User Guide

POWERQUEST®
Drive Image® Pro 3.0

Drive Image Pro 3.0
User Guide

Drive Image Pro by PowerQuest

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with other patents pending in the U.S. and elsewhere.

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Introduction

What Is Drive Image Pro 3.0?

Setting up multiple PCs is a time-consuming and costly process. Long hours can be spent installing and configuring operating systems and software on each individual machine. IS professionals in both industry and education need a fast, inexpensive solution for setting up multiple workstations.

Drive Image Pro 3.0 is a complete hard-disk imaging solution for IS professionals. Unlike file-by-file copying utilities, Drive Image Pro uses SmartSector imaging to create an exact image of a hard-drive or hard-drive partition. That exact image can then be used to deploy Windows workstations, upgrade existing workstations, manage changing desktop environments, and quickly and easily back up and restore hard drives. Drive Image Pro also includes PowerQuest's award-winning PartitionMagic Pro, allowing IS professionals to create, resize, move, and convert partitions without leaving Windows.

Using SmartSector imaging and TCP/IP multicasting, an IS professional can "PowerCast" a single image over a network to simultaneously set up and configure multiple Windows workstations across an enterprise. And with Drive Image Pro's exclusive DeltaNow, IS professionals can easily manage changing desktop environments and distribute individual software applications as part of the imaging process.

Drive Image Pro can easily create and store a compressed image file of an entire hard drive or individual partition of a hard drive on a network, Jaz, Zip, CD-ROM or other removable media device and apply images to drives of the same size or resized to fit drives of different size and geometry. Because Drive Image Pro uses SmartSector imaging, it will ensure that your Windows optimizations are preserved on target PCs. Drive Image Pro provides SmartSector imaging support for FAT, FAT32, NTFS, HPFS, and sector-by-sector support for LINUX, UNIX, and NetWare.

What's New in 3.0?

- PowerCasting
- DeltaNow
- BootDisk Builder
- Converting Ghost Image Files
- PartitionMagic 4.0
- Restoring Individual Files and Folders with Drive Image Pro File Editor
- Improved Resize Technology

What's Coming Soon?

• CD-R Support

• Remote Boot

Drive Image Pro System Requirements

Hardware/Software	Minimum	Recommended
Processor	Intel 386SX	Intel 486 or above
RAM	32 MB (16 MB required for FAT32 or NTFS)	32 MB
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 Pro.	Microsoft mouse (or compatible pointing device)

* For Windows NT and OS/2 users, Drive Image Pro must be run from a bootable floppy or from a bootable DOS partition on your hard drive. You can create bootable DOS diskettes using the Drive Image Pro installation program. For more information, see "Installing Drive Image Pro" in *Chapter 1*.

IMPORTANT! Because of operating system conflicts that can result from different hardware configurations, Drive Image Pro 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, 95/98, or NT to run DriveMapper and MagicMover. Drive Image Pro File Editor requires Windows 95/98 or Windows NT.

NOTE: DeltaNow requires the following or later versions: Windows for Workgroups 3.11, Windows 95, or Windows NT 3.5.

NOTE: Any discussion of deployment, including hard-disk imaging, assumes that the software, including the operating system, is being copied in accordance with the license agreements with the software manufacturer.

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Getting Started

This chapter contains the following information:

Installing Drive Image Pro

Installing on an OS/2 or DOS Only Computer

Installing Removable Device Drivers

Before Running Drive Image Pro

Running Drive Image Pro

Uninstalling Drive Image Pro

Getting Online Help

Installing Drive Image Pro

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

- Windows 95/98

- Windows NT

- Windows 3.x

  NOTE: If you are using DOS or OS/2, you can install Drive Image Pro to a DOS boot diskette. See "Installing on an OS/2 or DOS Only Computer" on page 5.

To install Drive Image Pro,

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

2. Start the installation program.

   a. If you are using Windows 95/98 or Windows NT 4.0 and if CD auto-run is enabled, the installation program automatically launches when you place the Drive Image Pro CD in your CD-ROM drive.

   b. If the CD auto-run is not enabled, insert the CD, click **Star > Run >** *drive***:\SETUP** (where *drive* is the drive letter of your CD-ROM drive), then click **OK**.

   c. If you are using Windows 3.x or Windows NT 3.51, click Run from the Program Manager File menu. Type *drive*:\SETUP (where *drive* is the drive letter of your CD-ROM drive), then click **OK**.

   NOTE: For Windows 3.1 or Windows 3.11, a swap file is required for installation.

   If you are installing on Windows 3.x, you can select from the following options:

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

If you are installing on Windows 95/98 or Windows NT, you can select from the following:

- Install Drive Image
- Create Rescue Diskettes
- Documentation
- Install Other Applications

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

Installing on an OS/2 or DOS Only Computer

Because OS/2 or DOS only computers cannot run the Windows based Install Shield, you can run the MAKEDISK.BAT file (found on the Drive Image Pro CD in the SETUP\OS2DOS directory) to install Drive Image Pro on OS/2 or DOS only systems.

This batch file creates two diskettes. The first diskette is a DOS boot diskette. It also contains the removable media device drivers. The second diskette contains the Drive Image Pro program.

Installing Removable Device Drivers

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

- To install Iomega drivers, select Iomega drivers during installation.
- To install SyQuest drivers, select SyQuest drivers and the required driver type (EIDE, SCSI, IEPP, or SEPP).
- To install Fujitsu drivers, select Fujitsu drivers and then the required drive type (ATAPI or SCSI).

For specific information on individual device drivers, contact your manufacturer directly. See "Hard Drive Manufacturers" in *Appendix E*. For more information on setting up Iomega, SyQuest, and Fujitsu drivers, see "Setting Up Removable Storage Devices" in *Appendix C*.

Using Parallel Port Devices with a NetWare Client

Loading a parallel port device driver with a network client installed may cause the system to hang. To successfully load the device driver for a parallel port drive, you must reboot the system without loading the network client. You can use the boot diskette set created by the install program to do this. For more information to resolve this problem, contact your network administrator.

Before Running Drive Image Pro

Before running Drive Image Pro, PowerQuest recommends that you:

- Run a disk utility such as ScanDisk or CHKDSK on each partition of the source drive(s) 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.

- Create rescue and DOS boot disks. See "Creating DOS Boot Disks" on page 119.

Running Drive Image Pro

You can run Drive Image Pro from a floppy diskette or from the hard drive if you booted in DOS or MS-DOS mode. The following two procedures describe how to run Drive Image Pro in interactive mode. To run Drive Image Pro from a batch file or using scripts, see *Chapter 8*.

Running Drive Image Pro from a Floppy Diskette

To run Drive Image Pro from a floppy diskette,

1. Insert a bootable diskette.

   NOTE: To create boot diskettes and a Drive Image Pro floppy, see "Installing on an OS/2 or DOS Only Computer" on page 5.

2. Reboot your machine.

3. After DOS loads and boots, insert the Drive Image Pro program floppy. Type **A:\PQDI**, then press <ENTER>.

Running Drive Image Pro from a Hard Drive

To run Drive Image Pro from your hard drive,

1. If you are using Windows 95/98, click **Start > Programs > PowerQuest > Drive Image Pro 3.0 > Drive Image 3.0**.

2. If you are using Windows 3.x, open the **Drive Image 3.0** Pro program group and double-click the **Drive Image Pro 3.0** program icon.

    > **NOTE:** If you are using Windows NT, you must boot to DOS from either a bootable floppy or from a bootable DOS partition on your hard drive. The Drive Image Pro install can create bootable DOS diskettes when run under Windows NT.

Uninstalling Drive Image Pro

To uninstall Drive Image Pro,

1. Launch the uninstall program.

    a. If you are using Windows 95/98 or Windows NT 4.0, click **Start > Programs > PowerQuest > Drive Image Pro 3.0 > Uninstall Drive Image Pro**.

    OR

    Click **Start > Settings > Control Panel > Add/Remove Programs>Drive Image Pro 3.0**.

    b. If you are using Windows 3.x or Windows NT 3.51, double-click the **Uninstall Drive Image** icon in the **Drive Image Pro 3.0** program group.

2. Follow the instructions on the screen.

Getting Online Help

Drive Image Pro includes online help to assist you in performing various tasks. The **Help** menu on the Drive Image Pro main screen gives you a brief overview of the online help system, lets you access the **Help Index**, and provides information about Drive Image Pro.

Help Contents

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

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

    NOTE: You can also press <F1> at any time to access the **Help Index**.

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

About

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

Creating Image Files

This chapter contains the following information:

Image Files and Hardware Configurations

Preparation

Procedure

Advanced Options

Scenarios

Image Files and Hardware Configurations

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

If you create an image on one machine and you wish to restore the image on a machine with a different configuration (for example, a different motherboard or video card), the operating system may not boot correctly. Therefore, we recommend imaging and restoring to identical hardware configurations.

Any discussion of deployment, including hard-disk imaging, assumes that the software, including the operating system, is being copied in accordance with the license agreement with the software manufacturer.

Preparation

1. Before running Drive Image Pro, 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.

    NOTE: If you are running under Windows 98 or Windows NT, see Microsoft documentation on running the Microsoft Windows 98 Preparation Tool or the Windows NT 4.0 System Preparation Tool. This documentation is included as TOOLS.PDF on the Drive Image Pro CD. To view this file, run Setup, then click **Documentation > Preparation Tools**.

Procedure

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

1. At the Drive Image Pro main screen, click **Create Image**.
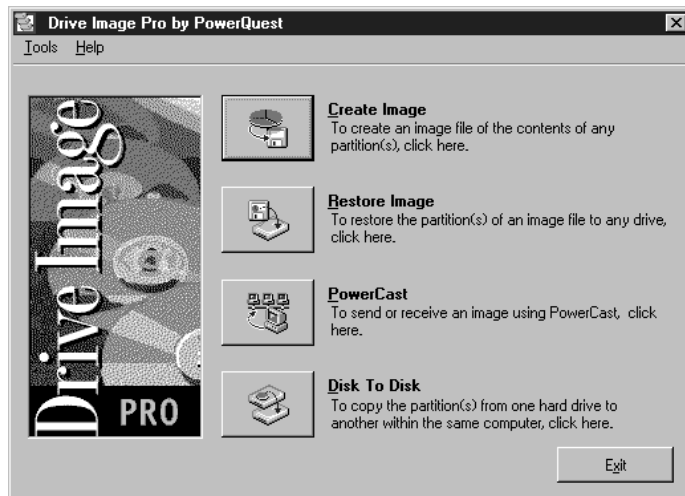
Drive Image Pro Main Screen

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.

A check appears to the left of the selected drive.
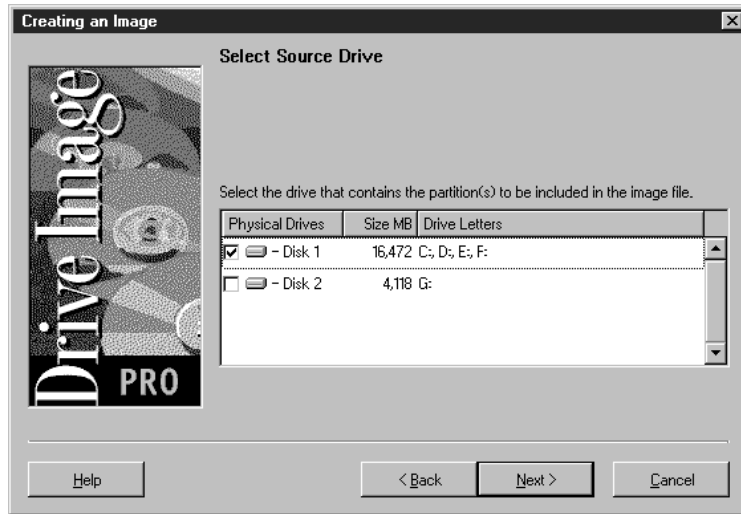
Select Source Drive

3. Click **Next**.

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

4. Select the source drive partition you wish to include in the image file, or click **Select All** to automatically select all partitions.

A check appears to the left of the selected partitions.

Letter	Volume Label	Volume Type	Status	Size MB	Used MB	Free MB	Pri/Log
☑ C:	WIN98	FAT32	Active	400.0	356.1	43.9	Primary
☐ *:	WINNT40	Hidden NTFS	Hidden	455.0	424.3	30.7	Primary
☐ *:	NT5B2	Hidden NTFS	Hidden	596.2	591.3	4.9	Primary
☐ D:	APPS	FAT	None	2,039.5	1,860.3	179.2	Logical

Total Selected: 400.0 356.1 43.9

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

   Make sure there is no existing file with the same name, unless you want the existing file to be overwritten.

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

   Drive Image Pro uses .PQI as the default image filename extension.

Name Image File

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

   You may also click **Browse** to browse the directory tree for your desired path or filename.

   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, MO, and SyQuest drives. (For more information about saving image files to removable media storage devices, see "Scenarios" on page 19.)

7. Click **Next**.

8. Select the desired compression level.

- **No Compression** is usually the fastest method for creating an image file and is useful if storage space is not an issue. However, if you are saving your image file to a busy network drive or to a relatively slow removable media device, high compression may be faster than no compression since there is less data to write to the file. Drive Image Pro selects **No Compression** by default.

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

- **High** compression offers a 50% average compression ratio.
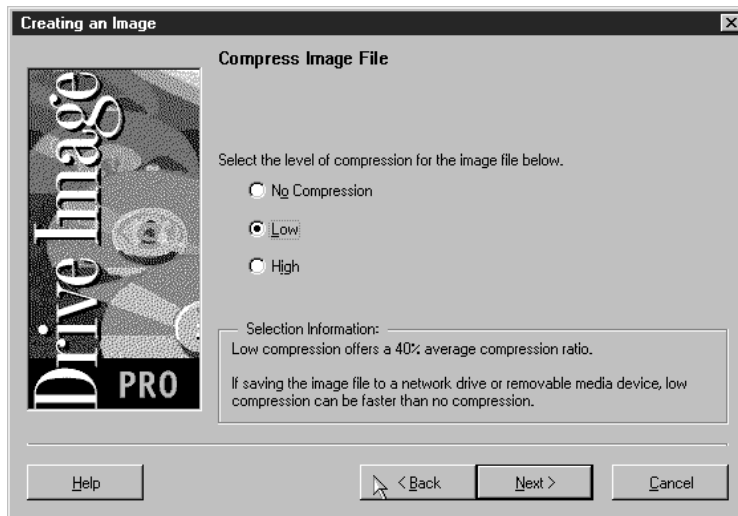
Compress Image File

NOTE: In general, compressed image files created with later versions of Drive Image Pro are not compatible with earlier versions. However, to create a compressed image in a later version that can be restored using Drive Image 1.0, specify the /ZLB command line switch. For more information about switches, see *Chapter 8*.

9. Click **Next**.

Drive Image Pro displays all the information you have entered to this point:

- Source Drive

- Source Partitions (partitions to be included in the image file are marked with an "X")

- Image Filename

- Compression Level

Ready to Create Image File

To modify any settings, click **Back**.

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

For information on **Advanced Options** settings, see "Advanced Options" on page 17.

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

> **NOTE:** If you entered a name of a current file (step 6), Drive Image Pro displays a message that <*path and filename*> already exists. You can replace the existing file or choose a new filename.

If Drive Image Pro 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. 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 19.

The **Creating the Image** dialog appears:
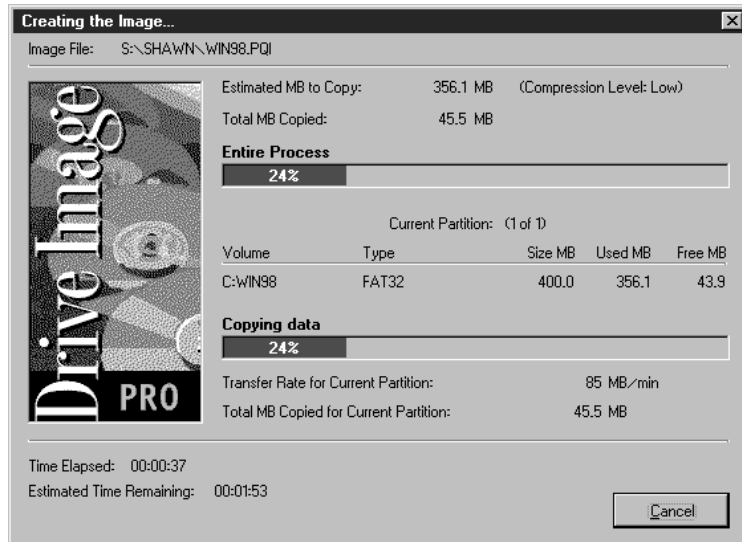
Creating the Image

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

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

Advanced Options

The **Create Image Advanced Options** dialog box appears when you click **Advanced Options** at the **Ready To Create Image File** screen. The following options are available:
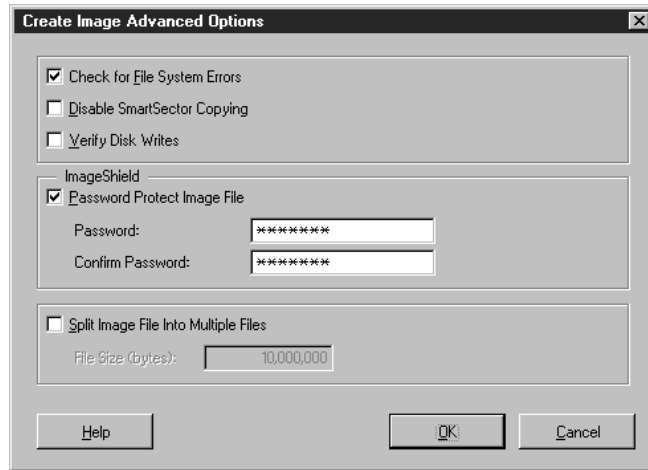
Create Image Advanced Options

Check for File System Errors

Clear 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 Pro check for file system errors. Clearing **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 Pro, leave the **Check for File System Errors** check box selected.

Disable SmartSector Copying

Drive Image Pro's SmartSector technology speeds up the imaging process by only copying clusters and sectors which 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, click **Disable SmartSector Copying**. **Disabling SmartSector Copying** increases processing time.

Verify Disk Writes

Click **Verify Disk Writes** 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 creation by as much as seven times.

