

Your Friendly Guide

PCLinuxOS

Installation Guide



PCLinuxOS

Radically Simple

PCLinuxOS

Installation Guide

Version: 1.1.1

Date: June 28, 2006

Texstar, LexNL, Devnet, Teacher, Helios, OkiE, IKerekes, Sal, Woob, and everybody who helped out.

Visit PCLinuxOS on the web at <http://www.pclinuxos.com>

PCLinuxOS support forums are available at <http://www.pclinuxos.com/forum/>

This guide is also accessible on line via <http://www.pclinuxonline.com/wiki/>

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Introduction

So you have been using the live CD and decided to install a safe and stable operating system on your computer. The first thing to do is to back up all of your valuable data on the drive that you will be installing to. While the install process is in most cases totally safe there is always the chance that something could go wrong, better safe than sorry.

Its assumed that at least at first you will be setting up a dual boot system on your computer. That just means you will still be able to use the other operating system and PCLinuxOS. This is what most people new to the Linux operating system usually choose to do. It gives you the ability to fall back on something that you already comfortable with, and being able to still use the tools with which you are familiar if you need them will definitely ease the transition.

You Really Don't Have to Give Up Windows!

Now possibly some of the terms in the two preceding paragraphs were unfamiliar and possibly just a little frightening. That's alright, the next few sections of the guide will help you along the way.

Please,if you have not attempted partitioning a hard drive before read through the next sections. The procedure is straight forward but you do need a good understanding of what is going on before you start.

That being said let us be the first ones to welcome you to the world of Linux powered computing. We are sure you will find that it is everything you had hoped that it would be, and always remember that help is never very far away. Just post in the forums or on the mailing list and you will get an answer, most often within minutes of when you asked.

Partitioning Your Hard Drive

You will need partitions to install PCLinuxOS. A partition is a section of the hard drive where you will install the program. You will need to decide on a plan of how you want to partition your hard drive.

If currently your complete hard drive is used by Windows, you'll need to create some room for PCLinuxOS. The creation of a partition in the spare room on your hard drive can be done during the installation of PCLinuxOS. You do, however, need to have all your Windows drives defragmented before you can do so. So before you begin with installing PCLinuxOS, start by defragmenting your Windows drives. Did you already make the back ups we discussed earlier? If not, do so now.

If you have lots of space on your hard drive then you might want to consider three basic partitions for your installation:

1. / (This is where the program files are installed).
2. /swap (This is the virtual memory)
3. /home (This is the same as My Documents in Windows. This is where you will want to store your personal files).

If you have 10GB to spare, try setting this up so that you have 5GB for / and 5GB for /home. Actually you can go a little smaller so you have room for your /swap. The rule of thumb for /swap is that you want it to be twice the size of your actual RAM (memory). Thus if you have 512MB of RAM you will want 1024MB for /Swap.

If you only have 5 - 7GB for installation, then only create two partitions: Swap and /. This will place /home within the partition for /.

Now that we have figured out how much space you have available and how many partitions you will need, then we need to see what we can do with the hard drive. You do not need a special program to partition your hard drive. The tools you need are right on your CD.

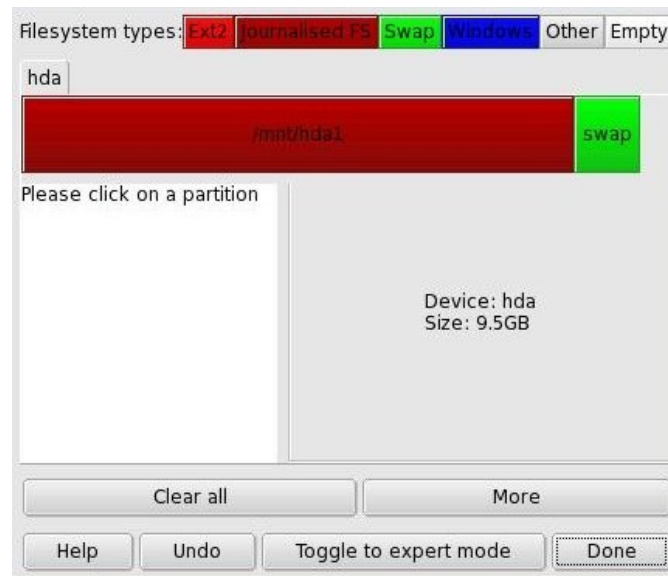
After you click on the Live CD install icon on the desktop, the first thing you will see is a little screen that says: "Run as root - KDE su The action you requested needs root privileges. Please enter root's password below or click ignore to continue with your current privileges. Command: /usr/sbin/livecd-install and then a line with Password and a blank white box. When you see this box you will type in the default root password - root. Then click the OK button.

At the bottom of the next screen is a button labeled: Disk Partitioner for advanced users. You will want to click on this button.

You will then see a series of tabs across the top. If you have more than one hard drive they will be labeled starting with hda (hard drive a) and continue with hdb (hard drive b) and so on for however many hard drives you have. If you have a USB or similar device hooked up you will also see sda to identify that device as well.

Windows partitions are outlined in blue. They will usually be labeled /mnt/win_c. That means the partitioning program has recognized that the partition or drive is formatted in a Windows format and mounted it (/mnt) as win_c or windows drive c. If a partition or drive is not mounted (listed as /mnt) then it is set aside and you can not look at any of the files there unless you mount it first.

Journalized FS is in a dark red or burgundy. You will see that listed as a file system type across the top. That is the type of format you will most likely want to use for your / and /home. This is a good type to use. The green identifies swap format. That is what you will need to use for your swap file. In the example below you will see a 9.65GB partition that is formatted as journalized ext3. This is someone that has only Linux on their computer. Yours will be blue because it is Windows.



Now to get on to business:

- Click on the drive you want to use.
- Select Resize
- Slide the rocker bar down to the size you want for your new partitions. If you have 10GB to play with, then slide the rocker down 10,000 in number. That will then give you a new partition of 10GB that you can then resize. You can resize by moving the bar with your mouse or by using the arrow keys. Using the arrow keys with the Control key will move it by chunks.
- When you have the size you want, click OK.
- A button will pop up saying "Please wait" and then "To ensure data integrity after resizing the partition(s) file system checks will be run on your next boot into Windows (TM).
- Press OK.
- Click on the gray area that you just added by reducing the size of your windows drive.
- Click on "create".

