BeOS User's Guide

BeOS Preview Release for the BeBox and Power Macintosh Computers

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BeOS Support Information

Be provides as much information as possible about the BeOS via the Web and other electronic means. Our belief is that if you can get help yourself, even in the middle of the night, you'll feel better about your experience with the BeOS.

For basic customer and technical support, visit Support section of the Be web site at http://www.be.com/support/index.html.

Support offers a wealth of Frequently Asked Questions (FAQs), software updates, and user and technical manuals, including links to the latest version of this User's Guide, in both on-line and downloadable formats. You can also find information about Be's electronic mailing lists, and for on-going information about the BeOS.

Be FAQs: http://www.be.com/support/qandas/index.html

BeOS Updates: http://www.be.com/support/updates/index.html

Be Documentation: http://www.be.com/documentation/index.html

Be Internet Mailing Lists: http://www.be.com/aboutbe/mailinglists.html

Also available on our web site is an Assistance Request form, to use when you cannot find the information you need on the web site, and want to request help from our Customer Technical Support group: http://www.be.com/support/assist/custsupport.html

If you cannot submit a help request via a web form, send e-mail to one of our support addresses. Please help us help you by including as much information about the problem as possible, such as the configuration of your system, what you were doing, what happened,

what you expected to have happen and why, and anything else about your configuration or problem that you think we should know.

Here is a list of Be's support addresses and their uses.

For BeOS users in the Americas or Pacific Rim:

- custsupport@be.com — for questions regarding set up, installation, configuration and compatibility of the BeOS, BeBox, or other technical questions that are not about programming or coding.
- custservices@be.com — for assistance with obtaining any of our products or for questions about your BeOS subscription.

For BeOS users in Europe:

- custsupport@beeurope.com — for questions regarding set up, installation, configuration and compatibility of the BeOS, BeBox, or other technical questions that are not about programming or coding.
- custservices@beeurope.com — for assistance with obtaining any of our products or for questions about your BeOS subscription.

By using the web as your first stop for support information, you help yourself and us. You will likely find the answer yourself more quickly than we can get it to you, and we can conserve our resources to help you more quickly on those occasions when you need more in-depth assistance.

If web searching and e-mail don't do the trick and you would rather talk to a human, you can call us. We're available Monday through Friday, between 6 AM and 6 PM (Pacific time) for people in the Western hemisphere and 8 AM to 6 PM GMT for those of you in the Eastern Hemisphere. Be's support phone numbers can be found (you guessed it) on our web site at http://www.be.com/support/index.html.

Contents

Introduction

This edition of the *BeOS User's Guide* accompanies the BeOS ™ Preview Release. This guide teaches you the basics of working with the BeOS on a BeBox ™ or a Power Macintosh ™–compatible computer. It also familiarizes you with the Be user interface, and Be applications.

The *BeOS User's Guide* includes the following chapters:

Chapter 1, "Installing the BeOS Preview Release." How to install the BeOS for BeBox and Power Macintosh, including advanced installation information for partitioning disks.

Chapter 2, "Learning BeOS Basics." Covers all the basics of working with the BeOS user interface.

Chapter 3, "Learning Be Application Basics." The basic techniques for using Be applications: starting apps, opening files, typing and editing text, saving files, quitting, and other application-related tasks.

Chapter 4, "Connecting Your BeOS System to the Internet." Detailed information regarding configuring your BeOS system for networking.

Chapter 5, "Using Internet Services." Covers all there is to know about using Internet services with the BeOS, including the worldwide web, ftp, mail, and remote access.

Chapter 6, "Customizing the BeOS." How to use BeOS application to customize the look and operation of your computer.

Chapter 7, "Working With the Mac OS." Discusses working across platforms. Includes information on mounting hierarchical file system volumes, converting Macintosh TrueType fonts, and transferring files from networked Mac OS hosts to your BeOS.

“App A: Using the BeOS Command Line Shell.” Running the BeOS from a command line terminal window.

“App B: BeOS Directory Structure.” Gives and overview of the directory (or folder) structure of the BeOS system

In addition to this guide, you can also refer to the following:

- The BeBox Owner’s Guide, if you’re running the BeOS on a BeBox computer; if you’re running the BeOS on a Power Macintosh, its owner’s guide. The owner’s guides show you how to set up the computer before you install the BeOS. They also include details about the computer’s ports and other features.
- The Installation Guide, which accompanies the BeOS CD-ROM, both as a printed booklet or as an electronic document on the Mac OS ™ portion of the BeOS CD-ROM.
- The Be Book, the reference to the Be API, now available in HTML format, in a variety of archive formats on the BeOS CD-ROM.
- The Be World Wide Web site http://www.be.com/, for advice on and support for developing BeOS applications; additions and corrections to this guide and The Be Book; and much more information about Be, Inc., and the Be hardware and software.
- CodeWarrior documents for Be, a collection of Metrowerks documentation for the Be development environment. These are available in HTML format on the BeOS CD-ROM.
- Specific information on installation and BeOS usage questions and answers can be found in the support section of the Be web site: http://www.be.com/support/.
- The Release Notes and other last minute documentation found on the BeOS Preview Release CD.

1 Installing the BeOS Preview Release

This chapter tells you how to install the BeOS for Power Macintosh and BeBox computers. It contains the following information:

Because you'll need to refer to this document while installing the BeOS, you'll probably find it easiest to use if you print it. Look for the latest version of this document at the Preview Release Support section on the Be web site:

http://www.be.com/support/preview/index.html

Installation Requirements

You can run the BeOS on a “Rev 6” or later BeBox Dual603 personal computer that has at least 16 MB of RAM.

You can also run the BeOS on many models of Power Macintosh or compatible computers that are based on the PowerPC 603 or 604 microprocessor and a PCI bus. This includes single and multiple-processor systems from Power Computing, UMAX, Motorola, Apple, DayStar, SuperMac, and other manufacturers. Check the Be web site for a list of specific brands and models:

http://www.be.com/products/beosreadylist.html

If you’re planning to run the BeOS on a Power Macintosh, you will also need:

- At least 16 MB of RAM.
- An extended Apple Desktop Bus™ (ADB) keyboard.

  Though you can work with smaller keyboards, you’ll find that some tasks in the BeOS are easier with an extended PC-style keyboard (with function keys and an Escape key).
- A standard ADB mouse.

  You can do almost everything in the BeOS with a one-button mouse, but there are lots of shortcuts that are easier if you have a mouse with two or three buttons. You can use any multiple-button mouse that conforms to the Apple guidelines for multiple-button mice (we’ve tested multiple-button mice from Kensington).

  Note that if you have a one-button mouse, you can emulate a three-button mouse by pressing Control-Command while you click the mouse button to emulate the secondary mouse button, and by pressing Control-Option while you click to emulate the tertiary mouse button.
- A 150 MB or larger hard disk or partition.

  It’s easiest to install the BeOS on a hard disk you use only for the BeOS, but if you’re comfortable working with a hard disk formatting utility, you can create a partition on a BeBox or Mac OS disk and install the BeOS on it, so you don’t need two disks. See the “Advanced Installation Option: Creating a Hard Disk Partition for the BeOS For Mac OS Systems” section later in this chapter.

- A CD-ROM drive.

  You can use virtually any model of CD-ROM drive to install the BeOS. However, to take advantage of some of the advanced features of the CDPlayer application, you need a Toshiba model 3401, 3601, or 3701 SCSI CD-ROM drive.

- You can use the Macintosh's on-board Ethernet connector or a DEC 21040- or 21041-based PCI network adapter card to connect to an Ethernet network.

- You can use any of a wide variety of high-speed modems to establish an Internet connection using PPP through a dial-up connection into an Internet Service Provider.

- The BeOS supports the graphics circuitry on the motherboard or bundled as a PCI card with supported Macintosh and compatible computers. See the Be web site for the latest list of other supported graphics cards.

Important: This list of BeOS-ready hardware is provided for informational purposes only. Support for any particular hardware platform may change without notice. Be cannot be held responsible for the use of this information, or the appropriateness of any purchase decision based on this information.

Before You Begin

Read carefully through the following list of preliminaries before you begin installing the BeOS:

- Before you install the BeOS, be smart! Back up any Macintosh or BeOS files — as you should do before installing any new software.

Caution: The BeOS Installer application can replace or delete existing files, or completely erase the contents of a disk before installing the BeOS. Be sure to read carefully any warning dialogs which appear during the installation process.

- If you were using Developer Release 8 of the BeOS and the BeMail application, save any messages you want to keep as text files and back them up onto another disk. You can also download a utility from the Preview Release Support section on the Be web site (http://www.be.com/support/preview/index.html) that converts all of your Be Mail to a UNIX-style "mbox" file, which can be read by a variety of mail applications.

- If you were using Developer Release 8 of the BeOS, you do not need to back up any applications you may have installed. Applications that run under DR8 do not run under the Preview Release, and so backing them up is not necessary.

- If you were using any earlier version of the BeOS (including any version of the Advanced Access Preview Release), the final version of the Preview Release uses a revised directory structure. The standard installation will leave your old system files in place, which may lead to confusion or unpredictable behavior. You should back up all files you wish to save to another disk, and then reinitialize the disk. Alternatively, move your personal documents and important settings files to a folder named "My Stuff" and then delete all other files and folders on the disk.

  If you do not have anything on the disk you wish to save, you can simply check the Clean Install option checkbox to have the Installer erase all pre-existing BeOS system folders and files, from all previous releases of the BeOS.

- If you reinstall the Preview Release of the BeOS, you may want to back up the contents of your *file:///boot/home/config/settings* folder, so you don't have to reconfigure your network and other settings after you reinstall the BeOS.

- Finally, read the release notes on the BeOS Installer CD-ROM and on the Preview Release Support section on the Be web site for any "gotchas" about your combination of hardware and software:

  file:///BeOS Mac Tools/Release Notes

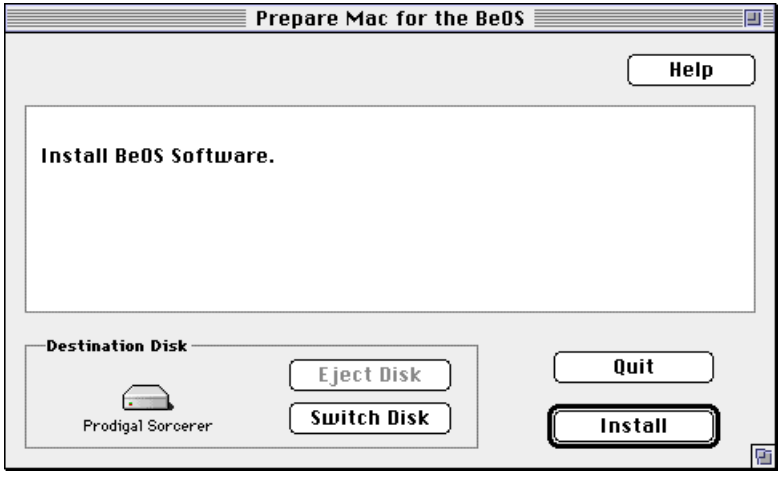
  http://www.be.com/support/preview/index.html

Preparing a Power Macintosh for Installation

Before you install the BeOS, you need to install some Macintosh tools that you use to start the BeOS. These tools are on the Macintosh portion of the BeOS Install CD-ROM.

1. Start the Mac OS and insert the BeOS Install CD-ROM.
2. If you have earlier versions of the BeOS files for the Macintosh, delete them. In particular, delete the BeOS Mac Tools folder, its contents, and the OS Chooser extension, which is in the Extensions folder in the System Folder.

   You can't use any of the files from previous releases of the BeOS with the current release.
3. Open the BeOS Install CD-ROM icon (if it's not already open) and double-click the installation script named Prepare Mac for the BeOS. In the window that opens, click Install.



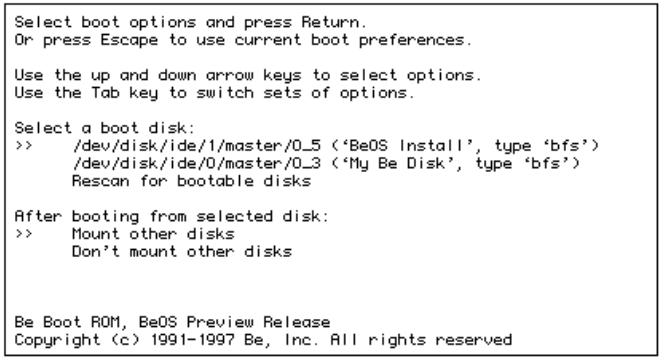
   Click Continue if you're asked if it's OK to quit other applications. When the installation is complete, click Quit.

   This script installs a folder named BeOS Mac Tools on the Mac hard disk. It also installs a system extension file named OS Chooser (in the Extensions folder in the System folder), which lets you choose whether you want to start the BeOS or the Mac OS each time you start the Macintosh.

Note: If you're planning to create a partition for the BeOS, rather than installing the BeOS onto an entire disk, follow the instructions in "Advanced Installation Option: Creating a Hard Disk Partition for the BeOS For Mac OS Systems," later in this chapter. When you've created the BeOS partition, continue with these instructions.

4. Open the copy of the BeOS Mac Tools folder that was installed on the Macintosh hard disk and double-click the BeOS Launcher application.

5. As soon as the Be logo appears, press the left Shift key until the boot selection screen opens. Then use the keyboard arrow keys to select the BeOS Install CD-ROM and press Return.



   Each bootable disk is listed by its device name and by the name it has in the Tracker. The BeOS Install CD-ROM is listed as "('BeOS Install', type 'bfs')."

   If the BeOS Install CD-ROM doesn't appear in the list, it's because the CD-ROM drive hasn't "spun up" and become ready yet. If this happens, use the arrow keys to select "Rescan for bootable disks" and press Return. You may need to do this a couple times if your CD-ROM drive takes a long time to spin up.

   After a moment, the BeOS License Agreement panel opens.

6. Read the license agreement carefully. If you accept the terms of the agreement, click Agree. If you don't accept the terms of the agreement, click Disagree, eject the CD, and return it to Be, as described in the agreement.

If you clicked Agree, the Installer application opens.

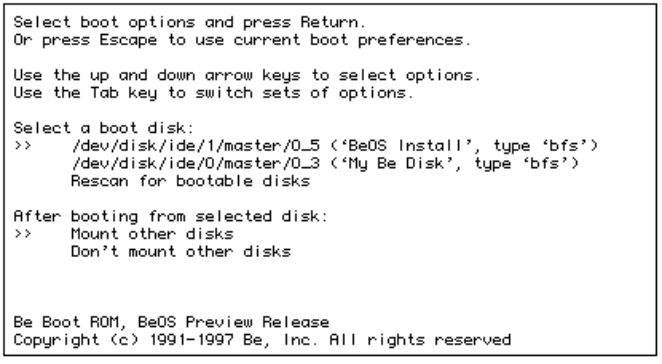
7. Skip to “Installing the BeOS” to learn how to use the Installer to install the BeOS.

Preparing a BeBox for Installation

Before you install the BeOS Preview Release, you need to upgrade the BeBox boot ROM—a portion of the BeOS system software that’s stored on a chip on the BeBox motherboard.

1. With the BeBox turned off, insert the Boot ROM Upgrader floppy disk in the floppy disk drive.
2. Turn on the BeBox.

   Messages inform you that the boot ROM chip is being upgraded. When the upgrade is complete, you’re instructed to eject the floppy disk.
3. Eject the floppy disk, insert the BeOS Install CD-ROM in the CD-ROM drive, and turn off the BeBox.
4. Turn on the BeBox and as soon as the Be logo appears, hold down the left Shift key until the boot selection screen opens. Then use the keyboard arrow keys to select the BeOS Install CD-ROM as your boot device and press Return.



Each bootable disk is listed by its device name as well as by the name it has in the Tracker. The BeOS Install CD-ROM is listed as "('BeOS Install', type 'bfs')."

If the BeOS Install CD-ROM doesn't appear in the list, it's because the CD-ROM drive hasn't "spun up" and become ready yet. If this happens, use the arrow keys to select "Rescan for bootable disks" and press Return. You may need to do this a couple of times if your CD-ROM drive takes a long time to spin up.

After a moment, the BeOS License Agreement panel opens.

5. Read the license agreement carefully. If you accept the terms of the agreement, click Agree. If you don't accept the terms of the agreement, click Disagree, eject the CD, and return it to Be, as described in the agreement.

   If you clicked Agree, the Installer application opens.

6. Continue with the next section, "Installing the BeOS."

Installing the BeOS

Once you've prepared a Macintosh or BeBox for installation and started up the BeOS from the BeOS Install CD-ROM, you're ready to use the Installer application to install the BeOS.

1. From the Onto pop-up menu, choose the disk onto which you want to install the BeOS.

The Onto pop-up menu contains a list of hard disk drives connected to the computer. If a disk is divided into multiple partitions, each partition appears in this menu as a separate choice.

Caution: Every drive and drive partition on your computer appears in this list, including your Mac OS or DR8 partitions, if you have any. Non-BeOS volumes are noted with a volume type (e.g., "[Mac HFS]") in the pop-up menu.

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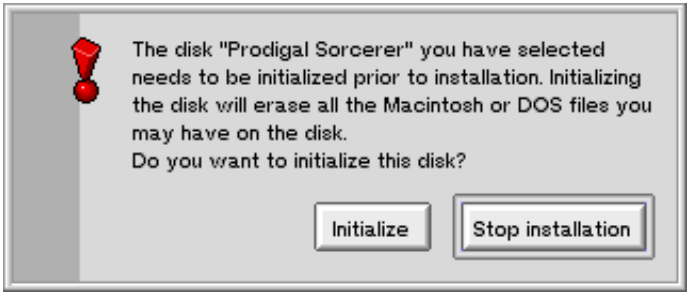
2 Click Begin.

If you have selected a non-BeOS file system volume, you will see a warning dialog telling you the volume must be initialized before installation can proceed:



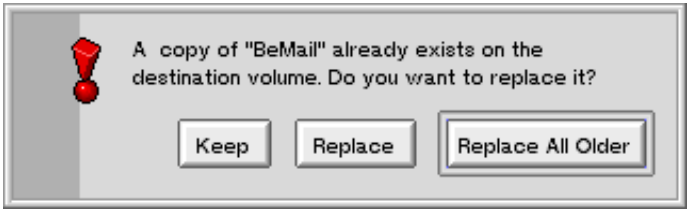
This dialog could mean that you have chosen an uninitialized partition, such as a newly created partition. In this case, the volume is empty, and it is OK to initialize it.

This dialog could also mean you have chosen a Mac OS or old BeOS partition. Be careful to select an empty or expendable partition.

If you click the Initialize button, the BeOS installs onto the volume after it is completely erased and a BeOS file system is created on it. Before this happens, you are asked to confirm the initialization and choose a volume name in step 3.

If you click the Stop installation button, the installation is cancelled, and the Installer's main screen reappears.

If the volume you have selected already has the BeOS installed on it, you're asked if you wish to replace existing files with files from the installation, or if you wish to keep your older files:

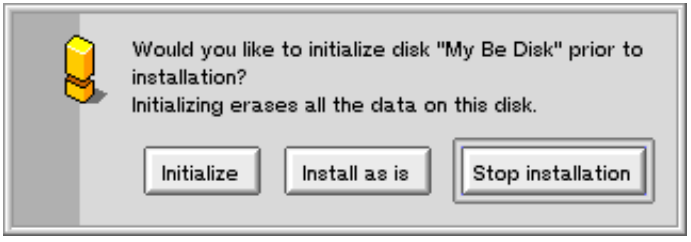


If you click the Keep button, the existing (and possibly obsolete) file will not be replaced. This dialog appears for every file which already exists on the installation volume.

If you click the Replace button, the file is replaced. This dialog appears for every file which already exists on the installation volume.

If you click the Replace All Older button, the file is replaced, and the Installer automatically replaces all remaining older files with fresh copies from the BeOS Install CD. This is the recommended selection.

If you have selected a BeOS file system volume, you're asked if you wish to initialize the volume before installing the BeOS:

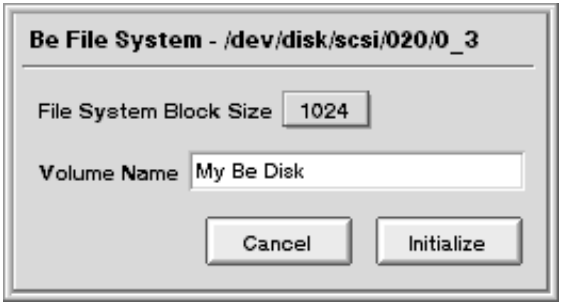


If you click the Initialize button, the BeOS installs onto the volume after it is completely erased. Before this happens, you're asked to confirm the initialization and choose a volume name in step 3.

If you click the Install as is button, the BeOS installs onto the volume without erasing anything first. Note, however, that even if you choose this option the installation process may replace files which already exist on the volume, such as the operating system files. Skip to step 4.

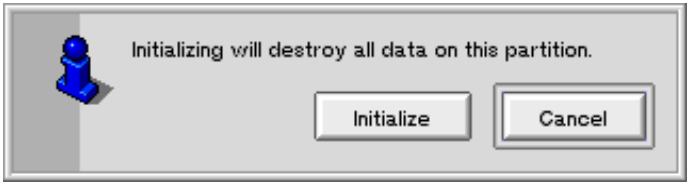
If you click the Stop installation button, the installation is cancelled, and the Installer's main screen reappears.

3 If you have chosen to initialize the installation volume, you're asked to name the volume:



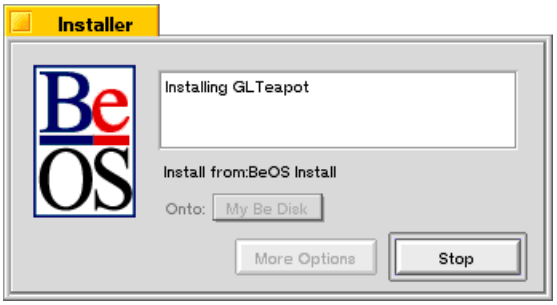
You can also set the file system block size, but unless you have a specific reason for doing so, you should not change this setting from the default of 1024.

Select the default volume name and replace it with a name for your BeOS volume, if you wish. Click the Initialize button. You're asked to confirm the initialization:

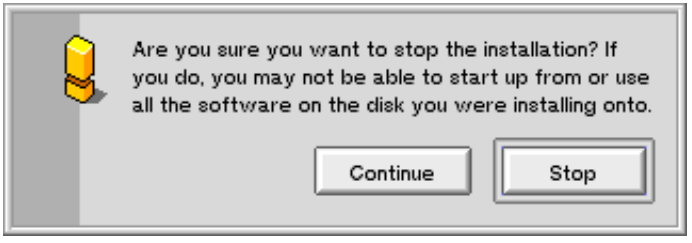


Click Initialize. The drive will be initialized (this takes a few seconds).

4 The Installer begins installing the BeOS onto the hard disk or partition. The names of files appear as they are installed onto your installation volume:

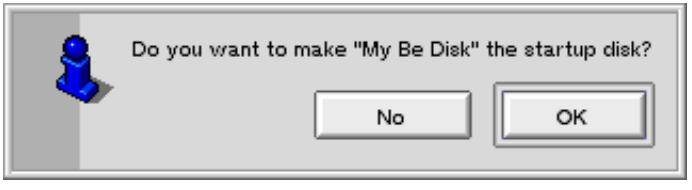


If you click the Stop button, you're asked if you really wish to halt the installation:



Stopping the installation is not recommended. If the Installer has removed outdated system files but not yet replaced them, your BeOS volume may not have all of the operating system files on it which are necessary to boot the BeOS from that disk. If you halt the installation process before completion, you should run a complete installation later, before you attempt to boot the BeOS from this volume.

5 When the installation process is complete, you're asked if you want to use the disk or partition onto which you just installed the BeOS as the startup disk:



6 Click OK. Or click No to leave the boot preference at the previous (or default) setting.

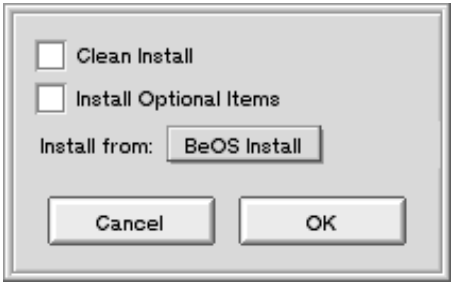
7 Click the Quit button or the Installer window's close box to eject the BeOS Install CD-ROM and restart the computer.

If you have a Macintosh, the OS Chooser dialog box appears, shortly after you first see the message, "Welcome to Mac OS." You can use OS Chooser to select the OS you want to boot, the BeOS or the Mac OS, as described in Chapter 2, "Learning BeOS Basics."

If you have a BeBox, it restarts the BeOS.

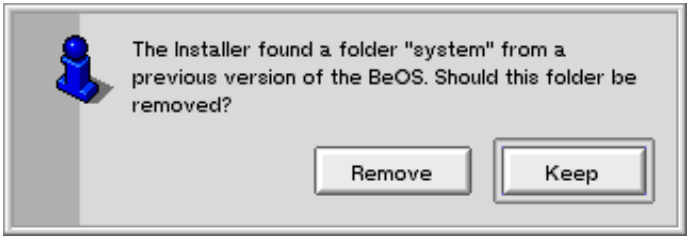
Installation Options

If you click the More Options button in the main Installer window, the following options dialog appears:



- **Clean Install:** Default is off (unchecked). Check the Clean Install checkbox to have the Installer delete the operating system directories and their contents before installing the new BeOS software. Leave this option unchecked to have the Installer replace existing individual items, but not delete new files you may have created in those directories.

  This option is strongly recommended if you are installing the BeOS onto a hard drive which has had any earlier version (BeOS DR8 or BeOS Advanced Access) of the BeOS installed on it. This option gives you the opportunity to remove outdated software from your system (recommended):



  Be sure you have backups of your important files if you choose this option!

- **Install Optional Items:** Default is off (unchecked). Check the Install Optional Items checkbox to install the files in the Optional folder on the CD-ROM. These items consist of movie and MIDI files, various goodies, sample code, and the source files to the gnu software included with the BeOS. These optional items may require an additional 80 megabytes or more of disk space. Leave this option unchecked to install only the BeOS and its standard applications.

- **Install from:** Default is the BeOS Installer CD-ROM. Use the Install from pop-up menu to choose a source different from the CD-ROM disk for the files to be installed. Use this option only if you are an expert, and know exactly what you are doing and why.

Start the BeOS

To start the BeOS on a BeBox, just turn it on.

To start the BeOS on a Power Macintosh, start the Mac OS and then double-click the BeOS Launcher application, which is in the BeOS Mac Tools folder you installed on the Macintosh hard disk.

To learn more about using the BeOS, see Chapter 2, “Learning BeOS Basics.”

Advanced Installation Option: Creating a Hard Disk Partition for the BeOS For Mac OS Systems

It is sometimes advantageous or necessary to create a separate partition to install the BeOS. What you need to know to do this is summarized in the following list:

- **Required tools**: You need to have a hard disk formatting utility and, optionally, a disk optimizer.
- **Before you begin**: As always, back up your important information. Defragment your hard drive. Decide how large a partition you need.
- **Creating a partition for the BeOS**: How to create a new partition on your hard drive.

Introduction

The BeOS must be installed onto its own hard drive or hard drive partition. The Mac OS also requires its own dedicated hard drive or hard drive partition. If you plan to use the BeOS on Power Macintosh or compatible hardware and have only a single hard drive in your computer, you have two choices:

- Buy a new hard drive to dedicate to the BeOS.
- Partition your existing hard drive into two or more partitions, and dedicate one to the BeOS.

This document describes how to partition your existing Mac hard drive, giving you an additional partition for the BeOS.

Warning: Partitioning your hard drive can destroy all data on that drive. Be sure you have adequate backups of all your important data before you begin any procedure in this section.

Note: If you have a BeBox, instructions for using DriveSetup to partition your hard drive can be found in Chapter 6 “Customizing the BeOS.”

Required Tools

Partitioning a hard drive requires specialized utility software, called hard drive formatting software. Some hard drive formatting utilities, such as Apple’s Drive Setup, do not support creating multiple Mac OS partitions on a single hard drive. Here is a list of software we know can perform this function:

- FWB’s Hard Drive Toolkit (Professional and Personal Editions)
- APS PowerTools

Note: Some hard drive formatting utilities are capable of changing the size of an existing partition without destroying the data on it. You’d want to do this, for example, when shrinking your existing Mac OS partition to make room to create a BeOS partition (we have tested only FWB’s Hard Drive Toolkit Personal Edition for doing this).

In order to partition your hard drive, you must first optimize it to move all existing data to one “end” of the hard drive, so that the formatting utility can “shrink” the existing partition without losing data. Disk optimizing utilities, such as Norton Speed Disk, do this with a minimum of effort.

Before You Begin

These are the steps to take before beginning to partition your hard drive:

1. Back up the Mac hard disk.

Be smart! If you have files you can't afford to lose, back them up before partitioning the disk! We strongly recommend that you back up your entire hard drive before beginning, so that you are completely protected from accidents or software problems.

2 Defragment the Mac OS disk.

There are a number of disk utilities that can defragment a disk. We've tested Speed Disk from the Norton Utilities for Macintosh. Defragmenting a disk allows you to repartition it without erasing existing files. If you don't mind erasing all the files on the disk, you don't need to defragment it.

Note: Some optimizers, including the recently released Norton Speed Disk 3.5, may separate data to both ends of your hard drive, which prevents nondestructive partition shrinking. You may need to change the default settings to get your optimizer to place all data at one end of the drive.

In Norton Speed Disk version 3.5, from the Options menu, choose Optimize For/ Disk Resizing. Previous versions of Speed Disk work automatically. Consult your software manual if you're using a different disk optimizer.

You can also defragment your hard drive by backing up the entire drive, erasing all the data, and then restoring your data from the backup. We recommend Norton Speed Disk.

3 Decide how large to make the new partition.

To install the BeOS onto it, the new partition must be at least 150 megabytes in size. You may wish to make the partition larger than that, to allow extra room for files you create, or software you purchase or download from the Internet. To just try out the BeOS, 150 megabytes is fine. If you plan to use the BeOS, the partition should be 250 megabytes or larger.

Note: If you plan to shrink an existing Mac OS partition, you must have enough free space on that drive to "convert" to the new BeOS partition. If you do not have enough space, you need to delete software or data files in order to make room. If you do this, you must defragment your hard drive again.

Creating a Partition for the BeOS

Modifying your hard drive partitions is a fairly straightforward procedure. We use FWB's Hard Drive Toolkit, Personal Edition in our example because it is bundled with a number of Power Macintosh—compatible systems. If you use a different partitioning utility, the overall sequence remains the same, although the specific steps, screens, or menu choices you need to use will likely be different. Consult your software manual for instructions on how to accomplish the steps outlined below.

WARNING: Once again, modifying hard disk partitions can destroy all data on the hard drive. Do not proceed unless you have a complete backup of your hard disk!

---

1. Boot your computer from your Mac OS installer CD-ROM.

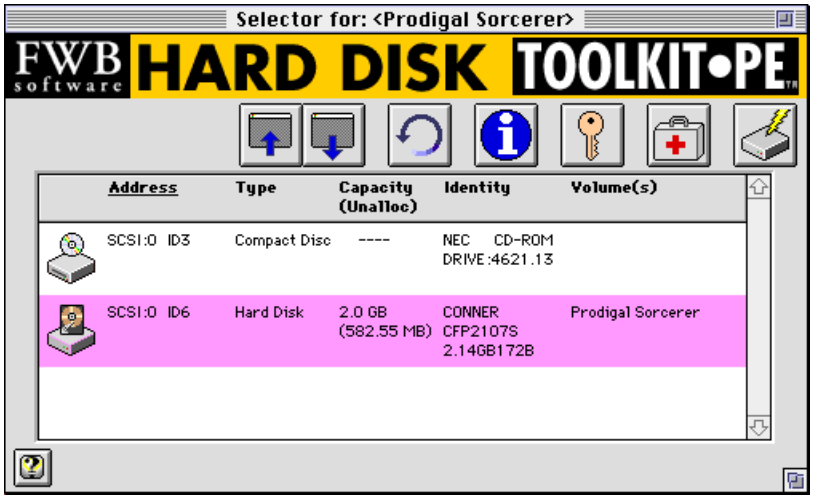
   A bootable Mac OS CD-ROM should have come with your computer when you purchased it. If you do not have a bootable Mac OS CD-ROM, you will need to borrow one, or boot off an external disk drive. You cannot modify the partitions on a disk drive if you boot from it.

2. Launch your hard disk formatting utility by double-clicking it in the Mac OS Finder.

   You cannot launch your hard disk formatting utility if it is located on the hard drive you want to modify. No formatting utility can operate on a hard disk if there are files in use on that disk.

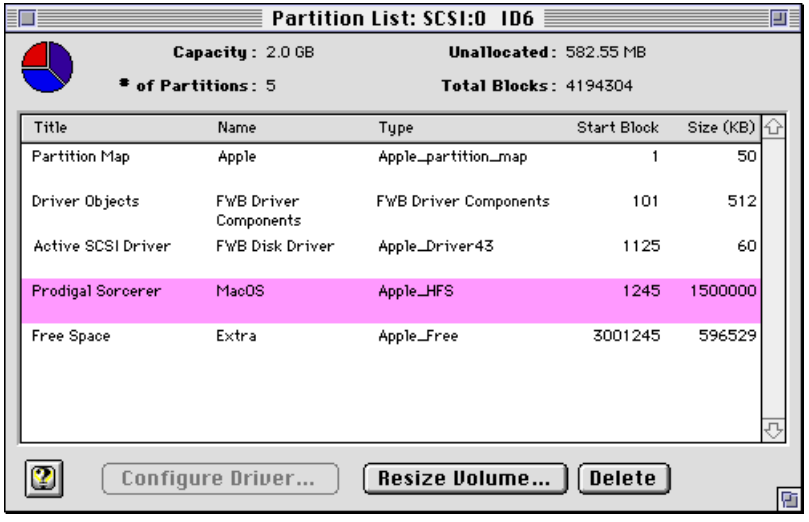
   Your formatting utility may be on the Mac OS installer CD-ROM. You can also put the formatting utility onto a floppy disk, second hard drive, Zip or Jaz drive (or other cartridge drives) and use it from there.

3. If your software has a splash screen, click past it. Select your hard drive in the configuration window, as shown (your software may be different):



4 Open the partition list or partition map window for the drive you have selected.

In Hard Disk Toolkit, you can simply double-click the disk in the window. Your software may require you to click one of the buttons, or make a selection from a menu.



