



The ultimate disk compression software  
for the Apple IIGS®

by Andy McFadden

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# ONE

*This chapter introduces you to HardPressed. In this chapter you'll learn about data compression and how HardPressed works.*



## Welcome to HardPressed

HardPressed™ is a powerful system extension that incorporates automatic file compression and expansion into the GS/OS system software. With HardPressed installed, you can *virtually double* the amount of free space on your disks. By compressing the files already on your disks—applications, databases, documents, spreadsheets, utilities, and anything else—you don't need to buy a larger hard disk or another floppy disk drive to hold more files.

The HardPressed software is a small application, called an INIT, that automatically loads when you start up your Apple IIGS. It operates in the background, compressing and expanding files as you save and open your documents and applications. In the Finder, your files still appear with their normal file type, only they're smaller. You can continue to use your documents and applications as you normally would—when you open a compressed file or launch a compressed application, HardPressed automatically expands the file for you. You don't need to “extract” them first like you do with other compression utilities, such as ShrinkIt.

HardPressed also comes with a control panel device (CDev) that lets you choose which folders and disks you want compressed automatically. And if you want to compress or expand files manually, the HardPressed Finder extension lets you do so by just selecting icons and choosing a command from a Finder menu.

## Customer Support

At WestCode Software our company “mission” is to create outstanding, innovative products. This package reflects our dedication to producing well-designed software combined with comprehensive and educational user documentation that helps you get the most from your purchase.



Our goal is to ensure that you're satisfied with our products and service. If you ever have a question or problem with one of our products, and you can't find an answer in the manual, call us for a quick solution. Our knowledgeable and friendly technical support staff is available to help you from 10:00 A.M. to 5:00 P.M. Pacific time, Monday through Friday. Call or write to:

(619) 487-9233 Technical questions about products

(619) 487-9200 General information and sales

(619) 487-9255 Fax

WestCode Software, Inc.  
Attn: Technical Support  
15050 Avenue of Science, Suite 112  
San Diego, CA 92128

When calling, you should be at your computer, have this manual handy, and be prepared to give the following information:

- The Product Registration number on the inside cover of this manual
- Your hardware setup (computer type, memory, and so on)
- The version of your system software
- A description of the problem

Modem users can also receive product support on America Online (keyword: APR) and Genie (A2 bulletin board), e-mail: WestCode.

## Registration

Please take a moment now to complete the Registration Card included with this package. Registration will allow us to notify you of product improvements and to tell



you about new products. It only takes a few minutes to fill out and mail the card, so please do it now. Remember, product support is available only to registered users.

## Customer Comments

We're always looking for ways to improve our products and frequently add new features requested by our customers. We welcome and encourage your comments for making our products and service even better. We're also interested in ideas for new products that you'd like to see produced.

## System Requirements

To use HardPressed you'll need the following:

- An Apple IIGS with a minimum of 1.25 megabytes (1280K) of memory; 2 megabytes are required if you don't have a hard disk drive. Additional memory is recommended to increase performance.
- Apple IIGS system software version 6.0 or newer

Optional:

- Hard disk drive (recommended)
- Accelerator card

HardPressed requires System 6.0 or newer. If you're not sure which version of the system software you have, look at the GS/OS startup screen (the screen that says "Welcome to the Apple IIGS"). If it says "System 6.0" below "Welcome to the Apple IIGS", then you have System 6.0. If it doesn't say "System 6.0", you have an earlier version.



## What's in this Package

The following items should be in your HardPressed package:

- One 800K 3.5-inch disk
- HardPressed User's Manual (this book)
- Registration and Change of Address cards

## About this Manual

If you are the type that likes to explore and start using software without first reading the manual, feel free to skip ahead to *Installing HardPressed* on page 11, which explains how to install HardPressed on your startup disk.

Once you have installed HardPressed, read *Using HardPressed* on page 19. In a brief tutorial, you'll learn how to mark folders for automatic compression, how to manually compress and expand files, and how to turn HardPressed on and off.

We strongly suggest that once you've seen HardPressed in action, you should return to this manual and read the following reference chapters completely.

- Chapter 4, *The HardPressed Control Panel*, shows you how to mark folders for automatic compression and set other options.
- Chapter 5, *The HardPressed Finder Extension*, shows you how to compress and expand files you select in the Finder.
- Chapter 6, *The HardPressed Control Desk Accessory*, shows you how to turn the automatic compression features on and off from within any GS/OS application.
- Appendix A, *Compressing System Files*, shows you which system files you can safely compress and which files you should not compress.



- Appendix B, *Trouble-shooting*, lists common questions and answers you may have about HardPressed. It explains error messages you may encounter and lists some applications that are not 100% compatible with HardPressed. If you use ProSel-16, it's very important that you read this section.
- Appendix C, *Technical Information*, includes technical descriptions of the compression methods used by HardPressed. It isn't necessary for you to read this section; it's included only as a technical reference.

This manual contains some technical information about the HardPressed software, data compression, and GS/OS. You don't need to understand the technical aspects of HardPressed to use it, but Appendix C provides that technical information nonetheless. If you read this entire manual, you'll understand how and why HardPressed works.

## Do You Know the Basics?

This manual assumes that you are comfortable working with your computer and know how to select menu items, open files, click on buttons and so forth. If terms such as *double-click*, *icons* and *system software* are new to you, please refer to the manuals that came with your computer.

## About Data Compression

Before getting started with HardPressed, please take a few moments to learn how HardPressed works. In the following sections, we'll tell you about data compression, how HardPressed integrates with GS/OS, and the kind of performance you can expect while using the program.



## Automatic, Intelligent Compression

HardPressed allows both automatic and manual compression of your files. For automatic compression, you can select which disks and folders are compressed automatically by *marking* disks and folders in the HardPressed control panel. When you create or save files in any marked folder, HardPressed compresses the file after it's saved. HardPressed also compresses any files you copy from another disk into a marked folder. You can think of this automatic compression as “compression by location.”

Using a *compression profile* you select in the control panel, HardPressed decides which compression module would work best on the file it's compressing, based on the file's ProDOS file type. Choosing a profile allows you to select greater compression with a loss of speed, or greater speed with less compression.

## Manual Compression with New Finder Commands

When you want to compress or expand files manually, you can use the new **Compress** and **Expand** commands in the Finder's Extras menu added by the HardPressed Finder extension. Now, compressing or expanding a file is as easy as selecting an icon and choosing a command—you don't need to launch an application, such as ShrinkIt, to manage your compressed files.

The HardPressed Finder extension also includes a **Compression Info** command, which shows you the actual, uncompressed size of a compressed file and how much disk space the compressed file saves.

## How HardPressed Makes Files Smaller

Data compression works by examining a file's contents and encoding it into a smaller format. A graphic, for example, may be stored as color information for each screen



pixel. A graphic containing 10 pixels of red, followed by 5 pixels of green, then 7 pixels of blue can be represented by the following color data:

```
R R R R R R R R R R G G G G G B B B B B B B
```

The color information requires 22 bytes, one byte for each screen pixel. Using a simple compression technique, the data can be compressed by replacing each series of repeating bytes with the number of bytes followed by the actual color information. Using compression, the data uses only six bytes instead of 22:

```
10 R 5 G 7 B
```

The example above is a rather simple method of data compression, but it gives you an idea of how compression works. HardPressed uses a few other, more complex methods to compress different kinds of files, such as applications and word processing documents. The different compression methods are described in *Appendix C—Technical Information* on page 73.

Because of the way compression works (by removing redundant data), the amount of compression achieved is highly dependent on the type of data you compress. Data with a lot of redundancy (such as bit-mapped graphics) compress very well, while more random data (such as applications) don't compress as well. Text files usually land somewhere in the middle.

## The Space and Time Trade-off

Compressing a file to make it smaller is a processor-intensive task. Generally, compression methods that compress tightly take longer to process a file than methods that provide less compression. HardPressed provides several different compression methods, contained in *compression modules*, that offer different levels of speed and compression. For example, the LZW module provides adequate compression at a



moderate speed. The LZSS module provides greater compression, but files take longer to compress.

The performance of different compression modules also differs in the time it takes to expand a file. Files compressed with the LZW module are expanded at a moderate speed, but files compressed with the LZSS module can be expanded two to three times faster than files compressed with the LZW module.

If you have an accelerator card installed in your computer, the different speeds of the compression modules may not make much difference to you. However, if your IIGS is running at normal speed, you may want to consider which compression modules HardPressed uses to compress your files. By selecting a compression profile, you can choose whether HardPressed provides greater compression with a loss of speed, or greater speed with less compression.

## How HardPressed Works with GS/OS

When you launch a compressed application or open a compressed document, HardPressed automatically expands the file for you. HardPressed expands the file into a temporary file in its *file cache*, a place in memory that HardPressed uses to store files it's working on. After HardPressed expands a file, your application reads the data from the file cache instead of the original file, which remains compressed. When you save a file in a marked folder, HardPressed first compresses the data into the file cache, then replaces the original file with the compressed copy.

If there isn't enough memory in the file cache to hold the file, HardPressed creates a temporary file on a disk. You can use the HardPressed control panel to set the size of the file cache (or turn it off completely), and to choose where temporary files are stored.



HardPressed stores compressed files as HardPressed data files with the “archival library” file type. However, your files still appear with their original type in the Finder and other GS/OS applications—HardPressed fools GS/OS into always displaying a file’s original type. Of course, if you make HardPressed inactive or remove it from your system, your compressed files will appear as archival library files and your applications won’t be able to access them.

## Installing HardPressed

Now that you’ve learned about data compression and how HardPressed works, you’re ready to start using it. The next chapter explains how to install HardPressed. The installation process takes only a few minutes.

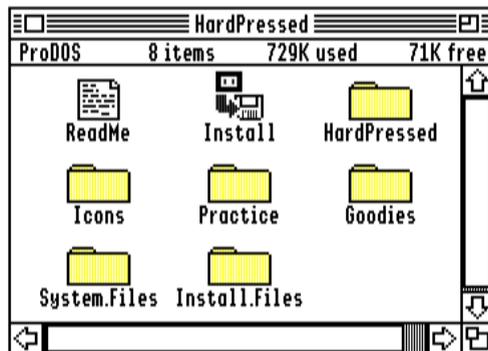


# TW

*This chapter explains how to install HardPressed on to your IIGS system disk. Once HardPressed is installed, it works as a built-in component of the IIGS system software, transparently operating behind the scenes to compress and expand files as you open and save your documents and applications.*

## The HardPressed Disk

HardPressed is supplied on a single 800K disk. Included on the disk is an easy-to-use Install program, the HardPressed software, and a file containing release notes.



- The **HardPressed** folder contains the HardPressed software: the control panel device (CDev), the HardPressed Finder extension, the HardPressed initialization file (INIT), and a variety of compression modules that HardPressed uses to compress different kinds of files.
- The **Practice** folder contains three files you'll use during the tutorial in the next chapter. It contains the Teach application, a text file, and a graphic file.
- The **System.Files** folder contains compressed versions of several system files used to install HardPressed onto an 800K system disk.
- The **Install.Files** folder contains files needed during the installation process.
- The **Icons** folder contains Finder icons for all of the HardPressed files.
- The **Goodies** folder contains technical information about HardPressed for those who are interested. The **Goodies.Readme** file in the Goodies folder contains a summary of the folder's contents.

