

Installing openSUSE 11.0

# COUNTDOWN

Ready to get started? This article shows you how to install openSUSE from the disc

included with this special edition. **BY MARCEL HILZINGER**



**T**he two-sided DVD included with this special edition includes the latest 32- and 64-bit versions of Novell's Linux distribution, openSUSE 11.0. The 32-bit side also comes with a Live version that enables you to test openSUSE on your system before you install anything.

To try out openSUSE, start by inserting the DVD in your drive and rebooting your machine. Note that the data is on the side opposite the corresponding label. In other words, if you want to start the Live version or the 32-bit installation, the 32-bit label should be facing up in the tray.

If you have a 64-bit computer and you want to install the 64-bit version of openSUSE, the 64-bit label should be facing up in the tray. If you aren't sure which version to use, the 32-bit version is a safe option for either 32- or 64-bit hardware. If this is the first time you have installed a Linux distribution, the box titled "Preparation" provides some useful instructions.

## Insert Your Disk and Go

After rebooting your machine, you should see the green openSUSE boot screen (Figure 1). Use the arrow keys to move among the menu options. If you want to run openSUSE 11.0 directly from the DVD (without installing it to your hard disk), choose one of the "Live System" options – that is,

*Live-System-GNOME* or *Live-System-KDE*. By running openSUSE

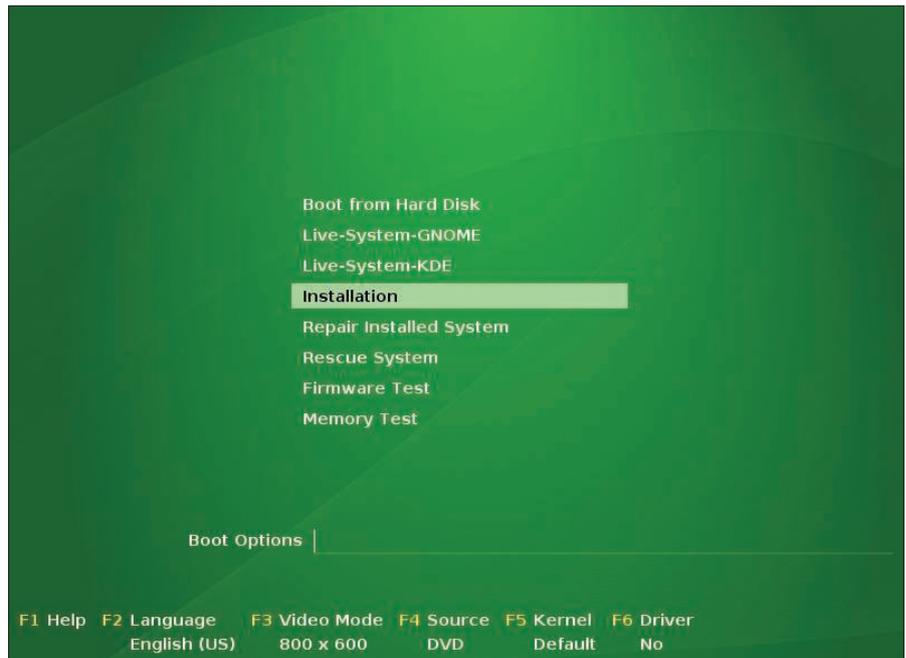
a Live system, you will give yourself a first look at how well your system supports openSUSE. A Live boot also lets you explore the openSUSE user interface, try some of the tools, and run some of the programs without disturbing the current content of your hard drive.

The two Live options boot to different desktop systems (Gnome or KDE). The Gnome and KDE desktops provide different tools but roughly equivalent functionality. The choice of Gnome or KDE is typically a simple matter of personal taste.

If you are ready to install openSUSE to your hard disk permanently, select *Installation* in the boot menu.

YaST, the openSUSE setup and configuration program, will launch when you select *Installation*. In the Welcome dialog (Figure 2), you first have to accept the Novell license agreement to copy openSUSE to your disk. Then you can go on to select a language and keyboard layout.

