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Beginning Fedora

From Novice to Professional

The complete guide to Fedora—includes everything you need to know to master this popular Linux-based operating system.

Shashank Sharma and Keir Thomas

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Beginning Fedora: From Novice to Professional

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The remainder of his time is devoted to his wife and children, and his part-time work as a professional musician.

CHAPTER 4

Preinstallation Steps

The first part of this book discussed the pros and cons of using Linux as part of your day-to-day life. It was intended to help you evaluate Linux and understand what you're buying into should you decide to make it your operating system of choice. Now, we move on to actually installing Linux and, specifically, Fedora, which is included with this book on a DVD.

Installing any kind of operating system is a big move and can come as something of a shock to your PC. However, Fedora makes this complicated maneuver as easy as possible. Its installation routines are very advanced compared to previous versions of Linux, and even compared to other current distributions.

What does saying that you're going to install Fedora actually mean? This effectively implies three things:

- Somehow all the files necessary to run Fedora are going to be put onto your hard disk.
- The PC will be configured so that it knows where to find these files when it first boots up.
- The Fedora operating system will be set up so that you can use it.

However, in order to do all this and get Fedora onto your PC, you must undertake some preparatory work, which is the focus of this chapter.

Understanding Partitioning

Chances are, if you're reading this book, your PC already has Windows installed on it. This won't present a problem. In most cases, Fedora can live happily alongside Windows in what's called a *dual-boot setup*, where you can choose at startup which operating system to run. However, installing Fedora means that Windows must make certain compromises. It needs to cohabit your hard disk with another operating system—something it isn't designed to do.

The main issue with such a situation is that Windows needs to shrink and make some space available for Fedora (unless you install a second hard disk, which is discussed later in this chapter). Fedora isn't able to use the same file system as Windows, and it needs its own separately defined part of the disk. Actually, it requires more than one part of the disk. Each of these parts is known as a *partition*. All of this can be handled automatically by the Fedora installation routine, but it's important that you know what happens.

All hard disks are split into partitions, which are large chunks of the disk created to hold operating systems (just like a large farm is partitioned into separate fields). A partition is usually multiple gigabytes in size, although it can be smaller. You can view your disk's partitions using the Disk Management tool in Windows XP and Windows 2000, as shown in Figure 4-1. You can access this tool by opening Control Panel, clicking the Administrative Tools icon, selecting Computer Management, and then choosing Disk Management.

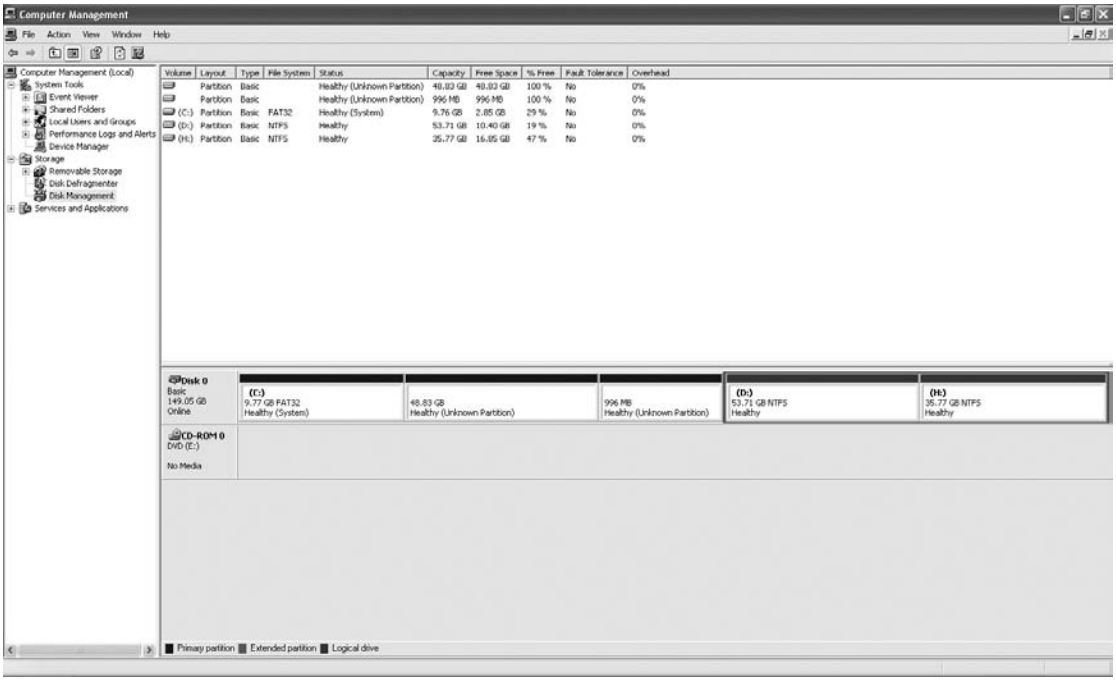

Figure 4-1. *You can view your disk's partitions using Windows XP's Disk Management tool.*

