Agustin’s Linux manual

By Agustin Velasco

Agustín's Linux Manual

Multimedia & Hardware Installation

Volume 3

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About the author

Agustin Velasco has over 15 years of experience in computers and electronics. Throughout the years he has earned a career in the technology arena, specializing in computer security and Data recovery.
By the end of 1995, he had an opportunity, and worked for a subdivision of Acer America, where he spent four years developing his skills in computer technology. Thereafter he was self employed, deploying networks and applying security at large scale. As a security specialist, he saw the need and mastered a technique in data manipulation which now he can use to recover lost or erased data from a variety of platforms.

As Linux became popular on the market, he started to experiment with it, and found that Linux is a highly reliable operating system. He started working with various Linux distributions including Slackware and Debian. Realizing that the end user might have problems working with some distributions, he started working with other more friendly packages. Soon after, he developed a technique based upon the Mandrake distribution.

He is currently an active supporter of the open source movement. Due to the lack of technical reference for the end users, he decided to write Agustin's Linux Manual "the series". Because of this documentation he receives the respect of the Linux community. On a day to day basis, Agustin's Linux Manual is used among top IT professionals and is now reaching educational institutions. Agustin currently participates in various forums, including chat rooms, where he answers questions related to the Linux Operating system.
Agustin is currently holding a position as technical director at www.netcontrol.org and is author of the second edition of these series based on Mandrake 10 Community Edition.

The purpose of this series and why it was written

This book has been written to help all of those who are interested in learning, are open minded and loves freedom. The book is written especially to assist educational institutions to teach people who have zero knowledge of Linux and perhaps for those who can not afford the pricy schooling but want to become a well respected system administrator.

The book takes one step by step from installation to system administration. It teaches how to set up Apache web server, Bind DNS server, Postfix email servers, Samba server and of course security. It gives you details on how to close unnecessary ports. It covers configuration on the Squid proxy server and demonstrates many of the available utilities that will assist you in system administration

Dedication

For my wife Amelia and my two kids Caroline and Kevin. I am really happy for having such a wonderful family, my wife for understanding and supporting me with all of my crazy ideas and my kids for not bothering me when I am writing or working on projects at home.

And last but not least to all of those who struggle in life to have an education, but never give up to demonstrate their abilities of accomplishing something. I myself have witnessed people without a degree who have accomplished the most wonderful skills but because a lack of a degree they have been put out of the practical field.

Acknowledgement

I'd like to thank my friend Anthony Whitaker (who lives in the shadows and wishes to remain anonymous); an idea man who undoubtedly could make any company number one and has been so helpful in the process of this book. Without his support this book wouldn't be completed. Anthony has a wide experience in the field of computers which made him a perfect person to review this book as an end user.

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Chapter 5

Multimedia

Configuring the sound card

Concerning Multimedia, the first thing probably would be getting your sound card to work. What good is it to go over this section if the sound is not working right? Most of the time as I said before your hardware will be automatically probed.

It does not matter if the sound card is added or built on to the motherboard, the configuration will be very much the same. Some of them may require downloaded drivers from the manufacturer, but many come as modules in your Linux distribution. In the case of downloaded drivers, you must follow the installation instructions from the manufacturer. However you may end editing the same file that I will show you how to add in the following section, `/etc/modules.conf`.

Many hardware drivers are loaded in `modules.conf` including the USB devices, net card, sound cards and many more.

When configuring manually, it requires additional steps than when configured by the system. If your sound card is not configured automatically, you need to do some research about it to make sure it is supported by Linux and if yes what drives are required to make it work.

Even if the sound card is configured automatically by the system, it will include two lines in `/etc/modules.conf`

For example:

```
above snd-trident snd-pcm-oss
alias sound-slot-0 snd-trident
```

These two lines indicate initializing the sound system by using a trident and OSS drivers, the sound card is identified as in slot 0.

The following is another example.

```
alias sound-slot-0 snd-cmipci
above snd-cmipci snd-pcm-oss
```

Adding modules in `modules.conf` may be just enough to have your sound card working. Rebooting will force the system to load the module and everything should be fine if the loaded module is correct. Read chapter 7 to learn how to use `modprobe` in case you need it, executing `modprobe` and the module name will auto-probe the device. If you don't receive any error then probably the correct module is loaded.

Another easy way to configure your sound card is by using the Mandrake control center. Use the Hardware List to probe the system, if the sound card is detected, you may be able to configure it there by using **Run configuration tool.**

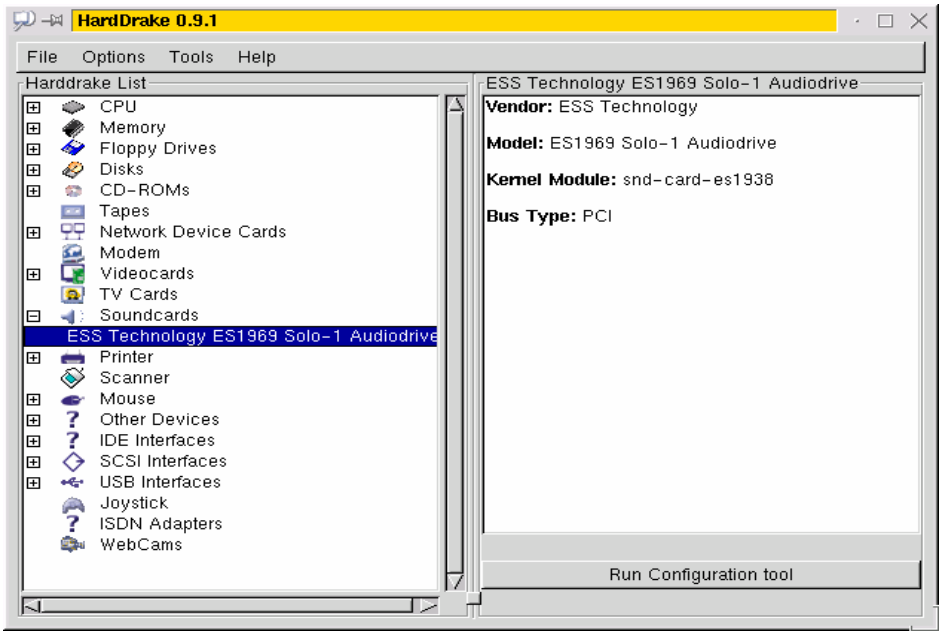


Fig 5.1

Note on the right panel, it gives a description of the hardware and tells you which Kernel Module is required to make it work, run the configuration tool to select that module and click Ok to accept it.

Clicking Ok will accept the selected module and will add the required configuration in `/etc/modules.conf`

After configuring this module, you should be able to see the sound device in

KStart => Configuration => KDE => Sound

If you do see the sound system, congratulations you successfully installed your sound card. Refer to figure 5.3 to tweak the sound server if required.

Mandrake 9.1 (default audio setting is on mute)

On Mandrake 9.1 you may not be able to hear sound yet, for some reason by default the Mixer is set to MUTE ALL. If that is the case follow the following instruction to uncheck the mute option.

- From the Multimedia menu => Sound
- Find and click on **Aumix**

  Or

Open a virtual terminal and type aumix on your command line and you should see the mixer pop up.

- On the **aumix** menu click on the mute option uncheck the Mute all.

Launch the CD-Player and you should be able to hear the sound.

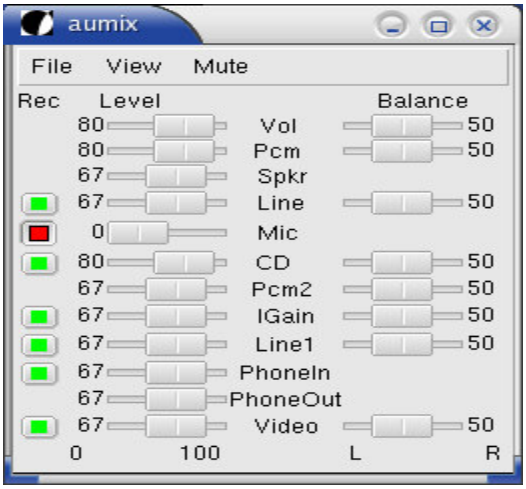


Fig. 5.2

You may also have to consider checking the **aRts** sound server option, figure 5.3. Make sure it is enabled to start on KDE start up. If it is not enabled, enable it and restart the system. On any other version of Linux it may be worth checking the sound server option in case you are having difficulties getting it to sound.

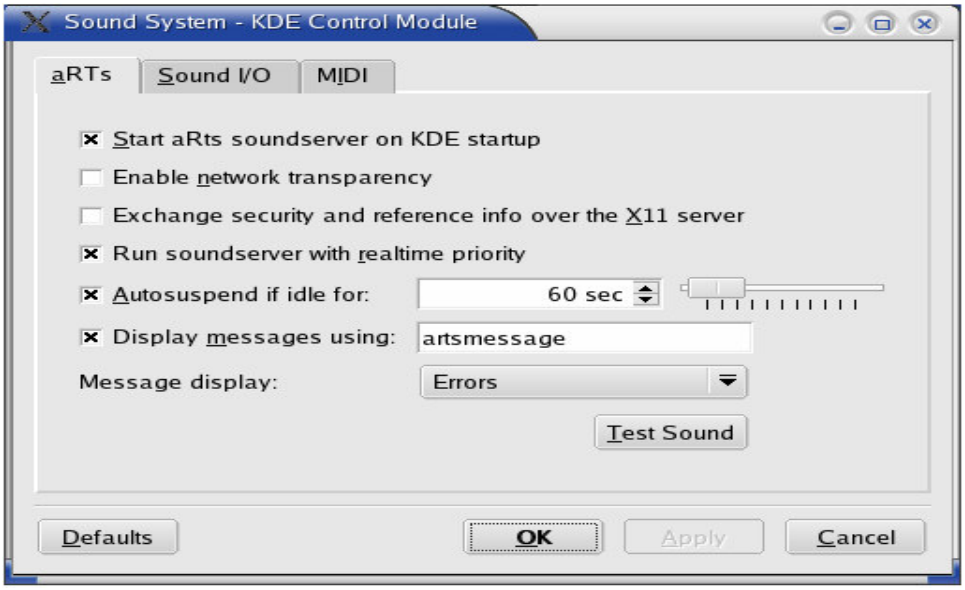


Fig. 5.3

Depending on your computer's BIOS ability, you may additionally manage the IRQ settings allocation starting at boot in your /etc/lilo.conf. To do this edit lilo.conf and find the line that says append, and insert the pci=biosirq at the end of that line.

Make note that assigning allocation of IRQs in lilo.conf is just an alternative if your system is having trouble allocating resources. To learn more about resources use dmesg as indicated in **Chapter 7 installing hardware.**

Audio application

If you love listening to those MP3s or watching your DVDs, then this section is for you. Of course this book wouldn't be complete if I would not discuss the freedom of the open source in the multimedia world. In this section I will discus *XMMS* and *Kscd* for the audio and *Xine* for your videos.

The X multimedia System (XMMs) can play a variety of audio sources, such as MP3s and regular CD music.

To launch *XMMS*, click on your *KDE* or *GNOME* menu and choose Multimedia =>Sound =>XMMS.

- Multimedia->Sound->XMMS

Note: If *XMMs is not on the multimedia menu, it is because it is not installed. Install it, logout and restart X.*

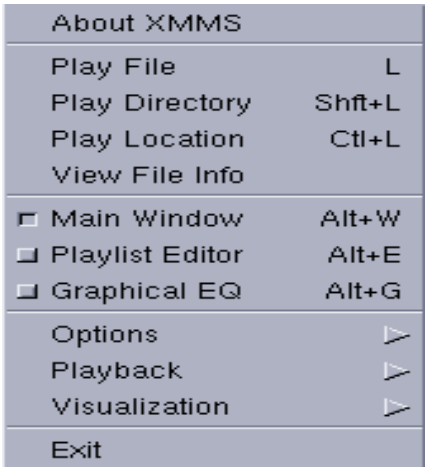
The XMMS Player

Fig. 5.4

This is the main window; use your mouse to play around with it. It is not difficult to use. It actually really looks like a regular disk player.

The circle on the upper left corner has a **menu** in which you can select the other parts of the player.

The XMMS Main Menu



The menu has two buttons:

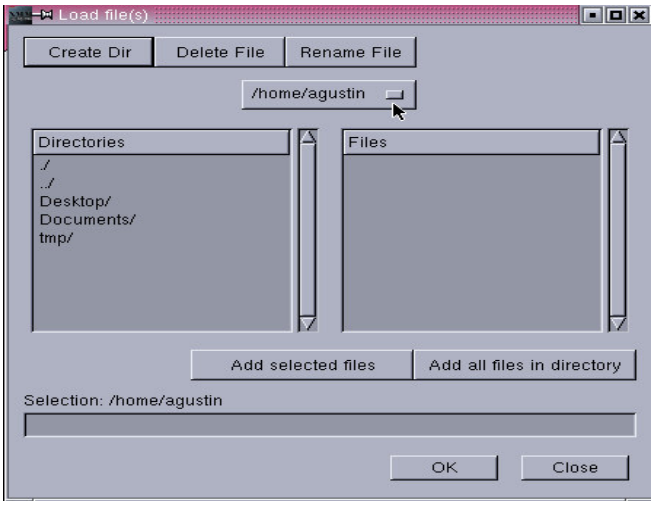
- Playlist Editor
- Graphical EQ

By pressing these buttons you make them available as part of the player.