The next step is to indicate whether you are updating an existing openSUSE system or installing a new one. The openSUSE software will automatically



**Figure 1:** Use this boot menu to start installing openSUSE. If you do not make a selection, the computer will boot normally from the hard disk.

set up the distribution for your hardware. If you experience any issues, uncheck the *Use automatic configuration* box. Now you should click *Next* to proceed.

## Time Zone and Desktop

The Clock and Time Zone screen lets you set the date and time. In the map view, you can click to expand your region. If you are using openSUSE in

## Preparation

Before you insert the Linux Pro Magazine DVD into your drive and boot your computer, you might want to consider the following questions:

- Can I boot my computer from the DVD drive?
- Is an older SUSE version installed on my machine?
- Do I want to install openSUSE parallel to an existing Windows version?
- Is more than one hard disk installed in my computer?

Recent computers usually boot from the CD/DVD drive if a boot-ready disc is in the tray when the system starts. If you do not see the openSUSE installation program Welcome screen (Figure 1) when you start your computer, you might need to change the BIOS settings. The instructions for accessing the BIOS menu typically flash across the screen when the system boots. For example, many systems require you to press the Del or F1 key to access the BIOS when you power on your computer. A setting such as *Advanced BIOS Options* or *Boot* will let you change the boot order so that the CD/DVD drive is designated as the *First Boot Device*.

If you already have a previous version of openSUSE running on your computer, you have the option of updating the previous version rather than reinstalling. To do so, launch the YaST installation program and select *Update*. Updating from an older version might mean manually resolving package dependencies, in that YaST will install a default system with KDE when you update. This technique is often more difficult and might require more expertise on the part of the user. Continue to select *keep packagename* to prevent YaST from deleting the packages that are not included with openSUSE. An easier solution is to back up any important files on a CD/DVD and then install from scratch instead of updating. At the least, you will want to back up your */home* and */root* directories, as well as your configuration files below */etc*.

If your openSUSE installation has a separate */home* partition, you are in luck. Just tell the new openSUSE version to use this as your */home* directory, and whatever you do, do not format the partition or you will lose any existing data on the system.

If you have not installed Linux on your machine and would like to install openSUSE to dual boot with an existing Microsoft

Windows version, you should start by defragmenting your Windows C:\ drive. If your Windows version has multiple partitions, use a different partition for your Linux installation. Note that the openSUSE installation program will format the drive you select for the install, so back up any essential data on the drive. You'll find an article elsewhere in this special edition on installing openSUSE to dual boot with Windows Vista.

If your computer has multiple hard disks, you first need to find out which cables are attached to which drives and in which order. One way to determine this is by checking your BIOS. To do so, open the *Standard BIOS Options* (or similar) menu and look for the entries for *Primary Master*, *Primary Slave*, *Secondary Master*, and *Secondary Slave*. If you have a recent mainboard with SATA disks, these entries might be called *First SATA Master* and *First IDE Master*, or *Second SATA Master* and *Third SATA Master*. Make a note of which devices are associated with which drives (see Table 1). Do not attach any external disks to your computer during the installation, or the installer might try to put openSUSE on an external disk.

