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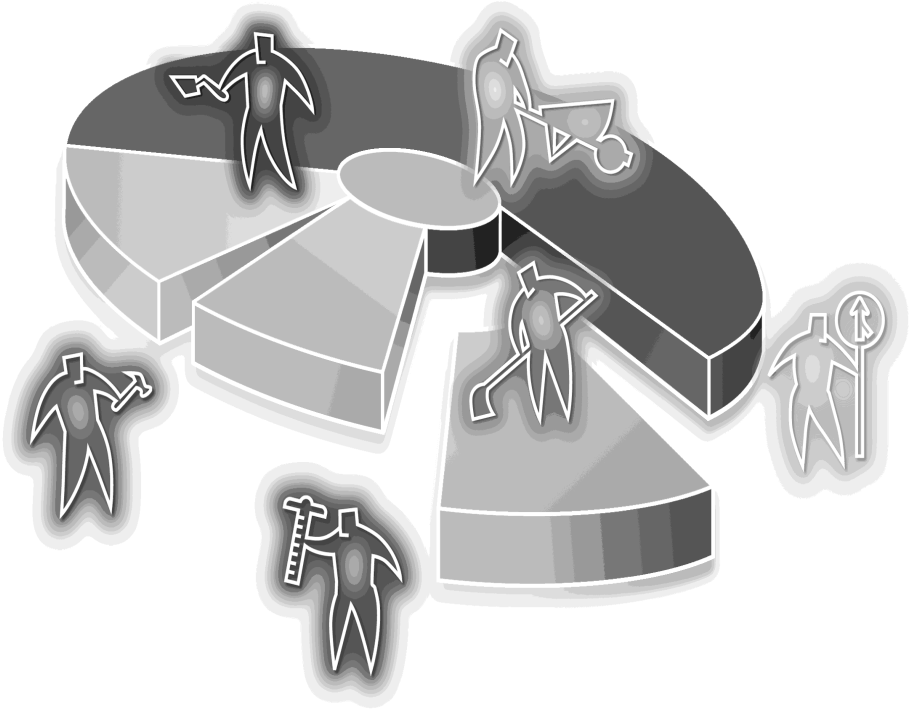
# PartitionMagic® 5.0

THE STANDARD IN HARD-DRIVE PARTITIONING



## User Guide

**PartitionMagic 5.0**
**User Guide**

PartitionMagic by PowerQuest

Manual Edition 1—October 1999



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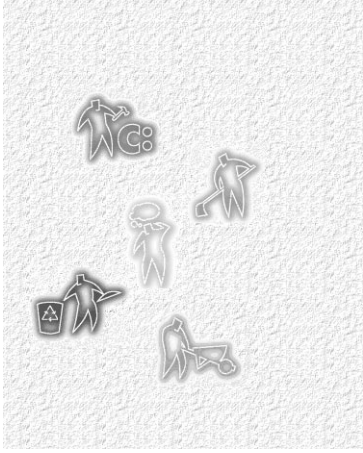
# About This Guide

This user guide can help you set up and use PowerQuest® PartitionMagic®.

The information and screen shots in this user guide are for Windows 95® and Windows 98. However, the information is applicable no matter which version you are using. Where there are differences between executables, they are noted.

The user guide consists of the following sections:

- The **Introduction** provides an overview of PartitionMagic and outlines hardware and software requirements.
- **Chapter 1: Getting Started** outlines step-by-step instructions on installing, running, and navigating PartitionMagic.
- **Chapter 2: Automating Tasks** provides an overview of PartitionMagic's wizards to create partitions, redistribute free space, resize partitions, and merge partitions. This chapter also provides an overview of scripting for PartitionMagic Pro.
- **Chapter 3: Completing Hard Disk Operations** provides information about and step-by-step instructions on using the Operations menu options, such as Resize/Move, Create, and Format.
- **Chapter 4: Completing Advanced Operations** explains how to use advanced partitioning operations, such as setting an active partition and resizing clusters.
- **Chapter 5: Converting Partitions** provides step-by-step instructions on converting from one file system to another, for example, converting FAT to FAT32.
- **Chapter 6: Using PartitionMagic Utilities** explains how to use the utilities included with PartitionMagic, such as DriveMapper™, and MagicMover™.
- **Chapter 7: Using BootMagic** provides an overview of BootMagic and instructions for some common BootMagic tasks.
- **Appendix A: Using PartitionMagic with Other Programs** provides information about using PartitionMagic with programs such as disk compression utilities and virus protection software.
- **Appendix B: Troubleshooting** provides answers to problems you may encounter while using PartitionMagic and describes error messages and their solutions.
- **Appendix C: PowerQuest Technical Support** covers what you should do before contacting technical support and provides information on various technical support options.
- The **Index** helps you locate topics discussed in the user guide.



# Introduction

*This section includes the following information:*

- What Is PartitionMagic?
- New Features
- PartitionMagic System Requirements
- Before Running PartitionMagic

## What Is PartitionMagic?

Imagine how disorganized your office would be if you kept all your files in one drawer. Surprisingly, this is similar to the way many people organize the space on their hard disks. With PartitionMagic, you can quickly and easily create partitions, which act as "file drawers," on your hard disks for storing valuable information such as data files, applications, and operating systems. Storing information in separate partitions helps you organize and protect your data, safely run multiple operating systems, and reclaim wasted disk space.

PartitionMagic enables you to secure your data by physically separating it from other files. Separate partitions also make backups to networks and removable drives easy.

PartitionMagic helps you reliably run multiple operating systems on the same computer. Some versions of PartitionMagic also include BootMagic, a powerful boot manager that helps you safely install new operating systems and lets you choose which operating system you want to use when starting your computer.

Because of limitations with the FAT file system (for DOS, Windows 95, and Windows 98), as much as 40 percent of your hard disk space can be wasted. PartitionMagic reclaims wasted space quickly and safely by using more efficient partition sizes. It can also convert FAT partitions to FAT32 and vice versa.

In addition to powerful partitioning features, PartitionMagic offers a variety of other options. For instance, you can perform partitioning operations and view the changes that will be made before applying them to your system. Additionally, you can view comprehensive information about your hard disk geometry and your hardware system, and you can resize root directories to make room for more long filenames.

***IMPORTANT!*** PartitionMagic is not designed to work with servers. We recommend PowerQuest® ServerMagic® for partitioning Windows NT and NetWare servers. Contact PowerQuest Sales or go to the PowerQuest web site *www.powerquest.com* for additional information about ServerMagic.

## New Features

PowerQuest PartitionMagic 5.0 includes the following new features:

- Ability to merge FAT and FAT32 partitions
- Improved interface: color key to indicate file system type, indicators for the 2 GB boot boundary and 1024 cylinder boundary, used and unused space indicators within partitions
- Option to hide wizard buttons on the main window
- More options for converting file systems for a partition: NTFS to FAT, NTFS to FAT32, primary to logical, and logical to primary
- Improved wizards: create new partition, merge partitions, redistribute free space, and resize partitions
- Ability to view a list of pending operations
- Improved online Help
- Added automatic error-fixing
- Support for NTFS 5
- *(PartitionMagic Pro only)* Improved user-interface for scripting

## PartitionMagic System Requirements

| Hardware/ Software | PartitionMagic for Windows 95 and Windows 98 | PartitionMagic for Windows NT Workstation | PartitionMagic for DOS (rescue disks) |
|---|---|---|---|
| Processor | Intel 486 DX or above (33 MHz) | Intel 486 DX or above (33 MHz) | Intel 486 DX or above (33 MHz) |
| RAM | 16 MB (32 MB recommended for FAT32 partitions)* | 16 MB (32 MB recommended for FAT32 partitions)* | 8 MB (16 MB for NTFS partitions; 32 MB recommended for FAT32 partitions)* |
| Hard-disk space | 12 MB | 12 MB | 611 K (if installing to hard disk instead of running from floppy disks) |

| | | | |
|---|---|---|---|
| Operating system | Windows 95a or later (Windows 95b or Windows 98 for FAT32 support) | Windows NT 4.0 Workstation only | MS-DOS 5.0 (6.2 or later recommended) for Windows 3.x |
| 3.5-inch diskette drive | High-density | High-density | High-density |
| CD-ROM drive | 4 x | 4 x | None |
| Monitor | VGA-compatible | VGA-compatible | VGA-compatible |

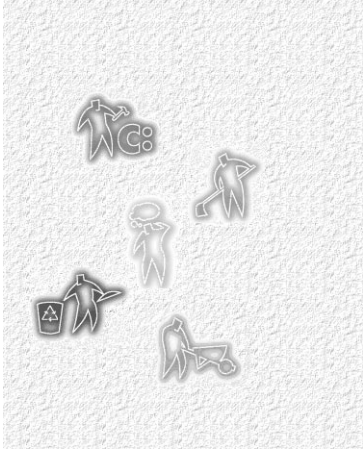
* More memory may be required to manipulate FAT32 partitions on hard disks larger than 4 GB.

## Before Running PartitionMagic

You should back up your hard disk before using PartitionMagic. While PartitionMagic has been thoroughly tested to be safe and reliable, other factors, (such as power failures, operating system bugs, and hardware defects), can put your data at risk. Before using *any* utility that makes extensive changes to your hard disk, you should back up your data.

If you run PartitionMagic under any version of Windows, make sure no other applications are running and no other users are attached to your workstation (in a peer-to-peer network) before running PartitionMagic.

PartitionMagic cannot run while other low-level disk utilities are running. Close all such utilities prior to starting PartitionMagic.



CHAPTER 1

# Getting Started

*This chapter contains the following information:*

- Installing PartitionMagic Under Windows
- Installing PartitionMagic Under DOS or OS/2
- Installing PartitionMagic Under Linux
- Running PartitionMagic
- The PartitionMagic Main Window—An Overview
- Getting Help
- Completing Tasks Manually—A Four-Step Process

  *Selecting a Hard Disk*

  *Selecting a Partition*

  *Selecting an Operation*

  *Applying Changes to Your System*
- Changing PartitionMagic Preferences
- Supported File Systems
- Uninstalling PartitionMagic

## Installing PartitionMagic Under Windows

You can install PartitionMagic from the following operating systems: Windows 3.x, Windows 95, Windows 98, and Windows NT 4.0 Workstation. If you are using DOS, see "Running PartitionMagic from Rescue Disks" on page 85.

***IMPORTANT!*** PartitionMagic must be installed on a local drive, not on a network drive.

1. Insert the PartitionMagic CD-ROM into your CD-ROM drive.
2. Follow the instructions for your operating system.

| Operating System | Instructions |
|---|---|
| Windows 95, Windows 98, or Windows NT 4.0 Workstation | **1** If the installation program does not start automatically, click **Start ➤ Run** on the Windows taskbar.<br>**2** Type *drive*:\SETUP, where *drive* is the drive letter of your CD-ROM drive.<br>**3** Click **OK**, and follow the on-screen installation instructions. |
| Windows 3.x | **1** In Program Manager, click **File ➤ Run**.<br>**2** Type *drive*:\SETUP, where *drive* is the drive letter of your CD-ROM drive.<br>**3** Click **OK**, and follow the on-screen installation instructions. |

The installation program installs PartitionMagic for the operating system currently running. If you want to install PartitionMagic for a different operating system, complete the **Custom** installation.

## Installing PartitionMagic Under DOS or OS/2

You can create rescue disks to run PartitionMagic from DOS. You must also create rescue disks if you are using OS/2, since there is not a native version of PartitionMagic for OS/2. The rescue disk version of PartitionMagic includes the same features as the Windows version, except there are no wizards.

1. Open the DOS-OS2 folder on the PartitionMagic CD.

2 Type `MAKEDISK A:`, where A: is the drive letter for your floppy disk drive.

You can also install the DOS version of PartitionMagic to your hard disk using this process. If you install to your hard disk, the PartitionMagic files (but not the system files) will be installed to a PQMAGIC directory at the root of the disk, and you will not need floppy disks.

## Installing PartitionMagic Under Linux

To install PartitionMagic under Linux, refer to the README.1ST document in the English\Linux folder on the PartitionMagic CD. (The file README-D.1ST file contains the same information and is readable under DOS.)

## Running PartitionMagic

***IMPORTANT!*** PartitionMagic must be run from a local drive, not from a network drive.

If you are using Windows 95, Windows 98, or Windows NT 4.0 Workstation, click **Start ➤ Programs ➤ PowerQuest PartitionMagic ➤ PartitionMagic 5.0 for Win95/98** (or WinNT)**.**

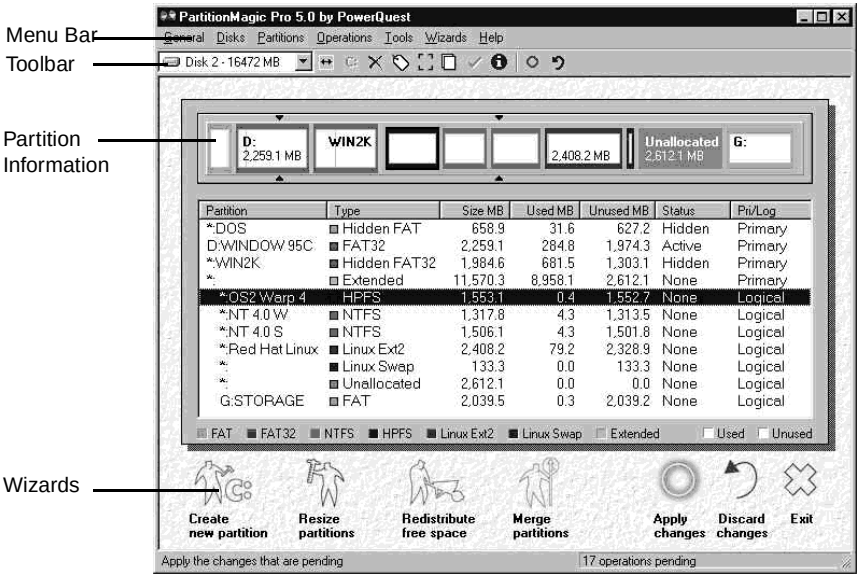
If you are using Windows 3.x, open the **PowerQuest PartitionMagic** program group and double-click the **PartionMagic 5.0** program icon.

If you are using DOS, OS/2, or Linux, see “Running PartitionMagic from Rescue Disks” on page 85. Note that the rescue disk version appears similar on screen and has the same features as the Windows version, except there are no wizards. The tasks and information outlined in this user guide apply to both the Windows and rescue disk versions of PartitionMagic.

## The PartitionMagic Main Window—An Overview

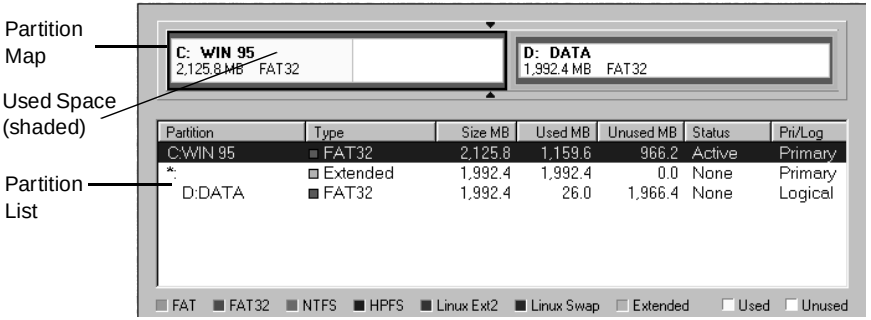
The PartitionMagic main window appears the same under Windows and the rescue disk version of PartitionMagic, except the rescue disk version does not display the wizards.

The menu bar and a toolbar appear at the top of the window. The menu bar gives you access to all of PartitionMagic’s features, while the toolbar gives you quick access to commonly used options.




### *Partition Information*

The partition area displays information about the selected hard disk's partitions. It consists of two areas: the partition map, which displays information graphically; and the partition list, which displays partition information in text form. For general information about partitions, see "Understanding Partitions" in *Basic Concepts* in Help.



### Partition Map

The partition map shows the partitions approximately to scale. Each partition is represented by a different color according to the file system it uses. If the selected hard disk contains logical partitions, the logical partitions are shown within an extended partition.

Each partition is color-coded to show used and unused space within the partition. Note that the operations you can perform on white (unformatted) or yellow (unknown) partitions are limited.

| Color | Description |
|---|---|
| Brown | Linux swap |
| Dark blue | HPFS |
| Dark green | FAT32 |
| Light blue | Extended |
| Light green | FAT |
| Pink | NTFS |
| Purple | Linux Ext2 |
| White | Unformatted |
| Yellow | Unknown |

The partition map also shows unallocated space (space not assigned to any partition).

There are triangle indicators to mark the 2 GB boot boundary and the 1024 cylinder limit. The boundary markers can help you as you create, move, or resize partitions, so you will not make primary partitions unbootable by accident. For additional information about the boot boundaries, refer to “Understanding the BIOS 1024 Cylinder Limit” or “Understanding the 2 GB Boot Code Boundary” in the PartitionMagic online help.

### Partition List

The partition list displays the following information about each partition: drive letter, volume label, file system type, size, amount of used and unused space, status, and whether the partition is a primary or logical partition.

Primary partition drive letters are flush left, followed by a colon and the volume name. Logical partition drive letters and volume labels are indented. An asterisk (*) appears in place of a drive letter for:

- Hidden partitions
- Extended partitions
- Partitions with file systems not supported by the active operating system
- Unallocated space

The partition size, used space, and unused space values are displayed in megabytes.

A partition's status can be:

- **Active:** The partition the computer boots from.
- **Hidden:** Partitions that do not have a drive letter. Partitions can be hidden by the operating system (it hides all primary partitions except the active one) or by BootMagic, or you can hide partitions with PartitionMagic.
- **None:** Partitions that are not active or hidden.

### *Wizards*

To help you quickly and easily complete several common partitioning tasks, PartitionMagic includes these wizards:

- Create new partition
- Redistribute free space
- Resize partitions
- Merge partitions

To start a wizard, click the wizard icon. For more information about using the wizards, see *Chapter 2* of this user guide.

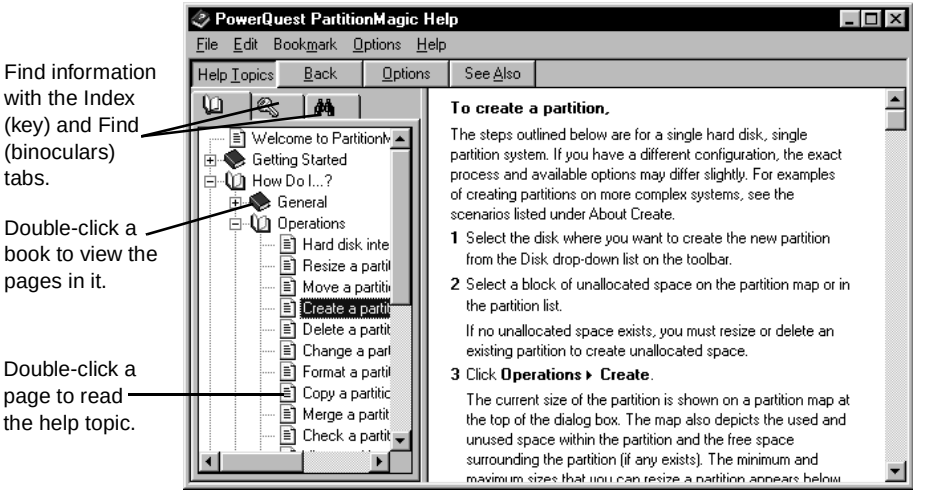
You do not have access to the wizards if you run PartitionMagic from the rescue disks.

## Getting Help

PartitionMagic Help provides in-depth information on features as well as step-by-step instructions for specific tasks.

To access Help, click **Help ➤ Contents** on the menu bar in the PartitionMagic main window.

The **PowerQuest PartitionMagic Help** is organized into books and pages.




Each book focuses on a different aspect of PartitionMagic, so you can quickly locate the information you need. When you double-click a topic, the information displays in the right window.

You can click the key tab to search for a topic using keywords.

### *Context-Sensitive Help*

By clicking **Help** in the lower right corner of a dialog, you can open context-sensitive help for the dialog. Clicking **Hints** in a wizard dialog displays helpful information about the task the wizard is performing.

### *README File*

The README.TXT file includes information that changed since this guide was written, corrections to the manual or help system, and information specific to installation or configuration issues.

## Completing Tasks Manually—A Four-Step Process

PartitionMagic offers two ways to complete tasks: using wizards and completing tasks manually. For information about using the wizards, see *Chapter 2* of this user guide. To manually complete a task, follow this general four-step process:

1. Select a hard disk.
2. Select a partition.
3. Select an operation and enter details about the changes you want to perform.
4. Apply changes to your system.

## *Selecting a Hard Disk*

The **Disk** option on the toolbar displays the currently selected disk and its size in megabytes (MB).

There are two ways to select a hard disk:

- On the toolbar, click the arrow button to the right of the currently selected disk to open a drop-down list of all the disks on your system. Then click the disk you want to select.
- On the menu bar, click **Disks**, then select a disk.

  **Disks** does not appear on the menu bar unless you have multiple hard disks.

### Using PartitionMagic with Removable Media

Please note that PartitionMagic is not designed to work on removable media. PowerQuest technical support does not guarantee they will be able to resolve problems you encounter when partitioning removable media.

### Windows 2000 Disks

Windows 2000 uses basic disks and dynamic disks. A basic disk has an industry standard disk format with primary and logical partitions, partition tables, and so forth. Windows 2000 has introduced “dynamic disks.” Dynamic disks do not conform to industry standards and are visible only when Windows 2000 is running. You cannot perform PartitionMagic operations on dynamic disks.

## *Selecting a Partition*

There are three ways to select a partition:

- Click the partition in the partition list or on the partition map.
- On the menu bar, click **Partitions**, then select a partition.
- Press **<Alt+P>** to activate the **Partitions** menu, press **<Up Arrow>** or **<Down Arrow>** to highlight the desired partition, then press **<Enter>**.

The selected partition is highlighted in the partition list.

### Selecting an Operation

After you have selected a disk and a partition, you can select an operation using the toolbar, the context menu, the menu bar, or the keyboard. If an operation cannot be performed on the selected partition, the operation is unavailable (menu item appears dimmed).

- Click one of the operations buttons on the toolbar.

  When you place the pointer on a toolbar button, a pop-up window displays the button's function.

- In the partition map or partition list, right-click the partition you want to change, then click the desired operation from the context menu.
- On the menu bar, click **Operations**, then choose the desired operation.
- Press **<Alt+O>**, then type the underlined letter of the desired operation.

For more information about the items on the **Operations** menu, see *Chapter 3* of this user guide.

### Applying Changes to Your System

As you complete tasks using the **Operations** menu, the partition map and partition list reflect the changes you have made. However, no changes physically take place on your system until you apply them. You can perform several operations and then apply all the changes at once.

You can tell when changes have been made but not yet applied to your system when the status box in the lower right corner of the main window indicates that operations are pending. If the wizard icons are displayed, the Apply Changes and Discard Changes icons also display at the bottom of the window when there are operations pending.

To apply changes to your system, click **General ➤ Apply Changes**, or click  on the toolbar. If the wizard icons are displayed, you can also click the **Apply Changes** icon at the bottom of the window. If you have open files, PartitionMagic may need to go to DOS mode or reboot your computer before the changes are applied.

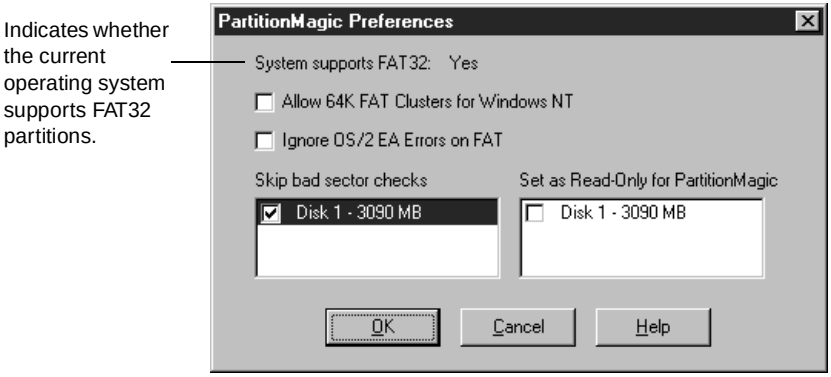
You can click **Apply Changes ➤ Details** to view a list of the operations that will be applied.

To discard the changes and start over, click **General ➤ Discard Changes**, or click  on the toolbar. If the wizard icons are displayed, you can also click the **Discard Changes** icon at the bottom of the window. You cannot discard or undo changes after you have applied them.

