

# ***Dual Boot with Fedora Core 6 and Windows XP***

**By Whil Hentzen**

Not everyone has a half-dozen computers in their office or home so that they can use a separate machine for each OS they want to work with. After all, Tom Watson of IBM once said that he couldn't imagine a need for more than five computers in the entire world. As a result, setting up a single machine to host more than one operating system is a common requirement. Unfortunately, much of the reference material out there is old or inappropriate for a dual boot of Fedora's latest release and the tried-and-true Windows XP. Here's how to get the two to co-exist nicely on the same computer with a minimum of fuss, and not too much Linux expertise either!

## 1. Preface

### 1.1 Copyright

Copyright 2007 Whil Hentzen. Some rights reserved. This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs License, which basically means that you can copy, distribute, and display only unaltered copies of this work, but in return, you must give the original author credit, you may not distribute the work for commercial gain, nor create derivative works based on it without first licensing those rights from the author. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/2.0/>.

### 1.2 Revisions

#### 1.2.1 History

Version	Date	Synopsis	Author
1.0.0	2006/12/20	Original	WH
1.1.0	2007/02/06	Added Product Recovery CD notes	WH

#### 1.2.2 New version

The newest version of this document will be found at [www.hentzenwerke.com](http://www.hentzenwerke.com).

#### 1.2.3 Feedback and corrections

If you have questions, comments, or corrections about this document, please feel free to email me at 'articles@hentzenwerke.com'. I also welcome suggestions for passages you find unclear.

### 1.3 References and acknowledgments

Thanks to the many folks on the IBM Thinkpad mailing list (<http://mailman.linux-thinkpad.org/mailman/listinfo/linux-thinkpad>), the folks on the Milwaukee Linux User Group list ([www.milwaukeeelug.org](http://www.milwaukeeelug.org)), the ProLinux mailing list ([www.leafe.com](http://www.leafe.com)), as well as all that amazing stuff that one can find on the Internet.

### 1.4 Disclaimer

No warranty! This material is provided as is, with no warranty of fitness for any particular purpose. Use the concepts, examples and other content at your own risk. There may be errors and inaccuracies that in some configurations may be damaging to your system. The author(s) disavows all liability for the contents of this document.

Before making any changes to your system, ensure that you have backups and other resources to restore the system to its state before making those changes.

All copyrights are held by their respective owners, unless specifically noted otherwise. Use of a term in this document should not be regarded as affecting the validity of any trademark or service mark. Naming of particular products or brands should not be seen as endorsements.

### 1.5 Prerequisites

This document was written using Fedora Core 6 and Windows XP on a three year old 1 Ghz Thinkpad T30 with a gigabyte of RAM and a 60 GB hard disk. Windows XP came from an MSDN subscription, so I had to burn the ISO CD myself. The IBM Product Recovery CD came from IBM, natch.

## 2. The environment and goal for this article

Several years ago I picked up a nifty little T30 Thinkpad from IBM. It came with Windows XP, naturally, and, as I was full-steam ahead on Linux, I naturally blew away the Windows installation (and the recovery partition) without ever booting the machine up. Since then I've installed several distributions of Linux on the machine; the most recent being Fedora Core 6.

The only Windows machine left in the office is starting to make "I'm about to die" noises (the machine is 7 ½ years old, after all) and so having a backup machine with Windows on it seemed to be a good idea. I've tried setting up Windows in a virtual machine using VMware but I've generally been dissatisfied with the results; VMware really needs more horsepower than this box has.

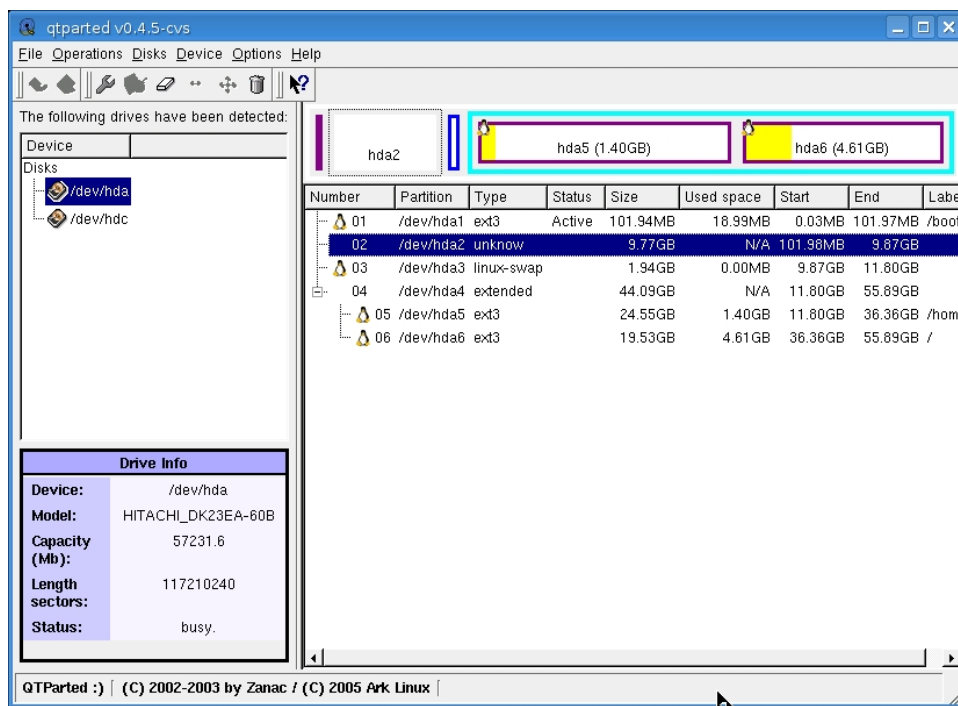
A brand new subscription to MSDN courtesy of an insider at MSFT showed up recently, so I've got all the goods I need to install Windows XP from scratch. The goal is to put Windows XP and Fedora Core on this box in a dual boot scenario.

Later, I decided I wanted to use the MSDN Windows XP installation on a different machine, so after I accomplished the 'proof of concept' installation, I decided to use the original Windows that came with the machine. Oh, wait, didn't I just say that I blew away the recovery partition? I sure did. And of course, a machine that comes with recovery CDs are few and far between. So I called IBM, forked over a few bucks, and they sent me a set of three IBM Product Recovery CDs for my machine so that I could restore the machine to it's pristine factory condition. I'll explain what to do with them in this article as well.

## 3. Ill-fated attempts

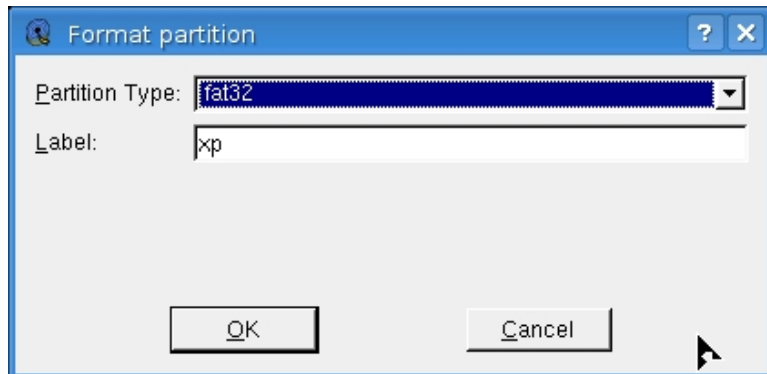
Remember that, at the beginning of this process, this machine was running Fedora Core 6 flawlessly. So the first thing I tried was to free up some space on the drive (I had a /home partition of 35 GB) and stuff XP in there.

