2. INSTALLATION OF SUSE
## 2.1.   PREINSTALLATION STEPS
2.1.1. Overview

Installing any kind of operating system is a big move and can come as something of a shock to our PC. However, SUSE Linux makes this complicated task as easy as it's possible to be. Its installation routines are very advanced compared to previous versions of Linux, and even compared to other current distributions. It even puts the Windows installation routine to shame.

However, in order to do all this and get SUSE Linux onto our PC, we must undertake some preparatory work, which is the focus of this experiment.

2.1.2. Freeing Up Space

The first step before installing SUSE Linux alongside Windows is to check how much free space we have in our Windows partition and possibly free up some space. To see the amount of free space we have, double-click My Computer, right-click our boot drive, and select Properties. The free space is usually indicated in purple on a pie-chart diagram, as shown in. figure.

We need to have at least 2GB of free space in our Windows partition for SUSE Linux to use. We'll need more space if we wish to install a lot of programs. If we don't have enough free space, we have several options
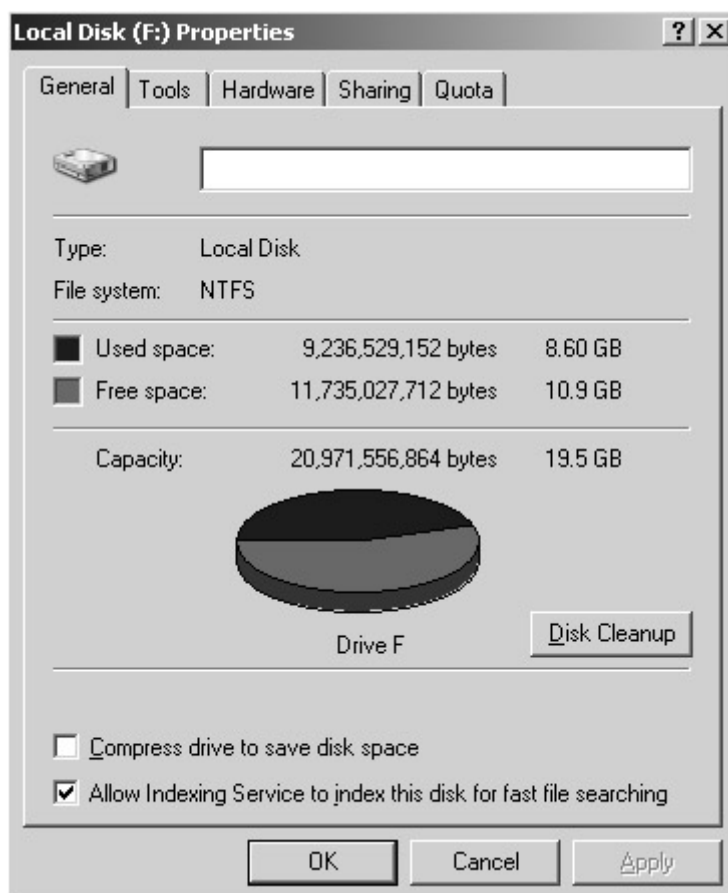
2.1.3. Backing Up Our Data

Whichever route we decide to take when installing SUSE Linux, we should back up the data currently on our computer beforehand. Possibly the easiest way of doing this is to burn the data to CD-R/RW discs using a program like Ahead's Nero and a CD-R/RW drive.

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

If we intend to erase the hard disk when installing SUSE Linux (thereby removing Windows), we can back up our data, and then import it into SUSE Linux.

2.1.4. Understanding Partitioning

Our PC already has Windows installed on it. This won't present a problem. In most cases, SUSE Linux can live happily alongside Windows in what's called a dual-boot setup, where we can choose at startup which operating system to run. However, installing SUSE Linux means that Windows must make certain compromises. It needs to cohabit our 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 SUSE Linux (unless we install a second hard disk, which we discuss later). SUSE Linux isn't able to use the same file system as Windows, and it needs its own separately defined part of the disk, which is referred to as a partition. All of this is handled automatically by the SUSE Linux installation routine, but it's important that we 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, although it can be smaller. We can view our disk's partitions using the Disk Management tool in Windows XP and Windows 2000, as shown in Figure. We can access this tool by opening Control Panel, clicking the Administrative Tools icon, selecting Computer Management, and then choosing Disk Management.