- You will now have a window that is labeled "Create a New Partition". The rocker bar should then be adjusted to the desired size. The file system type will be on Journalized FS: ext 3 unless you change it (not recommended). The mount point will show up as /. Since the / already exists (on the live CD) suggest to change it to /mnt/pclinuxos, adjust the size and then click OK. **(This is important otherwise the partitioning program tries to copy the existing / root partition to the newly created partition)**
- Now you will repeat the process by clicking on the gray area again.
- Next you will want to create the /swap partition.
- Size it down to twice your RAM. *If you don't know, select a number between 512 and 1024.*
- Click on the File system type and select "Linux swap".
- Press OK.

If you have room for another partition then we will add one last partition - /home. We will follow the same procedures:

- Click on the gray area.
- Click the "create" button.
- Size your partition (5GB is great if you have it).
- Leave the file system type as Journalized FS: ext 3.
- Use the down arrow to change the mount point to /home.
- Click OK.
- It will tell you to please wait as it formats your partition.
- Press the Done button.
- It will now tell you that it is going to save your fstab modifications. Once you do that you are on your way.

You have just done the hardest step - partitioning your hard drive so you can now install PCLinuxOS

Congratulations!

Installing PCLinuxOS to your Hard Drive

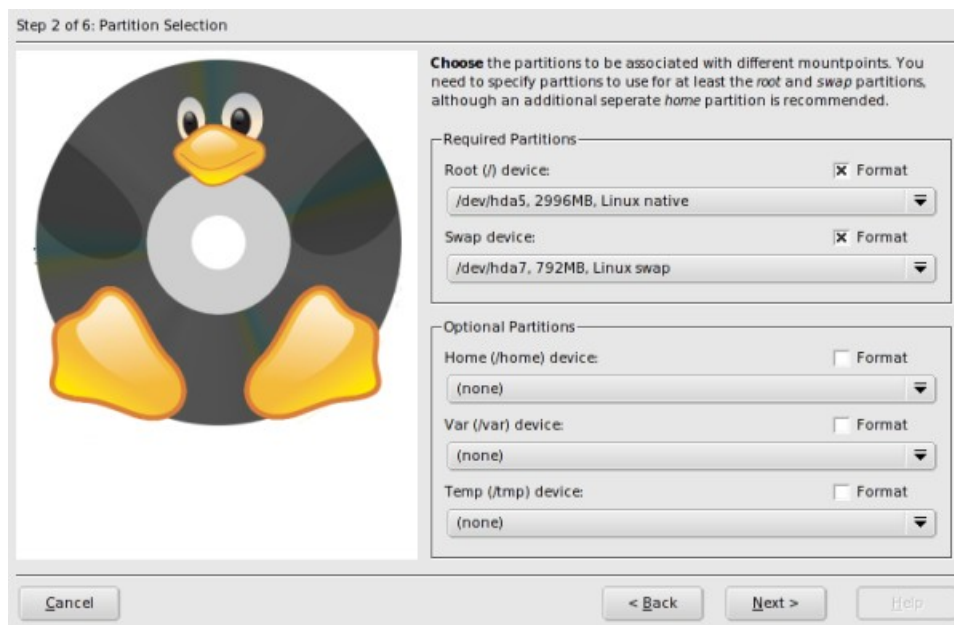
Step 1 of 6 - Drive Partitioning

The first step in your installation is setting up your partitions. Take a look at page 6 first. Once you have partitioned your hard drive you are ready to move on.

Step 2 of 6 - Partition Selection

This might sound confusing because you just identified partitions, but now they will really be assigned.

At the top of the page it reads: "Choose the partitions to be associated with different mount points. You need to specify the root and swap locations. A separate home partition is recommended, not required."

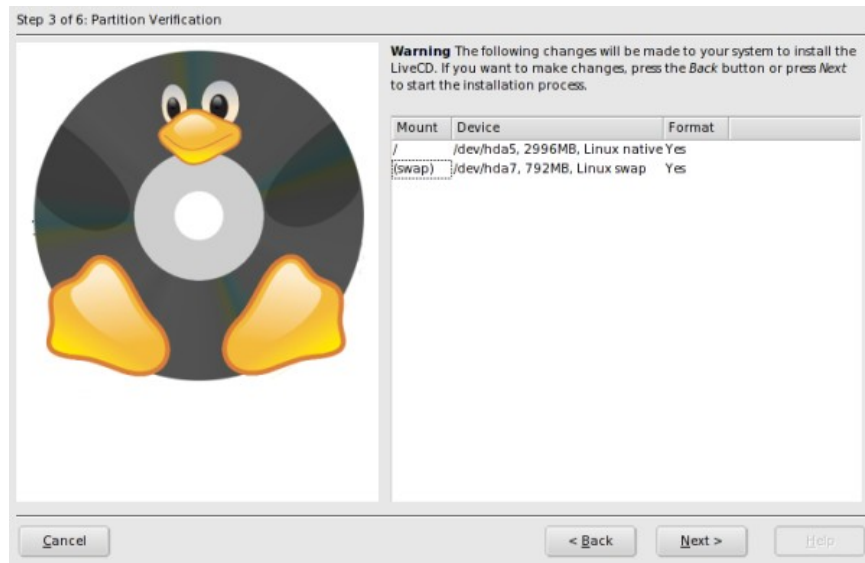


Under Required Partitions you will see one labeled Root (/) device and a button to click to format the partition. You will want to check the format box and then use the down arrow to change this to the partition you created. Select the largest partition you created and identify this as your / (root) partition.

Next select the swap partition you created. Remember this will be the very small partition. Select swap from the drop down menu and check the format box. If you formatted a third partition then go down to the section labeled "Optional Partitions" and select the third partition for your /home. Click on the next button and you are ready to move to the next screen.

