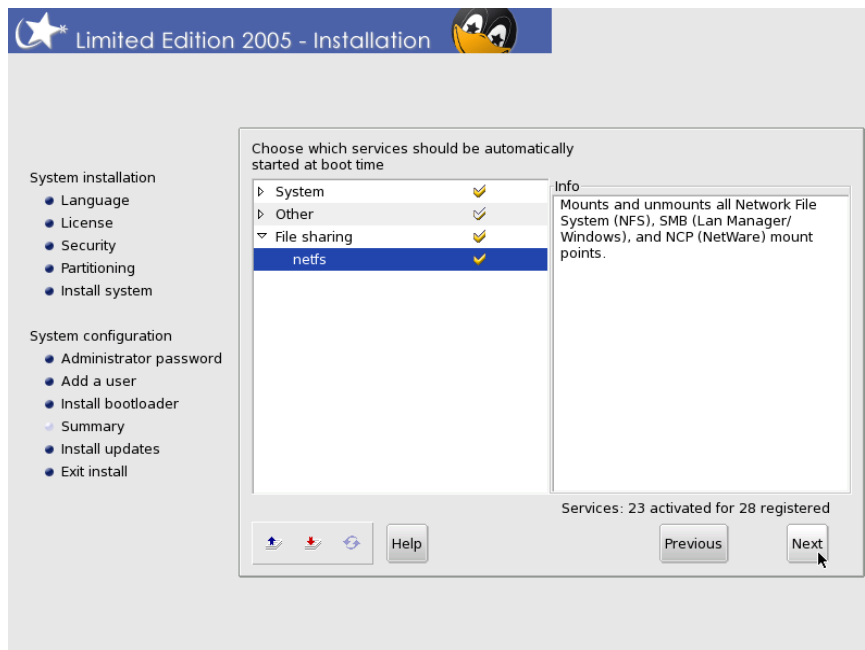
This dialog is used to select which services you wish to start at boot time.

DrakX will list all services available on the current installation. Review each of them carefully and uncheck those which aren't needed at boot time.

> A short explanatory text will be displayed about a service when it is selected. However, if you're 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 probably don't want to start any services which you don't need. Please remember that some services can be dangerous if they're enabled on a server. In general, select only those services you **really** need.

3.14. Installing Updates from the Internet
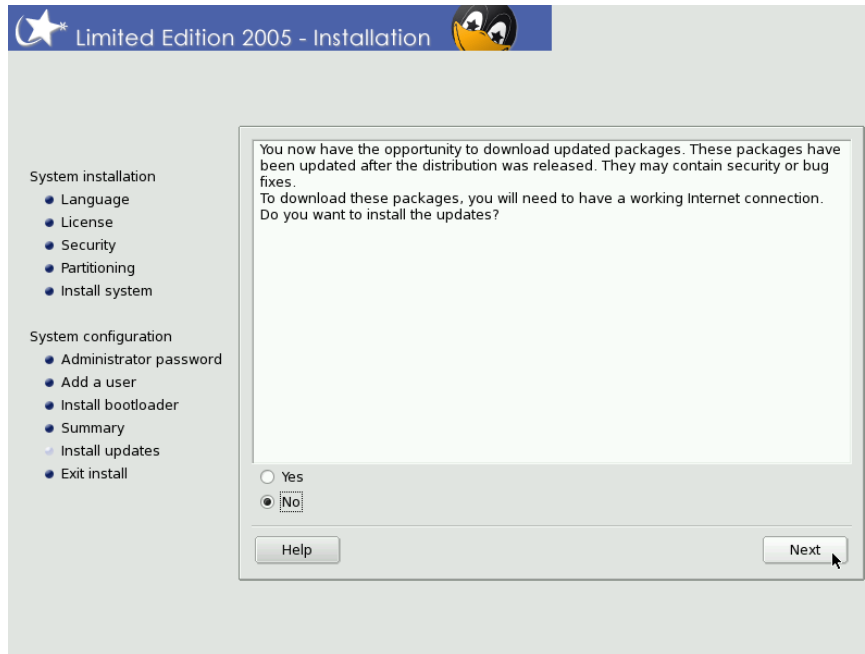
By the time you install Mandrakelinux, it's likely some packages will have been updated since the initial release. Bugs may have been fixed, security issues resolved, etc. To allow you to benefit from these updates, you're now able to download them from the Internet. Select Yes if you have a working Internet connection and you want to install any updated packages now, or No if you prefer to install updated packages later.

Choosing Yes will display a list of web locations from which updates can be retrieved. You should choose one near to you. A tree containing package selections will appear: review the selection, and press Install to retrieve and install the selected package(s), or Cancel to abort.

3.15. It's Done!
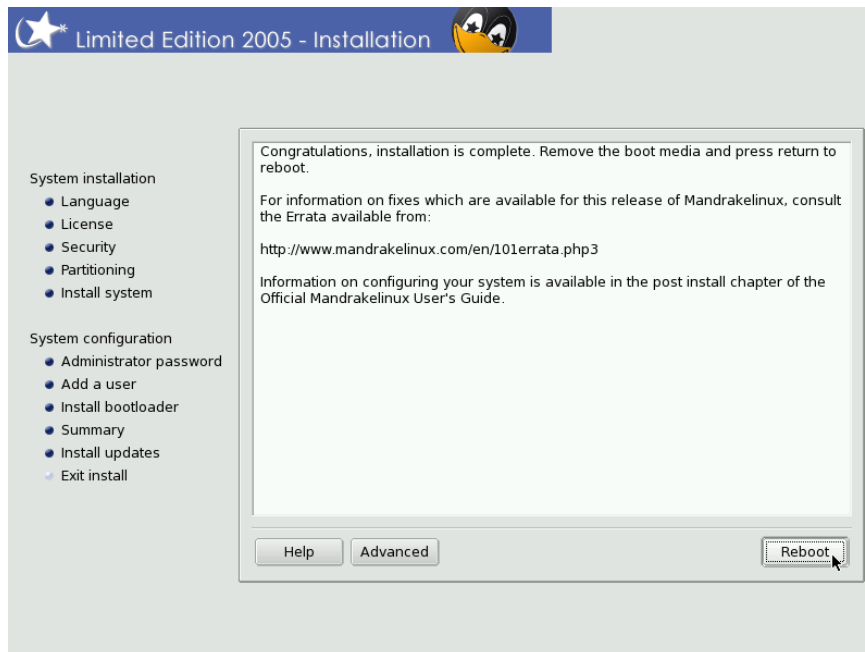
There you are. The installation is now complete and your GNU/Linux system is ready to be used. Just click on Reboot to restart the system. Don't forget to remove the installation media (CD-ROM or floppy). The first thing you should see after your computer has finished doing its hardware tests is the bootloader menu, which allows you to choose between the OSes your system can boot.

3.15.1. Advanced Options

The Advanced button shows more buttons to:

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

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

   - Replay. This is a partially automated installation. The partitioning step is the only interactive procedure.

   - Automated. Fully automated installation: **the hard disk is completely rewritten, all data is lost**.

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

2. Save package selection[1]: saves a list of the packages selected in this installation. The following screen shows you the possible media to use to save the package list onto: you might need to fill some parameters when you click on the Next button.

   To use this selection of packages with another installation, perform the installation as usual up to the point of the package selection, and choose to select individual packages, without worrying about the current package selection. Use the floppy icon and select the Load option. Then choose the medium which contains the package list. Finally click OK: the list of packages you loaded will be selected and be installed.

3.16. How to Uninstall Linux

If for any reason you want to uninstall Mandrakelinux, you can do so. The process of uninstalling Mandrakelinux is done in two steps:

> Removing partitions on your hard drive will inevitably result in the loss of all data stored on those partitions. Please make sure you've backed up all of the data you want to keep **before** proceeding.

1. Delete all partitions related to Mandrakelinux on your hard drive (usually partitions hosting ext3 file systems and the Swap partition) and — optionally — replace them with a single partition using DiskDrake (see *Managing your Hard Drive Partitions with DiskDrake*, page 169).

2. Remove the bootloader, LILO in this example, from the Master Boot Record (MBR). To do so, execute `lilo -U` in a console, as `root`. Doing this will not only uninstall LILO but will also restore the previous master boot record, if any.

   If you have a different boot loader, please refer to its documentation to determine how to regenerate the master boot record.

---

1. If you chose to save on a floppy, you will need a FAT-formatted floppy. To create one under GNU/Linux, type `mformat a:` or, as root, `fdformat /dev/fd0` followed by `mkfs.vfat /dev/fd0`.

Chapter 4. Migrating to Linux from Windows® and Mac OS® X

This chapter is aimed at users migrating from Windows® or Mac OS® X. Instead of presenting the various applications in depth, it tries to answer the most common questions and/or issues former Windows® or Mac OS® X users might ask.

4.1. Where's my...?

Experienced Windows® and Mac OS® X users are normally accustomed to certain functions and/or concepts which are often treated differently in GNU/Linux.

4.1.1. Start Menu

In Windows®, most applications and system tools are accessed through the so-called Start Menu; this concept remains more or less the same, except it's now called the Main Menu: in KDE you open it by clicking on the yellow star at the bottom left of your screen.

For users coming from Mac OS® X, Mandrakelinux's Main Menu can be considered as a replacement for functions from both the Apple Menu, located at the far left of the menu bar, and the Applications folder available in the Finder.

4.1.2. Applications

The wide variety of applications is a large differentiator between GNU/Linux and Windows®. Mandrakelinux installs many more applications onto your system, and clicking on the main menu will give you a wide range of choices depending on what you would like to do. There are many fully-fledged applications available to accomplish many common tasks such as office work (word processing, spreadsheets, presentations), e-mail handling, web browsing, software development, multimedia file handling, etc.

Mac OS® X users may find similarities between Mac OS® X and GNU/Linux applications, because Mac OS® X is based on BSD®, a UNIX®-like system on which GNU/Linux is also based. Moreover, other applications designed for the desktop have been ported to, or are available under, the X11 implementation available for Mac OS® X.

You may also install a large number of applications through the RpmDrake utility (please refer to the "*Package Management through Rpmdrake*", page 107).

4.1.3. Control Panel/System Preferences

The Control Panel in Windows® and the System Preferences utility in Mac OS® X are replaced by the Mandrakelinux Control Center under Mandrakelinux. It can be accessed by choosing System+Configuration→Configure your computer in the main menu. With this interface, you have the ability to modify most of your system's settings with graphical tools.

4.1.4. DOS Shell

GNU/Linux is still very fond of shell environments. Unlike Windows® the popularity of the shell is not fading away as is evident by the availability of the shell in Mac OS® X. By default, Mandrakelinux installs bash, a truly powerful shell environment. You can access it by opening the main menu and choosing System+Terminals→Konsole.

Few of your DOS commands or functions will work in a Linux shell. Take a look at the *Introduction to the Command Line* chapter in the *Reference Manual* to discover their equivalents and much, much more. Have fun, you now have a real shell at hand!

4.1.5. Network Neighborhood

GNU/Linux uses TCP/IP by default, not SMB (the Windows® network protocol), so there's nothing like a network neighborhood icon to give you a view of the network you're in. However, you may use the LinNeighborhood application to give you similar functionality.

Konqueror can also accomplish the same tasks. Just type **smb:/** in the location bar, and all of the shared Windows® resources on the network will appear. Please remember that for this to work, the samba-client package must be installed.

See *File Sharing*, page 79 for more information.

4.1.6. C: Drive

The "lettered drive" is a concept exclusive to Windows®. On UNIX® systems, the drive notion (C:, D:, ..., Z:) is replaced by "**mount points**". From a user perspective, you're always accessing directories. Your system will use configuration files to instruct the file system how to "load" all relevant disks, disk partitions and remote systems, and then assign them to a specified directory, generally under the /mnt directory. While this concept is similar to that found in Mac OS® X, it is slightly different. What is mounted under /mnt with GNU/Linux is mounted under /Volumes in Mac OS® X but is made available as a "root file system" in the Finder.

4.1.7. CD-ROM Drives

The same concept as for C: applies here. CD-ROMs are mounted in /mnt/cdrom. To access the CD-ROM, just click on the desktop icon and the CD-ROM's contents will appear in a new window.

> Things are a bit different for audio and data CDs: upon inserting an audio CD in the drive, the CD player is automatically loaded. Please see *Audio Applications*, page 87.

4.1.8. Floppy Disk Drives

Like CD-ROMs and disk partitions, floppy disks are mounted and will appear on /mnt/floppy. This feature directly supports reading Windows® diskettes.

> Icons are displayed on your desktop to access all your removable media devices: floppy, CD-ROM, ZIP, USB keys, and others.

4.1.9. My Documents

Under Mandrakelinux every user has a directory called the user's home directory: that is the place to store the user's documents. For example, Peter should store documents in /home/peter. A MyDocuments directory could be created inside the user's home to "mimic" Windows® behaviour.

The **home directory** concept is analogous to the C:\Winnt\Profiles\user_name\ or C:\Documents and Settings\user_name\ directories in Windows NT®, Windows® 2000 and Windows® XP and is explained in "*Using KDE*", page 45.

Under Mac OS® X this is very similar. The home directory's equivalent is /Users/user_name which contains a directory called Documents.

4.1.10. The Applications Needed to Open Some Kinds of Document

GNU/Linux can open most standard file formats: PNG pictures, Rich Text Format texts, PostScript printouts, etc. These file formats should always be preferred as they facilitate exchange of data between applications, and they ensure your freedom to change to another application and do not lock you into a given operating system.

You may also have many files in proprietary formats such as Microsoft® Excel or Microsoft® Word documents. OpenOffice.org is just one application which can handle most popular formats for office applications (see *Word Processor*, page 71 and *Spreadsheet*, page 73).

> We specifically mention office documents because they are widely used. Due to space constraints we cannot cover every single Windows® application and its GNU/Linux equivalent. However, there is a high probability that you will find GNU/Linux equivalents for all the programs you used under Windows® or Mac OS® X. To get an idea of GNU/Linux equivalents of Windows® applications, you can consult this table of equivalents (`http://linuxshop.ru/linuxbegin/win-lin-soft-en/table.shtml`).

4.2. A Brave New World!

Now that you have found your way around GNU/Linux, here is a brief presentation of the features which make excellent reasons to migrate to GNU/Linux.

4.2.1. A Multi-User Environment

GNU/Linux, like Mac OS® X, is based on UNIX®. This basically implies a shift in the structure of your environment, from a single workstation to a multi-user architecture and implies very thorough user management. Each file, service and application is exclusively allocated to a user or a group of users, according to its nature. For example, every user has his or her own personal directory, containing personal data and personal configuration files, which can be made inaccessible (even invisible) to other users.

4.2.2. Multiple Tasking

GNU/Linux has always been a very strong operating system for multi-tasking (running many applications concurrently). Although other operating systems have made great progress, GNU/Linux remains a leader in this domain.

4.2.3. Multiple Desktops

With GNU/Linux, KDE and GNOME give you as many desktops as necessary to work with, instead of just a single desktop. Users who like to have numerous applications running at the same time will greatly appreciate this feature since it makes for a much cleaner working environment.

4.2.4. Full Desktop Customization

Regarding aesthetics, GNU/Linux truly rocks! Not only can you choose between KDE or GNOME and many other window managers, but you can also highly customize their appearance with **themes**. Themes go beyond just the initial look and feel: actually, everything you see can be modified, from the background image to the behavior of applications when they are closed, which is truly unique.

See the themes page on Freshmeat (`http://themes.freshmeat.net/`) for available designs.

4.2.5. Thousands of Free Applications

The GNU/Linux community is by far the most generous one. Given a specific problem, you will most likely find a script or an application to answer your needs, for free! Also, Mandrakelinux includes hundreds of applications not documented in this book, so don't be shy, try them out. You'll most probably be surprised by the extent of the possibilities GNU/Linux offers.

GNU/Linux also offers advanced server functionality, such as the ability to host mail or web page servers "out of the box".

4.2.6. No More Reboots!

Windows® and Mac OS® (although this has largely been addressed in Mac OS® X) users know the level of frustration generated by crashing systems. Even though GNU/Linux is not perfect, its stability is one of its strongest points. Sometimes, applications crash, but rarely do they take the operating system down with them.

We hope this rapid tour will help you truly appreciate GNU/Linux's strengths. Do not be afraid to explore further!

Chapter 5. Linux for Beginners

5.1. Introduction

This chapter was written for inexperienced GNU/Linux users. If you know how to log in and out, use KDE and know where your applications reside on your Mandrakelinux system, skip ahead to the next chapter. If not, read on! After reading this chapter, all subsequent chapters will make much more sense to you.

> If you are an experienced Windows® or Mac OS® user, refer to "*Migrating to Linux from Windows® and Mac OS® X*", page 31, which will ease the transition between those operating systems and GNU/Linux.

5.2. The Bootloader Menu

When you reboot your computer after completing your Mandrakelinux installation, you will first see a menu containing a few items called the bootloader menu. This allows you to boot your GNU/Linux system, or any other operating systems you may have already installed, as well as some special options.

The number of items and their names will vary depending on your particular configuration. The one we are interested in at the moment is obviously the one labeled linux, which will start your Mandrakelinux system. It is the default item unless you manually configure it differently. All you need to do is to wait a few seconds — you will see a countdown at the bottom of the screen — or press **Enter**, and Mandrakelinux will start loading. You can select a different item by using the arrow keys on your keyboard and pressing the **Enter** key.

5.3. Getting Ready for your Session

GNU/Linux is a multiuser system. This means that more than one user can access the same machine, each with the ability to keep his or her own data and configuration files private and protected from other users. To be able to do this, different user accounts must be created by the administrator. The administrator is called root, whose password has been set during installation, and who has **no restrictions at all** on the system.

It's also important to understand the terms "to log in" and "to log out". To log in means to identify yourself to the computer. Think of it as a security officer verifying who you are before letting you in. 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".

When you log out you are telling the system you no longer need to use its resources. Your personal session is closed, you exit the graphical interface and the login screen appears once more.

> Although these definitions are valid within the scope of this chapter, they are oversimplified. As you read the following chapters, you will better understand these concepts, their advantages and options.

5.4. Beginning your Session

We assume that you are sitting in front of a running Mandrakelinux computer which, when turned on, automatically displays the graphical login screen. If this is not the case and you are facing a black screen with something like:

```
Mandrakelinux release 10.2 (Limited Edition) for i586
Kernel 2.6.10-3mdk on an i686 / tty1
machine_name login:
```

with a flashing cursor, type your user name (as defined during installation or by your system administrator), then your password. You should now be logged in. Now type startx and the graphical interface will be

launched (KDE by default, see *"Using KDE"*, page 45). If this doesn't work, please refer to *X Doesn't Start*, page 199. In order to automatically start your system in graphical mode, refer to *Controlling the Graphical Configuration*, page 119.

5.4.1. Identifying Yourself

You are currently in front of the following display (see figure 5-1). To log into the system, you need to supply your password.

> If there is more than one user defined on your system, you will just have to supply first your login name, selecting it from the list, and then your password.
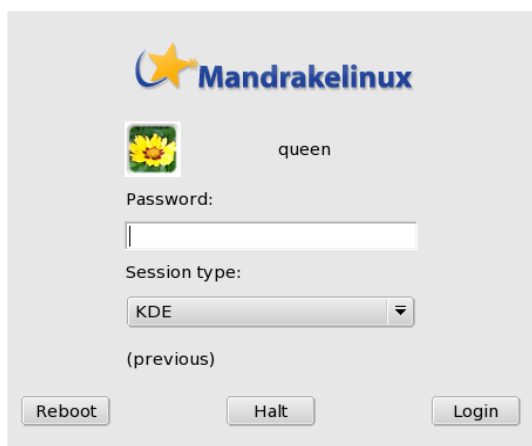
Figure 5-1. The Login Window

The login procedure takes place in a few simple steps:

1. Click on the icon corresponding to your login name, if needed.

2. Type your secret password[1]

3. Choose your favorite graphical environment from the Session type *pull-down menu*[2]. The session you last chose is selected by default, but if this is the first time that you have logged in, the default environment is KDE.

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

If you are the only user of your new Mandrakelinux system, and you are annoyed by having to type your login name and password every time you start a new session, there is a way to avoid this step: by booting directly into your favorite desktop environment. This feature is known as **auto-login** (see *Configuring the Login Mode*, page 185).

> Be careful with this option as no password will be asked for, therefore **anybody** can access your system.

---

1. The actual password will not be displayed and will be replaced by little stars (*). Remember: passwords under GNU/Linux are case sensitive, which means that if your password is `Very_Secret` and you type `Very_secret`, access will be denied!
2. This step is optional and allows you to choose a specific graphical environment. While we encourage you to try the various available choices so you can find the one you prefer, we strongly suggest you start with either KDE.

5.5. Using your Graphical Environment

5.5.1. The Mandrakelinux Desktop

All modern graphical environments share a common set of features: a main menu, a desktop area with some icons, a panel, etc. In the following paragraphs we will describe the elements which compose the desktop environment.
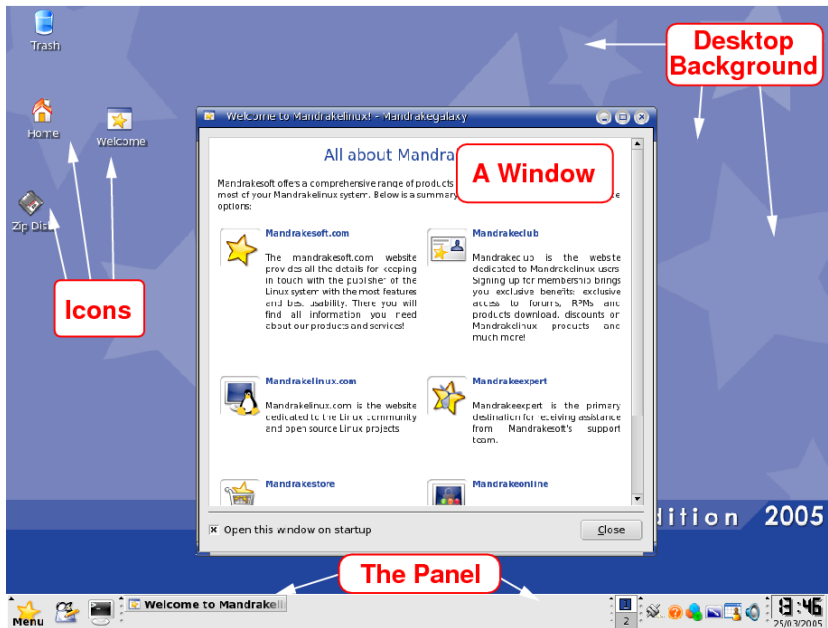
Figure 5-2. The KDE Desktop

1. Icons are located on the left of the screen and in the bar at the bottom of the screen. These are enhanced by a short description (the icon's title or name). Clicking on an icon either launches a program or opens a folder. In both cases a window will appear on the desktop.

2. The **panel** is located in the lower part of the screen. It provides quick access to useful tools such as a Terminal, a web browser, a text editor, etc. Each icon symbolizes an application (or program). Just move your mouse cursor over one of the icons and leave it there for a few seconds. A yellow help balloon will appear to describe the icon's function.

3. The icons and the panel do not float on the screen: they are "stuck" on something called the *desktop*, also called the background. In a sense, the desktop is where everything you see or use lives. Move your mouse cursor to a free area on the desktop (i.e. where there is nothing) and right-click: a menu will appear which will give you access to several more functions.

5.5.2. Accessing Applications

To access all of the software you installed during the installation process, click on the main menu. The applications are organized by tasks, so finding the program you are looking for is pretty easy.

5.5.3. Opening a Window on the Desktop

If you click on the icon on the desktop labeled as Home this window will appear:

Figure 5-3. KDE File Manager

You just launched a file manager called Konqueror. The window which pops up displays the content of your Home directory. This is where all of your personal documents and files are stored: only you can access them.

A window is composed of several parts. On top is the **title bar**. It shows the name or title of the application you launched and, possibly, the name of the document you are working on. It can be in two different states:
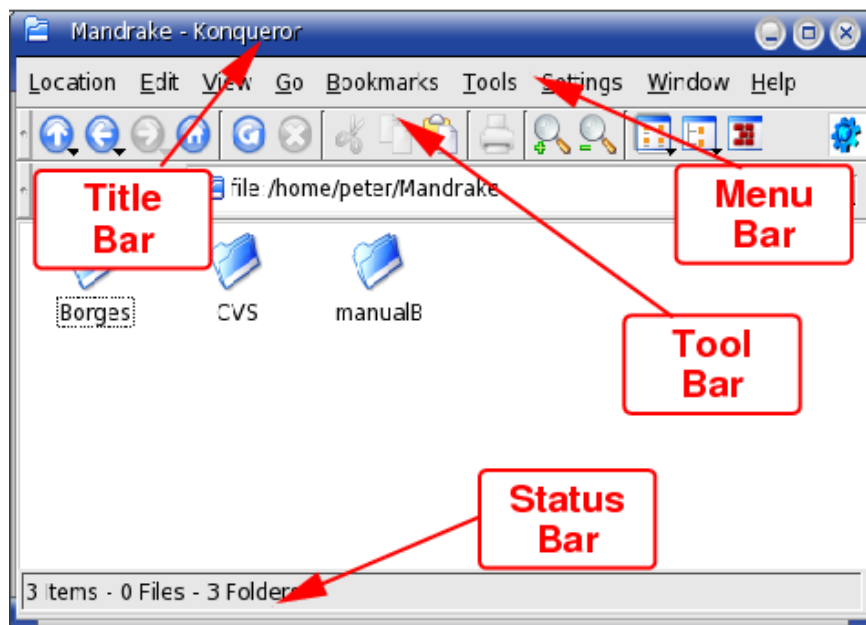
- **Active.** (full-colored title bar) This means you are currently using it.
- **Inactive.** (shaded title bar) The program is running, but you are not interacting with it at the moment.

Just under the title bar is the **menu bar**. In our example, it contains menus named Edit, View, and so on. Click on Edit. A list of items will appear in a drop-down menu, each one giving you access to one of the program's functions.

Below the menu bar is the application's **tool bar**. It consists of one or more rows of icons, each one equivalent to an item in one of the application's drop-down menus: you can consider them as a shortcuts to frequently-accessed program features, which can be found elsewhere in the menu bar.

The **status bar** usually sits at the bottom of the window. In it you will find information about the program's activity. Not all programs offer this feature, but if the one you are using does, remember to check it from time to time.

5.5.4. Managing Desktops

We introduced the desktop to point out the area of the screen where all objects are placed. Now look at the panel at the bottom of the screen. You can see a group of **desktop buttons**:

Figure 5-4. KDE's Virtual Desktop Buttons

These buttons give you access to *virtual desktops*, which are identical copies of the desktop you see after you have logged in. You will find more information about the handling and usage of virtual desktops in *Virtual Desktops*, page 46.

Click on the button labeled 2: as you can see, the window you opened before disappears. You didn't close it, you simply switched desktops. Click on the button labeled 1. The previous desktop will be displayed.

This feature called virtual desktops is very handy. It allows you to open several windows and to organize them as you wish.

You can also change which virtual desktop a window is currently in. This may be handy to logically organize your work by desktop, for instance moving all network related windows into desktop 2, all multimedia applications into another desktop, and so on.

So with KDE, right-click on the window's title bar and a pull-down menu will appear containing an item named To Desktop. Just point to this item and a list of your virtual desktops will appear. Simply choose the virtual desktop that you want to move it to.

5.6. Logging Out of your Session

When you are finally done using your computer, don't forget to tell the system you are leaving, that is remember to **log out** in a proper manner.

Logging out can be carried out in many ways: from the main menu, or from the menu that appears when you right-click on the desktop.

Whichever method you use, the screen will shade and a little box will pop up with options. If you click on OK you will quit the current session and, after all of your windows and the desktop itself have closed, you will be returned to the login screen.

However there are two other options available in the confirmation window: you can choose to shutdown the system (power off the computer), as well as reboot your system. Again, just click on the OK button after you've selected the desired option.

This is the correct and safe way to shut down or reboot your system. You should **never** do it by pushing your computer's power button because this can lead to serious problems such as file-system corruption or the loss of data.

Chapter 6. Accessing Documentation

Apart from the manuals included with Mandrakelinux, documentation is available from many sources. The next few pages contain suggestions which you might find useful.

6.1. Mandrakelinux-Specific Documentation

6.1.1. Mandrakesoft's Own Documentation

Some of those manuals may be available in your Mandrakelinux pack, in the `mandrake-doc-en` package. Once this is installed, a new menu entry will be available: More Applications+Documentation→Mandrakelinux documentation in English.

This section lists all the documentation which Mandrakesoft produced for the current release:

Starter Guide

> This manual is intended to get you going with Mandrakelinux. It includes basic topics which should be of interest to new GNU/Linux users, as well as configuration procedures for the most important elements of Mandrakelinux.

Reference Manual

> Available on-line and in the Mandrakelinux — PowerPack Edition, this document covers advanced GNU/Linux operations and system administration.

6.1.2. Internet Resources

Internet information sources are widespread and many web sites are devoted to GNU/Linux and its use or configuration. However, some sources of information are better than others.

Your preferred source of information should be the Mandrakelinux official web site (`http://www.mandrakelinux.com/`). In particular, check out the support section (`http://mandrakeexpert.com`).

On the other hand, many unofficial sources will also be of value. For one there is the Mandrake Community Twiki (`http://mandrake.vmlinuz.ca/bin/view/Main/WebHome`). It offers a lot of resources and gives information and documentation which can certainly interest Mandrakelinux users.

6.1.2.1. Mandrakeclub

If you're familiar with Mandrakelinux's web sites, you probably know about Mandrakeclub (`http://mandrakeclub.com/`). It's the meeting point for all Mandrakelinux users. On it you will find questions along with their answers, suggestions and news related to Mandrakelinux and GNU/Linux. You will be able to express your opinions and influence future development of Mandrakelinux. If you're not a member yet, we encourage you to join in.

One specific area of the Club is of particular interest: the Mandrakeclub Knowledge Base (`http://kb.mandrakeclub.com/`) is **the** Mandrakelinux user's database. It is probably the largest collection of Mandrakelinux-related documentation on the web.

It collects submissions by Mandrakelinux users. It also features a discussion forum and a community newsletter. These articles are meant to be practical and target beginner and intermediate users.

Topics range from administrative issues, such as the handling of the shell, to the tweaking of X, GNU/Linux's graphical subsystem.

6.1.2.2. Mandrakesecure

The Mandrakesoft Security Advisories web site (`http://www.mandrakesoft.com/security/`) (formerly known as Mandrakesecure) is Mandrakesoft's very own security site which covers package vulnerabilities.

6.1.2.3. Mandrakesoft E-training

The Mandrakesoft E-Training web site allows you to buy quality GNU/Linux training in order to improve your Open Source knowledge. You can access this web site (`http://campus.mandrakesoft.com`) by using your Mandrakeclub account. A free demo on Samba is available.

6.2. GNU/Linux Useful Resources

In this section we present resources useful for any GNU/Linux distribution. Most are not written specifically for Mandrakelinux, but may nevertheless prove useful.

6.2.1. The /usr/share/doc Directory

Most packages include their own documentation in one of `/usr/share/doc`'s sub-directories, which will be named after the specific package. Mandrakelinux's own documentation, when installed, is available in the `/usr/share/doc/mandrake/` directory.

6.2.2. The Man Pages

The Manual Pages (also known as "man pages") are a set of exhaustive documents which help you acquire better knowledge of GNU/Linux commands. The latter are usually issued through a "command line" and allow great control over your system (see the Introduction to the Command Line chapter of the *Reference Manual*). Although these man pages might seem discouraging at first, they offer great detail and we encourage you to browse through them when a problem occurs.

This should be your primary source of information for shell commands. Almost all commands have a manual page. Other items, such as certain configuration files, library functions for programmers and others system aspects also have their own man pages.

Man page contents are arranged in different sections. References to these 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.

> You can also display man pages in Konqueror by using the `man:/` prefix in your URL.

The easiest way to view a man page is through a browser. Using Konqueror, type **`man:/man`** in the Location bar and the man page for the `man` command will be displayed. For example, to display the man page for fstab(5), type in the Location field: **`man:/fstab(5)`**.

To display a man page in a terminal (or shell), type `man`. The syntax to obtain a man page is:

```
man [options] [section] <manual page>
```

`man` also has documentation, which can be obtained by typing `man man`. Manual pages are formatted and then displayed using the `less` *pager*.

The names of the manual pages and their relevant sections appear at the top of each page. At the bottom of the page you will find references to other pages with related subjects (usually in the **SEE ALSO** section).

You can start by consulting the pages related to the different commands covered in the *Reference 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: `man 2 mknod`. If you forgot the exact section, `man -a mknod` will read through all the sections looking for pages named `mknod`.

Chapter 7. Using KDE

7.1. Discovering the K Desktop Environment

This chapter will introduce the K Desktop Environment (KDE) and its panel. It will also talk about the concept of virtual desktops, how to navigate through and manage them and session support.

7.1.1. The Desktop

Figure 7-1. The KDE Desktop

KDE follows the modern desktop paradigm. In the above figure you see the desktop itself with some icons on it, while the panel sits at the bottom. This figure also introduces something new if you come from the Windows® world: virtual desktops (see *Virtual Desktops*, page 46).

> Virtual desktops are **not** an exclusive KDE concept. Other GNU/Linux desktop environments and window managers also make use of them.

The icons on the desktop represent files, directories, applications, devices, web pages (actually, the page's URL), etc. Almost "everything" can be placed on it. Different actions are associated to each icon. For example: clicking on a text file opens it into a text editor, clicking on a web page opens the URL inside Konqueror (see *Browsing Web Pages*, page 79), and so on.

Here are some of your desktop's default icons, along with a brief explanation for each of them.

Home. Gives access to all your personal files. Under UNIX®-like operating systems (Mandrakelinux is one of them), every user has a personal directory usually named `/home/user_name` where `user_name` is the user's login name.

Trash. Gives access to all deleted files (the equivalent of Windows®' Recycle Bin). Please bear in mind that files can also be deleted without being thrown into the trash can ("direct" file deletion) so some deleted files might not be accessible through the trash can.

Dynamic Icons for Removable Media. There will be icons for removable devices on your system (CD-ROM drive, floppy disk drive, ZIP/JAZ drives, etc.). Clicking on a device icon opens the medium inside that device. An error message may be shown if there is no medium present or if the medium can not be read for some reason.

7.1.2. The Panel

Figure 7-2. The KDE Panel

The panel is the bar which sits at the bottom of your desktop[1] and contains the following main components:

The Main Menu. Allows you to access the software installed on your system. It is the equivalent of Windows®' Start menu. Programs are arranged into convenient categories, so you can quickly and easily find the application you want to run.

Show Desktop. Use this to minimize all currently opened windows. Pressing it again will restore the windows to the state they were previously in. Handy when you your desktop is so full of opened windows and you want to access, for example, a folder on your desktop.

Desktop Switching Applet. Makes switching between virtual desktops as easy as one, two, three. See *Virtual Desktops*, page 46 for more information.

Screen Resolution Applet. Allows you to change the screen resolution. With higher resolutions you will have more space to run applications on your desktop. See *Changing Screen Resolution*, page 49, for more information.

7.1.3. Virtual Desktops

Virtual desktops give you more room to place your windows; they also allow you to better organize your windows by task.

Think of virtual desktops as having several screens available but with only one monitor. By default, there are two virtual desktops. To add or remove virtual desktops right-click on the desktop switching applet and select Configure Virtual Desktops from the pop-up menu. Using the slider at the top of the configuration dialog will allow you to select up to 20 virtual desktops. Press OK once you are satisfied with your settings.

By default, virtual desktops are named `Desktop N`, where `N` is the desktop number. To give more meaningful names to your virtual desktops (such as `Work`, `Play`, `Internet`...), right-click on the desktop switching bar and select Configure Virtual Desktops from the pop-up menu. Click in the input field of the desktop for which you wish to change the name and type in the new one. Pressing Apply will make the changes effective immediately. Press OK once you are satisfied with your settings.

When you log in into KDE the last virtual desktop you were in when you closed your last session is opened. To switch between virtual desktops just click on the desktop number in the desktop switching applet *et voilà !*

---

1. By default the panel is at the bottom, but it may be placed on any border of the desktop.

7.2. Personalizing your Desktop

7.2.1. Changing your Desktop's Appearance
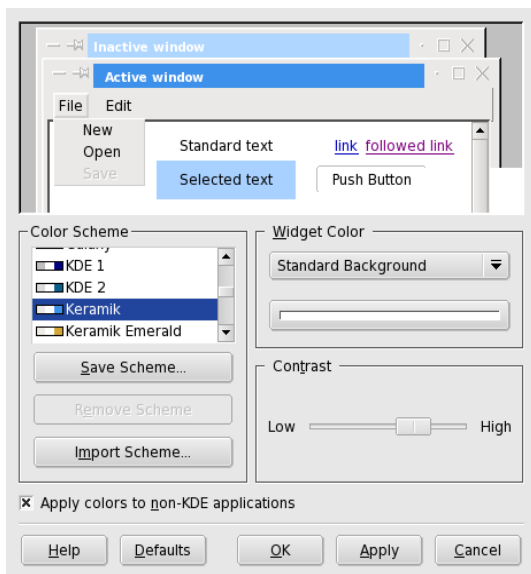

Figure 7-3. Changing KDE's Color Scheme

To change the desktop color scheme choose System+Configuration+KDE+ LookNFeel →Colors from the main menu. In the Color Scheme list are predefined color schemes. Select the one you like and click on Apply.

You can also define your custom color scheme by clicking on the element you want to change (for example, Active Window to change the active window colors) or selecting it in the Widget Color pull-down list. Once the element (widget) is selected, click on the color bar to open KDE's color selection dialog, choose the color you like and click on OK to apply it.

Clicking on Save Scheme will allow you save the color scheme for later use; you will be prompted for the scheme name, fill it and click on OK. Clicking on Remove Scheme will remove the currently selected customized color scheme, predefined color schemes cannot be removed.

You are **not** asked for confirmation before removing a color scheme. Therefore use the Remove Scheme button carefully.
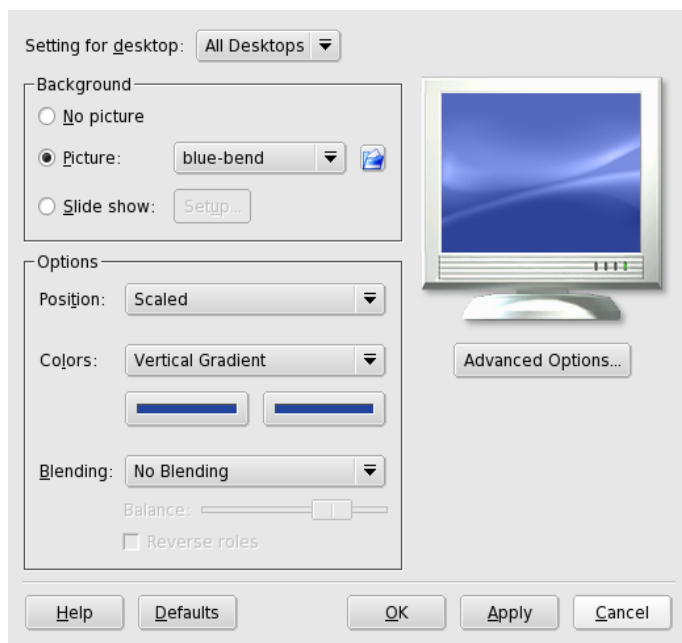
Figure 7-4. Changing KDE's Background Wallpaper

To change the desktop background, choose System+Configuration+KDE+ LookNFeel →Background from the main menu. Select the background picture option in the Background section and background scaling, colors and blending in the Options section.

Click on the Advanced Options button to adjust settings such as an external program to draw the background, the cache size for images, etc.

> All desktop background settings can be applied on a per-desktop basis using the Setting for desktop pull-down list. Please note that doing so consumes more memory.

7.2.2. Managing Desktop Icons

Adding Icons. To add an icon on the desktop simply right-click on the desktop's background. A pull-down menu will appear in which you must choose Create New. Another menu will appear in which you must select the type of object to create on your desktop:

- Folder creates a new folder on your desktop where you can store files.
- File→Link to Application creates an application launcher. When you click on it, the application will run as if you called it from a menu or the command line. Use it to have quick access to the applications you use most.
- File→Link to Location (URL) creates an icon giving you direct access to an URL (typically a web page or a web site). Use it to add icons for the sites you visit the most on your desktop.

> The above list is **not** extensive. The choices you have in the menu will depend on the software you have installed on your system.

Please bear in mind that the forms you will have to fill out to complete the icon adding operation are different for each kind of object being created. However, their options are fairly simple.

Modifying Icons. Right-click on the icon you want to modify and select Properties from the menu. You will then be able to change the title (the string displayed under the icon), the icon picture itself, and other properties of that type of object (folder, application, URL, etc.). Once you are satisfied with your settings, click on the OK button.

Removing Icons. To remove an icon, right-click on it and select Delete from the menu that pops up to delete it permanently, or Move to Trash (from where you can restore it later on). In either case, you will be asked to confirm before proceeding.

7.2.3. Changing Screen Resolution
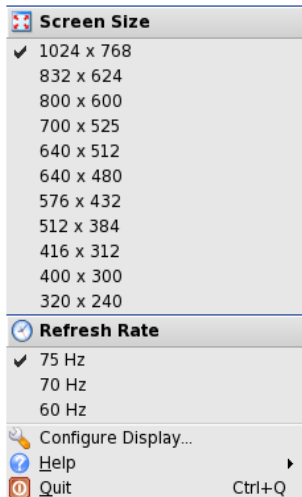
Figure 7-5. Available Screen Resolutions List

Clicking on the screen resolution changer applet will show you the list of all available sizes and refresh rates for your video card and monitor combination (see figure 7-5). The active screen size and refresh rate are marked with a tilde.

To change any parameter, simply select it from the list and a window will pop up asking you if you are satisfied with the settings (see figure 7-6). If you click on the Accept Configuration button, the settings will be applied immediately, otherwise the previous settings are retained.
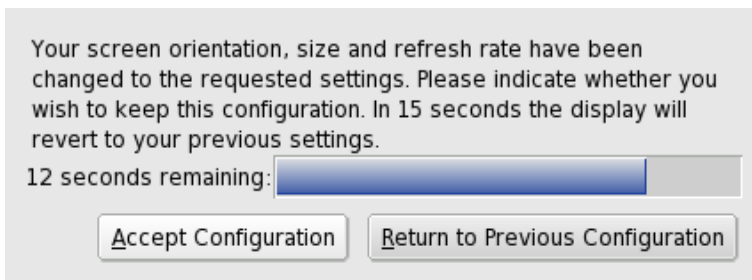
Figure 7-6. Accept New Resolution Settings?

The higher the refresh rate, the steadier the image. Select the highest refresh rate possible for your video card and monitor combination to put the least strain on your eyes.

To make the settings persist between sessions, choose Configure display from the menu and make sure that both Apply settings on KDE startup and Allow tray application to change startup settings are checked, otherwise your screen resolution settings will be lost when you quit your session.

7.3. KDE Sessions

KDE and its applications support sessions. This feature allows the system to save the state of all applications that are in use when the user logs out of the desktop environment, and to restore them when the user logs back in.

> Please bear in mind that non-KDE applications, and even some KDE ones, may have limited session support. The degree of session recovery is up to the application, ranging from just opening the application again, to opening it along with all the files that were open inside that application.

By default, KDE automatically saves sessions whenever you log out of the desktop environment. To change the default behavior, open the Session Manager (System+Configuration + KDE+Components→Session Manager from the main menu.), make your choices and click on the OK button once you are satisfied with your settings. They will be effective the next time you log into KDE.

Browsing and Surfing

Using the Internet with Mandrakelinux is very easy. And since it includes many mail clients and web browsers, you can choose the one which you prefer.

The default e-mail client in Mandrakelinux is part of the Kontact suite of applications and is called KMail. With it you will be able to read and write e-mails, filter spam, sign and encrypt your messages, and more (see *"Writing E-mails with KMail"*, page 53). To browse the web we provide you with documentation about the extremely popular Mozilla-based Firefox (see *"Surfing the Web with Firefox"*, page 61 which is seriously threatening Internet Explorer's monopoly especially since it's also available on Windows®. You will soon enjoy tabbed browsing, watch RSS feeds as well as the other standard web browser features such as managing (and importing) bookmarks.

Chapter 8. Writing E-mails with KMail

There are many graphical mail clients under GNU/Linux: KMail, Mozilla Thunderbird, Mozilla Messenger, etc. KMail is a graphical mail client under GNU/Linux. It's integrated into a groupware client named Kontact. This chapter will describe how to configure and use KMail to compose, read and organize your e-mail messages.

You can launch KMail by selecting Internet→Mail→KMail from the main menu. As we proceed, please note that only the minimum configuration steps will be explained in this section.

8.1. Configuring KMail

The first time you run KMail, you are faced with the Kontact main window, the mail section being selected. Access the Settings→Configure KMail sub-menu to bring up the configuration window. It is organized as a list of categories (on the left) and the configuration options for each of those categories (on the right). First, an identity[1] must be defined under the Identities category. KMail offers you a template for the default identity based on your system's account data (login, name, etc.). Click on the Modify button and, in the General tab, fill Your name, Organization and Email address with your data (see figure 8-1).

Figure 8-1. Setting General User Parameters

Use the Cryptography, Advanced and Signature tabs to set up other parameters such as different "Reply-To" addresses, a GPG key for secure message transmission, and so on. Once you are satisfied with your settings, click on OK and then on Apply: your default identity will be defined.

To configure the mail servers, select the Network category. In the Sending tab click on the Add button, select SMTP as the transport type and click on OK. In the General tab, fill the Name field with a meaningful name for this server and the Host field with the SMTP server's name or IP address (see figure 8-2). The remaining fields can be left with their default values.

---

1. If you have more than one e-mail address, for example one for your work and a private one, it is useful to create a different identity for each of them.

Figure 8-2. Setting the Outgoing Mail Server

For security reasons, the outgoing mail server you use may need authentication. If this is the case, check the Server requires authentication box and complete the login and password provided by your ISP or network administrator.

To receive mail, you need to create at least one account. In the Receiving tab click on the Add button, select POP3 as the account type[2] and click on OK. In the General tab, complete the Name field with a meaningful one for this account and the Host field with the name or IP address of the POP3 server. Your ISP should have provided you with an e-mail user name and password which have to be entered in the Login and Password fields. Put a check mark in the Store POP Password in configuration file to avoid having to type the password each time messages are retrieved (see figure 8-3)[3]. If you use many computers to access your e-mail with a POP3 account, you should check the Leave fetched messages on the server option. That way you can access messages which you already downloaded from another computer. Click on OK to add the account.

---

2. Since almost all ISPs provide POP3 accounts to retrieve mail, we used it in our example. If you have another account type, such as an IMAP (Internet Mail Access Protocol) one, the configuration will differ slightly.
3. However please understand that this means anyone can actually access your e-mails if they are using your user account.
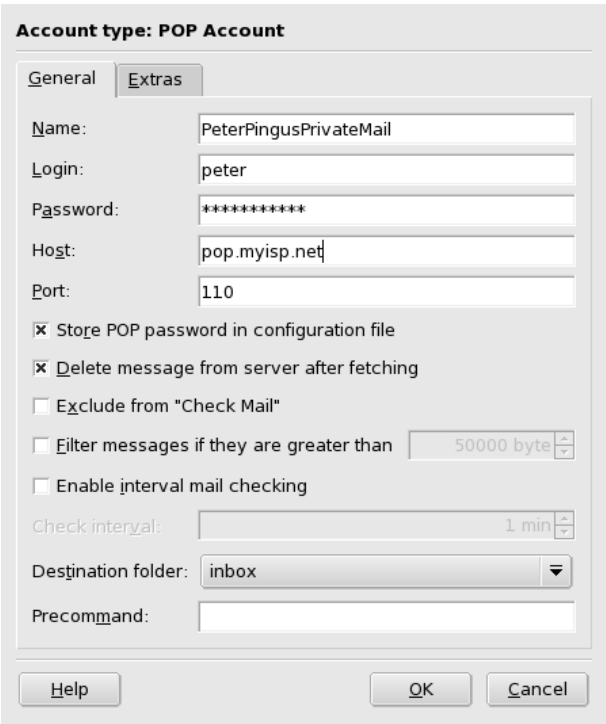
Figure 8-3. Configuring a POP3 Mail Account

> If you have a permanent network connection (such as DSL or cable-modem) checking the Enable interval mail checking box and selecting a period (in minutes) using Check interval will tell KMail to fetch messages periodically.

If you want KMail to handle more than one mail account just repeat the above procedure for each extra account. Once you are satisfied with your settings, click on OK. KMail is now ready to read and send mail on the Internet.
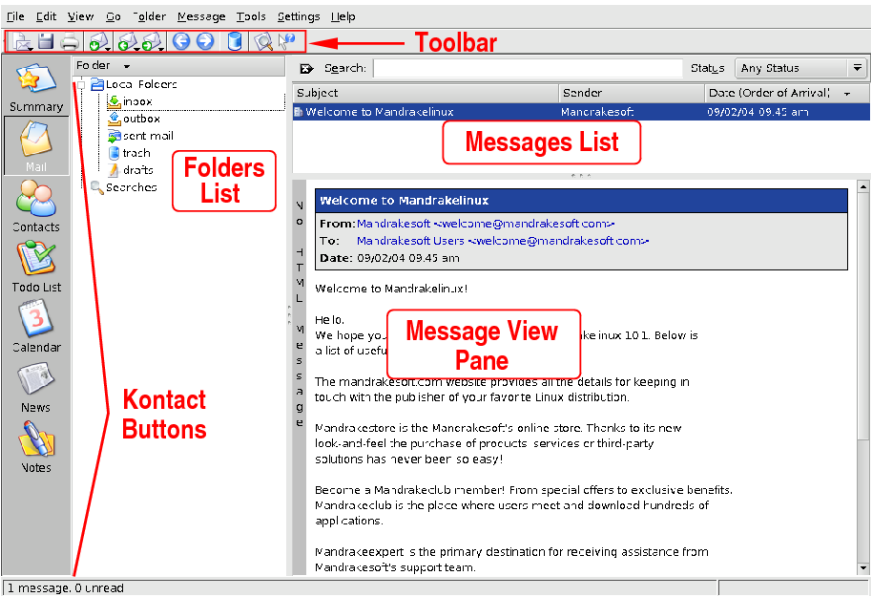
8.2. KMail's Interface

Figure 8-4. KMail Client Interface

> If the `kontact` package is not installed, the Kontact buttons on the
> left won't show.

Toolbar. This is where the main action buttons lie. See table 8-1.

Messages List. Where information (subject, date, sender, etc.) about messages stored in the currently selected folder is displayed.

Message View Pane. Where the currently selected message's contents are displayed.

Folders List. Where all folders are listed. The default folders are `inbox` (incoming messages), `outbox` (unsent templates), `sent-mail` (already sent messages), `trash` (deleted messages) and `drafts` (draft messages).

Kontact Buttons. KMail is now a component of Kontact. On the left of the interface you have buttons to access Kontact's components.

The following table shows the most important buttons available in KMail's toolbar, their equivalent keyboard shortcuts and a brief explanation of the functions they provide.

Button	Keyboard Shortcut	Function
	Ctrl-N	Compose a New Message. You will need to complete the To and Subject fields in the message-compose window.
	Ctrl-L	Get new messages for all defined e-mail accounts. Keep this button pressed to display a list of all defined accounts; select the one you want to get mail from in order to retrieve messages **only** for that account.
	R	Reply to the author of the selected message. A message-compose window will pop up with some fields already set.
	F	Forward (send to a third party) the selected message. You will need to fill in the To field in the message-compose window.
	D	Delete the selected messages. Deleted messages are moved to the `Trash` folder. You can recover messages moved into the `trash` folder, but deletion from the `Trash` folder cannot be undone: be careful!