On most desktop PC systems, there's just one partition, unless the user has specifically created new partitions. As I mentioned, SUSE Linux needs a partition of its own. During installation, SUSE Linux needs to shrink the main Windows partition and create a fresh partition alongside it (actually, it creates two partitions; the extra one is used to hold the swap file).
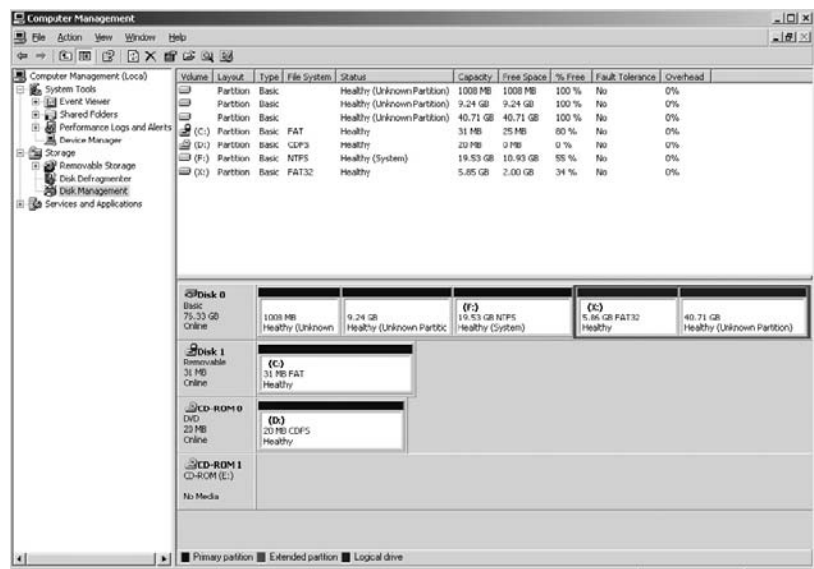
In addition, the SUSE Linux installation routine writes a new boot sector (also known as a boot loader). This is a small program at the very front of the disk that runs a separate program that lets we choose between operating systems (and therefore partitions) when we first boot up.

2.2.   INSTALLING SUSE LINUX

2.2.1. Overview of the Installation Process

Installing SUSE Linux requires little of the user beyond the ability to use a mouse. The installation program attempts to choose safe default choices in most cases and, if it intends to do something that involves deleting data, it will ensure that we're aware of this by highlighting the option in red on the main menu. In nearly all cases, we should be able to accept the default choices.

We can proceed through the installation by clicking the Next button at the bottom right of each page of choices. Wherever a series of options needs to be confirmed, we should click the Accept button if we're happy with the selections. If not, make our changes, and then click Accept.

No changes will be made to our system until we confirm our choices later on, just prior to starting to copy the files onto our hard disk. This means that we can experiment with different partition combinations, for example, without worrying about damaging or otherwise irreversibly affecting our system. It also means that we can abort installation at any time prior to the file-copying phase.
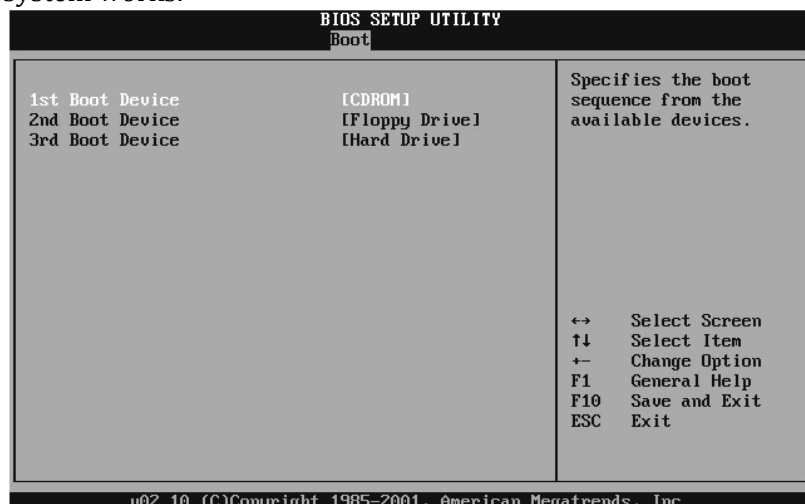
2.2.2. Boot from the DVD

With our computer booted up, insert the SUSE Linux disc into the DVD-ROM drive. Close the tray, and then reboot our computer.

SUSE Linux is installed by booting the installation program from DVD. Therefore, the first step is to ensure our computer's BIOS is set to boot from the DVD-ROM drive. How this is achieved varies from computer to computer. However, most PCs let we enter the BIOS setup program by pressing the Delete key just after the computer is first activated, although some use another key or key combination.