## Release Notes

On the HardPressed disk you will find a text file named **ReadMe**. Please read this file before continuing; it may contain information about new features in HardPressed that we added after this manual was printed. Double-click the **ReadMe** icon to open it using Teach, or use any text editor to read the file.

## Using the Install Program

The HardPressed disk itself is not a bootable disk. In order to install HardPressed, it will be necessary for you to start up from your hard disk or a IIGS system disk.

- 1 Run the Install program on the HardPressed disk by double-clicking the **Install** icon.



The first time you use the Install program, you must personalize your *original* HardPressed disk before you can continue with the installation.

- 2 After the personalization window appears, type your name in the first box.

- 3 Press Tab to move to the second box and type your organization's name.
- 4 Click **Personalize** to continue.

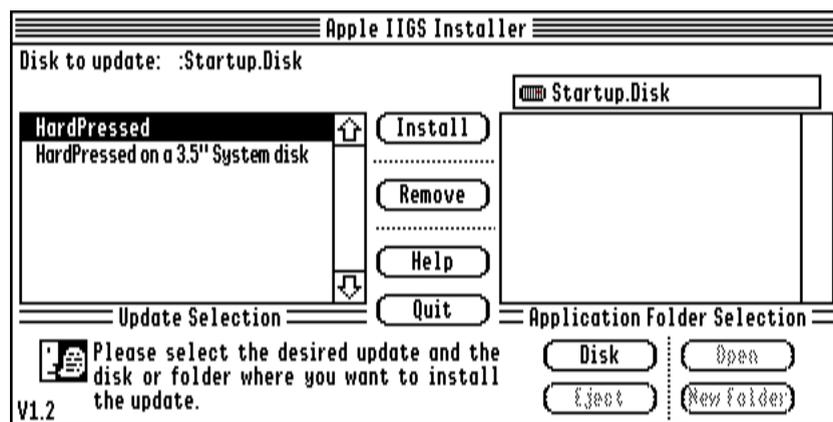


### Note

**Remember that HardPressed is licensed for use on a single computer.**

If you plan to use HardPressed on a network or on several computers, contact WestCode Software to obtain a network or site license.

After personalizing your HardPressed disk, the Apple IIGS Installer window appears.



- 5 If the upper left corner of the window doesn't show your startup disk's name, click the **Disk** button until your startup disk's name appears.

There are two choices in the list on the left:

- **HardPressed** installs the HardPressed software onto the hard disk (or hard disk partition) containing your System folder.

- **HardPressed on a 3.5" System Disk** installs HardPressed onto an 800K startup disk. Because there isn't much room left on a System 6.0 startup disk, the Install program replaces several system files with compressed versions of the files.



### Note

**If you install HardPressed on a 3.5-inch system disk, do so only on a backup copy.** You can either make a copy of the System.Disk included in the System 6.0 package, or use the System Installer to create a minimum system disk. This HardPressed Installer option works with System 6.0 system disks only and will not work with a System 6.0.1 system disk. If you use this Installer option and have only one 3.5-inch disk drive, many disk swaps will be necessary.

**6** Select which installation to perform by clicking it in the list.

**7** Click **Install** to install HardPressed.

When the Install program is finished, it may display a message "An update has altered system files on the startup disk. You can no longer use desk accessories."

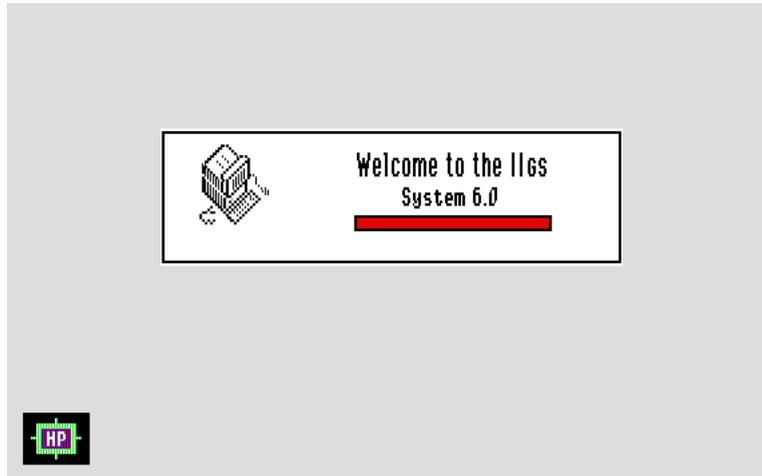
If the installation was successful, HardPressed is now installed on your startup disk. If the installation fails (you receive an error message), restart your computer with the Shift key held down to disable extensions, then try the installation again. If the installation still fails, contact WestCode Software for assistance.

**8** After you successfully install HardPressed, click **Quit**.

The Install program asks you to restart your computer.

**9** Click **Restart System** to continue.

HardPressed loads automatically when your IIGS starts up.



The HardPressed icon appears at the bottom of the startup screen, verifying that HardPressed is loaded and ready to use.



### Note

If you ever want to prevent HardPressed from loading, press and hold down the H key during startup.

## Where the Installer Puts Files

If you're interested in what the Installer is doing, it's copying the HardPressed software into various folders within the System folder on your startup disk. The following table summarizes which files are placed in each folder, with a brief description of each file.

File	Folder	What it's for
HardPressed	System.Setup	The HardPressed INIT performs the actual compression and expansion of files.
HP.Modules	System.Setup	This folder contains the profiles and individual compression modules that HardPressed uses.
HP.Prefs	System.Setup	This file contains settings for HardPressed that you can change in the HardPressed control panel.
HardPressed.CDV	CDevs	The HardPressed control panel allows you to mark folders for compression and set other options.
HardPressed.CDA	Desk.Accs	The HardPressed Control desk accessory lets you turn HardPressed on or off from any application.
HardPressed.FXT	FinderExtras	The HardPressed Finder extension allows you to compress and expand files you select in the Finder.
HardPressed.ICN	Icons	This file contains Finder icons for the various files that HardPressed creates and uses.

You should now read the next chapter, *Using HardPressed*, for a tutorial that shows you how to use the main features of HardPressed.



# THREE

*This chapter shows you how to use the main features of HardPressed. In this chapter, you'll learn how to mark folders for automatic compression, then watch as HardPressed compresses a file you save in a marked folder. You'll also learn how to compress and expand files using two new commands in the Finder.*



## About the Practice Folder

To give you some hands-on experience with HardPressed, we have included a folder called Practice on the HardPressed disk. This folder contains three files: a GS/OS application called Teach, a Teach document containing text, and an Apple Preferred graphic file. Compressing these different types of files will give you a good idea of the kind of results you can expect with HardPressed.

This tutorial will show you how to do the following:

- mark folders for automatic compression
- compress a file by saving it in a marked folder
- compress and expand files in the Finder
- check compression statistics on compressed files

Before you begin, please make a backup copy of your original HardPressed disk. (Use the Finder to make the copy.) Use your backup copy throughout the tutorial.

The tutorial assumes that you're working with the Practice folder on your backup disk. For faster performance, however, you can copy the Practice folder to your hard disk (if you have one) and do the tutorial from there if you want.

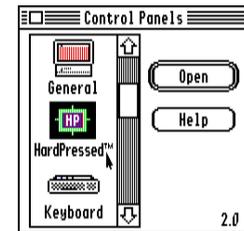
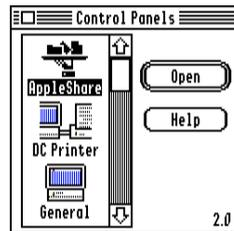
## Automatic Compression

This section shows you how to use the HardPressed control panel to mark which folders you want compressed automatically. When you create or save files in a marked folder, HardPressed automatically compresses the files.

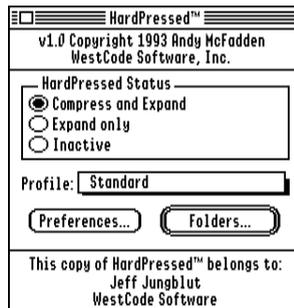


You can mark any number of folders on your disks, and you can mark folders on just about any kind of disk, including ProDOS, AppleShare, and HFS disks.

- 1 Make sure your backup copy of the HardPressed disk is not write-protected. Remove your original HardPressed disk from the disk drive and insert your backup copy.
- 2 Pull down the Apple menu and choose **Control Panels**, then click the scroll arrow to move down to the **HardPressed** icon. (You can press **H** to quickly scroll to the HardPressed icon.)



- 3 Double-click the **HardPressed** icon to open it.

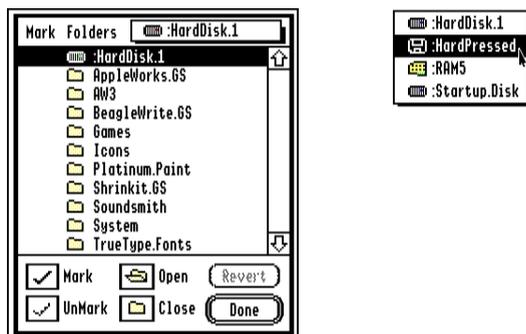


The HardPressed control panel window appears.

## Marking Folders in the HardPressed Control Panel

Now you'll mark a folder on the HardPressed disk.

- 1 Click the **Folders** button.



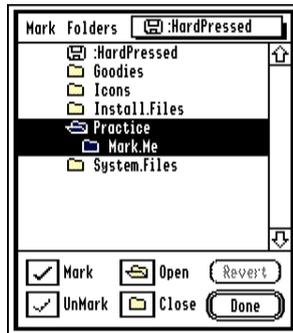
A list of folders on the current disk appears. Only folders are shown, not files. At the top of the dialog box is a pop-up menu listing all of the disks you have online.

- 2 If the HardPressed disk isn't shown, choose **HardPressed** from the pop-up menu.



A list of folders on the HardPressed disk appears.

- 3 Click the **Practice** folder to select it, then click the **Open** button.



The Mark.Me folder appears underneath the Practice folder. Both the Practice and Mark.Me folders are selected.

- 4 Click the **Mark.Me** folder so that only Mark.Me is selected.
- 5 Click the **Mark** button.



A checkmark appears next to the Mark.Me folder, indicating the folder is marked.

- 6 Click the **Done** button to accept the change.

From now on, **HardPressed** will compress any files you save in (or copy to) the **Mark.Me** folder.

- 7 Click the close box in the **HardPressed** window to close it, then close the **Control Panels** window.

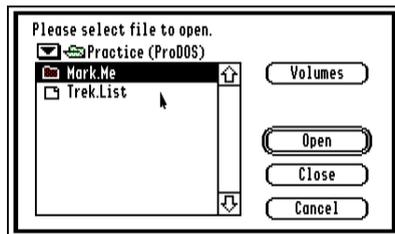
## Saving Files in Marked Folders

Now you'll use the **Teach** application to open a file, make a change to it, then save it in the **Mark.Me** folder. **HardPressed** will compress the new copy of the file.