I used Knoppix 5.0 to delete each of the partitions on the Fedora Core computer. I put the Knoppix disk in the drive, rebooted, and then selected the K Menu | System | qtparted menu option to load the partition editor. After inspecting the hardware (successfully, unlike Windows), qtparted displayed the results as shown in **Figure 1**.



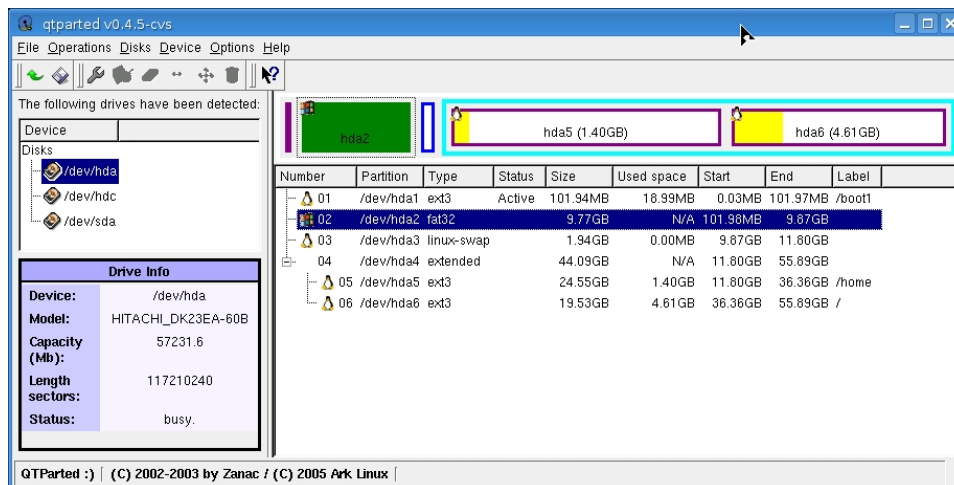
**Figure 1.** qtparted's results of inspecting the original Fedora Core installation.

As you can see, there are six partitions. Partition #2 is 10 GB of free space I had created for use with Windows XP. I right-clicked on that partition and selected "Format" from the context menu to create a fat32 partition, as shown in **Figure 2**.



**Figure 2.** Formatting partition #2 as fat32 for a Windows XP installation.

Once the format was done, qtparted reported that there was a nifty fat32 partition ready to go, as shown in **Figure 3**.



**Figure 3.** Partition 2 after being formatted with fat32.

However, Windows XP would not install in that space; Setup displayed a "Setup is inspecting the hardware" message and then died.

My second attempt was to let the Windows installation procedure just blow Fedora away during installation. I again tossed the Windows setup disk in the CD drive, booted, and the same "Setup is inspecting the hardware" message displayed, and then promptly died. Clearly Windows XP was not going to go past Setup if there was anything else on the drive first.

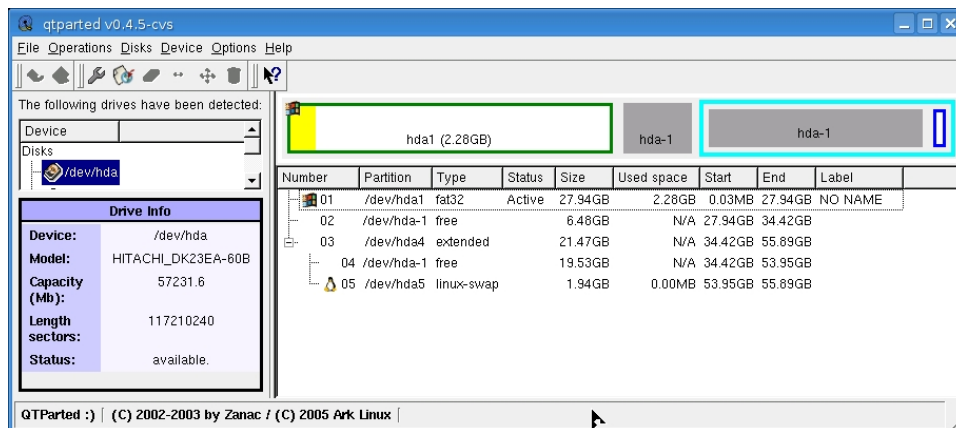
The third attempt was to wipe the drive clean and install fresh, and that's where this story begins.

## 4. Clear off the hard disk using Knoppix

I again used Knoppix 5.0 to load qtparted, and this time, deleted each partition. If you're comfortable with qtparted, you can skip the rest of this section and move on to Section 5. But if you've never used it, you may be asking yourself, "How?"

**Figure 4** shows the dual boot partitioning scheme that we'll use as our guinea pig for working with qtparted.

Remember, our goal is to return this machine to having a single unformatted partition that will be recognized by anything that can see a PC hard disk.



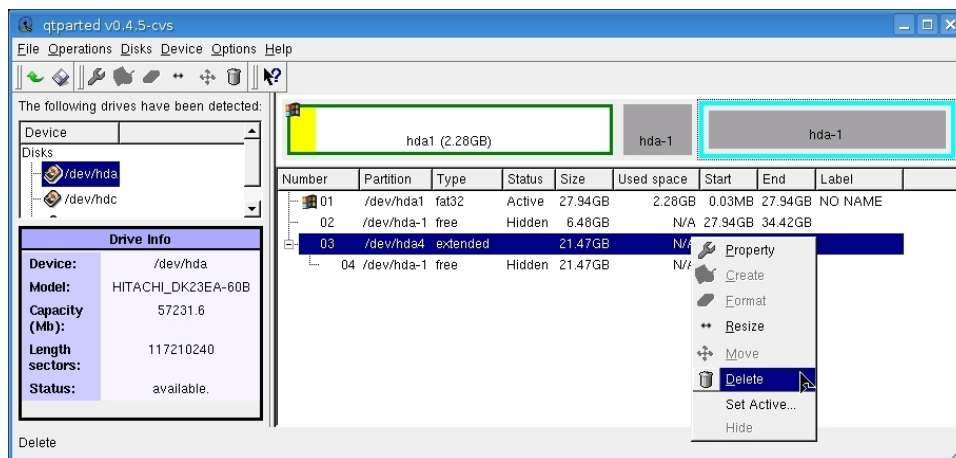
**Figure 4.** A typical dual-boot partitioning scheme displayed by qtparted.

As you can see, there's a Windows FAT32 partition as well as a couple of others. One of the others is an extended partition that holds a Linux swap partition. (This scheme used to have formatted partitions for /boot, /, and /home, but I already deleted them in order to make this section easier to follow. Those partitions are shown in Figure 4 as 'free'.)

#### 4.1. Using qtparted to delete partitions

First, select the partition you want to rid, right-click, and select the "Delete" option in the context menu for that partition.