Clicking on **play file,** a new window pups up to select the location of your file to play. see figure **Fig.5.6**

Fig. 5.5

From this panel you can create a directory, delete a file if you wish or **rename the file.** The button at the home directory where the mouse pointer is on fig. 5.6, is used to select a different directory for your mp3s source. If you know the exact location you can type it on the command line where it says selection at the bottom of this picture.
Once you have selected the directory, just press:



- Add selected files or
- Add all file in directory.
- Click Ok

Click on play button and there you go.

Fig. 5.6

The Play Directory

From figure 5.5, use the play directory option to select a specific directory.

- Click on the directory in which your files are stored and **click Ok**
- Click on Play button to play it, that's it.

Fig. 5.7

Play Location

To play your favorite CD refer to **fig. 5.5** and click on Play Location. This option is a shortcut to enter the CD-ROM mount point.

Enter the location where the CD-ROM is mounted. **Click Ok.**

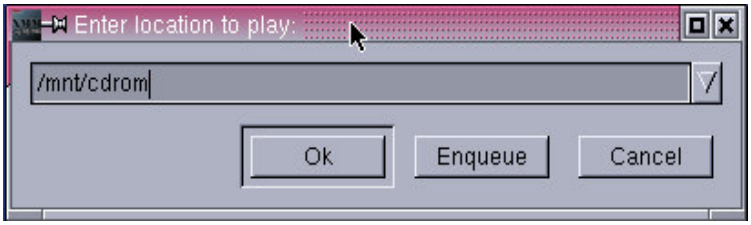


Fig. 5.8

- Click on the **Play button** figure 5.4 to play it.

The Equalizer

The equalizer is for adjusting the tones, just like on a regular home stereo. To change the settings, click on the ON button and set your preferences levels or press the auto button to load default settings. Use the PRESETS to Load previously saved configurations.

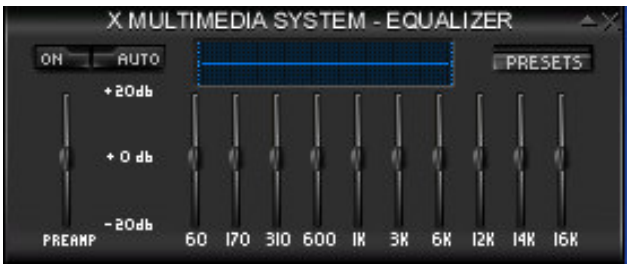


Fig. 5.9

The Play List

Fig. 5.10

Read the following to find out the extra features on the Play List.

FILE +

Fig. 5.11

Clicking and holding the mouse pointer on the FILE + button will show 2 other buttons:

DIR + and URL +

Move your pointer on to **DIR +**, that will let you choose the directory where your music files are stored, `/home/agustin/mp3`.

Clicking on **URL +** let's you enter a specific websites address or a complete path to your files directory, `/mnt/cdrom`.

FILE –

This option let's you remove a file from your play list. Click on the file name you wish to remove and **click FILE -**, or use the Delete key on your keyboard.

Click and hold the mouse on the **FILE –** display three other buttons.

- CROP -, ALL - and MISC -.

Fig. 5.12

CROP: This button removes all files from the play list, if you have any of those files highlighted; those files won't be removed from the list.

ALL: Removes everything from the list.

MISC: This has a submenu. Remove dead files or physically delete the files.

SEL ALL

This selects all files in the play list.

Click and hold display two other buttons:

Fig. 5.13

- SEL ZERO and INV SEL.

SEL ZERO: Selects zero files.
INV SEL: This inverts the selection of files.

MISC OPT

This option displays two other buttons.

Fig. 5.14

- FILE INF and SORT LIST.

FILE INFO: Displays file-information.
SORT LIST: Files are sorted, by list, by selection, random.

LOAD LIST

Click once on this button will pop window fig.5.15

Fig. 5.15

SAVE LIST: This allows you to save the files in your playlist as a list of audio track.

NEW LIST: This clears the list, makes it ready for a new list.

The Options Sub-menu

Audio I/O plugins

If you are unable to play your CD, check on preferences and make sure the plugins for CD Audio Player is enabled.

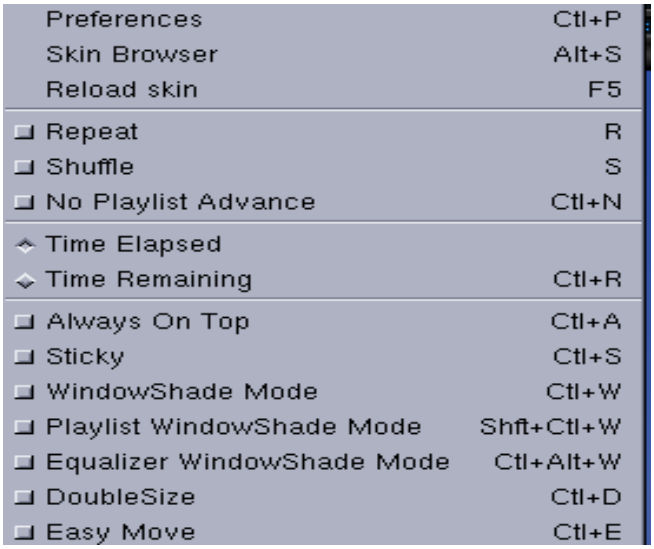


Fig. 5.16

The output plugins might be aRTS for KDE or OSS Driver for Gnome.

Note. *I myself use KDE with OSS Driver, Works fine.*

The Effect/General Plugins: This tab holds a set of effect plugins for voice removal, and echoing. With the appropriate configuration this panel allows you to control *XMMS* with your stereo, TV or VCR's remote control.

Visualization Plugins: You can select the plugins that satisfy you, while you are playing your music.

The Options tab: Here you can fully customize *XMMS* by adding or removing features.

Selecting Skins

While the player is active, by pressing **Al**t+**S** keys, you can select an amazing beautiful skin for the player. Scroll through all of them until you find the one you like.

Fig. 5.17

Checkout figure 5.18, it is the skin browser. You can select one manually or you can select them at random, it is your choice. You can also import your favorite from winAmp to: **.xmms/Skins** directory

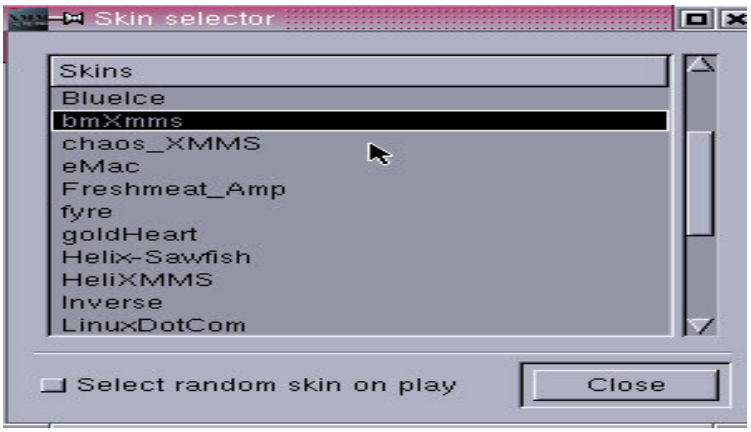


Fig. 5.18

For additional skins you can visit:
www.xmms.org/skins.html
www.skinz.org www.customize.org

Streaming

You can use XMMs to listen to your favorite radio channels; use Shift + click to save the channel or manually save the channel, once saved just add it to your list.
http://www.shoutcast.com, http://www.icecast.org

The Kscd CD Player

The KDE Small Simple CD player

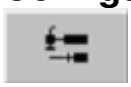
Fig. 5.19

KDE Menu => **Multimedia** => **Sound** => **KSCD** (CD Player)

Freedb Dialog


The second button at the bottom is a database to store pre-configured list such as the Artist's name, song's tile, etc. You can also program the play order separated by commas.

Configure KSCD


The next important button is the KSCD configuration button. The KSCD panel has several options that you can use for customization. The panel allows you to enable special features, such as:

- Enable auto play when CD is inserted.
- Eject the CD when finished playing.
- Stop playing on exit
- Randomly select songs

This panel also offers an option to set a remote Freedb. Upload records via SMTP. Using the remote freedb, gives you access to the *Compact Disc Database* hosted on freedb.freedb.org cddbp 888 -

If you want to upload or submit songs to the freedb server, you can use the SMTP tab. You will only need to enter your SMTP address and the port (25 the outgoing port by default) and enter a valid e-mail address.

Fig. 5.20

Simple, but beautiful!

Movies & DVDs

Linux still doesn't have many movie players due to proprietary codec's. We hope that in the near future we will have more than enough of what we can use. Currently Under Linux there are very interesting players such as Xine, Xmovie, Mplayer and others.

The Xine Video Player

Let's get started with Xine. Xine is very interesting; it supports a wide range of formats and good customization; fast and flexible as well.
Xine is tricky, your Linux distribution comes with an official version, but there is an unofficial version available.

Xine Official Version: Included in your Linux distribution, some formats not supported.

Xine Unofficial Version: Always updated, supports encrypted formats, Dvx …

There are other video players, but Xine is my favorite. In this section I will discus and teach you how to have it up and running as easy as possible.
If you want to try other players, you may want to try Mplayer, Ogle… or search the web for others.

Installing Xine
This installation will be the unofficial version….

Yes I know what people say, what good is Linux as a desktop if you can't play your DVD? The truth is, what good is it to speak first without seeking the truth? I hate to say it but people are ignorant, and because of our ignorance we always judge things wrong.

To start the installation, first you have to download the unofficial files required. My recommendation is that you download files in the RPM form.

The official Website is: http://xinehq.de/index.php

http://xinehq.de/index.php/nightly (rpms)

Software requirements:
In order for your installation to be successful, this is what you need…

- **libpng-2.1.0.3-1.i386.rpm**
- **libxine1-1_cvs-030903.i586.rpm**
- **Xine-ui-0.9.22cvs-030903.i586.rpm**
- **libdvdcss-1.2.6-2.network.i386.rpm**
- **W32codec-0.52-1.i386.rpm**
- **Xine-mozilla-plugin-0.2-030903.i586.rpm**
- **RealPlayer9-9.0.7.151.-4.i386.rpm**

Note: *By the time you do this installation, there probably will be updates for these files. So don't expect to find exactly the same.*

You might also see other names as part of the file name such as:

- **i686.rpm**
- **k6.rpm**
- **k7.rpm**

Any X86 is intended to run on Intel platform. The K6 is for the AMD k6 processor; and K7 is for Athlon/Duron processors.

My Linux system is on an Athlon XP 1500+, and I installed the i586 a Pentium equivalent package and it works well. The installation is very simple. First you have to log on as root or super-user, and then be in the appropriate directory where you saved the download and then execute the following command:

On your root prompt type:

```
# rpm -ivh libpng-2.1.0.3-1.i386.rpm
```

Execute the same command to all the downloaded files. The **libpng** is the first required library, known also as dependencies. Install it first before you install the rest.

Make sure you type the names correctly, while typing use the tab key to auto complete the names. Before you can use Xine, you have to set Linux to allow Xine to detect a DVD drive. Again this is done as root.

```
# ln -s /dev/cdrom /dev/dvd
```

That command creates a link to your CD-ROM. I know you might be asking yourself why. The reason is that in Linux the DVD drive is seen just as a CD-ROM and not like a DVD drive.

Starting Xine

Once all packages are installed, you can now **startx** as a regular user. On the **kde run command** type **Xine**.

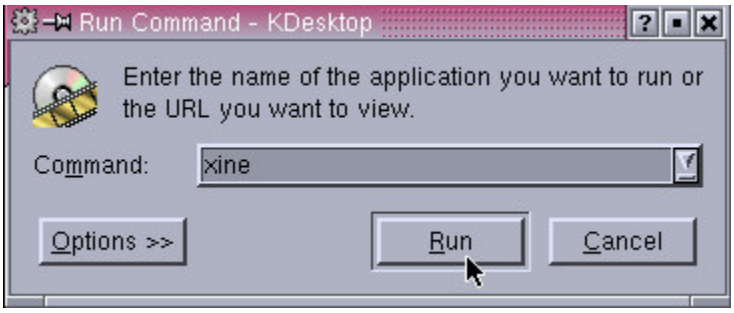


Fig. 5.21

That should launch the Xine video player.

Fig. 5.22

At the launch time you may receive a key binding error. In my case I got this:

Key binding of Toggle TV mode and File Selector are the same

When you receive these errors, it also displays two options to **Reset** or **Edit**
The key bindings are hot keys to access Xine's options. Select **edit** to find which key is used twice, change it or remove it.

How can you identify which key? From the key-binding panel click on each module and observe at the very bottom of the panel to the left corner; it displays the key. Make note of each key until you find the one that is repeated. Change it or remove it, press **save and close the panel**.

If you don't see Xine's main control center **fig 5.22**; on the main black screen **right click**, a menu should pop up. Click on the first option **Gui visibility,** and it becomes available.
To play a DVD, click on the DVD button, it automatically reads your DVD drive and loads the video. If it does not start, click on play, and it should start playing.

For extra configuration, (if you need it), at the left bottom side corner where the ON/OF button is; a **configuration button is available see fig. 5.23**.

On the **GUI tab,** there is an option for **configuration experience level**. Change that to **Advanced** or **Master of the known universe**. That gives you access to additional configuration options.

