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User Guide

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Drive Image 2.0
User Guide

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Manual Version 2
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About This User Guide

This user guide was written to help you set up and run PowerQuest Drive Image. It is divided into thirteen parts

The **Introduction** provides an overview of PowerQuest Drive Image and lists the hardware and software requirements.

Chapter 1: Getting Started provides step-by-step instructions on preparing to run Drive Image.

Chapter 2: Menu Options provides step-by-step instructions on using the drop-down menu options on the Drive Image main screen.

Chapter 3: Creating Image Files provides step-by-step instructions and scenarios on how to create image files.

Chapter 4: Restoring Image Files provides step-by-step instructions and scenarios on how to restore image files.

Chapter 5: Copying Disk To Disk provides step-by-step instructions on how to directly copy partitions from one drive to another, without creating an image file.

Chapter 6: Drive Image File Editor provides step-by step instructions on using Drive Image File Editor, a utility that allows you to create and copy image files, copy or delete partitions within files, compress and uncompress partitions, and restore individual program and data files from an image file.

Chapter 7: Additional Utilities provides information on DriveMapper and MagicMover, two utilities that are included with Drive Image.

Appendix A: Additional Resource Information reviews creating a bootable DOS floppy, loading DOS device drivers from a bootable floppy, and using FDISK and FORMAT to create and format partitions. It also provides device driver information, common jumper settings, and hard drive manufacturer information.

Appendix B: Troubleshooting provides a reference for Frequently Asked Questions and reviews error messages with their solutions.

Appendix C: PowerQuest Technical Support Contact Information covers what you should do before you contact technical support and provides a form for contacting PowerQuest technical support.

The **Glossary** defines common terms found in the Drive Image User Guide.

The **Index** helps you locate the different topics discussed in the Drive Image User Guide.

Introduction

This section contains the following information:

- What is Drive Image?
- Drive Image Professional Version
- Drive Image System Requirements

What is Drive Image?

Drive Image is for PC users who want a fast, complete solution for system backups and recovery. With Drive Image you can easily create and store a compressible image file of an entire hard drive or individual partitions on a Jaz, Zip, secondary hard drive, or other removable media device. The image file can then be restored from the source and used for complete operating system, application and data recovery.

NOTE: Currently, Drive Image does not support creating image files directly on CD-R or tape drives. You must first save image files to a supported source (hard drive, Zip drive, etc.), then copy them to CD-R or tape. Drive Image can, however, directly restore image files from CD-R.

Furthermore, image files can only be saved to devices that have a valid drive letter. While Drive Image includes some device drivers (such as Zip and SyQuest), the user is primarily responsible for loading the necessary drivers for his/her data storage devices so that DOS can correctly assign drive letters.

In addition to providing reliable system backup and recovery, Drive Image is an efficient means of replicating your system when upgrading to a new hard drive.

NOTE: To use Drive Image to clone multiple workstations see the *Drive Image Professional 2.0 Supplement.*

Using its patent-pending SmartSector technology, Drive Image is up to five to ten times faster than straight file-by-file, or sector-by-sector methods of copying because it copies only used sectors. This not only speeds up the copy process, it saves valuable disk space as well.

Drive Image also includes other useful features such as the ability to resize partitions, disk to disk copying for upgrading to a larger hard drive, and file system error and bad sector checking to prevent copying problems. Context-sensitive online help is available by pressing <F1>.

Drive Image supports the file systems of all versions of Windows 95, Windows NT, Windows 3.x, DOS, and OS/2 including FAT32, FAT32X, NTFS, and HPFS partition types. Because Drive Image understands the internal structure of these file systems, partition resizing and fast SmartSector copying can occur.

Drive Image provides limited support for NetWare, Linux, UNIX and other partition types. However, Drive Image copies such partitions sector by sector and does not resize them on the destination drive, making the image file creation and restore process for these file systems more time-consuming. Additionally, internal disk location references are not modified on the destination drive. This may make these partitions unbootable or otherwise inaccessible. PowerQuest will not support problems caused by NetWare, Linux, or UNIX partition types.

Drive Image is a DOS-based program that can be run from the hard drive in DOS or MS-DOS mode or from a floppy diskette after booting DOS. Because multi-tasking operating systems like Windows 95 and Windows NT operate with open files on the hard drive, it is necessary to run Drive Image from DOS so that the image files are an exact copy of your hard drive. Only by running in DOS is the hard drive completely inactive with no open files.

This Drive Image technology is brought to you by PowerQuest, the makers of PartitionMagic. PartitionMagic 3.0 is the revolutionary utility that lets you reclaim wasted disk space, safely boot and run multiple operating systems, and organize and protect your data.

NOTE: For more information on PartitionMagic, see "Benefits of Using Partition Magic" in *Appendix A* (page 89).

Drive Image Professional Version

If you want the absolute fastest way to clone workstations, a Drive Image Professional version is available for use on multiple PCs. For more information contact PowerQuest sales at 801-226-8977 or visit our Web site at *http://www.powerquest.com*.

Drive Image System Requirements

Hardware/Software	Minimum	Recommended
Processor	Intel 386SX	Intel 486 or above
RAM	8 MB (16 MB required for FAT32 or NTFS)	32 MB (48 MB for FAT32 partitions larger than 6 GB)
3.5-inch diskette drive	None	3.5-inch diskette drive
CD-ROM drive	Any speed	Any speed
Hard drive free space	5 MB	5 MB
Operating System	Windows 3.x, 95, NT, DOS 5.0, OS/2*	Windows 3.x, 95, NT, DOS 5.0, OS/2*
Monitor	VGA	SVGA
Pointing Device	No pointing device is required to operate Drive Image.	Microsoft mouse (or compatible pointing device)

* For Windows NT and OS/2 users, Drive Image must be run from a bootable floppy. For more information, refer to the README.TXT file on the Drive Image CD.

IMPORTANT: Because of operating system conflicts that can result from different hardware configurations, Drive Image was not intended to copy or image a hard drive that will be used in a system with different hardware configurations.

NOTE: You must have Windows 3.x, 95 or NT to run DriveMapper and MagicMover. Drive Image File Editor requires Windows 95.

Chapter 1

Getting Started

This chapter contains the following information:

- Installing Drive Image
- Before Using Drive Image
- Loading External Drive Device Drivers from DOS
- Running Drive Image
- Uninstalling Drive Image

Installing Drive Image

You can install Drive Image from any of the following operating systems:

- Windows 3.x
- Windows 95
- Windows NT

NOTE: If you are using DOS or OS/2, see refer to the README.TXT file on the Drive Image CD.

To install Drive Image, perform the following:

1. Insert the CD-ROM into your CD-ROM drive.

2. Start the installation program.

a. If you are using Windows 3.x or Windows NT 3.51, select **Run** from the Program Manager File menu. Type ***drive*:\SETUP**, in which *drive* is the drive letter of your CD-ROM drive, and click **OK**.

b. If you are using Windows 95 or Windows NT 4.0 and if CD auto-run is enabled, the installation program automatically launches when you place the Drive Image CD in your CD-ROM drive.

A dialog appears containing the following options:

- Install Drive Image
- Install MagicMover
- Create Diskettes
- Technical Support Helps

3. Select the option you want and follow the on-screen instructions.

> **NOTE:** On Windows NT or OS/2 systems, Drive Image must be installed to a FAT partition and can only be run after booting DOS. If you do not have DOS, refer to the README.TXT file on the Drive Image CD-ROM for information on creating a DOS bootable floppy.

Before Using Drive Image

Before using Drive Image, it is important that you perform the following:

- Run a disk utility such as ScanDisk or CHKDSK on each partition of the source drive to check for file system errors.
- Verify that each FAT partition containing OS/2 extended attributes has a minimum of 5 MB of free space within the partition if it will be resized during the restore process.
- Run CHKDSK /F if you are on a Windows NT system.

Loading External Drive Device Drivers from DOS

In order to use Drive Image with external drives, you must load the external drive device drivers from DOS. For specific information on setting up a DOS bootable floppy or loading a DOS device driver, contact your manufacturer directly. See the following section for a listing of External Drive Manufacturer's Internet addresses.

External Drive Manufacturer's Contact Information

Iomega:

http://www.iomega.com

SyQuest:

http://www.syquest.com

Cheyenne:

http://www.cheyenne.com

Panasonic:

http://www.panasonic.com

Installing Device Drivers for Iomega and SyQuest

During Setup, Drive Image allows you to install drivers for Iomega and SyQuest removable media.

To install Iomega drivers, simply select **Iomega drivers**.

To install SyQuest drivers, select **SyQuest drivers** and the required driver type (EIDE, SCSI, IEPP, or SEPP).

Running Drive Image

There are two ways to run Drive Image. You can run Drive Image from a floppy diskette or from the hard drive if you booted in DOS or MS-DOS mode.

Running Drive Image from a Floppy Diskette

If you want to run Drive Image from a floppy diskette, perform the following:

Windows 3.x, Windows 95, and Windows NT

1. Insert a bootable diskette.

NOTE: Refer to the README.TXT file on the Drive Image CD-ROM for information on creating a DOS bootable floppy or a Drive Image program floppy.

2. Reboot your machine.

3. Insert your Drive Image program diskette. Type **A:\PQDI** and press <ENTER>.

OS/2 and DOS

1. Insert a bootable diskette.

NOTE: Refer to the README.TXT file on the Drive Image CD-ROM for information on creating a DOS bootable floppy.

2. Reboot your machine.

Running Drive Image from a Hard Drive

If you want to run Drive Image from your hard drive, perform the following:

1. If you are using Windows 3.x, open the **PowerQuest Drive Image** program group and double-click the **Drive Image** program icon.

2. If you are using Windows 95, click **Start>Programs>Drive Image>PowerQuest Drive Image**.

   NOTE: If you are using Windows NT, you must boot to DOS from a bootable floppy. Refer to the README.TXT file on the Drive Image CD-ROM for information on creating a DOS bootable floppy.

Uninstalling Drive Image

To uninstall Drive Image, perform the following:

1. Launch the uninstall program.

   a. If you are using Windows 3.x or Windows NT 3.51, double-click the **Uninstall Drive Image** icon in the **PowerQuest Drive Image** program group.

   b. If you are using Windows 95 or Windows NT 4.0, click **Start>Programs>PowerQuest Drive Image>Uninstall Drive Image**.

      OR

      Click Start>Settings>Control Panel>Add/Remove Programs>Drive Image.

2. Follow the instructions on the screen.

Chapter 2

Menu Options

This chapter contains the following information:

- Tools Menu Options
- Help Menu Options

Tools Menu Options

The Tools drop-down menu on the Drive Image main screen lets you manually perform some common partition-management tasks that Drive Image automatically performs when it processes image files or when it copies partitions. The Tools menu gives you access to these useful features without requiring you to create or restore image files, or copy partitions.

Create Extended Partition

If you create an image of a primary partition and want to restore it as a logical partition, you must first have an extended partition on your hard drive. (For information on partition types and requirements, see *Background Information,* located in the Windows 95 Start menu under **Programs**>**Drive Image 2.0**.)

NOTE: It is not necessary to manually create an extended partition when you restore an image of a logical partition. Drive Image automatically creates an extended partition if one does not already exist.

To create an extended partition, perform the following:

1. At the Drive Image main screen, select **Tools>Create Extended Partition**.

The **Create Extended Partition** window appears (see Fig. 2.1).
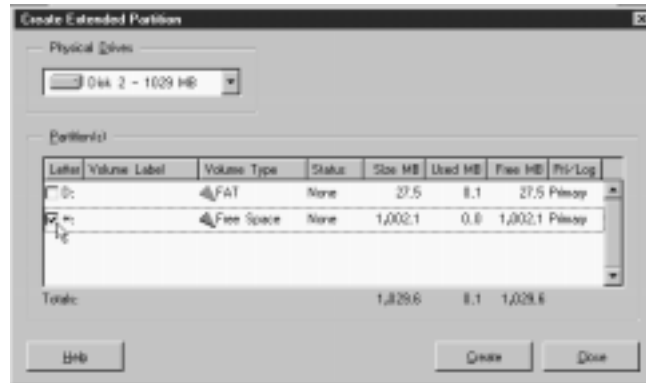
Fig. 2.1 – Create Extended Partition

2. If you have more than one hard drive on your system, select the desired drive from the **Physical Drives** drop-down list box.

3. Select a free space.

   A check mark appears to the left of the selected free space.

   NOTE: If there is no free space (unpartitioned area) on your drive, you must delete an existing partition to create free space.

4. Click **Create**.

   Drive Image creates an extended partition in the selected free space.

5. Click **Close** to return to the Drive Image main screen.

Delete Partition(s)

This feature deletes existing partition(s) to create free space on your hard drive.

WARNING: Be aware that deleting existing partitions DESTROYS any data they contain.

To delete partition(s), perform the following:

1. At the Drive Image main screen, select **Tools>Delete Partition(s)**.

    The **Delete Partition(s)** window appears (see Fig. 2.2).
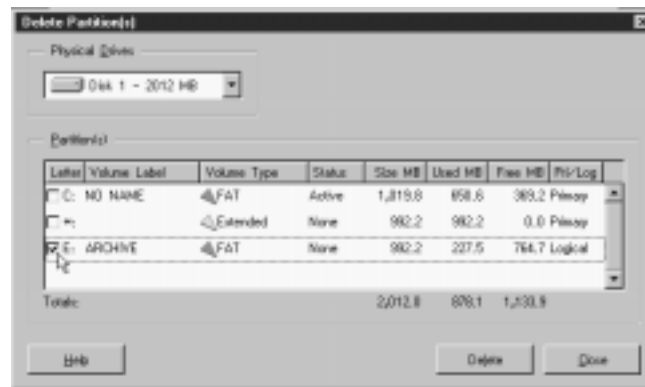
Fig. 2.2 – Delete Partitions

2. If you have more than one hard drive on your system, select the desired drive from the **Physical Drives** drop-down list box.

3. Select the partition you wish to delete.

    A check mark appears to the left of the selected partition.

4. Click **Delete**.

    The following message appears (see Fig. 2.3):

    "Selected partition:<*partition letter*>. Deleting this partition will DESTROY any existing data! Current volume label is <*volume label*>. Enter current volume label to confirm partition deletion:"
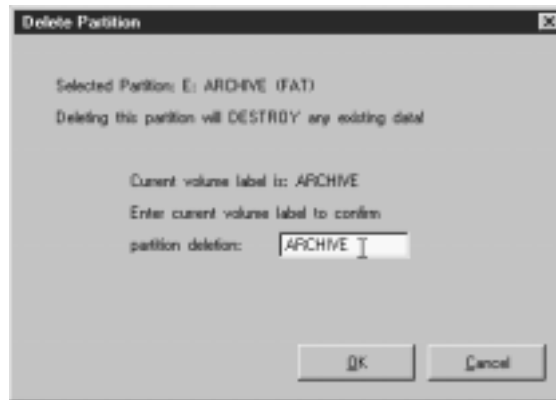
Fig. 2.3 – Delete Partition Confirmation

Enter the volume label exactly as it appears and click **OK**. Drive Image deletes the partition and displays the message: "Volume *<volume name>* was deleted successfully."

5. Click **Close** to return to the Drive Image main screen.

Hide/Unhide Partition(s)

The **Hide/Unhide** feature allows you to protect partitions from unwanted user access. When you hide a partition, it is not assigned a drive letter the next time you boot your computer and therefore, is inaccessible. Alternately, if you unhide a partition, it is assigned a drive letter the next time you boot your computer and becomes accessible again.

WARNING: Before hiding and unhiding partitions, be aware of the following:

- Hiding or unhiding a partition can cause the drive letters of subsequent partitions to change. This may make the computer fail to boot or cause applications to fail. For information on why drive letters change and how to fix them, see "How the OS Assigns Drive Letters and Problems Caused by Drive Letter Changes" in *Background Information*. (In Windows 95, *Background Information* is located in the Start menu under **Programs**>**Drive Image 2.0**.)

- If your hard drive contains more than one primary partition, only one is visible by default. When you use the **Set Active Partition** feature, Drive Image unhides the selected primary partition and automatically hides all other primary partitions (for more information, see the following section),.

- Because a hidden partition is not bootable or accessible, if you hide the partition where Drive Image is installed, you must re-install Drive Image on your new active (bootable) partition to run it again.

To hide/unhide partition(s), perform the following:

1. At the Drive Image main screen, select **Tools>Hide/Unhide Partition(s)**.

   The **Hide Partition(s)** window appears (see Fig. 2.4).
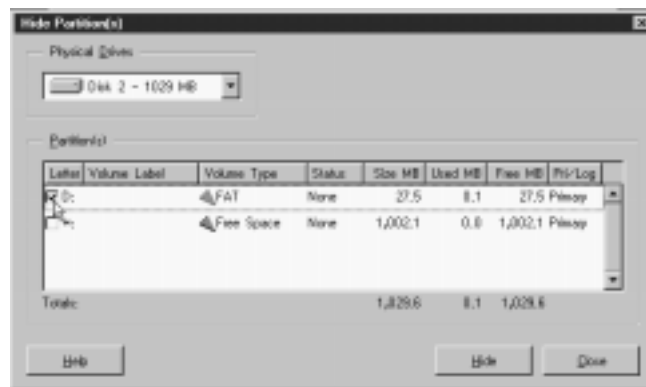
Fig. 2.4 – Hide Partition(s)

2. If you click on a visible partition, the **Hide** button is available.

    a. Click **Hide** to hide the selected partition.

    b. The partition status changes to "Hidden."

3. If you click on a hidden partition, the **Unhide** button is available.

    a. Click **Unhide** to unhide the selected partition.

    b. The partition status changes to "None."

4. Click **Close** to return to the Drive Image main screen.

5. Click **Exit** to exit Drive Image.

6. Reboot your computer.

Set Active Partition

The **Set Active Partition** feature allows you to make a primary partition the active (bootable) partition. Only one primary partition can be active at a time. To be bootable, a primary partition must be located on the first (Master) drive, and it must contain an operating system. When your computer boots, it scans the partition table of the first drive to find the active partition, then boots from that partition.

WARNING: Before you set an active partition, be sure it is bootable. If it is not bootable or if you are not sure, locate the boot disk you created when you installed Drive Image. If you restart your computer and it does not boot normally, you must boot from the floppy disk, run Drive Image from the program disk you created during Drive Image install, and set a different active partition.