Most desktop PC systems have just one partition, unless the user has specifically created new partitions. As mentioned, Fedora needs two partitions of its own. During installation, Fedora creates fresh partitions alongside the Windows partition. It creates two partitions: the `/boot` and a Logical Volume Management (LVM) partition that contains root (`/`) and the swap partitions.

In addition, the Fedora installation routine writes a new *boot sector* (also known as a *boot loader*). The boot sector is located at the very beginning of the disk and contains a small program that then runs another program that lets you choose between operating systems (and therefore partitions) when you first boot up.

■ **Note** Not all Linux distributions have the ability to repartition the hard disk. In fact, at the time of writing, it's pretty rare. Most expect to simply take over the entire hard disk, wiping Windows in the process (although they'll always ask the user to confirm this beforehand). We suggest that you use the KNOPPIX Live CD to resize NTFS partitions.

Of course, Fedora cannot shrink a Windows partition that is packed full of data, because no space is available for it to reclaim; and perhaps more importantly, Fedora does not completely support NTFS yet.

FEDORA AND WINDOWS FILE SYSTEMS

One of the benefits of dual-booting Linux and Windows is that Fedora lets you access the files on the Windows partition. This is quite handy and facilitates the easy exchange of data.

If the Windows partition is FAT32—used on Windows 95, 98, Me, and (sometimes) XP—then Fedora can both read and write files to the partition. However, if the file system is NTFS—used with Windows NT, 2000, and (sometimes) XP—then Fedora will make the file system available as read-only. We discuss in Chapter 14 software that enables you to write to an NTFS partition.

Freeing Up Space

The first step before installing Fedora alongside Windows is to check how much free space you have in your Windows partition. To see the amount of free space you have, double-click My Computer, right-click your boot drive, and select Properties. The free space is usually indicated in purple on a pie-chart diagram, as shown in Figure 4-2.

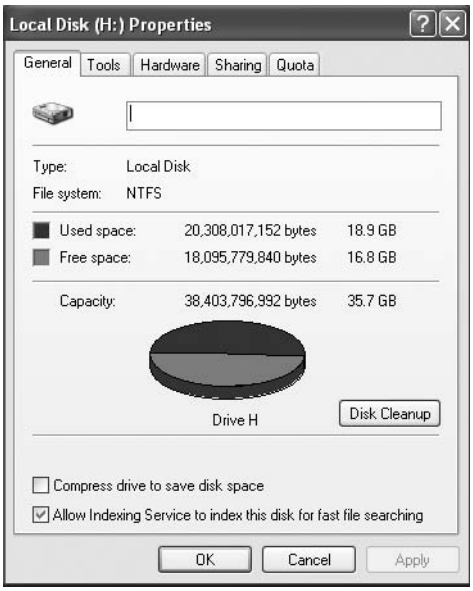

Figure 4-2. *Fedora needs free disk space in which to install, so you might need to clean up your Windows partition.*

You need to have at least 2 GB of free space in your Windows partition for Fedora to use. You'll need more space if you wish to install a lot of programs. If you don't have enough free space, you have several options: reclaim space, remove Windows, or use a second hard disk.

Reclaiming Space

On Windows XP, you can run the Disk Cleanup tool to free some space on your hard disk. Click the Disk Cleanup button beneath the pie-chart diagram showing the free disk space (see Figure 4-2). Disk Cleanup is also accessible by choosing Start ➤ All Programs ➤ Accessories ➤ System Tools ➤ Disk Cleanup.

You might also consider turning off System Restore. This consumes a lot of disk space, which you can therefore reclaim. However, deactivating System Restore will mean that you lose the possibility of returning your system to a previous state should anything go wrong. To access the System Restore control, right-click My Computer, click Properties, and then click the System Restore tab.

If you still cannot free up enough disk space, consider uninstalling unused software via the Add/Remove Programs applet within Control Panel. If you have any large games installed, consider removing them first, because they usually take up substantial amounts of hard disk space. You might also consider deleting movie and MP3 music files, which are renowned for eating up hard disk space. The average MP3 is around 4 MB, for example, and one minute of video at 240 × 180 resolution typically takes up 10 MB of disk space!