## Changing PartitionMagic Preferences

**1** In the main window, click **General ➤ Preferences**.

A check mark next to a preference indicates it is enabled.




**2** Click checkboxes to enable or disable preferences, then click **OK**.

### *Allow 64K FAT Clusters for Windows NT*

This preference lets you create FAT partitions with 64 KB clusters, which enables Windows NT to support large hard disks.

***IMPORTANT!*** Because DOS, Windows 3.x, Windows 95, and Windows 98 do not support cluster sizes larger than 32K, you cannot access a 64K partition using these operating systems. You should only use 64K partitions with Windows NT. If you are using multiple operating systems, we recommend not using 64K clusters.

To prevent you from inadvertently creating partitions with 64K clusters, this preference is disabled every time you exit PartitionMagic.

When enabled, the 64K cluster size is available in the **Resize/Move Partition** and **Resize Clusters** dialogs.

### *Ignore OS/2 EA Errors on FAT*

This preference tells PartitionMagic whether to ignore OS/2 Extended Attribute errors when it checks a FAT partition.

***WARNING!*** If OS/2 is on your computer, do not enable this preference. Data loss could occur because problems might go undetected.

### *Skip Bad Sector Checks*

When PartitionMagic modifies partitions, it performs extensive testing to detect bad sectors on your hard disk. Newer disk types (such as Enhanced IDE and SCSI) often handle bad sectors internally, making such testing superfluous. For this reason, PartitionMagic lets you bypass these tests with **Skip Bad Sector Checks**. When this preference is enabled, the Resize/Move, Create, Copy, and Format operations run faster.

***WARNING!*** If you skip bad sector checks and your hard disk has bad sectors, data loss can result.

Bad sector checking is on by default. PartitionMagic lets you set this preference individually for each of your hard disks. If your system has an older disk and a newer one, you could check the older disk and skip the newer one. A check mark next to a disk means to skip bad sector checking for that disk.

### *Set as Read-Only for PartitionMagic*

This preference lets you prevent PartitionMagic from making any changes to a hard disk. You can set this preference individually for each of your hard disks.

There are some exceptions to how this preference is applied:

- If the disk contains the boot partition, some files may be changed, such as the Windows NT boot initialization (BOOT.INI) file.
- If you tell PartitionMagic to run DriveMapper automatically, certain files, such as initialization files and shortcut files, may be changed.

## Supported File Systems

PartitionMagic supports the following partition types.

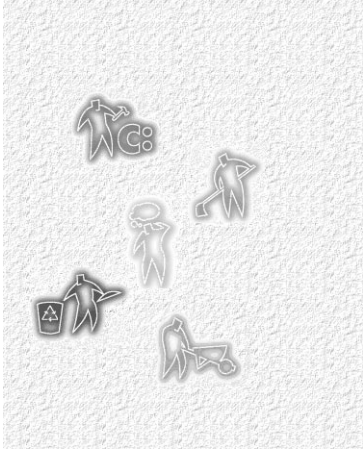
| Partition Type | Description |
|---|---|
| **Extended** | The extended partition gets around the arbitrary four-partition limit for a disk. An extended partition is a container in which you can further divide your disk space by creating logical partitions. An extended partition does not directly hold data. You must create logical partitions within the extended partition to store data. |
| **Extended-X** | An extendedx partition functions like an extended partition but is not limited to the first 1024 cylinders on a drive.<br><br>Linux kernels below 2.2 do not support Extended-X partitions. |
| **FAT** | Uses file allocation table (FAT) and clusters. The FAT file system is used by DOS, Windows 3.x, and most Windows 95 installations. A FAT partition is also accessible by Windows NT and OS/2. |
| **FAT16x** | FAT16x is a proprietary file system developed by Microsoft to enable FAT partitions beyond 1024 cylinders (~8GB). |
| **FAT32** | FAT32 is an enhancement of the FAT file system. It uses 32-bit file allocation table entries, rather than the 16-bit entries used by the FAT system, so FAT32 supports larger disk or partition sizes (up to 2 terabytes). The minimum size for a FAT32 partition is 256 MB.<br><br>A FAT32 partition is only accessible by Windows 95 OSR2 (version 4.00.950B), Windows 98, and Windows 2000, when available. DOS, Windows 3.x, Windows NT 3.51/4.0, earlier versions of Windows 95, and OS/2 don't recognize FAT32 and cannot use files on a FAT32 partition. |
| **FAT32x** | FAT32x is a proprietary file system developed by Microsoft to enable FAT32 partitions beyond 1024 cylinders (~8GB). Windows 95 OSR2 and Windows 98 may use FAT32x partitions. |
| **HPFS** | The High Performance File System (HPFS) is accessible only by OS/2, older versions of Windows NT (v. 3.51 and earlier), or versions of Windows NT that were upgraded from v. 3.51 or earlier. |

| Partition Type | Description |
|---|---|
| **HPFS/386** | HPFS/386 is a file system used by OS/2 Advanced Server. The only difference from HPFS is that HPFS/386 uses Access Control Lists (ACLs), and HPFS does not. In both file systems, each file and directory structure is anchored on a structure called an fnode. In HPFS/386, each fnode has internal storage space for ACLs and Extended Attributes. If a file has more than 16 ACLs, they are stored outside of the fnode on disk, and the fnode has a pointer telling where to find the ACLs. |
| **Linux Ext2** | The Linux Ext2 file system is only accessible by Linux, a freeware version of UNIX. The Linux Ext2 file system supports a maximum partition size of 4 terabytes. |
| **Linux Swap** | Holds a Linux swap file. The maximum usable size of a Linux swap file is 128 MB. The default size shown when you create a Linux swap partition may be slightly larger because of the physical geometry on the hard disk. |
| **NTFS** | The New Technology File System (NTFS) is accessible only by Windows NT. NTFS is not recommended for use on disks less than 400 MB because it uses a great deal of space for system structures. |
| **Unformatted** | Unformatted partitions reserve a portion of the disk but are not assigned a file structure. |
| **Unallocated space** | Unallocated space is the portion of a hard disk that is not currently assigned to any partition. |

## Uninstalling PartitionMagic

Exit PartitionMagic, then follow the instructions for your operating system.

| Operating System: | Instructions: |
|---|---|
| Windows 95, Windows 98, or Windows NT 4.0 Workstation | **1** On the Windows taskbar, click **Start ➤ Settings ➤ Control Panel**.<br>**2** Double-click **Add/Remove Programs**.<br>**3** Select **PartitionMagic 5.0**.<br>**4** Click **Add/Remove**. |
| Windows 3.x | Double-click the **Uninstall PartitionMagic** icon in the PowerQuest PartitionMagic program group. |



CHAPTER 2

# Automating Tasks

*This chapter includes the following information:*

- Wizard Overview

  *Running Wizards*

  *Applying Changes*

  *Create New Partition Wizard*

  *Resize Partitions Wizard*

  *Redistribute Free Space Wizard*

  *Merge Partitions Wizard*

  *Hiding Wizard Icons*
- Scripting

## Wizard Overview

PartitionMagic includes four wizards for common tasks. The wizards provide an alternative to performing the tasks manually using the commands on the **Operations** menu.

### *Running Wizards*

There are two ways to run a wizard:

- Click **Wizards** on the menu bar, then click the wizard you want to run.
- Click the appropriate wizard icon in the PartitionMagic main window.

### *Applying Changes*

When you complete a wizard, the partition map and partition list in the main window reflect the changes you entered. However, the changes do not actually affect your system until you apply them.

You can apply (or discard) changes that you enter using wizards in three ways:

- Click  on the toolbar to apply the changes, or click  on the toolbar to discard the changes and start over.
- Click **General ➤ Apply Changes** (or **Discard Changes**).
- Click the **Apply Changes** or **Discard Changes** icon at the bottom of the main window.

After running a wizard, you can run other wizards or perform other partition operations and then apply or discard all the pending changes at once.

### *Create New Partition Wizard*

The **Create new partition** wizard creates a new primary or logical partition.

You should be aware of the following considerations when creating a new partition:

- Creating a new partition may cause your drive letters to change. For example, if you have one primary partition (C:) on your hard drive and a CD-ROM drive (D:), and you create a new logical partition on your hard drive, the new partition becomes D: and the CD-ROM drive changes to E: after you reboot your computer. As a result, any programs on your hard drive that were linked to the CD-ROM no longer function because the paths to files have changed. PowerQuest recommends that you allow

DriveMapper to automatically update your drive letter references when prompted to do so. However, you can update drive letter references manually. Refer to “Changing Drive Letter References with DriveMapper” on page 80 for additional information.

For more information about why drive letters change, refer to “How the OS Assigns Drive Letters” and “Problems Caused by Drive Letter Changes” in *Basic Concepts* in Help.

- The file system you choose for the new partition will affect which operating systems can access the partition. The wizard dialogs will instruct you about the choices you make. For example, if you choose to create a FAT32 partition, the wizard will inform you that FAT32 partitions are used by Windows 95 OEM Service Release 2, Windows 98, and Windows 2000 but that Windows 3.x and DOS cannot access them. Pay close attention to the information in the dialog boxes, or you may inadvertently make your data inaccessible.
- Before installing Windows NT, make sure that all the partitions that you want Windows NT to recognize end prior to cylinder 1024. Otherwise, Windows NT will not install and will report that all the partitions are corrupted. If you cannot resize and move all partitions, you must obtain updated drivers from Microsoft before installing Windows NT.
- If you choose to create a Linux Ext2 partition, the wizard will prompt you to create a new Linux swap partition, as well.
- After you apply the changes from the wizard and reboot your computer, the operating system assigns the new partition a drive letter. You can then save data or install an operating system to your new partition.

If you created a new primary partition and plan to install an operating system on it, refer to “Installing a New Operating System” on page 36 for additional information.

### *Resize Partitions Wizard*

The Resize Partitions wizard helps you resize a partition and lets you specify how the resize will affect other partitions on the same disk. For example, if you have C: and D: partitions and you choose to enlarge C:, the wizard could take space from D: and allocate it to C:.

For information about resizing partitions without the wizard, see “Resizing and Moving Partitions” on page 26.

### *Redistribute Free Space Wizard*

The **Redistribute free space** wizard spreads the free space on a hard disk evenly across partitions. Free space refers to unused space within partitions and space that is not allocated to any partition.

You can redistribute free space on one hard disk at a time. You cannot redistribute free space across several disks.

For information about redistributing free space without the wizard, see “Resizing and Moving Partitions” on page 26.

### *Merge Partitions Wizard*

The Merge Partitions wizard helps you merge two adjacent FAT or FAT32 partitions. You choose two partitions, and the first will be expanded to include the second. The contents of the second partition are added as a folder inside the first partition.

PowerQuest recommends that you run DriveMapper to update drive letter references after merging partitions. The wizard will prompt you to run DriveMapper automatically.

### *Hiding Wizard Icons*

You can choose whether to display the wizard buttons near the bottom of the PartitionMagic main window. Hiding the wizard buttons increases the display area of the partition list.

1 Click **Wizards ➤ Hide Wizard Buttons**.

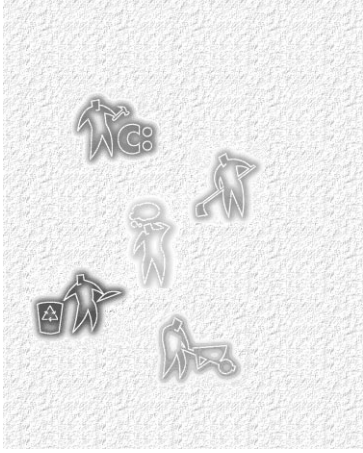
A check mark displays by the menu command if the wizard buttons are hidden. Choose the command again to redisplay the buttons.

The setting you choose will remain in effect until you reset it.

## Scripting

PartitionMagic Pro includes the ability to change the partitions on a computer by running a script that you create with Script Builder. The script is an ASCII file with text statements that define the operations to take place. To run a script, you pass the script filename to the program on the command line.

For additional information about script processing, refer to the PartitionMagic online help.




CHAPTER 3

# Completing Hard Disk Operations

*This chapter includes the following information:*

- Integrity Checks
- Resizing and Moving Partitions
- Creating Partitions
- Deleting Partitions
- Changing Partition Labels
- Formatting Partitions
- Copying Partitions
- Checking Partitions
- Merging Partitions
- Getting Information About Partitions
- Scanning a Disk for Errors
- Viewing Pending Operations

## Integrity Checks

PartitionMagic checks disk integrity with a sophisticated system of analysis and validation that operates behind the scenes every time you start the program or complete an operation. An initial integrity check scans your disk and reports any partition problems that may prevent PartitionMagic from operating properly. This integrity check acts as an early warning system that informs you of your disk's status and assures that the disk's structure is thoroughly analyzed and verified before you alter it.

If your physical disk passes the initial integrity check, you can select the disk's partitions and use PartitionMagic's options; otherwise, an error message appears instead of the partition list. This indicates a problem with your disk, not with PartitionMagic (because no disk modification operations have been initiated). If PartitionMagic finds errors that it can fix automatically, you will be prompted. It is safe to allow PartitionMagic to fix errors. Correct the disk problem, and then restart PartitionMagic. For additional information, see "Resolving Partition Table Errors" on page 114.

In addition to the integrity check at startup time, PartitionMagic performs two integrity checks during any operation. The first check tests the integrity of the file system in the partition before an operation begins (similar to CHKDSK or ScanDisk), and the second check validates your disk's data after an operation is completed. From start to finish, PartitionMagic examines your disk and informs you immediately if it detects any irregularities.

## Resizing and Moving Partitions

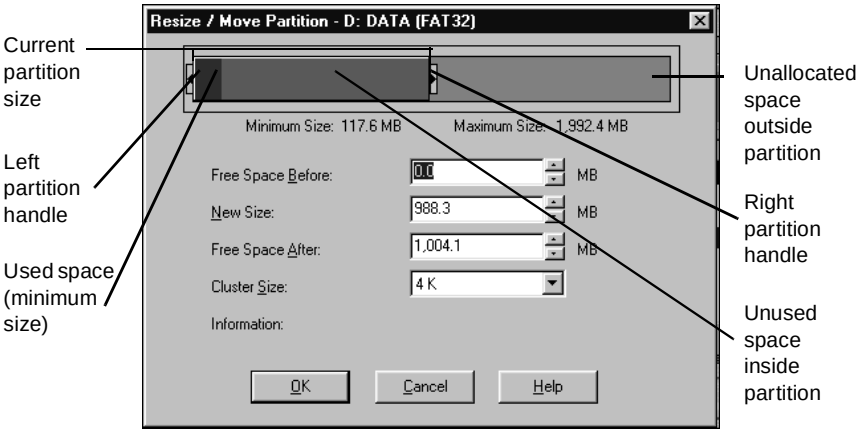
The **Resize/Move** operation lets you change the size of a partition and/or move it to another location on a hard disk.

1. From the **Disk** drop-down list (located on the toolbar), select the disk with the partition you want to resize/move.
2. On the partition map or in the partition list, select the partition you want to resize/move.

   You cannot move Windows NT volume or stripe sets with PartitionMagic.
3. On the toolbar, click  .

   You can also click **Operations ➤ Resize/Move** on the menu bar or right-click the partition and click **Resize/Move** on the context menu.

The **Resize/Move Partition** dialog appears.




The current size of the partition is shown on a partition map at the top of the dialog. The map also depicts the used and unused space within the partition and the unallocated space surrounding the partition (if any exists). The minimum and maximum sizes to which you can resize the partition appear below the map.

**4** Choose whether to resize or move the partition.

| To do this: | Do this: |
|---|---|
| **Move** | **1** Place the pointer on the partition.<br>The pointer changes to  .<br>**2** Drag the partition to the desired location.<br>There must be unallocated space adjacent to the partition to move it. If there is none, and the partition contains unused space, make the partition smaller and then move the partition.<br>You cannot move unknown partitions, partitions failing the **Check** operation, or unallocated space. |

| To do this: | Do this: |
|---|---|
| **Move** *(continued)* | Your Windows NT system partition cannot be moved past 4 GB, or Windows NT will not be bootable.<br><br>***IMPORTANT!*** Exercise caution when moving a bootable partition. Operating systems can become unbootable if moved beyond certain boundaries. For more information, see "Creating Bootable Partitions" on page 35. |
| **Resize** | **1** Place the pointer on the left or right partition handle.<br><br>The pointer changes to ↔.<br><br>**2** Drag the handle until the desired partition size is reached.<br><br>You can also resize the partition by typing new values in the **Free Space Before**, **New Size**, and **Free Space After** boxes or by clicking the arrows next to the boxes. The values you enter may change slightly to values supported by the drive's geometry. The arrow buttons resize the partition by the minimum increment, allowing you to make very fine adjustments. Changes are reflected in the partition map.<br><br>To make a partition smaller, unused space must exist within the partition. To enlarge a partition, there must be unallocated space adjacent to it. For additional information about resizing partitions, refer to "Notes about Resizing Partitions" below.<br><br>***IMPORTANT!*** Resizing your NTFS system partition over 7.8 GB may render your workstation unbootable. If you resize an NTFS system partition over this limit by accident, you can recover your system by using the PartitionMagic rescue disks to resize the NTFS system partition below 7.8 GB. |

If you know your disk has no bad sectors, **Skip bad sector checks** in **Preferences** to make **Resize/Move** operations faster.

**3** *(Optional)* Click the **Cluster Size** drop-down list and select a new size.

PartitionMagic changes the **Free Space Before**, **New Size**, and **Free Space After** values to show how the partition size is affected.

This option is only available for FAT and FAT32 partitions. For more information, see “Resizing Clusters” on page 64.

4 Click **OK**.

5 Click  on the toolbar to apply the changes, or click  on the toolbar to discard the changes and start over.

You can also perform other partition operations and then click **Apply Changes** after completing all of them.

### *Notes about Resizing Partitions*

When you resize a partition, data is consolidated, not compressed. To make a partition smaller, unused space must exist within the partition. To enlarge a partition, there must be adjacent unallocated space. If there is unallocated space on the disk, but it is not adjacent to the partition you want to enlarge, adjust the location of the space by moving other partitions.

***IMPORTANT!*** Exercise caution when resizing partitions smaller, especially a partition containing an operating system. Leave at least 50 MB more space in the partition than the operating system requires. Swap files, drivers, and other files may require the extra space. Additionally, operating systems can become unbootable if moved beyond certain boundaries. For more information, see “Creating Bootable Partitions” on page 35.

Resizing FAT and FAT32 partitions smaller may reduce the amount of wasted space on a hard disk. When you resize a FAT or FAT32 partition, PartitionMagic automatically resizes the clusters to their optimal size for the partition. For more information, see “Resizing Clusters” on page 64.

You should be aware of the following limitations when resizing partitions:

- You cannot make a partition smaller unless it contains unused space. You can only reduce a partition to the used size shown in the partition map plus a small buffer area. During a **Resize/Move** operation, data is consolidated to the front of the partition as needed, but no data compression takes place. Because of the way a FAT partition is structured, you can often resize a partition a second time and make it even smaller or larger than the first time you resized it.
- In certain instances, you cannot make a FAT partition larger when the partition contains no unused space. If you have a full partition and plenty of unallocated space adjacent to it, yet are not able to enlarge your partition, you may have to delete some files in the partition so that PartitionMagic has room to work. You may be able to slightly enlarge the partition (1 MB or less) and then enlarge the partition a second

time to provide the necessary buffer area for PartitionMagic. To see how much space is needed in a partition to resize past a cluster boundary, see the table in "Freeing Disk Space Before Enlarging a FAT Partition" in Help.

- It is difficult to calculate in advance the minimum size to which an NTFS or HPFS partition may be resized. During an NTFS or HPFS **Resize/Move** operation, if PartitionMagic runs out of space, it returns an error without completing the operation. The integrity of the NTFS or HPFS partition and data is never compromised.

### *Scenario 1: Adding Free Space to a Logical Partition*

This scenario outlines the step-by-step procedures for adding space to a logical partition. You can also use the **Resize Partitions** wizard to perform the same operations.

#### Sample Configuration

One 1 GB hard disk containing:

- One active primary FAT32 partition (C:) running Windows 98
- One extended partition enclosing one logical FAT partition (D:)


#### Objective

Resize drive C: smaller and add the newly created free space to drive D:.


#### Procedure

1. Resize drive C: smaller by the amount you want to add to drive D:.

   Resize or move C: so that the unallocated space is on the right.

2. Enlarge drive D: to occupy the unallocated space just created.

   The extended partition is automatically enlarged to accommodate drive D:.

3. Apply the changes to your system.

#### Result

Drive D: has room for additional files.

### *Scenario 2: Adding Free Space to a Primary Partition*

#### Sample Configuration

One 4 GB hard disk containing:

- One active primary FAT32 partition (C:) running Windows 95
- One hidden primary NTFS partition
- One extended partition enclosing one logical FAT partition (D:) and a block of free space


#### Objective

Add the block of free space to the NTFS partition.


#### Procedure

1. Move drive D: to the right (so the unallocated space is on the left).
2. Enlarge the NTFS partition to occupy the unallocated space.

   The extended partition is automatically resized to accommodate the NTFS partition.
3. Apply the changes to your system.

#### Result

The NTFS partition has room for growth and adequate space for operating system files such as drivers and swap files.

## Creating Partitions

The **Create** operation lets you create primary partitions, extended partitions, and logical partitions.

If you have multiple hard disks and partitions, the process and available options may differ slightly from the following steps. For examples of creating partitions on more complex systems, see the scenarios that begin on page 38 of this user guide.

1 From the **Disk** drop-down list (located on the toolbar), select the disk where you wish to create the new partition.

On a single hard disk, you can have up to four primary partitions or three primary partitions and one extended partition. Within an extended partition, you can create unlimited additional subdivisions called logical partitions.

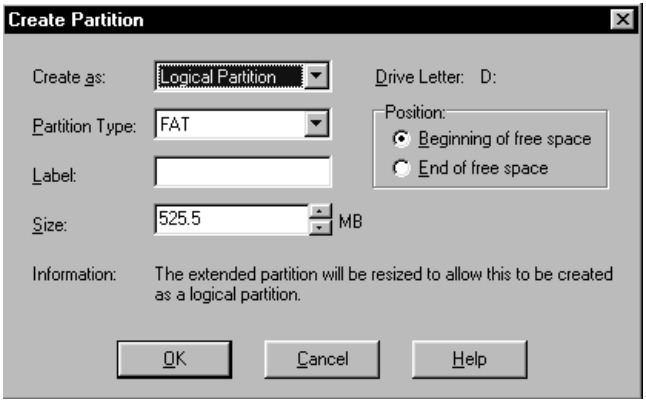
2 On the partition map or in the partition list, select a block of unallocated space.

If no unallocated space exists, you must resize or delete an existing partition to create unallocated space. For instructions on resizing and deleting partitions, see "Resizing and Moving Partitions" on page 26 and "Deleting Partitions" on page 41.

3 On the toolbar, click C:.

You can also click **Operations ➤ Create** on the menu bar or right-click the unallocated space and click **Create** on the context menu.

The **Create Partition** dialog appears.




4 From the **Create as** drop-down list, select **Logical Partition** or **Primary Partition**.

You should create primary partitions to install operating systems and logical partitions for all other purposes (such as storing data and applications). If you have multiple hard disks, you can improve speed by installing operating systems and applications on separate disks. If you do not know what type of partition you want to create, see "Understanding Partitions" in Help.

You should create a primary partition if you plan to install an operating system. Refer to "Creating Bootable Partitions" on page 35 and "Installing a New Operating System" on page 36 for additional information.

If you select **Logical Partition**, PartitionMagic automatically creates an extended partition to enclose the logical partition, or, if you already have an extended partition, resizes the extended partition larger to encompass the logical partition (the free space must be inside of or adjacent to the extended partition).

If **Logical Partition** is unavailable, you may already have four primary partitions on the hard disk. Or, if you have an extended partition, you may not have selected a block of free space inside of or adjacent to the extended partition.

5 From the **Partition Type** drop-down list, select the desired file system type:

**FAT** is the most common file system type. It is used by DOS, Windows 3.x, Windows 95, Windows 98, Windows NT, Windows 2000, and OS/2.

**FAT32** is used by Windows 95 OEM Service Release 2, Windows 98, and Windows 2000.

**HPFS** is used by OS/2 and Windows NT 3.51 (and earlier versions).

**NTFS** is used by Windows NT and Windows 2000.

**Linux Ext2** and **Linux Swap** are used only by Linux.

**Extended** creates an extended partition which can contain any number of logical partitions. **Extended** is not an option if the hard disk already contains an extended partition or four primary partitions.

