DriveCopy®

User Guide

PowerQuest® DriveCopy™ 4.0

User Guide

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PowerQuest Corporation

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U.S.A.

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Introduction

This section includes the following information:

- What is DriveCopy?
- Supported Partition Types
- DriveCopy System Requirements

What is DriveCopy?

DriveCopy is a DOS utility designed for desktop machines to help you copy the contents of one hard disk to another. You can copy your operating system, applications, and data to a new hard disk. Copied partitions are expanded to occupy the same proportion of the new hard disk as they do on the original disk. For example, if you had two 1 GB FAT 32 partitions on a 2 GB hard disk and you copied both partitions to a new 8 GB hard disk, each partition would be expanded to 4 GB on the new hard disk. You can choose to copy an entire disk or selected partitions on a disk.

You can use DriveCopy when you upgrade to a larger hard disk or when you add a second hard disk and keep the original. You should not use DriveCopy to set up a hard disk that will be used in another computer.

DriveCopy is "power-fail safe," so if the power or other hardware fails when you are copying data, no data is lost from the source drive. Should the power or other hardware fail, just start the process again after the failure is resolved.

Supported Partition Types

DriveCopy fully supports FAT16, FAT16X, FAT32, FAT32X, HPFS, NTFS, Linux Ext2, and Linux swap partitions under all versions of Windows, DOS, and OS/2.

IMPORTANT! You can also use DriveCopy to copy other partitions (such as NetWare and UNIX), but PowerQuest cannot guarantee the results when you copy unsupported partitions. Because DriveCopy does not use SmartSector copying, does not resize partitions, and does not update the pointers for unsupported partitions, there is some chance that these partitions will not be accessible or bootable on the destination drive after copying them with DriveCopy.

DriveCopy System Requirements

IMPORTANT! PowerQuest does not support the use of DriveCopy on servers .

Hardware/Software	Minimum	Recommended
Processor	Intel 386SX	Intel 486 or above
RAM	16 MB (32 MB required for FAT32 or NTFS)	32 MB (48 MB for FAT32 partitions larger than 6 GB)
3.5-inch diskette drive	3.5-inch diskette drive, 1.44 MB or larger	3.5-inch diskette drive, 1.44 MB or larger
CD-ROM drive	Any speed	Any speed
Hard disk free space	3 MB	5 MB
Operating system	Windows 9x or later, DOS 5.0, or OS/2	Windows 9x or later, DOS 5.0, or OS/2
Monitor	VGA	SVGA
Pointing device	None	Microsoft mouse (or compatible pointing device)

Using DriveCopy with SCSI Hard Disks

To use DriveCopy 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, DriveCopy 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 DriveCopy (if you install SCSI drivers from DOS).

Using DriveCopy with Compressed Disks

If you plan to use DriveCopy with a compressed drive, refer to “Using DriveCopy on Compressed Drives” on page 33 for additional information.

CHAPTER 1

Getting Started

This chapter includes the following information:

- Installing DriveCopy
- Before Using DriveCopy
- Setting Up the Hard Disks
- Starting DriveCopy

The DriveCopy quick reference, which is included in the DriveCopy box, provides simplified instructions for using DriveCopy.

Installing DriveCopy

You can run DriveCopy directly from the CD, or you can install it by creating two rescue diskettes. If you run Drive Copy from the CD, all of the necessary files will be loaded temporarily to your hard drive on a virtual floppy. If you create rescue diskettes, the DriveCopy files will be stored on and run from those diskettes.

Your DriveCopy serial number is located on the back of the DriveCopy CD sleeve.

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

2 The DriveCopy browser appears.

Click this:	To do this:
Install	View a browser with two installation options. • **Run from Virtual Floppy.** Choosing this option will prepare your system to automatically run DriveCopy on the next reboot. At that time, all of the necessary program files will be loaded temporarily to your hard drive. Virtual Floppy enables you to run the program without having to create floppy program diskettes. • **Create Program Diskettes.** This option will direct you through the process of creating program diskettes. You will use these diskettes to run DriveCopy after your new hard drive is installed.
Documentation	Display a PDF manual for DriveCopy.
Jumper Info	Connect to a web site that lists hard disks and corresponding jumper information.
Select language	Select the language of the product you want to install.
Exit	Exit the installation program.

Before Using DriveCopy

- Run a disk utility such as ScanDisk, CHKDSK, /R, or ffck on each partition of the source drive to check for file system errors. (Run CHKDSK /F if you are running a Windows NT system.) If you successfully run one of these utilities before running DriveCopy, you can choose not to have DriveCopy check for file system errors, reducing the time needed to copy data. See “Advanced Options” on page 23 for more information about checking for file system errors.
- Verify that each FAT partition containing OS/2 extended attributes has a minimum of 5 MB of unused space within the partition if it will be resized during the restore process.

Setting Up the Hard Disks

This section details installing IDE hard disks. The procedure may vary somewhat for SCSI drives. If you are installing a SCSI hard disk, follow the instructions that came with the hard disk. See also "Using DriveCopy with SCSI Hard Disks" on page 2.

1 Get the manufacturer's installation guides for both the existing and the new hard disks.

The installation guides provide information on installing the disks, setting up the BIOS, and changing the jumper settings. If you do not have access to these guides, contact the hard disk manufacturers directly. Most drive manufacturers maintain web sites that include setup information.

If you have access to the Internet, Ontrack's web site (*www.ontrack.com*) is an excellent resource for jumper information for hundreds of ATA/IDE hard disks and configurations.

Blue Planet's web site (*www.thetechpage.com*) includes contact information in English for the most common hard disk manufacturers.

2 Turn off the computer's power.

3 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 sensitive electronic components.

4 Remove the computer's cover (Figure 1.1).

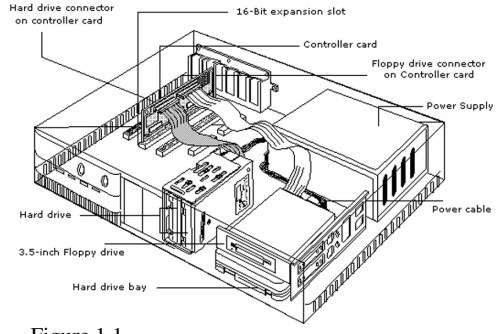


Figure 1.1

5 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.

6 Attach the interface cable and the power supply cable to the second drive (Figure 1.2).

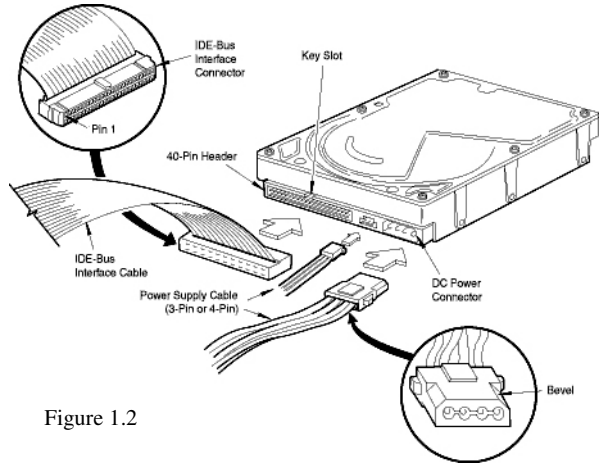


Figure 1.2

7 Mount the second drive (Figure 1.1).

8 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.