When the BIOS menu appears, look for an option such as "Boot" and select it (we can usually navigate around the screen of the BIOS menu using the cursor keys and select options by pressing Enter). On the new menu, look for a separate entry such as "Boot Device Priority" or perhaps "Boot Sequence." Ensure that the entry for the CD/DVD-ROM is at the top of the list, as shown in the example in Figure. Arrange the list so that it's followed by the floppy drive and then our main hard disk (which will probably be identified as "IDE-0" or "First hard disk"). We can usually press the F1 key for help on how the menu selection system works.
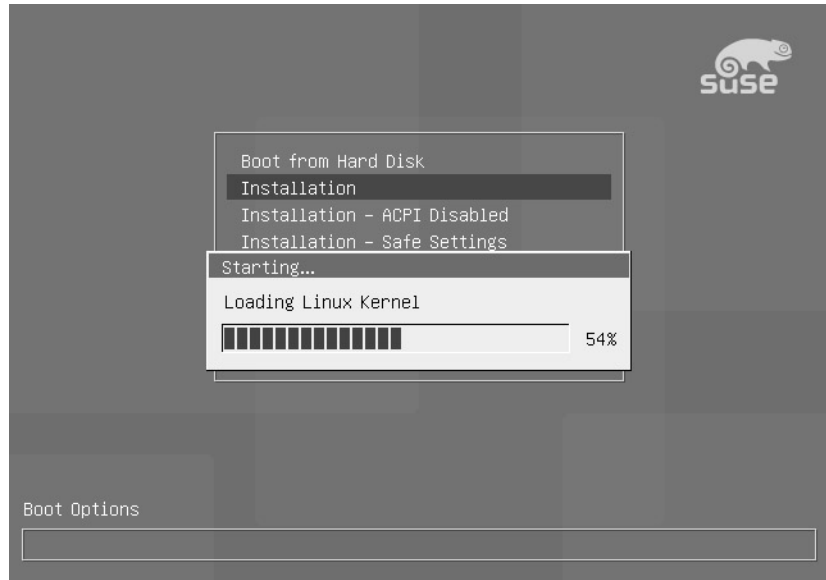
Once we've made the changes, be sure to select the "Exit saving changes" option. Our PC will then reset and boot from the SUSE Linux DVD-ROM, and we'll be greeted by the blue SUSE welcome screen.

```
                          BIOS SETUP UTILITY
                               Boot

                                                    Specifies the boot
                                                    sequence from the
     1st Boot Device            [CDROM]             available devices.
     2nd Boot Device            [Floppy Drive]
     3rd Boot Device            [Hard Drive]




                                                    ↔     Select Screen
                                                    ↑↓    Select Item
                                                    ←–    Change Option
                                                    F1    General Help
                                                    F10   Save and Exit
                                                    ESC   Exit



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2.2.3. Select to Install

After the welcome screen, we should see the DVD-ROM boot menu. From here, we can select to install SUSE Linux (use the cursor keys to move the selection up and down), so do so, as shown in Figure.