5. Select the existing Mac OS partition which you want to shrink.

   This partition has the same name as your Mac OS disk icon in the Mac OS Finder. It is also an Apple_HFS-type partition.

6. Reduce the size of the Mac OS partition by at least 150 MB.

   The amount you shrink the existing volume is the same amount that you'll be able to allocate to the new partition you create.

   In Hard Disk Toolkit, simply click the Resize Volume… button, then choose a new (smaller) size for the existing volume (in this case, 500,000K or less):

   You may have to confirm the resize command, possibly several times. If you are sure you wish to proceed, confirm everything.

WARNING: This step may destroy all data on your existing Mac OS partition. Be sure you have consulted your software manual, and carefully read the alert dialogs that appear. Also be sure that this is what you want to do.

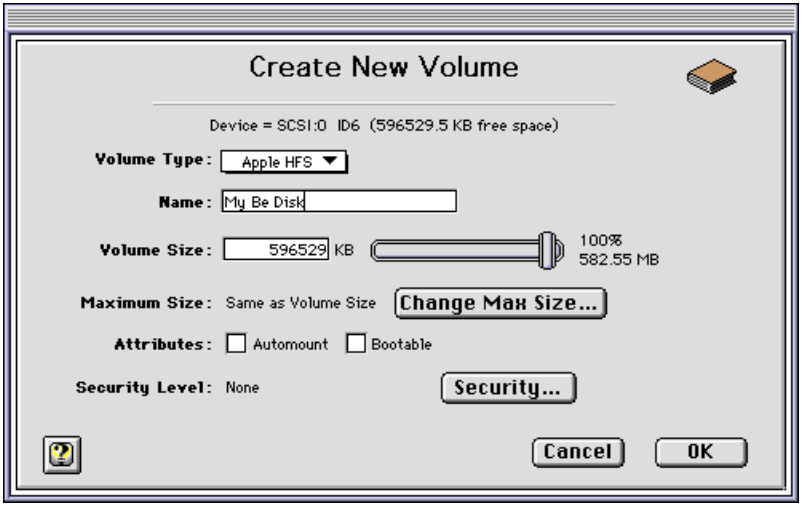
   Your existing hard drive partition will be shrunk.

7. Create a new, 150 MB or larger partition on the disk.

   In Hard Disk Toolkit, choose the Create New Volume… command from the Devices menu.

You can choose the size for the new partition (some software makes this easier than others). Most likely you'll want to make it the same size as the amount of space you shrunk the Mac OS partition.

Be sure to choose to create an Apple_HFS-type volume. You may also be able to name your volume at this point. If so, name it "My Be Disk," or any name that makes it easy to remember when you install the BeOS on it later.



After clicking "OK" or "Confirm" to any confirmation dialogs, the hard drive partitioning utility creates a new partition on your hard drive (this can take a few minutes). When it completes, you should receive some kind of confirmation message.

8 Quit your hard drive partitioning utility, and return to the Finder.

You should now see a new hard disk drive icon on your Desktop, with the name you gave your new partition. This hard drive partition is currently a Mac OS partition. When you install the BeOS onto it, the BeOS Installer converts it to a BeOS partition.

You are now ready to install the BeOS on the partition you created, as described previously in this chapter.

2 Learning BeOS Basics

This chapter shows you the basics of working with the BeOS: starting it up and shutting it down, working with the mouse and keyboard, and mastering the fundamentals of the user interface. Chapter 3, “Learning Be Application Basics,” picks up where this one leaves off, showing you the basic techniques you use with Be applications. Subsequent chapters show you how to use the applications that come with the BeOS. This chapter discusses the following topics:

Starting the BeOS

Once you've set up your computer and installed the BeOS, you can start using it.

1. Make sure that no floppy disk or CD-ROM that contains Be system software is inserted in a drive connected to your computer. When you start up the BeOS, it tries to find system software on removable disks before it looking on a hard disk.

2. Turn on any peripheral devices, such as the monitor or external disk drives.

3. Turn on the computer. The BeBox On/Off toggle switch is on the top of the back panel. Pushing the toggle up turns on the BeBox; pushing it down turns it off. If you're running the BeOS on a Power Macintosh, see your owner's guide if you're not sure how to turn it on.

4. If you're running the BeOS on a Power Macintosh, double-click the BeOS Launcher application or choose BeOS when the dialog appears during startup. This is in the BeOS Mac Tools folder on the Macintosh hard disk, which you copied from the BeOS CD-ROM as described in "Installing the BeOS Preview Release."

When you start the BeOS, the Be logo appears momentarily, and then the computer loads the BeOS system software from the startup disk (this is often called "booting"). As the BeOS boots, it performs some housekeeping tasks, which it may inform you about. Then the BeOS starts the Tracker application. The Tracker is where you manage the work you do in the BeOS: arranging and opening files, starting applications, and so on.

When a BeBox is on, two columns of light-emitting diodes (LEDs) become active on its front. The green LEDs at the bottoms of the columns act as power indicators: They glow whenever the BeBox is turned on. The upper LEDs show the relative load on the BeBox's two PowerPC processors; the more LEDs are lit, the harder the PowerPCs are working. The Pulse application provides a similar display. The amber LED at the bottom of the right column is a disk activity light; whenever the BeOS uses an IDE or SCSI disk, the amber LED glows.

Selecting a Boot Disk

When you boot the BeOS, it looks in a fixed order for a boot disk from which to start. First, it looks for system software on a floppy disk. If it doesn't find a floppy with system software, it looks for any other kind of removable disk, such as a CD-ROM. If it doesn't

find one, it checks the "boot preference" to determine the disk you prefer to boot from. It then tries to boot from that disk. If for some reason that disk isn't available or doesn't contain system software, the BeOS tries to boot from any other available disk with system software on it.

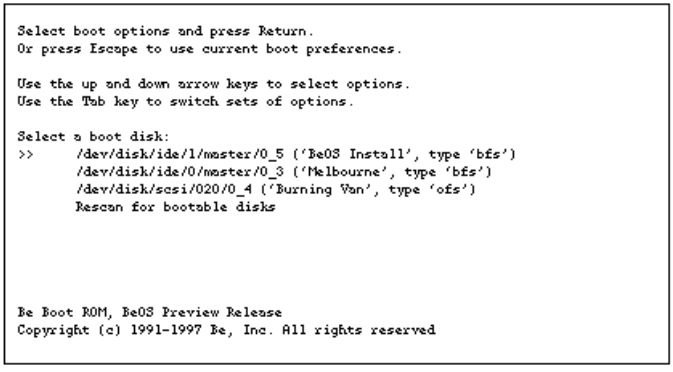
When you install the BeOS on a disk, the Installer asks if you want to change the boot preference to that disk.

Regardless of the boot preference and what disks are inserted or attached, you can select a boot disk in the boot selection screen. You can boot from DR8.x disks in addition to Preview Release disks. Open the boot selection screen by pressing and holding down the left shift key after you start the BeOS—as soon as you see the Be logo start to appear. On a Power Macintosh, open the boot selection screen by holding down the left Shift key immediately after you double-click BeOS Launcher.

Each bootable disk is listed by its device name and by the name it has in the Tracker (formerly called the Browser). Disks formatted using the Preview Release appear as type "bfs"; disks formatted using DR8.x appear as type "ofs." Disks with no Be system software on them aren't included in the list.

In the below example, the BeOS CD in an IDE CD-ROM drive is selected, with the option to boot off of a Preview Release–formatted IDE disk named "Melbourne" and a DR8-formatted SCSI disk named "Burning Van."

For more information about SCSI IDs and IDE disks, see your computer's owner's guide.



Shutting Down the BeOS

Before you turn off the computer, you must first shut down the BeOS. Shutting down ensures that open files—including system files—are saved to disk correctly. If you turn off the computer without first shutting down, you risk losing information.

1. Save your open files and quit any running applications. (Saving files and quitting applications are described in Chapter 3, "Learning Be Application Basics.")

2. Choose Shut Down from the Be menu by clicking on the Be logo in the Deskbar.

   If you want to restart the BeOS instead of shutting it down, choose Restart from the Be Menu instead.

   If you are copying or moving files or emptying the trash when you choose Shut Down or Restart, a dialog asks you to confirm that you want to shut down or restart the BeOS when these tasks are complete.

3. When a dialog tells you it's safe to turn off the computer, turn it off. You can also click the Restart button in the dialog (or press the Enter key) to restart the BeOS right away, without turning it off.

4. After you've shut down the BeOS and turned off the computer, turn off peripheral devices that have their own power switches, such as the monitor or external disk drives.

Resetting the BeOS

If the BeOS crashes, or if the Shut Down and Restart commands don't work, you can restart the BeOS (without turning the computer off and on) by resetting the BeOS.

There are two ways to reset the BeOS. The nostalgic way is to press "Control-Alt-Delete." In other words, press the following three keys at the same time:

- On a PC keyboard, the key labeled "Ctrl" at the bottom left of the keyboard (not the one next to the arrow keys); either one of the two keys labeled "Alt" on either side of the space bar; and either the key labeled "Del" on the numeric keypad or the key labeled "Delete" above the arrow keys.

- On a Macintosh, the Control key, the Command key, and key labeled “Del” above the arrow keys.

The other way to reset the BeOS is to press the Reset switch:

- On a BeBox, press the Reset and Interrupt buttons at the same time. The Reset and Interrupt buttons are built into the BeBox front bezel, on the horizontal surface below the floppy disk drive.
- On a Macintosh, press the Reset switch (see the computer’s owner’s guide for information on the location of its Reset switch).

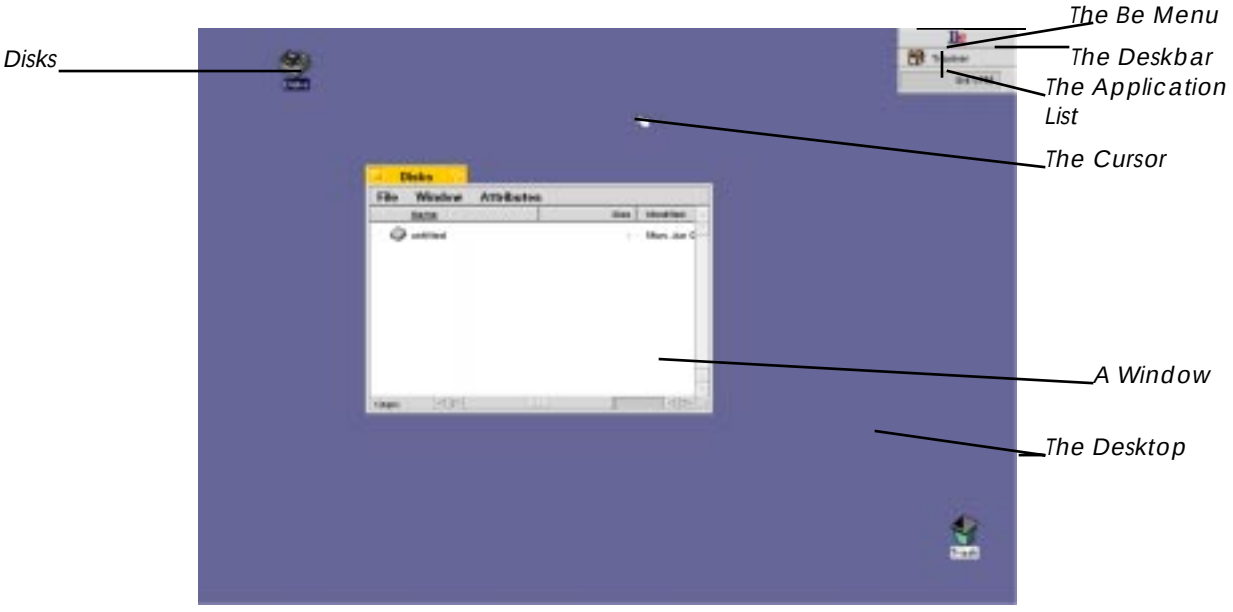
Caution: If you reset the computer without choosing Restart or Shut Down first, you risk losing data. In particular, you’ll lose the changes you’ve made to open files since you last saved them.

Interrupting the BeOS

WARNING: Do not use the Interrupt button in the Preview Release of the BeOS, because the interaction between the Interrupt button and the Debugger is broken.

Getting to Know the BeOS Workspace

When you start the BeOS, the Tracker (formerly called the Browser) starts up and the Deskbar appears in the upper-right corner of the screen. The background of the workspace is called the desktop—initially a solid blue area where windows open and you do your work.



Take a moment to identify the following features of the Be workspace:

- The cursor is the hand-shaped icon that moves when you move the mouse.
- The Deskbar contains menu items in the Be folder, and is where you'll find the Tracker and clock.
- The application list shows all running applications; you can use it to switch among them.
- The Be menu contains Find, the system commands (such as shut down and restart), and items contained in the Be folder located on the boot disk.
- Windows are where you view and work with files, text, pictures, and other information.
- The Disks window shows your boot disks and any other hard disks you may have.

Though most of this guide concentrates on showing you how to work in this initial workspace, you can create up to nine workspaces and switch among them using the Workspaces application (see "Customizing the BeOS").

Using the Mouse

The mouse controls items on the screen. When you move the mouse, a small icon called the cursor moves across the screen. The cursor changes shape depending on what you're doing. It appears as a hand for selecting items and choosing from menus, an I-beam for selecting text, and so on.

You use the mouse buttons to manipulate on-screen items that are beneath the cursor. The BeOS can take advantage of one-, two-, and three-button mice. On a three-button mouse, the left button is initially the primary button, the one you click to perform the most common tasks; the right button is the secondary mouse button; and the middle button is the tertiary mouse button.

If you have a single-button mouse, you can emulate a three-button mouse by pressing Control-Command while you click the mouse button to emulate the secondary mouse button, and by pressing Control-Option while clicking to emulate the tertiary mouse button. (On a PC keyboard, the Command key is usually labeled "Alt"; the Option key is the one labeled "Ctrl" to the right of the spacebar.) There are a few basic techniques (and terms that describe them) for using the mouse that you should learn before continuing with this guide:

This	Means To Do This
Move	Move the mouse without pressing a mouse button.
Click	Press and quickly release a mouse button without moving the mouse.
Press	Press and hold down a mouse button without moving the mouse.
Drag	Press and hold down a mouse button while you move the mouse.
Double-click	Press and release a mouse button twice in quick succession.
Triple-click	Like double-clicking, but thrice.
Double-click and drag	Like double-clicking, but hold down a mouse button instead of releasing it the second time, then move the mouse.

You can adjust how the BeOS interprets multiple clicks and how rapidly the cursor moves across the screen when you move the mouse.

Using the Keyboard

Most of the keyboard keys should be familiar to you from typing class. However, the BeOS uses some of the keys on a PC keyboard in ways you might not guess:

PC Key Label	Mac Key Label	BeOS Key Name	BeOS Function
Alt	Command	Command	Used with other keys as a shortcut to choosing menu items.
Ctrl (on left)	Control	Control	Used to type special characters, particularly when you're working in the Terminal application.
Ctrl (on right)	Option	Option	Used to type special characters, such as symbols and accented characters.
Enter (or arrow)	Return	Enter	Used to end a paragraph when you're typing. Also used as a shortcut for clicking on-screen buttons, opening files, and other common tasks.
Esc	Esc	Escape	Used as a shortcut to clicking Cancel in many panels and to close open menus.
Tab	Tab	Tab	Used to tab. Also used to select objects in windows and panels so you can manipulate them from the keyboard.
(arrows)	(arrows)	arrow keys	Used to move the cursor in text, to select items, and so on.

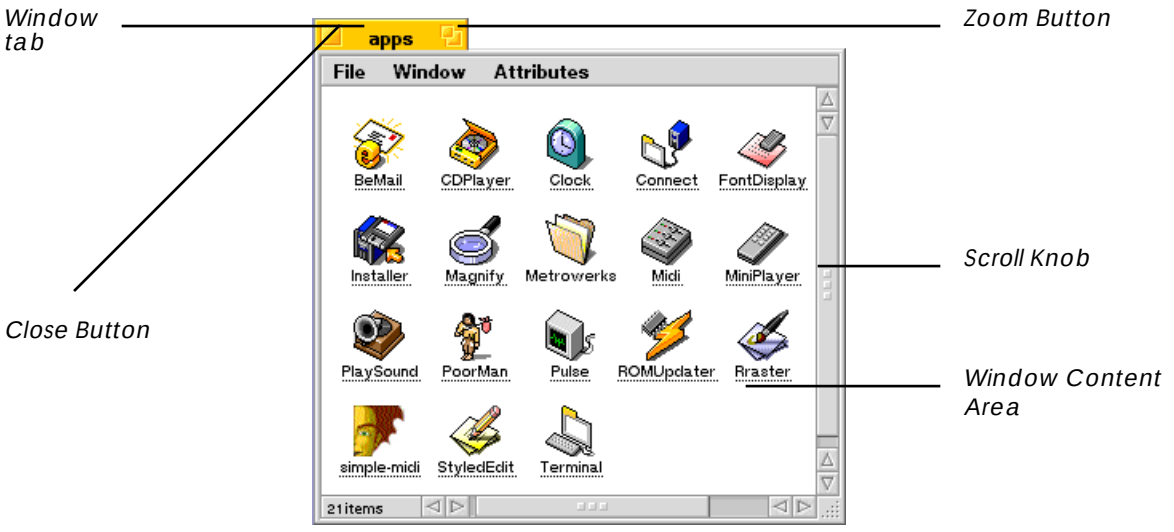
Keyboard Shortcuts

Many keyboard shortcuts in the BeOS are common in other operating systems. The table below lists frequently used keyboard shortcuts that you'll find helpful while working with the BeOS.

PC Key Label	Mac Key Label	Function in the BeOS
ALT C	Command-C	Copy
ALT N	Command-N	New
ALT O	Command-O	Open
ALT Q	Command-Q	Quit
ALT S	Command-S	Save
ALT V	Command-V	Paste
ALT W	Command-W	Close a window
ALT X	Command-X	Cut

Working With Windows

The BeOS displays information in windows, areas on the screen with some of the following features:



Most windows have a tab at the top, with the title of the window and one or more buttons. In the Tracker, the title usually tells you the name of the folder whose contents are shown in the window.

You can have one or many windows open at a time, but only the active window responds to your actions. For example, pressing keys on the keyboard only affects the active window by its tab; the active window has a yellow tab.

You can make a window the active window by clicking its border or (for most windows) anywhere in it. When you start up a new application or switch applications, the frontmost window in the new application becomes the active window.

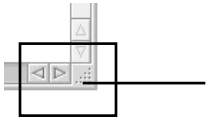
Moving a Window

To move a window drag it by its tab or border. The border includes the tab and the gray area on extreme edges of the windows where there is no scroll bar. For most Tracker windows, this means you can drag the window by its borders including the tab.

When you drag a window by its tab, take care not to click the close or zoom button accidentally.

Resizing a Window

You can change the size and dimensions of a window by dragging its resize knob. The resize knob is located on the bottom right of the window and is identified by the triangular dotted area.

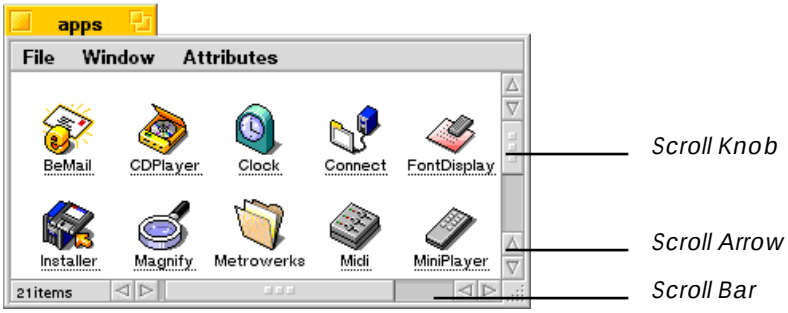


Drag the resize knob to resize a window.

You can also click a window's zoom button (the two squares icon in the window's title bar) to make it as big as it needs to be to show all that it contains—or at least as big as the screen. Clicking the zoom button again restores the window to its previous size. Choosing the Resize to Fit command from a window's Window menu has the same effect as clicking the zoom button.

Scrolling the Items in a Window

Sometimes a window contains more icons, more text, or a bigger picture than can fit. You can move the contents of the window within the window to see the items or parts of the document that aren't visible by scrolling. When a window contains more than you can see in it, its scroll bars become active to show that you can scroll to see more. Initially, windows in the BeOS have proportional scroll bars, so called because their scroll knobs change size to give you a rough idea of what proportion of the contents of a window is visible. When you can see almost everything the window contains, the scroll knob is almost as long as the scroll bar; when you can only see a tiny part of what the window contains, the scroll knob becomes small in relation to the whole scroll bar.



The simplest way to scroll is to click or press a scroll arrow. But there are lots of other ways to scroll:

Do This	To
Click a scroll arrow.	Move the contents of the window a little.
Press a scroll arrow.	Keep moving the contents of a window slowly.
Drag a scroll knob.	Scroll the contents of the window quickly.
Click in a scroll bar.	Scroll by a windowful.

You can also:

Do This	To
Press Page Up.	Scroll up a windowful.
Press Page Down.	Scroll down a windowful.
Press Home.	Scroll all the way to the top.
Press End.	Scroll all the way to the bottom.

The content of a window also scrolls when you select an item that's not in view; for example, when you use the arrow keys to select items in a window.

Zooming a Window

You can quickly increase the size of a window by clicking its zoom button. This has the same effect as choosing the Resize to Fit command from a window's Window menu. The window becomes as large as necessary to display everything in it. Click the zoom button again to return the window to its previous size and location. Some applications use the zoom button slightly differently. For example, when you click the zoom button in the Workspaces application's window, it moves the window to the lower-right corner of the screen.

Hiding a Window

If you begin to have more windows open than is convenient, you can hide one or more windows. To hide a window, double-click its tab (but be careful not to double-click the close or zoom button).

To restore a hidden window to its original location, go to the Tracker, where the pop-up menu shows which windows are hidden. Select the hidden window and it reappears on the desktop. You can do the same to hide applications in the BeOS.

Selecting Items

To work with an item in a window, you first select it. Selected items usually change color to show that they're selected. For example, when you click an icon in a Tracker window, it becomes darker (or *highlighted*).

Besides clicking, there are other techniques and shortcuts for selecting items. The following table summarizes ways you can select items in Tracker windows, query windows, and some panels, such as the Open and Save panels.

Do This	To
Click an item.	Select it.
Drag from an empty place in a window across one or more items.	Select the items you drag across.
Type one or more letters.	Select the item that starts with that letter or letters.
Press an arrow key.	Select the next item in the direction of the arrow.
Press the Tab key.	Select the next item in alphabetical order.
Hold down the Shift key while pressing the Tab key.	Select the next item in reverse alphabetical order.
Hold down the Shift key while you click, drag, or type.	Select or deselect additional items.
Choose Select All from the File menu.	Select all the items in the window.

Changing Views

Initially, the items in windows are displayed as large icons with their names beneath them. If you prefer, you can view the items in the window as small icons with their names to the right. Or, you can view the items in an ordered list view, which shows you additional information about the items. List views are also used in query windows, as well as some panels, such as the Open and Save panels.

You change views by choosing Icon view, Mini Icon view, or List view from a window's Window menu.

Icon View

Mini Icon View

When you're working in Icon view or Mini Icon view, you can move one or more items in a window to a new location in that window—perhaps to group related items in the same part of the window. Simply drag an item to the location you want. If more than one item is selected, they all move when you drag one of them. If you hold down the Command key on Mac keyboards ("Alt" on most PC keyboards) while you drag icons, they snap to an invisible grid when you release the mouse button.

In Icon view and Mini Icon view, you can use commands in the Window menu to straighten up the arrangement of all the icons in the window. Choose Clean Up to align each icon in the window to the nearest location on the invisible grid. If you hold down the Shift key, the Clean Up command changes to Clean Up All. Choosing this command sorts the icons in the window in alphabetical order on the grid.

Working in List View

When you're working in List view, you can change how the items are ordered in the list. Initially, items are sorted alphabetically by name, and the Name field title is underlined at the top of the list. If you click on another field title, the items in the list are sorted in a way that's appropriate for that field, and the field title you clicked becomes underlined. If you click a second time on a field title (or hold down the Shift key while you click on a field title the first time), the items are sorted in reverse order.

You can choose the fields you want to see in list view from the Fields menu. Fields shown in the window are checked in the menu.

Additionally, you can change the order in which the field title appears in the window. Simply drag the field title to the field title of the desired location and it will be placed accordingly.

Closing a Window

When you finish working with the contents of a window, you can close it to make more room for other windows on the desktop. To close a window, click its close button on the left side of the window tab. In many applications you can also choose the Close command, which is usually in a window's Window or File menu.

If you're working in an application where you need to save your changes, a dialog asks if you want to save any unsaved changes when you close a window.

In many Be applications—such as the preferences applications—when you close an application's last (or only) window, the application quits.

Working With Menus

Be menus contain commands, lists of applications, settings, and other items.

You work with menus in three main places:

- In the Deskbar.

  The Deskbar's application list has the Be logo as its title. The Be menu contains menu items for BeOS system functions, and for items you put in your Be folder.

- In windows.

  An application's menus are along the tops of its windows.

- In panels and dialogs.

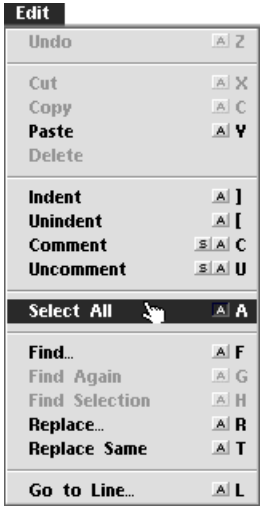
  Pop-up lists and other controls in panels and dialogs work very much like menus.

You can navigate menus and choose items from them in a number of ways, using the mouse, the keyboard, or a combination of the two.

Note: This section describes how menus behave when you first install the BeOS, but you can change the appearance of fonts and how they work with the Menu preferences application, described in "Setting Menu Preferences" on page 163.

Navigating Menus by Dragging

You can press a menu title, drag to the menu item you want, and release the mouse button to choose that menu item. If you release the mouse button without choosing a menu item, the menu closes.



When you drag through menus, you also see the **keyboard shortcuts** for the items in the menu. These are key combinations you can press rather than choosing the menu items with the mouse. The ⌘ icon represents the Command key (either of the keys labeled "Alt" on either side of the spacebar on most PC keyboards). The S icon represents the Shift key. Choosing menu items from the keyboard is described in "Navigating Menus From the Keyboard" on page 42.

Navigating Context-Sensitive Menus

In some applications, such as the Tracker, you can open a menu by selecting an item or positioning the cursor over it and then pressing a mouse button. Context-sensitive menus are also available in the Open and Save panels. You can drag to a menu item you want and release the mouse button to choose it. If you don't want to choose one of the items in the menu, drag the cursor out of the menu before you release the mouse button.

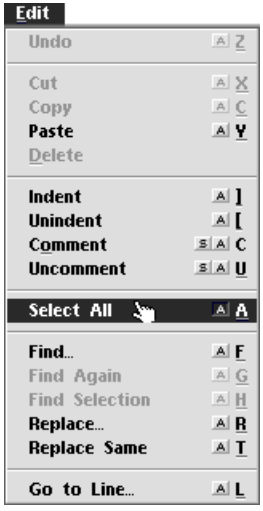
Initially, the secondary mouse button is the right mouse button on a three-button mouse, but you can rearrange the buttons and their roles with the Mouse preferences application. See "Setting Mouse Preferences" on page 165 for more information.

You can also open context-sensitive menus by pressing (holding down the mouse button) when the cursor is on an object—such as an icon or selection of icons in the Tracker—and waiting for a moment. The delay before the context-sensitive menu opens is related to the double-click speed you set in the Mouse preferences, which is described in "Setting Mouse Preferences" on page 165.

Navigating Menus by Clicking

You can click a menu's title to open it and view its contents. Then you can click a menu item to choose it.

When you click a menu title, the menu stays open until you choose a menu item, click another menu title, or click elsewhere on the screen. When you move the cursor (without pressing a mouse button) over items in an open menu, menu items highlight beneath the cursor and submenus open. You can press the Enter key on the keyboard to choose a highlighted menu item.



Click a menu title to open the menu, then click the menu item you want to choose.

When you click a menu title, you see the menu's **triggers**. Triggers are characters you can type when a menu is open to choose an item by typing instead of clicking. Triggers are indicated by underlined letters in menu titles and menu items. For more information, see "Navigating Menus From the Keyboard" on page 42.

An arrow next to a menu item indicates that has a submenu. Move the cursor over a submenu title to open it. Then click the menu item you want to choose in the submenu.

Navigating Menus From the Keyboard

You can press and release a key to display the triggers for the menu titles in the active window.

- On traditional PC keyboards, press Command (labeled "Alt") and Escape at the same time.
- On newer PC keyboards press the Menu key, usually to the left of the right-hand Control key.

- On Macintosh keyboards, press Command (labeled ⌘) and Escape at the same time; or press the equal sign key (=) on the numeric keypad.

You can also use triggers to navigate. Type the trigger letter for the menu you want to open, then type the menu item's trigger letter to choose it.

If triggers are showing and you decide not to choose a menu item, press Escape to hide the triggers.

Most menu items have a trigger. To choose an item that doesn't have a trigger, you can use the arrow keys to select it and then press Enter.

When you open a menu, you can also use the arrow keys on the keyboard to navigate menus. Use the left and right arrow keys to open different menus and submenus. Use the up and down arrow keys to highlight menu items. When the menu item you want to choose is highlighted, press Enter.

To open an application's main menu, press Command-spacebar (that is, press the Command key and the spacebar at the same time). To open the application list (so you can switch applications), press Command-Tab.

Choosing Menu Items by Shortcut

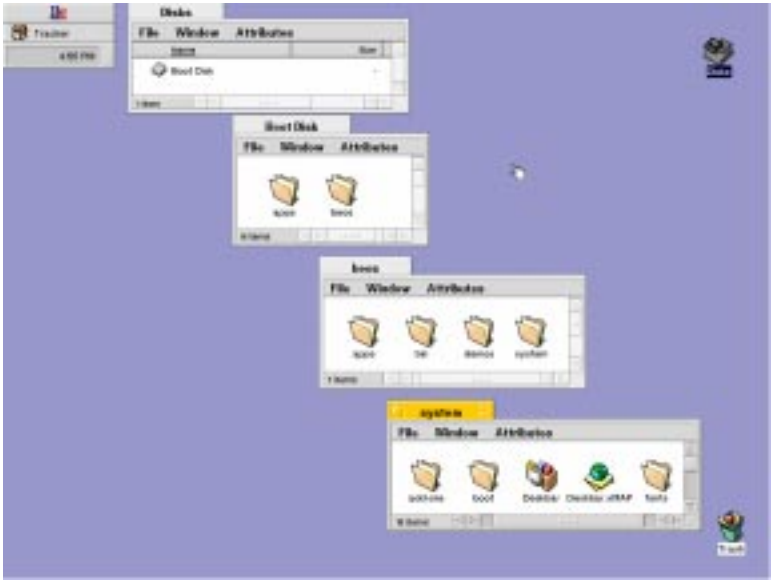
Many menu items have shortcuts, key combinations you can press to choose a menu item rather than by dragging, clicking, or by navigating from the keyboard. If a menu item has a shortcut, it's displayed to the right of the item in the menu. The A icon represents the Command key (either of the keys labeled "Alt" on either side of the spacebar on most PC keyboards; the key labeled ⌘ on Mac keyboards). The S icon represents the Shift key. Shortcuts are always displayed in menus as uppercase letters, though you need to press the Shift key along with the Command and letter keys only if the shortcut includes the S icon. For more information about shortcuts see "Keyboard Shortcuts" on page 31.

Working With the Tracker

You use the Tracker to organize you work: files, applications, queries, and so on. The Tracker is also the main tool you use to start applications.

Understanding the Hierarchical File System

Applications, documents, and other files in the Be file system are stored on disks. Because the number of files can become quite large, it's convenient to sort them into related groups. To do this, the BeOS—like many other operating systems—uses the metaphor of folders (also called "directories"), where you can keep related files together, and even related folders. The following illustration shows the fonts folder, which is in the system folder, which is in the BeOS folder, which is on the disk named Boot Disk.



There's another way of expressing the location of items in this hierarchy. For example, when you're working in the Terminal application, you use an item's path name. A path name is a series of folder names separated by slashes. For example, the path name of the fonts folder in the illustration is */beos/system/fonts*. The leading slash indicates that the system folder is in the root of the boot disk; that is, on the disk you booted from but not in a folder.

This system gets more complicated when you're working with more than one disk. There are also shortcuts to represent items in the same folder and items in folders closer to the root of the hierarchy.

Getting Information About an Item

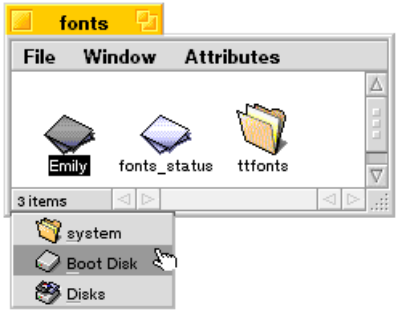
You can get information about an item in a window by selecting it and choosing Get Info from the File menu.

The information you receive depends on the item. For disks, you get information about their capacity and free space. For files, you get information about their size, their creation and modification dates, and location in the file system. For applications, you get this same information, plus a version number.

Opening Folders

Double-click a folder to open a window that shows the folder's contents. The title of the folder window is the name of the folder. A folder that contains another folder is often called the parent of the folder it contains. When you're viewing the contents of a folder in a window, you can open its parent folder by choosing Open Parent from the Window menu.

You can also open a folder's parents from the pop-up menu that appears when you press the lower-left edge of a folder window, the area that normally lists the number of items in the window below:



If you press the secondary mouse button when the cursor is over a folder or disk icon, or an empty area in a folder window, a context-sensitive menu opens under the cursor. You can also do this with a single-button mouse in Icon or Mini Icon view. The top item in the menu is a submenu with the same name as the folder the cursor is over. All folders, applications, and other files in the folder the cursor is over are arranged hierarchically in

the submenu. You can navigate the submenu to choose any folder or file to open it. (See “Navigating Context-Sensitive Menus” on page 41 for more information.)

Press on a folder with the secondary mouse button to open a menu you can use to open a file or folder the first folder contains.