9 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, sectors, and megabytes of the drives. This information is usually printed on the drive's outside cover. If it is not, contact the drive manufacturer.

10 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.

Computer BIOSes made before 1994 usually do not support the EIDE standard and cannot address hard drives larger than 504 MB. Hard drives larger than 504 MB typically include software such as Ontrack Disk Manager or Micro House EZ-Drive, which allow computers to see larger hard drives. The software is often named by the hardware manufacturer, so names vary. For example, Maxtor drives use MaxBlast software. If your machine does not support the EIDE standard, make sure the software included with the destination drive is correctly installed. See "Using DriveCopy with Drive Overlay Software" on page 29.

11 Save the BIOS changes.

12 Turn off the computer and restart it.

Starting DriveCopy

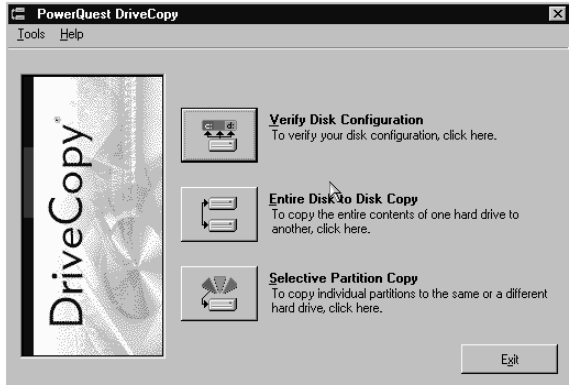
If your computer BIOS requires drive overlay software to recognize large hard drives, you must load the drive overlay software before starting DriveCopy. To verify if your computer has drive overlay software, see scenario 2 in "Using DriveCopy with Drive Overlay Software" on page 29.

If your computer does not require drive overlay software or if you are copying from a SCSI disk to another SCSI disk, start DriveCopy as follows:

1 If you installed DriveCopy to a virtual floppy, you have two options at the end of installation. You should **Reboot** if your new drive is already installed. DriveCopy will run when your machine reboots. You should **Shutdown** if you need to install your new drive. The next time you turn on your machine, DriveCopy will run.

If you created a DriveCopy diskette, insert it and reboot your computer.

It can take several minutes for DriveCopy to analyze your system and display the main DriveCopy screen.



If the disk has errors, those errors will be copied to the new disk, but DriveCopy enables you to salvage your data.

2 Choose the option that matches what you need to do.

Click this:	To do this:
Verify Disk Configuration	Display the drive letter, volume label, partition type (file system type), status, size, used and unused space for any hard disk on your machine.
Entire Disk to Disk Copy	Copy the entire contents of one hard disk to another hard disk. (See Chapter 2 for additional information.)
Selective Partition Copy	Copy individual partitions from one hard disk to unused space on the same hard disk or to another hard disk. (See Chapter 2 for additional information.)
Tools ➤ Create Extended Partition	Create an extended partition on a hard disk. This command is useful if you want to copy a primary partition and convert it to a logical partition. For example, if you have two hard disks that each include a primary partition (a bootable C: and data partition D:) and you are copying both the C: and D: partitions to a new hard disk that will be your master disk, you would want the D: partition copied to a logical partition to avoid having two primary partitions on the new hard disk. Primary partitions on the primary master drive should be reserved for operating systems only.
Tools ➤ Delete Disk Partition(s)	Delete partitions from a hard disk. You must have unallocated space (space not assigned to any partition) on a hard disk before you can copy data to it or create an extended partition on it. If you do not have unallocated space, you must delete partitions to create unallocated space. Be aware that deleting partitions destroys any data they contain. As a safeguard against accidentally deleting partitions (and data), you will be prompted to type the volume label of the partition you wish to delete and click **OK** to confirm that you want to delete the partition. Then DriveCopy deletes the partition, and you click **Close** to return to the DriveCopy main screen.

Click this:	To do this:
Tools ➤ Hide/Unhide Partition(s)	Hide a partition so it will not receive a drive letter next time you boot your computer, or unhide a partition so that it will receive a drive letter next time you boot your computer. You can hide partitions to prevent access to the data they contain. If you are copying data as a backup, you may wish to hide the backup partitions, so they cannot be altered. When you set your source drive as slave and destination drive as master (and you are copying an operating system), it is a good idea to hide the source operating system partition to avoid corruption. If your hard disk contains more than one primary partition, only one is visible by default. When you use the Set Active Partition feature (see below), DriveCopy automatically unhides the selected primary partition and hides all other primary partitions. Be aware that hiding and unhiding partitions causes drive letters to change.
Tools ➤ Set Active Partition	Set a primary partition active (that is, designate it as the bootable partition). To be bootable, a primary partition must be located on the primary master drive, and it must contain an operating system. ***IMPORTANT!*** Before you set an active partition, be sure it is bootable. If you restart the computer and it does not boot normally, boot from the DriveCopy boot diskette or any boot diskette, insert the program diskette, and set a different active partition.
Help	Choose commands from the Help menu on the DriveCopy main screen to display a brief overview of the online help system or access the Help index. You can also press <F1> at any time to display the Help index.

CHAPTER 2

Copying Drives or Selected Partitions

This chapter includes the following information:

- Copying Entire Drives
- Copying Selected Partitions
- Advanced Options
- After Running DriveCopy
- Scenarios

IMPORTANT! Before proceeding with the steps in this chapter, be sure to follow the instructions in *Chapter 1* for setting up your hard disks.

Copying Entire Drives

You may want to copy an entire hard disk if you:

- Upgrade your computer by replacing the existing hard disk with another one.
- Want to back up your existing drive to another drive.
- Add a second hard disk to your computer and designate the old hard disk as the slave drive and the new hard disk as the master drive.

It is not usually necessary to format or partition your destination drive. DriveCopy automatically performs both these functions. However, if you are copying a FAT16 partition, the largest available size is 2039.5 MB. You may need to partition the remainder of your hard disk to use the space. You can do so with a partitioning utility, such as PowerQuest® PartitionMagic® or FDISK.

If you are copying an entire master drive (Disk 1) to a slave drive (Disk 2) and would like to boot from Disk 2, you must change the jumper settings after the copy so that Disk 2 becomes the master drive.

