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Introduction and Overview

Welcome to Renaissance! We're glad you've chosen our program as your Apple IIgs disk optimization utility. We trust you'll find it easy to use, fast and smooth in operation, and absolutely essential to your computing peace of mind.

Renaissance is designed to speed up access of all your files, including the time it takes to boot up your computer, by "de-fragmenting" files that get segmented or broken up during the normal use of your disks. Although Renaissance will make the most dramatic improvements on hard disks, optimization can also be performed on floppy disks, ROM drives, and RAM drives.

This User's Guide is in four sections. The first describes Renaissance's system requirements, the files that are on the Renaissance disk, and how to install Renaissance on a hard disk drive.

The second section describes the way files and folders are organized on disk, how and why optimization becomes important, and what Renaissance actually does to optimize a disk.

The third section describes Renaissance's features and controls. Experienced IIGs users—those who feel confident in running a GS/OS-based, desktop-style application program with minimal guidance--can read through this section quickly and run Renaissance without further explanation. Less adventurous users may want to read in more detail. Renaissance has no tricks or quirks, though; it uses the familiar IIGs user interface to let the operator know what's going on, when a decision must be made, and what options are available. In fact, for many users, this Guide isn't really necessary.

The fourth section contains information about Technical Support.

Renaissance follows the standard that Vitesse, Inc. sets for all its products: it's fast, smooth, and uncomplicated. It's the state-of-the-art in IIGs disk optimization utilities, and you'll find it so convenient that it will quickly become one of your most used programs. We're proud of Renaissance... and we're confident you'll like it.

CAUTION - Please Read Carefully

Optimization requires the reading and writing of every piece of data on a volume. During the process, much of this data may reside in your IIGs's system memory, and at any given time, the maps and pointers to all the files on the volume will be in a state of flux. A power failure or surge, a system re-boot, bad memory chips, defective disk drive, or any number of interruptions can occur during optimization and any one of them will destroy all the data on the volume.

IT IS ABSOLUTELY ESSENTIAL THAT YOU MAKE A FULL BACKUP BEFORE OPTIMIZING ANY DISK VOLUME!

(We suggest Guardian, our desktop-based backup/restore utility as an excellent choice for this crucial task.)

In addition, we recommend highly that you use a disk volume check or repair utility to make sure that the catalogs and directories on your volume are intact before initiating an optimization.

By the way...before you do anything else, please make a copy of your Renaissance disk. Then run the "READ.ME" file on the disk to get any last-minute updates. Thanks.

Section 1

Renaissance Contents and Requirements

Renaissance will function only under GS/OS 5.0/5.02 or greater. It requires a minimum of 1 megabyte of system memory, and the more memory you have, the faster Renaissance will perform.

The files on the Renaissance disk include:

Renaissance: This is the main application file. It's a GS/OS application that can be located anywhere on a hard drive or floppy disk. It's not copy protected, so it can be moved to another disk quite easily.

Please note: The Renaissance file is an extended file, so it must be copied using the Finder or other GS/OS-based utility that supports extended files. Do not use any ProDOS 8-based utility that does not support extended files. The resulting copy will not function correctly, even though the copy or move operation may seem to have occurred without error.

Renaiss.Icons: This folder has the GS/OS Finder icons for the Renaissance and Read.Me application files, plus the icon for the Vitesse folder. If you want these icons to be available when you run Renaissance from your hard drive, copy the Renaiss.Icons folder to the Icons folder on your GS/OS boot volume.

Read.Me: This GS/OS application file will display a text file on the screen that provides any "last minute" word about Renaissance that couldn't be included in the manual.

Please note: The Read.Me file is an extended format file, too. As noted above for the Renaissance file, you can copy the Read.Me file successfully only with a GS/OS-based copy utility.

Vitesse: This folder contains ASCII text files with the same text that the Read.Me application and Help option display. You can load these text files into any word processor or text file handler to print them out.

Section 2

Understanding Fragmentation and Optimization

Disk drive data storage is often likened to using a large file cabinet that stores all your files and folders. Modern personal computer operating systems (including ProDOS and GS/OS) don't really save and recover files as you would in a file cabinet, though. While a definite files/folder organization method is used, the way data are actually stored on a hard drive is quite different from how a human would do it.