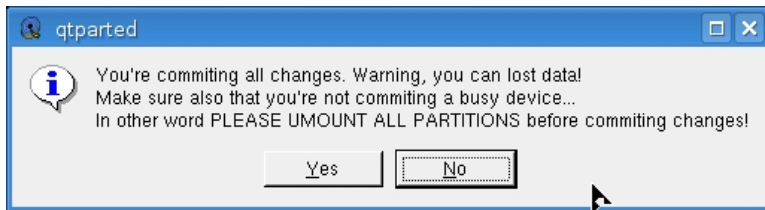
**Figure 5** shows an example of the context menu.



**Figure 5.** The "Delete" menu option in the qtparted context menu.

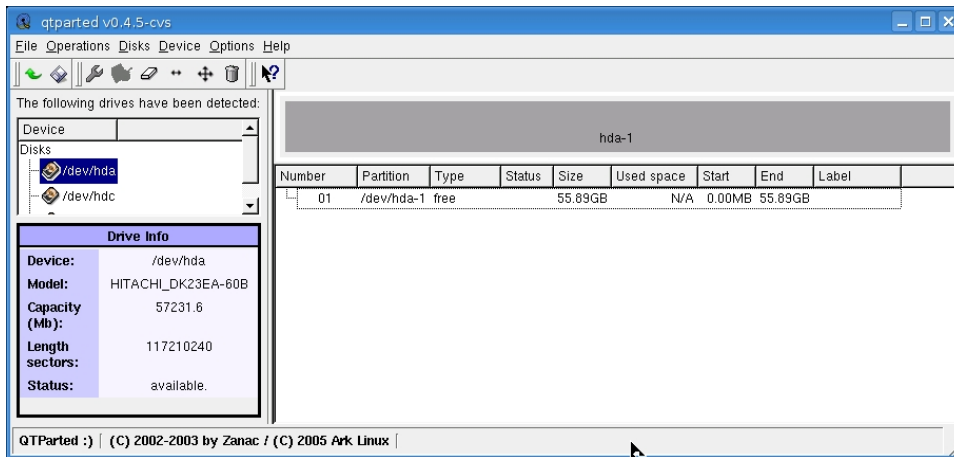
Select another partition, right-click, delete, repeat. When you're done with all of the partitions, be sure to select the File | Commit menu option in order to write your changes to disk.

You may find that the context menu options are disabled for some partitions. If that's the case, you'll have to commit the current changes, then reboot your machine before deleting another partition. You'll be prompted to confirm your intentions, as committing the changes is destructive and irreversible. See **Figure 6**.



**Figure 6.** Confirm your intentions!

Eventually, you'll be down to one single partition, as shown in **Figure 7**.



**Figure 7.** Down to a single partition.

## 4.2. Tricks with qtpartition delete

There are a couple of times during the delete process that can be tricky.

When you load up Knoppix on a machine that already has a Linux swap partition, Knoppix's default behavior is to use that swap partition. Unfortunately, Knoppix's death grip on the partition then makes it difficult to delete it. Even if you click on the "Delete" option really hard, it won't work. Instead, after selecting the "Delete" option from the context menu, you'll get a dialog warning that says "Partition already mounted".

Thus, you need to tell Knoppix not to use any existing Linux swap partition during boot. Do this by passing the 'noswap' parm:

```
boot: knoppix noswap
```

If you watch the boot messages carefully, you'll see a line that says something like

```
Skipping /hda/swap as directed
```

Now you'll be able to delete the swap partition.

Second, if you've got an extended partition, you need to delete all of the partitions inside it before deleting the extended partition itself. Figure 5 shows the deletion of an extended partition after all of the partitions inside have been removed.

## 5. Install Windows from the XP disk

Once the machine's hard disk was completely empty, I stuck the Windows XP disk in the drive, rebooted, and this time Setup not only inspected my hardware, but continued on to the next screen.

The next screen displayed what it found on the hard disk (a lot of empty space and one 2 GB partition from the swap file.) I told Setup to delete the swap partition, and then to create a single 10 GB partition, leaving the other 50 GB free. After doing so, the Windows installation worked flawlessly, and I now had a machine with a 10 GB partition that booted Windows, and just under 50 GB of free space.

If you want to install Windows from the rescue CD or partition, see Section 7 for details.

## 6. Install Fedora Core 6

Now the excitement begins. It's time to install Fedora Core 6, and if you've not done this before, I would recommend you pick up one of my other Fedora Core articles (I've done them for Fedora Core 1, 3, and 5 as well as SuSE 10.1.) I'm not going to reproduce all of the steps here; you can accept just about every default offered. However, I'm going to mention the couple of places where you want to make sure to select specific choices, and explain what's going on behind the scenes.

### 6.1. Behind the scenes after the Windows XP install.

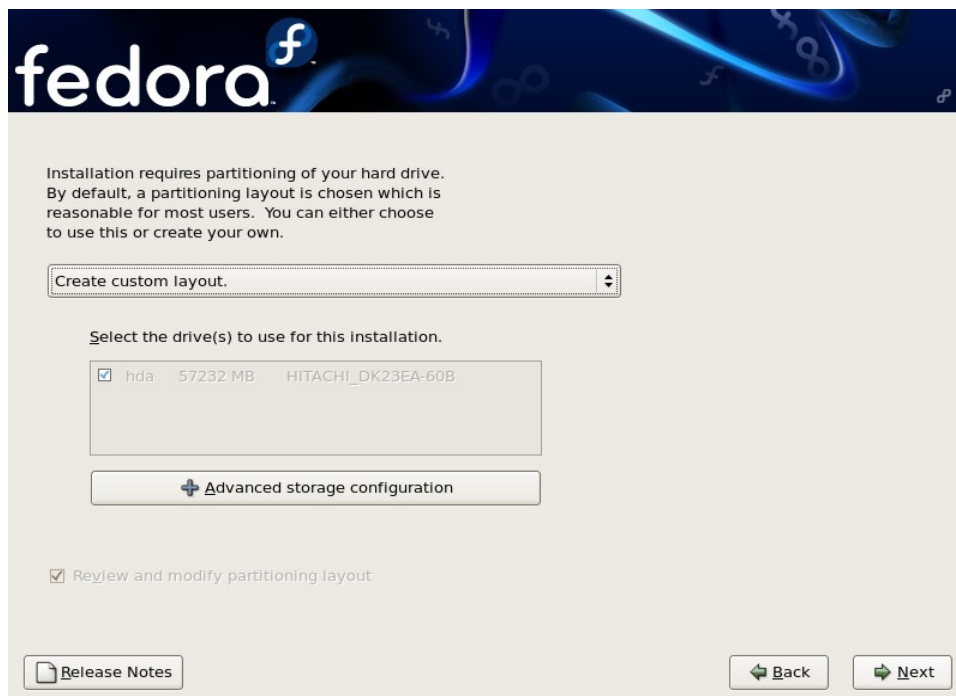
At this point, before you've installed FC6, Windows has created a boot loader that points to itself, and initialized the Master Boot Record (MBR) with data that points to its boot loader. In a Windows only world, all this happens behind the scenes and you'll never know anything about it. Once you add a second operating system to the same machine, though, you need to have a bit of an idea of what's going on.