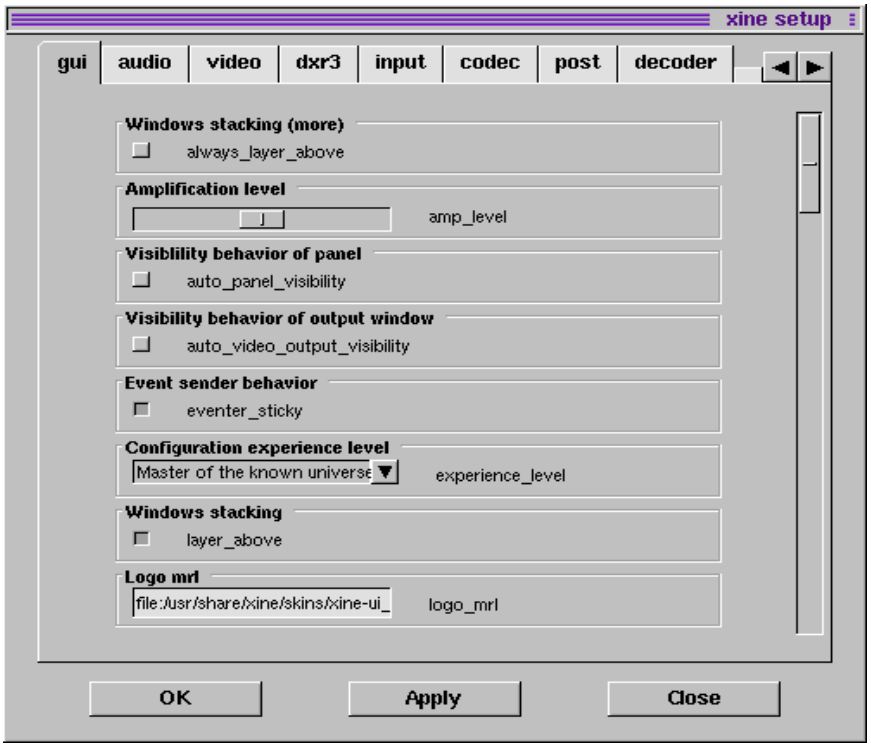


Fig. 5.23

From my point of view, I don't think you need to make changes to this preset options, except on the audio and codec's volume.

Create a shortcut for Xine

Now you are asking, what is the easiest way of accessing Xine, when you install the official version; a shortcut is added to the multimedia menu. But with the rpms that we just installed, we have to do it manually.

1. Browse to: **`/usr/share/xine/desktop/xine.desktop`**
2. Drag & drop the **xine.desktop** on to the desktop
3. Select create link here

Congratulations, you just installed Xine. Get some popcorn and enjoy your DVD…

Video Conferencing

Simple, fast and professional… Yes I love this video conferencing. I can't believe how easy it was to set up my web cam. I have a USB cam, and here is how I did it.

- Install *hotplug* package

The *`hotplug`* is a sort of plug & play for Linux, it allows you plug in new devices and use them immediately. Initially hotplug became a standard for USB devices in Kernel 2.4 but from 2.4+, it became the base of the subsystem buses and driver classes.

I recommend the use of it, because it makes it easy to configure your USB devices including PCI peripherals. Newer versions support **IEEE 1394** (Firewire/i.Link) and can even download needed firmware to USB devices. Many systems are supported including some mainframes and laptops' docking station.

I highly recommend you check before buying hardware for Linux; you should always check that it is supported. If it doesn't say Linux on the box don't buy it, period.

For more information visit: *http://linux-usb.org/devices*.

The cam Setup

1. Install the *hotplug* package
2. Shutdown the computer
3. Connect the web cam in an empty USB slot
4. Reboot the computer

Once your computer starts it should detect your web cam and configure it. If you already have *GnomeMeeting,* an icon should popup on your desktop. If *GnomeMeeting* is not installed, then install it and restart the computer. Now you should see the *GnomeMeeting* icon.

Fig. 5.24

This Icon is also available through **Main menu: Kstart =>Networking => GnomeMeeting.**

Click on the *GnomeMeeting* icon, a wizard start and walks you through the setup.

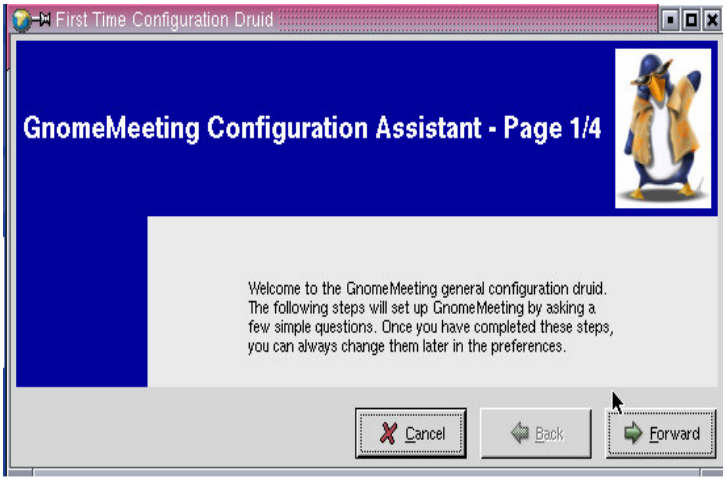


Fig. 5.25

Click forward to continue.

This wizard is also accessible through the *GnomeMeeting* main screen

Edit => Preferences menu (or press **Ctrl**+**S)**.

The next step is your Screen Name:

Fill out the information; this information will be displayed when you go online on the **ILS server.**

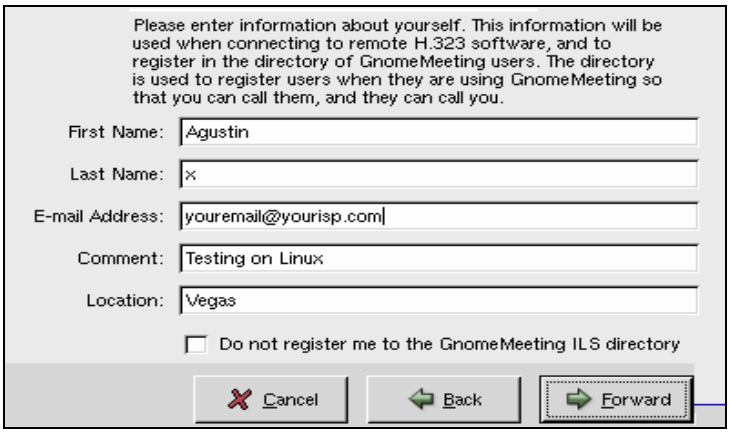
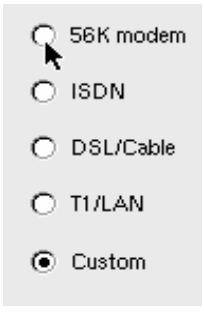


Fig. 5.26

Be careful with your privacy on line… I don't blame you.

They can see your face but they don't know your name.



Click **Forward** and select your connection type.

Fig. 5.27

Finally Click on Apply on the last Screen and you are set.

If you want to do video conferencing with *NetMeeting™* users, you need to set up the ILS options in Directory Settings, under Edit => Preferences; make sure you check the Register option.

This screen allows you to reset all the settings, including your personal data. Click on all the options to find out what this is, and what you can do with it

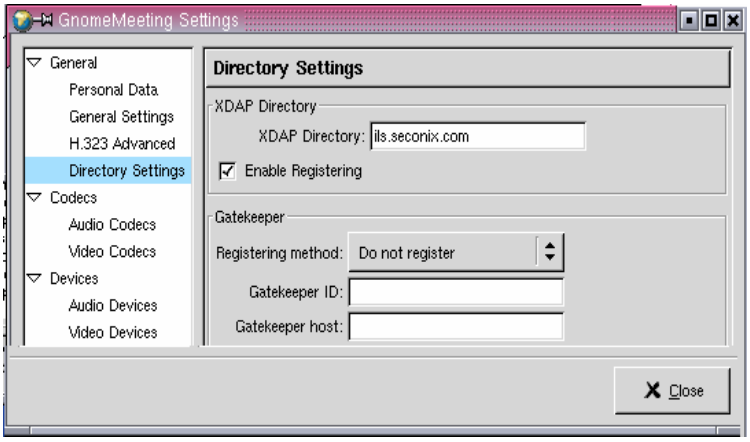


Fig. 5.28

If your personal info is all set as you want it, then you don't need to change anything here unless you want to use Netmeeting's option.

GnomeMeeting's Main Window

The main screen is simple, and easy to use.

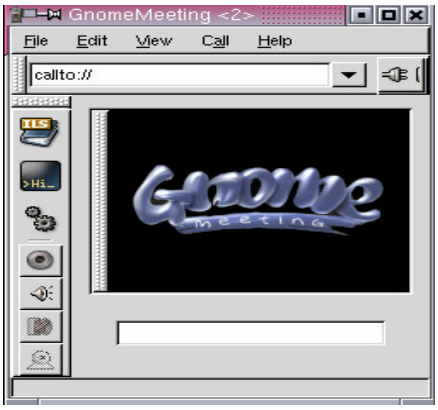


Fig. 5.30

The **call to:// Destination** or whom you want to call to.

On the left side of the main window you have the toolbar. From top to bottom:

- **ILS-** opens and close the DAP server where you can browse and look for people to talk to.
- **>Hi..** – Opens the text chat base
- ***.** The gears – is the control panel and keeps the log history
- Activates your cam
- **o<** - Activates your speakerphone

In the control panel's audio tab you can use the sliders to set the speaker and microphone levels.

Slide the control bars to set the desired settings for your audio and microphone

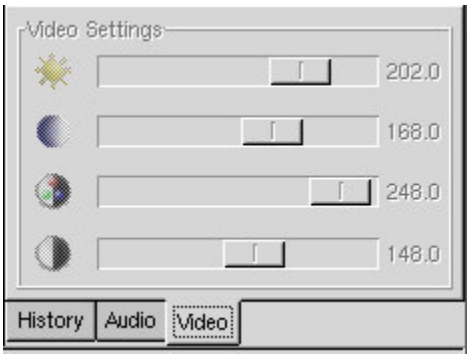


Fig. 5.31

In the same control panel's **video tab**, you can adjust the video properties.

- Brightness level.
- The white level.
- The color level.
- Cameras/light conditions and contrast

Connecting with another user

To start video conferencing directly with another user (end-to-end, no servers) you need to enter the remote host's IP address. (Figure 5.26)

Once the call was accepted, right-click on the video window and select remote to see only the remote party or both.

ILS (NetMeeting™) Users

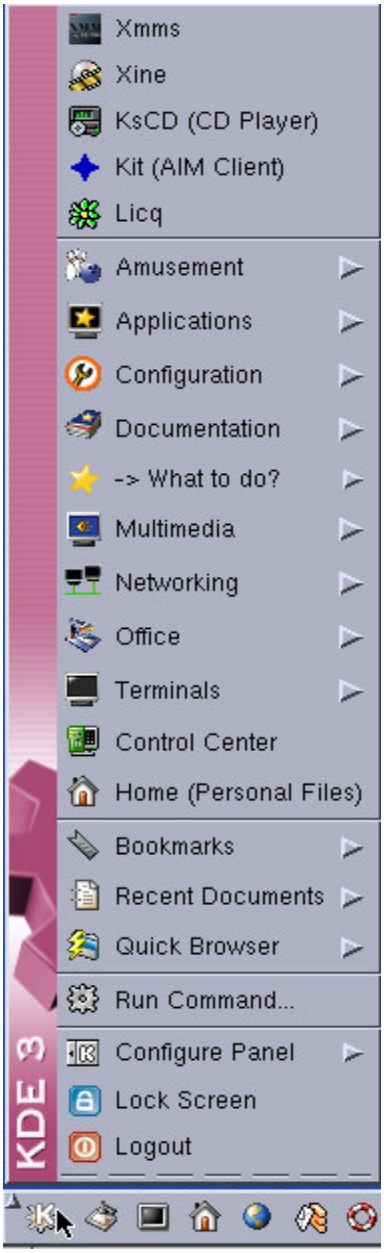
Once you did the directory setting click on find friends on **ILS**, click on Refresh to update the list of available users connected to that ILS server.

Selecting a user

Now, right-click on the person you want to call and select Call This User to initiate the call, or place the IP Address in the callto:// url. You can change ILS servers in the ILS directory pull-down list if you use multiple ILS servers.

Chapter 6

The Desktop



I hope that by this time you already discovered that you could use Linux without using the console. You don't need to become a command wiz to actually exploit the power of Linux.

As you already know, UNIX and its predecessor were born text based (command line). Nowadays most Linux distributions are desktop ready. And many applications are available too, including advanced tools for technical applications.

The desktop is fairly simple. Everything is mostly drag and drop, copy and paste. As you noticed in our previous chapters, we worked with several applications that run in the graphical environment.

KDE and Gnome, and other Window managers have a task bar laid out somewhere on the screen, If your distribution does not have one; read about it and find out if you can customize it.

Fig. 6.1

Normally the customization will depend on the type of windows manager you will use. Note that you can get KDE or Gnome or any other Xwindow client separately to install on your Linux to connect to the Xserver.

I know, you probably said, "what? Xserver!" Believe it or not a lot of things that run in the background are servers. We either access it by commands or by a third party utility that connects to the Sever and requests the information we asked for.