1. At the Drive Image main screen, select **Tools>Set Active Partition**.

    The **Set Active Partition** window appears (see Fig. 2.5).
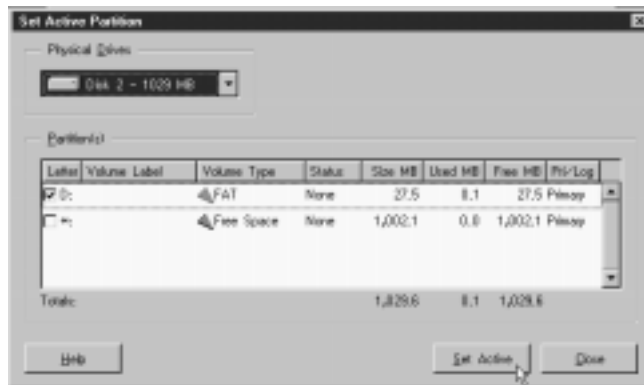
Fig. 2.5 – Set Active Partition

2. Make sure that **Disk 1** is selected in the **Physical Drives** drop-down list box.

3. Select a primary partition that is not currently active.

    A check mark appears to the left of the selected partition.

4. Click **Set Active**.

    The status of the selected partition changes to "Active."

5. Click **Close**.

6. Click **Exit** to exit Drive Image.

7. Reboot your computer.

Help Menu Options

Drive Image provides online help to assist you in performing various tasks. The Help Menu at the Drive Image main screen gives you a brief overview of the online help system, lets you access the Help Index, and provides information about Drive Image. In addition to the Help Menu, you can press <F1> at any time to access the Help Index.

Contents

1. Select **Help>Contents** to display general instructions for using Drive Image Help.

2. Click **Show Index** to display a list of all help topics. Double-click a topic to display information on that subject.

3. Click **Close** to exit Help and return to the Drive Image main screen.

About

Select **Help>About** to display Drive Image's version, copyright, and patent information as well as PowerQuest contact information.

Creating Image Files

This chapter contains the following information:

- Preparation
- Procedure
- Advanced Options
- Scenarios

Preparation

1. Before running Drive Image, use a disk utility program such as ScanDisk or Norton's Disk Doctor to identify and repair any errors on your hard drive.

   NOTE: NT users should run CHKDSK /F.

2. You may also choose to run a disk defragmenting utility to further optimize your hard drive.

Procedure

To create an image of the contents of any partition(s), perform the following:

1. At the Drive Image main screen, click **Create Image** (see Fig. 3.1).
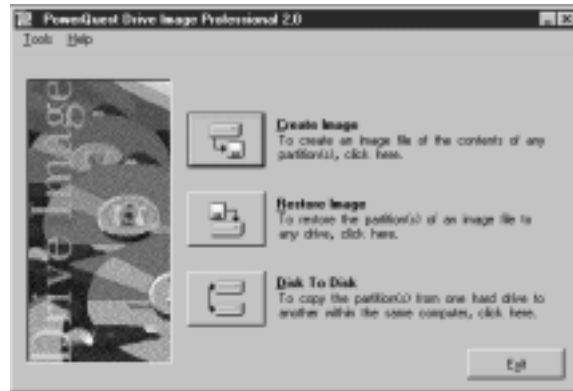
Fig. 3.1 – Drive Image Main Screen

If you have only one hard drive, skip to step 4.

2. If you have more than one hard drive, select the drive that contains the partitions you wish to include in the image file (see Fig. 3.2).

   A check mark appears to the left of the selected drive.
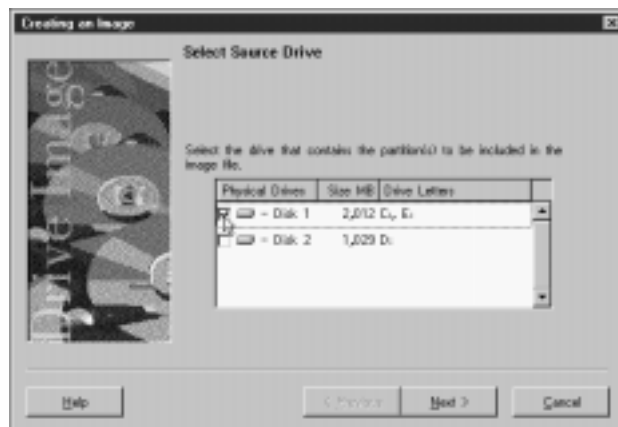
Fig. 3.2 – Select Source Drive

3. Click **Next**.

   NOTE: At any point prior to actual image file creation, you may click **Previous** to return to the previous step and change your settings.

4. Select the source drive partition(s) you wish to include in the image file, or click **Select All** to automatically select all partitions (see Fig. 3.3).

    A check mark appears to the left of the selected partition(s).
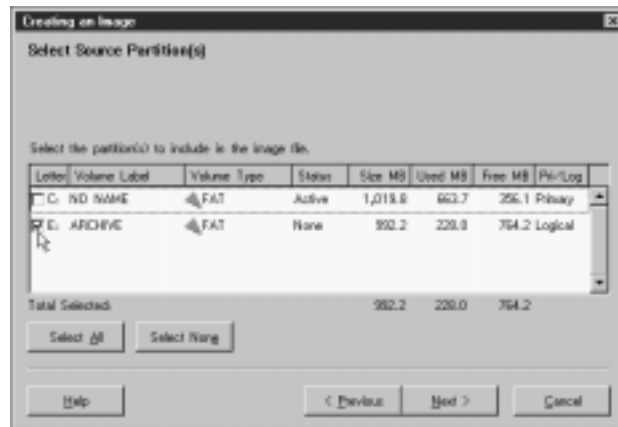
Fig. 3.3 – Select Source Partition

    To deselect partitions, click again on a partition or click **Select None** to deselect all partitions at once.

    The **Total Selected** field keeps a running total of the disk space for all selected partitions, as well as the total used and free space within the partitions.

5. Click **Next**.

6. Type the desired path and image filename in the Image File field, for example: D:\MYIMAGE.PQI (see Fig. 3.4).

    NOTE: Drive Image uses .PQI as the default image filename extension.

Fig. 3.4 – Name Image File

NOTE: You must save your image file to a partition that you are NOT including in your image file.

If the drive and directory are not specified in the filename, Drive Image automatically saves the image file to the Drive Image program directory, PQDI.

You may also click **Browse** to browse the directory tree for your desired path and/or filename. If you select a pre-existing image file, the following message appears:

"<*Image Filename*> exists. Do you want to overwrite it? Yes/No." If **Yes** is selected, Drive Image immediately deletes the existing file.

You can save your image file to any physical or logical drive which has a drive letter. That includes floppy drives, secondary hard drives, network drives, and removable media storage devices such as Jaz, Zip, SyQuest drives, etc. (For more information, see "Scenarios" on page 23).

7. Click **Next**.

8. Select the desired compression level (see Fig. 3.5).

   • **No Compression** is the fastest method for creating an image file and is useful if storage space is not an issue. (For an exception to this, see the tip on page 19.) Drive Image selects **No Compression** by default.

   • **Low** offers a 40% average compression ratio.

   • **High** offers a 50% average compression ratio.
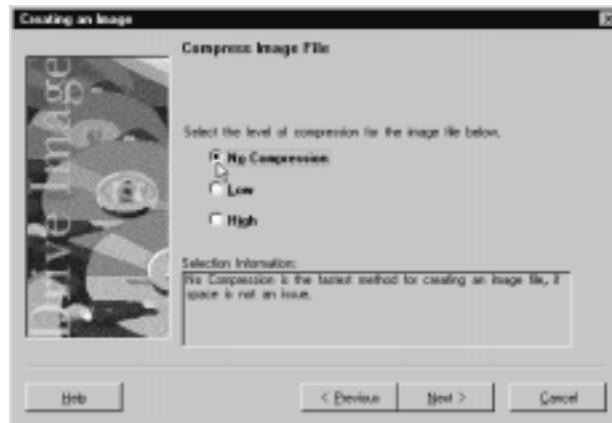
Fig. 3.5 – Compress Image File

TIP: If you are saving your image file to a busy network drive or to a relatively slow removable media device, compression may be faster than no compression since there is less data to write to the file.

9. Click **Next**.

   Drive Image displays all the information you have entered to this point (see Fig. 3.6):

   • Source Drive

   • Source Partitions (partition(s) to be included in the image file are marked with an "X")

   • Image Filename

   • Compression Level
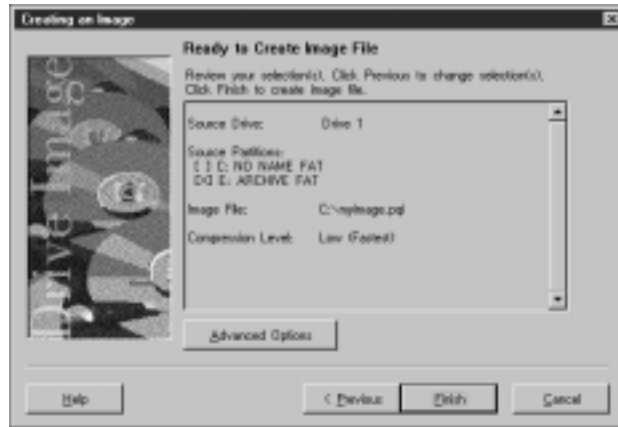
Fig. 3.6 – Ready to Create Image File

If you wish to modify any settings, click **Previous** to backtrack and make changes.

10. Click **Advanced Options** to set such options as disabling file system error-checking or password-protecting your image file.

    NOTE: For information on Advanced Options settings, see "Advanced Options" on page 21.

11. Click **Finish** to begin creating the image file.

    If Drive Image detects that you are saving your image file to a floppy drive or removable media, it enables a media-spanning feature that spreads the image file over a series of disks. Drive Image permits you to span a maximum of 50 disks with a limit of 12 partitions per image file. You must have at least 100K of available space on each disk in the series. If you use the media-spanning feature, be sure to number the disks in order, since you must insert them in sequence when restoring the image file. For more information, see "Creating an Image File on a Zip Drive" on page 23.

    The **Creating the Image** dialog appears, tracking the following items:

    - Image filename
    - Estimated megabytes to copy
    - Total megabytes copied
    - Entire process progress bar

- Information about current partition (volume, type, size MB, used MB, free MB)

- Sub-process progress bar

- Transfer rate for current partition

- Total megabytes copied for current partition

- Time elapsed

- Estimated time remaining

Upon completion, the following message appears: "Image was copied successfully to file: *<image filename>*. "

12. Click **OK** to return to the Drive Image main screen.

Advanced Options

The **Create Image Advanced Options** group box appears when you click **Advanced Options** at the **Ready To Create Image File** screen. The following options are available from the **Create Image Advanced Options** group box (see Fig. 3.7):

Fig. 3.7 – Create Image Advanced Options

Check for File System Errors

Unmark the **Check for File System Errors** check box if you want to disable error checking.

If you have already used a disk utility program such as ScanDisk to check your hard drive for errors, it is not necessary to have Drive Image check for file system errors. Unmarking **Check for File System Errors** saves time in creating the image file.

If you did not run a disk utility program before loading Drive Image, leave the **Check for File System Errors** check box marked.

Disable SmartSector Copying

Drive Image's SmartSector technology speeds up the data copying process by only copying clusters and sectors that contain data. However, in some cases, such as high-security environments, it may be desirable to copy all clusters and sectors in their original layout, whether or not they contain data.

If you wish to copy both used and unused clusters and sectors, mark the **Disable SmartSector Copying** check box.

NOTE: Disabling SmartSector copying increases processing time.

Verify Disk Writes

Mark the **Verify Disk Writes** check box if you want to enable DOS disk write verification.

NOTE: Disk write verification is not critical to safely create image files. Enabling disk write verification can slow the image file create process by as much as seven times.

ImageShield

If you wish to password-protect your image file, mark the **Password Protect Image File** check box and type a password in the **Password** field.

IMPORTANT: Be sure to note image file passwords and store them in a safe place. If you forget an image file's password, you cannot restore the file.

Split Image File Into Multiple Files

Because Drive Image does not directly support CD-R, it cannot span large image files over several CDs. Therefore, you must force Drive Image to split the large file into smaller, discrete files which you can save to CDs after you exit Drive Image (see "Creating an Image File on CD-ROM" on page 25).

To force Drive Image to split large image files into smaller files, mark the **Split Image File Into Multiple Files** check box and enter the maximum byte size for each file in the **File Size (bytes)** field. If you wish to save the files to CDs, specify a file size of 650,000,000 bytes (650 MB) or less.

Image File Comments

You can type brief comments about your image file in the **Image File Comments** field.

Scenarios

Creating an Image File on a Zip Drive

Sample System Configuration

One 1.2 GB hard drive containing:

- One active primary partition (C:) running Windows 95; 300 MB used and 500 MB unused.

- One extended partition containing one logical partition (D:); 400 MB used and 0 MB unused.

One Zip drive (E:).

Objective

Create an image file of your hard drive's logical partition (D:) and store it on your Zip drive.

Procedure

1. When you run Setup to install Drive Image on your computer, select the option to install Iomega drivers.

2. Since the image file will be too large to fit on one Zip disk, you must create a series of Zip disks.

   Label the first Zip disk as "MYIMAGE DISK #1". During the image file creation process, Drive Image prompts you to insert new disks as needed. Label each successive disk "MYIMAGE DISK #2", "MYIMAGE DISK #3", etc.

3. Run ScanDisk to identify and repair any errors on the D: partition.

4. Run Drive Image.

   As Drive Image automatically loads the Zip drivers, be sure to note the drive letter assigned to the Zip drive. In this case, we are referring to the Zip drive as E:.

5. Insert the Zip disk labeled "MYIMAGE DISK #1" into your Zip drive.

6. From the title screen, click **Create Image**.

7. **Disk 1** (your hard drive) should already be selected.

8. Click **Next**.

9. Select the logical partition (D:).

10. Click **Next**.

11. In the **Image File** field, type **E:\MYIMAGE.PQI**.

12. Click **Next**.

13. Select **High** compression.

    High compression compacts the image of your 400 MB logical partition by approximately 50%.

14. Click **Next**.

15. From the **Ready To Create Image File** screen, click **Advanced Options**.

16. Unmark the **Check for File System Errors** box.

17. Click **OK**.

18. Click **Finish**.

19. When Drive Image prompts you to insert the next disk in the series, wait until the busy light on the Zip drive goes out, remove "MYIMAGE DISK #1" from the Zip drive, and insert "MYIMAGE DISK #2".

20. After Drive Image has completed the image create process, click **OK** to return to the Drive Image main screen and exit the program.

Result

Your 400 MB logical partition is stored on two or more Zip disks (depending on how much data was in the partition(s) in a spanned image file. You can restore this logical partition to any hard drive that has at least 400 MB of available space.

Storing an Image File on CD-R

Sample System Configuration

One 3 GB hard drive containing:

• One active primary partition (C:) running Windows 95; 1.5 GB used and 300 MB unused.

• One extended partition containing one logical partition (D:); 1.2 GB unused.

One CD-R drive (E:).

Objective

Create an image file of your hard drive's active primary partition (C:) and store it on CD-R.

Procedure

1. Since the image file will be too large to fit on one CD, you must create a series of two CDs.

   Label the first CD as "MYIMAGE DISK #1" and the second as "MYIMAGE DISK #2".

2. Run ScanDisk to identify and repair any errors on your C: partition.

3. Run Drive Image.

4. From the Drive Image title screen, click **Create Image**.

5. **Disk 1** (your hard drive) should already be selected.

6. Click **Next**.

7. Select the active primary C: partition.

8. In the **Image File** field, type **D:\MYIMAGE.PQI**.

    Because Drive Image does not directly support CD-R, you must first save the image file to a partition on your hard drive, a secondary hard drive, a network drive, or a removable media device. In this scenario, you must save MYIMAGE.PQI to the D: partition because Drive Image locks the partition you are imaging (C:) in order to get an accurate image.

    NOTE: If you have only one hard drive and only one partition on that drive, use PartitionMagic to resize your existing partition and to create a logical partition that is large enough to accommodate the image file.

9. Click **Next**.

10. Select **Low** compression.

    Low compression compacts the image of your 1.8 GB primary partition by approximately 40%.

11. Click **Next**.

12. From the **Ready To Create Image File** screen, click **Advanced Options**.

13. Unmark the **Check for File System Errors** box.

14. Mark the **Split Image File Into Multiple Files** check box and enter 650,000,000 in the **File Size (bytes)** field.

15. Click **OK**.

16. Click **Finish**.

17. After Drive Image has completed the image create process, click **OK** to return to the Drive Image main screen and exit the program.

18. Start Windows 95 and open the D: drive from Windows Explorer.

    You will find two separate image files, MYIMAGE.PQI and MYIMAGE.002, on your D: drive.

19. Using a third-party CD authoring program, such as Adaptec's CD Creator, burn MYIMAGE.PQI into your CD labeled "MYIMAGE DISK #1" and MYIMAGE.002 into the CD labeled "MYIMAGE DISK #2".

Result

Your 1.8 GB primary partition is stored on two CD-ROMs in two separate image files. You can restore this primary partition to any hard drive that has at least 1.8 GB of available space.

Creating an Image File on a Secondary Hard Drive

Sample System Configuration

Disk 1 — One 3.5 GB hard drive containing:

- One active primary partition (C:) running Windows 95; 500 MB used and 1 GB unused.
- One extended partition containing one logical partition (E:); 400 MB used and 600 MB unused.
- 1 GB unpartitioned free space.

Disk 2 — One 2 GB hard drive containing:

- One primary partition (D:); 1 GB unused.
- One extended partition containing one logical partition (F:); 600 MB used and 400 MB unused.

Objective

Create an image file of the 1 GB logical partition (E:) that is on Disk 1 and store it in the primary partition (D:) on Disk 2.

1. Run ScanDisk to identify and repair any errors on both hard drives.

2. Run Drive Image.

3. From the Drive Image title screen, click **Create Image**.

4. Select **Disk 1**.

5. Click **Next**.

6. Select the **E:** partition.

7. Click **Next**.

8. In the **Image File** field, type **D:\MYIMAGE.PQI**.

9. Select **No Compression**.

    No Compression is the fastest method for creating an image file. You may use it if space is not an issue.