Step 3 of 6 - Partition Verification

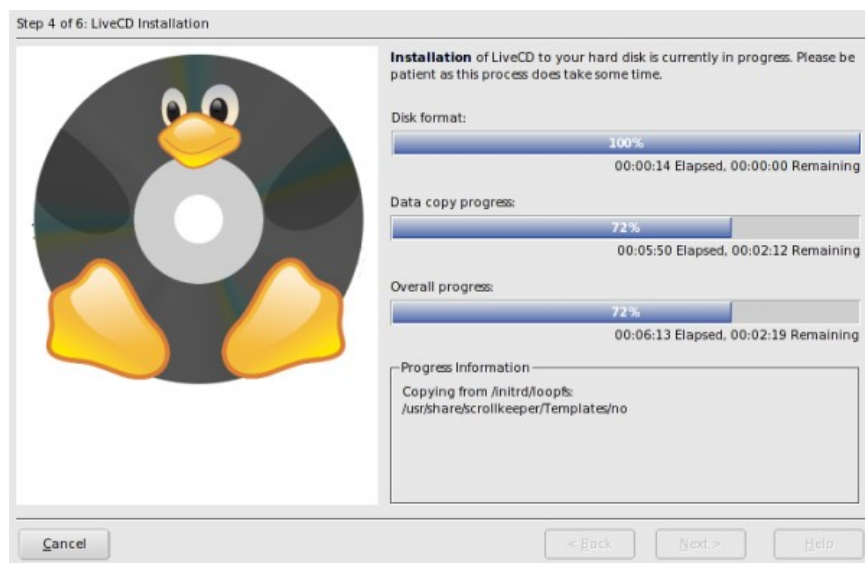
This page reads: "Warning: The following changes will be made to your system to install PCLinuxOS. To correct your selections, press the Back button, otherwise press Next to start the installation process."



If you are happy with how things look all you need to do here is to press next. If you think you messed up, then simply press the back button to go back and make changes.

Step 4 of 6 - PCLinuxOS Installation

This page reads: Installation of PCLinuxOS to your hard drive is currently in progress. Please be patient as this process does take some time. You will see bars that move across the page showing you how much has been completed. Go get a cup of tea or kick back and do something for about the next 15 to 20 minutes.



When it is finished then you will press next to move to the next page.

Step 5 of 6 – Boot loader Installation

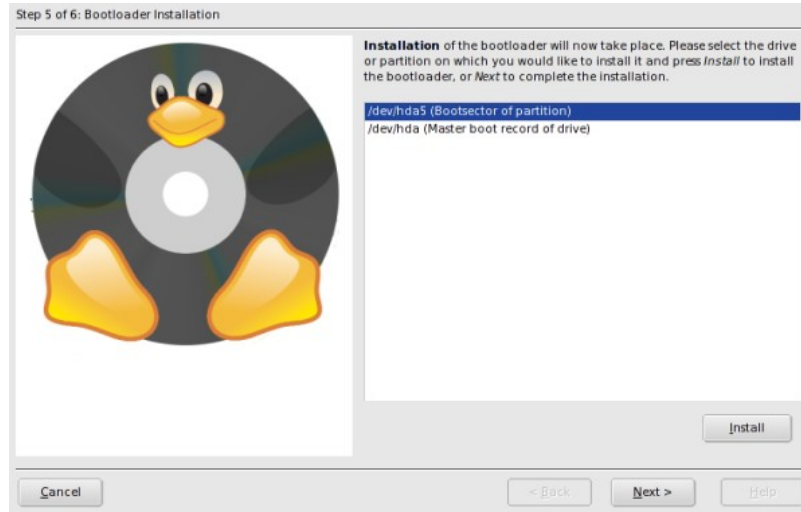
This is the step that sets up how your computer will work. It will set it up so that your computer can boot into either Windows or PCLinuxOS. It will assume that you have windows on any windows-formatted partition and will give you a link there. You will not lose your Windows access, but simply have a menu that gives you a choice of which way you want to go when you turn on your computer.

PCLinuxOS uses a program called Lilo. Lilo allows this dual-boot setup. In addition, you can, as you become more advanced, add additional distros if you desire. Lilo is very intuitive and we will now set it up on the "Master Boot Record" or "MBR". This is the first part of your hard drive and it is the first place accessed when the computer is ready to find where to boot. As you become more advanced, you will learn that there are other options for booting.

Boot loader Installation and Logging "Installation of the boot loader will now take place. Please select the drive or partition on which you would like to install it and press install to install the boot loader.

The normal spot is /dev/hda (Master boot record of drive). The term /dev/hda refers to the dev or device that is an HD or hard drive and it is the very first one thus the a. When a device is mounted it is then referred to as /mnt or mounted thus /mnt/hda and /dev/hda refer to the same place. Because we are turning on the computer the drive is not mounted yet so it is still /dev instead of /mnt.

This will add your Linux to the menu that boots your computer. When done you will need to click Install. Then click next.



Step 6 of 6 - Customization

Congratulations. You have installed PCLinuxOS to your local drive. Now you can customize it.

1. Type the root password. Here you will need to type a root password. Your root password is the same thing as administrator privileges. If you select less than 8 characters you will get a warning telling you that a short password may be unsafe. Then click on the button "Write Password". This is only used to do updates and administrative actions.
2. Delete guest. This is important for security purposes. You will then go down to create new user. This is what you will use to log in on a regular basis. However, it is currently disabled on the version 9 CD if you are logged in as guest. This means you can skip this step here but when you get it installed and boot into it from your hard drive you want to take a look at the PCLinuxOS Control Center and remove guest from your user list.
3. Create New User: Here you will create your user name. Remember that this is done in lower case letters. Enter your user password. This is what you will use when you log in each time. Then click on the button to "Write Password".

You have now installed PCLinuxOS. Be sure to restart your computer and remove the Live CD. Once you have done this you will be on your way to fine-tuning your distro the way you want.

Using Lilo to start PCLinuxOS

In windows you never think about how your computer boots up, you just know that it does. In PCLinuxOS we use Lilo as the boot manager. What is this? This is the program that kicks in when you turn your computer on right after it does its basic hardware check routine. This nifty little program tells your computer that you have more than one operating system on your computer. Lilo is a very smart program the way it is installed on your computer. It is usually installed in the very first sectors on your hard drive. Here are some things you might want to know:

How do I know it will add my Windows?