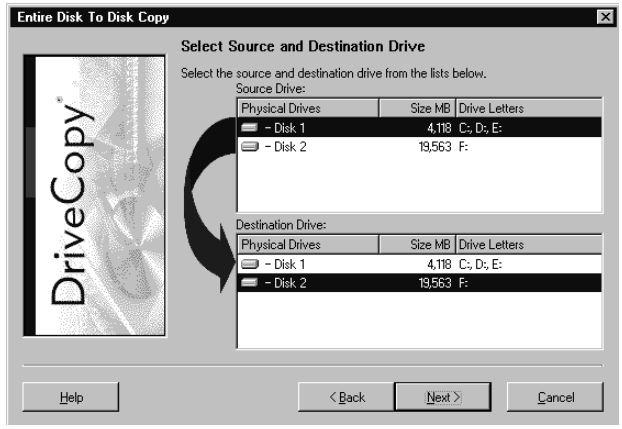
1 At the DriveCopy main screen, click **Entire Disk to Disk Copy**.

The **Select Source and Destination Drive** screen appears. (If your destination drive is not partitioned, the selections are made automatically, and the **Select Disk Write Mode** screen appears.)

2 From the **Source Drive** group box, select the source drive.

3 From the **Destination Drive** group box, select the destination drive.

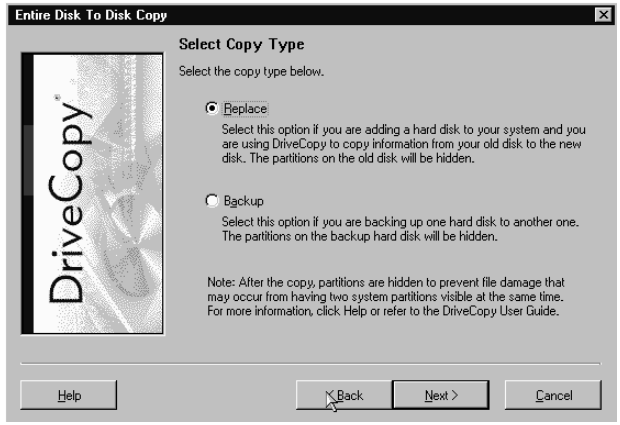
Make sure the drive size in the display is the size of your drive. If the drive information is incorrect, there could be a conflict in the BIOS that indicates that you have an overlay on that drive. See "Using DriveCopy with Drive Overlay Software" on page 29 for a solution.



4 Click **Next**.

The **Select Copy Type** screen appears.

5 Select **Replace** or **Backup** to indicate why you are running DriveCopy.



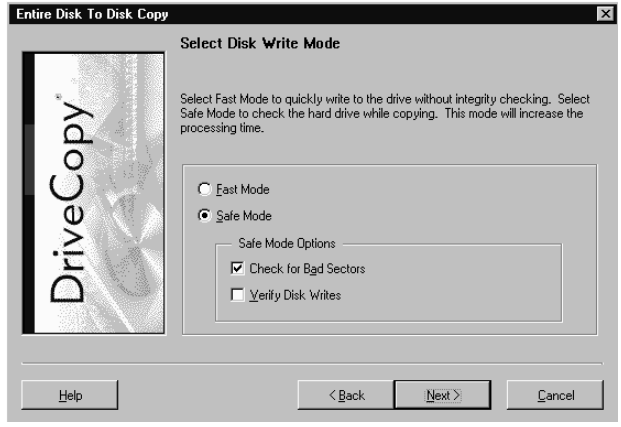
Select Replace if you are adding a hard disk to your system and using DriveCopy to copy information from your old drive to the new drive. If you select Replace, DriveCopy will hide the source partitions after copying them.

If you select Backup, DriveCopy will hide the destination partitions after copying them.

By hiding either the source or destination partitions, DriveCopy ensures that your drive letters will not change when you reboot your computer. Hiding partitions can also avoid problems that result when two identical operating system partitions are visible when you reboot. If you are confident that having both your source and destination partitions visible will not make your computer unbootable or cause problems because of drive letter changes, you can click **Advanced Options** at the Ready to Copy Disk to Disk screen (see step 9) and change DriveCopy's default settings. For more information, see "Advanced Options" on page 23.

6 Click **Next.**

The **Select Disk Write Mode** screen appears.

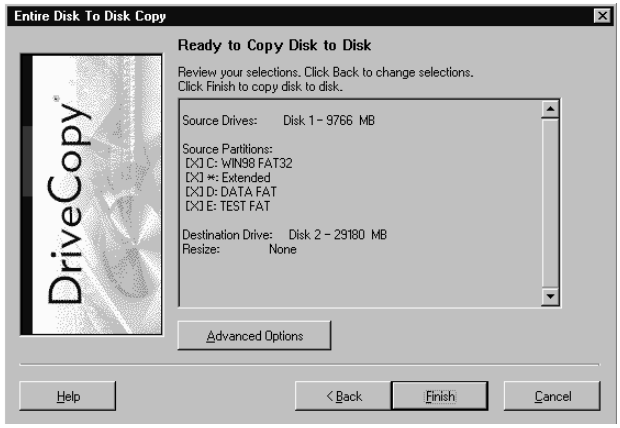


7 Click **Fast Mode** to copy data as quickly as possible without integrity checks, or click **Safe Mode** to choose integrity checks for DriveCopy to perform while copying the data.

Be aware that choosing Safe Mode can increase the time necessary to copy data. If you choose Safe Mode, you can choose to check the hard disk for bad sectors and verify disk writes. Checking for bad sectors is a good idea if your destination disk is an older model or if you are not sure it is in good condition. If you choose to verify disk writes, DriveCopy will check the data after it is copied to make sure it is readable. Verifying disk writes greatly increases the time required to copy data and is not necessary for a successful copy.

8 Click **Next**.

The **Ready to Copy Disk to Disk** screen appears.



9 *(Optional)* To alter any settings, click **Back**.

10 *(Optional)* To set options such as disabling file system error-checking or hiding partitions after copy, click **Advanced Options**.

See “Advanced Options” on page 23.

Copying multiple logical partitions without hiding them can cause the drive letters of subsequent partitions to change. This may make the computer unbootable or cause applications to fail.

11 Click **Finish** to begin copying.

The **Copying Disk To Disk** dialog appears.

12 *(Optional)* Click **Yes** to view information about the copied partitions, such as volume type, status, size, used and unused space, and whether it is a primary or logical format.

13 If the destination drive will be designated as the master drive and there is no active partition, you will be prompted to set an active partition. To set the operating system partition active, click **Yes**, select the partition containing your operating system, click **Set Active**, then click **Close**.

14 From the DriveCopy main screen, click **Exit**.

15 Hide or remove the source drive from your computer, and set the destination drive as the primary master drive.

IMPORTANT! If you have two identical operating system partitions and you do not hide or remove the source drive from your computer, the operating system on the primary master drive may be corrupted and your computer may not be bootable.