So if that makes it clear, our graphical interface is nothing else other than a client that connects to the Xserver. The Xserver then handles the request and sends it back to wherever it is supposed to go. The information might make a round trip to the Kernel and back to the Xserver and finally say to the Xclient "Ok here is what you asked for".

The start menu

The start menu holds other interesting options that we haven't covered. The menu's content will depend on what you have installed.

The logout: If you log in as text mode, this option takes you to the console and if you login graphically, it allows you to **login as a different user, turn off the computer** and **restart the computer.**

Lock screen: You can use the lock screen to lock it when you are away from the computer. The only way to unlock it is by entering the correct current user's password.

Configure panel: This is important. You can customize the feel and look of your menu. You can add and remove items. If you want to mess up your menu, this is the right place to do it. Of course you can always undo.

Fig. 6.2

Many features that are on your menu are controlled through the preferences options.

The task bar is also customized in the preferences option, so have fun.

The run command: This is the command line for executables, which you already know how to use.

Quick browser: This allows you to explore the system. The quick browser can be enabled or disabled in **configure panel** => **preferences** =>**Panel** => **Menus**

Recent documents: Display all recently opened documents. If you click on clear history it removes the list of opened documents.

Bookmarks: This holds all favorite websites that you visit, and when you add it to bookmark it appears here. You can edit this bookmark. You can even organize this by categories creating directories.

Home: This is your home folder and all your personal files.

The Control center

The control center on the start menu is user level and allows you to personalize many features of the system.

Fig. 6.4

The control center gives access to regular user; some features may require the root password.

As you can see the picture on the left, you can **manage your file system**; get information about many things including hard drives, DMAs, IRQs, Memory usage.

Get **information** about your network size, partition types and mount point.

The information sub-tree basically holds all information related to the system in general.

From this control panel you can change the way your desktop looks on the **Look and feel**, such as adding your wallpaper, etc. Look and feel is used to manipulate everything related to the desktop

You also have access to the Kpanel in the control center. If you want to learn the secret of the Linux desktop such as hot keys and shortcut, take a thorough look at **Look and Feel** => **Shortcuts**

You can even change the theme, change the windows behavior, or simply decorate your windows " I just changed my windows decoration to IceWM style and I really liked it.

Network: You can configure your email, browse the LAN, change sock configuration, talk configuration, or manage windows share (samba) as we saw in previous chapters.

Peripherals: If you are lucky enough to own a digital camera, you can configure it here in this control center. If for some reason your keyboard is not configured properly, or your mouse; you can set it manually to get it going.

Personalization: The control center holds very interesting things, every day the Linux community is working hard to make it easier to work with. Most Linux distributions now come with an accessibility option, which I do believe is of great significance for everyone.

Fig. 6.5

From this personalization you can change your country language, set the currency type, time, and date. You can even set the cryptography. You will be surprised when you see this section. There are many things that you can do such as creating certificates for SSL AND SIGNERS.

The console can be customized here. A nice feature that you might like is the blinking cursor on your terminal or maybe you would like to set the session mode. When you activate all these modes, it is available on the session menu of your terminal the next time you open it. (Fig.6.6)

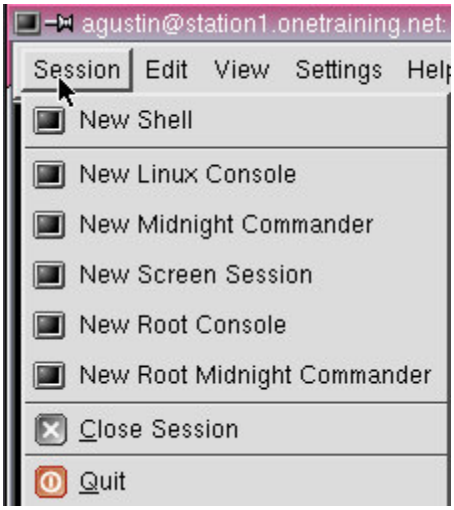


Fig. 6.6

Isn't it nice to control this? But of course, from the graphical interface you have the power of the console at your mercy; and not only that, if you like battle net, you can use multiple windows graphical and none graphical at the same time to execute the arsenal that perhaps you have collected.

Note: *As you open new consoles, they are lined up at the bottom of your console's screen.*

Your password properties can be controlled in the personalization option too. You can specify the way you want the password to be echoed, or set a policy to remember password for certain time in minutes.

Session manager: A session manager policy is also available to control the way you want the session to behave, such as confirm the logout, save the session for future logins, etc.

Power control: The power control session is great for controlling the battery consumption of your laptop.

The control center has other features such as the sound control system, system daemons, and Web Browsing. You can access the Web browsing section directly through your web browser; so you don't have to do the settings here.
Keep in mind that a lot of things are not necessary to mess with unless you really want to learn more about it. I think the best way to learn is by exploring the unknown.

Office

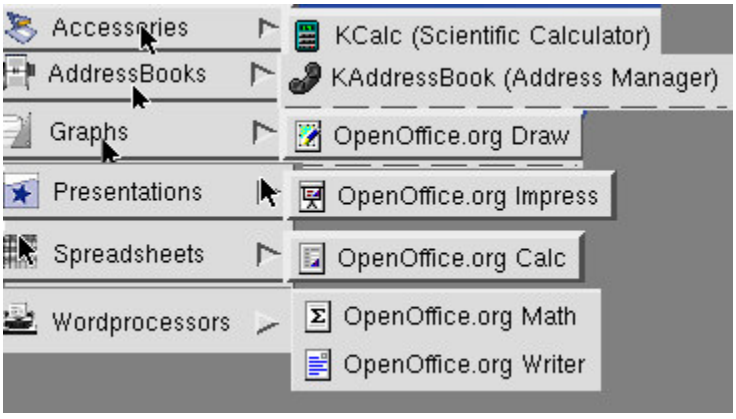


Fig. 6.7

Didn't I tell you that you could have everything for free? Here it is!... what else could you ask for when you have everything in the disktribution Disk. The picture to your left is OpenOffice. If you have installed KOffice, which is included in the CD set; you could double the list on this picture, but wait there is more.

I have not mentioned wordperfect, that you can download separately. Sometimes word perfect is included as a bundle when you buy a new motherboard. Now if we compare the price of these applications to Office XP from microsoft. Office XP costs $500.00. Open Office.org costs $0.00.

Just point your browser to www.distrowatch.com, www.linuxiso.org, www.linuxcompatible.org or browse the search engines to find faster mirror sites to download your favorite distribution; or go directly to www.Openoffice.org to download the office application.

With OpenOffice you can do everything you want. It can even open documents written in Office XP. It is fully compatible and more complete than ever.

The following picture is a screen shot of Open office word processor; it has all the features that you need. If you have used Microsoft office before, there is no big difference except that Open office would be more reliable. But of course you will decide about that. You may go out and spend $500.00 or use some time on the internet to download free.

I think that the open source community is part of our freedom of speech, so why not support it. It saves us money, it helps us to accomplish and get our jobs done, and it is a complete office suite.

I know what you are saying… but I cannot run it on my Windows XP! Assumption is not always the answer, did you wait to read this book to find out that you can install it on any windows machine. But why on windows, I don't have anything against Microsoft but man XP and Millennium are the worst operating systems they had made throughout the years. Don't ask me why, because I could write a complete book about it. Trust me I am an expert with Microsoft products and I know the ins and out of their products. If you don't believe me, just ask anyone who knows about computers how long windows millennium was on the market and why they discontinued it.

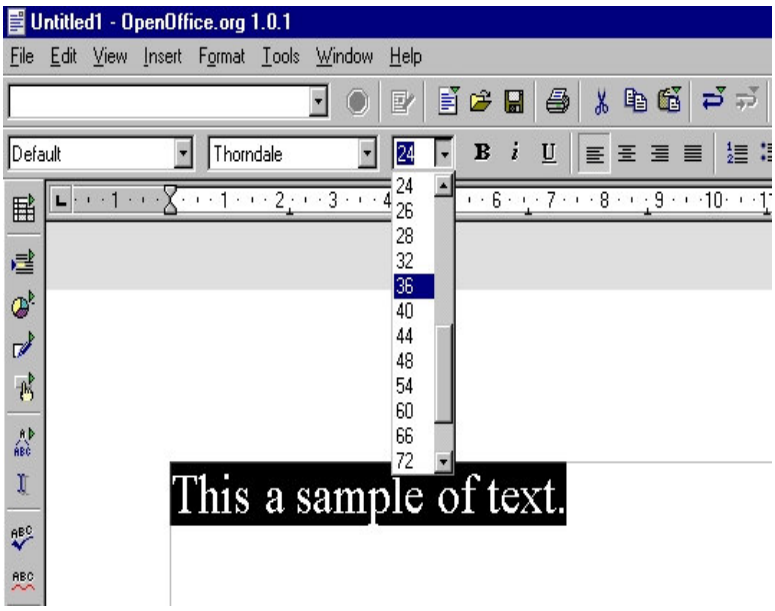


Fig. 6.8

If you happen to be a very wealthy individual and you love computers, you probably don't mind spending $500.00. If that is the case, buy **Linux boxed suite** from any distributor. I am very confident that it won't const you $500.00. It will really help the open source community to keep working and make a better future for everyone including you and -your child if you have one.

Now if you are poor like me, it is ok to download from the Internet. I am sure that when you learn how to use Linux and all its accompanied free software; some day if you remember what it is to be poor, you will contribute too. In the mean time enjoy the freedom of open source.

(Fig. 6.9) is a screen shot of the spreadsheet.

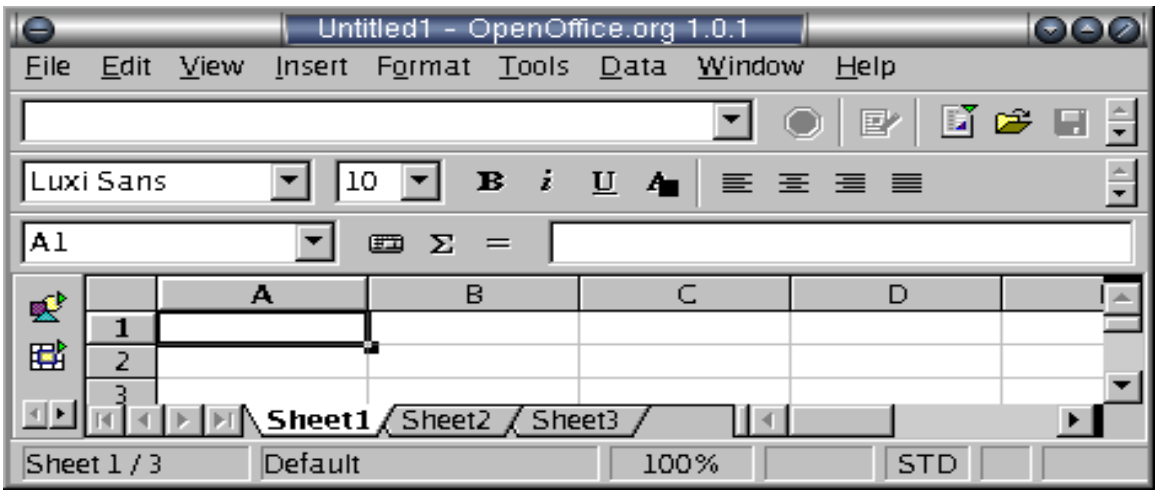


Fig. 6.9

If you were concerned about how to use Linux as your regular desktop, probably this is the answer. Believe me if there is anything that you use and is popular among users it is most likely that it is already available for Linux, if not probably it is being developed at this moment.

Do you love math? Here is a nice application that you can use for all your math problems.

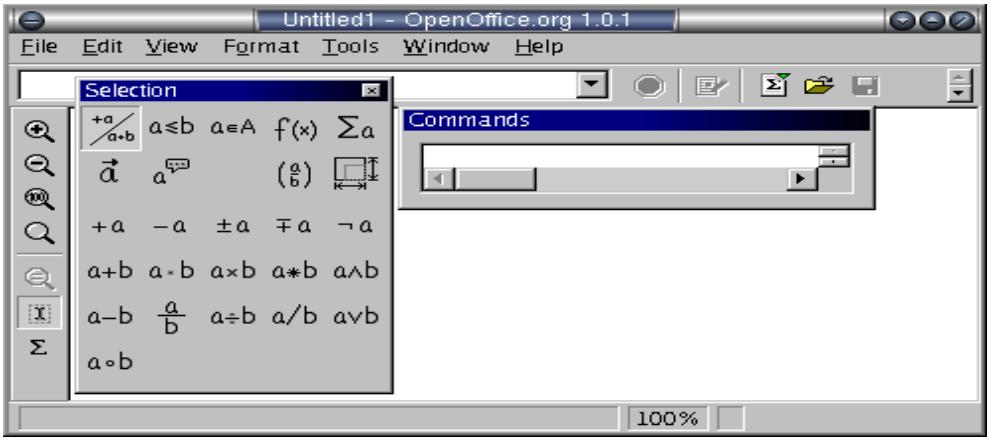


Fig. 6.10

The Open Office also comes with the presentation application called impress or use KPresenter; a power point assimilation. If you are a user that spends most of the time in front of public presenting projects, this application is for you.

There is more…

What about the organizer?

