HP Vectra Disc Cache Program

Be sure you have installed your operating system before using the instructions in this manual. If you have MS-DOS version 3.2, place these pages in the binder entitled *MS-DOS 3.2 Volume 1*, behind the tab labeled "Additional Utilities and Drivers."

If you have a different operating system manual, place these pages in that manual.

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Corrections and Updates

The *HP PC Communicator* magazine provides current information about Hewlett-Packard computers and software. A recent copy was included with your HP Vectra personal computer. Some of the things you can find in *The Communicator* include announcements of software updates, updates to manuals, articles on usage and programming techniques, and answers to frequently asked questions. We recommend that you order a subscription (HP Product Number 45530A/B/C, available in English only).

Table of Contents

Appendix A: Troubleshooting Guide

Appendix B: Error Messages

1 HP Vectra Disc Cache Program

Your computer comes with the HP Vectra Disc Cache Program that is designed to give you optimal system performance with your Hewlett-Packard Vectra computer.

What is Disc Caching?

Disc caching is a process that increases the effective speed at which your computer reads a hard disc. A disc cache automatically keeps copies of recently used data in memory. Your computer retrieves this information from the cache more quickly without having to read the hard disc every time.

When Will Disc Caching Help?

Disc caching will improve your computer's performance. Many applications such as accounting packages, spelling checkers, and data base programs, run faster and more efficiently using disc caching. The improvement you get depends on the way your application accesses the disc, how much data is accessed, and how often.

In What Situations Is Disc Cache Not Appropriate?

There is no disc caching support for computers with only flexible disc drives.

For information about software restrictions (Windows, StarLAN, and PageMaker) refer to the section, "Usage Tips for Specific Situations," in this chapter.

What You Need to Know

To start HP Vectra Disc Cache, you should know the type of memory where you want the cache located, and the size you want the cache to be.

Types of Memory Disc Caching Can Use

The three types of memory where the cache can be located are explained below.

- **Base** memory, also called conventional memory, is memory directly addressable by MS-DOS, maximum 640 KB.
- **Expanded** memory is memory above the 640 KB limit of MS-DOS. This memory is accessed using the LIM (Lotus/Intel/Microsoft) Specification, or the Enhanced Expanded Memory Specification.
- **Extended** memory is memory above 1 MB. It is not directly addressable by applications using MS-DOS. It can be used by HP Vectra Disc Cache, and by programs such as VDISK.

Note

If your HP PC has an 80386 or equivalent microprocessor, (for example, HP Vectra RS) then your system includes memory manager software which can allocate all or part of the **extended** memory as **expanded** memory. We recommend placing HP Vectra Disc Cache in simulated expanded memory in this case.

Copying HP Vectra Disc Cache to Your Hard Disc

If you have an internal hard disc, copy the HP Vectra Disc Cache program onto it. Find the HP Vectra Disc Cache Program Disc, or, if you don't have a separate disc, look on the SETUP and Utilities disc for the HP Vectra Disc Cache Program. Follow the steps below.

1. Insert the disc containing the HP Vectra Disc Cache Program into drive A:. (You may use any of your flexible disc drives. In our example we use drive A:.)

2. At the MS-DOS prompt, type:

   ```
   COPY A:HPCACHE.COM C:\
   ```

   and press Enter. This will copy the HP Vectra Disc Cache into the root directory of your hard disc.

3. Remove the HP Vectra Disc Cache program disc and put it away.

4. Now, type `C:` and press Enter.

Note

If you have only an **external** hard disc, refer to the instructions in the section, "Usage Tips for Specific Situations."

The HP Vectra Disc Cache program is now on your hard disc. When you are ready to run HP Vectra Disc Cache, go to the next section, "Starting Disc Cache" for instructions on using disc caching.

Starting Disc Cache

The following instructions explain the easiest way to set up a disc cache in base, expanded, or extended memory. Read the instructions that apply to the type of memory you intend to use. For best performance, use expanded memory if you have it available.

The instructions below will set up a disc cache which will remain in effect until you turn off your computer.

Setting Up a Disc Cache in Base Memory

To set up a cache in base memory (using the default size of 96 KB), type the following at the MS-DOS prompt:

```
HPCACHE
```

and press Enter.

Setting Up a Disc Cache in Expanded Memory

To easily set up a cache in **expanded** memory (using the default size of 256 KB), type the following at the MS-DOS prompt:

```
HPCACHE /A
```

and press Enter. The /A parameter after the command sets up the disc cache in expanded memory.

Setting Up a Disc Cache in Extended Memory

To easily set up a cache in **extended** memory (using the default size of 256 KB), type the following at the MS-DOS prompt:

```
HPCACHE /E
```

and press Enter. The /E parameter after the command sets up the disc cache in extended memory.