Suppose you are managing a row of file cabinets, with the cabinets marked numerically (1 to 10) and their drawers marked alphabetically (A to Z). You want to file a 40-page document called "Renaissance Manual", so you go to (say) Cabinet 7, open the drawer marked "R" (for Renaissance), and place the entire document in that drawer in its correct alphabetical place. You now know where to find the document when you need it later.

A disk drive takes a different approach. It immediately opens the first cabinet, looking to see if there's room for even one more sheet of paper. It then takes your 40-page manual, breaks it up into individual pages, and starts sticking pages into any cabinet that has room, moving from 1 to 10. When all 40 pages are exhausted, it creates and stores an "index" page in the "R" Drawer of Cabinet 7, which lists the locations of every page of the document.

Although this may seem to be inefficient, it's actually a good approach for a digital computer. Using this method, GS/OS can use every page (block) of storage on a disk. Also, if a file grows in size, only the "index" block needs to be updated (instead of rearranging everything to make room for the larger file), which can be done more quickly.

If the volume is relatively empty, each one of the blocks of information naturally falls next to its predecessor--unfortunately, it's rare that a disk volume is so empty that this can occur.

The disadvantage of this "any page/anywhere" scheme is this: as a disk gets full, more and more files get scattered around, and the drive read/write

head has to spend an inordinate amount of time seeking back and forth to gather up all the pieces. Seeking takes 20 to 50 times longer than actual read or write operations to the disk, so as time goes on, the time it takes to read or write whole files becomes noticeably longer.

The more you use a disk, the more fragmented it becomes. There is no direct way of preventing fragmentation, because it occurs naturally as files are re-saved larger or smaller than their original size. Deleting or adding files or folders to a volume will cause fragmentation, too, because your IIGs always tries to break files up into small pieces so it can tuck them away in any unused storage areas. The only ways to correct fragmentation are to copy all your files off of your hard disk and re-write them, or use Renaissance.

One of the best ways to help optimize a disk is to place each of a file's blocks of data directly behind its index list. Since the drive needs to check the index block first to see where all of a file's blocks are, it saves a lot of time if all those blocks are next in line, rather than scattered all over.

The IIGs' operating system, GS/OS, can use a technique called "multi-block reads and writes", which significantly enhances the speed of reading and writing files. This GS/OS feature can double or triple the speed of accessing your files, but GS/OS can use this technique when reading or writing a file only if the file's blocks are arranged one after the other. Getting rid of the empty blocks scattered in a volume will allow GS/OS to use this feature more frequently, so less time will be needed for reading and writing files.

Physical File Placement

The physical location of files on a disk can affect a drive's overall performance too, just as fragmentation does. As mentioned earlier, GS/OS saves all files, starting at the beginning of the disk and working its way towards the end, using any available free space. Consider what happens after you save or modify the System folder on a hard drive boot volume: chances are very high that all or part of it is physically located towards the end (or inner) portion of the disk. When you re-boot the system, the hard drive will seek to the area where the ProDOS file is located, then seek to the end of the disk to pick up needed files in the System folder, then seek back to the front of the disk again to continue the boot process--for instance, to open the Icons folder and load its contents.

In general, a disk's boot time is least when the "operating system" files are located together at the front of the disk. For most GS/OS disks, this includes the ProDOS file, the System folder, and the Icons folder. For ProDOS 8 disks, the files that should be collocated are ProDOS and any ".SYSTEM" files, such as BASIC.SYSTEM.

Application disks should have the application files (or folders) at the front of the disk, followed by data files--"static" ones first, then often-changed ones. Data-only disks should have the "static" files at the front, followed by files that are changed often.

Optimization Speed

Optimizing a disk completely (that is, eliminating fragmentation and collocating files with their indices) with any program takes a long time, and using Renaissance for that job is no exception. In most cases, every block of data on a disk has to move to another location, meaning that each block must be read and written at least once. For example, if Block 1 on a hard drive is empty, every block after it must move up by one position to fill in the "hole" or free space. No matter how fast the hard drive performs, reading and writing every block--multiplied by the sheer number of blocks (a 32 megabyte hard drive has 65,536 blocks)--will add up to a considerable amount of time, ranging from minutes to hours.

How long Renaissance will need to optimize an individual disk depends on many factors, but it's fair to say that after your first use of Renaissance, the time required for future optimizations of that same disk will decrease dramatically, since most of the disk's files will be still be at or near their optimum positions.