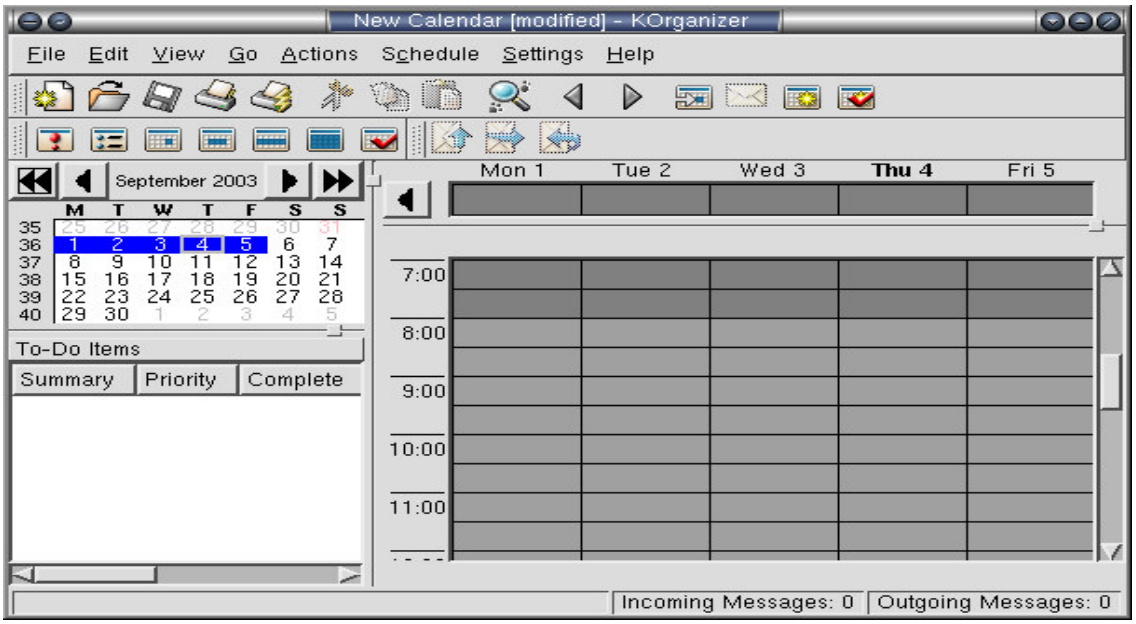


Fig 6.11

This is the best organizer I have ever seen. Where can you get an organizer like this for free? You have to try this. You can even use a scheduler to remind you.

I could continue telling you what things are on Linux that you could use but wouldn't it be better if you explore it yourself?

The explanation of how to use all these applications is beyond the scope of this book. My intention for writing this book is to give you a full understanding. I am planning on writing other books for applications, Linux security and others, but that will only depend on the response of people like you. Remember, it is work and time consuming. In the future you may visit my main two websites (www.onetraining.net , www.netcontrol.org). You may find some goodies there...

Networking

Now let's go back to the KDE menu on networking. (file transfer(ftp), etc.)

Using FTP

File transfer for example, ftp clients to upload and download files, graphical and non graphical.

- This ftp client is great, simple and very reliable. In the host field you specify the remote IP address, or a domain name.
- In the port field it is 21, and by default it is already 21.
- In the user field, you enter your login name or the active account in the remote server or host.

- In the password field, enter the login password.
- After entering the password hit enter to connect

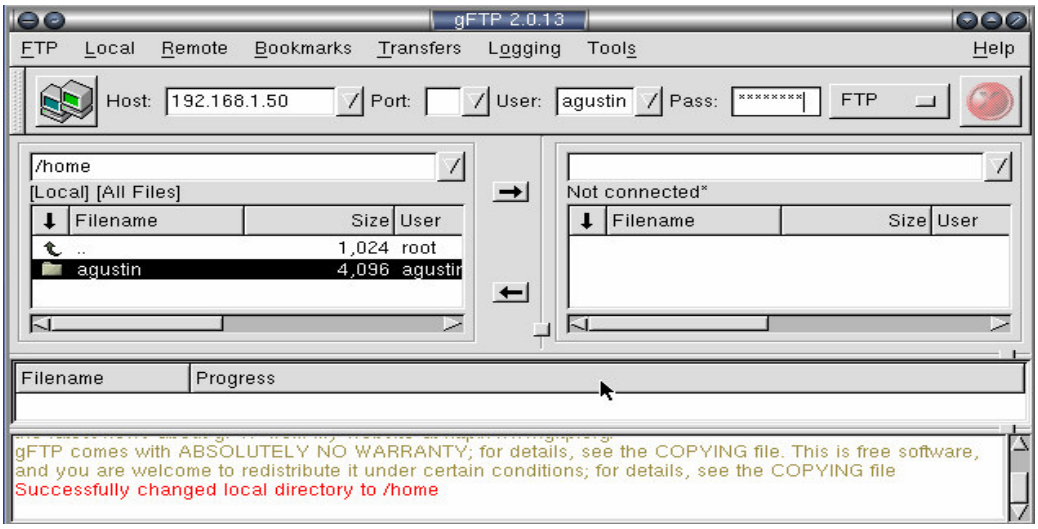


Fig. 6.12

The screen is separated in two parts, left and right. Observe in the middle of the picture, there are two arrows pointing left and right.

The left side is your local directory. The right side is the remote user's account and home directory. Each panel inside contains two arrows. You can scroll through it by clicking up and down.

File transfers: upload or download.

- Select the appropriate directory or files from the source
- Select the destination, double click folders to open if necessary
- Once you are sure of your selection press the arrow key on the center of the two panels to upload or download.

- If you are uploading, your source will be from left to right
- If you are downloading, your source is inverted.

By default everything will work without any configuration. You can also use http protocol, local transferring or ssh2.

Instant messaging: This holds your messenger client software. If you are an AOL user you could install - GAIM

IRC: This is another way of messaging. (Internet Relay chats)

Mail: These are all your email clients. There are many that you may not even know which one to use.
Other: Here you can find your Gnomemeeting

Remote Access: This holds several remote client connections, including KPPP dial up, telnet, virtual network connection and tight vnc if you have it installed.

The www: This is where you can find all web browsers installed.

Multimedia

The multimedia submenu keeps all of your favorite applications such as the sound player, the video player etc.

What to do

This option keeps shortcuts to some of the most frequently used applications, System administration, multimedia, Documentations, graphics utilities, Internet, etc.

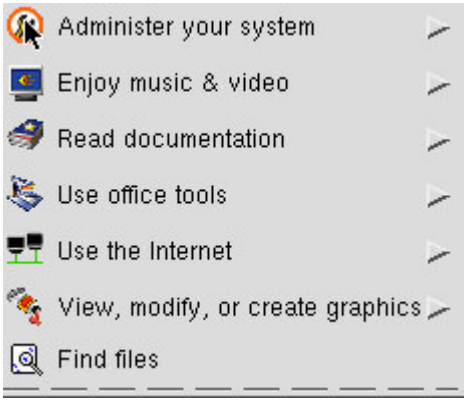


Fig. 6.13

Administer your system, you can add new software, change your password, configure KDE, manage your files your users etc.

Look at the picture to the left, these are the shortcuts on the menu.

Another important item on this menu that you haven't seen is the **search files**. The **search files** option is one of the best tools you have on the desktop.

Documentations

As you've already noticed, documentations are everywhere. Many of these links may be removed once you know your way around.

Configuration

This is basically the configuration (control center), also available on the KDE menu, just like on the task bar.

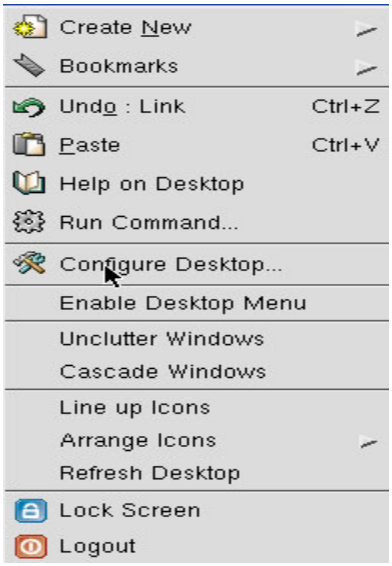
Applications

The application menu has other administrative utilities, such as accessibility, file manager, archiving and backups, publishing and text editors.

If you need access to other parts of the hard drive, then use the application submenu to access the file manager. This file manager runs as root.

The last part of the KDE menu holds some of the most recently executed applications.

The right click menu



By moving your mouse to the middle of the desktop and right clicking on it, you can see a menu with all sorts of commands.

From here you have access to the **run command, create new directory, configure your desktop, and lock the screen or logout.**

Fig. 6.14

On your main desktop also appears an icon for your home folder; by default you have read write access in your home folder.
To copy files use drag & drop wherever you have permission; or use copy paste instead.

Web browsers

There are three popular web browsers on Linux: Konqueror, Mozilla and Netscape communicator. Konqueror and Mozilla are my favorite. You can disable Java scripting with both of these. You can also connect through a Proxy server, enable cryptography, and support Netscape plug-ins.

Mozilla handles your downloads. If you save a web page, it saves all the pictures within the web page. It also controls privacy and security. In the newer version on Mandrake 9.1, Mozilla handles the popups in the private and security option.

You should check them out to decide which one will be your favorite… so enjoy!

Chapter 7

Installing new hardware

Well, before I jump to the most exciting part of this book, I plan to give you a short introduction on how to install new hardware.

Installing the hardware

In this installation I will add two extra parallel ports to the system, again make sure that Linux supports the hardware or it won't work.
Sure you can use the hard drake, to detect your hardware and it probably will allow you to configure it right there from the control center. Here we will do it manually.

Step 1

- The first thing is getting resources for the parallel card

For ISA (Industry Standard Architecture)
If you are installing an ISA card, most likely resources are set by jumpers such as IRQs. Consult the manual if you have one.

For PCI (Peripheral Connection Interface)
For PCI, Linux can read and report these resources for all PCI cards. To see the resources type the following on your command line:

```
lspci –v | less
```

When this command is executed it will report all the resources being used by all PCI peripherals in the system.

Note: *I suggest you run this command first before you physically install the hardware, and make note of what is installed, what IRQs are used by which devices and what addresses are used. Once you have this information, install your hardware and run the command again.*

This is an example of a PCI Net card found in my system:

00:0f . 0 Ethernet controller: Realtek Semiconductor Co., Ltd
RTL-8139/8139C (rev 10)
Subsystem: Realtek Semiconductor Co., Ltd. RT8139
Flags: bus master, medium devsel, latency 66, IRQ 11
I/O Ports at 2400 [size=256]
Memory at 42000000 (32-bit, non-prefetchable) [size =256]
Capabilities: <available only to root>

The information above is what you get when you run the command, and what you really need from this information is: I/O and IRQ

I/O Ports at 2400
Flags: bus master, medium devsel, latency 66, IRQ 11

Let's assume that on this system we have a parallel port PCI at port address 0x6100 and IRQ 12.

We also have other two parallel ports at addresses:

- 0x6400 with IRQ 12 (port B)
- And 0x6500 with IRQ 12 (port C).

Make note that these addresses are in Hexadecimal. That is why it appears with the 0x. All hardware uses an address like this one; it is a reserved area exclusively for that piece of hardware. These addresses are used as a point of reference whenever the hardware needs to communicate to the processor or other devices in accordance with the IRQ (interrupt request).

DMA (direct memory access): Without this, the hardware is unable to communicate. But of course it can be modified and new ones can be assigned. Once these values have been defined, they stay permanently as long as the hardware exists in the system.

Loading modules for the hardware

All modules and settings are controlled `in /etc/modules.conf` for *mandrake* and `/etc/conf.modules` for *redhat.* Other methods are using the `lilo.conf` and `/boot/grub/menu.lst`.

By using the lilo.conf the modules are load as part of the kernel (built in), but the correct way of doing this is using the modules.conf file.

Before I go to the actual configuration, you may want to try some of these commands related to modules:

Commands		Description
/sbin/lsmod		Lists all *configured* modules on your system
/sbin/modprobe -l		Lists all *available* modules
/sbin/modprobe -c		Lists *all* configured aliases
/sbin/modprobe -r [module]		Removes a loaded module rmmod
/sbin/modprobe [module]		Loads a module same as insmod
man modprobe		Loads the documentation for modprobe

Note: *For all new modules downloaded or compiled must be moved **to /lib/modules/[kernel version]/** for the system to be able to use it.*

After moving the modules to the appropriate directory, run **depmod -a** to let the system know about the new module, to test the module run this: modprobe [module name] if the module is loaded without error that means everything is OK. If you get any error messages, that means the module is wrong, or maybe the device is already running with the appropriate driver. Believe me it happens.

Modules loaded in the /etc/modules.conf, are loaded as alias of drivers. For example:

```
Alias       Device      Driver
alias       eth0        8139too
```

Many of the modules require further configurations, like I/O addresses and IRQ numbers. The following is an example of a parallel port assigned in the file modules.conf

```
alias parport_lowlevel parport_pc
options parport_pc io=0x378 irq = 7
```

It is very easy to identify, **io=0x378** and **irq = 7,** is the address and irq assigned to the first onboard parallel port in your system.

When you install additional hardware in your system, you have to manually edit the modules.conf, unless hard drake allows you to configure it.

Step 2

From the assumption of our next two-port installation we continue…

The **modules.conf** already contains some information; edit it to add the new information.

This port1 (integrated on the motherboard):

```
alias parport_lowlevel parport_pc
options parport_pc io=0x378 irq=7
```

You could just add the parameters required in the same line or create it separately for each port.
Combination of the ports 1,2,3:

```
alias parport_lowlevel parport_pc
options parport_pc io=0x378, 0x6400, 0x6500 irq=7, 5, auto
```

As you can see in the **io=0x378, 0x6400, 0x6500** are the IO address for each parallel port1, port2 port3. The port2 and port3 belongs to the dual ports B&C.