- 1 From the **Finder**, open the **Practice** folder, then double-click the **Teach** icon in the **Practice** folder.

In a few moments, the **Teach** menu bar and an untitled window appear.

- 2 Close the untitled window, then choose **Open** from the **File** menu.



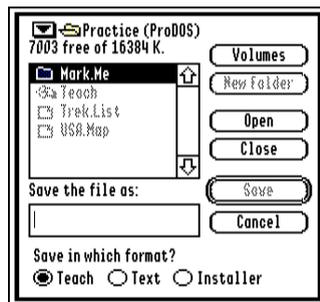
The **Open** dialog box appears, listing the **Mark.Me** folder and one document, **Trek.List**.

- 3 Click **Trek.List** to select it, then click **Open**.



The document appears in a new window.

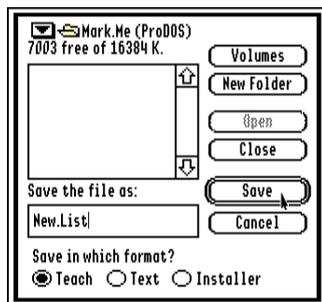
- 4 Make a change to the document. (Try adding a blank line to the beginning, or change the font or color.)
- 5 Choose **Save Copy as** from the File menu.



The Save dialog box appears.

- 6 Click the **Mark.Me** folder to select it, then click **Open**.

- 7 Click in the file name box. Type a new name for the document, such as **New.List**, then click **Save**.



Teach saves the new file in the Mark.Me folder, then HardPressed compresses the new file. The “emptying document” cursor appears briefly while HardPressed is working.

- 8 After you save the file, choose **Quit** from the File menu to return to the Finder.

Compare the size of the original Trek.List file and the New.List file you just created. The original, uncompressed copy is 33K in size, while the new, compressed copy is only 19K.

Practice			
ProDOS	4 items	9.3 MB used	6.6 MB free
Name		Size Kind	La
Teach		43K GS/OS application	
Trek.List		33K Teach document	
US\$ Mark.Me			
ProDOS	1 item	9.3 MB used	6.6 MB free
Name		Size Kind	
New.List		19K Teach document	

## Opening Compressed Documents

Your GS/OS applications can open compressed files just as they would open normal, uncompressed files—you don't need to expand them first. To try this out, continue with the following steps.

- 1 Double-click the **New.List** icon in the Mark.Me folder.



Teach opens the New.List document. The “filling document” cursor appears briefly while HardPressed expands the file.

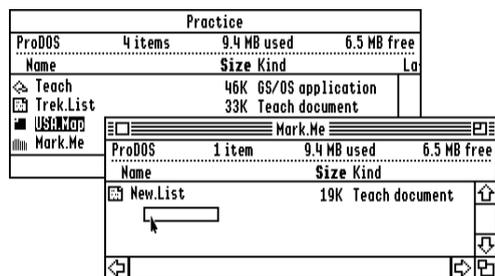
- 2 Without making any changes to the document, choose **Quit** from the File menu to return to the Finder.

Notice that the size of the New.List document is still only 19K. When you opened the New.List document, HardPressed expanded the file into its *file cache*, a place in memory used to store files that HardPressed is working on. Teach then read the file's data from the file cache, while the original file remained compressed on the disk.

## Moving and Copying Files to Marked Folders

You've learned that when a file is created or saved in a marked folder, it gets compressed. What happens if you use the Finder to move an uncompressed file to a marked folder?

- 1 Open the **Mark.Me** folder if it isn't already open.
- 2 Drag the **USA.Map** icon from the Practice window to the Mark.Me window. Notice what happens.



That's right—HardPressed does not compress the file. Why? Because the Finder is only *moving* the file instead of copying it. When the Finder moves a file from one folder to another on the same disk, it does not need to open, read, and write the file's contents—it just updates the two folders to show which folder contains the file you've moved. Because no new or changed file is created, no compression is done.

If you *copy* a file from another disk into the Mark.Me folder, the Finder would need to open, read, and write the file's contents to create the copy. In this case, HardPressed would then compress the new copy of the file. To see how this works, continue with the following step. If you have only one disk drive (the drive containing your HardPressed practice disk), skip ahead to the *Manual Compression* section.

- 3 Try dragging a file from the Practice folder to another disk, such as your RAM disk, then drag it from the other disk into the Mark.Me window.



After you drag the file to the Mark.Me folder, the filling document cursor appears while HardPressed compresses the file.

## Manual Compression

This section describes how to compress and expand files you select in the Finder, using new commands in the Finder's Extras menu. You can use these commands to compress and expand files at any time—even in unmarked folders, or when the HardPressed control panel is set to Inactive.

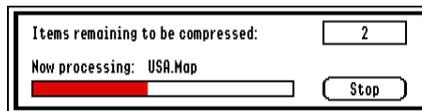
### Compressing and Expanding Files in the Finder

You'll begin by compressing all of the files in the Practice folder.

- 1** In the HardPressed disk window, click the **Practice** folder to select it.
- 2** Choose **Compress** from the Finder's Extras menu.



HardPressed compresses all files in the Practice folder. A dialog box indicates the progress of the compression.



- 3** Open the **Practice** folder if it isn't already open.

Notice that the file sizes are smaller than they were before. The table below shows what the file sizes should look like before and after compressing the folder and the approximate savings.

File Name	Size Before	Size After	Savings	Compression
Teach	47.8K	40.6K	7.2K	15%
Trek.List	31.4K	17.9K	13.6K	43%
USA.Map	13.4K	6.9K	6.4K	47%

You will get different rates of compression for different kinds of files depending on the data in each file. The table shows that while the the Teach application is about 15% smaller, the USA.Map file is about 47% smaller and the New.List file is about 43% smaller. Generally, you will find that graphic files and files containing text can be compressed smaller than other types of files.

## Checking Compression Information

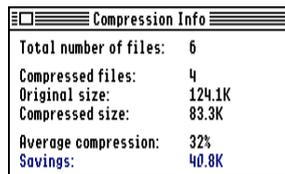
This section shows you how to get compression information about one or more files using the **Compression Info** command in the Finder.

- 1 Click the **USA.Map** icon to select it, then choose **Compression Info** from the Extras menu.

Compression Info	
Total number of files:	1
Compressed files:	1
Original size:	13.4K
Compressed size:	6.9K
Average compression:	47%
Savings:	6.4K
Data fork:	Standard LZW

A window appears, showing the original and compressed size of the file. The window also shows how much space was saved by compressing the file and the compression module used.

- 2 Click the window's close box to close the window.
- 3 Click the **Practice** folder in the HardPressed disk window to select it, then choose **Compression Info** from the Extras menu.



Compression Info	
Total number of files:	6
Compressed files:	4
Original size:	124.1K
Compressed size:	83.3K
Average compression:	32%
Savings:	40.8K

When you select more than one file and choose **Compression Info**, the window shows the compression statistics for *all of the selected files*. It shows the total number of files selected, the number of compressed files in the selection, the original and compressed size of the compressed files, the average compression of all the compressed files, and the total amount of space saved by compressing. The window does not show the compression module used when you select multiple files because different files may have been compressed with different modules.

- 4 Click the window's close box to close the window.

## Where to Go Next

Congratulations! You have learned how to use the primary features of HardPressed. The next two chapters go into detail about the features you learned about in this chapter.



- Chapter 4, *The HardPressed Control Panel*, explains in greater detail how to mark and unmark folders. It also shows you how to use other options in the HardPressed control panel.
- Chapter 5, *The HardPressed Finder Extension*, provides a reference to the commands in the Finder's Extras menu.



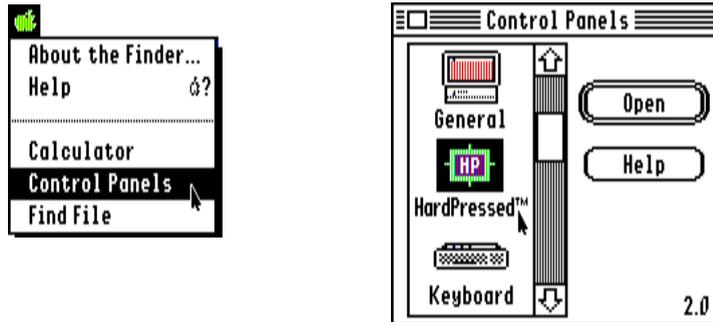
# FOU

*This chapter describes the options in the HardPressed control panel device. It shows you how to mark and unmark folders, choose a compression profile, choose a folder to hold temporary files, change the size of the file cache, and set other options.*

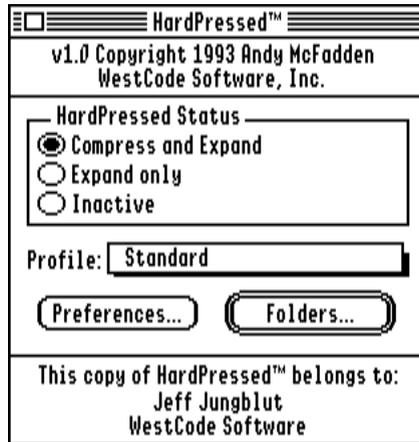
## Using the HardPressed Control Panel

The settings you choose in the HardPressed control panel determine how HardPressed compresses and expands files. With the control panel you can select which folders are automatically compressed, where temporary files are stored, and how much memory HardPressed uses for its built-in file cache.

You access control panels by choosing Control Panels from the Apple menu. In the scroll box at the left of the control panel window are various icons representing each control panel device.



To open the HardPressed control panel, click the scroll arrow to move down the list until you see the HardPressed icon. (You can also select the icon by typing the first few letters of its name.) To open the icon, click it once to select it and then click Open, or double-click the icon. The HardPressed window appears.



To choose an option, use the mouse or type the option's keyboard equivalent:

- ⌘-C Compress and Expand
- ⌘-E Expand only
- ⌘-I Inactive
- ⌘-S Standard profile
- ⌘-P Preferences
- ⌘-F Folders

Each feature is explained in the following sections.

## Changing HardPressed Status

The three options in the HardPressed Status box let you control how HardPressed operates. You can have HardPressed automatically compress and expand files as you save and open documents; automatically expand files, but not compress; and leave files as they are.

## Compressing and Expanding Files Automatically

If you select **Compress and Expand**, HardPressed compresses and expands files automatically as you open and save documents and applications. This is the setting you're likely to use most often.

When you open an application or document that's been compressed, HardPressed expands the file into its file cache or temporary folder. The application that opened the document then reads the file's contents from the expanded copy. When you close the document, HardPressed deletes the expanded file, leaving only the original, compressed file.

When you save a document into a folder that you have marked for compression, HardPressed first compresses the saved file into its file cache or temporary folder, then replaces the original file with the compressed copy.

## Expanding Automatically, but not Compressing

When you select **Expand only**, HardPressed expands any compressed files that you open or copy. No compression is done when you save a file in a folder you have marked for compression; files are always saved uncompressed.