ImageShield

To password-protect your image file, click **Password Protect Image File** and type a password in the **Password** field. To change or undo a password, use the Drive Image File Editor. For more information, see "Working with Passwords" on page 92.

IMPORTANT! 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

Sometimes it is useful to force Drive Image Pro to split a large image file into smaller files. To do so, click **Split Image File Into Multiple Files** 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.

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 Pro 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 image file creation, Drive Image Pro prompts you to insert new media 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 Pro.

   As Drive Image Pro 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. On 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. On the **Ready To Create Image File** screen, click **Advanced Options**.

16. Clear the **Check for File System Errors** check box.

17. Click **OK**.

18. Click **Finish**.

19. When Drive Image Pro prompts you to insert the next media 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 Pro has completed the image create process, click **OK** to return to the Drive Image Pro 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) in a spanned image file. You can restore this logical partition to any hard drive that has at least 400 MB of available space.

Creating an Image File for Use on CD-ROM

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-ROM drive (E:).

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

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 Pro.

4. On the Drive Image Pro 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**.

   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 Pro 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, you can use PowerQuest's PartitionMagic to resize your existing partition and 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. On the **Ready To Create Image File** screen, click **Advanced Options**.

13. Clear the **Check for File System Errors** check box.

14. Click 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 Pro has completed the image create process, click **OK** to return to the Drive Image Pro 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 Pro.

3. From the Drive Image Pro 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. On the **Ready To Create Image File** screen, click **Advanced Options**.

12. Clear the **Check for File System Errors** check box.

13. Click **OK**.

14. Click **Finish**.

15. After Drive Image Pro has completed the image create process, click **OK** to return to the Drive Image Pro 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.

3

Restoring Image Files

This chapter contains the following information:

Methods

Procedure

Resize Options

Advanced Options

Scenarios

Methods

This chapter describes restoring a Drive Image File to a different drive or partition

NOTE: If you create an image on one machine and you wish to restore the image on a machine with a different configuration (for example, a different motherboard, video card, etc.), the operating system may not boot correctly. Therefore, we recommend restoring to similar hardware configurations.

Other Methods:

• If you are restoring an image file to set up a new hard drive on a machine with a BIOS older than 1994, see "Using Drive Image Pro with an Older Computer BIOS that Requires Drive Overlay Software" in *Appendix B*.

• To restore image files created with Ghost, see "Converting Ghost Image Files to Drive Image Pro" in *Appendix B*.

• To restore selected files from a compressed or spanned image file, see "Restoring Files from spanned or Compressed Images" in *Chapter 7*.

• If you want to restore images to multiple machines as clients log on and thus reduce network traffic, see *Chapter 4*.

Procedure

To restore an image file to a different drive or partition,

1. Start Drive Image Pro, then click **Restore Image**.

2. In the **Image File** field, enter the path and filename of the image file you want to restore, or click **Browse** to select the path and image file.

Select Image File

3. Click **Next**.

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

4. If you have more than one partition, you can select the partitions you want to restore. Select the image file partitions, or click **Select All**.

A check appears to the left of the selected partitions.
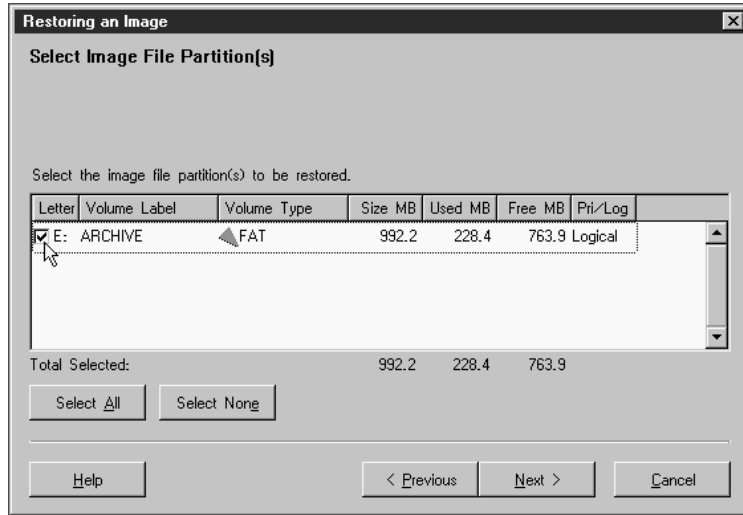
Select Image File Partition

To deselect partitions, click again on a partition or click **Select None**.

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

5. Click **Next**.

6. Select the drive where you want to restore the image file.
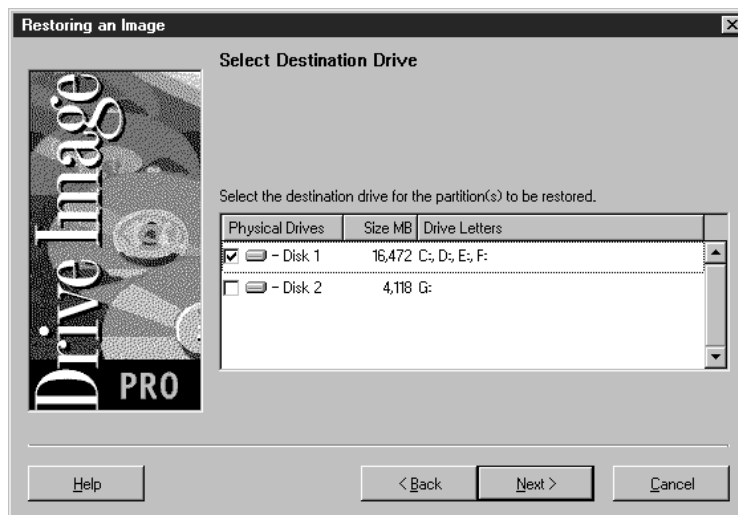
Select Destination Drive

7. Click **Next**.

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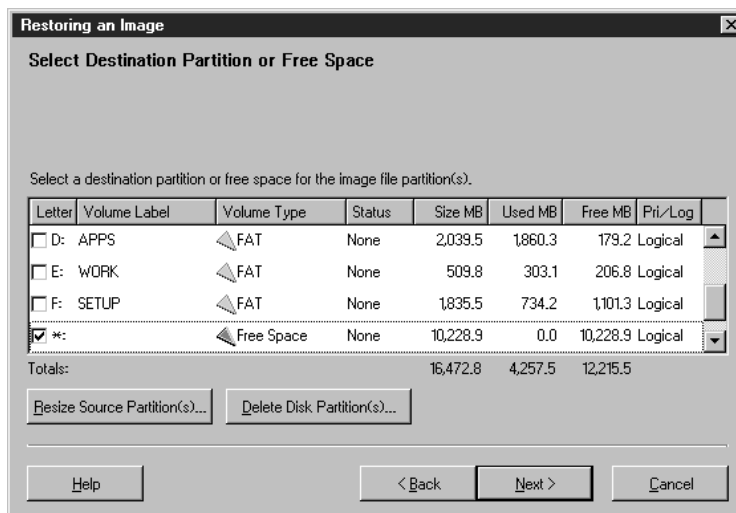
Select Destination Partition or Free Space

9. If the destination partition or free space is not large enough to accommodate the partitions 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 may want to resize the partitions:

   a. Click **Resize Source Partitions**.

   The **Resize Partitions** window displays.
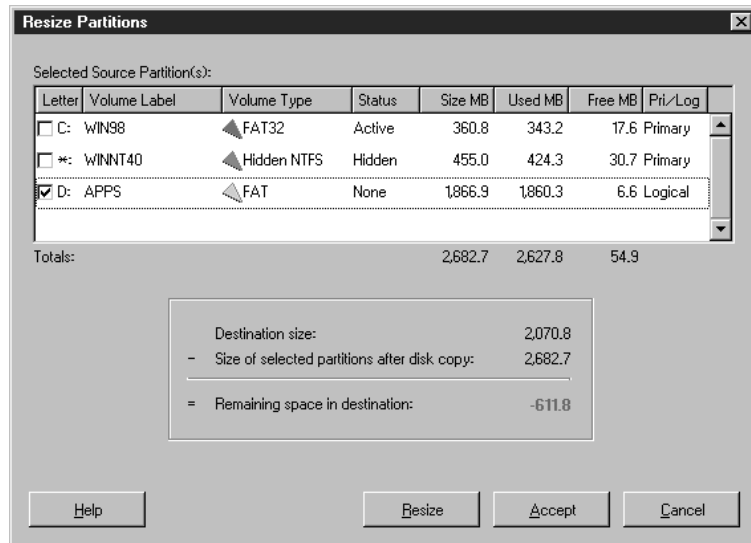
Resize Partitions: Main Window

The **Selected Source Partitions** group box displays the partitions you selected to restore.

The **Totals** field displays the disk space for the source partitions.

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

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

b. Click **Resize**.

The **Resize Partition** window appears.

Resize Partition	
Maximum Size:	2,070.9 MB
New Size:	2070.9 MB
Minimum Size:	360.8 MB

Help   OK   Cancel
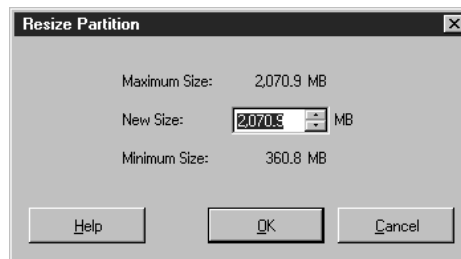
Resize Partition: Enter New Size

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

The **Minimum Size** field shows the smallest possible size the source partitions 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 Pro rounds the **New Size** up to the next cylinder boundary.

e. Click **Accept**.

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

10. Click **Next**.

If you selected an existing partition as the destination, the following message appears:
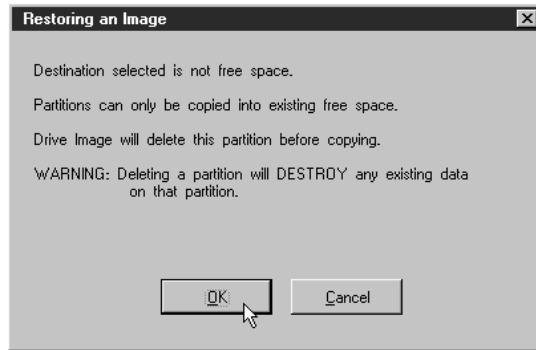
Delete Partition to Create Free Space: Confirmation Dialog

NOTE: Drive Image Pro does not delete the partition until you click **Finish** on the
Ready to Restore Image File screen.

If the free space on the destination drive is greater than the space required to restore
the selected partitions, the **Resize Options** dialog appears. For more information, see
"Resize Options" on page 34.

11. Drive Image Pro displays all the information you have entered to this point:
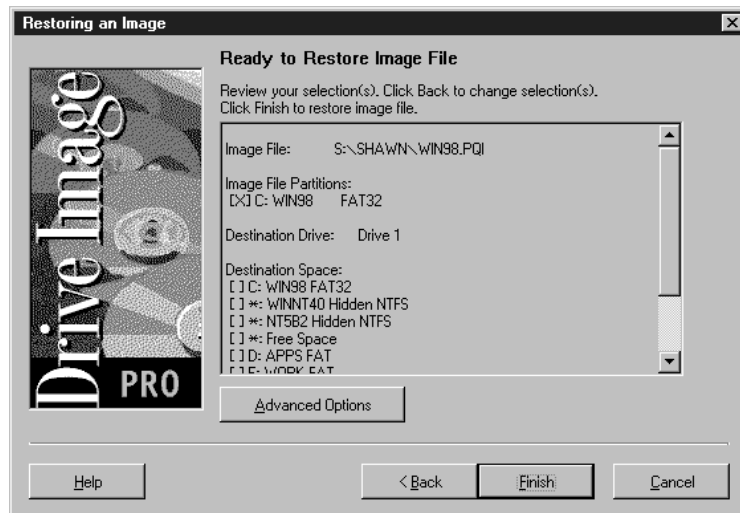
Ready to Restore Image File

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

12. If you wish to enable bad-sector checking, turn on DOS disk write verification, or hide partitions after restore, click **Advanced Options**. For more information on Advanced Options, see "Advanced Options" on page 35.

> ***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, see "Basic Concepts" on the Drive Image Pro CD. To view this file, run Setup, then click **Documentation > Understanding Hard Drives**.

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 Pro 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 Pro prompts you for each media, be careful to insert the disks sequentially. For more information, see "Restoring an Image File from a Zip Drive" on page 36.

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 Pro 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 partitions.
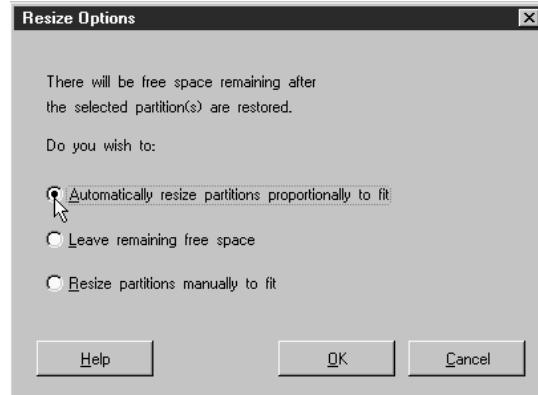
Resize Options

Automatically resize partitions proportionally to fit
Click this option to allow Drive Image Pro to automatically expand the partitions in
equal proportions to occupy the destination drive's remaining free space.

Leave remaining free space
Click 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
Click 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 "Procedure" which begins
on page 27.

Advanced Options

At the **Ready To Restore Image File** screen, click **Advanced Options** to access the following:
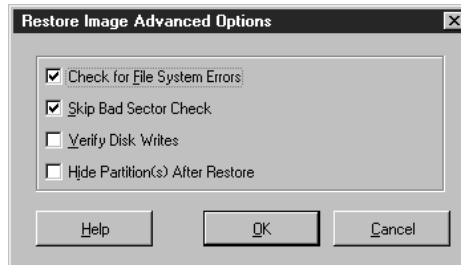
Restore Image Advanced Options

Check for File System Errors

Clear the **Check for File System Errors** check box 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 Pro check for file system errors. Clearing this option saves time in restoring images. Note that Drive Image Pro cannot restore partitions with file system errors.

Skip Bad Sector Check

This is selected 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 clearing the **Skip Bad Sector Check** box.

Verify Disk Writes

Click **Verify Disk Writes** 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

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.

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, click **Hide Partition After Restore**.

For example, if you are using your secondary hard drive as a complete backup of your primary drive, clicking **Hide Partition After Copy** preserves all the secondary drive information without changing any drive letters. When the computer boots up, a drive letter will not be assigned to the hidden partition.

For more information on why drive letters change, see "Basic Concepts" on the Drive Image Pro CD. To view this file, run Setup, then click **Documentation > Understanding Hard Drives**.

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 Pro.

   As Drive Image Pro 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 Pro 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 Pro prompts you to insert the next media in the series, remove "MYIMAGE DISK #1" from the Zip drive and insert "MYIMAGE DISK #2".

15. After Drive Image Pro has completed the image restore, click **OK** to return to the Drive Image Pro 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-ROM 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-ROM 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-ROM onto the bootable floppy that you created during Drive Image Pro installation. Refer to your CD-ROM user guide or contact your CD-ROM manufacturer for instructions on loading CD-ROM drivers in DOS and making DOS assign the CD-ROM 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 Pro program floppy you created during Drive Image Pro installation.

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

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

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

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

   You may also click **Browse** to browse the directory tree for your CD-ROM 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 Pro 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 Pro deletes the C: partition and labels it as free space.

15. Click **Finish**.

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

17. After Drive Image Pro 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 Pro 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 Pro.

2. From the Drive Image Pro 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 Pro has completed the image restore, click **OK** to return to the Drive Image Pro 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:).

4

PowerCasting

This chapter contains the following information:

Overview

Assigning IP Addresses

Running the PowerCast Server

Running the PowerCast Client

Advanced Options

Command Line Operation

Building PowerCast DOS Boot Diskettes

Overview

Drive Image Pro combines SmartSector imaging technology together with Ethernet multicasting to provide a fast and robust method for deploying workstations. PowerCasting sends an image file to one or more Drive Image Pro clients simultaneously. The image file is sent only once by the server to all the client computers, rather than separately to each client. This decreases network traffic by eliminating duplicate restore processes when preparing multiple workstations and when performing computer rollouts and migrations.

NOTE: PowerCasting currently supports only Ethernet networks. Drive Image Pro PowerCasting does not currently support bus or Token Ring networks.

Drive Image Pro contains both the PowerCast Server and Client. You can select either mode through the graphical user interface or command line switches. The Drive Image PowerCast Server reads the PQI image file from either local storage media or from a network server and then PowerCasts the image file to the client computers. The client computers receive and write the image file to the client disks. The image file can also be optionally resized to fit the various disk sizes on different client computers.

To enable Drive Image Pro PowerCasting, the driver for your network interface card (NIC) must be loaded and properly configured. If it is not properly installed and configured, you will receive error #1864 when you click PowerCast on the main Drive Image Pro dialog and then select client or server mode.

This error can be caused by Drive Image Pro not being able to find an IP address or by invalid configuration settings such as the line FRAME ETHERNET_II missing from the configuration files.

Assigning IP Addresses

In order for the Drive Image Pro PowerCast Server to communicate with each of the client computers on the network, the server and each client computer must have a unique IP address on the same local network subnet. Drive Image Pro will request an IP address from a DHCP or BOOTP server, or use the IP address specified in the optional WATTCP.CFG file.

When starting Drive Image Pro in PowerCast mode, it first looks for a WATTCP.CFG file for its IP address. If that file does not exist, it looks for a DHCP server. If the client fails to get an IP address, it will display error #1864 and disable the PowerCasting features.

The DHCP server method of assigning IP addresses is preferred because it saves time and is more versatile. For example, say you have 100 computers to configure. If you use the WATTCP.CFG method, you will need to build 100 different boot diskettes, each with its own IP address in the WATTCP.CFG file. But with DHCP, all the boot disks can be identical. Then when each computer boots up, it gets its IP address from the DHCP server.

In addition, the Drive Image Pro PowerCast Server contains a built-in BOOTP server for use where no DHCP server is available. The IP address range used by the built-in BOOTP server is specified in the PowerCast server Advanced Options window. We recommend you use addresses in the range of 192.168.0.0 through 192.168.255.255 or 172.16.0.0 through 172.31.255.255.