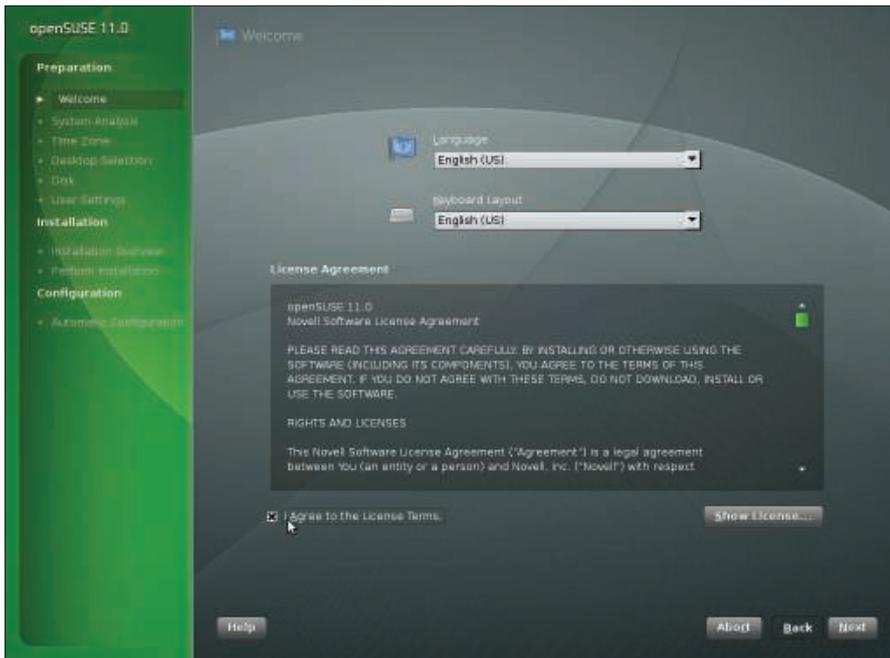


Figure 2: The Welcome screen with the language and keyboard layout selection.

parallel with Windows XP, you will need to uncheck the *Hardware clock set to UTC* box and then click *Change* to change the time.

If you are using Linux only, or Linux with Windows Vista, the time should already be set correctly. Just select a time zone if necessary. If the values shown in *Time and Date* are correct, then click *Next*.

The dialog that appears on your screen next lets you select a desktop (Figure 3). In contrast to Windows, Linux gives you a choice of various graphical user interfaces. It doesn't matter which desktop you select at installation, you can still experiment with the others at any later time.

## Partitioning

To install openSUSE, you either need enough free space on the disk for a new partition or you need to format an existing partition to make room for the new installation. You can view a proposed disk configuration in the Suggested Partitioning dialog.

Very carefully check this suggested configuration and – depending on whether you decide to accept the proposal, edit it, or ignore it – click *Next*, *Base Partition Setup on This Proposal*, or *Create Custom Partition Setup*, respectively.

If you see any red entries, it indicates that YaST intends to format the partition.

Note that doing so will destroy any existing data on the partition. Only experienced users with special partitioning requirements should use the *LVM Based* checkbox.

If you are installing openSUSE in parallel with Windows, YaST will typically suggest that you resize the Windows partition. Before you do so, make sure you defragment your Windows filesystem. In this case, reboot your machine, defragment Windows, and restart the installation.

If you are installing openSUSE on a second hard disk, select *Create Custom Partition Setup*. YaST will then show you the dialog window labeled *Preparing disk: Step 1*. Select the disk you want to partition and then click *Next*. Note that YaST will delete all the data on the selected disk.

If you are installing Linux parallel to Windows and you would like to manually change the partition sizes, or if you are not sure what to do next, select *Create Custom Partition Setup*. In both cases, you are taken to the Expert Partitioner dialog window (Figure 4).

The box titled “Partitioning Tips” has some useful advice on configuring partitions. Note that YaST does not actually write the partition table until you click *Install* in the next screen.

To create a new partition:

1. In the Expert Partitioner dialog window, you want to click *Create*. Depending on your hardware, YaST might ask you on which disk you want to create the partition and whether you want to create a primary or an extended partition.
2. If you select *Extended* and automatically assign all the free space to the new partition, you can then click *OK*, and YaST will take care of the rest. The disk overview will now show a new *Extended* type entry.
3. To create a logical partition within the extended partition, click *Create* again.



Figure 3: OpenSUSE gives you a choice of desktops.