Among the many factors that affect optimization speed are the following:

System RAM: Renaissance uses what is called "caching", meaning that if there is free memory available, it is used to hold blocks that are waiting to be moved. For example, if File A is supposed to be moved to the location now occupied by File B, File B will be read and stored in memory while File A is being written. However, if no memory is available, File B is written to another, unused portion of the disk until its final location is free. Obviously, the amount of free memory available to Renaissance can affect the overall speed of optimization dramatically.

File Position: When files that must be written contiguously are physically located away from their final locations, other files may be need to move out of the way to make room. These files must be read and held in memory until their locations become free, and this fills up memory quite rapidly--especially if entire folders must move across the disk. When files are near their optimum positions to begin with, though, very little memory is used.

If you have used Renaissance's Sort Directory feature (described later), it is likely that files will have to move great distances the first time. After that, however, the only files and folders that will need to move are those that have changed.

Disk Access: The access time of a drive also contributes to delays, especially if files must move across the full radius of the disk surface. It may take only a few tenths of a second to seek across the disk, but this operation--multiplied by the total number of blocks being moved--can result in long delays.

How Renaissance Works

Renaissance optimizes a disk by writing all its files and folders exactly in the order in which they appear in their directories, eliminating unused blocks between files as it does so. The first file or folder (and all its folders and files) in the root directory is written at the beginning of the disk, the last folder is the last data entity written, and all the other folders and files are written in between. However, if a folder in the root directory is constantly being changed (files growing in size, new files being added, etc.) the extra space needed will force some of the files to be written towards the end of the disk--and your drive will begin seeking quite frequently once again, wasting time.

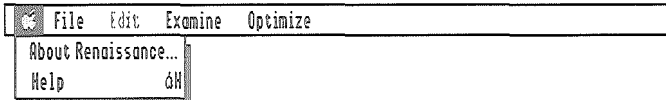
To remedy this situation, Renaissance allows the sorting of root directories for best location before optimization. Folders that are "static" (folders that contain files that are rarely changed) are best placed at the top of the list, followed by other folders and files until the last folder is one that you work with the most (frequently change, add, or delete files). This helps keep a drive in an optimized state as long as possible, and it also speeds up the optimization process the next time it needs to be done. After a first optimization, you will probably not need to use the Sort Directory function again unless you add more folders or do some disk "housekeeping" that results in rearrangement or deletion of a large number of files.

Section 3

Renaissance's Controls and How to Use Them

Apple Menu

Figure 1

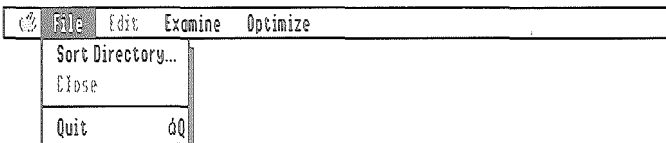


About: Selecting About displays a window containing version and copyright information. This is where you will find the serial number for your personal copy of Renaissance. Be sure to write this number on the registration card and return the card promptly so we can contact you about future updates and enhancements to Renaissance, as well as special pricing on new Vitesse products.

Help: Selecting Help displays summary information for using Renaissance.

File Menu

Figure 2



Sort Directory: This selection allows you to customize the way optimization will occur and delay the need for future optimizations.

After Sort is selected, a dialog box appears (Fig. 3) showing all volumes that are on line and can be sorted. When a volume is selected, a second dialog box appears, showing all the files and folders in the root directory. (See Fig. 4.) To move a file, highlight it by clicking on it in the list, then click the Move Up or Move Down button. If you change your mind or want to start over, click Cancel. When you're satisfied with the order of the files and folders, click the Sort button. After a few moments, the dialog box will disappear and the directory will be sorted in the new order.

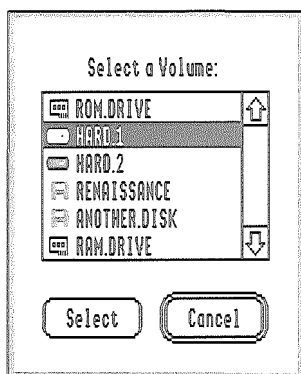
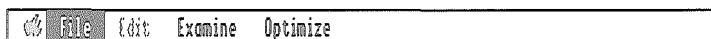


Figure 3

Please note: Because of the way GS/OS works, if you sort the boot volume, you will have to reboot the computer when you leave Renaissance. This is also true if the boot volume is optimized.