Valid local subnet IP addresses are specified by the subnet mask. It is common to use a mask of 255.255.255.0 to specify that IP addresses in the range 0 through 255 are in the subnet and are accessible. For example: if a computer's IP address is 192.168.2.4 and the subnet mask is 255.255.255.0, then all IP addresses from 192.168.2.0 through 192.168.2.255 are in the same local subnet and are accessible. Any IP addresses outside this range are not accessible from this computer.

Running the PowerCast Server

The server operation includes selecting a client mode, naming the session, and selecting the image file and partitions to be made available to PowerCast clients.

To create a session,

1. Start Drive Image Pro, then click **PowerCast**.

2. Click **Server**.

3. Select a client mode.

   - Click **Express** if you want to eliminate a decision step on the client side and have the image file replace the contents of the drive chosen by the client. The client does not have to choose a destination partition or free space.

   - Click **Custom** if you want to allow the client to choose the destination (partition or free space) and partition resize values.

4. Click **Next**.

5. Type any name you want for the PowerCast session, then click **Next**. This name will be used by the clients to select a session to join.

6. Specify the name of the image file to be PowerCast during this session, then click **Next**.

Select Image File

7. One of two things can happen:

   a. If there is only one partition, the **Resize Options** dialog appears. Skip to step 8 to select resize option.

   b. If the image file contains more than one partition, the partitions are displayed.

   Use one of the following methods to select the part of the image file you want to PowerCast:

   • Click the partitions you want to include.

   • Or click **Select All** to include the entire image file.

   • Or click **Select None** to clear the selections.

   After selecting partitions, click **Next**. The **Resize Options** dialog then appears.

8. Specify how you want to configure the remaining free space on the client computers.

    •   Click **Automatically resize partitions proportionally to fit**, if you want the selected image file to fill all available space.

    •   Click **Leave remaining free space**, if you want the selected image file to occupy equal space and leave the remaining space free.

9. Click **OK**.

Ready to Restore Image File

10. You can review your selections. If you want to disable file system checking, enable bad-sector checking, turn on DOS disk write verification, hide partitions after restore, or specify an IP address range, click **Advanced Options**. For more details about options, see "Advanced Options" on page 51.

11. After reviewing selections, click **Finish**.

The **Drive Image PowerCast Server** dialog appears. Here you can quickly see how many clients have connected to the session and control when you want the session to start.
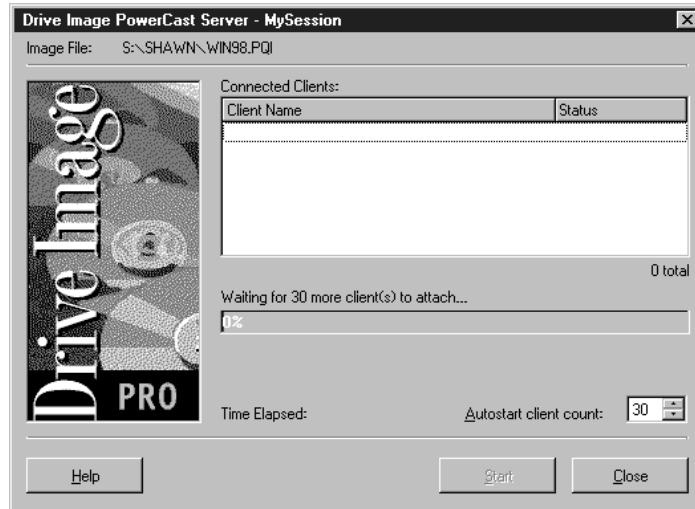
Drive Image PowerCast Server - MySession

12. To have the restore process start when a specified number of clients join the session, specify an **Autostart client count**.

13. To begin the session without waiting for a specified number to join, click **Start**.

Once started, the client status, server status, and PowerCast image transmission progress are displayed.

Running the PowerCast Client

The client operation includes logging in to a PowerCast session and selecting restore options.

To log on and restore an image,

1. Start Drive Image Pro, then click **PowerCast**.

2. Click **Client**.

The active PowerCast session names are listed in the **Available PowerCast Sessions** box.

3. Select the PowerCast session you want to join. The comments attached to the image file are displayed in the **Image File Comments** window. Click **Next**.
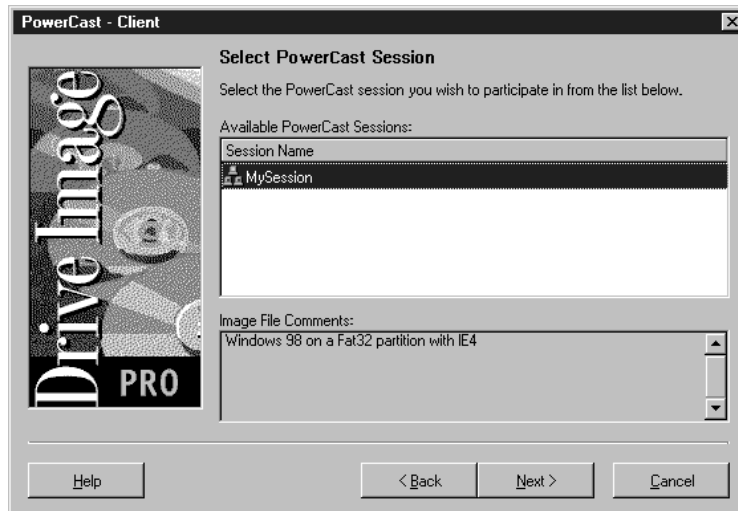
Select PowerCast Session

4. If the session prompts you to select a destination drive, select the physical drive where you want to restore the image file, then click **Next**.

If you selected **Custom** on the server and if the drive you have selected contains more than one partition or free space, the following dialog appears. (If you did not select **Custom** on the server, go to step 6.)

PowerCast - Client

Select Destination Partition or Free Space

Select a destination partition or free space for the image file partition(s).

Letter	Volume Label	Volume Type	Status	Size MB	Used MB	Free MB	Pri/Log
☐ D:	APPS	FAT	None	2,039.5	1,860.3	179.2	Logical
☐ E:	WORK	FAT	None	509.8	303.1	206.8	Logical
☐ F:	SETUP	FAT	None	1,835.5	734.2	1,101.3	Logical
☑ *:		Free Space	None	10,228.9	0.0	10,228.9	Logical
Totals:				16,472.8	4,257.5	12,215.5	

Resize Source Partition(s)...   Delete Disk Partition(s)...

Help   < Back   Next >   Cancel

Select Destination Partition or Free Space

5. Select the partition or free space where you want to restore the image file. You can also select from the following two options to alter partitions:

   • **Resize Source Partitions**: Lets you specify new sizes for the partitions in the received image file. The partitions will be restored to the destination disk and then resized to the selected sizes.

   • **Delete Disk Partitions**: Lets you delete partitions on the destination disk.

   When done selecting partitions and options, click **Next**.

6. Review your selections or change them by clicking **Back**. If you wish to ignore file system errors, enable bad-sector checking, turn on DOS disk write verification, or hide partitions after restore, click **Advanced Options**. For more information on options see "Advanced Options" on page 51.

7. To complete the client setup, attach to the server and wait for the server to start sending the image, then click **Finish**.

   The **Receiving PowerCast Image** dialog displays and tracks the following:

   • Image filename (session name)

   • Estimated megabytes to restore

   • Total megabytes copied

   • Entire process progress bar

- Information about current partition (volume name, 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. Would you like to view results?"

If you click **No**, the PowerCast session ends immediately.

If you click **Yes**, the **Display Drive Information** dialog will show the destination disk's current partition information. Click **Close** to end the PowerCast client session.

8. Click **OK**.

Advanced Options

At the **Ready To PowerCast Image File** screen, click **Advanced Options** to access the following:
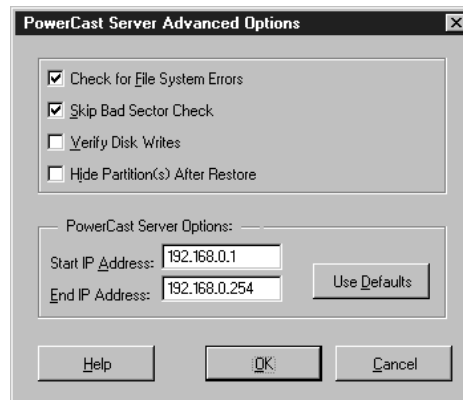
Advanced Options

Check for File System Errors

Clear the **Check for File System Errors** check box if you want to ignore file system errors. This can be used to allow a partition with errors to be PowerCast. However, you cannot restore a partition with file system errors.

Skip Bad Sector Check

This is selected 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 clearing the **Skip Bad Sector Check** box.

Verify Disk Writes

Click **Verify Disk Writes** if you want to enable 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

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.

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, click **Hide Partition After Restore**.

For example, if you are using your secondary hard drive as a complete backup of your primary drive, clicking **Hide Partition After Restore** preserves all the secondary drive information without changing any drive letters. When the computer boots up, a drive letter will not be assigned to the hidden hard drive.

For more information on why drive letters change, see "Basic Concepts" on the Drive Image Pro CD. To view this file, run Setup, then click **Documentation > Understanding Hard Drives**.

PowerCast Server Options (Server Only)

When a network DHCP server or WATTCP.CFG file cannot be found, Drive Image Pro acts as a DHCP server. These options let you specify the IP address range used. You can enter a range or use the defaults.

- **Start IP Address:** Enter the first IP address to be leased out to a client (lowest number).

- **End IP Address:** Enter the last IP address to be leased out to a client (highest number).

Command Line Operation

Both the PowerCast server and client operate from either the graphical user interface or from the command line. To start the Drive Image PowerCast server from the command line specify:

```
PQDI /MSN=session name /IMG=image filename
```

This will start Drive Image Pro in PowerCast server mode and display the server progress screen, wait for the specified number of clients to attach, and PowerCast the specified image file. Upon completion, the server will wait for additional clients to attach until **Close** is selected.

To start the Drive Image PowerCast client from the command line specify:

```
PQDI /MSN=session name /DSK=n
```

This will start Drive Image Pro in PowerCast client mode, display the PowerCast client progress screen, attach to the specified PowerCast session, delete all partitions on the specified disk, and restore the partitions from the image file received from the PowerCast server. Upon completion, the computer will reboot.

Additional command line switches may also be specified to modify the behavior of Drive Image Pro. For more information on running Drive Image Pro from the command line, see *Chapter 8*.

Building PowerCast DOS Boot Diskettes

Drive Image Pro provides the BootDisk Builder utility to assist in building Drive Image Pro DOS boot diskettes. After installing Drive Image Pro, you can run the BootDisk Builder from the Drive Image Pro program group. For more information on running BootDisk Builder, see "Creating DOS Boot Disks" in *Appendix A*.

The BootDisk Builder builds DOS boot diskettes with the necessary NIC drivers and network configuration files for either PowerCasting or for Microsoft or Novell network connectivity. It will not create boot disks that allow simultaneous PowerCasting and network connectivity. To simultaneously connect to a Windows NT or NetWare server, the network client software must also be properly configured on the boot disk. Because of wide variations in interface cards and network configurations, this process will not be explained in detail here. You will need to obtain additional help from your network administrator.

The required steps to manually build Drive Image PowerCast DOS boot diskettes for both NDIS 2.01 and ODI/MLID network interface drivers are detailed on the following pages. You can obtain the NIC drivers from the driver diskette that came with your network card, from your network administrator or Information Systems technician, or from the card manufacturer's web site. The other required network client software pieces can be obtained from your network administrator or Information Systems technician.

NDIS 2.01 NIC Driver

You can create a Drive Image Pro PowerCast DOS boot disk with your network interface card's NDIS 2.01 NIC driver.

Use the MAKEDISK.BAT file found found on the Drive Image Pro CD in the \SETUP\OS2DOS subdirectory to create a two-diskette Drive Image Pro set. The first diskette is the DOS boot diskette and the second is the Drive Image Pro program diskette. The following steps outline how to add the network drivers to the boot diskette. You need to alter the example configuration and system files for use with different network interface cards.

1. Copy the NDIS 2.01 NIC driver from your network interface card diskette to the boot diskette. For example, the 3Com 3x905 NIC driver is found on disk #1 in subdirectory \NDIS2\DOS and is named "EL90X.DOS."

2. Copy the DIS_PKT.DOS and the PROTOCOL.INI files to the boot diskette. These files are located on the Drive Image Pro CD in the \SETUP\OS2DOS subdirectory.

3. Change the "drivername=" line in the PROTOCOL.INI file [NIC_CARD] section to match your NIC's driver name. The following sample is for the EL90X.DOS driver.

    Sample PROTOCOL.INI file contents:

    ```
    [PROTMAN]
    drivername = PROTMAN$


    [PKTDRV]
    drivername = PKTDRV$
    bindings = NIC_CARD
    intvec = 0x60
    chainvec =0x66


    [NIC_CARD]
    drivername = EL90X$
    ```

4. Copy the PROTMAN.DOS, PROTMAN.EXE and NETBIND.COM programs to the boot diskette. You can obtain these files from the Windows NT Server 4.0 CD in the CLIENTS\MSCLIENT\NETSETUP directory or at the Microsoft FTP site at: ftp://ftp.microsoft.com/msclient/

5. Modify the CONFIG.SYS file to look as follows:

    ```
    DEVICE=HIMEM.SYS
    DEVICE=PROTMAN.DOS /I:A:\
    DEVICE=DIS_PKT.DOS
    DEVICE=xxxxx.DOS  (Change to match your NIC driver)
    LASTDRIVE=Z
    ```

6. Add the NETBIND line to the AUTOEXEC.BAT file.

    ```
    @ECHO OFF
    PROMPT $P$G
    NETBIND
    ```

The following files should now be on the boot diskette.

- <Hidden DOS system files -- IO.SYS and MSDOS.SYS>

- COMMAND.COM

- HIMEM.SYS

- CONFIG.SYS

- AUTOEXEC.BAT

- xxxxxx.DOS *(NDIS network card NIC driver, must match your card.)*

- DIS_PKT.DOS

- PROTMAN.DOS

- PROTMAN.EXE

- NETBIND.COM

- PROTOCOL.INI

7. On the Drive Image Pro program diskette (the second diskette) you can create a PQDI.BAT file to start Drive Image Pro and to optionally specify command line switches. To start Drive Image Pro in user interface mode, specify PQDI. The user interface is then used to select Server mode and options.

    `PQDI` *(Starts Drive Image Pro in GUI mode.)*

To start Drive Image Pro in PowerCast client mode, specify both the disk number and the PowerCast session name. Specify the disk number with the /DSK=n command line switch. **Warning! The entire disk will be erased.** Specify the PowerCast session name with the /MSN=*nnnnn* command line switch. The session name specified must match the name used by the server.

    `PQDI /DSK=1 /MSN=SESSION` *(Starts Drive Image Pro in PowerCast client mode)*

8. Skip this step if a DHCP server is available on the network segment that will be used for PowerCasting or if you don't want to use the Drive Image Pro BOOTP server.

If no DHCP server is available on the network segment, create a WATTCP.CFG file on the boot diskette to specify the IP address for this computer to use.

WATTCP.CFG file contents:

```
IP = 192.168.1.xxx
NETMASK = 255.255.255.0
HOSTNAME = WRKST001
```

IP is the workstation's unique IP address.

NETMASK is the proper network mask.

HOSTNAME is the workstation's unique name.

The second diskette should now contain the following files:

- MOUSE.COM
- PQDI.EXE
- PQDI.OVL
- PQDI.PQG
- PQDI.RTC
- PQDI.BAT *(Optional)*
- WATTCP.CFG *(Optional)*

Use the first diskette to boot DOS and then insert the second diskette and enter **PQDI** at the command prompt to start Drive Image Pro.

If all the files will fit on one diskette, you can copy the files from disk #2 to disk #1 and edit the AUTOEXEC.BAT file to automatically start Drive Image Pro.

ODI/MLID NIC Driver

To create a Drive Image PowerCast DOS boot disk with your network interface card's ODI/MLID NIC driver, perform the following steps:

Use the MAKEDISK.BAT file found in the \SETUP\OS2DOS subdirectory to create a two diskette Drive Image Pro set. The first diskette is the DOS boot diskette and the second is the Drive Image Pro program diskette. The following steps outline how to add the network drivers to the boot diskette. You need to alter the example configuration and system files for use with different network interface cards.

1. Copy the ODI/MLID NIC driver from your network interface diskette to the boot diskette. For example, the 3Com 3x905B NIC driver is found on disk #1 in subdirectory \NWCLIENT and is named 3C90X.COM.

2. Copy the LSL.COM program to the boot diskette.

   LSL.COM can be obtained from your network administrator, information systems technician, or from the Novell Web site at: *http://www.novell.com/download*

   Get the Novell® Client™ v2.6 for DOS and Windows 3.1x, unzip the DW26EN.ZIP file, and copy the LSL.COM file from the \NIOS subdirectory.

3. Modify the CONFIG.SYS file to look as follows:

   ```
   DEVICE=HIMEM.SYS
   LASTDRIVE=Z
   ```

4. Modify the AUTOEXEC.BAT file to look as follows:

   ```
   @ECHO OFF
   PROMPT $P$G
   LSL (Loads LSL program)
   3C90X (Loads ODI driver)
   ```

5. Create a NET.CFG file with the following contents:

   ```
   LINK SUPPORT
     BUFFERS 6 1600
   ```
   LINK DRIVER 3C90X *(Change to match your network card driver.)*
   ```
     FRAME ETHERNET_802.2
     FRAME ETHERNET_II
   ```

   NOTE: The FRAME ETHERNET_II line is required for PowerCasting.

The following files should now be on the boot diskette:

- <Hidden DOS system files -- IO.SYS and MSDOS.SYS>
- COMMAND.COM
- HIMEM.SYS
- CONFIG.SYS
- AUTOEXEC.BAT
- 3C90X.COM *(ODI/MLID network card NIC driver, must match your card.)*
- LSL.COM
- NET.CFG

6. On the Drive Image Pro program diskette (the second diskette) you can create a PQDI.BAT file to start Drive Image Pro and to optionally specify command line switches. To start Drive Image Pro in user interface mode, specify PQDI. The user interface is then used to select Server mode and options.

   `PQDI` *(Starts Drive Image Pro in GUI mode)*

   To start Drive Image Pro in PowerCast client mode, specify both the disk number and the PowerCast session name. Specify the disk number with the /DSK=*n* command line switch. **Warning! The entire disk will be erased.** Specify the PowerCast session name with the /MSN=*nnnnn* command line switch. The session name specified must match the name used by the server.