10. Click **Next**.

11. From the **Ready To Create Image File** screen, click **Advanced Options**.

12. Unmark the **Check for File System Errors** box.

13. Click **OK**.

14. Click **Finish**.

15. After Drive Image has completed the image create process, click **OK** to return to the Drive Image main screen and exit the program.

Result

An image of your 1 GB logical partition (E:) from Disk 1 is stored in an image file named MYIMAGE.PQI on the primary partition (D:) of Disk 2. You can restore the logical partition to any hard drive that has at least 1 GB of available space.

Restoring Image Files

This chapter contains the following information:

- Preparation
- Procedure
- Resize Options
- Advanced Options
- Scenarios

Preparation

If you are restoring an image file to setup a new hard drive on a machine with a BIOS older than 1994, see "Using Drive Image With Older Computer BIOSes that Require Drive Overlay Software" in *Appendix A*.

Procedure

To restore an image file to any drive, perform the following:

1. At the Drive Image main screen, click **Restore Image**.

2. In the **Image File** field, enter the complete filename of the image file you wish to restore, or click **Browse** to browse the directory tree for the desired path and image filename (see Fig. 4.1).

Fig. 4.1 – Select Image File

3. Click **Next**.

   NOTE: At any point prior to actual image file restore, you may click **Previous** to return to the previous step and change your settings.

4. Select the image file partition(s) you wish to restore, or click **Select All** to automatically select all partitions.

   A check mark appears to the left of the selected partition(s) (see Fig. 4.2).
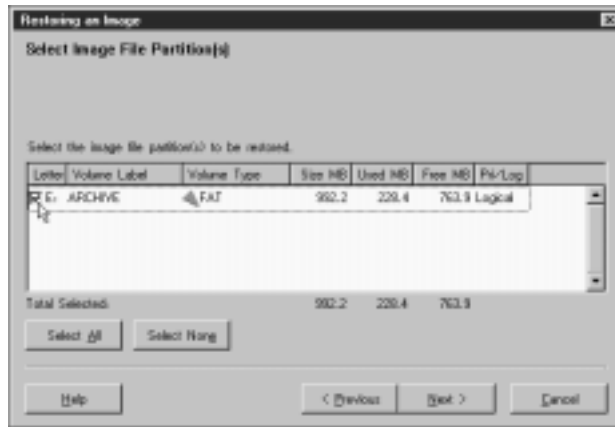
Fig. 4.2 – Select Image File Partition

To deselect partitions, click again on a partition or click **Select None** to deselect all partitions at once.

The **Total Selected** field keeps a running total of the disk space for all selected partitions, as well as the total used and free space within the partitions.

5.   Click **Next**.

6.   Select the drive to which you want to restore the image file (see Fig 4.3).
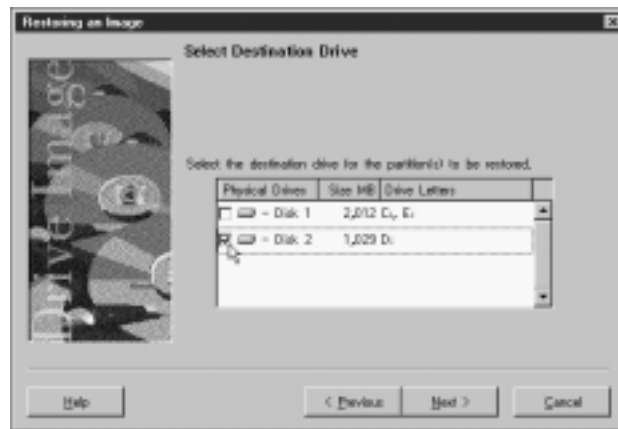
Fig. 4.3 – Select Destination Drive

7.   Click **Next**.

8. Select an existing partition or free space (non-partitioned disk space) (see Fig 4.4).
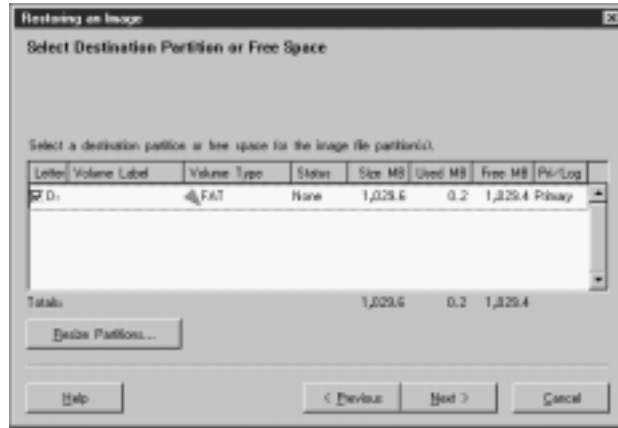
Fig. 4.4 – Select Destination Partition or Free Space

9. If the destination partition or free space is not large enough to accommodate the partition(s) you wish to restore, or if you are restoring the image file to a larger drive and want to set a specific size for partitions rather than use the proportional resize option, you can click **Resize Partitions** to specify different sizes for restored partitions. To resize partitions, perform the following:

a. Click **Resize Partitions**.

The **Resize Partitions** window appears (see Fig. 4.5).
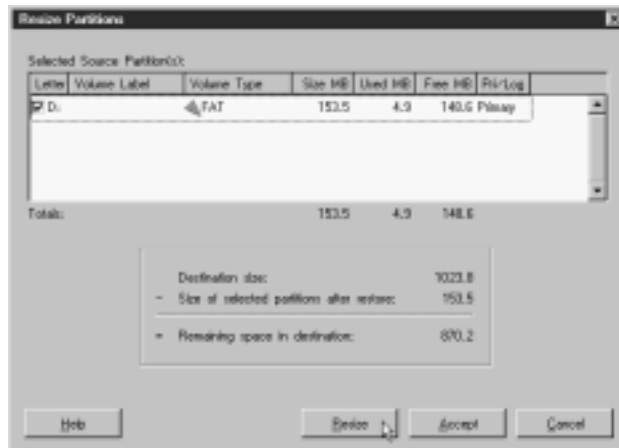
Fig. 4.5 – Resize Partitions: Main Window

The **Selected Source Partitions** group box displays the partition(s) you selected to restore.

The **Totals** field displays the disk space for the source partition(s), as well as the total used and free space within the partition(s).

A formula box below the **Totals** field displays the following information:

- Destination Size
- Current Size of Selected Partition
- Remaining Space in Destination

b. Click **Resize**.

The **Resize Partition** window appears (see Fig. 4.6).
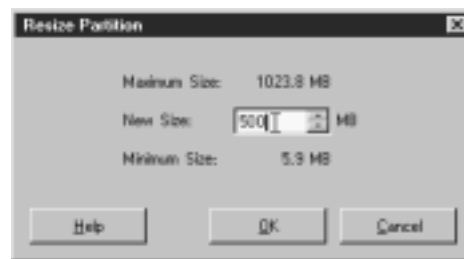
Fig. 4.6 – Resize Partition: Enter New Size

The **Maximum Size** field displays the largest possible size the source partition(s) can have and still fit in the destination space.

The **Minimum Size** field shows the smallest possible size the source partition(s) can occupy.

c. In the **New Size** field, enter a number that is less than the **Maximum Size** and greater than or equal to the **Minimum Size**.

d. Click **OK**.

Since partitions must end on a cylinder boundary, Drive Image rounds the **New Size** up to the next cylinder boundary.

e. Click **Accept**.

Later, when you restore the image file, Drive Image resizes the partition.

10. Click **Next**.

    If you selected an existing partition as the destination, the following message appears (see Fig. 4.7):

    "Item selected is not free space. Disk Images can only be restored into existing free space. Drive Image will delete this partition before restoring disk image. WARNING: Deleting a partition will DESTROY any existing data on that partition."

    Drive Image does not delete the partition until you click **Finish** on the **Ready to Restore Image File** screen.
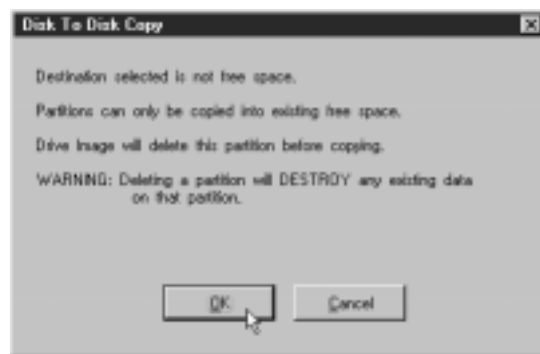
Fig. 4.7 – Delete Partition to Create Free Space: Confirmation Dialog

    If the free space on the destination drive is greater than the space required to restore the selected partition(s), the **Resize Options** dialog appears.

    NOTE: For information about resize option settings, see "Resize Options" (page 36).

11. Drive Image displays all the information you have entered to this point (see Fig. 4.8):

    • Image filename
    • Selected image file partitions
    • Destination drive
    • Destination space
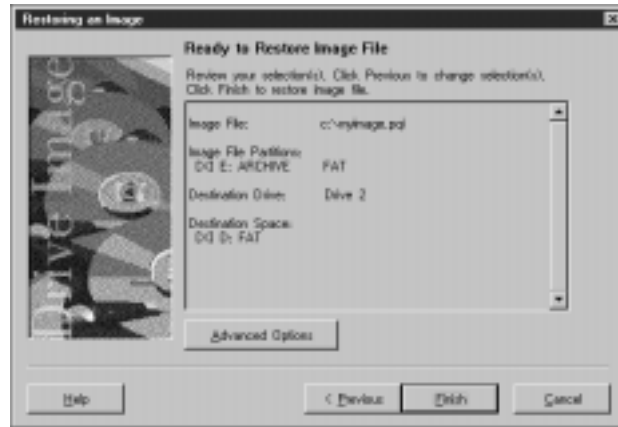
Fig. 4.8 – Ready to Restore Image File

If you wish to alter any settings, click **Previous** to backtrack and make changes.

12. If you wish to enable bad-sector checking or hide partition(s) after restore, click **Advanced Options**.

For information on Advanced Options settings, see "Advanced Options" (page 37).

> **WARNING:** Restoring multiple logical partitions can cause the drive letters of subsequent partitions to change. This may make the computer unbootable or cause applications to fail. For information on why drive letters change and how to fix them, refer to *Background Information*: "How the OS Assigns Drive Letters" and "Problems Caused by Drive Letter Changes." (In Windows 95, *Background Information* is located in the Start menu under **Programs**>**Drive Image 2.0**.)

13. Click **Finish** to begin restoring the image file.

If you assigned a password to the image file when you created it, the **Get Image File Password** dialog appears. You must enter the password in order to restore the image file.

If Drive Image detects that you are restoring your image file from a floppy drive or removable medium, it enables a media-spanning feature that is capable of reading the image file from a series of disks. As Drive Image prompts you for each disk, be careful to insert the disks sequentially. For more information, see "Restoring an Image File from a Zip Drive" on page 38.

The **Restoring the Image** dialog appears, tracking the following items:

- Image filename
- Estimated megabytes to restore
- Total megabytes copied
- Entire process progress bar
- Information about current partition (volume, type, size MB, used MB, free MB)
- Sub-process progress bar
- Transfer rate for current partition
- Total megabytes copied for current partition
- Time elapsed
- Estimated time remaining

Upon completion, the following message appears: "Image was restored successfully."

14. Click **OK** to return to the Drive Image main screen.

Resize Options

The following options are available when restoring partitions if the free space on the destination drive is greater than the space required by the partition(s).
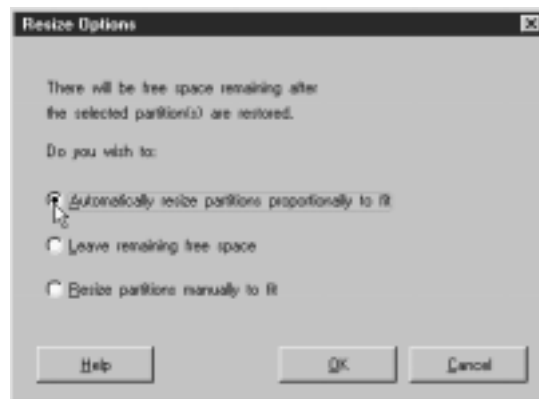
Fig. 4.9 – Resize Options

Automatically resize partitions proportionally to fit.

Mark this option to allow Drive Image to automatically expand the partitions in equal proportions to occupy the destination drive's remaining free space.

Leave remaining free space.

Mark this option if you want to leave any remaining free space unused on the destination drive after the partitions are restored.

Resize partitions manually to fit.

Mark this option to display the **Resize Partition** window where you can manually set the size of the partitions to fit in the destination drive's remaining free space.

NOTE: For more information on resizing partitions, see step 9 of the "Procedure" section (page 29).

Advanced Options

The **Restore Image Advanced Options** group box appears when you click **Advanced Options** at the **Ready To Restore Image File** screen. The following options are available from the **Restore Image Advanced Options** group box:
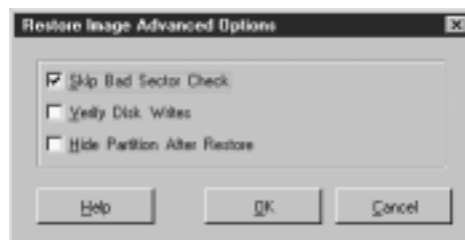
Fig. 4.10 – Restore Image Advanced Options

Skip Bad Sector Check

This is marked by default to save time in restoring the image file.

Although most drives do not have bad sectors, the potential for problems increases during the lifetime of the hard drive. If you have an older hard drive, it is wise to enable bad-sector checking by removing the mark from the **Skip Bad Sector Check** box.

Verify Disk Writes

Mark the **Verify Disk Writes** check box if you want to enable DOS disk write verification.

NOTE: Disk write verification is not critical to safely restore image files. Enabling disk write verification can slow the image restore process by as much as seven times.

Hide Partition After Restore

Most operating systems only allow one primary partition to be visible (bootable) at a time. If you are restoring an image of a primary partition and you do not want to make that partition your visible (bootable) partition, mark the **Hide Partition After Restore** box.

Scenarios

Restoring an Image File from a Zip Drive

Sample System Configuration

One 2.1 GB hard drive containing:

- One active primary partition (C:) running Windows 95; 600 MB used and 500 MB unused.
- 1 GB unpartitioned free space.

One CD-ROM drive (D:).

One Zip drive (E:).

Objective

Restore a 400 MB logical partition from an image file (MYIMAGE.PQI) that spans two Zip disks. You wish to restore the logical partition to the unpartitioned free space on your hard drive and to resize it to 1 GB.

Procedure

1. Run **Drive Image**.

   As Drive Image automatically loads the Zip drivers, be sure to note the drive letter assigned to the Zip drive. In this case, we will refer to the Zip drive as E:.

2. From the Drive Image title screen, click **Restore Image**.

3. Insert the Zip disk you labeled as "MYIMAGE DISK #1" into your Zip drive.

4. In the **Image File** field, type **E:\MYIMAGE.PQI**.

   You may also click **Browse** to browse the directory tree for your Zip drive and the desired image file.

5. Click **Next**.

6. Select the 400 MB logical partition.

7. Click **Next**.

8. **Disk 1** should already be selected.

9. Click **Next**.

10. Select the 1 GB unpartitioned free space.

11. Click **Next**.

12. When the **Resize Options** window appears, select **Automatically resize partitions proportionally to fit**, then click **OK.**

13. Click **Finish**.

14. When Drive Image prompts you to insert the next disk in the series, remove "MYIMAGE DISK #1" from the Zip drive and insert "MYIMAGE DISK #2".

15. After Drive Image has completed the image restore, click **OK** to return to the Drive Image main screen and exit the program.

16. Reboot your computer.

Result

After reboot, your hard drive has an active primary partition (C:) and an extended partition containing a 1 GB logical partition (D:). Your CD-ROM is now drive E: and your Zip drive is F:.

Restoring an Image File from a CD-R Drive

Sample System Configuration

One 3 GB hard drive containing:

- One damaged, unbootable active primary partition (C:) containing Windows 95; 1 GB used and 800 MB unused.

- One extended partition containing one logical partition (D:); 1.2 GB unused.

One CD-R drive (E:).

Objective

Replace your damaged active primary partition (C:) with a backup image of the partition stored on CD-ROM.

Procedure

IMPORTANT: You must copy the DOS drivers for your CD-R onto the bootable floppy that you created during Drive Image installation. Refer to your CD-R user guide or contact your CD-R manufacturer for instructions on loading CD-R drivers in DOS and making DOS assign the CD-R drive a letter.

1. Insert the bootable floppy and start the computer.

2. When the computer has booted to the A: prompt, insert the Drive Image program floppy you created during Drive Image installation.

3. At the A: prompt, type **PQDI** and press <ENTER>.

4. From the Drive Image title screen, click **Restore Image**.

5. Insert the CD-ROM you labeled as "MYIMAGE DISK #1" into your CD-R drive.

6. In the **Image File** field, type **E:\MYIMAGE.PQI**.

    You may also click **Browse** to browse the directory tree for your CD-R drive and the desired image file.

7. Click **Next**.

8. Select the 1.8 GB primary partition (C:).

9. Click **Next**.

10. **Disk 1** should already be selected.

11. Click **Next**.

12. Select the 1.8 GB damaged primary partition (C:) on your hard drive.

13. Click **Next**.

    The following message appears:

    "Item selected is not free space. Disk Images can only be restored into existing free space. Drive Image will delete this partition before restoring disk image. WARNING: Deleting a partition will DESTROY any existing data on that partition."

14. Click **OK**.

    Drive Image deletes the C: partition and labels it as free space.

15. Click **Finish**.

16. When Drive Image prompts you to insert the next disk in the series, remove "MYIMAGE DISK #1" from the CD-R drive and insert "MYIMAGE DISK #2".

17. After Drive Image has completed the image restore, it prompts you to select a primary partition to set active (bootable). Select the partition you just restored.

18. Click **OK** to return to the Drive Image main screen and exit the program.

19. Reboot your computer.

Result

The restored primary partition (C:) has replaced the damaged active primary partition (C:).
You should now be able to boot to Windows 95 and operate normally again. Your C: partition
contains all the data that was present on it when you originally created the image file.

