SpinRite 5.0

Personal Computing's Premier Hard Disk Maintenance & Recovery Tool

When SpinRite™ 1.0 was released into the market in March of 1988, the nature of hard disk utilities was redefined overnight. SpinRite won a place in Personal Computing history by winning a place in the hearts and minds of Personal Computer users.

Today's SpinRite 5.0, is the result of over ten years of SpinRite evolution. It incorporates many key advances to the state of the art in software-based ferromagnetic mass storage management and data recovery.

This document provides an overview of SpinRite 5.0, highlighting the product's current feature-set.

The latest version of SpinRite may always be purchased directly from Gibson Research for $89.

Owners of SpinRite 3.1 and 4.0 may upgrade for $39.

Go to http://www.grc.com for complete purchase and download details.

What does SpinRite do?

SpinRite is easy to use, and easy to explain, because it does just one thing really well: *It fixes hard disk drives to make them work perfectly.* It's as simple as that. SpinRite scrubs drive surfaces, finding and fixing any problems it encounters. It recovers data that has become unreadable by the operating system or any other utilites and makes that data readable again. By providing both preventive maintenance and data recovery, this single utility is everything most people will ever need to maintain the health of their disk drives and the safety of their data.

Key Features of SpinRite 5.0:

- Operates on DOS/Windows 12-bit, 16-bit, and 32-bit File Allocation Table (FAT) partitions of ***any size***.
- Exceedingly simple operation – technical knowledge is ***not*** required.
- Direct hardware-level operation with hard disk controllers and advanced support for IDE, EIDE, and SCSI hard disk drives. Aware of the latest hard disk drive technologies including Iomega ZIP and JAZ.
- New "Flux Synthesis"™super-sensitive surface analysis defect detection. Rapidly scrubs hard disk surfaces for latent and potential defects, removing unsafe regions from use and (*optionally*) returning perfect regions to full service.
- "DynaStat"™data recovery technology performs deep statistical analysis upon unreadable sectors to recover all or most sector data. Where other utilities give up, SpinRite's DynaStat recovers every last "bit."
- Dramatically fast operation. SpinRite 5.0 is up to ***ten times faster*** than versions 1,2, and 3, and every bit as fast as SpinRite 4!
- Drive "fingerprinting." Provides quick startup, default setting recall, usage history display, and long-term adaptive learning.
- Compatible and aware of popular disk compression technologies.
- Highly accurate and meaningful drive performance benchmarking.
- Directly launchable from Windows 95/98 without rebooting the system.
- Compatible with Windows 95/98 long filenames.
- Dynamic suspend and resume allows SpinRite operation to be interrupted at any time and resumed from the point of suspension.
- Continual prediction of remaining operating time.
- Rapid Data Recovery mode finds endangered data and brings it back.
- Drive parameter loss detection. When your BIOS loses its drive parameters, SpinRite will tell you what they were.

Direct Hardware Interaction with Hard Disk Controllers and Advanced Support for IDE, EIDE, and SCSI Hard Disk Drives.

Unlike ***any other disk utility***, SpinRite interfaces directly to the hard disk system's hardware, rather than working through the system's operating system or BIOS. This allows SpinRite to immediately determine the location of any surface defect after a single incident of error, rather than requiring multiple reoccurrences. This allows SpinRite to detect any and all media surface defects quickly and without fail.

SpinRite's hardware-level interconnection allows it to interface with the various functional extensions of the IDE/CAM/ATA drive standard – including LBA mode drives – and to manage the extended ECC error correction available in contemporary drives. SpinRite selectively disables and enables a drive's read caching, write caching, read-ahead buffering, on-the-fly sector relocation, on-the-fly error correction, dynamic servo thermal re-equalization, early and late ECC error correction, and other features present in modern drives. ***No other*** hard disk utility does this!

- **Special Handling of Write Caching:** The newest IDE, EIDE, and SCSI drives increase their apparent performance by caching and deferring hard disk write operations. This means that they accept data from the system and report it as written before it's actually been recorded. Since SpinRite must operate upon the "real" disk surface, it penetrates any write caching deception to deliver true surface analysis.