   PQDI /DSK=1 /MSN=SESSION1 *(Starts Drive Image Pro in PowerCast client mode)*

7. Skip this step if a DHCP server is available on the network segment that will be used for PowerCasting or if you don't want to use the Drive Image Pro BOOTP server.

   If no DHCP server is available on the network segment, create a WATTCP.CFG file on the boot diskette to specify the IP address for this computer to use.

   WATTCP.CFG file contents:

   ```
   IP = 192.168.1.xxx
   NETMASK = 255.255.255.0
   HOSTNAME = WRKST001
   ```

   IP is the workstation's unique IP address.

   NETMASK is the proper network mask.

   HOSTNAME is the workstation's unique name.

The second diskette should now contain the following files:

- MOUSE.COM
- PQDI.EXE
- PQDI.OVL
- PQDI.PQG
- PQDI.RTC
- PQDI.BAT *(Optional)*
- WATTCP.CFG *(Optional)*

Use the first diskette to boot DOS and then insert the second diskette and enter PQDI at the command prompt to start Drive Image Pro.

If all the files will fit on one diskette, you can copy the files from disk #2 to disk #1 and edit the AUTOEXEC.BAT file to automatically start Drive Image Pro.

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 the appendix for the following information:

   - "Hard Drive Manufacturers" in *Appendix E*

   - "Using Drive Image Pro with SCSI Hard Drives" in *Appendix B*

   - "Using Drive Image Pro with an Older Computer BIOS that Requires Drive Overlay Software" in *Appendix B*

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

   a. Create a bootable DOS diskette. Use the install program **Create Rescue Diskettes** option or See "Creating DOS Boot Disks" in *Appendix A*.

   b. Before running Drive Image Pro, 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.

   NOTE: You can copy a partition or drive from a larger to a smaller partition or drive. However, there must be enough free space on the smaller destination to accomodate the used space on the larger source.

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,

   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 contact information of some popular hard drive manufacturers, see "Hard Drive Manufacturers" in *Appendix E*.

   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 Manufacturers" in *Appendix E*.)

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 BIOS 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 Pro, make sure the disk sizes reported in the **Total Selected** fields are accurate before continuing. If Drive Image Pro 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 Pro 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,

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

2. Select the drive that contains the partition you wish to copy.

    A check appears to the left of the selected drive.
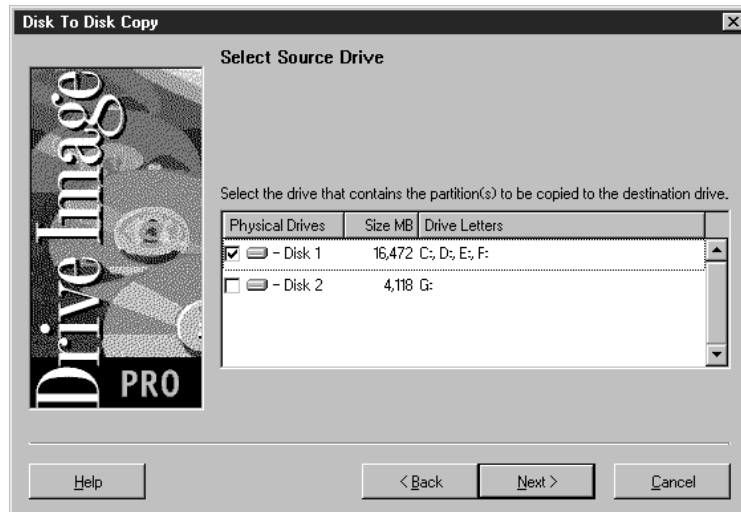
Select Source Drive

3. Click **Next**.

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

4. Select the source partition you wish to copy, or click **Select All** to automatically select all partitions.

A check appears to the left of the selected partition.
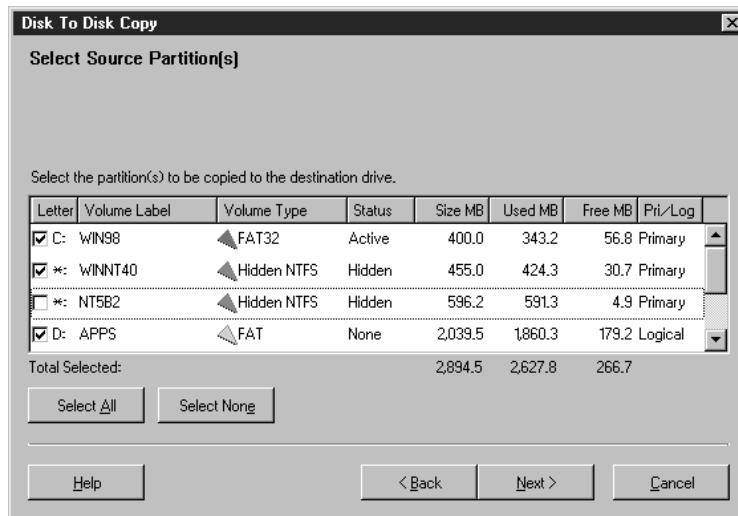
Select Source Partition

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.

IMPORTANT! In order to copy partitions, the destination partition or drive must have free space equivalent to the total used space of the selected source partition.

5. Click **Next**.

6. Select the drive to which you wish to copy the partition.
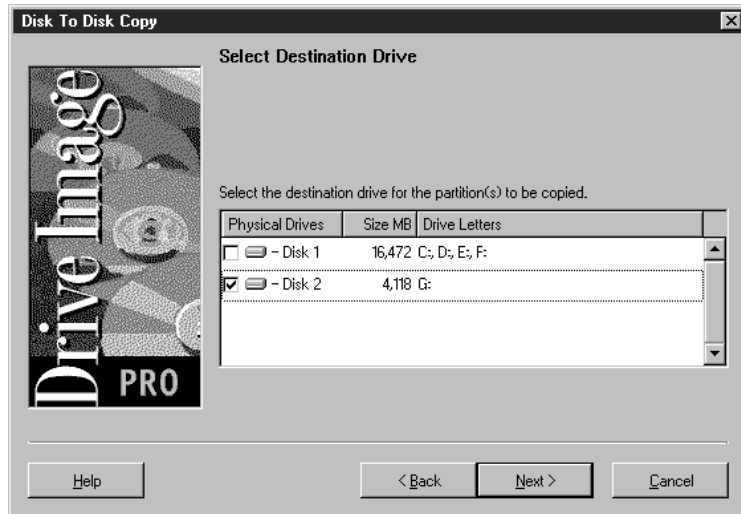
Select Destination Drive

7. Click **Next**.

8. Select an existing partition or free space (non-partitioned disk space) on the destination drive.

Disk To Disk Copy

Select Destination Partition or Free Space

Select a destination partition or free space below for the source drive partition(s).

Letter	Volume Label	Volume Type	Status	Size MB	Used MB	Free MB	Pri/Log
☐ *:		Free Space	None	7.8	0.0	7.8	Primary
☐ G:	TEST	FAT	None	2,039.5	67.0	1,972.5	Logical
☑ *:		Free Space	None	2,070.9	0.0	2,070.9	Logical

| Totals: | | | | 4,118.2 | 67.0 | 4,051.2 | |

Resize Source Partition(s)...   Delete Disk Partition(s)...

Help   < Back   Next   Cancel

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 you wish to copy, or if you are copying the partition to a larger drive and want to set a specific size for the partition rather than use the proportional resize option, you can click **Resize Source Partitions** to specify a different size for the copied partition. To resize partitions, perform the following:

a. Click **Resize Source Partitions**.
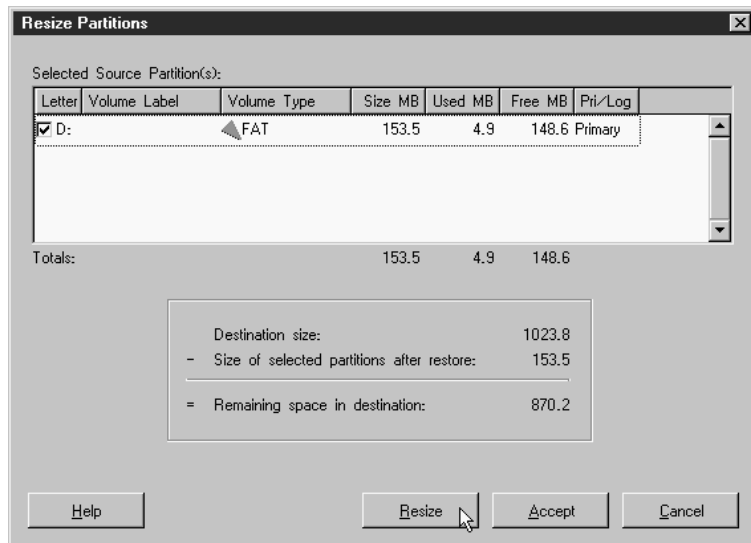
The **Resize Partitions** window appears.

Resize Partitions: Main Window

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

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

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.
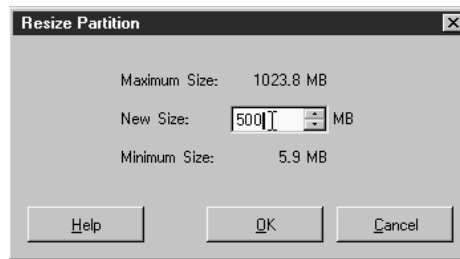
Resize Partition: Enter New Size

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

The **Minimum Size** field shows the smallest possible size the source partition 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 Pro rounds the **New Size** up to the nearest cylinder boundary.

e. Click **Accept**.

Later, when you copy the partition, Drive Image Pro resizes them.

10. Click **Next**.

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

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

Drive Image Pro 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, the **Resize Options** dialog appears.

NOTE: For information on resize option settings, see "Resize Options" on page 71.

11. Drive Image Pro displays all the information you have entered to this point.

- Source drive
- Source partitions
- Destination drive
- Destination space
- Resize
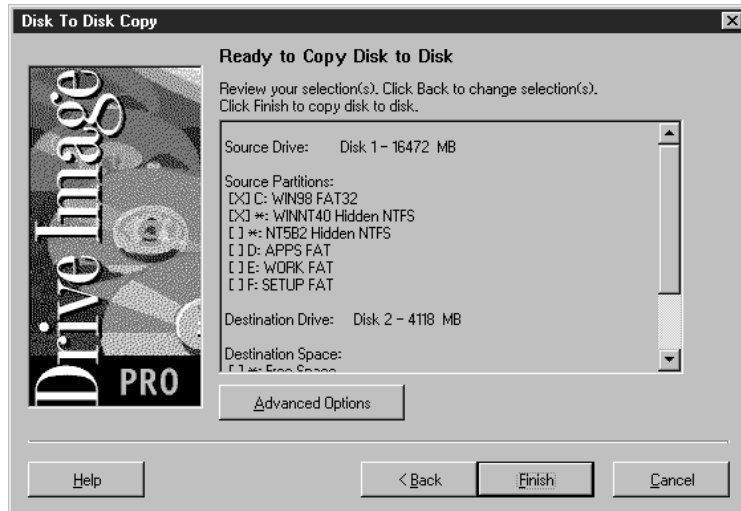
Ready to Copy Disk to Disk

If you wish to alter any settings, click **Back** 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**. For more information, see "Advanced Options" on page 72.

> **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, see "Basic Concepts" on the Drive Image Pro CD. To view this file, run Setup, then click **Documentation > Understanding Hard Drives**.

13. Click **Finish** to begin copying the selected partition.

The **Copying Disk To Disk** dialog tracks 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. Would you like to view the results?"

14. Click **OK** to return to the Drive Image Pro 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.

Resize Options

Automatically resize partitions proportionally to fit

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

Leave remaining free space

Click 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

Click 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.

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:
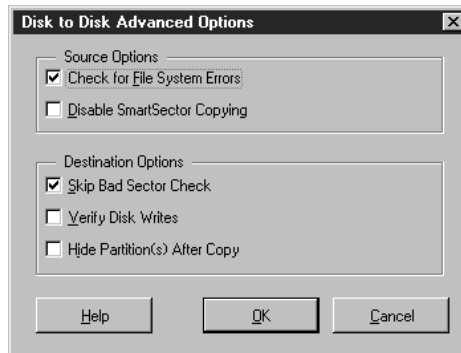
Disk to Disk Advanced Options

Source Options

Check for File System Errors
Clear 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 Pro check for file system errors. Clearing **Check for File System Errors** saves time in copying the partitions.

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

Disable SmartSector Copying
Drive Image Pro's SmartSector technology speeds up the imaging 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, click **Disable SmartSector Copying**. **Disabling SmartSector Copying** increases processing time.

Destination Options

Skip Bad Sector Check
This is selected by default to save time in copying the partitions.

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 clearing the **Skip Bad Sector Check** box.

Verify Disk Writes
Click **Verify Disk Writes** if you want to enable DOS disk write verification.

NOTE: Disk write verification is not critical to safely copy image files. Enabling disk write verification can slow the image 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, click the **Hide Partition After Copy** box.

For example, if you are using your secondary hard drive as a complete backup of your primary drive, selecting **Hide Partition After Copy** preserves all the secondary drive information without changing any drive letters. When the computer boots up, a drive letter will not be assigned to the hidden hard drive.

For more information on why drive letters change, see "Basic Concepts" on the Drive Image Pro CD. To view this file, run Setup, then click **Documentation > Understanding Hard Drives**.

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 98; 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 Pro.

3. From the Drive Image Pro 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**, clear the **Check for File System Errors** box.

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

15. Click **OK**.

16. Click **Finish**.

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

Result
The computer reboots and returns to Windows 98. 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 Pro **Disk To Disk** again. Select the hidden partition as the source and the active partition as the destination. After Drive Image Pro 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 98; 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 Pro.

2. From the Drive Image Pro 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. This partition will be deleted 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**, clear the **Check for File System Errors** box.

13. Click **OK**.

14. Click **Finish**.

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

Result
The computer reboots and returns to Windows 98. Drive letters stay the same, but the F: partition now contains the same data as the E: partition.

6

Common Partition Management Tasks

This chapter contains the following information:

Displaying Drive Information

Creating Extended Partitions

Deleting Partitions

Hiding Partitions

Setting the Active Partition

The **Tools** drop-down menu on the Drive Image Pro main screen lets you manually perform some common partition-management tasks that Drive Image Pro 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.

Displaying Drive Information

The **Display Drive** Information option lets you view information about the partitions on your current hard drive. You can view:

- Drive letters

- Volume (partition) labels

- Color-coded volume (partition) types

- Status (active partition)

- Partition size

- Used MB in partitions

- Free MB in partitions

- Primary or logical drive

To display drive information,

1. At the Drive Image Pro main screen, click **Tools > Display Drive Information**.

2. If you have more than one hard drive on your system, select the drive you want to view from the **Physical Drive** drop-down list.

Creating Extended Partitions

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 about partition types and requirements, see "Basic Concepts" on the Drive Image Pro CD. To view this file, run Setup, then click **Documentation > Understanding Hard Drives**.

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

To create an extended partition,

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

   The **Create Extended Partition** window appears.

   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.

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 Pro creates an extended partition in the selected free space.

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

Deleting Partitions

This feature deletes existing partitions to create free space on your hard drive.

WARNING! Be aware that deleting existing partitions destroys any data they contain.

To delete partitions,

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

   The **Delete Partition(s)** window appears.
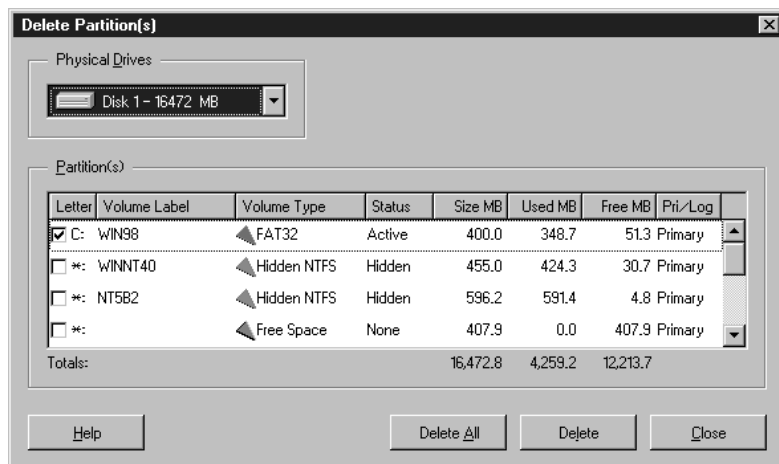
Delete Partitions

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

3. Click the partitions you wish to delete.
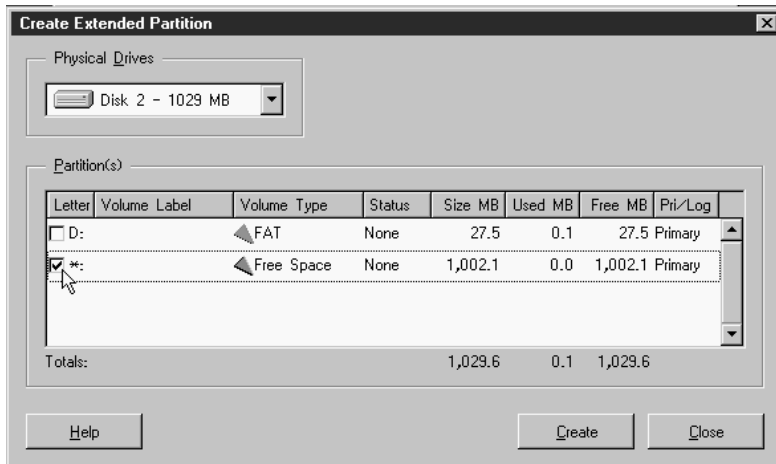
   A check mark appears to the left of selected partitions.