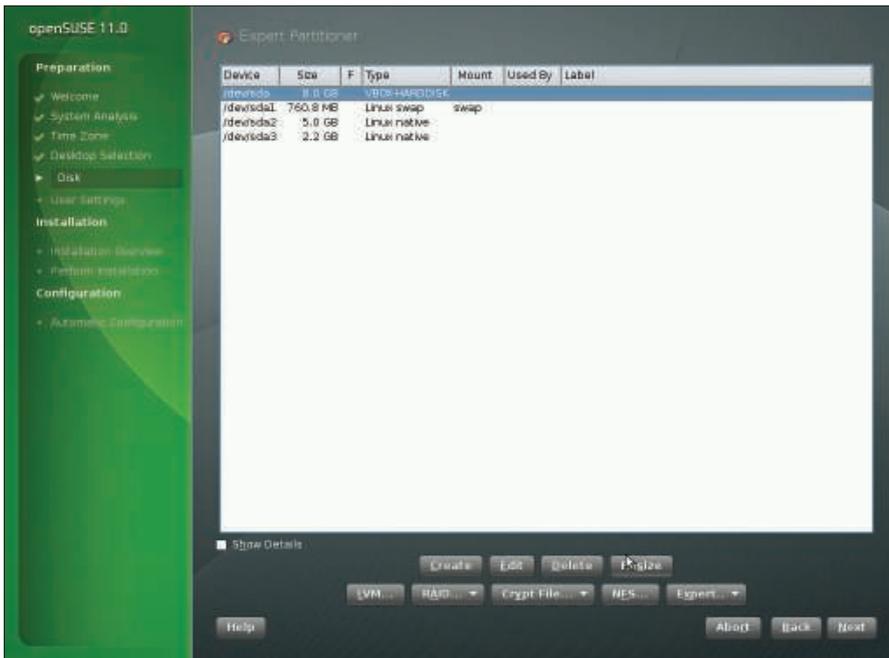


Figure 4: Setting up partitions on openSUSE.

Now start by setting up a swap partition: This is the partition the system uses to swap out memory if it runs out of RAM. Now check *Format* and select *Swap* as the *Filesystem*.

- At this time, enter the required size below *End:* – for example, *+512M* for 512MB, or *+1G* for a gigabyte. The “Partitioning Tips” box has details on choosing the right size for partitions. Clicking *OK* takes you back to the overview.

In the next step, create a root partition:

- First, click *Create* and select */* as the *mountpoint*, or just type a slash.
- If you want to use all of the remaining free space for the new partition, this completes the settings. You can then click *OK* and *Finish*.
- If you are creating more partitions, you need to specify the size of the new drive. To do so, enter a value in megabytes or gigabytes for *End:* – for example, *+8G* or *+8192M* for an 8GB ( $8 \times 1024\text{MB}$ ) partition. The root directory on an openSUSE KDE system needs at least 2.5GB – 4 to 8GB are recommended.

If you created a partition for openSUSE on Windows, you should select the partition and press *Delete*. Now follow the steps described above to create the two new required partitions.

Note that deleting a partition destroys all the data on the partition. After partitioning is complete, click *Finish* to return

to the Proposed Partitioning dialog window, where you can click *Next* to carry on with the installation.

## Creating Users

The Create New User dialog lets you enter your login name (*Username*) and a password. By default, openSUSE uses the password you enter here as the password for the system administrator, root. If you prefer to assign a different password to root, uncheck the *Use this Password for the System Administrator* box. If the password you enter is too simple, openSUSE will display a warning.

## Final Decisions

The Installation Settings screen (Figure 5) is up next. It lists the settings YaST

will configure if you click *Install*. To modify the settings, you can click the green links or use the *Change* drop-down list. If you press *Abort*, YaST will reboot your machine without making any changes to the system.

At the top, YaST shows you the partitioning steps, with the bootloader configuration following. The bootloader is the component that launches the operating system. OpenSUSE automatically sets up the bootloader, which is capable of launching Windows systems and other Linux installations. If you prefer to use a custom bootloader, you can change the settings by clicking the corresponding link.

With selection of the *Software* link, you can add or remove programs; however, it makes more sense to complete the installation first before you start doing this. Just accept the default choice of software for now. It is far quicker to install any software you need on a running system.

Below the overview that shows your language, time zone, and user configurations, you will see an entry for the *Default Runlevel*. This setting specifies the characteristics of the Linux operating environment. A setting of *Runlevel 5* is required for the GUI. Other run levels are sometimes useful for system administration and troubleshooting.