**Unformatted** creates an unformatted partition on your hard drive.

6 *(Optional)* Enter a label (up to 11 alphanumeric characters) for the new partition.

7 In the **Size** box, enter the desired size for the partition.

PartitionMagic automatically calculates a recommended size (based on the most efficient use of disk space), which you can accept or change.

8 If the size you specified for the new partition is smaller than the available unallocated space, you can position the partition at the beginning (recommended) or end of the unallocated space. In the **Position** box, click **Beginning of free space** or **End of free space**.

9 In the **Drive Letter** field, note the drive letter that will be assigned to the new partition after reboot.

If you have an existing primary partition and you create another primary partition, the new primary partition is automatically hidden and will not receive a drive letter assignment because only one primary partition can be active at a time. An exception is Windows NT, which can handle multiple visible primary partitions.

*(Windows NT only)* In the **Drive Letter** box, type or select the drive letter you wish to assign to the partition.

**10** Click **OK**.

**11** Click  on the toolbar to apply the changes, or click  on the toolbar to discard the changes and start over.

You can also perform other partition operations and then click **Apply Changes** after completing all of them.

If you created a new primary partition and plan to install an operating system on it, refer to "Installing a New Operating System" on page 36 for additional information.

After creating a partition, you can move applications to the partition using MagicMover. For more information see "Moving Applications with MagicMover" on page 81.

***WARNING!*** Because of conflicts that can result from different hardware and system configurations, do not create a partition on a hard disk and then move that hard disk to another computer. Data loss may occur.

### *Managing Drive Letter Changes*

Creating a new partition may cause your drive letters to change. For example, if you have one primary partition (C:) on your hard drive and a CD-ROM drive (D:), and you create a new logical partition on your hard drive, the new partition becomes D: and the CD-ROM drive changes to E: after you reboot your computer. As a result, any programs on your hard drive that were linked to the CD-ROM no longer function because the paths to files have changed.

PowerQuest recommends that you allow DriveMapper to automatically update the drive letter references in application shortcuts, initialization files, and registry entries when prompted to do so. However, you can update drive letter references manually. Refer to "Changing Drive Letter References with DriveMapper" on page 80 for additional information.

While you can use DriveMapper to update references to files, for least impact, consider creating all new partitions on the highest disk (for example, disk 3 in a three-disk system) and to the right of existing partitions. For more information, "Understanding Drive Letters" in Help.

### *Creating Bootable Partitions*

Before creating a partition where you plan to install an operating system (a bootable partition), you should understand the information outlined in the following table.

| Operating System | Boots from Primary or Logical | Supported Partition Type(s) | Boot Code Boundary | Space Required |
|---|---|---|---|---|
| DOS 6.22 and earlier | Primary | FAT | 2 GB | 8 MB |
| Windows 95 | Primary | FAT or FAT32** | 8 GB | 90 MB |
| Windows 98 | Primary | FAT or FAT 32 | 8 GB | 175 MB |
| Windows NT | Primary* | FAT, or NTFS | 2 GB | 117 MB |
| Windows 2000 | Primary | FAT, FAT32, NTFS | 8 GB | 600 MB |
| Linux | Either | Linux Ext2 | 8 GB | 250 MB |
| OS/2 | Either | FAT or HPFS | 4 GB | 110 MB |

* Windows NT must boot from a primary partition on the first drive. However, only a few NT files must reside on that partition; the remaining files can reside on a logical partition, which can be located on the first or a subsequent drive. The NT boot partition can be shared with another operating system.

**FAT32 is only supported by Windows 95 OEM Service Release 2, Windows 98, and Windows 2000.

***IMPORTANT!*** When you create, move, or resize a bootable partition, the partition must begin below the boot code boundary specified in the above table in order for the operating system to boot. With the exception of DOS 6.22 (or earlier) and OS/2, partitions beyond 8 GB are visible to the current operating system. For more information, see “Understanding the BIOS 1,024 Cylinder Limit” and “Understanding the 2 GB Boot Code Boundary” in Help. The partition map in the PartitionMagic main window displays indicators for the 2 GB boot boundary and the 1024 cylinder limit.

PartitionMagic displays a warning if you attempt to create, move, or resize a bootable partition outside of the 2 GB boot code boundary. If you continue with the operation, you may not be able to boot or to see the partition. In either case, you can resolve the problem by moving the partition back within the boot code boundary with the PartitionMagic rescue disks.

If your system includes SCSI disks and you create a partition before a bootable Linux partition, Linux may no longer be bootable. In this situation, you may need to create Linux rescue disks, boot from the rescue disks, and repair the Linux boot information on the Linux partition. Refer to the README.1ST text file in the \English\Linux folder on the PartitionMagic CD for information about creating rescue disks for Linux.

### *Installing a New Operating System*

If you install multiple operating systems, you must follow the steps below for each of them. For detailed information about installing operating systems, refer to OPERATE.PDF in the English\Docs folder on the PartitionMagic CD.

1. Make the partition active (not necessary if you are installing Linux).

   See “Setting an Active Partition” on page 62.

   You can only install operating systems on primary partitions.

2. Close all programs and reboot the computer using an operating system installation diskette.

3. Install the operating system.

   PowerQuest technical support does not help install operating systems. See your operating system documentation for details.

4. *(If applicable)* Add the operating system to your BootMagic configuration so that you can select the operating system you want to boot.

   For more information, see “Configuring BootMagic” on page 84.

5. Reboot the computer.

### *Scenario 1: Creating a Primary Partition for Windows NT*

#### Sample System Configuration

One 4 GB hard disk containing one active primary FAT32 partition (C:) running Windows 98.


#### Objective

Resize drive C: smaller. In the unallocated space created, create a primary FAT partition where Windows NT can be installed.


#### Procedure

1. Resize drive C: smaller by 3 GB. For more information, see "Resizing and Moving Partitions" on page 26.

   The partition where you want to install Windows NT must begin in the first 2 GB of the disk, or Windows NT will not be bootable. You may need to move your existing partition to the end of the disk, then create the Windows NT partition at the beginning of the disk.

2. Create a primary partition in the unallocated space using the following information:

   **Partition Type:** Select **FAT**. Do not select FAT32 unless you are using Windows 2000. Earlier versions do not recognize FAT32 partitions.

   **Label:** Type one, if desired.

   **Size:** Type **3000**.

   ***IMPORTANT!*** Before performing the next step, make sure you have the Windows NT installation CD and disks; otherwise, you will not be able to boot your computer.

3. Set the new partition active. For more information, see "Setting an Active Partition" on page 62.

4. Hide the FAT32 partition. For more information, see "Hiding and Unhiding Partitions" on page 60.

5 Apply the changes to your system.

***IMPORTANT!*** Before installing Windows NT, make sure that all partitions end prior to cylinder 1024. Otherwise, Windows NT will not install and will report that all the partitions are corrupted. If you cannot resize and move all partitions, you must obtain updated drivers from Microsoft.

6 Reboot the computer using the first Windows NT installation diskette.

7 Complete the Windows NT installation.

PowerQuest technical support does not help install operating systems. See your operating system documentation for details.

8 Add Windows NT to your BootMagic configuration so that each time you start or restart your computer, you can select the operating system you want to boot. For more information, see "Configuring BootMagic" on page 84.

#### Result

When the computer restarts, BootMagic presents a list of the available operating systems, in this case, Windows 98 and Windows NT. Select the operating system you want to boot.

### *Scenario 2: Creating a Logical Partition on a Secondary Hard Disk*

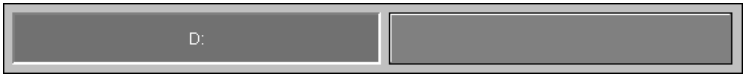
#### Sample System Configuration

**Disk 1** — One 4 GB disk containing:

- One active primary FAT32 partition (C:) running Windows 95.
- One extended partition enclosing one logical FAT partition (E:).


**Disk 2** — One 2 GB hard disk containing:

- One 1 GB FAT32 primary partition (D:).
- 1 GB unpartitioned unallocated space.




One CD-ROM drive (F:).

### Objective

Create a 1 GB logical FAT partition on Disk 2.


### Procedure

1. Select Disk 2.
2. Create a logical partition in the 1 GB unallocated space using the following information:

   **Partition Type:** Select **FAT**.

   **Label:** Type one, if desired.

   **Size:** Accept the pre-calculated size.

   **Create As:** Choose **Logical**.

   The partition will be assigned drive F: after reboot. Additionally, an extended partition will automatically be created to enclose the logical partition.
3. Apply the changes to your system.

### Result

After the computer reboots, the new logical partition is drive F: and the CD-ROM is drive G:.

## *Scenario 3: Creating Linux Logical Partitions*

### Sample System Configuration

One 6 GB hard disk containing:

- One active primary FAT partition (C:) running Windows 95.
- One extended partition enclosing one logical FAT partition (D:) and one logical FAT32 partition (E:).

### Objective

Resize drive E: smaller. In the unallocated space created, create one logical Linux Ext2 partition and one logical Linux Swap partition.


### Procedure

1. Resize drive E: smaller by 550 MB. For more information, see "Resizing and Moving Partitions" on page 26.
2. Create a logical partition in the unallocated space using the following information:

   **Partition Type:** Select **Linux Ext2**.

   **Label:** Type one, if desired.

   **Size:** Type **500**.
3. Create a second logical partition in the unallocated space using the following information:

   **Partition Type:** Select **Linux Swap**.

   **Label:** Type one, if desired.

   **Size:** Type **50**.
4. Apply the changes to your system.
5. Reboot the computer using your Linux installation diskette.
6. Complete the Linux installation.

   You do not need to change the active partition to install Linux.

   PowerQuest technical support does not help install operating systems. See your operating system documentation for details.

   ***WARNING!*** If you are using a boot utility like BootMagic, LILO (Linux Loader) must be installed to the Linux Ext2 partition containing the root directory and not installed to the master boot record. If you install LILO to the master boot record, other operating systems may become unbootable.

7 *(Optional)* Add Linux to your BootMagic configuration so that each time you start or restart your computer, you can select the operating system you want to boot. For more information, see “Configuring BootMagic” on page 84.

### Result

When the computer restarts, BootMagic presents a list of the available operating systems, in this case, Windows 95 and Linux. Select the operating system you want to boot.

## Deleting Partitions

The **Delete** operation deletes a partition and makes its data inaccessible.

1 From the **Disk** drop-down list (located on the toolbar), select the disk with the partition you wish to delete.

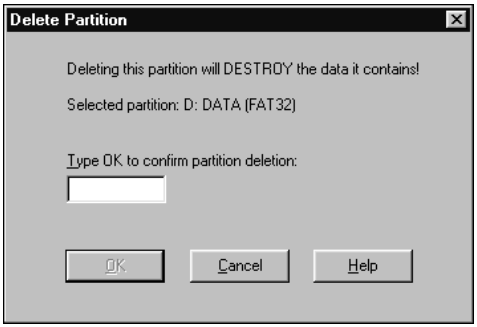
2 On the partition map or in the partition list, select the partition you want to delete.

To delete an extended partition, you must first delete all logical partitions within the extended partition.

3 On the toolbar, click  .

You can also click **Operations ➤ Delete** on the menu bar or right-click the partition and click **Delete** on the context menu.

The **Delete Partition** dialog appears.




4 Type OK to confirm the deletion.

5 Click **OK**.

6 Click  on the toolbar to apply the changes, or click  on the toolbar to discard the changes and start over.

   You can also perform other partition operations and then click **Apply Changes** after completing all of them.

PowerQuest recommends running DriveMapper when prompted. Deleting a partition can make your drive letters change, causing applications not to run because application shortcuts, initialization files, and registry entries refer to incorrect drives. DriveMapper, a utility included with PartitionMagic, helps you easily update drive letter references. Under some conditions, DriveMapper runs automatically after you delete a partition. For more information, see "Changing Drive Letter References with DriveMapper" on page 80.

If your system includes SCSI disks and you delete a partition before a bootable Linux partition, Linux may no longer be bootable. In this situation, you may need to create Linux rescue disks, boot from the rescue disks, and repair the Linux boot information on the Linux partition. Refer to the README.1ST text file in the \English\Linux folder on the PartitionMagic CD for information about creating rescue disks for Linux.

## Changing Partition Labels

The **Label** operation lets you to change a partition's volume label. Giving your partitions meaningful names makes managing them easier.

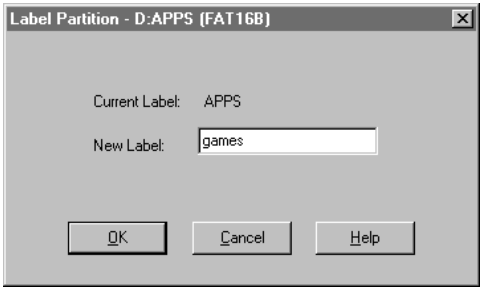
1 From the **Disk** drop-down list (located on the toolbar), select the disk with the partition whose label you wish to change.

2 On the partition map or in the partition list, select the partition with the label you want to change.

3 On the toolbar, click  .

   You can also click **Operations ➤ Label** on the menu bar or right-click the partition and click **Label** on the context menu.

The **Label Partition** dialog appears.




4. In the **New Label** box, type the new label.

   Labels cannot contain the following special characters: [*?:<>|+=;\/",].

   Labels can be up to 11 alphanumeric characters. Labels follow the same rules as DOS names, with two exceptions: spaces are allowed, and no period is required between the first eight characters and the last three.

5. Click **OK**.

6. Click  on the toolbar to apply the changes, or click  on the toolbar to discard the changes and start over.

   You can also perform other partition operations and then click **Apply Changes** after completing all of them.

## Formatting Partitions

The **Format** operation formats a partition, destroying all its data in the process. Formatting enables you to put a different file system on a partition.

PartitionMagic has several conversion options that let you convert from one file system to another without destroying existing files in a partition. For more information, see *Chapter 5* of this user guide.

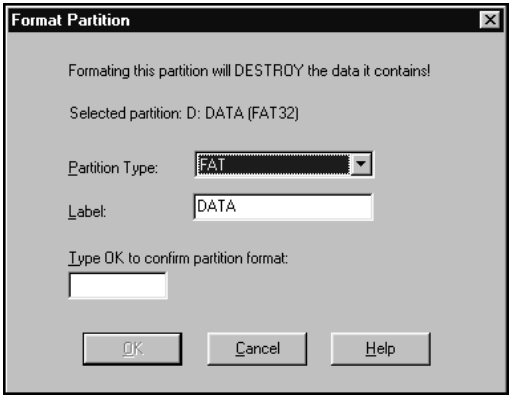
1. From the **Disk** drop-down list (located on the toolbar), select the disk with the partition you wish to format.

2. On the partition map or in the partition list, select the partition you want to format.

3. On the toolbar, click  .

You can also click **Operations ➤ Format** on the menu bar or right-click the partition and click **Format** on the context menu.

The **Format Partition** dialog appears.




4 From the **Partition Type** drop-down list, select the desired file system type.

If the partition is too small or too large, some partition types may not be available.

5 *(Optional)* Type a label for the partition.

6 Type OK to confirm that you want to format the partition.

7 Click **OK.**

8 Click  on the toolbar to apply the changes, or click  on the toolbar to discard the changes and start over.

You can also perform other partition operations and then click **Apply Changes** after completing all of them.

## Copying Partitions

The **Copy** operation lets you to make an exact duplicate of a partition.

Reasons why you might want to copy a partition include:

- To duplicate your operating system before upgrading to a new version or a different operating system (so that you can remember how the old operating system's windows, program icons, and properties were set up).

- To quickly move a smaller hard disk's contents to a larger, new hard disk.
- To change the relative order of partitions.
- To back up a partition.

**1** From the **Disk** drop-down list (located on the toolbar), select the disk with the partition you wish to copy.

To copy a partition, you must have unallocated space that is equal to or larger than the partition you are copying.

**2** On the partition map or in the partition list, select the partition you want to copy.

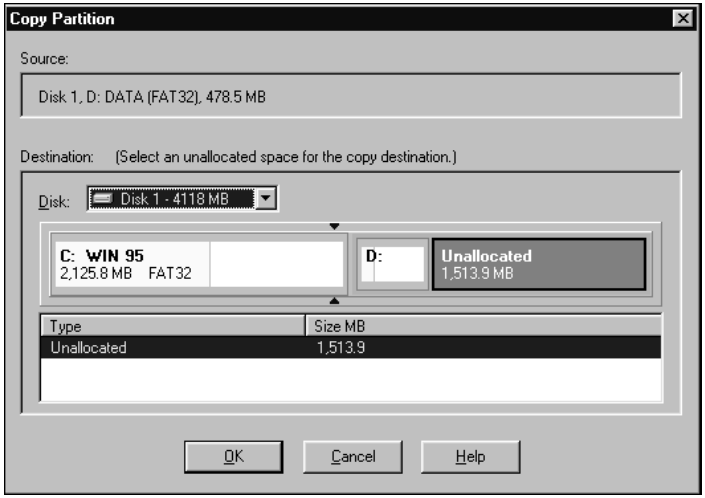
The **Copy** command is dimmed if there is not enough unallocated space on your disk for the partition.

You cannot use PartitionMagic to copy Windows NT volume or stripe sets.

**3** On the toolbar, click  .

You can also click **Operations ➤ Copy** on the menu bar or right-click the partition and click **Copy** on the context menu.

The **Copy Partition** dialog appears.




**4** From the **Physical Drives** drop-down list, select the disk where you want to copy the partition.

**5** In the partition list, select the unallocated space where you want to copy the partition.

6 Click **OK**.

7 Click  on the toolbar to apply the changes, or click  on the toolbar to discard the changes and start over.

The copy is the same size (or slightly different if copied to a disk with a different geometry) and file system type and contains the same data as the original.

## Checking Partitions

The **Check** operation checks the integrity of a partition.

1 From the **Disk** drop-down list (located on the toolbar), select the disk with the partition you wish to check.

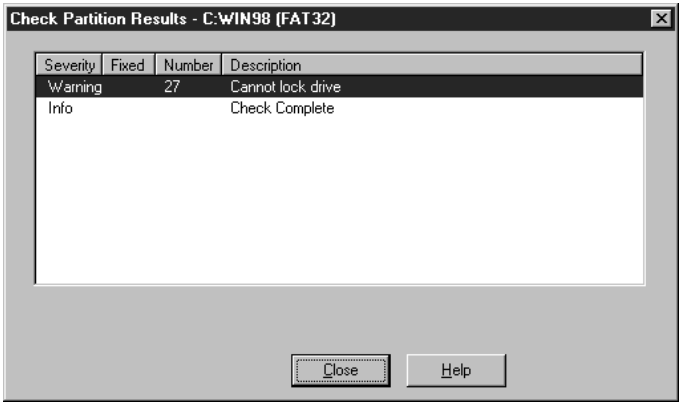
2 On the partition map or in the partition list, select the partition you want to check.

PartitionMagic can only check partitions that it can lock (that is, partitions that do not have open files on them). If there are open files on a partition, the Check option on the menu will be dimmed.

3 On the toolbar, click  .

You can also click **Operations ➤ Check for Errors** on the menu bar or right-click the partition and click **Check for Errors** on the context menu.

The **Check Partition Results** dialog appears.




If **Check** does not discover any errors, an Info entry appears with “Check Complete” in the **Description** column.

If a Check operation fails, “Check Failed” appears in the **Used** and **Unused** columns in the partition list. You should fix any errors encountered. For more information, see “Resolving Check Errors” on page 113.

If **Check** finds an error, such as cross-linked files, lost clusters, or bad directory information on an NTFS volume and can fix it, a **Fix** button appears at the bottom of the dialog. For each error found, **Check** displays the following:

- **Severity** describes the seriousness of the problem, which can be one of the following:
  - **Info:** The information given is helpful, but not critical. Does not correspond to any error.
  - **Warning:** The error may or may not cause problems.
  - **Error:** A problem was encountered, but PartitionMagic may still be able to make changes to the partition. Run ScanDisk or CHKDSK to fix the error, or click **Fix**, if available.
  - **Critical:** A catastrophic problem. PartitionMagic cannot make any changes to the partition.
  - **Fixed** displays **Yes** for each problem you fix on an NTFS volume. Not applicable for FAT, FAT32, or HPFS partitions.
  - **Number** shows a number corresponding to the error. For more information, see “Error Messages and Solutions” on page 115.
  - **Description** gives a brief description of the problem.

4. To fix an error on an NTFS volume, highlight the problem and click **Fix**.
5. When you are finished viewing the check results and fixing NTFS errors, click **Close**.

**Check** does not display information about the status and structure of a partition as do the DOS, Windows, and OS/2 CHKDSK utilities. To view that information, use the **Info** option. For details, see “Getting Information About Partitions” on page 49.

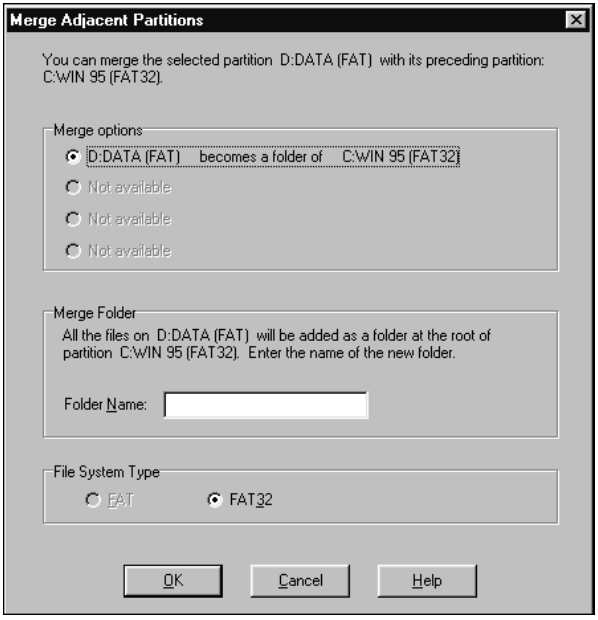
PartitionMagic checks for OS/2 Extended Attribute errors on FAT partitions. If you do not use OS/2 or previously used OS/2 but no longer do, consider enabling the **Ignore OS/2 EA Errors on FAT** preference, as these errors are not a concern. For more information, see “Changing PartitionMagic Preferences” on page 16. OS/2 users should not enable **Ignore OS/2 Errors on FAT**, as undetected errors could cause data loss.

## Merging Partitions

You can merge two FAT or FAT32 partitions that are adjacent to each other on a disk. It is useful to merge partitions if you have reached the maximum number of partitions on your disk, but you do not want to delete a partition. It is also useful if you want to combine FAT partitions and convert them to one large FAT32 partition.

1 Click **Operations ➤ Merge**.

The Merge Adjacent Partitions dialog appears.




2 Under **Merge options**, choose the partitions you would like to merge.

The contents of one partition will be moved into a folder within the other partition.

You should not merge partitions that contain different operating systems.

3 Under **Merge Folder**, type a name for the new folder that will be created in the partition you are keeping.

4 Choose **FAT** for **FAT32** for the format of the partition you are keeping.

If you are combining FAT partitions, be careful not to convert them to FAT32 unless you have access to FAT32 partitions. Windows 95b or later, Windows 98, and Windows 2000 can access FAT32 partitions.

5 Click **OK**.

The partition map in the main window changes to show the merged partitions.

6 Click **General ➤ Apply Changes** to apply pending operations or **General ➤ Discard Changes** to cancel them.

## Getting Information About Partitions

The **Info** operation displays information about the status and structure of a selected partition.

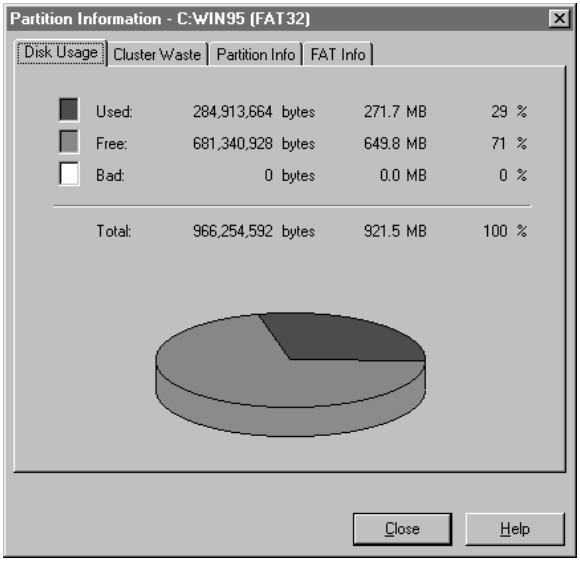
1 From the **Disk** drop-down list (located on the toolbar), select the disk containing the partition for which you wish to view information.