4. Click **Delete**, or to delete all partitions click **Delete All**.

   The following message appears:
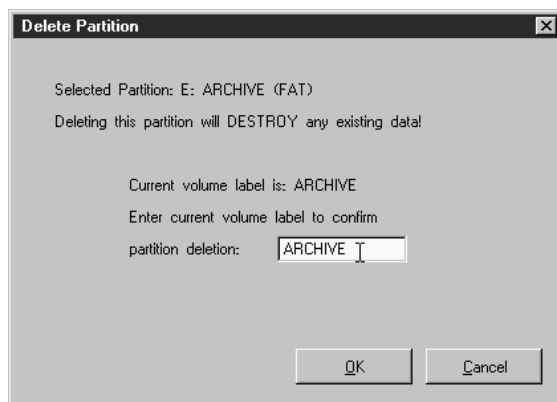
Delete Partition Confirmation

5. Type the volume label exactly as it appears, then click **OK**.

   Drive Image Pro deletes the partition and displays the message: "Volume <volume name> was deleted successfully."

6. Click **Close** to return to the Drive Image Pro main screen.

Hiding Partitions

The **Hide/Unhide** feature allows you to protect partitions from unwanted user access. Hidden partitions are not accessible because they are not assigned drive letters when you boot your computer. If you unhide a partition, it is assigned a drive letter the next time you boot your computer and becomes accessible again.

Before hiding and unhiding partitions, be aware of the following restrictions.

• 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 "Basic Concepts" on the Drive Image Pro CD. To view this file, run Setup, then click **Documentation > Understanding Hard Drives**.

- 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 Pro unhides the selected primary partition and automatically hides all other primary partitions. See "Setting the Active Partition" on page 83.

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

To hide/unhide partitions,

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

   The **Hide Partition(s)** window appears.
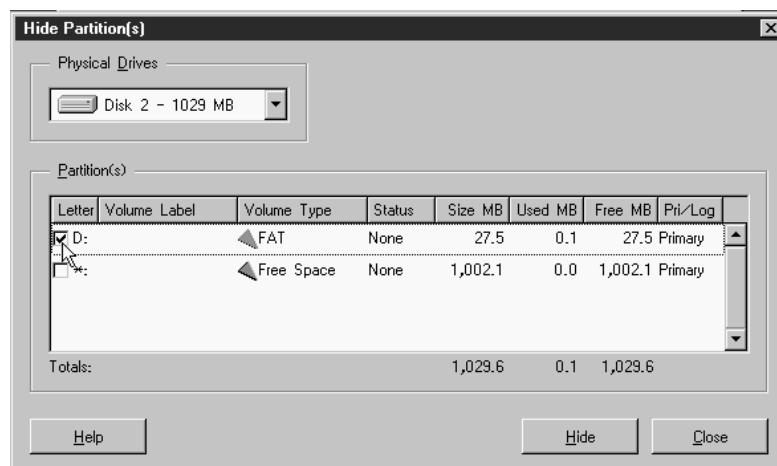
Hide Partition(s)

2. Click the partition you want to hide.

   A check mark indicates that the partition is selected.

   NOTE: Normally when you select a partition, the **Hide** button becomes available. If the button is not available, the partition can't be hidden.

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

   The partition status changes to "Hidden."

4. Click a hidden partition.

> **NOTE:** Normally when you select a partition, the Unhide button becomes available. If the button is not available, the partition can't be unhidden.

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

The partition status changes to "None."

6. Click **Close** to return to the Drive Image Pro main screen.

7. Click **Exit** to exit Drive Image Pro.

8. Reboot your computer.

Setting the 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 under most operating systems, 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 Pro. If you restart your computer and it does not boot normally, you must boot from the floppy disk, run Drive Image Pro from the program disk you created during Drive Image Pro install, and set a different partition active.

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

   The **Set Active Partition** window appears.
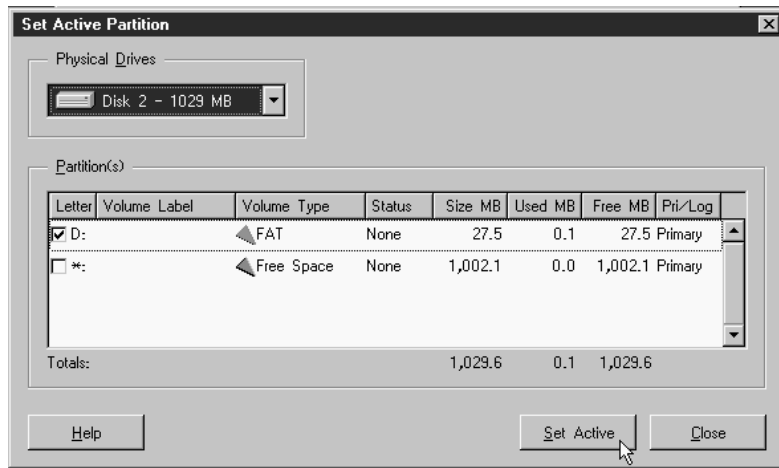
Set Active Partition

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

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

3. Click **Set Active**.

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

4. Click **Close**.

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

6. Reboot your computer.

Drive Image File Editor

This chapter contains the following information:

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 image files and partitions.

NOTE: Drive Image File Editor requires Windows 95/98 or Windows NT.

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**.
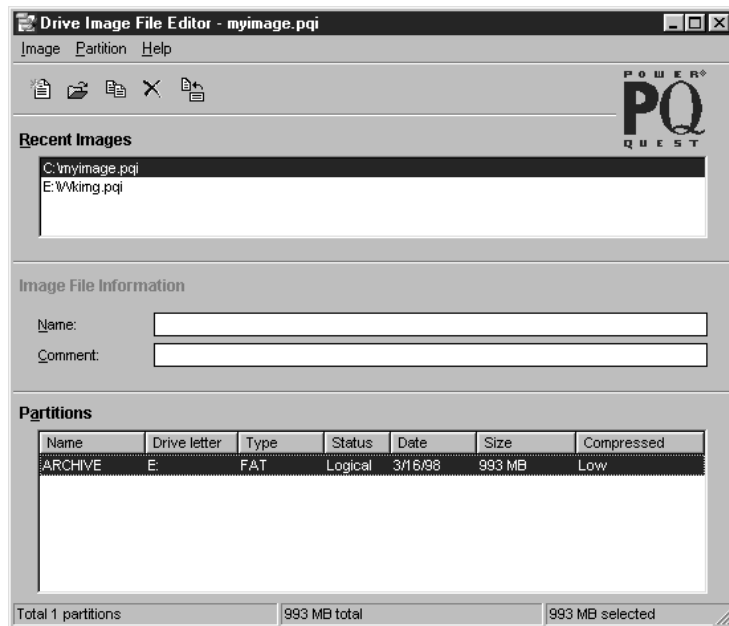
Image File Editor Main Screen

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. Double-click any image file or partition to activate **File Restore**.

The **Recent Images** list holds up to 64 filenames. Additional filenames 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.

    NOTE: The default name for the partition is the volume label assigned to the partition when the image was created. If you change the partition name here, it does not change the volume label when the image is restored.

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

- **Type** specifies the file system type (e.g. FAT, NTFS, 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** compression yields an approximate 40% compression rate. **High** compression is approximately 50%.

Opening Image Files

To open a new image file,

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 Pro, or Drive Image File Editor.

4. Click **Open**.

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

Deleting Image Files

To delete an image file,

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

    The **Open** dialog appears.

    NOTE: You can also select **Image > New** or click the **Create New Image** icon.

    The **New Image File** dialog appears. The following steps apply to both the **Open** and **New Image File** features.

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 without deleting.

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:

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

   The **New Image File** 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 want to create the image file.

3. Specify a new image filename.

4. Click **Save**.

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

   NOTE: Drive Image File Editor does not support HPFS partitions.

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, Mo, 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 want to span.

    NOTE: If the file is not listed, you must first open the file. For more information, see "Opening Image Files" on page 88.

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 want 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**.

    The **Copy Options** dialog appears.

6. Specify a compression level, change the password as needed, or split the image into multiple files, then click **OK**. For more information, see "Changing Copy Options" on page 92.

    Drive Image File Editor creates the spanned image file, prompting you for each new diskette. Drive Image Pro 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,

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

    NOTE: If the file is not listed, you must first open the file. For more information, see "Opening Image Files" on page 88.

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 want to save the combined image.

4. Specify the combined image filename.

5. Click **Save**.

   The **Copy Options** dialog appears.

6. Specify a compression level, change the password as needed, or split the image into multiple files, then click **OK**. For more information, see "Changing Copy Options" on page 92.

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 partitions within an image file, see "Uncompressing Partitions" on page 98. To copy an image file by creating a new file,

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

   The **Create New Image** dialog appears.

2. Navigate to the folder where you want 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 want 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 non-contiguous partitions.

7. Drag-and-drop the partitions to the newly-created filename in the **Recent Images** list.

    The **Copy Options** dialog appears.

8. Specify a compression level, change the password as needed, or split the image into multiple files, then click **OK**. For more information, see "Changing Copy Options" on page 92.

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

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

Changing Copy Options

Setting Compression Levels

Compressing files can save disk space and time over a busy network. Every time you save an image file or partition using Drive Image File Editor, you are prompted with the following compression options:

*   **No Change** keeps the same compression level.

*   **No Compression** is usually the fastest method for saving the image file and is useful if storage space is not an issue. However, if you are saving your image file to a busy network drive or to a relatively slow removable media device, high compression may be faster than no compression since there is less data to write to the file.

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

*   **High** compression offers a 50% average compression ratio.

Working with Passwords

When you create an image file in Drive Image Pro, you have the option to assign a password to that file. Once assigned, the password is encrypted into the file and can only be changed one of two ways. You can use Drive Image Pro to restore the protected image file, then create a new image file with a different password. Or you can use Drive Image File Editor to make password changes.

Every time you save an image file or partition using Drive Image File Editor, you are prompted with the following password options:

- **Use Same Password**

- **No Password Protection**

- **Set New Password**—If you choose this option, you then type the password in the Password and the Confirm Password fields.

NOTE: Password-protected partitions retain their passwords. Although they can be copied or saved into other image files, they cannot be restored or downloaded until the proper password is entered.

Also, partitions which already have a password cannot have the password removed using **No Password Protection** or have a new password set using **Set New Password** without correctly entering the original password when prompted during the copy.

Splitting an Image File Into Multiple Files

Sometimes it is useful to split a large image file into smaller files, for example when saving very large image files to removable media. You can split an image when you create it using Drive Image Pro, as you are automatically prompted for new media when media in a removable device is full. Or you can use the Drive Image File Editor to split image files after they have been created.

It is especially useful to save the split image files to a network drive and later transfer the files to removable media, such as a CD-ROM. The split image files can be sized in advance on the network to fit the removable media where they will be placed later.

Every time you save an image file using Drive Image File Editor, you are prompted with the following option.

- **Split Image File into Multiple Files** specifies the maximum byte size that your saved image file can be. For example, enter the size of your media in the **File Size** (bytes) field. If you want to save the file to CD, you could specify a file size of 650,000,000 bytes (650 MB) or less. When the file being saved reaches this size, it begins another file.

Accessing Partition Properties

To access a partition's properties information,

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" on page 88 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 type of the partition.

*   **File System Type** specifies the file system type used within the partition.

*   **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** compression yields an approximate 40% compression rate. **High** 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.

You can copy partitions using either the drag-and-drop method or the menu method. When you use the menu method, the **Copy to Image File** dialog displays so that you can specify folder and filename information.

Drag and Drop Method

To copy a partition,

1. In the **Recent Images** list, select the file that contains the partitions you want to copy.

    NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" on page 88 for more information.

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

3. Drag and drop the partitions to the desired file in the **Recent Images** list.

    The **Copy Options** dialog appears.

4. Specify a compression level, change the password as needed, or split the image into multiple files, then click **OK**. For more information, see "Changing Copy Options" on page 92.

    The copied partitions appear in the image file.

Menu Method

To copy a partition,

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

    NOTE: You can also right-click the partitions and select **Copy** from the quick menu.

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

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

3. Specify a new image filename.

4. Click **Save**.

    The **Copy Options** dialog appears.

5. Specify a compression level, change the password as needed, or split the image into multiple files, then click **OK**. For more information, see "Changing Copy Options" on page 92.

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

Deleting Partitions

To delete single or multiple partitions,

1. In the **Recent Images** list, click the file that contains the partitions you want to delete.

    NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" on page 88 for more information.

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

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

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

    One of the following messages appears: "Delete partition?" or "Delete all selected partitions?"

4. Click **Yes**.

    The partitions 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,

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

    NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" on page 88 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 **Copy Options** dialog appears.

7. Specify a compression level, change the password as needed, or split the image into multiple files, then click **OK**. For more information, see "Changing Copy Options" on page 92.

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

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,

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

    NOTE: If the file is not listed, you must first open the file. See "Opening Image Files" on page 88 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 **Copy Options** dialog appears.

7. Specify a compression level, change the password as needed, or split the image into multiple files, then click **OK**. For more information, see "Changing Copy Options" on page 92.

    The uncompressed partition appears in the image file.

Restoring Files or Folders from a Partition

Drive Image File Editor lets you restore individual files or folders from image partitions and save them to any directory or folder. You can restore single files and folders, or you can restore multiple files and folders.

To restore files,

1. In the **Recent Images** list, select the image file that contains the partition with the files you want to restore.

    NOTE: If the image file is not listed, you must first open it. For more information, see "Opening Image Files" on page 88.

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

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

    NOTE: You may also double-click any image file or partition to activate **File Restore**.

4. Depending on the type of image file or partition you select, the following displays:

    a. If you have selected a spanned or compressed image, the **Associate Image Index** dialog appears. For more information, see "Restoring Files from Spanned or Compressed Images" on page 100. If you assigned a password to your image file when you created it, Drive Image File Editor prompts you for a password. Enter the password you assigned to the image file, then click **OK** to continue.

       After specifying options, the **File Restore** dialog appears.

    b. If you have selected any other image file or partition, the **File Restore** dialog appears.

5. Use one of the following methods to select the files or folders you want to restore:

    - Click to select a single file.

    - Shift-click to select contiguous files.

    - Ctrl-click to select non-contiguous files.

    - Double-click a folder to browse its contents.

- 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 or pressing <Backspace>.

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

  NOTE: 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.

6. In the **Target Directory** field, enter the location where you want to save the restored files.

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

7. Click **Restore** to restore the files.

   If you specified target folders that do not exist, you will be prompted to create new directories. Click **Yes** if you want to be prompted for each new directory, or click **Create All** if you want all selected folders to be created on the target drive.

   Drive Image File Editor displays the following information:

   - "Restoring File: *<filename>*"

   - "To Directory: *<directory name>*"

   - Progress indicator bar

8. When Drive Image File Editor completes restoring the files, click **OK**.

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

Restoring Files from Spanned or Compressed Images

You can restore individual files or folders from spanned or compressed images without restoring the entire image file. You can select files and folders using a temporary index, or you can create a full index which will be saved for later use.

When you select spanned or compressed images and activate **File Restore**, the **Associate Image Index** dialog box appears.

Choose from the following image index options:

- **Continue** creates a temporary index. This temporary index is generated as needed and shows all files and folders. When you select a folder, it will take a few minutes to decompress the image and expand the index. The temporary index may be fully expanded and saved upon exiting **File Restore**.

- **Create** generates the complete index and saves it for future use. Creating a complete index will take several minutes depending on the size of the image file. Specify a directory and filename, then click **Save**.

- **Browse** lets you select an index if one has already been created and reassociate it with the image file. An image file ends with the extension .PQI. An index file ends with the extension .PQX.

8

Running Drive Image Pro in Batch Mode

This chapter contains the following information:

Overview

Command Line Switches

Script Files

Overview

Drive Image Pro may be run in one of two modes: interactive (the default) or batch mode. Interactive mode requires user input at discrete intervals, resulting in greater control and efficiency when working with one or two workstations. To run Drive Image Pro in interactive mode, for example, you type PQDI at the DOS prompt.

Batch mode allows the user to control the operation of Drive Image Pro with a file of script commands. Scripting is especially useful for system administrators when loading image files onto a large number of workstations, as it automates the loading process and saves time by eliminating the need for user intervention.

Command Line Switches

To run in script mode, Drive Image Pro uses a series of command line switches. To use these switches, type PQDI */switch*, where *switch* is one or more of the available commands. For example, to invoke the command interpreter, use the /CMD=<*scriptfile*> command. If the name of the text file containing the script commands were C:\SCRIPTS\LABS.TXT, you would type

```
PQDI /CMD=C:\SCRIPTS\LABS.TXT
```

at the command line or in your batch file.

NOTE: Because Drive Image Pro is run at a DOS prompt, you are limited to 128 characters on the command line.

Command Line Parameter	Description
/?	Displays all available command line switches, their syntax, and a short description.
/IMG=<*imagefilename*>	Designates an image file. The STORE and RESTORE commands will encounter an error if this option is not specified.
/CMD=<*scriptfilename*>	Designates a script text file; the script file contains arguments that are passed to the program.
/LOG=<*logfilename*>	Designates a log file. Because scripts execute without user intervention, these files are important for checking results.

Command Line Parameter	Description
/ERR=<*errorfilename*>	Designates an error file. Because scripts execute without user intervention, these files are important for checking errors.
/MSN=<*sessionname*>	Specifies the name of the PowerCast session. Use together with /DSK to start Drive Image Pro in multicast client mode. Use together with /IMG to start Drive Image Pro in PowerCast server mode.
/ACC=<*number*>	Specifies the number of PowerCast clients that must attach before the PowerCast server will automatically start sending the image file.
/SCO	Syntax Check Only parameter; this switch causes the syntax of each command in the script file to be checked without executing the command. This is important when writing and debugging the script file.
/RPP	Resizes partitions proportionally.
/WFS	Wipes the first sector after deleting all partitions. This will insure that a fresh master boot record will be written to the destination disk; only accessible using scripting.
/HPC	Hide partitions after copy.
/PWD=<*password*>	Designates a password that must be given to restore the partition's data. The password may be either a number or a string. This command will not password encrypt an image in a STORE script.
/ZLB	Specifies to use the ZLIB compression used in Drive Image Pro 1.x and 2.x image files.
/CAS	Switch causes every sector within a partition to be saved and restored. This will include all information in a partition including the deleted files. This option significantly slows down the imaging process and increases file size.
/SSO	Store system structures only. This creates an image file that contains only the file system structures and no file data.
/IFC	Ignores file system checks. This allows a partition with a known file system error (e.g. cross-linked files) to be stored in an image. Likewise, that same partition can be restored if this switch is used and if during the restore process the partition does not need to be resized.
/DSK	Specifies disk number to use for restore or save operation.
/CMD=STORE_ALL	This will store all partitions on the specified drive to the file specified by the /IMG= switch.