At the bottom is the YaST headline *Installation from Images*. This is a new feature with openSUSE 11.0 that can speed up your installation process depending on the hardware and software you select.

OpenSUSE includes compressed image files for most standard systems. All YaST

Table 1: Linux Device Names

Device File	Explanation
<i>/dev/sda</i>	First hard disk. Depending on your hardware, this can be the Primary IDE Master, the Primary SATA Master, or a SCSI or external drive
<i>/dev/sda1</i>	First primary partition on the first hard disk or extended partition
<i>/dev/sda4</i>	Fourth primary partition on the first hard disk or extended partition
<i>/dev/sda5</i>	First logical partition on the first hard disk
<i>/dev/sda6</i>	Second logical partition on the first hard disk
<i>/dev/sdb</i>	Second drive. Primary IDE Slave, Secondary SATA Master, or external USB/Firewire/ E-SATA disk
<i>/dev/sdc</i>	Third drive. Secondary IDE Master, Third SATA Master, or external USB/Firewire/ E-SATA disk
<i>/dev/scd0</i>	First ATAPI or SATA CD/DVD drive
<i>/dev/sr0</i>	First ATAPI or SATA CD/DVD writer
<i>/dev/fd0</i>	First floppy disk drive
<i>/dev/hda</i>	Formerly the first internal ATA drive. This was removed in openSUSE 10.3



**Figure 5:** Take a couple of minutes to check the installation settings. Red entries are a sure sign of trouble.

needs to do is unpack the images, move the files to the right places, then install any additional packages not included in the image.

Depending on your software selection, installing from an image file can also take longer than the legacy approach. To opt out of the *Installation from Images* option, click *Disable* for a normal installation. If you are installing a standard system with KDE 4 as the desktop, it is a good idea to install from images.

If the settings are to your liking, click *Install* to launch the installation. Depending on the speed of your computer,

this can take between 10 and 30 minutes. In addition to accepting the license, you might also need to accept a few non-free packages.

## Coffee Break

After you click *Install*, YaST will go on to format the partitions you created and copy required packages from the DVD to your hard disk.

When YaST has finished installing the selected packages, the system will reboot. Because the DVD is still in the drive, you will again see the openSUSE DVD Welcome screen. Just press Enter to boot from the hard disk.

If you have not changed the automatic configura-

tion setting, YaST will now go on to set up critical hardware components, such as the network, graphics, and sound cards. If the SUSE setup tool notices that you have a connection to the Internet, it will automatically set up the office openSUSE Project package and update sources on the Internet. You can change these settings after completing the install by selecting *Software | Software Repositories* in YaST.

Now all you need do is click *Next* and *Finish* to launch the user interface (Figure 6).

## New Features in openSUSE 11.0

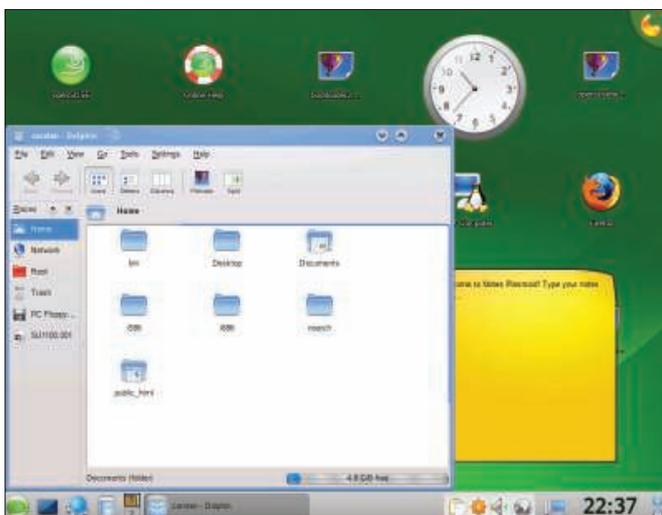
One of the biggest, most notable changes in the look and feel of openSUSE 11.0 is the new KDE 4 desktop. The new KDE not only looks good, it also includes some interesting new features. SUSE developers have also put an enormous amount of work into package management. Parsing new repositories is far quicker than before, and YaST also runs much faster.