This is very simple. All it needs to do is find your partitions or drives that are formatted in a Windows format. Once it finds a partition that is formatted in FAT32 or NTFS it will add an entry for that partition or drive. Then it will add a partition for PCLinuxOS as well.

What should I know about it?

You should know LILO is a versatile LINUX LOader. It does not depend on any specific file system, can boot Linux kernel images from floppy drives and hard drives, and can even boot other operating systems as well. One of up to sixteen different images can be selected at boot time. Various parameters, such as the root device, can be set independently for each kernel. Lilo can even be used as the master boot record.

Can I trust it?

I don't know. Do you trust anyone or anything? If so, then you can trust your Lilo to work each time you turn your computer on. Even though this may seem like a critical program that you are afraid won't work correctly, it will. Really!

What can go wrong?

Every once in a while you will need to add some boot parameters to the Lilo. Usually it will correctly identify these when you install it. If you find that you have problems with Lilo not booting correctly then you can do one of several things:

- Check out the [Cheat Codes](http://www.pclinuxonline.com/wiki/CheatCodes)¹ and see if you need to make any changes.
- Boot into Windows or boot from the live CD and then go to our very own [forum](http://www.pclinuxos.com/forum)² for PCLinuxOS and ask questions in the Installation section. Or use to the IRC link on the desktop. Once you click on this you will be able to get help from someone that is on line at the time. How's that for help? It is free too!
- Another good source for help is Scot's Newsletter All Things Linux [forum](http://forums.scotsnewsletter.com/index.php?showforum=14).³
- Go to the [Getting More Help](http://www.pclinuxonline.com/wiki/GettingHelp)⁴ web page to find out how to get more help.

1 <http://www.pclinuxonline.com/wiki/CheatCodes>

2 <http://www.pclinuxos.com/forum>

3 <http://forums.scotsnewsletter.com/index.php?showforum=14>

4 <http://www.pclinuxonline.com/wiki/GettingHelp>

Appendix I – Installed PCLinuxOS FAQ

I've just installed PCLinuxOS, but it won't start

If Windows (or a previous Linux) keeps loading instead of the PCLinuxOS you've just installed, your boot loader might be missing or broken.

There is a whole section in the Wiki here on how to repair a lilo/boot loader in all of its forms. But to be honest, if you've just installed PCLinuxOS, it would be easier to just reinstall. Make sure to click on the line that says: "Install to MBR" and not to forget to click the "Install" button before clicking "Next".

How do I set up my desktop to see my other drives and partitions?

Open KDE Control Center -> LooknFeel -> Behavior -> Click the Device Icons Tab and Check the box Show Device Icons. Click OK

I have PCLinuxOS installed already, do I have to install the latest CD to upgrade now?

You don't have to download and install every Live CD to keep up-to-date. You don't have to change anything. In Synaptic just click Reload-Mark all Updates-Apply and you will be up to date with all the same packages as the latest Live CD. More information can be found on our [Upgrading an existing PCLinuxOS installation](http://www.pclinuxonline.com/wiki/UpgradingInstall) page.

How do I set my computer, that it will automatically see my other drives every time I boot

In PCLinuxOS a special control file, the /etc/fstab describes to the operating system where your "other" system's partitions (drives in Windows language) resides, and how to mount them, i.e. make them visible.

Open the PCLinuxOS Control Center -> Mount Points -> Configure your local disk

Click on your windows partitions and click on the Toggle expert mode button. It will bring up a new (Options) button if you click on the Options it will show all the different options you can click or un-click, (with explanation, what the option means) but like the name says Expert Mode, use with caution.

When I boot PCLinuxOS all I get is a black screen with a "login:"-prompt

Something probably went wrong loading the video driver for your video card. When it fails to load your video driver you can probably still log in, only not using the graphical routines. At the text-mode "login:", log in as the root user. Then type "XFdrake" - case-sensitive, without the quotes - to set up your video card again. When you are done with XFdrake, start X by typing either "kdm" (for the graphical login) or "startx" to start KDE as root-user. Don't forget to log out the root when you start KDM!

Does the ksyntaxics touchpad icon automatically load in the system tray near the clock?

If you want to disable that, you can disable it via Start menu -> Configuration -> KDE -> Peripherals -> TouchPad and disable Touchpad (off) and un check the "Dock in system tray" check box. You can also use the Synaptic Software Manager to remove the Ksyntaxics package.

5 <http://www.pclinuxonline.com/wiki/UpgradingInstall>

Appendix II - The Boot loader FAQ

When you use only one operating system on your computer, you don't have much concern about which of the one installed operating systems is to start when you turn on your PC. When you have two operating systems, you do have to be able to choose which you want. To help you out with all kinds of situations (and worst case scenario's) we've compiled an extensive Frequently Asked Questions list.

What is a boot loader? What is Lilo? What is Grub?

When you turn on your computer, your computer must find out how to load an operating system. Your computer (or more specific: its BIOS) goes looking in a few places, and when it finds the information to load an operating system (OS), it immediately does so. You could for example have your computer looking at the floppy drive first, then the CD, then the USB keys or memory sticks, then the hard drive. Whichever means you use, it locates a piece of software to load the actual OS. The software that loads the OS is called the boot loader. Linux often uses either the Lilo boot loader (as is the case with PCLinuxOS) or Grub. The menu you see before PCLinuxOS starts is the boot loader. Wikipedia has extensive coverage of [booting and boot loaders](http://en.wikipedia.org/wiki/Bootloader)⁶.

What is a Master Boot Record?

The first sector (512 bytes) of your hard drive is called the Master Boot Record (MBR). The MBR holds both a little program and the information about the partitions on your hard drive, called the partition table. The program in the MBR, called the first stage boot loader, loads the partition table to discover which partition is marked for booting. It then loads and executes the boot sector of that partition to kick start the operating system. You only have one MBR per hard drive.

What is a partition's boot sector?

Each partition on your hard drive also holds a boot sector. This is the first 512 bytes *of a partition* on a hard drive. The boot sector holds a little program, another first stage boot loader, that can load the operating system and start it. The boot sector doesn't get loaded automatically, but you can get a boot loader (like the one in the MBR) to load and execute it.