If you hold down the Control key when you double-click a folder, the folder’s parent closes when the folder you double-clicked opens. This is a handy way to reduce the number of folders open in a workspace.

Renaming Items

You can rename any file, folder, disk, or other item in a window. To change an item’s name, select the name by clicking it and type a new one. You can also select an item in a window and choose Edit Name from the window’s File menu to select the name. You type and edit an item’s name in the same way as you would any other text in Be applications. You can name an item anything you want, as long as there’s no other item in the same folder with that name already. You can use up to 255 letters, numbers, and symbols—anything you can type, except slash (/).

Warning: Do not rename the beos folder located on the boot disk or the beos will no longer work.

Tip: If you change your mind about renaming a file or folder while editing its name, press the Escape key to restore the original name.

Creating a Folder

You can create a new folder to store related files and other folders.

1. Open the folder where you want to create the new folder, so the folder's window is the active window.
2. Choose New Folder from the folder window's File menu. (Or press Command-N on the Mac keyboard, Alt-N on the PC.)

A folder named New Folder is created. The folder's name is selected; to name the folder type a name and press Enter.

Moving and Copying Items

You can move items (such as a file or folder) from one folder to another, by dragging the item into the window or onto the icon of the folder where you want to move it. You may have to arrange the windows on your desktop so both the item you want to move and the window or folder where you want to move it are visible.

If the folder you drag an item onto is on a different disk, the item is copied instead of moved. That is, a new copy of the item you drag is created where you dragged it, but the original copy remains in the folder from which you dragged it. If you want to have copies of the item you're moving in both the source and destination folders on the same disk, hold down the Control key (the key labeled "Ctrl" on the left side of most PC keyboards) while you drag the item. This forces a copy whether the destination is on the same disk or not.

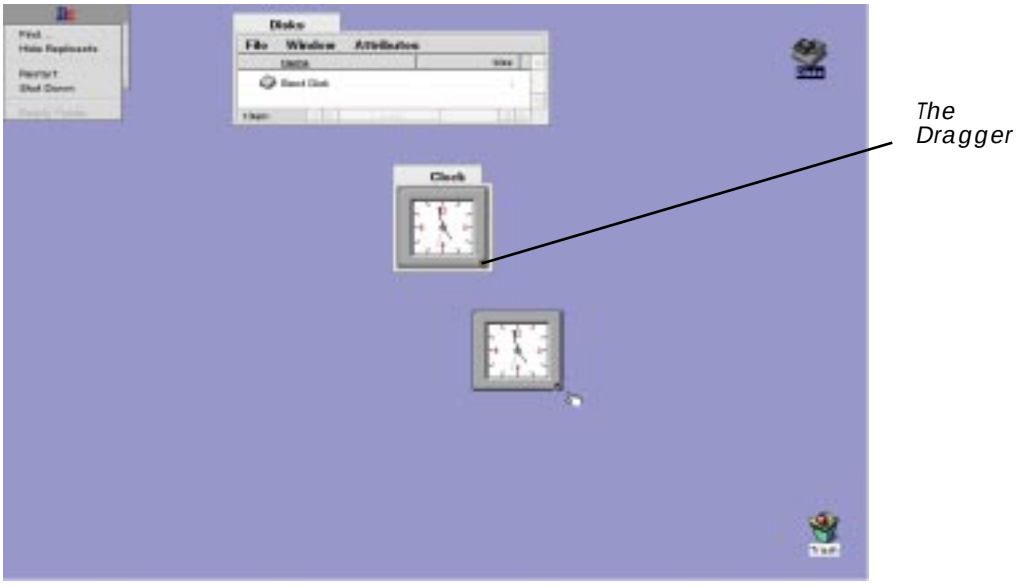
Another way to copy or move files or folders is to use the context-sensitive menus. Position the cursor over the item you want to move or copy and press the secondary mouse button. In the menu that opens under the cursor, drag to the Move To or Copy To submenu and then through the hierarchy of submenus to select the folder where you want to copy or move the item under the cursor.

Use the secondary mouse button to move or copy the selected item to any location in the file system.

If you're copying or moving a lot of files, a status window opens with updates on the progress of that task. If you're moving or copying more than one set of files or emptying the trash, each such task is listed in the status window. You can click a status bar in the Status window and click Cancel to stop a task in midstream, but whatever has been moved, copied, or deleted so far stays moved, copied, or deleted—it's not undone.

Replicating Items

Replicating items in the BeOS means you can take a component of an application and replicate it so it resides inside another application. To replicate an item, click on the Be logo in the Deskbar and choose Show Replicants. This creates draggers on the item you are replicating. By clicking on the dragger and holding the mouse button down, you can place the replicant anywhere, including the desktop.



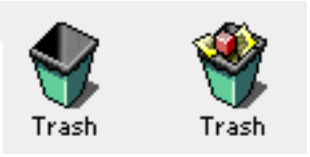
To delete a replicant, hold the secondary mouse or press Control-Command while you click the mouse button (if you have a single-button mouse) on the dragger and a pop-up menu appears and gives you the option to delete.

Duplicating Items

You can create a copy of any item by selecting it and choosing Duplicate from its window's File menu. The duplicate is created in the same folder as the original, and has the same name, with "copy" appended. If you create more than one duplicate of the same item, the duplicates have "copy 2," "copy 3," and so on, appended to the original name.

Deleting Items

You can delete files, folders, and most other items you see in the Tracker by dragging them to the Trash can icon. You can also put items in the trash by selecting them in a Tracker window and choosing the Move to Trash command from the window's File menu. When there are items in the trash, the Trash can icon appears to have trash in it:



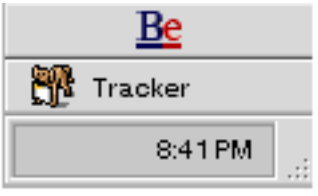
Items you put in the trash aren't deleted permanently. You can double-click the Trash icon to see what's in the trash and drag items back into a Tracker folder window if you decide not to delete them after all.

When you're sure you want to remove items permanently, choose the Empty Trash command from the Tracker's main menu, or click and hold the mouse on the Trash can icon to see the Trash pop-up menu, then choose Empty Trash.

If you make a habit of putting items in the trash and never emptying it, the trash eventually takes up a lot of disk space, so it's a good idea to empty the trash periodically.

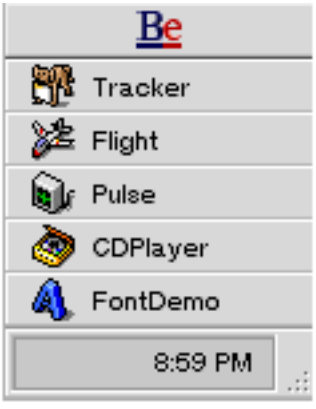
Working With the Deskbar

When you initially boot into the BeOS, the Deskbar appears in the upper-right corner of the screen.



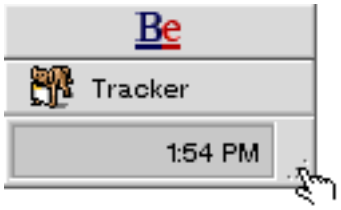
Click once on the Be Logo to view the Be Menu items. The Be Menu contains Find, the system commands (such as Restart, Shut Down, and Show Replicants), and any items that reside in the Be folder located on the startup disk.

The area between the Be logo and the clock is the application list, which shows the Tracker and all currently running applications:



Moving the Deskbar

You move the Deskbar by dragging it by the dotted area in its lower-right corner to the desired location. The Deskbar can be moved to any of the four corners as well as the top and bottom of the screen.

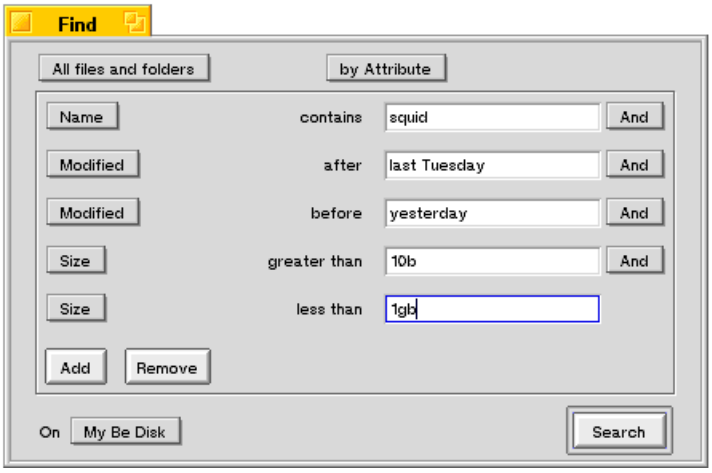


Finding Items

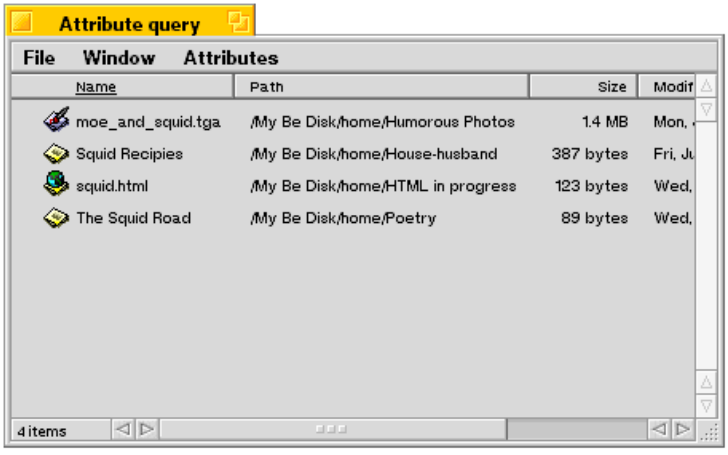
You can use the Find command in the Be Menu on the Deskbar to search for files, folders, and other items in the Be file system (that is, items stored as files on a disk). You can also search for entities such as e-mail or the names of audio CD tracks you enter in the CDPlayer application. When you choose Find, the Find window opens; there you specify in greater or lesser detail the attributes of what you're looking for. These specifications, called queries, are saved in the Be database, so you can reuse them later.

To find an item follow these steps:

1. Choose Find from the Tracker's main menu.
2. Choose what kind of items you want to find, and how you want to search (by name, attribute, or formula).
3. Specify the attributes of the item or items you want to find.
4. Specify the disk on which you want to search.



5 Click Find. A query window opens, listing all the items that match the attributes you set in the Find window.



Query windows are similar to other Tracker windows, except they have a gray background and work only in List view. You can double-click items to open them, drag items to the desktop and to other folders, add and remove fields using the Fields menu, and so on. (Think twice before dragging items from a query window to a location in the file system,

because they usually contain items from many parts of the file system, and once you move them, you can't move them back as a set.)

Caution: Though you can see and edit a text version of the query in the upper part of a query window, resist the temptation to experiment. The query language is incomplete in the Preview Release version of the software, and you can easily create an unresolvable query.

Opening a Query

The Be database saves every query you create—until you decide to delete it. You can peruse your queries in the *home/queries* directory on your boot disk. Double-click a query in the window to open another query window, which shows the current result of the saved query.

You can drag queries you don't want any more from the Query window to the trash.

Taking a Screen Shot

There are two ways to take a screen shot in the BeOS. Press the Print Screen key or command -shift-3 (alt-shift-3 on a PC keyboard). The screen shot appears in the folder called home on your boot disk. All screen shots are in targa format. You can open the screen shot be dragging it onto the application called Rraster. Rraster is located at *file://boot/beos/apps/rraster/*.

3 Learning Be Application Basics

The BeOS comes with a number of applications. Some you use to create documents, some to configure your working preferences, and others to demonstrate the potential of the BeOS. Most applications are in the */apps* folder located on your boot drive. You start applications, open files, type and edit text, save files, quit applications, and perform many other tasks the same way in most applications. This chapter introduces you to these basic techniques, and includes the following topics:

Starting an Application

You can start an application by double-clicking its icon. Other ways to start an application include selecting its icon and choosing Open from the File menu, and selecting an application icon and pressing Enter. You also start an application when you open a file—if the application you use with the file isn't already running. When an application is running, its name is added to the application list—located under the Be logo in the Deskbar.

Switching Applications

You can run many applications at the same time. The BeOS and the applications themselves understand how to share processors, memory, and other resources, so many applications can do many things simultaneously. While all running applications are "active," in the sense that they're all doing whatever you told them to do, only one application has a yellow title bar to indicate it is the active application. This is the application that responds to what you type on the keyboard, There are a number of ways to switch among applications. The simplest is to click in a window belonging to the application that you want to work in. Another way is to choose an application from the application list in the Deskbar.

Quitting an Application

When you finish working with an application, you can quit it by choosing its Quit command. In most applications the Quit command is in the File menu. In many applications, closing an application's windows also causes it to quit. It's a good idea to quit an application if you won't be using it for a while, to free up resources for applications you're still using.

Creating a New File

When you start many applications—such as StyledEdit—they open a blank, unnamed file in a window. You can work in this file and then save it (as described in "Saving a File" in the next section). You can create and open another new file by choosing the New command. The New command is in different locations in different applications, but in most it's in the File menu in the application's windows. It's important to save a new file as soon as you create work that you don't want to lose.

Saving a File

When you work in a file, your changes aren't stored permanently until you save them. If you experience a power outage, or if the application crashes, or if you accidentally press "Control-Alt-Delete," unsaved changes are lost. Saving a file puts a copy of the file with the latest changes on a disk, where it's stored permanently—until you change the file and save it again.

If you make changes to a file that already has a name and location on a disk, save your changes by choosing the Save command. The Save command can be in different menus in different applications, but it's most often each application window's File menu.

Opening a File

There are many ways to open files. The simplest is to double-click a file's icon. You can also select a file's icon and choose Open from the File menu, or select the file and press Enter. Most files have an application they're associated with—usually the application they were created with. When you double-click a file, it opens in this application. A file's icon usually resembles the icon of the application it's associated with, so you can tell what application a file will open in by looking at its icon.

If a file doesn't have an application associated with it, you're asked if you want to use StyledEdit to open the file when you double-click it. You can drag a file onto an application icon to open it in that application. This is a good way to open a file in an application it normally isn't associated with. For example, you can use this technique to

open a script file you want to read or edit in the StyledEdit application—if you just double-click a script file, the script runs, instead of opening in a document window. (Of course, the application has to know how to open the file, so you can't, for example, drag an ImageViewer file onto the PlaySound icon.)

Working With Text

You use the keyboard and mouse to create and edit text in many locations in the BeOS. You can edit file names, text files, settings in panels and dialogs, and so on. Edit text by selecting where you want to type and then typing. You can also copy text from one place and move it to another, or delete text.

The on-screen location where what you type (or text you move) will be entered is indicated in two ways. The first is by a blinking vertical bar, called the insertion point. The second is by highlighted text you want to replace.

Selecting Text

There are a number of ways to select text.

Do This	To
Click	Select an insertion point.
Double-click	Select a word.
Triple-click	Select a line.
Drag across text	Select a character at a time.
Double-click and drag	Select whole words at a time.
Triple-click and drag	Select whole paragraphs at a time.
Hold down the Shift key	Extend or reduce a range of selected text.

In many applications, you can choose the Select All command to select all the text in a window or document; the Select All command is usually in an application's Edit menu.

Typing Text

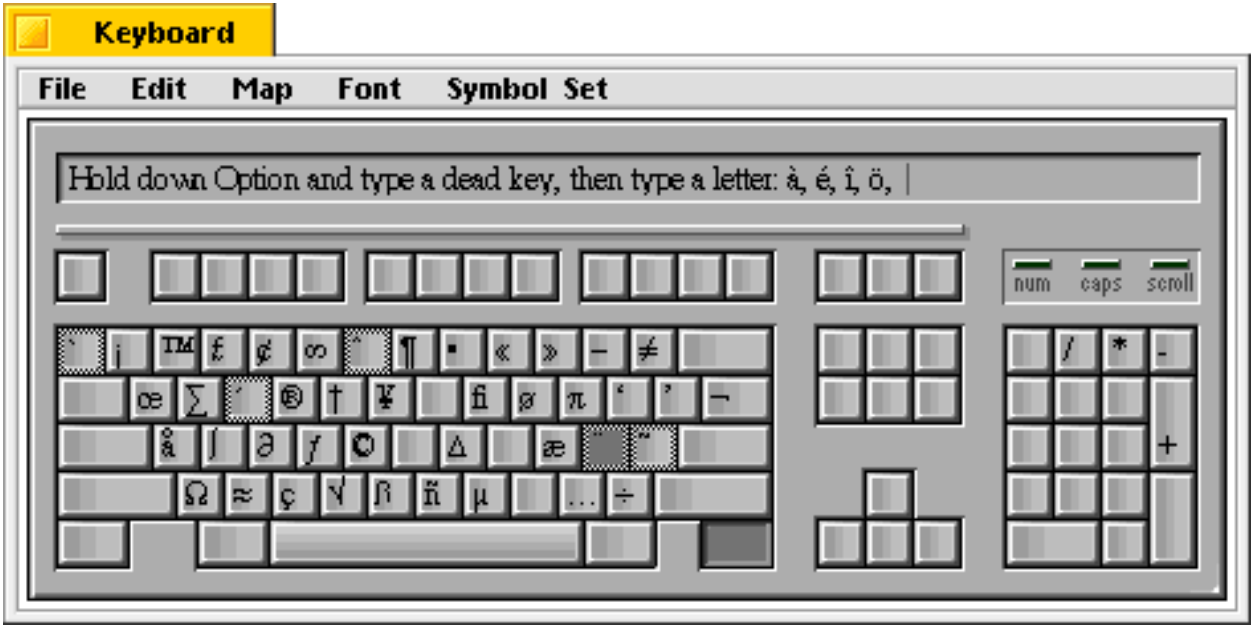
You type text in documents, when you name or rename files, in the Save panels, and in many other places. To type text, click to select an insertion point or select text you want to replace, then type what you want. If you select text, what you type replaces the selection.

Typing Special Characters

You type accented characters, symbols, and other special characters by holding down the Option key (the key labeled “Control” on the right side of most PC keyboards; the key labeled “Option” on Macintosh keyboards) while you type one or more other keys. You type most accented characters by typing a dead key with the accent you want, followed by the letter you want accented. Dead keys are keys that when pressed, don’t place a character on the screen until you type another character. For example, to type “é,” you press Option-E and then type “e.”

In the Keymap application, dead keys are indicated by a checked border. The keymap is located in the Be Preferences folder. The Keymap application is a good tool to use to find the accents and other special characters you want.

For more information, see “Using the Keymap Application” in Chapter 6, “Customizing the BeOS.”



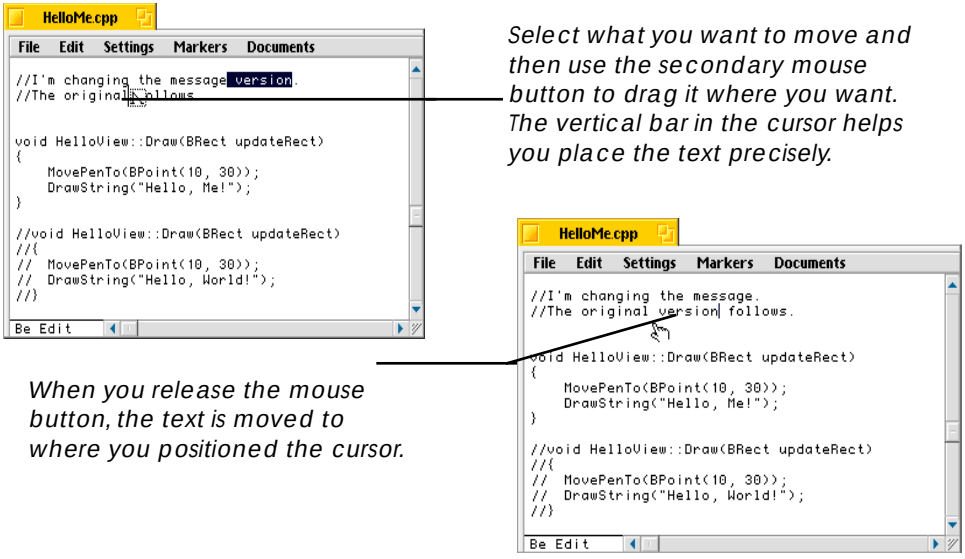
Copying and Moving Text

To copy selected text and paste it elsewhere, select the text you want to copy and choose Copy from a window's Edit menu. Then select an insertion point or text you want to replace and choose Paste from the Edit menu. You can paste text in the same document you copied it from or in any other application where you work with text, including the names of items in windows and text fields in panels. To move text rather than copy it—that is, remove the text you select and paste it elsewhere—choose Cut from the Edit menu instead of Copy.

Text you cut or copy is stored in a special part of memory, called the "clipboard." What you last cut or copied remains on the clipboard until you cut or copy something else, so you can paste what you cut or copied repeatedly, without having to cut or copy the original again.

Moving Text With the Mouse

You can use the mouse button to move selected text by dragging it. When you this, the cursor changes shape to help you position the text exactly where you want it.



Initially, the right mouse button is the secondary mouse button on a three-button mouse, but you can change which button is the secondary mouse button with the Mouse

preferences application (see “Setting Mouse Preferences” in Chapter 6, “Customizing the BeOS.”

Deleting Text

The simplest way to delete text is to press the Delete key which erases the text to the left of the insertion point letter by letter. (Depending on the keyboard you’re using, the Delete key may be labeled “Delete,” “Backspace,” or just have a left-pointing arrow.)You can delete selected text all at once by pressing the Delete key. Many applications also have a Delete command in their windows’ Edit menus. The Delete command acts on selected text just like pressing the Delete key.

Printing With the BeOS

The BeOS currently ships with support for two types of printers:

- Postscript LaserWriter–compatible printers connected via EtherTalk (AppleTalk protocol on Ethernet).
- HP LaserJet (PCL3)–compatible printers via the parallel port on a BeBox.

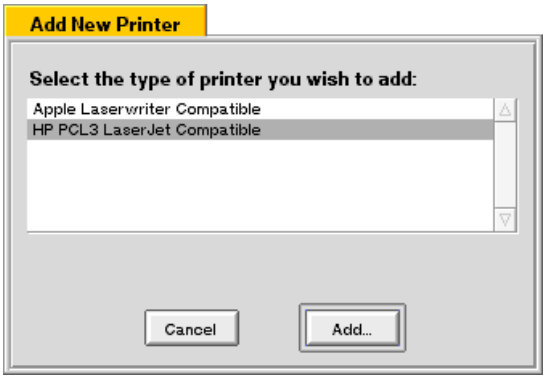
Selecting a printer is a two-step process on the BeOS:

- Add the printers you would like to use to your system.
- Select a current printer from that list.

There are two applications in the preferences directory, called Add Printer and Select Printer, which perform these two operations.

Adding a Printer

To add a printer first launch the Add Printer application, located in the Preferences folder. You will see that the BeOS currently supports two types of printers: the Apple LaserWriter Compatible, HP PCL3 LaserJet Compatible. As developers add drivers to the system, other printers types will appear in this window.

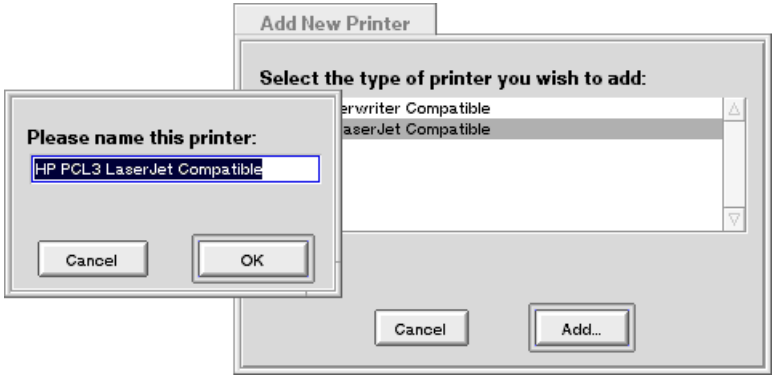


The HP LaserJet driver supports LaserJet-compatible (PCL3) printers connected via the parallel port to the BeBox. Because Power Macintosh–compatible computers do not have a parallel port, users should not try to add an HP LaserJet–compatible printer to their system.

Adding an HP LaserJet to Your System

To add an HP LaserJet printer to your system:

1. Launch the Add Printer application.
2. Select HP PCL3 LaserJet–compatible and click Add.



3. A dialog appears that lets you type in a new name for the printer.

4. When you click OK a dialog asks if you want this printer as your default printer. Click Yes if you do.

Adding an Apple LaserWriter–Compatible Printer

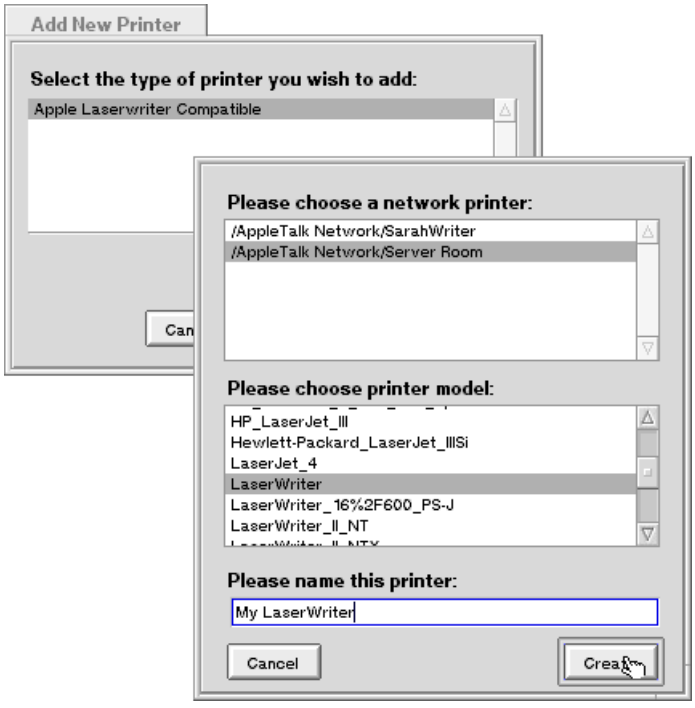
The BeOS Preview Release supports Apple LaserWriter–compatible printers that are connected via the Ethernet. Make sure that AppleTalk is turned on in the Network preferences panel before adding an Apple LaserWriter to the system.

If you have a LaserWriter-compatible printer connected via Ethernet that you want to print to:

1. Launch the Add Printer application.

2. Select LaserWriter Compatible and click Add.

3. Select which LaserWriter-compatible printer to add to your system from the top list.



Note: You can see and select only the printers that are in the same AppleTalk zone as your computer.

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4. Select the description file for the selected printer.
5. Choose a name for the printer on your system.
6. Click OK.
7. When you click OK a dialog asks if you want this printer as your default printer, or current, printer. Click Yes if you do.

Repeat these steps to add other printers to your selection.

Selecting a Printer

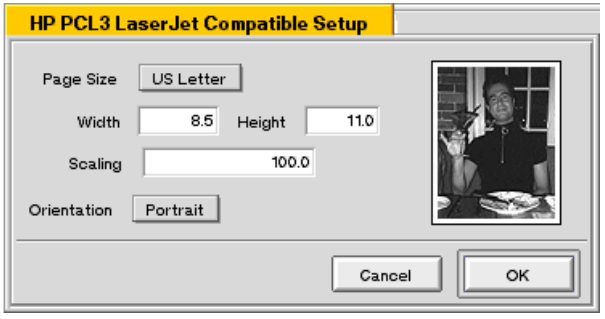
When you add new printers to your system, you can make any one the default. Use the Select Printer application when you have more than one printer on your system and want to switch between them:

1. Launch Select Printer
2. Select the printer you want to print to from the scrolling list available on your system and click Select.

Page Setup and Print Dialogs

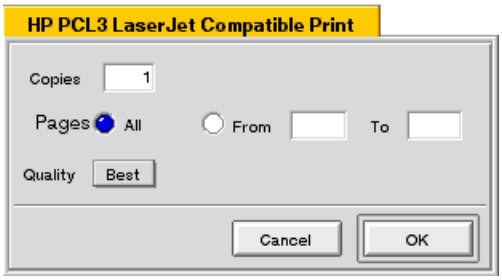
Applications have two dialogs that control printing: Page Setup and Print.

The Page Setup Dialog controls the orientation, scale, and paper size of the document.



The Print dialog controls the number of copies, page range to print, and print quality.

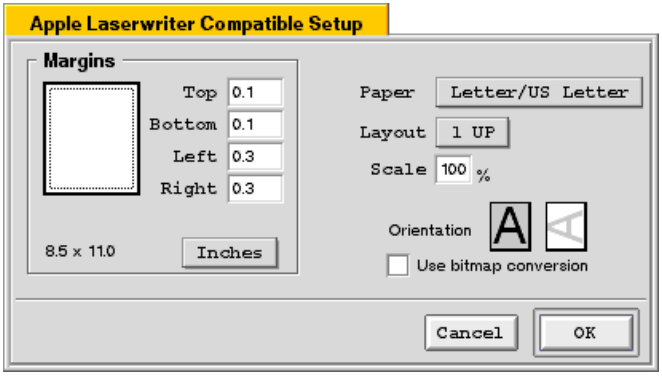
- The Page Size pop-up includes the sizes of paper you can print on.
- Width and height indicate the dimensions of the page.
- The Scaling box enables you to expand or contract the actual document when printed.
- Orientation indicates how the document is laid out on the page.



The Page Setup and Print dialogs are slightly different when printing to a LaserWriter-compatible printer.

- "Copies" indicates the number of copies of a document to print.
- Pages: "All" means print all pages; to print only part of a document type the desired page range in the From and To boxes.
- The Quality pop-up determines the quality/resolution of the printout.

While the Print dialog is virtually identical, the Page Setup dialogs for LaserWriter compatible printers is somewhat different than for LaserJet compatibles.



On the left side of the dialog you can set the margins for the page and choose the scale (inches, centimeters, or points). On the right side of the dialog:

- The Paper pop-up lets you choose the page size to print on.

- Layout determines the print order of the job: whether the first page prints out first or last.
- Scale lets you shrink or expand the entire document.
- Orientation makes the direction of the document either vertical or horizontal.
- The Bitmap conversion option converts everything to a large bitmap on your machine using the native graphics routines in the BeOS rather than converting to PostScript and converting on the printer. This is useful with BeOS capabilities, such as drawing transparency or Japanese fonts, that are not in the printer. The bitmap approach ensures that what you see is what you get, but files print more slowly since the entire bitmap must be downloaded to the printer.

4 Connecting Your BeOS System to the Internet

The BeOS is an Internet-native operating system, based on the same networking standards and protocols as those that control the Internet. These include TCP/IP, the basic Internet networking standard, and standards for file sharing, remote access, the worldwide web, and electronic mail. By utilizing these standards, your BeOS system can communicate with any other system on the Internet, including other BeOS systems, Windows, Mac OS, Unix, and other Internet-capable systems.

The BeOS is not limited to only Internet-standard networking, however. Its networking framework is flexible and expandable, so that software developers can add networking capabilities for virtually any other system. For example, your BeOS system can print to Postscript-based printers on Ethernet networks using the AppleTalk protocols. Other networking standards will become available from independent software developers for the BeOS.

This networking chapter covers the following topics:

Introduction

This chapter discusses how to configure your BeOS system for Internet networking. The next chapter, “Using Internet Services,” describes how to set up your BeOS system for file sharing, worldwide web access, receiving Internet electronic mail, Internet remote access, and setting up a worldwide web server. Connecting your BeOS system to the Internet consists of these five steps;

1. **Connect network hardware**—Connect the appropriate network hardware to your system. This includes network adapter cards, modems, and cables.

2. **Gather IP Address information**—Obtain Internet IP address information from your network administrator or Internet service provider (ISP), prior to configuring your BeOS system.

3. **Add network interfaces**—Use the Network preferences window to add network interfaces, which tell the BeOS about physical connections to the Internet.

4. **Configure Domain Name services**—Use the Network preferences window to configure domain name services, servers the BeOS uses to help you navigate the Internet.

5 **Save and restart networking**—Save the network configuration and reinitialize networking with the new settings.

In addition to describing how to set up your BeOS system for Internet networking, this chapter covers more advanced topics such as setting up a stand alone network, configuring for multiple network interfaces, special domain name service configurations, and how to install new network driver software.

Connecting to the Internet

The following sections step you through connecting your BeOS system to the Internet in considerable detail. Because this can be a complicated procedure, this chapter tries to provide all the information you'll need to connect successfully.

Connecting Network Hardware

The basic BeOS system supports a wide range of networking hardware. It supports network adapter cards for both PCI and ISA slot architectures that conform to the three largest networking hardware standards: the Novell NE-2000 card standard, the 3Com EtherLink II standard, or the DEC 21040/21041 standard. In addition, the BeOS supports PowerMacintosh on-board Ethernet hardware.

You can also connect to the Internet using a modem. The BeOS supports a wide selection of modems, connected to your system through one of your computer's serial ports.

For information on installing networking interface cards, transceivers, modems, and cables to your PowerMacintosh or BeBox system, see your PowerMacintosh-compatible hardware user's guide, BeBox hardware system user's guide, and the guides that came with your networking interface cards, modems, and cables. Once you have connected the proper hardware, return here to learn how to configure the BeOS software for your specific setup.

Gather IP Address Information

There are two basic concepts you need to know about when setting up any computer, including a BeOS system, for Internet access; the Internet IP Address, and the Internet Domain Name.

- **Internet IP Address**

  An IP (Internet Protocol) address is a set of four numbers, each ranging from zero to 255, separated by periods (also known as dots, and so sometimes an IP address is known as a dot address). An example of an IP address is 192.168.0.67. This is the basic form of "street address" for the Internet. All connected computers, and the hardware that runs the Internet, understand IP addresses. No two computers connected to the Internet have the same IP address at the same time.

- **Internet Domain Name**

  A domain name is a human-readable (or human-rememberable) version of the IP address. A domain name is a set of characters, separated by periods. An example is www.be.com, the domain name of the main Internet web server at Be, Inc.

To set up your BeOS system for the Internet, you need a set of Internet IP addresses to tell the BeOS your location on the Internet. You then use domain names like www.be.com or mail.server.com to locate web sites, check mail, and access other services on the Internet. The IP address configuration information differs slightly if you're connecting to the Internet via an Ethernet network, or via a modem and phone lines.

If you are connecting to the Internet via Ethernet you should contact your network administrator to get the information you need to configure your BeOS system. If you are connecting via modem and phone lines, you'll receive this basic information from your Internet Service Provider (ISP), or from your company's network administrator if you're connecting to a modem at your company.