Command Line Parameter	Description
/CMD=RESTORE_ALL	This will restore all partitions in the image file to the specified drive.
/MFS=_nnnnn_	Designates the maximum number of bytes that an individual image file can be. (nnnnn is the number of bytes in each file. The mininum number is 10000000.) When the specified size is reached, a second image is started.
/NBS	Disables bad sector checking. By default bad sector checking is disabled.
/CBS	Enables bad sector checking.
/UEB	Forces the extended BIOS to be used for disk reads and writes.
/CEC	Checks for an extra cylinder. This corrects a problem of the BIOS and DOS reporting different maximum cylinder numbers.
/RAV	Equivalent of Verify Disk Writes. Causes each sector restored to disk to be read back and compared as an extra security precaution. Using this parameter will significantly increase restore time.
/NRB	Suppresses the normal reboot during program exit.

Command Line Example

To specify SCRIPT.TXT as the script file, ERROR.TXT as the error file and
E:\IMAGES\DRIVE2.PQI as the image file, enter the following:

```
PQDI /CMD=SCRIPT.TXT /ERR=ERROR.TXT /IMG=E:\IMAGES\DRIVE2.PQI
```

Script Files

The script file designated in the command line contains arguments or instructions that are passed to the program, determining which operations are executed.

Because the scripts execute without user intervention, use extra care when developing the script file. For example, if the DELETE ALL command is encountered, all the partitions on the currently selected drive will be deleted without any warning or confirmation messages which would normally allow the user to cancel the operation.

Script Argument	Action
SELECT DRIVE {*<number>*}	Selects the drive of the number specified. For example, SELECT DRIVE 1 selects the first hard drive in the system. After this command, all other commands refer to drive 1 until another SELECT DRIVE command is given.
SELECT PARTITION *<number>*	Selects the specified partition by number on the currently selected drive. Partitions are numbered in the order of their starting sector number on the disk, excluding any extended partitions or free spaces.
SELECT PARTITION *<driveletter>*	Selects the partition assigned the specified drive letter by DOS. Since DOS only assigns drive letters to visible FAT partitions, only these types of partitions can be selected using this command.
SELECT PARTITION *<volumelabel>*	Selects the first partition with the specified volume label. For example, SELECT PARTITION "DATA" selects the first partition labeled "DATA." If more than one partition has this label (including FAT32, NTFS, and HPFS partitions), only the first one is selected.
SELECT PARTITION FIRST	Selects the first partition.
SELECT PARTITION NEXT	Selects the partition immediately following the last selected partition regardless of the syntax used to select that partition.
SELECT PARTITION ALL	Selects all the partitions on the currently selected drive.
SELECT FREESPACE {first | last | next | largest}	Selects the specified free space on the currently selected drive. When selecting the largest free space, it does not matter whether the free space is inside or outside of the extended partition.
SELECT IMAGE {*<number>* | **all**}	Selects the specified image in the image file. For example, SELECT IMAGE 3 or SELECT IMAGE ALL.
PROTECT PARTITION FIRST	Protects the first partition from being deleted.
PROTECT PARTITION LAST	Protects the last partition from being deleted.
PROTECT PARTITION DIAGNOSTIC	Protects the first valid partition of an unknown type from being deleted.
DELETE	Deletes the last partition selected using any of the SELECT PARTITION commands.
DELETE ALL	Deletes all partitions on the currently selected drive without having to select them.
DELETE EXTENDED	Deletes the extended partition; the extended partition can only be deleted after all the logical drives within it have been deleted.

Script Argument	Action
SECTOR CHECK ON	Enables Bad Sector Checking for all restore operations following the command. An alternative to /CBS if you need Bad Sector Checking off for some partitions and on for others.
SECTOR CHECK OFF	Disables Bad Sector Checking for all restore operations following the command. An alternative to /NBS if you need Bad Sector Checking on for some partitions and off for others.
SET ACTIVE	Sets the last partition selected as the active partition (meaning it will be the boot partition).
STORE	Stores selected partitions with no compression.
STORE WITH COMPRESSION OFF	Stores selected partitions with no compression.
STORE WITH COMPRESSION LOW	Stores selected partitions with low compression.
STORE WITH COMPRESSION HIGH	Stores selected partitions with high compression.
RESIZE IMAGE NO	Causes the last selected image to not be resized when the RESTORE command is encountered.
RESIZE IMAGE PROPORTIONAL	Proportionally resizes the last selected image when the RESTORE command is encountered.
RESIZE IMAGE *<number>*	Resizes the last selected image to the specified number (in MB) when the RESTORE command is encountered.
RESIZE IMAGE MAX	Resizes the last selected image to the maximum size possible. If this is used in a situation where the partition can take up the rest of the drive, it will fill up the drive.
RESIZE IMAGE MOST SPACE	Resizes the partition with the most free space. 1) Ignores "Resize Image Proportional" and treats it as "Resize Image No." 2) Ignores "Resize Image Max" and treats it as "Resize Image No" and 3) Considers "Resize Image <value>" as valid, causing the partition to be excluded from consideration when calculating the MOST SPACE.
RESTORE	Downloads all selected images into the free space and resizes them accoring to the RESIZE commands, if any.
REBOOT	Reboots the computer; any commands following this command will not be executed.

Script File Examples

Scenario 1: To store all the partitions on drive 2 to the file, E:\IMAGES\DRIVE2.PQI:

```
PQDI /CMD=SCRIPT.TXT /IMG=E:\IMAGES\DRIVE2.PQI
```

SCRIPT.TXT file contents:

```
SELECT DRIVE 2
SELECT PARTITION ALL
STORE
```

Scenario 2: To store partition 3 from drive 1, and partitions 1, 4 and 5 from drive 2 to the file, E:\IMAGES\DRIVES.PQI and have the image file split up into multiple files each 650 MB so each can be transferred to a CD-ROM:

```
PQDI /CMD=SCRIPT.TXT /IMG=E:\IMAGES\DRIVES.PQI /MFS=650000000
```

SCRIPT.TXT file contents:

```
SELECT DRIVE 1
SELECT PARTITION 3
STORE
SELECT DRIVE 2
SELECT PARTITION 1
SELECT PARTITION 4
SELECT PARTITION 5
STORE
```

Scenario 3: To restore all the images in the file, E:\IMAGES\DRIVES.PQI, to the first free space on drive 2:

```
PQDI /CMD=SCRIPT.TXT /IMG=E:\IMAGES\DRIVES.PQI
```

SCRIPT.TXT file contents:

```
SELECT DRIVE 2
SELECT FREESPACE FIRST
SELECT IMAGE ALL
RESTORE
```

Scenario 4: To restore the first two images in the file, E:\IMAGES\DRIVES.PQI, to the largest free space on drive 1 and resize them both proportionally:

```
PQDI /CMD=SCRIPT.TXT /IMG=E:\IMAGES\DRIVES.PQI
```

SCRIPT.TXT file contents:

```
SELECT DRIVE 1
SELECT FREESPACE LARGEST
SELECT IMAGE 1
SELECT IMAGE 2
RESIZE IMAGE PROPORTIONAL
RESTORE
```

Scenario 5: To restore the first two images in the file, E:\IMAGES\DRIVES.PQI, to the last free space on drive 1 and resize them to 500 MB each (the image was encrypted using the password 12345678):

```
PQDI /CMD=SCRIPT.TXT /IMG=E:\IMAGES\DRIVES.PQI /PWD=12345678
```

SCRIPT.TXT file contents:

```
SELECT DRIVE 1
SELECT FREESPACE LAST
SELECT IMAGE 1
RESIZE IMAGE 500
SELECT IMAGE 2
RESIZE IMAGE 500
RESTORE
```

Scenario 6: To delete all existing partitions on drive 2 and then restore all the images in the file, E:\IMAGES\DRIVES.PQI, to the free space (the image was encrypted using the password HELLO):

```
PQDI /CMD=SCRIPT.TXT /IMG=E:\IMAGES\DRIVES.PQI /PWD=HELLO
```

SCRIPT.TXT file contents:

```
SELECT DRIVE 2
DELETE ALL
SELECT FREESPACE FIRST
SELECT IMAGE ALL
RESTORE
```

Scenario 7: To restore the first four images in the file, E:\IMAGES\DRIVES.PQI, to the last free space on drive 1, and then resize the first image to 500 MB, keep the second the same size, and resize the third and fourth images to proportionally take up the remaining free space:

```
PQDI /CMD=SCRIPT.TXT /IMG=E:\IMAGES\DRIVES.PQI
```

SCRIPT.TXT file contents:

```
SELECT DRIVE 1
SELECT FREESPACE LAST
SELECT IMAGE 1
RESIZE IMAGE 500
SELECT IMAGE 2
RESIZE IMAGE NO
SELECT IMAGE 3
SELECT IMAGE 4
RESIZE IMAGE PROPORTIONAL
RESTORE
```

Scenario 8: To start Drive Image Pro as a server, then start a PowerCast session named SESSION_1 and an image file named IMAGE_1,

```
PQDI /MSN=SESSION_1 /IMG=IMAGE_1
```

To start Drive Image Pro as a client, then start a PowerCast session named SESSION_1 and restore the current image to drive 1,

```
PQDI /MSN=SESSION_1 /DSK=1
```

More Script File Examples

You can find additional script file examples at the PowerQuest web site at *http://support.powerquest.com/di/di1011.html*.

9

Creating Custom Installs Using DeltaNow

This chapter contains the following information:

Overview

Setting Up the Platform Computer

Creating the Installation Package

Scenarios

Overview

PowerQuest's DeltaNow works in conjunction with Drive Image Pro to help manage changing desktop environments. Using Drive Image Pro, an IS manager creates a standard desktop image file, for example, of just the operating system. Then using DeltaNow, the IS manager creates a custom installation of selected applications. The resultant "packaged install" can then be distributed to client computers along with the image file.

Using Drive Image Pro and DeltaNow together in this way, you can use one image file to configure the same operating system to all computers then use DeltaNow to create custom application installations to different subsets of these computers.

Setting Up the Platform Computer

The platform computer may be a standalone computer or a computer attached to a peer-to-peer network. This is the computer that will be running the application installations and building the DeltaNow installation executable.

Since DeltaNow uses the platform computer as a baseline, it is important to choose a computer or prepare one that is similar to or has less than up-to-date configuration information than the computers that you will be installing to. PowerQuest recommends that you use a dedicated machine with only the operating system and network connectivity and no other applications installed.

1. Install DeltaNow on the platform computer. To do so, start the Drive Image Pro installation program (for Windows 95/98/NT), click **Install Other Applications > Install DeltaNow**, then finish the installation.

2. Disable any programs that are running in the background.

3. If you expect a reboot at the end of the installation program you will be packaging, disable any programs that execute during the rebooting process, except for network connectivity.

Limitations

Please not the following limitations of DeltaNow-created application installations.

- Some applications allow for a rescue disk to be built at the end of their install. When DeltaNow creates a custom install of these applications, the user will not be able to make rescue disks from the DeltaNow-created application.

- Some applications, such as graphics software, may still access the CD after it is installed. This will still be the case from the DeltaNow-created application of that software.

- A few software applications require the CD if the user chooses to uninstall the software. If the user decides to uninstall one of these software applications, which was installed from a DeltaNow-created application, they will still require the original CD to uninstall the software.

Creating the Installation Package

DeltaNow first reads the configuration of the platform computer's hard drive and uses it as the baseline. Then you specify the installation programs you want in the package and run them as you would have users do. DeltaNow monitors this installation for duplication in the installation package.

Finally, DeltaNow compares the baseline with changes made by the installed applications (to file systems and system registry), then builds the installation package.

1. Click the **DeltaNow** icon.

2. Click **Options** if you want to change any of the following:

    a. Click **Add** to specify a search path that will limit or expand the monitoring process. Restricting the drives or partitions will speed the process.

    b. To delete a search path, select it, then click **Remove**.

    c. Specify a destination for writing temporary files. This is a working directory and should be empty as it is automatically purged at regular intervals, except for the resultant installation packages.

3. Click **OK** if specifying options. Click **Next** to begin reading the configuration.

    DeltaNow checks the file system and registry information.

4. At the Start your installation dialog, specify the location of the installation program you want DeltaNow to monitor.

5. Click **Monitor** to begin the application's installation program.

6. As the installation program runs, select the options that would be needed to install the program on client computers.

    If the installation program requires or suggests that the computer be rebooted, do so. After the computer has rebooted and any additional installation programs have run, the DeltaNow dialog displays. Click **Yes** to continue.

    After clicking **Yes** or after an ordinary installation, the **Compare** dialog appears.

7. The default package name is INSTALL. Type in a new name if you want to change it.

8. If you want to add another installation program to the package, click **Back** and run another installation program.

    For example, you could add applications to create a customized suite of software, or you could install a software package and its corresponding service pack.

9. Click **Back** and run the installation program for as many programs as you want to add.

10. When finished adding software, click **Next** in the **Compare** dialog.

    DeltaNow scans your file system and registry for changes created during the installation and places these changes into the INSTALL.CFG file. When the CFG file has been created, an information screen displays the location of the file.

11. Click **OK** to continue.

    The **Ready to build** dialog appears.

12. Click **Build** to create the DeltaNow executable from the INSTALL.CFG.

    A progress dialog appears showing the build process. Once the build is complete, a **Process Complete** dialog appears notifying you where the DeltaNow executable can be found.

13. Click **Finish** to exit DeltaNow.

14. Copy the packaged installation to the distribution server where clients can access the DeltaNow executable.

The packaged installation file can be placed onto a distribution server where the clients can access and execute it, or it can be included in a new image file for direct distribution to client computers. If the packaged installation file is accessed from the distribution server, it should be executed after the client computer is booted and logged onto the network. If the packaged installation file is included in a new image file, it can be executed on the client computer after first boot-up.

Scenarios

Scenario 1

The IS department must install a new company-wide application of Intuit's Expensible program on 50 workstations. It needs to be done by Monday morning. Each install, done manually, takes 15 minutes. The product ships on floppy disks. To visit each workstation and perform the installation manually will take hours. All of these systems are connected to the network and have e-mail.

Using DeltaNow, the IS department could create an executable program for the complete installation of Expensible. They could then attach the executable to an e-mail message, have the users point to it on the network, or burn it to a CD and run the install on each workstation. With DeltaNow, the complete installation of Expensible takes about 45 seconds.

Scenario 2

A configuration center responsible for setting up hundreds of systems every day is running out of disk space because of all the image files they must maintain. They have hundreds of different images because of the wide variety of offerings that they give the customer. This is a waste of disk space and time. Deploying large images also takes a lot of time.

With Drive Image Pro 3.0 and DeltaNow, the configuration center could have baseline images for the main operating systems and a variety of DeltaNow files for the custom setups. For example, one DeltaNow file could contain Microsoft Office 97, while another could contain Corel's WordPerfect Suite 8. To update something as simple as a driver on the systems, they can use DeltaNow. To install the complete Microsoft Office 97 could take 18 minutes; with DeltaNow, it takes 3 minutes and 10 seconds.

Scenario 3

A network administrator reads about a security loophole that can be closed by making a registry change in Windows 95/98. Using DeltaNow, the security admin makes the appropriate change, places the DeltaNow package on the network, and changes the network login script to automatically apply the change at startup. Now all of the systems will be automatically updated without human intervention.

Scenario 4

A new driver is available for a network card that greatly improves performance. The network administrator applies the new driver and generates a DeltaNow package. Looking at the NET.CFG or a registry key, the administrator can determine the system setup and automatically deploy the driver update via the network login script.

Creating DOS Boot Disks

This appendix contains the following information:

Overview

Creating DOS Boot Disks for PowerCasting

Creating DOS Boot Disks for NetWare

Creating DOS Boot Disks for Microsoft TCP/IP

Creating DOS Boot Disks With No Network

Modifying Existing DOS Boot Disks

Overview

The PowerQuest Drive Image Pro BootDisk Builder helps you build DOS boot disks specific to your network and network interface card. The DOS boot disks are required for PowerCasting. To restore image files from a network, all client computers must boot from DOS and have a network connection. Therefore, all client computers need a DOS boot diskette configured for their specific network needs.

BootDisk Builder is installed during the Drive Image Pro installation, and an icon is created for the desktop. When you run BootDisk Builder, it gathers information from your responses, then builds the boot disks.

The BootDisk Builder utility must be run on a Windows 95 or Windows 98 system.

Creating DOS Boot Disks for PowerCasting

1. Click the **BootDisk Builder** icon, then click **Create PowerCast Diskettes**.

2. Specify the path and filename of the Drive Image Pro EXE (PDQI.EXE), then click **Next**.

3. Select the type of network card you are using from the list. If it is not listed, click **Have Disk** and specify the location of the DOS ODI or NDIS driver for your network card. After selecting the network card, click **Next**.

4. Specify whether the network card is plug-n-play, then click **Next**.

   If you have selected **No** for plug-n-play, the following dialog displays:

   Specify IRQ and Base I/O Address information, then click **Next**. It is important to avoid conflicts with other devices. For more information, check your DOS documentation.

5. Specify the client IP address and hostname.

   a. If you are using a DHCP server, click **DHCP**. If not, specify an IP address and Subnet mask.

   On a DHCP server, the IP address is leased out temporarily on a first-come, first-served basis and increments automatically. If you are typing in a permanent IP address, you can also click **Auto increment**. When this option is selected, the IP address will increment each time another boot disk is created.

    b. Click **Auto assign** to have BootDisk Builder assign a hostname, or specify one of your own.

    c. Click **Next**.

6. Specify the disk number and session name parameters.

7. Specify the drive letter where you are creating the DOS boot diskette.

    a. If the diskette has not been formatted, you can click **Format** and format the diskette now. You must select **Copy system files** in the **Other options** group box of the **Format** dialog.

       NOTE: Before starting the build process, you can format disks from the main BootDisk Builder screen by clicking **Tools > Format**.

    b. Click **Next**.

8. If you want to save your choices for use at a later time, click **Save Configuration**, then name and save the file.

       NOTE: To retrieve a configuration, click **File > Load Configuration** on the main BootDisk Builder screen.

9. Click **Back** if you want to make any changes. When you are ready to build the boot disk, click **Finish**. The status bar displays the progress.

Depending on the network interface card selected, the network and Drive Image Pro files may require two diskettes. You will be prompted if a second diskette is needed.