If you plan to reformat the source (original) disk and use it for data storage, PowerQuest recommends that you first remove the disk, reboot to the destination (new) disk and ensure everything works correctly. Then reattach the source drive and run DriveCopy. Click **Tools ➤ Delete Partition**, and delete the old operating system partition (and any other partition you do not need to keep). Then reformat the old disk using PartitionMagic or FDISK.

16 Reboot your machine.

Copying Selected Partitions

You may want to select partitions to copy when:

- You upgrade your computer but do not want to copy all of your old system files onto the new hard disk.
- You want to back up of some of the data on your hard disk either to another place on that hard disk or to a second hard disk. (PowerQuest's Drive Image is a more complete backup solution.)

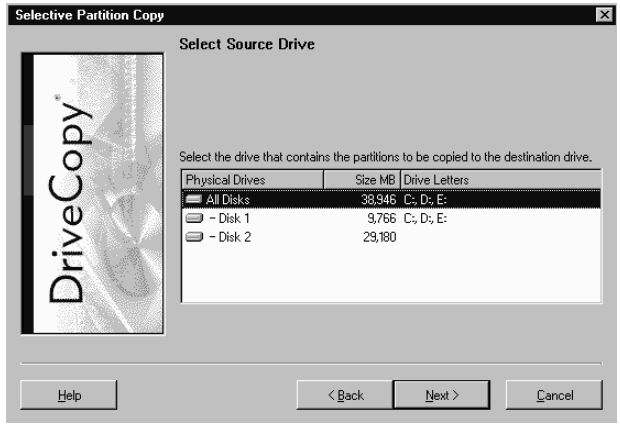
It is NOT necessary to format the destination partition or to partition free space. DriveCopy automatically performs both these functions.

IMPORTANT! After copying a disk, you must remove it from your computer or hide the partitions on it before rebooting your computer.

IMPORTANT! If you copy a single Windows NT partition to another location on the master drive, it may not be bootable until you edit the BOOT.INI file. If you copy a single NT partition to a slave drive, it will not be bootable unless you change the jumper settings so that the slave drive becomes the master drive. You may also need to edit the BOOT.INI.

1 At the DriveCopy main screen, click **Selective Partition Copy**.

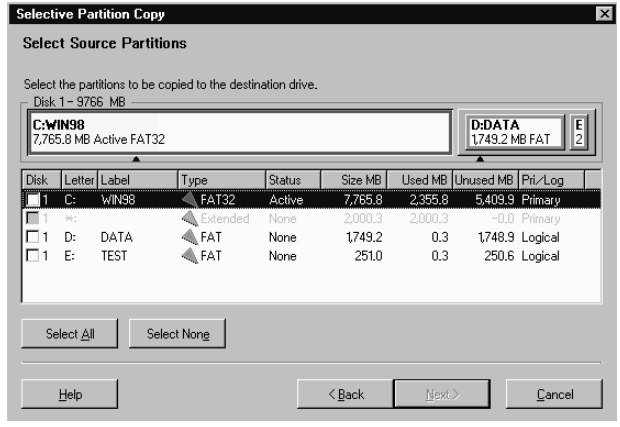
The **Select Source Drive** screen appears.



2 Select the disk or disks that include partitions you want to copy.

At any point prior to actually copying partitions, you can click **Back** to change your settings.

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

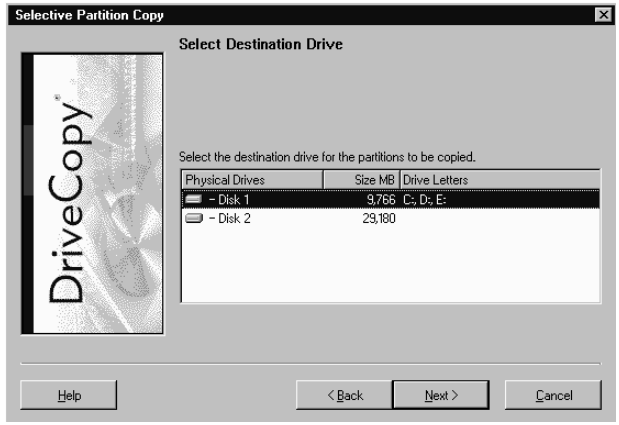


You may need to scroll to view all the partitions in the list. Note that if you have more than one hard disk on your machine, the first column in the partition list shows the physical hard disk where the partition is located.

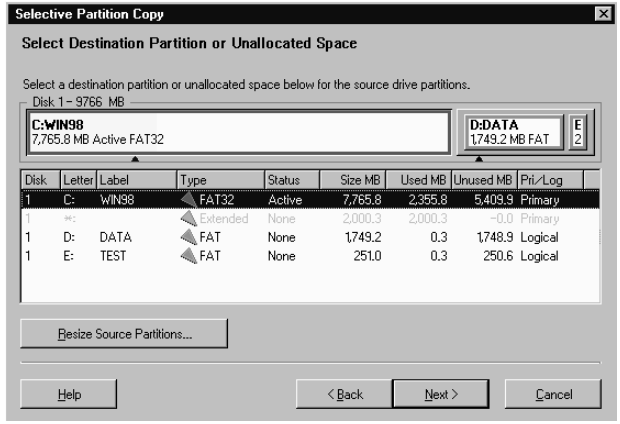
A check appears to the left of selected partitions. To deselect partitions, click again on a partition or click **Select None** to deselect all partitions at once.

3 Click **Next**.

4 Select the destination drive that includes the partitions or unallocated space where you want the copied partitions to be stored.



5 Select the destination partition or unallocated space. If there is only one partition on the destination drive, this step will be skipped.



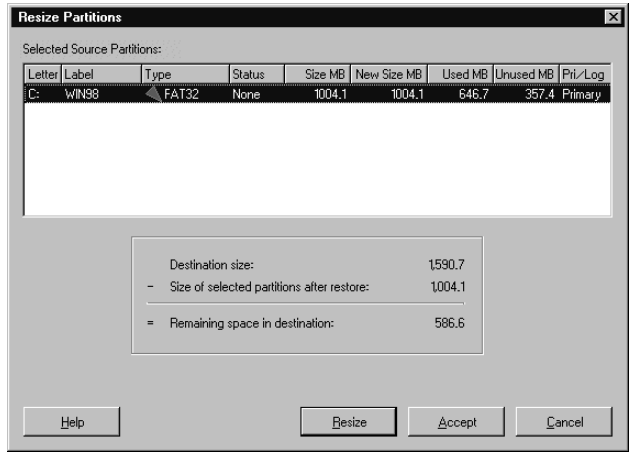
You may need to scroll to view all the partitions in the list. If you have more than one hard disk on your machine, the first column in the partition list shows the physical hard disk where the partition is located.

IMPORTANT! To copy partitions, the destination partition or drive must have unallocated space equivalent to the total used space of the selected source partition. If you copy to a partition that already includes data, the existing data will be replaced.