We're going to install FC6 with its own boot loader, and tell FC to overwrite the MBR with new data that now points to the FC6 boot loader. Then we're going to add an entry to the FC6 boot loader for the existing Windows installation, and then during bootup, the FC6 boot loader menu will be displayed and you'll have a chance to choose which OS you want to load.

### 6.2. Install FC6

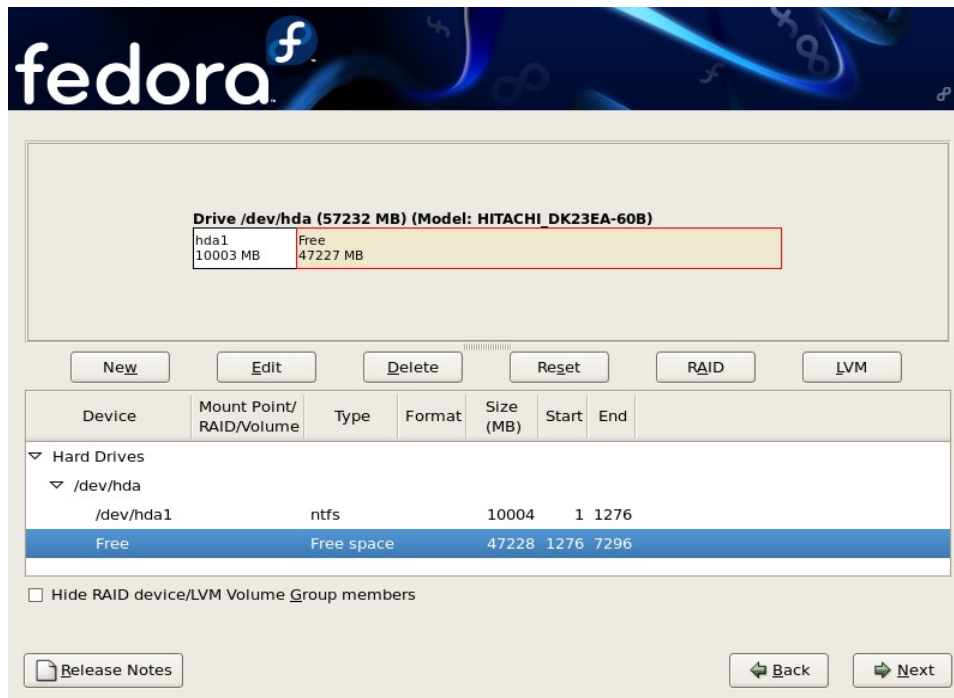
Pop the first FC6 CD into the drive (or the DVD, if you're so blessed), reboot, and the Fedora Core install will begin.

Advance through the installation until you get to the partitioning dialog (after the Install Splash screen), as shown in **Figure 8**.



**Figure 8.** The partitioning screen.

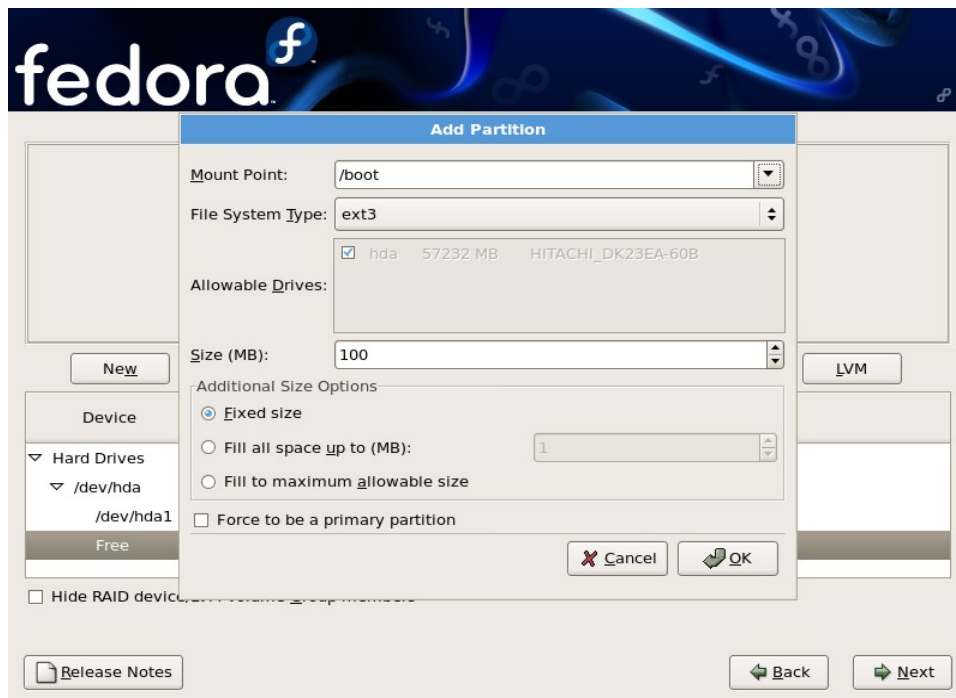
Choose "Create custom layout" as shown in Figure 8, and advance to the partition editor, shown in **Figure 9**.



**Figure 9.** The partition editor.

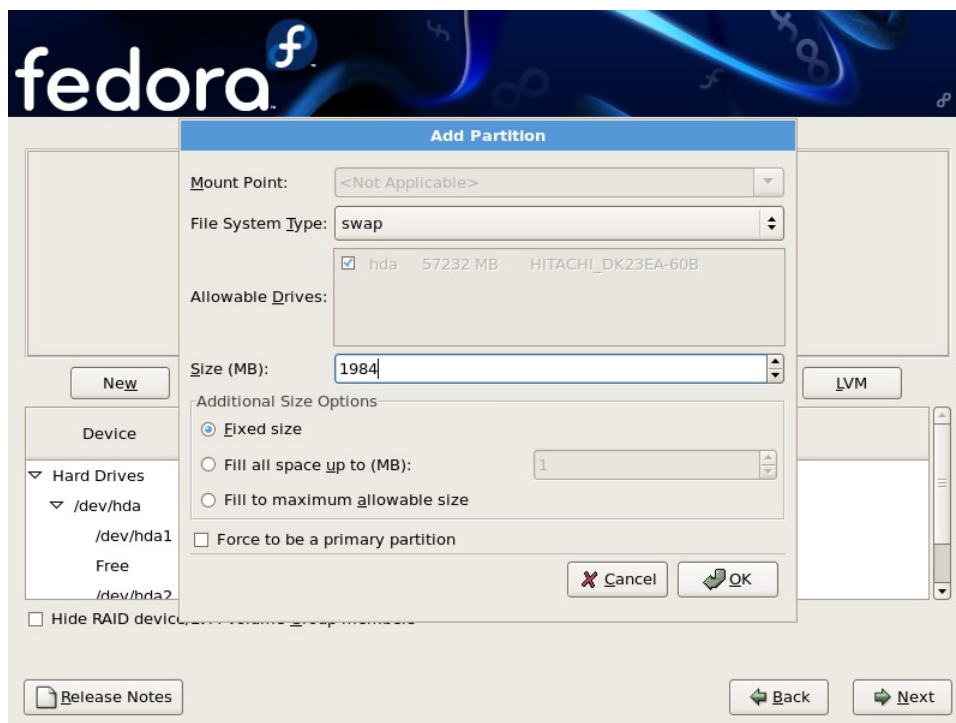
You'll be spending a bit of time here, so pay attention. As you can see in Figure 5, there's already a 10 GB partition allocated on the drive – and formatted as NTFS. That's our existing Windows partition. We're not going to mess with it. Instead, we're going to create several new partitions for our FC installation, all in the 47 GB of free space. Click "New" to open the Add Partition dialog as shown in **Figure 10**.