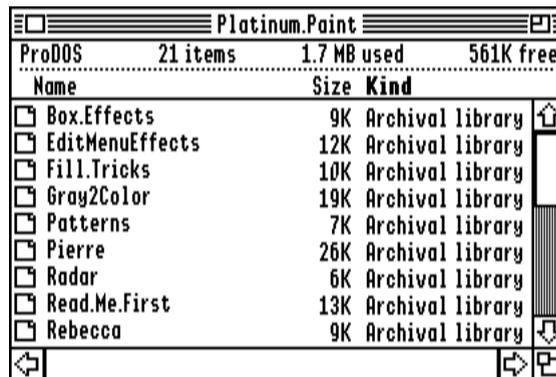
Use this option when you want to work with a compressed file, but you don't want to wait for the file to be re-compressed each time you save it.

While no automatic compression occurs when this option is selected, you can still compress files manually using the **Compress** command in the Finder's Extras menu. For information about the HardPressed commands in the Extras menu, see *The HardPressed Finder Extension* on page 53.

## Turning Off Automatic Compression and Expansion

When **Inactive** is selected, HardPressed does not automatically compress or expand files. Select this option when you want to copy compressed files in the Finder. This makes copying considerably faster, because you won't have to wait for HardPressed to expand the file, let the Finder copy it, then compress the new copy.

When HardPressed is inactive, compressed files appear as “archival library” files in the Finder instead of their regular type.



Platinum.Paint			
ProDOS	21 items	1.7 MB used	561K free
Name	Size	Kind	
Box.Effects	9K	Archival library	↑
EditMenuEffects	12K	Archival library	
Fill.Tricks	10K	Archival library	
Gray2Color	19K	Archival library	
Patterns	7K	Archival library	
Pierre	26K	Archival library	
Radar	6K	Archival library	
Read.Me.First	13K	Archival library	
Rebecca	9K	Archival library	↓



### Note

#### **You cannot open compressed files when HardPressed is inactive.**

Because compressed files appear as archival library files when HardPressed is inactive, your applications will not list compressed files in the standard Open File dialog box. Before accessing a compressed file, you must make HardPressed active.

To make HardPressed active, you can select the **Compress and Expand** or **Expand only** option in the control panel. You can also change the status of HardPressed using the HardPressed Control desk accessory in the Classic Desk Accessory menu. For

information about this desk accessory, see *The HardPressed Control Desk Accessory* on page 59.

When HardPressed is inactive, you can still compress and expand files manually using the **Compress** and **Expand** commands in the Finder's Extras menu. For information about the HardPressed commands in the Extras menu, see *The HardPressed Finder Extension* on page 53.



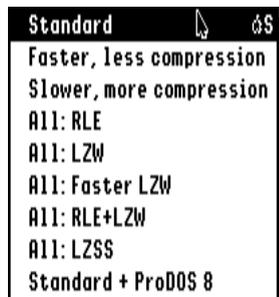
### Note

**Finder windows are not updated when you change the active status.**

If you have a Finder window open that contains compressed files, and you change the active status of HardPressed, the Finder won't update the display of file types until you close and re-open the window.

## Choosing a Compression Profile

To specify how you want HardPressed to compress files, you can choose one of several compression *profiles*. Choosing a profile allows you to select greater compression with a loss of speed, or greater speed with less compression. The **Standard** profile setting is best for most uses and you probably won't need to change it.



Each profile contains a list of file types that can be compressed and which compression module to use for each type of file. For example, the **Standard** profile uses the RLE compression module for GS/OS applications, the LZW module for Apple Preferred Format graphic files, and no compression for ProDOS 8 files. You don't really need to know which modules are used, but if you're curious, see the tables beginning on page 79.

The **Standard**, **Faster**, **Slower**, and **Standard+ProDOS 8** profiles compress files using a different compression module for each kind of file. The profiles beginning with **All** compress all files (including ProDOS 8 files) using the same compression module.

All files that you compress (either automatically or manually) are compressed using the active profile, regardless of how they may have been previously compressed. For example, if the active profile is **All: Faster LZW**, and you open a document that was compressed using LZSS, the file will be compressed using Faster LZW (instead of LZSS) when you save it.



### Warning

#### **HardPressed cannot expand files under ProDOS 8.**

If you compress files using an **All** profile or the **Standard+ProDOS 8** profile, the files won't be accessible to ProDOS 8 applications. While using one of these profiles is a good way to archive your seldom-used files, it also means you will have to expand the files manually (using the Finder extension) before you can work with the files in a ProDOS 8 application. (This is why the **Standard**, **Faster**, and **Slower** profiles do not compress ProDOS 8 files.) In addition, files you save under ProDOS 8 are not automatically compressed.

### Strategy for Choosing a Profile

The profile you choose is mostly a matter of personal preference; each has its advantages and disadvantages. The following is our recommended strategy for

compressing your files to get the maximum amount of free disk space, with the minimum amount of time spent expanding and re-compressing files as you use them:

**1** Open the HardPressed control panel.

**2** Choose **All: LZSS** from the Profile pop-up menu.

The LZSS compression module compresses slowly, but it generally provides better compression than the other modules. In addition, files compressed with LZSS expand very rapidly, so it's an excellent profile for compressing GS/OS applications and other files that don't change.

**3** In the Finder, select the files, applications, folders, or disks you want to compress\*. Because LZSS compresses files slowly, the compression will take some time. To start with, select just a few small- to medium-sized files.

**4** Choose **Compress** from the Extras menu.

HardPressed compresses the selected files with the LZSS compression module. You'll end up with a set of highly compressed files.

**5** Choose **Standard** or **Faster** from the Profile pop-up menu.

These profiles are better for day-to-day use because they compress files faster than LZSS. Remember, files compressed with one profile can still be expanded when another profile is active.

**6** Close the HardPressed and Control Panel windows.

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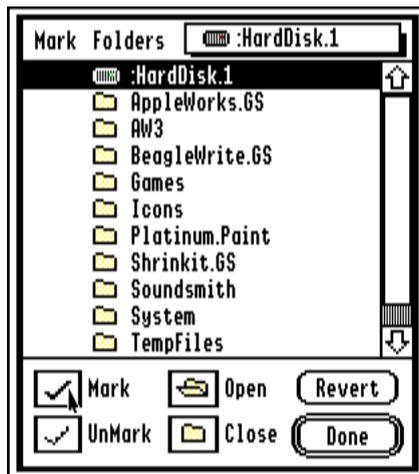
\*For a list of which files in the System folder you can safely compress, see *Compressing System Files* on page 63.

When you close the HardPressed control panel, the settings are saved in the **HP.Prefs** file in your System.Setup folder. HardPressed uses these settings each time your computer starts up.

## Marking Disks and Folders for Automatic Compression

If you want to have files compressed automatically when you save them, you must first tell HardPressed which folders you want compressed. You do this by *marking* folders on each disk. When you save a file in a marked folder, HardPressed compresses the file. When you save a file in an unmarked folder, no compression is done.

To mark folders for compression, click the Folders button in the HardPressed control panel.



The Folders dialog box appears.

## Choosing a Disk

The pop-up menu at the top of the dialog box lists all disks you have online. To switch disks, choose a different disk from the pop-up menu. The list box shows all the folders on the disk you choose.



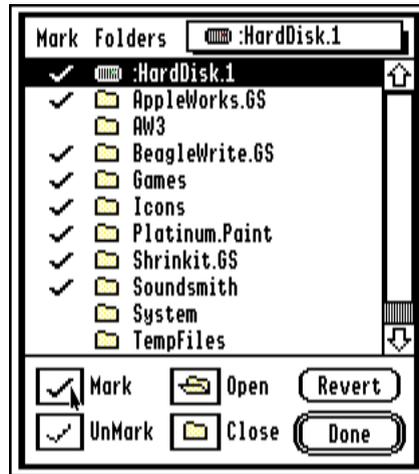
You can mark any kind of disk or folder that GS/OS can write to, such as ProDOS, HFS, and AppleShare. This includes 3.5-inch disks, 5.25-inch disks, hard disks, RAM disks, and file server volumes. You cannot mark DOS 3.3 or Pascal disks because GS/OS cannot write to these kinds of disks.

## Marking and Unmarking Folders

To mark a folder for compression, first select the folder name in the list using the mouse or the arrow keys. To select all the folders, press ⌘-A. You can select a group of folders by holding down the ⌘ key and clicking each folder you want to select.

To mark the selected folders, click the Mark button or press ⌘-M. When you save a file in a marked folder, or in any folder within a marked folder, HardPressed compresses it automatically. Files you copy (but not move) into a marked folder are also compressed.

By allowing you to mark folders, HardPressed lets you decide which folders you want compressed automatically and which folders you'd rather not have compressed.



To remove a mark from a folder, select the folder, then click UnMark (or press ⌘-U). HardPressed won't compress files you save in (or copy to) an unmarked folder.



### Note

#### Marking and unmarking doesn't automatically compress or expand files.

HardPressed compresses files automatically only when you save a file in (or copy a file to) a marked folder. Simply marking a folder won't cause HardPressed to immediately compress all the files in the folder. Likewise, unmarking a folder doesn't cause HardPressed to expand the folder's contents.

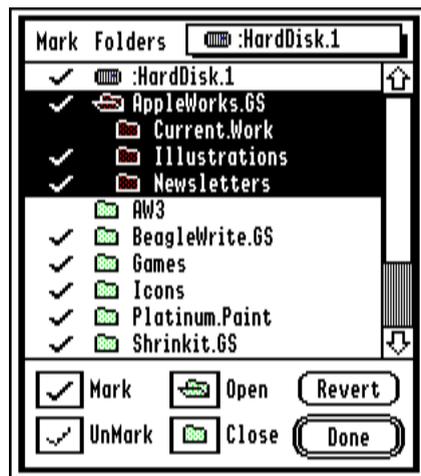
### Marking the Main Folder

The item at the top of the list (**HardDisk.1** in the earlier example) represents the main folder (sometimes called the *root directory*) of the disk. Files in this folder are the files that are shown in the Finder when you open a disk's icon. When the disk's main folder is marked, files will be compressed when you save them in the main folder; however, files in other folders on the disk are compressed based on each folder's marked or

unmarked setting. (Marking the main folder doesn't mean the entire disk is marked, only the main folder is marked.)

## Opening Folders

We mentioned earlier that when a folder is marked, all folders within it are also considered marked. There are situations in which you may want some folders within a marked folder to be unmarked, and HardPressed provides that option. To mark and unmark folders within another folder, select a folder and click Open, press ⌘-O, or double-click the folder name. HardPressed lists all folders within the selected folder and selects them for you.



You can now select, mark, and unmark folders within the opened folder. If any of the folders shown contain more folders, you can open them too.

In the example above, we have marked the open **AppleWorks.GS** folder and two folders within it, **Illustrations** and **Newsletters**. We've left the **Current.Work** folder

unmarked because we frequently open and save files in this folder, and we don't want HardPressed to compress a file each time we save it.