After Setting Up Disc Cache

Once the disc cache has been set up, the computer will perform disc caching without your having to do anything. If you want to change the disc cache size, or have it start automatically when you turn on your computer, read on.

Changing the Cache Size

Because the HP Vectra Disc Cache program does require a certain amount of your computer's memory, there are some cases where your HP Vectra may not have enough memory to use disc caching and still run your applications. In these cases, you will need to adjust the amount of memory allocated for disc caching. If your application does not have enough memory to run, it will display a message on the screen telling you that there is insufficient memory.

For maximum performance, you should make your cache size as large as possible, while still allowing enough memory space for your applications.

- Base memory - if the cache is in base memory, you may specify a size up to 512 KB.
- Expanded or extended memory - if the cache is in expanded or extended memory, you may specify a size up to 1024 KB (1 MB).

How to Specify Cache Size

To specify a cache size different from the default, add the /S parameter to the command line, followed by a colon and the number of KB you want for the cache.

For example, if you want to specify a cache size of 384 KB of expanded memory, your command line would have the following information in it:

```
HPCACHE /S:384 /A
|       |  |   |
|       |  |   '--Specifies expanded memory
|       |  |
|       |  '------Sets up cache of 384 KB
|       |
|       '---------Parameter to specify size
|
'------------------Command to set up disc cache
```

Automatically Starting Disc Cache

A file named AUTOEXEC.BAT (which stands for auto-execution batch) is executed every time you start your computer. If you include the command that starts HP Vectra Disc Cache in your AUTOEXEC.BAT file, it will be automatically started each time you start your computer.

For specific instructions on how to create or edit your AUTOEXEC.BAT file, refer to the "Batch Processing" chapter in the *User's Reference* manual.

If you wish to have a different set of parameters for each of your often used applications, you may wish to create different batch files to customize the cache to run with

each application. The batch file would set up the appropriate size cache before loading the application itself. Refer to the "Batch Processing" chapter in the *User's Reference* manual.

Usage Tips for Specific Situations

This section provides information which may apply to your specific situation.

Using External Hard Discs

External hard disc drives can be used with HP Vectra Disc Cache program. Should you want to use an external hard disc drive, use the following instructions to place a special driver in the CONFIG.SYS file. To install the driver, follow these steps:

1. Copy the file HPCACHE.SYS from the original disc to the root directory of the disc containing your operating system files.

2. Identify the line in your CONFIG.SYS file that specifies the external disc driver (such as HPDISC.SYS) and place the following line directly after it:

   ```
   DEVICE=HPCACHE.SYS
   ```

3. Restart your system.

4. Start HP Vectra Disc Cache as described previously.

Using Disc Cache with Windows

In the following two situations, if your system has only base memory, HP Vectra Disc Cache may not improve your system's performance:

- if you are using Microsoft® Windows™ 2.0 (or later)
- if you are using any version of Microsoft Windows with networking software.

HP recommends using additional memory in these situations. Additional memory offers the best solution because it allows you to take full advantage of the benefits of disc caching with all your application software.

Using Disc Cache with PageMaker

If you are using Aldus PageMaker™ and have only base memory, we do not recommend using HP Vectra Disc Cache unless you purchase additional memory.

Using Disc Cache with Networking

If you are using HP OfficeShare (StarLAN, ThinLAN, or SERIAL Network) and have only base memory, we do not recommend using HP Vectra Disc Cache unless you purchase additional memory.

2 Parameters

The parameters are pre-set to optimize disc cache performance on your HP Vectra Personal Computer for most applications and work loads. However, in some situations additional performance may be achieved by modifying the default parameters. The parameters are explained in the following tables.

How to Specify Parameters

To specify one or more of these parameters, add them to the command line that starts the HP Vectra Disc Cache program. The order of the parameters does not matter.

For example, to set up the cache in expanded memory using all the expanded memory except 512 KB, and prevent HP Vectra Disc Cache from checking for redundant writes, you would type the following command line.

```
HPCACHE /R:512 /A /W-
```

Note

To turn an option "on" specify the letter for that parameter or the letter with a "+" (plus) after it. To turn an option off, specify the letter with a "-" (minus) after it. For some parameters such as /R, you specify a number value.

The following table lists operating parameters that are intended to be used **after** HP Vectra Disc Cache has been set up.

OPERATING PARAMETERS

Parameter	What it Does
/F	Flushes the cache and resets measurements to values in effect when program is started. This is useful when making tests of cache performance.
/M	Displays the measurements of the cache. This option displays the number of disc transfer requests made by the system and applications, the number of actual physical transfers from the disc, the number of disc transfers saved by the cache, and the percentage of overall transfer requests saved by the cache.
/P	Displays all parameters in effect when HP Vectra Disc Cache is started.
/U	Un-installs HP Vectra Disc Cache. MS-DOS allows only the last-installed memory resident program to be un-installed. This option may be used after any programs loaded after Disc Cache have been un-installed.