## RPMs

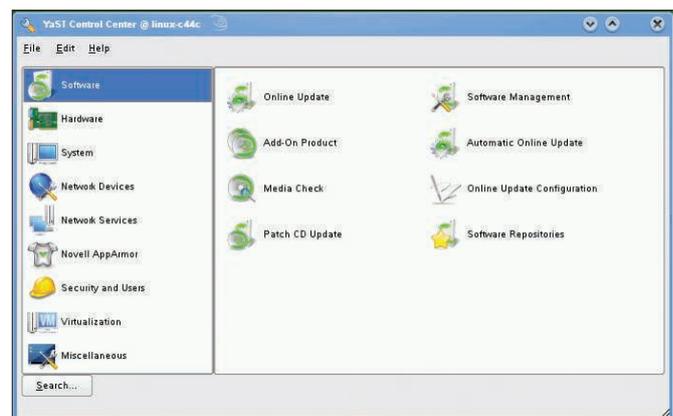
Software on openSUSE 11.0 is packaged in what are known as RPMs. RPMs in version 11.0 or later are compressed according to the LZMA algorithm, meaning they have far smaller footprints. This feature improves the download speeds, but it can slow down the installation, especially on older machines with low-powered CPUs.

## YaST

The YaST package manager is now far more cheerful – complete with rows of colored buttons (see Figure 7). Community repositories and official package



**Figure 6:** After completing the install, openSUSE automatically launches the new desktop; in this case, KDE 4 was chosen during installation.



**Figure 7:** Good old YaST in new clothes.

sources are now accessible with the same button.

This means that you can add both unofficial and official package sources on openSUSE 11.0 via the *Software | Software Repositories* module.

The openSUSE network manager shows a separate icon for each device, and it now supports Internet access via UMTS.

## Gnome Style

If you install a Gnome system, the openSUSE version of YaST automatically launches with a Gnome-style look and feel. If you want to try out a Gnome-style YaST on KDE, you can launch the tool at the command line with the following:

```
/sbin/yast2 --gtk
```

To see a KDE-style YaST on Gnome, type `/sbin/yast2 --qt` instead.

A keyboard combination of Ctrl + Alt + Backspace terminates the GUI desktop on a Linux machine. Many users are un-

aware of this, and it is easy to hit the wrong keys. To prevent this from happening, openSUSE disables the shortcut by default, and the system just beeps instead. If you really do want to use this keypress combination to restart the X

Server, you need to press Ctrl + Alt + Backspace again within two seconds.

Details of last-minute changes are also available in the release notes for the current version, which you will find in `/usr/share/doc/release-notes`. ■

## Partitioning Tips

By default, Windows sets up one partition per disk. However, this convention is not desirable because multiple partitions make it easier to organize your data and facilitate regular backups.

On Linux, partitions are assigned to mount points. The Linux counterpart to the Windows `C:\` directory is the root directory; its mount point is represented by a forward slash (`/`). The system resides here. The root directory must have a separate partition; you cannot install the system without it.

The size of the partition depends on your hard disk. You will need at least 2GB, but you should not use more than 10GB. Also, you must create a separate partition for virtual memory, known as the swap area. This swap partition should be at least the

same size as your system RAM. Approximately 1 to 2GB should put you on the safe side. The swap partition does not need a mount point.

If possible, you should also set up a separate partition for the `/home` directory. Linux uses the `/home` directory to store documents, as well as personal settings such as fonts, icons, and wallpaper. The bigger the `/home` partition, the more space for your data.

Depending on your configuration, you might also want to create additional data partitions and associate each partition with a mount point. For instance, you could set up partitions for `/data`, `/downloads` or `/documents`. If you are not sure that this is a good idea, do not set up separate data partitions.

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