6 If the destination partition or unallocated 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. If you do not want to resize the source partition, go to step 12.

7 Click **Resize Source**.

The **Resize Partitions** window appears.

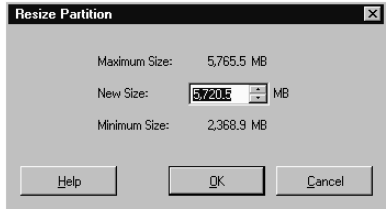


The **Selected Source Partitions** group box displays the partition you selected to copy.

The screen also displays the destination size, current size of selected partition, and remaining free space in the destination.

8 Click **Resize**. (If you do not want to make changes, click **Accept**, and go to step 12.)

The **Resize Partition** window appears.



9 In the **New Size** field, type the size for the partition (in MB), then click **OK**.

The size you enter must be equal to or larger than the Minimum Size and less than or equal to the Maximum Size displayed in the dialog.

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

10 Click **OK**, then click **Accept**.

Later, when you copy the partition, DriveCopy resizes it.

11 Click **Next**.

If you selected an existing partition as the destination, a prompt will appear reminding you that the existing partition will be deleted before copying.

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

12 If the unallocated space on the destination drive is greater than the space required to copy the selected partition, the **Resize Options** dialog appears. Click the option you want, then click **OK**.

Select this option:	To do this:
Automatically resize partitions proportionally to fit	Allow DriveCopy to automatically expand the partitions in equal proportions to occupy the destination drive's remaining unallocated space.
Leave remaining unused space	Leave any remaining unallocated space (space not partitioned) unused on the destination drive after the partitions are copied.
Resize partitions manually to fit	Display the **Resize Partitions** dialog where you can manually set the size of the partitions to fit in the destination drive's remaining unallocated space. (See step 8 for additional information about the Resize Partition dialog.)

The **Select Copy Type** screen appears.

13 Select **Replace** or **Backup** to indicate why you are running DriveCopy.

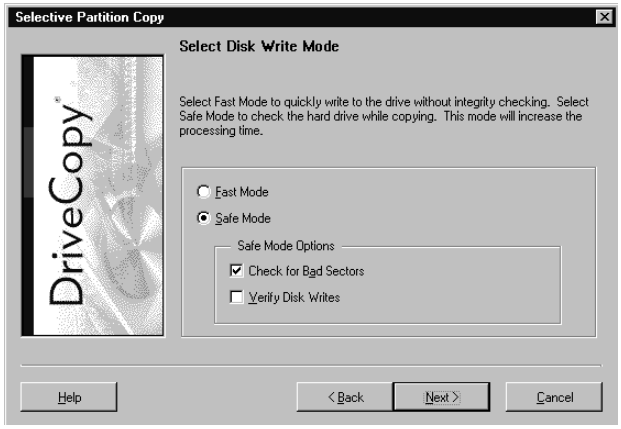
Select Replace if you are adding a hard disk to your system and using DriveCopy to copy information from your old drive to the new drive. If you select Replace, DriveCopy will hide the source partitions after copying them.

If you select Backup, DriveCopy will hide the destination partitions after copying them.

By hiding either the source or destination partitions, DriveCopy ensures that your drive letters will not change when you reboot your computer. Hiding partitions can also avoid problems that result when two identical operating system partitions are

visible when you reboot. If you are confident that having both your source and destination partitions visible will not make your computer unbootable or cause problems because of drive letter changes, you can click **Advanced Options** at the Ready to Copy Disk to Disk screen (see step 18) and change DriveCopy's default settings. For more information, see "Advanced Options" on page 23.

The **Select Disk Write Mode** screen appears.

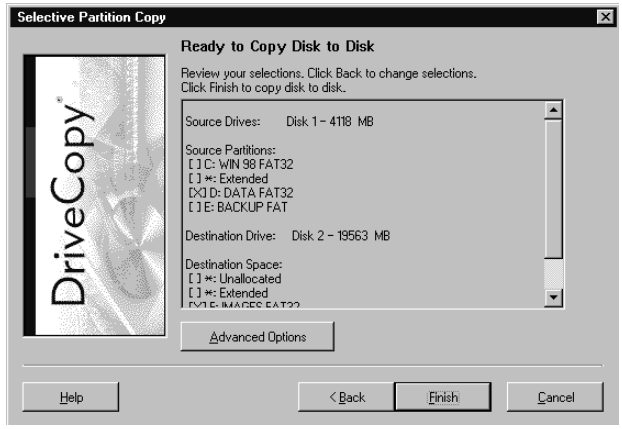


14 Click **Fast Mode** to copy data as quickly as possible without integrity checks, or click **Safe Mode** to choose integrity checks for DriveCopy to perform while copying the data.

Be aware that choosing Safe Mode can increase the time necessary to copy data. If you choose Safe Mode, you can choose to check the hard disk for bad sectors and verify disk writes. Checking for bad sectors is a good idea if your destination disk is an older model or if you are not sure it is in good condition. If you choose to verify disk writes, DriveCopy will check the data after it is copied to make sure it is readable. Verifying disk writes greatly increases the time required to copy data and is not necessary for a successful copy.

15 Click **Next**.

16 DriveCopy displays all the information you have entered to this point. To alter any settings, click **Back**.



17 *(Optional)* To set options such as disabling file system error-checking or hiding partitions after copy, click **Advanced Options**.

See “Advanced Options” on page 23.

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

The **Copying Disk To Disk** dialog tracks the progress, and a message prompts you when the process is complete.

19 Click **OK** to return to the DriveCopy main screen.

WARNING! Before you reboot your computer, ensure that you do not have two identical operating system partitions visible. To avoid possible corruption, you must remove the old hard disk from the computer or hide the operating system partition before rebooting. If there are two identical operating system partitions on the computer when you reboot, your operating system could be compromised.

Advanced Options

The **Disk to Disk Advanced Options** dialog appears when you click **Advanced Options** at the **Ready To Copy Disk To Disk** screen.

Select this:	To do this:
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 disk for errors, it is not necessary to have DriveCopy 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 DriveCopy, leave the **Check for File System Errors** check box selected.
Disable SmartSector Copying	DriveCopy's SmartSector technology speeds up the copying process by only copying clusters and sectors that contain data. However, in some cases, such as high-security environments, it may be desirable to copy all clusters and sectors in their original layout, whether or not they contain data. If you wish to copy both used and unused clusters and sectors, click **Disable SmartSector Copying**. Disabling SmartSector Copying increases processing time.
Hide Source Partitions After Copy	If you selected **Replace** at the **Select Copy Type** screen, this option is selected by default. Hiding the source partition will ensure that your drive letters do not change when you reboot your computer. It can also avoid problems caused by having two identical operating systems visible when you reboot.