2 On the partition map or in the partition list, select the partition on which you want to view information.

3 On the toolbar, click  .

You can also click **Operations ➤ Info** on the menu bar or right-click the partition and click **Info** on the context menu.

The **Partition Information** dialog appears.




Information is displayed in tabbed pages. To view a page, click its associated tab, which is always visible at the top of the pages. Based on the file system the partition uses, different pages appear.

4 Click the tab for the page you wish to view.

Each page is described in the following sections.

5 Click **Close** when you are finished viewing information.

### *Disk Usage*

The **Disk Usage** page is available for the FAT, FAT32, NTFS, and HPFS file systems. This page displays the following information in bytes, megabytes, and as a percentage:

- **Used** space on the partition, including space wasted by clusters
- **Unused** space on the partition
- **Bad** space on the partition
- **Total** space on the partition (the sum of Used, Unused, and Bad space)

PartitionMagic also displays this information in a pie chart.

### Cluster Waste

The **Cluster Waste** page applies only to partitions using the FAT or FAT32 file systems.

This page displays the following information:

- **Current Cluster Size** in bytes or kilobytes
- **Data** stored on the partition in bytes and megabytes
- **Wasted** space on the partition in bytes and megabytes
- **Total** used space in bytes and megabytes (the sum of Data and Wasted space)

PartitionMagic also displays this information in a bar chart.

### Partition Info

The **Partition Info** page is available for all types of partitions, including unallocated space and extended partitions. Information on this page includes the following:

- **Partition type** is shown in hexadecimal followed by a text description of the partition or file system type (such as FAT, FAT32, NTFS, or HPFS). The hexadecimal designation is the conventional way to display partition types.
- **Serial Number** is shown if the partition's file system uses serial numbers.

The lower portion of the page shows physical information about the partition:

- **First physical sector** shows the logical number and the location (cylinder, head, and sector) where the partition begins.
- **Last physical sector** shows the logical number and the location (cylinder, head, and sector) where the partition ends.
- **Total physical sectors** displays the number of sectors in the partition.
- **Physical Geometry** shows the total number of cylinders, heads, and sectors on the physical disk where the partition resides.

### File System-Specific Info Pages

The last page in the **Partition Information** dialog corresponds to the file system used on the selected partition. For example, if the file system is FAT or FAT32, the page is **FAT Info**; if the file system is NTFS, the page is **NTFS Info**, and so forth.

#### FAT Info

This page applies to partitions using the FAT or FAT32 file systems.

The first section provides the following information:

- **Sectors per FAT** shows the number of sectors in each file allocation table and the number of file allocation tables on the selected partition.
- **Root directory capacity** shows the number of possible entries and the number of sectors in the root directory. Because a FAT32 root directory can grow as needed, this line is blank for FAT32 partitions.
- **First FAT sector** shows the logical sector number within the partition where the FAT begins.
- **First Data sector** shows the logical sector number within the partition where the data portion of the partition begins.

The next section provides the following information:

- The number of bytes in files on the partition, the number of files, and the number of those files that are hidden
- The number of bytes in directories on the partition, the number of directories, and the number of those directories that are hidden

The final section of this page, **FAT Extensions**, provides the following information:

- The number of bytes used for OS/2 Extended Attributes and the number of files and directories affected by Extended Attributes
- The number of bytes used for long filenames and the number of files and directories using long filenames

### NTFS Info

This page applies to partitions using the NTFS file system. The first section shows the following information:

- **NTFS Version** shows the version number. The NTFS version does not match the OS version. For example, Windows NT 4.0 uses NTFS version 1.3.
- **Bytes per NTFS sector** displays the number of bytes in each logical sector on the selected partition. (There are always 512 bytes in each physical sector.)
- **Cluster size** displays the size of each cluster and the number of sectors in each cluster on the selected partition.
- **First MFT Cluster** shows the logical number of the first cluster in the master file table (MFT).
- **File Record Size** gives the size of file records in the MFT.

The next section displays information similar to that shown by NT CHKDSK:

- The number of files on the partition and the bytes and clusters allocated to them
- The number of wasted bytes in file clusters
- The number of indexes (directories) and the bytes and clusters allocated to them
- The number of bytes and clusters reserved for other system structures

### HPFS Info

This page applies to partitions using the HPFS file system.

The first section displays the following information:

- **Partition status** shows one or more of these values:
- **Active:** OS/2 is running and data has been written to the partition.
- **Dirty:** Windows NT or OS/2 was shut down improperly and is not running.
- **Corrupt:** One or more sectors are bad, and the partition needs to be checked.
- **Hot Fixes:** Problems have been hot fixed.
- **Not Active:** The partition is not in use.
- **DirBlock sectors** shows the range of sectors in the DirBlock band. The DirBlock band is usually preallocated near the center of the disk to reduce head movement.
- **Free DirBlocks** displays the number of unused DirBlocks in the DirBlock band and the total number of DirBlocks. If the DirBlock band fills up, additional DirBlocks are allocated from the data area.
- **HotFixes used** displays the number of hotfix sectors used and the total number of hotfix sectors available. Hotfix sectors are used temporarily to handle write errors. CHKDSK /F transfers the data from a hotfix sector to a good sector and makes the hotfix sector available again.

The last section displays information similar to that shown by OS/2 CHKDSK, including:

- The number of bytes and files on the partition and the number of sectors used for files
- The number of unused bytes in file sectors, which is equivalent to wasted bytes in FAT clusters. (Because HPFS allocates space by sectors, less space is wasted than in FAT clusters.)
- The number of bytes in directories, the number of directories on the partition, and the number of sectors used for directories
- The number of bytes in file/dir Fnodes, also shown as a number of sectors

  An Fnode is a key structural element of the HPFS file system. Each Fnode is 512 bytes (one sector). One Fnode exists for each file or directory in the partition.

- Number of bytes reserved by the system, also shown as a number of sectors
- Number of bytes used for Extended Attributes (EAs)

## Scanning a Disk for Errors

MS ScanDisk is a utility included with Windows 95 and Windows 98 that you can run from PartitionMagic. ScanDisk scans a partition for errors and fixes them. The **Check** operation also scans for errors, but it does not correct them.

If you are running Windows NT, you can run NT CheckDisk, rather than ScanDisk, from PartitionMagic.

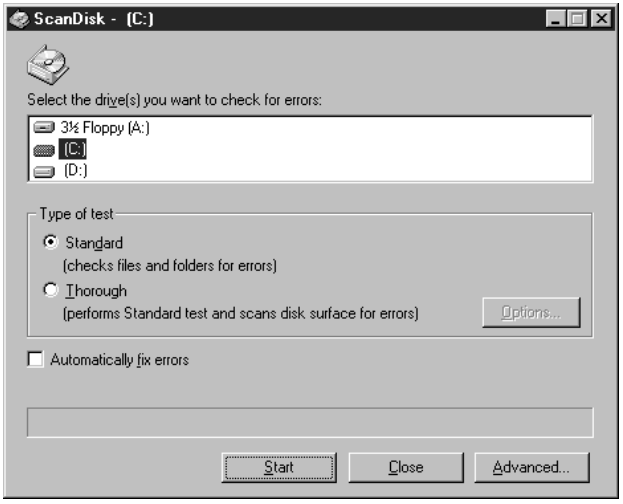
1. From the **Disk** drop-down list (located on the toolbar), select the disk you want to scan.

   ScanDisk only scans partitions with assigned drive letters; it does not scan hidden partitions, extended partitions, unallocated space, or partitions with file systems not supported by the active operating system.

2. On the partition map or in the partition list, right-click the partition you want to scan and click **MS ScanDisk** (or **NT CheckDisk** if you are running Windows NT) on the context menu.

   You can also select the partition and click **Operations ➤ MS ScanDisk** on the menu bar.

The **ScanDisk** dialog appears.




**3** In the **Type of test** box, click **Standard** or **Thorough**.

**Thorough** scans the partition for bad sectors.

**4** *(Optional)* Click **Automatically fix errors**.

5 Click **Start**.

When ScanDisk is finished, the **ScanDisk Results** dialog displays information about errors on the partition (if any were found) and other disk statistics, such as total disk space, number of bytes in bad sectors, and total allocation units.

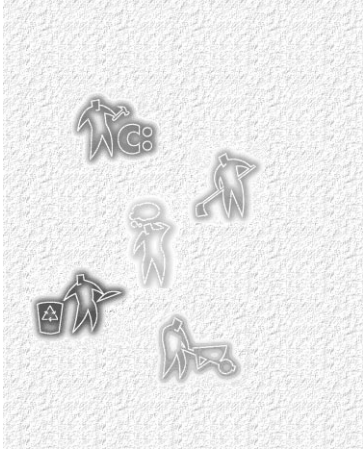

For more information about MS ScanDisk, consult Windows 95 or Windows 98 Help.

## Viewing Pending Operations

PartitionMagic queues operations until you apply them. You can view the operations that are pending at any time.

1 Click **Operations ➤ View Operations Pending**.

The list of pending operations is view-only. You can apply or discard all the changes listed using the commands on the **General** menu or the buttons on the toolbar.




CHAPTER 4

# Completing Advanced Operations

*This chapter includes the following information:*

- Changing a Drive Letter
- Retesting Bad Sectors
- Hiding and Unhiding Partitions
- Resizing the Root Directory
- Setting an Active Partition
- Resizing Clusters

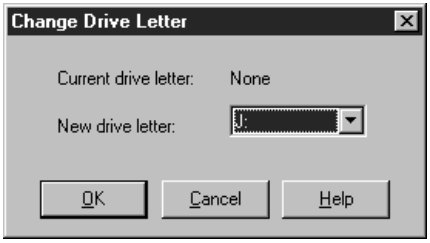
## Changing a Drive Letter

The **Change Drive Letter** operation is only available when you are running Windows NT. This operation lets you change the drive letter assigned to any partition visible to and supported by Windows NT.

1. From the **Disk** drop-down list (located on the toolbar), select the disk with the partition whose drive letter you want to change.
2. On the partition map or in the partition list, right-click the partition whose drive letter you want to change and then click **Advanced ➤ Change Drive Letter** on the context menu.

   You can also select the partition and then click **Operations ➤ Advanced ➤ Change Drive Letter** on the menu bar.

   The **Change Drive Letter** dialog appears.




3. In the **New drive letter** box, type or select the drive letter you want to assign to the partition.
4. Click **OK**.
5. Click  on the toolbar to apply the changes, or click  on the toolbar to discard the changes and start over.

   You can also perform other partition operations and then click **Apply Changes** after completing all of them.

## Retesting Bad Sectors

The **Bad Sector Retest** operation lets you check sectors on FAT partitions that have been marked bad and recover sectors that are usable.

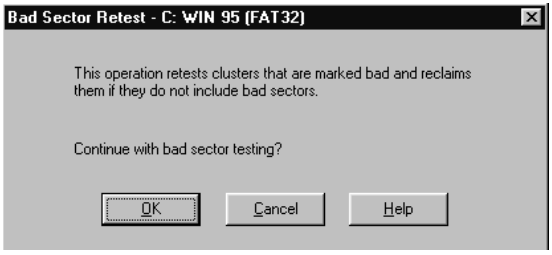
The FAT file system allocates disk space for file storage in units called clusters, which are composed of a fixed number of sectors. Because the FAT file system tracks bad sectors at the cluster level, it marks an entire cluster bad even though the problem may exist in a single sector. Use **Info** to discover whether a partition contains bad clusters. For more information, see "Getting Information About Partitions" on page 49.

As a conservative measure, when you move or resize a partition or increase cluster size, PartitionMagic marks all new clusters containing any part of old bad clusters as bad (even though the clusters may not actually contain bad sectors). Likewise, when you decrease a partition's cluster size, PartitionMagic divides bad clusters into multiple bad clusters. If, after you complete these tasks, PartitionMagic reports bad sectors, you can perform **Bad Sector Retest** and reclaim the good sectors that were marked bad.

1. From the **Disk** drop-down list (located on the toolbar), select the disk with the partition you want to retest.
2. On the partition map or in the partition list, right-click the partition you want to retest and then click **Advanced ➤ Bad Sector Retest** on the context menu.

   You can also select the partition and then click **Operations ➤ Advanced ➤ Bad Sector Retest** on the menu bar.

   The **Bad Sector Retest** dialog appears.




3. To continue with the test, click **OK**.

   Some sectors marked as bad are "marginally bad," meaning that one time the sector works fine and another time it does not. Bad Sector Retest may mark a marginally bad sector as good. This can result in data loss if the marginally bad sector fails in the future. Most modern hard drives detect bad sectors and automatically remap the

sector, so in general, you do not see bad sectors on modern hard drives. If you do get bad sector errors on a modern hard drive, it is recommended that you replace the drive.

4 In the lower right corner of the PartitionMagic main window, click **Apply changes**.

## Hiding and Unhiding Partitions

The **Hide Partition** operation lets you secure partitions against unwanted user access. You can perform this operation on FAT, FAT32, NTFS, and HPFS partitions.

When you hide a partition, the next time you boot your computer the partition is not assigned a drive letter. Conversely, when you unhide a partition, the next time you boot your computer the partition is assigned a drive letter.

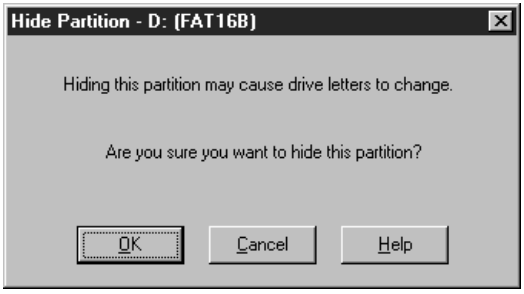
1 From the **Disk** drop-down list (located on the toolbar), select the disk with the partition you wish to hide.

2 On the partition map or in the partition list, right-click the partition you want to hide or unhide and click **Advanced ➤ Hide Partition** or **Unhide Partition** on the context menu.

You can also select the partition and then click **Operations ➤ Advanced ➤ Hide Partition** (or **Unhide Partition**) on the menu bar.

***WARNING!*** Note that unless you are running Windows NT, unhiding multiple primary partitions may cause data loss.

The **Hide Partition** dialog appears, warning you that drive letters may change.




3 To confirm that you want to hide the partition, click **OK**.

Hiding and unhiding partitions can cause the drive letters of other partitions to change. When this happens, your computer may not boot and applications may not run. PowerQuest recommends that you allow DriveMapper to run automatically to update drive letter references that change as a result of hiding or unhiding partitions.

4. In the lower right corner of the PartitionMagic main window, click **Apply changes**.

If your hard disk has more than one primary partition, only one is visible by default. When you use the **Set Active** operation, PartitionMagic unhides the selected primary partition and hides other primary partitions. While you can unhide more than one primary partition, we recommend that you do not.

If you are running Windows NT, partitions are not hidden automatically; therefore, you can have multiple visible primary partitions.

## Resizing the Root Directory

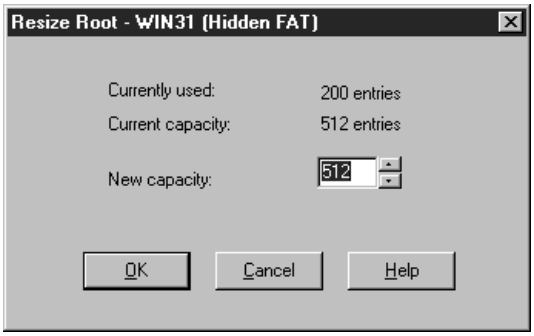
The **Resize Root** operation lets you change the maximum number of entries that can be placed in the root directory of a FAT partition. The number of root entries is set at the time the partition is formatted; the limit does not expand automatically as it does in a subdirectory or in a FAT32 partition. Consider increasing this number if you use Microsoft long filenames in the root directory. During this operation, data within the partition is unaffected.

1. From the **Disk** drop-down list (located on the toolbar), select the disk with the partition whose root directory you wish to resize.

2. On the partition map or in the partition list, right-click the FAT partition whose root directory you want to resize and click **Advanced ➤ Resize Root** on the context menu.

   You can also select the partition and click **Operations ➤ Advanced ➤ Resize Root** on the menu bar.

The **Resize Root** dialog appears, displaying the number of used entries and the current capacity.




3. In the **New capacity** box, type or select the number of entries you want the root directory to have.

   The number you type will be rounded to one that preserves the current cluster alignment.

4. Click **OK**.

5. Apply the changes, or perform other operations and then apply all the changes at once.

Occasionally, enlarging the root directory displaces the first few files on the partition (such as IO.SYS and MSDOS.SYS if the partition contains an operating system). If the root directory is on a boot partition and the partition fails to boot after resizing the root directory, you should run SYS.COM to move the displaced files back to the front of the disk.

## Setting an Active Partition

The **Set Active** operation lets you make a partition the active partition (the partition the computer boots from). Only one partition can be active at a time. To boot your computer from a partition, the partition must be on the first disk, and it must contain an operating system. When your computer boots, it reads the partition table of the first disk to find out which partition is active and boots from that partition.

***IMPORTANT!*** Before you make a partition active, it must be bootable. If the partition is not bootable or if you are not certain if it is, have a boot diskette ready.

PartitionMagic hides inactive FAT, NTFS, and HPFS primary partitions (unlike Windows 95, Windows 98, and DOS FDISK programs which cannot hide or unhide partitions). Hiding inactive primary partitions makes it easy to install multiple operating systems and choose the one you want to use with **Set Active**. For example, if you have Windows 95 and want to install Windows NT in a separate partition, you can make the Windows 95 partition smaller, create another primary partition, set it as the active partition, and then boot from the Windows NT installation diskettes.

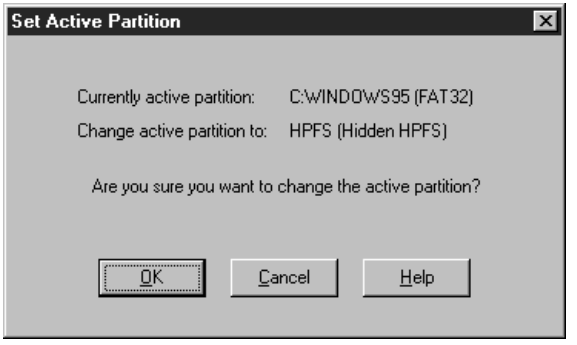
1. From the **Disk** drop-down list (located on the toolbar), select the disk with the partition you want to make active.

2. On the partition map or in the partition list, right-click the partition you want to make active and click **Advanced ➤ Set Active** on the context menu.

   You can also select the partition and click **Operations ➤ Advanced ➤ Set Active** on the menu bar.

   *(Windows NT only)* In a configuration with mixed IDE and SCSI hard disks, Windows NT does not always see the boot drive as the first disk. PartitionMagic displays drives in the order that Windows NT reports them. As a result, you may see your boot device as drive 1, 2, etc. PartitionMagic may also incorrectly report that there is no active partition. Be sure you identify which which drive is the boot drive.

   The **Set Active Partition** dialog appears.




3. Click **OK**.

4. Apply the changes, or perform other operations and then apply all the changes at once.

## Resizing Clusters

The **Resize Clusters** operation lets you change the cluster size on FAT and FAT32 partitions. Reducing cluster size may help you reclaim wasted space on your hard disk.

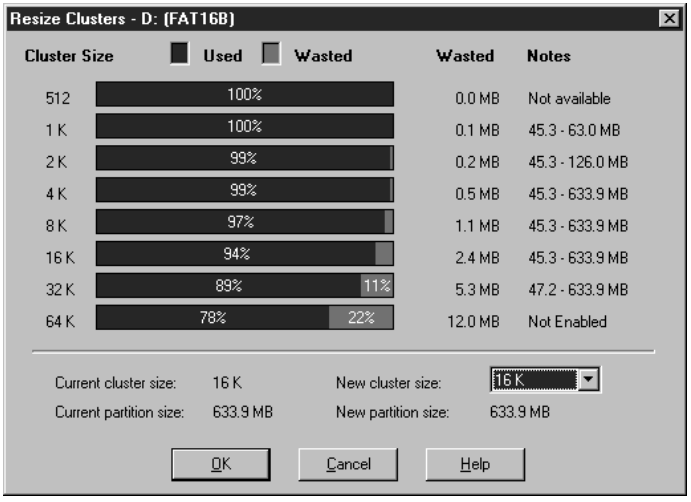
All files on FAT and FAT32 partitions are stored in allocation units called clusters. Each file on a partition is allotted at least one cluster. The size of a partition determines cluster size. Unless the size of a file is an exact multiple of cluster size on the partition where the file is located, the file includes wasted space. Larger partitions have larger clusters, and, therefore, more wasted space. For more information, see "Making Efficient Use of Disk Space" in Help.

1. From the **Disk** drop-down list (located on the toolbar), select the disk containing the partition where you want to resize clusters.

2. On the partition map or in the partition list, right-click the FAT or FAT32 partition where you want to resize clusters, and then click **Advanced ➤ Resize Clusters** from the context menu.

   You can also select the partition and click **Operations ➤ Advanced ➤ Resize Clusters** on the menu bar.

   The **Resize Clusters** dialog appears.




   For each cluster size, PartitionMagic displays the following:

- A bar graph and percentages represent how much space would be used and how much space would be wasted if you chose that cluster size for the currently selected partition
- Wasted space (in megabytes)
- The range of allowable partition sizes (in megabytes) or other information
- If a cluster size requires a partition that is too small for the data and files on the partition, "Not Available" appears in the **Notes** column. "Not Enabled" appears in the **Notes** column for the 64 KB cluster size because it is only used for Windows NT. You can enable the 64 KB cluster size, but it is not recommended. For more information, see "Allow 64K FAT Clusters for Windows NT" on page 16.

The lower portion of the **Resize Clusters** dialog displays information about the current and new cluster size and the current and new partition size (based on the new cluster size).

3. Using the information in the dialog, decide which cluster size you want to use (and can use) and select it from the **New cluster size** drop-down list.

   PartitionMagic adheres to the established limits for partition and cluster sizes. You cannot select a cluster size that is invalid for the selected partition.

   Choosing a smaller cluster size may resize the partition smaller, creating unallocated space next to the partition. You can use this unallocated space by creating a new partition.

   ***WARNING!*** Do not choose the 64 KB cluster size unless you have Windows NT and a 2–4 GB disk.

4. Click **OK**.

5. Apply the changes, or perform other operations and then apply all the changes at once.

### *Default Cluster Sizes*

A partition's cluster size is set by the DOS FORMAT operation, based on the size of the partition, as shown in the following tables.

**DOS and Windows default FAT cluster sizes**

| Partition Size (MB) | FAT Type | Sectors Per Cluster | Cluster Size |
|---|---|---|---|
| 0-15 | 12-bit | 8 | 512 bytes |

**DOS and Windows default FAT cluster sizes**

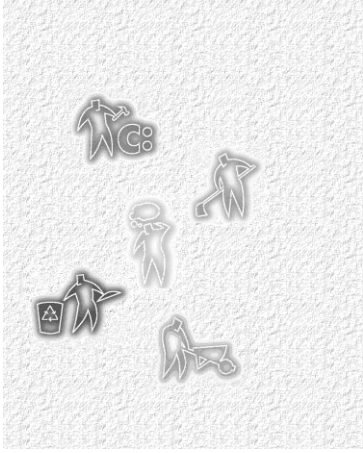
| Partition Size (MB) | FAT Type | Sectors Per Cluster | Cluster Size |
|---|---|---|---|
| 16-127 | 16-bit | 4 | 2 KB |
| 128-255 | 16-bit | 8 | 4 KB |
| 256-511 | 16-bit | 16 | 8 KB |
| 512-1,023 | 16-bit | 32 | 16 KB |
| 1,024-2,047 | 16-bit | 64 | 32 KB |
| 2,048-4,096 | 16-bit | 128 | 64 KB* |

*Only available with Windows NT.

**Windows 95 OEM Service Release 2, Windows 95, and Windows 2000 default FAT32 cluster sizes**

| Partition Size (GB) | Sectors Per Cluster | Cluster Size |
|---|---|---|
| 0.256- 8.01 | 8 | 4 KB |
| 8.02-16.02 | 16 | 8 KB |
| 16.03-32.04 | 32 | 16 KB |
| > 32.04 | 64 | 32 KB |

It is not recommended that you use the smallest cluster size on partitions containing a single, large file, such as a database or swap file.




