



You use Windows, but are fascinated by Linux. Here is how you can use both (or even Windows NT with Windows 95/98) on a single hard disk

Are you paranoid that your operating system could crash at any moment? Or plain tired of trying out diagnostic utilities that promise you the sky but turn out to be unreliable?

Maybe you need to try another operating system. But transition from one operating system to another, or switching between two operating systems is not easy—applications belonging to one OS

may not work on the other. The best way to explore this option is to install and work with both operating systems on your PC, until you are sure that you can move to any one completely.

Caution

Fooling around with hard disk partitions is a dangerous business. If you are trying to get two operating systems on one system just because this article says it is

possible, beware.

This article is meant to be a general guide to the process, not a manual with very precise instructions. Before you attempt the changes suggested in this article you must get very familiar with disk layout.

Preparations

Before you get down into tackling the problem, get braced. First, take backups of

Why should you have more than one OS?

- 1 You like to be one step ahead of everybody else. So when everyone uses one operating system, you use two.
- 1 Your standard operating system does not support some hardware while some other hardware is unsupported on the other OS.
- 1 Your standard operating system crashes often, while your ideal OS suffers from a dearth of applications.
- 1 You want to change operating systems but are not sure if you are ready for the move.
- 1 You are a developer who loves one operating system but needs to develop applications for the other.
- 1 You are not a developer, but your job requires you to spend your time with an operating system that you would rather not use.

all your data. You could end up formatting your hard disk, so be prepared. Taking a backup in another area of your hard disk is not a very good idea. This *might* work, but if you find a better solution, go for it. A better option is getting a backup on a CD, and if that is not possible, on floppies.

Also get yourself a boot diskette. You will need this if something goes wrong and you find that you cannot boot up anymore. A standard Windows boot diskette will do fine here. Check if your secondary operating system requires to be installed on a partition of its own. Although it is not recommended, some will even work on a FAT-16 (not FAT-32) partition with Windows already on it. Windows NT allows this, Red Hat Linux does not (some other Linux distributions like Slackware and S.u.S.E. do, but their installation procedures are not as simple as Red Hat's).

Steps: Let the process begin!

1. If you will be installing on different partitions, you will first need to repartition your hard disk. If you have not installed Partition Magic as yet, do it now. Then start Partition Magic using its icon in the Windows Start Menu. When prompted about having to switch to MS-DOS mode, choose Yes. After Partition Magic starts,