## Closing Folders

To close an open folder, click the folder's name in the list, then click **Close**.



### Note

**In the list of marked and unmarked folders, what you see is what you get.**

Remember that when a closed folder is marked, all folders within it are considered marked. In the previous example, if we closed the **AppleWorks.GS** folder, which is marked, then the unmarked **Current.Work** folder would again be considered marked.

## Restoring the Original Folder Settings

To restore the folder marks to the way they were when you opened the dialog box, click the **Revert** button. HardPressed re-reads the folder settings from the disk and displays the previous settings.

## Saving the New Folder Settings

To save the folder marks for the chosen disk, either choose another disk from the pop-up menu or click **Done**. HardPressed saves the folder marks in an invisible file called **HP.Vol.Prefs** in the main folder of the disk.



### Note

Folder marks on RAM disks are lost when you turn off your computer.

## Creating New Folders

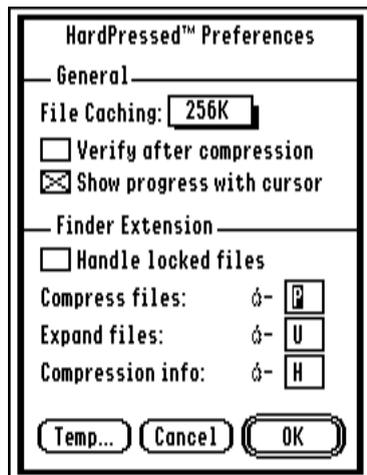
New folders you create inherit the marked status of their parent folder. For example, if you create a new folder within a marked folder, the new folder will also be marked (it doesn't matter if the parent folder is open or closed in the list). The same is true when you copy a folder: if the parent folder containing the new copy is marked, then the new copy will also be marked; otherwise, it will be unmarked.

Any new folders you create in the main folder of a disk will be marked if the main folder of the disk is also marked.

## Setting Preferences

The Preferences dialog box contains options you can set for the file cache, the temporary folder, file verification, Finder key equivalents, and other items.

To open the Preferences dialog box, click **Preferences** in the HardPressed control panel. The Preferences dialog box appears.



## Choosing a Size for the File Cache

The *file cache* is an area of memory set aside to hold files while HardPressed works on them. For example, when you open a compressed file while working in an application, HardPressed temporarily stores the expanded copy of the file in its file cache if there is enough room. If there isn't enough room in the cache for the expanded copy, HardPressed creates a temporary file on a disk. (See *Selecting a Folder for Temporary Files* on page 48.)

The cache size is preset to 256K. You can change the size of the cache from 32K up to 1024K. To change the cache size, choose a new size from the File Caching pop-up menu. To turn the cache off, choose **Off** from the pop-up menu. If you turn the cache off, HardPressed will always use temporary files instead of memory when compressing and expanding files.

Using a larger cache size increases the speed of HardPressed, because a larger cache lets HardPressed compress and expand more (and larger) files in memory instead of in temporary files on a disk. Also, the more memory you allocate to the file cache, the less disk space you'll need for temporary files.

The size you choose for the file cache is a maximum limit. If you set the file cache to 512K, HardPressed *does not* permanently take away 512K from the system; it will use *up to* 512K for caching the files it's working on.

## About the Temporary File Folder

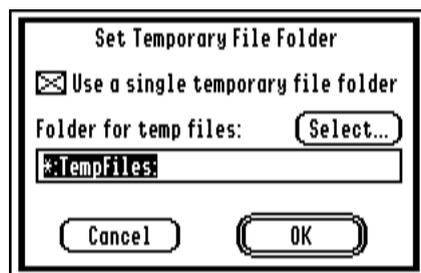
When HardPressed runs out of room for temporary files in its file cache, it stores them on a disk. By default, HardPressed stores its temporary files in a folder named **TempFiles** on your startup disk, but you can change the location if you want.

If you want HardPressed to store its temporary files in the same folder as the file it's working on, deselect the **Use a single temporary file folder** checkbox. However, if

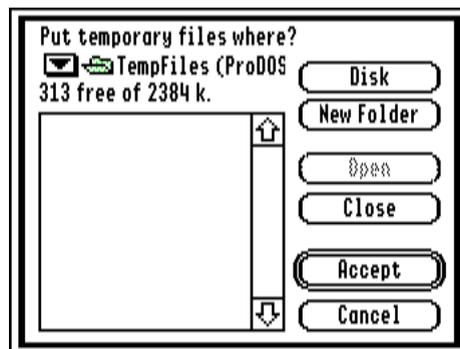
you compress files on slower disks (such as 5.25-inch or 3.5-inch disks), we recommend that you select a single folder on a faster disk (such as a large RAM disk or a hard disk) for holding temporary files.

### Selecting a Folder for Temporary Files

To change the location of the temporary folder, click the **Temp** button or press  $\text{⌘-T}$ . The Set Temporary File Folder dialog box appears.



An easy way to select a folder for temporary files is to use the **Select** button. When you click **Select**, another dialog box appears.



- 1** To select a different disk than the one shown in the pop-up menu, click **Disk**. Choose a disk by selecting the disk's name and clicking **Open**, or by double-clicking the name.
- 2** Use the Open and Close buttons to move to the folder you want HardPressed to use for temporary files.
- 3** If you want to create a new folder on the selected disk, click **New Folder**.
- 4** When the folder you want appears in the pop-up menu at the top of the dialog box, click **Accept**.

The GS/OS pathname of the folder you selected appears in the input box.



### Note

**Here are two suggestions for choosing where temporary files should be stored:**

**(1)** Choose a folder on a fast disk. A folder on a hard disk using a RamFAST controller (if you have one) or a folder on a large RAM disk are ideal. For working with temporary files, our tests show that using a hard disk with a RamFAST controller is actually faster than using a RAM disk.

**(2)** Choose a folder on a disk that has plenty of free space—enough space to hold a file that is 1.5 times as large as the expanded size of your largest compressed file. For example, if your largest compressed file is one megabyte when expanded, choose a folder on a disk that has at least 1.5 megabytes free.

You can also select a new folder for temporary files by typing a complete GS/OS pathname in the input box. The default pathname shown is `*:TempFiles`, which (to GS/OS at least) means the TempFiles folder on the startup disk.

Pathnames must begin with a colon (:), followed by the disk name, and end with a colon. Any folder names included in the pathname must also include a colon. An example would be `:RAM5:TempFiles:`, which means the folder named **TempFiles** on the disk named **RAM5**.



## Warning

**If you type a pathname, be sure it's correct. HardPressed won't check it.**

If you type an incorrect pathname (such as a pathname for a folder that doesn't exist), HardPressed won't tell you right away. However, you will receive a series of error messages when HardPressed is later unable to create a temporary file. In general, it's best to use the Select button to choose a pathname.

## Verifying Files After Compression

Our first reaction to a verify option was that if we thought it was necessary, we wouldn't sell the program. However, some people may not have the same faith in data compression as we do\*, so we provide a way to verify that the compressed copy is good before removing the uncompressed copy.

To turn on file verification, select the **Verify after compression** checkbox. When verification is turned on, HardPressed goes through an extra step after it finishes compressing a file: it expands the file again, verifying that the data that it expands matches the data in the original file exactly.

The comparison is done by computing a CRC (Cyclic Redundancy Check) before compression and after expansion. When verifying, the file is expanded in memory but not stored on disk. This makes the verification pass fairly fast, but compressing a file with verification turned on can still take up to twice as long as it would to compress the file without verification.

You can also turn the verification option on or off using the HardPressed Control desk accessory. See *The HardPressed Control Desk Accessory* on page 59.

---

\* There are also some people who still believe the Earth is flat. There may or may not be any correlation between the two groups.

## Showing Progress in the Mouse Cursor



When HardPressed is working on a file, it shows its progress by changing the mouse cursor to a document icon that empties (while compressing a file) or fills up (while expanding). To turn this feature off, deselect the **Show progress with cursor** checkbox. When the feature is turned off, the standard watch cursor appears whenever HardPressed expands or compresses a file.

## Choosing How to Handle Locked Files

When you use the Finder extension to expand a locked file, HardPressed will expand the locked file, unlock the original file, replace it with the expanded file, then lock the new, expanded file. If you don't want HardPressed to change locked files at all, deselect the **Handle locked files** checkbox. When this option is turned off, you must manually unlock a locked file before you can expand it. (You can use the **Icon Info** command in the Finder's Special menu to lock and unlock files.) Also, HardPressed won't automatically compress a locked file if this option is turned off.

For more information about the commands in the Finder's Extras menu, see *The HardPressed Finder Extension* on page 53.

## Changing Key Equivalents for the Finder Extension

Each HardPressed command in the Finder's Extras menu has a keyboard equivalent. You can change the key used for each command by typing different letters in the boxes. The default key equivalents are:

- |     |                  |                          |
|-----|------------------|--------------------------|
| ⌘-P | Compress files   | (P for Pack)             |
| ⌘-U | Expand files     | (U for Unpack)           |
| ⌘-H | Compression info | (H for HardPressed Info) |



For more information about the commands in the Finder's Extras menu, see *The HardPressed Finder Extension* on page 53.

### **Saving Changes to Preferences**

To accept your changes and close the Preferences dialog box, click **OK**. To throw away your changes and close the dialog box, click **Cancel**.

The settings in the Preferences dialog box are stored in the **HP.Prefs** file, which you can find in the **System.Setup** folder inside your **System** folder.

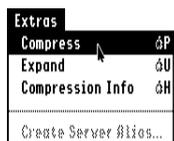


# FIVE

*This chapter describes the three HardPressed commands in the Finder's Extras menu. You can use these commands to compress, expand, and get compression information on files you select in the Finder.*

## About the HardPressed Finder Extension

The HardPressed Finder extension is a small piece of software that allows you to access the compression and expansion features of HardPressed from within the Finder. The Finder extension installs three new commands in the Finder's Extras menu: **Compress**, **Expand**, and **Compression Info**. Each command is described in the following sections.



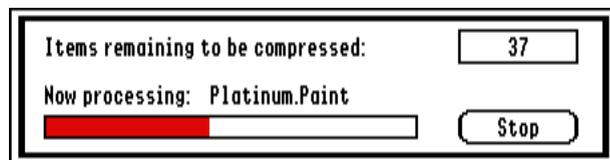
### Compressing Files, Folders, and Disks

The Compress command in the Extras menu allows you to manually compress any selected files, folders, or disks. The compression method used depends on the active profile chosen in the HardPressed control panel.

To compress one or more files:

- 1 Select the icon(s) of one or more files, folders, or disks.
- 2 Choose **Compress** from the Extras menu.

A dialog box indicates the progress of the compression.





## Warning

**If you want to compress files in the System folder, read Appendix A first.**

Certain files in the System folder should not be compressed because they need to load before HardPressed loads when your system starts up. If GS/OS cannot load a file because it's been compressed, unpredictable results may occur.\* For a list of which files in the System folder are safe to compress and which are not, refer to *Appendix A—Compressing System Files* on page 63.