Table 8-1. KMail's Toolbar Buttons

> Most of those buttons have a little black arrow on their bottom right
> corner. That means that a menu with additional related actions can
> be displayed by pressing the mouse button a little longer.
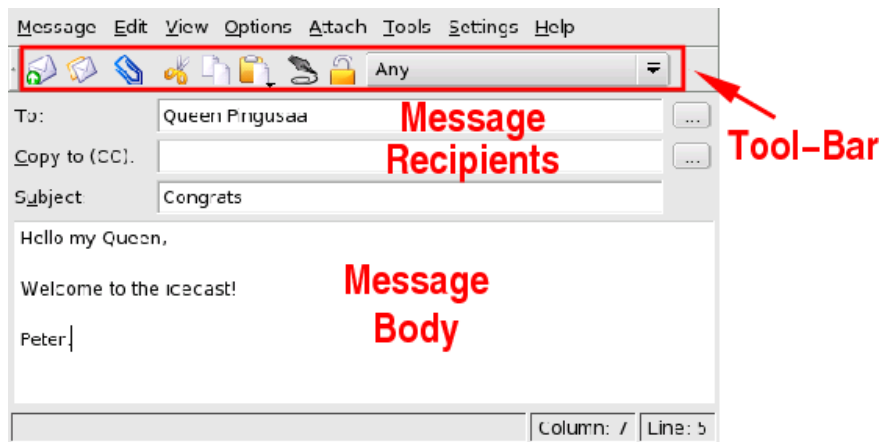
8.3. Composing a Message

Figure 8-5. The Message-Compose Window

Toolbar. This is where the main composition buttons reside. See table 8-2

Message Body. The area where you will type the contents of your message.

Message Recipients. The list of all recipients of this message. By default, the following options are shown:

- `To`: the "principal" intended recipient of this message.
- `Cc` (Carbon Copy): not-hidden "secondary" intended recipient(s) of this message. All recipients will have access to the mail addresses to which this message is sent.

> Select View→BCC from the menu to show the BCC (Blind Carbon Copy) field. These recipients are also "secondary" but are hidden from the other recipients of this message. No recipients of the message will have access to the other mail addresses to which this message was sent.

The following table shows the buttons which are mostly used in the message-composition window, their equivalent keyboard shortcuts and a brief explanation of the functions they provide.

Button	Keyboard Shortcut	Function
	Ctrl-Enter	Sends the message immediately (your network connection must be active). A copy of the message will be kept in the `sent-mail` folder.
		Queue the message. The message will be saved in the `outbox` folder and will be sent the next time you request mail to be sent (File→ Send Queued Messages).
		Attach a file to the message. This function is also accessible through the Attach→ Attach File menu. A standard file dialog will pop up. Select the file you want to attach and click on OK. Repeat for multiple files.

Table 8-2. Message-Composition Toolbar Buttons

8.4. Cryptography

8.4.1. Using a PGP Key

KMail allows you to use cryptography in order to encrypt and sign your e-mails, ensuring that your e-communications are not tampered with. With the growing need for privacy over the Internet, you might want to try out this feature.
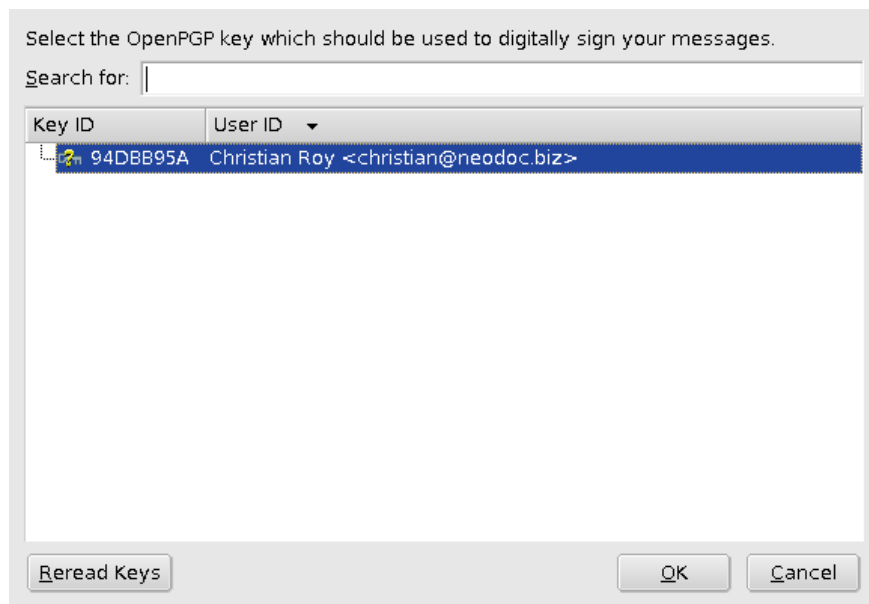
Figure 8-6. Using OpenPGP within KMail

The easiest way to use encryption with KMail is if you already have a PGP key. If you don't here's how to proceed:

1. Open a terminal window (System+Terminals→Konsole)(Administer your system→Use a terminal emulator).

2. Type `gpg --gen-key`.

3. You will be asked for what type of key you want: choose DSA and ElGamal.

4. Choose a key size: 2048 bits is the default, and is enough for today's needs; 4096 bits is probably extreme.

5. You can select an expiration date: `0` is for no expiration date.

6. Enter your user identification which contains your `Real Name`, then `E-mail Address` and finally an optional `Comment`.

7. Enter a passphrase which should be composed of upper- and lowercase letters, numbers and symbols: you need to enter it twice.

8. GPG will now generate your key. Move your mouse around, surf the web, play music since it needs a lot of random data.

9. Finally to make sure everything works, type `gpg --list-keys`. You should get something similar to this as a result:

    ```
    [peter@community peter]$ gpg --list-keys
    pub   1024D/95DBB95A 2005-03-15 Your Name (Comment) <your@email.com>
    sub   1024g/47FBB9BA 2005-03-15
    ```

For more information about generating a GPG key, please refer to the gpg man page or to this excellent tutorial (`http://linsec.ca/bin/view/Main/GnuPG`).

To set it up go back to the Manage Identities window (Settings→Configure KMail) and click on the Cryptography tab: simply click on the Change buttons for the OpenPGP signing key and OpenPGP encryption key fields and select your key (see figure 8-6), then OK.

Now when you will open a new composition window, you will see two new icons:

- This icon allows you to electronically sign your e-mail, which proves without a doubt that the e-mail comes from you.

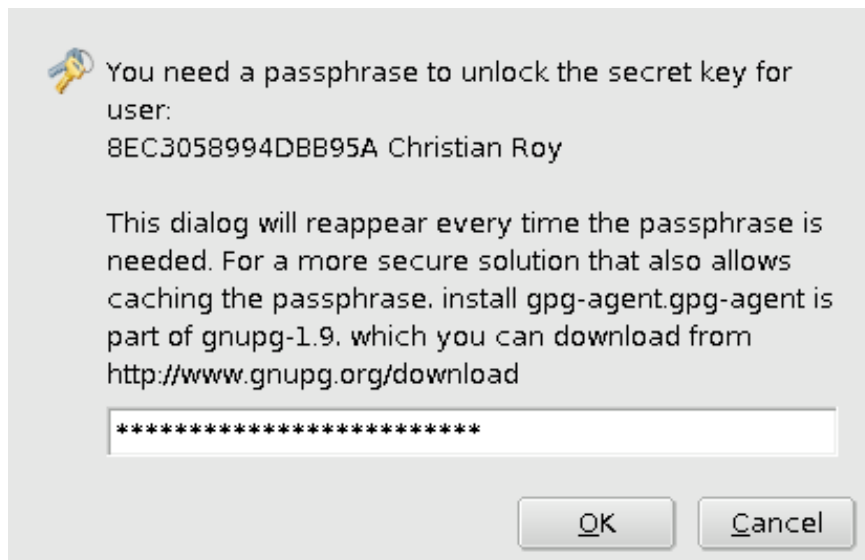- This icon permits to encrypt a message so that only the recipient you have chosen will be able to read the contents of your e-mail. Note however that the recipient must have shared his public key with you.

Once you have finished writing your e-mail, click on the icon which you need (sign, encrypt or both) then click on or **Ctrl-Enter**. A dialog box will appear and you will be asked to confirm your key and the recipient's:

The following keys will be used for encryption:

Your keys: 94DBB95A Change...

Recipient: maui@wanadoo.fr

Encryption keys: 3E2ADBFC Change...

Encryption preference: \<none>

OK Cancel

Figure 8-7. Encryption Key Approval Dialog

Finally you will be asked to enter your GPG passphrase.

You need a passphrase to unlock the secret key for user:
8EC3058994DBB95A Christian Roy

This dialog will reappear every time the passphrase is needed. For a more secure solution that also allows caching the passphrase. install gpg-agent.gpg-agent is part of gnupg-1.9. which you can download from http://www.gnupg.org/download

****

OK Cancel

Figure 8-8. Passphrase Dialog

When you receive encrypted mail, you will be prompted for your passphrase: simply type it in the dialog box which pops up.

Chapter 9. Surfing the Web with Firefox

Surfing the web means displaying documents published in electronic format by other organizations or individuals. Each of these documents is accessed through its address which also known as it's URL.

This chapter will deal with the speedy Firefox browser which is gaining more and more popularity each day, and also challenging other very widespread browsers on different operating systems due to its cross-platform availability. One of Firefox's *fortes* is that you can personalize it endlessly through extensions (*Extensions*, page 64) and themes (*Themes*, page 65).

9.1. A First Glance at Firefox

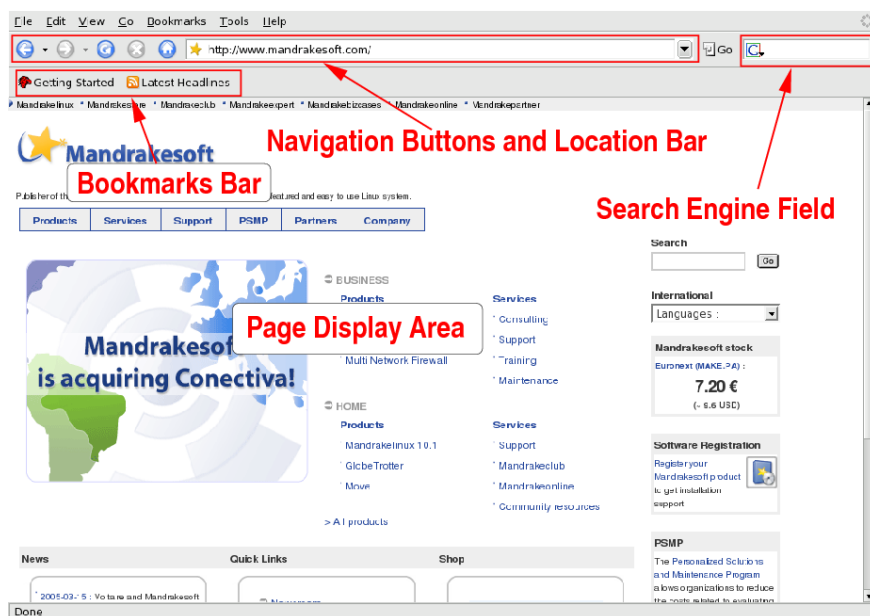You can launch the Firefox by selecting Internet+Web Browsers→Mozilla Firefox from the main menu.

Figure 9-1. Firefox Interface

> If Firefox's interface does not show in the expected language, you can easily change that: go to the Edit→Preferences menu entry, and select the General Language option. You will be able to select and add available languages for your interface. Put your preferred language on top of the list and the changes will be applied after you refresh your browser.

Firefox's interface is shown in figure 9-1. It is composed of the following:

- Page Display Area. Where the contents of the web pages you browse are displayed.
- Bookmarks Bar. Contains buttons which give you quick access to your bookmarked (favorite) sites (see *Managing Bookmarks*, page 64), as well as Live Bookmarks.
- Navigation Buttons & Location Bar. Navigation buttons are explained in *Surfing the Web*, page 61. The location bar is where you enter a web site's URL (or a local file using `file://` as the protocol part of the URL).
- Search Engine Field. Simply type in a keyword and choose your preferred search engine (such as Google™, Yahoo!, Dictionnary.com, etc. The results will be available in the Page Display Area.

9.2. Surfing the Web

The following table summarizes the most commonly used navigation buttons every web browser possesses.

Button	Keyboard Shortcut	Function
	Alt-left_arrow	Go back. Returns to the page visited before the current one. By clicking on it more than once, you can go back more than one page, but some pages use automatic redirection so this may not always work. Keeping this button pressed (or clicking on the little black triangle at its right) will show you a list of all the pages you can access through this feature.
	Alt-right_arrow	Go forward. Returns to the page visited after the current one. The comments for the "Go back" button apply.
	Ctrl-R	Reload. Refreshes the current page. By default, the browser will first look for the page in its cache (on-disk temporary storage space) and use the local copy, if relevant. Press the **Shift** key while clicking on the reload button to force the browser to fetch the page from the network.
	Esc	Stop. Stops transferring the currently requested object and will therefore cancel the page currently being loaded. Notice that we use the word "object" instead of "page" since web pages might be not only HTML code, but images and other media too.
		Home page. Returnsyou to the default Firefox home page which you can set through the Edit+Preferences→ General sub-menu.
		Engines. Filling this field with a keyword (such as Linux) will send for a request in one of the predefined search engines, such as Google$_{tm}$, Yahoo! and Creative Commons. By clicking on the Google$_{tm}$ logo, you can even customize your engines by clicking on Add Engines.

Table 9-1. Firefox's Web Browser Toolbar Buttons

9.3. Using the Sidebar

The sidebar gives you a quick access to the history of the sites you have visited recently, as well as to your bookmarks. To enable the sidebar, access the View+Sidebar sub-menu and then choose between Bookmarks (**Ctrl-B**) or History (**Ctrl-H**).
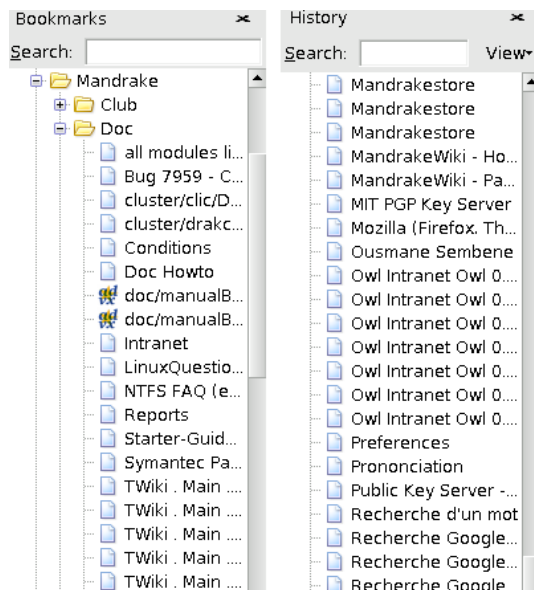
Figure 9-2. Bookmarks and History in the Sidebar

Search. Enter the keyword you wish to find results for (i.e. Mandrakelinux) in the Search field and press **Enter**. All the items containing your keyword will be displayed under the Search field. This applies for both the Bookmarks and History sidebars.
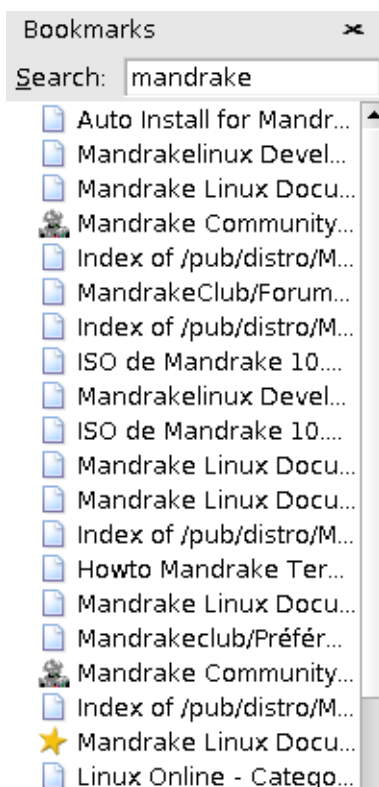
Figure 9-3. Search Fields Using the Bookmarks Sidebar

Bookmarks. In order to conveniently access your bookmarks, it is handy to display them in the sidebar. Clicking on one of your bookmarks will automatically launch a request for that page and it will be shown in the display area. To search for specific bookmarks based on keywords, simply type that keyword in the Search field (figure 9-3).

History. Firefox keeps track of the URLs you have visited in the past `N` days, where `N` is a number which can be configured (the default is set to 9 days). If you want to return to a site you visited a three days ago, access the 3 days ago folder in the History sidebar and click on the `+`. All the site's URLs you visited that day will be

displayed. Clicking on one of them will open the site in the Page Display Area. To look for a specific web site enter either it's URL or name in the Search field.

> To change the number of history days to keep, choose Edit+Preferences→Privacy from the menu and open the History sub-section.

9.4. Managing Bookmarks

Bookmarks store the URLs of your favorite web sites so you do not have to type their address again when you want to access them. You can classify them by subject, category, etc. Your Mandrakelinux system already has some predefined bookmark categories which you can use as a guide to set up yours. Selecting Bookmarks→ Manage Bookmarks from the browser's menu will open the bookmarks manager shown in figure 9-4.
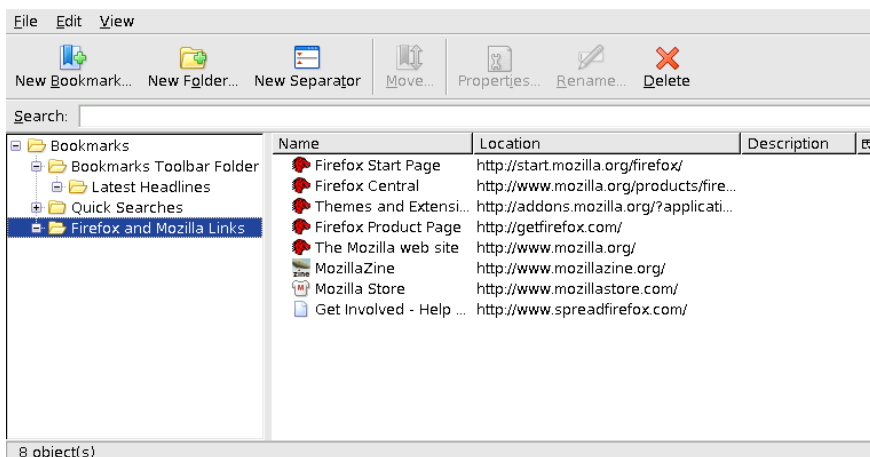

Figure 9-4. Bookmarks Manager Dialog

Bookmarks are classified in a tree structure, with all operations taking place on the currently selected tree node. Click on the New Folder button to create a new folder. Use folders to group bookmarks by subject, category, etc. Click on the New Separator button to add a separating line below the current node. Click on the Properties button to change the current bookmark's properties (name, URL, etc.). Click on the Rename button to change the bookmark's displayed name. Click on the Delete button to remove the current bookmark.

Bookmarks can be exported to an HTML file. Choose File→Export from the menu, enter the file name (`bookmarks.html`, by default) of the exported bookmarks file and click on Save.

Bookmarks can also be imported from an HTML file. Choose File→Import from the menu, enter the file name of the bookmarks file to import and click on Open.

9.5. Tabbed Browsing
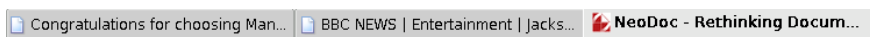
Figure 9-5. Firefox Tabs

Firefox allows you to browse many web pages at a time using a very nice feature called "tabbed browsing". Instead of opening a new browser window every time you want to view another page, you can open a new tab.

Clicking on this button (at the right end of the tab list) allows you to close the current tab. Right-clicking on it gives you some options such as opening new tabs, reloading current and all tabs, as well as closing them. You can also open a new tab through the File→New Tab sub-menu, or simply by using the **Ctrl-T** keyboard shortcut. On the other hand, **Ctrl-W** closes the current tab.

9.6. Extensions

Extensions permit you to extend Firefox's functionalities. You can think of extensions as add-ons or plugins. You can access them through the Tools→Extensions sub-menu. Then click on Get More Extensions and this page will appear:

Figure 9-6. Firefox Extension Page

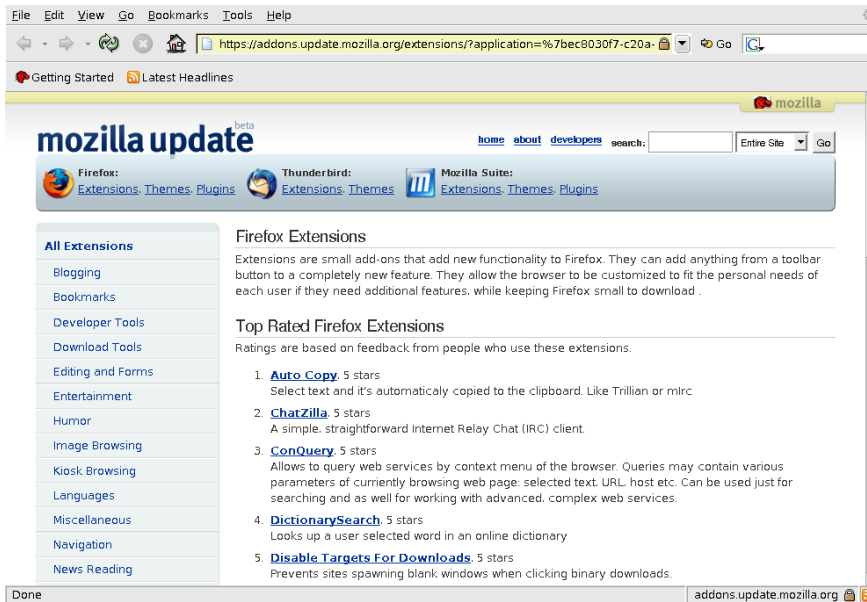Once you find an extension which interests you click on it and install it. You need to close and reopen your browser for the extension to be activated. Access the Extensions sub-menu again. The new extension will be there and you can check out its Options.
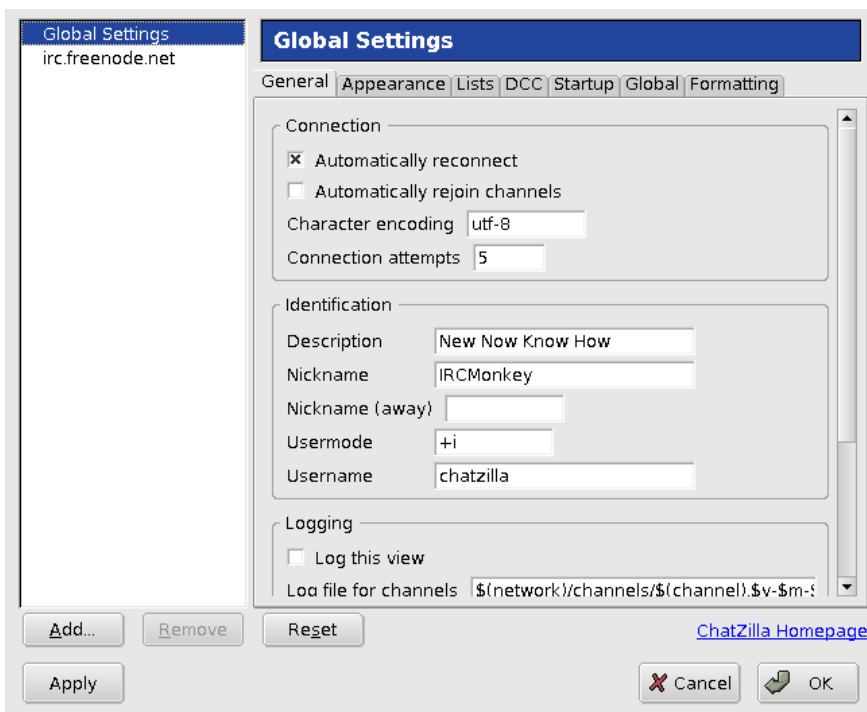

Figure 9-7. ChatZilla Options

9.7. Themes

A theme is what "dresses" your Firefox window. The process to acquire new themes is very similar to the extension procedure:

- access the Tools→Themes sub-menu;
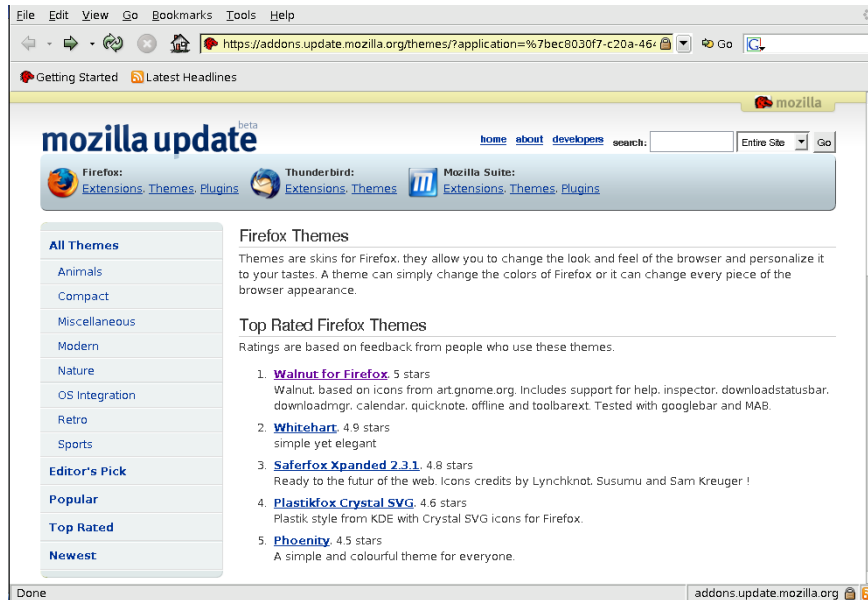- this web page will appear:

Figure 9-8. Firefox Themes Page

- select a theme you like and install it by clicking on it;
- close and reopen Firefox.

9.8. Installing Plugins

Plugins are programs which let your browser handle content other than HTML and graphics, such as animations, streaming audio, Java™ applets, and more. Firefox's plugins are stored in the `/usr/lib/firefox-VERSION/plugins` directory and installing plugins requires `root` privileges.

We will look at the procedures to install Java™, Flash® and Real plugins. If you own a commercial version of Mandrakelinux, installation is greatly simplified and all the needed packages are on the CDs.

> If you have a Mandrakeclub user name and password, you may be able to install even newer versions of the software mentioned here.

9.8.1. Java™

Install the `jre` RPM package. See "*Package Management through Rpmdrake*", page 107, for information on how to install RPM packages.

You can obtain the Java plugin on the Java Plug-in Home Page (`http://java.sun.com/products/plugin/`). Follow the links to the J2SE (Java 2, Standard Edition) and download the JRE for Linux. Choose the RPM file for the Linux platform, make it executable once the download finished (`chmod 700 j2re[VERSION].rpm.bin`) and execute it. A "real" RPM package which be created which can be installed using the Software Manager or the `urpmi` command. Of course, you will have to accept the proposed license agreements.

9.8.2. Flash®

You can retrieve the Flash plugin on the Macromedia® web site (`http://www.macromedia.com`). Click on the Flash Player page (within the Products page), then choose Downloads Get Flash Player and click on the Download Now button. Extract the `tar.gz` file into a temporary directory (`tar zxvf install_flash_player_7_linux.tar.gz`) and follow the instructions given in the included `Readme.txt` file to complete the plugin installation. Test the plugin by opening the Flash web site (`http://www.flash.com`) URL in the browser.

9.8.3. Real

You can get the Real plugin on the Linux Real (`http://www.real.com/linux/`) web site. At the time of writing, the latest Real player available for GNU/Linux was version `10`. Click on Download RPM Package. The procedure to install it is the same as for Java.

Using Mandrakelinux on a Daily Basis

This chapter is an introduction to the applications available under Mandrakelinux, such as file managers and external devices.

First, we explore the office suite domain. We discuss the basic uses of OpenOffice.org placing emphasis on its word processing (*Word Processor*, page 71) and spreadsheet (*Spreadsheet*, page 73) components.

The next section (*Konqueror File Manager*, page 77) discusses Konqueror which can be used to manage or share files. You can also browse the web with Konqueror. Then we guide you through basic printing operations (*Printing and Faxing from Applications*, page 80).

Multimedia applications are a must for any OS to be considered as a personal workstation. We introduce you to the multi-format `amaroK` audio player (*amaroK Audio Player*, page 87), as well as KMix (*Using the KMix Mixer*, page 90), a simple mixer. Then we'll show you how to use popular open-source movie applications such as Totem (*Movie Applications*, page 91) and how to burn music, data and even mixed data onto CDs using K3b (*CD Burning*, page 93).

Chapter 10. Office Work

10.1. Word Processor

This section will give you a brief introduction to OpenOffice.org Writer's word processing functions.

In order to make the text a little easier to read, we will alternate between the popular OOo acronym and the very long, yet full and correct OpenOffice.org name.

10.1.1. OpenOffice.org Writer

OpenOffice.org Writer is the part of the OpenOffice.org suite which provides the word processing functions. OpenOffice.org Writer can read most popular Office formats, easing the transition from, and ensuring compatibility with, other Office suites.

10.1.1.1. Starting

To launch OpenOffice.org Writer, select Office→Wordprocessors→OpenOffice.org Writer from the main menu.

You can also open it from any other OOo application screen, by selecting File→New→Text Document, which will open a blank OOo Writer document.

When you first launch OpenOffice.org Writer, a dialog will show up asking you whether you prefer to use the Microsoft® or OpenOffice.org format to save your files.

Your decision depends on whether you plan to exchange a lot of files with people who only use Microsoft® tools. If this is the case, click Use the Microsoft ® Word file format, but be warned that it is not perfectly supported. Also this is only the default format and can always be overridden by changing the File type in the Save as dialog.
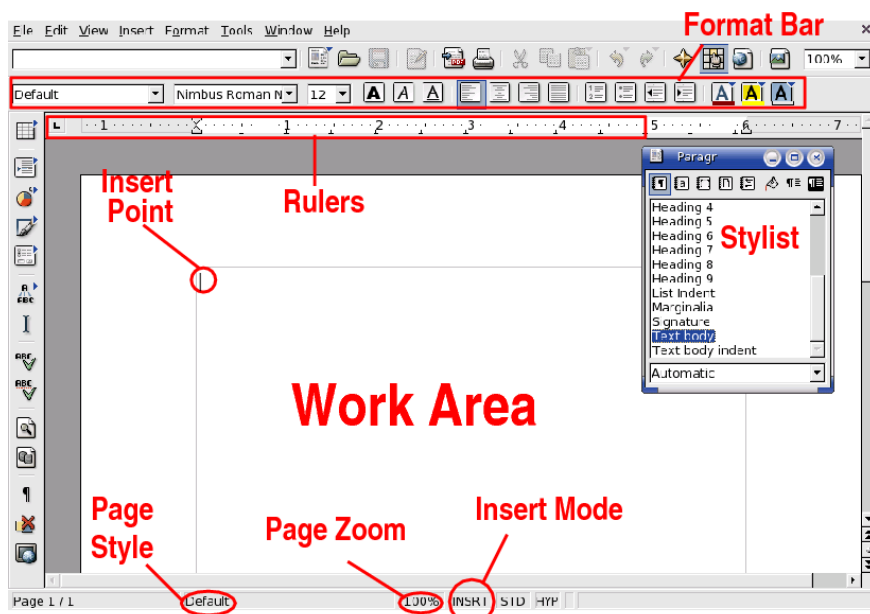
10.1.1.2. Interface

Figure 10-1. OpenOffice.org Writer's Main Window

10.1.2. Using the Word Processor

10.1.2.1. Styles

Word processor users often waste a lot of time formatting (changing paragraph alignment, font family, weight and size, etc.) their documents instead of using that time to concentrate on document structure and document content writing.

Styles provide a structure-centric approach to writing documents with a word processor, while normalizing document formatting and layout, and easily automating the generation and maintenance of table of contents (TOC), indexes, references, etc. In OpenOffice.org Writer, styles are handled using the Stylist.

Clicking on this icon in the tool bar will open/close it. It can also be opened/closed by choosing Format→Stylist from the menu bar, or by pressing the **F11** key.

When you have a...	Then apply the ... style
Chapter Title	Heading 1
Section Title	Heading 2
Sub-Section Title	Heading 3
Sub-Subsection Title	Heading 4
Paragraph	Default, Text Body, First Line Indent
List Item	Standard, Text Body, Text Body Indent

Table 10-1. Suggested Styles

Use the styles listed in table 10-1, as a guide. Select the region of the document to apply the style to, and in the Stylist window, double-click on the style you want to apply to that region.

The styles you use from the Stylist automatically become available in the styles drop-down list (the first one in the format bar), so you have the most used styles handy.

10.1.2.2. Margins

You can always adjust margins by hand with the ruler, but if you want to format a long document, this may not be the best solution. This is where the Stylist comes in handy.

By clicking on this icon in the Stylist, you will access the page formatting section of the Stylist. First, make a copy of the Default style:

1. Right-click on the Default item in the Stylist.

2. Choose New from the menu which pops up.

3. Assign a Name to your new style. The Next Style field will be updated accordingly when you select it. For the purpose of this example, `Default Copy` will be used as the style name.

4. Click on OK to insert your new style into the list of available styles.

Then, right-click on your newly created style item and choose Modify from the pop-up menu. The Page Styles: Default Copy window will appear. Open the Page tab and modify the margins to your liking.

This is the same as choosing the Format→Page menu.

While looking at the Page Styles: Default Copy window, you probably noticed that you could modify many formatting elements such as the Background, Header, Footer, etc. For example, if 90% of your work with a word

processor consists of writing business letters with a predefined format, you could set it up right now, thereby saving lots of time.

> If you modify an existing style, you will overwrite that style's original settings. If you feel that you have made a mistake, simply click on the Reset button to return to the last saved settings.

10.1.2.3. Lists

Sometimes paragraphs contain element lists, to enumerate the properties of an object ("unordered" or "bullet" list), or the steps to be performed in order to accomplish some task, (an "ordered" or "numbered" list, for instance).

Clicking on this button will format the selected text into an unordered list. Selecting the list items and choosing Format→Numbering/Bullets from the menu will allow you to change the bullet type from a predefined set.

Clicking on this button will format the selected text into an ordered list. The same rules as for unordered lists apply regarding to the numbering format.

10.1.2.4. Page Headers and Footers

By default page headers and footers are common to **all** pages of a document. Use them to describe certain aspects about the document's content, for example: page number, total number of pages, chapter, section, document's title, etc.

Choosing Insert→Header→Default from the menu will add a page header to your document, and choosing Insert→Footer→Default will add a page footer to your document. Just type the header/footer text you want to be shown or use one or more of the Insert→Fields menu items to compose the header/footer.

10.1.3. Going Further

If you wish to learn more on the usage of OpenOffice.org Writer, you should consult the tutorial available on the Tutorials for OpenOffice (`http://www.tutorialsforopenoffice.org/category_index/wordprocessing.html`) Web site.

Also don't hesitate to refer to the OpenOffice.org Writer's help which is accessible through the Help→Contents menu, or by pressing the **F1** key. You are bound to find the answers to your questions. Topics are accessible through a table of contents, an index is available as well, as a contextual search tool.

> OpenOffice.org Writer is able to export your documents in PDF format (choosing File→Export as PDF from the menu). This allows you to publish your documents in the Adobe® Reader® format.

10.1.4. Conclusion

Word processing could be considered as one of the most performed actions with a personal computer. As you have read above, OpenOffice.org Writer is a tool which not only gives you everything you need to create simple or complex documents, but is also compatible with existing Office file formats. Enjoy creating your documents with OpenOffice.org Writer!
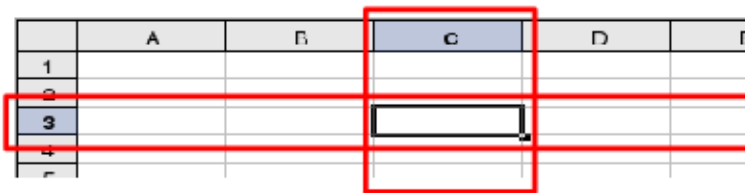
10.2. Spreadsheet

This section will give you a brief introduction to OpenOffice.org Calc's spreadsheet functions.

We take for granted that you know why you intend to use a spreadsheet and will not delve deeply into application-specific (accounting, financial, simulation, etc.) considerations.

10.2.1. What's a Spreadsheet?

Spreadsheets are electronic replacements for an accountant's ledger book and calculator. This software uses columns and rows to allow math operations to be performed on previously entered data. Nowadays, spreadsheets do a lot more as they are often used as (very) simple databases or as a charts and graphs application, even though that was not the original intention of such software.

Figure 10-2. Rows, Columns and Cells

Rows are named `1`, `2`, etc. Columns are named `A`, ..., `Z`, `AA`, `AB`, etc. The intersection of a row and a column is a cell, and its name is composed of the column and row attributes, for example: `C3` (shown in figure 10-2). OpenOffice.org Calc highlights the active row and column names.

10.2.2. Using the Spreadsheet

To launch OpenOffice.org Calc, select Office+Spreadsheets→OpenOffice.org Calc from the main menu.

When you first launch OpenOffice.org Calc, a dialog will show up asking you whether you prefer to use the Microsoft® or OpenOffice.org format to save your files.

Your decision depends on whether you plan to exchange a lot of files with people who use only Microsoft® tools. If this is the case, click Use the Microsoft® Excel file format, but be warned that it is not perfectly supported. Also note that this is only the default format and can always be overridden by changing the File type in the Save as dialog.

OpenOffice.org Calc is an enterprise-ready spreadsheet application and includes many features way beyond the scope of this document. Consult *Going Further*, page 77, for more information on how to make full use of OpenOffice.org Calc.

The following sections will explore basic functions such as entering data and formulas in the spreadsheet and adding graphics to represent that data. An example of an imaginary company's monthly expenses and sales figures will be used.

10.2.2.1. Entering Data

To enter data into a cell (either text or numbers) use the arrow keys to navigate to that cell or click in the cell and type the data in it, pressing the **Enter** key when you are finished. You can also use the **Tab** key or the **Shift-Tab** keys to move to the cell on the right or on the left, respectively.

The auto-completion feature simplifies data entry. Auto-completion "guesses" the next cell's data using the current cell's value as a base. It works not only for numeric data, but also for the days of the week, the months of the year, and others. Generally speaking, any kind of data which can be associated to a series of consecutive integral numbers can be entered using auto-completion.
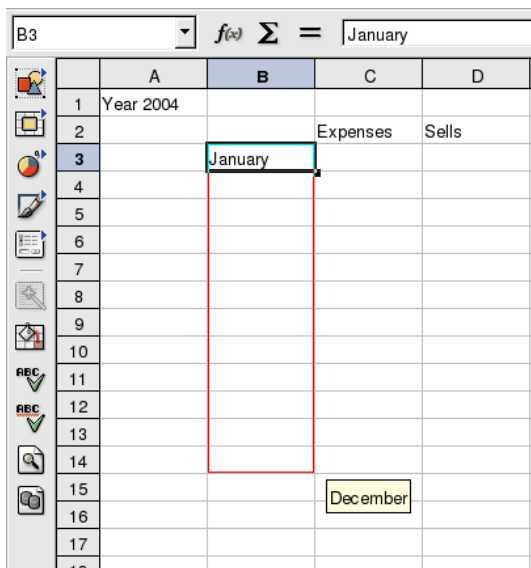
Figure 10-3. Simplifying Data Entry Using Auto-Completion

To use auto-completion put your mouse over the cell "handle" (the little black square located at the bottom right of the cell border), click on it and drag the cell. The cell values will be shown in a tool-tip (see figure 10-3). Once the desired final value is shown, release the mouse button and the cells will be completed.

Cell data can also be sorted according to different criteria (by column or row, depending on how you arrange your data). To do so, first select the cells you want to sort and then open the sort options dialog choosing Data→ Sort from the menu.

> Make sure you also select columns and rows which act as "headers" for the data (in our example, the column B which contains the months) in order for those to "follow" the sorting of the data.

In the Sort Criteria tab select the columns/rows to sort data by, and the sort order Ascending or Descending. The Options tab contains custom sort order settings, whether to perform a case sensitive sort or not and the direction of the sorting (top to bottom sorts data disposed in columns and left to right sorts data disposed in rows), among others. Click on the OK button once you are satisfied with the options and the selected cells will be sorted.

10.2.2.2. Adding Formulas

Formulas can be used to "automate" the spreadsheet allowing you, for example, to run complex simulations. Within cells, formulas are defined by preceding all cell data with the = sign. Anything else is treated as "static" data.

Operations are expressed using conventional algebraic notation. For example `=3*A25+4*(A20+C34/B34)` divides the value in cell `C34` by the value in cell `B34`, adds the value in `A20` to the result, multiplies that by `4` and adds to `3` times the value of cell `A25`. Thus, rather complex expressions can be made using simpler ones as a base.

OpenOffice.org Calc gives you many pre-defined functions which you can use in your formulas. There are date and time, mathematical, statistical, financial, logical and many other kinds of functions available. Explore them by invoking the AutoPilot function by choosing the Insert→Function menu or by pressing the **Ctrl-F2** keys.

> Under KDE the **Ctrl-F2** key combination switches to desktop number two, so you might want to redefine that in order to be able to invoke OpenOffice.org Calc's functions wizard using a keyboard shortcut.

figure 10-4 shows the `AVERAGE` function applied to the selected range of cells to calculate their average value. Note the use of the `:` character to specify a range of contiguous cells in the function.


Figure 10-4. Using a Function in a Formula

### 10.2.2.3. Charts: Explaining Data in a Simpler Way

When a spreadsheet contains too much information it often becomes difficult to understand how pieces of data relate to one another: too many numbers and too little meaning. The best way to represent this kind of data is through a chart.

As in all data-analysis functions, you must select the region you intend to show in the chart. So, select a range of cells and then chose Insert→Chart from the menu to bring up the chart assistant.
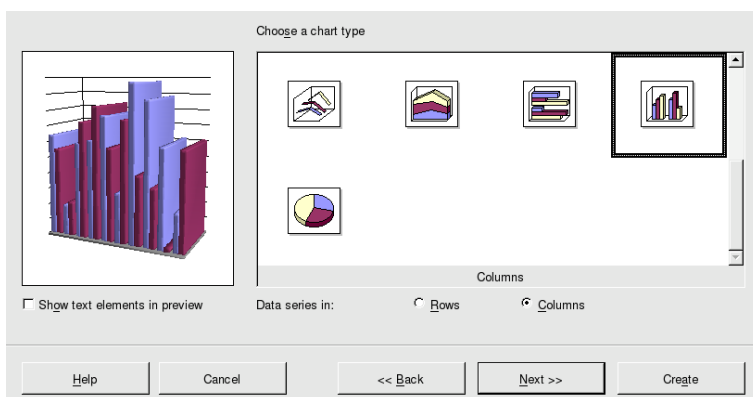
Figure 10-5. Choosing the Chart Type

After making your selections in the first page of the chart assistant and clicking on its Next >> button, you will see the chart-type selection page (in figure 10-5, a 3D side-by-side bar chart is chosen). Make your choices and click on Next >> to obtain variants on the type you have selected. Again, make your choices and click on Next >> to choose the final chart options, such as the chart's title, axis titles, etc. Make your choices, and click on Create to create and insert the chart in the spreadsheet (see figure 10-6).
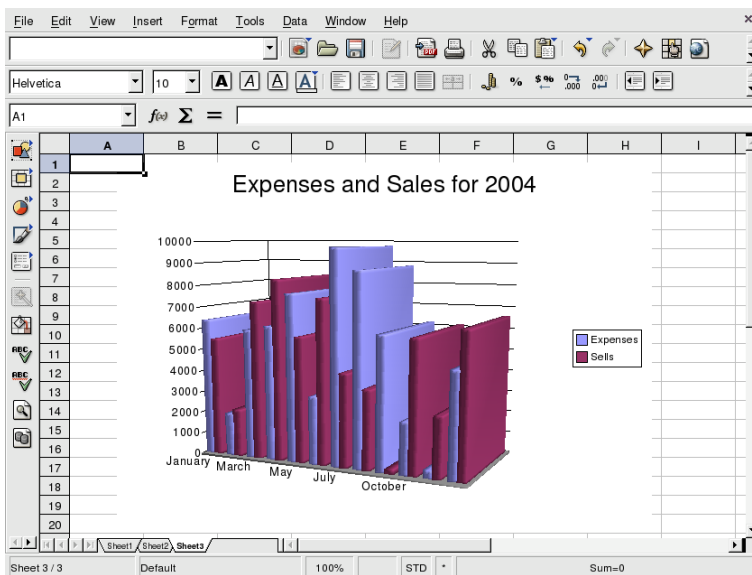
Figure 10-6. A 3D Chart Inside the Spreadsheet

Charts are "dynamic" in the spreadsheet which means that when you change data in a cell belonging to a chart, the chart will be automatically updated.

Clicking and then right-clicking on an inserted chart brings up a menu showing options to change many chart parameters. For instance, the chart's title can be changed by double-clicking on it.

10.2.3. Going Further

If you wish to learn more on the use of OpenOffice.org Calc, you should consult the tutorial available at the Tutorials for OpenOffice (`http://www.tutorialsforopenoffice.org/category_index/spreadsheet.html`) Web site.

Also, don't hesitate to refer to OpenOffice.org Calc's help accessible through the Help→Contents menu, or by pressing the **F1** key. There you are bound to find answers to your questions. Topics are accessible through a table of contents. An index is also available as well as a contextual search tool.

10.2.4. Conclusion

Spreadsheets simplify many accounting and other numeric-data-related tasks. They are used all over the world, from the corner-store manager who wants to manage schedules, to the biggest accounting firms which use them to write extensive and consistent data reports.

OpenOffice.org Calc offers extensive features for advanced users. You can use it as a simple database, or even program complete interfaces. You can also convert formats, define templates, etc. OpenOffice.org Calc is a very powerful application and will surely be around for quite a while.

10.3. Konqueror File Manager

File managers have grown to become multi-tasking applications, which do not only take care of basic tasks such as copying and moving files around. In fact, with Konqueror you are able to manage your files, browse a LAN, play MP3s, surf on the web , and more.

In this section, we take for granted that you have used a file manager before, and that it is not necessary to describe elementary features. We will talk about Konqueror which is KDE's default file manager.

10.3.1. Main Window

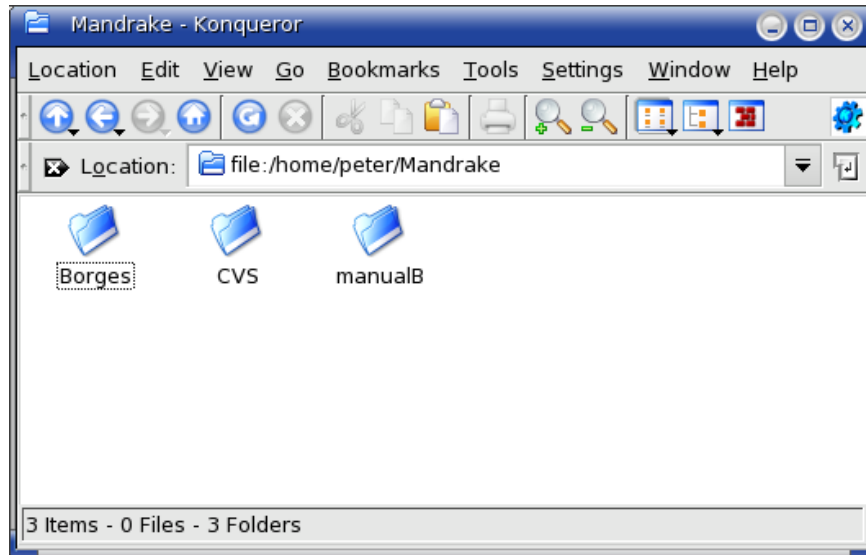You access your file manager by clicking on the Home icon located on the top left of your desktop.

Figure 10-7. Konqueror

The lower part of the window displays the current folder's contents (by default, what your home directory contains). Each file or sub-directory is represented by an icon, although you can change that view through the View→View Mode menu . That main view may also contain a sidebar (refer to *Sidebar*, page 78).

10.3.2. Sidebar

A sidebar may appear on the left side of the main view. The first time you launch Konqueror you will not see it. To show or hide it, select Window→Show Navigation Panel (or use the **F9** key.

Here are short definitions of the icons in Konqueror's sidebar:

Icon	Meaning
	Show Navigation Panel. This icon lets you change the sidebar view, add new folders, and more.
	Bookmarks. Where you can store your preferred web and FTP sites.
	Devices. Gives you access to the CD-ROM, Floppy, and removable devices (such as USB keys under the Hard disk entry), and Remote Shared folders, such as NFS or SMB shares (see *Allowing Users to Share Folders*, page 175).
	History. A list of the folders and network (web, FTP, etc.) sites you have visited during the current session.
	Home Directory. Represents your personal folder in which you organize your personal files.
	Network. Gives you access to FTP archives as well as to Mandrakelinux- and KDE-specific web sites (of course, you can add or delete entries too).

Icon	Meaning
	Root Folder. Lets you access your whole tree structure. Usually, you do not have sufficient rights to manipulate files outside your home directory. Only the system administrator (`root`) possesses the rights to do so.
	Services. Gives you access to the Audio CD Browser, Devices, Fonts, the LAN Browser and the Print System Browser.

Table 10-2. Konqueror Sidebar Icons

10.3.3. Copying, Moving, Linking and Deleting Files

Copying Files. Let's imagine you want to copy `test.png` to the `Documents` folder. With Konqueror, you first need to access the Window→Split View Left/Right (or press the **Ctrl-Shift-L** keys) menu or the Window→Split View Top/Bottom (or press the **Ctrl-Shift-T** keys) menu. Your window will be duplicated and you will be able to drag'n'drop the `test.png` image file into the `Documents` folder. Once you let go the file on the folder, a pop up menu will ask you whether you want to move, copy or link the file.

> There are many ways to manipulate files within your file manager. Drag'n'drop, keyboard shortcut combinations, opening two file managers, etc. Choose the method you prefer (check out the Edit menu).

Moving Files. The same principle applies to moving files around. Instead, select Move Here from the pop-up menu once you release the file.

Linking Files. Linking files allows you to access them without actually copying them all around your home directory. Let's imagine one of your files is deeply buried into the `/home/queen/Music/Artists/FavoriteArtist/` directory and you want to access it quickly. Here's how to proceed. With Konqueror simply drag it to the desired location, release the mouse button and select Link Here.

Deleting Files. There are "safe" and "unsafe" ways to delete files. The safe way would be to move it to the Trash, while the unsafe one would be to delete it for good directly. To delete a file, select it and press the **Del** key. To restore it, double-click on the Trash icon on your desktop and drag the file(s) back into your browser. To delete trashed files, simply Empty Trash Bin by right-clicking on the Trash icon. To delete a file directly, right-click on it and select Delete.

10.3.4. Browsing Web Pages

If you frequently browse through directories containing HTML files, for example your distribution's documentation, these directories generally contain a file called `index.html`.

Let's take the `/usr/share/doc/mandrake/en/Drakxtools-Guide.html/` directory as an example.Click on `index.html` and Konqueror will display that file's contents, and you can browse through the documentation, as if you were on the web.

Browsing the web with Konqueror is as easy as using a "real" web browser (please see "*Surfing the Web with Firefox*", page 61). Just type in the URL of the site you want to visit in the location bar and surf.