After the boot disk has been created, can choose to create another boot disk.

When a client computer is booted from the boot diskettes, Drive Image Pro will start in PowerCast client mode, connect to a PowerCast session named SESSION1, and restore the image to the first hard drive. This will completely erase any existing information on the first hard drive. To change these options, edit the AUTOEXEC.BAT file.

Creating DOS Boot Disks for NetWare

1. Click the **BootDisk Builder** icon, then click **Create Standalone Diskettes**.

2. Select **Novell NetWare**, then click **Next**.

3. Select the correct Ethernet frame type for your network, then click **Next**.

The **Novell NetWare information** dialog displays.

4. Specify Novell network information.

   a. To map a network drive, specify the drive letter, or click **Do Not Map**. You can also type a path to add to the drive-letter mapping.

   b. Specify your network login drive (existing drive, not a drive to map) and login name, or click **Do Not Login to network**.

   c. Click **Next**.

5. Specify the path and filename of the Drive Image Pro EXE (PDQI.EXE), then click **Next**.

6. Select the type of network card you are using from the list. If it is not listed, click **Have Disk** and specify the location of the DOS ODI or NDIS driver for your network card. After selecting the network card, click **Next**.

7. Specify whether the network card is plug-n-play, then click **Next**.

   a. If you have selected **No** for plug-n-play, specify IRQ and Base I/O Address information, then click **Next**. It is important to avoid conflicts with other devices. For more information, check your DOS documentation.

8. Specify the IP address and host name.

9. Specify the drive letter where you are creating the DOS boot diskette.

   a. If the diskette has not been formatted, you can click **Format** and format the diskette now. You must select **Copy system files** in the **Other options** group box of the **Format** dialog.

      NOTE: Before starting the build process, you can format disks from the main BootDisk Builder screen by clicking **Tools > Format**.

   b. Click **Next**.

10. If you want to save your choices for use at a later time, click **Save Configuration**, then name and save the file.

    NOTE: To retrieve a configuration, click **File > Load Configuration** from the main BootDisk Builder screen.

11. Click **Back** if you want to make any changes. When you are ready to build the boot disk, click **Finish**. The status bar displays the progress.

> **NOTE:** Depending on the network interface card selected, the network and Drive Image Pro files may require two diskettes. You will be prompted if a second diskette is needed.

After the boot disk has been created, you can create another boot disk.

When you boot a computer from these diskettes, Drive Image Pro will start in graphical user interface (GUI) mode. You can then select any operations.

Creating DOS Boot Disks for Microsoft TCP/IP

1. Click the BootDisk Builder icon, then click **Create Standalone Diskettes**.

2. Select **Microsoft TCP/IP**, then click **Next**.

The **Microsoft network information** dialog displays.

3. Specify Microsoft network information.

    a. Select the drive letter, and type the path of the Server drive.

    b. Type the user's Login name.

    c. Select which login you are using: workgroup or domain. Then type in the name.

    d. Click **Next**.

4. Specify the path and filename of the Drive Image Pro EXE (PDQI.EXE), then click **Next**.

5. Select the type of network card you are using from the list. If it is not listed, click **Have Disk** and specify the location of the DOS ODI or NDIS driver for your network card. After selecting the network card, click **Next**.

6. Specify whether the network card is plug-n-play, then click **Next**.

    a. If you have selected **No** for plug-n-play, specify IRQ and Base I/O Address information, then click **Next**. It is important to avoid conflicts with other devices. For more information, check your DOS documentation.

7. Specify the client IP address and hostname.

    a. If you are using a DHCP server, click DHCP. If not, specify an IP address and Subnet mask.

    On a DHCP server, the IP address is leased out temporarily on a first-come, first-served basis and increments automatically. If you type in a permanent IP address, you can also click **Auto** increment. When this option is selected, the IP address will increment each time a boot disk is created.

    b. Click **Auto assign** to have BootDisk Builder assign a hostname, or specify one of your own.

    c. Click **Next**.

8. Specify the drive letter where you are creating the DOS boot disk.

    a. If the diskette has not been formatted, you can click **Format** and format the diskette now. You must select **Copy system** files in the **Other options** group box of the **Format** dialog.

    NOTE: Before starting the build process, you can format disks from the main BootDisk Builder screen by clicking **Tools > Format**.

    b. Click **Next**.

9. If you want to save your choices for use at a later time, click **Save Configuration**, then name and save the file.

    NOTE: To retrieve a configuration, click **File > Load Configuration** from the main BootDisk Builder screen.

10. Click **Back** if you want to make any changes. When you are ready to build the boot disk, click **Finish**. The status bar displays the progress.

    Depending on the network interface card selected, the network and Drive Image Pro files may require two diskettes. You will be prompted if a second diskette is needed.

11. After the boot disk has been created, you will have an option to create another boot disk.

    When you boot a computer from these diskettes, Drive Image Pro will start in graphical user interface (GUI) mode. You can then select any operations.

Creating DOS Boot Disks With No Network

1. Click the **BootDisk Builder** icon, then click **Create Standalone Diskettes**.

2. Select **No Network**, then click **Next**.

3. Specify the path and filename of the Drive Image Pro EXE (PDQI.EXE), then click **Next**.

4. Specify the drive letter where you are creating the DOS boot disk.

   a. If the diskette has not been formatted, you can click **Format** and format the diskette now. You must select **Copy system files** in the **Other options** group box of the **Format** dialog.

      NOTE: Before starting the build process, you can format disks from the main BootDisk Builder screen by clicking **Tools > Format**.

   b. Click **Next**.

5. If you want to save your choices for use at a later time, click **Save Configuration** then name and save the file.

   NOTE: To retrieve a configuration, click **File > Load Configuration** from the main BootDisk Builder screen.

6. Click **Back** if you want to make any changes. When you are ready to build the boot disk, click **Finish**. The status bar displays the progress.

   After the boot disk has been created, you can create another boot disk.

When you boot a computer from these diskettes, Drive Image Pro will start in graphical user interface (GUI) mode. You can then select any operations.

Modifying Existing DOS Boot Disks

To change the client IP address or hostname on existing disks,

1. Click the **BootDisk Builder** icon, then click **Modifying Existing Diskettes**.

   The **Update Client IP Address and Hostname** dialog displays.

2. Change the client IP address and hostname, then click **Next**.

3. Specify the drive letter where you are modifying the DOS boot disk, then click **Next**.

4. Click **Finish** to modify the boot disk.

   After the boot disk has been modified, you will have an option to modify another boot disk.

Additional Tasks

This appendix contains the following information:

Using FDISK and FORMAT to Create and Format Partitions

Using Drive Image Pro with SCSI Hard Drives

Using Drive Image Pro with an Older Computer BIOS that Requires Drive Overlay Software

Making the Operating System Assign a CD-ROM Drive Letter

Converting Ghost Image Files to Drive Image Pro

About PartitionMagic

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. To create and format a partition 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 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. Select **3** to **Delete partition or Logical DOS** drive, then press <ENTER>.

6. Choose to delete your logical drives first, then your extended partition, and finally your primary partition. 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. 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, 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 in which to store your applications and data.

Using Drive Image Pro with SCSI Hard Drives

To use Drive Image Pro 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 Pro 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 Pro.

Using Drive Image Pro with an Older Computer BIOS that Requires 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 Pro 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 Pro 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 Pro 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 Pro 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 Pro 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 Pro 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 Pro 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 Pro 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 Pro 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:

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 Pro) may appear at the end of this line. Change this letter to Z.

   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 > 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 Z.

    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.

Converting Ghost Image Files to Drive Image Pro

Three sample batch files are included on the Drive Image Pro CD in the \SETUP\OS2DOS directory to help you convert existing Ghost Image files to Drive Image Pro files. This process requires a computer with a connection to a scratch hard drive which is large enough to contain the largest restored Ghost image.

The batch files restore the Ghost image to the scratch hard drive, then create a Drive Image Pro file from that hard drive using Drive Image Pro. Any existing data on the scratch hard drive is overwritten when the Ghost image is restored to it. To preserve a computer's primary hard drive, the scratch drive can be a second drive.

The batch files are PQCVT.BAT, PQCVT2.BAT, and PQCVT3.BAT.

Using PQCVT.BAT
Use PQCVT.BAT when you want to specify program paths, image filenames, and working disk information on the command line.

To run the batch file, provide the following arguments:

```
PQCVT <Ghost exe path> <Ghost image file path> <Drive Image Pro exe
path> <Drive Image Pro image file path> <disk drive number>
```

Arguments	Description
<Ghost EXE path>	Full path to Ghost EXE program
<Ghost image file path>	Full path to existing Ghost image file to be converted
<Drive Image Pro EXE path>	Full path to Drive Image Pro EXE program
<Drive Image Pro image file path>	Full path to the new Drive Image Pro file
<disk drive number>	Working disk drive number, 1=first, 2=second, etc.

For Example

```
PGCVT S:\BIN\GHO210 T:\OLD\I12345.GHO S:\BIN\DM T:\NEW\I12345.PQI 2
```

This example runs the Ghost program found at `s:\bin\gho210`, then restores the image file `t:\old\i12345.gho` to disk drive 2. It then runs the Drive Image Pro program found at `s:\bin\dm` and builds a new image file at `t:\new\i12345.pqi` from drive 2.

A log file can be created by executing the batch file from the command shell and redirecting the output. For example,

```
COMMAND/C PQCVT IMAGE.GHO >CVT.LOG
```

Modifying PQCVT2.BAT

Use the PQCVT2.BAT file when you want to "hard wire" program paths and working disk information. When you enter this information in the batch file itself, you only need to enter one argument in the batch command line: the image file name. For example,

```
PQCVT2 I12345
```

After the paths are edited in the PQCVT2.BAT file, it will run the Ghost Image program, restore the image file I12345.GHO to the second hard drive, then run the Drive Image Pro program and create the new image file.

To modify the batch file,

1. Retrieve the PQCVT2.BAT file into a DOS text editor such as Notepad or DOS Editor.

2. Edit the file and replace all occurrences of **ggg1**, **ggg2**, **ddd1**, **ddd2**, and **9999**, with the path information for the Ghost executable, new image files, and drive number respectively.

3. Remove the first **GOTO** line following the **REM** statements, then save the file.

Converting Multiple Files

To convert several existing Ghost Image files, use the PQCVT3.BAT file as follows:

```
PQCVT3 <file path and pattern>
```

This batch command scans the directory looking for Ghost image files and calls the PQCVT2 batch command for each file that matches the file pattern specified. Rather than specify an exact file, use MS-DOS conventions where "*" equals any number of characters and "?" equals any single character.

About PartitionMagic

In addition to Drive Image Pro, PowerQuest Corporation makes PartitionMagic. PartitionMagic is a 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

Up to 40% of your hard drive may be wasted due to inefficient storage methods. PartitionMagic 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 makes it easy to run multiple operating systems on the same machine without compatibility problems. Explore the world of Windows 95/98 or NT while still relying on the security of your current operating system.

Organize and Protect Data

Create physically separate partitions 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 includes a utility that lets you move applications from one partition to another with their files and operating system settings in place. With PartitionMagic it's easy to create, resize, move, and convert 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 95/98 to make room for more long filenames. With PartitionMagic, configuring your hard drive has never been simpler.

C

Setting Up Removable Storage Devices

This appendix describes removable media device drivers included with Drive Image Pro and how to manually install them on a hard drive or diskette.

Both the Drive Image Pro install program (for Windows) and the MAKEDISK.BAT file (for OS/2 and DOS) install and configure the drivers for removable storage devices. This information is provided for those who want to manually configure these drivers or alter the standard configuration. For more information about MAKEDISK.BAT, see "Installing on an OS/2 or DOS Only Computer" on page 5.

Iomega Drivers

Iomega provides a driver loader program that allows you to load drivers from the AUTOEXEC.BAT file. Each time the Iomega driver program loads, it must also load an ASPI manager to communicate with the Zip or Jaz drive. The Drive Image Pro install program copies a large set of ASPI managers to the DRIVERS directory for SCSI, IDE, and Parallel Port interfaces.

The Iomega driver program tries to load each ASPI manager until it finds one that matches. If it does not have to use this trial-and-error process to find the correct ASPI manager, it can load more quickly.

Editing Your GUEST.INI File

If you use only one or two specific host adapters, you may want to edit the GUEST.INI file and remark (using the REM command) the ASPI managers you do not need. This way only the ASPI managers you normally use will be loaded and tested.

1. From the DRIVERS directory where you installed Drive Image Pro, locate the GUEST.INI file and open it using Notepad in Windows, DOS EDIT, or any other ASCII text editor.

2. Find the ASPI manager line for the Iomega driver that supports your drive. For example, if you routinely use an Iomega PC1616 adapter, use the line that reads ASPI=ASPI1616.SYS.

The following table lists the supported Iomega Adapters and their corresponding ASPI managers.

Iomega Adapter	ASPI Manager
Jaz jet PCI (PC/Mac model)	ADVASPI.SYS
Jaz jet (PC-only model)	ASPI8DOS.SYS
Jaz jet ISA	ASPIPC16.SYS
Jaz Traveller	ASPIPPM1.SYS
Parallel Port Zip drive	ASPIPPM1.SYS
Zip zoom SCSI Accelerator	ASPIPC16.SYS
Zip Card PCMCIA SCSI adapter	ASPIPC16.SYS
Zip IDE drive	ASPIIDE.SYS
PC1616 adapter	ASPI1616.SYS
PC1600 adapter	ASPIPC16.SYS

3. Add a REM at the beginning of each ASPI manager line you do not want to load.

For example, in a case where the Zip or Jaz drive is connected to an Iomega PC1616 adapter, you would remark all ASPI manager lines except ASPI1616.SYS:

```
REM ASPI=ASPIPPM1.SYS /INFO FILE=NIBBLE.ILM SPEED= 1

REM ASPI=ASPIIDE.SYS /INFO

REM ASPI=ASPI8DOS.SYS /D

REM ASPI=ADVASPI.SYS
```

```
    REM ASPI=ASPIPC16.SYS INFO

    ASPI=ASPI1616.SYS /SCAN /INFO
```

4. Save the changes to the GUEST.INI file and exit the text editor. If you are using a word processor, be sure to save the file as ASCII or DOS text.

> **NOTE:** If you later need to use an ASPI manager which has been remarked, edit the GUEST.INI file again and remove the REM command at the beginning of the ASPI manager line.

ASPI Manager Reference

Detailed reference information on the ASPI managers used by the Iomega driver program is located in the electronic "Installation Manual" (MANUAL.EXE) on the Iomega installation diskette.

1. For either Windows or DOS, go to a DOS prompt, type **A**: then press <ENTER>.

2. Type **MANUAL** then press <ENTER>.

Assigning Specific Drive Letters for Iomega Drives

To specify the first drive letter you want the Iomega drive to use, add the LETTER= *option* to the command line. For example, if you type GUEST.EXE LETTER=G then G will be assigned to the first supported drive it finds.

If you have more that one Iomega drive, each additional drive will receive a drive letter following G in alphabetical order. (When supporting more than one drive, drive letters are assigned in order of SCSI ID number, from lowest to highest.)

More Information

More information can be obtained from the install diskettes that came with your Iomega product and from the Iomega web site *http://www.iomega.com*.

SyQuest Drivers

There are four interface types used by SyQuest products: EIDE, EIDE Parallel Port (IEPP), SCSI, and SCSI Parallel Port (SEPP).

Each interface type requires a different driver or combination of drivers. The drivers may be loaded in either the CONFIG.SYS or the AUTOEXEC.BAT.

Loading Drivers in the CONFIG.SYS

1. Open the CONFIG.SYS file in a text editor such as Notepad or DOS Editor.

2. List the driver in a DEVICE= *command*. For example:

```
DEVICE=XXXXXX.SYS [switches]
```

Where XXXXXX.SYS represents one of the drivers described below and [*switches*] represents optional driver switches. Most drivers accept the **/D** switch to display additional debug information. For example:

```
DEVICE=XXXXXX.SYS /D
```

Loading Drivers in the AUTOEXEC.BAT

1. Open the AUTOEXEC.BAT file in a text editor such as Notepad or DOS Editor.

2. In a separate line, enter the SyQuest driver loader program SQLOAD.COM. For example:

```
SQLOAD XXXXXX.SYS [switches]
```

Where XXXXXX.SYS represents one of the drivers described below and [*switches*] represents optional driver switches. For example:

```
SQLOAD EPATSYQ.SYS /DE

SQLOAD SQPPDRVR.SYS /S
```

EIDE Driver

The EIDE driver, SQATDRVR.SYS, supports the EIDE products SparQ, SyJet, EZ230, EZ135, SQ3270, and SQ3105. To load the driver in your CONFIG.SYS file add the following line:

```
DEVICE=SQATDRVR.SYS /S
```

EIDE Parallel Port Drivers

The EIDE Parallel Port drivers, EPATSYQ.SYS and SQPPDRVR.SYS, support the SparQ and EZFlyer 230 products. The EPATSYQ.SYS driver must be loaded before the SQPPDRVR.SYS driver in order to function properly.

To load the drivers in your CONFIG.SYS file add the following lines:

```
DEVICE=EPATSYQ.SYS /DE

DEVICE=SQPPDRVR.SYS /S
```

SCSI Driver

The SCSI driver, SQDRIVER.SYS, along with the SCSI adapter ASPI manager supports the SCSI products SyJet, EZ230, SQ3270, SQ3105, SQ200, SQ88, and SQ44.

Many ASPI managers are included and are loaded to auto-detect the SCSI interface card. The ASPI manager must be loaded before the SQDRIVER.SYS driver in order to function properly.

To load the drivers in your CONFIG.SYS file add the following lines, using the ASPI manager that supports your SCSI card in place of ASPI8DOS.SYS:

```
DEVICE=ASPI8DOS.SYS /D

DEVICE=SQDRIVER.SYS /S
```

For more information, see "List of ASPI Managers and Supported Adapters" on page 146 and your SCSI host adapter documentation.

SCSI Parallel Port Drivers

The SCSI Parallel Port drivers, EPST.SYS and SQDRIVER.SYS, support the SyJet parallel port product. The EPST.SYS driver must be loaded before the SQDRIVER.SYS driver in order to function properly.