- **Special Handling of Automatic Relocation:** Some recent-technology drives perform automatic relocation of defective sectors. This presents problems for "unaware" data recovery programs because a defective sector containing data may be relocated before its data has been successfully removed. SpinRite deliberately disables automatic relocation, when present, until all data has been recovered, then deliberately re-enables relocation to allow the drive to replace the defective sector. After relocation has occurred, the data is replaced into the newly relocated sector.

- **Special Handling of Extra ECC Data:** To perform reliably at today's higher data densities, newer drives have enhanced their built-in error correction code (ECC) to tolerate longer error "bursts." SpinRite adaptively determines how much extra ECC data the drive provides, then uses everything that's available.

- **Special Handling of Drive ID's:** SpinRite reads, displays, and interprets the identity and manufacturer of all leading hard disk drives. This information is used to determine which advanced drive features are available, and to determine the specific data-to-flux-reversal encoder-decoder used by the drive's manufacturer. This information is used by SpinRite's new Flux Synthesis surface analysis technology.

"Flux Synthesis" Super-Sensitive Media Analysis Surface Defect Detection

SpinRite is empowered with an understanding of the complex relationships between a drive's external data and the internal magnetic flux reversals used to record and retrieve that data.

Using this knowledge, SpinRite deliberately records signals which will have the lowest-possible amplitude when read back from the drive. After turning off all data re-read retries and all automatic data corrections, SpinRite is able to quickly scrub the drive's surface to uncover any regions which cannot safely store data.

"DynaStat" Data Recovery

Since SpinRite's legendary data recovery capabilities have always been a highlight for its users, we continually invested tremendous effort through the years to take its data recovery to new heights. SpinRite's DynaStat Data Recovery system is the culmination of this effort. DynaStat employs every trick we know, as well as some new inventions we created just for this purpose.

Rather than giving up when a sector can't be read, or rather than taking whatever data the drive might be willing to begrudgingly yield, the DynaStat system accumulates a comprehensive statistical database about the behavior of any individual sector's data through the accumulation and classification of up to 2,000 individual sector rereads. By understanding the unlock/re-lock behavior of the drive's data-to-flux-reversal encoder-decoder, and by processing the sector's data "tails" after encountering a defect of any kind, SpinRite "reverse engineers" the sector's original data from the statistical performance profile of the unreadable sector's flux reversals. The resulting product is able to completely recover data that would otherwise have been utterly lost.

SpinRite's "Fingerprint" Technology

SpinRite's drive fingerprinting system provides faster startup operation by storing a collection of critical drive parameters so that they do not need to be determined with every use of SpinRite. Issuing the command SPINRITE AUTO starts SpinRite running on a drive in seconds. The fingerprint also retains the user's last option settings, a date-stamped summary of the results from SpinRite's prior five uses, and miscellaneous bits of data which simplifies its use.

Compressed Drive Compatibility

We have never felt comfortable with whole-disk compression and we won't be using it ourselves. However, we certainly understand the wide appeal of compression's promise, so SpinRite incorporates full and transparent support for all leading partition compression technologies. Specifically, SpinRite can be transparently used with Microsoft's DriveSpace, Stac's Stacker (versions 2.0 and later), and Addstor's SuperStor (versions 2.0 and later) partition compressing systems.

Since SpinRite is operating upon the drive's surfaces, it must work in terms of the physical drive which is hosting the compressed partition, rather than the logical compressed partitions which have been created from the physical drives. Thanks to tremendous cooperation and support from Microsoft, Stac, and Addstor, SpinRite eliminates user confusion by leaving all DOS partition designations unaltered and by carefully explaining any changes in drive lettering which may be required. Users who are accustomed to seeing drive C: can use SpinRite upon drive C: even though SpinRite is actually operating upon the swapped or hidden partition lying beneath the compressed drive. When SpinRite exits, the system is returned to its original condition.

NOTE: SpinRite also recognizes the other partition compression solutions and correctly operates upon their compressed host files as well.

Drive Benchmarking Breakthrough!