The **IRQs= 7, 5, auto** are assigned to the port1, port2 and port3. You can either set the IRQ number manually or set it to get first available IRQ automatically.

As I have already stated, you could also separate the settings as in the following:

Separation of ports by line

```
alias parport_lowlevel parport_pc
options parport_pc io=0x378 irq=7

alias parport_lowlevel parport_pc
options parport_pc io=0x6400 irq=5

alias parport_lowlevel parport_pc
options parport_pc io=0x6500 irq=auto
```

If you exit the editor and save the file, restart the system. The parallel ports lp0, lp1 and lp2 should be enabled now and is ready to use.
Other hardware may require special procedures, read the documentations or browse the web for help. You could also load modules or special configuration in other way such as search for it and execute it at boot time, this could be accomplished by creating a bash file. Call it whatever you want, makes it +x executable and add it in `/etc/rc.d/`
Before you attempt the rc.d, try adding it in */etc/modules* this file is used to load from the kernel; as far as the documentation concerns. Note I am not referring to modules.conf, which is in the same directory.

Introduction to IDEs

I hate to go through history, but I strongly believe that I should review Ide's so new users can have a basic understanding of why we have big hard drives and related devices that connect to the IDE channel.

First of all, IDE stands for (Integrated Device Electronics) and was introduced in 1986 and originally known as ATA (Advanced Technology Attachment). Since then it has gone through several changes.

When ATA was introduced, many were proprietary, meaning made by a particular company; so if you wanted to buy a hard drive you also had to by the controller for it from the same company. Due to limitations arising from the combination of the BIOS and the ATA controller, the maximum size per drive was restricted to 504 MB, of course DOS FAT 16. In 1990 the industry came up with a standard and introduces ATA-2 with enhancements eliminating the 504MB barrier.

In 1994, Western Digital launched the EIDE (Enhanced Integrated Drive Electronics) featured with PIO (Programmed Input Output), DMA and LBA (Direct Memory Access & Large Block Addressing) allowing us to install 2.0 GB hard drives. Thanks to the new technology, EIDE allowed other variants to introduce secondary channels, Bios translation, and the ATAPI protocol for removable devices.

The industry opted marketing in new implementations, rather than going by the standard and introduced Fast –ATA supporting LBA, PIO 3, DMA mode 1, Fast ATA2 and Fast ATA-3 with PIO mode 4, DMA mode 2 transfers (ecc-error correction code).

ATA-4 was implemented to introduce the well-known Ultra DMA/33 to correct some non-compliance (incompatibility) issues. Another enhancement was introduced (Ultra DMA mode 4 UDMA/66) to allow higher transfer (speed). Concerning speed and size UDM5, 6 Ultra DMA/100 and Ultra DMA/133 are now available which allows us to install bigger hard drives (160.0 GB), etc.

UDMA/33

These are UDMA mode 2 (UDMA/33), example of supported hardware is PCI cards Promise Ultra 33.

UDMA/66

These are mode 4 (UDMA/66), some build in chipsets on motherboards, and controllers.

UDMA/100

Ultra DMA 5 supported under Mandrake 7.2 +, shipped in Promise UDMA 100 chipsets, 40 pin IDE Cable.

UDMA/133

Ultra DMA mode 6 uses 80-pin cable, enhanced use of power management.

Even though bigger and faster hard drives are available, many users don't know how to take advantage of it. First of all users just go out and buy a big hard drive without realizing how old their computers are. If you are with me; you know what I am saying. I mean you don't become a technician overnight or go to school and pass a test. Real technicians are practical, they're logical, they think. Installing a hard drive is not just tightening some screws or replacing some jumpers.

No, a computer technician must know what is required to install a hard drive in a system. Will the system support it? How fast or how slow will it be in that system? Is it worth being installed in that system? Depending on the system, a separate controller may be required to take advantage of the hard drive's features. These are all the questions that you need to consider when installing hard drives.

Tweaking the Performance of your hard drive

Installing a big hard drive with Linux is not actually a big issue, based on the partitions required during the installation; but of course keep in mind that a very big hard drive for an old system may require a controller.
Make sure that when installing new hard drives the LBA option is enabled in your BIOS setup. When buying a new hard drive, buy a new IDE cable ATA 100/133 compliance, it will ensure that the data transfer will always be reliable.

If you are installing more than one hard drive, create swap files for each drive. Make sure your system has enough fans. Hard drives usually tend to heat. If you are adding all kinds of devices to the system, make sure your power supply will handle it. I usually use 350 to 400 watts in my systems depending on what I have installed.

To optimize your drive, you need to install the **hdparm** package, a utility to test your drive set parameters for better performance; I consider this an interleave set utility and is driven by the ATA/IDE device driver subsystem.

The **hdparm** utility has many parameters, read the documentations to learn the details of these parameters. "man hdparm"

Here are some of the most frequently used parameters, to get information about your drive.

To get the current and adjustable parameters use:

- hdparm /dev/hd[x]

To get complete details about your drive

- hdparm -i /dev/hd[x]

The current active UDMA transfer mode is marked with an asterisk (*).

To run a benchmark:

- hdparm -Tt /dev/hd[x]

Note: *You can use combinations of parameters to get better results.*

How to optimize your drive

Using the parameters you can optimize the drive. Many hard drives have features that you can enable or disable such as 32 bit I/O support, Power management, or maybe defect management. For example here is how you enable the 32-bit I/O support; a parameter followed by a numeric value will turn it on.

Currently supported numeric values include:

- value 0, disable 32 bit I/O support

- value 1, enable 32 bit data transfer
- value 3, enable 32 bit data transfer with special sync sequence (works with nearly all 32 bit IDE chipset)

Note: 32 bits only refers to data transfer within PCI or VLB (Vesa Local Bus) all (E)IDE drives have only 16-bit connection over the data ribbon cable.

```
hdparm -c3 /dev/hda
```

With the executed command, we just enabled a synchronized 32-bit data transfer.

Power Management: To enable the Advanced Power Management –B parameter

```
hdparm -B /dev/hda
```

Check the current power mode:

```
hdparm -C /dev/hda
```

Setting (U) DMA

To set DMA mode, the following command is used, the command itself can be used but a combination of –X is preferred to ensure that the drive itself is programmed. Read the drive documentation before trying this.

```
hdparm -d1 /dev/hda
```

```
hdparm -d1 -X mdma2 /dev/hda     //setting xfermode (multiword DMA Mode 2)
```

- -X sdma1 is used to set simple mode DMA transfer
- -X mdma2 is used to set multiword DMA mode 2
- -X udma2 is used to set ultra DMA mode 2 transfer (you need to prepare the chipset first)

Note. *The –X is used to set transfer mode for newer drive (E)IDE use it only when the chipset supports it. Query the setting first before you make changes. New drives may already turn on this PIO modes at power on.*

Always query and benchmark the drive after your settings, to ensure that the drive has been programmed the way you want it.

Note*. All modifications or setting are not saved permanently. If you reboot the system, the settings are lost. So when you do this make note of the settings, create a file and execute it via bash script, or via* `/etc/rc.d/` *alternatively and probably best, add the line in your* `/etc/rc.d/rc.local`

Installing CD-ROMs

All CD-ROMs, CD Writers, DVDs and IDE ZIPs drives are treated as SCSI devices under Linux. Most CD-ROMs are detected automatically, especially if you are installing Linux from CD-ROMs, when you finish the installation the Drive should be already working.

Make note that even the CD-ROM is configured properly; it may not be available when you need it. A CD-ROM, in order to be accessible needs to be mounted.
To find out about the real name of your device type this:

- **ls -l /dev/cdrom**
- **dmesg | grep CD**

To mount the CD-ROM, use these commands:

- **mount /dev/cdrom /mnt/cdrom**
- **mount /dev/scd0 /mnt/cdrom**
- **mount /dev/scd1 /mnt/cdrom**

Or

- **mount /dev/hdb /mnt/cdrom**

Where /mnt/cdrom is a directory to temporarily, read the information contained in your physical CD-ROM. /dev/xxx is your physical device.

Some times you need to eject a CD from the CD-ROM drive, but the drive won't open, it is because it is mounted. In order to remove the CD you have to un-mount the drive first. To un-mount the drive, use this:

- **umount /mnt/cdrom**

Note. *Mount and umount is executed as root.*

Installing a CD/RW

Same procedure in finding the actual device could work in identifying the drive

- **ls -l /dev/cdrom**

This command may not be enough so use this instead**:**

- **dmesg | grep CD**

The `dmesg | grep` queries the hardware and give you complete information about the drive, including brand name, model, speed and revision number. The dmesg | grep can be also used for any piece of physical known hardware, such as CD, eth0, ide, etc.

Assuming that you only have a hard drive and a CD-RW, then the dmesg | grep should return `/dev/hdxx`. If your system has two CD drives, you'll have to find out which is which. The system will report whether it is `/dev/cdrom`, `/dev/cdrom0` or `/dev/cdrom1`; more information can be obtained by exploring `/proc/ide`

To configure the setting, edit the following files:

- /etc/modules add this line:

  ```
  scsi_hostadapter
  ```

- `/etc/modules.conf` add this line:

  ```
  probeall scsi_hostadapter ide-scsi
  ```

Exit and save the files

Now edit `/etc/lilo.conf`, find the line that says append = Inset your correct drive obtained from `dmesg | grep`.

a)hdb=ide-scsi b)hdc=ide-scsi c)hdd=ide-scsi

Be careful, do not delete `devfs=mount`, observe my lilo.conf below.

```
boot=/dev/hda
map=/boot/map
vga=normal
default=linux
keytable=/boot/us.klt
prompt
nowarn
timeout=100
message=/boot/message
menu-scheme=wb:bw:wb:bw
ignore-table
image=/boot/vmlinuz
      label=linux
      root=/dev/hda5
      initrd=/boot/initrd.img
      append="quiet devfs=mount hdc=ide-scsi hdd=ide-scsi"
      vga=788
      read-only
image=/boot/vmlinuz
      label=linux-nonfb
      root=/dev/hda5
      initrd=/boot/initrd.img
      append="devfs=mount hdc=ide-scsi hdd=ide-scsi"
      read-only
image=/boot/vmlinuz
      label=failsafe
      root=/dev/hda5
      initrd=/boot/initrd.img
      append="failsafe devfs=nomount hdc=ide-scsi hdd=ide-scsi"
      read-only
other=/dev/hda1
      label=NT
      table=/dev/hda
other=/dev/fd0
      label=floppy
      unsafe

other=/dev/hda3
      table=/dev/hda
      label=FreeBSD
```

Save, exit and execute **lilo**

```
lilo -v
```

This command will update the boot image… and now you can reboot the system.

If you are logged in graphically, insert a CD disk into the CD-ROM drive and you should be able to read it. If not mount the drive to:

```
#mount /dev/scd0 /mnt/cdrom
```

Note. *Your first CD-ROM drive is scd0 the second would be scd1…only if you have it in the same ide channel. If you have it as slave with a master hard drive it will be treated as hdb or hdbx. Same rule is applied to Zip drives.*

An organized way is to create mounting point for each drive in the mnt directory:

`#/mnt/mkdir cdrom`	`#/mnt/mkdir cdrom1`	`#/mnt/mkdir cdrom2`
`#/mnt/mkdir dvd`	`#/mnt/mkdir dvd1`	`#/mnt/mkdir dvd2`
`#/mnt/mkdir zip`	`#/mnt/mkdir zip2`	`#/mnt/mkdir zip3`

Create directory as needed and mount it as appropriate. Use the Mandrake Control Center, Mount Points to create an fstab entry for your device.

Floppy Disk

A floppy disk is recognized as fd0 or fd1 if you have two floppies. All you have to do is mount it in order to be used.

- `mount /dev/fd0 /mnt/floppy`

That's it; just make sure the floppy directory exist.

Installing Zip Drives

Installing zip drives may be as simple as plugging it in and mount it or it may become a nightmare. Pay attention to what you are doing, most zip drives and CD-ROMs are preset as slave from factory. I recommend using your IDE zip as slave; a simple way of avoiding problems is have all the drives configured properly before the installation.

But of course, having all installed before installation is not always the case, and only troubleshooting thing makes you an expert. As I already mentioned zip drives are treated as SCSI devices, but if you install it as a slave next to the primary hard drive, it will be seen as hdb. If you have it connected as slave in the secondary IDE channel, it will be seen as sda4.

An example, my system is configured as follows:

Primary IDE channel:

- Western Digital 40.0 GB drive hda1
  -With multiple boot, Linux 9.0
  -Windows 2000 Professional
  -FreeBSD 5.0
- A 16x DVD ROM hdb

Secondary IDE channel:

- CD-RW 24X scd0
- IDE ZIP 100 sda4

To see what is installed in the system type the following command

- `dmesg | more`

This command allows you to see page by page.
A very effective way of finding out the correct device name is by running the control center in graphical mode and browse to hardware list. Select the hardware click on it. You should be able to see the details about the hardware on the right panel.
If you have a zip drive already installed when you are installing Linux; then during installation, two driver modules were installed that make your zip drive work.

- **ppa** this driver is for older zip drives and used mostly for parallel zips
- **imm** this driver is for mostly new drives including IDEs' 100 and 250MB drives.