To load the drivers in your CONFIG.SYS file add the following lines:

```
DEVICE=EPST.SYS /DE

DEVICE=SQDRIVER.SYS /S
```

Loading a parallel port device driver with a network client installed may cause the system to hang. To successfully load the device driver for a parallel port drive, reboot the system without loading the network client. You can also reboot from the boot diskette created by the install program.

More Information

More information can be obtained from the install diskettes that came with your SyQuest product and the SyQuest web site *http://www.syquest.com*.

Fujitsu Magneto-Optical Disk Drives

The Fujitsu 3.5-inch Megneto-Optical (MO) drive is available with either a SCSI or ATAPI interface. Separate DOS device drivers are supplied for each interface type. The device driver supports the FAT (File Allocation Table) file system, read/write, and disk change status.

The SCSI device driver requires a SCSI host adapter card and its matching ASPI manager software. For more information, see the "List of ASPI Managers and Supported Adapters" on page 146 and your SCSI host adapter documentation.

The 3.5-inch Magneto-Optical disks are available in five capacities:

128 Mbytes size, 512 byte sectors

230 Mbytes size, 512 byte sectors

540 Mbytes size, 512 byte sectors

640 Mbytes size, 2048 byte sectors

1.3 Gbytes size, 2048 byte sectors

The volume format may be **Super floppy** or **AT Hard disk** format. The driver automatically detects the volume format and assigns logical drive letters (such as D:). If no valid formats or partitions are detected, the device driver identifies the disk as unformatted. See the driver documentation supplied with the product for additional information about formatting MO disks.

Installation of Fujitsu Magneto-Optical Drivers

The ATAPI MO device driver is loaded in the CONFIG.SYS file using the following command:

```
DEVICE[HIGH]=(path)\MODISKAP.SYS [/P][/Ii][/Rr]
```

The SCSI MO device driver is loaded in the CONFIG.SYS file using the following:

```
DEVICE[HIGH]=(path)\ASPIXXX.SYS
DEVICE[HIGH]=(path)\MODISK2.SYS [/P][/Ii][/Rr]
```

ASPIXXX.SYS represents the ASPI manager that matches your SCSI host adapter.

Optional Switches

/P
Pauses screen messages after the driver has been loaded and initialized. Press any key to continue the operation. Use this option to check the messages displayed by the driver.

/Ii ATAPI driver
Only the device connected to port IDE i is mounted. Otherwise, all ports are scanned MO devices.

i is defined as:

> 1 = Primary Master

> 2 = Primary Slave

> 3 = Secondary Master

> 4 = Secondary Slave

/Ii SCSI driver
Only the SCSI device with ID i is mounted. Otherwise all SCSI IDs are scanned. To also specify the host adapter number, enter /Ih:i (h is the host adapter number and i is the SCSI-ID). To specify multiple devices, use the "+" character as a delimiter. For example: /I0:1+1:2

/Rr
Reserves the specified number of logical drive letters (r=1 to 10) for a single drive. Otherwise, a single drive letter is reserved. The number of reserved drive letters is independent of the number of disk partitions. The driver can access only as many partitions as the number of reserved drive letters.

NOTE: If the inserted disk contains more partitions than specified by the /r option, as many drive letters are assigned to the disk drive as there are defined partitions. If the disk has fewer partitions than the number of drive letters reserved, an error occurs only when the driver attempts to access the additional drive letters.

LASTDRIVE
The CONFIG.SYS last drive command does not affect the drive letter assignment in the MO disk drive. If the driver assigns a drive letter higher than the one specified by the LASTDRIVE command (default is E:), the CD-ROM drive cannot be accessed. To enable access to the CD-ROM drive, specify a larger value in the LASTDRIVE command.

If the following conditions exist, the device driver will not be loaded into memory and the message "Driver not loaded" will display.

- No ASPI manager loaded

- Cannot find MO drive (with or without a disk inserted)

- Driver already loaded

IMPORTANT! The SMARTDRV cache is turned off by default for MO disk drives. If you attempt to write data to a write-protected disk while the SMARTDRV write cache is on, you will need to reset the computer.

At the driver loading, a disk with 2048-byte sectors will be ejected. Insert the disk after the driver loading

You can read more about Magneto-Optical disk drivers from the install diskettes that came with the product and from the Fujitsu web site *http://www.fujitsu.com*.

List of ASPI Managers and Supported Adapters

The following is a list of several popular ASPI managers and the cards they support. Drive Image Pro will use the ASPI manager you install to support your SCSI card.

ASPI8DOS.SYS
PCI Bus

Adaptec AHA-2910A/2910B

Adaptec AHA-2930A/2930B

Adaptec AHA-2940/2940AU/2940W/2940U/2940UW

Adaptec AHA-2944W/2944UW

Adaptec AHA-3940/3940U/3940W/3940UW

Adaptec AVA-2904, AVA-2902E/I

Adaptec AIC-7850/7855/7860/7870/7880 based SCSI host adapters

Jaz jet (PC-only model)

ASPI7DOS.SYS
EISA Bus

Adaptec AHA-1740/1742/1744

Adaptec AHA-1740A/1742A

Adaptec AHA-2740/2742/2740T/2742T

Adaptec AHA-2740A/2742A/2740AT/2742AT

Adaptec AHA-2740W/2742W

Adaptec AIC-7770 based SCSI host adapters

VL BUS

Adaptec AVA-2825

Adaptec AHA-2840VL/2842VL

Adaptec AHA-2840A/2842A

ASPI4DOS.SYS
ISA Bus

Adaptec AHA-1540B/1542B

Adaptec AHA-1540C/1542C

Adaptec AHA-1540CF/1542CF

Adaptec AHA-1540CP/1542CP

Microchannel Adaptec AHA-1640

ASPI2DOS.SYS
ISA Bus

Adaptec AVA-1502P/AP

Adaptec AVA-1505

Adaptec AVA-1515

Adaptec AHA-1510/1520/1522

Adaptec AHA-1510A/1520A/1522A

Adaptec AHA-1510B/1520B/1522B

Adaptec AHA-1530P/1532P

Adaptec AVA-1502AE/AI, AVA-1505AE/AI, AVA-1505AES

Adaptec AIC-6260/6360/6370 based SCSI host adapters

Adaptec AVA-1502AE/AI, AVA-1505AE/AI, AVA-1505AES

PCMCIA Bus

Adaptec SlimSCSI (APA-460 & APA-1425/50/50A/60/60A)

MCAM18XX.SYS

PCI Bus

Adaptec AHA-2920/2920A

MA160.SYS

If needed, add this adapter to the ASPI manager lines in your GUEST.INI or
LDSQSCSI.BAT files.

ISA Bus

Trantor T160

Microchannel Trantor T260

MA348.SYS

If needed, add this adapter to the ASPI manager lines in your GUEST.INI or
LDSQSCSI.BAT files.

Parallel Port Trantor MiniSCSI Plus (T348)

Adaptec MiniSCSI Plus (APA-348)

MA358.SYS

If needed, add this adapter to the ASPI manager lines in your GUEST.INI or
LDSQSCSI.BAT files.

Parallel Port Trantor MiniSCSI EPP (T358)

Adaptec MiniSCSI EPP (APA-358)

Adaptec MiniSCSI EPP (APA-358A)

ASPIIDE.SYS
IDE

> SCSI to IDE ASPI Manager

> Zip IDE drive

ASPIATAP.SYS

> SCSI to ATAPI ASPI Manager

ASPIPPM1.SYS and ASPIPPM2.SYS

> SCSI to Parallel Port Zip Drivers

> Jaz Traveller

ASPIEDOS.SYS

> Adaptec AHA-1740/1742/1744 (in Enhanced Mode only)

ASPIPC16.SYS

> PC1600 adapter Zip Zoom SCSI Accelerator

> Adaptec APA-1460 and other AIC-6260/5360 based adapters

> Jaz jet ISA adapter

> Zip zoom SCSI Accelerator

> Zip Card PCMCIA SCSI adapter

ASPI1616.SYS

> PC1616 adapter and other NCR-53C406A based adapters

ASPI2930.SYS

> AHA-2930 adapter

Troubleshooting

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

Frequently Asked Questions

Accessing Your CD-ROM Drive

Freeing Conventional Memory to Run Drive Image Pro

Increasing Windows NT Server Speed

Fixing SyQuest Driver Load Failure

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://support.powerquest.com/er/er0000.html.*

Accessing Your CD-ROM Drive

If you need to access your CD-ROM drive from Drive Image Pro, you will need to add the command in the CONFIG.SYS file to load your CD-ROM driver. You will also need to add the command in the AUTOEXEC.BAT file to load the CD-ROM extensions.

1. At the DOS prompt, change to the directory of the CONFIG.SYS you want to edit. For example, if you are editing the CONFIG.SYS on a boot diskette, type *drive*: (where *drive* is the drive letter of the boot diskette), then press <ENTER>.

2. Type **EDIT CONFIG.SYS** and press <ENTER> to start the DOS Editor and retrieve the CONFIG.SYS file.

3. Add either the DEVICE or DEVICEHIGH command. For example, type

    DEVICE=[*drive*:][*path*]*filename* [dd-*parameters*]

    or

    DEVICEHIGH=[*drive*:][*path*]*filename* [dd-*parameters*]

    where [*drive*:][*path*]*filename* specifies the location and name of the CD-ROM device driver and [dd-*parameters*] specifies any command-line information the device driver requires.

    NOTE: You may want to use DEVICEHIGH if you need to conserve conventional memory. See "Freeing Conventional Memory to Run Drive Image Pro" on page 153.

    For more information on your device driver, consult the documentation that came with your CD-ROM.

4. Click **File > Save** to save the file.

5. Click **File > Open** and retrieve the AUTOEXEC.BAT file.

6. Add the command line MSCDEX.EXE.

7. Click **File > Save** to save the file.

8. Click **File > Exit** to exit the editor.

Freeing Conventional Memory to Run Drive Image Pro

The Drive Image Pro 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 Pro 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 Pro, answer N (no) to tell DOS not to execute that command (not load that software into memory). This will conserve conventional memory.

Creating 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 Pro from either the diskette or your hard drive.

If you want to create and restore images across a network, you will need to create a network boot diskette. See "Creating DOS Boot Disks" in *Appendix A*.

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 file in the root directory (A:\). To create a CONFIG.SYS in the root directory, perform the following:

1. At the DOS prompt, type *drive*: (where *drive* is the drive letter of the diskette drive), then press <ENTER>.

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

2. Type **EDIT CONFIG.SYS** and press <ENTER>.

   This starts the DOS editor. (You will see a blank screen if no CONFIG.SYS currently exists.)

3. 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 DEVICE=C:\WINDOWS\HIMEM.SYS.

4. Click **File > Save** to save the file.

5. 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.

Increasing Windows NT Server Speed

If your Windows NT server slows to a crawl when running Drive Image Pro, it may be that the server is trying to cache the whole image file in memory. With one or more clients on the network trying to restore images, the NT server fills up its RAM with the image files. With very little RAM left to handle further requests, the NT server slows down.

Microsoft suggests that one might add more RAM on the server. You can also add the /MFS=100000000 switch to the command line when starting the Drive Image Pro executable. This limits each image file size to around 100 MB. This will help because each file is closed after moving to the next file, and NT can re-use the memory cache. The NT server no longer tries to cache the whole image file in memory.

This is not an issue with NetWare servers.

Fixing SyQuest Driver Load Failure

When you start Drive Image Pro, the batch file loads the Iomega and SyQuest drivers. You may receive the following message when loading your SyQuest removable drive: "Removable Drives(s) Not Found. See Readme for ways to correct this problem. Driver Not Installed." Please refer to "SyQuest Drivers" in *Appendix C*.

If your SyQuest driver is a SCSI drive and is connected by an adapter not supported by the ASPI8DOS, ASPI7DOS, ASPI4DOS, ASPI2DOS, or ASPIEDOS ASPI managers, edit the LDSQSCSI.BAT file to include the correct ASPI manager.

Resolving Check Errors

Drive Image Pro 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 problems as Drive Image Pro.

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 errors that Drive Image Pro shows, contact PowerQuest at the numbers listed in *Appendix E*.

If the CHKDSK (or SCANDISK) program and Drive Image Pro detect the same errors (which is usually the case), run CHKDSK with the /F switch to fix the problem.

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 Pro still reports a problem, reformat the partition and restore your files from the backup copy to correct the error.

Drive Image Pro also checks a partition after restoring it. If this check fails, report the problem to PowerQuest at the numbers provided in *Appendix E*. 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" on page 157.

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 which fail the check.

6. Reinstall the operating systems.

7. Restore the backup files as necessary.

Error Messages and Solutions

For a list of error messages and solutions, run Setup, then click **Documentation > Error Documentation** on the Drive Image Pro CD.

You can also view a complete list of error messages and solutions at the PowerQuest Knowledge Base at *http://support.powerquest.com/er/er0000/html*.

Contact Information

This appendix contains the following contact information:

Hard Drive Manufacturers

External Drive Manufacturers

PowerQuest Technical Support

PowerQuest Newsletter and Internet Address

Hard Drive Manufacturers

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

Hitachi

- URL: *http://www.hitachi.com/storage*

- Tech Support Phone: 800-HITACHI or 800-448-2244

- Fax: 408-235-8942

- E-mail: *drwesupport@hal.hitachi.com*

IBM

- URL: *http://www.storage.ibm.com/techsup/hddtech/hddtech.htm*

- Phone: 888-IBM-5214

- Automated Fax: 408-256-5418

- Fax: 507-253-DRIVE

- E-mail: *drive@us.ibm.com*

Maxtor

- URL: *http://www.maxtor*

- 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*

NEC Technologies

- URL: *http://cssweb.nectech.com/customersupport/finals/index.htm*

- Tech Support Phone: 978-742-7049

- Fast Facts Fax: 800-366-0476

- E-mail: *tech-support@nectech.com*

Quantum

- URL: *http://support.quantum.com*

- Tech Support Phone: 800-826-8022

- Fax Back Support: 800-434-7532

- E-mail: *qsupport@qntm.com*

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 Voice System: 800-732-4283

Western Digital

- URL: *http://www.wdc.com/support*

- Tech Support Phone: 800-275-4932

- Automated Voice System: 949-932-4900

- Fax Back Support: 949-932-4300

External Drive Manufacturers

Fujitsu

- URL: *http://www.fcpa.com/support/su_support_frame.html*

- Tech Support Phone: 800-626-4686

- Fax Back Support: 408-428-0456

Iomega

- URL: *http://www.iomega.com/support*

- Automated Voice System: 888-879-7660

- Fee-based Phone Support: 888-879-4-IOMEGA

  ($15/incident for Zip)

  ($19/incident for Jaz)

- Automated Fax Back: 801-778-5763

SyQuest

- URL: *http://www.syquest.com/support/index.html*

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://support.powerquest.com/index.htm*, 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 Phone Number _____

Your Fax Number _____

Drive Image Pro Serial Number _____

Computer Manufacturer _____

Computer Model and Model Number _____

Date of Computer Manufacture _____

Processor Type (386, 486, Pentium) _____

Amount of Memory (RAM) _____

Operating System(s) / Version Number (DOS 6.21, etc.) _____

File System(s) (FAT, FAT32, HPFS, 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 Pro user to receive the following types of technical support. PowerQuest offers free support for 45 days from the date of your first call to PowerQuest's technical support.

Fax

Location	Number
USA	(801) 437-4218
Europe	(+31) 20 582 9260

Fax the information listed on the pages above and a description of your problem to the technical support fax number. This service is available in the U.S., Canada, and Europe 24 hours a day, 7 days a week. We try to respond to all fax requests within 24 hours.

Faxback

Location	Number
USA	(801) 437-7921
USA Toll Free	(800) 720-0391

BBS

Location	Number
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.

Postal Service Mail

USA	Europe
PowerQuest Corporation	PowerQuest
PO Box 1911	Orlyplein 85
Orem, Utah 84059-1911	1043 DS
	Amsterdam
	The Netherlands

Please include the information from the PowerQuest Problem report with a description of your problem. Be sure to also include a return address, a daytime phone number, or other relevant contact information.

Corporate Web Site
http://www.powerquest.com

E-mail

Language	Location	E-mail
English	USA	support@powerquest.com
Italian	USA	italian@powerquest.com
Portuguese	USA	latina@powerquest.com
Spanish	USA	spanish@powerquest.com
Dutch	Netherlands	eurots@powerquest.com
English	Netherlands	eurots@powerquest.com
English	UK	eurots@powerquest.com
French	France	france@powerquest.com
German	Germany	germany@powerquest.com

Please include the information from the PowerQuest Problem Report with a description of your problem in your e-mail message.

Telephone

Language	Location	Number
Dutch	Netherlands	(+31) 20 581 3906
English	Netherlands	(+31) 20 581 3907
English	UK	(+44) 0171 341 55 17
English	USA	(801) 226-6834
French	France	(+33) 1 69 32 49 30
German	Germany	(+49) 069 66 568 516
Italian	Italy	(+39) 02 45 28 1312
Portuguese	USA	(801) 226-6834
Spanish	Spain	(+34) 91 622 3146
Spanish	USA	(801) 226-6834

Our USA call center is open Monday through Friday, 7 a.m. to 6 p.m. MST/MDT. Our European call centers are open Monday through Friday, 9:00 to 18:00 CET. Please have the information from the PowerQuest Problem report ready for the technical support technician.

PowerQuest Newsletter and Internet Address

PowerQuest has a monthly electronic newsletter that is dedicated to official announcements regarding PowerQuest products. It also contains tips and techniques for getting the most out of your PowerQuest products. Signing up on the list will give you all the information you need regarding product tips, bugs, and patches. Just go to the PowerQuest home page (*http://www.powerquest.com*), enter your email address in the space provided, then click **Sign me up**.

You will be e-mailed a response verifying your subscription.

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.

Client Computer
In a PowerCast session, the computer that downloads an image file from the server and restores it to a destination partition or free space on its hard drive.

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 or restore 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 95/98, 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 and Windows 98). 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 partitions that can be used to back up 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.

Multicasting
The ability to create a session and simultaneously send an image file from the server to one or more networked clients.

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.

PowerCasting
see Multitasking

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.

Server
In a PowerCast session, the computer that creates the session and sends the image file to one or more networked client computers.

Source
The Source hard drive is the drive from which the image is made.

Spanned Image
An image file that has been created in two or more segments so that it can be placed on media that is smaller than the image itself.

Volume
This User Guide uses the term volume interchangeably with partition.

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