Note that we can also choose to boot from the hard disk, avoiding installing Linux, or we can boot to a rescue system, which will help we fix problems that might arise in the future (in other words, we can also use the SUSE Linux installation DVD as a rescue disc). There's also the option to install Linux using "Safe settings," which will use a text-based installer with many potentially troublesome options deactivated (such as certain power-saving options and performance tweaks, which can cause incompatibilities). This is useful if we run into installation problems, although it isn't necessary in the majority of cases.

2.2.4. Select Our Language

SUSE Linux is a fully internationalized operating system, and one of the first steps is to select the language we wish to use during installation, as shown in Figure. The default is English (US), although there are other variations of English available for other countries, such as the United Kingdom. After we've selected our language, click the Accept button at the bottom right.
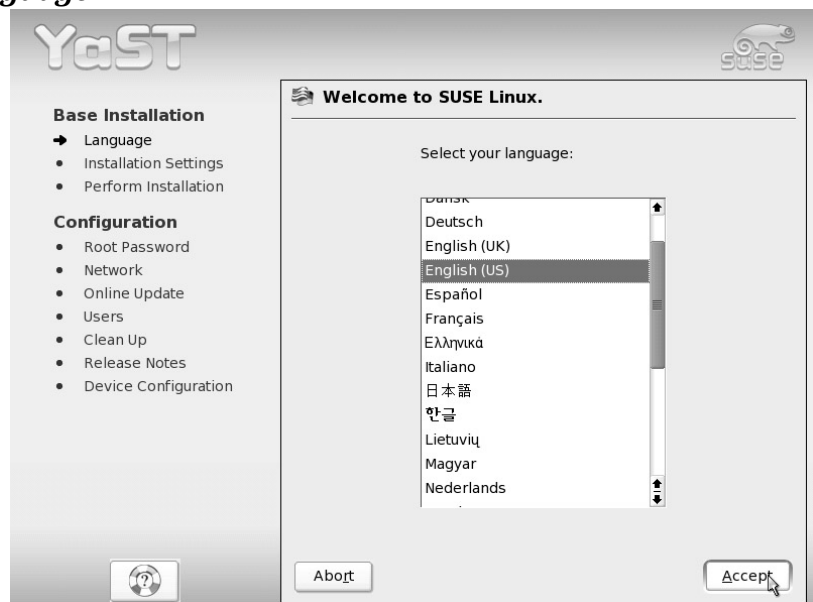
2.2.5. Partition the Disk

Partitioning the disk is one of the most important steps during installation although, unfortunately, it's one that's also couched in difficult terminology. However, SUSE Linux does a good job of making it easy to understand.

We have three main options related to disk partitioning: install on a hard disk that also has Windows, install on a second hard disk, or delete the Windows partition.

Sharing a Hard Disk with Windows

If we're installing SUSE Linux on a hard disk that has Windows on it, by default, SUSE Linux will shrink the Windows partition to make space (provided we have enough free space). In the free space, it will automatically create two new partitions: one for data such as programs, known as the root partition, and one for the swap file. (By default, on Linux systems, the swap data is held in its own partition, rather than sharing the main hard disk, as with Windows.)