## Expanding Files, Folders, and Disks

If you compress files that you plan to use with ProDOS 8 applications, or you want to give a copy of a compressed file to someone who doesn't own HardPressed, you'll need to first expand the file using the **Expand** command.

The **Expand** command in the Extras menu works like the opposite of the **Compress** command: it allows you to manually expand any compressed files, folders, or disks. The files you select for expansion can be expanded no matter what profile is active in the HardPressed control panel.

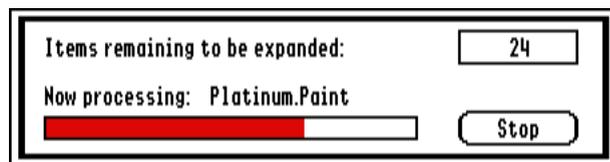
To expand one or more compressed files:

- 1** Select the icon(s) of one or more files, folders, or disks.
- 2** Choose **Expand** from the Extras menu.

A dialog box indicates the progress of the expansion.

---

\*Actually, the results are fairly predictable. The computer will most likely crash.

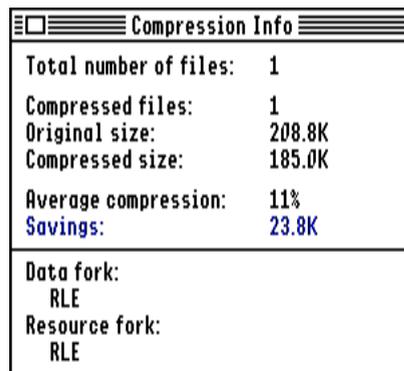
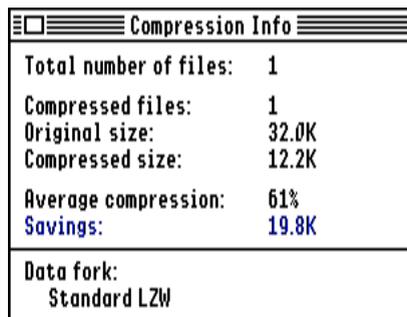


## Checking Compression Information

The **Compression Info** command displays a window containing compression statistics about the selected file or files. To use the Compression Info command:

- 1 Select the icon(s) of one or more files, folders, or disks.
- 2 Choose **Compression Info** from the Extras menu.

A window appears, showing the original and compressed size of the file. The window also shows how much space was saved by compressing the file and the compression module used for both the data fork and resource fork of the file.



If you select more than one file and choose **Compression Info**, the window shows the compression statistics for all of the selected files. It shows the total number of files

selected, the number of compressed files in the selection, the original and compressed size of the compressed files, the average compression of all the compressed files, and the total amount of space saved by compressing. The window does not show the compression module used when you select multiple files because different files may have been compressed with different modules.

Compression Info	
Total number of files:	987
Compressed files:	651
Original size:	7.7MB
Compressed size:	4.7MB
Average compression:	38%
Savings:	2.9MB

- 3 Click the window's close box to close the window.



# SIX

*This chapter describes the options in the HardPressed Control desk accessory. Available in the Classic Desk Accessories menu, HardPressed Control allows you to turn HardPressed on or off from within any GS/OS application.*

## About the HardPressed Control Desk Accessory

HardPressed Control is a classic desk accessory (CDA) that you can access through the text-based Desk Accessories menu. It contains an option that lets you control the status of HardPressed and a file verification option, each of which is also available in the HardPressed control panel.

These options are available to you when you are running any GS/OS application, including text-based applications such as a communications program or a development environment. You can change the options in this desk accessory instead of returning to the Finder and making the changes through the HardPressed control panel.

This desk accessory isn't available when you are in a ProDOS 8 application.

### When to Use the Desk Accessory

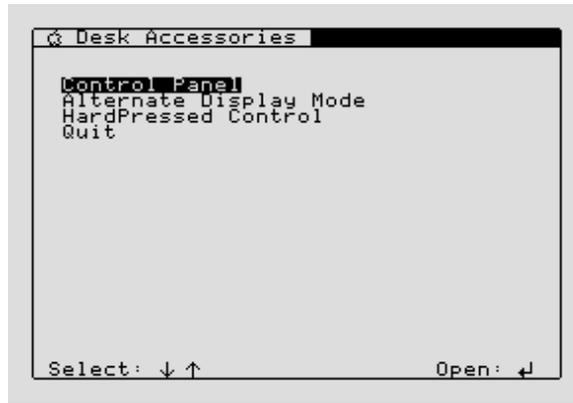
Use the HardPressed Control desk accessory when you want to make HardPressed inactive only temporarily—for example, before copying a batch of compressed files in the Finder. After copying the files, you can quickly make HardPressed active again by opening the desk accessory and changing the status back to **Compress and Expand** or **Expand only**.

After a bit of use, you'll probably find that changing the options in the text-based desk accessory is faster than changing them in the control panel.

### Accessing the Desk Accessory

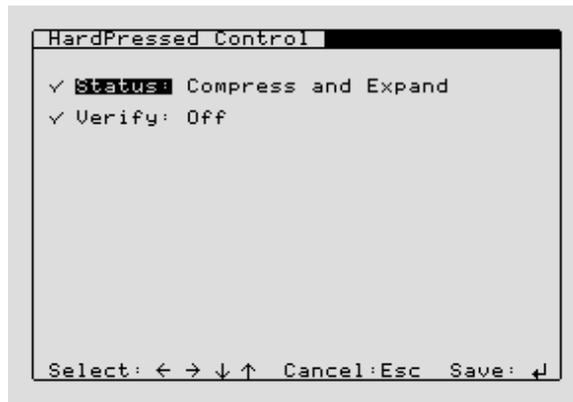
To access the HardPressed Control desk accessory:

- 1 While holding down the  and Control keys, press the Escape key.



The Desk Accessories menu appears.

- 2 Use the up and down arrow keys to select **HardPressed Control**, then press Return.



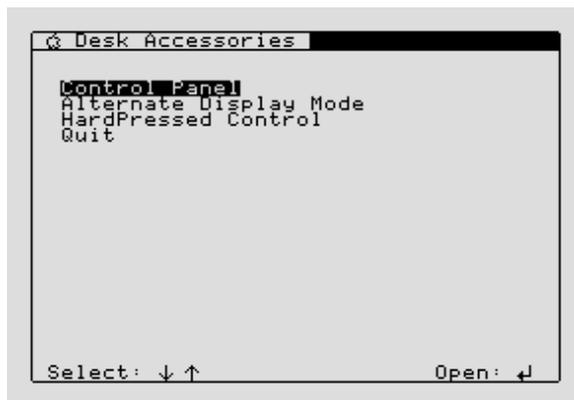
The HardPressed Control menu appears.

- 3 Use the up and down arrow keys to select the option you want to change.

For more information about the HardPressed Status option, see *Changing HardPressed Status* on page 35.

For more information about the Verify option, see *Verifying Files After Compression* on page 50.

- 4 Use the left and right arrow keys to change the option's current setting.
- 5 Press Return to save the new settings.



The Desk Accessories menu reappears.

- 6 Press Escape to select the **Quit** option.
- 7 Press Return to exit the Desk Accessories menu and return to your application.

The changes you make in the HardPressed Control desk accessory are only temporary. When you restart your computer, the HardPressed Status and Verify options are restored to the settings you had previously chosen in the HardPressed control panel.

# A

*If you want to compress files in your System folder or make a compressed system disk, this appendix explains which files you can compress and which you can't.*

## Compressing System Files

While HardPressed allows you to compress any files on your disks, there are certain files in your System folder you should not compress. Because these files load before HardPressed loads when your computer starts up, GS/OS won't recognize them if they are compressed. The following list summarizes which files you should not compress.

- ProDOS
- System:Error.Msg
- System:GS.OS
- System:GS.OS.Dev
- System:Start
- System:Start.GS.OS
- System:Drivers: <All Files>
- System:FSTs: <All Files
- System:System.Setup: <All Files>

You can safely compress files in the CDevs, Desk.Accts, FinderExtras, Fonts, Sounds, and Tools folders. You can also compress the P8 and Finder applications if you want. For best performance, compress files in your System folder using the **All: LZSS** profile.

Do not compress the program named Start. You can compress Start only if you rename it to something else (such as Finder) after installing SetStart and a new Start program.

If you want to create a bootable 800K disk with HardPressed installed, the following table lists the minimum set of files to install. You can also use the Install program to create a compressed system disk. Make sure HardPressed is inactive before using the Install program or else HardPressed will expand all the files copied during installation.

File Name	Compress?
ProDOS	No
BASIC.System	No
<b>Icons</b>	
FType.Apple	Yes
<b>System</b>	
Error.Msg	No
Finder	Yes
GS.OS	No
GS.OS.Dev	No
P8	Yes
Start	No
Start.GS.OS	No
<b>CDevs</b>	
HardPressed.CDV	Yes
Printer	Yes
SetStart	Yes
Time	Yes
<b>Desk.Accts</b>	
ControlPanel	Yes
HardPressed.CDA	Yes
<b>Drivers</b>	
AppleDisk3.5	No
AppleDisk5.25	No
Console.Driver	No
<b>FinderExtras</b>	
HardPressed.FXT	Yes
<b>Fonts</b>	
FastFont	Yes
<b>FSTs</b>	
Char.FST	No
Pro.FST	No
<b>System.Setup</b>	
HardPressed	No
HP.Prefs	No

File Name	Compress?
Resource.Mgr	No
Sys.Resources	No
Tool.Setup	No
TS2	No
TS3	No
<b>HP.Modules</b>	
cd.ahuff	No
cd.crc16	No
cd.diff	No
cd.lzss	No
cd.lzw	No
cd.rle	No
P.all.flzw	No
P.all.lzss	No
P.all.lzw	No
P.all.rle	No
P.all.rlelzw	No
P.Faster	No
P.Smaller	No
P.StdProDOS	No
<b>Tools</b>	
Tool014	Yes
Tool015	Yes
Tool016	Yes
Tool018	Yes
Tool019	Yes
Tool020	Yes
Tool021	Yes
Tool022	Yes
Tool023	Yes
Tool025	Yes
Tool027	Yes
Tool028	Yes
Tool034	Yes



# B

*This appendix explains some common problems and their solutions. It explains error messages you may encounter and lists programs that may not work correctly while HardPressed is active.*

## Trouble-shooting and Error Messages

This appendix contains answers to questions and problems you may have regarding HardPressed. It also includes a description of the GS/OS error messages you may encounter while using the program.

### Disabling HardPressed at Startup

If you want to disable HardPressed for any reason, there are two ways to do it.

- To temporarily turn off HardPressed when your system starts up, press **H** when the GS/OS startup screen appears. An X appears through the HardPressed icon to show that HardPressed isn't loaded. HardPressed will be loaded the next time you restart your computer.
- To permanently disable HardPressed, click the HardPressed icon in the System.Setup folder (inside your System folder), then choose **Icon Info** from the Special menu. Deselect the **Active** checkbox, then restart your computer. HardPressed won't load at startup until you re-select the **Active** checkbox in the Icon Info window.