10.3.5. File Sharing

This feature allows you to share your documents with other people on the local network and access documents other people share. It also enables system administrators to provide users with common repositories where everyone can add, modify and consult files.

10.3.5.1. Sharing Files

If file sharing is activated through the Mandrakelinux Control Center (please see *Allowing Users to Share Folders*, page 175) you can right-click on folders in your Konqueror window and choose Share. It allows you to share one or as many folders as you like through NFS[1] or Samba[2].

10.3.5.2. Browsing Shared Files with Konqueror

> For LAN browsing to work, make sure the `lisa` package is installed. If not, you will have to start the `lisa` service after installing it.

You can browse all available shared files on the network by opening the LAN Browser section in the Services sidebar. All machines offering shared files will appear as folders under this section. Inside the host name folder appears one folder per protocol supported by this machine. Those may be:

FISH

> This protocol relies on `ssh` communications. So every local machine having an `ssh` server running on it will allow you to connect to it (providing proper authentication) and browse all the folders you have access to.

NFS

> Under this Remote Share folder the shares provided by UNIX® machines will be displayed (see *Importing Remote NFS Directories*, page 175).

SMB

> Shares provided by Windows® or SMB-enabled machines (see *Importing Remote SMB Directories*, page 173) will show up under this Remote Share folder.

10.4. Printing and Faxing from Applications

Once your printer is properly installed (refer to *Configuring Printers with PrinterDrake*, page 123 for instructions on printer installation) it's time to put it to use. In the past, printing was quite an issue under GNU/Linux but as you will soon discover, this has changed **a lot**. KDE applications support a simple printing method based on a program called kprinter. kprinter can even be used to build PDF files and to send faxes.

10.4.1. Accessing KPrinter

From KDE applications, clicking on the print button or selecting File→Print will invoke kprinter directly. Make sure you select the page range, the printing quality, the number of copies, etc., and click on the Print button.

GNOME applications have to be set up to print with kprinter. In fact, every X application which supports the definition of its printing command (for example, Mozilla) can use kprinter. All you have to do is invoke the print options (by typing **Ctrl-P**, or by selecting File+Print) then look for an option named "Print command", "Printer", "Printer Options" or similar, and fill it with `kprinter --stdin`. This way, kprinter will be invoked every time you ask that application to print. Then click on the Print button and you will see kprinter's main window (no actual document will be printed at this point).

---

1. NFS (Network File System) allows you to share, export or import files to or from your computer in a networked environment. Although the NFS setup is easier than the Samba one, it can **only** be used within a UNIX®-based system (like GNU/Linux). Moreover, NFS is an insecure protocol and should be used exclusively in a secure local environment.
2. SMB is a protocol by which PCs share resources such as files and printers. Windows® and GNU/Linux (through Samba) and OS/2 operating systems, among others, support the SMB protocol. It can be considered an alternative to Netware and NFS.

10.4.2. KPrinter's Interface

kprinter allows you to set many options[3] for printing your documents, such as the output device (generally a physical, local or remote printer), the number of copies, the paper size, the printer resolution, etc.
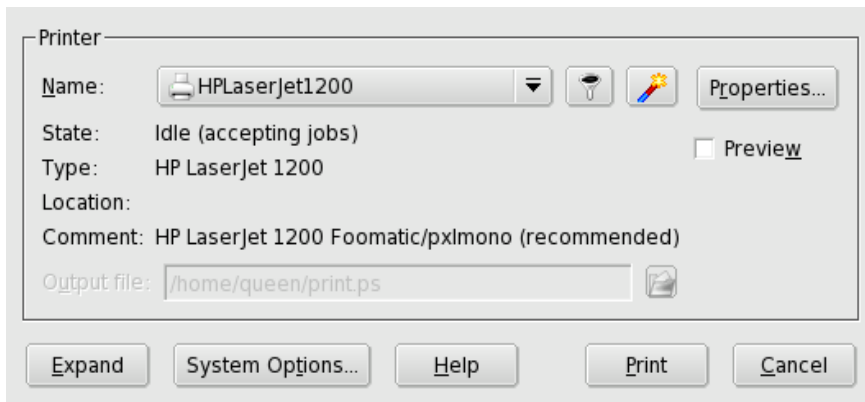
Figure 10-8. KPrinter Window

In the Printer section you can choose the printer from a pull-down list. Depending on the printing system you use, you can also add new printers (clicking on the magic wand icon will launch a wizard to help you to do this) and you can further configure the printer settings by clicking on the Properties button.

At the bottom of the window are buttons which allow you to Expand kprinter's options. The System Options button gives you access to global printing configuration. The other buttons (Help, Print, Cancel) speak for themselves.

10.4.2.1. The Printer Section

In this section, you set the device which will receive your print job and its properties, such as page size, resolution, etc. All the available printers are listed in the Name pull-down list. Just select the one you want to print to.

> Usually, your local printer, the "Print to file" printers (both PDF and Postscript) and the "Fax" printer are listed. However, if you are in a network, all printers available on the network will be listed too, so network printing becomes very simple.

Click on the Properties button to change the device's options. Please note that the options available will depend on the chosen device.

---

3. The actual printing options you will be able to set will depend on the output device you have selected. Not all devices have the same capabilities.
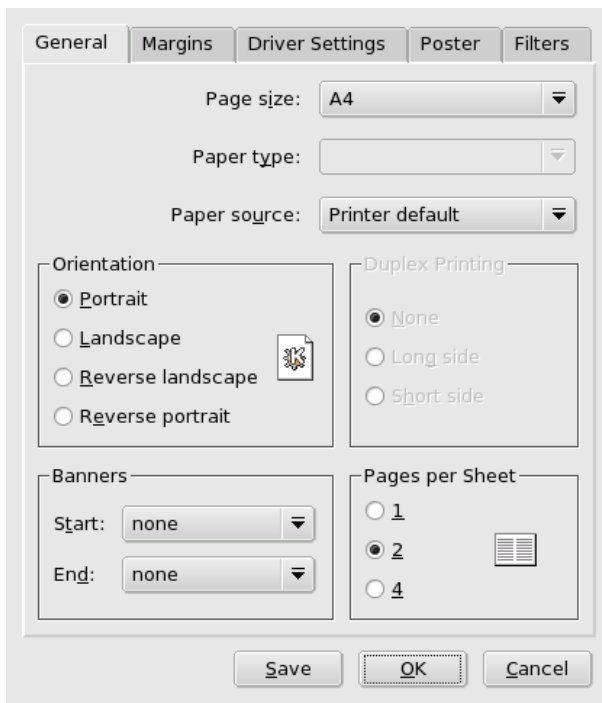
Figure 10-9. Printer Properties Window

Most options available are self-explanatory. One worth mentioning is Pages per sheet (set to 2 in the example). This allows you to put up to 4 pages onto a single sheet of paper (or 8 if you can print on both sides). This is a nice feature to save paper when printing book drafts or other lengthy material which changes often.
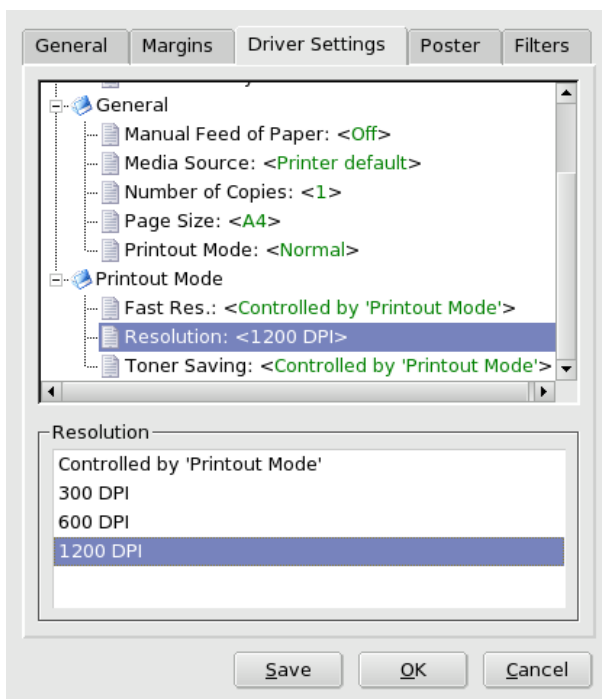
Figure 10-10. Changing Printer Resolution

If you want to change printer-specific options such as the resolution of the printing device, you click on the Driver Settings tab. Here you will find the Resolution option as one of the available categories. When you click on it, the available resolutions will be displayed in the bottom part of the window. Select the one you want from the list.

Other settings include printing modes which use much less toner or ink (search for something like "Economy Mode", "Toner Density" or "Toner Saving"). However, the output is much paler. If this is not available, choosing a lower resolution often has similar effects.

You can use the Save button to save the current settings for future printing jobs. Once you are satisfied with your settings, click on OK.

10.4.2.2. Expanded Printing Dialog

After clicking on the Expand button, kprinter's dialog changes to the one shown in figure 10-11.
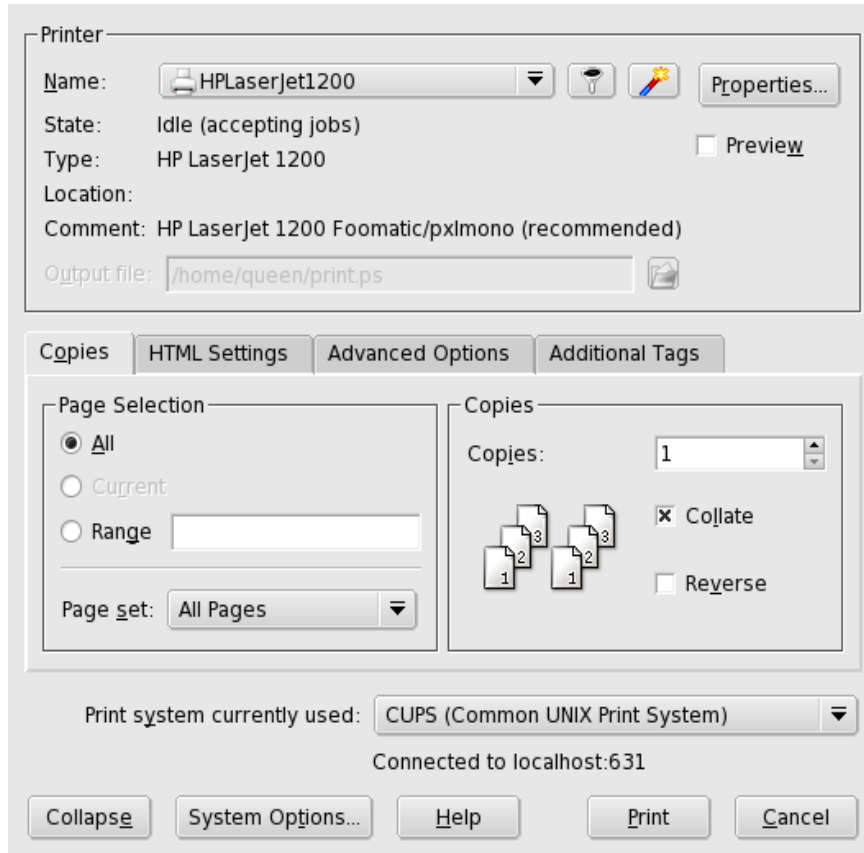
Figure 10-11. More Printing Settings

In the Copies tab you have the page range settings and the number and order of the copies. Page selection can be set to:

All

    Prints all of the document's pages.

Current

    Prints only the document's current page. This option might not be available at all times.

Range

    Allows you to specify page ranges to print. You can specify pages or groups of pages separated by commas: `1,2,5` prints pages 1, 2 and 5; `1-3,7,21` prints pages 1 to 3 and pages 7 and 21, `10-` prints from page 10 to the end of the document, and `-3` prints the first three pages of the document).

The Page set pull-down list lets you specify pre-defined sets of pages to print (All pages, Odd pages or Even pages). This allows you to print double-sided documents on a printer without a duplex unit: print the odd pages, turn the stack of printed pages over and put them back into the input tray, then print the even pages.

Under the Copies section, use the little arrows to increase or decrease the number of copies or just type the number of copies you want to print in the Copies field.

When you are printing multiple copies, you may check the Collate check box to print the whole document before starting to print the second copy, instead of getting all copies of page number 1, then all copies of page number 2, and so on.

The Reverse check box makes the printing job start at the last page and end at the first one (the document is printed "backwards"). This option is useful if your printer leaves the paper sheets face-up in the output tray.

In the Advanced options tab you may set some options concerning printing time, priority of the print job and so on.

Click on the Collapse button to return to the "minimal" display mode of kprinter.

10.4.3. Building PDF Files

Creating a PDF file from your document is very easy with kprinter. Simply select the Print To File (PDF) special printer, enter the file name in the Output file field as shown in figure 10-12, and click on Print. A PDF file will be written (`print.pdf` in your home directory in our example).
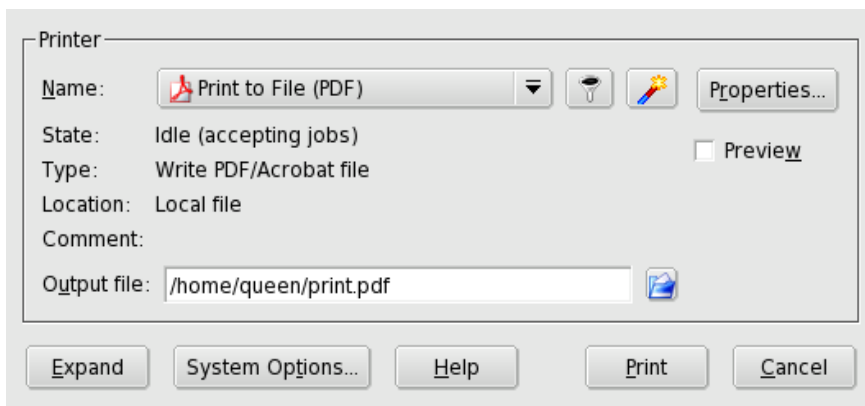

Figure 10-12. Generating a PDF File

10.4.4. Sending Faxes

The special Send To Fax printer allows you to send the document you are working on directly by fax. When you click on the Print button, a dialog (figure 10-13) will appear.
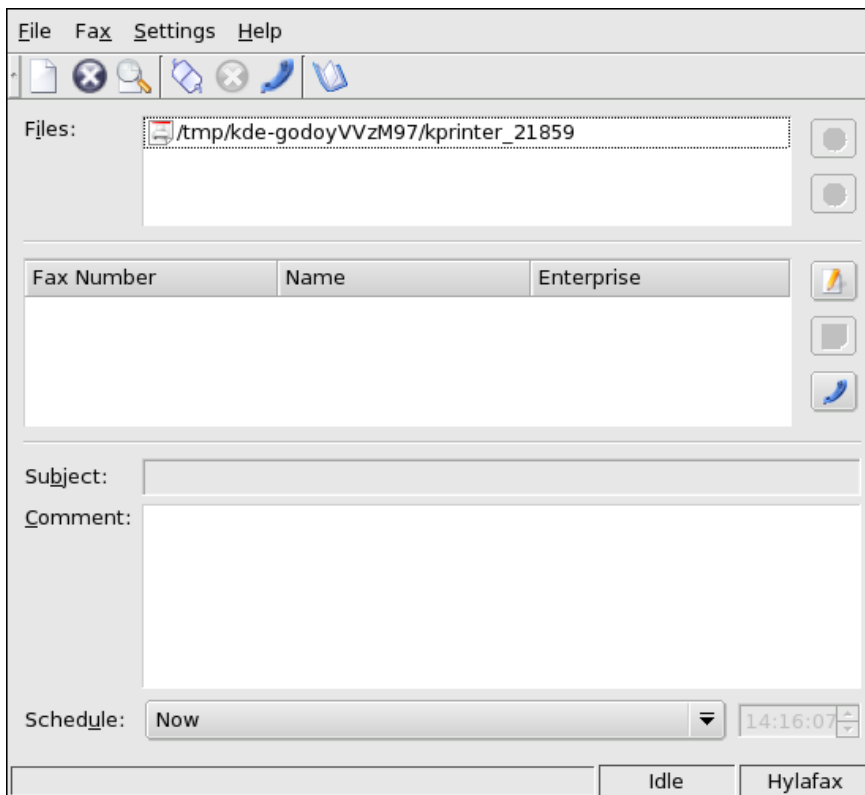
Figure 10-13. Faxing Main Window

First, you need to make sure that your fax modem is properly configured. To configure your fax modem, select Settings→Configure KdeprintFax from the menu. Fill the information under the Personal section with your name, company and fax number. In the System section make sure that the correct faxing system and its corresponding parameters are set. An example is shown in figure 10-14.
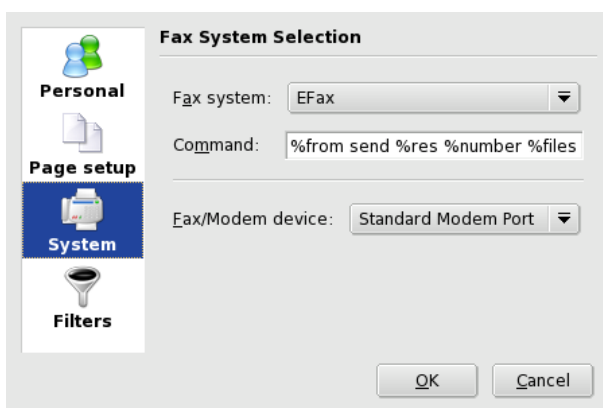
Figure 10-14. Fax Settings

Fill in the Fax number field and click on the Send Fax button, or press the **Enter** key, to send the fax immediately.

The View Log button (**Ctrl-L**) will show you a window with the fax activity log (check it to make sure your fax has been sent correctly).

The Address Book button (**Ctrl-A**) will open the KDE address book to let you select fax numbers to dial.

Once your fax has been sent you can quit the fax window by selecting File→Quit from the menu or pressing **Ctrl-Q** keys.

10.4.5. Handling Print Jobs

This icon appears on the KDE panel whenever you have print jobs, printing or queued. Clicking on it will open the print queue control window.

table 10-3 lists the most important job queue control functions. Please bear in mind that, unless you have sufficient rights, you can only control print jobs launched by yourself. You won't have control on print jobs launched by other users. Also note that not all buttons might be enabled at all times.

Button	Function
	Clicking on this button will put the currently selected print job on hold, that is it will pause its printing.
	Clicking on this button will resume printing of the currently selected paused print job, that is it will continue its printing.
	Clicking on this button will remove the currently selected print job from the queue, and its printing will be canceled. Please bear in mind that you will **not** be asked for confirmation, the job will be removed immediately.
	Clicking on the "up arrow" button will increase the priority of the print job and clicking on the "down arrow" button will decrease it. You can use these buttons to give some jobs preference over others.

Table 10-3. Jobs Queue Control Buttons

Chapter 11. Audio, Movie and Video Applications

11.1. Audio Applications

11.1.1. amaroK Audio Player

`amaroK` is "the" multimedia application to use to listen to your favorite saxophone player, techno D.J. or what not. One of `amaroK`'s unique features is the Context Browser. It provides you with useful information and guides you in learning how to use it efficiently, and even makes suggestions. You can also drag and drop music folders onto it avoiding having to go through numerous menus to listen to your favorite R&B artist. It's also the sexiest music player you've probably ever seen!

In this section we will go through its essential features. So let's start by launching `amaroK`. Access the Multimedia+Sound→Amarok sub-menu. The First-Run Wizard will be launched.
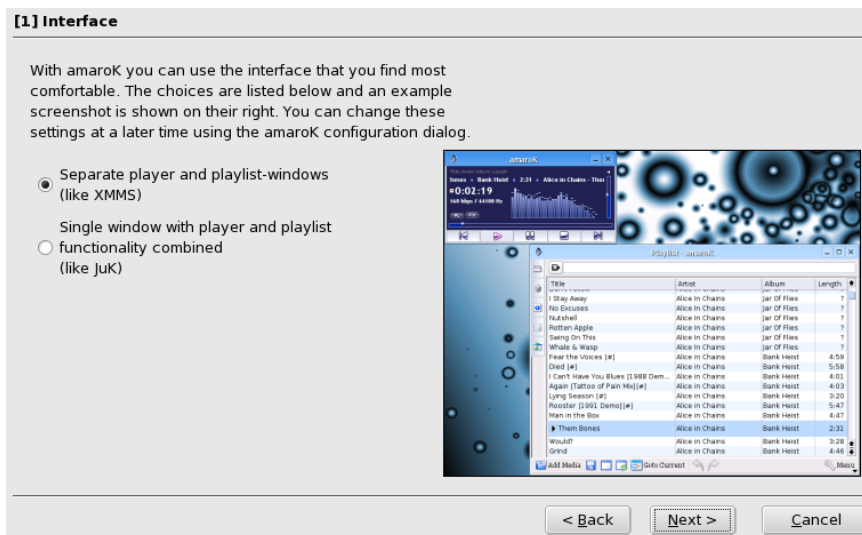
Figure 11-1. amaroK's First-Run Wizard

After a welcome screen you will be asked whether to use the Separate player and playlist-windows (like XMMS) (which is another multimedia player) or Single window with player and playlist functionality combined (like JuK). Select the one you prefer.

The next screen allows you to build your music collection. Click in the folders in which you have music files. If you're networked with other computers and share some folders, you might want to check folders in the `/mnt` directory. Of course those machines need to be powered on and file sharing must be set properly (see *Allowing Users to Share Folders*, page 175). After clicking on Next and Finish `amaroK`'s main window will be displayed:
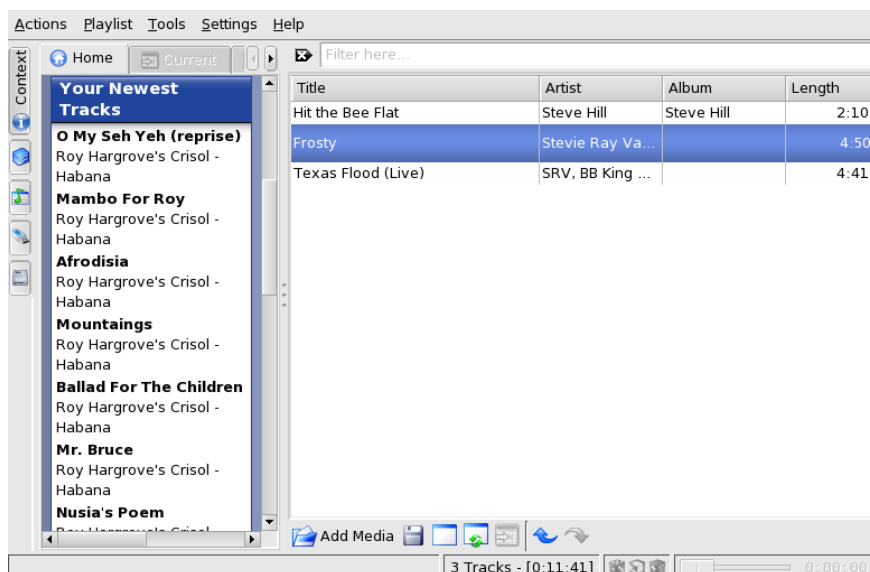
Figure 11-2. amaroK's Main Window

If you want to add other folders to your collection access the Settings+Configure amaroK→Collection menu. Then access the Tools→Rescan Collection item. You can also rerun the first-run wizard (Tools→First-Run Wizard).

Once `amaroK` is launched this icon will appear on the panel. Right click on it to access some options such as Minimize and Play.

Once this is done click on the Collection icon and all your music will be listed (see figure 11-3).
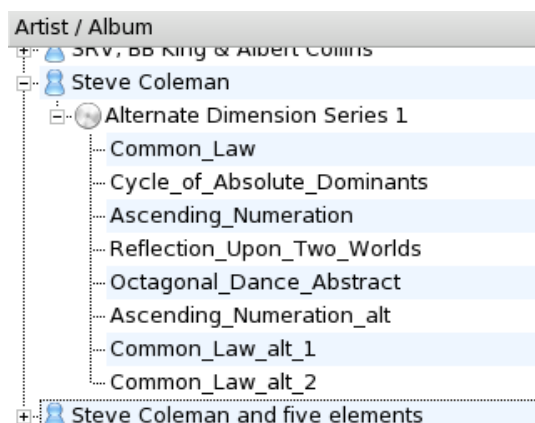
Figure 11-3. Music Collection

If you added files from removable devices (such as a USB key or an external hard drive), make sure they are mounted at the same location as when you originally added them to your collection or `amaroK` will not be able to find the files they contain.

Click on the playlist icon to access all the playlists in your collection. If you don't have any you can listen to the Cool-Streams which is a collection of techno streams. To build one, simply drag tunes in to the playlist then select Playlist→Save Playlist As and give it a name. You can also click on [icon] at the bottom of the playlist window.

Click on this icon if you wish to transfer songs to your iPod.

Finally this icon allows you to access you local file system. You can also access your music there. As you can see it as an alternative to using the collection.

Now let's take a closer look at the Context Browser.

11.1.1.1. Context Browser

Figure 11-4. Using Context Information

The Context Browser is made up of tabs which display information about the music you play most frequently, usage statistics, and more. The Home tab displays Your Favorite Tracks (which will be empty if you haven't used `amaroK` yet), Your Newest Tracks as well as your Least Played Tracks. Now click on the Current tab (see figure 11-4).

If the album is recognized its album cover will be displayed on the upper part. You will also notice the "brain" icon called MusicBrainz (`http://www.musicbrainz.org`) which is a community-driven music database. It will give you usage statistics. Then the interactive part of `amaroK` kicks in: it gives you suggestions on tracks you could play from the same artist (Suggested Songs). The most played songs by that current artist are displayed in Favorite Tracks by [Artist], and all of the current artist's albums will be listed in the lower part of the Context Browser.

The last tab displays the artists Lyrics. Click on a song in your playlist and then on the Lyrics tab. It will propose a few suggestions and by clicking on the accurate title, the lyrics will be displayed in the lyrics browser.

11.1.1.2. Playing an Audio CD

To do so insert the CD in the drive and access the Actions→Play Audio CD item. The contents of the audio CD will be displayed in the Context Browser. Select the `CDA` folder and drag the `.cda` items to the playlist to listen to them.

You will notice that in the `audiocd` folder are many folders, not just the `.wav` files. Since `amaroK` is linked to K3b (see *CD Burning*, page 93) it converts the `.wav` files on-the-fly to MP3 and Ogg Vorbis format. Let's see how we can make use of that functionality.

11.1.1.3. Burning Tracks with K3B through amaroK

Simply right-click on songs or music folders and choose in which format you want to burn the songs. For individual songs `amaroK` will ask you to choose between Burn to CD as data or Burn to CD as audio. The former will create a data CD which means you will be able to listen to it on your computer and your MP3 player, for example. Choosing the latter will only permit you to listen to it through a traditional CD player which doesn't support MP3 or Ogg Vorbis formats. For albums (or folders) you will find a pop-up menu stating Burn All Tracks by This Artist. Once you select that option a pop-up window will appear and will ask you to choose between audio and data formats.

11.1.1.4. Cover Manager

In order for the album covers to be displayed in the Context Browser, `amaroK` provides you with a Cover Manager. Access the Tools→Cover Manager item to launch it.
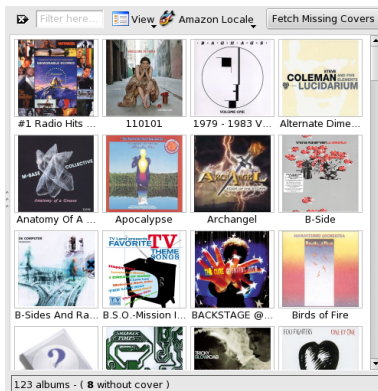

Figure 11-5. amaroK Cover Manager

To recover missing album covers, click on Fetch Missing Covers. To find covers from a specific artist, type his/her name in the filter input box ( ).

11.1.2. Using the KMix Mixer

KMix is a sound card mixer application under KDE. It allows you to fine-tune your sound cards through various sliders. It's interface is shown in figure 11-6
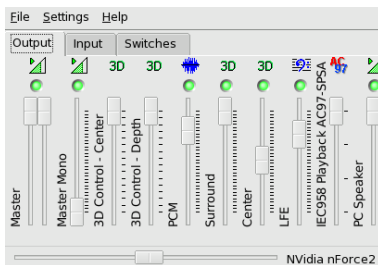
Figure 11-6. KMix Main Window

The Output tab controls the volume levels of the sound sources of your sound card. The most important one is the Master which controls the general volume. By right-clicking on each slider you have extra options such as Split Channels, Muted Hide, etc. Clicking on the green dot at the top of a column will mute/unmute that sound source.

 Clicking on this icon will pop-up a slider which lets you control the master volume, as well as mute all sound and launch the full mixer window.

The Input tab controls the volume levels of the recording sources of your sound card. If you use videoconferencing software or are a musician this is where you will want to adjust your microphone and your auxiliary devices. Clicking on the green dot at the top of a column will mute/unmute that recording source, while clicking on the red dot at the bottom of a column will enable/disable recording from that source.

The Switches tab goes deeper into your sound card's configuration. Boosting your microphone, using an external amplifier: these features are for advanced users who wish to **really** master their sound system. To activate them, simply click on the dot at the top of each column.

Finally the horizontal slider enables you to balance your sound between the left and right speakers. Notice that if your sound card supports separate levels for master's right and left, the Output's Master controllers will be modified following the movement of the horizontal balance slider.

11.2. Movie Applications

This section discusses movie players available with Mandrakelinux. It introduces some applications, hints about the problems you could face while using them, and suggests resources to get the best out of them.

11.2.1. Introduction

The main problem with video players under GNU/Linux is that most popular video codecs are proprietary, and to implement them in a free software application (mainly due to the cost of licensing), the codecs have to be reverse-engineered. This is very complex and may not be legal in some countries, which limits the availability of such codecs, and thus the type of video files which may be displayed under GNU/Linux.

For example, it will be virtually impossible to play some compressed digital video files or DVDs without downloading the corresponding codecs from the Internet.

> In some countries, the status of the DVD playback and reverse-engineered codecs are still under review. That is why Mandrakesoft does not include all the plugins to use those codecs[1]. The information included here is meant to help Mandrakelinux users who know that, in their country, using these codecs and plugins is legal. **Mandrakesoft does not encourage law violation and you should verify the law(s) that apply in your case, before you download and use these codecs and plugins**.

11.2.2. Totem

Totem is the default media player under Mandrakelinux based on Xine libraries which can play video and audio streams and files, but we'll concentrate on its video capabilities here. One of its nicest features is that it can be completely controlled using the keyboard.

Double clicking on a supported video file will launch Totem, open the file, and start playing it. You can also launch Totem by selecting the Multimedia+Video→Totem Movie Player entry from the main menu. Totem can also be run from a terminal: type `totem --help` to see all available options.
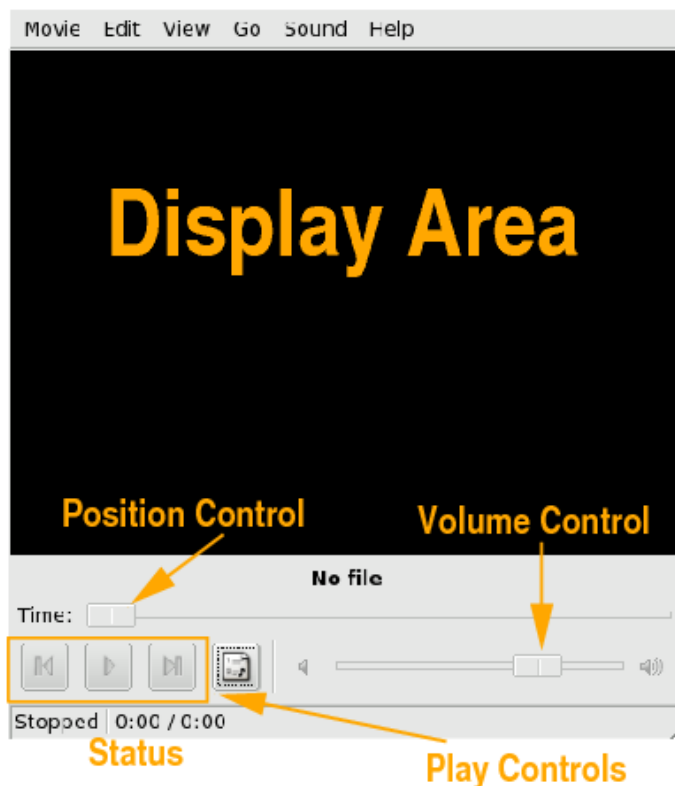
Figure 11-7. Totem's Interface

Totem's interface is shown in figure 11-7. It is a very simple interface composed of the following:

- Display Area. This is the area where the movie being played will be shown. Of course, you are not restricted to watch the movie inside this little area, press the **F** key to switch between full-screen and windowed modes. When in full-screen mode, moving the mouse will show the play controls at the bottom of the screen and a button to exit full-screen mode at the top right corner.

- Position Control. Using this slider you can "jump" to any part of the movie you want to, just drag the slider right, or press the right arrow key, to forward; drag the slider left, or press the left arrow key, to rewind.

- Volume Control. Using this slider you can adjust the volume level of the movie being played, just drag the slider right, or press the up arrow key, to make it louder, or drag the slider left, or press the down arrow key, to make it softer.

- Play Controls. A reduced set of the usual VCR controls: Previous (keyboard shortcut: **B**), Play/Pause (keyboard shortcut: **P**) and Next (keyboard shortcut: **N**).

- Status. Located at the bottom left of Totem's window, it shows the play status of the movie (Playing, Stopped, Paused) and the current time out of the total movie time.

All controls can be hidden/shown pressing the **H** key.

To play a DVD just insert the disc in the drive, Totem will be opened and the DVD title will start playing. When playing DVDs it is recommended that you switch to full-screen mode. To eject the disc, choose Movie→ Eject from the menu, or press the **Ctrl-E** keys.

Use the different entries in the View menu to adjust the video view, zoom in and out, change the aspect ratio, etc. Feel free to investigate!

11.2.3. Other Movie Applications for Linux

Xine

> Xine is one of the most interesting video application for GNU/Linux. It supports a wide range of formats and input sources. It is fast, flexible and extensible. It is also provided as a library on which many players are based.

MPlayer

> MPlayer is yet another interesting application and supports multiple output drivers, and even older video cards. It also supports DVD, AVI, VideoCD, amongst others. You will probably have to download and install winDLLs and proprietary codecs to make it work with many popular video formats. On one hand this might seem unfortunate, but on the other it gives you access to all formats supported under Windows®.

XMovie

> This application is tailored to playback high resolution movies such as MPEG1, MPEG2 and AVI files. It is not really made to playback compressed files such as Quicktime®, but does support MPEG2 streams.

Kaffeine

> Kaffeine is a KDE application based on Xine libraries. Its capabilities are very similar to those of its "parent", but it is better integrated in the KDE environment.

Finally, there are other video applications for GNU/Linux such as vlc (`http://www.videolan.org/`) (an MPEG2 files/streaming video and DVD player), Ogle (`http://www.dtek.chalmers.se/groups/dvd/`) (a DVD player which supports menus and navigation) and RealPlayer® (`http://www.real.com/`) (which is proprietary software). We encourage you to explore them as they may answer your specific needs.

11.3. CD Burning

In this section we will discuss using K3b to burn:

- a CD from an ISO image;
- a set of files to a CD;
- an audio CD (CDDA);

as well as how to duplicate a CD and erase re-writable media.

K3b also supports DVD recording, but we will concentrate on CD recording here. You only need to install the `k3b-dvd` package. DVD recording is not very different to CD recording anyway, just make sure you use the menu entries labeled DVD instead of CD.

> **Copyrighted Material.** Please note that data/audio/video CD/DVD copying is often forbidden by copyright law. The examples provided here are informational only and are not intended to make a CD/DVD pirate out of you. It is assumed that if you want to duplicate copyrighted material, it is because you have the right to do so.

11.3.1. Getting Started

DrakX or HardDrake should have already configured your CD-R(W) drive properly, we will show you how to put it to use.

Usually, you need `root` privileges to access the CD burner. With K3b this is not true anymore since it is automatically configured at installation time to give non-privileged users access to the CD burner. However, it is highly recommended that non-privileged users wanting to burn CDs be part of the `cdwriter` group in order to minimize burning errors due to an overloaded system. So, go ahead and add those users to the `cdwriter` group. Please refer to *Managing Users and Groups*, page 158, for information on users and group management.

Choosing System+Archiving+CD burning→K3b from the main menu will start K3b. figure 11-8 shows K3b's interface with a new data project open.

> If you get a message stating that **cdrdao does not run with root privileges** or that **cdrdao has problems with ATAPI writers**, you can safely ignore it. To prevent that message from appearing again put a mark on the Don't show again check-box and click on the Close button.

> The first time K3b is run, or if you change the CD-R(W) drive, a dialog will pop up asking you for confirmation about the burner's speed. Set the speed to match the fastest speed of your burner and click the OK button.
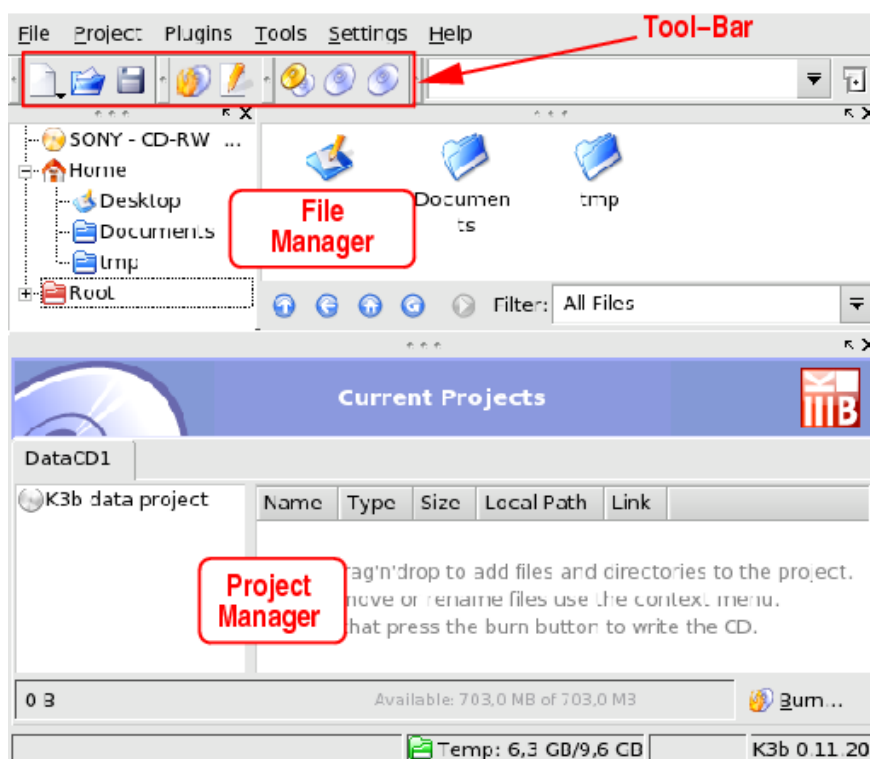
Figure 11-8. K3b's Interface

Tool-Bar. Where buttons to perform common actions lie. See table 11-1.

File Manager. To choose which files will be included in the burned CD. You can use the left-side tree to navigate your file system structure and also the browser-like buttons at the bottom. The Filter pull-down list is handy for selecting which file types are going to be shown in the File Manager. Drag and drop the files you want to include in the project into the Project Manager.

Project Manager. Where all files which will be on the burned CD are shown and handled. Files can be removed and their location (directory) on the CD can be changed here.

The following table shows the most important buttons available in K3b's tool-bar, their equivalent keyboard shortcuts and a brief explanation of the functions they provide.

> Not all buttons are enabled at all times. For example, the Burn CD button will not be enabled if there is no active project.

| Button	Keyboard Shortcut	Function
		Create a New Project. Once you click on this button a list of available project types will be shown: choose New Audio CD Project to create an audio CD (see *Burning Audio CDs (CDDA)*, page 98); choose New Data CD Project to create a data CD (see *Burning Data CDs*, page 95); choose New Mixed Mode CD Project to create a mixed mode (data+audio) CD; choose New Video CD Project to create a digital compressed video CD; choose New eMovix CD Project to create an eMovix (`http://movix.sourceforge.net`) CD.
	Ctrl-O	Open an Existing Project. A standard file dialog will be opened from where you can choose the project you wish to open. By default, only K3b's project files (`*.k3b`) are shown. Select the project you are interested in and click the OK button.
	Ctrl-S	Save the Current Project. A standard file dialog will be opened where you can enter the name under which the current project will be saved. Type the name of the project and click the Save button.
	Ctrl-B	Burn the Current Project to a CD. It opens a window which asks for the project's burn settings. Please refer to *Burning Data CDs*, page 95, for more information.
		Copy a CD. To make an exact copy of a CD. It opens a window which asks for the copy settings. Please refer to *Duplicating a CD*, page 99, for more information.
		Erase a CD-RW. To erase re-writable media. It opens a window which asks for the erase operation settings. Please refer to *Erasing CD-RW media*, page 100, for more information.

Table 11-1. K3b's Toolbar Buttons

11.3.2. Burning Data CDs

11.3.2.1. Burning From an ISO Image

Let us assume you have downloaded a CD-ROM image from the Internet and you want to burn it on a CD. Choose Tools+CD→Burn CD Image... from K3b's menu. Click the "open file" button to browse for the CD image file and select the file in the standard open file dialog. The CD image will be verified and information about it will be displayed (see figure 11-9).
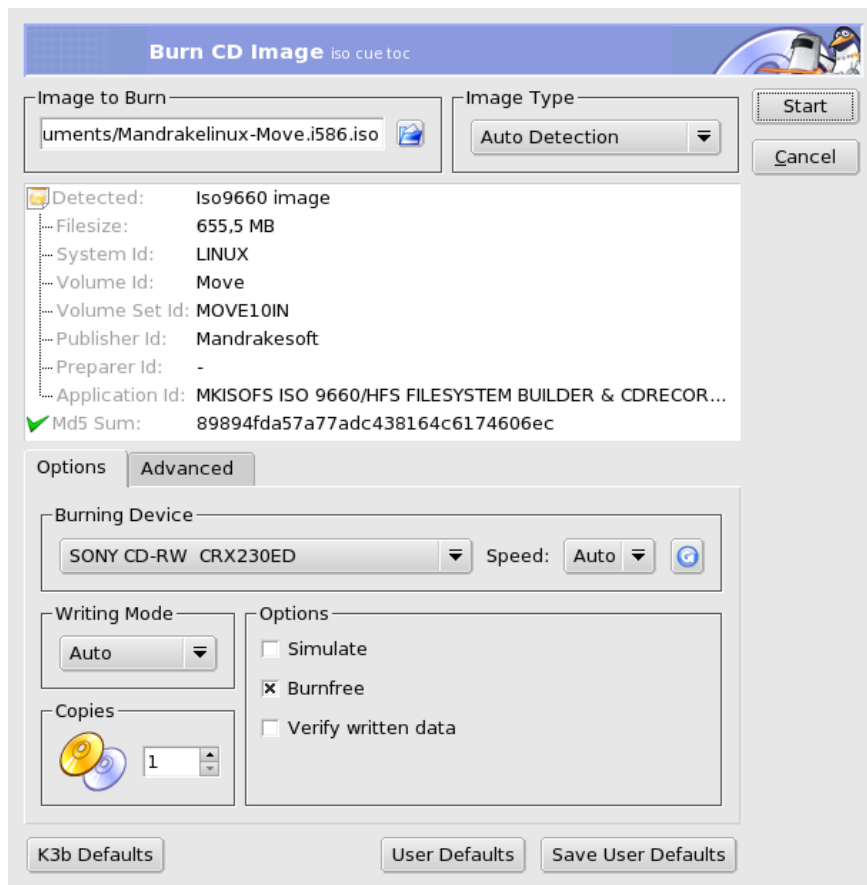
Figure 11-9. Burn CD Image Options

Once the image is verified, you can insert the recordable medium and click the Start button to write it to the disc.

> If an already written re-writable medium is found in the CD burner, a dialog will pop-up asking you whether to erase it first. Click Yes and follow subsequent instructions if you want to erase it, or change the medium for a non-written one and click No.

> The Speed pull-down list should be set to Auto to make K3b select the fastest possible recording speed supported by the the combination of your CD burner and the currently inserted recordable medium. The "slowest" of them limits that maximum speed.

11.3.2.2. Burning a Set of Files or Directories

Choose File→New Project→New Data CD Project from K3b's menu (or use the New Project button or keyboard shortcut shown in table 11-1). Then drop, into the Project Manager, the files and/or directories to be included on the CD (see figure 11-10).
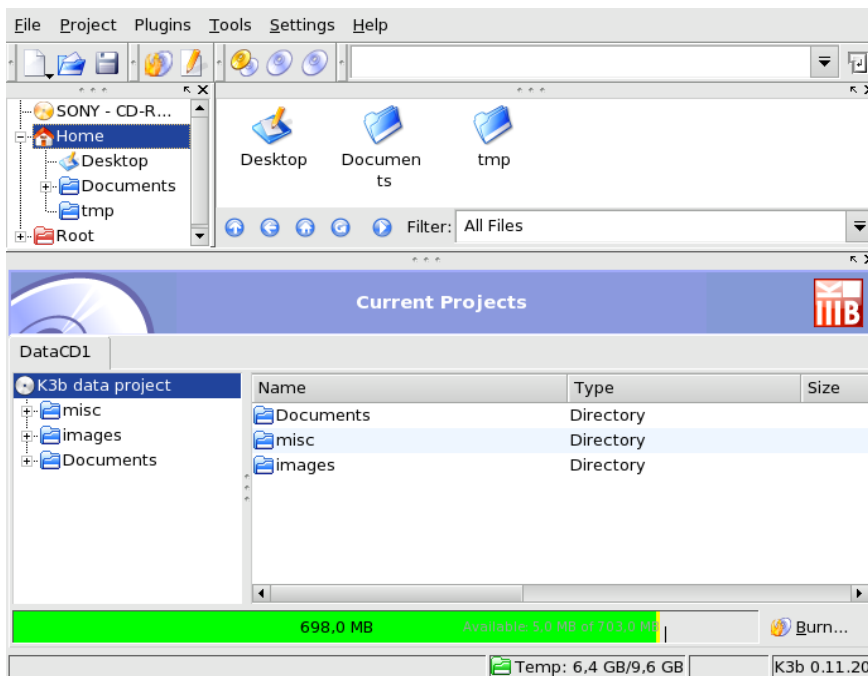
Figure 11-10. Selecting Files/Directories to Include on the CD

> Adding directories containing lots of files, can take some time, please be patient and wait until the `Adding files to Project PROJECT_NAME...` message disappears from K3b's status bar.

The space occupied by the selected files/directories will be shown by a color-coded bar at the bottom of the Project Manager, together with the quantity expressed in MB and the available MB of the medium's total capacity. The bar's color codes are as follows:

Green

> The set's size is less than that of the selected medium's capacity (700 MB by default). There are no capacity-related problems.

Yellow

> The set's size is nearly equal the selected medium's capacity. If it is a few MB below the medium's capacity, there will be no capacity-related problems; if it is a few MB above the medium's capacity, the CD might be written without problems, but there is little guarantee of success.

Red

> The set's size exceeds the medium's capacity by lots of MB. The CD will not be recorded properly.

Right-clicking on any file/directory in the Project Manager will pop-up a contextual menu with options to remove and rename files, create new (empty) directories, etc. Files and directories can be relocated (change the directory under which they will appear) on the CD using drag-and-drop.

> Renaming the top element of the left side tree in the Project Manager will change the CD's volume name (`K3b data project` by default for data CDs).

Clicking the Burn... button (or choosing the Project→Burn menu entry) will display a window where you can select writing parameters (see figure 11-11). Insert a recordable medium in the CD burner and then click the Burn button to start writing the CD.
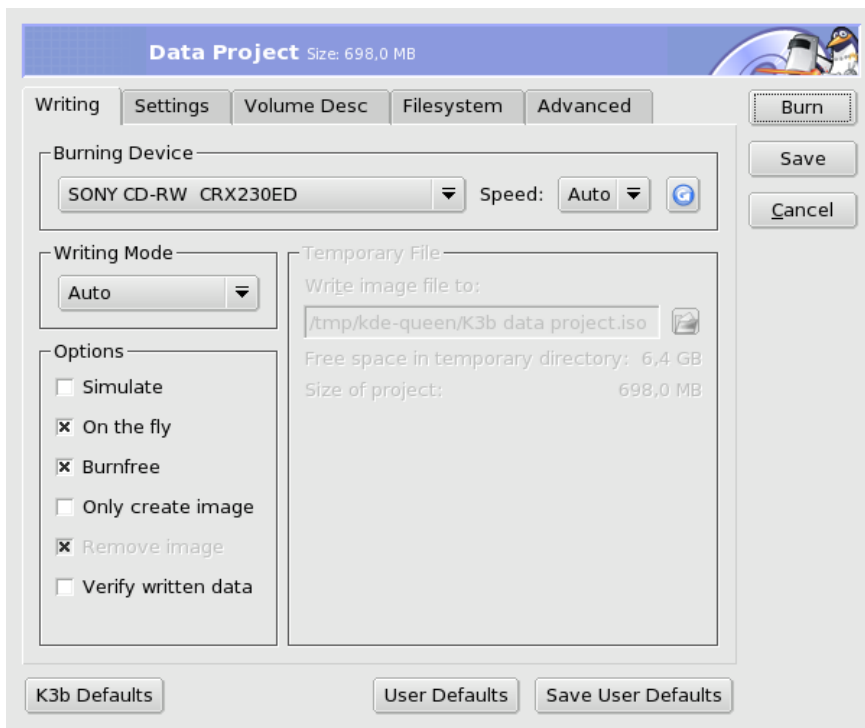
Figure 11-11. Setting Writing Parameters

11.3.3. Burning Audio CDs (CDDA)

CD recording is not limited to data CDs, you can also record audio CDs. By audio CDs, we mean CDs that you can play in your car or home stereo equipment, not data CDs with OGG, MP3 or any other digital audio format files on them.

At the time of writing, K3b supports recording audio CDs from tracks digitized in the wave (`*.wav`), Ogg Vorbis (`*.ogg`) and MP3 (`*.mp3`) formats. You can mix digital audio formats, K3b will decompress the compressed ones on the fly. K3b can also create digital audio tracks starting from audio CDs: this task is known as "ripping" (see *Audio CD Extraction (Ripping)*, page 100).

Choose File→New Project→New Audio CD Project from K3b's menu (or use the New Project button shown in table 11-1). Select K3b's File Manager's filter to Sound Files, navigate to where the digitized audio files are and then drag the audio tracks and drop them in the Project Manager (see figure 11-12).
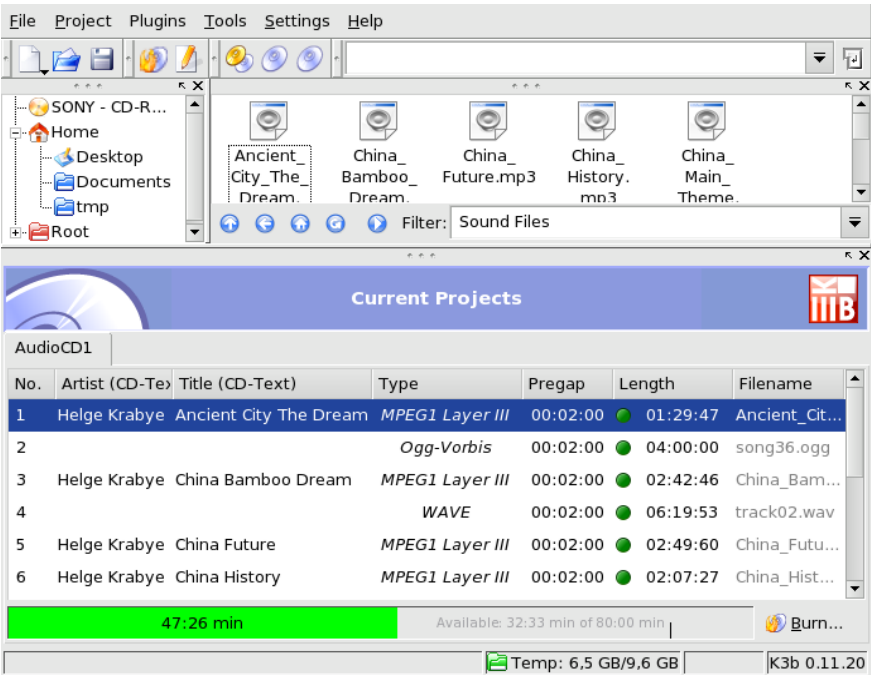
Figure 11-12. Selecting Audio Tracks to Include on the CD

Use drag and drop to move the files up and down the compilation. Once you have the tracks compiled in the order you want in the Project Manager, proceed as described in *Burning a Set of Files or Directories*, page 96, to write them to CD.