Note: If you're using the BeOS on a PowerMacintosh, and your system is connected to the Internet using the Mac OS, you can get IP address information from the TCP/IP control panel in the Mac OS. See the "Mac OS TCP/IP Configuration Information" section in this chapter for details.

Information you need to connect to the Internet includes the following:

Network Configuration Info	Description
Your IP Address	The IP address your computer uses to uniquely identify itself on the Internet. When you have a specific IP address, it's known as manual addressing (example: 192.168.0.67). You can also have an Internet server automatically assign your computer an IP address each time you connect. This is called server addressing (or dynamic addressing). This method is most frequently used when connecting to the Internet via modem, and sometimes when connecting via Ethernet. If you use server addressing, you will not have a specific IP address.
Network Mask (Net Mask)	A type of IP address that your computer uses to determine how to route information to and from your computer. In the majority of cases, your net mask is 255.255.255.0, but your organization or ISP may use a different net mask (example: 255.255.255.0).
Domain Name	The basic Internet name for your company or ISP; your "neighborhood" address on the Internet (example: mycompany.com).

Primary Domain Name Server, Secondary Domain Name Server	Domain names can be read by humans, computers on the Internet only understand IP addresses. A domain name server translates between human-readable domain names and machine-readable IP addresses. These two IP addresses provide the locations of two translators (usually also in your company or ISP) your computer can use when accessing Internet services. You can still access the Internet if you don't have domain name servers, but you'll have to use IP addresses rather than domain names. (Example: 192.168.0.1).
Host Name	Your computer's host name. This name is optional. Note that configuring your BeOS system for this name does not mean that other people will be able to use it to reach your computer unless your network administrator has configured the Internet routers to understand the name (example: name.mycompany.com).
Router IP Number	A router is a gateway through which your computer transmits data from your local network out to a larger network or the Internet (example: 192.168.0.10).

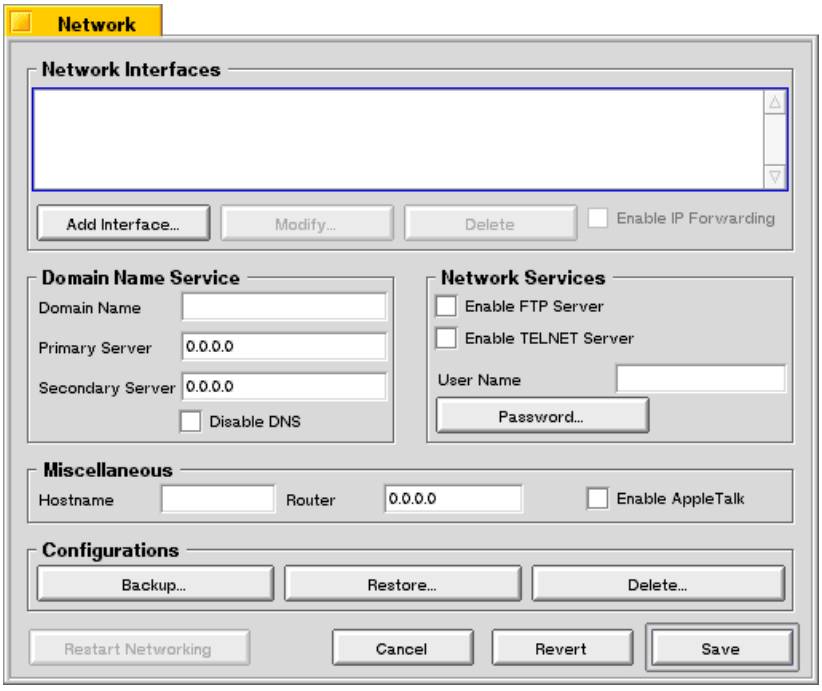
This is all the information you need to configure your computer for connection via an Ethernet network. If you are connecting to the Internet via modem, you need a few additional pieces of information:

Additional Configuration Information	Description
Dialup Phone Number	The phone number your computer calls to access the Internet. It is a phone number at your company or ISP that has a modem at the other end to which your modem connects (example: (408) 555-1212).
Dialup Server Type	The type of connection server you connect to. In most cases, this is either Standard PPP or Unix Login (also known as a Shell Account). This information tells your computer what protocol to use once the modems have connected (example: Unix Login).
User Name & Password	The user name and password you use to identify yourself to the server when you connect via modem (example: myname, mycode).

Once you have the information listed above, you're ready to set up your BeOS system for connecting to the Internet.

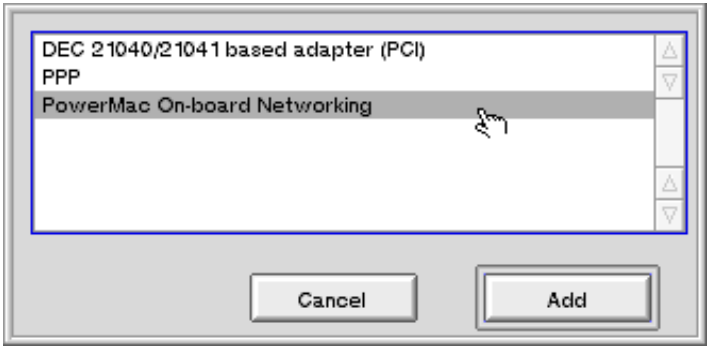
Adding Network Interfaces

Configuring BeOS networking is done through the Networking Preferences, found on your main hard disk in the Preferences folder (*file://boot/preferences/Network*). When you double-click the Network preferences icon, this window appears:



When you add a network interface to the Network preferences window, you're telling your BeOS system what physical paths it can use to get to the Internet. Your computer might be connected to the Internet by a direct Ethernet network cable, by a modem and phone lines, or both. A network interface is simply a description of these physical paths to the Internet. You must specify at least one network interface to successfully connect to the Internet.

To add a network interface, click on the Add Interfaces... button in the Network preferences window. The following window appears:



Network Interfaces for Ethernet Connections

If you are using an Ethernet connection, you will likely use one of three types of network interfaces, depending on the specific network hardware in your computer system:

- **PowerMacintosh On-Board Networking**

  If you are using a PowerMacintosh-compatible computer that comes with built-in Ethernet networking, you have what's called PowerMac on-board networking. With most systems, the cable connected to your computer via on-board networking is either 10BaseT (phone cord-like cabling), or an Apple Universal Interface (AUI) adapter which is connected to the network cable.

- **PCI Network Adapter Card** (DEC 21040/21041 compatible cards)

  These cards are inserted into one of the PCI slots on your PowerMacintosh-compatible or BeBox computer systems. They can use a wide variety of network cable types.

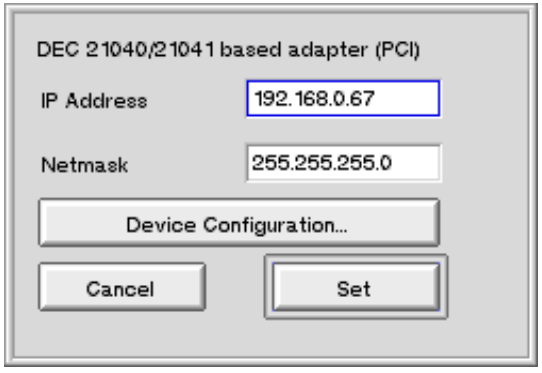
- **ISA Network Adapter Card** (NE2000 compatible cards and 3COM EtherLink II compatible cards)

  These cards plug into the ISA slots of BeBox systems and some PowerMacintosh-compatibles and can use a variety of network cable types.

If your network adapter is not one of those listed above, you need to install a BeOS Network Driver before configuring the card. See "Installing Network Drivers" for more

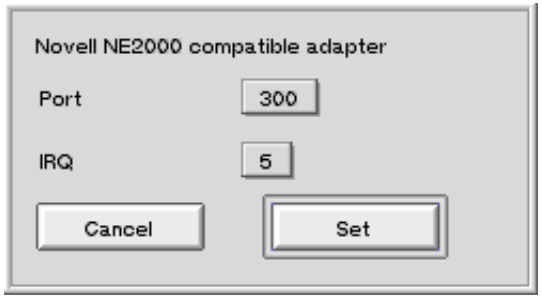
information on how to do this, and then return here to finish your network configuration. Once the network driver is installed, it appears in the Add Interfaces window.

Choose the proper network interface type from the list for your networking hardware, and press the Add button. The following window appears:



In this window, type the IP address and the net mask your network administrator provided to you, and press the Set button.

With an ISA-based Ethernet interface there is one additional step before pressing the Set button. PCI cards are self-configuring, but ISA cards are not. Press the Device Configuration... button, and the following window appears:



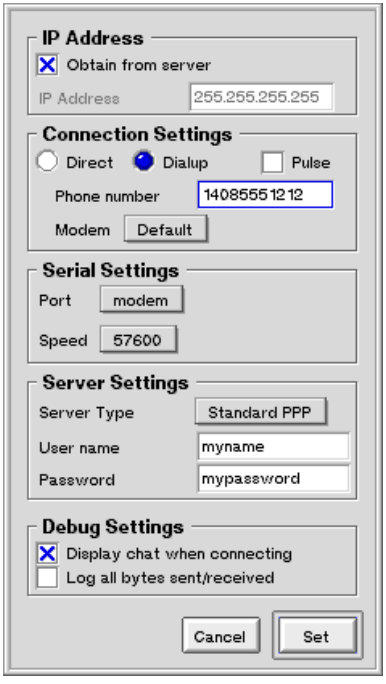
You can set the Port and IRQ (interrupt) numbers from the pop-up menus. The defaults are port 300 and IRQ 5, which work in most cases. For more information, see the guides that came with your computer system and your network interface card. Once finished, press

the Set button. You return to the IP Address and Net Mask Window, where you can press Set to finish the Interface configuration.

Once you complete the IP address and net mask information, your Network Interface appears in the Network preferences window. You can now continue with configuring domain name services.

Network Interfaces for Modem Connections

If you are connecting to the Internet by modem, your computer uses the Point-to-Point Protocol (PPP) to complete your Internet connection via the phone line. You should therefore add a PPP Network Interface. Select PPP from the Add Interfaces window and press the Add button. You'll see the following window:



To configure your system for a modem-based connection, place the information provided by your network administrator or ISP in the appropriate fields of this window:

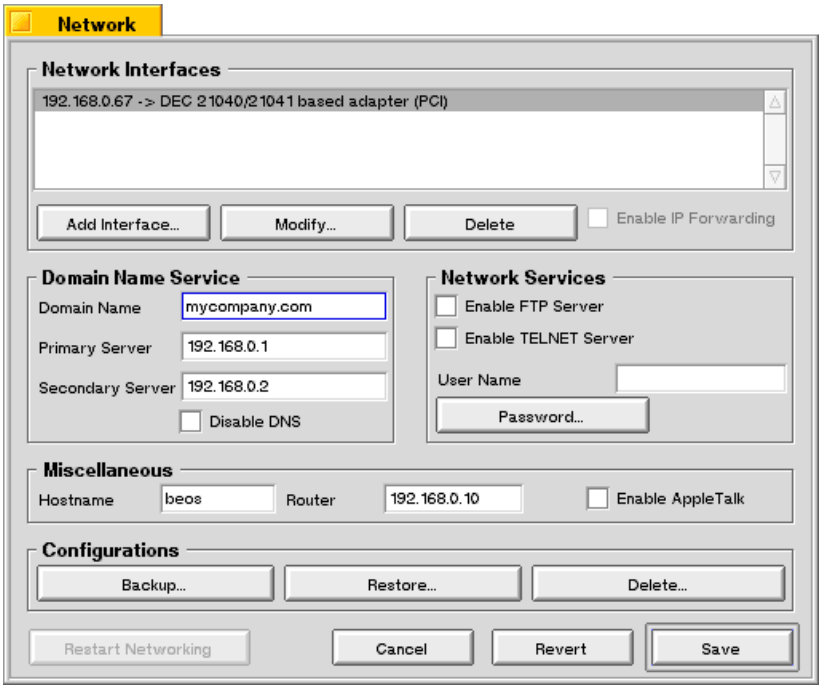
Setting	Description
IP Address	If you are using server addressing, check the Obtain from server checkbox. If you have an assigned IP address (manual addressing) for your computer, leave the checkbox unchecked, and type the IP address into IP Address field.
Connection Settings	If you are connecting by phone line, click the Dialup radio button. Type the access phone number into the Phone number field, then select the type of modem you are using from the Modem pop-up menu. This selection tells the BeOS what type of controls to use for your modem. If your modem isn't in this list, check your user's guide for compatible modem types and choose one from the list. Use the Direct radio button option only if you are connecting to another system via a null-modem cable. Generally this is only for specialized network configurations.
Serial Settings	Use the Port pop-up menu to select the serial port your modem is connected to. Then select the serial speed of your modem. This is the speed at which the modem and computer communicate, not the modem's speed. In general, select a setting that is higher than your modem's highest speed (i.e., select 57600 if you are using a 28800 or 33600 modem). If you are unsure, use the 57600 setting as a default.

Setting	Description
Server Settings	From the Server Type pop-up menu, select the type of communications server you are connecting to (you should receive this information from your network administrator). The most common interface is Standard PPP; if you're unsure of the setting, use this one. The second most popular server is Unix Login. After selecting a server, type your user name and password in the appropriate fields.
Debug Settings	You or your network administrator can use these options to monitor the connection process in order to work through connection difficulties. Display chat when connecting display, the messages sent and received by your modem during the connection process. Log all bytes sent/received writes the messages to a file. In general, you should leave these options unchecked (off).

Once you have completed the PPP configuration window and pressed the Set button, your PPP Network Interface appears in the Network preferences window. You can now continue with configuring domain name services.

Configuring Domain Name Services

After you add the proper network interface, you return to the Network preferences window. Your newly added network interfaces appear in the window (with your computer's assigned IP address, or 0.0.0.0 if you are using server addressing).



You should now enter your Domain Name, Primary Domain Name Server IP address, and Secondary Domain Name Server IP address in the Domain Name Service portion of the window. Then type in your computer's host name, and Internet Router IP address in the Miscellaneous section of the window. If you are unsure of the router IP address, use 0.0.0.0 as the default.

Note: The checkboxes and fields in the Network Services portion of the window are described in the chapter "Using Internet Services." You can ignore these fields for now. The Enable AppleTalk checkbox is described in the chapter "Learning Be Application Basics." Disabling DNS and enabling IP forwarding are described in this chapter in the sections "Disabling Domain Name Service" and "IP Forwarding."

Saving and Restarting Networking

Once you add your domain name service configuration information to the Network preferences window, press the Save button. This writes your configuration information to disk. The following window appears:

Any time you change the BeOS Networking Preferences, you should restart networking. This allows the BeOS to disconnect from current network services, and reconnect using the new settings.

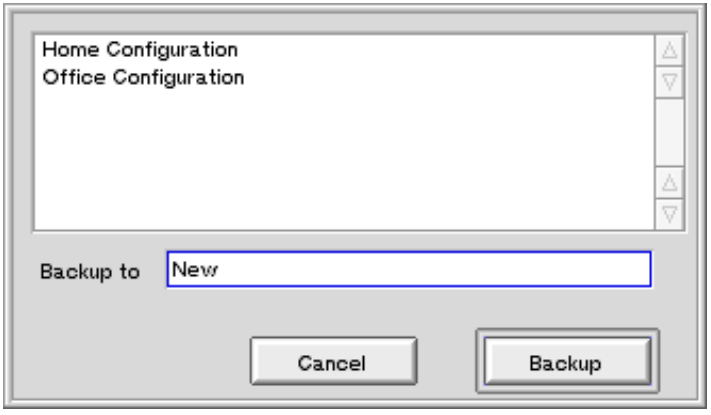
Note: Restarting networking interrupts currently running network operations, such as retrieving mail or downloading a web page. Make sure you don't have any open applications that actively use Internet services before you restart networking. Also, if for some reason an application or your Ethernet network causes BeOS networking to temporarily stop functioning, you can use the Network preferences window's Restart Networking button to reset networking.

Once you save the settings and restart networking, you may close the Network preferences window. Your BeOS system is now configured for accessing the Internet.

Backing Up and Restoring Network Configurations

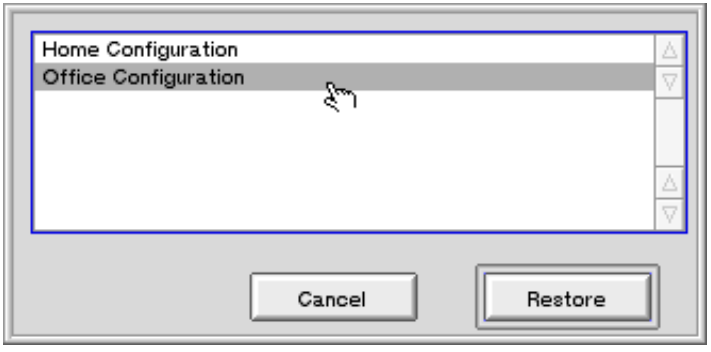
Once you set up your BeOS system for Internet networking, you can name the networking configuration and save it. You can save multiple configurations using the Network Preference window, for example one for connecting to an ISP from home, and one for connecting to an office network. You can then restore a saved configuration in a few mouse clicks to quickly switch between Internet connections.

To save a configuration, configure networking options in the Network preferences window. Then press the Backup... button in the Configurations portion of the window. The following window appears:



Give the configuration a name, and press the Backup button. Your configuration will be saved to disk.

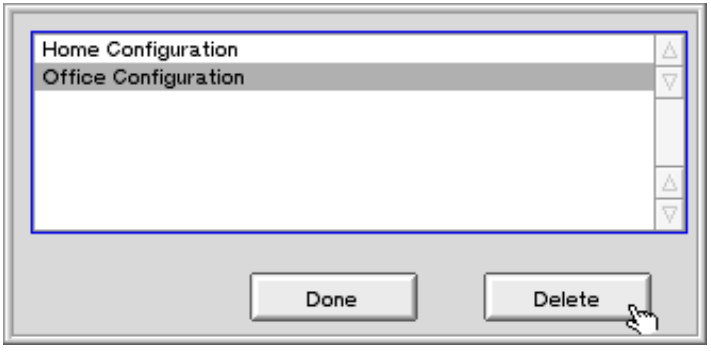
To restore a configuration, press the Restore... button in the Configurations portion of the Network preferences window. You will see the following window:



Select the configuration you wish to restore, and press the Restore button. The network preference settings are replaced with the restored configuration. Then press the Save

button to save the network settings and restart networking for the new configuration to take effect.

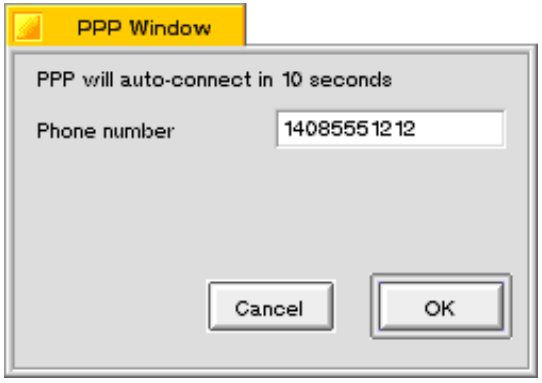
If you want to permanently delete a saved network configuration, press the Delete... button in the Configurations portion of the Network preferences window. You will see the following window:



Select the configuration you want to delete, and press the Delete button. The selected configuration is removed from the list of saved configurations.

Initiating a PPP Connection

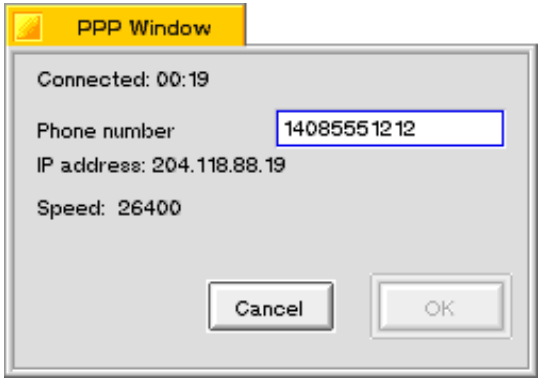
If you are using a modem to connect to the Internet, the BeOS automatically initiates a PPP connection whenever you access an Internet service, such as a web page or a file server. When this happens, a window appears on your screen that looks like this:



The PPP connection begins automatically in ten seconds. You can type an alternate phone number for the connection if needed. You can also press the OK button to begin the connection immediately.

Note: Pressing the Cancel button, or clicking the close box, cancels the PPP session initiation. Many applications, however, try multiple times to initiate the connection, so you may have to click cancel a few times before the application gives up.

Once the BeOS is connected to the Internet, the window changes to look like this:



This window shows how long the PPP connection has been active, the IP address being used, and the actual speed of the modem connection. You can press the Cancel button, or click the close box, to terminate the PPP connection and disconnect the modem. The PPP connection automatically starts again if your BeOS system or an application needs to communicate with the Internet.

Setting Up a Stand Alone Network

There are situations in which you may want to connect your BeOS system to an Ethernet network that is not connected to the Internet. For example, if you have a home or office network which connects multiple BeOS systems, or a BeOS system with Windows, Mac OS or Unix-based systems, and want to transfer information between these systems. This type of network is called a stand alone network.

Since the BeOS is a native Internet networking system, it relies on the Internet's TCP/IP protocol to communicate over Ethernet, even if it is not connected to the Internet. But if you're creating a stand alone network, you don't have a network administrator to provide IP addresses and other information needed to configure networking. How do you configure networking in such a situation?

Fortunately, the creators of the Internet anticipated just such a situation, and set aside a class of IP addresses to use only for stand alone networks. These addresses all have the following configuration:

IP Address:	192.168.0.xxx
Network Mask:	255.255.255.0

The xxx in the IP address can be replaced with any number from 1 to 254. This means that you can have up to 254 devices connected to a stand alone network

---

Note: You can't use 0 and 255 be used as the last number in the IP address, because Internet protocols reserve these numbers for specific network functions; using them may confuse some computer systems. You can use other IP addresses for a stand alone network, but if you later connect your stand alone network to the Internet (as in "Setting Up BeOS for Both Stand Alone

Network and Modem-Based Internet Use"below) you may have problems with conflicting IP addresses. It's best to use the reserved 192.168.0.xxx address format for local networks.

To set up your BeOS system for a stand alone network, use the following configuration information:

IP Address	192.168.0.xxx Replace xxx with a number between 1 and 254.
Net Mask	255.255.25.0
Domain Name	None (leave field empty)
Primary Domain Name Server	0.0.0.0
Secondary Domain Name Server	0.0.0.0
Host Name	None (leave field empty)
Router	0.0.0.0

You can give other systems on your stand alone network other addresses in the 192.168.0.xxx range (remember, each device must have a unique number). To configure Windows, Mac OS or Unix systems for stand alone networks, refer to the user's guides that came with those systems.

Your stand alone network will not have a domain name server (unless your specifically configure one of the systems to provide such services). Because of this, you need to use the Internet IP Address, rather than a domain name, to communicate between computers on the stand alone network.

Setting Up BeOS for Both Stand Alone Network and Modem-Based Internet Use

You may find yourself in a situation where you want to connect your BeOS system to a stand alone network, and at the same time be connected to the Internet via a modem. This is common in small businesses or home office situations where multiple systems are interconnected, and only the BeOS system has a modem connected. You will want to communicate with the local systems and with services on the Internet without disruption.

The BeOS can handle this situation smoothly. To set this up, do the following:

1. Set up an Ethernet-based network interface for the stand alone network.

   Add a network interface for the appropriate Ethernet connector as if you were setting up a stand alone network (see "Setting Up a Stand Alone Network"). Use an IP address of the form 192.168.0.xxx, and a net mask of 255.255.255.0. Other computers and devices on the stand alone network should be configured as described in "Setting Up a Stand Alone Network."

2. Set up a PPP network interface for the modem-based Internet connection.

   Use the IP address and net mask provided by your network administrator.

3. Configure domain name services using the PPP information.

   Set up the domain name service section using the domain name, primary and secondary domain name server IP addresses, and router IP address provided by your network administrator for the PPP connection.

4. Save and restart networking.

Once you complete this configuration, your BeOS system will be active on both network interfaces. You can communicate with devices on your local network through the Ethernet interface. Whenever you attempt to access a service that is not on your stand alone network (www.be.com, for example), the BeOS initiates a PPP connection. While connected to the Internet via modem, you can still communicate with any device on your local network.

Multiple Network Interfaces

As described in the proceeding section, the BeOS can handle multiple network interfaces—multiple network interface cards, multiple modems, or any combination. To enable this, use the Network preferences window to add one network interface for each type of physical connection.

There is only one rule to keep in mind. Each network interface must have a different IP address. You cannot assign the same IP address to multiple interfaces because the interface that information should be sent by and received from will be unclear. For this same reason, you are restricted to one PPP interface that uses server addressing (although you can have multiple PPP interfaces that use manual addressing).

IP Forwarding

Let's say you have a stand alone network with multiple computers connected, and you have a BeOS system with a network interface's connected to the Internet (via PPP/modem or a separate Ethernet network). Can the BeOS system forward information from the other systems to the Internet, and send information from the Internet back to them?

The answer is yes. To enable this function, check the Enable IP Forwarding check box in the Network preferences window. The other computer systems on your local network should have the IP address of your BeOS system as the router IP address in their TCP/IP configuration.

The BeOS then forwards Internet-bound information for the stand alone network. In a way, your BeOS system acts as a lightweight Internet router for your local network.

Note: IP forwarding requires a lot of processing time if there is heavy traffic coming from and going to the local network. Keep this in mind before using the BeOS system you're working with IP forwarding.

Note: The IP Forwarding checkbox will only be enabled once the BeOS is configured with more than one network interface.

Disabling Domain Name Service

When trying to resolve a domain name (convert a domain name into an IP address), the BeOS uses a specific set of steps in a specific order;

1. It check the *hosts* file on the BeOS system for domain name information.
2. If there is no *hosts* file entry, it checks the primary domain name server.
3. If there is no response, or the domain name is unknown, it checks the secondary domain name server.
4. If the domain name is still unknown, it posts a resolution failure error.

Note that the middle two steps require the BeOS to contact domain name servers. There are times when this is not desirable, because it causes an unwanted PPP connection or for some other reason. Checking the Disable DNS button in the Network preferences window turns domain name services off.

With DNS disabled, the BeOS only checks the local hosts file to resolve any domain names. This means that the only domain names that can be used are those specifically placed in the hosts file.

Note: Disabling DNS is not recommended if you are connected to the Internet. Most Internet services, notably worldwide web pages, require DNS services to operate correctly. Any reference of the type www.be.com will be unresolved and unreachable. Disabling DNS should only be used in stand alone networks, or in unusual network configurations.

Editing the hosts File

The *hosts* file, located in your Home configuration folder (*file://boot/home/config/etc/hosts*) is a text file that contains information needed to resolve domain names. By adding addresses to the *hosts* file, you can use domain names, rather than IP addresses, to connect to devices on a stand alone network, or devices that might be unknown to domain name servers on the Internet.

A standard BeOS system does not have a *hosts* file. However, there is a *hosts* sample file (*file://boot/home/config/etc/hosts-sample*) which can be duplicated and modified. Duplicate the *hosts* sample file and rename it *hosts*. You can then edit the *hosts* file to add the appropriate domain names and IP addresses.

The hosts sample file initially looks like this:

```
#
# Sample hosts file for assigning names to IP addresses.
# You do not need this file if you are using the Domain Name Service (DNS).
#
# Copy this file to /system/hosts and edit as necessary.
# The format is nearly identical to the Unix hosts file format.
#
# NB: do not put any leading tabs or spaces at the beginning of the line
#
# Format is:
#
# IP-address        hostname                  aliases (optional)
#
192.0.0.23        Unixbox.mycompany.com      Unixbox
192.0.0.123       bebox.mycompany.com        bebox
```

You can add new IP addresses and domain names to the bottom of this file (and you can remove the Unixbox and bebox lines). For more information on using this file, refer to the Be web site (http://www.be.com). You can also find information on this standard file in many Unix networking publications.

Installing Network Drivers

If your network adapter card is not one of those listed in the standard BeOS system installation, you need to install BeOS network driver files before configuring the card.

BeOS network driver files may have come in the same package as the network adapter card. You may also find information about new network drivers as they are created on Be's web site (http://www.be.com).

Network drivers are add-ons to the BeOS network server and the BeOS kernel. Because of this, they should be installed in your Home configuration folder, in the network server add-ons folder *(file://boot/home/config/add-ons/net_server/*) and the kernel add-ons folder

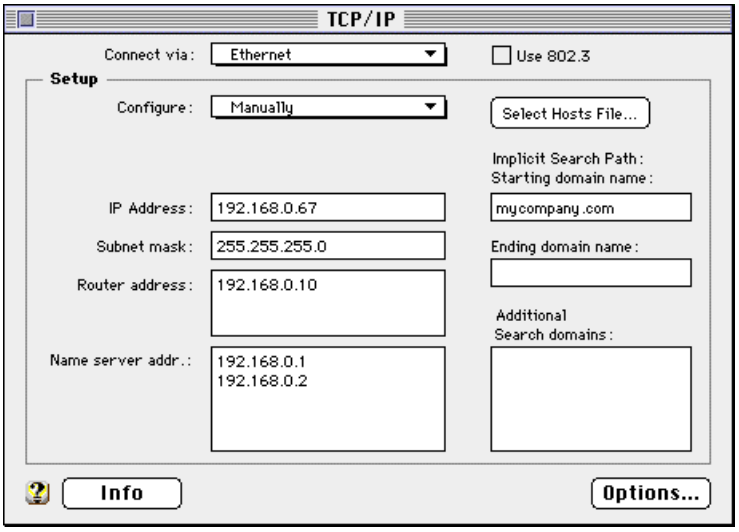
(*file://boot/home/config/add-ons/kernel/drivers/*). If you look in BeOS add-ons folder (*file://boot/beos/system/add-ons/net_server/*), you'll find the following drivers already installed with the basic BeOS system:

3c503	Driver for 3COM Etherlink II compatible cards
appletalk	Driver for AppleTalk protocol printing
gce	Driver for PowerMacintosh compatible on-board Ethernet
ne2000	Driver for Novell NE2000 compatible cards
ppp	Driver for PPP serial port networking
tulip	Driver for DEC 21040/21041 compatible cards

Once you install new network drivers into the appropriate folders (or your installer software has done it for you,) they will appear in the Add Network Interface window, and you can continue with network configuration. For more information on installing drivers and add-ons, see the chapter "Customizing the BeOS."

Mac OS TCP/IP Configuration Information

If you are using a Power Macintosh or compatible, and have already connected your system to the Internet from the Mac OS, you can obtain the information you need to connect your BeOS system to the Internet without having to find your network administrator. To do this, open the TCP/IP control panel from within the Mac OS. You'll see the following window:



The IP address, net mask (subnet mask), router, primary and secondary domain name servers (name server address), and domain name (starting domain name) are all in this window. Copy the information on a slip of paper, and use it to configure your BeOS system.

Note: If you're using a PPP connection for Mac OS networking, the above window will look a bit different, but will still provide you with the information you need to configure your BeOS system. If you are using non-Apple provided PPP software, you may need to open another window to obtain phone number information. Consult your Mac OS networking guides for more information.

---

5 Using Internet Services

While the Internet uses the TCP/IP networking protocol to tie together BeOS, Windows, Mac OS and Unix systems around the world, more interesting things begin to happen when you use this networking capability to access Internet services. From the worldwide web, to tens of thousands of file servers, to electronic mail and remote access, Internet services provide a wealth of resources which can help you communicate with people around the globe, and literally put information at your fingertips.

This chapter discusses four forms of Internet services:

- **Worldwide web services**—Accessing worldwide web pages using the NetPositive application, and setting up a personal web server using the PoorMan web server software.
- **Internet file sharing services**—Accessing Internet file servers, and setting up your BeOS system as a personal file server.
- **Internet mail services**—Access Internet mail services using the BeMail application and Mail Preferences. To use Internet mail services, you need to have an Internet mail account and e-mail address, which can be assigned by your network administrator.
- **Internet remote access services**—Using the Internet's native remote access service, Telnet, to access your BeOS system from anywhere on the Internet.

The chapter also discusses compressing and decompressing files for Internet use with tools integrated into the BeOS, and identifying some common tools that aid in the process of Internet communication.

Note: Before you use any Internet server, be sure that you've configured your BeOS to connect to the Internet. If you haven't done this, see the chapter "Connecting Your BeOS System to the Internet," for information on getting connected to the Internet.

This chapter discusses the following topics:

Uniform Resource Locators (URLS)

Before digging deeper into Internet services, it's important to understand the concept of uniform resource locators, or URLs. This is the standard addressing mechanism by which your BeOS system can find any Internet service, located on any Internet server, anywhere in the world.

By now, the basic form of a URL is probably familiar to you—they're used on product packaging, advertising, and even in motion picture advertisements. The URL for Be's worldwide web site is http://www.be.com/.

The first part of the URL, http://, stands for the hypertext transfer protocol, which is the basic protocol of the worldwide web. The second portion of the URL, www.be.com, is the Internet domain name for the main web server at Be.

You can extend the URL to go to specific web pages. For example, to go to the product section of the Be web site, you would use the URL http://www.be.com/products/.

URLs aren't limited to web pages. There are also URLs for Internet file servers. The URL for Be's public file server is ftp://ftp.be.com, where ftp:// stands for the file transfer protocol, and ftp.be.com is the Internet domain name for Be's file server.

There are also URLs for mail, news and many other web services. There is even a URL for accessing files on your local hard disk—file:///boot/beos/documentation/index.html is the URL for the index of the documentation installed on your hard disk when you installed the BeOS. You may have noticed that throughout the networking chapters, file:// URLs have been used to denote where files can be found on your hard drive as part of the BeOS.

Using Worldwide Web Services

One of the most active parts of the Internet is the worldwide web, a global network of servers each of which contains pages of information on virtually every topic. This section, discusses how to access these web pages with the NetPositive application, and how to set up a basic personal web server with the PoorMan web server application.

Accessing Internet Web Servers – NetPositive

NetPositive is a worldwide web client application, also called a browser. With it, you can access any web page on the Internet, view its contents, and link to pages connected to that web page. To start up NetPositive, double-click on its icon (*file:///boot/apps/NetPositive*). When you do, the default window opens, and you're ready to explore the worldwide web.

The Browser Window

The NetPositive application browser window displays the contents of the worldwide web page that you are currently viewing, as well as all of the basic controls needed to navigate the web. The first page you see when you open NetPositive is its default page.