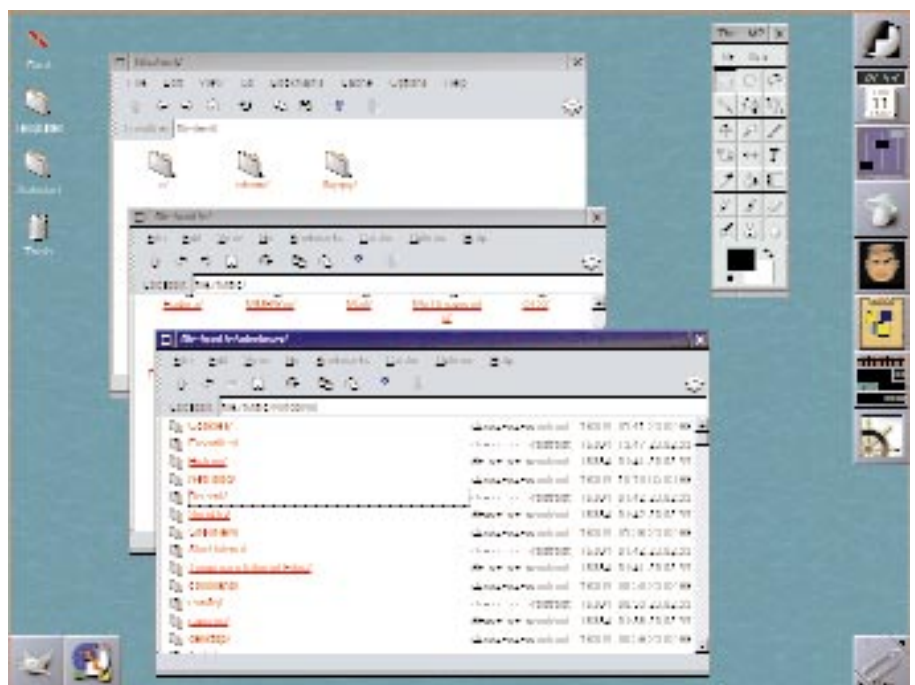
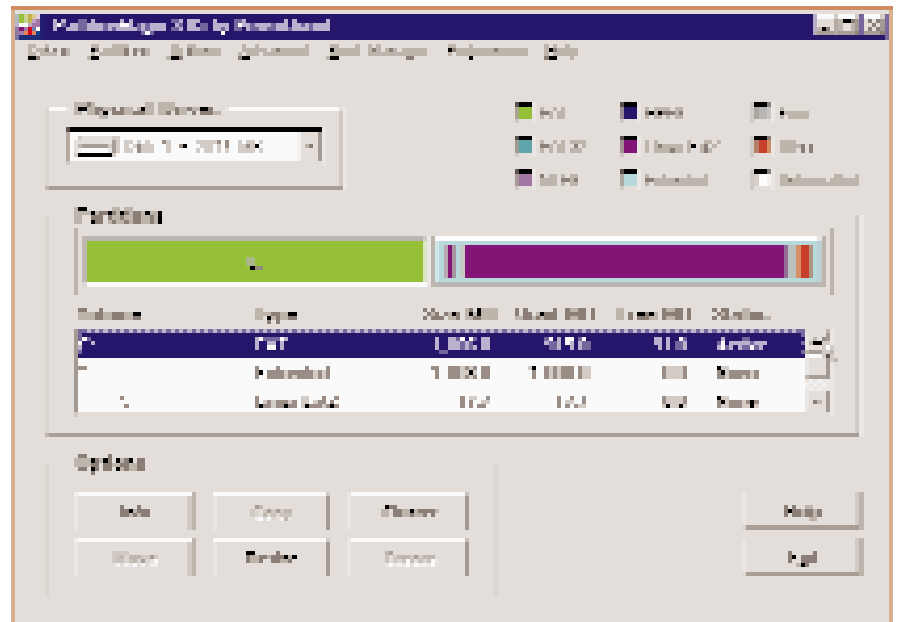
you will see a list of partitions on your hard disk.

2. Check if you have enough free space in the partition table (not your 'C' drive) for your new operating system. About 500 MB of disk space is recommended. If you do, exit Partition Magic and skip to the next step. If not, check your existing DOS partitions for any free space (C: for example). If you still don't

have the required amount of disk space, exit Partition Magic, free up some disk space, and start all over again. If you do have the required disk space, resize the partition with the free space, so as to shrink it by about 500 MB.

3. The actual installation process begins here. We will start with Linux first, skip to Step 6 for Windows NT.

Insert the first Red Hat CD into your



You can access your Windows partitions from within Linux



1 I cannot boot, my system crashes after the BIOS initialises.

Your hard disk's partitioning got trashed. The only solution now is to boot using the boot diskette. Repartition your hard disk using FDISK, install Windows 95 or whatever operating system you used before, and restore your backup. If you were naive enough to keep your backup somewhere on your hard disk itself, you may now also arrange for its funeral.

2 I cannot boot from a boot diskette or boot CD. My hard disk starts to boot in spite of the floppy in the drive.

Your BIOS has been set to boot from your hard disk always. You will need to change the boot sequence in your BIOS. Refer to Step 3.

3 I reinstalled Windows 95 and now LILO boot is gone!

drive. If you have an older BIOS that does not support booting off a CD, insert the installation floppy into your floppy drive. Reboot your system and then enter your BIOS. Select the second option, Advanced configuration. Then check the boot sequence: the CD-ROM or A: option (depending on which you will use), should come first, before C:. Use [PgUp] and [PgDn] to choose values. Press [Esc] when done, then select Save and Exit.