### Questions and Answers

- Q.** Sometimes when I choose **Icon Info** in the Finder, HardPressed expands the file. Why?
- A.** Some files have version information stored in the resource fork. For example, getting Icon Info on the HardPressed CDev will display the full name of the program and a copyright notice. To get at this information, the resource fork must be expanded first.

- Q.** I copied the **All: Adaptive Huffman** profile out of the Goodies folder, but I can't seem to compress anything with it.
- A.** The profiles tell HardPressed which modules to use. If the needed modules aren't loaded, HardPressed can't use them. By default, the Adaptive Huffman and Differential modules are marked as Inactive in the Finder. You can enable them with the Finder's **Icon Info** command (select the module's icon in the System:System.Setup:HP.Modules folder, choose Icon Info in the Special menu, then deselect the **Inactive** checkbox). Once you have activated the module, it will be available every time you start your computer, and HardPressed will load it when you restart or reopen the HardPressed control panel.
- Q.** When compressing a file with the Finder extension, why does the little document icon empty and then fill up?
- A.** You have Verify mode turned on. The cursor empties during compression, then fills during the verify. When expanding, it just fills.
- Q.** An X appears through the HardPressed icon each time my computer starts up, but I didn't press H to keep it from loading.
- A.** Either HardPressed or your system software is not installed correctly. You can usually fix the problem by re-installing HardPressed. If HardPressed still doesn't load after re-installing it, re-install System 6, then re-install HardPressed.
- Q.** I tried to compress some files in the Finder, but I get a message saying that HardPressed couldn't find anything to compress.
- A.** HardPressed will not compress a file if any of the following are true:
- The file is already compressed.
  - The file is less than 512 bytes in size.

- The file is locked and the **Handle locked files** checkbox isn't selected in the HardPressed control panel (see page 51).
- The type of file selected can't be compressed by the active profile. (For example, the Standard profile does not compress ProDOS 8 files.)

**Q.** I compressed a file in the Finder, but when I select it and choose **Compression Info**, it says it isn't compressed.

**A.** The file is not compressible. For example, compression may have actually made the file larger; in these cases, HardPressed keeps the original file and discards the larger, "compressed" copy.

**Q.** I selected **Inactive** mode in the HardPressed control panel, but when I restart, it comes up in **Expand only** mode.

**A.** HardPressed does not set the mode to Inactive in the HP.Prefs file. This is because you may have compressed files in the System folder—if HardPressed is inactive when your computer starts up, it won't be able to load the compressed system files.

## Error Messages

The following are some GS/OS error messages you may encounter while using HardPressed. If you need to call WestCode Customer Support about an error message not listed here, please write down the error number before calling.

### Error \$0201: Out of Memory

HardPressed uses more memory than GS/OS alone does (which goes without saying), so you may run out of memory sooner. To reduce the amount of memory HardPressed uses, try lowering the size of the file cache in the HardPressed control panel, or turn the file cache off. See *Choosing a Size for the File Cache* on page 47 for more information.

If decreasing or turning off the file cache doesn't help, try removing desk accessories that you don't use very often. (You can make desk accessories inactive using the Icon Info command in the Finder). Inactive desk accessories don't take up any memory.

If the first two solutions don't work, we recommend increasing the amount of memory in your Apple IIGS.

### **Error \$004A: Bad Version**

If a HardPressed file becomes damaged (perhaps because a program started writing data directly to the disk, or a crash occurred during an update), or a module needed to uncompress it is missing, GS/OS will return error \$4A (Bad Version). While we're not really using the error code in the way it was intended, the message conveyed is the same: HardPressed can't read this file, and nothing the application can do will change it.

### **Error \$0045, \$0046: Path Not Found (Can't create temp file)**

HardPressed is unable to create a temporary file. This will happen if the pathname for the temporary folder is set incorrectly in the HardPressed control panel, or if the volume containing the temporary folder is offline. This message usually appears in a HardPressed warning dialog box, not as a GS/OS error message. See *Selecting a Folder for Temporary Files* on page 48 for more information.

## **Application Limitations**

Because of the way HardPressed works, there are some programs with which it may not be 100% compatible. The following sections list some incompatible programs we are aware of. For the most recent compatibility notes, read the **ReadMe** file on your HardPressed disk.

## ProSel-16

Many ProSel-16 utility functions read the disk directly, instead of using the typical GS/OS calls to read and write files. This bypasses HardPressed, so ProSel can become confused when dealing with compressed files while HardPressed is active. To avoid these problems, you must use the HardPressed control panel or the HardPressed Control desk accessory to make HardPressed inactive before using the Utilities, Backup/Restore, Volume Repair, or Volume Optimization functions.

We have used ProSel-16 as a program launcher throughout the development of HardPressed without any problems.



### Warning

**Make HardPressed inactive before using any of the ProSel-16 file or disk utilities.**

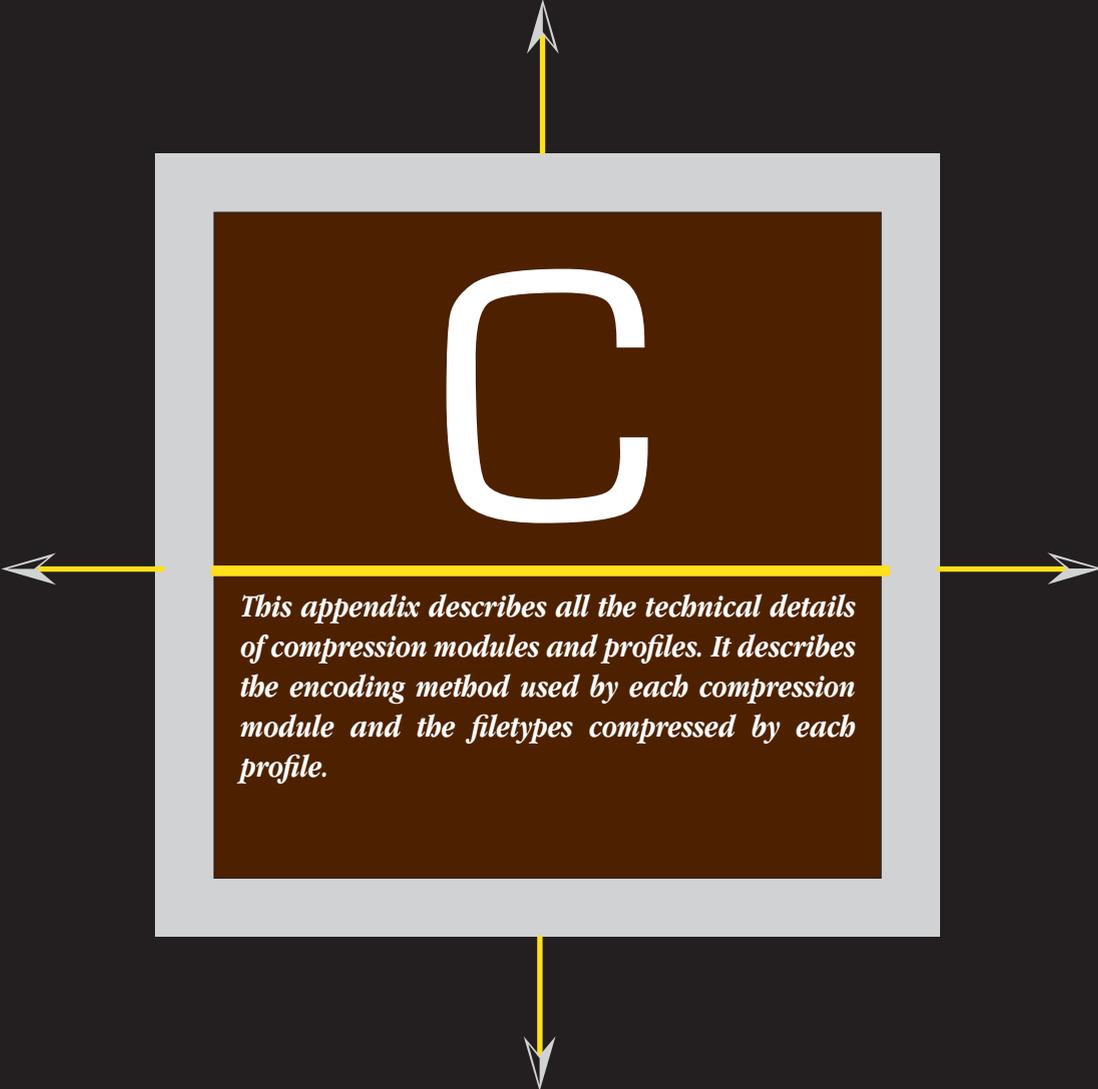
If you use the Utilities, Backup/Restore, Volume Repair, or Volume Optimization menus while HardPressed is active, your data may become corrupted. Do not try to copy compressed files with ProSel's utilities while HardPressed is active. Always make HardPressed inactive before using the ProSel-16 utilities.

## GNOBug

GNOBug (software that allows GNO programmers to use GSBug) is used to hook GNO in above GSBug. However, hooking GNO above HardPressed can cause problems. The correct order is HardPressed first, GNOBug second, and GSBug third.

## Old ORCA and APW Shells

The CAT command will show the files as HardPressed (LBR) files instead of their expanded file type, but all commands and utilities will function without any problems.



C

*This appendix describes all the technical details of compression modules and profiles. It describes the encoding method used by each compression module and the filetypes compressed by each profile.*

## Technical Information

This appendix discusses the technical aspects of the compression modules and profiles included with HardPressed. In the following sections, you'll learn which modules and profiles are best for compressing the different kinds of files you use. You don't need to read this to use HardPressed, but it's informative reading nonetheless.

We designed HardPressed to be easily extensible. Instead of keeping the compression modules and profiles built into HardPressed, they are stored in separate files inside the HP.Modules folder in your System.Setup folder. As new compression modules and profiles are produced by WestCode and third-party developers, you can take advantage of their functionality by simply dragging them to your HP.Modules folder.

### Compression Modules

HardPressed uses a variety of compression modules to process different kinds of data. The tables on the following pages tell you about each module's advantages and disadvantages. Each table includes the following:

- the encoding method and the compression module's file name in System.Setup
- a description of the encoding method
- the best- and worst-case kinds of files
- the encoding (compressing) speed and decoding (expanding) speed
- the compression ratio achieved
- the memory requirement

The encoding and decoding speeds for each module are relative to the other modules.