The browser window has a menu bar at the top. Immediately below that is the URL field. To the right of the URL field is a set of navigation buttons. The rest of the window shows the contents of the current web page.

Notice that the horizontal scroll bar in the lower-left portion of the window does not extend across the entire bottom of the window. The gray space to the left is the status bar. As you move the cursor over the web page, the status bar shows the location of that hyperlink (where you would go if you clicked on the hyperlink). The status bar also contains progress messages about the download of a page.

Retrieving a Web Page

To go to another web page, click on a hyperlink, or type the URL for the page into the URL location field beneath the menu bar. If you type www.news.com and press the Enter key, you'll get a page that looks something like this:

This page is part of the c|net Internet site, which provide a range of computer-related news and services. You can navigate around this site to become familiar with browsing web pages in NetPositive.

Note: You don't always have to type the entire URL—NetPositive makes some intelligent guesses about the text you type. For example, if you leave http:// off NetPositive assumes that the URL

represents a web page and adds it automatically. Also, if you type a single word, like “be,” NetPositive assumes it should add www. to the beginning and .com to the end, resulting in www.be.com. This shortcut works for many commercial and personal home pages.

Using the Navigation Buttons

The navigation buttons to the right of the URL field allow you to quickly flip through web pages you’ve visited since you started the current NetPositive session:

Pressing this button takes you to the last page you visited before the current page. Pressing it repeatedly moves back multiple pages.

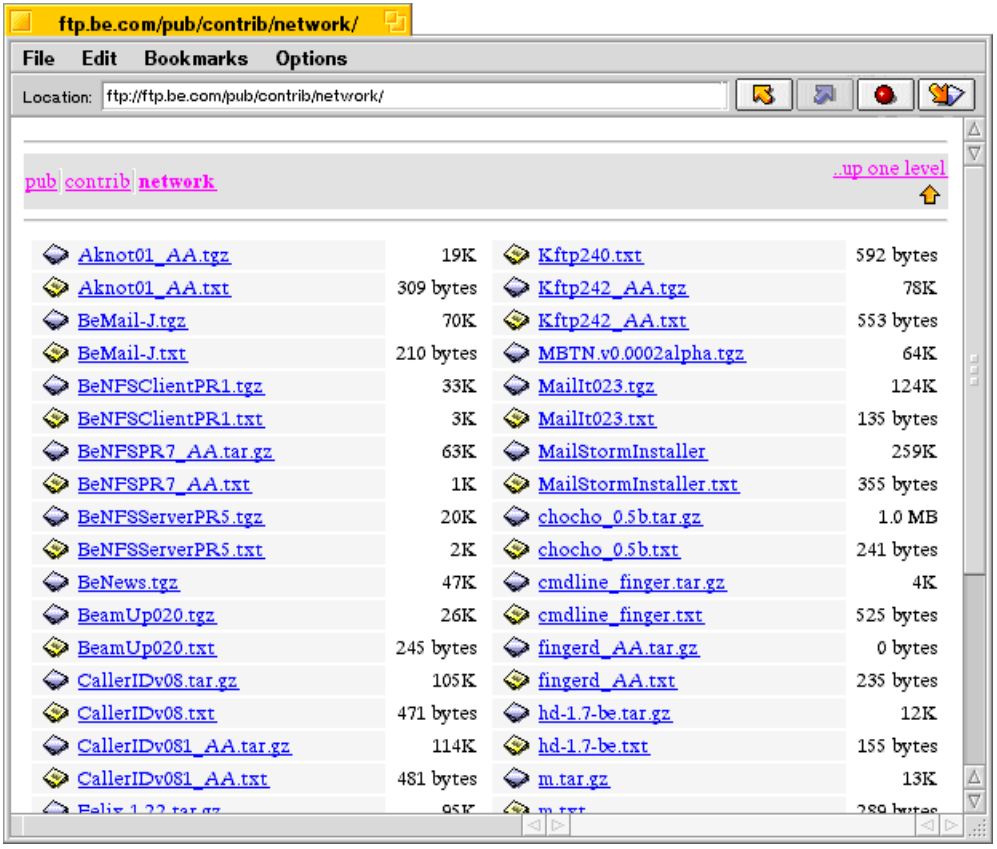
Pressing this button takes you forward one page. You usually used it return to a page after using the Back button.

This button stops the download of the current page. The text and graphics already been downloaded remain in the window.

Pressing this button tells NetPositive to retrieve the current page from the server again. This can be used to update the contents of a page, if it changes rapidly. It also lets you resume a page download if you have stopped it.

Accessing an Internet File Server With NetPositive

You can also access Internet file servers (FTP servers) from NetPositive. To do this, type the file server's URL into the URL field and press the Enter key. For example, Be's public file server is located at ftp.be.com. If you type ftp://ftp.be.com/pub/contrib/network/, you see the contents of the folder *pub/contrib/network*:



If you want to download a file from this page (or any web page) click on the hyperlink. The file begins to download and a new window appears, showing the status of the transfer:

The file download window disappears once the file is completely transferred to your BeOS system. To cancel the download, close the download status window. Note that you don't have to wait for the file transfer to complete to click on another hyperlink or open another web page—the file continues downloading unless you close the file download window.

Browser Window Menus

The menus across the top of the browser window give you access to the full functionality and options of NetPositive. Here's a description of each menu and the items they contain:

File menu

Command	Does this
New	Opens a new browser window.
Open Location...	Opens a window into which you can type a URL. The page is displayed in the topmost browser window.
Open File...	Brings up a file panel, allowing you to choose a text, graphic, or HTML page from a hard disk, CD or other local volume.
Save	Allows you to save a page to disk in HTML format.
Print...	Prints the currently displayed page.
Show HTML...	Brings up a window which displays the raw HTML code used to create the page.
Close	Closes the window.

Edit Menu

Command	Does this
Cut	Copies the selected text to the clipboard, and removes it. This command works only within the URL field or Open Location... window.
Copy	Copies selected text to the clipboard.
Paste	Pastes selected text into the URL field or the Open Location... window.
Clear	Removes selected text from the URL field or the Open Location... window.
Select All	Selects all the text in the URL field or in the web page.
Find...	Brings up the Find... window, allowing you to search the current web page for a specific word or phrase.
Find Again...	Repeats the last Find... with the same word or phrase starting at the last location at which the text was found.

Bookmarks Menu

When you open NetPositive for the first time, the Bookmarks menu contains only one item: Add to Bookmarks. Choosing this adds the current web page to the bookmark list. Once you've done this, the web page's title appears in this list. You can return to the page at any time by selecting it from this menu. The bookmarks list is saved on disk, and the items appear whenever you use NetPositive.

Options Menu

Command	Does this
Preferences...	Lets you set your default home page and configure NetPositive to use proxy servers (see "Setting Your Default Home Page" and "Using NetPositive with Proxy Servers" below). Preferences also let you choose default fonts for document encodings.
Document Encoding	Lets you tell NetPositive what type of document encoding should be used. (See "Document Encoding" below).

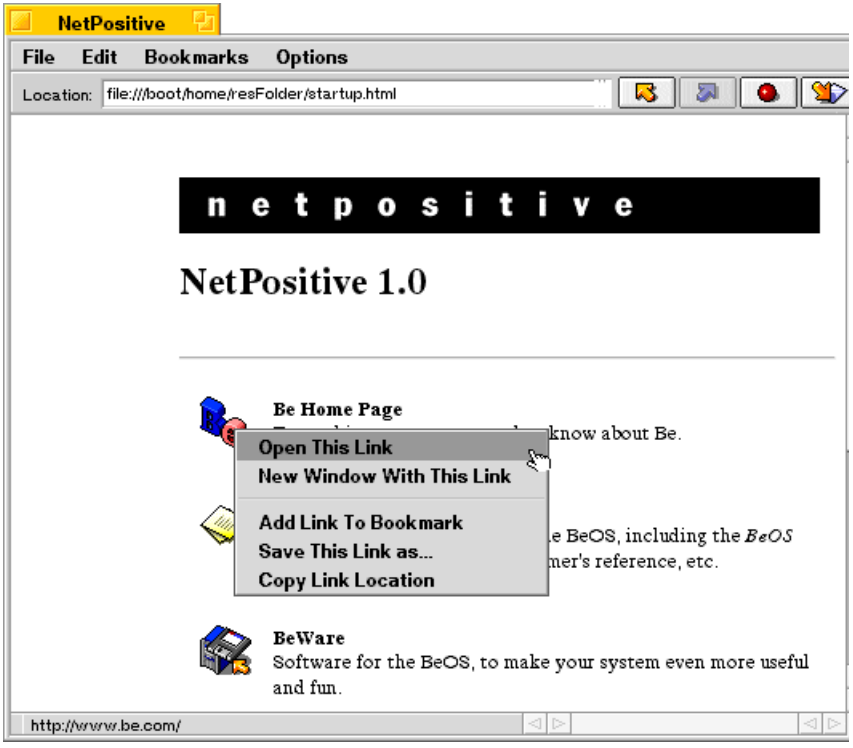
Context-Sensitive Menus

When you move the mouse into the content area of the web page, there are two context-sensitive menus which can help you navigate and give you access to common commands. To bring up these menus press the second mouse button (or hold down the mouse button for a second or two with a single-button mouse). These menus are especially helpful when a web page is being used as a replicant (see "NetPositive as a Replicant—Live Desktop Pages" below).

If you hold the mouse over a part of the web page that does not contain a hyperlink, you see the following menu:

Command	Does this
Back	Takes you to the last page visited before the current page.
Forward	Takes you forward one page. This button is usually used to return to a page after you have used the Back button or command.
Add To Bookmarks	Adds the current page to the bookmark list.
Bookmarks	Refers to pages added as bookmarks, which appear at the bottom of this menu. Selecting a bookmarks takes you to that page.

If you hold the mouse over a part of the web page that contains a hyperlink, you see the following context-sensitive menu:



Command	Does this
Open This Link	Opens the hyperlinked page.
New Window with...	Opens the hyperlinked page, and places the contents into a new window (rather than replacing the contents of the current window).
Add Link To Bookmarks	Adds the hyperlinked page to the bookmark list.

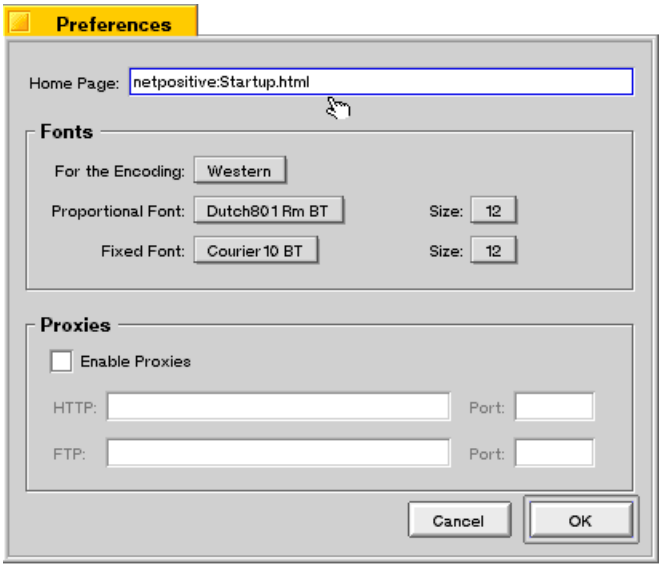
Command	Does this
Save Link As...	Opens the hyperlink and saves the contents to disk (rather than display it in a window).
Copy Link...	Copies the URL of the hyperlink to the clipboard.
Bookmarks	Refers to pages added as bookmarks, which appear at the bottom of this menu. Selecting a bookmarks takes you to that page.

Setting Your Default Home Page

When you open NetPositive for the first time, you see a default web page that is stored with NetPositive. This default home page is displayed whenever you start NetPositive, and when you open a new browser window.

You can change this default home page to one of your choice (a personal page, news page, www.be.com, or any page) that automatically downloads when you start NetPositive.

To change the default home page, select Preferences... from the Options menu. The preferences window opens:



At the top of this window, is a text field for your default home page. To set a different page, type the URL for the page in the field (the full URL, including http://). The next time you start NetPositive, your new home page displays automatically.

Note: If you use a modem to connect to the Internet via a PPP connection, you may want to leave the default home page (netpositive:Startup.html) or else point to an HTML file on disk. If you use a remote web page, when you start up NetPositive, your BeOS system attempts to connect via PPP to download the home page. You might not want this to happen each time you open NetPositive.

Note: If you drop an HTML, text, or graphics file onto NetPositive from the desktop, NetPositive assumes you want to view the contents of that file and so displays it, rather than the home page.

NetPositive as a Replicant—Live Desktop Pages

NetPositive is a replicant-enabled application. That means that you can treat web pages as objects that can be moved and placed within other applications, documents, and even on your BeOS desktop. Placing a NetPositive page on the BeOS desktop makes the web page

constantly available, and the web page automatically downloads when you start up your BeOS system.

Note: For more information on replicants, and on showing and hiding replicants, see the chapter "Learning Be Application Basics."

To place a NetPositive page onto the desktop (or into any replicant-enabled document), first choose Show Replicants from the Deskbar's main menu. When you do this, a replicant dragger icon appears in the lower-left corner of the NetPositive browser window.

To place the current web page on the desktop, press the mouse button while over the dragger icon, and drag it onto an empty place on the desktop. Once you let go, the web page appears on the desktop and starts to fill with the current page information.

You can now close the NetPositive application at any time — the desktop web page remains active. You can navigate through web pages using the same context sensitive menus that you find in the NetPositive application. You can also use the dragger icon to move the replicant around the desktop, and you can use the resize box to resize the replicant. You can place as many web page replicants on the desktop as you'd like.

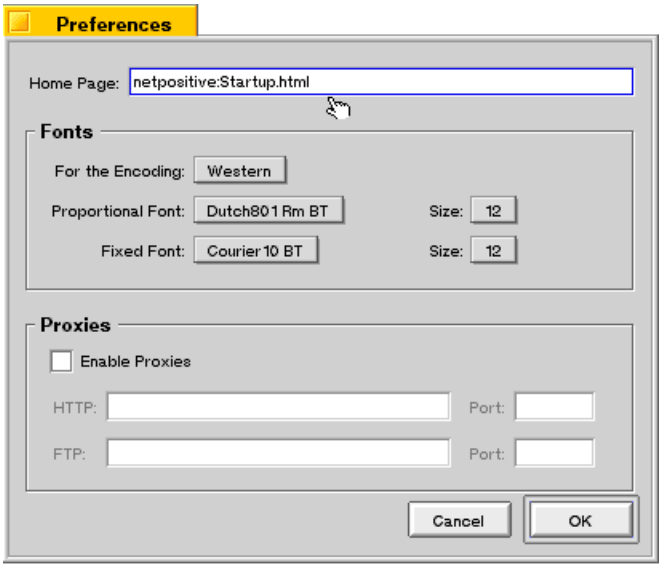
Note: A web page replicant does not have a URL text field, so you can't type a URL (you'll have to open NetPositive to do that). However, all your bookmarks are available within the context-sensitive menus, and you can drag text, image, and HTML files from disk onto the replicant to show their contents.

Note: If you place a web page replicant on the desktop, when you start up your BeOS system, the web page downloads automatically. This is fine if you are directly connected to the desktop, but if you connect over a modem it means that a PPP Internet connection starts as soon as your BeOS machine starts. Keep this in mind when placing web page replicants on the desktop.

Document Encoding

As you navigate through worldwide web pages, you'll note that often you are connecting to servers located in other countries. These web sites may use different document encodings for displaying web pages. A document encoding is made up of a region (such as western, Japanese, or Unicode) and an encoding type.

NetPositive lets you specify the default font for each region. This is useful if you switch between web pages created in, say, English and Japanese. You can do this using the Preferences... window found in the Options menu. When you select this item, the preferences window appears:



The center section lets you choose an encoding region and select the font for NetPositive to use to display pages using that encoding.

Note: To view Japanese web pages, or pages created for any multibyte character language, you need to install a font that contains the language's characters. You can find out how to install fonts in the chapter "Customizing the BeOS."

The Options menu also lets you switch encodings for a page on the fly. When you selecting a different encoding, the window's content area is redrawn to reflect the change. This permits easy viewing of pages that may assume a different default encoding than your normal settings.

Using NetPositive with Proxy Servers

If you connect to the Internet via a network at your company or school, you may have a proxy server for worldwide web use or Internet file server (FTP) access. Proxy servers act as a security device, filtering the type of information that can come into a network, and flow back out onto the Internet. If you've attempted to reach a worldwide web server

outside your organization (such as www.be.com) and received no response, it's possible that your network administrator has set up a proxy server.

NetPositive works with proxy servers. To configure the application for this, open the Preferences... window from the Options menu. At the bottom of the window, are two text fields, HTTP (worldwide web) and FTP. You should place the Internet host name (i.e., proxy.mycompany.com) or Internet IP address for your company's proxy servers into these fields. When you close the preferences window, NetPositive begins using the proxy servers for worldwide web and file server access.

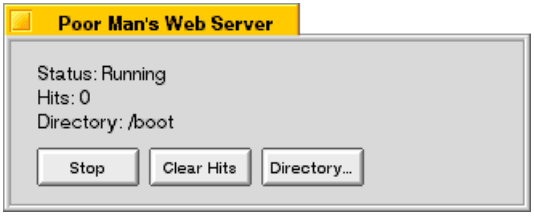
Setting Up a BeOS Personal Web Server

Your BeOS system isn't limited to accessing web pages located on other servers. It can also act as an Internet web server, serving up web pages to anyone who accesses your system. In this way you can be a publisher of web-based information, as well as a consumer of other people's web pages.

There is a variety of web server software available on the market with a wide range of capabilities. If you are looking to use your BeOS system as a web server accessed by a large number of people, or wish to ensure security for web-based transactions and other commerce-based applications, you'll want to get your hands on one of these industrial strength packages.

But you can get started immediately by using the personal web server that comes with the BeOS. Appropriately named the PoorMan web server application, it is designed to serve up HTML-based web pages, graphics and other web based information with a minimum of set up and hassle. PoorMan is ideal for small, personal servers and for getting started at prototyping web sites.

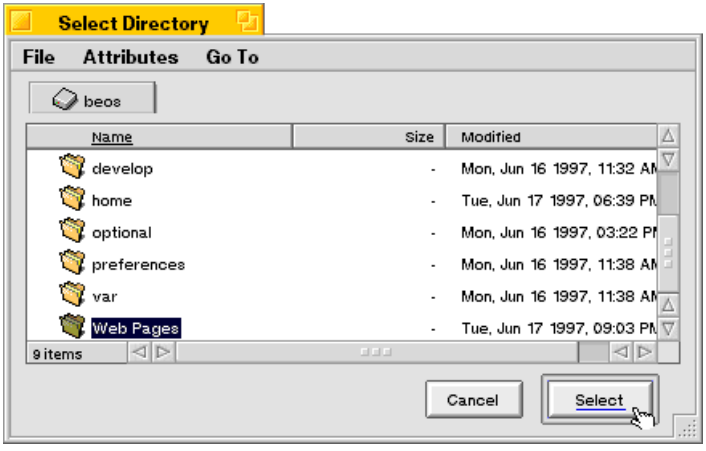
To set up your BeOS system as a web server, first open the PoorMan server application (file:///boot/apps/PoorMan). When you open Poor Man, the following window appears:



The first thing you'll notice when you start up PoorMan is that the web server immediately becomes active—the Status: information field indicates the server is "Running." You might want to press the Stop button to temporarily halt the server while you configure it.

You must tell PoorMan which directory folder on your hard disk you want to use as the root directory of your web server. This is important because by specifying a folder, you restrict external web access to that folder, preventing anyone from accessing other folders on your system. You place all of your web pages and web graphics into this folder so that they can be accessed by the outside world.

To select this directory, press the Directory... button. The standard BeOS file selection window appears:



Select the folder you want to designate as your web page folder. You can use the File menu to create a new folder if needed. Then press the Select button. This returns you to the PoorMan window, where your selected folder appears in the Directory: information field.

That's it. You have now finished configuring the PoorMan web server. You can press the Start button to restart the web server. PoorMan keep counts of the number of times other people access your web pages, known as hits, and shows this number in the Hits: information field. At any time you can reset this counter, or stop the web server.

Note: The PoorMan application must be running for the web server to be active. When you close the PoorMan window or quit the application, web serving is disabled. You can hide the PoorMan window by double clicking on the window title bar, or by using the DeskBar to Hide All.

Note: You can't use an Internet domain name (i.e., mysystem.company.com) to access your BeOS web server unless your network administrator has configured your network's Internet router hardware to recognize the name as a substitute for your Internet IP address. So make sure you use the IP Address to access your system, and give this information to others wishing to access your system.

Getting your BeOS web server up and running is only the first step in creating an Internet web site. You need to create web pages using the hypertext markup language (HTML) and create the graphics for your pages. The creation process for these pages is beyond the scope of this discussion, but you can find information on this topic at your local bookstore, or on-line at Netscape's corporate web site (http://home.netscape.com/assist/net_sites/).

Using Internet File Sharing

Your BeOS system can access file servers anywhere on the Internet, and can act as an Internet file server itself—letting you and colleagues share files and exchange information. To do this, your BeOS system uses a standard Internet protocol known as the File Transfer Protocol, abbreviated FTP. The process of file transfer is often called FTPing files.

This section discusses how to access file servers on the Internet, and transfer files to and from your BeOS system and other systems on the Internet. You can do this with either the BeOS text-based command line tools, or a graphical FTP client application. You'll also learn how to set up your BeOS system as an Internet file server.

Accessing Internet File Servers

There are two ways to access an Internet file server from your BeOS System. The first is to use the command line shell built into the BeOS, and the second is to use one of the graphical FTP client applications available for the BeOS.

The examples below show how to access Be's public Internet file server, ftp.be.com, and transfer a file called *Ktfp242_AA.tgz* to your system. Kftp is an example of a graphical FTP application, and is a useful tool. It is stored on the Be file server in a compressed format, discussed later in this chapter. The full URL to this file is ftp://ftp.be.com/pub/contrib/network/Kftp242_AA.tgz.

Command Line FTP

File server access from the BeOS command line is similar (in fact identical) to the commands used in most UNIX systems, and by most text-based Internet Service Providers. The work is done by a command line tool called "ftp." which is included with your BeOS system.

Note: You can find out more about the BeOS command line shell in t"App A: Using the BeOS Command Line Shell."

To start a command line FTP session, open the Terminal application (file:///boot/apps/Terminal). A new command line window opens with the cursor placed after a dollar sign prompt. Then type

```
$ ftp ftp.be.com
```

The first ftp tells the BeOS that this is an FTP command. ftp.be.com is the name of Be's public FTP server: you replace this with the name of the server you are trying to reach, or with the Internet IP address (i.e., ftp 192.168.0.50). When the BeOS reaches the server, you'll see the following:

```
Connected to www.be.com.
220 www.be.com FTP server (Version wu-2.4.2-academ[BETA-12](3) Wed
Mar 5 17:23:49 PST 1997) ready.
Name (ftp.be.com:demo):
```

The server asks for your name and password. Public servers use a convention called anonymous access that lets you access the public portions of a file server. In this case, you type anonymous as your log-in name, and your e-mail address as the password. When you type the password, the characters do not appear on the screen as a security precaution.

```
Name (ftp.be.com:demo): anonymous
Password:
```

```
230-Welcome to the Be FTP site! All transfers are logged.
230-
230 Guest login ok, access restrictions apply.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp>
```

Once you typed in the name and password, you're signed onto the server. The text prompt changes to ftp> to indicate that you are using FTP.

Since this is a command line interface, you type your requests and receive a text response. The entire set of commands for FTP are described in the FTP command documentation (file:///boot/beos/documentation/Shell Tools/man1/ftp.html) found on the BeOS CD. As an example, try downloading a file from the Be file server:

```
ftp> ls
200 PORT command successful.
150 Opening ASCII mode data connection for /bin/ls.
total 24
drwx--x--x   2 root  wheel   512 Jul  9  1996 bin
drwx--x--x   2 root  wheel   512 Mar  6 04:28 etc
drwx-wx-wx   9 1001  wheel  3072 Jun  6 18:20 incoming
drwxr-x--x  12 1001  wheel  2048 Jun  6 16:21 outgoing
drwxrwxr-x  19 root  wheel   512 Mar 20 18:52 pub
226 Transfer complete.
```

The `ls` command requests the file listing for the current directory. The listing, in this case is five folders (subdirectories). The file you are looking for is in a specific directory (ftp://ftp.be.com/pub/contrib/network); you use the change directory command (`cd`) to get there:

```
ftp> cd pub/contrib/network
250 CWD command successful.
```

Once in the correct folder, you can get another file listing (by typing "`ls`") or you can simply get the file you are looking for (*Kftp242_AA.tgz*):

```
ftp> get Kftp242_AA.tgz
200 PORT command successful.
150 Opening BINARY mode data connection for Kftp242_AA.tgz (79824
bytes).
226 Transfer complete.
79824 bytes received in 2.07 secs (38604 bytes/sec)
```

The file is downloaded to your disk with the same name it had on the server. The ".tgz" at the end of the file name tells you that the file is an archive (containing many files) and is compressed. This is discussed in the section "Compressing and Archiving Files" in this chapter. Once you have the file, you can disconnect from the server by typing the quit command:

```
ftp> quit
221 Goodbye.
$
```

The dollar sign prompt returns, signalling that you have left FTP and are back in the BeOS command line shell.

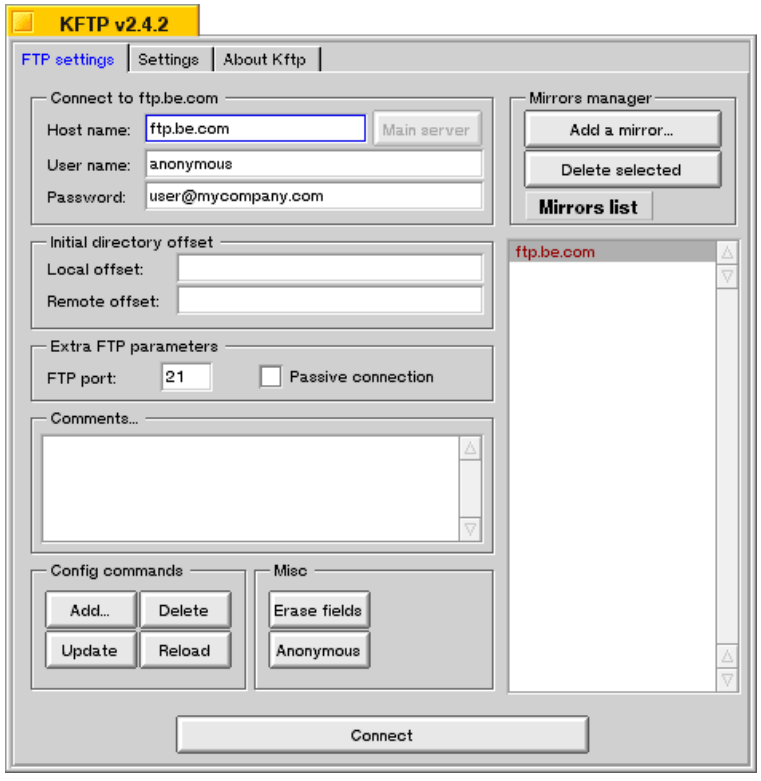
Graphical FTP Applications

Unless you're a command line aficionado, you're probably wondering if there's a better way to use FTP. Fortunately, there is—graphical FTP applications.

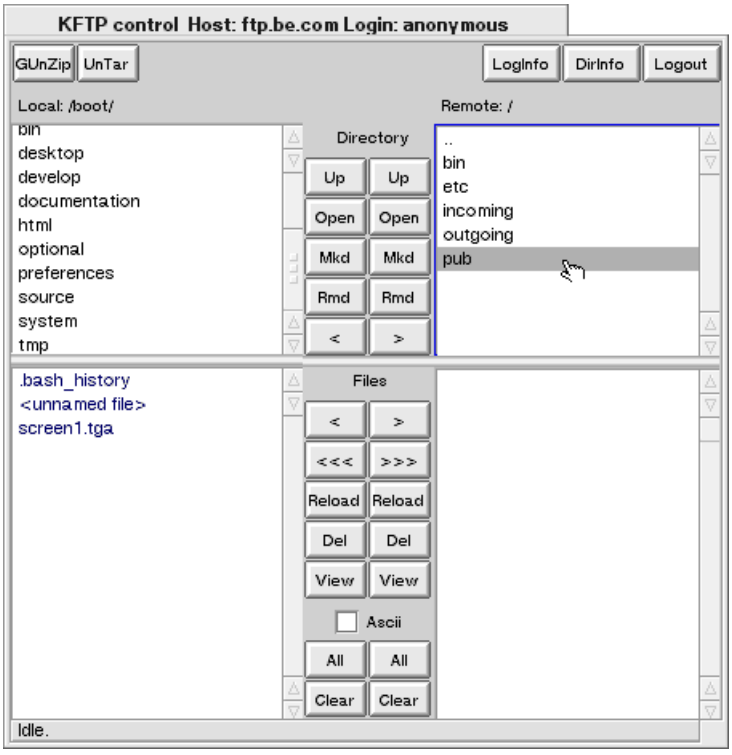
One way to navigate Internet file servers graphically is to use the worldwide web and NetPositive, the BeOS built-in web browser application, or one of many other web client applications. NetPositive is discussed in this chapter in "Using Worldwide Web Services."

Another way to reach Internet file servers is with a graphical FTP application— an application specifically designed for accessing Internet file servers. One such application is Kftp, by Laurent Pontier. You can get a copy of Kftp, and browse through a variety of other freeware, shareware, and commercial software by accessing http://www.be.com/beware/. This example uses Kftp to get the same file downloaded in the command line FTP section above.

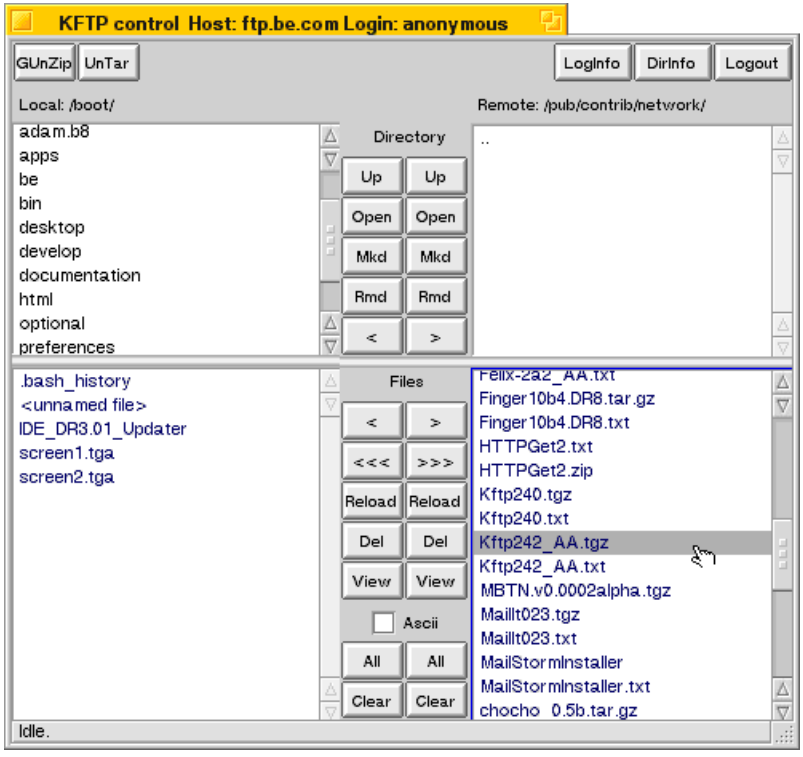
When you open Kftp, you see the Kftp FTP settings window:



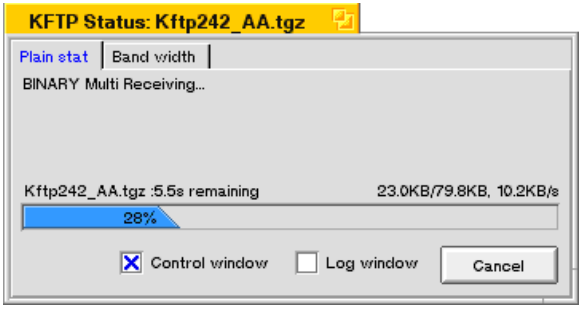
To connect to ftp.be.com, type the server name into the Host name field. As explained in the command line section, to access the public sections of the file server you use anonymous access. Type “anonymous” into the User name field and your e-mail address into the Password field. Then press the Connect button. Once connected to ftp.be.com, you see the file browser window:



The contents of your BeOS hard drive and folders appear on the left. On the right are folders (top) and files (bottom) from ftp.be.com. You can move through folders by double-clicking on the folder name (or selecting the folder and pressing the Open button). To go up a level, double-click the ".." By opening the "pub" folder, then the "contrib" folder, and then the "network" folder, you'll see the following in the file browser window:



The list of files in *pub/contrib/network* is in the lower-right pane. You can get the file "*Kftp242_AA.tgz*" by clicking on the file name, and pressing the < button to transfer it from the file server to your BeOS. During the file transfer, see the transfer progress window appears:



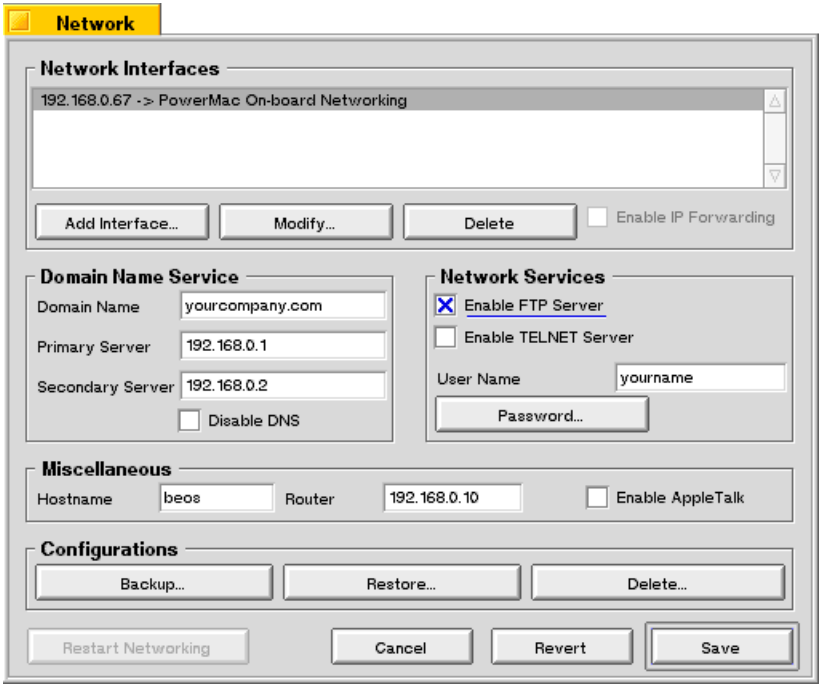
The progress window disappears once the file transfer is complete. Press the Log Out button to disconnect from the server, and then quit the Kftp application.