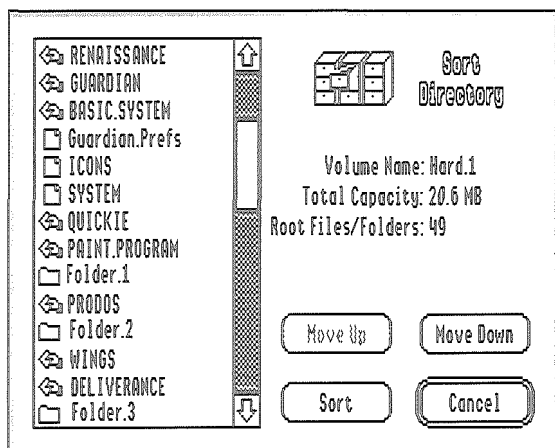
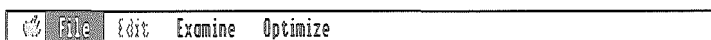
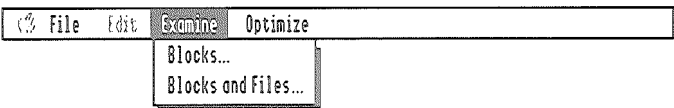


Figure 4

Close: Standard GS/OS desktop Close item that performs the same function as clicking in a window's Close box.

Quit: This selection quits Renaissance and returns to the launcher.

Edit Menu (Renaissance does not use the Edit menu functions; they are provided for standard GS/OS desk accessory use only.)



The **Examine** menu is used to determine whether or not optimize.

Blocks Only: This selection provides a quick scan of “whole block” fragments; these are the blocks that are not used by any file. Selecting **Blocks Only** and choosing a volume brings up the dialog in shown in Figure 6. On the left, a graphic representation is shown of every block on the volume, with used blocks shown in green and free blocks shown in black. If there are many black lines or dots in the green portion, or bands of black are shown surrounded by green, the volume is very fragmented.

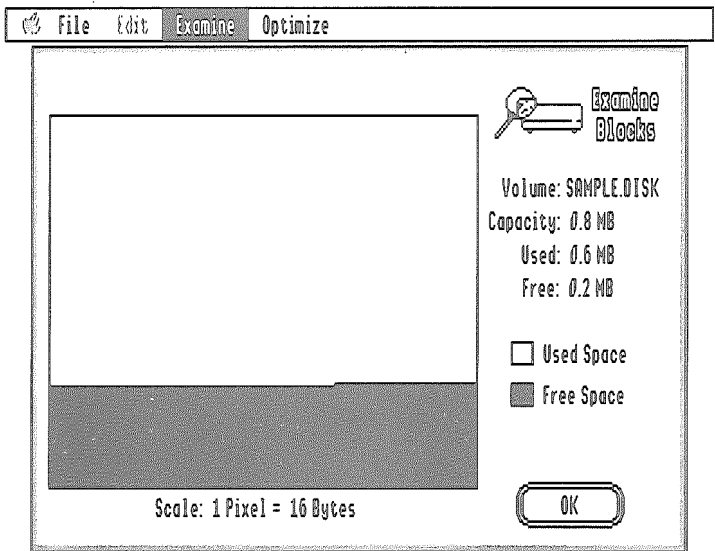


Figure 6

Blocks and Files: This selection gives a more extensive and accurate scan of fragmentation. It yields the same Whole Block Fragmentation display described above, followed by an overlay of “File Fragmentation”.

As described earlier, each file has an index list associated with it. File fragmentation is a check of how contiguous the blocks are for each file in each index list. Every time Renaissance finds a file block in an index list out of sequence, it marks the position on the display with a black dot or line. After the file scan is complete, Renaissance calculates the percentage of blocks that are fragmented vs. the total number of blocks used.