Restoring an Image File from a Secondary Hard Drive

Sample System Configuration

Disk 1 — One 3.5 GB hard drive containing:

- One active primary partition (C:) running Windows 95; 500 MB used and 1 GB
  unused.

- One extended partition containing one logical partition (E:); 400 MB used and 600 MB
  unused.

- 1 GB unpartitioned free space.

Disk 2 — One 2 GB hard drive containing:

- One primary partition (D:); 1 GB used by the image file, MYIMAGE.PQI, and 0 MB
  unused.

- One extended partition containing one logical partition (F:); 600 MB used and 400 MB
  unused.

Objective

Restore the 1 GB logical partition from the image file, D:\MYIMAGE.PQI to the
unpartitioned free space on Drive 1.

Procedure

1. Run **Drive Image**.

2. From the Drive Image title screen, click **Restore Image**.

3. In the **Image File** field, type **D:\MYIMAGE.PQI**.

    You may also click **Browse** to browse the directory tree for your secondary drive and
    the desired image file.

4. Click **Next**.

5. Select the 1 GB logical partition.

6. Click **Next**.

7. Select **Disk 1**.

8. Click **Next**.

9. Select the 1 GB unpartitioned free space.

10. Click **Next**.

11. Click **Finish**.

12. After Drive Image has completed the image restore, click **OK** to return to the Drive Image main screen and exit the program.

13. Reboot your computer.

Result

After reboot, **Disk 1** has a 1.5 GB active primary partition (C:) and an extended partition containing two 1 GB logical partitions (E: and F:). **Disk 2** has a 1 GB primary partition (D:) and an extended partition containing one 1 GB logical partition (G:).

Chapter 5

Copying Disk to Disk

This chapter contains the following information:

- Preparation
- Procedure
- Resize Options
- Advanced Options
- Scenarios

Preparation

1. If you are upgrading to a new hard drive, refer to *Appendix A* for the following information:

    - Hard Drive Manufacturer's Contact Information
    - Using Drive Image with SCSI Hard Drives
    - Using Drive Image with Older Computer BIOSes that Require Drive Overlay Software

2. It is strongly recommended that you perform the following steps before upgrading to a new hard drive or using Drive Image to copy disk to disk.

    a. Create a bootable DOS diskette.

        NOTE: For information on creating a bootable floppy, see the README.TXT file on the Drive Image CD-ROM.

b. Before running Drive Image, use a disk utility program such as ScanDisk or Norton's Disk Doctor to identify and repair any errors on your hard drive.

c. Verify that the destination drive or partition is the same size or larger than the source drive.

3. If you are copying from one partition to another partition on the same hard drive, skip directly to the "Procedure" section.

4. To set up a dual hard drive system, perform the following:

a. Get the manufacturer's installation guides for both drives.

The installation guides provide information on installing the drives, setting up the BIOS, and changing the jumper settings. If you do not have access to these guides, contact the hard drive manufacturers directly. Most drive manufacturers maintain sites on the World Wide Web that offer setup information. For a contact list of some popular hard drive manufacturers, refer to "Hard Drive Manufacturer Contact Information" in *Appendix A*.

b. Turn off the computer's power.

c. Discharge static electricity by touching a grounded metal object such as a metal filing cabinet.

> *WARNING:* Do not allow static electricity to contact the inner parts of your computer. Static electricity can damage or destroy your computer's electronic components.

d. Remove the computer's cover.

e. Determine which drive you want to be Master and which drive you want to be Slave, then follow the manufacturer's instructions to change the jumper settings on your hard drives accordingly.

f. Attach the interface cable and the power supply cable to the second drive.

g. Mount the second drive.

h. Start the computer and enter its Basic Input/Output System (BIOS) Setup program before the computer completes startup.

This is usually accomplished by pressing <DEL>, <F1>, or <F2>, according to the prompt that appears at the bottom of your screen during initial startup.

i. If the BIOS Setup program includes an Auto-Detect option, select it to detect both the Master and Slave drives.

    If there is no Auto-Detect option, you may be required to enter the specific number of heads, cylinders, and megabytes of the drives. This information is usually printed on the drive's outside cover. If it is not, contact the drive manufacturer. (See "Hard Drive Manufacturer Contact Information" in *Appendix A*.)

j. If the BIOS does not support hard drives larger than 504 megabytes, follow the destination drive manufacturer's instructions to install any software included with the drive.

    IMPORTANT: Computer BIOSes made before 1994 usually do not support the EIDE standard and cannot address hard drives larger than 504 MB. Hard drives larger than 504 MB typically include software such as OnTrack Disk Manager, Maxtor Max-Blast Disk Manager, or Micro House EZ-Drive which allow computers to see larger hard drives.

    If your machine does not support the EIDE standard, make sure the software included with the destination drive is correctly installed.

    When running Drive Image, make sure that the disk sizes reported in the **Total Selected** fields are accurate before continuing. If Drive Image lists a drive size that is much smaller than its actual size, the EIDE support software is not functioning properly.

k. Turn off the computer and restart it.

Procedure

NOTE: Please be aware that it is NOT necessary to format your destination partition or to partition your hard drives before performing a Disk To Disk Copy. Drive Image automatically performs both these functions.

To directly copy partitions within the same drive or from one hard drive to another without creating an image file, perform the following:

1. At the Drive Image main screen, click **Disk To Disk**.

2. Select the drive that contains the partition(s) you wish to copy (see Fig. 5.1).

    A check mark appears to the left of the selected drive.
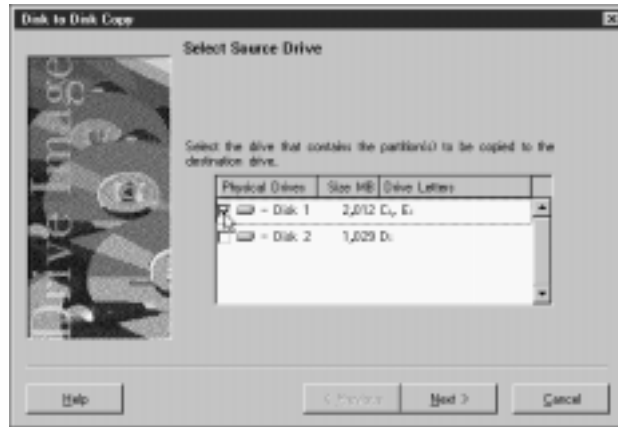
Fig. 5.1 – Select Source Drive

3. Click **Next**.

> **NOTE:** At any point prior to actually copying partitions, you may click
> **Previous** to return to the previous step and change your settings.

4. Select the source partition(s) you wish to copy, or click **Select All** to automatically
   select all partitions (see Fig. 5.2).

   A check mark appears to the left of the selected partition(s).
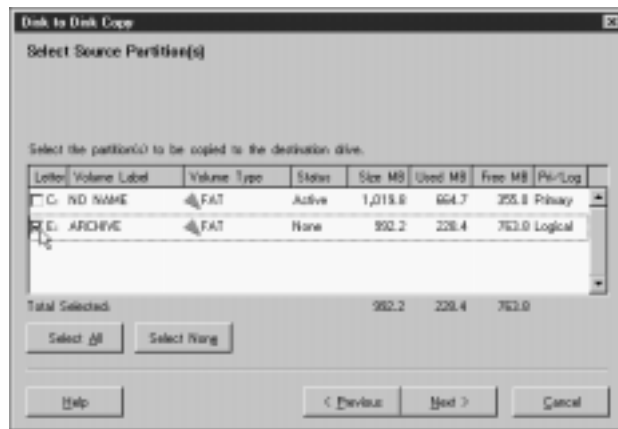
Fig. 5.2 – Select Source Partition(s)

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To deselect partitions, click again on a partition or click **Select None** to deselect all partitions at once.

The **Total Selected** field keeps a running total of the disk space for all selected partitions, as well as the total used and free space within the partitions.

IMPORTANT: In order to copy partitions, the destination partition or drive must have free space equivalent to the total space (used and unused) of the selected source partition(s).

5.   Click **Next**.

6.   Select the drive to which you wish to copy the partition(s) (see Fig. 5.3).
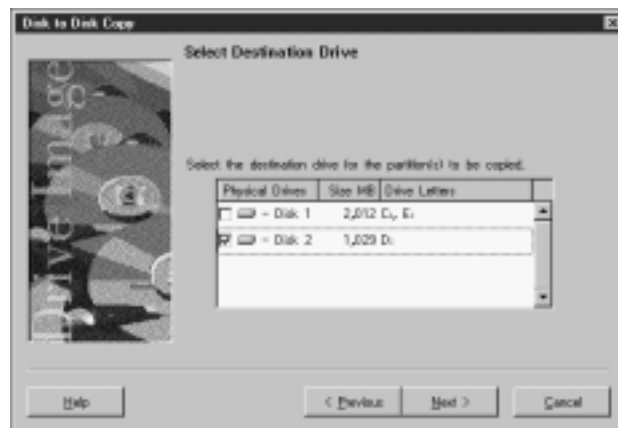
Fig. 5.3 – Select Destination Drive

7.   Click **Next**.

8. Select an existing partition or free space (non-partitioned disk space) on the destination drive (see Fig. 5.4).
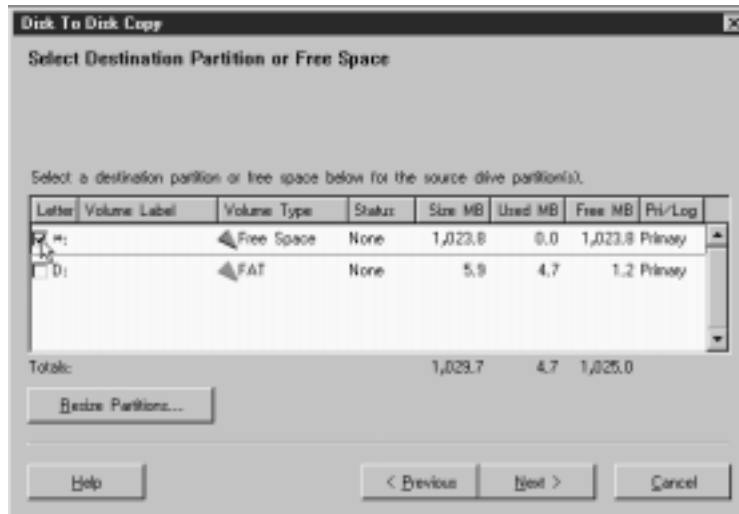
Fig. 5.4 – Select Destination Partition or Free Space

NOTE: If your destination drive is new and does not contain any partitions, disregard this step.

9. If the destination partition or free space is not large enough to accommodate the partition(s) you wish to copy, or if you are copying the partition to a larger drive and want to set a specific size for partition rather than use the proportional resize option, you can click **Resize Partitions** to specify a different size for the copied partition. To resize partitions, perform the following:

a. Click **Resize Partitions**.

The **Resize Partitions** window appears (see Fig. 5.5).
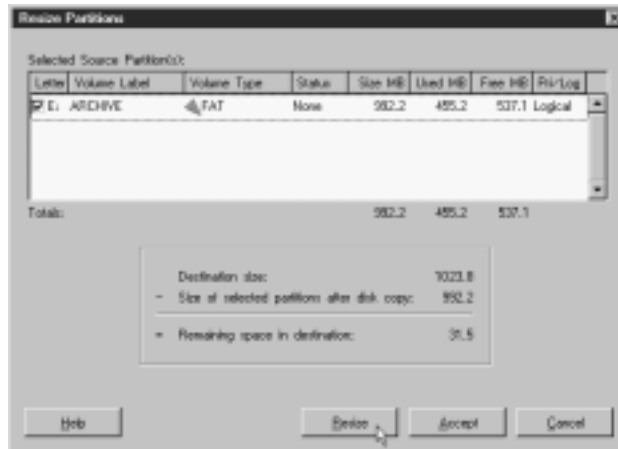
Fig. 5.5 – Resize Partitions: Main Window

The **Selected Source Partitions** group box displays the partition(s) you selected to copy.

The **Totals** field displays the disk space for the selected partition(s), as well as the total used and free space within the partition(s).

A formula box below the **Totals** field displays the following information:

- Destination Size
- Current Size of Selected Partition
- Remaining Space in Destination

b. Click **Resize**.

The **Resize Partition** window appears (see Fig. 5.6).
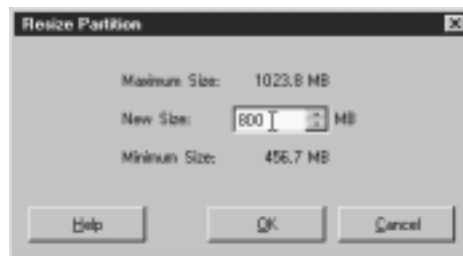
Fig. 5.6 – Resize Partition: Enter New Size

The **Maximum Size** field displays the largest possible size the source partition(s) can be and still fit in the destination space.

The **Minimum Size** field shows the smallest possible size the source partition(s) can occupy.

c. In the **New Size** field, enter a number that is less than the **Destination Size** (from the previous dialog's formula box) and greater than the **Minimum Size**.

d. Click **OK**.

Since partitions must end on a cylinder boundary, Drive Image rounds the **New Size** up to the nearest cylinder boundary.

e. Click **Accept**.

Later, when you copy the partition(s), Drive Image resizes them.

10. Click **Next**.

If you selected an existing partition as the destination, the following message appears:

"Item selected is not free space. Partitions can only be copied into existing free space. Drive Image will delete this partition before copying. WARNING: Deleting a partition will DESTROY any existing data on that partition."

Drive Image does not delete the partition until you click **Finish** on the **Ready to Copy Disk to Disk** screen.

If the free space on the destination drive is greater than the space required to copy the selected partition(s), the **Resize Options** dialog appears.

NOTE: For information on resize option settings, see "Resize Options" (page 54).

11. Drive Image displays all the information you have entered to this point (see Fig. 5.7):

• Source drive
• Source partitions
• Destination drive
• Destination space
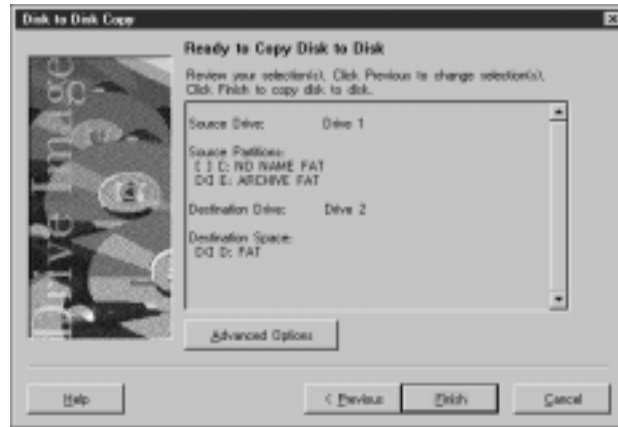
Fig. 5.7 – Ready to Copy Disk to Disk

If you wish to alter any settings, click **Previous** to backtrack and make changes.

12. If you wish to set options such as disabling file system error-checking or hiding partitions after copy, click **Advanced Options**.

> **NOTE:** For information on Advanced Options settings, see "Advanced Options" (page 55).

> **NOTE:** Copying multiple logical partitions can cause the drive letters of subsequent partitions to change. This may make the computer unbootable or cause applications to fail. For information on why drive letters change and how to fix them, refer to *Background Information*: "How the OS Assigns Drive Letters" and "Problems Caused by Drive Letter Changes." (In Windows 95, *Background Information* is located in the Start menu under **Programs**>**Drive Image 2.0**.)

13. Click **Finish** to begin copying the selected partition(s).

    The **Copying Disk To Disk** dialog appears, tracking the following items:

    • Estimated megabytes to copy

    • Total megabytes copied

    • Entire process progress bar

    • Information about current partition (volume, type, size MB, used MB, free MB)

- Sub-process progress bar

- Transfer rate for current partition

- Total megabytes copied for current partition

- Time elapsed

- Estimated time remaining

Upon completion, the following message appears: "Selected partition(s) copied successfully."

14. Click **OK** to return to the Drive Image main screen.

Resize Options

The following Resize Options are available when copying partitions if the free space on the destination drive is greater than the space required by the partition(s).
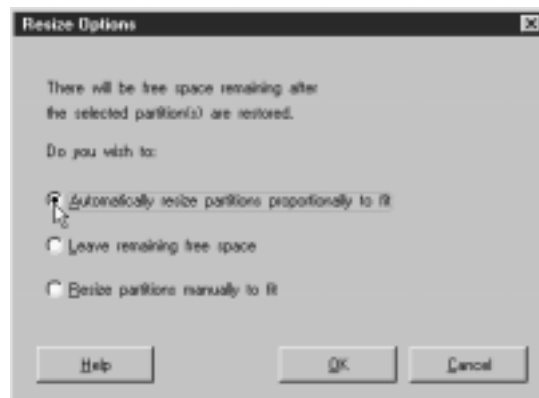
Fig. 5.8 – Resize Options

Automatically resize partitions proportionally to fit.

Mark this option to allow Drive Image to automatically expand the partitions in equal proportions to occupy the destination drive's remaining free space.

Leave remaining free space.

Mark this option if you want to leave any remaining free space unused on the destination drive after the partitions are copied.

Resize partitions manually to fit.

Mark this option to display the **Resize Partition** window where you can manually set the size of the partitions to fit in the destination drive's remaining free space.

NOTE: For more information on resizing partitions, see step 7 of the "Procedure" section (page 49).

Advanced Options

The **Disk to Disk Advanced Options** group box appears when you click **Advanced Options** at the **Ready To Copy Disk To Disk** screen. The following options are available from the **Disk To Disk Advanced Options** group box:
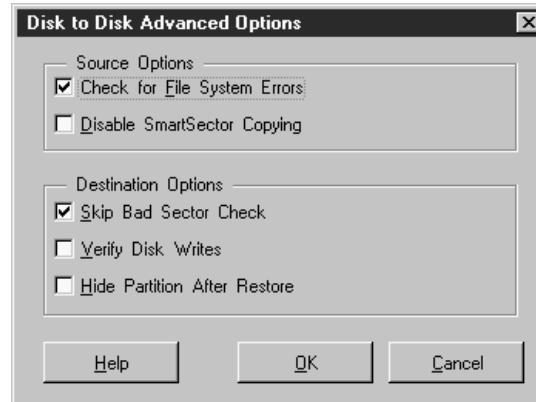
Fig. 5.9 – Disk to Disk Advanced Options

Source Options

Check for File System Errors

Unmark the **Check for File System Errors** check box if you want to disable error checking.