What is chain loading?

Suppose you have PCLinuxOS installed on /dev/hda5, and you've installed PCLinuxOS's boot loader to the boot sector of /dev/hda5. How can your computer then know how to load your PCLinuxOS? You have to configure the boot loader in the MBR to load the boot loader on /dev/hda5 to load Linux. This is called "chain loading". Luckily, this sounds more complicated than it actually is.

Where does Lilo or Grub come into play in all this?

Once the first stage boot loader is running, from the MBR, it locates the second stage boot loader from the /boot folder of your Linux. This is either Lilo or Grub. In the case of Windows, the second stage boot loader is called NTLDR. With Linux the /boot folder holds, among others, the boot program Lilo or Grub. Lilo then loads the kernel (the heart of the operating system) and the initrd from the /boot folder. The initrd (which is short for initial ram disk) holds the programs that end up launching the PCLinuxOS that we all know and love.

⁶ <http://en.wikipedia.org/wiki/Bootloader>

What more should I know about Lilo?

You should know LILO is a versatile Linux Loader. It does not depend on any specific file system, can boot Linux kernel images from floppy drives and hard drives, and can even boot other operating systems as well. One of up to sixteen different images can be selected at boot time. Various parameters, such as the root device, can be set independently for each kernel. Lilo can even be used as the master boot record.

How do I edit lilo.conf / grub.conf?

This part of the guide presumes you know how to use the console/terminal. In case you don't, here is how to. You can open a console/terminal by starting: Start menu -> Terminals -> Terminal Program - Super User Mode. It will ask for the root password.

You can now very easily edit files by typing "kedit /etc/lilo.conf" for example. This opens a normal text editor (like notepad) to edit "/etc/lilo.conf" with. Executing a command is as easy as typing it in on the console, and pressing enter. Executing "lilo -v" for example, is done by, at the "#" prompt, typing "lilo -v", and pressing Enter. When you are done with using the console, you can type "exit" to log out. Or you can press Ctrl+D, which does the same.

If you know the Norton Commander or Total Commander, then you might want to try starting "mc" from the console. With mc (midnight commander) you can edit files by locating them and pressing F4.

I've just installed PCLinuxOS, but it won't start

If Windows (or a previous Linux) keeps loading instead of the PCLinuxOS you've just installed, your boot loader might be missing or broken.

There is a whole section on how to repair a lilo/bootloader in all of its forms. But to be honest, if you've just installed PCLinuxOS, it would be easier to just reinstall. Make sure to click on the line that says: "Install to MBR" and not to forget to click the "Install" button before clicking "Next".

Repairing a Broken Boot loader

You are using your computer, and you find that you have to reinstall Windows. I know this obviously never happens, but let just suppose. :) You reboot your computer, and Linux has gone! It's straight into Uncle Bill's bug fest. Of course, your precious Linux system is still on the drive, but how do you get to it?

Your Linux boot loader in the MBR is overwritten by Windows' boot loader. To be fair, this can also happen if you are installing - just for testing of course! - another Linux distro, which "aggressively" overwrites the Master Boot Record.

Now how do you get to your Linux system? It's not as hard as it sounds. You will need your live CD.

Put in the Live CD, and reboot the computer. Use the same boot options you would normally use to match your keyboard, resolution and hardware. Eventually you will get to the login screen. I recommend that, on this occasions, you log in as root.

What you do next depends on the version of Live CD you have. With preview 0.92, we have included an easier solution to restore your broken boot-loader.

Repairing a broken boot loader - Live CD v0.92 and up

We have included a little tool for you called redo-lilo. You can run this tool to repair the broken boot loader for you! You can also still use the way you did it before - explained beneath.

Repairing your broken boot loader using redo-lilo:

- Open a konsole (Start menu -> Terminals -> Terminal Program (Konsole) and type "redo-lilo".
- Follow the on-screen directives and when done, reboot to your repaired boot loader and log in to your PCLinuxOS installation.

Repairing a broken boot loader - prior to v0.92

On earlier versions of the live CD you can install the "redo-lilo" package via synaptic. You can then follow the steps as mentioned above. For more information about installing software via synaptic, read the [Installing Software](#) page.

If you want to do it manually, follow these steps. You will see a logo near the top left of the screen "My Computer". Click on that, then in the Konqueror window that opens, click on "Storage Media". You should see a number of logos representing partitions on your hard drive. You have to find the one that relates to your root partition. The naming system on screen is odd, based on the partition size, unless the partition has a volume name, but when you click on the right one, you will see the name media:/hdaX (X is the actual partition number where you installed PCLinuxOS, e.g., hda5 , even the hda part can be different, hdb in the case of the second drive, or sda in the case of SATA, USB, or SCSI hard drive, but I will use hdaX in this tutorial) in the address bar.

7 <http://www.pclinuxonline.com/wiki/QuickStartSynaptic>

The main thing is that, having clicked on it, and viewed its contents, it has been mounted. Change the address bar to read: /mnt/hdaX. It should make absolutely no difference to the contents. If it does, try /mnt and check the sub folders within it to find the one you wanted earlier. Once it is found, I am assuming it will be called /mnt/hdaX but you use the one you find if different.

Now for the magic: Click on the icon to open a terminal. That's the one that looks like a black screen with ">_" on it. Now type in this lines:

```
mount -t proc none /mnt/hdaX/proc
mount -t none /dev /mnt/hdaX/dev -o bind
chroot /mnt/hdaX /bin/bash
```

You have now entered your saved PCLinuxOS setup. You can't do any real work from here, but many basic functions will work. So enter the following command:

```
lilo -v
```

This will re-instate the boot loader into your Master Boot Record. Provided of course, that is where it was originally installed.

Type the line before rebooting:

```
exit
```

If you got an error when typing "lilo", or, on reboot, you could not get into your Linux system, you may have errors in your file at "/etc/lilo.conf". If you cannot deal with them yourself, you may wish to seek help at the forum.

Adding PCLinuxOS to an existing GRUB

You have installed another Linux already, with Grub as boot loader (Ubuntu, Suse, etc.) Now you are wondering how you can add PCLinuxOS to the Grub already installed?