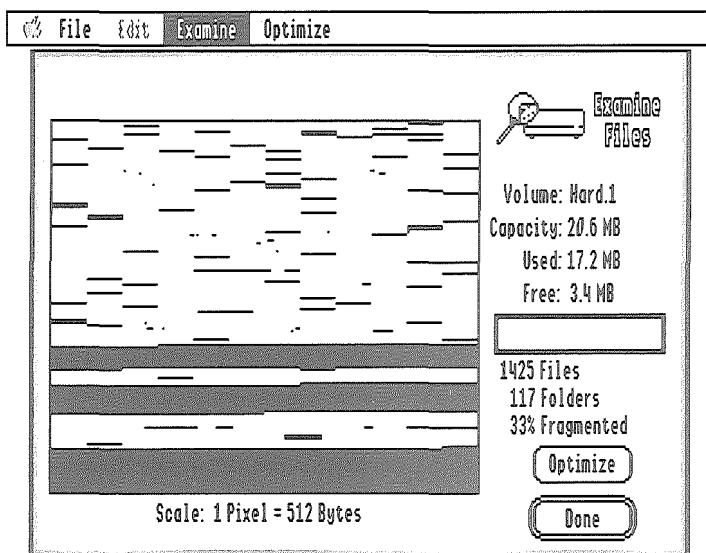


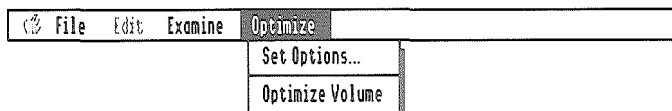
Figure 7

After all the files have been scanned, Renaissance gives you the option of optimizing the volume by clicking the **Optimize** button or closing the dialog by clicking the **Done** button.

In general, it's advisable to optimize a volume if more than 5% of the volume is fragmented. This is only a guideline, however, as greater than 5% fragmentation may be acceptable depending upon how frequently you use the files on the volume. An important point to remember is that fragmentation and file placement are interrelated. If you've used the **Sort Directory** function to change the order of one or more folders significantly, you have, in effect, caused 100% fragmentation. This is because every file will now have to move to the new location you specified in the sort.

Optimize Menu

Figure 8



Set Options: Selecting this item displays a dialog that allows you to enable or disable several options. (See Fig. 9)

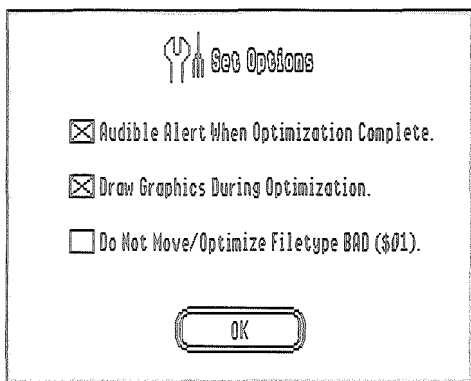


Figure 9

Audible Alert: Checking this box causes Renaissance to announce audibly when optimization is complete. Using this option lets you walk away from your computer to do other things without constantly looking at the screen while waiting for completion.

Please note: If Renaissance runs very low on memory during optimization, it will “steal” the memory used by the audible alert to maintain full optimization speed. If this occurs, the audible alert will not occur even though you have the checkbox enabled. Optimization speed always has priority.

Display Graphics: Checking this box causes the green and black graphics display to be updated during the optimization process. This shows how the volume is being optimized and is interesting to watch, but the display portion of the program takes some time to run. Disabling the graphics will speed up the optimization process. On large volumes, disabling the graphics may speed up the optimization noticeably, depending upon degree of fragmentation.

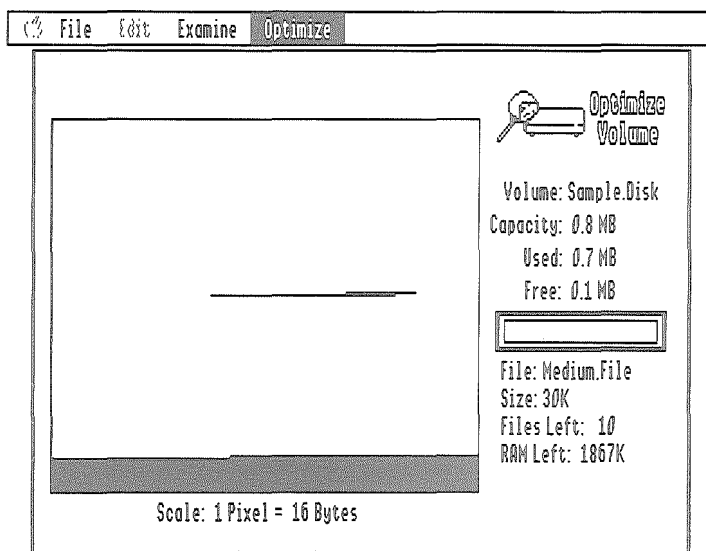
Do Not Optimize Bad Types: Checking this box instructs Renaissance not to optimize filetype \$01 (BAD). Bad Block files are a special file type used to mark defective or unusable portions of hard disks. (Check your hard disk manual or with the manufacturer to see if Bad Blocks are used during formatting. Most SCSI drives do not use the Bad Block file method to mark defects.) There are also utilities on the market that can create or add Bad Block files to both hard disks and floppies. If you use one of these, you may have a true Bad Block file.