CHAPTER 5

# Converting Partitions

*This chapter includes the following information:*

- Converting FAT Partitions to FAT32
- Converting FAT Partitions to HPFS
- Converting FAT Partitions to NTFS
- Converting FAT32 Partitions to FAT
- Converting NTFS Partitions to FAT
- Converting NTFS Partitions to FAT32
- Converting Primary Partitions to Logical
- Converting Logical Partitions to Primary

## Converting FAT Partitions to FAT32

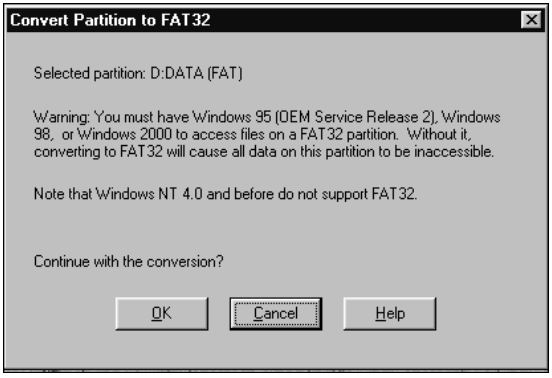
The **Convert FAT to FAT32** operation converts a FAT partition to FAT32. FAT32 partitions have less wasted disk space than FAT partitions (for more information, see “Resizing Clusters” on page 64). However, you should be aware of these issues:

- You must have Windows 95 OEM Service Release 2, Windows 98, or Windows 2000 to access files on a FAT32 partition. If you run an operating system other than these, FAT32 partitions will be inaccessible when the other operating system is running, even if one of these operating systems is installed on your machine.
- Some laptops have a sleep mode that saves all memory to disk. Because this function sometimes requires a FAT partition, consult your laptop manual or contact the manufacturer before converting to FAT32.
- The minimum recommended size for a FAT32 partition is 256 MB.

1. From the **Disk** drop-down list (located on the toolbar), select the disk containing the partition you wish to convert.
2. On the partition map or in the partition list, right-click the FAT partition you want to convert to FAT32 and click **Convert ➤ Convert FAT to FAT32** on the context menu.

   You can also select the partition and click **Operations ➤ Convert ➤ Convert FAT to FAT32** on the menu bar.

   The **Convert Partition to FAT32** dialog appears.




3. To continue with the conversion, click **OK**.

4. Click **General ➤ Apply Changes** to apply the changes, or click **General ➤ Discard Changes** to discard the changes and start over.

   You can also click **Apply changes** in the lower right corner of the PartitionMagic main window to apply changes.

   You can also perform other partition operations and then apply the changes after completing all of them.

## Converting FAT Partitions to HPFS

The **Convert FAT to HPFS** operation converts a FAT partition to HPFS. During this operation, PartitionMagic preserves data, long filenames (created by Microsoft Windows NT, Windows 95, and Windows 98), and Workplace shell long name Extended Attributes.

***WARNING!*** You must have OS/2 to access files on an HPFS partition. Without it, you will lose all files on the converted partition. Proceed with caution when performing this conversion, as it cannot be reversed.

1. Back up the data on your boot drive.

   Because the conversion cannot be reversed, we strongly recommend that you take this precautionary step.

   If a Corrective Service Facility (CSF) has been applied to your version of OS/2, you must make new Install/Utility diskettes and use them in place of your original OS/2 diskettes.

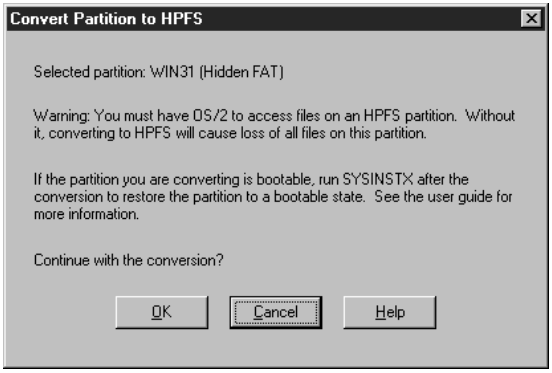
2. Reboot your system from a diskette, from a partition other than the one you are converting, or from DOS.

3. Run PartitionMagic from a partition other than the one you are converting.

4. From the **Disk** drop-down list (located on the toolbar), select the disk containing the partition you want to convert.

5. On the partition map or in the partition list, right-click the partition you want to convert and then click **Convert ➤ Convert FAT to HPFS** on the context menu.

The **Convert Partition to HPFS** dialog appears, displaying important information about the conversion.




6. To continue with the conversion, click **OK**.

7. Click **General ➤ Apply Changes** to apply the changes, or click **General ➤ Discard Changes** to discard the changes and start over.

8. Click **Yes** to confirm that you want to apply the changes.

9. If you have open files, a prompt appears indicating that the changes you have made require going to MS-DOS mode (if you are using Windows 95 or Windows 98) or rebooting (if you are using Windows NT). Click **OK** to make the changes. After the changes are made, the computer is rebooted.

   If you do not have any open files, the **Batch Progress** dialog appears. When all operations are complete, click **OK** to return to the PartitionMagic main window.

   ***IMPORTANT!*** Complete the remaining steps only if the partition you converted to HPFS contains OS/2.

10. Copy SYSINSTX.COM from the OS/2 Installation Disk to the root of the new HPFS partition.

11. Copy UHPFS.DLL from the OS/2 Disk 2 to the root of the new HPFS partition.

    If you have an OS/2 CD-ROM, consult your IBM documentation for instructions on creating a diskette from the disk image.

12. Change to the new HPFS partition by typing `drive:` (where *drive* is the drive letter of the partition you converted from FAT to HPFS).

13. From the root of the new HPFS partition, type `SYSINSTX drive:` (where *drive* is the drive letter of the partition you converted from FAT to HPFS).

14. Verify that HPFS.IFS is listed in the CONFIG.SYS file similar to the following:

    ```
    IFS=C:\OS2\HPFS.IFS /CACHE:256 /CRECL:4 /AUTOCHECK:C
    ```

    If this line is not present, add it, replacing **C:** and **:C** with the drive letter of the partition you just converted.

    ***IMPORTANT!*** If you want to be able to boot to the command line using **<Alt+F1>**, make this change to all CONFIG.* files in \OS2\BOOT.

15. Verify that HPFS.IFS is present in the OS2 directory. If not, copy it from OS/2 Installation Disk 1.

    Your HPFS partition is now bootable.

## Converting FAT Partitions to NTFS

The **Convert FAT to NTFS** operation launches the Microsoft Convert utility to convert a FAT partition to NTFS. You must be running Windows NT to complete this conversion.

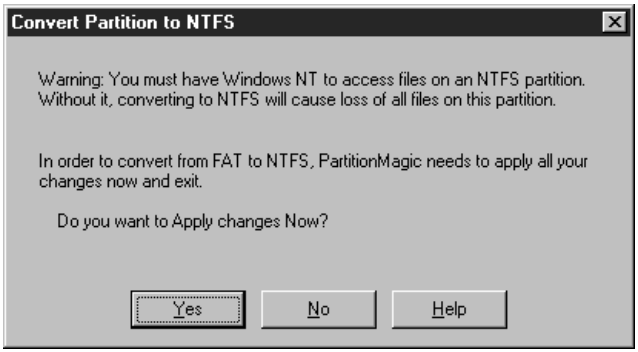
If you boot multiple OSs, you must be careful converting FAT to NTFS. NTFS is only accessible with Windows NT; therefore, the data in this partition will not be accessible if you boot DOS or Windows 95/98.

1. From the **Disk** drop-down list (located on the toolbar), select the disk containing the partition you want to convert.

2. On the partition map or in the partition list, right-click the partition you want to convert and click **Convert ➤ Convert FAT to NTFS** on the context menu.

   You can also select the partition and click **Operations ➤ Convert ➤ Convert FAT to NTFS** on the menu bar.

The **Convert Partition to NTFS** dialog appears.




3. To continue with the conversion, click **Yes.**

   When you click **Yes,** PartitionMagic automatically applies any pending changes and exits. The Convert utility is then started.

4. If you have open files, a prompt appears indicating that the changes you have made require rebooting. Click **OK** to make the changes. After the changes are made, the computer is rebooted. The partition is converted.

   If you do not have any open files, the **Batch Progress** dialog appears. Click **OK** to return to the PartitionMagic main window. The partition is converted.

## Converting FAT32 Partitions to FAT

The **Convert FAT32 to FAT** operation converts a FAT32 partition to FAT.

1. From the **Disk** drop-down list (located on the toolbar), select the disk containing the partition you want to convert.

2. On the partition map or in the partition list, right-click the partition you want to convert and click **Convert ➤ Convert FAT32 to FAT** on the context menu.

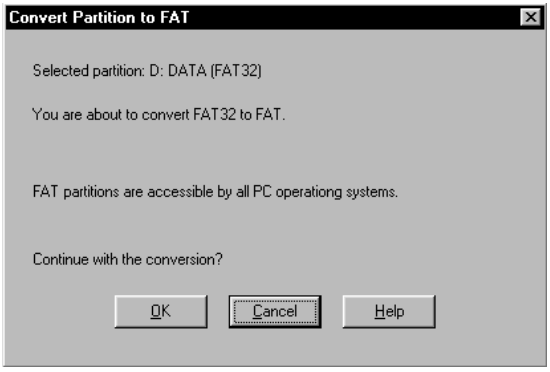
   You can also select the partition and click **Operations ➤ Convert ➤ Convert FAT32 to FAT** on the menu bar.

   To complete this conversion, the partition must have at least 300-400 MB of unused space because of how the FAT file system allocates disk space for file storage.

The menu command is dimmed if your FAT32 partition contains over 2 GB of data. If the partition size is over 2 GB but it contains less than 2 GB of data, you can convert the partition (without data loss), but the new partition will be 2039 MB.

At this point, PartitionMagic may report too many root directory entries (the maximum number of entries in a FAT partition's root directory is limited, unlike a FAT32 partition's root directory). In this case, move or copy some of the files in the root directory to another location and then start the conversion again.

The **Convert Partition to FAT** dialog appears.




3 To continue with the conversion, click **OK**.

4 Click **General ➤ Apply Changes** to apply the changes, or click **General ➤ Discard Changes** to discard the changes and start over.

You can perform other partition operations and then apply the changes after completing all of them.

## Converting NTFS Partitions to FAT

Converting an NTFS partition to FAT allows you to view the contents of the partition from DOS, Windows 95, or Windows 98.

***IMPORTANT!*** You will lose file system-specific information when converting from NTFS to FAT. Refer to "NTFS Information Lost When Converting to FAT or FAT32" on page 74 for additional information.

1 Select the disk with the partition you want to convert, from the **Disk** drop-down list on the toolbar.

2 On the partition map or in the partition list, select the partition you want to convert.

3 Click **Operations ➤ Convert ➤ NTFS to FAT**.

4 Click **OK**.

5 Click **General ➤ Apply Changes**.

NTFS is an advanced version of FAT and FAT32. Therefore, depending on the NTFS features used on the partition, the type of data, and partition size, you may or may not be allowed to complete the conversion.

If you receive an error message and the conversion stops, it is usually caused by one or more of the following:

- The file system for conversion is not allowed for the current partition size. A FAT32 partition should be greater than 256 MB, and a FAT partition must be less than 2 GB.
- The NTFS partition has data in memory that has not yet been written to the hard disk.
- The file system has errors, such as lost clusters and cross-linked files. You can fix these problems, then try the conversion again.
- There is not enough temorary space in the partition to do the conversion. The conversion will require the NTFS system and the FAT32 system files until the last step of the conversion. Also, there is data in NTFS FRS's that must be moved to external clusters and saved.

### *NTFS Information Lost When Converting to FAT or FAT32*

If you can complete the conversion from NTFS to FAT or FAT32, you may receive a warning about the quality of data and feature loss, depending on the features used on the partition, the type of data, and the partition size.

| Warning | Description |
|---|---|
| **Severe** | The conversion is allowed. However, because the partition being converted is using advanced features in NTFS, you may experience unintended data and feature loss. You will receive a severe warning in one or more of the following cases:<br>• There are sparse files on the volume. Any sparse files, except for the bad sector file, will stop the conversion. |

| Warning | Description |
|---|---|
| **Severe** *(Continued)* | • There is more than one data stream for any file.<br>• Any links.<br>• Any extended attributes.<br>• Any user-defined attributes in any file.<br>• Device entries. |
| **Conversion** | The conversion is allowed. Although a conversion warning is not as serious as a severe warning, you may still experience the loss of NTFS-specific features that are not supported in FAT32. You will receive a conversion warning in one or more of the following cases:<br>• Disk usage quotas - NTFS supports limiting the amount of disk space for a user. After conversion, all users will have full access to all free hard disk space.<br>• Access control lists - This is a file attribute that lists all the users that can access a file. After conversion, all users will have full access to all files.<br>• Index of access control lists - A list of all files that have specific access rights assigned to them. After conversion, all users will have full access to all files.<br>• FAT index file - This file is sometimes created on Windows 2000 computers. After conversion, all indexing of keywords will be lost.<br>• Old versions of files - NTFS has the ability to keep versions of files, however, only the current version of the file is converted and saved. |
| **No Warning** | The conversion is allowed. The most basic NTFS partition still gives files more features than are found in FAT or FAT32. When Windows NT 4.0 is used to copy files from an NTFS partition to a FAT partition, no warning is given about the features you are losing. Also, the conversion will not give you a warning about specific features that cannot be converted. These features include:<br>• Standard journal file (only used internally by NTFS) - This file is a transaction log of changes to the NTFS file system. After conversion, the journal file will be lost. |

| Warning | Description |
|---|---|
| **No warning** *(continued)* | • NTFS-specific file attributes - NTFS and FAT both have standard file attributes, such as Read-only, Archive, Hidden, and System. NTFS has additional file attributes that can be set. After conversion, however, these additional file attributes will be lost.<br>• NTFS-specific file dates - The last edit date is converted to the FAT date. After conversion, the creation date, last access date, and last edit date (date change only) will be lost.<br>• Reliable change journal - This journal file is new to Windows 2000. After conversion, this file will be lost. |

## Converting NTFS Partitions to FAT32

Converting an NTFS partition to FAT32 allows you to view the contents of the partition from Windows 95b or Windows 98.

***IMPORTANT!*** You will lose file system-specific information when converting from NTFS to FAT32. Refer to "NTFS Information Lost When Converting to FAT or FAT32" on page 74 for additional information.

1. Select the disk with the partition you want to convert, from the **Disk** drop-down list on the toolbar.
2. On the partition map or in the partition list, select the partition you want to convert.
3. Click **Operations ➤ Convert ➤ NTFS to FAT**.
4. Click **OK**.
5. Click **General ➤ Apply Changes**.

   If the conversion fails, refer to the bulleted list on page 74 for a list of possible reasons.

## Converting Primary Partitions to Logical

You might want to convert a primary partition to a logical partition if you have reached the limit of primary partitions on your hard disk. If you create a logical partition, PartitionMagic will automatically place it in an extended partition. You can then create more logical partitions within that extended partition, expanding the maximum number of partitions on the disk.

1. Select the disk with the partition you want to convert, from the **Disk** drop-down list on the toolbar.
2. On the partition map or in the partition list, select the partition you want to convert.
3. Click **Operations ➤ Convert ➤ Primary to Logical**.

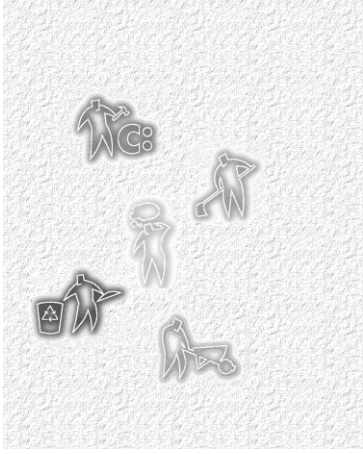
   If you already have an extended partition on the disk, the partition you want to convert must be adjacent to the extended partition; otherwise, it cannot be converted to logical.
4. Click **OK**.
5. Click **General ➤ Apply Changes**.

## Converting Logical Partitions to Primary

You might want to convert a logical partition to a primary partition if you plan to install an operating system on it. The partition must be a primary partition to be bootable.

1. Select the disk with the partition you want to convert, from the **Disk** drop-down list on the toolbar.
2. On the partition map or in the partition list, select the partition you want to convert.

   The partition must be either the first or last logical partition within the extended partition, or it cannot be converted to primary.
3. Click **Operations ➤ Convert ➤ Logical to Primary**.
4. Click **OK**.
5. Click **General ➤ Apply Changes**.




CHAPTER 6

# Using PartitionMagic Utilities

*This chapter includes the following information:*

- Changing Drive Letter References with DriveMapper
- Moving Applications with MagicMover
- Configuring BootMagic
- Running PartitionMagic from Rescue Disks
- Generating Diagnostic Reports with PartitionInfo
- Changing Bootable Partitions with PQBoot
- Using International Keyboards

## Changing Drive Letter References with DriveMapper

When you create, merge, delete, hide, and unhide partitions, your drive letters can change, causing applications not to run because application shortcuts, initialization files, and registry entries refer to incorrect drives. DriveMapper is a wizard that lets you easily update drive letter references.

1 From the PartitionMagic main window, click **Tools ➤ DriveMapper**.

  You can also click **Start (**on the Windows taskbar) **➤ Programs ➤ PowerQuest PartitionMagic ➤ DriveMapper**.

DriveMapper also runs automatically if the following conditions are all met:

- You apply changes to your system that affect drive letter assignments.
- You are running Windows 95 or Windows 98.
- Your hard disk contains only FAT or FAT32 partitions.
- You have no more than one CD-ROM drive and no more than one removable drive.

If you are using Windows NT as your only operating system, we recommend using the **Change Drive Letter** operation rather than DriveMapper. **Change Drive Letter** lets you permanently set the drive letters for your partitions so that adding and removing partitions does not affect drive letters. Note that if you merge partitions, drive letters will change even if you are using Windows NT and the Change Drive Letter operation.

If you have installed an alternative desktop on Windows 3.11 or Windows 95/98 with the desktop files residing on a different drive than the Windows system files, DriveMapper may not be able to adjust your paths. Because DriveMapper is a Windows program, it must have Windows loaded to run. If the drive letter has been changed for the drive that holds your desktop files, you may not be able to start Windows.

### *Using DriveMapper With Multiple Operating Systems*

If you run multiple operating systems, you should reinstall applications rather than use DriveMapper. The following issues make using DriveMapper in a multiple operating system environment difficult and error-prone:

- Drive letter assignments are based on the file systems supported by an operating system. If you do not put all FAT32, NTFS, and HPFS partitions after all FAT partitions, drive letters will change depending on the operating system currently running, and DriveMapper may be unable to correctly identify which changes should be made. For more information on how drive letters are assigned, see “Basic Concepts” in Help.

- Registry settings are changed for the current operating system only. If you rerun DriveMapper from another operating system, references in files will already be changed and further changes will introduce errors.
- When DriveMapper is running, files contained in hidden partitions are not updated. If you are using multiple primary partitions for different operating systems, only the active primary partition may be visible. Thus, only files in that primary partition will be updated.

### *Changing Drive Letters in the Correct Order*

DriveMapper must change drive letters in the correct order to avoid destroying original references before they are used to make changes for other drive letters.

For example, assume you have two partitions on your hard disk (a primary partition C: and a logical partition D:) and a CD-ROM drive E:. Suppose you create a logical partition between C: and D:. The drive letter of D: changes to E:, and the drive letter of E: changes to F:; however, references in certain files (such as shortcuts) still reflect the original drive letter assignments. DriveMapper must first change the drive E: references to F: and then change the drive D: references to E:.

DriveMapper will automatically place changes in the proper order. PowerQuest strongly recommends that you apply changes in the order DriveMapper chooses.

## Moving Applications with MagicMover

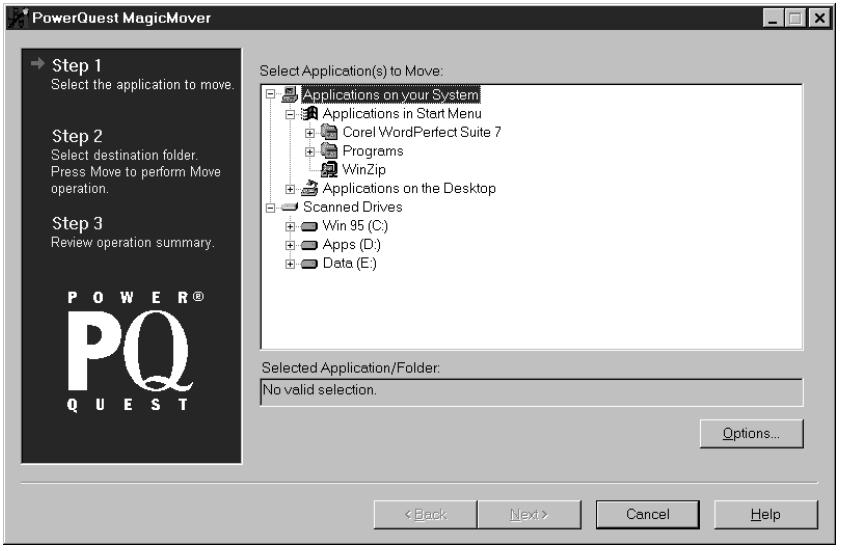
MagicMover is a tool that helps you move applications from one partition to another. For example, after creating a logical partition within an extended partition, you can use MagicMover to move applications to the new partition.

***IMPORTANT!*** Moving an application with MagicMover does not enable that application to run under an operating system different from the one under which it was installed.

1. In the PartitionMagic main window, click **Tools ➤ MagicMover** on the menu bar.

   You can also click **Start ➤ Programs ➤ PowerQuest PartitionMagic ➤ MagicMover** on the Windows taskbar.

At this point, MagicMover scans your system to obtain the most current information about files, including their sizes, dates, and interdependencies, such as which executables use which DLLs and their variants (such as OCX and VBX). When MagicMover is finished scanning, the MagicMover window appears.




Moving an application involves three steps, which are shown on the left side of the main window. A red arrow appears next to the step you are performing; a green check appears next to completed steps.

The right side displays a hierarchy similar to the folder hierarchy in Windows Explorer. Icons represent the applications on your desktop, the applications in the Start menu, and the drives MagicMover found during the scan.

**2** Find the application you want to move by double-clicking the appropriate icon, then double-clicking folders, and then clicking individual applications to select them.

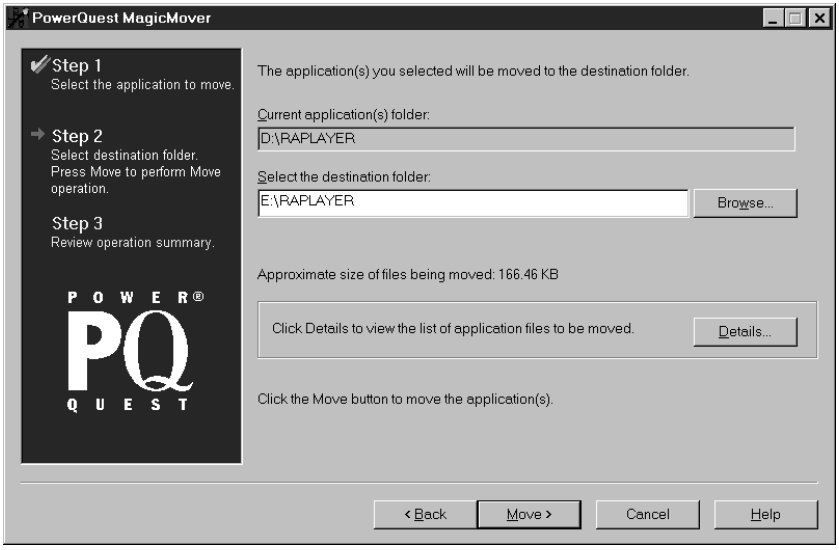
You can select an individual application or a program group.

When you select an application, the complete file path appears in the **Selected Application/Folder** box.

**3** When you have selected the application you want to move, click **Next**. MagicMover analyzes the applications and files to ensure that it can safely move them. A progress bar tracks the analysis.

MagicMover cannot move any application from the Windows directory or any of its subdirectories.

If MagicMover can move the application, the dialog shown below appears. The **Current application(s) folder** box displays the path where the application you want to move is currently installed.