Select this:	To do this:
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. Disk write verification is not critical to safely copy files. Enabling disk write verification can slow the copying process dramatically.
Hide Destination Partitions After Copy	If you selected **Backup** at the **Select Copy Type** screen, this option is selected by default. 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 bootable partition, the **Hide Destination Partitions After Copy** box should be selected. If you are using your secondary hard drive as a complete backup of your primary drive, selecting **Hide Destination Partitions 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 additional information about hiding partitions, see **Tools ➤ Hide/Unhide Partitions** on page 9.

After Running DriveCopy

- **2 GB FAT Limitation.** FAT partitions (used by Windows 95, 3.x, DOS, and sometimes Windows 98, Windows NT and OS/2) have a limit of 2039.5 MB by design. When the source hard drive contains one FAT partition (C: drive) and the destination hard drive is larger than 2 GB, after using DriveCopy, the resulting

partition on the destination drive will be only 2 GB while the remainder of the drive will be unpartitioned space. You can create extended partitions in the unpartitioned space using the **Create Extended Partition** command on the DriveCopy Tools menu.

- **Restoring a Backup System Partition with DriveCopy.** To replace the active partition on your computer with a hidden backup partition you created with DriveCopy (for instance, if you lose data from your C: partition), run DriveCopy again. Select the hidden partition as the source and the active partition as the destination. After DriveCopy completes the copying process, it prompts you to set an active partition. Select the newly copied partition.

Scenarios

Replacing Existing Hard Disk

Sample System Configuration	Source disk: 2 GB hard drive containing one active primary FAT32 partition (C:) running Windows 98; 1.9 GB used, 100 MB unused.
	Destination disk: new 6 GB hard drive, empty.
Objective	Copy contents of existing source disk to a new destination disk. Then remove the source disk.

1. When you are setting up the hard drives as instructed in *Getting Started*, set the jumpers on the 6 GB drive to master (or primary) and the jumpers on the 2 GB drive to slave. To avoid confusion when removing the source drive later, you may find it helpful to mark your drives as SOURCE (2 GB drive) and DESTINATION (6 GB drive) with a marker or a piece of tape.
2. Run DriveCopy.
3. From the DriveCopy main screen, click **Entire Disk to Disk Copy**.
4. From the **Source Drive** group box, select **Disk 2** (the 2 GB drive).
5. From the **Destination Drive** group box, select **Disk 1** (the 6 GB drive), then click **Next**.
6. Select **Replace**, then click **Next**.
7. Select **Fast Mode**, then click **Next**.

8. The selection list on the **Ready To Copy Disk To Disk** screen displays the following information:

9. Click **Finish**.

10. After DriveCopy has completed the copying process, click **Yes** to view information about the copied partitions and to verify that drive and partition sizes are reported correctly.

11. Click **Close**.

12. Click **Yes** to set an active partition on the destination drive.

13. Select the partition containing your operating system, click **Set Active**, then click **Close**.

14. From the DriveCopy main screen, click **Exit**.

15. When DriveCopy prompts you to reboot your computer, do not reboot. Instead, turn off the computer.

16. Remove the 2 GB source drive.

17. Start the computer and update the BIOS to reflect a one hard drive system.

    For information on changing BIOS settings, see steps 8-11 on page 6.

18. Reboot the computer.

The computer reboots and starts up Windows 98. The C: partition contains all its original data, but has now expanded from 2 GB to 6 GB and has 4.1 GB of unused space.

Copying Selected Partitions

Sample System Configuration	Source drive: 4 GB hard drive containing one 2 GB active primary FAT partition (C:) running Windows 98, and an extended partition containing two 1 GB logical partitions (D: and E:).
Objective	Copy the D: partition and the E: partition to the destination drive.

1. When you are setting up the hard drives as instructed in *Getting Started*, set the jumpers on the new 4 GB drive to slave and leave the jumpers on the old 4 GB drive set to master or primary.

2. Run DriveCopy.

3. From the DriveCopy title screen, click **Selective Partition Copy**.

4. Select **Disk 1**, then click **Next**.
5. Select the **D:** partition and the **E:** partition, then click **Next**.
6. Select **Disk 2**, then click **Next**.

   The free space on Disk 2 is already selected.
7. Select **Backup**, then click **Next**.
8. Select **Fast**, then click **Next**.

   The **Resize Options** dialog appears.
9. Select **Leave Remaining Unused Space** to leave 2 GB of unpartitioned free space on the destination drive after the D: and E: partitions are copied.

   This allows you to add additional partitions to your second hard drive in the future.
10. Click **OK**.
11. The selection list on the **Ready To Copy Disk To Disk** screen displays the following information:
12. From the **Ready To Copy Disk To Disk** screen, click **Advanced Options**.
13. Under the **Destination Options**, mark the **Hide Destination Partitions After Copy** box.

    This hides the D: and E: partitions on the destination drive so that the operating system cannot see these partitions or access their data.

    Hiding the partitions has several advantages in this case.

    First, hiding partitions causes drive letters to remain the same. If the partitions were visible after copy, the operating system would assign the CD-ROM drive the letter H:. As a result, all existing programs that refer to the CD-ROM drive (formerly drive F:) would have to be reconfigured or reinstalled.

    Second, hidden partitions retain all their data but cannot be seen or accessed by the operating system. This guards the data against accidental erasure.

    You can unhide partitions at any time by using the **Hide/Unhide Partitions** feature in the **Tools** menu on the DriveCopy main screen.
14. Click **OK**.
15. Click **Finish**.

16 After DriveCopy has completed the copying process, click **Yes** to view information about the copied partitions and to verify that drive and partition sizes are reported correctly.

17 Click **Close** to return to the DriveCopy main screen and exit the program.

18 Reboot the computer.

The computer reboots and starts up Windows 98. Drive letters stay the same, but the D: and E: partitions are now securely archived on the second hard drive.

CHAPTER 3

Additional Resource Information

This chapter includes the following information:

- Using DriveCopy with Drive Overlay Software
- Using DriveCopy on Compressed Drives
- Assigning a CD-ROM Drive Letter

Using DriveCopy with Drive Overlay Software

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

In some cases, you can obtain an updated BIOS from the manufacturer. Upgrading your BIOS is a better solution than using drive overlay software, so check with the BIOS manufacturer before proceeding with the process outlined in this section.

If you copy SCSI to SCSI, the older BIOS does not come into play because SCSI has its own translation mechanism.

Some large disks require that you install drive overlay software to allow your computer to recognize the full disk. If the disk size is not properly recognized after using DriveCopy, reinstall the drive overlay software.

The following scenarios outline the installation procedures for a variety of system configurations. Before you follow the solution steps of any of these scenarios, make sure your system configuration matches the system configuration described at the beginning of the scenario. Each of these scenarios require you to create a DriveCopy diskette rather than installing to the hard disk.

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 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 DriveCopy 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 DriveCopy is showing the correct size for each drive and the correct order for the copy sequence, then finish the copy process.