If you have already used a disk utility program such as ScanDisk to check your hard drive for errors, it is not necessary to have Drive Image check for file system errors. Unmarking **Check for File System Errors** saves time in copying data.

If you did not run a disk utility program before loading Drive Image, leave the **Check for File System Errors** check box marked.

Disable SmartSector Copying

Drive Image's SmartSector technology speeds up the data copying process by only copying clusters and sectors that contain data. However, in some cases, such as high-security environments, it may be desirable to copy all clusters and sectors in their original layout, whether or not they contain data.

If you wish to copy both used and unused clusters and sectors, mark the **Disable SmartSector Copying** check box.

NOTE: Disabling SmartSector copying increases processing time.

Destination Options

Skip Bad Sector Check

Although most drives do not have bad sectors, the potential for problems increases during the lifetime of the hard drive. If you have an older hard drive, it is wise to enable bad-sector checking by removing the mark from the **Skip Bad Sector Check** box.

Verify Disk Writes

Mark the **Verify Disk Writes** check box if you want to enable DOS disk write verification.

Disk write verification is not critical to safely copy partitions. Enabling disk write verification can slow the copying process by as much as seven times.

Hide Partition After Copy

Most operating systems only allow one primary partition to be visible (bootable) at a time. If you are copying a primary partition and you do not want to make that partition your visible (bootable) partition, mark the **Hide Partition After Copy** box.

Also, if you are using your secondary hard drive as a complete backup of your primary drive, marking the **Hide Partition After Copy** box preserves all the secondary drive information without changing any drive letters.

Scenarios

Copying from Partition to Partition in a Single Hard Drive System

Sample System Configuration

One 2 GB hard drive containing one active primary partition (C:) running Windows 95; 500 MB used and 1.5 GB unused.

Objective

Create a backup of the active partition by copying it to the same hard drive.

Procedure

1. Use PowerQuest's PartitionMagic to resize the existing primary partition to about half the total size of the hard drive (1 GB).

2. Run Drive Image.

3. From the Drive Image title screen, click **Disk To Disk**.

4. **Disk 1** should already be selected.

5. Click **Next**.

6. Select the primary partition (C:).

7. Click **Next**.

8. **Disk 1** should already be selected.

9. Click **Next**.

10. Select the free space (non-partitioned disk space) you created when you resized the primary partition.

11. Click **Next**.

    If the **Resize Options** window appears, select **Automatically resize partitions proportionally to fit**, then click OK.

12. From the **Ready To Copy Disk To Disk** screen, click **Advanced Options**.

13. Under the **Source Options**, unmark the **Check for File System Errors** box.

14. Under the **Destination Options**, mark the **Hide Partition After Copy** box.

15. Click **OK**.

16. Click **Finish**.

17. After Drive Image has completed the copying process, click **OK** to return to the Drive Image main screen and exit the program.

Result

The computer reboots and returns to Windows 95. Because only one primary partition may be visible at a time, the new partition does not appear in Windows Explorer.

If you ever wish to replace the active partition with the hidden backup partition (for instance, if you lose data from your C: partition), run Drive Image **Disk To Disk** again. Select the hidden partition as the source and the active partition as the destination. After Drive Image completes the copying process, it prompts you to set an active partition. Select the newly copied partition.

Copying from Drive to Drive in a Dual Hard Drive System

Sample System Configuration

Disk 1 — One 3 GB hard drive containing:

- One active primary partition (C:) running Windows 95; 500 MB used and 1 GB unused.

- One extended partition containing one logical partition (E:); 400 MB used and 600 MB unused.

- 500 MB unpartitioned free space.

Disk 2 — One 2 GB hard drive containing:

- One primary partition (D:); 400 MB used and 600 MB unused.

- One extended partition containing one logical partition (F:); 200 MB used and 800 MB unused.

Objective

Copy the E: partition from Disk 1 to the F: partition on Disk 2.

Procedure

1. Run Drive Image.

2. From the Drive Image title screen, click **Disk To Disk**.

3. Select **Disk 1**.

4. Click **Next**.

5. Select the **E:** partition.

6. Click **Next**.

7. Select **Disk 2**.

8. Click **Next**.

9. Select the **F:** partition.

10. Click **Next**.

    The following message appears:

    "Destination selected is not free space. Partitions can only be copied into existing free space. Drive Image will delete this partition before copying. WARNING: Deleting a partition will DESTROY any existing data on that partition."

    Click **OK**.

11. From the **Ready To Copy Disk To Disk** screen, click **Advanced Options**.

12. Under the **Source Options**, unmark the **Check for File System Errors** box.

13. Click **OK**.

14. Click **Finish**.

15. After Drive Image has completed the copying process, click **OK** to return to the Drive Image main screen and exit the program.

Result

The computer reboots and returns to Windows 95. Drive letters stay the same, but the F: partition now contains the same data as the E: partition.

Drive Image File Editor

This chapter contains the following information:

- Drive Image File Editor -- Main Screen
- Opening Image Files
- Deleting Image Files
- Creating New Image Files
- Copying Image Files
- Working with Image File Passwords
- Accessing Partition Properties
- Copying Partitions
- Deleting Partitions
- Compressing Partitions
- Uncompressing Partitions
- Restoring Individual Files from a Partition
- Speeding up the Restore Process

PowerQuest's Drive Image File Editor simplifies management of your image files. Working within a single screen, Drive Image File Editor gives you total image file control, allowing you to create and copy image files, copy or delete partitions within files, compress and uncompress partitions, and restore individual program and data files from imaged partitions. Drive Image File Editor also provides name and comment capabilities, for easy identification of individual files and partitions.

Drive Image File Editor—Main Screen

Drive Image File Editor's main screen is divided into three sections: **Recent Images**, **Image File Information**, and **Partitions** (see Fig. 6.1).

Fig. 6.1 – Image File Editor Main Screen

Recent Images

Recent Images lists the PowerQuest image files most recently accessed. Click any filename in this list to view the corresponding image file and partition information. You can also right-click anywhere in the **Recent Images** list box to access a quick menu of all the commands in the **Image** menu.

The **Recent Images** list holds up to 16 file names. Additional file names bump the oldest items from the list. To clear this list, select **Image>Recent Images>Clear List** from the menu bar. To remove a single list entry, select **Image>Recent Images>Remove Entry**.

Image File Information

Image File Information displays user-assigned **Name** and **Comment** information for the selected image file. You may specify a name by typing directly in the **Name** field, or by selecting **Image>Name** from the menu bar. If no name is assigned, this field remains blank.

You may also specify a comment by typing directly in the **Comment** field, or by selecting **Image>Comment** from the menu bar. If no comment is assigned, this field remains blank.

Partitions

Partitions displays the partitions in the selected image file. The following information is provided for each partition:

- **Name** identifies a user-assigned name for the selected partition. You may specify a name by selecting **Partition>Name** from the menu bar. If no name is assigned, this field remains blank.

- **Drive Letter** identifies the drive letter associated with the selected partition.

- **Type** specifies the file system type (e.g. FAT, NTFS, HPFS, etc.) of the selected partition.

- **Status** identifies the selected partition's drive status as either **Primary** or **Logical**.

- **Date** identifies the date the selected partition's image file was created.

- **Size** specifies the selected partition's file size.

- **Compressed** identifies whether the selected partition is compressed or uncompressed. If the partition is compressed, the level of compression (**Low** or **High**) is also specified.

    NOTE: Low level compression yields an approximate 40% compression rate. High level compression is approximately 50%.

Opening Image Files

To open a new image file, perform the following:

1. From the menu bar, select **Image>Open** or click the **Open Image File** icon.

    The **Open** dialog appears.

    NOTE: You may also right-click inside the **Recent Images** list box and select **Open** from the quick menu.

2. Navigate to the folder where the image file is located.

3. Select the desired image file.

    NOTE: Drive Image File Editor can only open files created with Drive Image, Drive Image Professional, or Drive Image File Editor.

4. Click **Open**.

    The filename appears in the **Recent Images** list.

Deleting Image Files

To delete an image file, perform the following:

1. From the menu bar, select **Image>Open** or click the **Open Image File** icon.
   The **Open** dialog appears.

2. Navigate to the folder where the image file is located.

3. Select the desired image file.

4. Press <DEL>.
   The following message appears: "Are you sure you want to send [*.PQI] to the Recycle Bin?"

5. Click **Yes**.
   The image file is deleted.

6. Click **Cancel** to exit the **Open** dialog.

Or, you may follow these steps:

1. From the menu bar, select **Image>New** or click the **Create New Image** icon.
   The **New Image File** dialog appears.

2. Navigate to the folder where the image file is located.

3. Select the desired image file.

4. Press <DEL>.
   The following message appears: "Are you sure you want to send [*.PQI] to the Recycle Bin?"

5. Click **Yes**.
   The image file is deleted.

6. Click **Cancel** to exit the **New Image File** dialog.

NOTE: Image files may also be deleted using Microsoft's Windows Explorer utility.

Creating New Image Files

Drive Image File Editor allows you to create empty image files, which may then be customized by copying desired partitions from other files. To create a new image file, perform the following:

1. From the menu bar, select **Image>New** or click the **Create New Image** icon.

    The **Save As** dialog appears.

    NOTE: You may also right-click inside the **Recent Images** list box and select **New** from the quick menu.

2. Navigate to the folder where you wish to create the image file.

3. Specify a new image filename.

4. Click **Save**.

    The new filename appears in the **Recent Images** list.

Creating Spanned Image Files

Drive Image File Editor allows you to save an existing image file across a series of disks (e.g. floppy disks and removable media storage devices such as Jaz, Zip, and SyQuest disks) in a spanned format. To span an existing image file, perform the following:

1. In the **Recent Images** list, select the file you wish to span.

    NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" (page 63) for more information.

2. From the menu bar, select **Image>Span**.

    The **Create Spanned Image** dialog appears.

    NOTE: You may also right-click the selected image file in the **Recent Images** list box and select **Span** from the quick menu.

3. Navigate to the location where you wish to save the spanned image.

    NOTE: You must have at least 100 KB free on the destination drive.

4. Specify the spanned image filename.

5. Click **Save**.

Drive Image File Editor creates the spanned image file, prompting you for each new diskette. Drive Image permits you to span a maximum of 50 disks with a limit of 12 partitions per image file. You must have at least 100K of available space on each disk in the series. If you use the media-spanning feature, be sure to number the disks in order, since you must insert them in sequence when restoring the image file.

Combining Spanned Images Files

Drive Image File Editor allows you to recombine a spanned image file into a single, unified file. To combine a spanned image file, perform the following:

1. In the **Recent Images** list, select the file you wish to combine.

   NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" (page 63) for more information.

2. From the menu bar, select **Image>Combine**.
   The **Combine Spanned Image** dialog appears.

   NOTE: You may also right-click the selected image file and select **Combine** from the quick menu.

3. Navigate to the location where you wish to save the combined image.

4. Specify the combined image filename.

5. Click **Save**.

The image file is combined and saved under the specified filename.

Copying Image Files

Although image files cannot be directly copied within Drive Image File Editor, file copies may be made in one of two ways. To copy an image file, perform the following:

1. In the **Recent Images** list, select the file you wish to copy.

    NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" (page 63) for more information.

    The file's partition information appears in the **Partitions** group box.

2. Shift-click to select contiguous partitions or Control-click to select discontiguous partitions.

3. From the menu bar, select **Partition>Copy** or click the **Copy Partition** icon.

    The **Copy to Image File** dialog appears.

4. Navigate to the folder where you wish to create the image file.

5. Specify a new image filename.

6. Click **Save**.

    The following message appears: "Copy partitions to image file [*.PQI]?"

7. Click **Yes**.

    The copied partitions appear in the newly-created image file.

Or, you may follow these steps:

1. From the menu bar, select **Image>New** or click the **Create New Image** icon.

    The **Save As** dialog appears.

2. Navigate to the folder where you wish to create the image file.

3. Specify a new image filename.

4. Click **Save**.

    The new filename appears in the **Recent Images** list.

5. In the **Recent Images** list, select the file you wish to copy.

    The file's partition information appears in the **Partitions** group box.

6. Shift-click to select contiguous partitions or Ctrl-click to select discontiguous partitions.

7. Drag-and-drop the partitions to the newly-created filename in the **Recent Images** list. The following message appears: "Copy partitions to image file [*.PQI]?"

8. Click **Yes**.

    The copied partitions appear in the newly-created image file.

NOTE: Image files may also be copied using Microsoft's Windows Explorer utility.

Working with Image File Passwords

When you create an image file in Drive Image, you have the option to assign a password to that file. Once assigned, the password is encrypted into the file and cannot be changed. Password-protection is an excellent means of securing your image files; however, editing protected files can be confusing. Following are some general rules for working with password-protected files:

Images

If you wish to undo or reassign a password, you must use Drive Image to restore the protected image file and then create a new image file with a different password.

Partitions

Partitions from a password-protected image file retain that password. Such partitions cannot be copied or saved into an image file with a different password, nor can partitions with different passwords be combined to create an new image file.

Accessing Partition Properties

To access a partition's properties information, perform the following:

1. In the **Recent Images** list, click the file that contains the desired partition.

    NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" (page 63) for more information.

2. In the **Partitions** group box, select the desired partition.

3. From the menu bar, select **Partition>Properties**.

   NOTE: You may also right-click the partition and select **Properties** from the quick menu.

   The **Properties** dialog appears.

4. To exit the **Properties** dialog, click **OK**.

Properties Information

Displays the properties of the selected partition. The following information is provided on each partition:

- **Name** identifies a user-assigned name for the partition.

- **Comment** specifies a user-assigned comment associated with the partition.

- **Drive Letter** identifies the partition drive letter.

- **Partition Type** specifies the file system type of the partition.

- **File System Type** specifies the file system type of the image file in which the partition is located.

- **Status** identifies the selected partition's drive status as either **Primary** or **Logical.**

- **Spanned** identifies whether the partition is spanned over several disks.

- **Compression** identifies whether the selected partition is compressed or uncompressed. The level of compression (**Low** or **High**) is also specified.

  NOTE: Low level compression yields an approximate 40% compression rate. High level compression is approximately 50%.

- **Password Protected** identifies whether the selected partition is password protected.

- **Partition Size** specifies the total size of the partition. This total includes both used and free space.

- **Used Space in Partition** specifies the amount of used space within the partition.

- **Free Space in Partition** specifies the amount of free or unused space within the partition.

- **Physical Size in Image** identifies the actual size of the partition within the image file. This physical size may differ from the **Partition Size** depending upon the amount of used and free space within the partition and the compression level.

Copying Partitions

You may copy single or multiple partitions between image files. Copied partitions will not overwrite any partition already in the file. Therefore, you may have several partitions with the same name, drive letter, etc. within one image file.

To copy a partition, perform the following:

1. In the **Recent Images** list, select the file that contains the partition(s) you wish to copy.

     NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" (page 63) for more information.

2. In the **Partitions** group box, select the desired partition(s).

3. Drag-and-drop the partition(s) to the desired file in the **Recent Images** list.

     NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" (page 63) for more information.

     The following message appears: "Copy partition(s) to image file [*.PQI]?"

4. Click **Yes**.

     The copied partitions appear in the image file.

Or, you may follow these steps:

1. In the **Recent Images** list, select the file that contains the partition(s) you wish to copy.

2. In the **Partitions** group box, select the desired partition(s).

3. From the menu bar, select **Partition>Copy** or click the **Copy Partition** icon.

     NOTE: You may also right-click the partition(s) and select **Copy** from the quick menu.

     The **Copy to Image File** dialog appears.

4. Navigate to the location of the image file to which you want to copy the partition(s).

5. Select the desired image file.

6. Click **Save**.

    The following message appears: "Copy partition(s) to image file [*.PQI]?"

7. Click **Yes**.

    The copied partition(s) appear in the image file.

Deleting Partitions

To delete single or multiple partitions, perform the following:

1. In the **Recent Images** list, click the file that contains the partition(s) you wish
    to delete.

    NOTE: If the file is not listed, you must first open the file. See "Opening Image
    Files" (page 63) for more information.

2. In the **Partitions** group box, select the desired partition(s).

3. From the menu bar, select **Partition>Delete** or click the **Delete Partition** icon.

    NOTE: You may also right-click the partition(s) and select **Delete** from the quick menu.

    The following message appears: "Delete partition? or Delete all selected partitions?"

4. Click **Yes**.

    The partition(s) are deleted from the image file.

Compressing Partitions

Drive Image File Editor allows you to compress individual partitions and save them to
another image file. Compressed partitions will not overwrite any partition already in the
file. Therefore, you may have several partitions with the same name, drive letter, etc.
within one image file.

To compress a partition, perform the following:

1. In the **Recent Images** list, select the file that contains the partition you wish to compress.

    NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" (page 63) for more information.

2. In the **Partitions** group box, select the desired partition.

3. From the menu bar, select **Partition>Compress**.

    NOTE: You may also right-click the partition and select **Compress** from the quick menu.

    The **Compress to Image File** dialog appears.

4. Navigate to the location of the image file in which you want to save the compressed partition.

5. Select the desired image file.

6. Click **Save**.

    The **Compress Partition** dialog appears.

7. Select the compression level, either **Low** or **High**.

    NOTE: Selecting **Low** compresses partitions by approximately 40%. **High** increases the compression ratio to approximately 50%.

8. Click **Compress**.

    The compressed partition appears in the image file.

Uncompressing Partitions

Drive Image File Editor allows you to uncompress individual partitions and save them to another image file. Uncompressed partitions will not overwrite any partition already in the file. Therefore, you may have several partitions with the same name, drive letter, etc. within one image file.

To uncompress a partition, perform the following:

1. In the **Recent Images** list, select the file that contains the partition you wish to uncompress.

   NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" (page 63) for more information.

2. In the **Partitions** group box, select the desired partition.

3. From the menu bar, select **Partition>Uncompress**.

   NOTE: You may also right-click the partition and select **Uncompress** from the quick menu.