There are two ways to load the modules:

- Type **modprobe ppa** or **insmod ppa**
- Or **modprobe imm** or **insmod imm**

Any of the two commands above will load successfully or will complain; that only means the modules are available for use.

Find the correct device name with dmesg or by using the control center and use the following command to mount the zip drive. Make sure you have a zip disk inserted.

Create a directory `mkdir /mnt/zip`

- `mount /dev/sda4 /mnt/zip`

Make sure the directory **zip** exists. If no errors were generated with mount, you've got it. Now you should be able to read the content of your zip drive in text or graphical mode.

If everything works fine the easiest way to create a mount point is by using the control center to add it in to the fstab.

Installing USB devices

All USB devices are detected automatically; if not install the **hotplug** package. It will detect and configure your hardware. Any external storage devices are also handled as SCSI and this rule also applies to parallel storage devices.

To mount a USB ZIP disk for instance you can use the following command.

```
mount /dev/sda4 -t vfat /mnt/zip
```

Or

```
Mount /dev/sda4 /mnt/zip
```

Note that there is a utility to manage all your USB devices called "**USBview**" and is under:

Kstart Menu => Configuration => Hardware

There is a file that manages your USB in `/etc/sysconfig/usb`, you may need to edit it if you are having trouble. Change the values to **yes** as needed, make sure USB=YES.

USB device is very strait forward and you won't have any trouble for the installation, just remember to install the **hotplug** package.

In some cases, during the boot process the system freezes when loading USB modules, and you just can't get to the login prompt. You may also receive kernel panic errors! To solve

this issue; at boot time press 'I' to enter the booting interactive mode and answer (no) not to load the USB modules; login as root and edit /etc/modules.conf

- Edited the file `/etc/modules.conf`

Comment the line: **probeall usb-interface usb-uhci**

Insert these lines:

probeall usb-interface uhci
alias usb-controller uhci

After this, you can then install drivers for any specific device you may have, if it is required. You may also disable the USB in `/etc/sysconfig/`usb by editing the file and change **USB = yes to USB = no**

Same procedure may apply to PCMCIA cards when any of these two devices freezes at boot time; it is most likely IRQ or I/O address conflict. Use dmesg to troubleshoot resources. Many other devices can be enabled and disabled in /etc/sysconfig/, including the PCMCIA cards.

Fire wire IEEE 1394

Fire wire is a high-speed peer-to-peer connection. These devices are similar to USB that is why it is treated as SCSI devices too. Before your device can be detected, three modules that make it work needs to be installed.

If the module is already indexed, by typing: `modprobe` **`ochi1394`**
You should receive a respond that either it was loaded successfully or device not found. If the module is not indexed yet, use the **`insmod ochi1394`** to index it in the modules library.

The other module is: **sbp2**

- **`modprobe ochi1394`** **or** **`insmod ochi1394`**
- **`modprobe sbp2`** **or** **`insmod sbp2`**
- **`modprobe ieee1394`** **or** **`insmod ieee1394`**

The entry for your devices most likely will be updated automatically in `/proc/scsi/scsi`

If this is not updated you may have to add the entry manually. Let's assume that this is a CD-ROM: /dev/scd0 here is how you do it; you can either edit it manually or send an echo command:

- **`echo "scsi add-single -device 0 0 0 0" > /proc/scsi/scsi`**

If you need to unload the modules after use:

- **`Modprobe -r modulename`**

Remember always check that your hardware is supported, it saves a lot of headaches.

Using the CD-Writer

Well, I figured out that you successfully installed your CD-Writer and of course the installation is not complete if you don't successfully record you favorite CDs. The CD-RW

has become the favorite device to make backups, and of course archiving files has never been easier using many utilities out there; and Linux is not an exception.

Linux comes with powerful utilities; among them are my favorites, the X-CD Roast and Eroaster. Using your CD Writer under Linux is fairly simple. First you have to install the software and then run the setup (a required configuration).

Install the following packages (each is a different package).

- X-CD Roast
- Eroaster

If you run the software as a regular user for the first time, you will receive a warning message saying that is not configured yet, so it instructs you to run it under root.

Fig. 7.1

Do as it says; logout and re-login as root. Start the graphical interface and run X-CD-Roast, it is located under:

Kstart => application => archiving => CD-writer

When you run this configuration, it is one time only. It is mainly to set up the drive, the hard drive space for mirroring the image of your copies and of course your users.

Follow the instruction below to configure it. Look at the picture it shows the details on the configuration.

Fig. 7.2

- To start the configuration, click on Setup

This will auto run a drive scan and will present your CD-Writer and any other removable devices.

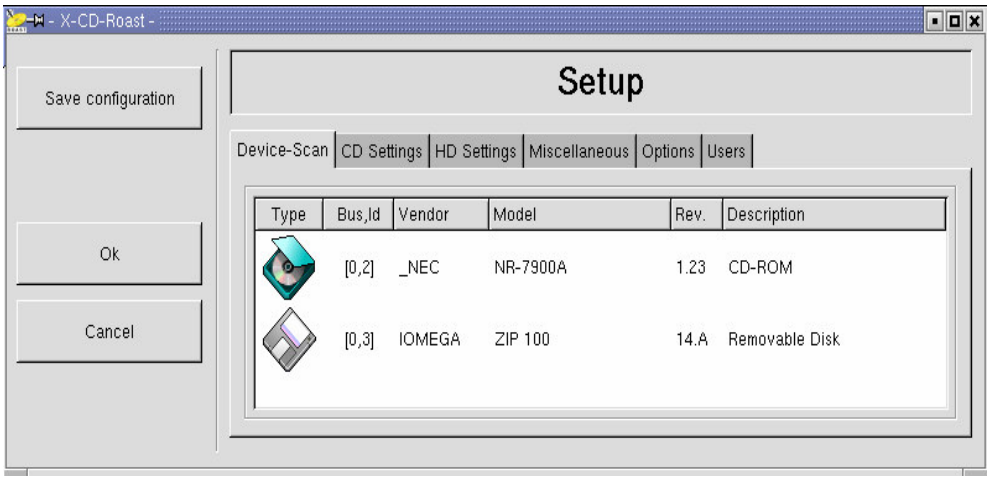


Fig. 7.3

The next step is configuring the correct parameters for the CD-Writer.

- Click on CD Setting tab

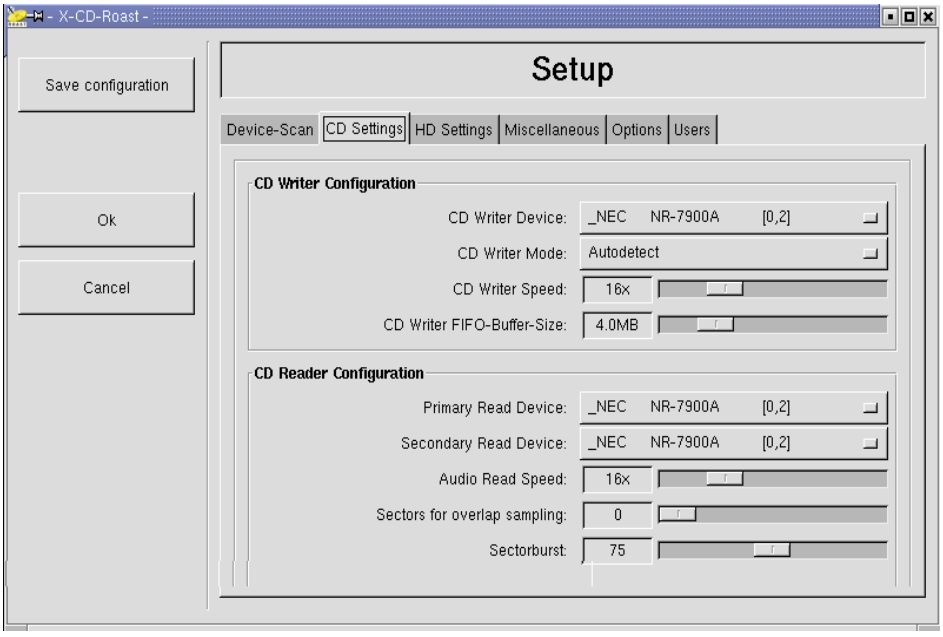


Fig. 7.4

Make sure that you have the correct drive selected. On the write mode leave it as default.

For the writer's speed, you need to adjust this at a proper speed to make sure you don't get too many errors. For example I have a 24x CD-Writer but depending on the media that I am using, the automatic speed adjustment does not work properly. To fix this problem, I use the writer at a lower speed; at 16x and all the errors disappeared.

Next, you need to set the space on the hard drive for the image storage. Look on the following picture, it shows /home/CD-RW

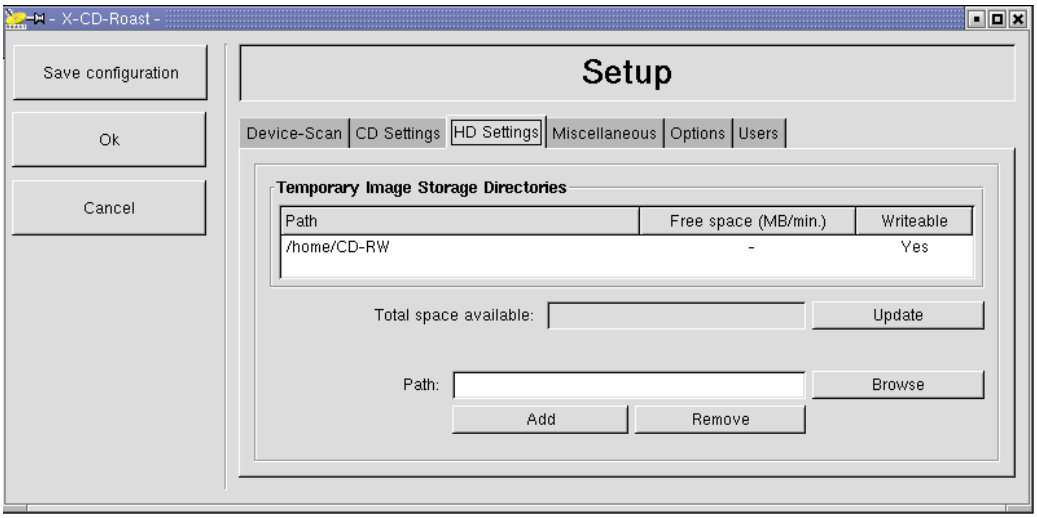


Fig. 7.5

If you are going to use the default directory, make sure that it really exists, and it is writeable.

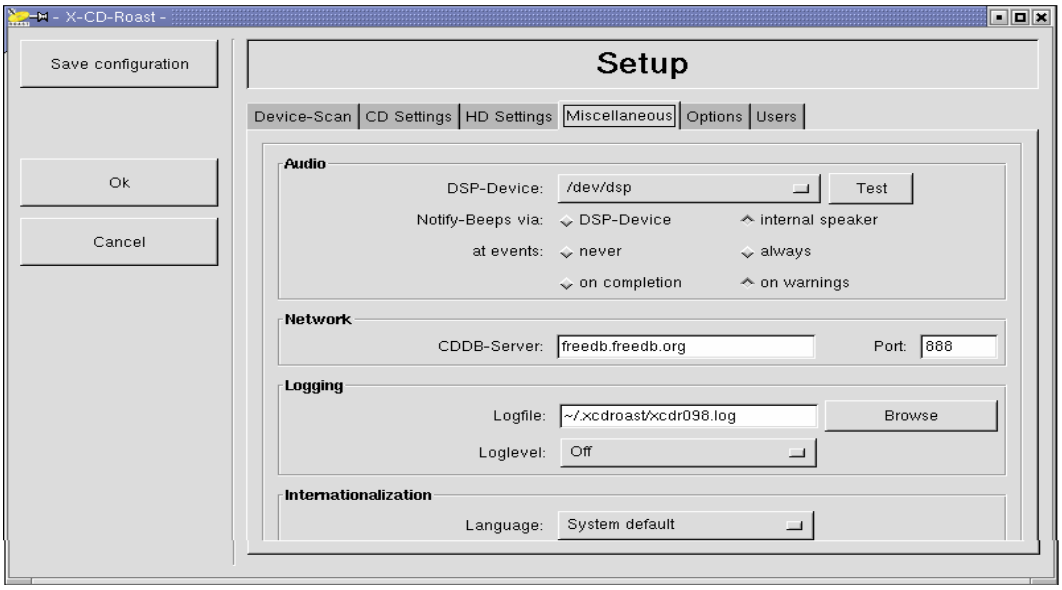


Fig. 7.6

On the miscellaneous tab, you will set the sound option. This is important if you need to receive warning notifications.

The next tab is the **options**. In this panel you can select the way it will browse for files for your backups.

Last but not least, are the Users. In this panel you specify who can run these applications.