Removing Windows

Some users might prefer a second, more radical option: getting rid of Windows completely and letting Fedora take over the entire hard disk. If you feel confident that Fedora will fulfill your needs, this is undoubtedly the most straightforward solution. You'll be able to do this during installation. However, this will also mean that any personal data you have will be lost, so you should first back up your data (as described shortly).

■ **Caution** You should be aware that installing Windows back onto a hard disk that has Fedora on it is troublesome. Windows has a Darwinian desire to wipe out the competition. If you attempt to install Windows on a Fedora hard disk, it will overwrite Linux.

Using Another Hard Disk

A third option for making room for Fedora is attractive and somewhat safer in terms of avoiding the potential for data loss, but also potentially expensive: fitting a second hard disk to your PC. You can then install Fedora on this other hard disk, letting it take up the entire disk. Unlike Windows, Fedora doesn't need to be installed on the primary hard disk and is happy on a secondary drive.

A second hard disk is perhaps the best solution if you're low on disk space and want to retain Windows on your system. However, you'll need to know how to install the new drive or find someone to do it for you (although step-by-step guides can be found on the Web—just search using Google or another search engine). In addition, if your PC is less than 12 months old, there is a possibility that you'll invalidate your guarantee by opening up your PC.

If you have an old PC lying around, you might also consider installing Fedora on it, at least until you're sure that you want to run it on your main PC. As noted in Chapter 1, one of the best features of Fedora is that it runs relatively well on older hardware. For example, a Pentium II with 256 MB of memory should allow for a decent performance.

NO-INSTALL LINUX

If you want to use the Linux operating system but leave your hard disk untouched, you might consider a number of additional options. Perhaps the most popular is to use a "live" version of Linux. A live version of Linux is one that boots and runs entirely from a CD (or DVD); it doesn't touch the user's hard disk. The most popular is KNOPPIX (`www.knoppix.org/`). The distribution we discuss throughout this book, Fedora, also offers two live CD versions, albeit ones that can be installed as well.

Using Linux in this way involves downloading an ISO image (a single large file of around 650 MB), which then must be burned to CD using a Windows program like Nero. Once the CD has been created, you simply boot from it in order to run Linux (after you ensure that your PC's BIOS is set to boot from CD, as explained in Chapter 5).

Alternatively, you might consider using virtual PC software. This type of software runs under Windows and re-creates an entire PC hardware system within software—effectively a PC within a PC. The hard disk is contained within one or two Windows files. Linux can then be installed on these virtual PC systems. When the program is switched to full-screen mode, it's impossible to tell you're running inside a computer system created in software. Two commercially available examples are considered worthwhile by many: VMware (`www.vmware.com/`) and Microsoft's Virtual PC (`www.microsoft.com/windowsxp/virtualpc/`). You should be aware that both are designed to be professional-level tools, so they are quite expensive. You can also obtain open source renditions of virtual PC software, such as QEMU (`http://fabrice.bellard.free.fr/qemu/`).

Another option in its infancy at the time of writing is Cooperative Linux, or coLinux for short (`www.colinux.org/`). This is a set of Windows programs that aims to let Linux run under Windows using emulation. Unfortunately, setting up and using coLinux requires some expert knowledge, so you might want to wait until you have more experience with Linux.

Backing Up Your Data

Whichever route you decide to take when installing Fedora, you should back up the data currently on your computer beforehand. Possibly the easiest way of doing this is to burn the data to CD-R/RW discs using a program like Nero and a CD-R/RW drive.

If you take the coexistence route, installing Fedora alongside Windows, backing up your data should be done for insurance purposes. Although the Fedora Project tests all its software thoroughly and relies on community reporting of bugs, there's always the chance that something will go wrong. Repartitioning a hard disk is a major operation and carries with it the potential for data loss.

If you intend to erase the hard disk when installing Fedora (thereby removing Windows), you can back up your data, and then import it into Fedora.

Table 4-1 shows a list of common personal data file types, their file extensions, where they can be typically found on a Windows XP system, and notes on importing the data into Fedora. Note that earlier versions of Windows (95, 98, and Me) may differ when it comes to data storage locations.