   The **Uncompress to Image File** dialog appears.

4. Navigate to the location of the image file in which you want to save the uncompressed partition.

5. Select the desired image file.

6. Click **Save**.

   The following message appears: "Uncompress partition to image file [*.PQI]?"

7. Click **Yes**.

   The uncompressed partition appears in the image file.

Restoring Individual Files from a Partition

Drive Image File Editor allows you to restore (extract) individual program and data files from imaged partitions and save them to any directory or folder. You can restore single files or you can restore multiple files at the same time.

To restore (extract) one or more files, perform the following:

1. In the **Recent Images** list, select the image file that contains the partition with the file(s) you wish to restore.

   NOTE: If the image file is not listed, you must first open it. See "Opening Image Files" (page 63) for more information.

2. In the **Partitions** group box, select the desired partition.

3. From the menu bar, select **Partition>File Restore**.

    NOTE: You may also right-click the partition and select **File Restore** from the quick
    menu.

    The **File Restore** dialog appears.

4. Select the file you wish to restore.

    Shift-click to select contiguous files or Ctrl-click to select discontiguous files.

    Double-click on a folder to browse its contents for the desired file(s). To return to the
    previous directory level, click the folder button to the right of the **Look In** field, or
    backtrack using the list in the **Look In** field.

    The name of the selected file appears in the **File name** field. If multiple files are
    selected, **(multiple files)** appears in the **File name** field.

    You can also type the filename directly into the **File name** field or use wildcard
    characters such as "*" and "?" to reduce the number of files listed.

5. In the **Target Directory** field, enter the location where you want to save the restored
    file(s).

    You may also click **Browse** to browse the directory tree for the desired target folder.
    Double-click on the target folder, then click **Select**.

6. Click **Restore** to restore the file(s).

    NOTE: If you assigned a password to your image file when you created it, Drive
    Image prompts you for a password. Enter the password you assigned to
    the image file, then click **OK** to continue.

    Drive Image File Editor displays the following information:

    - "Restoring File: *<filename>*"
    - "To Directory: *<directory name>*"
    - Progress indicator bar

7. When Drive Image File Editor completes restoring the file(s), click **OK**.

8. Click **Close** to return to the Drive Image File Editor main window.

Speeding Up the Restore Process

When restoring image files, compressed partitions can slow down the process. The program must spend time uncompressing each partition. This process becomes much faster if you perform the uncompressing yourself.

To speed up the restore process, perform the following:

1. In Drive Image File Editor, select the image file you wish to restore from the **Recent Images** list.

    NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" (page 63) for more information.

2. Uncompress all partitions within the image file.

    NOTE: See "Uncompressing Partitions" (page 72) for more information.

    NOTE: Uncompressed partitions do not overwrite their compressed counterparts. When you use Drive Image to restore the image file, be careful to select only one version of the partitions (compressed or uncompressed). If you click **Select All** to select all partitions in the image file, Drive Image will restore both compressed and uncompressed versions to the destination drive. You can avoid this by creating a new image file for the uncompressed partitions, or by deleting each compressed partition after it has been uncompressed.

3. Using Drive Image, restore the image file to the destination drive.

4. If space is limited, you can use Drive Image File Editor to re-compress the image file partitions after the image file is restored.

    NOTE: Note: See "Compressing Partitions" (page 71) for more information.

The image file is restored to the destination drive with the desired partition compression.

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Chapter 7

Additional Utilities

This section contains the following information:

- Drive Mapper
- Magic Mover

To simplify partition management, PowerQuest has included DriveMapper and MagicMover with Drive Image.

DriveMapper

DriveMapper is a wizard for Windows 3.x, Windows 95, and Windows NT that allows you to easily alter drive letter assignments for partitions and your CD-ROM drive. Because some files, such as .INI, configuration, and preferences fields, may keep references to the old drive letters, your system may not function properly when drive letters have changed. You can use DriveMapper to search for these references and change them to the new drive letter assignments.

DriveMapper corrects one drive letter at a time. If you have only one drive letter change (such as your CD-ROM drive), you need to change only one reference. If more than one letter has changed, you will have to change the drive letters one at a time in the correct order.

NOTE: If you are using Windows NT as your only operating system, we recommend that you use Disk Administrator rather than DriveMapper. Disk Administrator allows you to set the drive letters for your partitions so that adding and removing partitions will not cause any drive letters to change.

NOTE: If you have installed an alternative desktop on Windows 3.11 or Windows 95 with the files residing on a different drive than the Windows system files, DriveMapper may not be able to adjust your paths. DriveMapper is a Windows program and must have Windows loaded in order to run. If the drive letter has been changed for the drive that holds your desktop files, you may not be able to bring up Windows.

NOTE: For information on making the operating system assign a drive letter to your CD-ROM, see "Making the Operating System Assign a CD-ROM Drive Letter" in *Appendix A*.

Avoid Using DriveMapper With Multiple Operating Systems

If you run multiple operating systems on your computer, using DriveMapper is not recommended. Instead, you should reinstall applications. The following issues make using DriveMapper in a multiple operating system environment difficult and error-prone:

- Drive letter assignments depend on which file systems an operating system supports. If you do not put all FAT32, NTFS, and HPFS partitions after all FAT partitions, drive letters change depending on the operating system that is running, and DriveMapper may be unable to correctly identify which changes should be made.

- Registry settings are changed for the current operating system only. If you rerun DriveMapper from another operating system, references in files are already changed and further changes introduce errors.

- DriveMapper does not update registry files contained in hidden partitions. 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 are updated.

  NOTE: While you can rerun DriveMapper multiple times and use the /SSD (Select Search Drives) switch when starting DriveMapper (to allow you to specify which drives to search), doing so requires careful attention to detail, and errors are probable.

- While DriveMapper can update most OS/2 references, it does not change OS/2 Extended Attributes.

Change Drive Letters in the Correct Order

You must change drive letters in the correct order to avoid destroying original references before they are used to make the appropriate changes for other drive letters. For example, assume that you have two partitions on your hard drive assigned the drive letters C: and D: and a CD-ROM drive assigned E:. If you create a logical partition between C: and D:, the drive letter of D: would change to E:, and the drive letter of E: would change to F:. However, references in certain files would continue to reflect the old drive letter assignments. You can use DriveMapper to first change the drive E: references to F: and then the drive D: references to E:.

WARNING: When you make a change to your hard drive that adds drive letters, always change the highest affected drive letter first. If you change them in a different order, you will change source references needed to change other drive mappings.

You can also make changes to your hard drive that will decrease the number of drive letters. To illustrate a case in which you would decrease the number of drive letters, assume that you have four partitions on your hard drive: C:, D:, E:, and F:. If you delete D:, E: would change to D:, and F: would change to E:. Starting with the lowest affected drive letter, use DriveMapper to reassign the current drive letter in files that contain incorrect references.

WARNING: When you make a change to your hard drive that decreases the number of drive letters, always change the lowest affected drive letter first. If you change them in a different order, you will change source references needed to change other drive mappings.

Changing References for One Drive Letter

NOTE: For information on making the operating system assign a drive letter to your CD-ROM, see "Making the Operating System Assign a CD-ROM Drive Letter" in *Appendix A*.

To change references for one drive letter, perform the following:

1. From Windows 3.x, launch DriveMapper by double-clicking the DriveMapper icon in the Drive Image by PowerQuest program group.

    OR

    From Windows 95 or NT, click **Start>Programs>Drive Image by PowerQuest>DriveMapper**.

2. Click **Next** to go to the **Drive Letter Changes** screen.

3. Select **Only one drive letter changed** and click **Next**.

4. Type the old drive letter in the first field.

5. Type the new drive letter in the second field and click **Next**.

    DriveMapper searches for references to the old drive letter. This may take several minutes. A progress window displays the percentage of the search completed.

6. When the Search Results screen appears, click **Next** to change all references.

    OR

    Select **View changes to be made** and click **Next** to select which references should be changed.

7. When you have changed your drive references, click **Finish**.

Changing References for More Than One Drive Letter

NOTE: For information on making the operating system assign a drive letter to your CD-ROM, see "Making the Operating System Assign a CD-ROM Drive Letter" in *Appendix A*.

To change references for more than one drive letter, perform the following:

1. From Windows 3.x, launch DriveMapper by double-clicking the DriveMapper icon in the Drive Image by PowerQuest program group.

    OR

    From Windows 95 or NT, click **Start>Programs>Drive Image by PowerQuest>DriveMapper**.

2. Click **Next** to go to the **Drive Letter Changes** screen.

3. Select **More than one drive letter changed** and click **Next**.

4. Type the old drive letter in the first field.

5. Type the new drive letter in the second field and click **Next**.

   DriveMapper searches for references to the old drive letter. This may take several minutes. A progress window displays the percentage of the task completed.

6. When the Search Results screen appears, click **Next** to change all references.

   OR

   Select **View Changes To Be Made** and click **Next** to select which references should be changed.

7. When you have changed the references for the first drive, click **Restart** to change references for another drive letter and repeat steps 1–6.

8. When finished changing your drive references, click **Finish**.

MagicMover

MagicMover helps you move applications from one partition to another. For example, you can use Drive Image to restore partitions to a new drive and then you can use MagicMover to move applications from one partition to another along with all their related files and operating system settings.

PowerQuest has included two versions of MagicMover:

- A 32-bit version for Windows 95 and Windows NT 4.0
- A 16-bit version for Windows 3.x

32-Bit Version

This section explains how to install and use the 32-bit version of MagicMover. If you are running Windows 3.x, you should refer to the "16-Bit Version" section (page 84).

Installing MagicMover

To install the 32-bit version of MagicMover from Windows 95 or Windows NT 4.0, perform the following:

1. Insert the Drive Image CD-ROM into your CD-ROM drive.

2. Click **Start>Run**.

3. Launch the installation program by typing *drive:***SETUP32.EXE** in the Run dialog box, where *drive* is the drive letter of the CD-ROM drive, and pressing <ENTER>.

4. In the Installation Options dialog, select **Install PowerQuest MagicMover**.

5. Follow the on-screen instructions.

   NOTE: By default, MagicMover icons are installed under **Start>Programs> PowerQuest MagicMover**. However, during the installation, you can choose to install MagicMover in a different location.

Moving Applications

Moving applications involves three simple steps:

1. Select the application to move.

2. Select the destination location (i.e. the drive and directory where you want to move the application).

3. Review the operation summary (optional).

   These three steps are shown on the right side of MagicMover's main window. A red arrow displays next to the step you are currently performing. When you complete that step, the red arrow moves to the next step and a green check displays next to the completed step.

To move an application using the 32-bit version of MagicMover, perform the following:

1. Launch MagicMover (if you installed to the default location, click **Start>Programs>PowerQuest MagicMover**).

   Because your system changes any time you install or delete files and applications, MagicMover now performs a scan to obtain the most current information about your system. The scan locates all files on your system and determines their sizes, dates, and interdependencies, such as which executables use which DLLs and their variants (OCX, VBX, etc.).

   When the scan is complete, MagicMover's main window appears.

   Displayed on the right side of this window are the three steps to move an application.

On the left side of the window is an icon representing the applications on the desktop, an icon representing applications in the **Start** menu, and icons representing the drives that MagicMover found when it scanned your system.

NOTE: You can cancel the operation at any time by clicking **Cancel,** or you can go back to the previous step by clicking **Back**.

2. Double-click the appropriate icon.

3. Double-click the desired destination folder or root directory.

4. Select the program you wish to move by clicking its icon.

NOTE: You can select an individual application or a complete program group.

When you select an icon, the complete file path for the represented application displays.

5. When you have selected the application you want to move, click **Next**.

MagicMover makes sure that it is safe to move the applications and files you have selected. A status bar appears displaying the progress of the analysis. If MagicMover cannot move the application, a dialog appears notifying you that the program or folder cannot be moved.

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

The three steps to move an application are shown in this dialog box. Step One now has a green check beside it, indicating that it is complete.

The first field in this dialog shows the complete path where the application you want to move is currently installed. The dialog also shows the approximate combined size of the files being moved.

NOTE: To view a complete list of all of the files being moved and changes that will be made to the Registry and .INI files, click **Details**.

6. In the **Select The Destination Folder** field, specify where you want to move the application.

Type the full path.

OR

Click **Browse** to select a destination from the directory tree. Double-click directories to open them. Click **OK** when you have selected the desired directory.

7. When you have selected the directory to which you wish to move the application, click **Move**.

A progress bar appears. MagicMover moves the necessary files to the selected drive and directory, updates the links between the application's files, updates the appropriate Windows Registry entries and .INI files, and scans the links.

When the move is complete, a dialog box appears showing you which applications were moved (in icon form), the drive and directory to which they were moved, and the actual size of files moved. You can also review the actions that MagicMover took during the operation by clicking **Details**.

8. When you are finished moving applications, click **Close** to exit MagicMover.

9. Reboot the computer.

16-Bit Version

This section explains how to install and use the 16-bit version of MagicMover. If you are running Windows 95 or Windows NT, you should refer to the "32-Bit Version" section (page 81).

Installing MagicMover

To install the 16-bit version of MagicMover from Windows 3.x, perform the following:

1. Insert the Drive Image CD-ROM into your CD-ROM drive.

2. Select **Run** from the Program Manager File menu.

3. Launch the installation program by typing *drive:***\SETUP16.EXE**, where *drive* is the drive letter of the CD-ROM drive, and pressing <ENTER>.

4. In the Installation Options dialog, select **Install PowerQuest MagicMover**.

5. Follow the on-screen instructions.

The installation program creates a new program group with the appropriate icons.

NOTE: By default, MagicMover is installed to *drive:*\POWERQUEST MAGICMOVER; however, during installation you can specify another location.

Moving Applications

Moving applications involves three simple steps:

1. Select the application to move.

2. Select the destination location (the drive and directory where you want to move the application).

3. Review the operation summary (optional).

   These three steps are shown on the right side of MagicMover's main window. A red arrow displays next to the step you are currently performing. When you complete that step, the red arrow moves to the next step and a green check displays next to the completed step.

To move an application using the 16-bit version of MagicMover, perform the following:

1. Launch MagicMover (if you installed to the default location, double-click the **PowerQuest MagicMover** icon in the **PowerQuest MagicMover** program group).

   Because your system changes any time you install or delete files and applications, MagicMover now performs a scan to obtain the most current information about your system. The scan locates all files on your system, determining their sizes, dates, and interdependencies, such as which executables use which DLLs and their variants (OCX, VBX, etc.).

   When the scan is complete, MagicMover's main window appears.

   Displayed on the right side of this window are the three steps to move an application.

   On the left side of the window is an icon representing the applications on your system and icons representing the drives that MagicMover found when it scanned your system.

   NOTE: You can cancel the operation at any time by clicking **Cancel,** or you can go back to the previous step by clicking **Back**.

2.   Double-click the appropriate icon.

3.   Double-click the desired folder.

4.   Select the program you wish to move by clicking its icon.

When you select an icon, the complete file path for the represented application displays.

5.   When you have selected the application you want to move, click **Next**.

MagicMover makes sure that it is safe to move the applications and files you have selected. A status bar appears displaying the progress of the analysis. If MagicMover cannot move the application, a dialog appears notifying you that the program or folder cannot be moved.

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

The three steps to move an application are shown in this dialog box. Step one now has a green check beside it, indicating that it is complete.

The first field in this dialog shows the complete path where the application you want to move is currently installed. The dialog also shows the approximate combined size of the files being moved.

NOTE: To view a complete list of all of the files being moved and changes that will be made to the Registry and .INI files, click **Details**.

6.   In the **Destination** field, specify where you want to move the application.

Type the full path.

OR

Click **Browse** to select a destination from the directory tree. Double-click directories to open them. Click **OK** when you have selected the desired directory.

7. When you have selected the files you want to move and the destination directory where you want to move the files, click **Move**.

   A progress bar appears. MagicMover moves the necessary files to the selected drive and directory, updates the links between the application's files, updates the appropriate Windows Registry entries and .INI files, and scans the links.

   When the move is complete, a dialog box appears showing you which applications were moved (in icon form), the drive and directory to which they were moved, and the actual size of files moved. You can also review the actions that MagicMover took during the operation by clicking **Details**.

8. When you are finished moving applications, click **Close** to exit MagicMover.

9. Reboot the computer.

A

Additional Resource Information

This appendix contains the following information:

- Hard Drive Manufacturer Contact Information
- Benefits of Using PartitionMagic
- Using FDISK and FORMAT to Create and Format Partitions
- Using Drive Image with SCSI Hard Drives
- Using Drive Image with Older Computer BIOSes that require Drive Overlay Software
- Making the Operating System Assign a CD-ROM Drive Letter

Hard Drive Manufacturer Contact Information

To find the jumper settings for hard drives, consult your hard drive installation guide or contact your hard drive manufacturer directly. This section contains the World Wide Web site addresses and phone numbers for the most common hard drive manufacturers. In most cases, the hard drive manufacturer's web site will contain the information you need to install the hard drive correctly.

Another valuable resource is the web page, *http://blue-planet.com/tech/index.html*. In addition to listing the most common hard drive manufacturers, this site provides the jumper settings for every hard drive ever made.

Additional jumper information is available from OnTrack at *http://www.ontrack.com*.

Contact Information

NOTE: The following contact information was correct at the time this manual was printed. Information is subject to change.

Fujitsu

- URL: *http://www.fcpa.com/support/su_support_frame.html*
- Tech Support Phone: 800-626-4686
- Fax Back Support: 408-428-0456

Maxtor

- URL: *http://www.maxtor.com/ide_cmos.html*
- Tech Support Phone: 800-2-Maxtor or 800-262-9867
- Tech Support Fax: 303-260-2260 or 408-922-2050
- E-mail: Technical Assistance@Maxtor.com

Quantum

- URL: *http://support.quantum.com/*
- Tech Support Phone: 800-826-8022
- Fax Back Support: 800-434-7532

Samsung Electronics America

- URL: *http://www.sec.samsung.co.kr/support/faqs/index.html*
- Tech Support Phone: 800-726-7864
- Fax Back Support: 800-229-2239

Seagate/Conner

- URL: *http://www.seagate.com/support/disc/specs/qickspec.shtml*
- Tech Support Phone: 408-456-4496
- Tech Support Fax: 405-936-1685
- Fax Back Support: 405-936-1600
- Automated Support: 800-732-4283

Western Digital

- URL: *http://www.wdc.com/support/welcome2.html*
- Tech Support Phone: 800-275-4932
- Fax Back Support: 714-932-4300

Benefits of Using PartitionMagic

In addition to Drive Image and DriveCopy, PowerQuest Corporation makes PartitionMagic. PartitionMagic 3.0 is the revolutionary utility that lets you reclaim wasted disk space, safely boot and run multiple operating systems and organize and protect your data.