You have two options:

- You have installed the boot loader, of the PCLinuxOS you want to boot, to the partitions boot sector. You can chain load PCLinuxOS - this, luckily, is easy. In this case you also don't have to modify anything in the "master" boot loader if the "slave" boot configuration changes.
- If you didn't install any boot loader for the PCLinuxOS you want to install at all, you'll have to add a complete PCLinuxOS configuration, which is a bit more work. In this case you have to remember to modify the "master" boot loader if the "slave" boot configuration changes.

Chain loading PCLinuxOS

If you have installed the boot loader in the boot sector of the partition holding the PCLinuxOS installation, you are in luck. It just got quite a bit easier. I'll presume you have installed your new PCLinuxOS to /dev/hda3. If not, you'll have to make changes to the example below accordingly. Start by booting the Linux that "owns" the GRUB in the MBR.

As root-user, edit the file /boot/grub/grub.conf (or menu.lst) of the Linux that "owns" the "master" boot loader in the MBR. At the bottom of the file, add:

```
title PCLinuxOS
rootnoverify (hd0,2)
chainloader +1
```

Explanation:

line 1: title=... This is what you'll see in the boot menu. Use any title you like.

line 2: rootnoverify=... The partition you want to boot. In our example we've installed the boot loader to the partition /dev/hda3, which translates to (hd0,2) - first hard drive (hd0), third partition (,2). hdb1 would be (hd1,0)

line 3: chainloader +1 - This configures grub to chain load to hda3/hd0,2

After editing the configuration file, you have to install updates again. Make sure you are either booted from the Linux that comes with the file you've just edited. (or that you are correctly chrooted - experienced users) If that is the case, then install the boot loader using:

```
grub-install /dev/hda
```

Replace /dev/hda with the device you want to install to.

The complete PCLinuxOS configuration

Start by booting the Linux that "owns" the master boot loader in the MBR. I'll presume you have installed your new PCLinuxOS to /dev/hda3. If not, you'll have to make changes to the example below accordingly.

As root-user, edit the file /boot/grub/grub.conf of the Linux that "owns" the "master" boot loader in the MBR. At the bottom of the file, add:

```
# PCLinuxOS
title PCLinuxOS
kernel (hd0,2)/boot/vmlinuz-2.6.12-oci4.mdk root=/dev/hda3 vga=0x317
initrd (hd0,2)/boot/initrd-2.6.12-oci4.mdk.img
```

Explanation:

line 1: # PCLinuxOS - just a comment, does nothing

line 2: title, this is what you'll see in boot menu. Use any title you like

line 3: kernel, you must edit this to suit your setup, pick the kernel you want.

line 4: initrd, same as line 3. Make sure you pick the initrd that comes with the kernel.

The "(hd0,2)" is comparable to hda3, and "(hd0,0)" would be hda1.

After editing the configuration file, you have to install updates again. Make sure you are either booted from the Linux that comes with the file you've just edited. (or that you are correctly chrooted - experienced users) If that is the case, then install the boot loader using:

```
grub-install /dev/hda
```

Replace /dev/hda with the device you are using for your install.

Adding PCLinuxOS to an existing LILO

You have installed another Linux already, with Lilo as bootloader. Now you are wondering how you can add PCLinuxOS to the Lilo already installed?

You have two options:

- You have installed the bootloader, of the PCLinuxOS you want to boot, to the partitions bootsector. You can chainload PCLinuxOS - this, luckily, is easy. In this case you also don't have to modify anything in the "master" bootloader if the "slave" boot configuration changes.
- If you didn't install any bootloader for the PCLinuxOS you want to install at all, you'll have to add a complete PCLinuxOS configuration, which is a bit more work. In this case you have to remember to modify the "master" bootloader if the "slave" boot configuration changes.

Chainloading PCLinuxOS

If you have installed the bootloader in the bootsector of the partition holding the PCLinuxOS installation, you are in luck. It just got quite a bit easier. I'll presume you have installed your new PCLinuxOS to /dev/hda3. If not, you'll have to make changes to the example below accordingly. Start by booting the Linux that "owns" the lilo in the MBR. As root-user, edit the file /etc/lilo.conf of the linux that "owns" the "master" bootloader in the MBR. At the bottom of the file, add:

```
other=/dev/hda3
label="PCLinuxOS"
table=/dev/hda
```

Explanation:

line 1: other=... The partition you want to boot. In our example we've installed the bootloader to the partition /dev/hda3.

line 2: label=... This is what you'll see in the boot menu. Use any title you like.

line 3: table=... This is the hard drive you are using. In our case /dev/hda.

After editing lilo.conf, you have to install the changed lilo to the MBR again. Make sure you are either booted from the Linux that comes with the lilo.conf you've just edited. (or that you are correctly chrooted - experienced users) If that is the case, then install lilo using:

```
lilo -v
```

The complete PCLinuxOS configuration

Start by booting the Linux that "owns" the master bootloader in the MBR. Before we start to make changes make sure you have mounted PCLinuxOS. I'll presume you have installed your new PCLinuxOS to /dev/hda3 and you have /dev/hda3 mounted on /mnt/hda3. If not, you'll have to make changes to the example below accordingly. As root-user, edit the file /etc/lilo.conf of the linux that owns the "master" bootloader in the MBR.

At the bottom of the file, add:

```
image=/mnt/hda3/boot/vmlinuz-2.6.13-oci2.mdk-i686-up-4GB
    label="PCLinuxOS"
    root=/dev/hda3
    initrd=/mnt/hda3/boot/initrd-2.6.13-oci2.mdk-i686-up-4GB.img
    append="nomce acpi=ht splash=silent psmouse.proto=imps"
    vga=788
```

Explanation:

line 1: image=... The kernel you want to boot. Go to the /boot folder of the installed PCLinuxOS to locate the kernel (a file starting with vmlinuz) you like. You could go with the default image, being "/boot/vmlinuz". You might not get your latest kernel however, when you've added or updated kernels via Synaptic / apt-get.

line 2: label=... This is what you'll see in the boot menu. Use any title you like.

line 3: root=... This is the partition you'd like to use as / folder. It is the partition you installed PCLinuxOS to.

line 4: The initrd is created when you install kernel. Make sure you pick the initrd file from the /boot folder that matches the kernel you picked on line 1 (image=...). If you went with "/boot/vmlinuz", pick "/boot/initrd.img"

line 5: Take this as verbatim. If you know you need/want different boot options, you can change these

line 6: This means you'd like to have a graphical boot-up, instead of text based. After editing the configuration file, you have to install updates again. Make sure you are either booted from the Linux that comes with the file you've just edited. (or that you are correctly chrooted - experienced users) If that is the case, then install the bootloader using:

```
lilo -v
```

Make sure you have correctly mounted your PCLinuxOS when you install lilo, using the command above.