4. Your system will now boot up into Red Hat Linux installation. Press [Enter] at the boot prompt, then follow the instructions displayed on screen. When asked if you want to use the entire hard disk for Linux, select No. When warned about losing all your existing Linux partitions, select Yes.

5. Red Hat setup will reboot your system after the installation is complete. Remove the CD and/or floppy from your drive now or the installation process will start all over again. When confronted with a LILO boot: message, type linux or just

Windows 95 removed LILO boot to install its own boot manager—a boot manager that allows you to boot only into Windows. The simplest solution to this is to boot using your Linux boot diskette and then restore LILO. A roundabout solution, if you don't have a boot diskette, is to use the Ext2 file system drivers for Windows 95 to extract the Linux boot image from your Linux Ext2 partition, then use LoadLin to boot into Linux. Both Ext2FS and LoadLin are available for free from the Internet. LoadLin is also a workable solution if you want to use Linux without using LILO.

To reinstall LILO (if Windows removed it or you have changed the configuration file), login to Linux as root and type /sbin/lilo.

4 What do I do after the LILO prompt? Pressing Enter takes me into Linux.

When the LILO prompt comes up, type 'dos' and press [Enter] to boot into Windows 95. Pressing the [Tab] key at the prompt

will give you a list of choices. You can later configure LILO to boot into Windows by default instead of Linux. To do this, once in Linux, edit the file /etc/lilo.conf. For details on this file's contents, type man lilo.conf at the command prompt. LILO lets you try some really interesting tricks, like making the boot prompt appear only on request.

5 How do I change the 30 second timeout at the NT boot prompt?

Within NT, open Control Panel, then Startup/Shut-down. Change the boot timeout from here. If you would rather have the NT loader wait till you make your choice, use Notepad to open boot.ini in the root directory of your NT partition, then set the boot timeout to -1.

Top Goof-ups

1. System crashes during boot
2. Hard disk backup placed on hard disk itself
3. Partition table manhandled
4. Windows 95 installed after Linux

Incompatible couples

Windows 95 and Windows 98 cannot be installed in dual-boot mode as-is, because neither of them comes with a boot manager. You can however use the boot manager of another operating system such as Linux's LILO (LILO Loader), or Windows NT's NT Loader. Or you could use Partition Magic's Boot Manager too

press [Enter] to boot into Linux. Type dos to boot into Windows.

6. You can install Windows NT 4.0 into either an existing partition that already has Windows 95/98 on it, or into a new partition. NT supports only FAT-16 and NTFS partition types, it cannot be installed on to a FAT-32 partition. Installing into a different partition is recommended because both 95/98 and NT use the Program Files directory for applications.

7. Start installing NT. When asked for the directory to install to, do not use the same directory as your existing Windows installation. Like Linux, NT will automatically set up a dual boot system.

8. When you reboot, NT Loader will present a boot menu with Windows 9x as the default option. Use the arrow keys to select the operating system you want to boot into. NT Loader will boot into the default operating system after an inactivity timeout limit of 30 seconds. This limit is configurable.

Checklist

Make sure you are equipped with these before you proceed:

1. Partition Magic or any other such partition management software. If you cannot find any, you will have to repartition your hard disk using FDISK, which will essentially require you to format your drive and lose your data.
2. FIPS: This is a simple, free, partition splitting utility. Use it if you cannot get Partition Magic.
3. Boot diskette, in case something goes wrong.
4. Your secondary operating system. This workshop describes combining Windows 95/98 with Red Hat Linux 5.2 or Windows NT 4.0.

Conclusion

Working with multiple operating systems can be a very interesting experience. Apart from the frustration of finding that little of what you know of one operating system will work on another, you will also learn to understand why no two operating systems (even two different flavours of Linux) are the same, what goes into making an operating system an operating system, and more.

KIRAN JONNALAGADDA