Reclaim Wasted Disk Space

Everyone wants to get the most they can out of their hard drive. But, up to 40% of your hard drive may be totally wasted due to inefficient storage methods. PartitionMagic 3.0 increases your usable disk space by shrinking large FAT partitions and restructuring cluster sizes to reclaim up to hundreds of megabytes of lost disk space.

Safely Run Multiple Operating Systems

PartitionMagic 3.0 makes it easy to run multiple operating systems on the same machine without compatibility problems. Explore the world of Windows 95 or NT while still relying on the security of your current operating system. And PartitionMagic 3.0 includes Boot Manager from IBM, making it easy to select an operating system every time you boot your computer.

Organize and Protect Data

Create a physically separate partition for your valuable data files to protect them from potentially unstable applications and operating systems. This simplifies backups, especially to devices like Zip drives. PartitionMagic also includes a utility that lets you easily move applications from one partition to another with their files and operating system settings in place. With PartitionMagic it's easy to create, resize and move hard drive partitions on the fly.

Additional Benefits

Once you organize, optimize, and secure your hard drive, you can take advantage of PartitionMagic's other useful features. For instance, you can view comprehensive information about your hard-disk geometry and your hardware system. You can also resize root directories in Windows 95 to make room for more long file names. With PartitionMagic, configuring your hard drive has never been simpler.

Order Information

To purchase PartitionMagic, visit your local computer software store or call (800) 379-2566. You can also order PartitionMagic from our web site at *http://www.powerquest.com*. All credit card transactions are secure.

Using FDISK and FORMAT to Create and Format Partitions

NOTE: Although FDISK and FORMAT do not offer the functionality and flexibility of PartitionMagic, these free utilities are capable of creating new FAT partitions or deleting existing partitions.

This section explains how to create and delete partitions for the following situations:

Scenario 1:

If you copied a single FAT partition (C: drive) from your source hard drive to a destination hard drive larger than 2.1 GB, you now have unallocated disk space and need to create a partition(s). To create and format a partition(s) using FDISK and FORMAT, follow these simple steps:

NOTE: Using FDISK to create partitions from unallocated disk space is simple and will NOT destroy any existing data on the hard drive. FDISK, however, will NOT allow you to change partition sizes without destroying data.

1. At a DOS or MS-DOS prompt, type **FDISK** and press <ENTER>.

2. Select **1** to Create DOS partition or Logical DOS Drive and press <ENTER>.

3. Select **2** to Create Extended DOS partition and press <ENTER>.

4. Press <ENTER> again to create the Extended DOS partition.

5. Press <ESC>.

6. Press <ENTER> to create the Logical DOS Drive within the Extended partition.

7. If your hard drive is larger than 4 GB, you can create a second Logical DOS partition with the remaining disk space. To do so press <ENTER>.

8. Press <ESC> twice to return to a DOS or MS-DOS prompt.

    To format your new partition(s) type **FORMAT** *drive:* at a DOS or MS-DOS prompt where *drive:* is the drive letter of the new partition. You will now have additional partitions on your destination hard drive (example D:, E:).

Scenario 2:

If you want to leave your source drive in as a secondary or Slave drive after the copy, you need to delete and recreate partitions so that drive letters will not conflict. To delete and recreate partitions on your source hard drive after the copy process is finished follow these steps:

NOTE: This process will delete the data on this hard drive; however, you have a complete copy on your destination drive.

1. If you have not already done so, change the jumper settings on the original source drive to reflect a secondary or Slave setting in a two drive system. Then switch the jumper settings on the destination drive to reflect a primary or Master setting in a two drive system.

2. At a DOS or MS-DOS prompt type, **FDISK** and press <ENTER>.

   NOTE: If you are asked whether you wish to enable large disk support, click **YES** and press <ENTER> UNLESS you plan on using other operating systems on your PC, including some versions of Windows 95 and Windows NT, as well as earlier versions of Windows and MS-DOS.

3. Select **5** to Change Current Fixed Disk Drive and press <ENTER>.

4. At the Change Current Disk Drive Screen, choose **2** to change to your second disk drive and press <ENTER>.

5. Next select **3** to Delete partition or Logical DOS drive and press <ENTER>.

6. Choose to delete your logical drive(s) first and then your extended partition and then finally your primary partition(s). Or if you only have one partition on your source hard drive choose to delete the single primary partition.

7. Select **1** to Create DOS partition or Logical DOS Drive and press <ENTER>.

8. Next select **2** to Create Extended DOS partition and press <ENTER>.

9. Press <ENTER> again to create the Extended DOS partition.

10. Press <ESC>.

11. Press <ENTER> to create the Logical DOS Drive within the Extended partition.

12. If your hard drive is larger than 4 GB, you can create a second Logical DOS partition with the remaining disk space. To do so press <ENTER>.

13. Press the <ESC> key twice to return to a DOS or MS-DOS prompt.

14. To format your new partition(s) type **FORMAT** *drive:* at a DOS or MS-DOS prompt where *drive* is the drive letter of the new partition.

You now have a new empty partition(s) in which to store your applications and data.

Using Drive Image with SCSI Hard Drives

To use Drive Image on a SCSI hard drive, you must have a SCSI controller card that supports software Interrupt 13. Most SCSI controller cards let the user enable software Interrupt 13 support in the BIOS through the card. If your SCSI controller card does not allow you to set it to use software Interrupt 13, Drive Image will not work on drives attached to your SCSI adapter. Contact the manufacturer of the SCSI adapter to determine if your adapter can support software Interrupt 13. As a general rule, if FDISK can be used to partition the drive, you can use Drive Image.

Using Drive Image with Older Computer BIOSes that Require Drive Overlay Software

Drive overlay software is needed, such as Disk Manager or EZ-Drive, if the system has an older BIOS and the disk copy is being made from IDE to IDE or IDE to SCSI.

NOTE: If copying SCSI to SCSI, the older BIOS does not come into play because SCSI has its own translation mechanism.

This section provides information on both IDE and SCSI hard drive installations. The following are scenarios which outline, step-by-step, the installation procedures for a variety of system configurations.

Scenario 1:

- The system has a BIOS that does not support drives over 504 MB in size.
- The source drive is an IDE drive that is smaller than 504 MB. It does not have a drive overlay program.
- The destination drive is an IDE drive that is larger than 504 MB and needs to have a drive overlay program in order to be recognized by the older BIOS.

Steps:

1. Install the destination drive as the Master and the source drive as the Slave and run the auto-detect in the BIOS.

2. Restart the computer with the drive overlay boot disk.

3. Install the drive overlay program to the destination drive that is now set as the Master (check with manufacturer).

4. Restart the computer again, allowing the drive overlay program to load.

5. Put your Drive Image bootable diskette in your diskette drive (A:).

6. In the drive overlay boot menu, select the option to boot from a floppy disk.

7. Make sure that Drive Image is showing the correct size for each drive and the correct order for the copy sequence.

8. Finish the copy process.

Scenario 2:

- The system has a BIOS that does not support drives over 504 MB in size.
- The source drive is an IDE drive larger than 504 MB and a drive overlay program is loaded.
- The destination is a SCSI drive and will not need a drive overlay program.

Steps:

1. Leave the source drive set as the Master.

2. Install the SCSI drive with the lowest SCSI ID in the SCSI chain.

3. Run the BIOS auto-detect and make sure it recognizes the IDE drive.

4. Run the SCSI BIOS to make sure the SCSI drive is recognized correctly.

5. Restart the computer and allow the drive overlay program to load.

6. Put your Drive Image bootable diskette in your diskette drive (A:).

7. In the drive overlay boot menu, select the option to boot from a floppy disk.

8. Make sure that Drive Image is showing the correct size for each drive and the correct order for the copy sequence.

9. Finish the copy process.

Scenario 3:

- The system has a BIOS that does not support drives over 504 MB in size.
- The source drive is an IDE drive larger than 504 MB and a drive overlay program is installed.
- The BIOS is upgraded to a BIOS that supports larger drives.
- The destination drive is a SCSI drive that is larger than 504 MB.

Steps:

1. Leave the source drive set as the Master.

2. Install the destination drive and set it as drive 0.

3. Run the BIOS and auto-detect the drives.

4. Make sure that LBA is off for the source drive.

5. Run the SCSI BIOS to make sure the SCSI drive is recognized correctly.

6. Restart the computer and allow the drive overlay program to load.

7. Put your Drive Image bootable diskette in your diskette drive (A:).

8. In the drive overlay boot menu, select the option to boot from a floppy disk.

9. Make sure that Drive Image is showing the correct size for each drive and the correct order for the copy sequence.

10. Finish the copy process.

Scenario 4:

- The system has a BIOS that does not support drives over 504 MB in size.
- The source drive is an IDE drive larger than 504 MB and a drive overlay program is installed.
- The BIOS is upgraded to a BIOS that supports larger drives.
- The destination is an IDE drive that is larger than 504 MB.

Steps:

1. Set the source drive as the Master.

2. Set the destination drive as the Slave.

3. Run the new BIOS and auto-detect the drives.

4. Make sure that LBA is turned on for the destination drive and off for the source drive.

5. Restart the computer and allow the drive overlay program to load.

6. Put your Drive Image bootable diskette in your diskette drive (A:).

7. In the drive overlay boot menu, select the option to boot from a floppy disk.

8. Make sure that Drive Image is showing the correct size for each drive and the correct order for the copy sequence.

9. Finish the copy process.

Making the Operating System Assign 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 with the way drive letters are assigned to these devices.

Drive Image does not make drive letter assignments; this is a function of the operating system. The operating system assigns drive letters in the following order: The first recognized primary partition on each hard drive will receive a letter, followed by all logical partitions on each hard drive. Next, the CD-ROM drive and any other form of removable media will be assigned a letter.

Because the CD-ROM is one of the last drives to receive a letter, any partitions that you create or delete on any of your hard drives will affect the drive letter assignment of your CD-ROM drive. This change in drive letter assignments is usually performed by the operating system automatically. Occasionally, however, the operating system will fail to assign a new drive letter to the CD-ROM drive. If this should occur, please follow the steps listed below.

If you are using DOS/Windows 3.11 or are loading your CD-ROM drivers under DOS with Windows 95, perform the following:

1. At a DOS prompt, type **EDIT C:\CONFIG.SYS**.

    This starts the DOS editor program and opens your CONFIG.SYS file.

2. Change **LASTDRIVE=*drive*** (in which *drive* is any letter of the alphabet) to **Z**.

    This allows the OS to assign all drive letters through **Z**.

3. Click **File>Exit**.

4. Click **Yes** to save the file.

5. You should now be back to a C:\ prompt. Type **EDIT C:\AUTOEXEC.BAT**.

    The DOS editor program starts and opens your AUTOEXEC.BAT file.

6. Look for a line that includes the word **MSCDEX**. The **/L:*drive*** parameter (in which *drive* is the drive letter that was assigned to your CD-ROM before you made changes with Drive Image) may appear at the end of this line. Change this letter to **U**.

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Because the OS assigns all other available drive letters before assigning Z, this ensures that partition changes you make in the future will not invalidate your CD-ROM drive letter.

For more information, type **HELP MSCDEX** at a DOS prompt.

NOTE: 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 just before the first letter used by the network search drives.

7. Select **File**, then **Exit**. When you are asked whether you want to save the file, click **Yes**.

8. When you see the DOS prompt (C:\), reboot your machine.

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

1. Click **Start>Settings>Control Panel>System**.

2. From the System Properties screen, select **Device Manager**.

   This brings up a list of the devices in your computer.

3. Double-click **CDROM**.

4. Click the **Settings** tab.

5. At the bottom of the Settings page is the heading, **Reserved Drive Letters**. Under this heading are two listings, **Start Drive Letter** and **End Drive Letter**. Change the values for these listings to **U**.

   Because the OS assigns all other available drive letters before assigning Z, this ensures that partition changes you make in the future will not invalidate your CD-ROM drive letter.

6. Click **OK** to close the **Settings** page.

7. Click **OK** to close the **System Properties** page.

8. Click **Yes** to restart your computer.

B

Troubleshooting

This appendix gives solutions to problems that you may encounter while using PowerQuest's Drive Image. Included are the following:

- Frequently Asked Questions
- Freeing Enough Conventional Memory to Run Drive Image
- Resolving Check Errors
- Resolving Partition Table Errors
- Partition Tables and Viruses
- Error Messages and Solutions

Frequently Asked Questions

PowerQuest maintains the latest Frequently Asked Questions on their Web site at *http://www.powerquest.com/support/index.html*.

Freeing Enough Conventional Memory to Run Drive Image

The DOS Drive Image executable running under DOS requires a minimum of 400KB of memory in the first 640KB of the computer's address space (conventional memory). If you try to run Drive Image from DOS and find you do not have enough free conventional memory, you can free enough additional memory in a number of ways.

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.

NOTE: MEMMAKER is only available with DOS versions prior to DOS 6.0. MEMMAKER is not available with Windows 95.

Using the F8 Key to Keep Programs From Loading

If running MEMMAKER does not free enough conventional memory, you can free more by pressing <F8> right after booting your computer (while DOS is booting). If you press <F8>, when DOS reads the commands from the CONFIG.SYS and AUTOEXEC.BAT files on your hard drive, DOS will ask you if you want it to execute each command. When you see commands that load device drivers or TSR programs that you will not need to run Drive Image, answer **N** (no) to tell DOS not to execute that command (not load that software into memory). This will conserve conventional memory.

Using an Operating System Boot Diskette

If running MEMMAKER and using <F8> does not free enough conventional memory, you can create a boot diskette that allows you to boot using a very minimal amount of conventional memory.

You can create a boot diskette for any version of DOS by performing the following:

1. Place in your diskette drive (A:) any diskette that does not contain information you want to keep.

2. Go to a DOS prompt, type **FORMAT** *drive:* **/S** (where *drive* is the drive letter of the diskette drive).

3. Press <ENTER>.

After the diskette is formatted and the operating system files are transferred, you will be able to boot the computer from the diskette. If you restart your computer with the diskette in the diskette drive, your computer boots using a minimal amount of conventional memory. After you boot from the diskette, you can run Drive Image from either the diskette or your hard drive.

Creating a CONFIG.SYS File on the Boot Diskette

If making an ordinary boot diskette doesn't free enough conventional memory, you can create a customized boot diskette that will free even more conventional memory. (With the customized diskette, you will free more conventional memory by loading some of the DOS operating system into high memory.) To customize the diskette, you must create a CONFIG.SYS in the root directory (C:\). To create a CONFIG.SYS in the root directory, perform the following:

1. Go to a DOS prompt.

2. Type *drive:* (where *drive* is the drive letter of the diskette drive) and press <ENTER>.

    Verify that you have changed to the diskette drive (you see the *drive:\\>* prompt).

3. Type **EDIT CONFIG.SYS** and press <ENTER>.

    This starts the DOS editor (you will see a blank screen).

4. In the editor, type the following:

    DEVICE=C:\DOS\HIMEM.SYS

    DEVICE=EMM386.EXE

    DOS=HIGH,UMB

    > **NOTE:**   All lines must be entered in the order shown. Windows users: Substitute
    > Windows for DOS.

5. Click **File>Save** to save the file.

6. Click **File>Exit** to exit the editor.

You can now reboot your computer from the customized boot diskette. When DOS loads, much of it is loaded into high memory, saving a maximum amount of conventional memory.

Deleting Operating System Compression Files

If you use DOS 6.22 and your system doesn't have any compressed drives (for example, DriveSpace, DoubleSpace, or Stacker), you can delete the operating system compression files DRVSPACE.BIN or DBLSPACE.BIN from any boot diskette you create. This frees more conventional memory because DOS 6.22 loads the contents of these files into memory, regardless of what's in the CONFIG.SYS or AUTOEXEC.BAT. These files are hidden system files, so if you wish to delete them you will have to perform the following:

1. From the DOS prompt, type *drive:* (where *drive* is the drive letter of the diskette drive).

2. Type **ATTRIB -R -H -S *.BIN**.

3. Type **DEL *.BIN**.

Resolving Check Errors

Drive Image checks the integrity of a partition very thoroughly prior to creating an image file or copying a partition. These checks are substantially the same as those made by the operating system's CHKDSK, SCANDISK, or AUTOCHK utility.

If you receive a Check error message for any partition, after backing up your hard drive, run your operating system's CHKDSK program on that partition. CHKDSK usually shows the same problem(s) as Drive Image.

NOTE: Run SCANDISK if you have MS-DOS 6.x or Windows 95.

NOTE: The DOS CHKDSK program does not detect problems in Extended Attributes.

NOTE: If you are using Windows NT CHKDSK, DO NOT use the /F switch on the initial run.

If CHKDSK (or SCANDISK) does not show the same error(s) that Drive Image shows, contact PowerQuest at the numbers listed in *Appendix C*.

If the CHKDSK (or SCANDISK) program and Drive Image detect the same errors (which is usually the case), run CHKDSK with the /F switch to fix the problem(s).

NOTE: Run SCANDISK if you have DOS 6.x, or run CHKDSK if you have Windows NT.

After running CHKDSK with the /F switch, try running CHKDSK without using the /F switch to make sure the partition is free of errors. Under OS/2, you should perform this procedure twice before proceeding.

If Drive Image still reports a problem, reformat the partition and restore your files from the backup copy to correct the error.

Drive Image also checks a partition after restoring it. If this check fails, report the problem to PowerQuest at the numbers provided in *Appendix C*. While data loss is possible, in this case it is not typical. The problem is usually a minor file system error that CHKDSK /F can correct without data loss. For more extensive errors, you may need to restore your files from a backup copy.

Resolving Partition Table Errors

To resolve partition table errors, you must create new, error-free partition tables.

NOTE: In some cases, PowerQuest technical support can help you fix partition table errors without data loss. Check with them first before proceeding to the following steps.