Note: Kftp is one example of a graphical FTP application. Others take different approaches to user interface and have different capabilities. This discussion is only an introduction to graphical file sharing.

Setting Up a BeOS Personal File Server

You can set up your BeOS as an Internet file server, capable of transferring and sharing files from any location on the Internet, and with any operating system.

BeOS file serving is controlled by the Network Preferences window. Open it (file:///boot/preferences/Network) and the following window appears:



To turn on your BeOS system's Internet file server capabilities, click the Enable FTP Server check box in the Network Services section of the window. Below this checkbox, is a field titled User Name. If you enter a name in this field, your BeOS system requires that the name be typed in when anyone accesses your file server.

The Password button also lets you require a password for access to your BeOS file server. Pressing this button brings up a new window:

To enable the password requirement, type a new password into both fields. The password must be typed identically in both fields to be accepted. You won't see the password as you type it—the characters are replaced by "*" characters. You should enter a user name and password for your BeOS system before enabling file sharing to discourage unauthorized access to your computer.

Once you complete these steps, press the Save button in the Network Preferences window, and restart networking. Your BeOS system will now accept file server requests from other systems on the Internet. To access your system, you or another user should type your system's Internet IP Address (example: 192.168.0.10) as the server name, and then the appropriate user name and password.

Note: For an example of accessing a BeOS file server from the Mac OS, see the chapter "Working With the Mac OS."

Note: You can't use an Internet domain name (i.e., mysystem.company.com) to access your BeOS file server unless your network administrator configures your network's Internet router hardware to recognize the name as a substitute for your IP address. So make sure you use the IP Address to access your system.

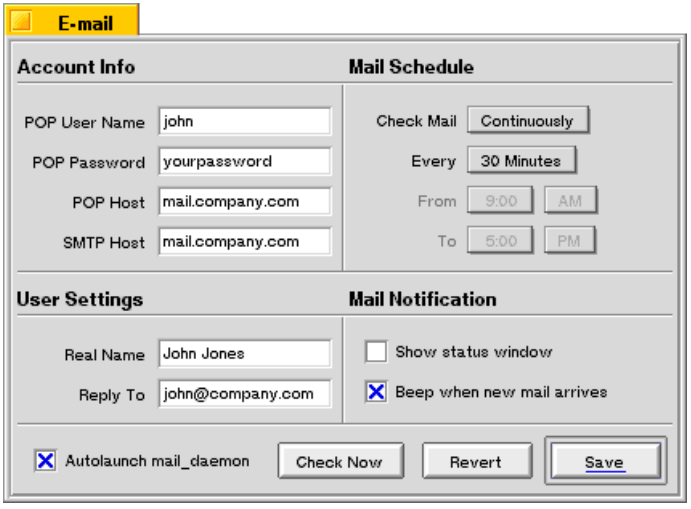
Using Internet Mail Services

Electronic mail (e-mail for short) is Internet service used most. With e-mail you can send messages to anyone in the world, containing anything from text, to graphics, to entire packages of files.

The BeOS has built-in Internet mail services. The application that does most of the work is BeMail (*file://boot/apps/BeMail*) and its companion, the Be Mail Server (also known as the mail daemon). This section shows how to configure the BeOS for sending and receiving mail, and describes the features of the BeMail application. It also covers other mail applications available for the BeOS.

Configuring Mail Services

To set up your BeOS to send and receive electronic mail, you need to open the Mail Preferences window (*file://boot/preferences/E-mail*). When you double-click on the E-mail Preferences icon, the following window appears:



The information you enter in this window tells the BeOS where to find your mail server on the network, your name and password, and other mail-related options.

E-mail preference	Purpose
POP User Name	POP stands for the Post Office Protocol. Your POP user name is usually the first part of your e-mail address (i.e., user in user@company.com).
Password	Your network administrator should provide your password. If you do not enter a password, you're asked for one whenever a mail connection is made.
POP Host and SMTP Host	The Internet domain names or IP addresses to the servers that handle your mail. The POP Host takes care of incoming mail; the SMTP Host (Simple Mail Transfer Protocol) of outgoing mail. In most cases, the POP Host and SMTP Host are the same server, but your network administrator may provide you with different names for each. Also, in most cases, the host name is the last part of your e-mail address (i.e.,. company.com in user@company.com).
User Settings	The Real Name field lets you stamp all outgoing mail with your real name (rather than just the e-mail address). You should place your full name in this field. The Reply To field lets you specify to which e-mail address responses to your outgoing messages should be sent.
Mail Schedule	These menus let you set how often the BeOS should automatically check for mail. You can select a repeating connection, or connections based on day and time. If you connect to the Internet via PPP, checking your mail automatically starts an Internet connection (which may require a phone call).

E-mail preference	Purpose
Mail Notification	Show Status Window places a permanent window on your desktop that shows the status of your messages (see Mail Status Window below). You can also instruct the BeOS to sound a system beep when new messages arrive.
Autolaunch mail_daemon	Automatically starts mail services when you start the BeOS. You should generally always have this turned on.

Once you finish configuring mail preferences, press the Save button to save the settings to disk. Then you can press the Check Now button to check for new messages immediately.

Mail Status Window

If you set the Show Status window in mail preferences to “on”, a new window appears on your desktop. After the BeOS checks for new messages, the window looks like this:

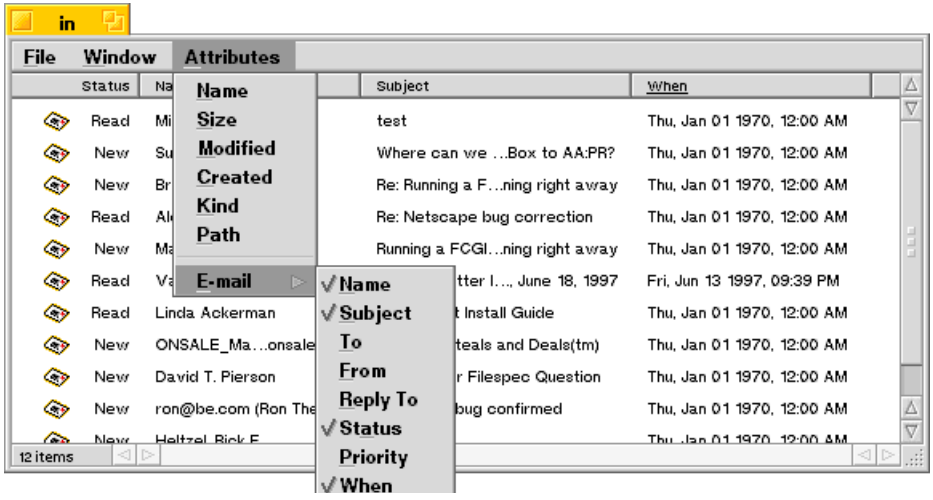
The Mail Status window gives you key information about messages at a glance. It shows how many new and unread messages you have, and tells you when the next automatic mail connection will be made. If a mail download is in progress, it displays the status of that download as well.

The status window includes a convenient Check Now button, which immediately initiates a mail session.

Checking for New Mail

Once you configure the mail preferences window, the BeOS continuously checks mail for you automatically. You can also check messages by pressing the Check Now button in the Mail Status window.

When new messages arrive, they are automatically routed to a mail/in folder created in your home folder (*file://boot/home/mail/in/*). When you open this folder, you'll see the following window appears:

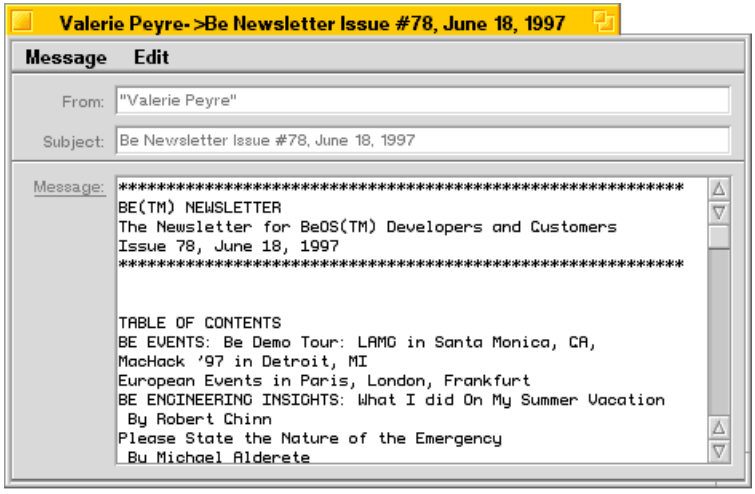


This is a BeOS Tracker window, just like the windows you use to manage other files within the BeOS. If you pull down the Attributes menu, however, you'll notice that a new set of attributes, E-mail, lets you display message-related information in the Tracker. This is a key benefit of the BeOS's attribute-based file system, which allows you to organize information any way you want.

In the window above, incoming mail is organized by status, sender's name, subject, and when the message was received, and sorted on the time received, from most recent to the oldest.

Reading Mail

When you receive a message, you can double-click on its icon to display it. Double-clicking opens the BeMail application (*file:///root/apps/BeMail*) and creates a new window:



At a glance, you can see who the message is from and its subject of the message, and scroll through its contents. If this message had other files attached to it (see "Sending Mail" below), you would also see a list of attachments. Since this is an incoming message, you can't edit the text in the window, although you can select and copy it. In general, though, it's easier to reply or forward a message using the menus at the top of the window:

Message Menu (incoming mail)

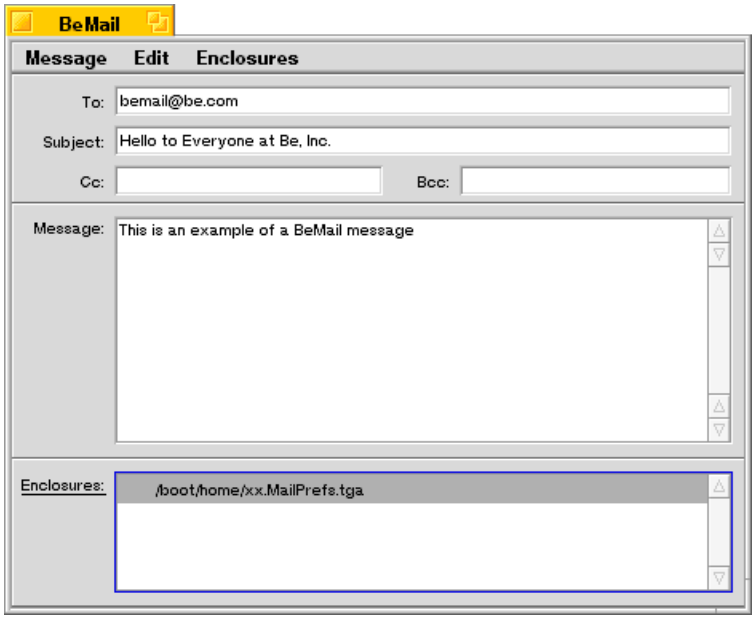
Command	Does this
New Message	Creates a new message window.
Reply To Sender	Creates a new message and automatically places the sender's e-mail address in the To: field.

Command	Does this
Reply To All	Creates a new message and automatically places all recipients in the To: field.
Forward	Copies the message into a new message, allowing you to forward the contents to another e-mail address. It also lets you add your own comments to the message.
Resend	Copies the message into a new message, allowing you to forward the contents to another e-mail address. Unlike forward, however, the message retains the original From: address. This is often called redirect.
Show Header, Show Raw Message	These options allow you to see the raw text of the Internet message, with the route information and other technical information.
Page Setup, Print	Options for printing the message.
Move To Trash	Moves the message to the trash. You can reclaim it by opening the trash and moving it to another folder.
Close	Closes the window, and provides a number of options for moving the message.

The Edit menu has the standard cut, copy, paste, clear, and select all items you'd expect.

Sending Mail

To type a new message, either double-click on the BeMail application (*file:///boot/apps/BeMail*) or select New Message from the Message menu from within any BeMail window. This brings up a new message window:



In this window, you complete the To:, Subject:, Cc: and Bcc: fields, and then type the text of your message. If you want to attach a file to the message, simply drag the file onto the Enclosures section of the window.

Message Menu (outgoing mail)

Command	Does this
New Message	Opens a new message window.
Send Now	Sends the message immediately.
Send Later	Sends the message with the next regularly scheduled connection.
Page Setup, Print	Options for printing the message.
Close	Closes the window.

Edit Menu (outgoing mail)

Command	Does this
Cut, Copy, Paste...	Normal text editing commands.
Quote	"Quotes" the selected text by placing a ">" character in front of each line. This is the standard Internet convention for copying (quoting) a message when replying, allowing the reader to quickly scan through the text for your comments as well as the quoted comments.
Remove Quote	Removes the quote character from the selected lines.
Add Signature	Adds the selected "signature" text to the bottom of the message (see "BeMail Preferences" below).

Enclosures Menu

Command	Does this
Add...	Brings up the file selection window, allowing you to attach a file as an enclosure to this message.
Remove	Removes the selected enclosure from the message.

BeMail Preferences

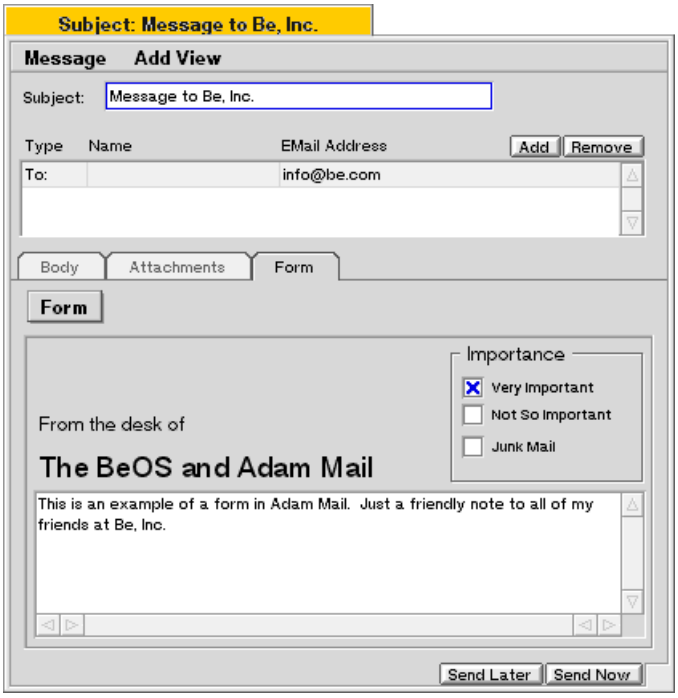
BeMail's preferences menu allows you to configure BeMail to your way of working. To view this menu, click on the right mouse button (For the single-button mouse equivalent, see the chapter "Learning BeOS Basics") on any part of a message window. A context-sensitive menu appears with the following options:

Preferences menu

Command	Does this
About	Brings up the BeMail about window.
New Mail Message	Creates a new message window.
Preferences...	Lets you select the font and point size of text in BeMail windows, and to set the expertise level of BeMail which controls if alert and warning messages appear. Preferences also gives you access to the signatures editor, where you can create standard text endings for your messages (which appears in the Add Signature menu of outgoing messages).
Quit	Closes all open messages and quits BeMail.

Other Mail Packages

BeMail is one of many mail packages available for the BeOS. Another is Adam, a mail application from Adamation (http://www.adamation.com/). Adam gives you even more control over your Internet messaging, with support for multiple accounts, the ability to send and receive forms, and many other features.



Adam can also make use of BeOS add-ons which extend its forms and message type capabilities, and add many other features.

As with most BeOS Internet services, software developers pick up where the BeOS leaves off, extending its functionality. The BeOS is modular so that new capabilities can be added at any time.

Using Internet Remote Access Services

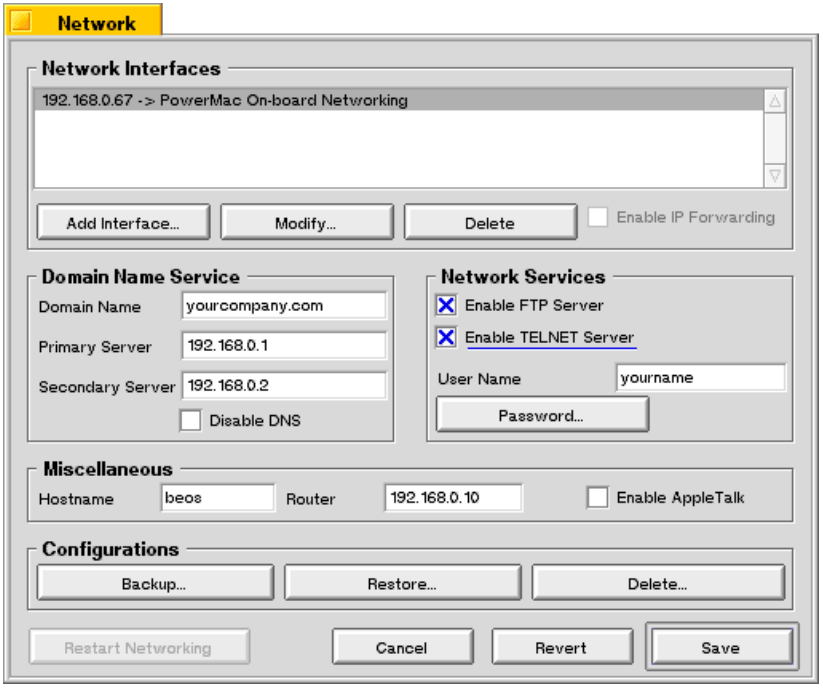
In designing the BeOS, the Be software team borrowed many ideas from other operating systems. In Unix systems, it is possible to remotely access a system from anyplace on the Internet (with the correct passwords and permissions). When you do this, the Unix system accepts commands as if they were typed from the keyboard right in front of it, and sends you the results, wherever you are.

The ability to use Internet remote access services has been duplicated in the BeOS by way of Telnet. From your BeOS system you can remotely access any BeOS or Unix-based system on the Internet. You can also configure your BeOS to accept remote connections, so you have access to your system no matter where you are.

Note: Mac OS and Windows systems generally use proprietary protocols to enable remote access. You'll need additional third-party software for your BeOS to be able to remotely access those systems.

Configuring Telnet Remote Access

To set up your BeOS for remote Internet access, you need to turn on the BeOS Telnet server using the Network Preferences window. Open this window (*file:///boot/preferences/Network*) and you'll see the following:



To enable the Telnet server, click the Enable TELNET Server checkbox to the on position. If you have not done so already (for example, to set up a personal file server), type a User Name and click the Password button to add a password. The same user name and password is used for both TELNET and FTP Servers. You should enter a user name and password for your BeOS system before enabling remote access services to discourage unauthorized access to your computer.

Once you do this, press the Save button and restart networking. Your BeOS system's remote access server is now active and you can remotely log in from another system on the Internet.

Note: You can't use an Internet domain name (i.e., mysystem.company.com) to access your BeOS system remotely unless your network administrator has configured your network's Internet router hardware to recognize the name as a substitute for your Internet IP address. So make sure you use the IP address to access your system.

Accessing Your BeOS System via Telnet

Telnet is command-line based. You access them through the command line window (*file:///boot/apps/Terminal*). The commands you use in a Telnet session are identical to those you use on the BeOS command line. This is important—when you are connected remotely to your system, it behaves as if you are typing on the keyboard. All the same commands are available to you. And this applies to any BeOS or Unix-based system you connect to remotely over the Internet.

Note: The BeOS and many Unix systems use a command line interface and command set known as the C Shell, Bash Shell, or Borne Again Shell. Many of the commands are documented in web pages included on your BeOS CD. To learn more about the C Shell and text-based commands, visit your local bookstore and browse the many (many, many) books on the subject.

To access your BeOS system from another computer (or to access any other system from your BeOS), you need to open a Telnet client application on that system. If you are using another BeOS system to access your own, you can simply open the Terminal application (*file:///boot/apps/Terminal*). At the prompt, type:

```
$ telnet 192.168.0.67
```

where 192.168.0.67 is replaced by the domain name or the IP address of your system or the computer you are trying to reach. When you reach your BeOS system, you will see the following:

```
$ telnet 192.168.0.67
Trying 192.168.0.67...
Connected to 192.168.0.67
Escape character is ‘^]”.
192.168.0.67 login:
```

You then type in your name and password for access to the system. If you do this correctly, you’ll see something like the following:

```
login: yourname
Password:

Welcome to the Be shell.

$
```

You are now remotely connected to your BeOS system, and any command you type is sent and executed on your system, rather than one you are typing from. For example, you can start an application on your system by changing directory to where the application is located and typing the application name. For more information on the Be command line shell see “App A: Using the BeOS Command Line Shell.”

When you finish, type the exit command; you should see something like this:

```
$ exit
logout
Connection closed by foreign host.
```

If you are using another BeOS system, the command line window closes automatically.

Compressing and Archiving Files

By now you’ve been browsing the web or looking at file servers and have seen document and software files ready for download that have seemingly indecipherable letters at the end of their names: .tar, .gz, .tgz, .zip, .pkg, and others.

These letters have a special meaning—they tell you that the file you are about to download has been archived, compressed, or both, in the process of Internet transmission. The concepts of archiving and compression are important when dealing with the Internet, because they make the process of data transmission easier and more efficient.

Archiving is the process of combining several files into one file. For example, you can archive ten image files into a single file for transmission. This means that the Internet, and all of the servers between you and the destination, only have to deal with this one file. When you receive an archive, you expand the archive and end up with the ten files back in their original form. Entire applications and their documentation, web sites, and folders can be neatly combined into a single file which can be moved from place to place and expanded to return to their original formats.

Compression is the process of encoding the contents of a file in such a way that the file takes less space to store — and less time to transmit. Compression can often cut the size of a file down to one-third of its original size or less. When the compressed file arrives at the destination, it can be decompressed to return the file to its original state.

Archiving simplifies the number of files you need to attach to e-mail messages, or upload to a web site or file server. Compressing reduces the size of files so that they take less time to transmit—extremely important if you use a modem to connect to the Internet. Compression also saves space on Internet servers, an important part of Internet etiquette.

There are a number of tools available to you for archiving and compression with the BeOS. In many cases, your Internet application takes care of these details for you. But in other cases, you'll need to archive and compress, or decompress and unarchive, yourself.

Archiving - tar Files

For archiving, one tool often used on the Internet is called tar. It was developed for Unix systems and is included as one of the basic tools in the BeOS. tar is a command line tool, but there are many ways to access it, as discussed in the section "Archive and Compression Tracker Add-Ons" in this chapter.

You use tar most often to unarchive a file that you've downloaded from the Internet. To do this, open the command line window (*file:///boot/apps/Terminal*) and navigate to the desired folder. You can expand a tar archive by typing the command

```
tar xvf file_name
```

The `xvf` in the command instructs the tar tool to expand the file (`x`), to be verbose and show you the names of the files as they are extracted (`v`), and to use the file with the following name (`f`).

To archive a set of files, you also use the command line tar command

```
tar cf archive_name file_name
```

In this case, tar is told to create a new archive (`c`) using the file name (`f`) `archive_name`, and to place the file `file_name` into the archive. You can also add files to the archive at any time by using "`a`" (for append) rather than the "`c`" option.

Note: To get a complete list of the tar commands, you can type "tar --help" while in a command line window. You can review this information in the BeOS Shell Tools documentation included on your BeOS CD.

Compressing - gzip Files

For compression, the counterpart of tar is another Unix tool known as gzip (pronounced gee-zip). gzip compresses a single file; another tool, gunzip (pronounced gee-un-zip) uncompresses it. tar and gzip are often used together, first archiving a group of files into a single tar file, and then compressing them using gzip. This creates files that look like *file.tar.gz*, or *file.tgz*.

You use gunzip most often to decompress files downloaded from an Internet server. To do this, open the command line window (*file:///boot/apps/Terminal*) and navigate to the desired folder. You can uncompress a gzip file by typing the command

```
gunzip file_name.gz
```

This uncompresses the file, and puts the contents into a new file without the .gz extension. It also automatically deletes the compressed file to avoid confusion with the uncompressed version.

To compress a file, you do exactly the same thing, only using the gzip command:

```
gzip file_name
```

This command takes the file `file_name` and compresses it, putting the result into a new file called `file_name.gz`.

Note: For a complete list of the commands for gzip and gunzip, type “gzip --help” or “gunzip --help” while in a command line window. You can also review this information in the BeOS Shell Tools (*file:///boot/beos/documentation/Shell_Tools*) documentation included on your BeOS CD.

Archiving and Compressing - zip Files

The combination of gzip and tar has two major disadvantages in the BeOS environment. First, it is a two-step process, rather than a simpler single step. Second, tar does not preserve the attributes of BeOS files, additional information attached to BeOS files by many BeOS applications. This does not matter when you are transmitting information to Windows-, Mac OS- or Unix-based systems because those systems can’t use the attributes (they do use the data portion of the files, which are stored by tar). But if you are transmitting files to BeOS users, you want to preserve these attributes so that the additional information is transmitted, intact, to the destination.

The answer is a tool called zip (and its companion, unzip). This tool both archives and compresses, and preserves the attributes found on BeOS files. In fact, zip is a universal archiving and compression tool because it lets BeOS systems find and store the additional file attributes, while allowing other computer systems to ignore the attributes and read the data portion of the files.

Note: zip is freeware, freely distributed and free to use. In fact, it’s against the license to ship zip with anything that carries a price tag, so zip can’t be included on the BeOS CD as a standard tool. You can get zip and unzip from the Be public file server (*ftp://ftp.be.com*) or from any other public servers that carry BeOS freeware and shareware.

You use unzip most often to decompress and unarchive files downloaded from an Internet server. To do this, open the command line window (*file:///boot/apps/Terminal*) and navigate to the desired folder. You can expand a .zip file by typing the command

```
unzip file_name.zip
```

To archive and compress a file, you do exactly the same thing, only using the zip command:

```
zip result_name.zip file_name
```

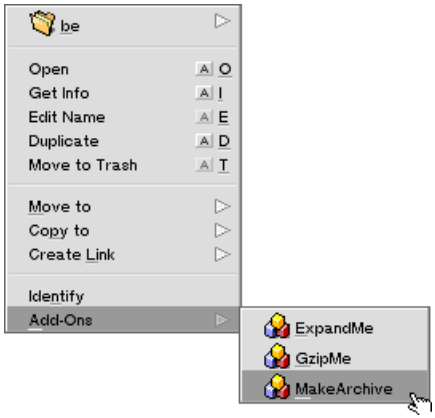
This command takes the file `file_name` and archives and compresses it, putting the result into a new file called `result_name.zip`. Note that the result file name must have the ,zip extension. You can add files to the .zip archive by simply repeating the zip command with the same `result_name.zip`.

Note: For a complete list of the commands for zip and unzip, you can type “zip -help” or ““unzip -help” while in a command line window.

Archive and Compression Tracker Add-Ons

One thing you’ll notice about tar, gzip and zip is that they are all command line tools. An easier way to compress and archive files is with Tracker add-ons. These tools give you access to gzip, tar, and zip directly from the Tracker menus in every Tracker window. Just select the files and use the menu to choose the command; the rest is done for you.

For example, the Tracker has a built-in add-on called MakeArchive which uses tar. Just select the files you want to archive, and press the right mouse button (or press and hold on single-button mice) to see the context-sensitive menu. Select Add-Ons/MakeArchive at the bottom of the menu, and the selected files are placed into a tar archive named archive.tar.



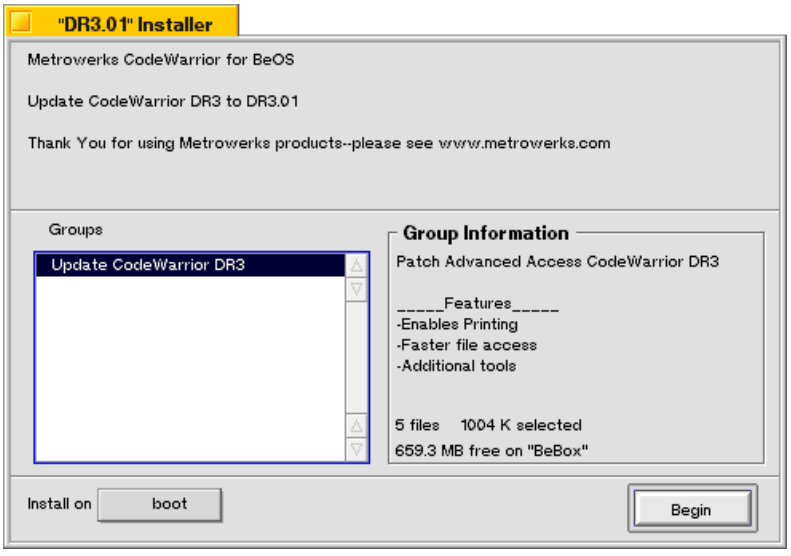
You can also find the add-ons in the File menu located at the top of all Tracker windows. MakeArchive is included with the BeOS. You can find other Tracker Add-Ons on the Be public file server (ftp://ftp.be.com/ or http://www.be.com/) and on other Be-related sites.

Software Installers - PackageBuilder Files

Another class of files you may download from the Internet are self-extracting files, also called installers. These files are self-contained—to decompress and unarchive the contents double-click them. More sophisticated installers present you with install options, automatically place files into the appropriate folders, and more.

One of the more sophisticated installers for the BeOS is Package Builder by StarCode Software (http://www.starcode.com/). Package Builder is the application that software developers use to create packages, often named with the extension .pkg, which you download from the Internet.

Once you download a package file, double-click to open the package and the following window appears:



The window gives you information about the contents of the package. Each package can have a number of groups, such as “full install” or “minimal install.” Select where you want the software installed on your hard disk, and press the Begin button. The files are extracted and installed automatically.

6 Customizing the BeOS

Several applications included with the BeOS allow you to customize the look and operation of your computer. This chapter shows you how to use each of these applications in the BeOS Preview Release, and how to add fonts, drivers, and system add-ons.

For information on adding printers to your system see “Adding a Printer” in Chapter 3, “Learning Be Application Basics.”

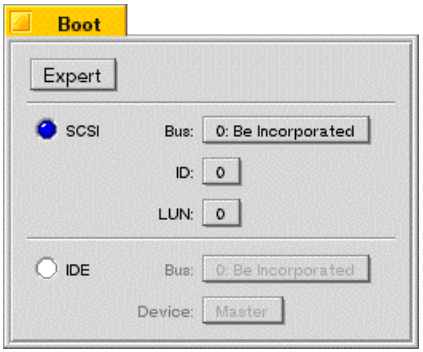
This chapter discusses the following topics:

Using the Boot Application

The Boot application is useful only if you have the BeOS installed on more than one disk connected to your computer. It lets you select the default SCSI or IDE device from which to launch the BeOS.

If you want to change the boot drive, launch the Boot application. A window appears that lists each mounted disk by name. You can change the boot preference to match the configuration of a mounted disk by clicking a name in the list. The current boot disk is marked with a bullet (•).

If you want more advanced options, click the Easy pop-up and select Expert. In Expert mode, you can use the pop-up menus to change the boot disk to any drive on the SCSI or IDE drive buses.

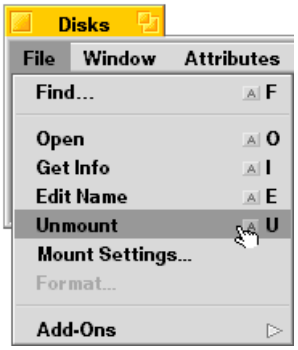


For SCSI disks, only the built-in SCSI bus is typically available, and unless you have a computer with more than one SCSI bus in it, leave the LUN (Logical Unit Number) at 0.

Using Drive Setup

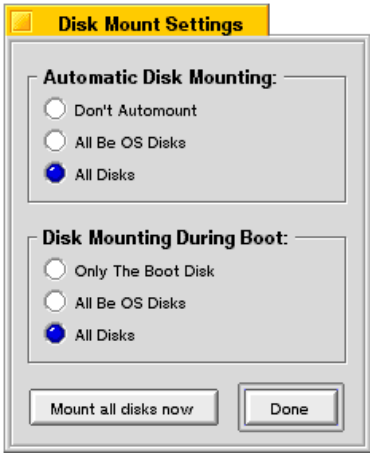
WARNING: Use of the Drive Setup application can result in the loss of your data. Be careful using Drive setup and back up your data before proceeding.

You can mount and unmount volumes directly from the Tracker's Disks window's File menu. Mounting makes the contents of a disk available to the operating system; unmounting does the reverse. You should always unmount floppies and other removable media before ejecting them.



Disk Mounting Settings

The Tracker's Disks window's File menu also contains the Mount Settings dialog, which controls automatic mounting of disks and removable media, and lets you choose the disks you want to mount during the boot process.



Automatic Disk Mounting

Automatic Disk Mounting controls the mounting of disks inserted or attached after the machine has booted. It offers the following three options:

- You can choose not to automatically mount any volume,
- You can automatically mount only BeOS disks,
- You can automatically mount all disks.

Disk Mounting During Boot

Disk mounting during boot controls the mounting of disks during the boot process. There are three options available:

- You can choose to mount only the boot disk.
- You can mount all BeOS disks or volumes,
- You can mount any recognized disks or volumes.

Supported Drives

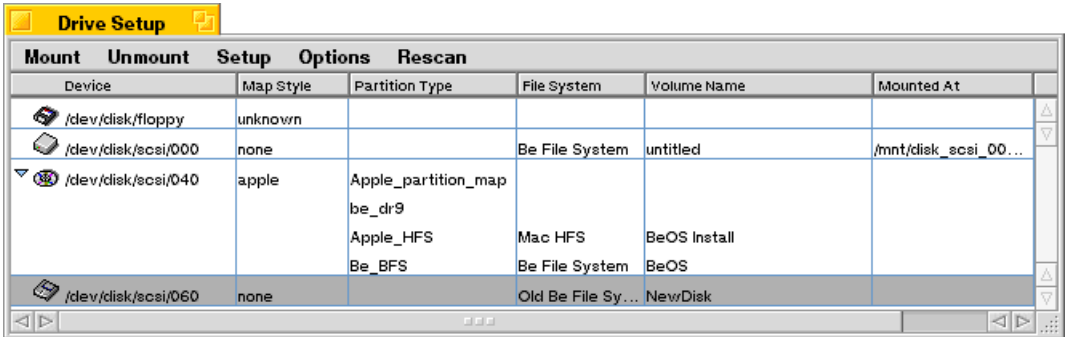
The Drive Setup application lets you work with any type of drive supported by the BeOS. In Drive Setup you can mount, unmount, format, partition, eject, and initialize disks connected to your computer.