Adding PCLinuxOS to the Windows Boot loader

You have installed Windows already. Now you are wondering how can I add PCLinuxOS to the Windows boot loader? Windows has a boot loader as well. It is called NTLDR. It automatically starts when you boot Windows, you probably haven't seen it, because it immediately launches Windows. Still, it is there.

To have Windows boot PCLinuxOS we have to get an image of the boot sector. So when you install PCLinuxOS make sure you install the boot loader to the partition you've installed PCLinuxOS on. Not the MBR, the partition's boot sector. Let's presume you have installed PCLinuxOS to /dev/hda3 and you've installed the boot loader to the boot sector of /dev/hda3 as well.

We now need to take a snapshot of the boot sector and transfer it to Windows. First of all, we copy the boot sector of the PCLinuxOS installation to a file. Be careful here! Make sure you type this correctly before pressing enter. Change /dev/hda3 to the partition you've installed PCLinuxOS. As root-user, execute:

```
dd if=/dev/hda3 of=./pclosboot.lnx bs=512 count=1
```

This command will have made a file called pclosboot.lnx. We now have to copy that file (which is small - 0.5kb) to Windows. You could do this with a floppy disk or a USB key. You could even email it to yourself from Linux to Windows. Whatever you want. Make sure you've copied the file pclosboot.lnx we just created to c:\pclosboot.lnx

The configuration file for NTLDR is called 'c:\boot.ini' and is an hidden file. To show the hidden files with Windows 2000/XP, in the Explorer (the file manager) go to the c:\ folder. Now click on Tools->Folder options. Click the Views tab. If you scroll down a little bit, you see the option "Hidden files and folders". Select "Show hidden files and folders". Also uncheck the "Hide protected operating system files (Recommended)".

You will now see (and be able to edit) the c:\boot.ini file. Edit the boot.ini file and add this line to the end of the file:

```
c:\pclosboot.lnx="PCLinuxOS"
```

The "PCLinuxOS" part is the name you'll see. You can modify that.

You can make more changes to the boot.ini file, by opening the Control Panel. Start -> Settings -> Control Panel -> System. Click on the advanced tab, and click on "Startup and Recovery". In the window you now get, you can further tweak your boot loader settings.

Reboot and you'll see the menu with the PCLinuxOS option!

Remember: If you make changes to lilo.conf, and reinstall the changes to the boot sector of the /dev/hda3 partition, you'll have to create a new pclosboot.lnx file and copy it to Windows again!

Adding Windows to an existing LILO

You have installed PCLinuxOS and you have a Windows on your computer, during the installation Windows should have been added to your Lilo boot loader menu automatically.

Perhaps in your case, for some reason, it didn't and you are now wondering how you can add Windows to the Lilo already installed?

As root-user, edit the file "/etc/lilo.conf". At the bottom of the file, add:

```
other=/dev/hda1
label="Windows"
```

Explanation:

line 1: other=... The partition holding Windows. In our example we've installed Windows on the /dev/hda1 partition.

line 2: label=... This is what you'll see in the boot menu. Use any title you like.

After editing lilo.conf, you have to install the changed lilo to the MBR again. Make sure you are either booted from the Linux that comes with the lilo.conf you've just edited. (or that you are correctly chrooted - experienced users) If that is the case then, as root user, install lilo using:

```
lilo -v
```

Dual-booting another Linux with PCLinuxOS

If you want to dual-boot multiple Linux's, with PCLinuxOS as master Linux, have them install their boot loader into the partition you installed the additional Linux's on - and *not* the mbr. PCLinuxOS in effect will then continue to be owner of the Master Boot Record.

So if you install LinuxX (Linux Brand X, fill in any Linux here) on for example /dev/hda3 then also have LinuxX install the boot loader to the /dev/hda3 partition. You can then use chain loading to start the /dev/hda3 boot loader from the PCLinuxOS lilo to boot into your LinuxX installation.

In the chain loading case, your computer will start and it'll display the normal PCLinuxOS Lilo boot loader menu. You'll have an option there to start the other Linux. If you select that option, the Lilo (or Grub) of the other Linux loads which is then able to really start the other Linux. We do still have to add the other Linux to the Lilo of PCLinuxOS.

Chain loading Another Linux

I'll presume in this example you have installed your new Linux to /dev/hda3. If not, you'll have to make changes to the example below accordingly. I'll also presume that you are now running PCLinuxOS.

As root-user, edit the file /etc/lilo.conf of PCLinuxOS. At the bottom of the file, add:

```
other=/dev/hda3
    label="LinuxX"
    table=/dev/hda
```

Explanation:

line 1: other=... The partition you want to boot. In our example we've installed the LinuxX boot loader to partition /dev/hda3.

line 2: label=... This is what you'll see in the boot menu. Use any title you like.

line 3: table=... This is the hard drive you are using. In our case /dev/hda.

After editing lilo.conf, you have to install the changed lilo to the MBR again. Make sure you are either booted from the Linux that comes with the lilo.conf you've just edited. (or that you are correctly chrooted - experienced users) If that is the case, then install lilo using:

```
lilo -v
```

The complete LinuxX configuration

You can also immediately start LinuxX from the Lilo of PCLinuxOS. Depending on which Linux you want to start, what you have to add to the lilo configuration is different. Add to this that you have to mount the other Linux as well makes it a bit hard. This procedure is however explained earlier in this guide.