Table 4-1. *Data That Should Be Backed Up*

Type of File	File Extensions	Typical Location	Notes
Office files	`.doc`, `.xls`, `.ppt`, `.pdf`, etc.	My Documents	Microsoft Office files can be opened, edited, and saved under Fedora using the OpenOffice.org suite. PDF documents can be viewed with the Evince program.
E-mail files	N/A	N/A	The Evolution mail client used by Fedora cannot import data directly from Microsoft Outlook or Outlook Express. However, there is a convoluted but effective workaround, which is described in the next section.
Digital images	`.jpg`, `.bmp`, `.tif`, `.png`, `.gif`, etc.	My Pictures (within My Documents)	Fedora includes a variety of programs to both view and edit image files.
Multimedia files	`.mp3`, `.mpg`, `.avi`, etc.	Various	With some additional downloads (discussed in Chapter 18), programs under Fedora can play MP3 music files and most movie file formats.
Internet Explorer Favorites	None	`\Documents and Settings\<username>\Favorites`	Your Favorites list cannot be imported into Fedora, but the individual files can be opened in a text editor in order to view their URLs, which can then be opened in the Fedora web browser.
Miscellaneous Internet files	Various	Various	You might also want to back up web site archives or instant messenger chat logs, although hidden data such as cookies cannot be imported.

Backing Up E-mail Files

Microsoft e-mail cannot be easily imported into Fedora because Microsoft prefers to create its own proprietary file formats, rather than use open standards recognized by the rest of industry. Most e-mail programs use the MBOX format, and this is true of Fedora as well as programs created by the Mozilla Foundation (the organization behind the Firefox web browser). However, Microsoft uses its own DBX file format for Outlook Express and PST format for Outlook.

As a workaround, you can download and install the free Mozilla Thunderbird e-mail client (available from `www.mozilla.com`) on your Windows system. In Thunderbird, select Tools ➤ Import to import your messages from Outlook, Outlook Express, or even the popular Eudora mail client. You will then be able to back up Thunderbird's mail files and import them into Evolution under Fedora.

To find where the mail files are stored, in Thunderbird, select Tools ➤ Account Settings, and then look in the Local Directory box. Back up each file that corresponds to a folder within your mail program—for example, `Inbox`, `Sent`, and so on. Note that you only need to back up the files *without* file extensions. You can ignore the `.sbd` folders as well as the `.msf` files.

Making Notes

When you're backing up data, a pencil and paper come in handy, too. You should write down any important usernames and passwords, such as those for your e-mail account and other online services. You might want to write down the phone number of your dial-up connection, for example, or your DSL/cable modem technical settings.

■ **Caution** Don't forget to back up "hidden" data, such as Internet passwords.

In addition, remember to jot down essential technical details, such as your IP address if you are part of a network of computers using static addresses (this will usually be relevant only if you work in an office environment).

■ **Tip** If you've forgotten any passwords, several freeware/shareware applications are able to "decode" the asterisks that obscure Windows passwords and show what's beneath them. A good example is Asterisk Password Reveal, which you can download from `www.paqtool.com/product/pass/pass_001.htm`. Sites like Download.com (`www.download.com/`) offer similar applications.

Note that you don't need to write down information such as hardware interrupt (IRQ) or memory addresses, because hardware is configured automatically by Fedora. However, it might be worth making a note of the make and model of some items of internal hardware, such as your graphics card, modem (dial-up, DSL, or cable), and sound card. This will help if Fedora is unable to automatically detect your hardware, although such a situation is fairly unlikely to arise. You can garner this information by right-clicking My Computer on your desktop, selecting Properties, and then clicking the Hardware tab. Then click the Device Manager button. Instead of writing everything down, you might consider taking a screenshot by pressing the Print Scr button and then using your favorite image editor to print it.

■ **Tip** Fedora works with a wide variety of hardware, and in most cases, it will automatically detect your system components. If you're in any doubt, you can consult the forums at `www.fedoraforum.org` (in particular, the Hardware Help forums). You might also consider subscribing to one or more of the Fedora mailing lists at `www.redhat.com/mailman/listinfo`. Remember that an important element of Fedora is its community of users, many of whom will be very willing to answer any questions you might have!

Once you're certain that all your data is backed up, you can move on to the next chapter, which provides a step-by-step guide to installing the operating system.

Summary

The aim of this chapter has been to prepare both you and your computer for the installation of Fedora. We've looked at how your hard disk will be partitioned prior to installation and the preparations you should make to ensure your hard disk has sufficient free space. You also learned about the types of files you might choose to back up, in addition to vital details you should record, such as usernames and passwords for your online accounts.

In the next chapter, we move on to a full description of the Fedora installation procedure, which will guide you through getting Fedora onto your computer.