The following table lists the parameters available with HP Vectra Disc Cache and what the default parameter settings are.

ADVANCED PARAMETERS

Parameter	What it Does
/A	Specifies that the cache should be in expanded memory.
/B	Copies data to and from the cache in batches of sectors. The default for base and expanded memory is B+. For extended memory, which turns interrupts off, the default is B-, which transfers data one sector at a time.
/E	Specifies that the cache should be in extended memory.
/E:XXX	Prevents the cache from allocating memory below E:XXX. This allows HP Vectra Disc Cache to coexist with programs that allocate extended memory in a way that HP Vectra Disc Cache cannot detect. Disc Cache allocates from the top-most memory limit down. This parameter sets the bottom-most limit, below which the cache will not go. For example, if you have one 512 KB RAM disc which cannot be detected, the correct value for E:XXX would be 1024 + 512 = 1536. The parameter would be: `/E:1536`.
/H	Enhances performance of writing to the hard disc. This option is compatible with all HP hard disc drives, but may be incompatible with some third-party hard disc subsystems. The default is H+. (Continued on next page.)

Parameter	What it Does
/R:XXX	Allows you to allocate XXX KB of memory (of the type already specified) for programs loaded after HP Vectra Disc Cache. Allocates the rest of available memory to the cache. This option should not be used with /S.
/S:XXX	Allows you to allocate XXX KB of memory for the cache. The default cache size is 96 KB for base memory, and 256 KB for expanded and extended memory. This option should not be used with the /R parameter.
/T	When a disc read is requested, part or all of the track is also read into cache memory. The amount read is the track buffer size. If no /T parameter is specified, there is a 4 sector track buffer. If /T is specified, the track buffer amount is one full track. This number could be 17 or 32 sectors, depending on your hard disc.
/T:XX	Allows you to specify the number of sectors in the track buffer size.
/W	Checks data being written to the cache to see if it already has identical data. If there is no change to the data, nothing is written to the disc. The default is W+. If extended memory is specified, the default is W-.
/-X	Does not provide caching function for drive X. For example, if you have two hard disc drives and do not wish to cache drive D:, specify: HPCACHE /-D.

Command Line Examples

The following are examples of sample command lines for HP Vectra Disc Cache:

1. `HPCACHE /A /R:256`

   Meaning: Set up HP Vectra Disc Cache in expanded memory and reserve 256 KB for applications that will be loaded later. The /R parameter specifies the amount of working memory you want to remain after the cache is set up. The rest of expanded memory is allocated to the HP Vectra Disc Cache program and its cache.

2. `HPCACHE /E /S:384`

   Meaning: Set up HP Vectra Disc Cache in extended memory, and set up the cache to be 384 KB in size.

3. `HPCACHE /S:256 /T:8`

   Meaning: Set up a cache of 256 KB in base memory, and read sectors off the disc 8 at a time (instead of the default of 4.)

4. `HPCACHE /-D`

   Meaning: Set up a cache of 96 KB in base memory, but do not cache drive D:. Drive C: will still be cached.

A Troubleshooting Guide

Following are some suggested steps to take if you have problems using Disc Cache.

Remove the Disc Cache

It is possible that the problem you have is not related to Disc Cache. Start your system without Disc Cache, or use the /U parameter to un-install Disc Cache, and see if the problem persists.

Change Some of Disc Cache's Parameters

Review the table in Chapter 2, "Parameters," to determine if you should change any of the programs parameters. If you did specify changed parameters in your command line, check to make sure that you did so correctly.

Simplify the AUTOEXEC.BAT File

Check the root directory of your hard disc for the AUTOEXEC.BAT file. To display the file, do the following:

At the MS-DOS prompt, type:

```
TYPE \AUTOEXEC.BAT
```

and press Enter.

This will display your AUTOEXEC.BAT file on your screen. Do you have other resident programs that are being started by command lines in your AUTOEXEC.BAT file? If so, make a copy of the file, and then modify it so

it contains only the Disc Cache command line. Save the modified file. Start your system with the modified AUTOEXEC.BAT file. If the problem has disappeared, add the other resident programs back to the AUTOEXEC.BAT file, one at a time, until you are able to determine which one is causing the problem.

Simplify the CONFIG.SYS File

Use the same procedure described above to display your CONFIG.SYS file. This file may contain one or more device drivers. You do need an expanded memory driver to use the /A parameter, but other device drivers may not be required for the basic operation of your computer. Delete the extra device drivers, save the new CONFIG.SYS, and restart your computer. If the problem has disappeared, add the device drivers back one at a time until you are able to determine which one is causing the problem.