11.3.4. Duplicating a CD
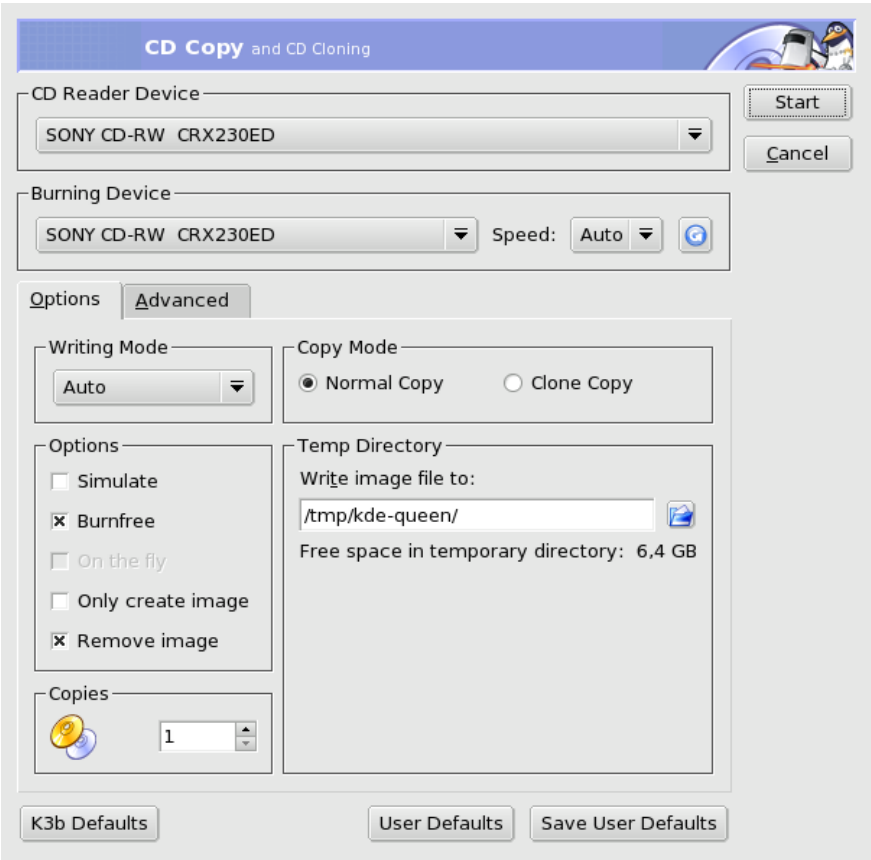
Figure 11-13. Setting Copy CD Options

Choose Tools+CD→Copy CD from the menu (or use the button shown in table 11-1) and a dialog will pop up (see figure 11-13). Select the number of copies (`1` in the example), whether to remove the temporary image or not (`yes` in the example), the reader and burning devices (automatically set) and click the Start button to start duplicating the CD. The "source" CD will be read, an image of it will be made and then the "target" CD will be written.

11.3.5. Audio CD Extraction (Ripping)

The `cdparanoia` package must be installed to be able to rip audio CDs. Please refer to "*Package Management through Rpmdrake*", page 107 for information on package installation. Also, make sure that enough temporary space is available: you can check the available space in K3b's status bar near the right.

Insert the audio CD to rip tracks from and double click on the drive in K3b's File Manager left side tree. The CD will be read and, by default, all tracks will be marked to be ripped. Remove the check mark from those you do not want to rip and click on gears button   to show a dialog to set ripping options (see figure 11-14).
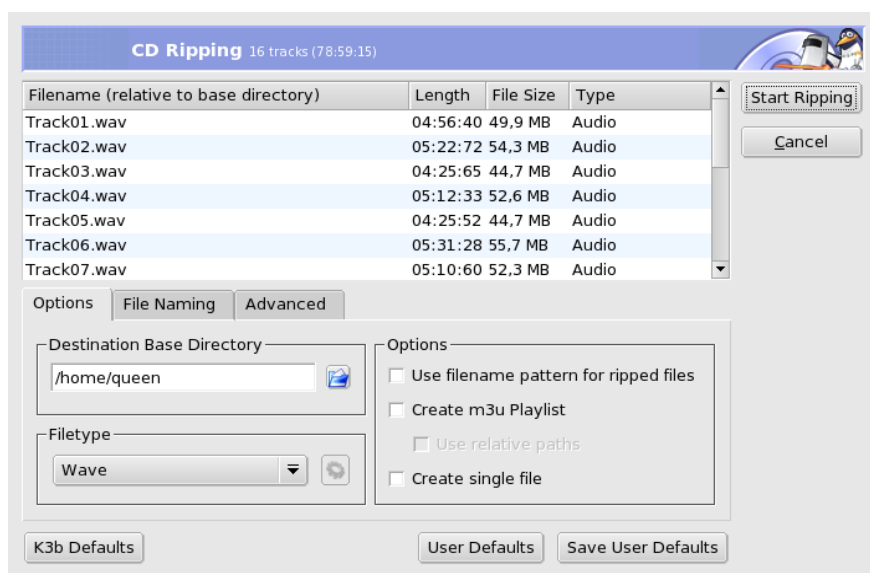
Figure 11-14. CD Ripping Options

Remove the checkmark from the Use filename pattern for ripped files option to have tracks named `TrackNN. wav` and stored in the directory specified in the Destination Base Directory field (your home directory, by default) and click the Start Ripping button to start ripping.

11.3.6. Erasing CD-RW media
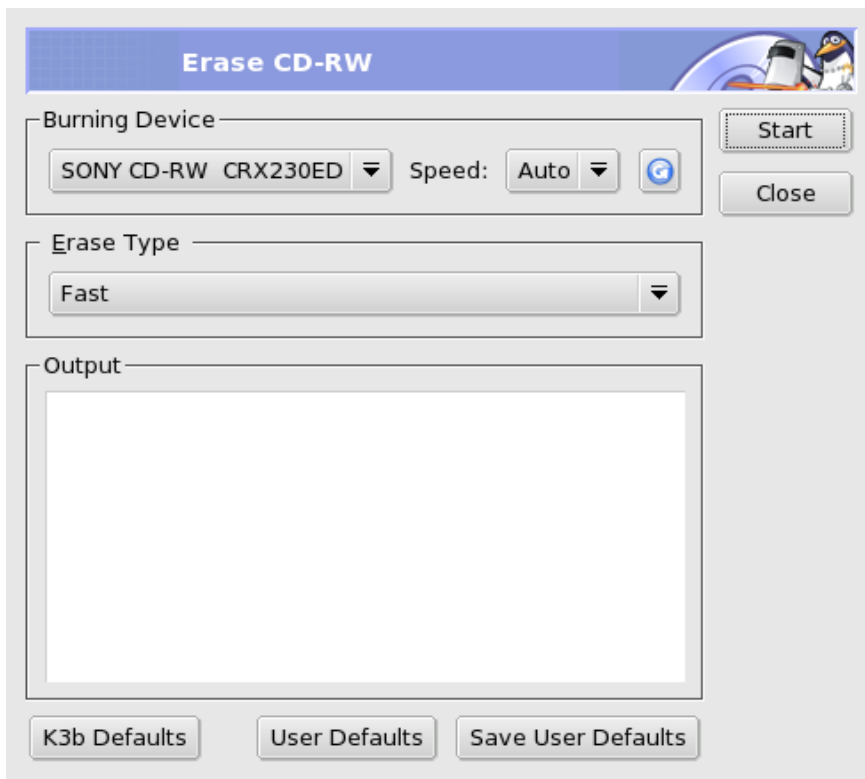
Figure 11-15. Setting CD-RW Blanking Options

You might want to format your CD-RW media in order to write it with different data. To do so, choose Tools+CD→Erase CD-RW... from the menu (or use the button shown in table 11-1) and a dialog will pop up (see figure 11-15). The Erase Type can be set to Fast (the CD-RW is quickly erased in up to 3 minutes); Complete (the CD-RW is completely erased taking up to 90 minutes); and a few options related to multi-session recording. Insert the medium on the CD burner and click the Start button to erase the CD-RW.

11.3.7. Going Further

As you can see, CD recording with Mandrakelinux is well supported with graphical programs. This section is a kind of mini-HOWTO of CD recording for the most common tasks you might want to do. However, CD recording uses are not limited to things described here. Please refer to the FAQ on the K3b web site (`http://k3b.sourceforge.net`) for more information.

Chapter 12. Introduction to the Mandrakelinux Control Center

12.1. MCC's Components

Mandrakelinux Control Center (MCC) is Mandrakelinux's main configuration tool. It enables the system adminis-trator to configure the hardware and the services used by all users. The tools accessible through the Mandrake-linux Control Center greatly simplify the administration of the system, particularly by avoiding the use of the "evil" command line.

You will find this icon in your window manager panel. You can also access the Mandrakelinux Control Center through the main menu (System+Configuration→Configure your computer).

> Mandrakelinux Control Center is also available from the command line in text mode by running `drakconf`.
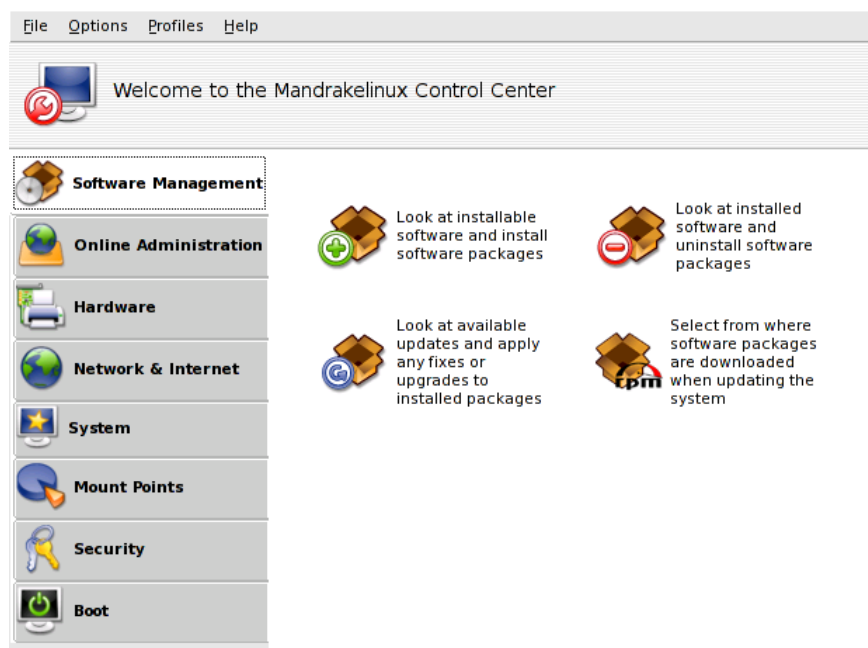
Figure 12-1. The Control Center's Main Window

We will detail some of the available menu entries:

- **Options→Display Logs.** When activated this option displays a Tools Logs window. It shows all system mo-difications made by the configuration tools launched from within the Mandrakelinux Control Center.

- **Options→Expert mode.** Gives you access to some of the more advanced tools, which are marked in the table below.

- **Profiles.** This menu gives you access to the configuration profiles features. We cover this topic in *Managing Configuration Profiles*, page 105.

- **Help→Help.** This will open the help browser which will display documentation about the active configura-tion tool.

- **Help→Report Bug.** A window will pop up allowing you to report a bug to the development team. See *The Drakbug Reporting Tool*, page 106.

The tools are sorted into categories. The following table lists all the tools it contains as well as references to the corresponding sections of this manual.

Boot	*Configuring the Login Mode*, page 185
	Changing your Boot-Up Configuration, page 185
	Customizing your Boot Theme, page 187
Hardware	*Configuring your Hardware*, page 117
	Controlling the Graphical Configuration, page 119
	Changing your Keyboard Layout, page 121
	Changing your Mouse, page 122
	Configuring Printers with PrinterDrake, page 123
	Setting up your UPS, page 140
Mount Points	*Managing your Hard Drive Partitions with DiskDrake*, page 169
	Managing Removable Devices, page 172
	Importing Remote NFS Directories, page 175
	Importing Remote SMB Directories, page 173
	Setting up WebDAV Mount Points, page 176. This is an experimental utility to mount remote WebDAV directories.
	Allowing Users to Share Folders, page 175
Network & Internet	*Network and Internet Connection Management*, page 145
	DrakProxy: a simple tool which allows you to configure any proxies your computer may need to use to access the Internet.
	Internet Connection Sharing, page 148
Security	*Securing your Machine through DrakSec*, page 179. Available only in Mandrakelinux Control Center's expert mode.
	Controlling File Permissions with DrakPerm, page 180. Available only in Mandrakelinux Control Center's expert mode.
	Securing your Internet Access via DrakFirewall, page 182
System	*Customizing your Menus with MenuDrake*, page 151
	Display manager chooser: DrakeDM enables you to choose the X11 Display Manager for users who graphically log onto the machine. Basically, all display managers offer the same features, it's just a question of taste.
	Configuring Start-Up Services, page 154
	Managing Available Fonts on your System with DrakFont, page 155
	Setting your Machine's Date and Time, page 156
	Monitoring System Activity and Status, page 157
	Console: simply opens a terminal to directly enter commands with the administrator account (root).
	Managing Users and Groups, page 158
	Backing Up and Restoring your Files, page 161
	DrakAuth enables you to select the authentication mode to be used to authenticate users on your system. Available only in Mandrakelinux Control Center's expert mode.
Software Management	*"Package Management through Rpmdrake"*, page 107

Table 12-1. Overview of Graphical Tools

Another category, Server Wizards, appears if the drakwizard package is installed. The documentation for those wizards is available on-disk or in the *Server Administration Guide*. It contains wizards which enable you to do basic configuration of common LAN services such as web, FTP, mail and database servers.

The same happens with the Online Administration category, which only appears if the rfbdrake package is installed. This tool allows you to take control of a remote host (Linux/UNIX®, Windows®).

12.2. Managing Configuration Profiles

A profile is a specific set of configuration settings suited for a computer in a given environment. Profiles allow you to store configuration parameters specific to certain environments and to switch between them, according to the context.

By default Mandrakelinux Control Center profiles enable you to configure network setups for different locations. This is especially useful for laptops which need a different configuration for home, at the office, the coffee shop, etc. It also allows you to activate different services from one profile to another (see *Configuring Start-Up Services*, page 154).

12.2.1. Profiles Handling

New profiles you wish to create will be based on the active one. All modifications are automatically recorded in the active profile. A single menu (Profiles) lets you manage them.
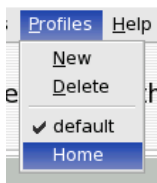
Figure 12-2. The Control Center Profiles Menu

New

Creates a new profile based on the active one's settings. A dialog pops up asking for the name of the new profile. Don't forget to switch to that profile after creating it.

Delete

Shows a list of profiles so you can select the one to be removed. The active profile will not be shown, because it cannot be removed while being used.

default

The entries which follow correspond to all available profiles, the active one being checked. Click on a profile name to switch the host configuration to that profile, and you will then be asked for confirmation.

Let's take an example. You come back home with your brand new laptop which your system administrator configured so you can connect to your corporate network. You now want to configure the network to access the Internet from home.

1. Create a new profile named, for example, "Home".

2. Switch to it.

3. Reconfigure your network so that the modem, instead of the network card, is used to access the Internet (see *Network and Internet Connection Management*, page 145).

4. Connect to the Internet.

5. When back at the office, switch back to the "default" profile.

12.3. The Drakbug Reporting Tool

If you encounter unexpected behavior in Mandrakelinux-specific tools, Drakbug allows you to report it to the development team.

> To be able to report bugs using Drakbug, you need a working Internet connection as well as a Drakbug account (`http://bugs.mandrakelinux.com/newuser.php`).

To run Drakbug, go to the Help→Report Bug menu entry of the faulty tool, or run it from Mandrakelinux Control Center's own menu. Drakbug can also be triggered automatically by a crashed Mandrakelinux tool.

Figure 12-3. Reporting a Bug

In order to correctly report a bug, it is important to identify the package it is related to. To make this task easier, enter the application name in the Application Name (or Full Path) field and click on the Find Package button.

Click on the Report button. Your web browser will then open. If you are not logged in to the Mandrakesoft Bugzilla web site (`http://qa.mandrakesoft.com/`) you will be asked to log in (or create an account if you do not have one). Once you are logged on the site, complete the bug report as completely and accurately as possible and click on Commit.

Chapter 13. Package Management through Rpmdrake

Mandrakelinux uses the RPM packaging system and provides convenient tools to simplify package installation by handling software dependencies automatically. The urpmi set of tools is command line based and discussed briefly at the end of this chapter; here we will concentrate on Rpmdrake: Mandrakelinux's graphical software installation tool.

Rpmdrake consists of different tools, which you access by choosing one of the entries of System+Configuration+Packaging in the main menu or by clicking on Software Management in the Mandrakelinux Control Center (see figure 13-1).

Figure 13-1. Software Management in the Mandrakelinux Control Center

We recommend that you access Rpmdrake via the Mandrakelinux Control Center.

13.1. Install Software

When launching this tool you will have to wait a few seconds, while Rpmdrake searches the available packages database. Then you will be presented the Software Packages Installation interface.
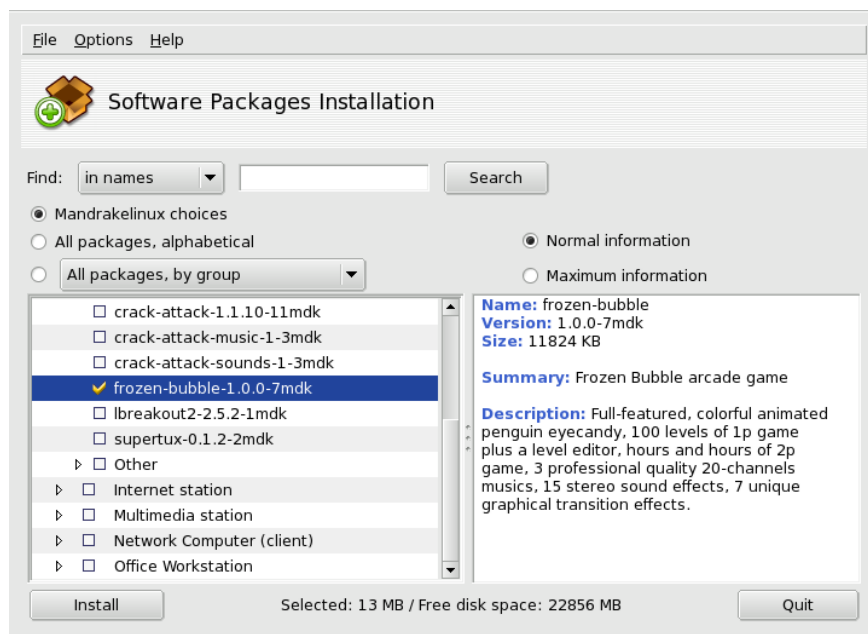
Figure 13-2. The Software Packages Installation interface

The window is divided into four parts: the upper part offers you some possibilities to manipulate the list of packages you can install. You will find this list in the middle on the left. Next to it, on the right, you have an area where you can find a description of the currently selected package. In the bottom of the window you will find two buttons and information about how much space will be needed to install the selected packages and how much space you have available on your disk.

13.1.1. Selecting Packages to Install

Let us have a closer look at the interface as shown in figure 13-2. A package named "`frozen-bubble-1.0.0-7mdk`" is selected in the tree-view and in the package description area you will see the required disk space, a short summary (Frozen Bubble arcade game) and a detailed description (Full-featured, colorful animated penguin eye candy...).

> If your software medium repository is configured to use `hdlist` files (not the summary `synthesis` files, using the full hdlist is the default option after installing your Mandrakelinux system), you may get more information on the package by choosing the Maximum information radio button in the access-area. In addition you will see a list of the files provided by the package and the change log.

The status bar shows you the disk space required by the selected packages as well as the current free space. Please note that due to dependencies, the disk space required by the selected packages might be higher than the size required by the chosen package by itself.

> Rpmdrake will show you an alert box if you try to install more software than the free available disk space. Nevertheless you may proceed (you may, for example, be able to remove some no longer required files, such as programs downloaded from Internet in the past and which you do not use anymore, to allow the installation to continue).

Now you can begin the installation, by simply clicking on the Install button. A new window will appear, showing you a progress bar of how your installation is proceeding. If you prefer to leave without doing anything, you can just click on the Quit button.

While selecting applications to install, it may happen that you choose a package which requires dependencies (additional libraries or another tool) to work correctly. In this case Rpmdrake displays an information window allowing you to choose whether to accept the selected dependencies, or to Cancel the operation (figure 13-3).

Figure 13-3. Rpmdrake — dependency alert box

Another possible scenario might be: you want to install a package which requires dependencies, and various packages are capable of providing that dependency. The list of alternatives is then presented (figure 13-4). You may read the additional information presented by clicking the Info… button to help you choose the best alternative.
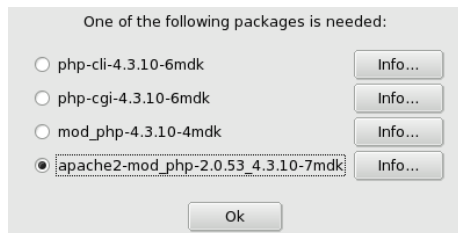
Figure 13-4. Rpmdrake — package alternatives

We will now take a closer look at the search and sort functions provided to ease your job as a system administrator.

13.1.2. Searching Packages

Sometimes you may know about some tool you saw somewhere or you heard of at a friends place, now you wonder how to find and install them on your system.

It is really easy: just type the name, (or part of the name), in the text area next to the Search button. Then choose, from the pull-down list, where you want to look for it (either in the package name, in the description provided with the package or in the names of the files stored in the packages). After clicking on the Search button, a new list will appear (Search results), showing you the results Rpmdrake found while scanning the packages databases.

Let us take a look on the different sort orders:

Mandrakelinux choices

> This sort order will show the list of packages in the four groups you saw during the installation of Mandrakelinux. This is the easier sort order because it focuses on a selected part of the available packages, those which are considered to be the most useful of the distribution.

All packages, alphabetical

> Instead of a tree view, you will be presented with a flat list of all available packages you can install on your system.

All packages, by group

> Here you will be shown the list of packages grouped by their functions (e.g. Games, System, Video, etc.).

All packages, by size

> Here you get a list sorted by size (the biggest package at the top, the smallest at the bottom of the list).

All packages, by selection state

> If you choose this presentation, you will end up with a flat list, in which all selected packages are shown first, the other available packages below them. To make it easier for you, those two parts are sorted alphabetically. This sort order is particularly useful just before the actual package installation, because it helps you to see the selection of packages to be installed.

All packages, by medium repository

> Once again you will find the packages sorted alphabetically, but this time they are shown under the name of the data medium they belong to.

All packages, by update availability

> In this mode, you might get two groups of packages: a list of packages which might be added to your machine, and a second list of the packages of which you have an older version already installed on your computer.

13.1.3. Updating Media

When installing your system, you have been using a certain number of media (most probably CDs), containing the packages. You may also have added remote media (figure 13-7) for which packages available may evolve in time (it is especially the case for your Club media (`http://www.mandrakeclub.com/modules.php?name=Mirrors-list`)).

Rpmdrake does not update all media each time it is run because that would take too much time, most of all with remote media. Media update can also be performed through *The Software Media Manager*, page 111.

13.2. Remove Software

As this interface works like the "Install Software" one, we will not repeat its basic functions. The only difference to the installation interface is that you will deal with the already installed packages list from which you'll choose those you want to remove, instead of those packages which might be useful to install on your computer.

13.3. Mandrakelinux Update

> Mandrakesoft now provides an automatic updates service; see "*Mandrakeonline Services*", page 189.

Once again: if you have already worked with the software installation interface of Rpmdrake, then you should feel comfortable with Mandrakeupdate. But let us look at the details.

When you launch this tool, it will first ask you to choose an Internet repository to check for updates. You should choose one in a country near you.

A small difference to the "Install Software" interface is the ability to choose which kind of update you want to install on your computer by grouping them in certain ways. You may select Security updates, Bugfixes updates and Normal updates.

The other difference is a new text section (Reason for update) inside the package description area. It provides you with information about why this update was made available. This may help you decide if you want to

update certain packages or not. When you have a slow Internet connection or you have to pay per MB when you are downloading, it would be wise to read it.

If you are not yet familiar with the interface, please go back to *Install Software*, page 107 to learn about it.

13.4. The Software Media Manager

This part of Rpmdrake is dedicated to the configuration of the package media repositories. As you can see in figure 13-5 there are some media configured: "Installation CD", "Contrib CD", etc. With this tool you can add other software media: a CD from a magazine containing RPMs, a Web repository, etc. The check boxes in the left column allow you to temporarily disable a medium: when unchecked, the associated packages will not be taken into account for installation or upgrades.
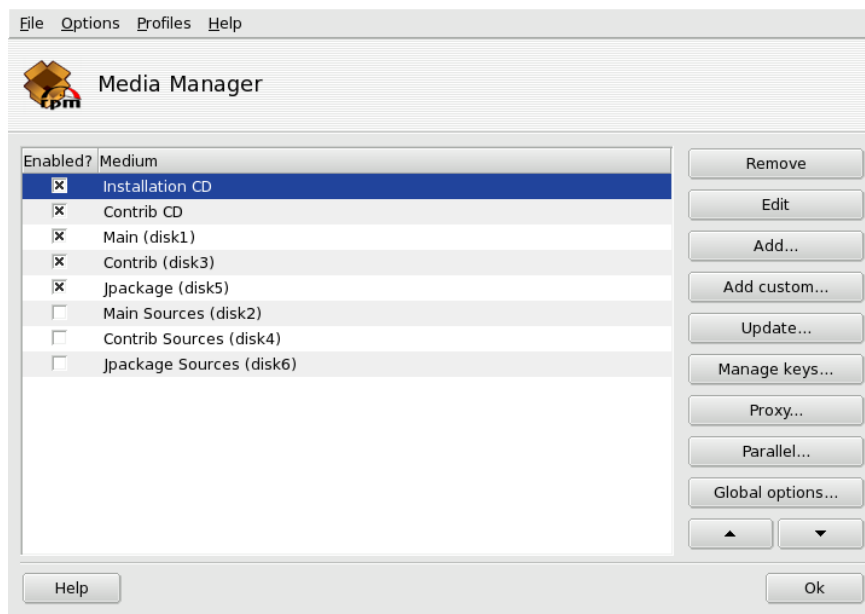
Figure 13-5. The "Software Media Manager"

Various buttons allow you to perform actions on the selected media.

Remove

> Allows you to remove a medium which you no longer use. Simply select the medium to be removed in the list and click this button.

Edit

> Here you may change the URL or the relative path to the `synthesis/hdlist` (if you do not know what we are talking about it will be wise to leave this window via Cancel instead of Save changes).

> In case you need to pass through a specific proxy to access this media, you can configure it here by clicking on the Proxy... button. Note that you can also define a global proxy for all remote media through the Proxy... button of the main interface.

> This option also allows you to change from using `hdlist` files to `synthesis` files, which are much smaller but with less information on packages. Synthesis files only have information about package names, their dependencies and short summary, you won't be able to search for files inside uninstalled packages, for example, and you won't be able to see the full description for a package if you click on its name.

Add...

> Use this button to add to your system all publicly available official package sources from Internet repositories. This is useful for example if you have a fast Internet connection or only have the first installation CD at hand. Choose a mirror geographically near to your location.
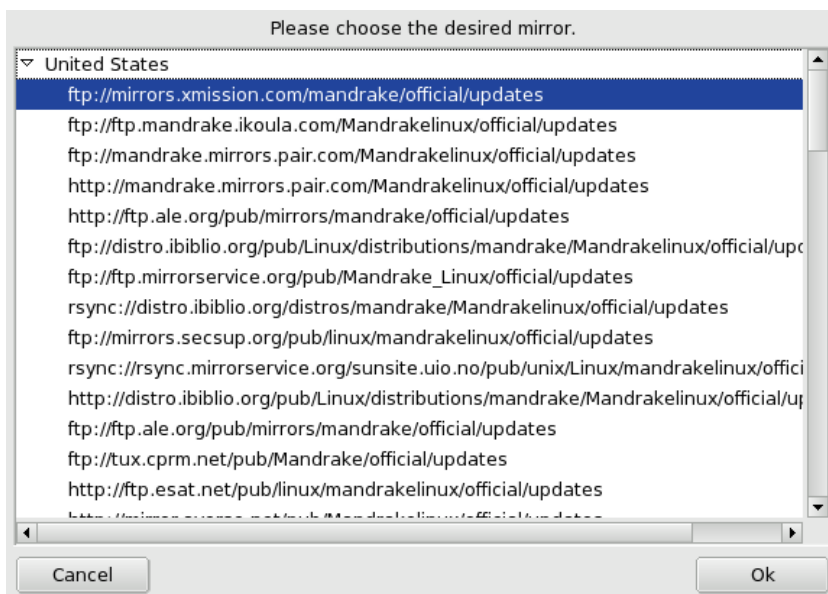
Figure 13-6. Rpmdrake — adding a new source

After choosing a mirror and clicking the Ok, package information for the source you chose will be down-loaded and will be available for you to install and update your system with them.

Add custom...

This button provides access to a new dialog, in which you may reference a new software package medium.
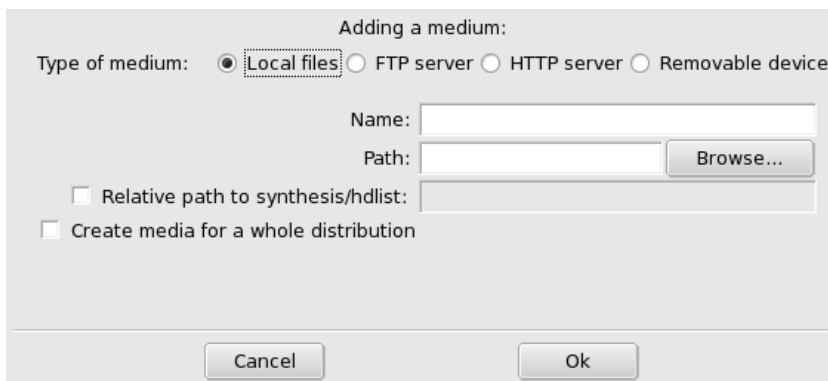
Figure 13-7. Rpmdrake — adding a Media

Update...

You will be shown a list of already defined data media. You can choose the ones where you want to update the list of available packages in it. This is useful for remote media to which new packages are being added. Just start the process by clicking on Update.

Manage keys...

It is important that any new packages you install are authenticated. To do so, each package can be elec-tronically signed with a "key", and you can allow/disallow keys on a per-medium basis. On figure 13-8, you can see that Mandrakelinux key is allowed for medium "Installation CD". Click on Add a key... to allow another key for the selected medium (beware, do this with care, as with all security-related questions), and on Remove key to remove a key from the selected medium.
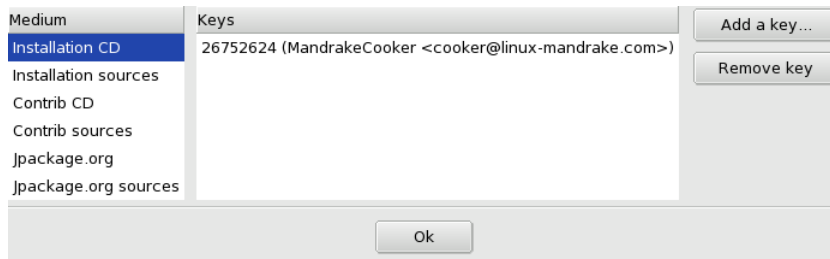
Figure 13-8. Rpmdrake — managing keys

Proxy...

If you are sitting behind a firewall and you still need to access remote media (notably for package updates), you can do so if you have a proxy server which leads to the Internet (at least in an area where you can find a package server). Normally it should be enough to fill in the Proxy hostname to get it working (figure 13-9). If you need a user / password combination to get through the proxy, you can also specify these here. Just confirm your changes by clicking on OK and you are done.
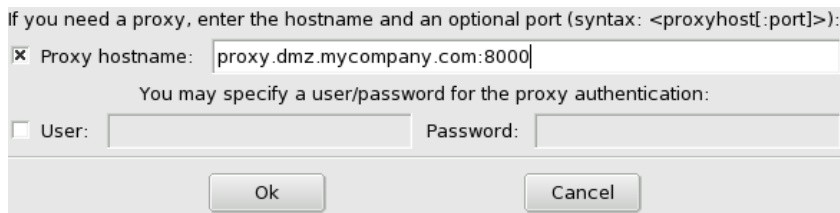
Figure 13-9. Rpmdrake — configuring a proxy

Parallel...

If you are running a large network of computers, you may want to install a package on all the computers in parallel; this button will open a dialog window allowing the configuration of the "Parallel" mode. As it is rather complicated and only useful to a limited group of people, this short introduction will not give more details about it.

Global options...

This button allows you to configure the program used to download new packages and if the source should be checked against a given key. These choices are used on all installed sources.
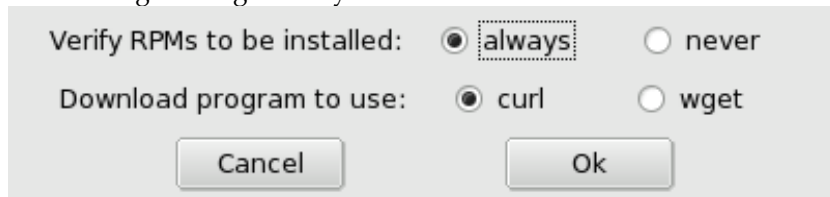
Up and Down arrows

These buttons allow changing the order that sources will be used when installing a package.

> Rpmdrake processes your `urpmi.cfg` file from top to bottom to obtain a list of medium repositories and the packages that each contains.
>
> When a later medium repository contains some packages also contained in an earlier repository, the packages appear only under the later repository. If the later repository contains **all** the packages from an earlier repository, the earlier repository is not shown at all.
>
> Thus, if your `urpmi.cfg` file has five data media repositories, Rpmdrake may show you only the last one if the last one contains all the packages contained in the previous four. Rearranging the order of the media in the `urpmi.cfg` file may result in a very different selection of media repositories being shown by Rpmdrake, even though the same packages are available.
>
> Either way, you won't miss available packages, you just won't see the repositories listed.

As you have seen on our short trip through Rpmdrake, it is easy to manage your own system, to add new applications or to remove something if you need more space on disk.

13.5. Package Management through the Command Line

Rpmdrake applications are merely graphical interfaces to the powerful urpmi command line tools. For those wishing to control their packages via the command line (useful if you are working remotely, for example) we quickly present the most useful commands. Note that most commands require root privileges.

13.5.1. Installing and Removing Packages

This is done with two simple commands:

```
urpmi <package_name>
```

> Will install package `package_name` if it exists or the package whose name contains the `package_name` string in it. If more than one package matches, you'll be presented a numbered list of matches: just type the number of the one you are interested in and tap **Enter**.

```
urpme <package_name>
```

> Will remove the package `package_name`.

Consult the urpmi(8) and urpme(8) man pages to learn about the many options and behaviors of these two commands.

13.5.2. Media Management

Adding and removing media is easy on the command line but the syntax must be strictly respected.

13.5.2.1. Adding New Media

```
urpmi.addmedia <name> <url>
```

This command allows you to add a new medium either from a local drive, a removable device (CD-ROM), or from the network through the HTTP, FTP, NFS, `ssh` or `rsync` protocols. The syntax varies for each of these methods so you are encouraged to consult the urpmi.addmedia(8) man page before using it.

If you are declaring a new update medium, use the `--update` option on your `urpmi.addmedia` command line.

You don't know where to find new media containing useful applications specially packaged for your Mandrakelinux system? You can find some at the Easy Urpmi page (`http://easyurpmi.zarb.org/`). The Mandrakeclub (`http://www.mandrakeclub.com/`) also provides Urpmi media (`http://www.mandrakeclub.com/modules.php?name=Mirrors-list`) for test and contribution packages.

13.5.2.2. Removing Media

`urpmi.removemedia <name>`

This command will simply remove the medium `name`. If you cannot remember the medium's name, issuing `urpmi.removemedia` alone on the command line will list all defined media.

13.5.2.3. Updating Media

`urpmi.update <name>`

This command will scan the named medium and update the package list associated to it. This is useful for update media. If you wish to rescan all defined media you can simply run `urpmi.update -a`.

13.5.3. Tricks and Recipes

13.5.3.1. Finding the Package which Contains a Specific File

You know you need a specific file on your system but you do not know which package provides it... The `urpmf` utility will scan all media and find it for you[1]. Just run `urpmf <filename>` and any package(s) which contain it will be displayed.

You can even provide only a partial name. For example `urpmf salsa` will return a list of all packages which contain a file whose name contains the `salsa` name in it. Please note that this will only work for media that does not use synthesized hdlists.

```
[root@test queen]# urpmf salsa
    kaffe:/usr/lib/kaffe/lib/i386/libtritonusalsa-1.1.2.so
    kaffe:/usr/lib/kaffe/lib/i386/libtritonusalsa.la
    kaffe:/usr/lib/kaffe/lib/i386/libtritonusalsa.so
```

13.5.3.2. Updating Packages

This command will automatically update all the packages that need it as Mandrakeupdate would do it:

```
urpmi.update -a; urpmi --update --auto-select --auto
```

---

1. This is only true if you use the full hdlist files. If you use synthesis files, `urpmf` can only search for files on already installed packages

Chapter 14. Hardware Setup

14.1. Configuring your Hardware

14.1.1. Introduction

The HardDrake project has been developed to simplify hardware detection and configuration under GNU/Linux by providing a user-friendly interface.

14.1.1.1. What Is HardDrake?

HardDrake is a service for hardware detection, run at system boot time, and also a full GUI-based tool which ties together many of the tools already included in a GNU/Linux distribution. It automates and simplifies the process of installing new hardware. For the most part, HardDrake will be able to detect most devices.

On one hand, HardDrake is used to display information, and on the other, it can launch configuration tools. With its easy-to-use interface, you can browse all the hardware your system contains.

HardDrake uses the "ldetect" engine, so if your new hardware is not detected, you may try to upgrade the `ldetect` library itself and its hardware database, located in the `ldetect-lst` package.

14.1.1.2. Usage

To launch HardDrake, you can start it through:

- the Mandrakelinux Control Center: click on the Hardware category, and then on the Hardware icon.
- a terminal: type `harddrake2` as `root`. You can also pass parameters to HardDrake through the command line (type `harddrake2 -h` to get a list of possible parameters).
- the desktop: go to the main menu. The HardDrake entry is in the System+Configuration+Hardware→HardDrake sub-menu.

After all devices have been detected, the main HardDrake window will appear (see figure 14-1).

On the left, you can see the device tree showing you all of the hardware categories.
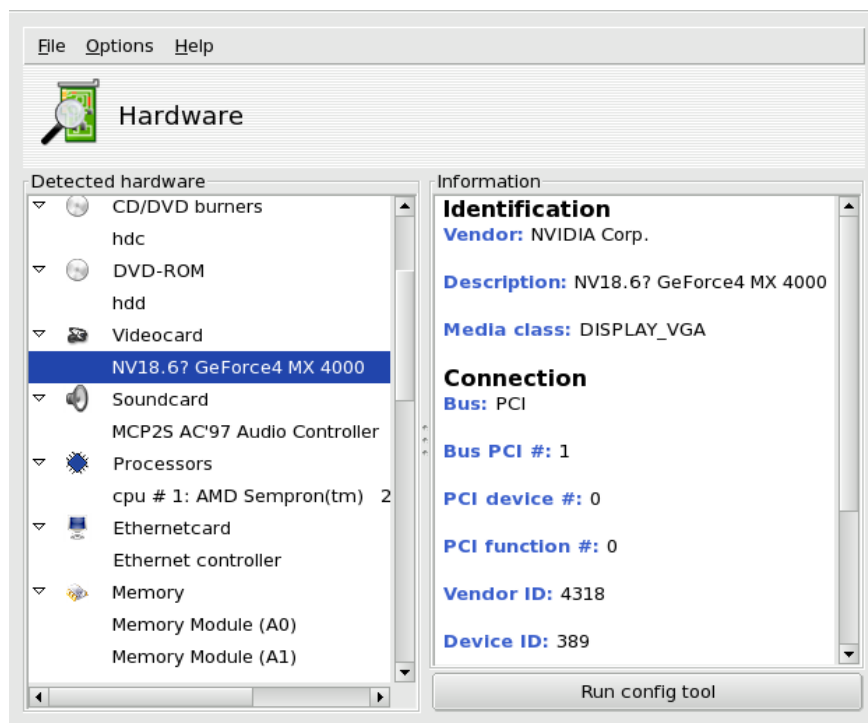
Figure 14-1. Selected Device

By selecting a device, you will see additional information about it in the right frame. To better understand the meaning of the information presented, you can consult the help page accessible by choosing Help→Fields description from the menu.

Depending on the device selected, two other buttons may appear:

- **Configure module.** This pops up a window with all the module device parameters listed. **For experts only!**
- **Run config tool.** Launches the Mandrakelinux configuration tool (available through the Mandrakelinux Control Center) associated with that device.

A special category called `Unknown/Others` might also show up, containing all the currently unknown hardware in your system, as well as known hardware that does not fit into the existing categories (such as thermal sensors, random number generators, etc.).

You can also toggle the entries in the Options menu to enable automatic detection of some hardware which wouldn't have been detected otherwise. You need to restart HardDrake for those changes to have effect.

If you have a Mandrakeonline account and want to help us improve hardware support under Mandrakelinux, or want to see your hardware better supported in the future, you can choose File→Upload the hardware list from the menu and fill the form with your account data, then click on the Ok button: your hardware list will be uploaded. You need a working Internet connection.

14.1.2. Problems/Troubleshooting

If you think you have found a bug related to HardDrake, report it using the Mandrakelinux bug reporting tool (see *The Drakbug Reporting Tool*, page 106).

HardDrake does not probe for ISA PnP devices. If you have an ISA PnP sound card, run `sndconfig` or `alsaconf` from the command line. You may need to install the `sndconfig` package or the `alsa-utils` package.

14.1.3. Other Information

- If you have a hard time getting your IsaPnP tools working, please check out the IsaPnPTools home page (`http://www.roestock.demon.co.uk/isapnptools`).

## 14.2. Controlling the Graphical Configuration

This set of tools allows you to configure your graphical display. With it you will be able to change your video card, your resolution and your monitor. It can be useful if you happen to change one of your graphical components after the initial installation.

> If you cannot boot into graphical mode and you end up in a console (command-line interface), log in as `root` and launch `XFdrake`. You will get a tool similar to the one described in *Controlling All Video Parameters*, page 120, but in text mode.

The graphical configuration tools are accessible through different icons in the Mandrakelinux Control Center Hardware section.

14.2.1. Changing the Monitor
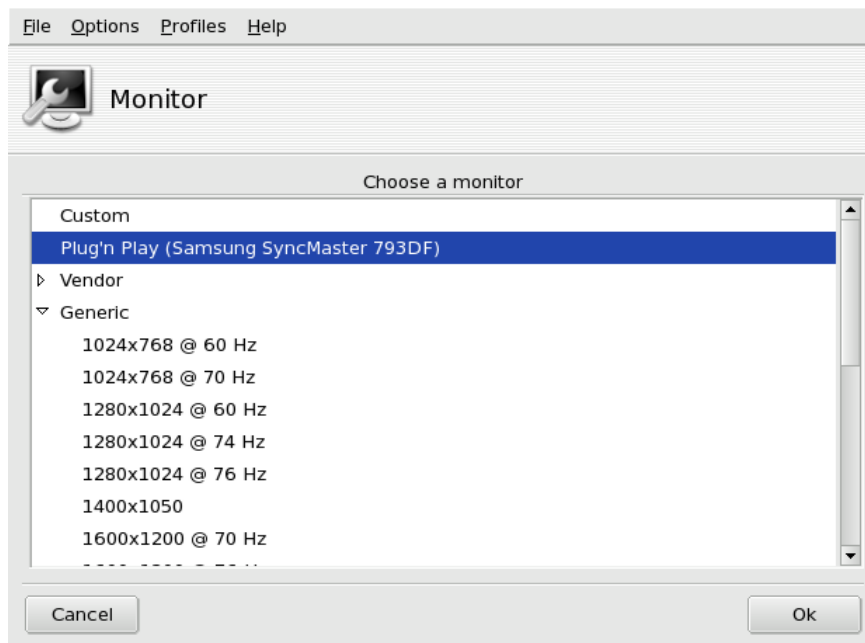
Figure 14-2. Choosing a New Monitor

This tool allows you to change the monitor type currently in use. When you click on it a window pops up, listing many monitor models (see figure 14-2). If your monitor was automatically detected it will be listed as Plug'n Play along with its model.

If your monitor wasn't automatically detected, you can choose it from the list. If you don't find your monitor or a compatible one, choose one with parameters corresponding to your own monitor from the Generic entry, at the bottom.

14.2.2. Changing Resolution
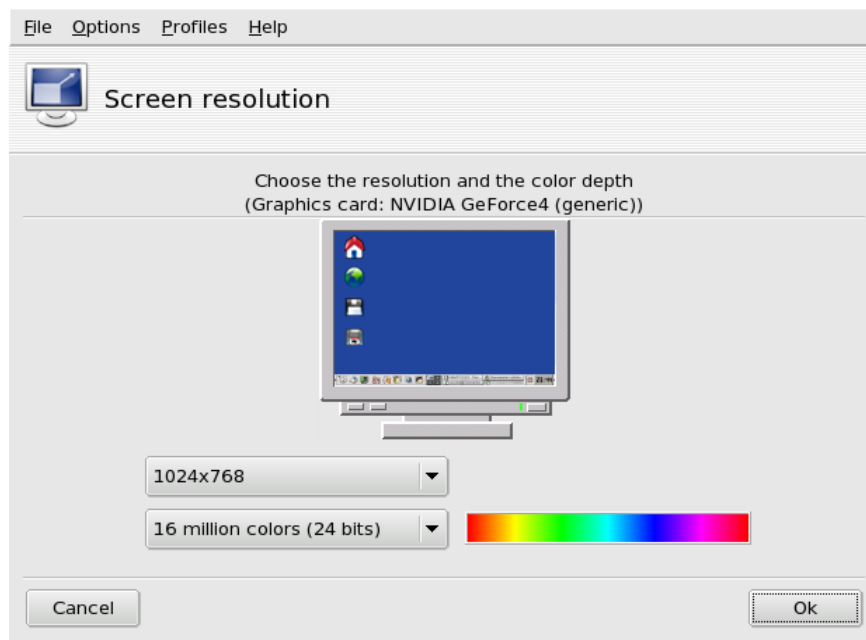
Figure 14-3. Changing the Resolution of your Screen

 This tool enables you to change the current screen resolution (`800x600`, `1024x768`, etc.) and the color depth. Simply choose the one you wish to use. The monitor in the window displays what the desktop will look like with the chosen configuration (see figure 14-3). If it looks good, click on OK.

The changes will be activated after you quit and restart your graphical environment.

By default, the available resolution list only shows resolutions supported by your video card and monitor combination. There is a special entry named Other which adds more possible resolutions along with their ratio. Bear in mind that most monitors are designed with a `4:3` horizontal vs. vertical ratio.

14.2.3. Controlling All Video Parameters
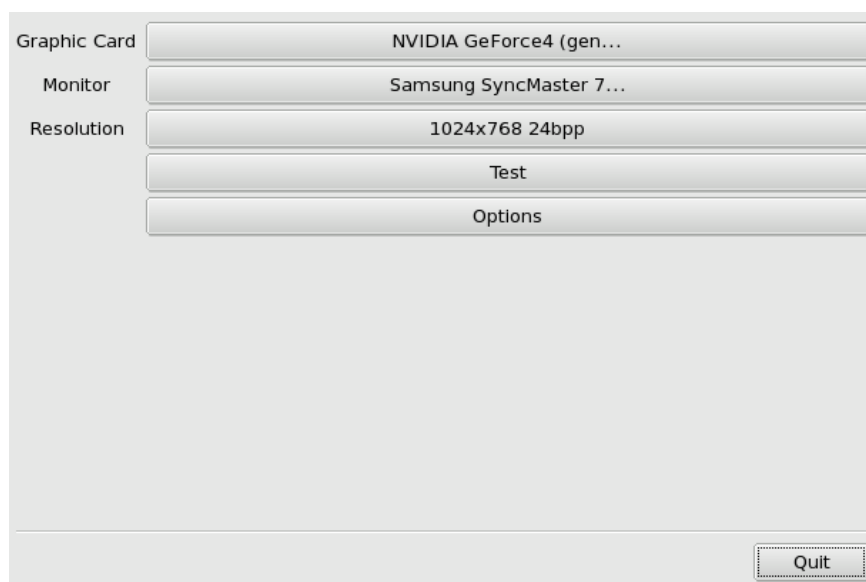
Figure 14-4. XFdrake Main Window

If you happen to change your video card after installing your system, or want to have full control over the graphic configuration, run as `root`, `XFdrake` from a console. The tool shown in figure 14-4 will be shown.

Let's look at the interface. The first three buttons allow you to change certain aspects of the graphical configuration:

Graphic Card

The button displays the name of the graphic card currently configured. If you wish to change it, just click on it. Depending on your card, different servers may be available, with or without 3D acceleration. You may need to try different ones until you get the best result.

In case you cannot find the graphic card you have, but you know which driver supports it, select it from the Xorg entry at the bottom.

Monitor

Enables you to change the monitor with the tool described in *Changing the Monitor*, page 119.

Resolution

Enables you to change the pixel resolution and the color depth with the tool described in *Changing Resolution*, page 119.

> If you are using KDE you can also change the screen resolution on the fly by using the *Changing Screen Resolution*, page 49.

Then, there are more buttons:

- **Test.** Click on this button to verify that your modifications actually work. It is highly recommended you do test it, because if it does not work, it will be harder later to recover a working graphical environment. If the test fails simply wait until it ends. If you are not satisfied with the suggested settings, choose No during the test, and you will be returned to XFdrake's main menu.

> Depending on your video card, video testing may not be available. You will be warned of such a situation. If it happens that the settings are incorrect and your display does not work, refer to "*Troubleshooting*", page 195"*Troubleshooting*", page 195 to use XFdrake's text version.

- **Options.** You can choose to start the graphical server when your system boots. Answer No if you prefer to have a text login. Selecting Yes will launch the graphical login manager at boot time.
- **Quit.** If you modified your graphical display in some way, the current configuration will be displayed and XFdrake will ask you whether you want to keep your changes or not. This is your last chance to go back to the old configuration. If all seems OK, click on Yes. If you wish to restore the previous parameters, click on No.