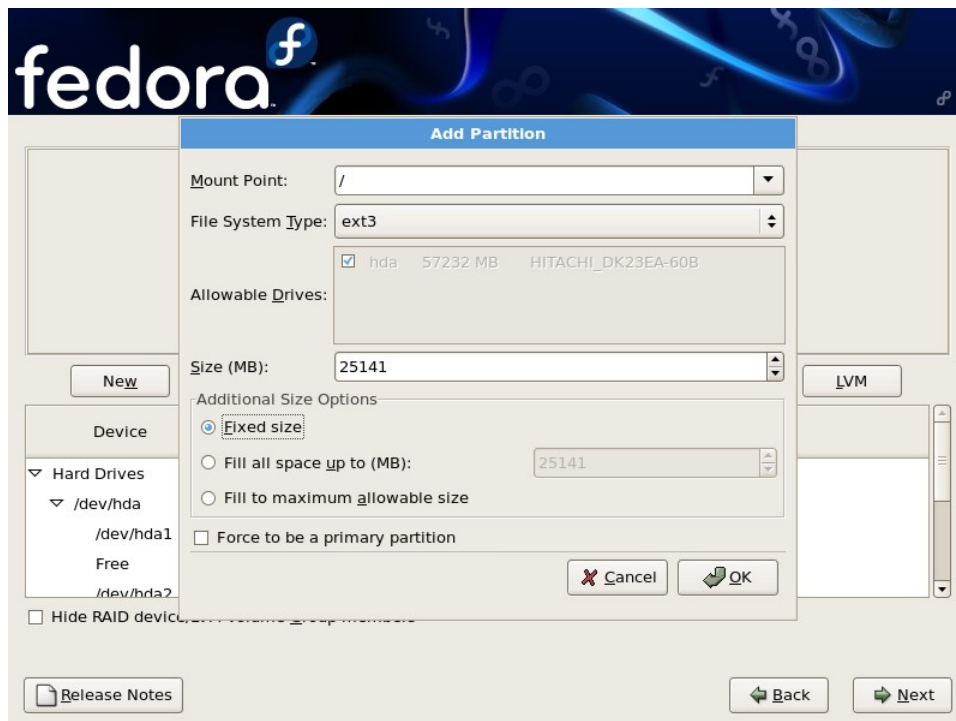
**Figure 10.** The Add Partition dialog.

Create a 100 MB (not GB) partition and set the mount point to be /boot. Click "OK" to create the partition and return to the partition editor. Next, click "New" and create a second partition for the swap file, as shown in **Figure 11**.

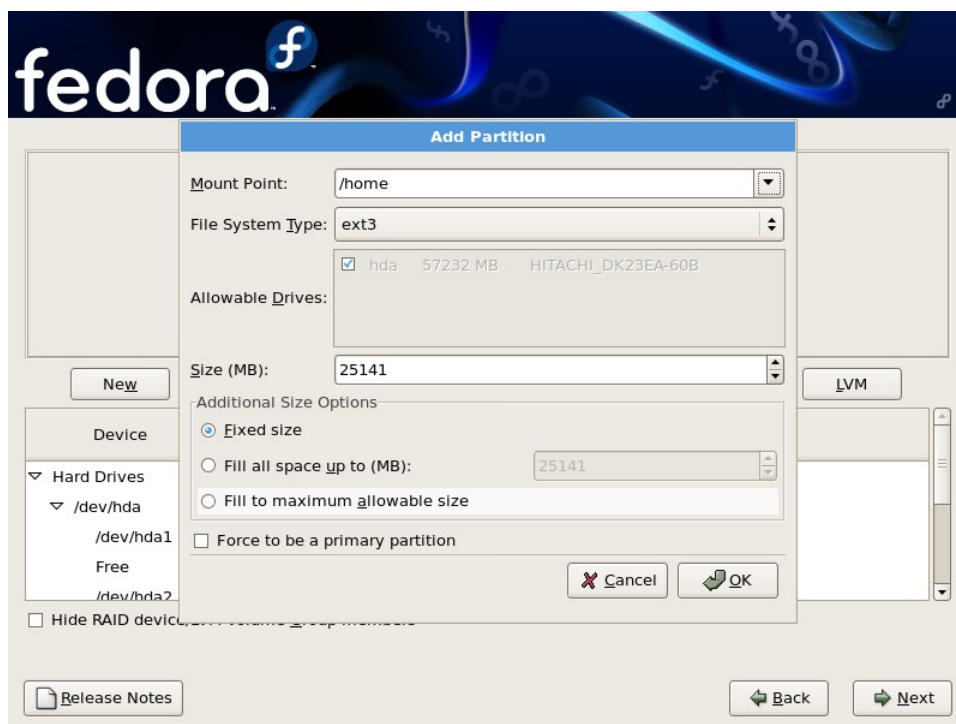


**Figure 11.** Adding a swap partition.

Size the swap partition to be twice the amount of RAM on your machine, and click OK to return to the partition editor. Create another partition for /, as shown in **Figure 12** and one more for /home, as shown in **Figure 13**.



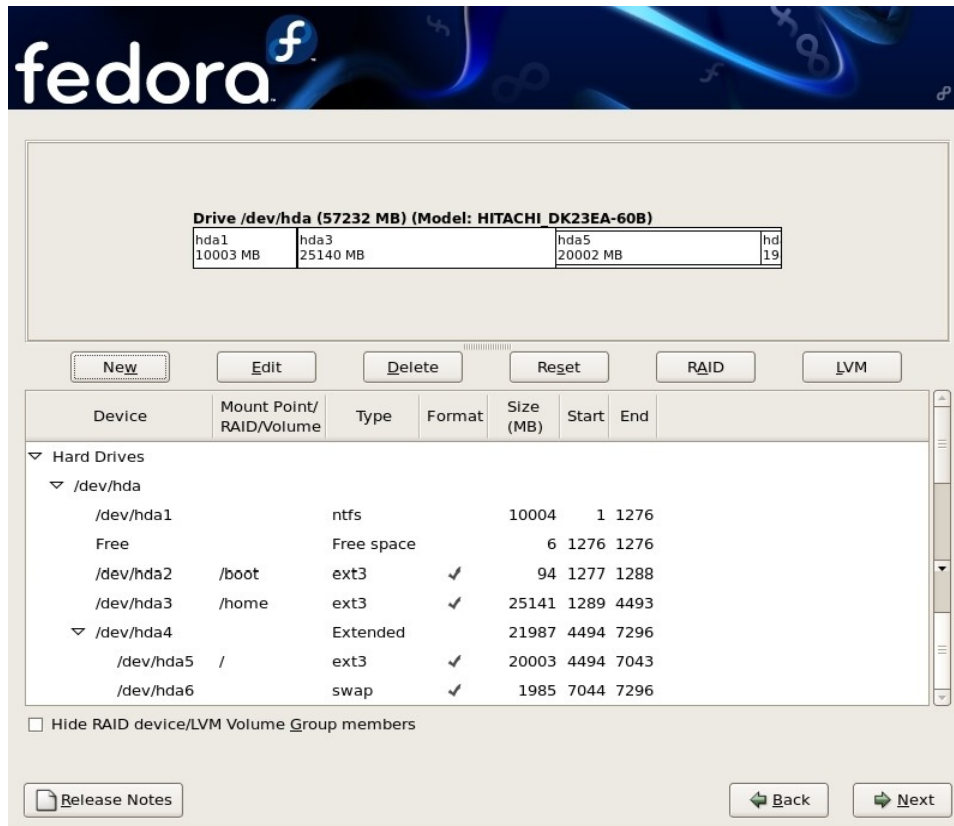
**Figure 12.** Creating the / partition.