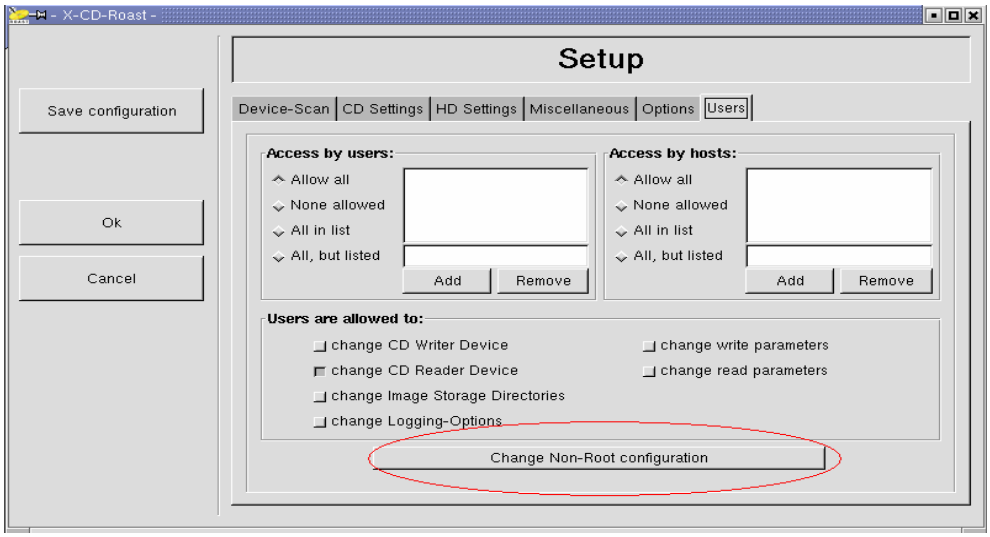


Fig. 7.7

It is important that you add all users who will use this application.

If you prefer, at the bottom of this panel there is an option to activate non-root privilege. When **Change Non-Root Configuration** is active, you don't need to run the configuration under root privilege, because any user then can launch it. Once the configuration is finished, you can start using it to create your CDS.

The duplicate CD option from Figure 7.2 allows you to duplicate an exact replica of the original CD.

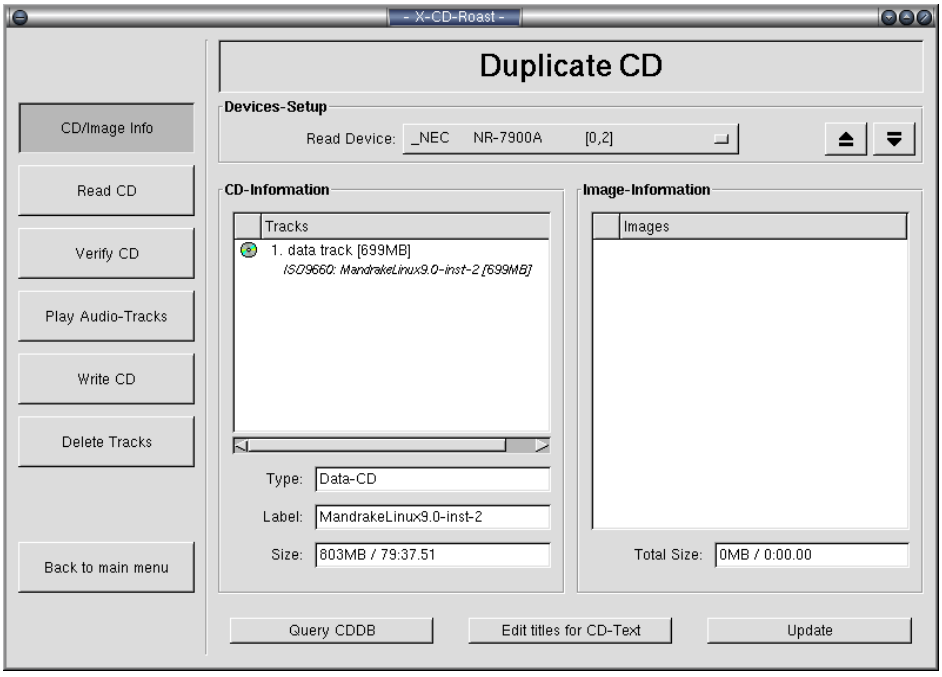


Fig. 7.8

To store specific files to a CD, you need the **Create CD** option from the main menu (figure 7.2).

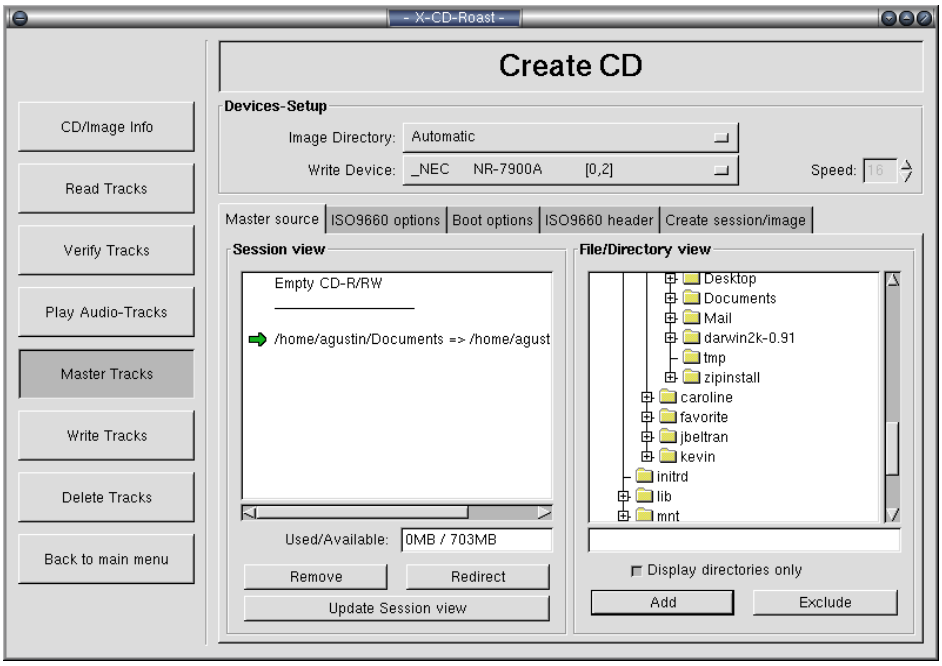


Fig. 7.9

You can choose the files you need to backup as shown on this picture. CD-Roast is not difficult to use. If you have used a version of Nero for windows; it is almost the same.

- During the configuration, you set your image directory. In this panel you will see all of your images/ISO at the right window title "Image Information". When you have your ISO images ready to be burn, just click on the "Write Track" buttons.

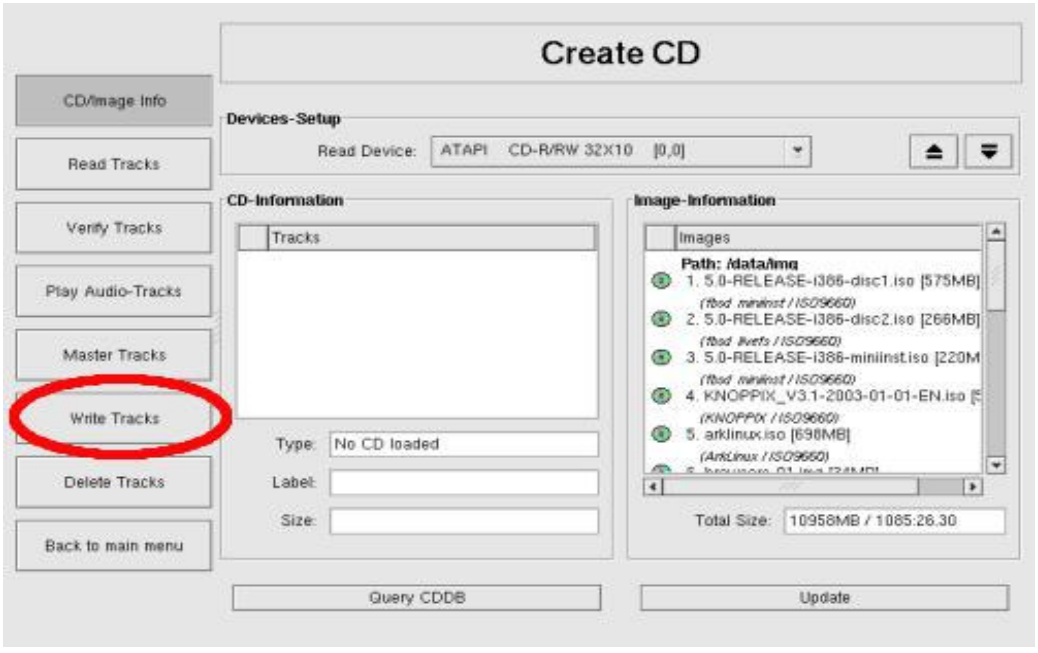


Fig. 7.10

- Click on "Layout Tracks" tab, select an image/ISO you want to burn, click the "add" button, then click the "accept track layout" button.

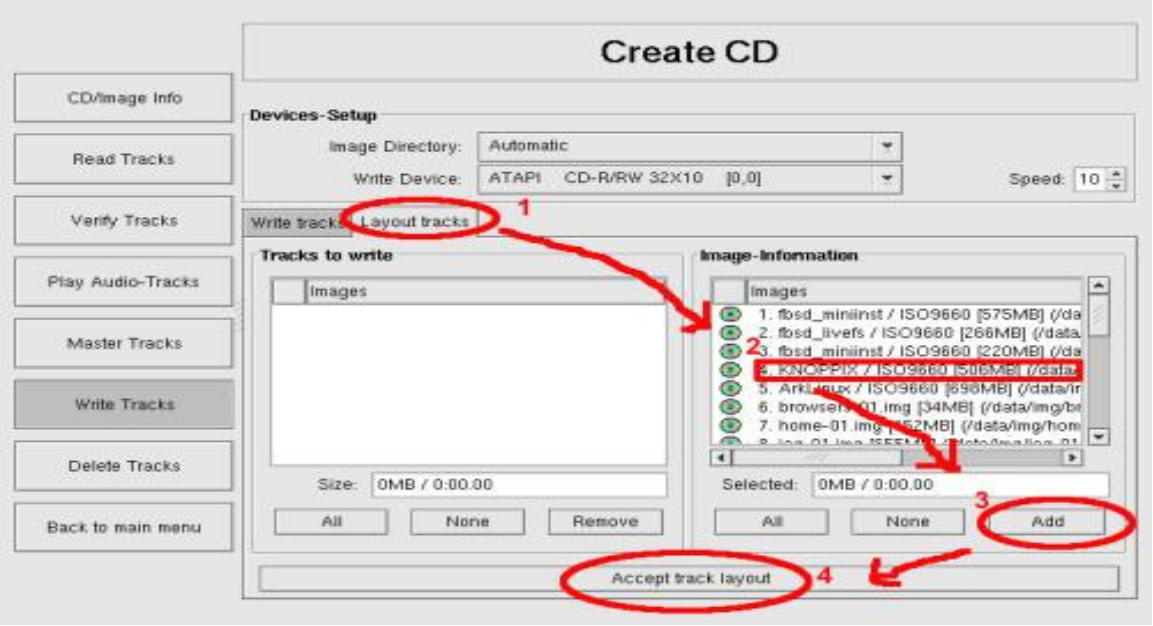


Fig. 7.11

- The following panel "Images" shows your current ISO image, if it is the correct image/ISO then it is ready to burn...by clicking the "Write Tracks" button

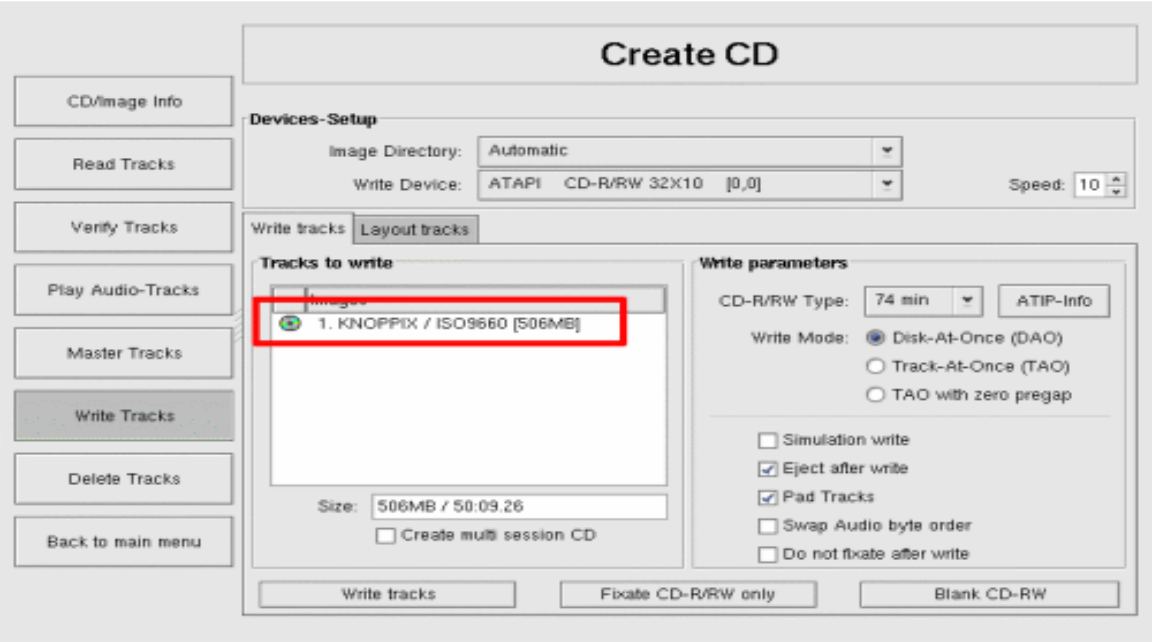


Fig. 7.12

Clicking on write tracks should start the writing process and that's it folks.