SUSE Linux will make as much space as possible for the main Linux partition when it resizes Windows. Select the "Base partition setup on this proposal"option. The next screen will show a list of the partitions. Select our Windows partition—it will be marked either FAT32 or HPFS/NTFS—and click the Edit button. We'll see a graphical display along with a slider, which we can click and drag to alter the sizes of the two partitions, as shown in Figure. There's no hard-and-fast rule for the partition sizes, apart from the fact that the SUSE Linux root partition should be at least 2GB in size (if we intend to install a lot of software, we should consider a partition of 5GB or more).

When we're satisfied with the partition setup, click OK, and then click Next on the following screen. Click Finish to complete our changes.
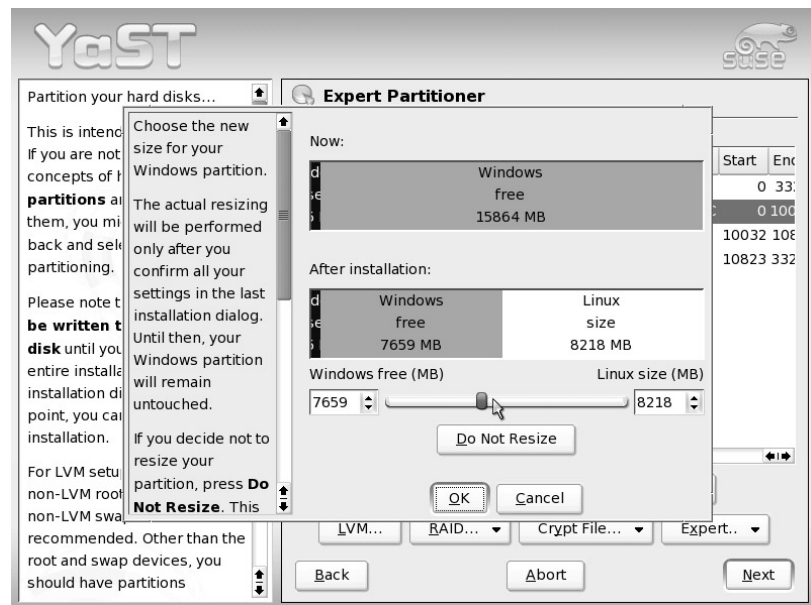
2.2.6. Set the Time Zone

The next step is to set the time zone for where we are. This will mean that SUSE Linux can automatically take into account schemes such as daylight saving time. A list of countries and continents appears on the left side of the screen, and the relevant time zones are listed on the right side, as shown in Figure.

UTC is another way of referring to Greenwich Mean Time (GMT). If we want to match our PC's clock with GMT, select this option. When we've made our selection, click the Accept button.
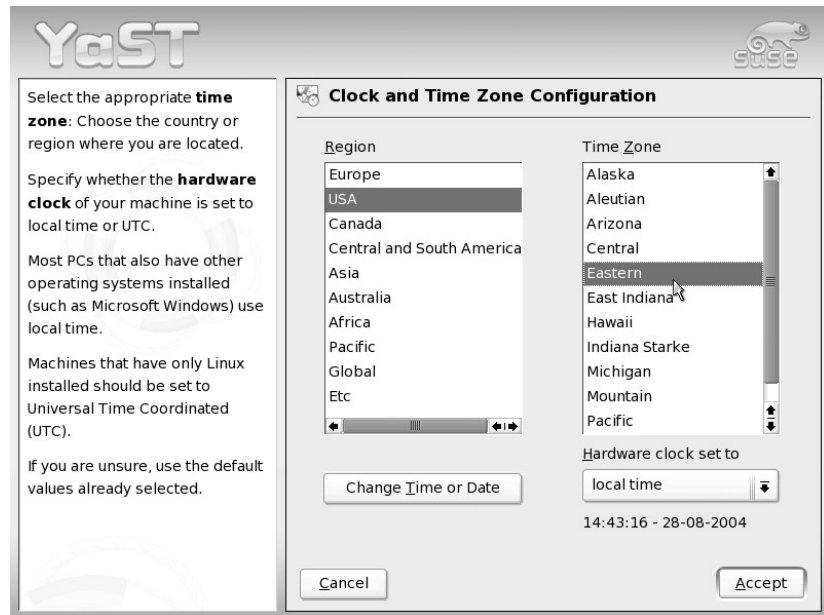
2.2.7. Choose Installation Settings

An Installation Settings screen will then appear, as shown in Figure. This screen lays out the default installation choices, such as which software will be installed, how the hard disk will be partitioned, and much more. We can move through these settings using the scroll bar on the right side of the screen. On the left side of the screen, an installation progress display shows where we're up to in the procedure. This will stay on our screen throughout the installation process.

The default installation choices are usually correct, and the user in a hurry can simply click the Accept button at this stage. However, it's a good idea to check through the selections, to be sure that we're happy with the changes that will be made to our system and avoid the possibility of overwriting existing data.