**Figure 13.** Creating the /home partition.

How big to create the partitions? We had nearly 50 GB of space remaining, so I set aside 20 for / (which will include all the software we install as well as variable data like web pages, databases and log files) and 25 for /home.

Click the "OK" button in this dialog, and you'll see the new layout of partitions in the main partitioning screen as shown in **Figure 14**.

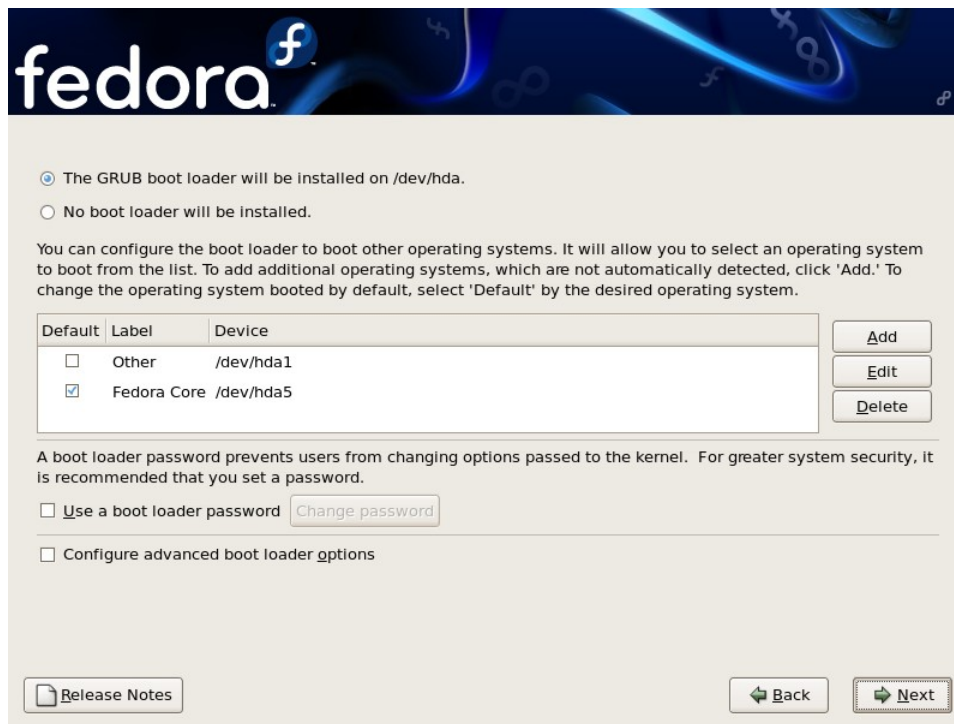


**Figure 14.** The Partition Editor screen with new partitions.

(If you're wondering why your screen doesn't fit as many lines in the list box as mine does in Figure 10, it's because I used everyone's friend, The GIMP, to merge parts of two screen shots' list boxes into one so that you could see all of the rows on one image.)

### 6.3. Configure the boot loader for Fedora Core 6 and Windows XP

Now on to the Boot Loader screen, the critical point of our effort to put FC and Windows XP on the same machine. See **Figure 15**.



**Figure 15.** The boot loader screen.

After you've done this a few times, the prompts on this screen make sense, but they may not your first time through. The "The GRUB boot loader..." option button is selected at the top of the screen. This means that FC's installation will create a second boot loader (in addition to the one that already exists for Windows).

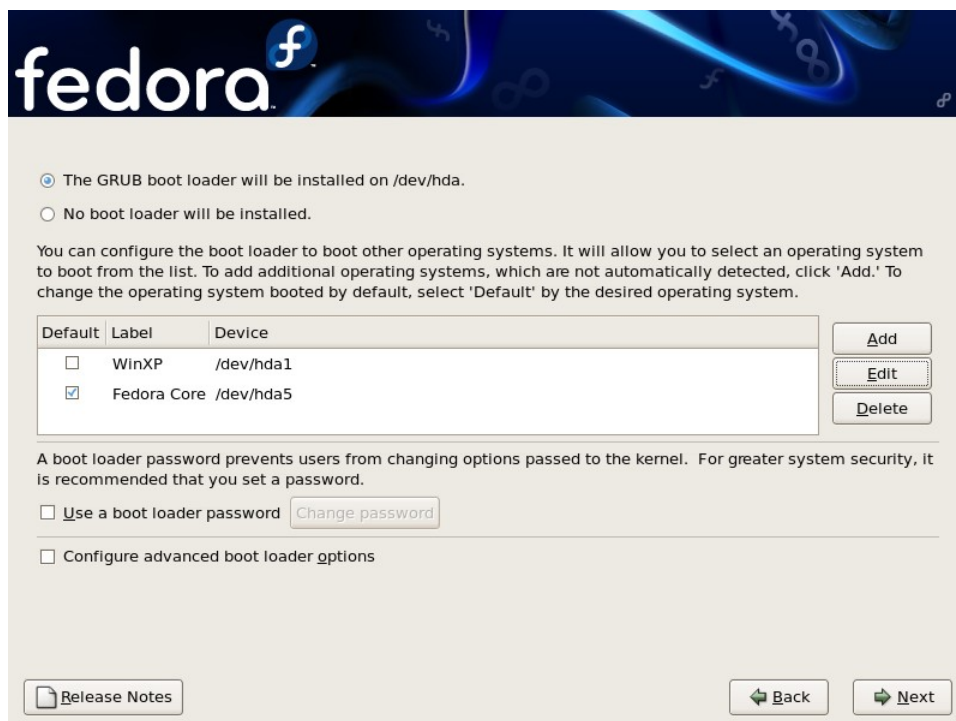
In the list box, you'll see that the Fedora Core item is selected. This means that the FC installation will replace the Windows XP pointer in the MBR with a pointer to the FC boot loader. However, the 'other' operating system (Windows XP) will also be included in the FC boot loader menu.

You can edit the "Other" prompt to be more friendly. Highlight the item in the list box, click "Edit" to open the "Image" dialog as shown in **Figure 16**.