<b>16-bit CRC-CCITT (cd.crc16)</b>	Encoding speed: excellent	Compression ratio: adds two bytes to the end of the file
	Decoding speed: excellent	Memory requirements: no internal buffers, 8K output buffer
<p>This module computes a 16-bit CRC (Cyclic Redundancy Check) on the data. A CRC is a value obtained by performing computations on every byte of data in a file. If any part of a file is changed, the CRC will be different. This allows you to be sure that the file you are expanding is identical to the file you compressed.</p> <p>CRC doesn't actually change any of the data, so it processes very quickly. The CRC is stored at the very end of the file, so the file will grow by two bytes.</p>		

<b>Differential (cd.diff)</b>	Encoding speed: excellent	Compression ratio: N/A
	Decoding speed: excellent	Memory requirements: no internal buffers, no output buffer
<p>Differential encoding changes the file so that the value of each byte is the difference between it and the previous byte, so "1 2 3 4" becomes "1 1 1 1". Differential encoding doesn't change the size of the data; it is intended to be run as a pre-processor before compression.</p> <p>Differential encoding followed by full adaptive Huffman gives good compression. Faster adaptive Huffman will not do very well.</p> <p>Best case: sound files and musical instruments.</p> <p>Worst case: anything else.</p>		

<b>RLE—Run Length Encoding (cd.rle)</b>	Encoding speed: very good	Compression ratio: poor
	Decoding speed: very good	Memory requirements: no internal buffers, 8K output buffer
<p>RLE passes data through until it sees the same byte repeated several times in a row. It changes the “run” of characters into a three-byte code.</p> <p>RLE is useful mostly as a preprocessor before compressing with LZW or LZSS. In the best case, it makes the file smaller before LZW gets it, and it will prevent the data structures used by LZ compressors from filling up with long runs of the same character. RLE is commonly used in programs which give a slight amount of compression with no perceptible reduction in speed, such as Apple’s Archiver backup program.</p> <p>Best case: files which have characters repeated several times in a row, such as APW source files (which have lots of spaces in them) and applications (which often have large regions filled with zeroes). A large file filled with zeroes compresses tightly.</p> <p>Worst case: English text. Since RLE replaces characters with a three byte code, only runs of four characters can be compressed. This is rare in most documents that are intended for human use.</p>		

<b>Adaptive Huffman (cd.ahuff)</b>	Encoding speed: poor	Compression ratio: fair
	Decoding speed: poor	Memory requirements: 4K internal buffer, 4K output buffer
<p>This is a form of Huffman encoding that adapts to the input. The compressor replaces frequent characters with short codes and infrequent characters with longer codes.</p> <p>Adaptive Huffman doesn’t do very well on most files because the data structure update routines are slow and it has to deal with input and output on a bit-by-bit basis.</p> <p>Best case: files composed primarily of a small set of characters. It does reasonably well on English text.</p> <p>Worse case: files with an even distribution of characters.</p>		

<b>Faster Adaptive Huffman (cd.ahuff)</b>	Encoding speed: fair	Compression ratio: fair
	Decoding speed: fair	Memory requirements: 4K internal buffer, 4K output buffer
<p>This compressor is similar to adaptive Huffman, except it stops adapting after the first 4K of input data. Since most of the time is spent manipulating the data structures, compression is faster (though not quite as good).</p> <p>For English text files, this does about as well as adaptive Huffman. For other kinds of files (applications) it doesn't do nearly as well, and for some (differentiated sound files) it tends to fail miserably.</p> <p>Best case: same as adaptive Huffman.</p> <p>Worse case: same as adaptive Huffman, with the additional handicap of files which change drastically after the first 4K.</p>		

<b>12-bit LZW (cd.lzw)</b>	Encoding speed: fair	Compression ratio: very good
	Decoding speed: fair	Memory requirements: 30K internal buffer, 8K output buffer
<p>12-bit LZW uses the Lempel-Ziv-Welch encoding method, with a maximum code size of 12 bits.</p> <p>12-bit LZW is one of the most widely used compression methods. Variants of LZW can be found in almost all archiving programs (ShrinkIt compresses files with RLE and LZW). The reason for this is that it typically compresses text files by 45-50%, and can work quickly and with a small amount of memory. 12-bit LZW isn't very fast on an Apple IIgs, but it can be sped up with some simple tricks (see Faster 12-bit LZW).</p> <p>Best case: files with repeated strings, such as English text. LZW replaces common strings with symbols.</p> <p>Worst case: random data. LZW doesn't do well on raw sound files or data which has already been compressed (except for RLE and the like).</p>		

<b>Faster 12-bit LZW (cd.lzw)</b>	Encoding speed: fair	Compression ratio: good
	Decoding speed: good	Memory requirements: 30K internal buffer, 8K output buffer
<p>This compressor is very much like 12-bit LZW, but it's enhanced to give better performance at the expense of slightly less compression.</p> <p>Faster LZW uses the same memory and most of the same routines that the standard LZW compressor does. The only real difference is that the output codes are fixed at 12 bits instead of variable width, so the routines which deal with the codes are much simpler.</p> <p>Best case: see 12-bit LZW.</p> <p>Worst case: see 12-bit LZW.</p>		

<b>LZSS (cd.lzss)</b>	Encoding speed: very poor	Compression ratio: very good
	Decoding speed: very good	Memory requirements: 28K internal buffers, 8K output buffer
<p>LZSS is a different Lempel-Ziv method which takes six to ten times as long as LZW to compress data, but expands twice as fast. The compression is generally better than what LZW achieves.</p> <p>LZSS can't build strings as long as LZW can, but it builds longer strings sooner. The 12-bit limitation on LZW prevents it from doing as well as LZSS. The high speed of expansion (more than twice as fast as LZW) makes this an ideal choice for files which are changed rarely or not at all, such as applications, Super Hi-Res screens, text files, help files, and so on.</p> <p>Best case: files with repeated strings of characters.</p> <p>Worst case: random or already compressed data.</p>		

## Profiles

A profile tells HardPressed which compression module to use when compressing a file. There are two general kinds of profiles. The “intelligent” profiles, such as **Standard** or **Faster**, tell HardPressed to use a certain compression module depending on the ProDOS file type of the file being compressed. The “all” profiles, such as **All: LZSS**, use a single compression module to compress all files (regardless of file type).

The tables on the following pages describe the types of files compressed by each profile. Each table contains a general category of file types (such as sound files or uncompressed graphic files), a list of the ProDOS file types in the category, and the compression modules used based on the “intelligent” profile setting (Standard, Faster, or Slower).

The **Standard + ProDOS 8** profile uses the LZW module to compress files in the ProDOS 8 category or Generic Text or Binary category.

<b>Unknown or unassigned</b>	Faster: None	Standard: None	Slower: None
\$00 (NON), \$0D, \$0E, \$17, \$18, \$1C, \$1D, \$1E, \$1F, \$23-28, \$2F-3F, \$44-4F, \$53, \$60-6A, \$6C, \$70-9F, \$A1-AA, \$AE-AF, \$BE, \$C4, \$CB-D4, \$D9, \$DA, \$DC, \$DD, \$DE, \$DF, \$E1, \$E3-ED, \$F1, \$F2, \$F3, \$F4, \$F5, \$F6, \$F7, \$F8			

<b>Pascal, CP/M, Apple ///</b>	Faster: None	Standard: None	Slower: None
\$02 (PCD), \$03 (PTX), \$05 (PDA), \$07 (FNT), \$09 (BA3), \$0A (DA3), \$0B (WPF), \$0C (SOS), \$10 (RPD), \$11 (RPI), \$12 (AFD), \$13 (AFM), \$14 (AFR), \$15 (SCL), \$20 (TDM), \$21 (???) (Instant Pascal source), \$22 (???) (UCSD Pascal volume), \$29 (???) (Apple /// SOS dictionary), \$EF (PAS)			

<b>ProDOS 8</b>	Faster: None	Standard: None	Slower: None
\$08 (FOT), \$16 (PFS), \$19 (ADB), \$1A (AWP), \$1B (ASP), \$2A (8SC), \$2B (8OB), \$2C (8IC), \$2D (8LD), \$2E (P8C), \$41 (OCR data), \$43 (Peripheral data), \$5F (FIN), \$6B (BIO), \$6D (TDR), \$6E (PRE), \$6F (HDV), \$A0 (WP), \$DB (DBM), \$EE (R16), \$F0 (CMD), \$FA (INT), \$FB (IVR), \$FC (BAS), \$FD (VAR), \$FE (REL), \$FF (SYS)			

<b>Generic text or binary</b>	Faster: None	Standard: None	Slower: None
\$04 (TXT), \$06 (BIN)			

<b>GS/OS Application</b>	Faster: None	Standard: RLE	Slower: LZSS
\$B1 (OBJ), \$B2 (LIB), \$B3 (S16), \$B4 (RTL), \$B5 (EXE), \$BC (LDF)			

<b>Source code</b>	Faster: Faster LZW	Standard: Faster LZW	Slower: LZW
\$B0 (SRC)			

<b>Development utility document</b>	Faster: Faster LZW	Standard: Faster LZW	Slower: LZSS
\$5E (DVU)			

<b>Mixed text and data (WP) files</b>	Faster: Faster LZW	Standard: LZW	Slower: LZW
\$40 (DIC), \$50 (GWP), \$51 (GSS), \$52 (GDB), \$BF (DOC)			

<b>Desktop Publishing</b>	Faster: Faster LZW	Standard: Faster LZW	Slower: LZW
\$54 (GDP)			

<b>Hypermedia/multimedia</b>	Faster: Faster LZW	Standard: LZW	Slower: LZSS
\$55 (HMD), \$5C (MUM)			

<b>Sound files</b>	Faster: None	Standard: None	Slower: Diff+AHuff
\$D6 (INS), \$D8 (SND), Filename.SND			

<b>Compressed data</b>	Faster: None	Standard: None	Slower: None
\$C0/\$8XXX (PNT), \$E0 (LBR), filename.Z, filename.ARC, filename.ZOO, filename.ZIP, filename.SHK, filename.GIF, filename.BXY, filename.JPG			

<b>Finder data</b>	Faster: None	Standard: None	Slower: None
\$42 (FTD), \$CA (ICN)			

<b>GS/OS System data</b>	Faster: None	Standard: None	Slower: None
\$B6 (PIF), \$B7 (TIF), \$B8 (NDA), \$B9 (CDA), \$BA (TOL), \$BB (DVR), \$BD (FST), \$C7 (CDV), \$C8 (FON), \$F9 (OS)			

<b>Uncompressed graphic data</b>	Faster: Faster LZW	Standard: LZW	Slower: LZSS
\$5B (ANM), \$C1 (PIC), \$C2 (ANI), \$C3 (PAL), \$C5 (OOG)			

<b>Allegedly compressed graphic data</b>	Faster: None	Standard: LZW	Slower: LZSS
\$C0/\$0000-\$0003			

<b>Miscellaneous</b>	Faster: None	Standard: None	Slower: None
\$56 (EDU), \$57 (STN), \$58 (HLP), \$59 (COM), \$5A (CFG), \$5D (ENT), \$AB (GSB), \$AC (TDF), \$AD (BDF), \$C6 (SCR), \$D5 (MUS), \$D7 (MDI), \$E2 (ATK)			

<b>Sparse files</b>	Faster: RLE	Standard: RLE + Faster LZW	Slower: RLE + LZW
Not filetype dependent			

<b>Uncompressible files</b>	Faster: None	Standard: None	Slower: None
\$01 (BAD), \$5A/804B, \$5A/804C, \$5A/804D (HardPressed preferences), \$BC/400F, \$BC/C00F (HardPressed compression module), \$C9 (Finder data), \$E0/800D, \$E0/800E, \$E0/800F (HardPressed compressed data)			

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