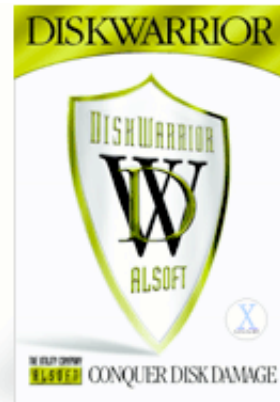# DiskWarrior®

Conquer Disk Damage!

DiskWarrior is the most highly decorated Mac disk repair utility ever. It repairs disks that no other program can repair. New hardware monitoring helps protect your data from drive malfunctions.

DISKWARRIOR

CONQUER DISK DAMAGE

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## Why choose DiskWarrior?

DiskWarrior is a utility designed from the ground up with a totally different approach to preventing and resolving directory damage. DiskWarrior resolves existing disk damage by rebuilding your disk directory using data recovered from the original directory, thereby recovering files and folders that you thought were lost. The directories DiskWarrior creates are also optimized for maximum directory performance.

DiskWarrior is not a disk repair program in the conventional sense. It does not attempt to solve all of the possible problems that can occur with a disk. It specializes in eliminating directory errors - the most common problems Mac OS users have with their disks. DiskWarrior rebuilds your disk directories making them error-free, eliminating any problems the errors would have caused, and recovering lost

## Why should you use DiskWarrior first to rebuild your directory?

When other utilities attempt to repair your directory, they attempt to do so by "patching" the directory one problem at a time, ignoring the big picture of what is truly wrong with your directory and risking file information that might otherwise have been saved. This method can result in sections of the directory being patched over and deleted. Since whole sections of the directory can be deleted, this attempt at repair can cause loss of directory data and thus loss of access to your files.

Because other utilities may delete directory data in their repair attempts, you should always use DiskWarrior first when you suspect directory damage on your disk. DiskWarrior uses a patent-pending method of quickly rebuilding your directory from the data recovered

files. It fixes any problem with master directory blocks and alternate master directory blocks (HFS), volume headers and alternate volume headers (HFS Plus), volume bit maps, catalog trees, and extents trees.

This approach has a significant advantage that the others overlook. Other products attempt to repair your directory one step at a time, ignoring the big picture of what is truly wrong with your directory, and risking file information that could be saved. Too often, they will incorrectly begin to "repair" your directory, and then give up when they realize that they have modified the directory to an irreparable state. At Alsoft, we know that the most important thing when you are attempting to repair your disks is getting your data back. That's why the first thing DiskWarrior checks is your directory data, and that's what it uses to create a replacement directory. DiskWarrior continues its rebuild operations unless no directory data can be found.

But directory damage isn't the only threat to your data. A physical hardware malfunction can cause intermittent loss of access to any data on the drive. If the malfunction is serious enough, the only way to retrieve the data on the drive is through an expensive data recovery service. DiskWarrior can be configured to automatically check drives for possible drive malfunction, giving you the chance to back up your data before a drive completely fails. The hardware monitoring can also be run manually if you suspect a drive malfunction.
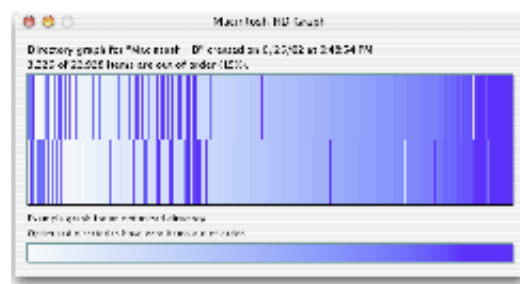
You know Alsoft has been making disk utilities for the Mac for years, and that we know HFS and HFS Plus inside and out. Our disk optimization utilities have always chosen the safety and security of your data over anything else, and have been able to detect and report directory

in your old directory. This method recovers files and folders that you thought were lost and that no other program can recover. Otherwise, you risk losing directory data and thus access to your files. With DiskWarrior, there is never a risk of losing directory data and thus never a risk of losing access to your files.

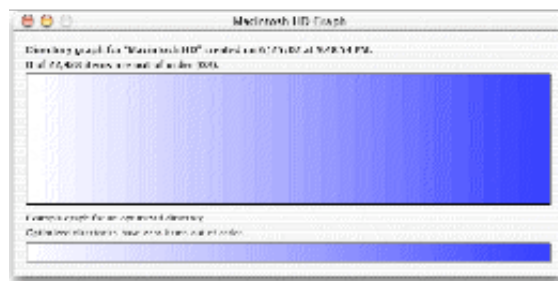## When should you rebuild your directory with DiskWarrior?

Obviously, you should run DiskWarrior when you suspect that there is directory damage on one of your disks. Directory damage can result in the disk not mounting (not appearing on the desktop when the computer is started), missing files or folders, an inability to move or copy files, or crashes when files are used.

But the best use of DiskWarrior is for preventative maintenance of your disks. Many forms of directory damage do not manifest themselves until long after the damage has actually occurred. You can prevent this damage from escalating by running DiskWarrior on your disks regularly. DiskWarrior will rebuild your disk directory, eliminating all existing directory damage. The directory DiskWarrior creates is also optimized for maximum directory performance, and this will speed up the performance of your disk.