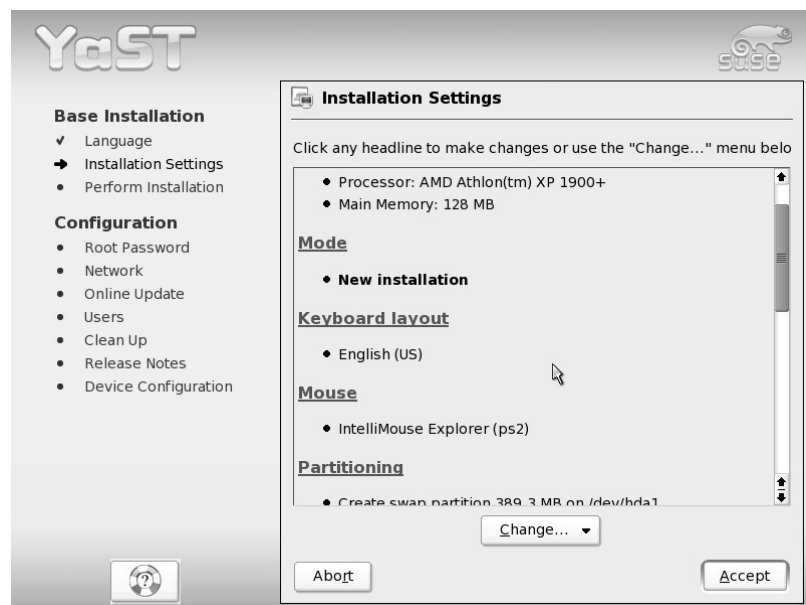
Rather like a web browser, each heading in the list can be clicked to reveal a fresh page full of details and configurable options. For example, we might choose to edit the selection of software that will be installed. By default, SUSE Linux installs a fully functional system, which includes the KDE desktop, OpenOffice.org office suite, help and support documents, and a handful of other essential programs. This makes for a system that offers everything we need but isn't too overwhelming. However, it's possible to select more software by clicking the Software heading, and then clicking the Detailed Selection button. Once we do this, we'll

see the screen shown in Figure. The software is arranged into groups on the left side of the screen, and the right side shows a list of the individual software packages, which will be installed as part of the larger group.

When we're satisfied with our selection, click the Accept button.
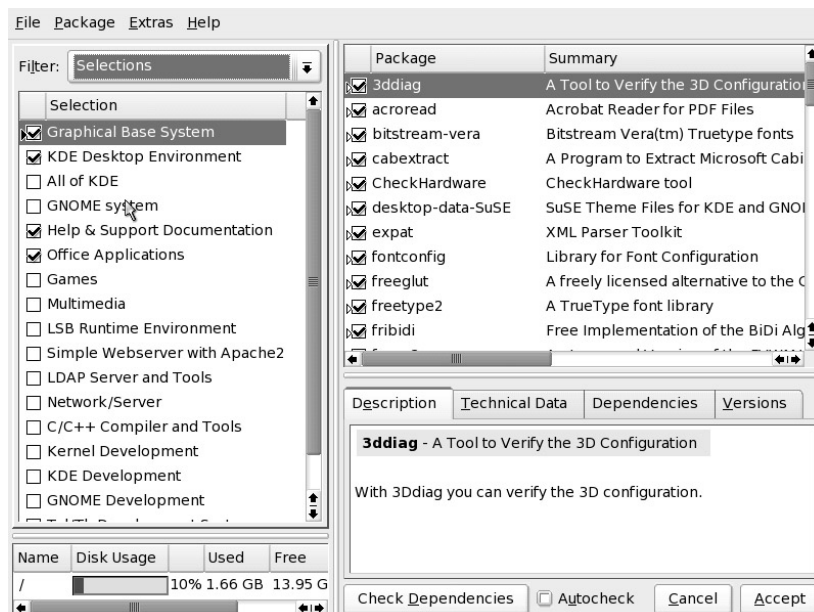
2.2.8. Start Installation

The next step is to click the Yes, Install button, as shown in Figure. This will start the full installation, and the program will copy SUSE Linux files onto your hard disk. Before doing so, be sure to check all the installation options to make sure they're correct, particularly with regard to hard disk partitioning. Installation will take between 30 and 60 minutes, depending on the speed of your PC.
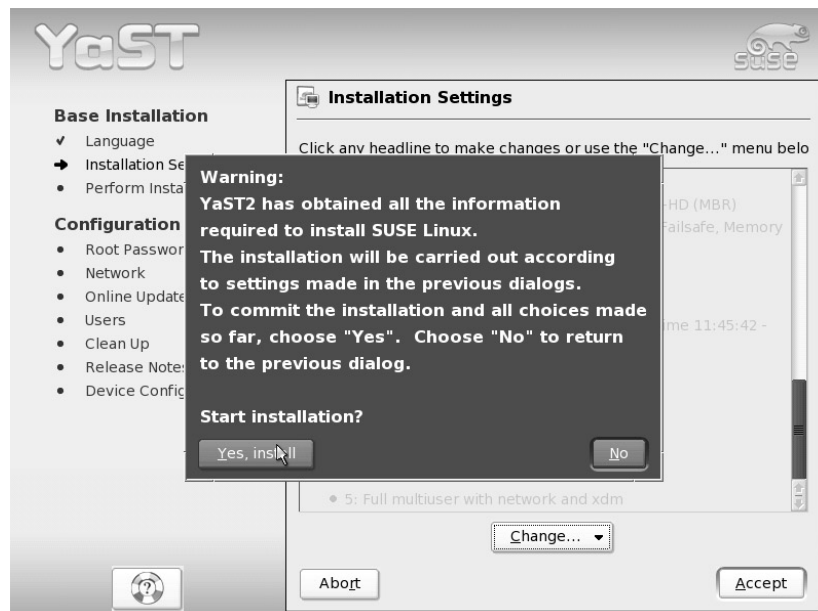
2.2.9. Monitor the Installation

Although there's no real need to, you can monitor the installation progress and read the on-screen messages that point out some of SUSE Linux's main features, as shown in Figure. By clicking the
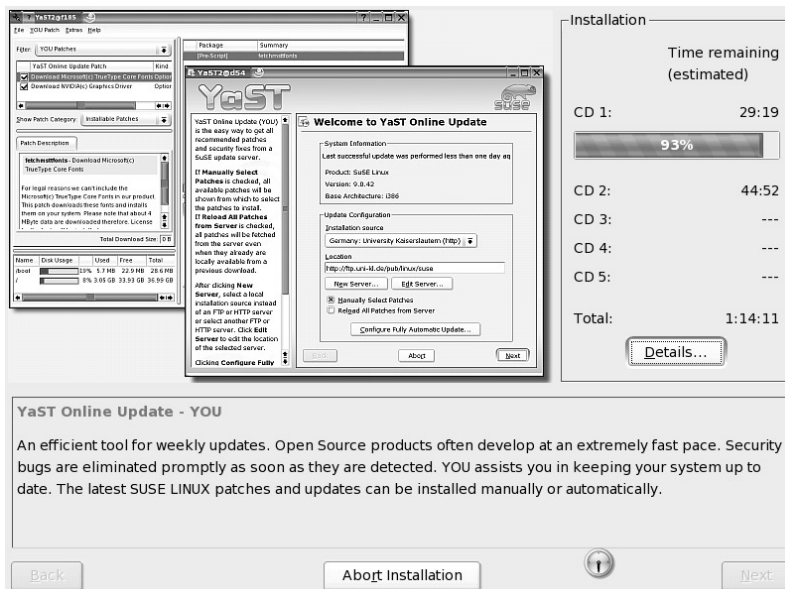
Details button, you can see which packages are being copied across. Don't worry if some of the software packages sound complicated, or even unnecessary. The way Linux works means that some software packages rely on other software packages, so often software that will never directly be used is installed.