The changes will be activated after you quit and restart your graphical environment.

14.3. Changing your Keyboard Layout

This tool allows you to define another keyboard layout. This is commonly done when the keyboard you want to use is different from the one chosen at installation time.
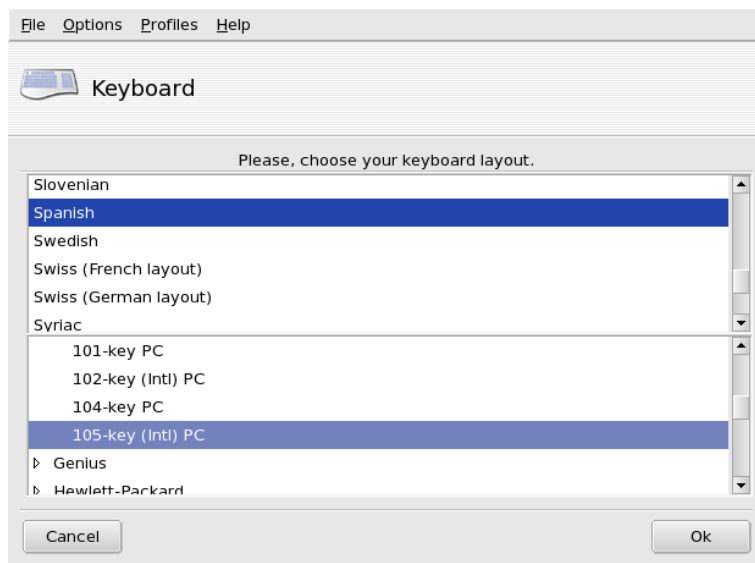
Figure 14-5. Choosing a Different Keyboard Layout

Select your keyboard's language and its number of keys from the lists shown in figure 14-5. Changes are effective immediately after clicking OK.

> If you choose a keyboard layout based on a non-Latin alphabet, the next dialog will ask you to choose the key binding that will switch the keyboard configuration between the Latin and non-Latin layouts.

14.4. Changing your Mouse

This tool enables you to set up a different mouse, which is useful if the mouse you are currently using is not the same as the one you chose at installation time.
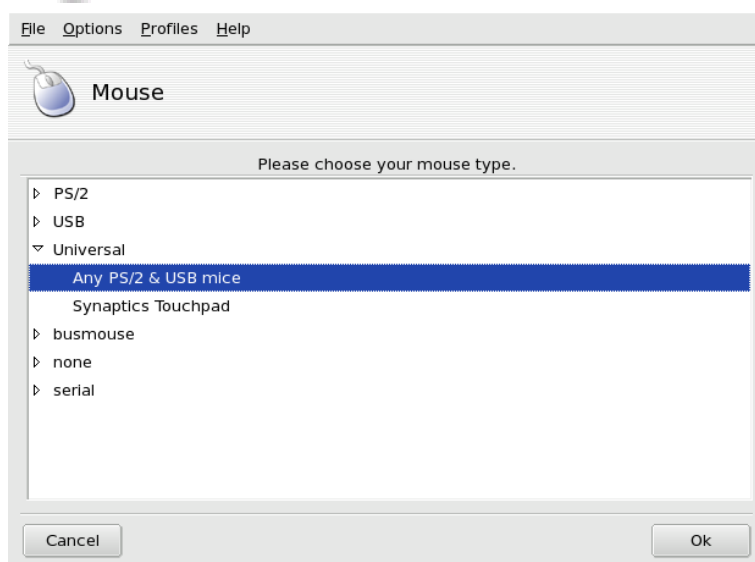
Figure 14-6. Choosing a Different Mouse

Mice are sorted into a tree according to their connection type and model (see figure 14-6). Highlight the mouse of your choice and click OK. Changes take effect immediately after the mouse test is done.

> The Any PS/2 & USB mice option works with virtually all modern mice, while the Synaptics Touchpad option works with almost every touch pad found on notebook computers.

14.5. Configuring Printers with PrinterDrake

This tool allows you to either:

- configure a newly installed printer on your machine;

- configure your machine to act as a server for a printer which has just been connected to your local network;

- allow your machine to access network printers served by other servers (GNU/Linux as well as Windows® ones).

> If you just installed a printer that was not available when you installed Mandrakelinux, make sure it is correctly connected and powered on before launching the configuration tool.

14.5.1. Initial Configuration

When you first launch the PrinterDrake tool, it may be in one of three states:

14.5.1.1. There is no printer directly connected to the computer.
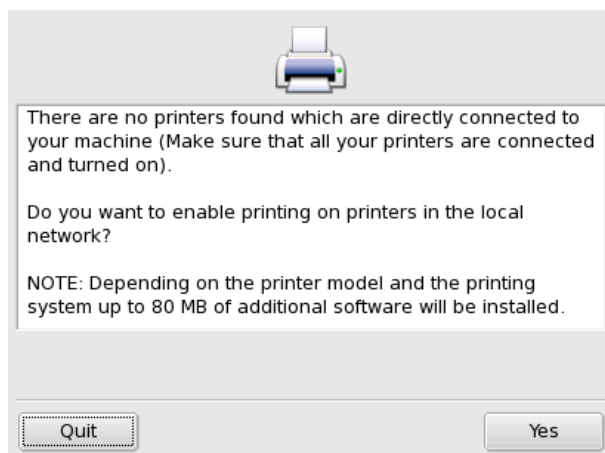
Figure 14-7. Activate Printing

The tool did not detect any local printers. However you can print on network printers, or manually install printers which were not detected. Press on Yes to do so.

Figure 14-8. Activating Network Printers

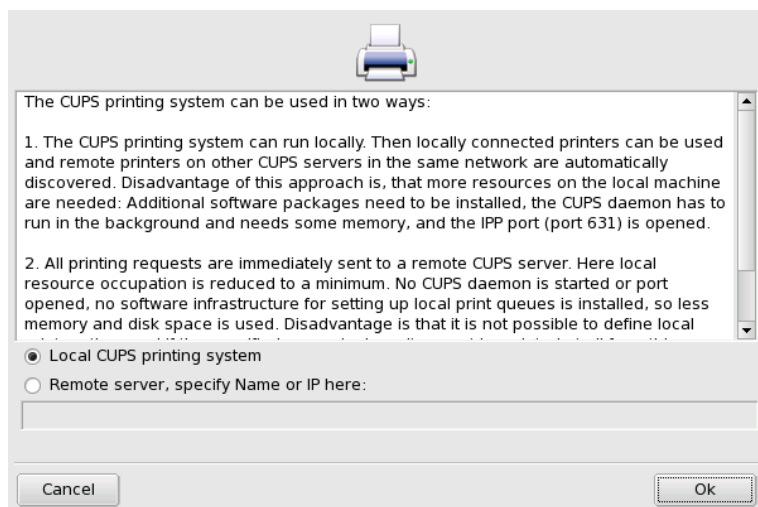- Select the Local CUPS printing system option if you wish to configure your machine to act as a print server for either a local printer which was not detected, or a network printer connected to your local network.

  Any required software will be installed and then the main configuration interface (see figure 14-10) appears. Click on Add Printer to install the network printer.

- Select the Remote server option if you wish to be able to print on printers served by another CUPS printing server on the network. Your applications will immediately have access to all public printers served by that server. You only need to provide the hostname or IP address of that server in the field below (ask your system administrator).

  When this is done, the main configuration interface (see figure 14-10) appears. The Configured on other machines tab will be filled with the available network printers.

14.5.1.2. A New Printer Has Been Detected

If a printer had already been configured previously, the new one will be installed automatically. Otherwise a confirmation dialog will appear.
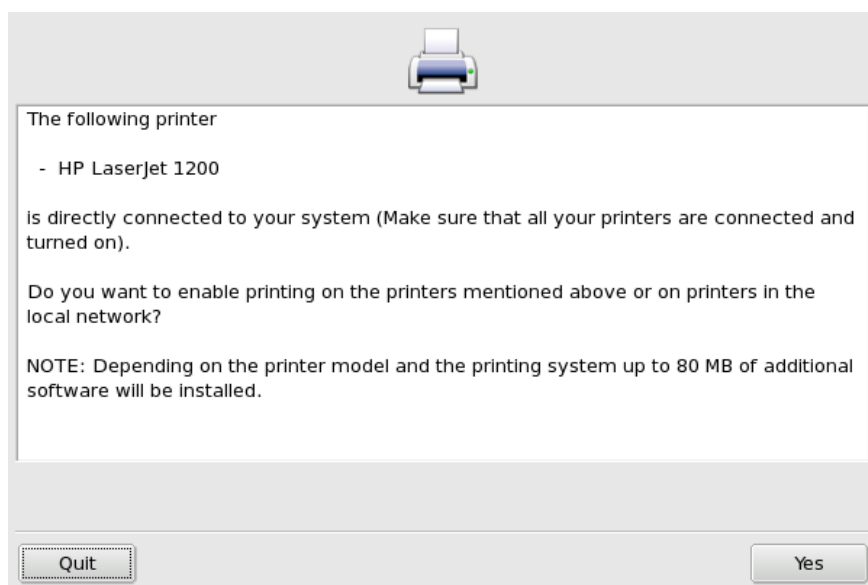

Figure 14-9. A New Printer Is Detected

Simply confirm the automatic installation of the new printer. The main configuration interface (see figure 14-10) is then displayed. Make sure to check that the printer parameters fit your needs (see *Reconfiguring an Existing Printer*, page 132).

14.5.1.3. A Printer Had Been Already Configured at System Installation Time

In this case, the main configuration interface (see figure 14-10) is shown. Make sure to check that the printer parameters fit your needs (see *Reconfiguring an Existing Printer*, page 132).

14.5.2. The Printer Management Interface
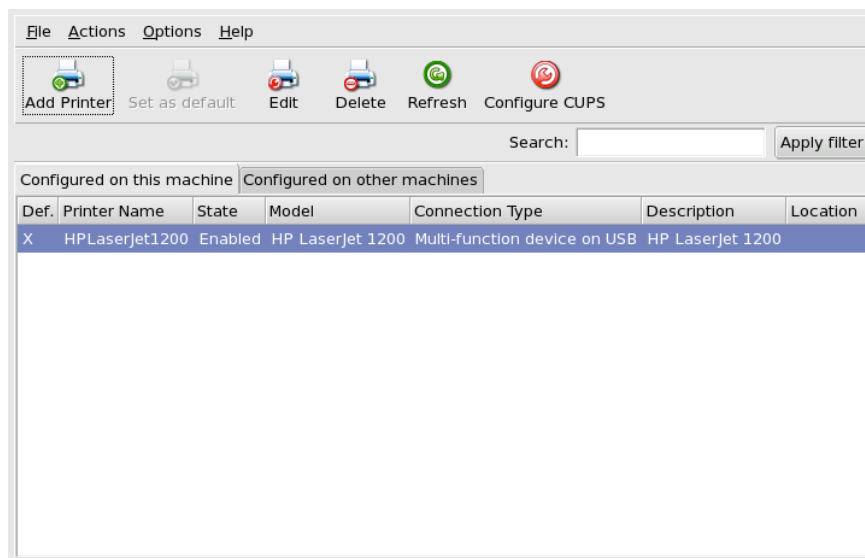
Figure 14-10. Managing Printers

If your local printer has been automatically added you should now verify its configuration. Select it in the list, click on Edit and check the Printer options.

The printer configuration tool (see figure 14-10) has two tabs. The first one for locally connected printers (Configured on this machine), the other one for printers available on the local network (Configured on other machines). These are the buttons (at top) which give you access to all available maintenance tasks:

- Add Printer: launches the printer configuration wizard described in *The Printer Configuration Wizard*, page 127.

- Set as default: sets the selected printer as the default printer when no specific printer is chosen at print time. A cross appears in the Def. column of that printer.

- Edit: opens the printer configuration dialog described in *Reconfiguring an Existing Printer*, page 132.

- Delete: removes the selected printer from the available printer pool.

- Refresh: updates the printers list with possible new or removed printers, especially true for networked printers.

- Configure CUPS: (if a local network exists) by default, your system will be totally open. It will use all of the network's available printers and share all of its local printers with the local network. Click on this button if you do not want to access network printers, or if you want to restrict the access to your local printers. This dialog will also let you configure access to servers outside the local network.

> The Options→Expert mode menu will add extra features to the tool. See *Expert Mode*, page 133.

14.5.3. CUPS General Configuration

We have already mentioned that printing can be performed on printers configured on your own machine (general home installations) or on those served by other servers (for centralized corporate printers). The Configure CUPS button allows you to control such behavior.
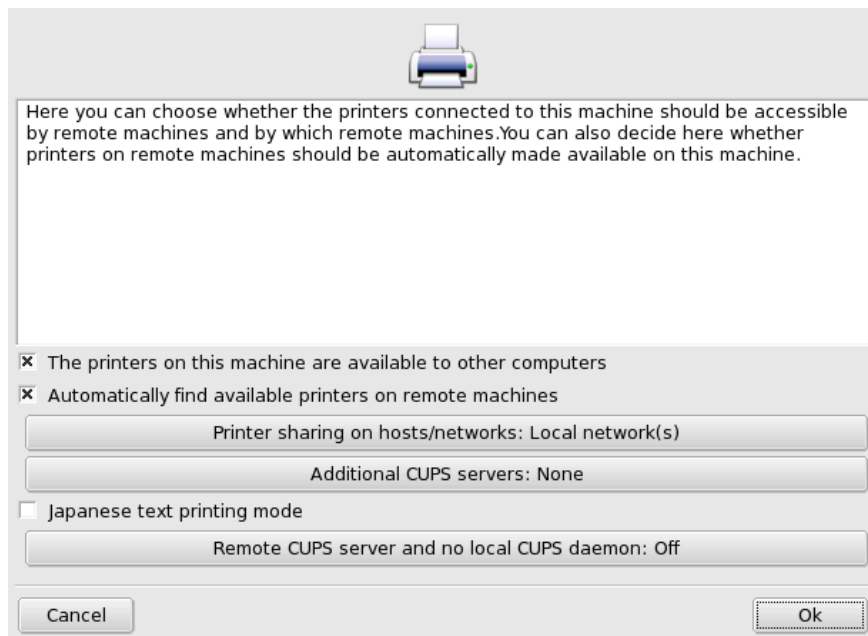
Figure 14-11. CUPS Printer Server Configuration

This dialog enables you to switch between the two available printing modes: client or server, through the Remote CUPS server and no local CUPS daemon button.

14.5.3.1. Client Mode
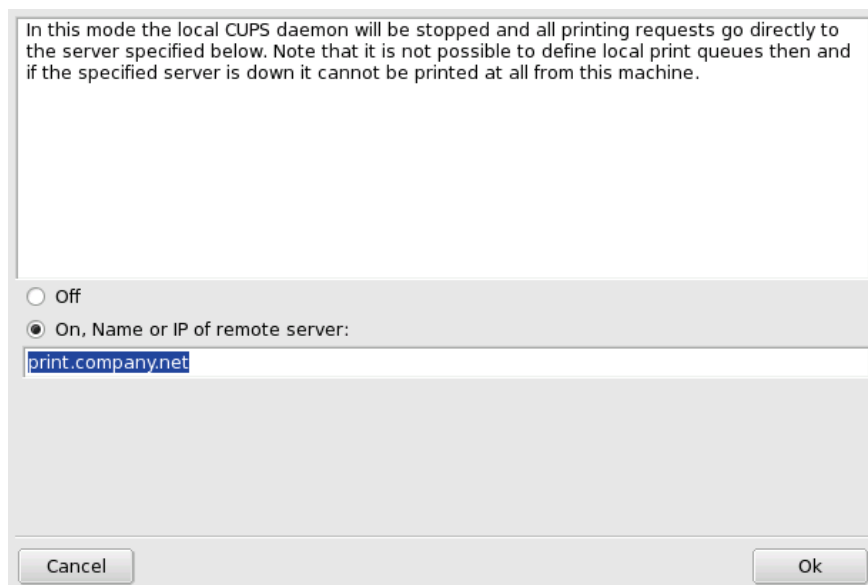
Figure 14-12. Client Mode Configuration

Select the On option to connect to another printer server. You then just need to specify the name or IP address of that server in the field below.

If you choose this mode, your printing configuration is now finished. Accept the options by clicking the OK buttons, and you will be able to check the list of available printers in the Configured on other machines tab of the main interface (see figure 14-10).

14.5.3.2. Server Mode

If you want your machine to access locally connected printers (through parallel or USB ports), or network printers not already configured on another server, you need to select the Off option. Click OK, and you will then be able to fine tune your printer server (see figure 14-11).

A number of options are available to further secure and enhance your print server features:

The printers on this machine are available to other computers

> By checking this option, you allow other computers to print on printers configured locally. Remember to restrict access by clicking on Printer sharing on hosts/networks (see below).

Automatically find available printers on remote machines

> By activating this feature you will tell your print server to automatically make available all other printers found on other servers on the local network, as if they were locally connected to your print server. This way your system's users will be able to print on any printer the print server "sees", either local or remote ones. If the remote printers you intend to use are served by a server not on your local network, you can still tell the print server to use them with the Additional CUPS servers button (see below).

Printer sharing on hosts/networks

> Clicking on this button displays a new window where you can specify which networks the local printers should be made available to.

Additional CUPS servers

> This dialog simply allows you to specify one or more CUPS servers to which we want to be able to connect and access printers from. Specify the IP address and port of the CUPS server in the dialog which opens.

Japanese text printing mode

> This option replaces the original text filter for one more suited to Japanese texts, but with less features. Use it if you have to print Japanese text-only files.

14.5.4. The Printer Configuration Wizard

Click on Add printer and the configuration wizard will come up. To move from one step to another, click on OK or Next. Use Cancel to abort the installation.

14.5.4.1. Detecting a Printer

Figure 14-13. Auto-Detecting Printers

The first screen allows you to enable the auto-detection of locally connected printers, network printers, and finally printers served by SMB (Windows®) servers. First try to activate auto-detection for the printer types you are looking for. The next step will show which printer(s) was/were detected. If the one you want to set up is listed, select it, click on OK, confirm the printer model, and proceed with *Printer Test*, page 131. If the detected printer is not the correct one check the Manual configuration box and proceed with the printer model step (see figure 14-18). If auto-detection fails, remove the check mark from all check boxes, click on Next and follow the instructions below.

14.5.4.2. Printer Port, Type, Name and Model

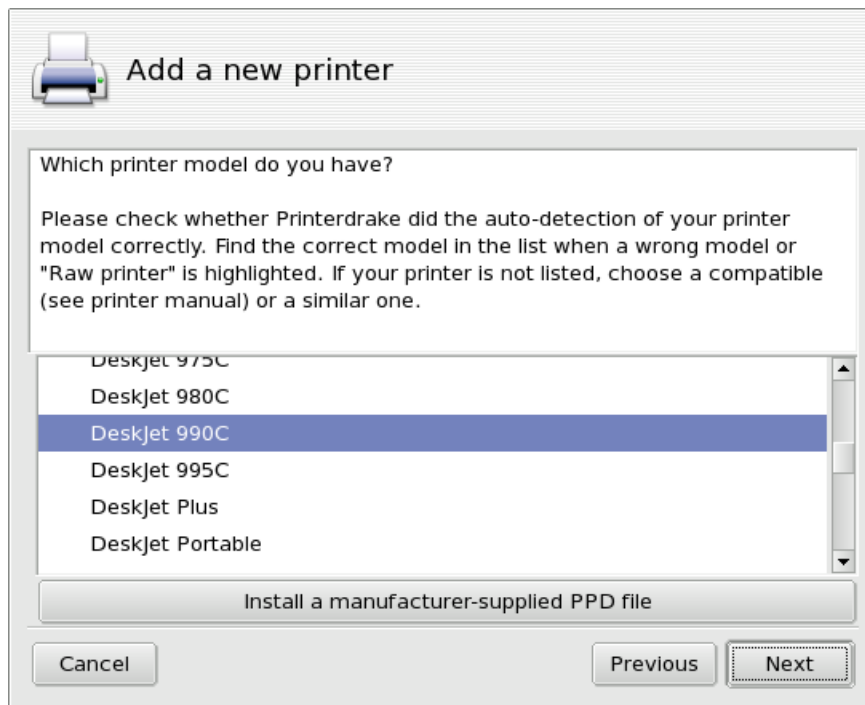**Figure 14-14. The Printer Port**

First, you need to determine which port your printer is connected to: either a parallel or a USB port.

Figure 14-15. Multi-Function Device

You will then be asked whether your printer is a multi-function device from HP or `Sony`. If so, additional packages will be installed on your system and you will be told how to scan and access photo memory cards with your device.
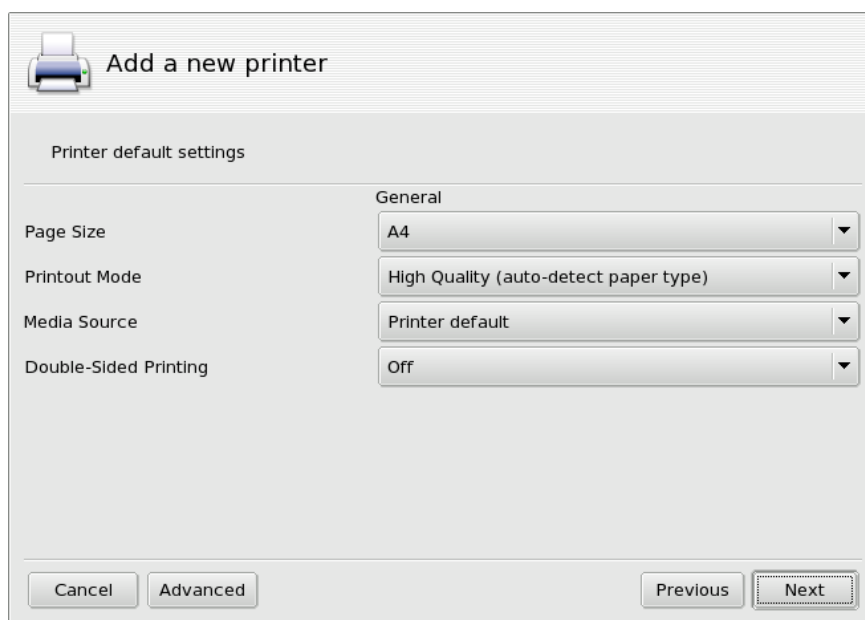
Figure 14-16. Choosing the Printer Model

Next the list of supported printers is displayed. It is a tree view with the manufacturer's name first and then the printer models. Select the printer you have or a compatible one (see figure 14-16) if yours is not specifically listed.

If you want to install the driver supplied by your printer manufacturer, click on the Install a manufacturer-supplied PPD file button and select the medium containing the PPD file and browse to it. Accept subsequent dialogs to use your chosen PPD file.

14.5.4.3. Print Options

Figure 14-17. Configuring the Printer's Options

After that, the options associated with the chosen printer will be shown (see figure 14-17). It is important you choose the proper settings (such as paper size, media source, etc.) currently installed on the printer. If the settings you choose are not correct, printing may fail.

> For settings referring to printout quality, bear in mind that higher quality levels may make the printing operation slower and may consume more ink.

14.5.4.4. Printer Name

Figure 14-18. Choosing a Name for your Printer

You must now provide a name for your printer to easily identify it. Optionally, you can also supply a Printer description and a physical Location (see figure 14-18).

> The printer name must contain only letters, numbers and the underscore "_" character. Also it is better to limit its length to 12 characters maximum so that Windows® clients don't have problems when accessing it through Samba.

> If you already have one or more configured printers, you will be asked whether the printer you are configuring will be the default printer for applications on your system. If you say No, the previous default printer will be retained.

14.5.4.5. Printer Test
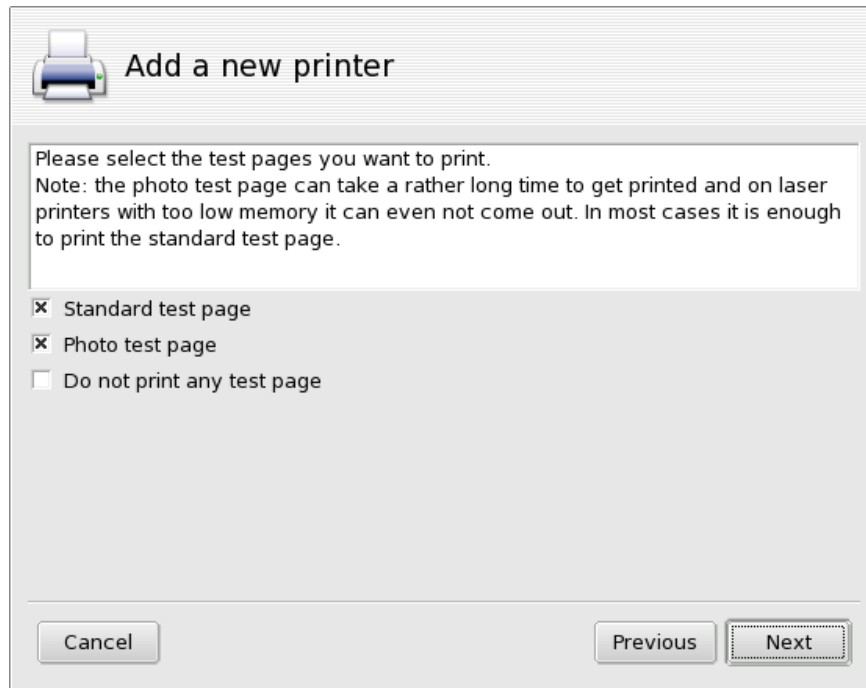
Figure 14-19. Testing the Printer

Finally, you will be asked whether or not you want to test the printer. Two test pages are available (see figure 14-19) so you can adjust the parameters according to your needs. It is advisable to print at least one test page so you can immediately correct the parameters if something goes wrong. The printer should begin to print almost immediately.

14.5.4.6. It's Done

Congratulations, you are ready to print! If you are not satisfied with your test page, answer the appropriate question with No and you will be led to the printer configuration menu (see figure 14-20) in order to correct the settings. See *Reconfiguring an Existing Printer*, page 132.

Your printer will now appear in the list of available printers in the main window (see figure 14-10).

14.5.5. Reconfiguring an Existing Printer

Double-clicking on a printer's name in the list, or clicking on the Edit button, displays a menu where you can choose actions to take on the selected printer (figure 14-20). Each option gives access to a particular step of the wizard we described above (see *The Printer Configuration Wizard*, page 127). One difference will be that the current settings will be predefined in all fields, and you may update them where required.
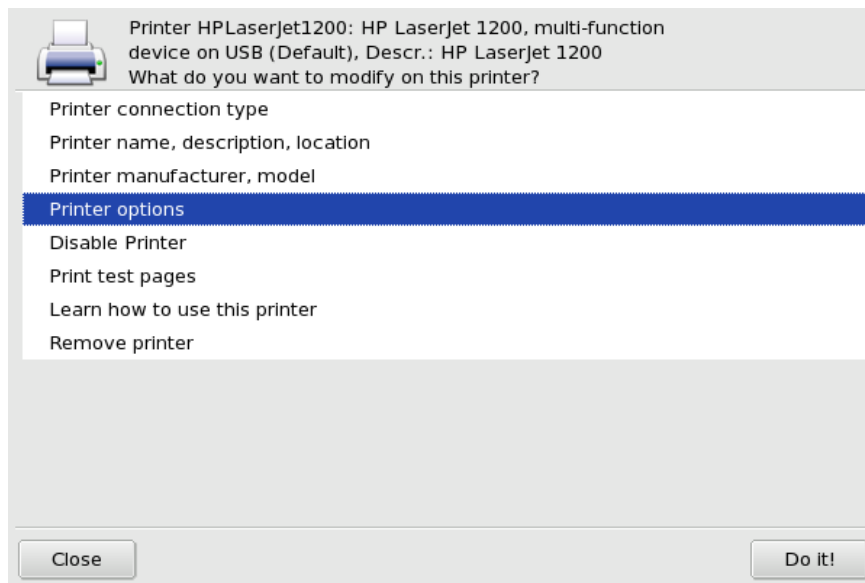
Figure 14-20. Modifying an Existing Printer

There are a few additional options:

1. Disable printer. Use this option to remove that printer from the printers available to the system's users. You might need to temporarily disable a printer under maintenance so that users don't try to use it in the meantime. When a printer is disabled, that option changes to Enable printer.

2. Learn how to use this printer. Displays information on how to use a particular printer model. In the case of a multi-function device from HP, information about scanning and photo memory card access is also displayed.

3. Remove printer. Use this option to delete that printer's configuration from the system.

Select an action in the dialog and then click on the Do it! button to perform it.

14.5.6. Expert Mode

The expert mode has three additional features:

- **Choose a Different Driver to the Default One for a Printer.** Different drivers are available for the same printer. In expert mode, a third level appears in the printer model selection list (see figure 14-16). It allows you to change each printer's driver.

- **Install Many Kinds of Remote Printers.** This feature enables you to print on remote printers using the LPD protocol, printers on Windows® servers which require authorization, or other arbitrary printer types.

If PrinterDrake is in expert mode, it does not automatically configure new local printers on start-up. Use the Add printer button to configure the printer.

If you start the new printer wizard in expert mode, there is an additional step at the beginning.

Figure 14-21. Configuring a Remote Printer

Different connection types are available:

- Local printer. A printer directly connected to a parallel or USB port on your computer. In most cases, the printer model will be auto-detected.

- Printer on remote lpd server. A printer already served by another machine on a `lpd` server.

- Network printer (TCP/socket). A printer directly connected to your local network. The network can be scanned and printer models automatically detected provided the Printer auto-detection box is checked.

- Printer on SMB/Windows 95/98/NT server. Relevant for printers already connected to a computer running an OS which serves printers with the SMB protocol, including Samba printers (the necessary Samba components will be automatically installed in this case). The network can be scanned provided the Printer auto-detection box is checked.

- Enter a printer device URI. This option allows you to directly enter the printer's Universal Resource Identifier (URI) on your network. It can be used for any of the above remote connections, and more. This is useful when your system administrator provides you directly with the printer's URI.

Click on the Modify timeout for network printer auto-detection button to change the default timeout (4000 milliseconds, or 4 seconds) for detection of networked printers. Please bear in mind that the bigger the timeout, the better the chances of detecting remote printers. However the auto-detection process will also take more time.

14.6. Installing and Using Scanners

This section will explain how to install a scanner through ScannerDrake, and how to use it with SANE and XSane (scanner interface software). We will also present a list of other scanner interface software you could use with GNU/Linux.

> Please note that while support for scanners is very good, not all scanners are supported under GNU/Linux: before buying new hardware, it is always a good idea to visit Mandrakesoft's Hardware Database (`http://www.mandrakelinux.com/en/hardware.php3`) and the SANE home page (`http://www.sane-project.org/`) to check for compatibility issues.

14.6.1. Configuring your Scanner

14.6.1.1. ScannerDrake

ScannerDrake is the Mandrakelinux scanner detection and configuration tool. This wizard will help you install your scanner. Make sure your scanner is powered on and launch ScannerDrake by clicking on the Scanners entry of the Mandrakelinux Control Center's Hardware section. You will first be prompted to install some necessary software, simply click on Yes.

The program will try to detect the manufacturer and model of your scanner. If it finds one which is ready to use it will show some information about it in the upper part of the wizard's main window. If the detection failed and no scanners were identified, you will be shown this window:
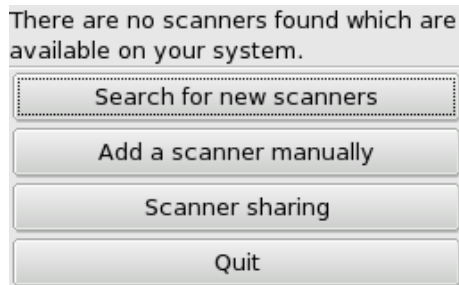
Figure 14-22. Install your Scanner with ScannerDrake

You can try to perform a new search by clicking on Search for new scanners, which is useful if you have just plugged a scanner in. If the automatic detection fails, click on Add a scanner manually and look for the specific model you own by first expanding the manufacturer's section, then browsing through the list of available models.
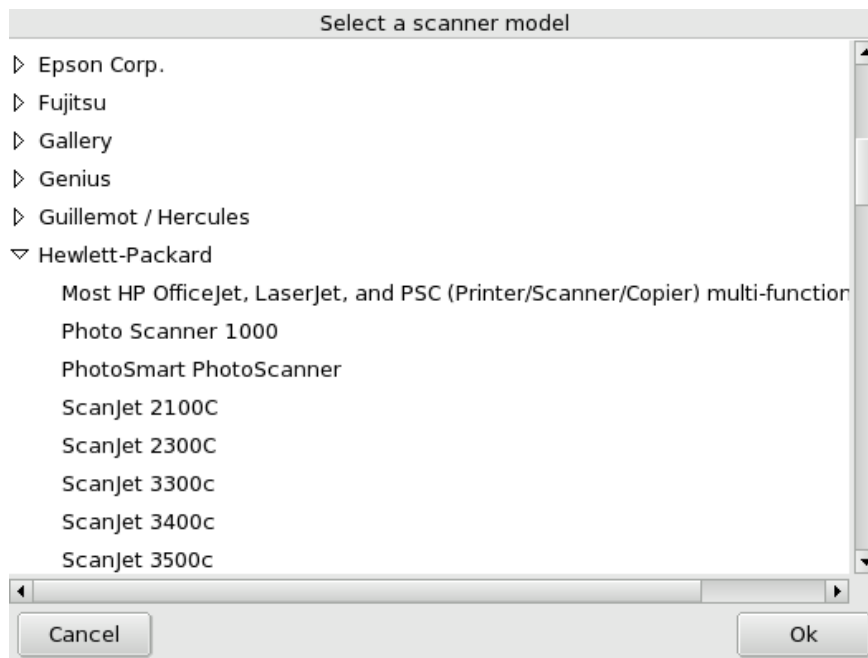
Figure 14-23. The Tree-list of All Known Scanner Models

After choosing the appropriate model, you can leave the default Auto-detect available ports option and click on OK. If you have a parallel port scanner, selecting `/dev/parport0` in the pull-down list should be the right choice.

Please select the device where your Hewlett-
Packard ScanJet 5200C is attached
(Note: Parallel ports cannot be auto-detected)

choose device Auto-detect available ports ▼
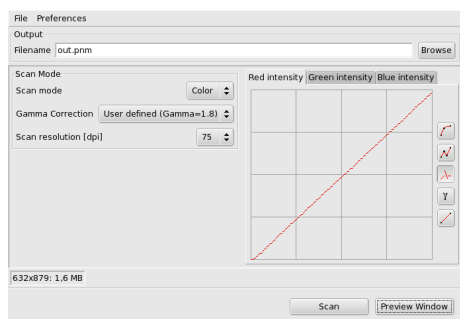
Cancel   Ok
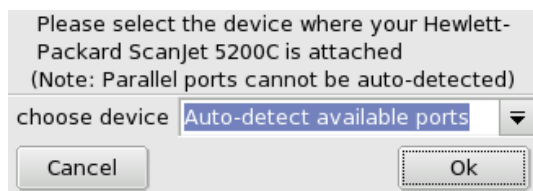
Figure 14-24. Specifying the Connection Type

Your scanner should now be installed and you should be ready to use the programs which come with SANE, XSane or other acquisition software.

⚠ Note that HP multi-function devices, such as the OfficeJet and PSC printers, must be configured through PrinterDrake. Please refer to *Configuring Printers with PrinterDrake*, page 123. The scanning part of non-HP multi-function devices can be set up with Scanner-Drake as a stand-alone scanner.

To test that everything works correctly, launch xscanimage[1] from a terminal and try to acquire a picture from your scanner. You may first acquire a preview of the scanned image by clicking on the Preview window button, as shown in figure 14-25.

File   Preferences
Output
Filename out.pnm   Browse
Scan Mode   Red intensity Green intensity Blue intensity
Scan mode   Color ▲▼
Gamma Correction User defined (Gamma=1.8) ▲▼
Scan resolution [dpi]   75 ▲▼

632x879: 1,6 MB
                              Scan   Preview Window

Figure 14-25. Acquiring Images with xscanimage

Note that xscanimage may also be invoked directly from GIMP by choosing File+Acquire+xscanimage→Device dialog from the program menu.

ScannerDrake allows for scanner sharing between users connected via a LAN. Installation is very easy: just click on Scanner sharing and either select The scanners on this machine are available to other computers or Use scanners on remote computers depending on what you want to do. With these buttons you can define which machines are allowed to use your scanners and which remote scanners you want to use.

---

1.   The `sane-frontends` package must be installed.
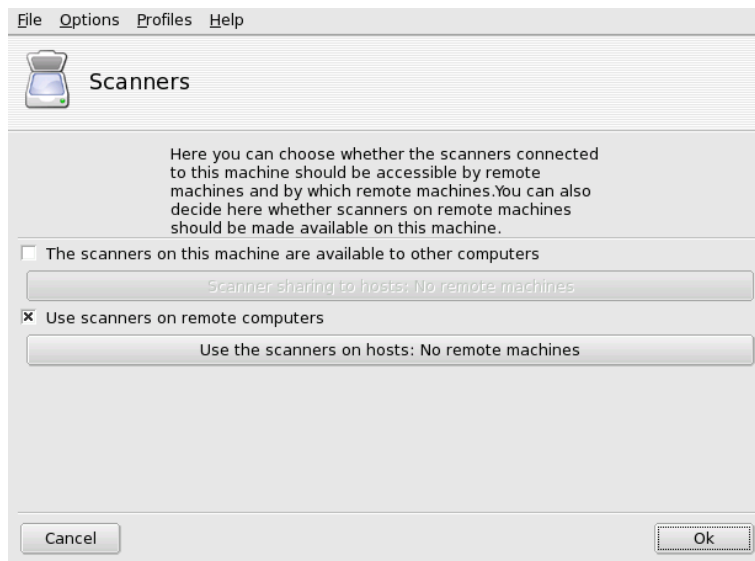
Figure 14-26. Sharing Scanners within a LAN

In order to share your scanner on your LAN, the `saned` package needs to be installed. If it isn't, ScannerDrake will ask you if you want to install it. You also need to set up scanner sharing on the machines from which you want to access the scanner. Check the Use scanners on remote computers box, and then click on Add host. Fill in the information in the Name/IP address of host field for each of the machines which scanners.

14.6.2. Using Image Acquisition Software

14.6.2.1. XSane

While xscanimage is more than enough for your basic scanning needs, more experienced and/or graphic-oriented users will want to use a more sophisticated program. XSane[2] offers more options and a more informative display during the image acquisition process.

You can launch XSane through the Multimedia+Graphics→X Sane menu item. You'll see several windows pop up on the screen.

---

2. The `xsane` package must be installed.
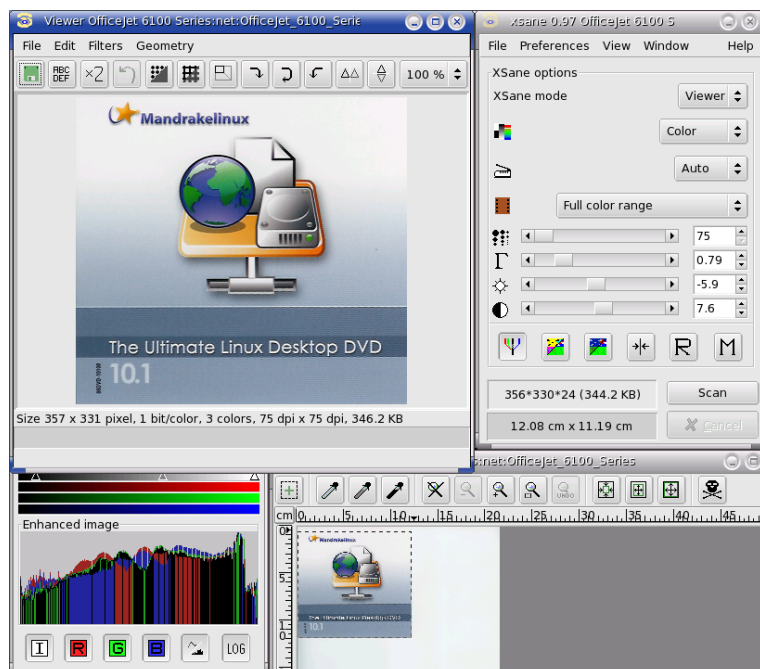
Figure 14-27. XSane Multiple Windows

If the package `xsane-gimp` is installed, you will have a GIMP plugin at your disposal. It will allow you to import your images directly into GIMP for image retouching tasks. To do this, simply choose File+Acquire → XSane: device dialog to launch XSane. You can now scan your image and have it sent directly to GIMP.

14.6.3. Advanced Configuration

14.6.3.1. Fine-Tuning the Resolution

Most modern scanners boast high resolutions, such as 1200, 1600 or 2400 DPI (Dots Per Inch). But it would be a mistake to perform all of your scanning at the maximum available resolution. You will notice very little — if any — quality difference between a 300 and a 600 DPI image scan, but the file size will grow exponentially, up to many MBs of disk space for a single image file.

The resolution value should be chosen according to the device on which the image will be reproduced. For images to be viewed on computer monitors, e.g. for web sites, the resolution should be close to typical monitor resolution values, between 70 and 100 DPI. Higher values will result not only in bigger images, but the dimensions will also increase, so that an image scanned at 160 DPI instead of 80 will be about twice as large[3].

If you intend to print your images, a resolution of 300 DPI should be enough for most home printers. Increase this value if you have a very high quality printer.

Higher values should be chosen only for specific uses, such as enlarged images on very high quality printers, or quality scans of black and white originals. You will have to experiment a little until you're satisfied with the results.

14.6.3.2. OCR Software

By installing the `kdegraphics-kooka` and `ocrad` packages, you'll be able to use Kooka, a simple graphical front-end to SANE which is also able to perform OCR tasks. To launch it, choose Multimedia+Graphics→Kooka from the main menu.

First you will be asked to choose the scanning device and then Kooka's main window will appear.

---

3. However, scanning at a higher resolution, and then reducing the resulting image size using graphic manipulation software such as GIMP, is one method often used to obtain better results than directly scanning at the desired final resolution.
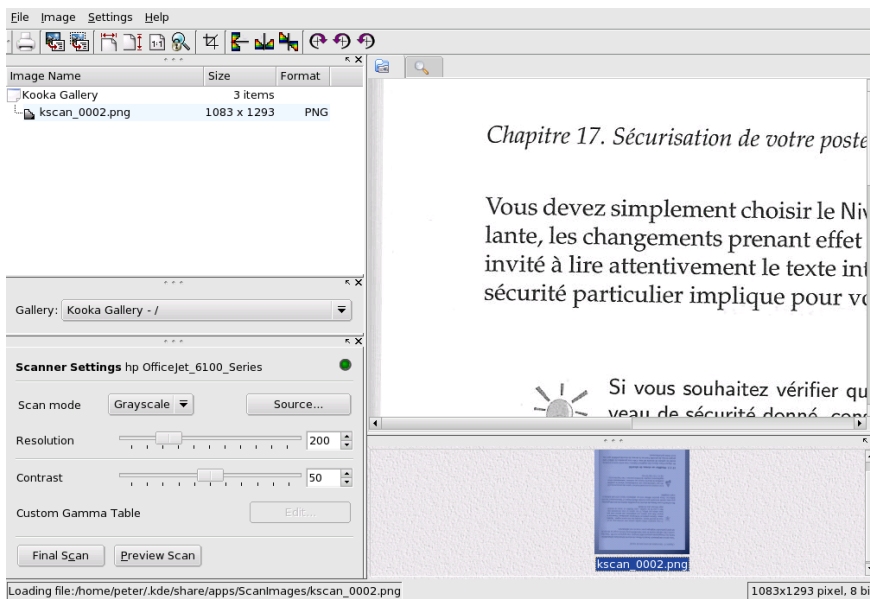
Figure 14-28. Kooka's Main Window

figure 14-28 shows a screen shot of a scanned image. To do so place the image or book you want to scan onto your scanner and click on Preview Scan at the bottom left of Kooka's window. For better results, you should choose the Grayscale Scan mode. Then adjust the resolution (200 DPI should be enough), select the part of the image to be scanned and click on Final Scan.

To benefit from Kooka's OCR features, you must configure it. Access the Settings→Configure Kooka menu, click on OCR, and select the OCR engine you want to use.
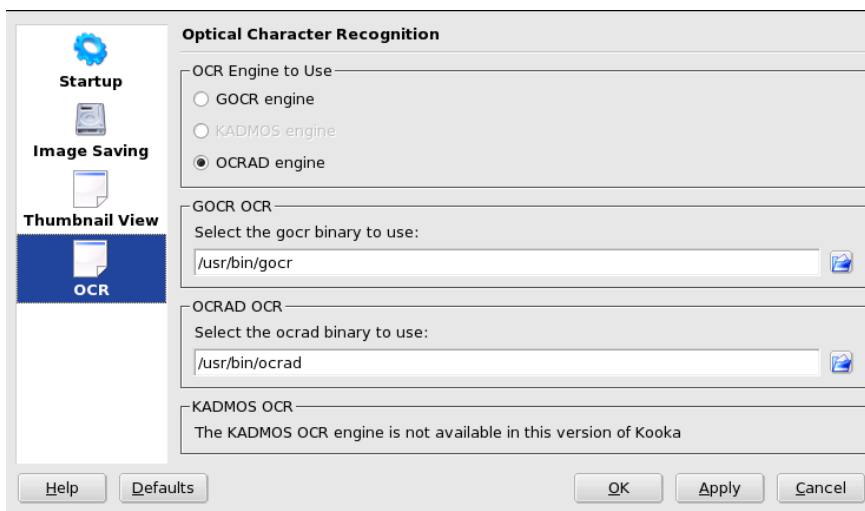

Figure 14-29. Kooka's Configuration Window

Once this is done you can click on this icon (Image→OCR Image) and click on Start OCR. The resulting text will appear along with a spell correction window.

> Kooka is still in beta phase. Although it's possible to make it work properly you will need to adjust its parameters until you obtain a decent rendering. For more information on Kooka please read it's handbook (Help→Kooka Handbook).

14.6.4. Other Scanner Interface Software

Here is a list of other scanner interface software which is known to work under GNU/Linux.

- Unfortunately, OCR (Optical Character Recognition) programs are not as common or sophisticated as their image acquisition counterparts. However there are at least two programs which are mature enough: Clara OCR (`http://www.claraocr.org/`) and GOCR (`http://jocr.sourceforge.net/`). You'll find all the necessary packages on the Mandrakelinux CDs.

  Clara's graphical interface is very simple and doesn't require a specific desktop environment, but it will be necessary to train the program on the scan of a sample page. The training process can be quite tedious, and not very intuitive for the new user[4], so be sure to read the tutorial file. More experienced users should also refer to its *Advanced User's Manual*.

- GOCR is another project which has reached a usable status, but bear in mind that it is still beta software. GOCR can read images in many formats, and will produce a simple text file as its output. It's a command-line tool, so if you want to use a graphical front-end you will need to install the `gocr-gtk` package, although some image capture applications such as XSane offer limited OCR capabilities through it. You can launch it through the Multimedia+Graphics→Gtk-ocr sub-menu.

- Users of the FLTK ("Fast Light Tool Kit") graphic user interface could try FlScan (`http://freshmeat.net/projects/flscan/`), a FLTK front-end for SANE.

- For EPSON scanners, you could download Image Scan! for Linux (`http://www.epkowa.co.jp/english/linux_e/index.html`), a scanner utility provided free of charge to GNU/Linux users by EPSON KOWA Corporation.

- While multi-functional HP devices are configured using PrinterDrake, owners of these devices should have a look at the HP Linux Inkjet Project (`http://hpinkjet.sourceforge.net/`). The developers involved in the project aim at providing GNU/Linux support for most Hewlett-Packard OfficeJet, PSC, LaserJet, and PhotoSmart printer multi-function peripherals (MFPs).

14.7. Setting up your UPS

 The role of a UPS (Uninterruptable Power System) is to provide you with electrical power whatever happens. Say there's a power outage in your area, the UPS will enable you to continue working for a certain amount of time due to its battery (up to 10 minutes usually depending on the model). Its main function, however, is to allow you to save your data and to cleanly close your machine, minimizing and even avoiding data corruption and loss.
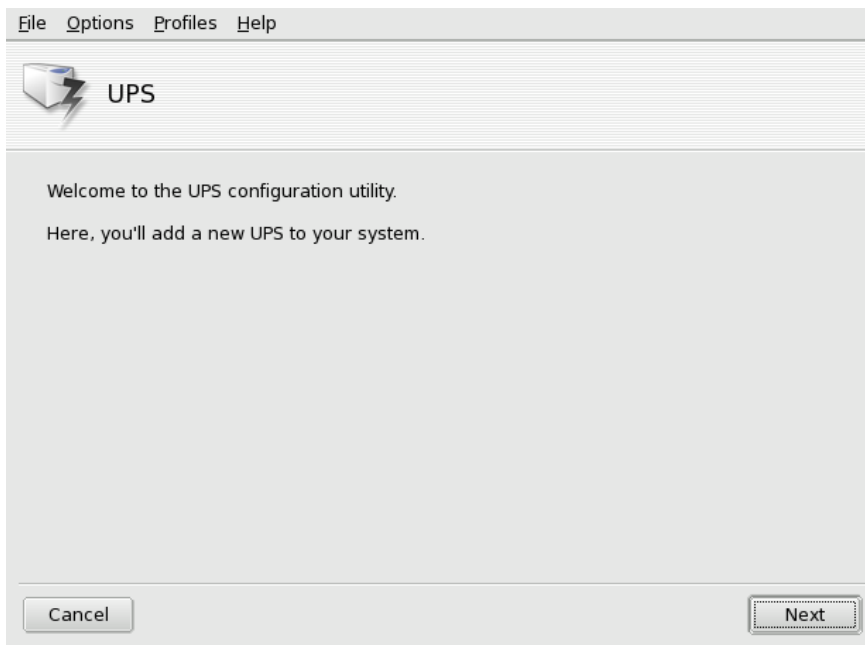
To launch the DrakUPS utility, open the Mandrakelinux Control Center in the hardware section and click on Set up a UPS for power monitoring.

> The `nut-server` ("nut" standing for Network UPS Tool) package needs to be installed.
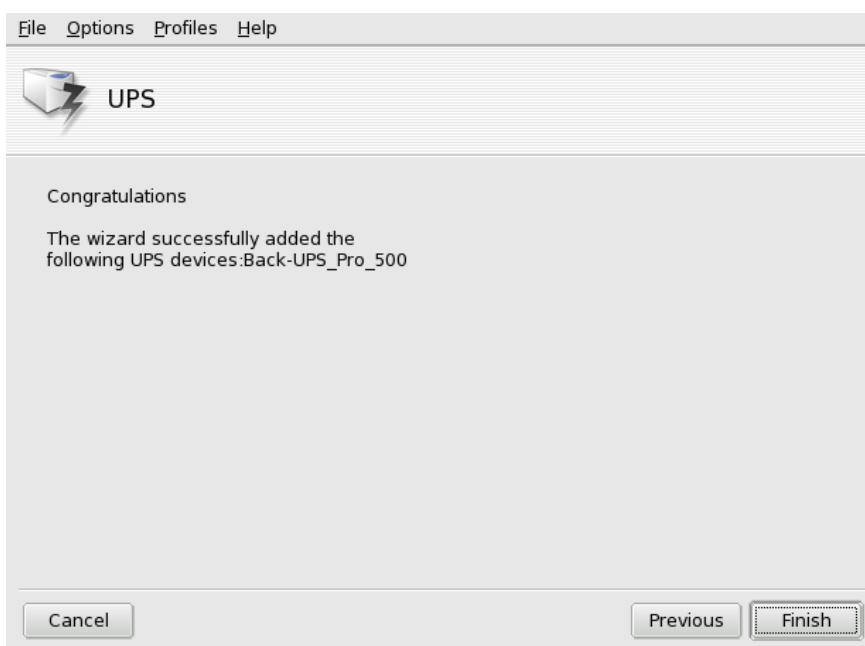
---

4. To quote the authors: "Clara OCR is not simple to use. A basic knowledge about how it works is required for using it".