Please note: Regardless of which way this option is set, Renaissance will always check for Bad Block files before optimization and will alert you to the situation. **DO NOT TRY TO OPTIMIZE TRUE BAD BLOCK FILES.** Doing so will cause read/write errors during the optimization process, which will result in a fatal error and probably damage the volume's directory structure.

A volume containing Bad Block files can never be 100% optimized, because the Bad Block file itself cannot move from its physical location. All other files must be optimized to fit snugly around the Bad Block file. In all likelihood, the unoptimized portions of the volume will be relatively small and will not add significant delays to the normal operation of your drive.

Clicking the **Done** button closes the dialog box.

Optimize: Selecting this option initiates the optimization process. You are first given the opportunity to choose a volume, followed by a display dialog with information pertaining to the volume. The graphic display begins with a scan of both whole block and file fragmentation, followed by the actual optimization process.



During optimization, informational displays appear on the right side of the window, as shown in Figure 10. These displays perform or relate the following:

Total, Used, and Free Space: The selected volume's total disk space, total used space, and total unused space (megabytes).

Note: Volume space is rounded off and displayed to the nearest tenth of a megabyte. The numbers displayed may not be absolutely accurate for very small volumes (such as floppy disks).

Thermometer: An indication of the number of files that have been optimized and percentage of completion.

File: The name of the file currently being optimized.

Size: The size of the file currently being optimized (kilobytes).

Files Left: The total number of files and folders left that need to be optimized.

Time Left: An estimate of the time left to complete optimization.

Time Left is estimated by tracking the time it has taken so far to optimize each file. The estimate is not made until 12% of the files have been processed, and it becomes more accurate as more files are optimized. Optimizing very large or very small files may pull the number temporarily one way or the other, especially if the system is low on memory. If less than a minute is left, the **Time Left** estimate is not shown. Also, one usually doesn't see a time estimate for floppy disks.

Please read the important note on the next page.

IMPORTANT NOTE

Once the optimization process has begun, do not disturb the computer until it is completed. Renaissance does not allow you to pause or quit an optimization in progress, because there is always a risk of volume damage, dictated by the infinite fragmentation possibilities of a given volume.

If you receive an error message during optimization, chances are that the volume directory or file structure was damaged in some way before optimization. Renaissance does some checking of volume integrity before starting optimization, but a 100% check on the volume should be performed by a volume check or volume repair utility ahead of time, as discussed previously. If the Bad Block option was set incorrectly, Renaissance may also have tried to read or write to defective data portions of the volume, which will also result in an error.

Renaissance may display a Fatal Error screen showing two Renaissance-peculiar error numbers: Mach ID and Status. These two 4-digit hexadecimal numbers should be written down and retained. If optimization of the same volume yields repetitive fatal errors, provide these numbers to Vitesse Technical Support.

The importance of backup before optimization cannot be stressed enough, since all errors during optimization are fatal and will probably result in a damaged, unusable volume. If this occurs, you must erase the volume with the Finder's Erase function or your disk utility, then restore of all your files from the backup set.

Section 4

Technical Support

We want you to be completely satisfied with the Vitesse product(s) you've purchased. Our technical support staff is available to help when things have gotten beyond your control, and you may avail yourself of that support by writing to

Vitesse, Inc.
ATTN: Technical Support
13909 Amar Road, Suite 2
La Puente, CA 91746-1669

...or by calling

818-813-1274
9:00 AM - 4:00 PM (west coast time)
Monday-Friday

But please, before you write or call, read the User's Guide and any Read.Me and/or Help files provided with our product(s) to see if your problem is covered. It can save you and us time that can be better spent.

Also, be sure you are familiar with how to use your IIgs and other, non-Vitesse software and hardware before you call. We can--and will--help, but don't expect us to be able to summarize what you can better learn by self-study and practice.

All information contained in this manual is for the sole purpose of identifying and suggesting the nature of the product described and does not warrant the nature or the quality of the product. Specifications are subject to change without notice.

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