Typical hard disk before directory optimization. - Full Size

errors no other program can (the others obviously couldn't fix the problems they couldn't even find). That knowledge has been put into DiskWarrior to give you the only tool that can eliminate any directory problem possible and recover lost files and folders! And, as an added bonus, the directory DiskWarrior creates is optimized for maximum directory performance!



DiskWarrior tells you what was repaired and lets you preview the repairs. - Full Size

# What is directory damage and how does it affect you?

The directory is the portion of your disk set aside to record the names and locations of your files and folders. When your directory is either incorrectly updated or not updated at all, your directory is damaged.

An errant program can damage your directory by inadvertently writing its own data to the portion of the disk that is reserved for the directories. If your Mac crashes or loses power, updated directory information that the Mac OS caches in memory for faster access never gets written to your disk, resulting in directory damage. The presence of directory damage may be very minor



Same hard disk after directory optimization by DiskWarrior. - Full Size

# What other advantages are there to using DiskWarrior?

DiskWarrior optimizes your directory for maximum performance. Directory optimization typically results in a 50% to 60% decrease in the time it takes programs to scan the directory and a 10% to 20% decrease in startup time. Other programs may not provide the true directory optimization provided by DiskWarrior. (For more information about how to tell if your directory needs optimization and a free utility that can show you the state of optimization of your directory graphically, see the Ask Al that gives you all the details. This utility is also built into DiskWarrior version 2.0 and higher.)

DiskWarrior compares your old directory with the new rebuilt directory and determines if there have been any changes to the number or contents of your files and folders. It then lists any differences it finds in the DiskWarrior Report. You'll know right away what files and folders are affected by directory damage. The report lists the problems found by file, making it easy for you to see what files and folders you need to check in the preview.

DiskWarrior's patented preview feature lets you examine the files and folders

and go unnoticed. Or it could make some or all of your files inaccessible!

## How does directory damage occur?

The continued accuracy of information in the directory depends on the ability of the Mac OS to perform ALL of its update and maintenance operations without any unexpected interruptions. Also, to help speed up many Mac OS computer operations, important pieces of information are temporarily cached in memory instead of being immediately saved to the disk.

Common types of unexpected interruptions are kernel panics and crashes, power loss (lights flicker), turning your Mac OS computer off without using the proper "Shut Down" procedure, and pressing the "RESET" button. Depending upon the exact moment of the interruption, you stand a good chance that your directory was either not updated correctly and/or some information had not been saved to the disk. You now have directory damage and/or information loss.

Another way that your directory can be damaged is if an errant program inadvertently writes its own data to the portion of the disk that is reserved for the directory. If this occurs, then your directory data has been overwritten and may be permanently lost. System extension, called kernel extensions in Mac OS X, may inadvertently corrupt system data. Directory damage occurs when the directory containing the corrupt data is saved to disk.

## How does DiskWarrior protect data from hardware failure?

on your damaged disk as they will appear after the directory is repaired but before any changes are made to the disk. This assures you that you will get the expected results before any changes are made permanent.

When enabled, Disk Warrior's hardware monitoring capability can notify you if your drive devices are in danger of failing. This notice can give you valuable warning, allowing you the opportunity to back up your files before the drive becomes completely inaccessible. Without such a back-up, your may be left with an expensive data recovery service the only way to get your data back.

DiskWarrior verifies your rebuilt directory to ensure that it is error free. For protection from interruptions such as power loss, DiskWarrior uses a unique fail-safe method of replacing the damaged directory with the repaired directory. With DiskWarrior, you never have to worry about the safety of your files.

If there is a system folder on your disk, DiskWarrior will ensure that it is blessed. No more flashing question mark!

DiskWarrior safely rebuilds journaled disks. It also checks System and Finder files for damage, eliminates a common cause of system crashes by checking custom icon files for corruption, and repairs the wrapper volume System files caused when HFS Plus disks are initialized under Mac OS 9.0 - 9.0.4, allowing Macs with these disks to start up.

## Why Alsoft DiskWarrior is the Only Answer

DiskWarrior's ability to rebuild your directory and recover lost files and

Your data may be lost when the hard drive containing the data has a mechanical malfunction. As drives are used, their parts begin to wear out. Drive manufacturers have begun including internal diagnostic routines in their drives to help determine if a drive is exceeding its operating tolerances, but unless you have software to access these routines, you will not have any warning of the impending drive malfunction.

With DiskWarrior installed, you can enable DiskWarrior's hardware monitoring capability, which uses a drive's built-in S.M.A.R.T. technology to monitor drive hardware. If the diagnostics indicate the potential for a malfunction, DiskWarrior provides you with a warning, using the notification method you have specified. This warning gives you the chance to back up any data on the drive before it fails completely, saving you from having to rely upon an expensive data recovery facility to retrieve your data.

folders is unrivaled. DiskWarrior rebuilds your directory based upon the data it finds in the old directory and verifies your rebuilt directory to ensure that it is error free. And DiskWarrior's patented preview allows you to preview your disk as it will appear after the directory is repaired but before any changes are made to the disk. With DiskWarrior, there is never a risk of losing directory data and thus never a risk of losing access to your files.

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