Figure 14-30. DrakUPS Set Up

Next you will be asked to whether you wish for DrakUPS to autodetect your UPS or to manually configure it. First try with auto-detection. If all goes well you should get a congratulation message.
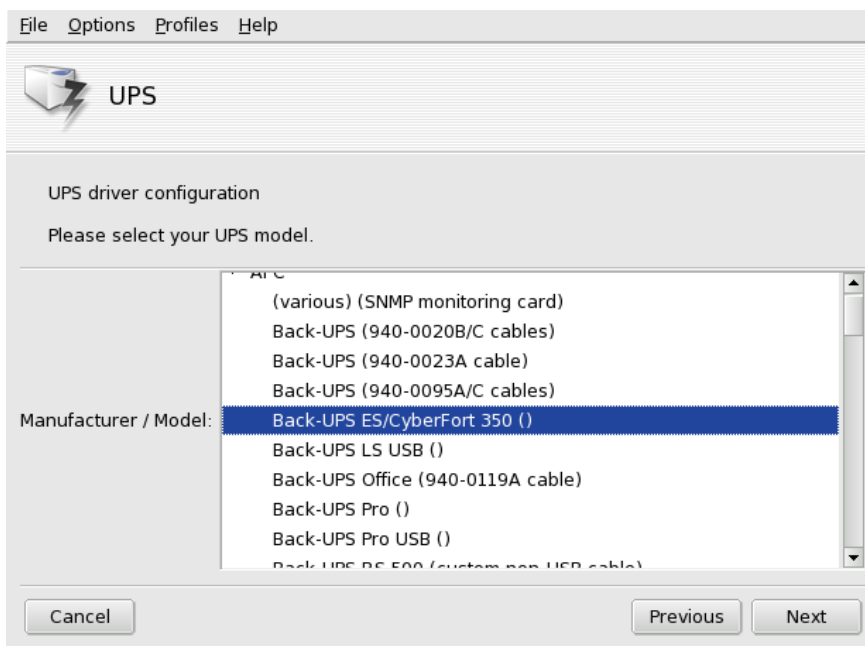

Figure 14-31. Successful Auto-detection

If it doesn't work try to do it manually.

Figure 14-32. DrakUPS Manual Configuration

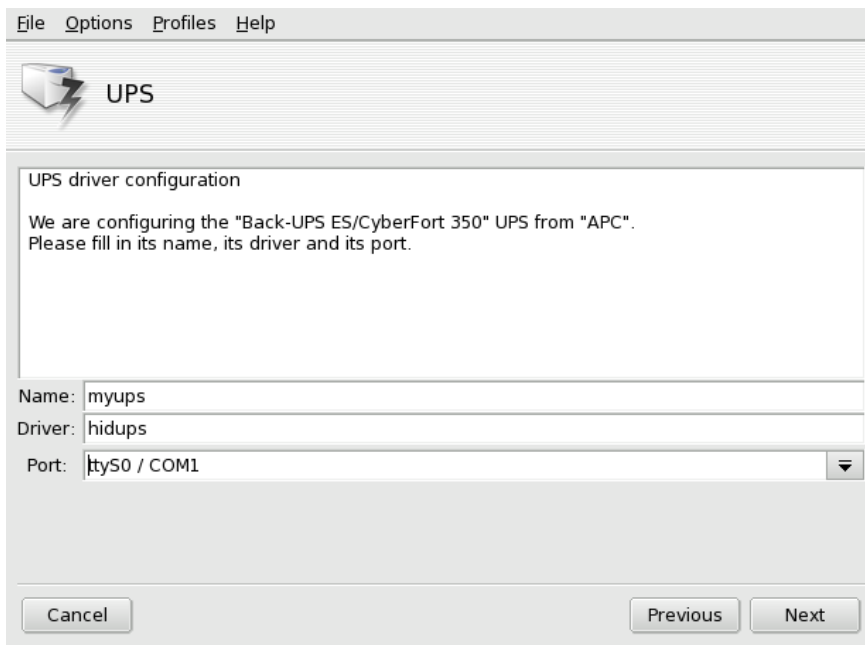The next step is to choose your UPS model. Select the most appropriate one in the list of manufacturers and models.

Figure 14-33. Selecting the Manufacturer and Model

Then DrakUPS will display some fields for you to fill. Assign a Name, Driver, and Port[5].

---

5. The Name and Driver fields should automatically be filled. Of course, you can change its name but we recommend you keep the driver name.

Figure 14-34. Name, Device and Port Names

If all went well your UPS should now be configured and ready to help avoid bad power outage surprises.

Chapter 15. Setting up your Network and Accessing the Web

15.1. Network and Internet Connection Management

Before connecting to the Internet, you are encouraged to set up a firewall on your machine so as to avoid bad surprises such as intrusions on your system. You can set up a very simple, yet effective, firewall using DrakFirewall (please refer to *Securing your Internet Access via DrakFirewall*, page 182, for more information).

Your Mandrakelinux system contains a tool which allows you to easily configure your network access, whether it be to the **Internet** or to a local network. To launch drakconnect, first open Mandrakelinux Control Center and select the Network & Internet section. Here, a few tools enable you to configure and maintain network connections. A view of the main interface is shown in figure 15-1. We describe the Internet connection sharing tool in *Internet Connection Sharing*, page 148.
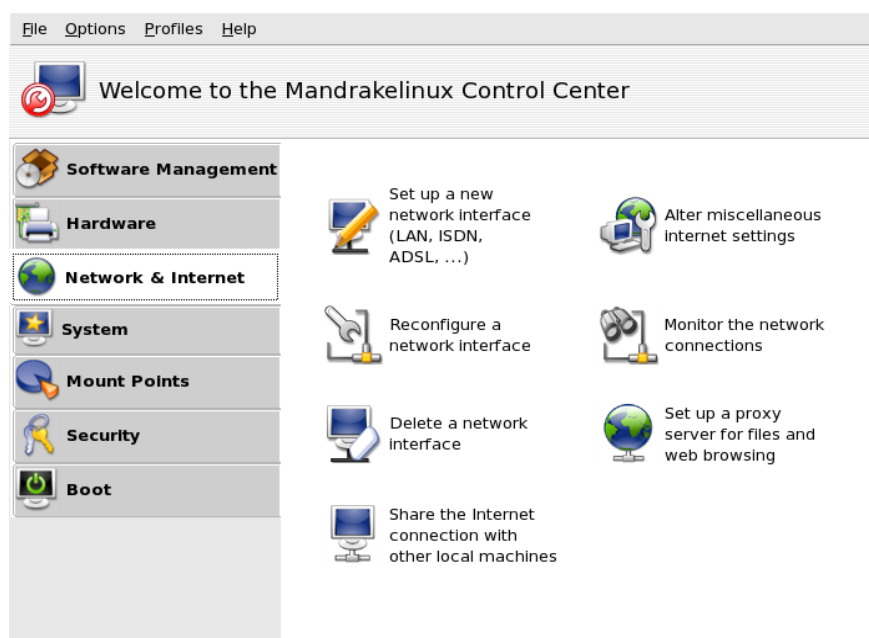
Figure 15-1. DrakConnect Tools

15.1.1. New Connection

This tool allows you to set up a new network connection. drakconnect supports different types of Internet and network connections. The first step consists in choosing which type of connection you wish to configure. Always make sure you have all the information provided by your ISP or network administrator at hand.

15.1.1.1. Modem Connection

Select the Modem connection type and continue to the next step. A list of detected modems is shown. If the modem you wish to configure isn't automatically detected, select the Manual choice box and then the communications port the modem is connected to. The required packages will be installed.

You will then see a list of countries/ISPs;. If yours is listed select it and continue to the next step: some parameters (connection name, phone number to dial, and authentication scheme) will be automatically set. Verify them, add the missing ones and accept them. If yours is not listed, select the Unlisted - edit manually option, click on Next and fill the parameters with the settings provided by your ISP (see figure 15-2).

Figure 15-2. Entering Dial-up Connection Parameters

All parameters should be obvious, except for the authentication type. The value in the Authentication pull-down depends on what your ISP supports: Script-based (an old type of authentication method based on "expect" and "send" types of chat between your system and your ISP); Terminal based (a terminal window will pop up when the connection is made and you will have to login interactively); PAP, CHAP, or PAP/CHAP (authentication information exchange protocols, CHAP is preferred because it is more secure, PAP/CHAP will automatically choose the supported one).

Then come the IP, DNS and gateway settings. Nowadays, most ISPs provide them automatically when a connection is made, so selecting the Automatic option on them is usually a safe bet. You will then be asked whether you wish to allow users to start the connection. The safest choice is No. Otherwise any user will be able to take the link down, therefore disconnecting every other user.

During the next step you will be asked whether to start the connection at boot time or not: it is probably safer and cheaper to choose No. Finally you will be asked to test the connection: we recommend you to do so to make sure all parameters are accurate. You can now control your Internet connection using the kppp remote access connection dialer through the main menu: Internet+Remote Access→KPPP.

15.1.1.2. LAN Connection

Select the LAN connection type and continue to the next step. Your NICs will be detected automatically; if you have more than one, you will have to select the one you wish to configure. You can also load a driver for your NIC manually.

Then, you will have to specify if the network parameters will be automatically set up (Automatic IP (BOOTP/DHCP)) or not (Manual configuration): fill the next steps with the parameters which your ISP or network administrator gave you.

> Check the Network Hotplugging box to have your network brought up and down automatically when you connect and disconnect the network cable. This is specially handy for laptop users.

If you configure the network with DHCP you can optionally provide the machine's hostname. Then you can supply the Zeroconf hostname: this is the name which will be assigned to the machine when the network link is not active (meaning the cable was disconnected when the network service was brought up).

Finally, the wizard will ask you to restart your network to activate the changes.

After the configuration is done, you can bring the network connection up or down as described in *Monitoring Connections*, page 148. Please bear in mind that LAN connection types are set up to always be started at boot time.
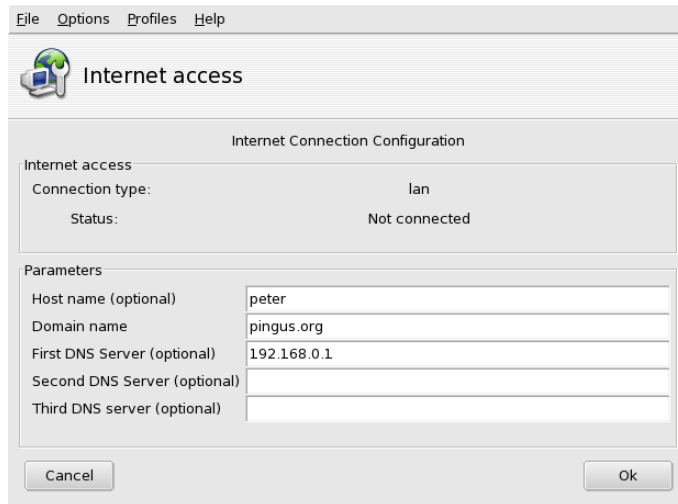
An applet will appear in the desktop's panel indicating that the connection is up (

) or down (

). Right click on it to access a menu that will also let you control the connection's state as well as other parameters.

15.1.2. Internet Access

Figure 15-3. Configuring the Internet Access
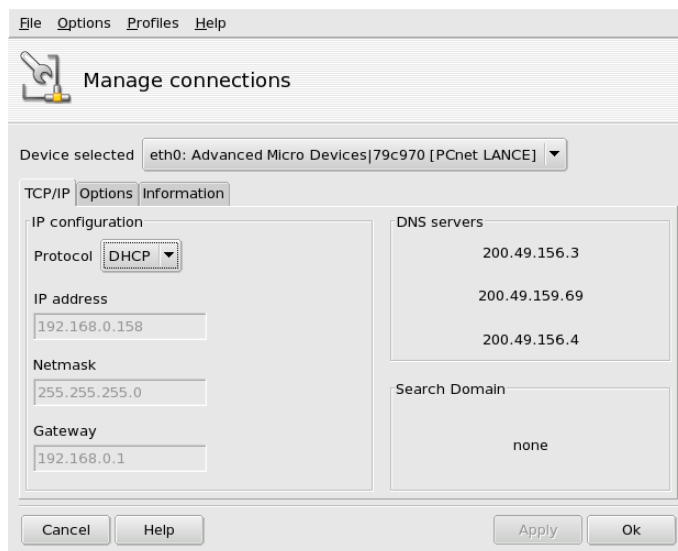
This tool allows you to specify Internet access parameters if they need to be modified after your initial configuration. Please bear in mind that these parameters are system-wide and apply to all interfaces. If needed, the gateway address may be modified as described in *Managing Connections*, page 147.

15.1.3. Managing Connections

Figure 15-4. Manage Network Connections

This tool permits you to modify network interface-specific parameters. Use the drop-down list at the top to select the interface you want to configure. The tabs allow you to change parameters and options according to the network interface type selected for configuration.
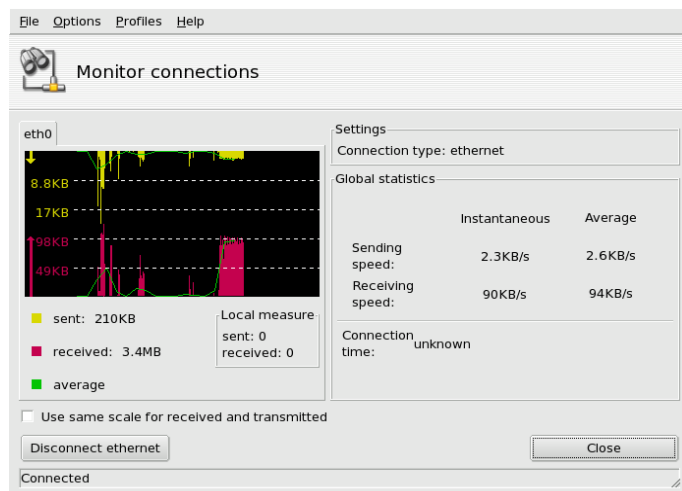
15.1.4. Monitoring Connections

Figure 15-5. Real-Time Network Connection Monitoring

This tool shows the network interfaces activity. You can specify some options for the traffic graphic and statistics: update interval, scale, etc (see figure 15-5). It can also be used to control the status of the network connection, bringing it up or down using the button at the lower left.

15.1.5. Removing a Connection

This tool simply enables you to remove a network interface. Select the interface to be removed in the Net Device pull-down list.

You will not be asked for confirmation. Once an interface is selected for removal, pressing the Next button deletes it at once.

15.1.6. Proxy Settings

This tool allows you to define the hostnames or IP addresses of proxies for the FTP and HTTP protocols your computer will use. Fill the fields with the required values and click OK.

A proxy is a server which retrieves information from the Internet on your behalf, keeping a local copy of the web pages which are most frequently requested. They are referred to as "caching proxies", and optimize bandwidth usage. In some organizations, you cannot access the Internet directly. You must pass through a proxy which authenticates you before allowing you to connect to the Internet. This is usually combined with a firewall which only guarantees the proxy direct access to the Internet. They are referred to as "authentication proxies". In corporate or business environments, proxies perform both caching and authentication functions for performance and security reasons.

15.2. Internet Connection Sharing

This tool configures your system so that it acts as a gateway to the Internet for other machines connected to it via a LAN. In order for your machine to do this, you will need an already configured and working connection to the Internet and a network connection to your LAN. This implies at least two interfaces, for example, a modem and an Ethernet card.

This wizard will also configure a firewall to block most connections from the Internet. You are encouraged to check that the firewall configuration suits you after completing the wizard.

After you complete this wizard, all computers on the LAN will be able to access the Internet. Their configuration will be automated due to the DHCP server which will be installed on your gateway, and the web access will be optimized due to the use of the Squid transparent proxy cache.

1. Choosing the Internet Interface

   You first need to specify the name of the interface connected to the Internet. Make sure you select the correct one: use the examples in the on-line help as a guide.

2. Choosing The LAN Network Adapter

   If you have more than one Ethernet interface, and depending on what you chose as your Internet interface, the wizard might ask you to select the one connected to your LAN. Make sure you select the correct one. Note that all traffic to and from this network passing through the gateway will be masqueraded, that is: it will appear to come from the gateway instead of from the LAN.

3. Configuring the LAN Interface

   At this point, if it is the 1st time the system has been configured as a gateway, the wizard will automatically install and set up all the software needed for the gateway to function properly.

   Otherwise, the wizard will first offer to reconfigure the LAN interface so that it will be compatible with the gateway services. It is recommended that you leave the default options and click on Next. Then, all the software needed will be installed.

Configuring the Clients

A *DHCP* server has been installed on the machine. By configuring the clients on the local network to use DHCP, they will automatically use the Mandrakelinux machine as a gateway to the Internet. This works for Windows®, GNU/Linux and any other OS which supports DHCP.

For example, on a Mandrakelinux client system, make sure you selected DHCP in the Protocol pull-down list when configuring the network as shown in figure 15-6.
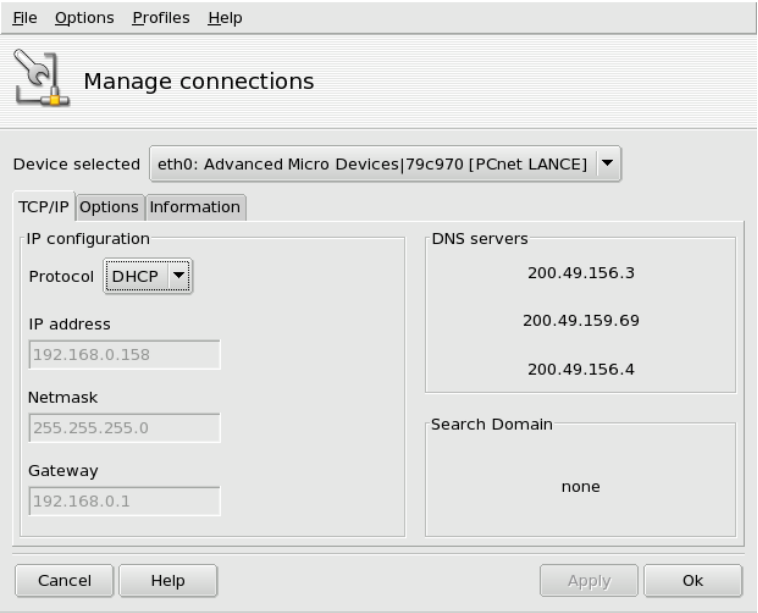
Figure 15-6. Configuring a Client to Use DHCP

Chapter 16. Personalizing your System

16.1. Customizing your Menus with MenuDrake

In order to help you manage the main menu of your preferred graphical interface, Mandrakelinux provides you with a menu editor which ensures menus from all desktop environments (such as KDE or GNOME) are coherent.

This tool allows system administrators to control the menus for all users (the system menu) but can also be utilized by users to personalize their own menus. You can launch MenuDrake from the Mandrakelinux Control Center or from the System+Configuration+Other→Menudrake menu entry.

Figure 16-1. Launching MenuDrake in System or User Mode

If started by `root`, MenuDrake can be used in two different modes: either changing menus for all users, or customizing the menus for user `root`. You will be able to switch from within the application thereafter, but for now, click on:

- System menu to make changes to menus available for all system users;
- Root menu to customize the menus for the `root` user only.

When you launch MenuDrake, it first scans your current menu structure and displays it. The main window (see figure 16-2) is divided in two parts: the menu itself on the left, and a form relative to the highlighted menu item on the right.
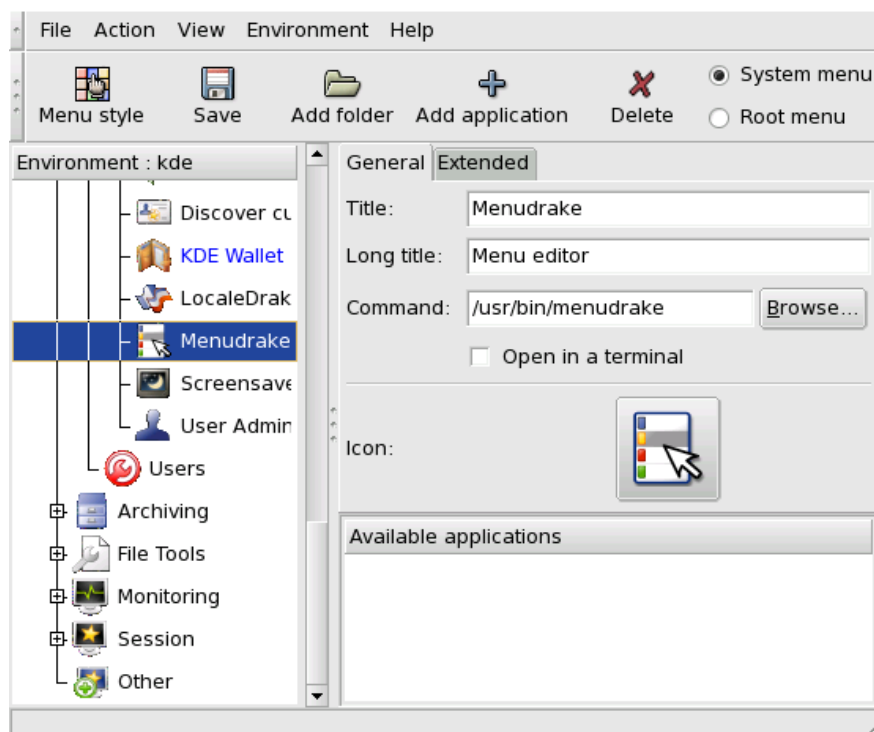
Figure 16-2. MenuDrake's Main Window

You can click on the tree's [+] signs to view the content of the related sub-menus, and on [-] to hide them.

> In your tree you may see entries which do not appear in your actual menu. These are empty directories which are not displayed but can be used for future applications which you may wish to install.

16.1.1. Adding a New Menu Entry

This should seldom happen as all Mandrakelinux graphical applications should provide a menu entry. However if you want to add a menu entry for a package you compiled yourself, or for a console mode program, use this function. Let's suppose you want to run the `top` command in a terminal window to view running processes and the utilization of system resources through a menu entry in the System→Monitoring menu.

Select the System→Monitoring entry, and click on the tool bar's Add application button. A dialog will appear asking you for the title of the menu entry and the command associated with it.
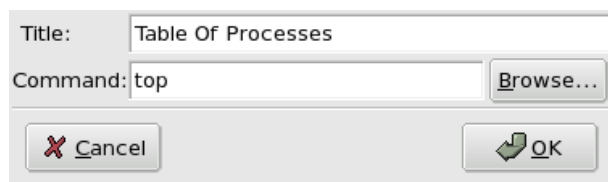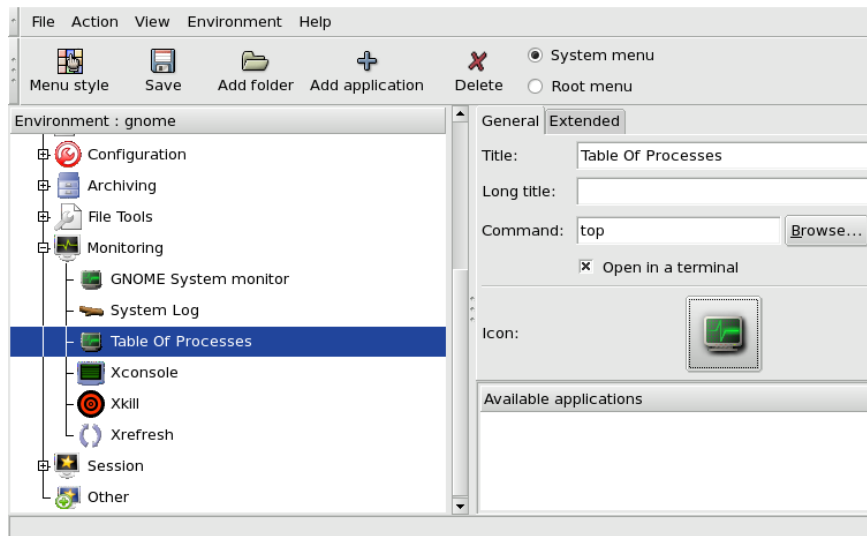

Figure 16-3. Adding a New Menu Entry

Edit the title (you could insert "Table Of Processes") to be shown in the menu. Then you need to provide the action the system should execute in the Command field: **top**. Click on OK and the entry will be added to the menu tree.

You can also choose an icon for your entry from the list which appears once you click the icon button itself. The new entry is shown in figure 16-4. Do not forget to check the Open in a terminal box to have the program run in a terminal window.

Figure 16-4. A New Menu Entry with MenuDrake

> While modifying your menus, you might make a big mess out of
> them... Remember that you can reload the menus as you last saved
> them by pressing the **Ctrl-R** keys (or accessing the File→Reload
> user config sub-menu). You can also revert to the default menus by
> accessing the File→Reload system menu sub-menu.

Finally to activate your modifications, click on the Save button and that's it. Congratulations! You can now test
your new settings by accessing the main menu.

> Depending on the graphical interface you are using, the changes to
> your menu may not be shown immediately. In some cases, you may
> need to log out and back in again for the changes to take effect.

16.1.2. Advanced Features

16.1.2.1. Different Menu Styles

Depending on the experience the users working with your machine have, you may want to provide them with
different menu styles. Mandrakelinux provides a few template menus which you can eventually customize.
They are available through the main window's Menu Style button.
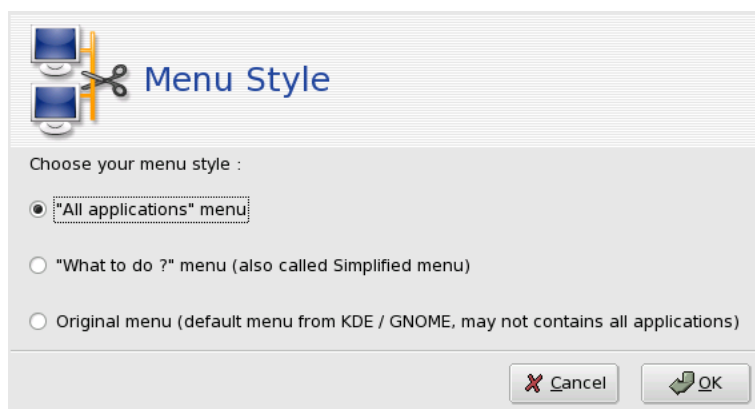
Figure 16-5. Choosing a Menu Style

Choose one of the available options:

- **Use system administrator settings.** If you started MenuDrake as a simple user, you can choose to set your personal menu style to use the menus prepared by the system's administrator.

- **All applications.** This is the traditional menu shipped with Mandrakelinux and it contains nearly all the available applications, sorted into functional categories.

- **What to do?** Specifically designed by our ergonomics team, this menu provides a fast access to most common applications sorted by usage, such as Play a game, Use the Internet, etc.

- **Original menu.** These are the plain menus as provided by the KDE or GNOME desktops. This menu probably lacks some applications.

When you have chosen a menu style, click on OK. You will then be able to see the corresponding menu structure in the main window, and you can then customize it.

16.1.2.2. About the Environment Menu

The entry we have just added to the menu is now available in the active graphical manager menu. It is also possible to make modifications to all graphical manager menus by choosing Environment→All environments.

All entries which only apply to the active graphical environment appear in blue in the tree structure on the left.

16.1.2.3. Moving and Removing Entries

MenuDrake entries support the drag-and-drop feature. Similarly, you may have noticed that whenever you remove an application from the menu, it appears in the "attic", that is the Available applications list on the bottom right corner. If you ever wish to add them again, you simply have to drag them to the desired place in the menu tree.

16.2. Configuring Start-Up Services

At boot time, the system starts a number of services (programs running in background to perform a variety of tasks). This tool gives the administrator control over those services. See the *The Start-Up Files: init sysv* chapter of the *Reference Manual* for more information.
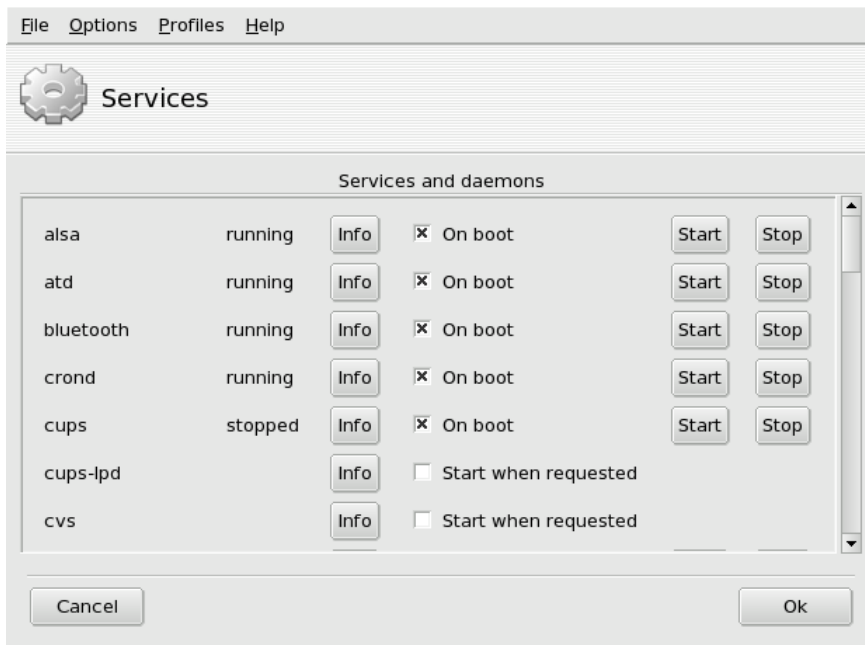
Figure 16-6. Choosing the Services Available at Boot Time

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

- Service name;
- Current Status: either `running` or `stopped`;
- Info: click on this button to get a little explanation about that service;
- On Boot: check this box if you wish this service to be automatically brought up at boot time[1]. Alternatively, if xinetd is installed and the service is a xinetd service, the label Start when requested will be displayed. Checking the box will then mean to activate that service in xinetd. You will also have to make sure that the xinetd service itself is activated.
- Start: immediately starts the service, or restarts it (stop+start) if it is already running;
- Stop: immediately stops the service.

For both the Start and Stop buttons, a tool tip will show you the status of the operation.
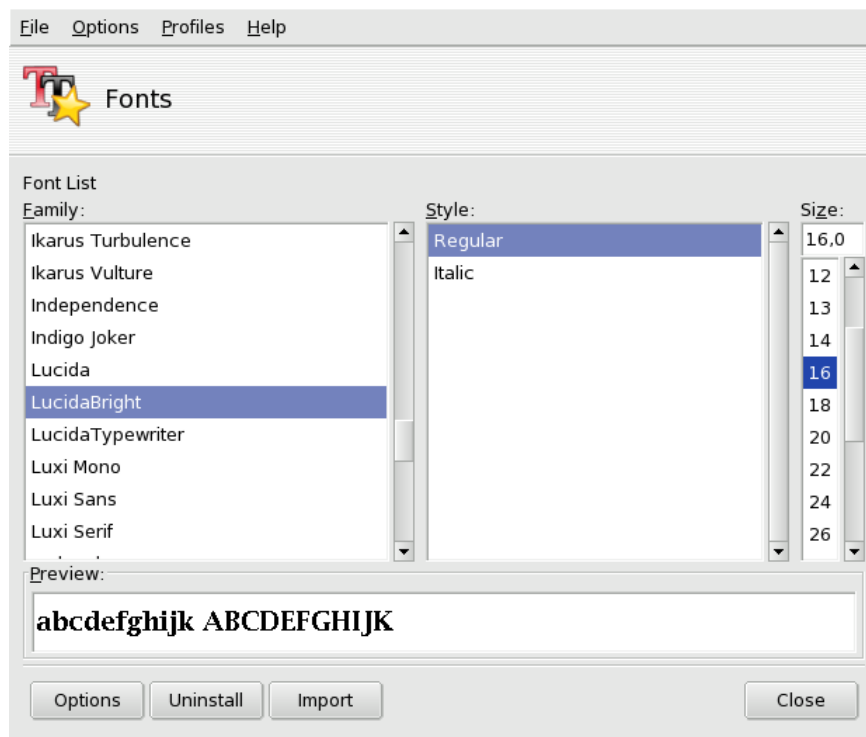
16.3. Managing Available Fonts on your System with DrakFont

This tool enables you to review the different font families, styles, and sizes available on your system. It also allows the system administrator to install new fonts.

The main window (see figure 16-7) shows a visual appearance of the currently selected font combination.

---

1. Generally in *runlevels* 3 and 5.

Figure 16-7. DrakFont's Main Window

drakfont is made up of a number of windows which are accessible through the buttons located at the bottom-left corner.

Options

Allows you to specify which applications and devices (such as printers) will support the fonts. Select the ones you want support for and click on the OK button.

Uninstall

Allows you to remove installed fonts, in order to save space for example. Use this with great care, it could have side effects on your applications. You should notably not remove fonts you did not install yourself.

Import

Allows you to manually add fonts found outside the Mandrakelinux distribution, on a local Windows® installation or from the Internet, for example. Supported font types are `ttf`, `pfa`, `pfb`, `pcf`, `pfm`, `gsf`. Clicking on the Add button will open a standard dialog allowing you to specify the font file to import. Once you've specified all the fonts you want to import, click on the Install fonts button.

> To select more than one font, double-click on the first font you wish to select and it will be added to the Import Fonts window. Then double-click the other fonts you wish to install and the same action will occur. When you are done click on the Close button and then on the Install fonts button. Once the installation operation is done, make sure the new fonts appear in the Family list.

16.4. Setting your Machine's Date and Time

This little tool enables you to set your system's correct internal date and time.
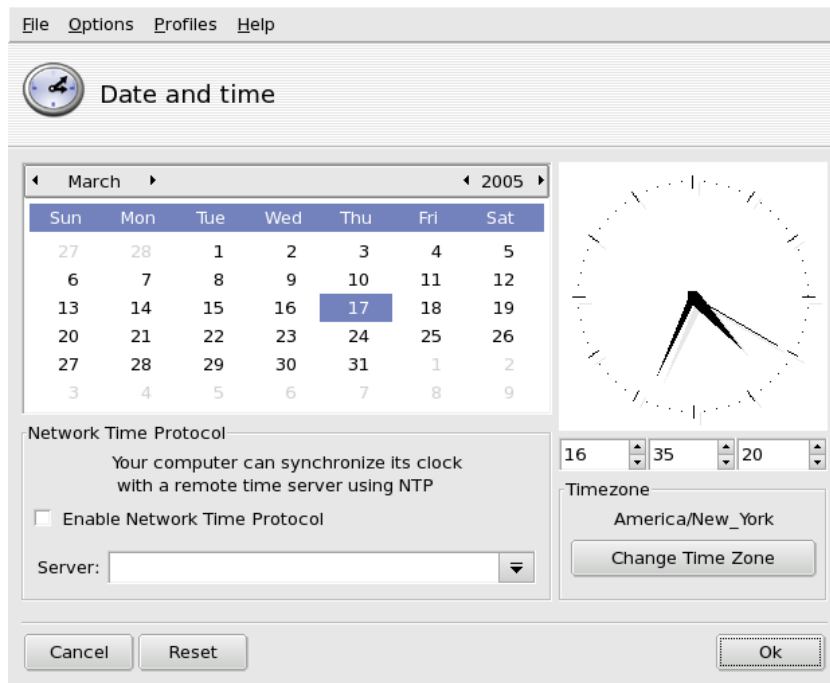
Figure 16-8. Changing Date and Time

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

- To change the year, click on the little arrows on each side of the year; same procedure to change the month. This updates the month view where you can click on the current day in order to highlight it.

- We recommended that you check the time-zone settings for your geographical location. Click on the Change Time Zone button and select the correct place in the tree view.

  Once you've chosen the time zone, a dialog will appear asking you whether your hardware clock is set to GMT. Answer Yes if only GNU/Linux is installed on your machine, No otherwise.

- To change the time, you can either move the hour, minute and second hands of the analog clock, or change the numbers below it.

- If you have a permanent Internet connection and want your system to synchronize its internal clock with time servers on the Internet, put a check mark in the Enable Network Time Protocol option and select a server in the Server pull-down list.

> The NTP (Network Time Protocol) package needs to be installed. If it isn't, a dialog will pop up and ask you whether you wish to install it.

> If you select the `pool.ntp.org` server, NTP will automatically choose the server nearest to the time zone you selected.

When you're finished, click on OK to apply your settings or Cancel to close the tool, which will discard your changes. If you want to return to your previous settings, click on Reset.

16.5. Monitoring System Activity and Status

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

16.5.1. Browsing System Logs
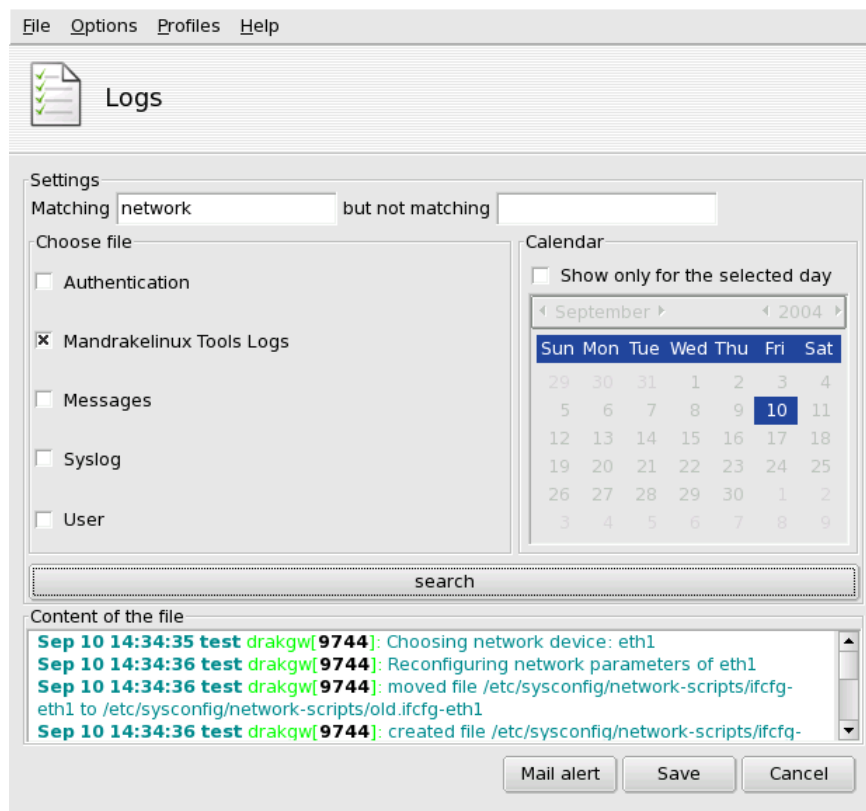
Figure 16-9. Browsing and Searching through System Logs

These are the steps to follow in order to browse or look for a specific event into the system logs:

1. You must choose which specific words to match by filling the Matching (log files contain the words) field and/or the but not matching (log files do not contain the words) field. At least one of the two fields must be filled.

2. Then in the Choose file area select the file you want to perform the search on: simply check the corresponding box.

> The Mandrakelinux Tools Log is filled by Mandrakelinux-specific configuration tools, like those you find in the Mandrakelinux Control Center. Each time these tools modify the system configuration they write a line in this log file.

3. Optionally, you can restrict the search to a specific day. In that case, check the Show only for the selected day box and choose the desired day from the calendar.

4. When all is set up, click on the Search button. The results will appear in the Content of the file area at the bottom.

Clicking on the Save button will open a standard dialog letting you save the search results into a plain text (`*.txt`) file.

16.6. Managing Users and Groups

UserDrake allows system administrators to easily add and remove users from the system, to assign users to a group, and to manage user groups in the same manner.

> In this section we will only focus on user management. Group management is very similar, however.

16.6.1. The Interface

Launching UserDrake will display the main window (figure 16-10) which lists the users currently defined on the system. You can switch from users to groups by clicking on the Groups tab next to the Users tab.
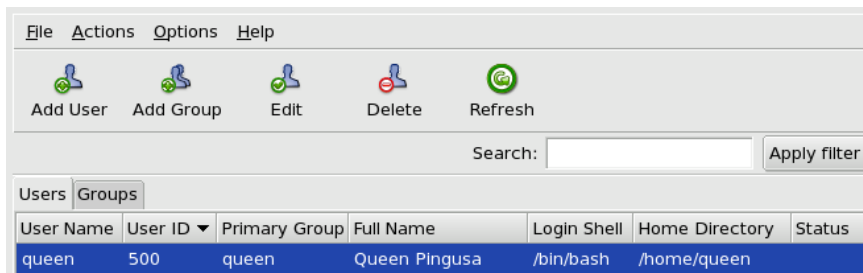
Figure 16-10. The User List in UserDrake

All changes have immediate effect on your local user database. If the user list is modified outside of UserDrake, you can refresh UserDrake's window by clicking on the Refresh button.

> If you make changes to an already logged in user, those changes won't take effect until he or she logs out, and logs in again.

Available actions are:

Add User

Adds a new user to the system. We will detail this procedure in *Adding a New User*, page 159.

Add Group

Adds a new user group to the system.

Edit

Allows you to change the parameters of the selected user or group. We will detail editing user parameters in *Adding a New User*, page 159. In the case of a group you will be able to assign or remove users from that group.

Delete

Removes the selected user or group from the system. A confirmation dialog will be shown, and in the case of a user you will also be able to remove the user's `/home` directory and `mailbox`.

16.6.2. Adding a New User

We created the non-privileged user Queen Pingusa at installation time, and now we want to create a new user called Peter Pingus. Then we want to make them both members of the `fileshare` group, so that they can share folders with other users on the network (see *Allowing Users to Share Folders*, page 175).

Click on the Add User button, the dialog box to add a new user will pop up (see figure 16-11). The only required field is Login although we strongly recommend that you set up a password for this new user: enter it in both the Password and Confirm Password fields. You can also choose to add a comment in Full Name. Generally, this is the full name of the user, but you can put whatever you want.

Figure 16-11. Adding a New User in the System

We now have two users in our list. Select one of them with your mouse, and click on the Edit button. The dialog box shown in figure 16-12 will pop up. It allows you to modify most available user parameters.

Figure 16-12. Adding Users to a Group

The dialog is made of the following tabs:

User Data

    Allows you to modify information provided when the user was created.

Account Info

> Enables you to provide an expiration date for that account, after which the user won't be able to connect to the system. This is useful for temporary accounts. It's also possible to temporary lock an account to prevent a user from logging in. Finally, this tab allows you to change the icon associated with the user.

Password Info

> Allows you to provide a password expiration date, after which the user will have to change his password.

Groups

> Shows the list of available groups where you can select the groups to which any user should belong.

For our users we just need to look for the `fileshare` entry and check the box associated to it. Then click on the OK button to make the changes effective.

16.7. Backing Up and Restoring your Files

Drakbackup allows you to back up data present on your computer, whether it be on hard drive, another networked computer, a CD/DVD or a tape. Once the files you wish to back up are defined and that you've configured the way to access the backup media, you can run the backup periodically. Then, you can forget about it until you wish to restore some files.

The backup parameters must be defined so that Drakbackup knows what, where and when to perform the backup. We will guide you step-by-step with a back up-and-restore example using the wizard. Then we will introduce you to automation of periodic backups.

16.7.1. A Practical Example Using the Wizard
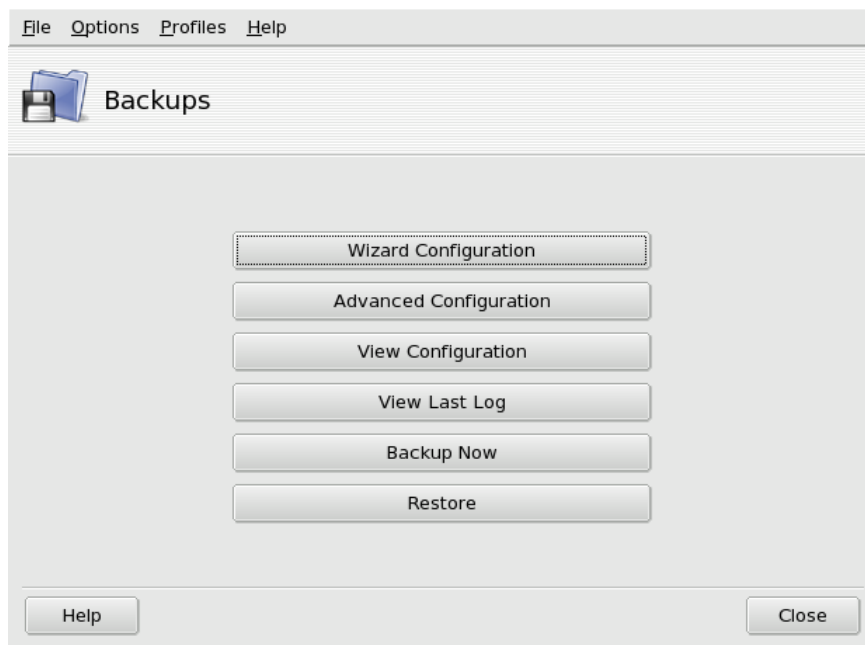
Figure 16-13. Main Drakbackup Window

Start Drakbackup by clicking on the Backups icon in Mandrakelinux Control Center's System section. Click on the Wizard Configuration button to start the wizard. After making your choices in each step click on Next.
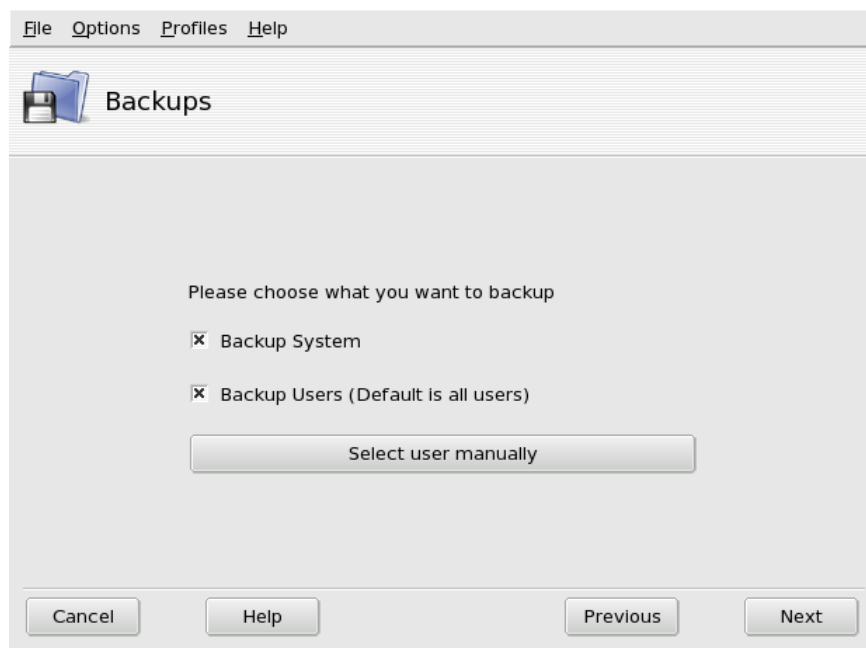
16.7.1.1. First Step: What to Backup

Figure 16-14. Selecting What to Backup

Select Backup System to include the `/etc` directory where all your current system configuration files lie. This allows you to "transport" your system to a different computer with little effort: only hardware-dependent configuration will have to be revised.

> The "system" backup does not include applications themselves (i.e. executable files, libraries). *A priori* this makes sense because it is likely that you will have access to the system's installation media from which applications can be easily installed again on the target computer.

Select Backup Users to include all the files included in all of your users' `/home` directories. Clicking on the Select user manually button will let you select individual users and give you the following options:

- Do not include the browser cache. Select this to exclude the web browser's cache from the backup file set. Recommended due to the very nature of the browser's cache.

- Use Incremental/Differential Backups. Selecting this will preserve old backups. Choosing Use Incremental Backups will only save files which have been changed or added since the **last** backup operation. Choosing Use Differential Backups will only save files which have been changed or added since the **first** backup operation (also known as the "base" backup). This last option takes more space than the first one, but allows you to restore the system "as it was" at any given point in time for which a differential backup was made.

16.7.1.2. Second Step: Where to Store the Backup
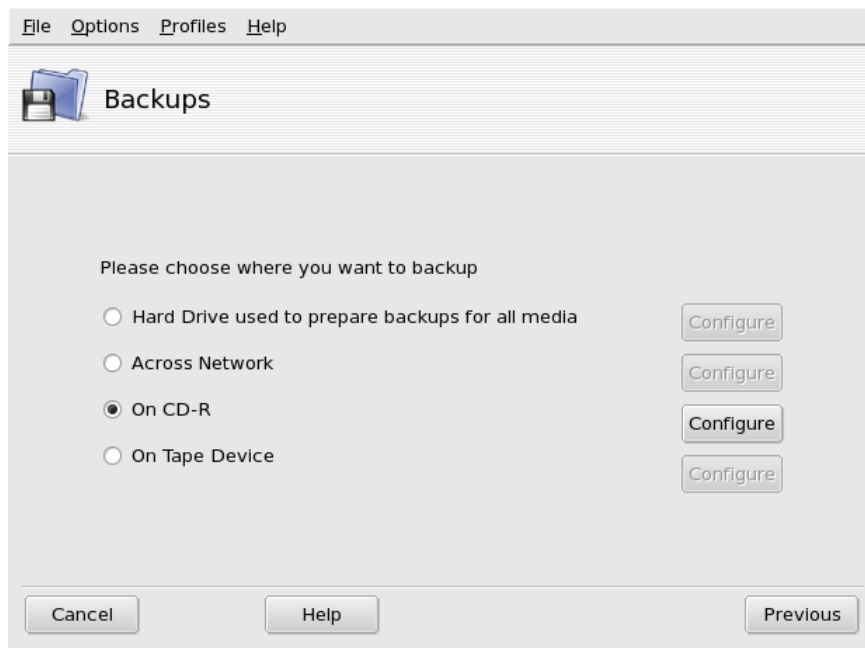

Figure 16-15. Selecting Where to Store the Backup

Select Across Network to store the backup on a remote computer accessible using either `ssh`, FTP, `rsync` or WebDAV. A machine name or IP address, a user name and password on that machine, a directory on that machine, and the access method and its options (if applicable) must be specified by clicking on the corresponding Configure button.

Select On Tape Device to store the backup on a tape drive. Click on the corresponding Configure button to set the tape device and tape parameters such as whether or not to rewind, erase and eject the tape.