Scenario 2

The drives on your machine do not report the correct size when you click **Verify Disk Configuration.**

1. Disconnect the source drive.
2. Install the destination drive and set it as the master drive.
3. Run the BIOS and auto-detect the drives.
4. Install the overlay software to the destination drive.
5. Install the source drive and set it as the slave drive.
6. Run the BIOS and auto-detect the drives.
7. Restart the computer and allow the drive overlay program to load.
8. Put your DriveCopy bootable diskette in your diskette drive (A:).

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

   If you are running EZ-drive or Disk Manager, consult the manufacturer's documentation for steps to boot the overlay software.

10 Once DriveCopy has loaded, select **Entire Disk to Disk Copy.** Make sure the Source Drive is the slave drive, and the Destination Drive is the master drive. If you have a different configuration, DriveCopy may not copy the drive correctly.

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 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 DriveCopy 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 DriveCopy is showing the correct size for each drive and the correct order for the copy sequence, then 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 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 DriveCopy 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 DriveCopy is showing the correct size for each drive and the correct order for the copy sequence, then finish the copy process.

Scenario 5

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 DriveCopy 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 DriveCopy is showing the correct size for each drive and the correct order for the copy sequence, then finish the copy process.

Using DriveCopy on Compressed Drives

DriveSpace and DriveSpace 3

To use DriveCopy with DriveSpace or DriveSpace 3, you must first free 5 MB of space within the host partition by performing the following:

1. Double-click the My Computer icon.
2. Right-click the drive you wish to alter.
3. Select **Properties** from the pop-up menu.
4. Select the **Compression** tab.
5. Click **Compression ➤ Advanced.**
6. Select **Run DriveSpace**.

   A list of your physical drives, compressed drives, and host drives appears.
7. Choose the compressed volume you wish to change.
8. You are offered three options at the top of the menu: **Drive**, **Advanced**, and **Help**. Select **Drive**.
9. Click **Drive ➤ Adjust Free Space**.
10. Notice the slide bar at the bottom of the Free Space menu. Move the bar to the right to reduce the compressed volume by at least 5 MB.

    You may need to delete or transfer to diskette 5 MB of files if your compressed volume is completely full.
11. After using DriveCopy, follow steps 1-10 again, except this time move the slide bar to the left to get more compressed space (to increase the compressed volume to fill the new space you have gained).

Stacker

PowerQuest DriveCopy is compatible with Stacker for OS/2 and DOS. This means that DriveCopy can manipulate the physical partitions (uncompressed drives) that contain the Stacker compressed drives (the STACVOL*.* hidden file). Use the Stacker DOS Toolbox to change the Stacker compressed drive size so that you have at least 5 MB of free space on the Host volume.

To copy a physical partition containing a Stacker compressed drive, you must first shrink the Stacker volume using the Stacker DOS Toolbox so that at least 5 MB is left free on the Host volume. After copying the drive with DriveCopy, you can expand the Stacker volume to make the new space available for compression. To change the size of a Stacker (compressed) drive, refer to the instructions in the Stacker user guide.

Assigning a CD-ROM Drive Letter

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

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

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

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

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

   Your CONFIG.SYS file opens in the DOS editor program. Look for this line: LASTDRIVE=*drive* (where *drive* is any letter of the alphabet). Change *drive* to **Z**. This allows the OS to assign all drive letters through Z.

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

   If your computer is on a network, when you log in to the network, the letter "Z" and other letters at the end of the alphabet may be assigned to network search drives. In this case, assign your CD-ROM a letter immediately preceding the first letter used by the network search drives.
8. Select **File ➤ Exit**.
9. When you are prompted to save the file, select **Yes**.
10. When you see the DOS prompt (C:>), reboot your machine.

APPENDIX A

Troubleshooting

This appendix includes the following sections:

- Error Messages
- Generating Diagnostic Reports with PARTINFO.EXE
- PowerQuest Technical Support

Error Messages

In addition to the specific error instructions included in this section, the following general guidelines may help you resolve errors you encounter with DriveCopy.

Error Message	What to Do
100's (partition table errors)	Run PARTINFO (see"Generating Diagnostic Reports with PARTINFO.EXE" on page 41), then call PowerQuest Technical Support for assistance.
2000's (FAT check errors)	Run a thorough ScanDisk, then run DriveCopy again. If the problem persists, contact PowerQuest Technical Support.
Any error on a Windows NT system	Run CHKDSK /F, then run DriveCopy again. If the problem persists, contact PowerQuest Technical Support.

If you encounter errors that are not documented in this user guide, go to the PowerQuest web site *support.powerquest.com*.

Disk Access Errors (49–50)

These errors indicate that accessing your disk is not possible, and, often, are the result of hardware problems. Some problems may have simple solutions. For other problems, the only solution may be replacing the hard drive. When possible, DriveCopy detects major errors before any changes have been made so you can back up your data before replacing the hard drive.

#45 CRC error in data

When DriveCopy reads information off of a hard disk, it checks the CRC (Cyclic Redundancy Check) information contained in each sector. If the CRC test returns a result that is different from the value stored on that sector, DriveCopy displays a CRC error. This usually means one of two things: The file being read has become corrupted by some other means, or a sector used by the file has become bad and thereby corrupted that part of the stored file. To resolve the problem, run a surface test to make sure any bad sectors are marked as bad, then run DriveCopy again.

When a CRC error occurs, you can click **Yes** to ignore that one error, **Yes to All** to ignore all future read errors, or **No** to view the problem and fix it. If you ignore the read error message, your data may be at risk.

#49 Write fault

DriveCopy is unable to write to a specific sector on the hard disk. There are a number of possible causes of this error:

- If your PC beeps or displays a black box in the middle of the screen, virus protection is enabled in your computer's BIOS. Disable virus or boot sector protection in the BIOS.
- A virus protection application (which may be a TSR or DLL program) is in use. Disable the application before using DriveCopy.
- There is a bad sector on the hard disk (this is usually the case only with older hard disks). Run SCANDISK on the hard disk to perform a surface scan.
- You have set up disk mirroring with PC-Tools. Disable the disk mirroring option.

Partition Table Errors (100–122)

If you encounter a partition table error that you are unable to resolve using the information in this user guide, see “Generating Diagnostic Reports with PARTINFO.EXE” on page 41 before contacting PowerQuest Technical Support.

#105, #106, and #108 Partition begins or ends on wrong boundary.
The hard disk partition table contains erroneous values. DriveCopy expectsFAT, HPFS, and NTFS partitions to begin and end on the boundaries used by FDISK. If they do not, the disk may be partially corrupted and any modifications DriveCopy makes may decrease the amount of data recoverable from the hard disk. Therefore, DriveCopy refuses to recognize any of the hard disk's partitions.You can use thePARTINFO utility to print the contents of the partition tables.