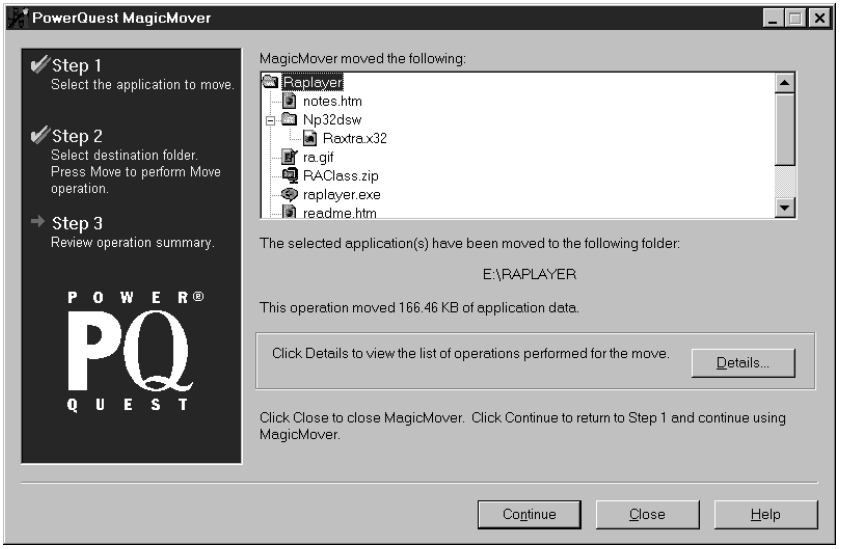

4. In the **Select the destination folder** box, type the path where you want to move the application or click **Browse** to select the desired directory.

5. If desired, click **Details** to view a list of the files that will be moved and changes that will be made to the Windows registry and initialization files.

6. Click **Move**.

   A progress bar appears while MagicMover moves the applications, updates links between application files, and updates the Windows registry and initialization files.

When the move is complete, MagicMover summarizes the actions that occurred.




7 To review a list of operations performed during the move, click **Details**.

8 To exit MagicMover, click **Close**.

To move another application, click **Continue**.

9 Reboot the computer.

## Configuring BootMagic

BootMagic is a PowerQuest application that helps you run multiple operating systems on a single computer. Each time you start or restart your computer, BootMagic presents a list of available operating systems from which you can select the operating system you want to boot.

BootMagic has a configuration window you can access from PartitionMagic to select and arrange the operating systems you want to appear as boot-up choices.

If the copy of PartitionMagic you purchased includes BootMagic, refer to *Chapter 7* of this user guide for information about installing BootMagic and changing your BootMagic configuration.

To purchase BootMagic, contact PowerQuest Sales at (800) 379-2566 or (801) 226-8977, or go to the PowerQuest web site at *www.powerquest.com*.

## Running PartitionMagic from Rescue Disks

**Create Rescue Disks** is a wizard that helps you create diskettes you can use to boot your computer and run PartitionMagic for DOS (PQMAGIC). Rescue disks are useful when:

- You have hidden the partition where PartitionMagic is installed and need to run PartitionMagic to unhide the partition.
- You have accidently converted a partition to FAT32 and your operating system does not support FAT32, so your computer will not boot. (You can use the rescue disks to convert the partition back to FAT.)
- Other occasions arise when you do not have access to PartitionMagic on the CD or hard drive.

When you boot your computer from the first rescue disk, PQMAGIC automatically runs. You must insert the second rescue disk when prompted. PQMAGIC has the same look and functionality as PartitionMagic for Windows 95, except there are no wizards.

If you run out of space on the first rescue disk as a result of adding network, SCSI, or CD-ROM drivers to your boot sequence, you can delete the following files from the disk: chkdsk.com, fdisk.exe, ptedit.exe, and partinfo.exe. We recommend that you delete the files in that order, freeing up only the space that you need to accommodate additional files. These files are included in the Utilities folder on the PartitionMagic CD where you can access them later, if necessary.

If you use an international keyboard or character set, you will need to modify the AUTOEXE2.BAT and CONFIG.SYS files on the rescue disks. Refer to “Using International Keyboards” on page 90 for additional information.

### *Creating Rescue Disks Under Windows*

You must have two blank 1.44 MB floppy disks available before you begin this procedure (three disks for double-byte languages). For information about creating rescue disks under DOS, refer to “Installing PartitionMagic Under DOS or OS/2” on page 8.

1 You can create rescue disks under Windows in two ways:

| To create rescue disks from: | Do this: |
|---|---|
| PartitionMagic main window | Click **Tools ➤ Create Rescue Disks** on the menu bar. |
| Windows 95 or Windows 98 | Click **Start ➤ Programs ➤ PowerQuest PartitionMagic 5.0 ➤ Create Rescue Disks**. |

2 Insert a blank formatted 1.44 MB disk into your 3.5-inch disk drive and click **OK**.

3 Follow the prompts and the instructions on the progress bar (located at the bottom of the window).

The rescue disks contain the following files:

| PartitionMagic 5.0 Disk 1 | PartitionMagic 5.0 Disk 2 |
|---|---|
| • Partinfo.exe (utility program)<br>• PTEDIT (utility program)<br>• Keyb.com<br>• Mode.com<br>• Miscellaneous system files | • Mouse.com<br>• PMHelp.dat (help file)<br>• PQMagic.exe<br>• PQMagic.ovl<br>• PQMagic.pqg<br>• PQPB.rtc<br>• Rescue.txt |

If you create rescue disks for a double-byte language, the third disk includes fonts.

### *Running a Script from the Rescue Disks*

If you have PartitionMagic Pro, you can modify the rescue disks to run PartitionMagic with a script file automatically.

1 Open the AUTOEXEC.BAT file on **PartitionMagic 5.0 Disk 1**.

2 Edit line line that includes PQMAGIC as follows, where SCRIPT.TXT is the name of the script file you want to execute:

```
PQMAGIC /CMD=SCRIPT.TXT
```

***IMPORTANT!*** Do not include a hard return at the end of the line that includes the PQMAGIC command. Do not make any other modifications to the AUTOEXEC.BAT file.

3. Save the AUTOEXEC.BAT file.

4. Copy the AUTOEXEC.BAT file to **PartitionMagic 5.0 Disk 2**.

   The file must be identical on both disks, or PartitionMagic will not function properly.

   When you boot from the first disk, PartitionMagic will execute the script file you specified. For additional information about scripting, refer to PartitionMagic help.

## Generating Diagnostic Reports with PartitionInfo

PartitionInfo generates a report showing the contents of your hard disk partition table. This information is helpful in resolving various partitioning problems (see "Error Messages and Solutions" on page 115).

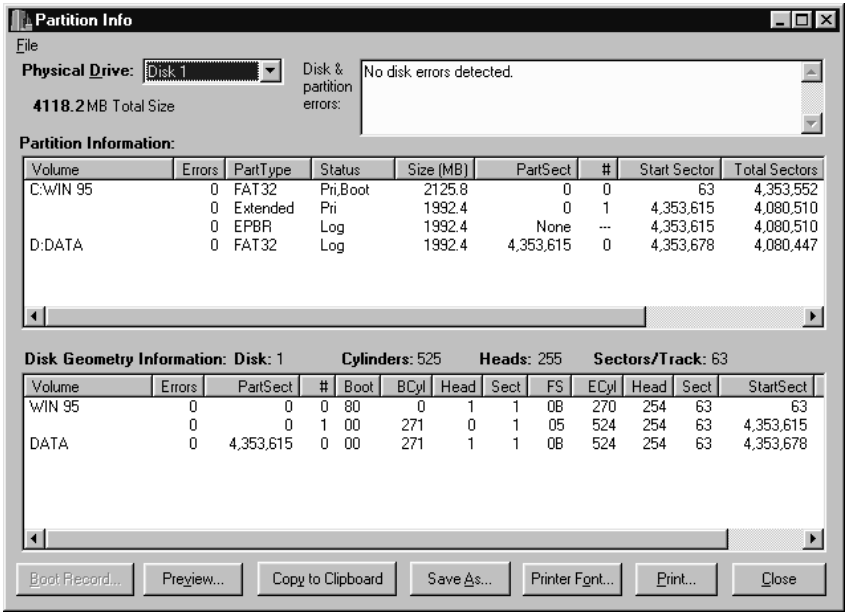
You can run PartitionInfo under Windows 95, Windows 98, and Windows NT 4.0 workstation. If you are using DOS or Windows 3.x, run PARTINFO.EXE (see page 89).

The first time you run PartitionMagic on your machine, PartitionInfo creates a snapshot file PQ_ORIG.TXT that includes information about all the drives and partitions on your machine. The file is saved in the Windows\System folder (for Windows 95/98) or the %system root%\system32 directory (for Windows NT). Every other time you run PartitionMagic, another snapshot file, PQ_INFO.TXT, is created in the same directory. You can run PartitionInfo yourself to create additional snapshot files.

1. Click **Start ➤ Program Files ➤ PowerQuest PartitionMagic 5.0 ➤ PartitionInfo**.

   The PartitionInfo window appears, displaying partition and disk geometry information and disk and partition errors. Disk geometry information includes data from the master boot record and the extended partition boot records.

   Only errors that display in the box near the top of the screen indicate problems. Do not be concerned with Warnings and Infos in the bottom two boxes.




**2** From the **Physical Drive** drop-down list, select the disk for which you wish to view information.

**3** You can save the PartitionInfo report as a file, or you can print it.

| To do this: | Do this: |
|---|---|
| Save the report as a file | Click **Save As**. In the Filename box, type a name for the file. Click **Save**. (Columns of information are separated by tabs, so you can open the file in a word processor and easily format the report.) |
| To change the font for a printed report | Click **Printer Font**. Select the desired font, font style, size, and so forth. Click **OK**. |
| To change printer setup | Click **File ➤ Printer Setup**. We recommend that you set the page orientation to landscape to avoid text being cut off at the right margin. |
| To print a report | Click **Print**, then click **OK**. |

**4** To exit PartitionInfo, click **Close**.

### *Generating Diagnostic Reports with PARTINFO.EXE*

You can also run PARTINFO.EXE from the second rescue diskette to get partition information. The PARTINFO program provides essentially the same information as the PartitionInfo program but without the GUI interface.

1. Boot the computer to DOS.
2. Insert the second rescue diskette.
3. You have several options for running PARTINFO.

| To do this: | Do this: |
|---|---|
| To display partition information on your screen | Type `PARTINFO`, then press <Enter>. |
| To send a report directly to your printer | Type `PARTINFO >LPT1` or `PARTINFO >PRN`, then press <Enter>. |
| To save the report as a text file on a floppy disk | Type `PARTINFO >A:\PARTINFO.TXT`, then press <Enter>. |

## Changing Bootable Partitions with PQBoot

PQBoot is a quick and easy way to switch between bootable primary partitions. PQBoot is for users who only occasionally change the active partition and do not want to use BootMagic. For more information about BootMagic, see “Configuring BootMagic” on page 84.

1. (Windows 95/98 or Windows NT workstation) Click **Start ➤ Programs ➤ PowerQuest PartitionMagic 5.0 ➤ PQBoot**. Under Windows 95/98, PQBoot32 will only run if PQVXD.VXD is in the same directory as PQBOOT32.EXE.

   (Windows 3.x) Open the PowerQuest PartitionMagic program group, then double-click the PQBoot icon.

   (DOS) Go to a DOS prompt. Change to the directory containing PQBOOT.EXE, then type `PQBOOT`.

2. If you are using Windows, a message appears indicating that PQBoot runs in MS-DOS mode and that all other programs will close if you continue. To continue, click **Yes**.

3 PQBoot displays a list of all primary partitions. Type the ID number of the partition (shown in the first column) you want to make the bootable primary partition.

   Check the **Status** column to see if a partition is bootable.

4 Press <**Enter**>.

   PQBoot makes the partition active and reboots the computer.

### *PQBoot Command Line Switches*

PQBoot offers several command line switches that are useful when you know the ID number or volume name of the partition you want to make active. To use a switch, run PQBoot from a DOS prompt. Supported switches include:

- **/A** marks a partition active without rebooting.
- **/P:<*number*>** selects the active partition using the partition's ID number.
- **/S** shows partition information, including ID numbers and volume names.
- **/V:<*label*>** selects the active partition using the partition's volume label.
- **/?** displays a brief description of the switches and examples of how to use them.

For example, to set the second available bootable partition active without rebooting, type `PQBOOT /P:2 /A`.

#### Running PQBoot with Command Line Switches

1 Go to a DOS prompt.

2 Change to the directory containing PQBoot (typically C:\PROGRAM FILES\POWERQUEST\PARTITIONMAGIC\UTILITY\DOS).

3 (DOS) Type `PQBOOT switch` (where `switch` is the appropriate switch).

   (Windows 95/98/NT) Type `PQBOOT32 switch`.

## Using International Keyboards

When you use the DOS version of PartitionMagic (see page 85), you may lose the ability to use your keyboard the way you are accustomed to or to view extended characters properly. The PartitionMagic rescue disks include the files you need to resolve these problems.

If you use an international keyboard or character set, you must edit the AUTOEXE2.BAT and CONFIG.SYS files on the rescue disks.

1. The following lines are remarked in the AUTOEXE2.BAT file. Delete the `REM` from the beginning of the line, and replace the variables *xx* and *yyy* with the keyboard code and character set code page for your language.

   ```
   MODE CON CP PREP=((yyy)EGA.CPI)
   MODE CON CP SEL=yyy
   KEYB xx,yyy
   ```

   *xx* = two-letter keyboard code (for example, US or FR)
   *yyy* = character set code page (for example, 437)

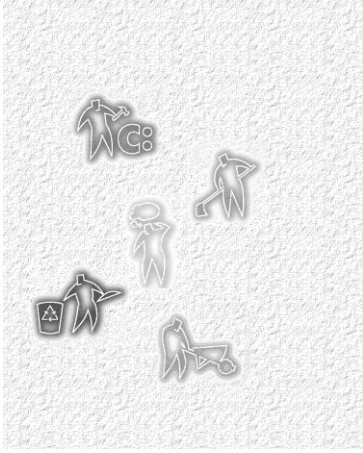
2. Save the AUTOEXE2.BAT file.

3. The following line is remarked in the CONFIG.SYS file. Delete the `REM` from the beginning of the line, and replace the variable *yyy* with the character set code page for your language.

   ```
   DEVICE=DISPLAY.SYS CON=(EGA,yyy,)
   ```

4. Save the CONFIG.SYS file.

5. Reboot from the first rescue disk.



CHAPTER 7

# Using BootMagic

*This chapter includes the following information:*

- Getting Started
- Configuring BootMagic
- Setting BootMagic Passwords
- Adding an Operating System to the BootMagic Menu
- Removing an Item from the BootMagic Menu
- Modifying a Menu Item's Properties
- Setting a Default Operating System
- Setting the Startup Delay
- Disabling BootMagic
- Using the BootMagic Menu
- Other BootMagic Options

## Getting Started

PowerQuest's BootMagic is a powerful disk-management tool that helps you run multiple operating systems on a single PC. Each time you start or restart your computer, BootMagic presents a list of operating systems (OSs) you can boot from. The configuration program lets you quickly select the OSs you want to appear in the **BootMagic Menu** and lets you set various boot-time options such as a default OS and a startup delay.

With BootMagic, you can easily switch between OSs, using whichever OS best suits your immediate needs. You can even try out a new OS risk-free, knowing that your old OS is there, readily accessible when you need it.

### *BootMagic System Requirements*

The following table lists the minimum and recommended system requirements for installing and using BootMagic.

| Hardware/Software | Minimum | Recommended |
|---|---|---|
| **Processor** | Intel/486SX | 486 or above |
| **RAM** | 4 MB (Windows 95, Windows 98 and Windows NT require additional memory) | 16 MB or more |
| **Hard-disk free space** | 10 MB | 10 MB |
| **CD-ROM drive** | Any speed | Any speed |
| **3.5-inch diskette drive** | 3.5-inch diskette drive | 3.5-inch diskette drive |
| **Operating system** | Windows 3.x, Windows 95, Windows 98, Windows NT 4.0, DOS 5.0 or later | Windows 3.x, Windows 95, Windows 98, Windows NT 4.0, DOS 5.0 or later |
| **Monitor** | VGA | Super-VGA |
| **Pointing Device** | No pointing device is required to operate BootMagic | Microsoft mouse (or compatible pointing device) |

### *Supported Operating Systems*

BootMagic supports the following operating systems:

- Windows 98
- Windows 95
- Windows NT 4.0
- Windows NT 3.51
- Windows 3.x (must be installed with DOS 5 or later)
- MS-DOS 5.0 or later
- PC-DOS 6.1 or later
- Open DOS
- OS/2 3.0 or later
- Linux
- BeOS
- Most other versions of DOS
- Some other PC-compatible OSs

### *Installing BootMagic*

You can install BootMagic from Windows 95, Windows 98, Windows NT 3.51 or 4.0, and DOS 5.0 or later. For Windows 3.x systems, exit Windows and use the DOS installation.

***IMPORTANT!*** BootMagic must be installed to a FAT or FAT32 primary partition on the first hard disk.

1. Insert the PartitionMagic CD in your CD-ROM drive.

   In Windows 95, Windows 98, or Windows NT 4.0, the setup program automatically starts when you insert the CD into the CD-ROM drive.

2. If you are installing from the PartitionMagic CD, select **Install** from the PartitionMagic setup screen and mark the BootMagic check box to launch the BootMagic install program.

   If you are using DOS, type *drive*`:\ENGLISH\BTMAGIC\DOS\INSTALL.EXE` (where *drive* is the drive letter of your CD-ROM drive).

3. Follow the on-screen instructions to install BootMagic.

After installation, BootMagic sorts through your system's hard disks, looking at the partition tables and gathering information about each currently-installed operating system. BootMagic then automatically runs the configuration program, adding every detected OS to the **BootMagic Menu**.

At this point, it may be necessary for you to edit the items that appear in the menu list. While BootMagic reliably detects most OSs, it may also detect some non-OS partitions. For example, if you have a primary NTFS data partition (that is, a partition which contains only data, no OS) on the first disk, BootMagic may detect it as Windows NT. Likewise, an HPFS data partition may be detected as OS/2 and a primary FAT16 or FAT32 data partition may be detected as MS-DOS or Windows 95/98. Because data partitions cannot be booted, you should remove them from the menu list. You can also choose to add or remove other OS selections, modify OS names and icons for easier identification, add passwords, set a new startup delay, or select a different default OS.

For information on detecting non-OS partitions in the menu list, see "Finding the Right Operating System" in BootMagic's online Help. For more information on using the configuration program, see "Configuring BootMagic" on page 97 in this guide or refer to online Help.

After you make any necessary changes, click **Save/Exit**. The next time you reboot your computer the **BootMagic Menu** appears. To start an OS, simply select the desired menu item from the **BootMagic Menu**.

### *Creating a BootMagic Rescue Disk*

During installation, you have the option to create a BootMagic rescue diskette. (DOS users should run *drive*:\BTMAGIC.PQ\MKRESCUE.BAT after the BootMagic DOS install to create the rescue diskettes.) This diskette is vital if your system's master boot record (MBR) is ever damaged or overwritten. It can also be helpful if you inadvertently disable BootMagic and cannot access the configuration program to re-enable it.

***WARNING!*** Technical support may not be able to assist you if you have not created a rescue disk.

To launch BootMagic's configuration program from the rescue diskette, boot from the rescue diskette and follow the on-screen instructions.

Once in the configuration program, you can make any needed modifications or additions. When you click **Save/Exit** to exit the configuration program, BootMagic re-saves all the necessary files and rewrites the MBR, thereby restoring the program to normal.

### *Getting Help*

If you need more information than this chapter provides, BootMagic's online Help is your best solution.

- To access Help in the Windows configuration program, select **Help ➤ Contents** from the menu bar.

- To access Help in the DOS configuration program, select **Help ➤ Topic List** from the menu bar.
- To access context-sensitive Help, click **Help** in the lower-right corner of most dialogs, or press <F1>.

If you need further assistance, you can call PowerQuest Technical Support. See "Contact Information" on page 133.

### Configuring BootMagic

BootMagic's configuration program consists of two versions, one for DOS and one for Windows 95/98 and Windows NT Workstation. Both versions have similar interfaces and offer the same functionality.

BootMagic's configuration program may be manually launched by any of the following:

- In Windows, select **Start ➤ Programs ➤ PowerQuest BootMagic ➤ BootMagic Configuration**.
- In DOS, run *drive*:\BTMAGIC.PQ\CONFIG.BAT.
- On the PartitionMagic main screen, click **Tools ➤ BootMagic Configuration**.

When you run the configuration program, the **BootMagic Configuration** window appears. From this window, you can set a password for the configuration program, the **BootMagic Menu** or specific menu items; add or remove an OS to the **BootMagic Menu**; modify an OS's BootMagic properties; set your default OS; set the startup delay; or disable BootMagic. Each of these options are briefly covered in this chapter. For further information about configuring BootMagic or for details for each step outlined below, please refer to BootMagic's online Help.

## Setting BootMagic Passwords

BootMagic now allows users to password protect the BootMagic configuration program, the **BootMagic Menu**, or even specific menu items.

To set a password for the configuration program or the **BootMagic Menu**, follow these steps:

1. In the BootMagic Configuration window, click the **Options** menu.

2. Select **Set Configuration Password** to password protect the configuration program or **Set Boot-time Password** to password protect the **BootMagic Menu**.

3. Enter the current password in the **Old password** text box.

   The **Old Password** text box will be blank and disabled when there is no prior password.

4. Enter the new password in the **New password** text box.

5. Retype the new password in the **Confirm new password** text box.

6. Click **OK**.

To clear a password, enter the old password and leave the new password fields blank.

To set a password for specific **BootMagic Menu** items, you must modify the menu item's properties. For more information, see "Modifying a Menu Item's Properties" on page 99 or refer to BootMagic's online Help.

## Adding an Operating System to the BootMagic Menu

1. In the **BootMagic Configuration** window, click **Add**.

2. *(Optional)* To view all your system's partitions, including those that BootMagic does not recognize as containing an OS, mark the **Advanced** check box.

3. Select the OS you wish to add to the **BootMagic Menu**.

   BootMagic may sometimes detect an OS that doesn't exist or may detect the wrong name for an existing OS. For help on finding the operating system and partition you want, see "Finding the Right Operating System" in BootMagic's online Help.

   ***WARNING!*** Do not add non-OS partitions to the **BootMagic Menu**. You cannot boot your computer from a partition without an OS. If you add a partition that doesn't have an OS and try to boot, you will be left with a black screen.

   In this event, soft boot your computer (press **Ctrl-Alt-Delete),** boot DOS or Windows from the **BootMagic Menu**, run the BootMagic configuration program, and remove the non-OS menu item from the BootMagic menu.

4. Click **OK**.

The **BootMagic Menu Item Properties** dialog appears.

5 Define the menu properties as desired, and then click **OK**.

For more information on defining runtime menu properties, see "BootMagic Menu Item Properties" in BootMagic's online Help.

## Removing an Item from the BootMagic Menu

1 In the **BootMagic Configuration** window, select the item you wish to delete from the **BootMagic Runtime Menu** list.

2 Click **Delete**.

Deleting an OS from the **BootMagic Menu** does not remove the OS from your system. The OS remains in its partition and can be added again to the menu if desired.

## Modifying a Menu Item's Properties

1 In the **BootMagic Configuration** window, select the item you wish to modify.

2 Click **Properties**.

3 Modify the properties as desired, then click **OK**.

For a description of each property, see "BootMagic Menu Item Properties" in BootMagic's online help.

## Setting a Default Operating System

BootMagic automatically selects the OS on the home partition (that is, the partition on which BootMagic is installed) as the system default. This is the OS that BootMagic automatically boots if another OS is not chosen before the startup delay expires, or if the startup delay is set to **None**.

For more information on the startup delay, see the next section, "Setting the Startup Delay."

To select another OS as the default,

1. In the **BootMagic Configuration** window, select the OS you wish to set as the system default.
2. Click **Set as Default**.

## Setting the Startup Delay

By default, BootMagic uses a **Timed** startup delay set to 30 seconds. You may change this setting with the following options:

- Select **None** to eliminate any time delay. BootMagic automatically boots the default OS at startup without displaying the **BootMagic Menu**.
- Select **Indefinite** to specify an unlimited time delay. BootMagic displays the runtime menu until you choose the OS you wish to boot.
- Select **Timed** to designate a time delay from 1 to 99 seconds. BootMagic waits the specified amount of time for an OS to be chosen before booting the default OS.

If you set the startup delay to either **None** or **Timed**, you must also ensure that a valid OS item is selected as the system default. Without a default OS, BootMagic cannot boot your system.