Support Information

Support for this product is provided through the world-wide Hewlett-Packard support network -- along with support for the other HP components of your system. Depending on how you purchased your HP Vectra Personal Computer, the best source of assistance may be your own organization, your dealer, or Hewlett-Packard.

B Error Messages

This appendix lists error messages in alphabetical order that the HP Vectra Disc Cache program may display in response to error situations.

```
/A+ parameter ignored -- conflicts with /E+.
```

Explanation: You may not select both expanded (/A) and extended (/E) memory, re-enter the HPCACHE command with the correct parameter(s).

```
Advanced support request ignored for Drive x.
```

Explanation: You have requested advanced support (/H), but your hard disc controller is not industry standard compatible. Basic support will be used.

```
Cache size requested too small.
```

Explanation: You have requested a cache size less than the minimum supported by HP Vectra Disc Cache.

```
/E+ parameter ignored -- not 80286 system.
```

Explanation: Use of extended memory is not supported on the HP Vectra CS.

```
Expanded Memory Failure; Function = x; Error Code = y.
```

Explanation: The Expanded Memory Manager returned error indicated. Restart your computer and look for a message with more explanation.

```
/F Flush request ignored.
```

Explanation: You have requested that the cache be flushed at the time the disc cache program is started. This parameter is used to flush the program **after** you have started the program.

```
HP Vectra Disc Cache Program already installed.
You must un-install before reinstalling with different parameters.
```

Explanation: You have tried to start the HP Vectra Disc Cache program after it has already installed a disc cache.

```
/M parameter ignored -- no measurements available.
```

Explanation: You have requested measurements when the disc cache program is started. Measurements will be available once you have executed other commands after the disc cache is installed.

No drives found to cache.

Explanation: No hard discs were found to cache, therefore no disc cache was started. If you have an external hard disc, refer to the "Usage Tips for Specific Situations" section in Chapter 1 before starting the disc cache program.

No Expanded Memory Manager found; Check CONFIG.SYS file.

Explanation: The Expanded Memory Manager was not installed successfully. Refer to the documentation that came with your expanded memory board for information on installing the Expanded Memory hardware and software.

Not enough memory for HP Vectra Disc Cache program.

Explanation: There is not enough free memory in your system to start the HP Vectra Disc Cache program.

```
Problem with drive x.
Correct and then press any key.
```

Explanation: There may be bad sectors on your hard disc. If you suspect this to be true, you have the following options:

a. If you have a test utility that detects (and removes from use) bad sectors on the hard disc, run it.

   OR,

b. Backup all files on the hard disc, reformat the hard disc, then restore all files back on to the hard disc. Reformatting the hard disc should detect (and remove from use) bad sectors.

If you are sure that your hard disc has no bad sectors, specify the /H- parameter to instruct HP Vectra Disc Cache to use basic support for your hard disc.

```
There is not enough free memory in your system
Your system has xxxK bytes of free memory.
```

Explanation: You have selected a cache or reserve size that exceeds the memory capacity of your system. Try a different value for the /S or /R parameter. If you are also using a RAM disc, you may wish to reduce its size or eliminate it altogether. If you have requested the cache to be installed in conventional memory, try instead to install the cache in expanded or extended memory if you have it.

```
/U Cannot un-install -- Other programs above.
```

Explanation: You have requested that your disc cache be un-installed after loading one or more programs after it. You will need to exit or un-install these programs before un-installing the disc cache.

```
/U parameter ignored -- HP Vectra Disc Cache is not installed.
```

Explanation: You have requested that a disc cache to be un-installed when it currently is not installed.

```
Warning: HPCACHE.SYS placed after non-disk driver.
```

Explanation: Either your external hard disc is not turned on, or the HPCACHE.SYS driver has not been placed after the external hard disc driver in your CONFIG.SYS file.

```
/x parameter ignored.
```

Explanation: You have selected on option that is not recognized by the HP Vectra Disc Cache Program.

```
/-x Drive x cannot be cached -- sector size incompatible.
```

Explanation: Drive x has a sector size which is not a multiple of 512 bytes.

/-x Drive x cannot be cached -- physical unit unknown

Explanation: If drive x is a RAM disc, HP Vectra Disc Cache is simply informing you that it cannot cache a RAM disc. This is not a problem since there is no point in caching a RAM disc.

Another possibility is that drive x is a remote drive in a network. In this case, it is inappropriate to cache a remote drive. (You may want to install a disc cache on the system where the remote drive resides.)

You may also see this message if drive x is installed in your system in such a way that MS-DOS accesses it without using the BIOS (Basic Input Output System). In the case of external hard disc drives, you should follow the steps outlined in the "Usage Tips for Specific Situations" section in Chapter 1.