#107 and 109 Partition begins or ends after end of disk.
This error can occur when you are running DriveCopy on a hard disk that uses more than 1,024 cylinders. Under DOS, DriveCopy is restricted by the BIOS 1,024 cylinder limit. If any partitions extend beyond the limit, DriveCopy cannot safely operate on the hard disk. To use the full capacity of hard disks with more than 1,024 cylinders, you must run the DriveCopy executables under either OS/2 or Windows 95. This error can also occur when you are booting OS/2 from a diskette, and the correct drivers for the hard disk are not present on the diskette.

Additionally, this error can occur if a partition erroneously extends beyond the physical end of the hard disk. This may happen if the hard disk has been used on a different computer or with a different hard disk controller. You can use the PARTINFO utility to print the contents of the partition tables. Be advised that the physical geometry of the hard disk may differ from the logical geometry assigned to the hard disk by the operating system.

#110 Partition table number of sectors is inconsistent.
The hard disk partition table contains two inconsistent descriptions of the number of sectors on the hard disk. You can use the PARTINFO utility to print the contents of the partition tables.

This error is serious if both DOS and OS/2 use the hard disk. Because DOS uses one description and OS/2 uses the other, data loss is likely once the partition is almost full.

#116 Partition table Begin and Start inconsistent.
The hard disk partition table contains two inconsistent descriptions of the partition's starting sector. This error can occur if the operating system reports a hard disk geometry that is different than the geometry in use when the partition table was written. Possible causes of the hard disk geometry changing are:

- Different operating systems (for example, DOS and OS/2) report different hard disk geometries.
- You boot from a diskette that loads a different driver than is loaded when you boot from the hard disk.

- Upgrading the operating system (for example, from OS/2 2.x to OS/2 Warp) causes a different driver to be used.
- The hard disk or controller has been changed.
- The BIOS has been upgraded.
- The BIOS LBA setting has been changed.
- There is a partition table virus present on the hard disk.

You can use the PARTINFO utility to print the contents of the partition tables. You can also use a virus scanning program to remove any partition table virus. Data loss is possible if the number of heads or sectors per track has changed since you first created your partitions.

Check Errors (500–1045)

Check errors occur when DriveCopy checks the integrity of a partition.

#1015 System sector not marked unavailable.
This error may indicate that there are open files on the hard disk. Shut down and restart OS/2, booting from diskettes. If this does not resolve the problem, run OS/2's CHKDSK program. Additionally, you can delete the erroneous file.

This error message may also indicate that a file is listed with a file length of zero. OS/2's CHKDSK program will not fix this problem.

#1027 Could not account for all sectors.
This error may be resolved in one or more of the following ways:

- If you are working with an HPFS386 partition, you must use BACKACC to back up ACL information and to change the partition to regular HPFS. You can then use DriveCopy to make changes to the partition. After using DriveCopy, use RESTACC to restore the ACL information and then change the partition back to HPFS386.
- If you are trying to run DriveCopy from the partition that you want to modify, run DriveCopy from a different partition.
- Delete the offending file. Files named FOUND.000 or ending in .CHK are typically the problem.
- Turn off the disk mirroring option in PC-Tools.
- If none of the above solutions works, back up the partition, delete it, recreate it, and restore the data.

Read Errors

These errors indicate that reading your disk is not possible and warn you of possible problematic data. When a read error occurs, you can click **Yes** to ignore that one error, **Yes to All** to ignore all future read errors, or **No** to view the problem and fix it. If you ignore the read error message, your data may be at risk.

Generating Diagnostic Reports with PARTINFO.EXE

The PARTINFO utility generates a report showing the contents of your hard disk partition table. This information is helpful for PowerQuest Technical Support in resolving various partitioning problems (errors that display #100 through 121).

1. Boot the computer to DOS.
2. Insert the DriveCopy CD.
3. You have several options for runningPARTINFO from a DOS prompt.

To do this:	Do this:
To display partition information on your screen	Type `E:\PARTINFO`, then press <Enter> (where `E:\` is your CD-ROM drive).
To send a report directly to your printer	Type `PARTINFO >LPT1` or `PARTINFO >PRN`, then press <Enter>.
To save the report as partinfo.txt on a floppy disk	Type `PARTINFO >A:\PARTINFO.TXT`, then press <Enter>.

PowerQuest Technical Support

Before contacting our technical support department, please try to resolve your problem by using this guide, DriveCopy Help, the README file, and PowerQuest's corporate web site.

Tips

- PowerQuest technical support engineers may request information from the PARTINFO utility program to help you resolve problems with DriveCopy. See "Generating Diagnostic Reports with PARTINFO.EXE" on page 41.

- Your product serial number (printed on the back of the DriveCopy CD sleeve) is required to obtain technical support.
- If you received a demo or trial version of DriveCopy, you are not entitled to complimentary technical support.

Support Life Cycle

Technical support is available to all registered users throughout the life of the product, which began when PowerQuest released the software to manufacturing and ends six months after the release of the next version of the software or when PowerQuest discontinues its development.

For information about PowerQuest's fee-based technical support or Professional Services offerings, please follow the Professional Services link at *support.powerquest.com*.

Contact Information

Corporate Web Site

The technical support web site, *support.powerquest.com*, includes an overview of support options, an e-mail support request form, a list of error messages and information to resolve problems you encounter, and answers to frequently asked questions about the product.

E-mail

Language	E-mail Address
Dutch	eurots@powerquest.com
English	support@powerquest.com* eurots@powerquest.com
French	france@powerquest.com
German	germany@powerquest.com
Italian	italian@powerquest.com
Portuguese	latina@powerquest.com
Spanish	spanish@powerquest.com

*To obtain the most efficient e-mail technical support for specific technical questions, you should fill out the form at *support.powerquest.com/emsupport.html* (available in English only).

Fax

Location	Number
U.S.A.	(801) 437-4218
Europe	+31 (0) 20 581 9270

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

Telephone

Language	Location	Number
Dutch	Netherlands	+31 (0)20 581 3906
English	Netherlands	+31 (0)20 581 3907
English	UK	+44 (0)207 341 5517
English	U.S.A.	(888) 438-1260
French	France	+33 (0)169 324 930
German	Germany	+49 (0)696 656 8516
Italian	Italy	+39 (0)24 528 1312
Spanish	Spain	+34 (0)916 623 1 46
Spanish	U.S.A.	(801) 226-6834

The U.S.A. call center is open Monday through Friday from 7:00 a.m. to 6:00 p.m., MST/MDT. Our European call center, located in the Netherlands, is open Monday through Friday from 9:00 to 18:00, CET.

Postal Service Mail

U.S.A.	Europe
PowerQuest Corporation P.O. Box 1911 Orem, Utah 84059-1911 U.S.A.	PowerQuest Customer Service P.O. Box 58287 1040 HG Amsterdam, Netherlands

Include a detailed description of your problem and a return address, a daytime phone number, or other relevant contact information.

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