SpinRite's new drive benchmarking system is one of our favorite features. We've invented a performance measurement index (Sector Access Velocity, or SAV) which – for the first time ever – actually corresponds quite closely to the ***perceived performance*** of the hard disk system being measured. SpinRite also has a new data throughput test that's aware of, and not fooled by, hard disk drive internal caching. It separates and independently measures a drive's buffered and unbuffered data transfer rates.

Floppy Diskette Operation

Everything SpinRite does for hard disk drives now also works on floppy diskettes of any size and density! It's always frustrating to move a diskette from one machine to the next, only to have that second machine refuse to read a diskette which the first machine just wrote ... especially if the first machine's in California and you're in New York! We've been using SpinRite's new "fix it fast" mode to scan reluctant floppy disks for their problems and to fix them on the spot. Don't leave home without it!

Amazing New Multithreaded User-Interface

If you've been wondering about all the excitement over multi-threaded operating systems, give SpinRite a whirl and see for yourself. When it's running you'll be in the hands of a slick and amazingly responsive three-thread multitasking user interface. One "thread" is managed by the system's clock, another by the keyboard, and the third by SpinRite. No matter what you do in the foreground, SpinRite keeps chugging along, running patiently in the background. There's never been anything like it.

Drive Parameter Loss Detection and Correction

SpinRite's most surprising feature is something we added to help people who bought SpinRite for the wrong reason. The BIOS's tendency to "forget" its setup parameters can result in tremendous confusion. Many people have purchased SpinRite over the years to "fix" their hard disks when the real problem was just a loss of the system's drive parameters. So, we decided to add a feature we've never heard of anywhere: SpinRite now detects when the system's drive parameters have been altered or lost ... and can determine what they were and should be ... ***even if it's never encountered the system before!***

Safety Features

SpinRite is also safer to use. We've taken our many years of experience with SpinRite and incorporated everything we know about *any* problems *anyone* ever had with prior versions into the product's core.

Incredibly Easy to Use

And as if all ***that*** weren't enough, here are some of the other miscellaneous features we've built into SpinRite:

- Consolidated reporting including drive information, drive benchmark performance, and detailed SpinRite operations logging.
- Multiple drive/partition operation.
- Simplified command line options.
- Automatic management of prior report logs.
- Many convenient logging options.
- Simple, homogenized "level setting" for operational modes specification.
- On-the-fly, anytime, "operating level" changing.
- On-line command line options reference.
- Suppression of insignificant condition reporting.
- 72 character user-definable partition labels.
- Automatic screen blanking after 5 minutes.
- Continuous prediction of remaining running time.
- Enhanced operation interruption and resumption.
- Sticky option settings.
- Shorter-phrases option for detailed technical log.
- Tabular format for the detailed technical log.
- Simplified cluster map display.
- Comprehensive partition and drive physical information.
- IDE and EIDE drive self-ID and serial number display.
- Ten-minute "checkpointing" eliminates need to restart from the beginning in the event of power failure while running.

~World Class~ Technical Support

No matter ***how good*** a mature product like SpinRite may be, there's always Murphy's Law which reads: If anything can go wrong, it will. After the invention of personal computers, this law was broadened to include the experience of personal computer users. It now reads: If anything can go wrong, it already did, and you didn't notice. As if this weren't bad enough, Murphy's wife has been known to describe her husband as an optimist.

In order to help you combat Murphy's whole family, we're standing by to offer whatever sort of assistance you may ever need. So, part of what you get when you purchase SpinRite is all of the technical expertise we've accumulated throughout SpinRite's long life.

Technical support for SpinRite is available by eMail: support2006@grc.com, or through our Internet web site at: http://www.grc.com.

If you'd like, give us a try before you buy and see for yourself what ***real*** technical support can be like.

Use the information shown below to contact us and see just how responsive we are!

All product literature and documentation is freely available on our web site. SpinRite 5.0 may be purchased from Gibson Research Corporation for $89, and may be downloaded from the web immediately after its purchase with any browser . Owners of versions 3.1 and 4.0 may upgrade to version 5.0 for $39. (A valid, registered, serial number is required for upgrade pricing.)

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