To create new, partition tables, perform the following:

1. Make sure you have no viruses.

    NOTE: See "Partition Tables and Viruses" (page 106).

2. Back up the data on the affected partitions.

3. Delete the partitions.

    NOTE: You may need to use the FDISK program from a recent DOS version because earlier versions of DOS may refuse to delete HPFS or hidden partitions.

    NOTE: If using OS/2, the OS/2 FDISK program may recognize the partition's corruption and refuse to modify it. In this case, use the FDISK program from a recent DOS version.

4.   Recreate the partitions.

5.   Restore the contents of the partitions.

Partition Tables and Viruses

If partition changes made under one operating system are not reflected under the other, and vice versa, it is possible that a master boot record (MBR) virus is present.

Use a virus check utility that can detect the latest viruses. If a virus is found, data loss is likely. If a virus is found, perform the following:

1.   Before removing the virus, run ScanDisk or CHKDSK under each of the operating systems to evaluate the integrity of the partition.

2.   Back up the files from any partition that passes the Check operation.

3.   After backing up the files from all operating systems, remove the virus.

4.   Run ScanDisk or CHKDSK under each of the operating systems again.

5.   Delete and recreate any partitions that fail the check.

6.   Reinstall the operating system(s).

7.   Restore the backup files as necessary.

Error Messages and Solutions

NOTE: For a complete list of all our error messages and solutions, please visit our Knowledge Base at http://www.powerquest.com/support/kb.html.

Miscellaneous Errors (3–38)

#3 Not enough memory

The DOS Drive Image executable running under DOS requires a minimum of 400KB of memory in the first 640KB of the computer's address space (conventional memory) and 8MB of total memory. If you don't have enough conventional memory, see "Freeing Enough Conventional Memory to Run Drive Image" (page 101) for possible solutions.

#8 Could not allocate/deallocate DOS real mode memory

The DOS Drive Image executable running under DOS requires some memory in the first 1MB of the computer's address space (Drive Image uses a DOS extender). If not enough memory is available, Drive Image cannot access the hard drive. If you don't have enough conventional memory, see "Freeing Enough Conventional Memory to Run Drive Image" (page 101) for possible solutions.

#23 Unsupported version of operating system

The operating system versions that are required to run Drive Image are listed in "System Requirements" in the *Introduction* (page xix).

#34 This beta or evaluation version is no longer safe to use

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

#36 DPMI Server error

Drive Image DOS executables use a DOS extender. This error indicates a failure during a call made from Drive Image through the DOS extender (to DOS or to the BIOS). The DOS extender may be in conflict with other programs that use extended memory. DOS would load the conflicting programs from your CONFIG.SYS or AUTOEXEC.BAT file during the normal boot sequence.

You may be able to resolve this problem by pressing <F8> while booting DOS. After DOS boots and starts to read the commands from your CONFIG.SYS and AUTOEXEC.BAT files, DOS will ask if you want to execute each command. When you see commands that load device drivers or TSR programs that you think might be conflicting with the Drive Image DOS extender, answer **N** (no) to tell DOS not to execute that command (not to load that software into memory). You will often be able to find a program configuration that will enable Drive Image (the DOS extender) to run without error.

Disk Access Errors (40–56)

Errors in the 40-56 number range indicate that accessing your disk is not possible, and, often, are the result of hardware problems. Some problems may have simple solutions. For other problems, the only solution may be replacing the hard drive. When possible, Drive Image detects major errors before any changes have been made so you can back up your data before replacing the hard drive.

#49   Write fault

#50   Read fault

Drive Image is unable to write to/read from a specific sector on the hard drive. There are a number of possible causes of this error:

- 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 Drive Image.

- There is a bad sector on the hard drive (this is usually the case with only older hard drives). Run SCANDISK on the hard drive 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.

- Your caching controller card is not set up properly.

Partition Table Errors (100–199)

Errors in the 100-199 number range are partition table errors. For general information about solving this type of error, see "Resolving Partition Table Errors" (page 105) and "Partition Tables and Viruses" (page 106).

#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. Since any modifications Drive Image makes may decrease the amount of data that is recoverable from the hard drive, Drive Image will not recognize any of the hard drive's partitions. You must create new, error-free partition tables to resolve your problem. See "Resolving Partition Table Errors" (page 105).

#104   No sectors in partition

No partition should contain zero sectors. Delete the partition before using Drive Image.

#105   Partition starts on wrong boundary

The hard-disk partition table contains erroneous values. Drive Image expects FAT, NTFS, and HPFS partitions to begin and end on the boundaries used by FDISK. If they do not, the disk may be partially corrupted. In this circumstance, if Drive Image were to make any modifications it might cause the loss of data. Therefore, Drive Image will refuse to recognize any of the hard drive's partitions. To resolve this problem, see "Resolving Partition Table Errors" (page 105).

#106   Partition doesn't start with sector one

See error #105.

#107   Partition begins after end of disk

This error can occur when you are running Drive Image on a hard drive that uses more than 1,024 cylinders. Under DOS, Drive Image is restricted by the BIOS 1,024 cylinder limit. If any partitions extend beyond the limit, Drive Image cannot safely operate on the hard drive.

This error can also occur if a partition erroneously extends beyond the physical end of the hard drive. This may happen if the hard drive 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 drive may differ from the logical geometry assigned to the hard drive 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 drive. This error is serious if both DOS and another operating system use the hard drive. 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 "Resolving Partition Table Errors" (page 105).

#111   Logical partition starts outside Extended

The hard-disk partition table contains erroneous values. All logical partitions must be totally contained within the extended partition. To resolve this error, see "Resolving Partition Table Errors" (page 105).

#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 drive! In most instances, you should resolve the problem as explained in "Resolving Partition Table Errors" (page 105).

#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 of the hard-disk geometry changing are:

- Different operating systems (for example, DOS and OS/2) report different hard-disk geometries.

- You boot from a diskette that loads a different driver than is loaded when you boot from the hard drive.

- Upgrading the operating system (for example, from OS/2 2.x to OS/2 Warp) causes a different driver to be used.

- The hard drive or controller has been changed.

- The BIOS has been upgraded.

- The BIOS LBA setting has been changed.

- There is a partition table virus present on the hard drive.

In most instances, you should resolve the problem as explained in "Resolving Partition Table Errors" (page 105). 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.

#120   The logical drive chain is incompatible

This error occurs under some OSs when logical partitions are not chained together in the expected order. DOS, OS/2, Windows 95, 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" (page 105).

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 drive (cylinder 0, head 0, sector 1) contains the master boot record (MBR) and the primary partition table. Drive Image cannot make changes to this hard drive 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 will be aborted before any corruption can occur. Try moving the partition to a different place. If your hard drive has bad sectors, we recommend that you replace the hard drive.

Check Errors (500–599)

Check errors occur when Drive Image checks the integrity of a partition. For useful general information about resolving these errors, see "Resolving Check Errors" (page 104).

#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

ScanDisk or CHKDSK should be able to find these errors and correct them.

#506   Not enough free space on partition to shrink

Some free space (which is dependent on the hard drive'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, Drive Image 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 will occur when you encounter this error.

#510   The version of the file system is not supported

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

HPFS Check Errors (1000–1500)

Check errors occur when Drive Image checks the integrity of a partition. For useful general information about resolving these errors, see "Resolving Check Errors" (page 104).

#1015 System sector not marked unavailable

This error may indicate that there are open files on the hard drive. Shut down and restart OS/2, booting from diskettes. If this does not resolve the problem, run OS/2's CHKDSK program. This error message may also indicate that a file is listed with a file length of zero. OS/2's CHKDSK program will not fix this problem. As a last resort, delete the offending file.

#1027 Could not account for all sectors

This error may be resolved in one or more of the following ways:

- If you are working with an HPFS386 partition, check the technical support area of PowerQuest's Web site for more information.

- If CHKDSK has created any FOUND.000 or *.CHK files, delete them.

- If the error message indicates the name of the offending file, delete it.

- Turn off the disk-mirroring option in PC-Tools.

- If none of the above solutions works, back up the partition, delete it, recreate it, and restore the data.

#1045 Stac volume detected delete—Stac volume before converting

This error message occurs when you attempt to convert a partition to HPFS, and the existing partition contains a STAC volume. Stacker cannot access a STAC volume that is on an HPFS partition. Delete the STAC volume from the partition before converting to HPFS.

NTFS Check Errors (1500–1699)

Errors 1500-1699 are NTFS-specific error messages. In this context, "attribute" does not mean read-only, hidden, system, and so on. Rather, "attribute" means one of a file's data streams. Check errors occur when Drive Image checks the integrity of a partition. For useful general information about resolving these errors, see "Resolving Check Errors" (page 104).

#1501   Wrong version of NTFS

The partition was created using a version of the NTFS file format that Drive Image cannot work with.

#1503   Bad NTFS cluster size

The NTFS cluster size must be 512, 1,024, 2,048, or 4,096 bytes.

#1512   Restart record mismatch

The two restart entries in the journal file are different. This may happen if Windows NT is not properly shut down. To fix this problem, restart Windows NT 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 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's CHKDSK program will not fix it, but Windows NT will rebuild 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 will 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 0-10) 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.

#1644   Bad system file sequence number

A system file has a bad sequence number. System files must have a sequence number from 0 to 10. A partition with this problem may pass a run of Windows NT's CHKDSK program, but Windows NT will 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's CHKDSK program will not fix this problem, but the Windows NT operating system will automatically rebuild the root directory on the partition the next time it is started.

Miscellaneous Drive Image Error Messages

#1701   Err disk not empty

Used in scripting. The DELETE ALL command failed to delete all the partitions on the drive.

#1800   Err partition not open

Attempted operation on a partition in an improperly opened image file.

#1801   Err partition not found

Did not find requested partition in image file.

#1802   Err corrupt bundle

Image file header information is not valid.

#1803   Err bundle read only

Attempted to delete or write to a partition in the image file which was opened in Read Only mode.

#1804   Err no bitmap Image

File contains no partition bitmap.

#1805   Err write failed

Error encountered while writing image to file. This error usually occurs when Drive Image runs out of space in the partition to which it is writing an image file.

#1806   Err out of memory

Out of Memory.

#1807   Err compression

Error encountered while compressing or decompressing image file data.

#1808   Err buffer too small

Buffer too small to read in partition bitmap.

#1809   Err no more free space

No more free space available to process remaining partitions.

#1810   Err open failed

Could not open image file.

#1811   Err read failed

Could not read from image file.

#1900   Err invalid drive number

Used in scripting. The script contains an invalid drive number.

FAT Check Errors (2000–2099)

Check errors occur when Drive Image checks the integrity of a partition. For useful general information about resolving these errors, see "Resolving Check Errors" (page 104).

#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.

#2005   One or more lost clusters were found

Run SCANDISK or CHKDSK to fix this error.

#2012   Formatted FAT file system too big for partition

This error can be caused by the following circumstances:

- 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 be caused by the following circumstances:

- The number of clusters on the hard drive 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 drive.

A qualified consultant may be able to fix the hard drive 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 is caused by any program that 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.

Appendix C

PowerQuest Technical Support

Contact Information

This appendix contains the following information:

- Before you Contact Technical Support
- PowerQuest Problem Report
- Contacting PowerQuest Technical Support

Before You Contact Technical Support

PowerQuest is committed to providing you with comprehensive technical support.
However, before calling our technical support department, try to resolve your problem by
using this guide, the online Help system, or check PowerQuest's Web site for Frequently
Asked Questions at *http://www.powerquest.com/support/index.html*, or for international
customers, see *http://www.powerquest.com/intnl/index.html*. Also, check the
README.TXT file for information that has changed since this guide was printed.

PowerQuest Problem Report

If you cannot find the solutions you need in this guide, please have the following
information ready or send it along when you contact technical support:

Your Company Name _____

Your Name _____

Your Voice Phone Number _____

Your Fax Phone Number _____

Drive Image Serial Number _____

Computer Manufacturer _____

Computer Model and Model Number _____

Date of Computer Manufacture _____

Processor Type _____ (386, 486, Pentium)

Amount of Memory (RAM) _____

KB Operating System / Version Number _____ (DOS 6.21, etc.)

Other Hardware. Include bus type (ISA, EISA, MCA, PCI, VESA), hard drive model, and external drives.

_____

_____

_____

Memory Resident Software. Include memory managers and list their version numbers (for example, OnTrack's Disk
Manager Version 6.0 or EZ-Drive Version 7.0).

_____

_____

_____

Contacting PowerQuest Technical Support

If you cannot get the help you need from this guide, you can contact our technical support department in any of the ways listed below. You must be a registered Drive Image user to receive the following types of technical support. PowerQuest offers free support for three months following your first call to PowerQuest's technical support.

Fax

USA	(801) 434-3060
Europe	(+31) 20 582 9260

Fax the information listed on the pages above and a description of your problems to the technical support fax number. This service is available in the U.S., and Canada, and Europe 24 hours a day, 7 days a week. We try to respond to all fax requests within 24 hours.

FaxBack

USA Toll Free	(800) 720-0391
USA	(801) 437-7921

BBS

USA	(801) 226-5608

Call the PowerQuest bulletin board for product information and answers to frequently asked technical questions. The correct modem setup is N-8-1. Our BBS supports transmission speeds from 1200bps to 28.8Kbps.

Telephone

USA	(801) 226-6834

Support is available Monday through Friday, 8 a.m. to 5 p.m. MST/MDT.

Internet

You can contact PowerQuest through the Internet by sending an E-mail message to:

support@powerquest.com.

Corporate Web Site

http://www.powerquest.com.

Postal Service Mail

USA	Europe
PowerQuest Corp.	PowerQuest
P.O. Box 1911	Orlyplein 85
Orem, Utah 84059-1911 U.S.A.	1043 DS
	Amsterdam
	Netherlands

Contacting PowerQuest International Technical Support

Internet

Language	Email Address
Dutch	eurots@powerquest.com
French	eurots@powerquest.com
English	eurots@powerquest.com
German	eurots@powerquest.com
Spanish	latina@powerquest.com

Telephone

Our European call centre is open from 9:00 to 18:00 CET and is available in the following languages:

Language	Location	Number
Dutch	Netherlands	(+31) 20 5813906
French	France	(+33) 1 69 32 49 30
German	Germany	(+49) 069 66 568 516
English	UK	(+44) 0171 341 55 17
English	Netherlands	(+31) 20 5813907

Glossary

ATA

A standard used by hard drives to communicate with the controller ports or cards that allow the hard drive to interface with the computer. Before ATA, there were numerous incompatible methods for interfacing hard drives to computers. ATA simplifies this process, thus reducing the cost of developing and purchasing related hardware. ATA is the proper term for Integrated Drive Electronics (IDE).

ATA-2

ATA-2 is the common name for a new, enhanced IDE standard. This standard is still evolving and has not yet been submitted for approval as an official standard.

Batch Mode

Switches in a normally interactive program that prepare it to receive non-interactive command input.

BIOS (Basic Input/Output System)

The BIOS is the program code stored in a PC-compatible ROM to boot the computer and provide basic services such as low-level hard drive access.

Cloning

Copying a hard drive to an image file or destination disk to create an exact duplicate.

Destination

The destination hard drive is the drive that is copied to during a copy operation.

Disk

A hardware device to store data. A disk contains a Master Boot Record and partitions.

EIDE (Enhanced Integrated Drive Electronics)

A marketing program that promotes certain features of ATA-2.

Extended Partition

One of the four primary partitions on a hard drive can be an extended partition. Extended partitions do not directly hold data; rather, you can create an unlimited number of logical partitions within the extended partition to store data. An extended partition cannot be the active partition.

FAT File Allocation Table

File system used by DOS, Windows 95, NT and sometimes OS/2 to store and retrieve files and directories.

FAT32

FAT32 is the file system used by updated versions of Windows 95 (version 4.00.950B or above). FAT32 is an enhancement of the FAT file system and is based on 32-bit file allocation table entries, rather than on the 16-bit entries the FAT file system uses. As a result, FAT32 supports much larger volumes (up to 2 terabytes).

GB (Gigabyte)

1,073,741,824 bytes.

IDE

See ATA.

Image

An image is a snapshot of a drive's partition(s) that can be used to backup a system, install a new hard drive, or configure a new system.

Jumper

Metal prongs and a circuit completion cap on the outside of a hard drive. You can remove, reposition, and then replace the cap to create various jumper settings such as Master and Slave.

HPFS

High Performance File System an alternative to a FAT file system which is used by OS/2.

Interactive Mode

An operation mode where the program's responses alternate with user commands, each being dependent upon the other.

LBA (Logical Block Addressing)

1) In EIDE, a means of specifying sector addresses by replacing CHS values with a single linear 28-bit number. 2) Generically, a one-dimensional address of a hard-disk sector, contrast with *CHS*.

Linux

Linux Ext2 file system was developed for the Linux operating system (a free-ware version of the UNIX operating system). Linux Ext2 file system supports a maximum volume size of 4 terabytes.

Logical Drive

A contiguous area inside an extended partition that can be used by the operating system to store and retrieve files.

Master

The first hard drive on an IDE hard drive controller.

MB (Megabyte)

1,048,576 bytes.

NetBIOS

A high level Network programming interface which is supported by lower level Network protocols such as IP/SP and TCP/IP.

NetWare

The Novell NetWare network operating system uses the NetWare File System, which was developed specifically for use by NetWare servers.

NTFS New Technology File System.

An alternative to FAT and HPFS file systems used by WinNT.

Partition

An uninterrupted area on a disk, defined in the Master Boot Record. Every partition contains a specific file system such as FAT, FAT32, HPFS or NTFS.

Primary Partition

A partition referenced in the Master Boot Record partition table. Four primary partitions can exist on a hard drive. One of these may be an extended partition. Only one primary partition on a drive may be active at time. Data and applications are often placed on a logical partition inside an extended partition. This enables the data to be accessed by all primary partitions.

Restore

Downloading an image file to a destination drive. The Restore and Download script arguments are interchangeable and accomplish the same function.

Slave

The second hard drive on an IDE hard drive controller.

Script File

A series of instructions, usually in text file format, written to be passed to a program running in batch mode.

Source

The Source hard drive is the drive from which the copy is made.

Volume

This User Guide uses the term volume interchangeably with partition.

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