Select On CD-R to store the backup on optical media: (re)writable CD or DVD. This is our preferred media for the example, so click on its Configure button to set the required parameters (see figure 16-16).
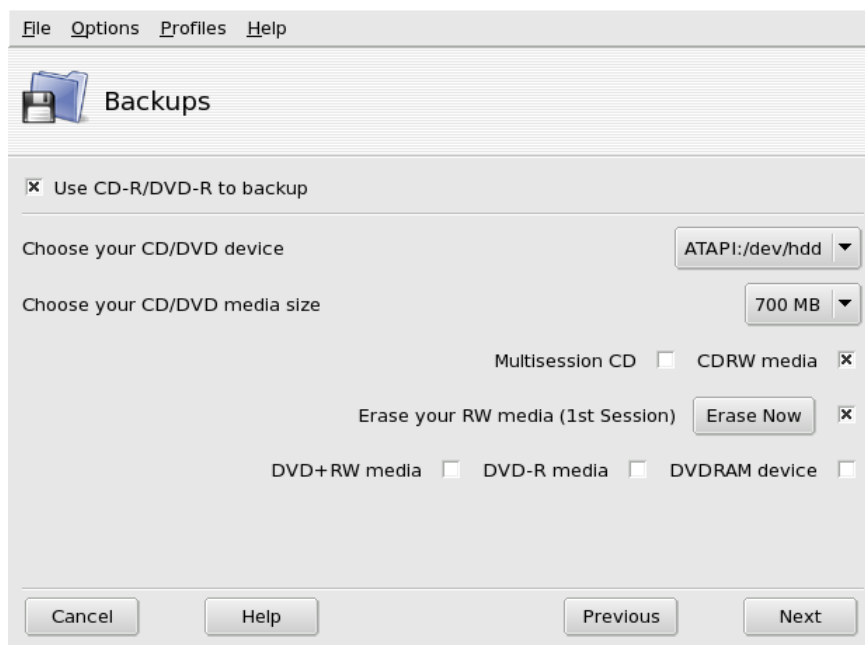

Figure 16-16. Setting Optical Media Parameters

If it isn't done automatically, use the Choose your CD/DVD device combo box to set the CD/DVD device. In our example, we chose `ATAPI:/dev/hdd`, which is an IDE recorder. We chose a `700 MB` medium size and a

re-writable medium (the CDRW media option is selected).

Select the Erase your RW media option to erase the data on your re-writable media before each backup is performed. If you select the Multisession CD option, only the 1st session will erase the media. Session-related information recording takes some space out (20 to 30 MB) for each session, so the "real data" storage space will actually be less than the medium's size.
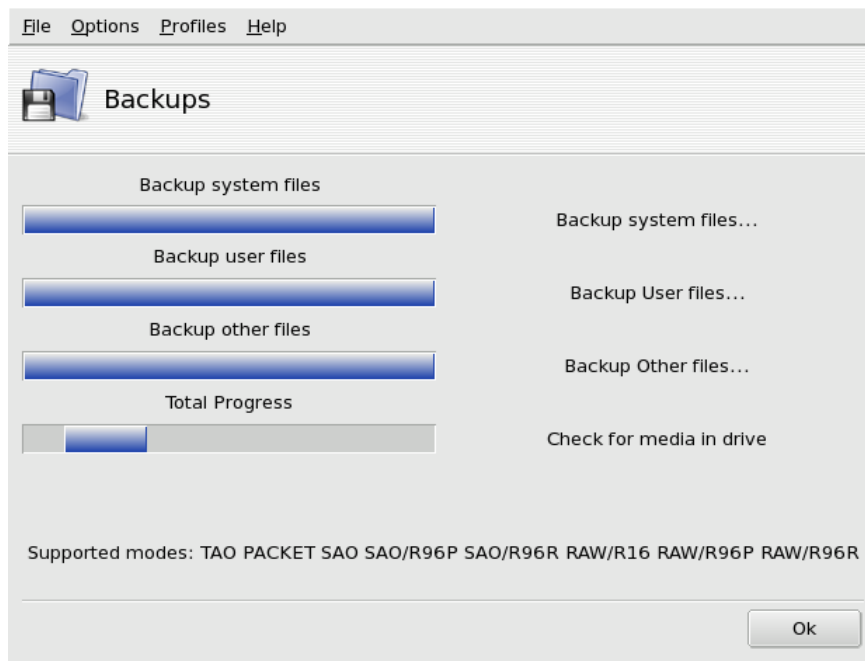
16.7.1.3. Third Step: Review and Store the Configuration
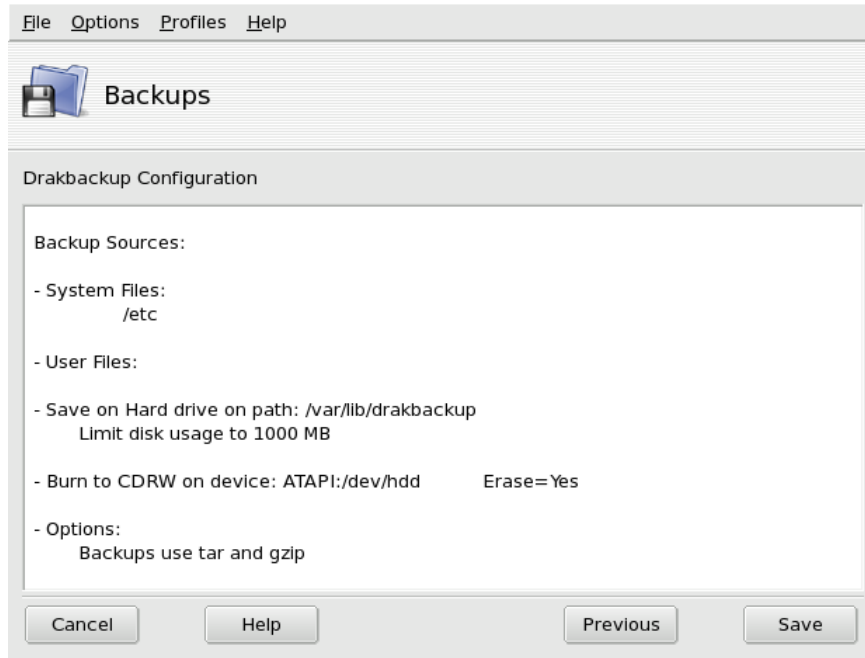
Figure 16-17. Review Configuration Parameters

The last wizard step shows a summary of the configuration parameters. Use the Previous button to change any parameter you are not satisfied with. Click on Save to store them. Drakbackup is now ready to perform backups.

16.7.1.4. Performing the Backup

**Figure 16-18. Backup Progress Dialog**

Click on Backup Now and then on Backup Now from configuration file to display a confirmation dialog with Drakbackup's parameters: make sure the corresponding media (the CD-RW disk in our example) is ready and click on Build Backup to start the backup operation.

> ⚠ If the backup set size exceeds the medium's available capacity, Drakbackup might just fail. This is a known issue and it's being worked on. As a work-around, please try to remove files from the backup set so its size never exceeds the medium's available capacity.

A dialog (see figure 16-18) will display the current progress of the operation. Please be patient: the time it takes to back up depends on many factors such as the size of the backup file set, the speed of the storage option selected, and so on. Once the operation is finished a report will be shown: look for possible errors on it and take corrective measures if needed.

16.7.2. Restoring Backups
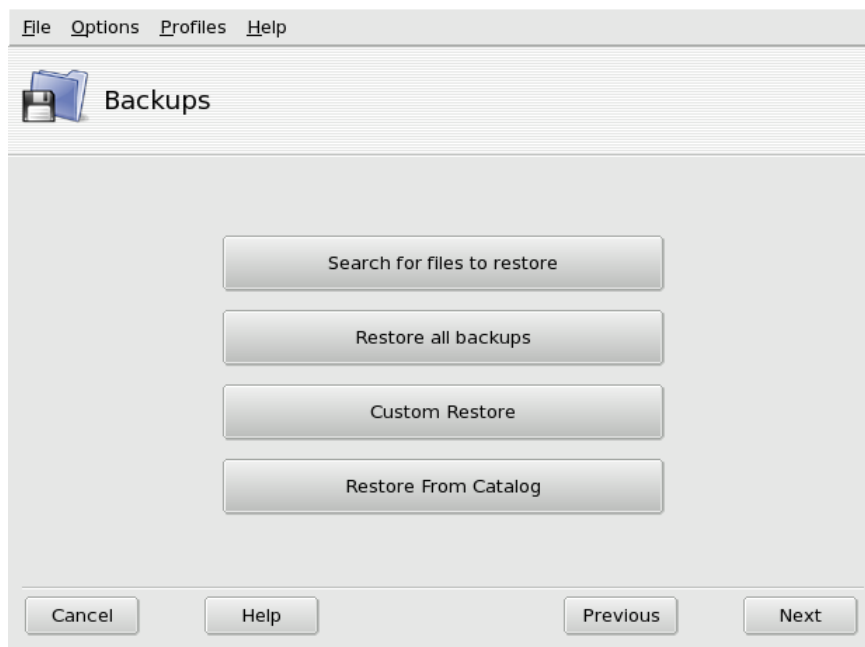
**Figure 16-19. Choosing the Restore Type to Perform**

Make sure the media you want to restore the backup from is accessible and ready. Then click on Drakbackup's Restore button. In our example we will restore the whole backup so on the restore dialog (figure 16-19) click on Restore all backups. A dialog will show you the current restore settings. Click on the Restore button to start the restoration process.

> Existing files in the target restoration directory (same location where the backup was made from, by default) will be overwritten.

Feel free to investigate the other restore options if you want to restore part of a backup instead of the full file set.

16.7.3. Automating Periodic Backups
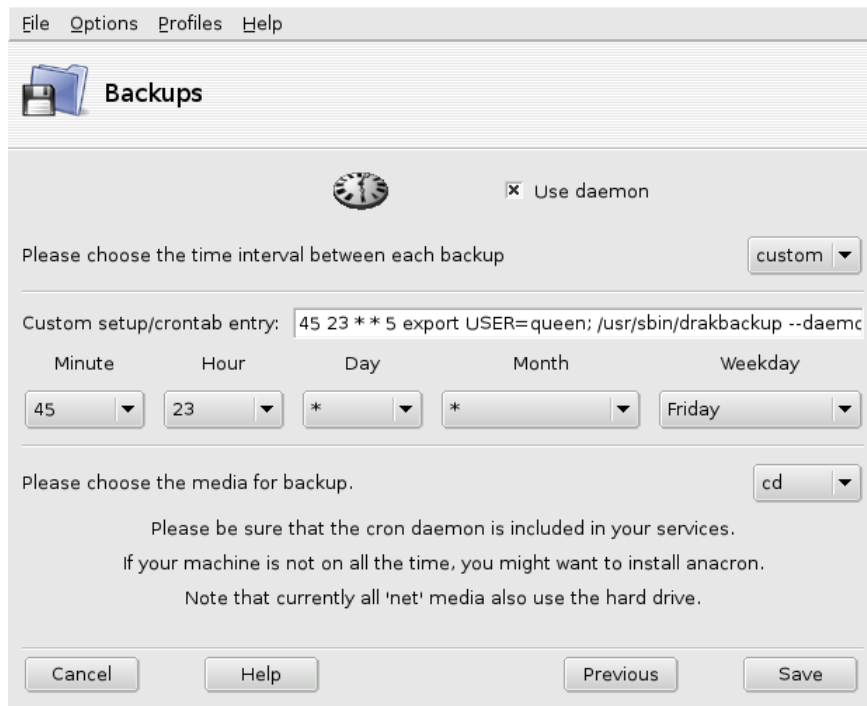
Figure 16-20. Daemon Options Window

In Drakbackup's main window, click on Advanced Configuration and then on the When button. The backup scheduling window will appear (see figure 16-20). Select Use daemon to define the schedule. You will then be asked to specify the interval (or period) between each backup operation and the storage media. In our example we set up a customized calendar (custom period selected) to perform a backup every Friday at a quarter to midnight and store it on CD. You can also specify hourly (i.e.: performed 1 minute after the hour), daily (i.e.: performed at 4:02AM), weekly (performed at 4:22AM) and monthly (performed at 4:42AM) periods instead of custom.

16.7.4. Other Drakbackup Options
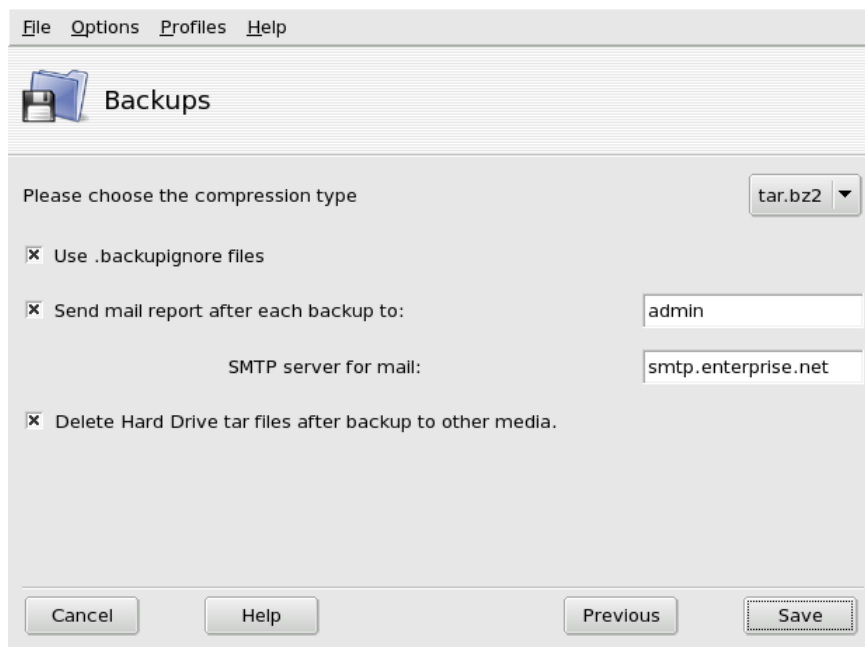
Figure 16-21. Miscellaneous Options Window

Click on Advanced Configuration and then on the More Options button. The miscellaneous options window will appear (see figure 16-21).

Use the Please choose the compression type pull down list to select the compression used for your backups among `tar` (no compression), `tar.gz` (gzip compression) and `tar.bz2` (bzip2 compression: better but slower).

Select the Use .backupignore files option to have Drakbackup exclude certain files from the backup. The `.backupignore` file should be present in every directory of the backup file set where files are to be excluded. Its syntax is very easy: a one-file-per-line list of the names of the files to exclude.

> You can use the star (`*` = "matches any string") and the question mark (`?` = "matches one and only one character, regardless of what that character is") in the `.backupignore` file to exclude sets of files. For example, `somename*` will match all files whose names start with `somename`, and `image00?.jpg` will match files named `image001.jpg`, `image009.jpg`, `image00a.jpg`, `image00h.jpg`, etc.

Select the Send mail report after each backup to option and fill the e-mail address so Drakbackup knows to whom to mail the backup operation report. Please bear in mind that the system needs to have a working MTA (Mail Transport Agent) for this option to be effective.

> If you want to send the report to more than one recipient, you will have to set up a mailing list, containing all those addresses, and fill the field with the mailing list's post address.

All methods other than NFS use the hard disk drive to store temporary files. Select the Delete Hard Drive tar files after backup to other media option to have Drakbackup free that space after performing the backup.

Chapter 17. Parameterizing your Mount Points

17.1. Managing your Hard Drive Partitions with DiskDrake

Partitions are initially set up during the installation process. DiskDrake allows you, to some extent, to resize your partitions, move them, etc. DiskDrake can also deal with RAID devices and supports LVM but we will not discuss these advanced uses here. Please refer to the *Reference Manual* to learn more about what partitions are used for.

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

1. Back up your data. Transfer it to another computer, ZIP disks, etc.

2. Save your current partition table (the table describing the partitions held on your hard drive(s)) to a floppy disk (see *DiskDrake's action buttons*, page 170).
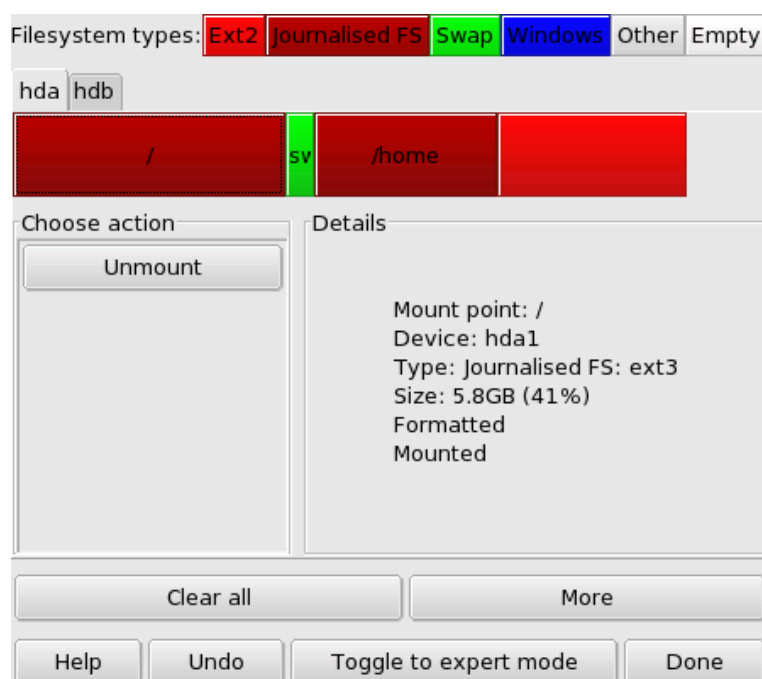
17.1.1. The Interface

Figure 17-1. DiskDrake's Main Window

DiskDrake enables you to configure each physical hard drive on your machine. If you only have one IDE disk, you will see a single tab called hda below the file-system types. If there is more than one drive, then each drive will have its own tab and will be named according to the Linux name for that drive. DiskDrake will allow you to manage the partitioning of each drive.

The window (see figure 17-1) is divided into four zones:

- Top. The structure of your hard drive. When you launch DiskDrake it will display the current structure of the drive. DiskDrake will update the display as you make changes.

- Left. A menu relevant to the partition currently selected in the above diagram.

- Right. A description of the selected partition.

- Bottom. Buttons for making general actions. See next section.

We will now review the actions available through the buttons at the bottom of the window, and then describe a practical use case.

17.1.2. DiskDrake's action buttons

Clear all

    Clicking on this button will clear all partitions on the current hard drive.

More

    Displays a three button dialog allowing you to:

    Save partition table

        Allows you to save the current partition table to a file on a disk (a floppy, for example). This may prove useful if a problem arises (such as an error made during drive repartitioning).

    Restore partition table

        Allows you to restore the partition table as previously saved with Save partition table. Restoring a partition table may recover your data as long as you do not reformat partitions, because the formatting process will overwrite all your data.

    Rescue partition table

        If you lose your partition table and have no backup, this function scans your hard drive to try and reconstruct the partition table.

Help

    Display this documentation in a browser window.

Undo

    Cancels last action. Most modifications done on your partitions are not made permanent until DiskDrake warns you it will write the partition table. This button therefore allows you to undo all of your modifications on partitions up to last write.

Toggle to expert mode

    This button allows you to access the expert mode functions (which are even **more** dangerous if you are not sure what you are doing). Reserved for experts.

Done

    Saves your changes and exits DiskDrake.

### 17.1.3. Resizing an Old Partition and Creating a New One

In this section, we are going to do a little exercise to demonstrate one of the more useful features of DiskDrake. Let us imagine that you decide to use your machine as an FTP server and you want to create a separate `/var/ftp` partition in order to host the FTP files. **Note that doing this step-by-step tutorial will actually modify the structure of your hard drive.**

This is what the current `/home` partition looks like (see figure 17-2), before any modification. We are going to shrink this partition in order to create free space for the new file system.

> ⚠ In order to perform the steps in this example, all users of your system must be logged out, except `root`.

First of all, you need to unmount the `/home` partition by clicking on it and then pressing the Unmount button.
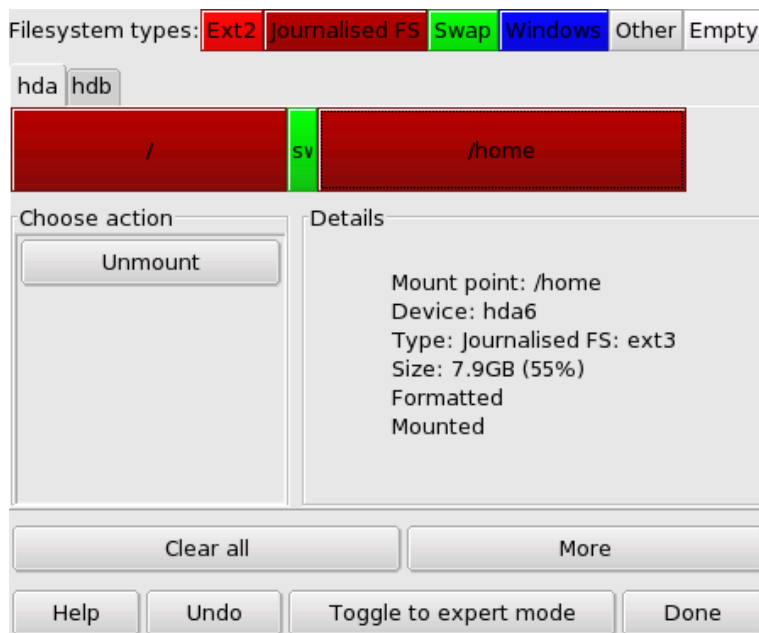
Figure 17-2. The /home Partition Before Resizing

The next step, as you may have guessed, is to click on the Resize button. A dialog will appear (see figure 17-3) which will allow you to choose the new size for the `/home` partition. Move the slider to reflect the new size, then click on OK.
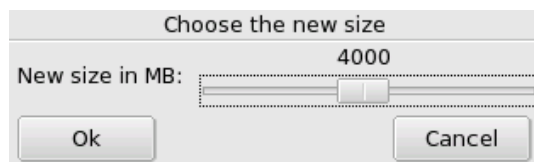
Figure 17-3. Choosing a New Size

When this is done, you will notice that the graphic representation of your hard drive has changed. The `/home` partition is smaller, and an empty space appears on the right. Click on the empty space and then on the Create button which appears. A dialog (see figure 17-4) will let you choose the parameters for the new partition. Set the size, choose the file system you want to use (usually `Journalized FS: ext3`) and then enter the mount point for the partition, which in our example will be `/var/ftp`.

Figure 17-4. Defining the New Partition

figure 17-5 shows what our projected partition table now looks like.
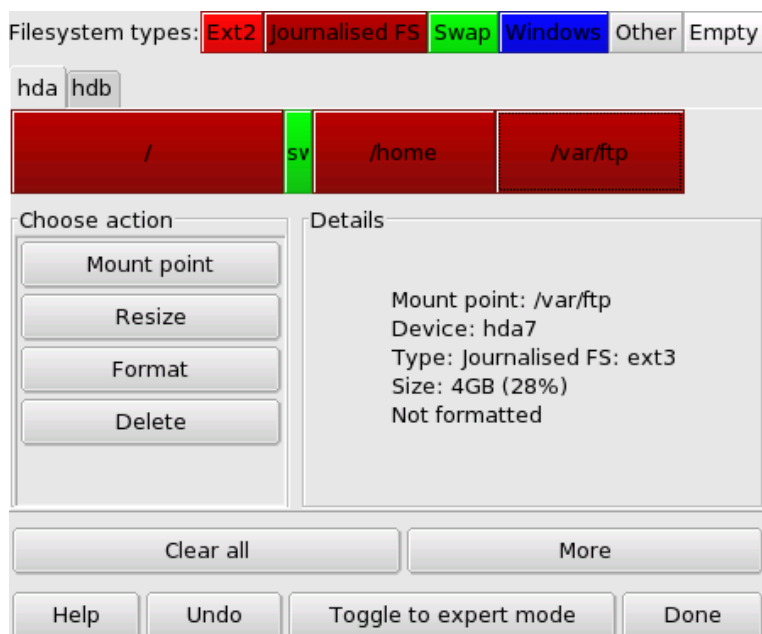

Figure 17-5. The New Partition Table

The last step is to format (prepare to host files) the newly created partition. To format the partition, click on its representation in the partitions picture, then on the Format button. Confirm the writing of the partition table to disk, the formatting of the partition and the update to the `/etc/fstab` file. You may be asked to reboot the computer to make changes effective.
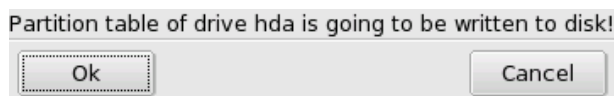

Figure 17-6. Confirming the Writing of the Partition Table

17.2. Managing Removable Devices

These tools enables system administrators to easily control most options which affect the behavior of removable devices such as floppy, CD and DVD disks. Note that, by default, all removable devices are automatically made available so users shouldn't have to manually mount media.
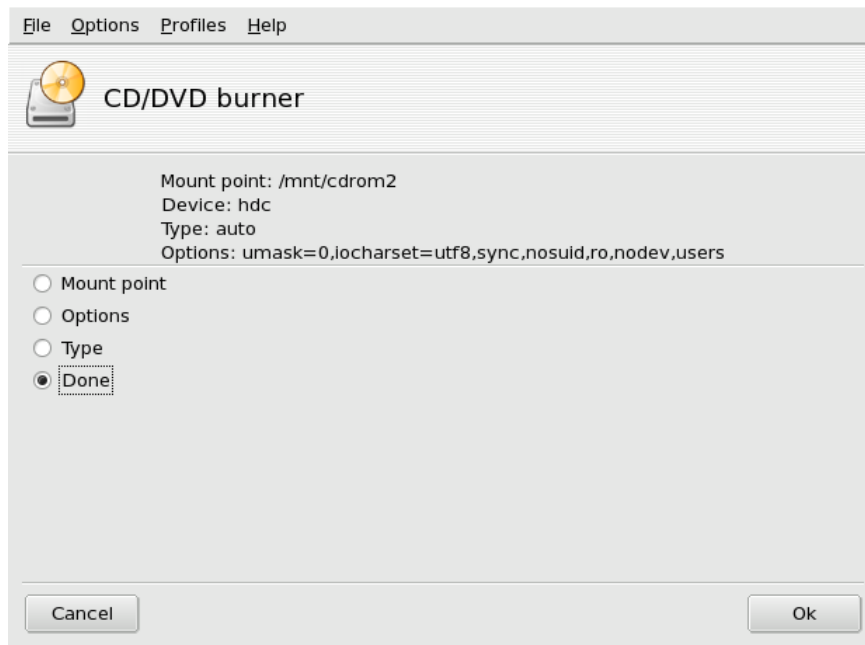
Figure 17-7. Changing a Parameter

For each device the following properties may be changed:

- **Mount point.** The directory where the device's files will be accessible from. You can either choose an entry in the list or type in your own path. If the directory does not exist, it will be automatically created.

- **Options.** Controls various device options, notably whether it is mounted automatically (supermount) or not. Note that if the supermount option is selected, the two others (user and `noauto`) must not be selected.

- **Type.** Displays a list of file-system types. If you have a specific medium with an uncommon file system on it, this is where you can tell Linux how to access it.

Select the property you wish to change and click on OK. The corresponding dialog will pop up in which you can change your settings. Then click on OK again. The system will then ask you if you want to save the modifications in the `/etc/fstab` file. By saying yes, you will not have to unmount and re-mount that device: it will be done automatically

17.3. Importing Remote SMB Directories

This tool allows the system administrator to import remote shared directories based on the SMB protocol (used mainly by Windows®) on the local machine.

While users can individually access remote shares through their file managers, it may be required in some cases to import a specific share for it to become immediately available for all users. We'll go through an example showing you how to import a template directory from a Windows® machine.
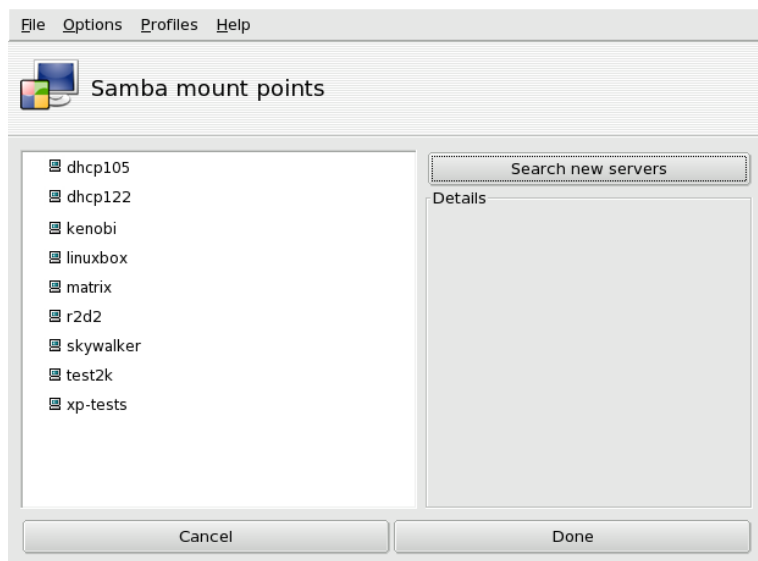
Figure 17-8. Scanning the Whole Network

Clicking on the Search servers button scans the local network for machines which currently share directories (including the local one). In our example, many servers are available. We'll choose `skywalker` and we'll make it available locally for all users.

Clicking on a machine's name will try to connect to it and browse for available shares. If that machine has password-protected shares, a dialog will pop up asking you to identify yourself.
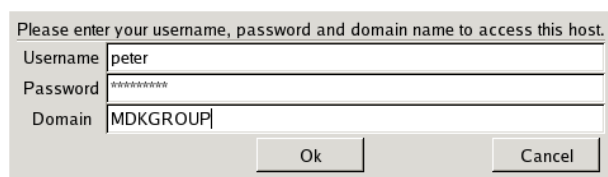
Figure 17-9. Authenticating on a Remote Samba Server

Enter the correct Username, Password and Domain. The available shares on that machine will then appear. Click on the little arrow on the left of the server icon to show available shares.

> If the machine you're connecting to has both public and password-protected shares, then canceling the password entry dialog will connect you to that machine, but only to its public shares.

Figure 17-10. Choosing the Remote Directory to Import

Once a share is selected, a Mount point button appears. Clicking on it displays a dialog where you can type the local directory name where remote files will be accessible.

Once this is done, two more buttons appear:

- **Mount.** Makes the resource available locally. When this is done, users simply have to point their file manager to the directory selected as the mount point to get the files hosted by the server.

- **Options.** Allows you to set a user name and password to access that SMB mount point. Other permissions and advanced settings can also be set through this button.

Also, the little icon in front of the shared directory becomes

When you're finished configuring the access points for remote directories, click on Done. A dialog box will appear asking you whether you wish to save your modifications to the `/etc/fstab` file (where mount point information is usually stored), or not. Click on Yes to make the shares configuration persistent between sessions. Click on No to exit without saving your changes.

17.4. Importing Remote NFS Directories

This tool is exactly the same as the one mentioned in *Importing Remote SMB Directories*, page 173, except that it controls file sharing through the NFS protocol rather than SMB. Therefore it allows you to locally import shared files from NFS-friendly machines. The interface is the same as the one described in *Importing Remote SMB Directories*, and the effects are similar. Only the corresponding machines are different: UNIX® for NFS and Windows® for SMB.

Another difference is that there is no need to provide a password to access NFS shares. The authentication mechanism is host-based.

17.5. Allowing Users to Share Folders

This tool enables you to share files with other users of your computer network. File sharing can be done on heterogeneous systems such as GNU/Linux and Windows®.

The file-sharing configuration is done in two simple steps: determining who can export folders, and then which protocol to use. A 3rd step is necessary if you select the Custom export option.
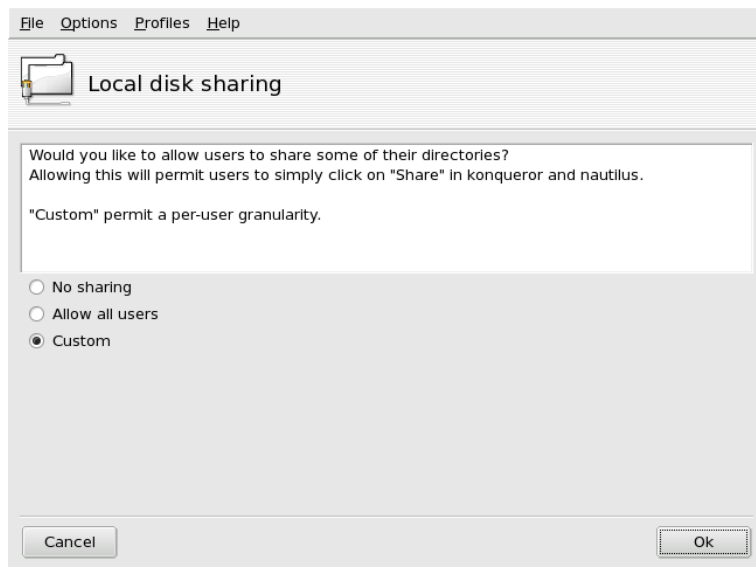

Figure 17-11. Controlling Exports

First of all, you must determine who will be able to share folders. Here are the different available options:

- **No sharing.** Prevents users from sharing data with others.
- **Allow all users.** All users are allowed to share data with others.
- **Custom.** By choosing this option, only users within the same `fileshare` group will be allowed to share data. If you choose this option, the `fileshare` group will be created and, as a 3rd step, you will be prompted to run UserDrake in order to add the allowed users to this group (see *Managing Users and Groups*, page 158).

Figure 17-12. Choosing the Export Protocol

Then you must choose which protocol to use for file sharing. Check one or both of the following:

- **SMB.** If you want your users to share files using Windows® systems.

- **NFS.** If you want your users to share files using UNIX® systems (such as GNU/Linux).

Once you have checked the appropriate boxes, click on OK. The required packages will be installed, if needed. If you uncheck a previously checked box, the corresponding service will be stopped.

Once users are allowed to share data, they can select the folders to be shared through their preferred file manager (see *File Sharing*, page 79).

17.6. Setting up WebDAV Mount Points

WebDAV (*Web-based Distributed Authoring and Versioning*) is an extension to the HTTP protocol which allows you to create, move, copy, and delete resources on a remote web server. In practice, mounting a remote WebDAV repository on your local machine will allow users to modify a remote web server's files as if those files were local to the system.

Browse the WebDAV Resources (`http://www.webdav.org/`) pages to learn more about this protocol.
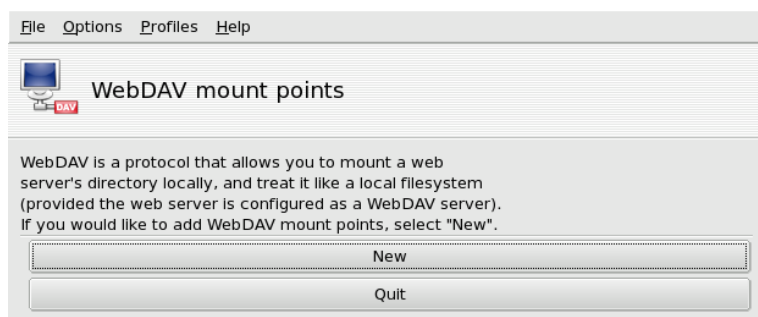

Figure 17-13. Managing WebDAV Mounts Points

The first time you launch this tool the required packages will be installed if needed, and only two buttons will be available. New, which allows you to define a new mount point, the other one just Quits the application.

After you have defined mount points, they will appear as new buttons at the top of the buttons list. Clicking on a mount point button will get you to the mount point menu (see figure 17-14).

When you click on the New button you are asked for the URL of the web server. Enter the complete URL of the web server, beginning with `http://` or `https://`, then click OK.
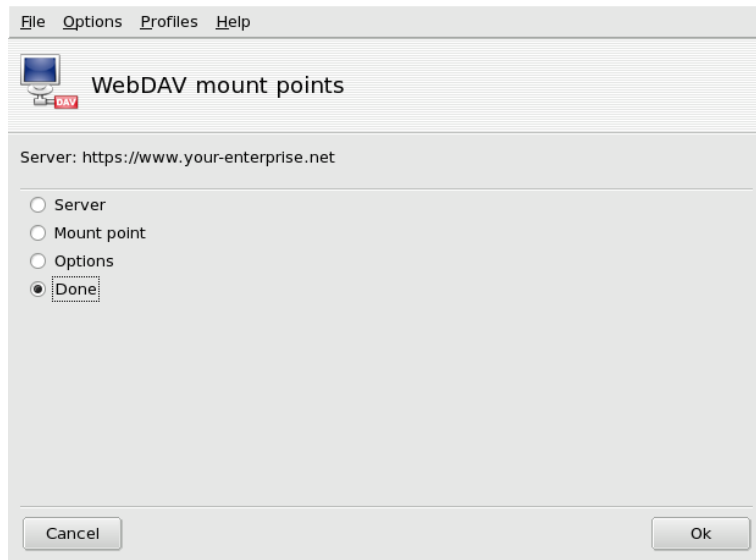
Figure 17-14. WebDAV Menu

You must now decide where the web server files will be accessible from. Select the Mount point option and click OK. There you will be able to choose a local directory or type in your own. If the selected mount point does not exist, it will be created.

If the server requires authentication, do not forget to fill the username and password fields in the Options dialog. Then all you need to do is to actually mount the remote repository by selecting Mount and clicking OK.

You will now be able to browse and modify files on the local mount point you have defined and the changes will be immediately available on the web server.

To make your settings persistent between sessions, do not forget to save modifications to the `/etc/fstab` file when you quit the wizard.

Chapter 18. Securing your Linux Box

## 18.1. Securing your Machine through DrakSec

There is a graphical interface to msec (which stands for Mandrakelinux Security Tool) called draksec which you can access through the Mandrakelinux Control Center. It allows you to change your system's security level and to configure every option of msec's security features.

18.1.1. Setting your Security Level

> This tool is only displayed in expert mode. Choose Options→Expert mode from the menu and then look into the Security section of the Mandrakelinux Control Center to access it.
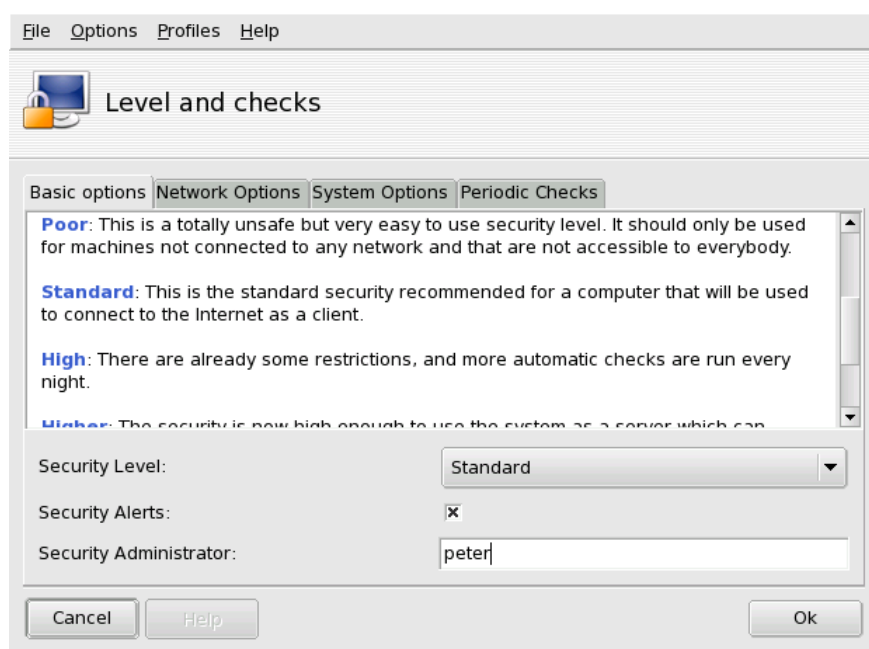
Figure 18-1. Choosing the Security Level of your System

Simply choose the security level you want from the Security Level pull-down list: it will be effective as soon as you click on the OK. Please read the help text regarding security levels very carefully so that you know what setting a specific security level implies.

> If you wish to check which options are activated for each security level, review the other tabs: Network Options, System Options and Periodic Checks. Click on the Help button to display information about the options and their default values. If some of the default options do not suit your needs, simply redefine them. See *Customizing a Security Level*, page 180, for details.

Put a check mark on the Security Alerts box to send by mail possible security issues found by msec to the local user name or to the e-mail address defined in the Security Administrator field.

> ⚠️ It is highly recommended that you do activate the security alerts option so that the administrator is immediately informed of possible security issues. Otherwise, the administrator will have to regularly check the relevant system log files.

18.1.2. Customizing a Security Level

Clicking on each of the Options tabs (and the Periodic Checks one) will lead you to msec's list of security options. This allows you to define your own security level based on the security level previously chosen.
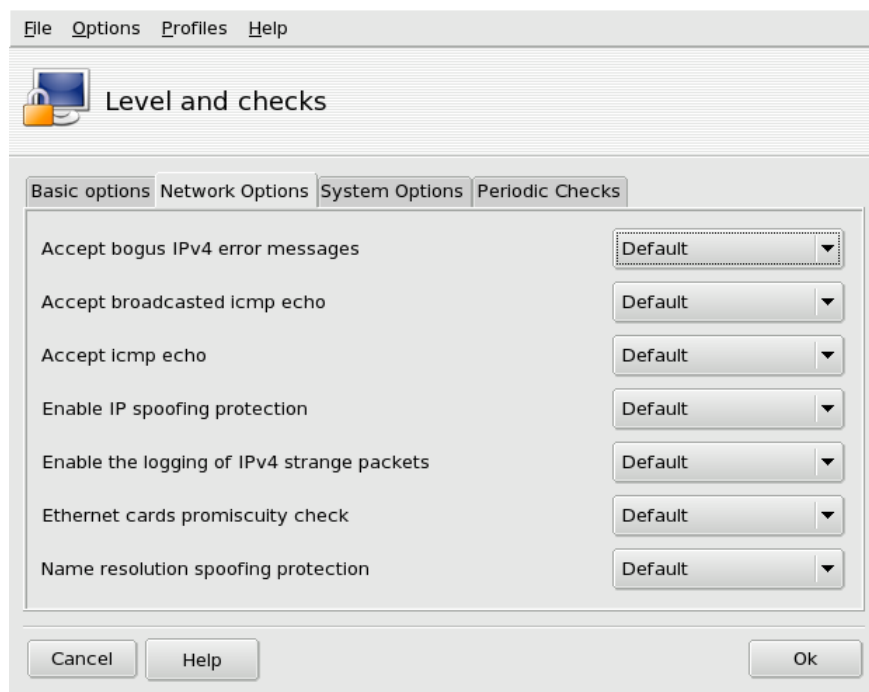
Figure 18-2. Modifying Standard Options

For each tab, there are two columns:

1. **Options List.** All available options are listed.
2. **Value.** For each option[1] you can choose from the corresponding pull-down menu:
   - **Yes.** Activate this option no matter what the default value is.
   - **No.** Deactivate this option no matter what the default value is.
   - **Default.** Keep the default security level behavior.
   - **Ignore.** Use this option if you do not wish that test to be performed.
   - **ALL, LOCAL, NONE.** The meaning of these are option-dependent. Please see the Help text available through the Help button for more information.

Clicking on OK accepts the current security level with custom options, applies it to the system and exits the application. Clicking on Cancel discards changes, keeping the old security level and exits the application.

---

1. The default security level setting is shown in the Help window.

## 18.2. Controlling File Permissions with DrakPerm

In *Securing your Machine through DrakSec*, page 179, you saw how to change your system's security level and customize the security checks associated to those levels.

drakperm allows you to customize the permissions which should be associated with each file and directory in the system: configuration, personal files, applications, etc. If the owners and permissions listed here don't match the actual permissions of the system's files, then msec (which stands for *Mandrakelinux Security Tool*) will change them during its hourly checks. Those modifications can help prevent possible security holes or intrusions.

This tool is only displayed in expert mode. Choose Options→Expert mode from the menu and then look into the Security section of Mandrakelinux Control Center to access it.
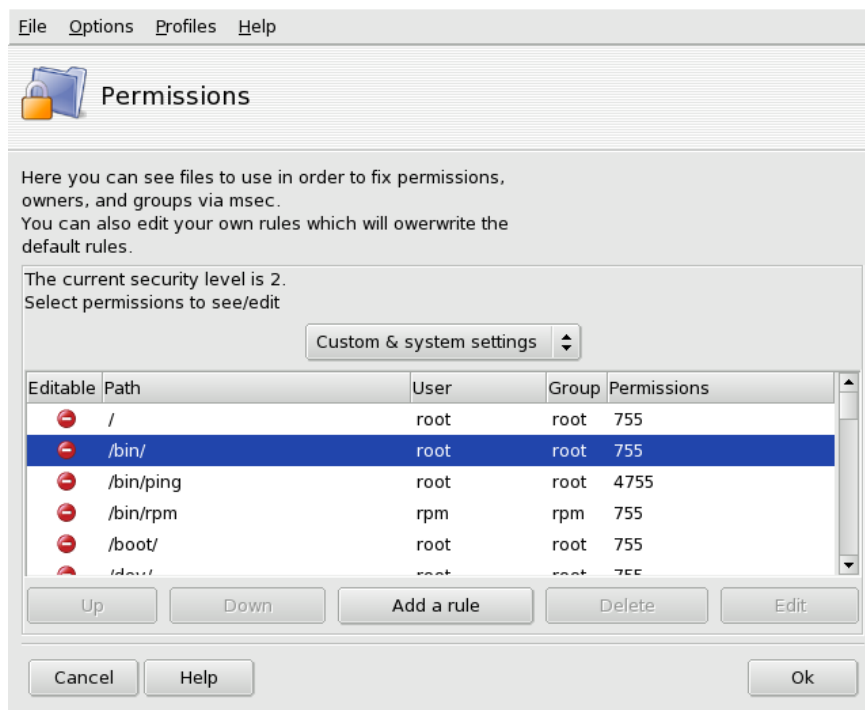
Figure 18-3. Configuring File-Permission Checks

The list of files and directories which appears will depend on the current system's security level as set by msec, along with their expected permissions for that security level. For each entry (Path) there is a corresponding owner (User), owner group (Group) and Permissions. In the drop-down menu at the top of the list, you can choose to display only msec rules (System settings), your own user-defined rules (Custom settings) or both as in the example shown in figure 18-3.

You cannot edit system rules, as stated by the "Do not enter" sign on the left. However, you can override them by adding custom rules.

If you wish to add your own rules for specific files or modify the default behavior, display the Custom settings list and click on the Add a rule button.

Figure 18-4. Adding a File-Permissions Rule

Let's imagine your current security level is set to 3 (high). This means that only the owners of the home directories will be able to browse them. If you wish to share the content of Queen's home directory with others, you will need to modify the permissions of the /home/queen/ directory.

Filling the new rule dialog as seen in figure 18-4, will allow you to accomplish this.

If you create more rules, you can change their priorities by moving them up and down the rules list: use the Up and Down buttons on your custom rules to have more control over your system's permissions.

When you are satisfied with your settings, don't forget to save your changes by clicking on OK.

18.3. Securing your Internet Access via DrakFirewall

 This little tool allows you to set up a basic firewall on your machine. It will filter connection attempts made from the outside, and block unauthorized ones. It is a good idea to run it just after installing your machine and before connecting to the Internet, therefore minimizing the risks of your machine being cracked.
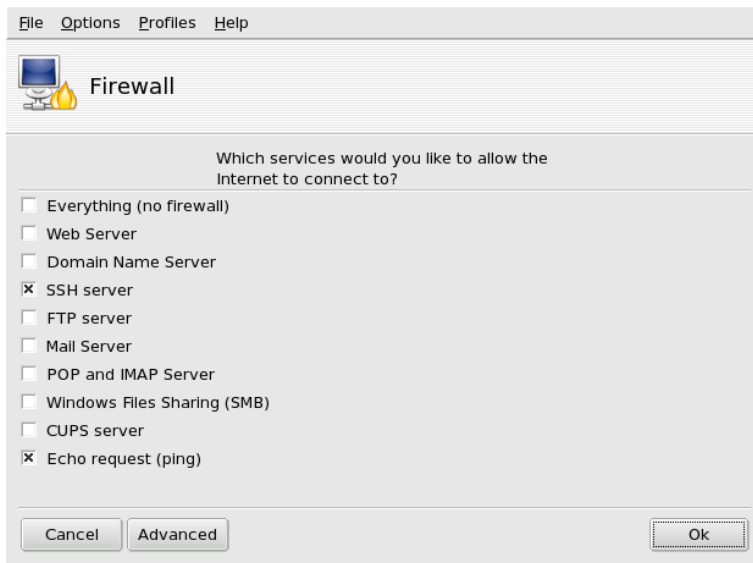
Figure 18-5. The DrakFirewall Window

Simply uncheck the Everything (no firewall) box, and then check the boxes corresponding to the services you wish to make available to the outside world. If you wish to authorize a service which is not listed here, click on the Advanced button to manually enter the port numbers to open.

> The Advanced button will open an Other ports field where you can enter any port to be opened to the outside world. Examples of ports specifications are presented just above the input field, use them as a guide. It is possible to specify port ranges by using the `:` syntax. Example: `24300:24350/udp`

Not checking a service in this list will not prevent you from connecting **to** it. It will only prevent people **from** the Internet to connect to that service on your machine. If you do not plan to host any services on your machine (common case for a desktop machine) just leave all boxes unchecked.

If, on the other hand, you wish to disable the firewall and leave all services accessible from the outside, check Everything (no firewall) , but please bear in mind that this is **very insecure**, and therefore not recommended.

Then clicking on OK will bring you to the next step, which consists in selecting the network interface connected to the Internet.
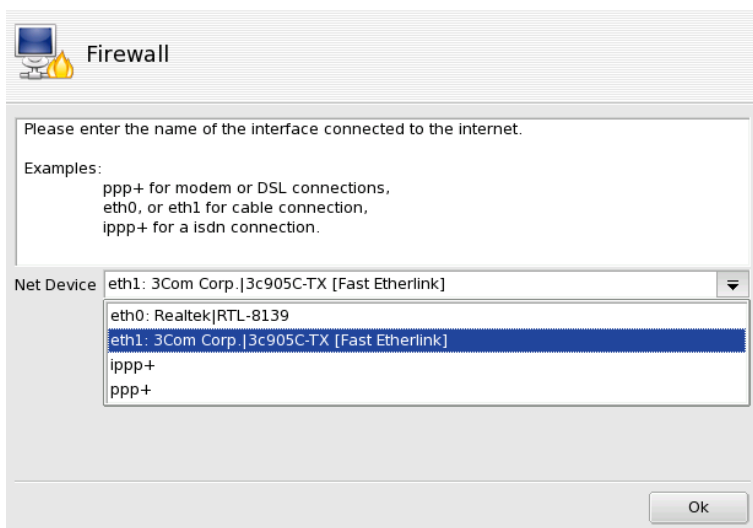
Figure 18-6. The Internet Interface

Refer to the examples to determine your Internet interface's name. If you are unsure, you can check the system network configuration (see *Managing Connections*, page 147). You can finally click OK to install the needed packages, activate the firewall and enjoy your secure Internet connection.
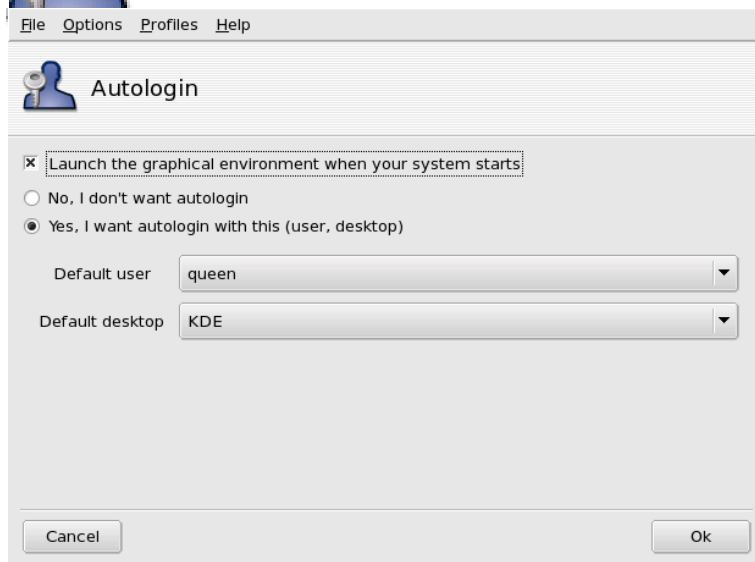
Chapter 19. Boot Device Configuration

19.1. Configuring the Login Mode

This tool allows a user to be automatically logged into the system at boot time, without a password being required.