If you set the startup delay to **None** and select a default OS that cannot run the BootMagic configuration program, you will be unable to modify the configuration settings and boot other OSs. If this happens, boot your computer while holding down the left **Shift** key. This overrides the timer settings and opens the **BootMagic Menu** without a timer (as the **Indefinite** option) for that one boot.

You can then select DOS or Windows from the **BootMagic Menu**, run the BootMagic configuration program, and change either the default OS or the startup delay.

## Disabling BootMagic

You may encounter situations in which you want to disable BootMagic. For example, if you are diagnosing an OS startup problem and need to reboot your system multiple times, you may wish to bypass loading BootMagic every time. Disabling BootMagic replaces the BootMagic master boot record (MBR) with a copy of your original MBR.

Disabling BootMagic does not destroy any of your configuration settings. All of the current settings are saved until BootMagic is re-enabled.

1. Unmark the **BootMagic Enabled** check box in the **BootMagic Configuration** window.

   The configuration options become unavailable, and BootMagic remains disabled until the box is re-checked.

2. Click **Save/Exit** to save your changes and exit the configuration program.

   When you reboot your computer, BootMagic no longer loads and the default OS is automatically booted.

To re-enable BootMagic, run the configuration program from either your hard drive or the BootMagic rescue diskette. Mark the **BootMagic enabled** check box in the **BootMagic configuration** window. When BootMagic is re-enabled, it saves a copy of the current MBR and then reinstalls the BootMagic MBR. Upon reboot, BootMagic loads normally and all the previous configuration settings are restored.

For more information on creating a BootMagic rescue disk, see “Creating a BootMagic Rescue Disk” on page 96.

## Using the BootMagic Menu

Once installed, the **BootMagic Menu** appears each time you start your computer. The **BootMagic Menu** displays all the OSs configured for booting. Each OS is identified by its user-assigned name and icon. Although BootMagic automatically highlights the default OS, you can choose any of the listed OSs. Simply click on the OS you want to boot. You may also use your arrow keys to select an OS and then press **<Enter>**.

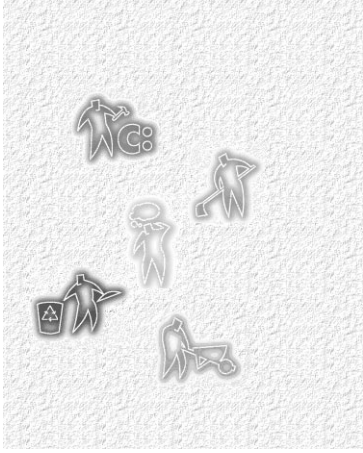
If the OS you want is not listed, you can run the BootMagic configuration program and add it to the menu. For more information on adding an OS to the menu list, see “Adding an Operating System to the BootMagic Menu” on page 98.

## Other BootMagic Options

BootMagic facilitates a host of OS-related tasks. For example, BootMagic makes installing multiple OSs on your system easy. For information on installing to primary or logical partitions, see “Using BootMagic to Install a New Operation System” in BootMagic’s online Help. You may also want to refer to the help topic on OS-specific installation issues.

BootMagic also enables you to boot operating systems that are not on the first hard disk. For specific instructions on second drive booting and beyond, see help topics “Booting Operating Systems from a Second Drive” and “Third Drive Booting and Beyond.”

Other new BootMagic features include Advanced Partition Hiding (that is, hiding all primary partitions on all disks except the primary partition being booted) and an option to change the BootMagic background screen to a customized, Windows format bitmap. Refer to the BootMagic online help for comprehensive information about BootMagic features that are not discussed in this chapter.



APPENDIX A

# Using PartitionMagic With Other Programs

*This appendix includes the following information:*

- Norton Utilities
- Disk Compression Utilities
- Operating System Boot Utilities
- Virus Protection Software
- Drive Overlay Programs
- SoundBlaster

## Norton Utilities

You can safely use PartitionMagic and Norton products together. The following information will help you avoid any problems.

### *Norton Disk Doctor*

If an extended partition ends at the end of a drive, Norton Disk Doctor (NDD) will sometimes display this message: “An extended partition has invalid parameters and probably is inaccessible. Correct this situation if you are unable to access partitions on hard disk 1. Do you wish to correct this problem?” To eliminate this message, use PartitionMagic to resize the logical and extended partitions at the end of the drive to leave some free space before the end of the drive.

Additionally, when you delete, move, or resize partitions, it appears to NDD that you could have inadvertently deleted a partition. NDD displays the following message: “If you are unable to access a disk that you previously could, you should revive this partition. Would you like to revive this partition?” If you inadvertently deleted a partition, select **Yes**. If you do not want this message to appear every time you run NDD, complete the following:

1. Click **No**.

   NDD displays this message: “You have chosen not to revive the partition. Do you want Norton Disk Doctor to mark the partition so it doesn’t ask about it again?”

2. Click **Yes**.

   The **Create Undo File** dialog appears.

3. Click **Skip Undo File**. (Creating an undo file uses many diskettes.)

   NDD displays this message: “If you wish to undelete this partition at a later time, use the /UNDELETE switch.”

4. Click **OK**.

   NDD displays this message: “Partition information has been changed. Would you like to restart your computer?”

5. Click **Restart Your Computer**.

### *Norton AntiVirus*

Because Norton AntiVirus (NAV) interprets changes to partition tables and boot records as potential virus attacks, PartitionMagic takes steps so that NAV automatically reinoculates. Should NAV give you the choice of repairing the changes, *do not* select **Repair**. Instead, inoculate after using PartitionMagic.

## Disk Compression Utilities

You can safely use PartitionMagic and some disk compression utilities together. The following information will help you avoid any problems.

### *DriveSpace and DriveSpace 3*

To use PartitionMagic with DriveSpace, you must first change the size of a DriveSpace or DriveSpace 3 drive in Windows 95 or Windows 98 by completing the following:

1. On the Windows desktop, double-click **My Computer**.
2. Right-click the drive you wish to alter.
3. Select **Properties** on the context menu.
4. Click the **Compression** tab.
5. From the **Compression** menu, select **Advanced**.
6. In the **Advanced Properties** menu, select **Run DriveSpace**.

   A list of your physical drives, compressed drives, and host drives appears.
7. Choose the compressed volume you wish to change.
8. At the top of the menu, click **Drive**.
9. From the **Drive** menu, click **Adjust Free Space**.

   The **Adjust Free Space** menu appears. At the bottom of the menu is a slide bar.
10. To increase compressed space (enlarge the compressed volume), move the slide bar to the left. To increase uncompressed space (shrink the compressed volume), move the slide bar to the right.

    If you wish to shrink the host for a compressed drive, move the bar to the right to create more uncompressed space on the host. You can then use PartitionMagic's

Resize/Move operation to make the host partition smaller. If you have already resized the partition larger and want to add more space to the compressed volume, move the slide bar to the left.

## Operating System Boot Utilities

Both OS/2's Dual Boot and System Commander 2.0 and above accommodate boot sector changes made by PartitionMagic. To install System Commander on drives that PartitionMagic has modified, you may need to use System Commander 2.06 or later.

If you have System Commander on your computer, you must configure it so that it does not simultaneously unhide multiple primary partitions. To configure System Commander so that it does not create multiple visible primary partitions, complete these steps for each operating system selection on the System Commander menu:

1. On the **Operating System Selection** menu, select an operating system.
2. Press <**Alt+S**>.
3. From the resulting menu, select the **Local Special Options** menu.
4. Click **Primary partitions accessible on drive 0**.

   A screen appears with three options: **ALL**, **AUTO**, and **NONE**. **AUTO** is the default. Select **NONE**.

   The other primary partitions will now be hidden when this operating system boots.
5. Repeat this procedure for all operating system selections on the menu.

## Virus Protection Software

PartitionMagic modifies the master boot record and partitions' boot sectors. Virus protection software should be able to detect that PartitionMagic is changing partition tables and not boot code; however, it is possible that unsophisticated virus protection programs may mistake PartitionMagic changes as attempts to install a virus. If this occurs, turn off the virus protection program while using PartitionMagic and inform the virus protection software manufacturer of the problem.

Some motherboards contain virus protection software within the BIOS. If this causes a problem when you are running PartitionMagic, disable the BIOS virus protection, and then restart PartitionMagic.

## Drive Overlay Programs

Drive overlays, such as Ontrack DDO, Microhouse EZ-Drive or Pro-Drive, Maxblast, WD DDO, and Seagate DDO, provide your computer with access to larger disk drives. PartitionMagic is compatible with these programs only if the drive overlay program is loaded before PartitionMagic.

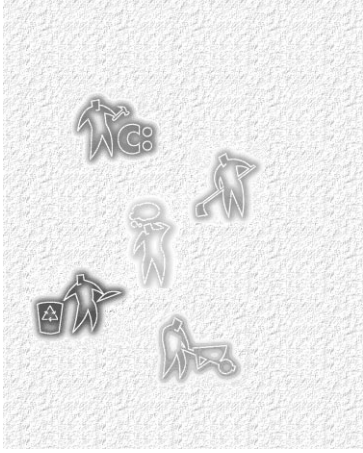
If you boot your computer from a diskette, the overlay will not load, and PartitionMagic will not get the correct information from your drive. You can boot from a diskette and still load the drive overlay by completing the following:

1. Start your computer as if you were going to boot from the hard disk.
2. When prompted, press **<Space>** or **<Ctrl>**.
3. The drive overlay information appears with an option of booting from a diskette. Select this option and insert the boot diskette when prompted.

## SoundBlaster

If you load load DOS drivers for a SoundBlaster Live sound card in your autoexec.bat and config.sys files and then perform an operation in PartitionMagic that requires PartitionMagic to go into boot-mode, PartitionMagic will crash.

To resolve the problem, unload the SoundBlaster drivers until after you have finished using PartitionMagic.



APPENDIX **B**

# Troubleshooting

*This appendix includes the following information:*

- General Troubleshooting

  *Freeing Memory to Run PartitionMagic under DOS*

  *Assigning a CD-ROM Drive Letter*

  *Using PartitionMagic With a SCSI Hard Disk*

  *Resolving Check Errors*

  *Resolving Partition Table Errors*

  *Partition Tables and Viruses*

  *Partition Will Not Boot After Resizing*
- Error Messages and Solutions

## General Troubleshooting

This section addresses the following situations:

- Freeing Memory to Run PartitionMagic under DOS
- Assigning a CD-ROM Drive Letter
- Using PartitionMagic With a SCSI Hard Disk
- Resolving Check Errors
- Resolving Partition Table Errors
- Partition Tables and Viruses

### *Freeing Memory to Run PartitionMagic under DOS*

The DOS PartitionMagic executable requires a minimum of 585 KB of memory in the first 640 K of the computer's address space (conventional memory). If you do not have sufficient conventional memory, there are several ways you can free additional memory.

#### Running MEMMAKER

MEMMAKER is a program that automatically configures your computer to save conventional memory (while still loading all of the device drivers and other programs you usually load when booting DOS). MEMMAKER frees conventional memory by moving as many programs as possible out of conventional memory into high memory. Run MEMMAKER by typing MEMMAKER at a DOS prompt. Follow the on-screen instructions.

MEMMAKER is only available in DOS 5.0 to 6.22. It is not available in Windows 95 or Windows 98 DOS mode.

#### Using the F8 Key to Keep Programs From Loading

Press <**F8**> immediately after booting your computer (while DOS is booting). As DOS reads the each command in the CONFIG.SYS and AUTOEXEC.BAT files, it asks if you want the command executed. When you see commands that load device drivers or TSR programs not needed to run PartitionMagic, press **N** so that the software is not loaded into memory.

### Deleting Operating System Compression Files

If you use DOS 6.22, Windows 95, or Windows 98 and your system does not have any compressed drives (using programs such as DriveSpace, DoubleSpace, and Stacker), you can delete the operating system compression files, DRVSPACE.BIN or DBLSPACE.BIN, from any boot diskette you create. This frees conventional memory because DOS 6.22, Windows 95, and Windows 98 load these files into memory, regardless of the contents of CONFIG.SYS and AUTOEXEC.BAT.

DRVSPACE.BIN and DBLSPACE.BIN are hidden system files. To delete them, complete the following:

1. Place your boot diskette in your diskette drive.
1. Go to a DOS prompt.
2. Type **A:** and press <**Enter**>. You should see **A:\>** on your screen.
3. Type `ATTRIB -R -H -S *.BIN`, and press <**Enter**>.
4. Type `DEL *.BIN` and press <**Enter**>.

## *Assigning a CD-ROM Drive Letter*

If your computer has a CD-ROM drive or any form of removable media, you should be aware of potential problems caused by the way drive letters are assigned to these devices.

If you are using Windows NT, you can change drive letter assignments with PartitionMagic; otherwise, this is a function of the operating system. The operating system assigns drive letters in this order: (1) the first recognized primary partition on each hard disk, (2) all logical partitions on each hard disk, (3) any other primary partitions on each hard disk, and (4) the CD-ROM drive and any other forms of removable media. For more information, see "How the OS Assigns Drive Letters" in *Basic Concepts* in Help.

Because the CD-ROM is one of the last drives to receive a letter, any partition you create or delete on any of your hard disks affects the drive letter assignment of your CD-ROM drive. Occasionally, the operating system may not assign a drive letter to the CD-ROM drive. If this occurs, complete the steps outlined below.

If you are using Windows 95/98 and Windows 95/98 drivers for the CD-ROM:

1. On the toolbar, click **Start ➤ Settings ➤ Control Panel**.
2. Double-click **System**.
3. Click the **Device Manager** tab.

4. Double-click **CD-ROM**.
5. Double-click the name of your CD-ROM drive.
6. Select the **Settings** tab.
7. In the **Start drive letter** and **End drive letter** boxes, type or select **Z**. Because the OS assigns all other available drive letters before assigning Z, this ensures that partition changes you make in the future do not invalidate your CD-ROM drive letter.
8. Click **OK** to close the **Settings** page.
9. Click **OK** to close the **System Properties** dialog.
10. When prompted to restart your computer, click **Yes**.

If you are using DOS or Windows 3.x or are loading your CD-ROM drivers under DOS with Windows 95/98:

1. Go to a DOS prompt.
2. Type **EDIT C:\CONFIG.SYS**.

   Your CONFIG.SYS file opens in the DOS editor program. Look for this line: LASTDRIVE=*drive* (where *drive* is any letter of the alphabet). Change *drive* to **Z**. This allows the OS to assign all drive letters through Z.
3. If your CONFIG.SYS file does not contain the LASTDRIVE=drive statement, you can add it by simply typing `LASTDRIVE=Z`.
4. Select **File ➤ Exit**.
5. When you are prompted to save the file, select **Yes**. You should be back to a C:\> prompt.
6. Type **EDIT C:\AUTOEXEC.BAT**.
7. Your AUTOEXEC.BAT file opens in the DOS editor program. Look for a line that includes the word "MSCDEX." The /L:*drive* parameter (where *drive* is the drive letter assigned to your CD-ROM before you made changes with PartitionMagic) may appear at the end of this line. Change *drive* to **Z**. Because the OS assigns all other available drive letters before assigning Z, this ensures that partition changes you make in the future do not invalidate your CD-ROM drive letter. For more information, type **HELP MSCDEX** at a DOS prompt.

   If your computer is on a network, when you log in to the network, the letter "Z" and other letters at the end of the alphabet may be assigned to network search drives. In this case, assign your CD-ROM a letter immediately preceding the last letter used by the network search drives.

8. Select **File ➤ Exit**.
9. When you are prompted to save the file, select **Yes**.
10. When you see the DOS prompt (C:>), reboot your machine.

### *Using PartitionMagic With a SCSI Hard Disk*

To use PartitionMagic on a SCSI hard disk, you must have a SCSI controller card that supports software Interrupt 13. Most SCSI controller cards let you enable software Interrupt 13 support in the BIOS through the card. If your SCSI controller card does not, contact the manufacturer to determine if your adapter can support software Interrupt 13. As a general rule, if you are able to use FDISK to partition the disk, you will also be able to use PartitionMagic.

### *Resolving Check Errors*

PartitionMagic checks the integrity of a partition thoroughly before making changes to it. The **Check** and **Info** operations perform the same checks and display error messages when they discover problems. For more information, see "Checking Partitions" on page 46 and "Getting Information About Partitions" on page 49. These checks are similar to those made by an operating system's CHKDSK, ScanDisk, or AUTOCHK utility.

PartitionMagic also checks a partition after modifying it. While data loss is possible, it is not typical. The problem is usually a minor file system error that CHKDSK /F /R (or ScanDisk, if you are using Windows 95/98) can correct without data loss. For more extensive errors, you may need to restore your files from a backup copy. If problems persist, report the problem to PowerQuest technical support.

If you receive a **Check** error message on any partition, back up your hard disk and then run your operating system's CHKDSK program on that partition (do not use the /F switch on the initial run). If you have MS-DOS 6.x, Windows 95, or Windows 98, run ScanDisk. CHKDSK and ScanDisk generally discover the same problems as PartitionMagic (except that the DOS CHKDSK program does not detect problems in Extended Attributes).

If CHKDSK or ScanDisk does not show the same errors as the **Check** operation, contact PowerQuest technical support. For more information, see *Appendix C* of this user guide.

If CHKDSK or ScanDisk and the **Check** operation detect the same errors, which is usually the case, run CHKDSK with the /F switch or run ScanDisk to fix the problems. Then run CHKDSK again without the /F switch to ensure that the partition is error free. Under OS/2, perform this procedure (running CHKDSK without /F) twice.

When CHKDSK reports no errors on the partition, run the **Check** operation. If PartitionMagic still reports a problem, reformat the partition and restore your files from the backup copy.

### *Resolving Partition Table Errors*

Partition table errors are errors in the 100 - 199 range. In most cases, you must resolve partition table errors by creating new, error-free partition tables. The general steps are: (1) ensure you have no viruses (see below), (2) back up the data on the affected partitions, (3) delete the partitions, (4) recreate them, and (5) restore their contents. You may need to use the FDISK program from a recent DOS version, as earlier versions may refuse to delete HPFS or hidden partitions, and the OS/2 FDISK program may recognize the partition's corruption and refuse to modify it.

In some cases, you can resolve partition table errors manually. Run PartitionInfo to determine the errors on your partitions. PowerQuest technical support can help resolve partition table errors if you e-mail the PartitionInfo report to **help@powerquest.com**. Refer to "Generating Diagnostic Reports with PartitionInfo" on page 87 for additional information about PartitionInfo.

### *Partition Tables and Viruses*

If partition changes made under one operating system are not reflected under another, and vice versa, a master boot record (MBR) virus may be present.

Use a virus check utility that can detect the latest viruses. If a virus is found, data loss is likely. Before removing the virus, boot each operating system and use the **Check** operation to evaluate the integrity of the partition. Back up the files on any partition that passes the **Check** operation. Then remove the virus and perform the **Check** operation on the partitions again. Delete and recreate any partitions that fail the check. Finally, reinstall the operating systems and restore the backup files as necessary.

### *Partition Will Not Boot After Resizing*

Occasionally, resizing a FAT partition displaces the first few files on the partition (such as IO.SYS and MSDOS.SYS if the partition contains an operating system). If you resize a boot partition and then it fails to boot, run SYS.COM from DOS or from the PartitionMagic rescue diskettes.

# Error Messages and Solutions

PartitionMagic error messages and possible solutions are listed below by number. The messages are also grouped in number ranges by error category.

If you encounter an error not mentioned in this appendix, visit PowerQuest's web site at *www.powerquest.com/support/ER/er0000.html* for a current listing. Error message information on the web site is available in English only.

## *Miscellaneous Errors (3–38)*

### #3 Not enough memory

This error can occur when you are resizing, moving, or copying a FAT32 partition. For more information about memory requirements, see "PartitionMagic System Requirements" on page 5.

The DOS PartitionMagic executable requires a minimum of 585 KB of memory in the first 640 KB of the computer's address space (conventional memory) and 8 MB of total memory. For possible solutions if you have insufficient conventional memory, see "Freeing Memory to Run PartitionMagic under DOS" on page 110.

### #8 Could not allocate/deallocate DOS real mode memory

The DOS PartitionMagic executable running under DOS, Windows 3.x, Windows 95, and Windows 98 requires some memory in the first 1 MB of the computer's address space (PartitionMagic uses a DOS extender). If not enough memory is available, PartitionMagic cannot access the hard disk. For possible solutions, see "Freeing Memory to Run PartitionMagic under DOS" on page 110.

### #27 Cannot lock drive

Under multitasking operating systems such as Windows 95, PartitionMagic must lock a partition before it can safely modify it. If the hard disk contains files that are in use by another process, PartitionMagic cannot lock the partition.

### #29 Cannot lock a locked drive

Verify that the partitions you are attempting to modify are not on a locked hard disk.

### #34 The time has expired on this evaluation version

PowerQuest occasionally releases beta versions and evaluation versions of PartitionMagic. Both versions are not as safe as release versions; therefore, PowerQuest builds an expiration date into each version. After a predetermined test period, the beta or evaluation version no longer functions.

### *Disk Access Errors (40–56)*

Errors in the 40–56 number range indicate that accessing your disk is not possible, and often result from hardware problems. Some problems may have simple solutions; for others, the only solution may be replacing the hard disk. When possible, PartitionMagic detects major errors before any changes have been made so you can back up your data before replacing the hard disk.

#### #45 CRC error in data

When PartitionMagic or any other program reads information off of a hard disk, it checks the CRC (cyclic redundancy check) information contained in each sector. If it performs a CRC test and the result is different from the value stored on that sector, there is a CRC error. This usually means one of two things.

- The file being read has become corrupted by some other means.
- A sector used in the file's storage has become bad and corrupted that part of the stored file.

The solution is to do a surface test to make sure any bad sectors are marked as bad, then reinstall the software involved to ensure that files on the system are not corrupted. You may also want to try running PartitionMagic with an /IRE switch.

#### #48 Sector not found

This error can be reported when a given sector cannot be read or written to. There are many possible causes.

If you are encountering this error, make sure that your BIOS supports the operating system and hard disk on the system. Also run a thorough ScanDisk on the drive to prevent data from being written to bad sectors.

#### #49 Write fault

#### #50 Read fault

(The following information applies to errors 49 and 50.)

PartitionMagic is unable to write to/read from a specific sector on the hard disk. Possible causes include:

- If your PC beeps or displays a black box in the middle of the screen, virus protection is enabled in your computer's BIOS. Disable virus or boot sector protection in the BIOS.
- A virus protection application (which may be a TSR or DLL program) is in use. Disable the application before using PartitionMagic.

- There is a bad sector on the hard disk (this is usually the case only with older hard disks). Run ScanDisk on the hard disk to perform a surface scan to verify the existence of bad sectors. If your drive has bad sectors, we recommend you replace it.
- You have set up disk mirroring with PC-Tools. Disable the disk mirroring option.

### *Miscellaneous Error*

#### #70 Changes to the drive cannot be made under Windows

If you are using Windows 3.x, you cannot run PartitionMagic for Windows 95, Windows 98, or Windows NT Workstation. You must run PartitionMagic for DOS from a DOS prompt.

### *Partition Table Errors (100–199)*

Errors in the 100–199 number range are partition table errors. For general information about resolving these errors, see “Resolving Partition Table Errors” on page 114 and “Partition Tables and Viruses” on page 114.

#### #100 Partition table is bad

The master boot record (MBR) can contain, at most, one extended partition, and each extended partition boot record (EPBR) can contain, at most, one link to another EPBR. This error occurs when a partition table violates the foregoing rule. It can also occur if you have more than one active partition. Since any modifications PartitionMagic makes may decrease the amount of data that is recoverable from the hard disk, PartitionMagic does not recognize any of the hard disk’s partitions. If you must create new, error-free partition tables to resolve your problem, see “Resolving Partition Table Errors” on page 114 for instructions.

#### #104 No sectors in partition

No partition should contain zero sectors. Delete the partition before using PartitionMagic.

#### #105 Partition starts on wrong boundary

The hard-disk partition table contains erroneous values. PartitionMagic expects partitions to begin and end on the correct cylinder boundaries. If they do not, the disk may be partially corrupted. In this circumstance, if PartitionMagic were to

make any modifications it might cause the loss of data. Therefore, PartitionMagic refuses to recognize any of the hard disk's partitions. To resolve this problem, see the instructions in "Resolving Partition Table Errors" on page 114.

### #106 Partition doesn't start with sector one

See error #105.

### #107 Partition begins after end of disk

This error can occur if a partition erroneously extends beyond the physical end of the hard disk. This may happen if the hard disk has been used on a different computer or with a different hard-disk controller or if BIOS settings have been changed. Be advised that the physical geometry of the hard disk may differ from the logical geometry assigned to the hard disk by the operating system.

