

## SpinRite Data Recovery Technology

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## SpinRite's Data Recovery Technology

### How SpinRite **RECOVERS** Unreadable Data

**Disaster Recovery** is perhaps SpinRite's strongest and most unique capability since **SO MUCH MORE CAN BE DONE** than any other disk utility has ever bothered to do. (Scandisk is probably the worst of all since it does NOTHING other than to simply discard any data that can't be read.)

**SpinRite NEVER takes a drive's data for granted.** It contains and deploys an extensive arsenal of data recovery techniques and technologies designed to pull a drive's data back from oblivion.

How does SpinRite recover lost data from a drive?

#### ● **Disable Auto-Relocation**

Hard disk drives "heal themselves" by replacing defective sectors with spares. This gives the drive the favorable appearance of being "defect free", which is how the drive's manufacturer wants the drive to always appear. The problem is that the drive does this on its own, without asking or notifying, and in the process vital data is too-easily lost.

**When a troubled sector is replaced by a spare,  
that troubled sector can never again be accessed!**

**The FIRST THING SpinRite does** when it starts examining and working with a drive is to completely disable the drive's built-in automatic sector relocation. This way the drive can't whisk the sector away the first time it's not easily read, and SpinRite can study the sector to recover its data as much as necessary. (And as you might guess by now, no other utility is even aware of this problem.)

#### ● **Erroneous Data Reading**

With the drive's defective sector relocation disabled, SpinRite is now free to work as hard as it wishes to recover the sector's data. So it begins re-reading the sector. But rather than ignoring the data from a bad read, SpinRite uses its unique "hardware level access" (which no other utility has) to **read whatever data the drive was able to get**

**from the bad sector.** SpinRite begins assembling a database of this bad data, which will be used by SpinRite's "Dynastat" data recovery system.

It often happens that during this re-reading and data collecting phase, **one perfect read** will be received just by trying to read the sector many more times than other software ever bothers to. In this case, SpinRite reports **perfect data recovery** then re-enables the drive's auto-relocation so that the defective sector is **now** released and replaced with a perfect (but empty) spare. The region is then tested extensively and the data is perfectly written back onto the drive.

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### ● **Head Repositioning**

During the defective sector re-reading, the drive's read/write head is deliberately relocated to either side of the troubled sector -- and at varying distances -- so that when the head is again placed over the troublesome sector, it might come to rest at a slightly different position than it did last time ... and might allow the sector to be perfectly read.

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### ● **Dynastat Analysis**

If several thousand sector re-reads all fail to produce a single perfect reading, SpinRite next employs the database it has been building from each failed sector reading. By performing a statistical analysis of this data, SpinRite is frequently able to reconstruct all of the sector's data, even though no single reading was perfect.

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### ● **Accept Partial Data**

If the Dynastat analysis is unable to perfectly reconstruct the sector's data, it will at least be able to identify the data bits that differed from one reading to the next. This allows it to greatly minimize the uncertainty within the sector's damaged area and to recover most of the sector's 4096 individual data bits.

SpinRite will log the name of the file whose sector was not **completely** recovered and replace the file's completely unreadable sector (which any other software would have simply discarded) with this "mostly correct" now-readable sector so that **all but a few data bits** of the file can still be read and used.

**This is obviously a huge improvement over losing the entire file due to one of its sectors being completely unreadable.**

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**The result of all of the above** has earned SpinRite the reputation for being a "miracle worker" and being "pure magic." But as you can see, while the results for the user might indeed be magic,

SpinRite just does a lot of hard and honest work, and comes through when it matters most to its owner.

Everything you've read above is completely unique to SpinRite. **NO OTHER UTILITY** does any of the things you've read above. Not one. Does it make **ANY SENSE** to be using a computer **without** a copy of SpinRite lying around?

As Richard O'Reilly wrote in his **Los Angeles Times** review of SpinRite:

***"After testing SpinRite, I am convinced that it is a must-have product for most users of IBM or compatible PC's with hard disks. SpinRite may well be the best investment you can make in the integrity of your system."***

Now you know why he said that.

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