**Figure 19-1. Choosing the Login Mode**

There are a few parameters:

1. Graphical interface: if you wish to have the X Window System (graphical display) started at boot time, check the Launch the graphical environment when your system starts box. If you leave it unchecked, the text login will be displayed.

2. Autologin: if you're the only person using your machine and nobody else has access to it, you may choose to be automatically logged in at boot time. To do so, select the Yes, I want to autologin with this (user, desktop) option. Then choose the user who will be logged on automatically in the Default user, as well as the preferred Default desktop in the pull-down menus.

19.2. Changing your Boot-Up Configuration

This tool allows you to configure the bootloader and the boot menu entries.
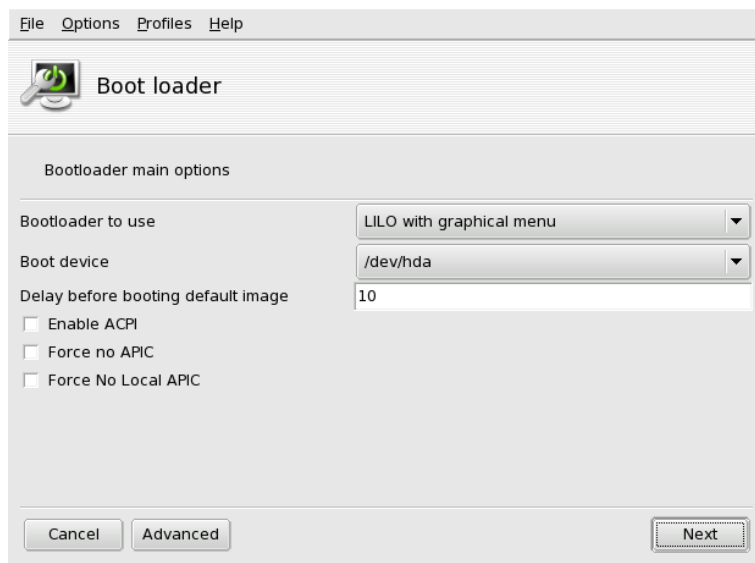
Figure 19-2. Choosing the Boot Mode

19.2.1. Configuring the Bootloader

You can choose between two bootloaders: GRUB and LILO. For the latter you can either choose a text or a graphical menu. Either one will allow you to boot Mandrakelinux, it's just a question of taste.

Unless you know what you are doing, you should not change the default Boot device shown, since that is where the bootloader installs itself. The next field allows you to set the time (in seconds) before the bootloader starts the default OS. If more than one OS is installed on your machine, it's a good idea to leave at least 5 seconds so that you can easily select a different menu item, if needed.

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

The dialog finally shows a few options which can be useful depending on your specific hardware.

Enable ACPI

> Enable this option to allow better power management support if your hardware is ACPI compatible. ACPI is often needed for new laptops which no longer support APM.

Force No APIC

> The IO-APIC (`http://www.wlug.org.nz/APIC`) is only really useful for multi-processor systems. It may cause problems on single processor systems and should be deactivated in that case by checking this box.

Force No Local APIC

> The Local APIC can be used by Linux to program interruptions to wake up threads. On multi-processor machines it can be used to send interrupts to another processor.

These relatively new APIC features are known to cause problems on some computers because of badly designed chip sets or poor support in Linux kernel drivers. These problems can cause system freezes or incorrect device detection. So you may need to deactivate them by checking the corresponding box.

19.2.2. Managing Boot Entries

After clicking Next, the list of entries which will be available at boot time is displayed. You can either Add, Modify or Remove entries.

It is also possible to make an entry the default one by checking the Default check-box in the Modify dialog.

Be careful with what you modify with this tool: you could prevent
your system from booting!

19.3. Customizing your Boot Theme

The Boot Theme utility enables you to change the default theme displayed at boot time, as well
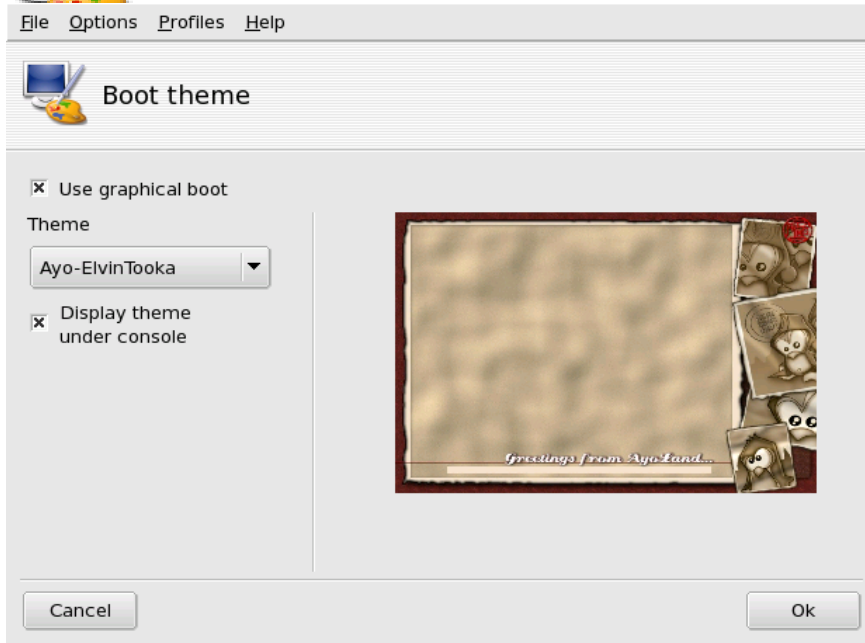as a few other options.

Figure 19-3. DrakBoot Theme Window

- Uncheck the Use graphical boot box if you prefer to view a text interface at boot time.
- Uncheck the Display theme under console if you want a clean, "traditional" console. This relates to the consoles accessible through the **Ctrl-Alt-Fn** keys.

The boot theme setting will have no effect if your system is not set to boot using the graphical mode. Please
refer to *Changing your Boot-Up Configuration*, page 185, for more information on setting the boot mode.

Please note that by default, only one theme is available. You can
install the `bootsplash-themes` package which you will find in
`contribs`. Other themes are also available on the web.

Chapter 20. Mandrakeonline Services

Mandrakesoft has a convenient update service which warns users about bug or security fixes specifically available for their machines. This service can also be configured to automatically install package updates so you don't even have to run it manually.

This system is composed of three items:

Initial Configuration Wizard (see *Initial Configuration*, page 189)

> A wizard allowing you to register a new machine in order to benefit from the Mandrakeonline services.

Web Management Interface (see *The Web Management Interface*, page 191)

> A web interface which allows you to manage the list of the hosts you maintain. It also allows you to activate hosts so that they are taken into account for updates.

An Applet (see *Mandrakeonline Applet*, page 193)

> A desktop applet which informs you about the status of your updates, and allows you to launch update installations when needed.

To get further information about the Mandrakeonline service, take a look at the FAQ (`https://www.mandrakeonline.net/page.php?page=info`).

20.1. Initial Configuration

The first time you boot up your system after installation, the Mandrakeonline wizard will show up (figure 20-1). It allows you to create a new account or to register an existing one. To manually launch the wizard from your user account, click on the Mandrakeonline applet icon on the panel and choose Configure.
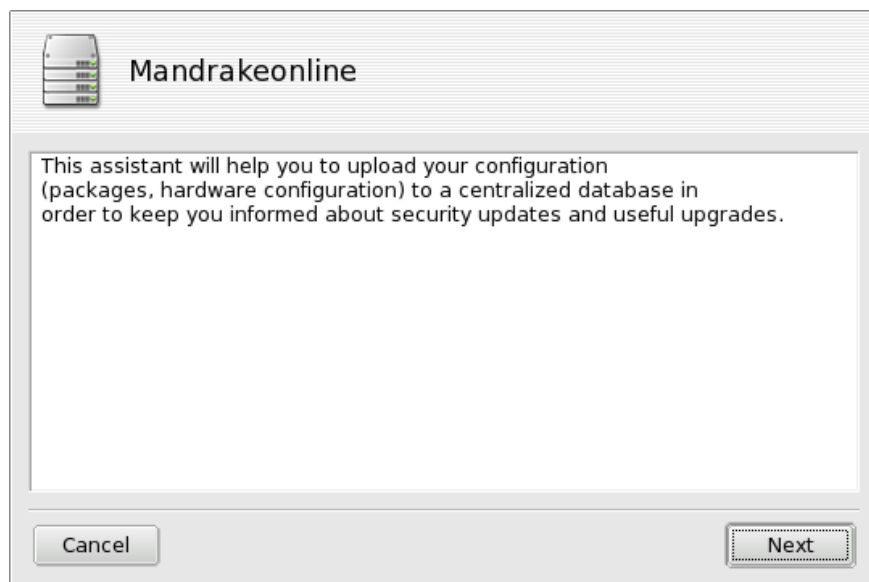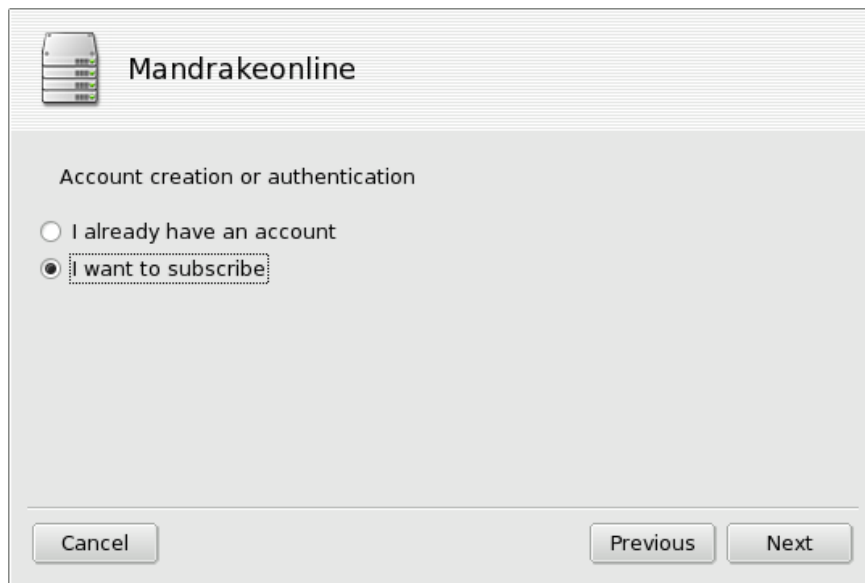

Figure 20-1. Creating a new Mandrakeonline Account

Figure 20-2. Existing or New Mandrakeonline Account?

If you do not have a Mandrakeonline account, select the I want to subscribe option and fill the fields in the form. If you already have one, just go on to next step.

You will be then presented with the Mandrakelinux privacy policy. Read it thoroughly and continue to the next step.
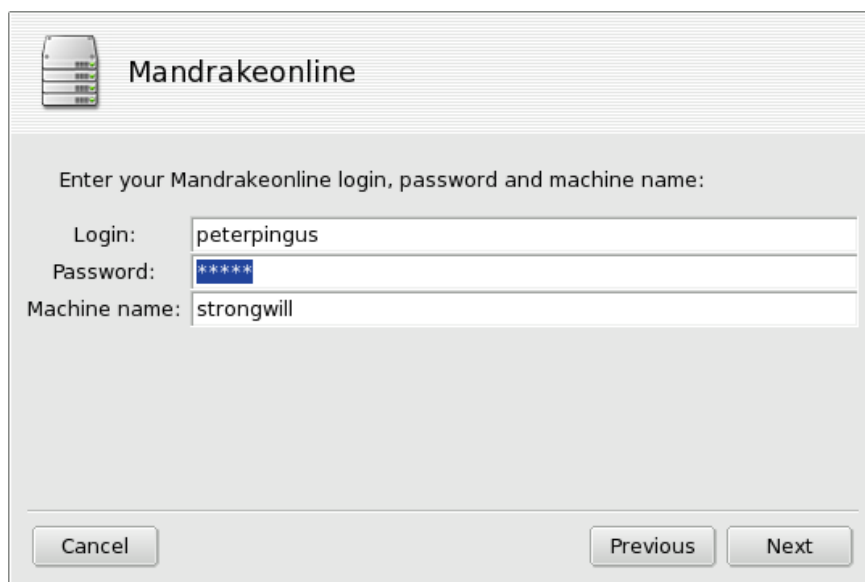
Figure 20-3. Authentication on Mandrakeonline

Now enter the login information for your account, and provide a name to identify the machine you are currently working on. This is useful if you manage several computers with Mandrakeonline.
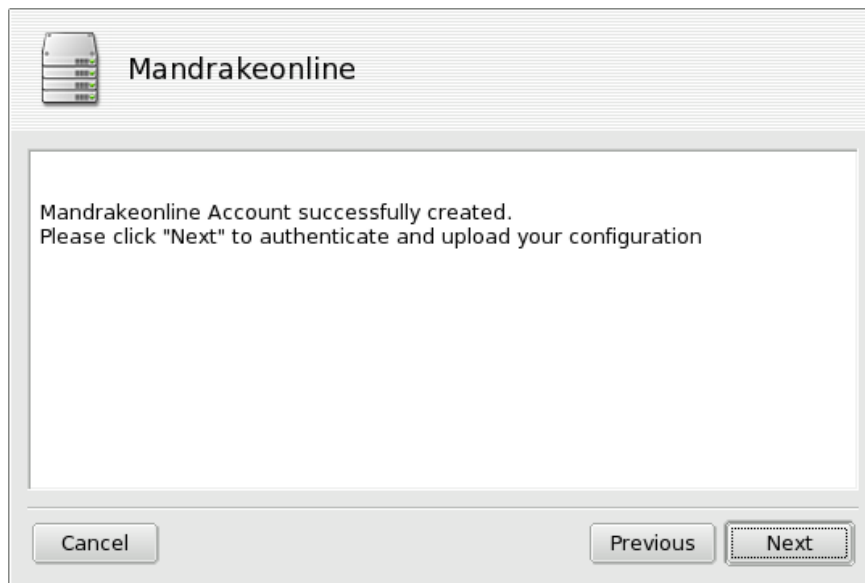
Figure 20-4. Setup Automatic Updates: Login

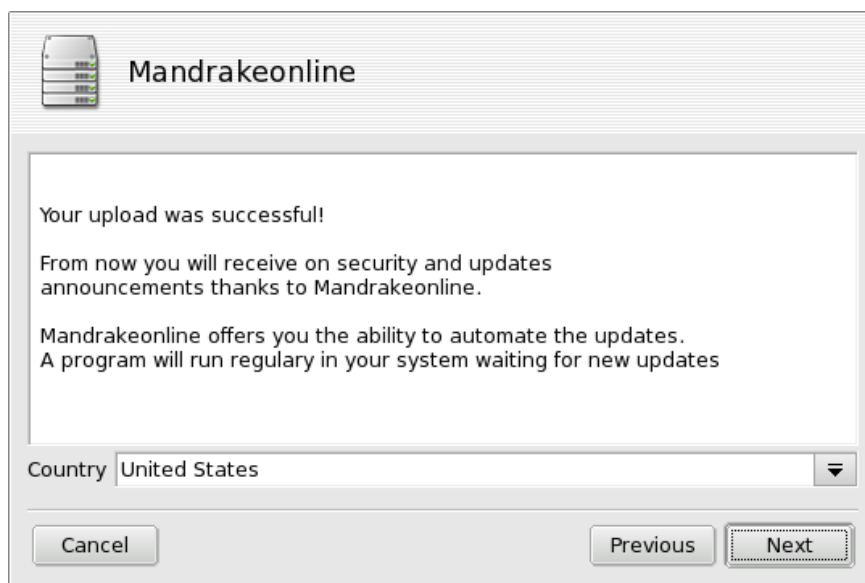Finally, you are asked to choose your country so that automatic updates occur from the nearest possible server. If your country is not listed, make sure you select the nearest one. If you don't want automatic updates to occur, simply click the Cancel button, or click on Next in order to benefit from automatic updates.

Figure 20-5. Setup Automatic Updates: Country

Clicking on Finish the wizard is finished. To complete your Mandrakeonline setup, you must now activate this machine in your account.

20.2. The Web Management Interface

Now that the machine information is added to your Mandrakeonline account, you must activate the services associated to it. To do that, first identify yourself with your login information at the Mandrakeonline web administration interface (`https://www.mandrakeonline.net/`). You can open it by right clicking on the Mandrakeonline applet on the panel, and choosing the Online WebSite entry.
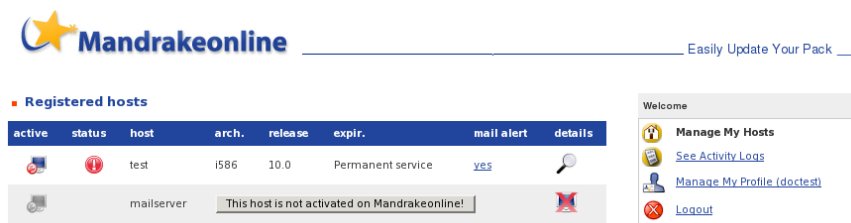
20.2.1. Subscribing New Machines

Figure 20-6. Mandrakeonline hosts list

We note here that the host we just added (mailserver) is not activated. To do that, press the This host is not activated on Mandrakeonline! button.

A form with various subscription options show, and once you have completed the subscription process, the host is activated. You will now benefit from all available update services for this machine.

20.2.2. Hosts Management

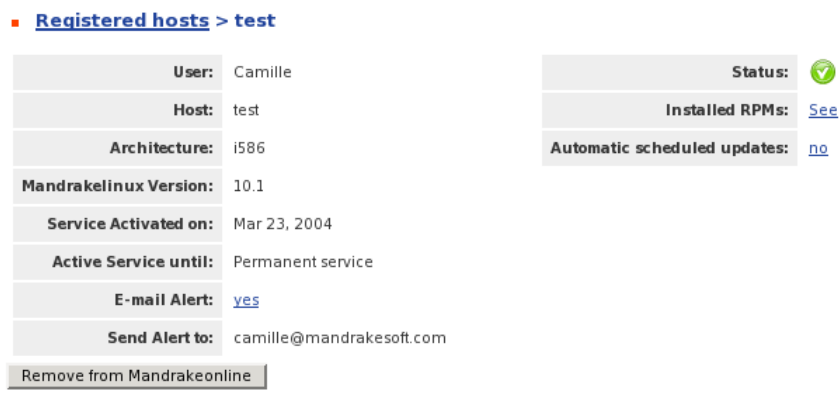Once a host is activated it is possible to get to its management interface by clicking on the details icon.

Figure 20-7. Up To Date Mandrakeonline Host

The available actions differ slightly according to whether the machine packages are up to date or not, but basically these are the actions one can perform:

Control email alerts

> Simply click on the yes or no link to change the status of mail sending. Those alerts are particularly useful if you choose not to benefit from automatic updates: if activated, an e-mail will be sent to you when there are updates available.

Control automatic scheduled updates

> Simply click on the yes or no link to activate or stop automatic updates. If yes is displayed, updates available for your machine will be automatically installed by the applet (see *Mandrakeonline Applet*, page 193) which regularly connects to the Internet to check for such updates.

Check current and outdated packages

> By clicking on the See link in front of the Installed RPMs or Errata(s) label.

20.2.3. Scheduling Updates

If you have chosen to perform package updates manually, you can also do it from the applet (see *Mandrakeonline Applet*, page 193). From the web interface, you can check which updates are available for your machine, and choose which to install.

Figure 20-8. Outdated Mandrakeonline Host

You must now select the packages to be updated. You can do this blindly by clicking on the Schedule all packages to be updated button, or selecting them one by one, by clicking on the See link by the Errata(s) option.

Figure 20-9. Select Packages to be Updated

Here you can click on the advisory number (MDKSA-2004:033 in the example) to get full details about this update. Check the box for each package you want to be updated on your machine. When this is done, click on the Schedule Packages button.

When updates have been selected, they will be automatically installed next time the applet connects to the Mandrakeonline server, which occurs several times a day.

20.3. Mandrakeonline Applet

The applet which resides on your desktop panel informs you about update availability and allows you to perform basic system maintenance tasks.

The applet icon can be in one of many states, depending on the machine status:

 The system is up to date. All is fine.

 A standard program update is available for your installed packages.

 A bugfix update is available for your installed packages.

 A security update is available for your installed packages. It is **highly** recommended that you install security updates.

 The applet is currently contacting the server, be patient.

This host is currently not activated. Activate it using the web interface (see *Subscribing New Machines*, page 191).

The applet cannot connect to the server. Check your Internet connection.

The system is currently not configured or a configuration error was found. Launch the configuration wizard (see *Initial Configuration*, page 189) to use Mandrakeonline.

Clicking on the applet icon opens a dialog with action buttons, followed by the current machine status.
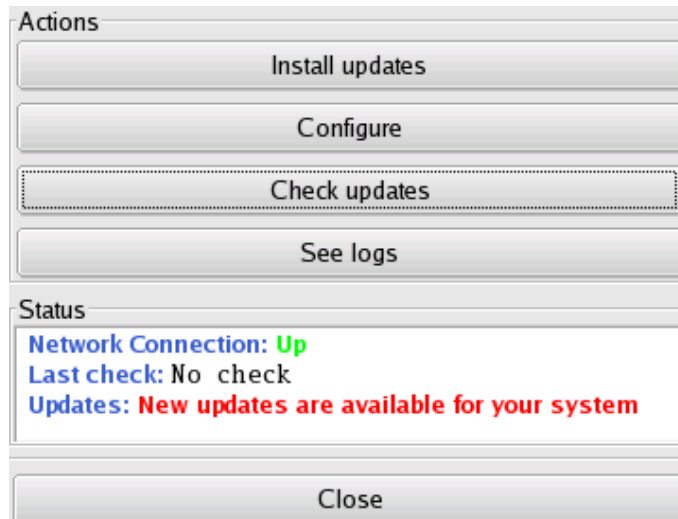
Figure 20-10. Mandrakeonline Applet

Install updates

Manually launch the updates installer by opening Rpmdrake (see *Mandrakelinux Update*, page 110).

Configure

Launch the wizard (see *Initial Configuration*, page 189). This can be useful to resend your machine configuration to the server, for example if you have upgraded your hardware.

Check updates

Manually connects to the server to check if updates are available. This is normally done periodically by the applet, but if you have no permanent connection to the Internet, it may be useful to manually check for updates when you are online.

Chapter 21. Troubleshooting

This chapter will guide you through some troubleshooting basics, that is: what to do when everything goes wrong or, better yet, what to do to be **prepared** if something goes wrong and then how to fix it.

21.1. Introduction

Making backup copies of your data, fixing little problems, recompiling the kernel, installing software, and tweaking configuration files are not uncommon scenarios in every day GNU/Linux life: even if you don't do it all the time, some day you may want or need to. Those tasks can be managed without any hassle if you use a little common sense and follow some practices and guidelines we will introduce in this chapter.

> Many of the examples and tools presented in this chapter deal with the command line. Usually, restoration of a damaged system to a working state can only be done this way. We assume that you feel comfortable enough using this powerful tool.

So, on to the basic things you need to have ready...

21.2. A Boot Disk

The very first thing you will need when your system cannot boot from the hard disk will be a boot disk. It will allow you to boot your system up and, in a matter of minutes, enable you to undo what rendered your system unusable.

> You can also use the `Rescue Mode` of Mandrakelinux's installation CD-ROM to boot your machine and perform some maintenance tasks, but a boot disk might prove to be useful anyway (for example, if your machine doesn't support booting from the CD-ROM drive).

21.2.1. Creating a Boot Floppy from the Console

Open a terminal and type the following, as `root`:

```
# mkbootdisk --device /dev/fd0 `uname -r`
```

and strike the **Enter** key, then follow the instructions given on screen.

One parameter needed by `mkbootdisk` is the `--device [device]` option, which tells `mkbootdisk` which device you want to write the boot disk to. In our example, we chose `/dev/fd0` which is the first floppy drive in the system. In 99.9% of cases that should work. If it doesn't, just choose the right device for your floppy drive.

The other parameter needed is the `[kernel-version]` option, which tells `mkbootdisk` which kernel you want to put on the floppy. In our example, we use `` `uname -r` `` which gives as a result the name of the current running kernel. Thus, the example given will create a boot disk in the first floppy drive with the current running kernel on it.

Please note that this will create a boot disk based on your current running kernel with all the modules that kernel uses.

21.2.2. Testing the Boot Disk

Always test your boot floppy to make sure it **actually works**. There are few things more embarrassing than finding that the floppy won't boot because of media errors. If the floppy boots OK then... You are done!

21.3. Backup

21.3.1. Why Backup?

Backing up your system is the **only** means of being able to repair it if it suffers severe damage, if you accidentally delete some important system files, or if someone breaks into your system and intentionally deletes some files. You should also back up your personal data (compressed audio, images, office documents, e-mails, address book, etc.) to be safe.

You should make your backups using an appropriate medium and keep them in a safe place. Such a place should be outside the place you usually work in, if possible. You can even have two backups, one on-site, and one outside. Generally speaking, you should make sure that you will be able to restore those backups if you want all this to be really useful.

21.3.2. Preparing your System

You probably have everything you need already installed in your system. You should also keep a boot disk near at hand (you **created** one, didn't you?). Actually, you can make backups using only `tar` and, optionally, a compression tool such as `gzip` or `bzip2`. See an example in *Backup Example Using tar*, page 197.

As an alternative, you can use specialized backup programs, such as Taper, Time Navigator, Arkeia, or Mandrakelinux's own Drakbackup (please refer to *Backing Up and Restoring your Files*, page 161).

21.3.3. What to Backup?

Well, this might be the single most difficult question every system administrator asks himself when the time to backup comes. The answer depends on issues such as: are you only backing up your personal data, your configuration files, or your whole system? How much time or space is it going to take? Will you be restoring your backup on the same machine/OS version, or on a different one?

Since this is a troubleshooting chapter, we will try to focus on making a backup that will allow us to quickly restore our system to the state it was before that terrible thing which rendered it unusable happened. Of course, you will need to make a backup of your personal data if you don't want to lose it.

As a rule of thumb, you will need to back up the following directories: `/etc`, `/home`, `/root` and `/var`. If you do a complete backup of these directories, you will have saved not only your system configuration, but your data as well. Please bear in mind that a backup can take a **long** time to complete, but it's the safest bet.

A more sophisticated scheme would be to backup only those files which have changed, skipping the ones which haven't. This will take more planning time, but will lead to quicker backups (and quicker restores, too). They will also be "easier" to port from one machine/OS version to another.

To summarize, back up all the configuration files of the programs you use and all of the configuration files you have changed. Also back up all your personal (and your system's users) data files. You won't regret it.

21.3.4. Where to Back Up?

The other big question to answer. This depends on how much you want to back up, how fast you want to make your backups, how easy it is to access the backup media, and a large list of etceteras.

Generally speaking, you need media that is at least as large as the amount of information you want to back up, and fast enough so the whole process won't take forever to complete.

Available backup media options vary in capacity, reliability, and speed. You can combine backup media according to your backup strategy, for example: tapes and CD-R/DVD+RW, hard disk and tapes, hard disk and CD-R/DVD+RW, etc., but bear in mind that your backup software may or may not support all of these options.

21.3.5. When to Back Up?

There are many policies for backup schedules. We will introduce you to a few. Remember that these are not mandatory, nor the best ones, nor the only ones. These are just guidelines you may want to follow in rolling out your own backup schedule.

The many backup strategies out there depend on the media you use, on how often your data changes, and on how critical that data is to you or your organization. For example, one strategy states that you should make a full backup each weekend, and an incremental (changed data only) backup every day. Then make a full backup every month and store that one in at least two places. This strategy might prove useful for a company, but not for a personal computer. For your personal backups you can think of something like this: make a weekly backup of your files on your disk drive and each month transfer those backups to CD-R/DVD+RW or tape.

21.3.6. Backup Example Using tar

Next, we will introduce you to a little backup script which uses `tar` and `bzip2` for making a compressed backup of the list of directories you provide. Please read the script's comments for tips on its usage.

> You need read permission on the files, and read and execute permissions on the directories you are going to back up. Otherwise the backup operation will fail.

```
#!/bin/bash

# Create a compressed backup of all the directories specified and put the
# resulting file in a directory of your choice.

BACKUP_DIRS="$HOME /etc /var"
BACKUP_FILENAME=`date '+%b%d%Y'`
BACKUP_DEST_DIR="/backups"

# Uncomment the following line for GZipped backups, comment for
# BZipped backups

#tar cvzf $BACKUP_DEST_DIR/$BACKUP_FILENAME.tar.gz $BACKUP_DIRS

# We do a BZipped backup here...
# Comment the following line for GZipped backups, uncomment for
# BZipped backups

tar cvjf $BACKUP_DEST_DIR/$BACKUP_FILENAME.tar.bz2 $BACKUP_DIRS
```

Use `BACKUP_DIRS` to specify the directories you want to include in the backup and `BACKUP_DEST_DIR` to specify the destination directory where the backup is going to be stored. Make the script executable: open a terminal and run `chmod 700 backup.sh`.

Of course, you can always move the resulting `tar.bz2` or `tar.gz` file to any media you want later. You can even backup directly to the media you want by mounting it and changing the variable `BACKUP_DEST_DIR` of the script accordingly. Feel free to enhance this script and make it as flexible as you want.

To restore the backups made this way, please look at *Restore Example Using tar*, page 197.

21.4. Restore

The restoration of a backup depends on which program, media, and schedule you used to make it. We won't cover all the restore cases, but only mention that in order to recover your settings and data files, make sure that you restore the files and/or directories to the same places they were in when you made the backup.

21.4.1. Restore Example Using tar

Now, we will introduce a little script to restore the backup we made with `tar` using the script introduced earlier in *Backup Example Using tar*, page 197.

> ⚠ You need write permissions on the files and directories you are going to restore. Otherwise the restore operation will fail.

```
#!/bin/bash

# Extract a compressed backup of all the directories specified
# putting the backed up files into their original places.

BACKUP_SOURCE_DIR="/backups"
RESTORE_FILENAME=$1

# Uncomment the following line if you are restoring GZipped
# backups

#tar xvzf $BACKUP_SOURCE_DIR/$RESTORE_FILENAME

# Restore a BZipped backup here...

tar xvjf $BACKUP_SOURCE_DIR/$RESTORE_FILENAME
```

As you can see, this script is simple enough. All we have to do is to pass it the file name of the backup we want to restore as a parameter (just the file name, not the full path), and it restores the backed up files into their original locations. Make sure the script is executable: open a terminal and run `chmod 700 restore.sh`.

21.4.2. Making a Recovery CD-ROM

There is a way to be prepared in case of "total disaster", and that is by making a **full** backup of your system. Programs such as mkCDrec can be very useful to get you up and running in a matter of minutes. You can find it, together with its documentation on the mkCDrec web site (`http://mkcdrec.ota.be`).

mkCDrec allows you to do multiple-CD-ROM volumes, disk cloning (copying the full contents of a disk or partition to another with similar characteristics — at least the same size), and many more.

In order to restore a system with mkCDrec you only have to boot with the first CD-ROM of the multiple-CD-ROM volume and then follow the on-screen instructions.

21.5. Problems Arising at Boot Time

It could happen that your system hangs during boot up. If so, don't panic, just keep reading.

> 📝 The next sections are not introduced in any particular order.

21.5.1. System Hanging during Boot

If your system hangs during `Rebuilding RPM database` or `Finding module dependencies`, just press **Ctrl-C**. This will allow the system to skip this step and continue to boot. Once booted, execute `rpm --rebuilddb` as `root` if the system hang was at the `Rebuilding RPM database` phase. If the system hang was at the `Finding module dependencies` phase you have most likely been through a kernel upgrade, but have not done it correctly. Check if the files in `/boot` and the `/lib/modules` directory match the current kernel version (i.e., have the current version number attached). If they don't match, please read *Compiling and Installing New Kernels* from *Reference Manual* to find out how to fix it.

If the boot process hangs at `RAMDISK: Compressed image found at block 0` you have messed up the `initrd` image. Either try to boot another `lilo.conf` entry or boot an emergency system and remove or change the `initrd=` section in `/etc/lilo.conf`.

21.5.2. File-System Check on Boot Fails

The information below applies to ext2 and ext3 file systems only. If you have a different file system, please check its documentation.

If, for any reason, you didn't shut your box down properly, the system will run a routine file-system check during the next boot. Sometimes it may fail to do this on its own and will ask for the root password and drop you to a console. Execute `e2fsck -py [device]` where `[device]` is the name of the partition on which the automatic check has failed. The `-p` switch tells `e2fsck` to make all the necessary repairs without asking, `-y` assumes you answer `yes` to all questions. When the check and repair phase is over, press **Ctrl-D** to leave the emergency console. The system will reboot.

If you get this error regularly, there may be bad blocks on your disk. Execute `e2fsck -c [device]` to find out. This command will automatically mark any bad blocks and thus prevent the file system from storing data in these blocks. `e2fsck` checks the file system automatically only if it hasn't been unmounted properly during the previous system shutdown; or if the `maximal mount count` has been reached. To force a check, use the `-f` option.

The verification for bad blocks on a disk should only be done on unmounted file systems, and can take a long time to complete.

21.5.3. X Doesn't Start

If you boot into X **by default** and have managed to break your X configuration somehow, and cannot enter X anymore, you can log into a console and use XFdrake to re-configure X. You can also boot into a different run level, fix X's configuration with XFdrake and reboot into X.

21.5.3.1. Booting Into a Different Run Level

The default run level GNU/Linux boots to is defined in the `/etc/inittab` file. Look for an entry like `id:5:initdefault:`. To boot into run level 3 (the console), you have to define that run level on the boot prompt. Under LILO, press the **Esc** key once and type `linux init 3`. Under GRUB, press the **E** key twice, add `init 3`, press the **Enter** key and then the **B** key to boot.

For a more detailed description about run levels, please refer to the The Start-Up Files: init sysv chapter of Mandrakelinux's *Reference Manual*.

21.5.3.2. Configuring X from the Console

To re-configure X using XFdrake from the console simply type `XFdrake`, as `root`.

Using XFdrake is no different to the graphical environment except that you won't have nice icons and may not be able to use the mouse pointer. To move down you have to press the right or down arrow keys on your keyboard; to move up press the left or up keys on your keyboard. You can also use the **Tab** key to move between the different options/buttons. The text on the currently selected button/option will be highlighted with a different color. Press the **Enter** key to activate it.

Please refer to *Controlling the Graphical Configuration*, page 119 for instructions on its usage.

21.6. Bootloader Issues

21.6.1. Bootloader Reinstall

Sometimes you will make a mistake and wipe your disk's MBR (Master Boot Record), or some misbehaving program does it, or you dual boot with Windows® and catch a virus that does it. So, you think you won't be able to boot your system anymore, right? **Wrong!** There are many ways to recover the boot record.

To recover your bootloader you will **need** a boot disk. Without a boot disk of some kind you might be completely lost[1].

Reboot your computer using the boot disk. What you do next varies according whether you use LILO or GRUB. No matter which bootloader you use, all the commands you must execute will need to be run as `root`.

21.6.1.1. With LILO

If you use LILO, you only need to issue the following at the command prompt: `/sbin/lilo`. This will reinstall LILO on your disk's boot sector and will fix the problem.

21.6.1.2. With GRUB

If you use GRUB things are a little bit different to that of LILO.

> The following example will assume that you are trying to install GRUB in the MBR of your first IDE drive, and that the file `stage1` is in the `/boot/grub/` directory.

First, invoke GRUB's shell by issuing the `grub` command. Once there, issue the following command: `root (hd0,0)`. This will tell GRUB that the files it needs are in the first partition (`0`) of your first hard disk (`hd0`). Then issue the following command: `setup (hd0)`. This will install GRUB in the MBR of your first hard disk. That's it!

You can also try to use `grub-install /dev/hda` to install GRUB on your first hard drive's MBR, but the method described above is the preferred one.

21.6.1.3. Some Considerations for Dual-Booting Systems

Windows 9x, NT, 2000 and XP upgrades. If you are running a dual-boot system, be very careful to always have a GNU/Linux boot disk prepared. When (re)installing Windows® (all versions), as Windows® rewrites the MBR **without any warning at all**, and if you don't have a boot disk, you won't be able to boot GNU/Linux after you perform the Windows® upgrade.

21.6.2. Backing Up and Restoring the MBR

To make a backup copy of your hard disk's MBR, insert a blank floppy in your floppy disk drive and issue the following:

```
# dd if=/dev/hda of=/dev/fd0/mbr.bin bs=512 count=1
```

If you want to restore a backed up copy of your hard disk's MBR, insert the floppy containing it into your floppy disk drive and issue the following:

```
# dd if=/dev/fd0/mbr.bin of=/dev/hda bs=512
```

---

1. Unless you made a backup of your MBR.

The above examples assume that the MBR of your first IDE hard disk (`/dev/hda`) is backed up to a file named `mbr.bin` on your first floppy diskette drive (`/dev/fd0`) and should be run as the `root` user.

21.7. File System Issues

21.7.1. Repairing a Damaged Super-Block

The information below only applies to ext2 and ext3 file systems. If you have a different file system, please check its documentation.

The super-block is the first block of each ext2FS/ext3FS partition. It contains important data about the file system, such as its size, free space, etc. (it is similar to the method used by FAT partitions). A partition with a damaged super-block cannot be mounted. Fortunately, ext2FS/ext3FS keeps several super-block backup copies scattered over the partition.

Boot your system with a boot disk. The backup copies' location depends on the block size of the file system. For file systems with 1 KB block sizes it is at the beginning of each 8 KB (8192 bytes) block. For file systems with 2 KB sizes it is at the beginning of each 16 KB (16384 bytes) block, and so on. You can use the `mke2fs -n [your_disk_device_name]` command to find out at which byte positions the super-block copies are. Assuming a 1 KB block size, the first backup copy is in byte number 8193. To restore the super-block from this copy, execute `e2fsck -b 8193 /dev/hda4`; change `hda4` accordingly to reflect the name of your damaged partition. If that block also happens to be damaged, try the next one at byte number 16385, and so on until you find a suitable one. Reboot your system to activate the changes.

21.7.2. Recovering Deleted Files

We will discuss some ways of recovering deleted files and directories. Please bear in mind that recovery tools are not magical, and they will only work depending on how recently you deleted the file(s) you are trying to recover.

You might be wondering how to recover files you accidentally deleted. There are some utilities designed for GNU/Linux's ext2 file system which allow you to recover deleted files and directories. However they won't recover the files you deleted a few months ago because of disk usage, space marked as "free" will have been overwritten. So the **best** way to protect against accidental or not so accidental deletions is by making backups.

Please bear in mind that there are not (as yet) tools to recover files deleted on `reiserfs` file systems. Keep in touch with the ReiserFS home page (`http://www.namesys.com`) for the latest news about it.

One recovery tool is Recover. It's an interactive tool. If you have a Mandrakelinux — PowerPack Edition, you already have it on the `contribs` CD-ROM. Otherwise, you can find it on the Rpmfind web site (`http://www.rpmfind.net`). Go there and download the RPM. Once you have the RPM, install it. Then run it with `recover` and answer the questions it asks you. The questions will help you to set a time span to look for deleted files and directories to minimize the time it takes to do the search[2].

Once the tool finishes its search, it will ask you where you want to save the recovered files and directories. Pick a directory of your choice, and you will have all the files and directories recovered into it. Note that you won't be able to recover the file names, just their contents, but you can inspect them or try to rename them with different names until you get the right one. This is better than nothing.

---

2. You can search for **all** deleted files too by appending the `-a` option, but it will take longer...

> There are also mini-HOWTOs related to "undeletion" for ext2, look at Ext2fs-Undeletion (`http://www.tldp.org/HOWTO/ mini/Ext2fs-Undeletion.html`) and undeletion of whole directory structures (`http://www.tldp.org/HOWTO/mini/ Ext2fs-Undeletion-Dir-Struct/index.html`).

21.8. Recovering from a System Freeze

When stuck in a "freeze", your computer doesn't respond to commands anymore and input devices such as keyboard and mouse seem to be blocked. This is a worst-case scenario and could mean that you have a very severe error in either your configuration, your software or your hardware. We will show you how to deal with this annoying situation.

In the case of a system freeze, your top priority should be trying to shutdown your system properly. We assume you are running under X. So try these steps consecutively:

1. Try to kill the X server by pressing the **Ctrl-Alt-Backspace** keys.

2. Try to switch to another console by pressing the **Ctrl-Alt-Fn** keys (where n is the console number, from 1 to 6). If you succeed, login as `root` and issue the command: `kill -15 $(pidof X)` or the command `kill -9 $(pidof X)`, if the first command shows no effect. Check with `top` to see if X is still running.

3. If you are part of a local network, try to use `ssh` to connect into your machine from another box. It is advisable to `ssh` into the remote machine as an unprivileged user and then use the `su` command to become `root`.

4. If the system doesn't respond to any of these steps, you have to go through the SysRq (System Request) sequence. The SysRq sequence involves pressing and holding three keys at once: the left **Alt** key, the **SysRq** key (labeled **Print Screen** on older keyboards) and a letter key.

   a. **Alt-SysRq-R** puts the keyboard in "raw" mode. Now try pressing **Alt-Ctrl-Backspace** again to kill X. If that doesn't work, carry on.

   b. **Alt-SysRq-S** attempts to write all unsaved data to disk ("sync" the disk).

   c. **Alt-SysRq-E** sends a termination signal to all processes, except for `init`.

   d. **Alt-SysRq-I** sends a kill signal to all processes, except for `init`.

   e. **Alt-SysRq-U** attempts to re-mount all mounted file systems read-only. This removes the "dirty flag" and will prevent a file system check upon reboot.

   f. **Alt-SysRq-B** reboots the system. You might just as well press the "reset" button on your machine.

> Remember that this is a sequence, i.e. you have to press one combination after the other in the right order: **R**aw, **S**ync, t**E**rm, k**I**ll, **U**mount, re**B**oot[3]. Read the kernel documentation for more information on this feature.

5. If none of the above helps, cross your fingers and press the "reset" switch on your machine. If you are lucky, GNU/Linux will just run a disk check upon reboot.

By all means, try to find out what causes these lockups because they can do severe damage to the file system. You might also want to consider using one of the journaling file systems included in Mandrakelinux: ext3, `reiserfs`, etc. which handle such failures more gracefully. However, replacing ext2FS with `reiserfs` requires reformatting your partitions. You can use `tune2fs -j /dev/hdaN` to convert the file system in the Nth partition of the first IDE disk from ext2FS to ext3FS.

21.9. Killing Misbehaving Apps

Well, this one is not so hard after all. You have many ways to do it. You can do it by finding the PID of the program which stopped responding, and then using the `kill` command to terminate it, or you can use the `xkill` tool or other graphical tools such as the ones that show the process tree.

21.9.1. From the Console

The first thing to do to terminate a misbehaving program is to find its PID, or process ID. To do so, execute the following from a console: `ps aux | grep mozilla`, supposing that Mozilla is the misbehaving program. You will get something like the following:

```
peter    3505  7.7 23.1 24816 15076 pts/2   Z   21:29  0:02 /usr/lib/mozilla
```

This tells us, amongst other things, that Mozilla was started by user peter and that its PID is `3505`.

Now that we have the PID of the misbehaving program, we can execute the `kill` command to terminate it. So we execute the following: `kill -9 3505`, and that's it! Mozilla will be killed. Note that this is **only** to be used when the program doesn't respond to your input anymore. **Do not** use it as a standard means of exiting from applications.

Actually, what we have done was send the KILL signal to the process number `3505`. The `kill` command accepts other signals besides KILL, so you can have greater control over your processes. For more info, see kill(1).

21.9.2. Using Graphical Monitoring Tools

You can also use the graphical process' status tools (like KPM, KSySGuard, and GTOP to name a few) which allow you to point to the process name and with one click send that process a signal or just kill that process.

> If you are using KDE, you can press the **Ctrl**-**Alt**-**Esc** keys: the pointer will change to a skull with crossed bones and you can simply click on the window of the misbehaving application to kill it.

21.10. Miscellaneous

Some considerations on newer hardware such as legacy-free systems, nVidia® and ATI 3D® graphics accelerator cards, and other things that do not fit in the preceding sections...

Legacy-Free Systems. Hardware manufacturers have recently introduced what they call "legacy-free systems", mainly on laptops[4], but there are also legacy-free desktop computers. This basically means that the BIOS has been considerably reduced to allow you only to choose which media to boot from. Mandrakelinux will be able to configure everything properly.

nVidia and ATI 3D Graphics Cards. Computers with nVidia or ATI graphics cards need a patched kernel to be able to use OpenGL hardware 3D acceleration on OpenGL-compatible applications. If you own a Mandrakelinux — PowerPack Edition, the kernel should have been installed by DrakX. If this is not your case, please obtain and install the corresponding packages. You can visit nVidia's web site (`http://www.nvidia.com`) and ATI's web site (`http://www.ati.com`) and download the appropriate drivers, or you can download the RPM packages from Mandrakeclub (`http://www.mandrakeclub.com`). Then run Mandrakelinux Control Center and re-configure X from there.

My Computer is "slow". If you notice your computer is really slow, or significantly slower than with other GNU/Linux versions, you might overcome this "problem" by disabling ACPI support. To do so, add the following to your `/etc/lilo.conf` file:

---

4. Refer to the great Linux on Laptops (`http://www.linux-laptop.net`) web site for more information on your laptop make/model.

```
append="acpi=off"
```

If the file already has an `append=` line, only add `acpi=off` at its end. Running `lilo -v` as `root` and rebooting your computer will make the changes effective.

21.11. Mandrakelinux's Specific Troubleshooting Tools

Each administration tool (the ones started from Mandrakelinux Control Center) is a potential trouble fixing tool. You can use all these tools to revert configuration changes, to add or remove software, to update your system with the latest fixes from Mandrakesoft, etc.

If you think you have found a bug in any of our tools, please feel free to submit a bug report using Drakbug, our automated bug report tool.

21.12. General Guidelines for Solving a Problem under Mandrakelinux

Here are the different means available to you in your problem-solving quest. Try the first option and only then, if that does not work, try the second, and so on.

21.12.1. Search the Internet

The various Internet sites previously mentioned are excellent starting points. They deal with general **and** very specific aspects of your potential problems. Finally, try a general search engine such as Google™ or, as mentioned above, the Linux-specific Google™ search engine. And do not hesitate to use the Advanced search (`http://www.google.com/advanced_search`) option with very detailed questions, such as the error message you are receiving.

21.12.2. Mailing Lists and Newsgroups Archives

The previous searches may lead you to general answers which hide the results of your specific question amongst many other answers. To refine your search, you can try the following.

First, try to find a list which seems specifically geared to your problem, then perform a search in its archive pages.

Example

You've noticed some strange behavior while trying to use GRUB with a minix partition.

One of the results of a search using the "grub mailing list" keywords in Google™ is a link to the *GRUB mailing list archive* (`http://mail.gnu.org/archive/html/bug-grub/`). It even offers a search engine, which when searched for "Minix" leads you directly to a patch.

> Note that not all archives have an embedded search engine. However, using Google™ as an example, you can easily use the advanced field `domain` to limit your search to the specific site hosting the archive. This strategy may also be used to exclude sites which keep returning garbage.

For a newsgroups search, Google Groups™ (`http://groups.google.com/`) maintains an archive of an amazingly large number of newsgroup channels.

21.12.3. 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, so 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.

A last word: 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. If your problem isn't fixed today, it may be tomorrow...

21.12.4. Mandrakesoft Business Services

Finally, when facing a really challenging situation, corporate users (especially) might consider hiring one of Mandrakesoft's consultants to address their specific needs.

This is one of the strong suits of open-source products: we have the source, we have the power! Therefore, almost any problem, no matter how complex, specific or high level, may be solved right in the heart of the software.

You might also want to customize your Linux environment to meet very precise goals. For example, you could use Mandrakelinux as a custom routing application on special devices. Know that Mandrakesoft consulting services (`http://www.mandrakesoft.com/products/business`) can help you.

21.13. Final Thoughts

As you have seen there are many more ways to recover from an emergency than by re-installing the whole system again[5]. Sure, you need a little expertise in applying some of the techniques described in this chapter, but with a little practice you will gain such expertise. However, we hope that you will never need to really master these techniques ... although it does not hurt to know them. We hope that the instructions and examples given will be useful when you are in need. Good luck recovering from an emergency!

---

5.   The usual way to fix things in some other operating systems...

Appendix A. The GNU General Public License

The following text is the GPL license that applies to most programs found in Mandrakelinux distributions.

Version 2, June 1991 Copyright (C) 1989, 1991 Free Software Foundation, Inc. 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

A.1. Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software — to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps:

1. copyright the software, and

2. offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

A.2. Terms and conditions for copying, distribution and modification

- 0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

  Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only

if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

- 1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

  You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

- 2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

  1. You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

  2. You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

  3. If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

  These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

  Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

  In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

- 3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

  1. Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

  2. Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

  3. Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

  The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

- 4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

- 5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

- 6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

- 7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

  If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

  It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

  This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

- 8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

- 9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

  Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

- 10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

- 11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

- 12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Index

administrator, 35
applications
  accessing, 37
  Clara OCR, 140
  DiskDrake, 169
  Drakbackup, 161
  Drakbug, 106
  DrakPerm, 181
  DrakSec, 179
  Firefox, 61
  HardDrake, 117
  K3b, 93
  Kaffeine, 93
  kill misbehaving apps, 203
  killing, 203
  Konqueror, 78
  KPrinter, 80
  lpd, 134
  Mandrakelinux Control Center, 103, 145
  Mandrakelinux Control Center, 107
  MenuDrake, 151
  msec, 179, 181
  OpenOffice.org, 71, 74
  PrinterDrake, 123
  rawwrite, 10
  Rpmdrake, 107
  ScannerDrake, 135
  Totem, 91
  troubleshooting tools, 204
  UserDrake, 159
  XMovie, 93
ATI 3D graphics cards
  OpenGL, 203
authentication
  Active Directory, 22
  LDAP, 22
  NIS, 22
  PDC, 22
background, 37
backup, 196
  Drakbackup, 161
  Master Boot Record, 200
  restore, 166, 198
  tar, 197, 198
bar
  menu, 38
  status, 38
  title, 38
  tool, 38
  tool, application, 38
BIOS, 9
  Plug'n'Play, 9
bookmarks, 64
boot
  different run level, 199
  dual-boot, 7, 29
  file-system, 199
  services, 28

  system hanging, 198
boot disk
  creating, 9
boot disk, 195
  Master Boot Record, 200
bootloader
  configuration, 186
  dual-boot, 200
  GRUB, 24
  LILO, 24
  menu, 35
  reinstall, 200
  uninstall, 30
Borges, **??**
bugs
  reports, 106
CD, 93, 172
cdrom.img, 9
clipboard, 79
commands
  defrag, 7
  DrakConf, 103
  Kppp, 11
  lilo, 30
  minicom, 11
  scandisk, 7
  tar, 197
  urpmi, 114
configuration, 25
console
  switch to another, 202
country
  configuration, 25
date
  adjust, 156
defrag, 7
dependencies
  automatic, 21
desktop, 37
  environment, 45
  virtual, 38
development, 2
devices
  removable, 172
DHCP server, 149
DiskDrake
  hda, 169
  NFS, 175
  removable devices, 172
  Samba, 173
DocBook, **??**
documentation
  accessing, 41
  Mandrakelinux, 3
  manuals, 42
drag'n'drop, 79
Drakbackup, 161
Drakbug, 106
DrakConf, 103
DrakPerm, 181