Some important terms to remember:

- A **disk drive** is a physical device; e.g., a SCSI hard drive.
- You can **partition** a disk into multiple **volumes**.
- A **volume** is a logical device. A single hard drive can have **multiple logical volumes**; e.g., one for the Mac OS and one for the BeOS.

Drive Setup Features

If you want to mount, unmount, format, partition, eject, or initialize disks connected to your computer, launch the Drive Setup application.



The Drive Setup application window shows you the drives currently installed in the system. In the window above you see there are four drives connected to the computer: a floppy drive, a hard drive, a CD-ROM, and a removable SCSI device. A small triangle appears next to partitioned drives with multiple volumes. Click on the triangle to see all of the volumes on the drive.

The table below identifies and describes the features of the Drive Setup application window:

Feature	Function
Device	This column lists the SCSI, IDE or floppy drive devices you can mount on this computer. These include floppy drive, hard drive, CD-ROM drive, and a removable SCSI device.
Map Style	This column identifies the partition map style. Currently the BeOS supports two styles: Apple and Intel. Developers may develop modules that extend this to support other partition map styles.

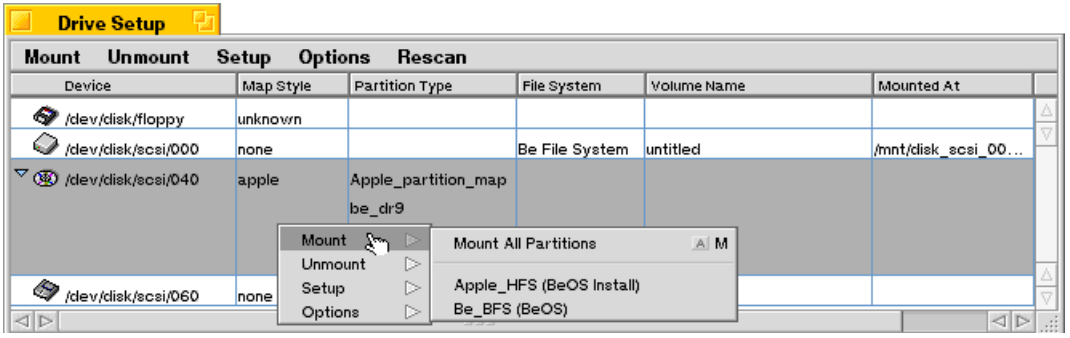
Feature	Function
Partition Type	This column shows the specific partitions on a given volume. The BeOS recognizes Be, Macintosh HFS (Hierarchical File System), ISO 9660, and “ofs” (Old Be File System) partitions.
File System	This column shows the specific file system for each volume.
Volume Name	This column has the name for each volume on a drive.
Mounted At	This column shows the location of a volume.
Size	This column shows the size of each device and/or volume.

Mounting a Volume

Mounting simply means displaying a drive or volume in the Disks folder located on the Desktop. You can mount a drive or volume either via the Disks window’s File menu or with Drive Setup.

To mount a volume with Drive Setup:

1. Launch Drive Setup.
2. Select the device you want to mount: e.g., floppy, CD, Zip drive, etc.
3. Select the Mount menu. You can also use the context-sensitive menus (click the right mouse button or press the Control-Command keys while clicking the mouse) to see the Mount menu as shown below:



You can choose to mount all volumes or a specific type of volume.

Unmounting a Volume

Unmounting means removing a drive or volume from the Disks folder display. To unmount a volume:

1. Launch Drive Setup.
2. Select the device you want to unmount:e.g., floppy, CD, Zip drive, etc.
3. Select the Unmount menu.

You can choose to mount all volumes or a specific volume.

Formatting a Disk

WARNING: Formatting a disk destroys all data on that disk! Back up any data on you want to keep before formatting the disk.

Formatting is a time consuming, low-level process. You should attempt to format a disk only after initialization has failed.

To format a disk:

1. Launch Drive Setup.
2. Select the disk you want to format, and unmount it if necessary.
3. Select Format from the Setup menu.

   In the warning dialog that appears click Format if you still want to Format the disk.

Partitioning a Disk

WARNING: Partitioning a disk destroys all data on a disk! Back up data you want to keep before partitioning the disk.

You can use Drive Setup to create multiple partitions on a disk, except on floppy disks, which are too small to partition, and on read-only media like CD-ROMs. You might want to create a partition to allocate half of your hard drive to the BeOS and half to the MacOS.

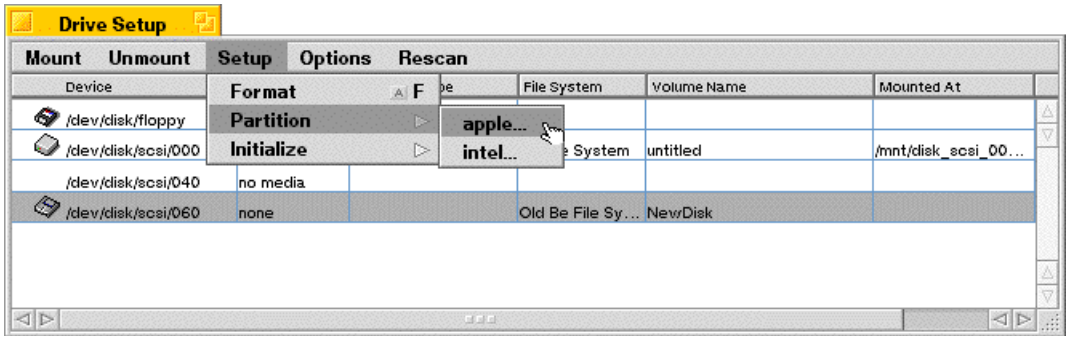
To create a partition:

1. Launch Drive Setup.
2. Select the disk you want to initialize, and unmount it if necessary.
3. Select Partition from the Setup menu.

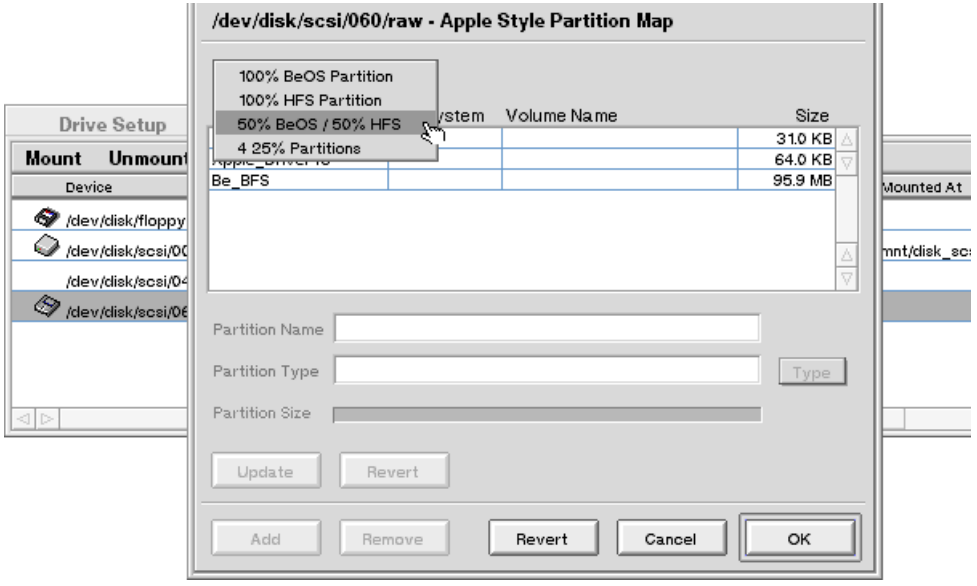
You can choose to create either an Apple- or Intel-style partition from a hierarchical menu. Make your choice based on the type of computer you are likely to share this drive with.

Creating Apple-Style Partitions

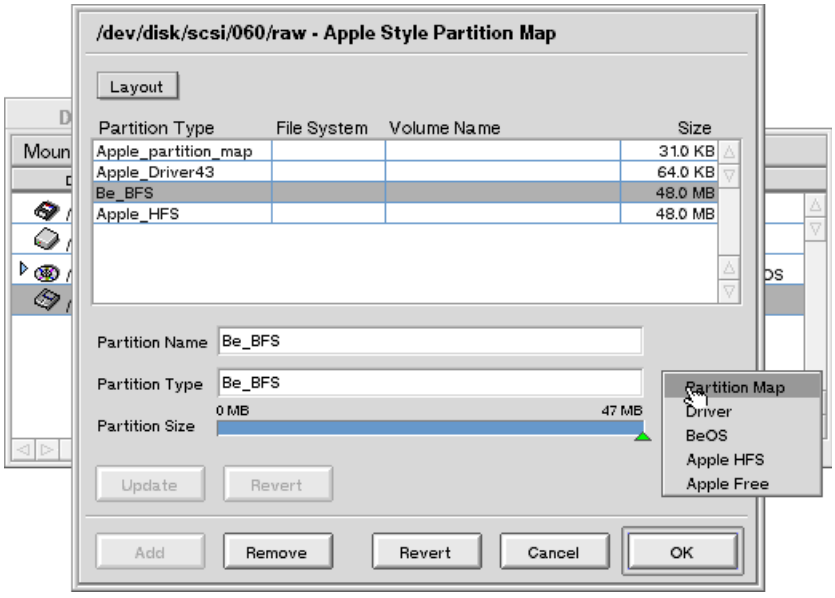
When you choose an Apple-style partition you have the option to enter each partition by hand or use one of the preset layout configurations.



You can choose one of the configurations in the Layout pop-up. You can alter the preset configurations by clicking on one of the preset partitions and then changing the name, type, or size.



To change the partition name or type enter the appropriate information in the corresponding text box.



WARNING: Use only one of the partition types in the pop-up menu or your partition will not be recognized by the BeOS or MacOS.

To change the partition size move the slider left to increase or right to decrease the size. If you change the size, you should click update to see the new sizes of all of the partitions.

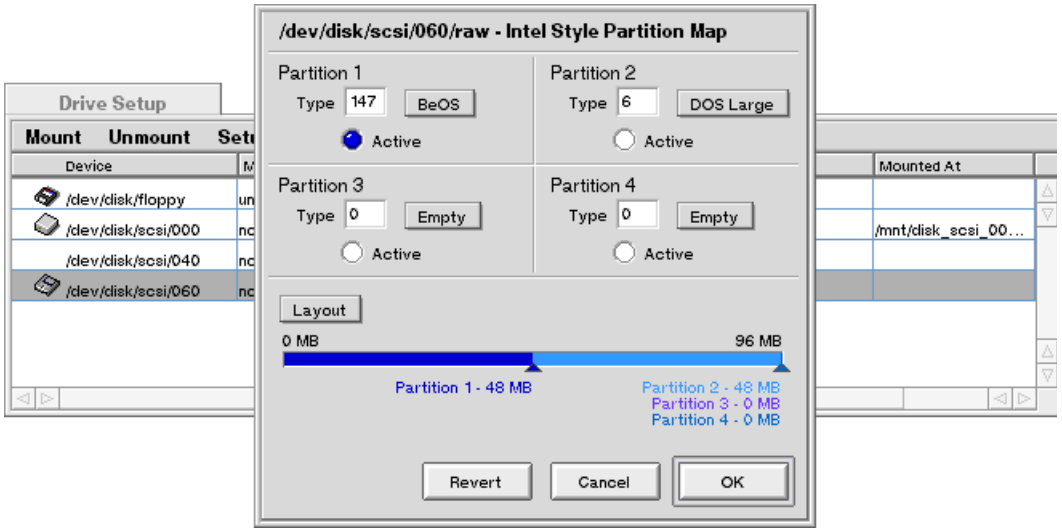
You can also add or remove partitions with the Add and Remove buttons at the bottom of the window.

When you have the configured the partitions, click OK to partition the drive. A dialog warns that you may lose all the data on your disk; continue only if you are sure you want to erase all of the data on the disk.

Creating Intel-Style Partitions

When you choose an Intel-style partition you can have up to four partitions per disk.

You can choose one of the preset configurations by clicking the Layout pop-up menu. You can alter the type and size of the partitions. Drive Setup supports six different Intel partitions types via the pop-up menu next to the Type field. You typically use DOS Large or BeOS.



To change the partition name or type enter the appropriate information in the corresponding text box.

WARNING: Use only one of the partition types in the pop-up menu or your partition will not be recognized by the BeOS or by Intel-based operating systems such as Windows.

To change the partition size move the slider left to increase or right to decrease the size. If you change the size, you should click update to see the new sizes of all the partitions.

You can also add or remove partitions with the Add and Remove buttons at the bottom of the window.

When you have the configured the partitions, click OK to partition the drive. A dialog warns that you may lose all the data on your disk; continue only if you are sure you want to erase all of the data on the disk.

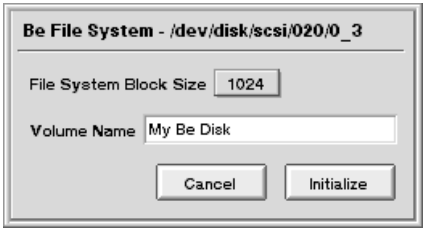
Initializing a Disk

Initializing a disk prepares it to hold data in a certain file system format; e.g., Mac HFS, DOS, BeOS. You must initialize a new Be partition before you can write data to it.

To initialize your disk:

1. Launch Drive Setup.
2. Select the disk and volume you want to initialize, and unmount it if necessary.
3. Select Initialize from the Setup menu.
4. You have four initialization choices: Be File System, Mac HFS, ISO 9660, or the Old Be File System.

   A dialog that lets you name the volume and determine the file system block size appears. The default size is 1024; this gives the best performance for most cases. If you are an expert and will have only a few very large files, you can increase the system block size.



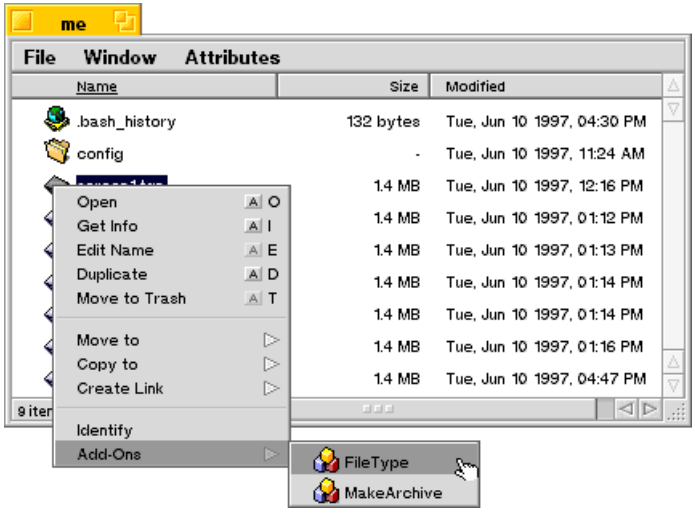
Understanding File Types

The BeOS uses the Internet standard MIME as file types (descriptors). The file types determine how the system and Tracker deal with a file. For example, a files' file type determines which application opens that file when you double-click it. The BeOS lets you change the file type and associated application for a file as well as the associated application for a whole file type.

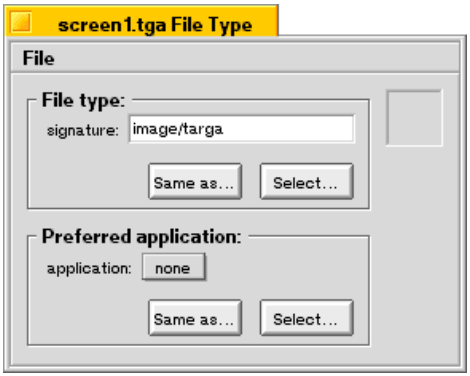
Changing the Type of a File

The primary way to change file type is via the File Type Tracker Add-On that is included with the system. To change a file type this way:

1. Select the file you want to associate with an application.
2. Click File and Select Add-Ons/FileType.



The File Type Add-On dialog that appears has two sections: the File type and the Preferred application.

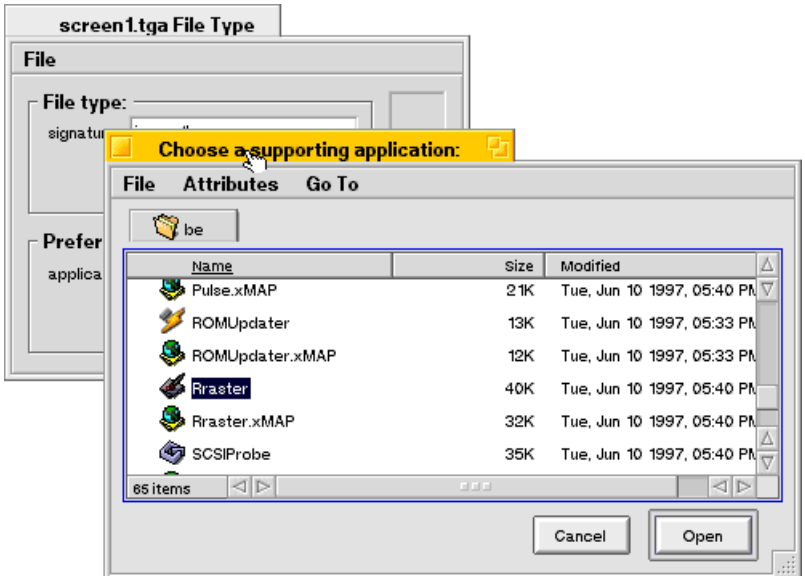


In the File type section is the file's signature; this is the MIME type associated with the file. You have three options for choosing a file type:

- Drag and drop a file of the type that you want the selected file to have onto the window.
- Make the signature of this file the same as another file on your system by using the Same as button.
- Make the signature of this file the same as those in the scrolling list of known types known to the system by using the Select button.

In the Preferred application section you can associate a particular application with the file signature you chose in three ways:

- Drag and drop the application you want to associate with this file onto the window.
- Make it the same as the application associated with another file via the Same as... button.
- Select the particular application you want it associated with by using the Select button as shown below:



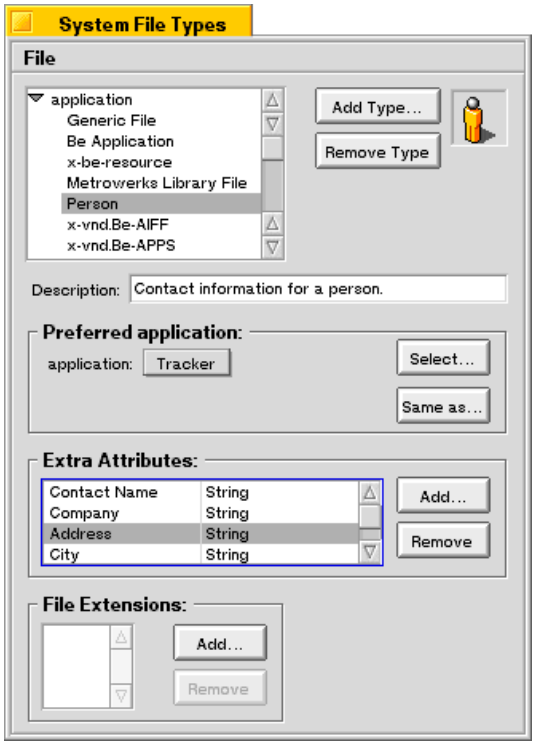
Changing a File Type

The File Type add-on works on individual files, while the File Type application operates on an entire type of file. In addition to changing the application associated with a particular file type, the File Type application also lets you add and remove MIME types, attributes, file extensions, and associated icons.

The top section in the application is a scrolling list of all of the file types known to your system. When new applications are installed, new file types unique to that application are added to the system and this list.

File types are broken into categories like application, audio, image, text, and video. The screen below shows the Person File type. While the system adds new types automatically when you launch new applications, you can also manually add and remove types from the list.

A particular file type is associated with an icon.



The Preferred application section is similar to the File Type add-on except that it establishes the preferred application for all files of a specific type.

The Extra Attributes section displays additional attributes that can be associated with a file type. In the screen above you see that the Person File Type has additional attributes associated with it: contact name, company, etc. You can add or delete attributes and the Tracker will display the updated list.

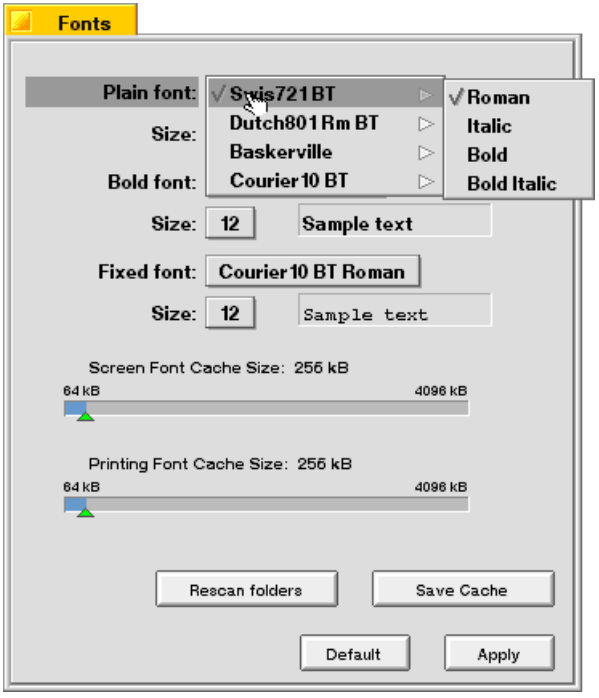
The File Extensions section displays file extensions that are commonly used on other platforms to identify file types. You can associate a suffix with a file type so it can be identified more easily when moved to other platforms.

File Type for an Application

Developers can use the File Type application to modify the behavior of their application. Because this is a developer function, we do not document it here.

Using the Font Panel

The Font Panel application lets you set standard system fonts and the size of the font caches. There are three types of default system fonts: plain, bold, and fixed-spaced fonts. You can choose the font, size, and style the system uses for each of these categories.



The Font Panel application works in conjunction with the Menu application (see “Setting Menu Preferences” in this chapter) to let you customize the look of applications and dialogs in the BeOS. The Font Panel lets you customize text within dialogs and applications.

To change these characteristics, choose a font, style, and size and click the Apply button.

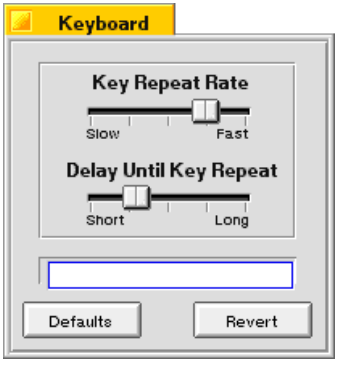
Screen Font Cache Size determines how much RAM is allocated to hold font bitmaps. The larger the cache size the faster the screen redraws, but the less RAM is available for applications.

The Printing Font Cache Size determines how much RAM is allocated to printer fonts. The larger the cache size the faster the printing, but the less RAM is available for applications. You need a Printer Font Cache only if you print to HP LaserJet–compatible printers.

Setting Keyboard Preferences

When you press a key on the keyboard, a character appears on screen (or some other action takes place). If you hold down a key, the BeOS waits a moment and then acts as if you were repeatedly pressing that key. For example, if you press and hold down a character key when the insertion point is in a text field, a character appears in the field and then after a brief delay, more copies of that character appear. You can use the Keyboard application to increase or decrease the delay between first pressing a key an the key repeating, and to set a key's repeat rate.

Click Revert to restore the key-repeat settings that were in effect when you first started the Keyboard application. Click Defaults to restore the settings that were in effect when you first installed the BeOS.



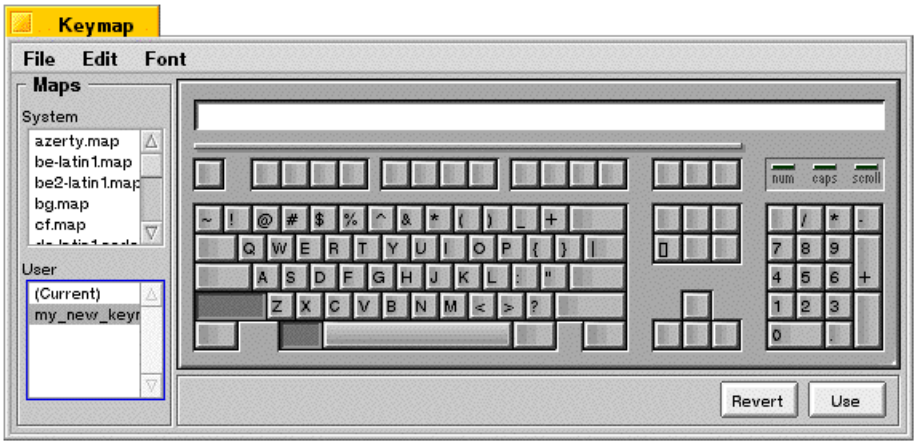
Using the Keymap Application

The Keymap application opens a window that shows you the current keymap, that is, the character you see on-screen when you press each key. You can select a system keymap and type on the keyboard or click keys in the Keymap window to see the resulting character in the field at the top of the Keymap window If you press one or more modifier keys (such as Shift, Option, or Control) on the keyboard or click them in the Keymap window, the keycaps change to show you what characters are mapped to the keys when the modifier keys are pressed.

Different fonts map characters to different keys. You can choose a font from the Font menu to see that font's mapping in the Keymap window. This is also a useful way to look for characters you don't use very often, such as bullets, accents, or other special characters.

You can change the keymapping for your keyboard to support different languages or keyboard layouts. The BeOS comes with a number of preconfigured keymaps that you can choose from the scrolling System keymaps list. To customize a keymap or create your own:

1. Choose any user or system keymap.
2. Click File and Save As and enter the name of your new keymap.
3. Make sure the keymap is being saved to *file:///boot/home/config/settings/keymap*.
4. To make the keymap selected in the Keymap window active, click Use.



The new keymap is displayed in the User list. You can create a custom keymap by using the secondary mouse button to drag characters to the keys you want to map them to. You can also use the secondary mouse button to drag characters/glyphs not available on your keymap from FontDisplay.

Each keymap is made up of nine mapping tables that show what each key produces when you type it with no modifier key pressed, or with the Shift, Control, or Option key pressed, plus all the possible combinations of these keys.

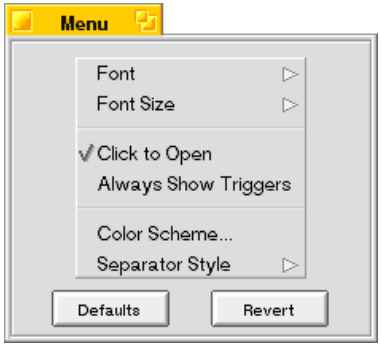
If you use the tertiary mouse button to drag a character from one keycap to another, you actually drag all nine characters associated with that key in the nine tables in the keymap.

You can revert to the default keymap at any time by choosing one of the standard System keymaps.

Setting Menu Preferences

You can use the Menu preferences application to change the color and other aspects of the appearance of menus throughout the BeOS. You can also use Menu preferences to change how menus behave. When you start the Menu preferences application, a window opens with a set of controls that look like an open menu. You can choose items from this menu to customize the menus in the BeOS.

Choose a font from the Font menu and a font size from the Font Size menu that you want to use in menus. The menu in the Menu window changes right away to reflect your choices.



If you uncheck Click to Open, you can't open a menu or submenu by clicking its title—you can only drag through menus.

If you check Always Show Triggers, triggers for menu titles, commands, and other menu items are always visible, even when you're dragging through menus, rather than just when you're navigating menus from the keyboard or clicking menus and submenus to open them.

Choose Color Scheme to open a color selection panel. When you click a color in the panel (if you're using 8-bit color) or drag one of the red, green, or blue color component sliders (if you're using 32-bit color), the Menu preferences window changes to show how the highlighting and other uses of color in menus will appear. (For more information about setting 8-bit and 32-bit color, see the "Setting Screen and Workspace Preferences" section in this chapter.)

You can choose one of three styles of menu item separators from the Separator Style submenu.

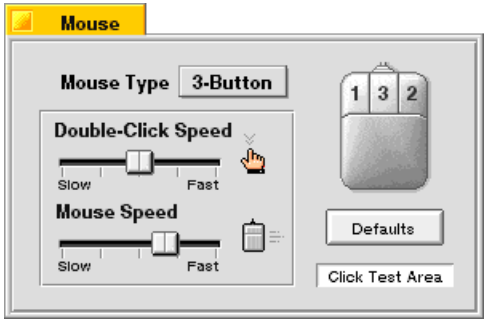
Click Revert to restore the Menu preferences settings that were in effect when you first started the Menu application. Click Defaults to restore the settings that were in effect when you first installed the BeOS.

Changes you make in the Menu preferences take effect in other applications the next time you start them (or in the case of the Tracker, the next time you start the BeOS).

Setting Mouse Preferences

Use the Mouse application to set preferences for the ways a mouse works with the BeOS. You can set whether you're using a one-, two-, or three-button mouse and which buttons you want to use as the primary, secondary, and tertiary mouse buttons (for more information on the role of the mouse and mouse buttons in the BeOS, see "Using the Mouse" in Chapter 2 "Learning BeOS Basics"). You can set how quickly you have to click the mouse button before the BeOS interprets two clicks as a double-click. You can also set how rapidly the cursor moves across the screen when you move the mouse.

When you start up the Mouse application, the Mouse window opens.



Note: If you have a single-button mouse, you can emulate a three-button mouse by pressing Control-Command while you click the mouse button to emulate the secondary mouse button, and by pressing Control-Option while you click to emulate the tertiary mouse button.

Setting Network Preferences

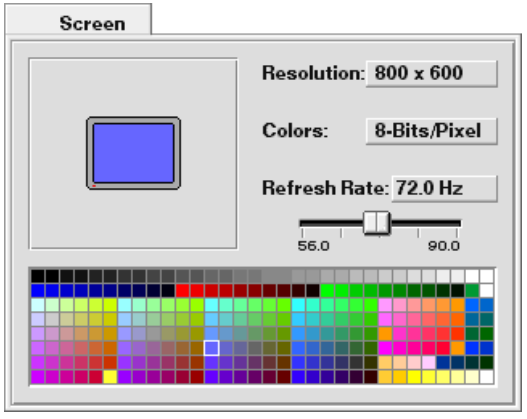
See Chapter 4,"Connecting Your BeOS System to the Internet" to learn how to set up networking on your computer.

Setting Screen and Workspace Preferences

You can use the Screen and Workspaces applications in tandem to define the configuration of your monitor. Initially, the BeOS works with the graphics card and monitor to display a screen resolution of 640 pixels horizontally and 480 pixels vertically. This display uses 8 bits of color data per pixel (also referred to as the screen depth), and has a refresh rate (the number of times per second the screen is redrawn) of 60.1 Hz. If you have a graphics card and monitor that can accommodate a higher resolution, more colors per pixel, or a faster refresh rate, you can change these settings in the Screen preferences panel.

For detailed information about what kinds of graphics cards work with the BeOS, see the Be web site (http://www.be.com).

When you start up the Screen application, the Screen window opens.



You change a setting by choosing from the pop-up lists, or by dragging the Refresh Rate slider, and clicking OK in the panel that asks you to confirm the change. You can also adjust the refresh rate by pressing the left or right arrow key on the keyboard—this technique is useful to fine tune the best-looking refresh rate.

WARNING: You risk damaging the monitor and even starting a fire if you select a resolution, number of colors per pixel, or refresh rate the monitor isn't designed to support. Read the owner's guides that came with your monitor and graphics card to find out what combinations of settings are safe for the monitor.

If your graphics card or monitor can't support a setting you make, you may not be able to read anything on the screen—but if you wait a few seconds, the screen reverts to the previous setting if you don't click OK.

You can uncheck Confirm Changes in Screen's main menu, so you don't have to click to confirm each setting change in a panel. If you do this and then change a setting that makes the screen unreadable, you can use keyboard shortcuts for commands in Screen's main menu to restore the default settings: Command-D for Default Resolution and Command-R for Default Refresh Rate. Or in a pinch, press Command-Control-Shift-F12 to restore all default settings except desktop color (this shortcut works at any time, even when Screen isn't running, though the default settings aren't saved unless Screen is running).

If you choose a very high resolution, a panel warns you that you risk damaging your monitor if it can't support that setting. If you're entirely certain that your graphics card and monitor can support any resolution, number of colors, or refresh rate you choose, you can uncheck Confirm High Resolution in Screen's main menu to circumvent these warnings, but be warned: This is a Be-tested way to destroy expensive monitors!

The changes you make to the resolution and number of colors affect only the active workspace, so if you're working with more than one workspace (as described in "Understanding Workspaces" in this chapter), you can set a different resolution and number of colors for each workspace.

Adjusting the Screen Size and Position

When the Screen window is the active, you can adjust the size of the screen image on the monitor by holding down the Shift key while pressing the up or down arrow key. You can adjust the position of the screen image by holding down the Control key (the key labeled "Ctrl" in the lower-left corner of most PC keyboards) and pressing the up, down, left, or right arrow key. To restore the default screen size and position, choose Default Position from the Screen window's main menu.

Setting a Desktop Color

The desktop—the "background" of the screen—is initially solid blue, but you can pick a different color in the Screen window.

If you choose 8 bits of color information per pixel, the lower portion of the Screen window shows the 256 colors you can choose from for a desktop color (at 8 bits per pixel, you can display up to 256 colors on the screen at one time). Click the color you want.

If you choose 32 bits of color (24 bits for color and 8 bits for Alpha channel) information per pixel, the lower portion of the Screen window offers three sliders, for the red, green, and blue components of the more than 16 million colors you can display on the screen at one time.