2.2.10.Reboot After Installation

When the installation program has finished copying files, it will perform some updating and configuration tasks, as shown in Figure. Next, it will reboot the system. Your PC will most likely boot from the DVD-ROM again. However, this time, you should select to boot from the hard disk. You'll then see a second boot menu, which is read from your hard disk. Choose to boot Linux. This will move you to the next phase of the installation: configuration.
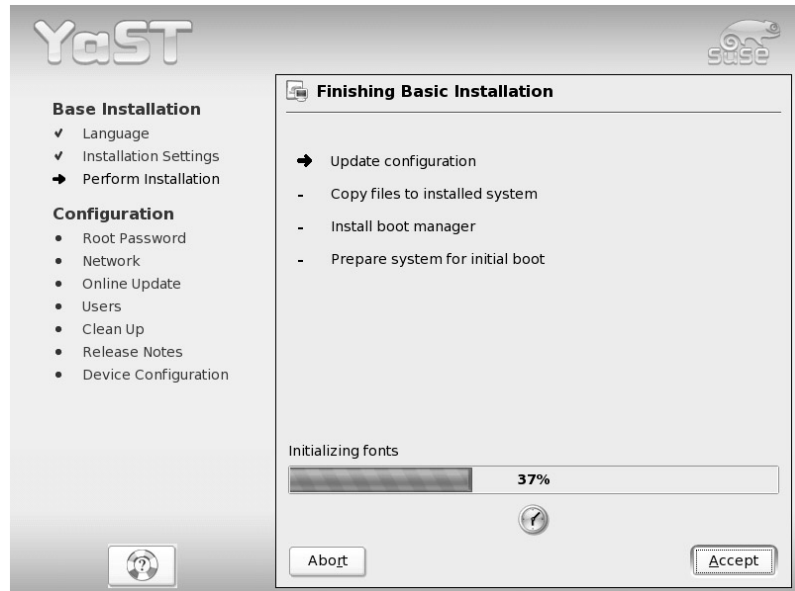
2.2.11.Set the Root Password

The first postinstallation step is to set a password for the root user. The root user is like the Administrator user on a Windows PC—the user who has complete control over the system. Although we talk of root as being a "user," in reality, you should rarely, if ever, log in to your computer as root. Instead you should only switch into root when necessary, on a temporary basis. I'll explain how this is done via the GUI and via the command-line prompt. For day-to-day use, you should create an ordinary user account, which you'll be invited to do later in the configuration process.

By default, SUSE Linux won't accept passwords with more than eight characters. If this limitation doesn't bother you, type a password into the box and click the Next button. If you would like to use a longer password, click the Expert Options button and select a

different Encryption Type. I recommend Blowfish, as shown in Figure. Then click OK and enter your password.

2.2.12.Create Users

Assuming that you selected the Stand-Alone Machine option in the previous step, you'll now be invited to create new user accounts, as shown in Figure. As mentioned earlier, you should create a simple user account for yourself to use every day, rather than using the root account. You'll be invited to enter various details. Most important are the user login, which will be your username, and the password, which must be entered twice to ensure accuracy. The username cannot have spaces in it. It can be a mixture of capital and lowercase letters. You should avoid using symbols in the username, because this can create problems later on. The password can include numbers, letters, and symbols, but no spaces.