**Figure 16.** Changing the prompt for the "Other" operating system.

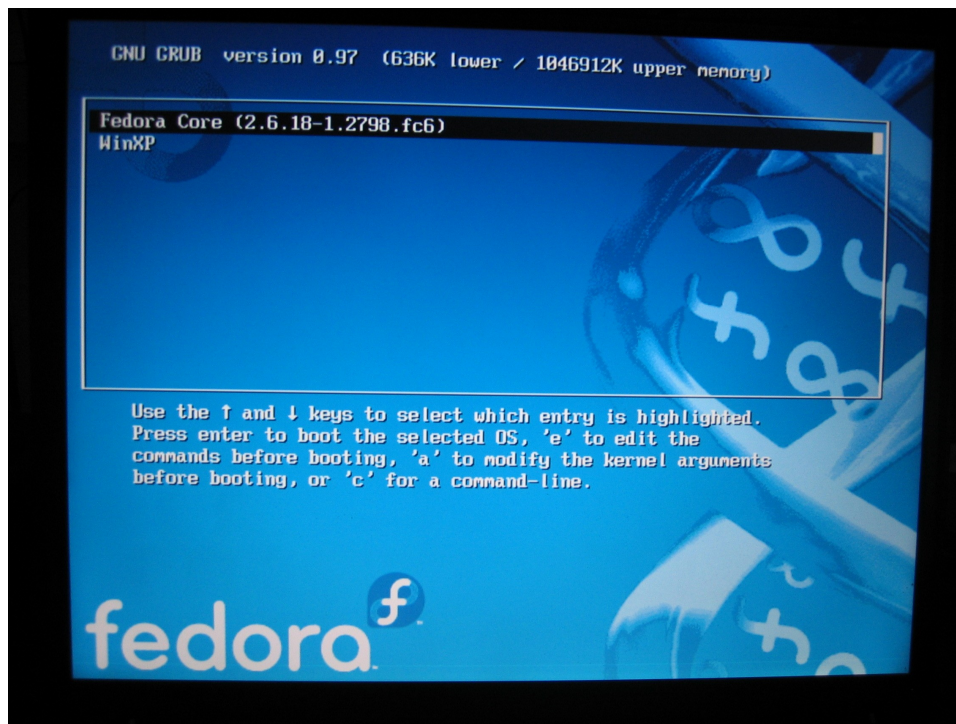
Change the label to something more to your liking, and click "OK". The results will be displayed in the partition editor as shown in **Figure 17**.



**Figure 17.** The "Other" operating system item with a friendlier label.

These items will also be displayed in the FC boot menu, as shown in **Figure 18**.





**Figure 18.** The contents of the Fedora Core 6 boot loader menu.

Once you update the Fedora Core kernel (as of this writing, the current version is .2894), you'll see new kernels displayed in this menu as well. You can go into the `/boot/grub/grub.conf` file and you'll see something like this:

```
# grub.conf generated by anaconda
#
# Note that you do not have to rerun grub after making changes to this file
# NOTICE: You have a /boot partition. This means that
#           all kernel and initrd paths are relative to /boot/, eg.
#           root (hd0,0)
#           kernel /vmlinuz-version ro root=/dev/VolGroup00/LogVol100
#           initrd /initrd-version.img
#boot=/dev/sda
default=0
timeout=5
#splashimage=(hd0,0)/grub/splash.xpm.gz
#hiddenmenu
title Fedora Core (2.6.18-1.2849.fc6)
    root (hd0,0)
    kernel /vmlinuz-2.6.18-1.2849.fc6 ro root=/dev/VolGroup00/LogVol100
    initrd /initrd-2.6.18-1.2849.fc6.img
title Fedora Core (2.6.18-1.2849.fc6xen)
    root (hd0,0)
    kernel /xen.gz-2.6.18-1.2849.fc6
    module /vmlinuz-2.6.18-1.2849.fc6xen ro root=/dev/VolGroup00/LogVol100
    module /initrd-2.6.18-1.2849.fc6xen.img
title Fedora Core (2.6.18-1.2798.fc6xen)
    root (hd0,0)
    kernel /xen.gz-2.6.18-1.2798.fc6
    module /vmlinuz-2.6.18-1.2798.fc6xen ro root=/dev/VolGroup00/LogVol100
    module /initrd-2.6.18-1.2798.fc6xen.img
title WinXP
    root (hd0,1)
```

```
chainloader +1
```

If you like, you can temporarily remove some of these entries simply by commenting them out with a "#" in front of the lines of (dis)interest.

## 7. Installing Windows from a Product Recovery CD

Life isn't always as smooth as described in Section 5. As mentioned in Section 2, after getting both Windows XP and Fedora Core running on the machine, I decided to do it again the right way, with the Product Recovery CD for this machine.

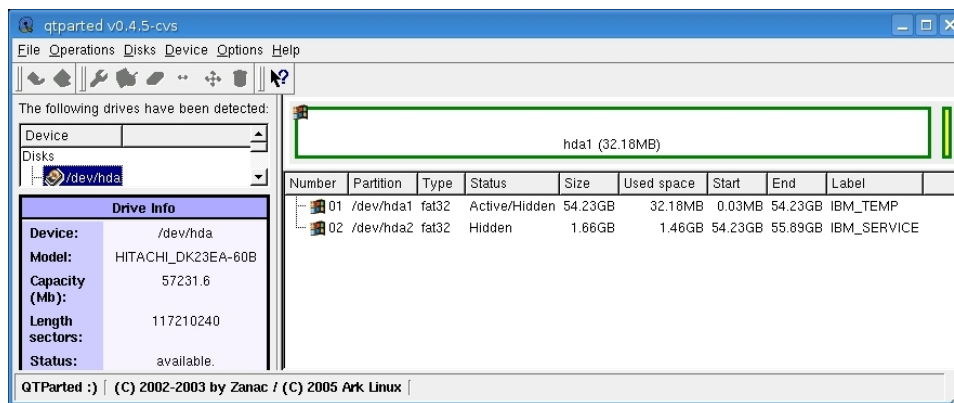
Like described in Section 3, you can't take an existing installation, stick the Product Recovery CDs in the drive, and expect it to overwrite the contents of the hard disk – you know, like the warnings upon boot of the first CD tells you it's going to. But it doesn't actually do that, at least not with the IBM Product Recover CDs for this Thinkpad. It appears that the recovery software is looking for a default partition table. When it doesn't find what it's looking for (either it doesn't exist, or it's not organized as it's expecting), the software terminates, but without any sort of message that it's doing so. Yes, this took me several attempted installations and reboots to figure out.

Anyways, here's how to do the installation of Windows XP from an IBM Product Recovery CD.

First, I'll assume that you've got a single, unformatted partition on your disk to start out with. See Section 4 if you've got the remnants of other partitions still laying around.

Second, pop the bootable Recovery CD into the drive and reboot. Follow the prompts and a hidden partition containing the contents of the Recovery CDs will be created on the hard disk. Eventually you'll be prompted to eject the last CD and reboot.

If you want to take a look at what your hard disk looks like now, boot up with Knoppix and use `qtparted` to see the partitions. You should see something like that shown in **Figure 19**.