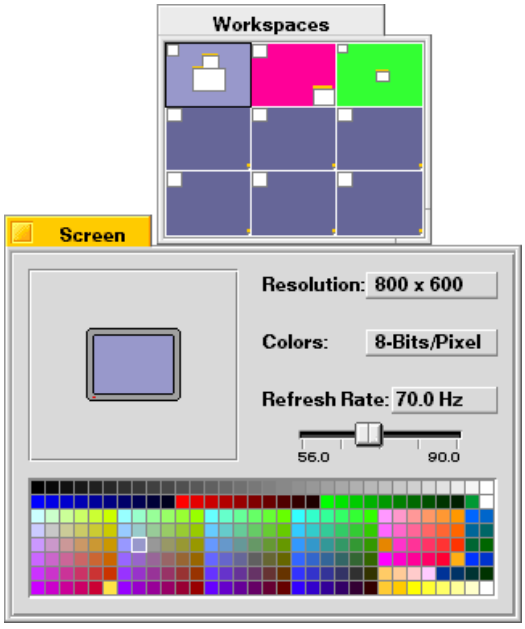
If you're using the Workspaces application to work in more than one workspace (as described in "Understanding Workspaces"), the color you pick affects only the active workspace—the one where you're using Screen—so you can give each workspace a distinctive desktop color.

Understanding Workspaces

When you first start working with the BeOS, you have one workspace: a desktop and a set of windows that open on it, which you arrange to suit your projects. The BeOS supports up to nine virtual monitors (or panes) via the Workspaces application. Each pane in the Workspaces window represents a workspace, with a miniature version of each window open in that workspace. Each pane can have a different resolution, frequency, bit depth, and color background. Applications can even be running in different workspaces.

Configuring Workspaces

One example of the usefulness of Workspaces is in a graphics application where you want to see how a graphic looks in both 8 bits and 32 bits. You can simply move the graphic between a 32-bit workspace and an 8-bit workspace to see the how the graphic looks in the different environments.



To customize your workspaces, use the Screen application with Workspaces to give several workspaces a different resolution, bit depth, and a unique desktop color so you can tell them apart at a glance. The number of panes to configure depends on your needs.

Navigating Workspaces

Click in a pane to switch to that workspace. You can also switch workspaces by holding down the Command key while pressing the function key that corresponds to that workspace (counting from left to right, top to bottom in the Workspaces window): Command-F1 to switch to the first workspace, Command-F2 to switch to the second, and so on. The workspace you're currently working in is called the active workspace.

There are several ways to work with applications in different workspaces:

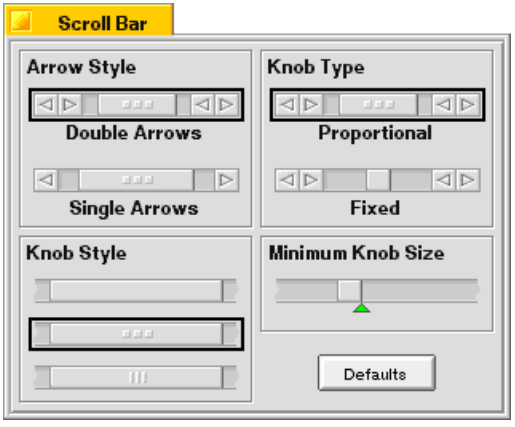
- You can enter a workspace and then launch the application.
- You can drag an application window into another pane to have that window reside there.

- You can drag an application's icon into a pane in the Workspaces window to start it in that workspace.

The Tracker keeps track of all applications running no matter which workspace they are in. If you select an application that is in another workspace via the Tracker, you go to that new workspace.

Setting Scroll Bar Preferences

Initially, many windows in the BeOS use proportional scroll bars, as described in the chapter "Learning BeOS Basics" in "Scrolling the Items in a Window." If you don't like proportional scroll bars, you can use the ScrollBar application to set your preference to a fixed-size scroll knob and make some other choices about how scroll bars look and behave.



Click the arrow style, knob style, and knob type you prefer. Drag the green arrow to adjust the minimum scroll knob size. Click Defaults to return all the settings to the way they were when you first installed the BeOS. The settings you make in ScrollBar affect windows when you next open them.

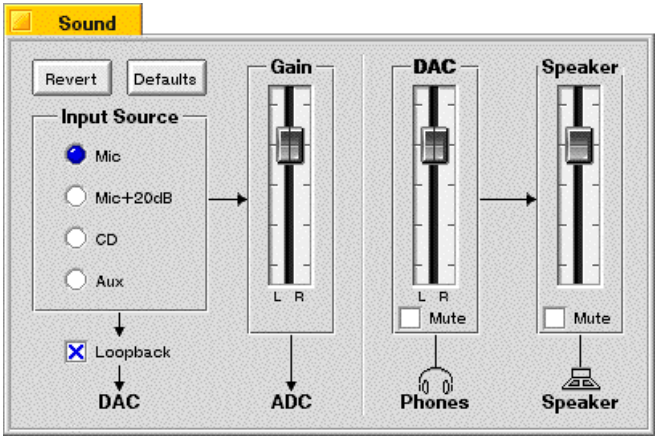
Selecting a Printer

See “Printing With the BeOS” in Chapter 3, “Learning Be Application Basics.”

Setting Sound Preferences

You can use the Sound application to select the input and output sources and volumes of a number of audio features in the BeOS.

When you start up the Sound application, the Sound window opens. The arrangement of the features in the Sound window shows you how they relate to one another.



The Input Sources radio buttons allow you to select one of the following input sources:

- Mic for a connected microphone.
- Mic + 20dB for a connected microphone with input level boosted 20 decibels.
- CD for sound from the CD-ROM drive.
- Aux for sound from other sound sources.

Checking the Loopback box causes sound from the input source to both enter the system and to play out the speaker or speaker jack.

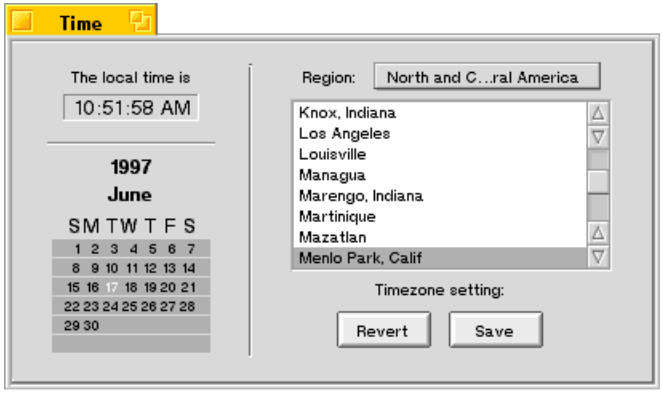
The Gain slider controls the level into the machine. There are left and right channels that can be controlled separately (via the secondary mouse button) or as one. To move them separately, click on the left or right half of the slider.

The DAC slider controls the volume going out the headphone jack port. It too has a left and right channel that can be controlled separately.

The Speaker slider controls the volume of the internal computer speaker.

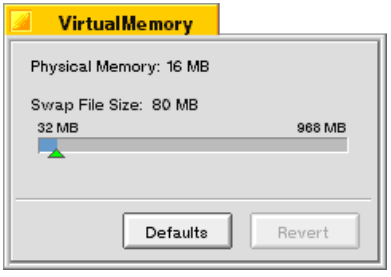
Setting Time Preferences

Clock circuitry on the computer motherboard keeps the time, even when the computer is turned off. You set the date and time with the Time application. When you start Time, a window opens with the computer's notion of the current date and time. Click the component of the date or time you want to change and then set the correct date or time using the controls for that component. You can make these adjustments using the small arrows; type an hour, minute, or second; or directly click a date on the calendar. Your changes take effect immediately.



Setting Virtual Memory Preferences

The Virtual Memory application allows you to set the amount of hard disk space to use for Virtual Memory. The Window displays the RAM installed (Physical Memory) and the amount of hard drive space allocated (Swap File Size). To change the amount of hard drive space allocated, drag the green triangle to set the desired amount.



Adding Fonts

The BeOS includes a TrueType font renderer, which displays TrueType-format fonts on the screen at virtually any size. The standard set of TrueType fonts included with the BeOS is stored in the *file://boot//beos/system/fonts/ttfonts* folder. These are the system fonts and you should not change them.

You can purchase or download additional TrueType fonts in PC (not Macintosh) format and add them to the BeOS, so they're available in applications that work with fonts, such as StyledEdit and FontDemo. A few kinds of TrueType fonts don't work with the BeOS, but most do.

1. Move the fonts to the *file://boot/ /home/config/fonts/ttfonts* folder on the BeOS hard disk.
2. Make sure the fonts have the .ttf extension (uppercase letters don't work).
3. Restart the BeOS.

Adding Add-Ons

You can add software to the BeOS that extends the functionality of applications and the system. This kind of software is called an add-on. BeOS system add-ons are stored in the *file:///boot/beos/system/add-ons* folder and should not be changed. User configurable add-ons are stored in the *file:///boot/home/config/add-ons*. Add-ons can be for various parts of the system: the app_server, Drive Setup, kernel, net_server, Print, Raster, and Tracker, as well as for any application.

Installing an add-on is easy: just move it into the appropriate folder in the *file:///boot/home/config/add-ons* folder on the boot disk. Tracker Add-Ons should be placed in the Tracker folder, application add-ons should be placed in the add-on folder associated with that application. See the documentation which came with the new add-on for the correct name and location.

Adding a Driver

You can add software to the BeOS that makes it work with new kinds of devices or with familiar devices in new ways. This software is called a driver. In the BeOS there are two kinds of drivers: graphics card drivers (sometimes called graphics drivers) and all other kinds of drivers. Standard BeOS drivers are stored in the *file:///boot/beos/system/add-ons/kernel* and *file:///boot/beos/system/add-ons/app_server* folders and should not be changed.

Caution: Don't replace, rename, or delete the supervga file in the */system/add-ons/app_server folder*, or you won't be able to restart the BeOS.

To add a graphics card driver, copy it into the *file:///boot/home/config/add-ons/app_server* folder and restart the BeOS.

To add any other kind of driver, copy it into the *file:///boot/home/config/add-ons/kernel* folder and restart the BeOS.

7 Working With the Mac OS

This chapter covers interactions between your BeOS and the Macintosh OS. It discusses the following topics:

Mounting HFS Volumes

The BeOS has the ability to mount Macintosh HFS (Hierarchical File System) volumes. This lets you access the files stored on any Macintosh partitions connected to your computer. That is, you can access data on Macintosh partitions using BeOS applications.

Mount and unmounting HFS volumes is a four-step procedure:

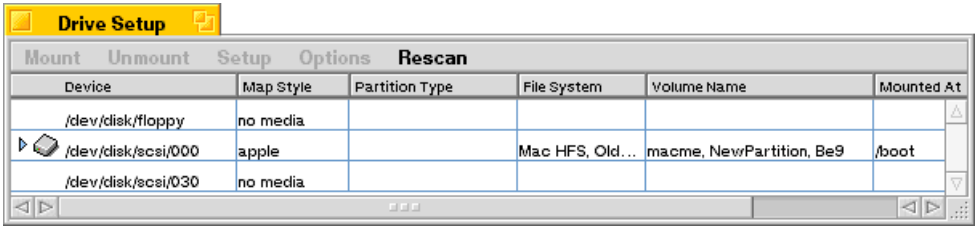
- Launching Drive Setup—familiarizing yourself with the Drive Setup application.
- Mounting HFS volumes using Drive Setup.
- Copying files to and from an HFS volume to the BeOS volume.

Note: You can learn more about mounting and unmounting disks in the chapter “Customizing the BeOS.”

- Unmounting HFS volumes using Drive Setup.

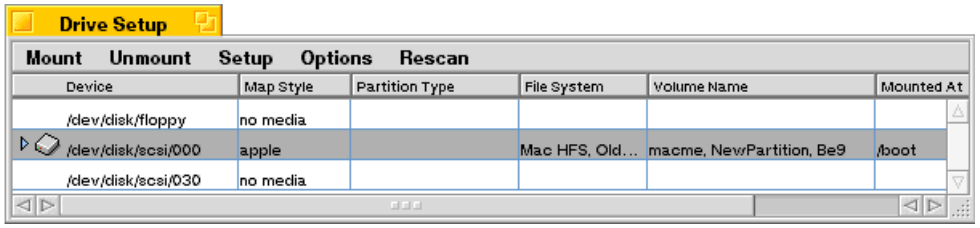
Launching Drive Setup

Drive Setup is a BeOS utility that lets you work with storage devices such as hard disks, floppy disks, removable cartridges, and partitions. Drive Setup is in your BeOS Preferences folder. Double-click the Drive Setup icon. It tells you that it is “Scanning devices...” to see what volumes and partitions exist. After that, you should see the following screen:

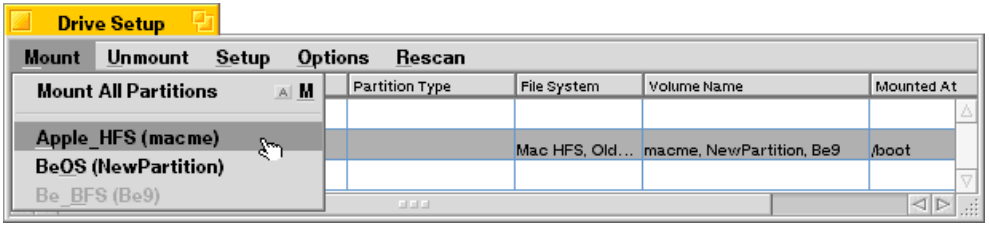


Mounting HFS Volumes

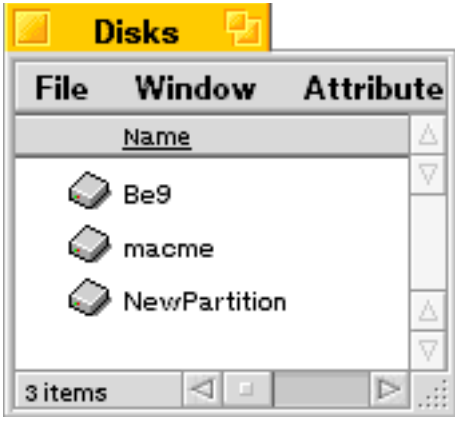
Mounting HFS volumes using Drive Setup is virtually the same as mounting BeOS volumes. First select the hard disk you wish to work with by clicking on the device name and highlighting it. If there are any mountable volumes, the Mount menu becomes active.



Now select the Mount menu and choose the Apple_HFS volume you want to mount. Alternatively, you could simply select Mount All Partitions.

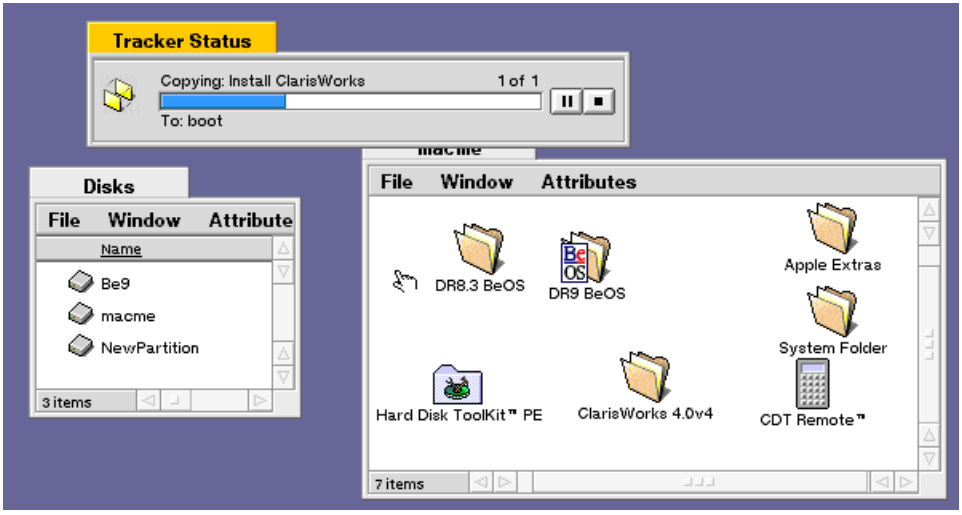


Once you've mounted the HFS volume it appears within your Disks folder.



Copying Files

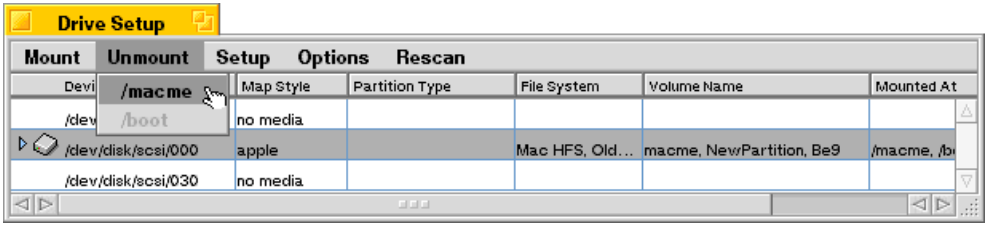
Although you can't run the Macintosh applications, you now have access to all the data files stored on the HFS volume. To copy files from one volume to another, click on a file and drag it to a window on a different volume.



Unmounting HFS Volumes

Once you finish using an HFS volume, you may unmount it. This is not a necessary step as the volume is automatically unmounted when you restart or shut down the BeOS.

However, if you want to unmount a volume, launch Drive Setup and select the drive where the volume resides. From within the Unmount menu, select the volume to unmount.



Converting Macintosh TrueType Fonts

Converting Macintosh TrueType fonts for use on the Be OS is a simple two-step process:

- Use the TTConverter that comes with your BeOS in the Macintosh Utilities folder to convert fonts to BeOS format.
- Install converted fonts in the BeOS

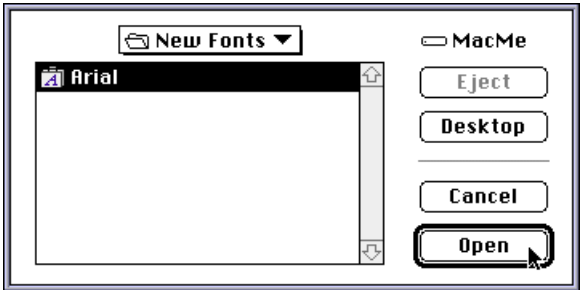
When you install the BeOS, a folder called Macintosh Utilities is created on the Macintosh volume. This folder contains a utility called TTConverter, which converts Macintosh TrueType fonts into a format that the BeOS can use. Most TrueType fonts can be converted using this utility with the notable exception of Apple's standard fonts that ship with the Mac OS (Chicago, Courier, Geneva, Helvetica, Monaco, New York, Palatino, Symbol, and Times).

Note: The BeOS uses the same TrueType format as Microsoft Windows. If you acquire new fonts, be sure you either get them in this format, or use TTConverter to covert them.

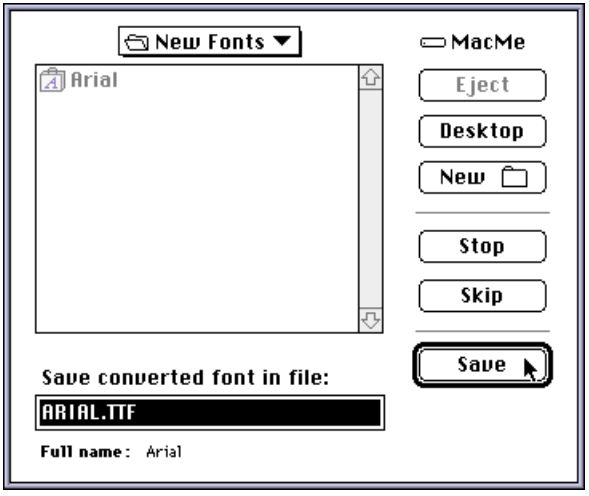
Launching the TTConverter and Converting Fonts

Look for the TTConverter in the *BeOS Mac Tools/Mac Utilities* folder, then follow these steps to convert TrueType fonts for use with the BeOS:

1. Double-click on the TTConverter icon and select Convert from the File menu.
2. A dialog box appears in which you can choose the font you wish to convert (e.g., Arial):

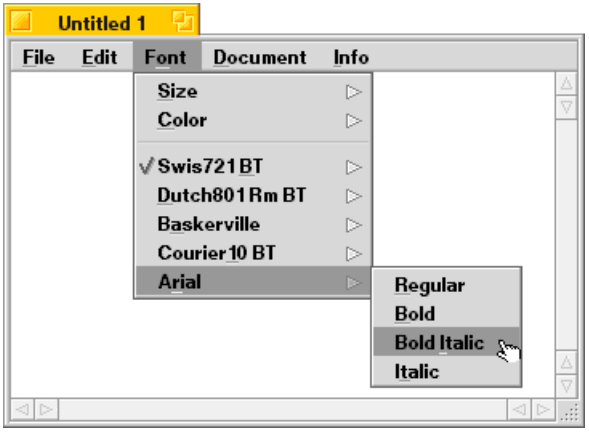


3 You can convert all of the font types associated with a font. An additional dialog box lets you either save them all or skip font styles you don't need. Converted files have a filename that ends in .TTF (e.g., ARIAL.TTF, ARIALB.TTF, ARIALI.TTF, ARIALBI.TTF).



Installing Converted Fonts in the BeOS

After you convert the fonts, you need to copy them over to your BeOS volume. You can accomplish this by mounting the HFS volume (see "Mounting HFS Volumes" in this chapter) or by using the File Transfer Protocol (FTP). In any case, the.TTF files must be placed in *file:///boot/home/config/fonts/ttfonts* folder. Once the files have been placed there, restart the BeOS to activate the new fonts. You can now use the StyledEdit application to see your fonts.



Transferring Files From Networked Mac OS Hosts

Since the BeOS installs on Power Mac–compatible hardware, the environment in which it runs will most likely contain other computers running the Mac OS. The BeOS installation CD includes a Mac OS tool called Netfinder. Netfinder allows you to transfer files using the Internet's File Transfer Protocol (FTP).

Netfinder contains a shareware license. You may evaluate Netfinder for thirty days, after which you must pay the shareware fee. Refer to the documentation that accompanies Netfinder; it contains detailed technical information as well as the shareware usage license.

File transfer from the BeOS to networked Mac OS hosts involves three steps:

- Setting up your network.
- Turning on Internet file sharing.
- Transferring files with Netfinder.

Setting Up Your Network

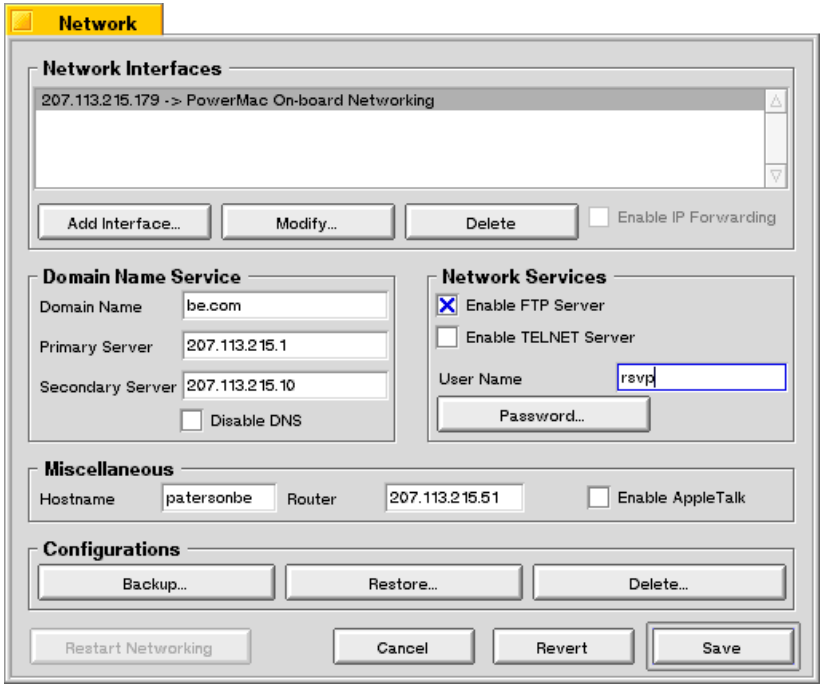
When setting up the Mac OS for Internet file sharing using the TCP/IP control panel, you should refer to your Mac OS documentation for help. You can also refer to Chapter 4 "Connecting Your BeOS System to the Internet." You'll find the concepts, steps, and basic definitions are very similar. If you are not connected to the Internet but still want to set up a connection using the Internet protocols, read "Setting Up BeOS for Both Stand Alone Network and Modem-Based Internet Use" in the same chapter.

Turning on Internet File Sharing

Your BeOS system includes a built-in FTP server for serving files to hosts on a TCP/IP network. To turn on Internet file sharing:

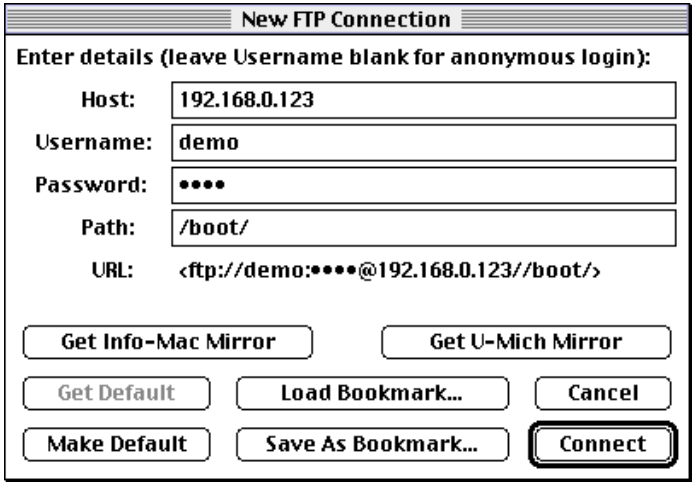
1. Find the Network configuration panel the BeOS Preferences folder.
2. In the panel, check the Enable FTP server checkbox, and assign a user and password.
3. Save your changes and click the Restart Networking button.

You are now ready to transfer files.

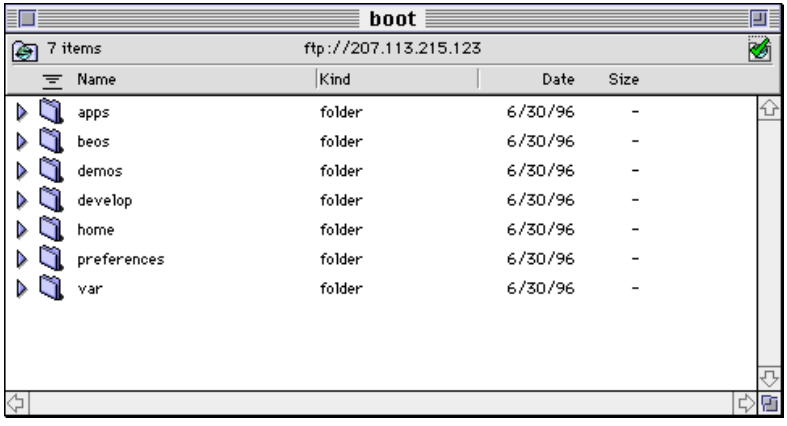


Using Netfinder for Mac OS to Transfer Files

Netfinder for Mac OS is included on the BeOS CD. To run this application, double-click its icon. Type in the IP address of the BeOS machine to which you wish to connect in the Host field. Enter the user name and password in the appropriate areas. Also be sure to put the "/" in the Path field, which opens your connection at the root of the volume, making navigation of the remote file system much easier. Click the Connect button to activate your connection.



Once connected, you'll see a window with the contents of the volume of the BeOS system. You may now drag and drop files between your Mac OS volumes and the BeOS volume to which you are connected.



App A: Using the BeOS Command Line Shell

One of the most common complaints about graphical user interface operating systems is that they eliminate or severely disable text-based command line control. This is especially frustrating to users accustomed to command lines, particularly those coming from Unix-based systems.

The BeOS is graphically based, but also has the command line capabilities found in most Unix systems. There are three main benefits to this approach:

Command Line Control and Tools

Just about anything you can do with the graphical interface on the BeOS you can also do from the BeOS command line. When combined with the Unix Posix features of the BeOS, many Unix tools can be used without change. Many of these are already installed in the *file:///boot/beos/bin/* directory.

Getting Under The Hood

There are a number of powerful text-based tools which can give you a “look under the hood” at the BeOS. This is helpful for configuring complex systems or fine tuning the performance of specific applications and the system overall. For example, you can get a

list of every process running on the BeOS, and initiate and stop processes from the command line.

Powerful Scripting Language

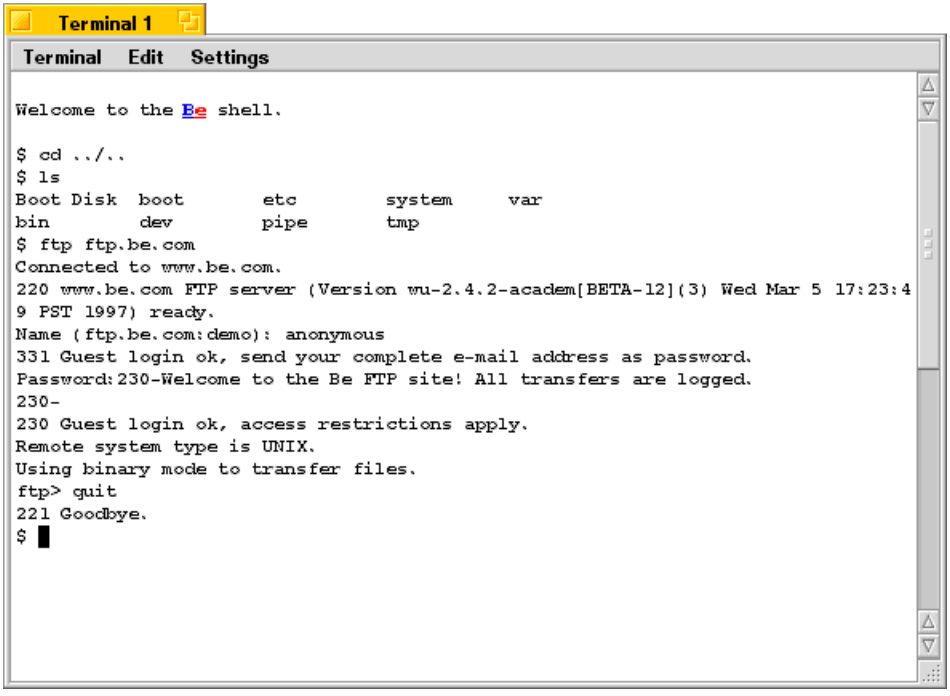
By using text-based commands, you can build powerful scripts to control virtually every aspect of the BeOS. These scripts can aid in configuration, and can even be the equivalent of double-clickable applications

The BeOS command line shell is based on the bash shell. This interface is used throughout the Unix community. The commands the BeOS uses are identical to those used with bash.

Note: bash stands for the Borne-Again Shell, a derivative of the original Borne shell. To learn about the features of this command and scripting environment, check some of the many books available on the subject. One of the most comprehensive is *Learning the bash Shell*, by Cameron Newham and Bill Rosenblatt, published by O'Reilly & Associates (also the technical publishers for the BeOS and of the Be Book for programming with the BeOS). O'Reilly & Associates is on the web at http://www.ora.com/.

Accessing the BeOS Command Line

The BeOS command line environment is accessed through the Terminal application (*file:///boot/apps/Terminal*). Terminal supplies the text interface and gives you access to the bash shell tools that are integrated with the BeOS. When you double-click on the Terminal application, the following window opens:



The $ prompt tells you that the command line is ready to accept any typed command. You can open multiple Terminal windows at the same time, each one executing its own set of commands. To exit the command line shell, type exit, close the Terminal window, or quit the application. Closing the window terminates any command currently executing in that shell.

Examples of Common Commands

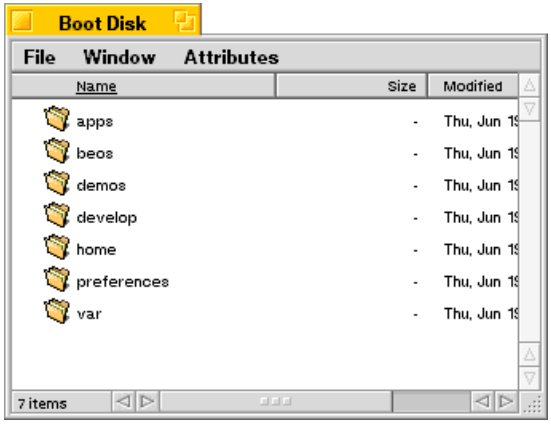
You can also see a listing of supported commands in the on-line documentation on your BeOS CD (*file:///boot/beos/documentation/*). As examples, here are a few common commands:

Command	Does this
ls	Returns a list of the files in the current directory (list).
cd path	Change directory. Changes the current directory to path. Note that "cd.." moves up one directory from the current one.
application_name	Typing the name of an application launches the application. If you type "application_name &", the application opens in the background and the process ID of the application is returned.
ftp server_domain _name	Opens an Internet file transfer protocol session. You can find out more about this command in the chapter Using Internet Services.
telnet domain_name	Opens a Telnet remote access session. To find out more about this command see the chapter "Using Internet Services."
ps	Returns a list of every process currently running on the BeOS, including their state and process ID numbers.
kill process_ID	Terminates the thread with the given process ID. If the thread is the main thread for an application, all associated threads are also killed. This command can be both helpful and dangerous, so be careful if you use it, especially with any BeOS system thread or process.

App B: BeOS Directory Structure

This is an overview of the directory (or folder) structure of the BeOS system. The directory structure of the BeOS is designed not only to organize files, but also to improve system reliability and pave the way for multiuser capability in future versions of the BeOS.

When you first install the BeOS, the Tracker displays seven directories or folders that are created, as shown in the screen below:



Two additional directories (desktop and var) are not displayed in the Tracker but are accessible through the Terminal or the File panel. Desktop is the directory for files placed on the desktop. var is where temporary files such as spool files are stored by the system and applications.

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Directory	Contains
apps	Stores links to the standard BeOS applications. You can place new BeOS applications there.
beos	Clean BeOS system is installed in this directory.
demos	Interesting demo applications are placed in this directory.
develop	Header files and libraries used in software development are stored in this directory.
home	All user added files, fonts, libraries, etc., can be stored in this directory. See the chapter "Customizing the BeOS."
optional	Optional items (movies, midi files, etc.) are installed if you chose the optional install option.
preferences	Links to the preference applications are stored.

In the BeOS there are two classes of directories: system and user. To ensure system reliability, you can install or delete items in the user directories - the system directory should never be modified by the user.

WARNING: The /beos and /develop folders are system software directories and should not be modified by the user.

The apps, home, optional, and preferences directories as well as any you create via the Tracker are user directories and can be modified or deleted as desired. We encourage you to install applications in the apps directory, and working files in the home directory.

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