Using DOS FDisk to reinstall the default MBR

If you dual-boot Windows and Linux, and your master boot record (MBR) is broken which prevents both Windows AND Linux from starting, you can solve this by reinstall a default DOS/Windows boot loader. This will get Windows booting again. Before you attempt any of this, first give the solution explained in the chapter Repairing a Broken Boot loader on the page 16 a try. If that doesn't help, here is how you can reinstall the default DOS MBR to get Windows booting again.

If you've installed Grub before, and have trouble removing it again or installing Lilo after Grub, this will help as well. In that case, you will obviously have to reinstall Lilo after cleaning the MBR using the procedure beneath.

If you dual-boot Windows, and have the installation CD for Windows, please continue reading the "Using your Windows Installation CD" topic beneath.

Using only PCLinuxOS and our standard MBR image

We have a default MBR standing ready that, when installed, will get Windows starting again. It will also remove any Grub you might have installed previously. If neither Windows nor the installed PCLinuxOS work, start by booting from the live CD now.

Then download this [mbr.bin⁸](http://www.pclinuxonline.com/wiki/upimages/wallp/mbr.bin) file, to the home folder /home/guest. It holds the boot record to be installed. To install the boot record, open a terminal. Start menu -> Terminals -> Terminal Program (Super User Mode)

Type the root password (on the live CD this is "root".)

We'll presume two things. One, the mbr.bin file is indeed now in /home/guest. And your /dev/hda hard drive is the first hard drive holding the MBR to be cleaned.

Execute:

```
dd if=/home/guest/mbr.bin of=/dev/hda
```

This cleans the existing MBR and reinstalls a standard MBR.

Using your Windows Installation CD

If you have a working Windows, but want to remove the Lilo or Grub from the MBR, start a DOS command prompt with: Start -> Run -> cmd.

You are probably thinking now: "if Windows worked, I wouldn't be needing a fresh MBR!" If your DOS/Windows doesn't load *at all*, you could put in the Windows installation CD and restart your computer. Instead of installing from the Windows installation CD however, start the [Windows Recovery Console⁹](http://support.microsoft.com/default.aspx?scid=kb;EN-US;314058). Depending on your Windows version, at the "Welcome to Setup" screen, press F10 or press 'R' for repair. You then get a DOS command prompt and you would then have access to the program needed.

8 <http://www.pclinuxonline.com/wiki/upimages/wallp/mbr.bin>

9 <http://support.microsoft.com/default.aspx?scid=kb;EN-US;314058>

There is an internal "fixmbr" command which repairs your broken master boot record. Executing this command is usually all that is needed. However, sometimes it is also necessary to run "fixboot C:" to boot Windows.

Some interesting Microsoft knowledge base links:

<http://support.microsoft.com/kb/307654/>

<http://support.microsoft.com/kb/310497/>

<http://support.microsoft.com/kb/314058/>

<http://support.microsoft.com/kb/216417/>

<http://support.microsoft.com/kb/305595/>

Using a Boot disk

You can also use another computer to download a DOS 6.22 boot disk (if you don't have one at hand already, always a good idea to have one at hand) from bootdisk.com and boot from that. Once you booted from the DOS 6.22 boot disk, you can use the fdisk on the floppy disk.

After running "fdisk /mbr", Windows should load again when you restart your computer.

Using Freedos

Worst case scenario: you don't have a dos boot-able floppy disk, or a Windows to create one using the bootdisk.com provided disks. We'll solve this problem using the [freedos project](http://www.freedos.org/)¹⁰. First boot your PC using the live CD. You can then download a floppy image from [the fdos.org](http://the.fdos.org/)¹¹ site. Make sure to get the **odin1440.img** file.

You can install the downloaded floppy image to a floppy disk with the linux dd command. Open a terminal Start menu -> terminals -> terminal program (konsole). Go to the folder holding the .img file. Next put in an empty floppy disk and type:

```
dd if=odin1440.img of=/dev/fd0
```

Make sure you type it correctly! This installs the freedos disk image to the disk, it takes a while. When done, check to see if it worked. Reboot from disk and at the dos prompt, execute the "fdisk /mbr" command.

You can also download a 12MB CD iso file which you can burn to a CD using k3b, which is easier perhaps. More information about the odin freedos disk images, including the download itself, see the [freedos odin](http://odin.fdos.org/)¹² page.

¹⁰ <http://www.freedos.org/>

¹¹ <http://fdos.org/ripcord/beta9sr1/disksets/ODIN/>

¹² <http://odin.fdos.org/>

Restoring The Previous MBR

You can actually restore a previous MBR. During the PCLinuxOS installation the boot loader gets installed. The first time you install lilo on a new PCLinuxOS install, Lilo saves the current Master Boot Record (MBR) in the /boot folder, normally with the name "boot.0300". You can have Lilo backup the MBR that is currently installed by first removing (or renaming) the existing "boot.0300" file and then running Lilo.

For example: you used the "fdisk /mbr" or fixmbr trick which overwrites your MBR causing you to loose the ability to start your installed PCLinuxOS. You might want to restore your MBR now. There is a trick to copying back the MBR-record saved in /boot/boot.0300.

The MBR's first stage boot loader is located in the first 446 byte of the 512 byte sector holding the Master Boot Record. The remaining 64 byte is the partition table, followed by a 2 byte signature (AA55h) which the BIOS requires for a proper boot loader. The partition sector holds the way your hard drive is partitioned. The first stage boot loader loads the second stage boot loader, being Lilo, Grub or NTLDR in case of Windows.

If you just would copy back the 512 bytes blindly, you might loose the partitioning changes you made *after* your first install. So the trick is to use an instruction like:

```
dd if=/boot/boot.0300 of=/dev/hda count=1 bs=446
```

This will overwrite the MBR's first 446 byte with the original content, typically the (Windows) first stage boot loader, while keeping the partition table itself unchanged.

You will have to be root to have access to the MBR.

Making a backup of the boot sector yourself

You can also make a backup copy of the MBR/boot sector yourself! As root, execute:

```
dd if=/dev/hda of=./bootsect.lnx count=1 bs=512
```

You know have a file called bootsect.lnx that holds the content of the MBR. You can also make a copy of the boot sector of a partition using:

```
dd if=/dev/hda3 of=./bootsecthda3.lnx count=1 bs=512
```