**Figure 19.** Using `qtparted` to see the hidden Recovery Programs partition.

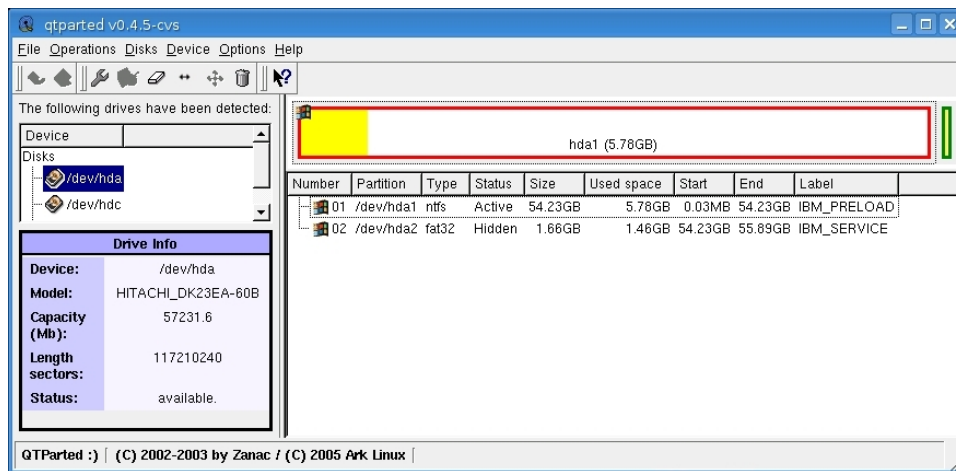
Third, reboot without any media in the drives. With a ThinkPad, the IBM splash screen prompts you to press F11 to invoke the IBM Recovery Program option. I've found this to be a touchy option; you can't just tap the key and let go. Rather, you have to press and hold it down until you see a text message, including a C:> prompt, flash by at the top of the screen. If you let go too soon, the machine will attempt to boot from the regular hard disk partition, which doesn't hold anything, resulting in a

```
Invalid system disk
Replace the disk, and then press any key
```

message.

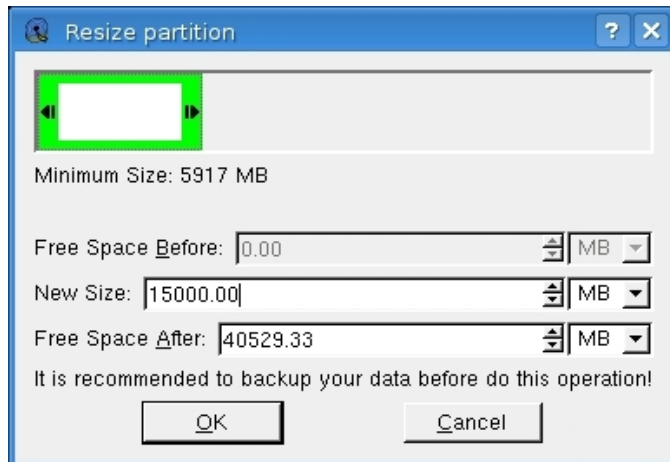
Upon successful initiation of the Recovery program, you'll be prompted to confirm that you understand that installing with the Recovery Programs will format your hard disk and do other irreversible things. Once you accept all of the

warnings, Windows XP will be installed. Unlike the install from an XP system disk, this install doesn't ask you any questions during Setup. Thus, you'll end up with an installation that takes up the entire hard disk (sans the small hidden partition that contains the Recovery Programs.) See **Figure 20**.



**Figure 20.** The new partition table with a factory version of Windows XP.

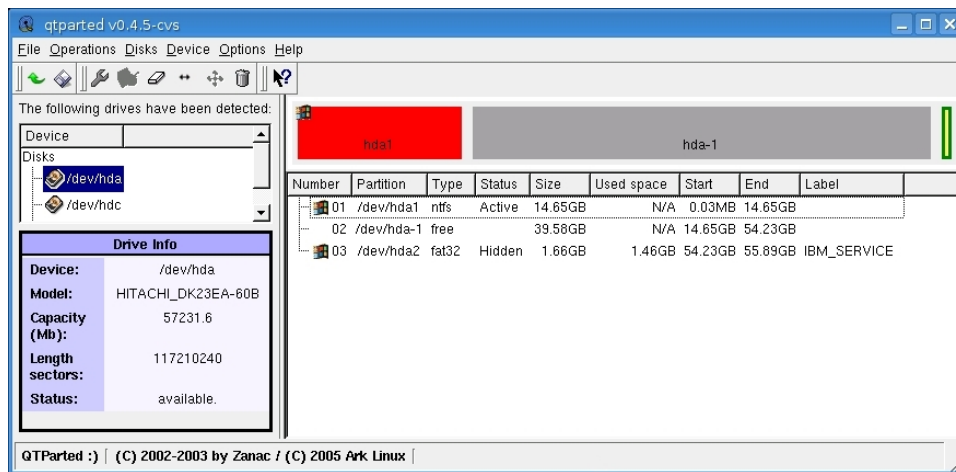
This isn't going to be satisfactory given our goal of having a dual boot machine, so while in qtparted, right-click on the IBM\_PRELOAD partition, select "Resize" and the Resize partition dialog will appear. Change the size of the partition to a more amenable value. On this 60 GB hard disk, 15 GB for Windows, leaving 40+ for other installations – given the couple of GBs taken up by the hidden Recovery Programs partition – seems reasonable. The resulting dialog is shown in **Figure 21**.



**Figure 21.** The Resize partition dialog with a more reasonable Windows partition size.

After you commit the change, you'll see your newly sized 15 GB Windows partion, /dev/hda1, and a free, /dev/hda-1 partition, just beckoning for another operating system to fill it up. See **Figure 22**.





**Figure 22.** The partition scheme with free space ready for more installations.

At this point, you're ready to start your Fedora Core installation, as described in Section 6.

## 8. Where to go for more information

This free article is published and distributed by Hentzenwerke Publishing, Inc. We have the largest lists of “Moving to Linux”, OpenOffice.org, and Visual FoxPro books on the planet.

We also have oodles of free articles on our website and more are being added regularly. Our Preferred Customer mailing list gets bi-monthly announcements of new articles (and gets discounts on our books, first crack at special deals, and other stuff as we think of it.)

Click on “Your Account” at [www.hentzenwerke.com](http://www.hentzenwerke.com) to get on our Preferred Customer list.

**If you found this article helpful, check out these Hentzenwerke Publishing books as well:**

**Linux Transfer for Windows® Network Admins:  
A roadmap for building a Linux file and print server  
Michael Jang**

**Linux Transfer for Windows® Power Users:  
Getting started with Linux for the desktop  
Whil Hentzen**

**Linux Transfer for Windows® Web Developers:  
A roadmap for setting up a Linux Web server  
Steve Suehring & Dee-Ann LeBlanc**

**MySQL Client-Server Applications with Visual FoxPro  
Whil Hentzen**

**OpenOffice.org Macros Explained  
Andrew Pitonyak**

**OooSwitch:**

**501 Things You Wanted To Know About Switching to OpenOffice.org from Microsoft Office®**

**Tamar E. Granor**

**The Tiny Guide to OpenOffice.org**

**Benjamin Horst**