### #108 Partition doesn't end at end of cylinder

See error #105.

### #109 Partition ends after end of disk

See error #107.

### #110 Partition table number of sectors is inconsistent

The hard-disk partition table contains two inconsistent descriptions of the number of sectors on the hard disk. This error is serious if both DOS and another operating system use the hard disk. Because DOS uses one description and other operating systems may use the other, data loss is likely once the partition is almost full. To resolve this error, see the instructions in "Resolving Partition Table Errors" on page 114.

### #111 The order of entries in the EPBR is not correct.

An extended partition boot record (EPBR) is a sector on the hard disk that contains a partition table. The EPBR partition table is special because it generally only has two valid entries: one for the logical partition and one that is a pointer to the next EPBR. The standard is for the logical partition's entry to be the first entry in the table and the second entry is the pointer to the next EPBR. The third and fourth entries are not used. For some utilities, such as IBM's Boot Manager, the order of these entries is important because the utilitiy expects the first entry to be the logical and the second entry to be the pointer to the next EPBR. If PartitionMagic detects that the EPBR entries are out of order, you will be prompted to fix the error. If you choose to fix the error, PartitionMagic will reorder the EPBR entries for you automatically.

### #112 Logical partition ends outside Extended

See error #111.

### #113 Partitions overlap

The hard-disk partition table contains erroneous values. If data partitions overlap, writing to one may destroy data in another.

This error is sometimes the result of an OS/2 FDISK bug. If free space exists within the extended partition, OS/2's FDISK program allows a primary partition to be created that overlaps the extended partition. A logical partition is subsequently created in the space occupied by the overlapping primary partition.

If a primary partition overlaps the end of the extended partition but does not overlap any logical partitions within the extended partition, the problem can be remedied by patching the partition table. **Only qualified individuals should attempt this repair! An incorrect patch could destroy all data on the hard disk!** In most instances, you should resolve the problem as explained in "Resolving Partition Table Errors" on page 114.

### #116 Partition table Begin and Start inconsistent

The hard-disk partition table contains two inconsistent descriptions of the partition's starting sector. This error can occur if the operating system reports a hard-disk geometry that is different than the geometry in use when the partition table was written. Possible causes include: (1) different operating systems (for example, DOS and OS/2) report different hard-disk geometries, (2) you boot from a diskette that loads a different driver than is loaded when you boot from the hard disk, (3) upgrading the operating system (for example, from OS/2 2.x to OS/2 Warp) causes a different driver to be used, (4) the hard disk or controller has been changed, (5) the BIOS has been upgraded, (6) the BIOS LBA setting has been changed, or (7) there is a partition table virus present on the hard disk.

In most instances, you should resolve the problem as explained in "Resolving Partition Table Errors" on page 114. You can also use a virus scanning program to remove any partition table virus. Data loss is possible if the number of heads or sectors per track has changed since you first created your partitions.

### #117 Partition's drive letter cannot be identified

Under OS/2, PartitionMagic must be able to find the drive letter for each partition before modifications can be made. There are various reasons why OS/2 might not be able to find a drive letter for each partition. For example, a driver on your system may change the drive letters from their defaults, or your partitions may not have serial numbers.

The solution is to run PartitionMagic from DOS or from MS-DOS mode (in Windows 95 or Windows 98). When PartitionMagic runs from DOS or from MS-DOS mode, it does not need to be able to find the drive letter for each partition. Thus, if the problem indicated by this error message is the only problem, PartitionMagic can run successfully.

#### #120 The logical drive chain is incompatible

This error occurs under some operating systems when logical partitions are not chained together in the expected order. DOS, OS/2, Windows 95, Windows 98, and Windows NT require that logical partitions be chained together in ascending order. Some other operating systems do not require this. For example, some versions of the Linux FDISK utility chain logical partitions together in the order they are created. This error message identifies a very dangerous situation; using the DOS FDISK in this situation can cause loss of one or more partitions.

For solutions to this problem, see the instructions in "Resolving Partition Table Errors" on page 114. If you decide to back up your data and recreate your partitions, you may have to use the same partitioning program that you used to create the partitions in order to delete them.

#### #121 The first sector of the drive cannot be read

The first sector of the hard disk (cylinder 0, head 0, sector 1) contains the master boot record (MBR) and the primary partition table. PartitionMagic cannot make changes to this hard disk because an error occurred when it read the first sector. See error #50 for information on resolving this error.

#### #122 A bad sector was found in the current or new partition area

The partition cannot be moved safely because there is a bad sector in the new or current partition area. When you see this error message, the move operation is aborted before any corruption can occur. Try moving the partition to a different place. If your hard disk has bad sectors, we recommend that you replace the hard disk.

### *Check Errors (500–599)*

Check errors occur when PartitionMagic checks the integrity of a partition. For general information about resolving these errors, see "Resolving Check Errors" on page 113.

#### #500 Subdirectory is corrupted

This error message reveals the name of the corrupted subdirectory. Back up the contents of that directory and its subdirectories. You can then delete the corrupted subdirectory.

#### #501 Cross-linked files were found

Multiple files claim the same clusters. PartitionMagic can fix this error when it occurs on an NTFS partition. For more information, see “Checking Partitions” on page 46. PartitionMagic lets you fix this error by: (1) copying the shared clusters to each affected file, (2) deleting all affected files, or (3) keeping one file and deleting the other affected files.

#### #506 Not enough free space on partition to shrink

Some free space (which is dependent on the hard disk’s current contents) is required to resize a partition smaller. Delete unneeded and duplicate files in the partition and then attempt the operation again.

#### #508 As specified, the operation does not change the partition

You have entered a value that is the same as or (when rounded to the required cylinder boundary) rounds to the same as the partition’s present value. Enter a larger change.

#### #509 A bad sector was detected in the current or new FS area

In order to perform the resize operation that you requested, PartitionMagic attempted to expand the file system area. However, the program found a bad sector in the new area. Try moving the partition before you resize it. No corruption occurs when you encounter this error.

#### #510 The version of the file system is not supported

An updated version of PartitionMagic is required to operate on this new version of the file system. Visit *www.powerquest.com* for information about updated versions of PartitionMagic.

### *Batch Errors (600–633)*

#### #600 Error trying to create batch file
#### #601 Error trying to write batch file
#### #602 Batch file not found

(The following information applies to errors 600–602.)

PartitionMagic 5.0 lets you specify a series of changes you want to make to your partitions, and then executes all the changes when you click **Apply**. At this point, PartitionMagic writes out a command list file (called a “batch file”) to disk in preparation for execution, and then reads the file upon execution (immediately if a lock can be secured on all impacted partitions, or in a special “reboot” mode after rebooting your computer if not all locks can be secured). In the

Windows 95, Windows 98, and Windows NT Workstation versions of PartitionMagic, the batch file is located in your Windows\System directory. In the DOS versions, it is located in the directory from which PartitionMagic 5.0 is running. The batch filename is PQ_PM50.PQB.

If the batch file cannot be created, cannot be written, or cannot be located when PartitionMagic attempts to execute the command file, the above error messages appear. You should contact PowerQuest technical support. See *Appendix C* of this user guide for more information.

### #603 Unknown batch operation

The batch file contained an operation unknown to PartitionMagic 4.0. Contact PowerQuest technical support. See *Appendix C* of this user guide for more information.

### #625 Changes cannot be applied

Generally error 625 only occurs when the system needs to go into boot-mode to execute your commands. A 625 error occurs when your disk geometry is seen differently in your native Windows version of PartitionMagic than it is in the boot-mode version. For security reasons, PartitionMagic cannot apply your changes without risking data loss.

One common configuration that will cause a 625 error is a system that has a hard disk (such as a SCSI or removable drive) that is visible in Windows but that cannot be seen in the boot-mode environment.

Some possible solutions include:

- Make sure the operation executes in native Windows mode (without resorting to boot-mode execution). PartitionMagic will only go into boot-mode if it cannot lock a partition (that is, if there are any open files on the partition). Try to confine all operations to drives PartitionMagic can lock before clicking the **Apply Changes** button.
- Change the configuration of the offending disk (most likely the SCSI or removable drive) by changing the BIOS setup for that disk. Doing so will ensure that the native and boot-mode environments detect identical hard disk configurations. If this does not work, you can try temporarily disabling the offending disk.

This error usually indicates that some other application has modified your disk configuration while you were running PartitionMagic. Make sure no other applications are loaded while PartitionMagic is running.

### *User Interaction Errors (950–999)*

#### #950 Unable to detect any disk drives

No partitionable hard disks were found on your computer. Diskette drives and many removable media drives do not support partitioning. PartitionMagic cannot perform operations on disks in such drives.

#### #951 An invalid value was entered

The value entered is outside the range or (when rounded to the required cylinder boundary) rounds to a value that is outside the range for the operation specified. Check the displayed range and reenter the value.

#### #952 Value entered is the same as the current value

See error #508.

#### #963 Selected operation is currently invalid

Not all PartitionMagic operations can be performed on all partitions. For example, you cannot convert an HPFS partition to NTFS, and you cannot create a partition if there is not enough unallocated space on the hard disk.

Under Windows, options that are not available either do not appear on the menus or they appear dimmed. However, if you are running scripts with the DOS version, there are no menus so you cannot see which operations are available. Refer to the relevant information in this user guide or the online Help for restrictions that explain why an operation is not available.

#### #967 Could not perform operation to the value specified

This error occurs only in the enterprise version of PartitionMagic from a running script. If the value specified on a resize or move operation is not between the minimum and maximum possible, script execution stops and this error displays.

#### #968 Incorrect Volume Label entered, Deletion not performed

To delete a partition, PartitionMagic requires you to enter that partition's volume label. If the volume label you enter does not match the volume label of the partition you want to delete, this error appears.

#### #969 Incorrect Volume Label entered, Unable to proceed.

To format an existing partition, PartitionMagic requires you to enter that partition's volume label. If the volume label you enter does not match the volume label of the partition you are attempting to format, this error appears.

### #970 Invalid Bad Sector Check value specified

This error occurs only in the enterprise version of PartitionMagic from a running script. If the script command SET DEFAULT BAD SECTOR TEST STATE is not followed by either ON or OFF, this error appears.

### #971 The label entered was too long

When you enter a volume label, the process that checks the validity of the label displays this message if the label is too long. The label must be no longer than 11 characters.

### #972 Invalid characters in the label

When you enter a volume label, the process that checks the validity of the label displays this message if the label has characters that are invalid. Invalid characters include the following: [ * ? : < > | + = ; \ / ” , ].

### #973 Volume Label cannot have leading spaces

When you enter a volume label, the process that checks the validity of the label displays this message if you enter a label in which a space or spaces are the leading characters.

### #974 Root size specified was not in the valid range

This error occurs only in the enterprise version of PartitionMagic from a running script. If you use the Create, Format, or Resize Root operations, and the number of root entries specified is not within the acceptable range for that partition, this error appears. Generally, the valid range is from 64 to 1,024.

### #975 The cluster size specified was invalid for this partition

This error message displays only in the enterprise version of PartitionMagic from a running script. Many commands have a cluster size option. If a script command specifies an invalid cluster size (for the type and size of the partition), this error appears.

### #976 Cannot create the file system specified in the current space

This error message displays only in the enterprise version from a running script. When you use the Create or Format commands, you must also choose a file system type. If the file system or partition type you specified cannot be created in the space available, this error appears.

#### #977 Partition selected is invalid

This error message displays only in the enterprise version of PartitionMagic from a running script. If the partition selected from the Select Partition command is not a valid partition, this error appears.

#### #978 Unable to set to proper partition after last operation. Script halted.

This error message appears only in the enterprise version of PartitionMagic from a running script. After each operation, PartitionMagic ensures that the right partition is still selected. If PartitionMagic is not able to select the proper partition, it ends script processing and displays this error.

#### #986 Unable to get information for the specified partition

PartitionMagic reports this error most commonly when MS-DOS-based terminate-and-stay-resident programs (TSRs), are running in the background. These TSR's will be located in the Config.sys or Autoexec.bat files.

One such TSR is the SUBST command. The SUBST can be used to associate a path with a drive letter. This creates a "virtual drive" that can be accessed as an additional local drive. The SUBST command is classified as a "dirty" or "deadly" TSR, and cannot be loading at the same time that PartitionMagic is loading.

To solve the problem, you must remark out the Config.sys or Autoexec.bat line that is loading the SUBST command. This command can be reinstated after running PartitionMagic.

There are other “dirty” or “deadly” TSR's that may cause a problem. If you are experiencing this error and are not using the SUBST command, find and remark out any of the following commands: Join, Append, or Assign.

This error can also be reported if your C: drive is compressed. If the C: drive is compressed, you will need to either uncompress the drive, or run PartitionMagic from the rescue diskettes.

This error can also be caused by multiple partition table errors. If any of the above solutions do not apply, run PartitionInfo and send the report to PowerQuest technical support. Refer to “Generating Diagnostic Reports with PartitionInfo” on page 87 for information about PartitionInfo and PARTINFO.

### *NTFS Check Errors (1500–1699)*

Errors 1500–1699 are NTFS-specific check errors, which can occur when PartitionMagic checks the integrity of a partition. PartitionMagic can fix certain errors when you perform the Check operation. For more information, see “Checking Partitions” on page 46 and “Resolving Check Errors” on page 113.

In this section, “attribute” does not mean read-only, hidden, system, etc. Rather, “attribute” means one of a file’s data streams.

#### #1501 Wrong version of NTFS

The partition was created using a version of the NTFS file format that PartitionMagic cannot work with.

#### #1503 Bad NTFS cluster size

The NTFS cluster size must be 512, 1,024, 2,048, 4,096, 8,192, 16,384, 32,768, or 65,536 bytes.

#### #1512 Restart record mismatch

The two restart entries in the journal file are different. This may happen if Windows NT Workstation is not properly shut down. To fix this problem, restart Windows NT Workstation and shut it down using the Shut Down command.

#### #1516 Partition improperly dismounted

The partition dirty flag is set in a restart record in the journal file. This error may have been caused by a power failure or system crash while the Windows NT operating system was writing the partition. Reboot Windows NT and execute CHKDSK /F to repair the damage.

#### #1527 Bad update sequence number

A buffer contains mismatched update sequence numbers. This error may have been caused by a power failure or system crash while the Windows NT operating system was writing to the partition. Reboot Windows NT Workstation and execute CHKDSK /F to repair the damage.

#### #1529 Information mismatch in directory entry

A file attribute stored in a file record is different from the attribute stored in its directory entry. If this error is in a system file (file 0–10), Windows NT CHKDSK does not fix it, but Windows NT rebuilds the root directory on the partition the next time the operating system is started.

#### #1538 Can’t find contiguous space to move

The partition does not contain enough contiguous free space to hold the new copy of a file that must be contiguous. You normally encounter this error when you use the Resize option to resize a partition smaller.

#### #1539 File size mismatch

The size of a system file (file 0–15) recorded in its file record does not match either the size recorded in its directory entry in the root directory or the size of its data stream.

#### #1544 External attribute list in external attribute

An external file record has an external attribute list.

#### #1545 File attributes out of order

The attributes in a file must appear in order of increasing numeric type.

#### #1546 Attribute neither resident nor nonresident

The attribute resident flag has a value other than resident or nonresident.

#### #1547 Wrong run limits

A run has more clusters than the difference between its highest and lowest cluster.

#### #1548 File table has fewer than 16 entries

The file table must have at least 16 entries.

#### #1549 File table has more than 4 billion entries

The file table must have fewer than 4 billion entries.

#### #1604 File's parent does not contain the file

The file's parent directory does not contain a reference to the file, or a file's size, date, or time information does not match the file's parent directory information. This error can be fixed when you perform the Check operation. For more information, see "Checking Partitions" on page 46. When you fix this error, PartitionMagic updates the file's parent directory information.

#### #1609 Lost cluster(s)

The volume bitmap shows clusters as being used which are not used (no file claims them). This error can be fixed when you perform the Check operation. For more information, see "Checking Partitions" on page 46. PartitionMagic lets you fix this error by either deleting the lost clusters or by saving them in a file in the root directory. The filename is FILEXXXX.PQE, where XXXX is a number between 0000 and 9999.

#### #1630 Inconsistent sizes in attribute header

File size information is incorrect. This error can be fixed when you perform the Check operation. For more information, see “Checking Partitions” on page 46. When you fix this error, PartitionMagic computes the correct file size information.

#### #1644 Bad system file sequence number

A system file has a bad sequence number. System files must have a sequence number from 1 to 15. A partition with this problem may pass Windows NT CHKDSK, but Windows NT does not mount the partition the next time the operating system is started.

#### #1647 Error in root directory index

There is an error in the root directory’s index. Running Windows NT CHKDSK does not fix this problem, but Windows NT automatically rebuilds the root directory on the partition the next time it is started.

### *FAT Check Errors (2000–2099)*

Check errors occur when PartitionMagic checks the integrity of a partition. For general information about resolving these errors, see “Resolving Check Errors” on page 113.

#### #2001 FAT copies are not identical

Run ScanDisk to fix this error.

This problem may also be caused by a virus. Run a virus checker and remove the virus if possible.

#### #2002 There are invalid entries in the FAT

This error can generally be fixed by running a thorough ScanDisk on the partitions reporting the error.

#### #2003 File size does not match FAT allocation for file

Run ScanDisk or CHKDSK to fix this error.

#### #2005 One or more lost clusters are present

Run ScanDisk or CHKDSK to fix this error.

#### #2012 Formatted FAT file system too big for partition

This error can occur when:

- The number of sectors in the partition is larger than 65,536, and the bsHugeSects field of the boot sector ("Big total number of sectors" in Norton's DISKEDIT utility) shows that there are more sectors in the partition than the partition table shows.
- The number of sectors in the partition is less than 65,536, and the bsSects field of the boot sector ("Total sectors on disk" in Norton's DISKEDIT utility) shows that there are more sectors in the partition than the partition table shows.

This situation can result in data loss when the FAT file system tries to use space outside the partition that does not exist or that belongs to another partition. Since file data may exist outside the partition boundary, you cannot fix the problem by simply patching the boot sector.

To correct the error, back up all data on the partition, delete the partition, recreate the partition, and restore the data. Alternately, it has been reported that you can use Norton Disk Doctor to fix this problem.

### #2013 A component of FAT geometry is bad

This error can occur when:

- The number of clusters on the hard disk is greater than the FAT limits allow. This can result from bad values in the boot sector for the number of sectors, FATs, root entries, reserved sectors, and sectors per cluster.
- The number of sectors in the FAT is not large enough to hold the number of clusters present on the hard disk.

A qualified consultant may be able to fix the hard disk by performing simple patches. Alternately, you can back up the data on the partition, delete the partition, recreate the partition, and restore the files.

### #2024 The OS/2 Extended Attribute file is corrupt

This error only occurs if you are running OS/2 and a program mistakenly writes to or overwrites the OS/2 Extended Attribute file. If this error occurs, you should back up your data, delete the partition, recreate the partition, and restore your data.

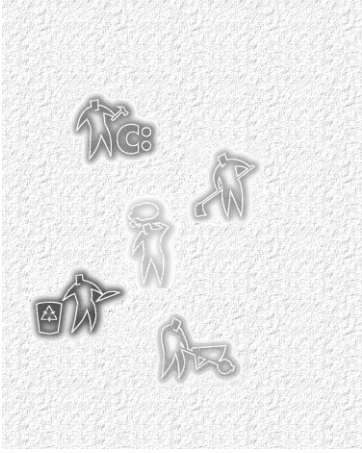
### #2027 Too many root entries in the FAT32 partition to convert it to FAT16

Long filenames may be causing this problem, since they use multiple entries per file. To fix this error, move some of the root directory entries into a subdirectory and defragment the disk.

### *Operating System Errors (over 10,000)*

Any number over 10,000 indicates an operating system error. To determine the number of the operating system error, subtract 10,000. See your operating system documentation for information about resolving the error.

APPENDIX C



# PowerQuest Technical Support

*This appendix includes the following information:*

- Before Contacting Technical Support
- Contact Information

## Before Contacting Technical Support

PowerQuest is committed to providing you with comprehensive technical support. However, before contacting our technical support department, please try to resolve your problem by using this guide, PartitionMagic Help, the README file, and PowerQuest's corporate web site.

### *Tips*

- Your problem may be resolved by applying the most recent patch or upgrade of the software.
- PowerQuest technical support engineers may request information from the PartitionInfo utility program to help you resolve problems with PartitionMagic. See "Generating Diagnostic Reports with PartitionInfo" on page 87 for more information about PartitionInfo and PARTINFO. The PartitionInfo report is always required for errors 100-199, 986, and drive detection errors of any kind.
- Your product serial number is required to obtain technical support.

### *Term of Technical Support for PartitionMagic 5.0*

Technical support is available to all registered users throughout the life of the product, which began when PowerQuest released PartitionMagic 5.0 to manufacturing and ends six months after the release of PartitionMagic 6.0.

Upon registration, PowerQuest provides 90 days of complimentary technical support from the day of your first call. In addition, registered users are eligible for special upgrade pricing when PowerQuest releases a new version of PartitionMagic. Contact PowerQuest Customer Service for additional information about upgrade pricing.

# Contact Information

## *E-mail*

| Language | E-mail (for specific technical problems) |
|---|---|
| Dutch | eurots@powerquest.com |
| English | help@powerquest.com<br>eurots@powerquest.com |
| French | france@powerquest.com |
| German | germany@powerquest.com |
| Italian | italian@powerquest.com |
| Portuguese | latina@powerquest.com |
| Spanish | spanish@powerquest.com |

To obtain e-mail technical support for specific technical questions, you can fill out the form at *http://www.powerquest.com/support/emsupport.html* (available in English only). If you send the information from PartitionInfo or PARTINFO with your e-mail message, a PowerQuest technician will be able to assist you more easily. See "Generating Diagnostic Reports with PartitionInfo" on page 87 for more information about PartitionInfo and PARTINFO.

### E-mail on Demand

PowerQuest maintains an e-mail on demand system to resolve common problems. You can view a list of available documents at *www.powerquest.com/support/demand.html*. To request one of the documents, send an e-mail message to **support@powerquest.com** with the index number of the document in the subject of the message. You can only request one document per e-mail message. E-mail on demand documents are available in English only.

## *Corporate Web Site*

The PowerQuest web site includes a wide array of information.

| Information | Web Site Address |
|---|---|
| Overview of support options | www.powerquest.com/support/support.html |
| E-mail support request form | www.powerquest.com/support/emsupport.html |

| Information | Web Site Address |
|---|---|
| Error messages | www.powerquest.com/support/er/er0000.html |
| PartitionMagic FAQs | www.powerquest.com/support/FAQs.html |

### Fax

| Location | Number |
|---|---|
| USA | +1 (801) 437-4218 |
| Europe | +31 (0) 20 582 9260 |

Fax a description of your problem to the technical support fax number. This service is available in the U.S., Canada, and Europe 24 hours a day, 7 days a week. PowerQuest technicians try to respond to all fax requests within 24 hours.

### Telephone

| Language | Location | Number |
|---|---|---|
| Dutch | Netherlands | +31 (0) 20 581 3906 |
| English | Netherlands | +31 (0) 20 581 3907 |
| English | UK | +44 (0) 0171 341 55 17 |
| English | USA | +1 (801) 226-6834 |
| French | France | +33 (0) 1 69 32 49 30 |
| German | Germany | +49 (0) 069 66 568 516 |
| Italian | Italy | +39 (0) 02 45 28 1312 |
| Portuguese | USA | +1 (801) 226-6834 |
| Spanish | Spain | +34 (0) 91 622 3146 |
| Spanish | USA | +1 (801) 226-6834 |

The U.S.A call center is open Monday through Friday, 7 a.m. to 6 p.m., MST/MDT. Our European call centers are open Monday through Thursday from 9:00 to 18:00, CET, and Friday from 9:00 to 17:00, CET.

If you have the information from PartitionInfo or PARTINFO ready when you call, a PowerQuest technician will be able to assist you more easily. See “Generating Diagnostic Reports with PartitionInfo” on page 87 for more information about PartitionInfo and PARTINFO.

### *Postal Service Mail*

| USA | Europe |
|---|---|
| PowerQuest Corporation<br>P.O. Box 1911<br>Orem, Utah 84059-1911<br>U.S.A. | PowerQuest<br>Orlyplein 85<br>1043 DS<br>Amsterdam<br>The Netherlands |

Please include the information from PartitionInfo with a description of your problem. Also include a return address, a daytime phone number, or other relevant contact information.

# Index

## R

## Z