Note that the Auto Login option is selected by default. This means that Linux will not ask for your username and password when it boots up; it will simply boot straight into the default user account. If you require more security (in other words, your PC is located where strangers can access it), you can deselect the Auto Login option. In that case, a username and password prompt will appear after SUSE Linux boots, and no one will be able to access the PC without the correct username and corresponding password.
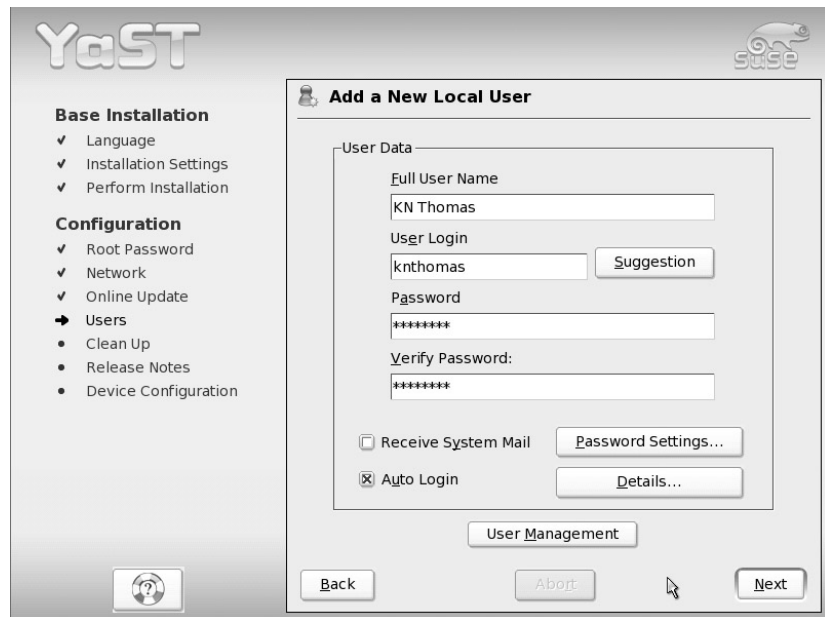
2.2.13.Configure Our Hardware

After creating users, the installation routine will clean up some old files and attempt to test the network connection. Following this, you'll be invited to configure your hardware, as shown in Figure.

In reality, this is largely a summary of SUSE's autoprobing of your
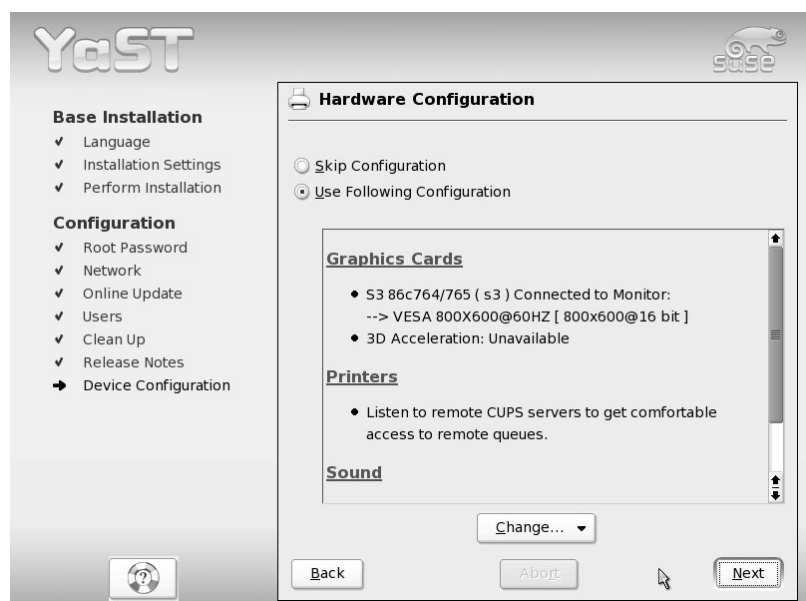
hardware. Generally speaking, if SUSE Linux isn't able to detect your hardware by probing, then it probably won't support it. In other words, if your hardware doesn't appear in the list under the various headings, it's probably not possible to use it under SUSE Linux at this time. However, the chances of this happening are slim. You'll learn about configuring hardware, such as printers, in Chapter 8. You should choose the Skip Configuration option at this stage.

2.2.14.Finish Installation

At this point, the installation has finished. The installation routine will quit, and your system will be booted. Note that this doesn't mean your system will reboot. Linux isn't as reliant on rebooting as Windows is. Instead, the system's kernel will load. After a few seconds, if you selected the Auto Login option when creating user accounts, the desktop should appear, as shown in Figure. If you deselected this option, you'll be greeted with a prompt to enter your username and password.