

Hard Disk Warning!

Posted on [May 15, 2011](#) by [Larry](#)

[This article was first published in the September, 2008, issue of Larry's Final Cut Pro Newsletter. [Click here to subscribe.](#)]

For those of you who are archiving your products on hard disks, please pay close attention!

Recently, I was talking to an engineering manager of a well-known hard disk company discussing how we were supposed to archive tapeless media for the long-term.

NOTE: *The company he works for is not important, because I've since corroborated this issue with two other hard disk companies. This is a hard disk issue, NOT a specific vendor issue.*

Executive Summary

Magnetic signals recorded on a hard disk are designed to be refreshed periodically. If your hard disks stay on, this happens automatically. However, if you store your projects to a removable hard drive, then store that hard drive on a shelf, unattached to a computer, those magnetic signals will fade over time... essentially, evaporating.

According to what I've been told, the life-span of a magnetic signal on a hard disk is between a year and a year and a half. The issue is complex, as you'll see, but this is a MUCH shorter shelf-life than I was expecting.

The way to keep the files on your hard disks safe is to connect the hard drive to your computer every six months or so and, ideally, copy all the files from one drive to another. Failing that, use a program like [Micromat's TechTool Pro](#), or [ProSoft's Drive Genius](#), to do a complete scan of your hard drive. Doing so will replenish any magnetic signals that are starting to fade.

The Technical Details

The issue of magnetic fading has been a little-talked about concern in the hard disk industry for a while, but it is complex and simple answers are hard to find. Here are some comments that one engineer sent me that may help you understand this better.

This has been something that has come up over the years, in the quest for higher density hard drives, before we crossed the 1GB per drive barrier. At that time, there was concern because the earth's magnetic field could affect data integrity, and many measures were designed to compensate for this effect. At that time and since, there was also concern for the magnetic charges on the disk platters.

Older mainframe storage systems continuously read each sector; this read automatically refreshed any sectors that were marginal. Servo tracks are also embedded within the data tracks, so any signals out of margin were easily detectable. Loss of servo info would render the disk useless, as the controller would not know where the head really was on the disk surface.

Improvements have been made in head technology, media magnetic qualities, and recording techniques to make the data integrity less subject to outside influence, and to the fading of the magnetic encoded bits on the disk surface. Sort of like when cheap magnets eventually lose their magnetism. Better materials deliver longer life.

So...in the interest of checking things out, simply reading every sector on a disk actually is preventative; if the controller within the disk detects any marginal data in either the servo tracks or the data bits recorded on the surface, the controller will automatically rewrite the data to the sector. If it cannot, this block is mapped out, again, automatically, and a substitute data block will be mapped in. All modern disks do this for you today. A simple read cycle of every sector or data block is all that is necessary.

In the 80's and early 90's this was NOT automatic, and that is where things like defragging and bad-block mapping were the norm. Today, a lot of this is done automatically for you by the disc itself, or the file system manager in the OS. Things are

constantly being moved around.

So, the scanning is simply reading every sector of the disk surface. The act of copying all the files from one disk to another disk would almost accomplish the same thing. With this latter method, unused parts of the disc would not be read again.

As for duration: I would say that the disks could lose data if not used for a long period of time. Doing this surface scan every year or two is preventative. It is hard to define a point in time when a failure due to degraded media occurs. I do have drives here that have not been spun up for several years, and they are fine, but I have heard from many who do have issues after leaving the drive in storage for several years. Sometimes it is actual data fade; sometimes it is power supply related; sometimes it is due to extremes in temperature or humidity.

All things age, some more gracefully than others.

Bottom line, revisiting your storage archives periodically is some assurance that what you have saved away is really still there. You know the old adage, the only thing worse than no backup, is a backup that can't be used.

Larry again: Frankly, I was stunned with this news and wanted to share it with you as soon as I could. Please make sure to check your hard drives regularly. Keep multiple backups. And consider using tape as a backup while these archiving issues get sorted out.

Here's an article I wrote recently on [backing up to tape](#) that may be useful to you.