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The platter that matters

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What are you going to do when your hard disk fails? Note that I said 'when' - not 'if'.

A hard disk is an engineering marvel: a rigid, magnetically coated platter spinning at between 5,400 and 7,200 revolutions per minute, while thousandths of an inch above it a read/write head busily reads data from, or writes data to, the platter.

The distance between the spinning disk and the head is so small that even a speck of dust can cause a crash - which is why drives have to be assembled in so-called 'clean rooms'.

The hard drive is thus an electro-mechanical device manufactured to incredibly high tolerances, which become more exacting with every passing month as manufacturers find ways of cramming more and more data onto them.

Once upon a time (1981 to be precise), five megabytes was regarded as a huge storage capacity - that was the size of the disk fitted in the early IBM PC-XT machines. Now I have an iPod with a tiny (one inch) drive that has a capacity of 60 gigabytes - that's 12,000 times the capacity of the original XT drive. Many laptops now come with 80Gb drives, and the average desktop probably has one of at least twice that capacity.

The trouble with electro-mechanical devices is that they wear out or break down because of component failure or maltreatment. (Imagine the hammering the hard

drive in your laptop gets.) Unlike solid-state devices, they have moving parts and are therefore certain to fail eventually. The only question is when that will happen.

On the face of it, the probability of failure may seem remote. All drive manufacturers publish what looks like a key statistic for their products - the 'Mean Time Between Failure' (MTBF). Most drives on the market today come with MTBF figures of between 300,000 and 500,000 hours. To the layman, these numbers seem comforting. After all, if your drive runs for 10 hours a day and has a MTBF of 500,000 hours, that means it's good for 50,000 days, which is nearly 137 years.

So that's all right then! Er, no, for several reasons. One is that MTBF is a complex measurement derived from testing in laboratory conditions (which are not the same as those found in actual use) and calculated using an arcane formula. Another is that it's a mean - an average - and we all know that it is perfectly possible to drown in a river that is, on average, six inches deep. So although the MTBF is interesting to geeks, it doesn't tell you what you really need to know - which is how long the manufacturer really expects your drive to last.

Fortunately, this information is easy to obtain because, alongside the MTBF figures, most manufacturers indicate the 'service life' and warranty period of a drive. And it turns out that most drives have a service life of between three and five years, and a warranty that is (surprise) always shorter than that.

Now comes the interesting bit. Until recently, hard drive failure was a catastrophe only for really heavy users of computing, or for those running network servers - which is why both those categories of user have always been paranoid about backing up their data. But most ordinary users didn't keep that much stuff, and in general much of what they did keep consisted of documents that could easily be backed up onto removable disks or filed in paper form.

But about three years ago, millions of such 'ordinary' users began buying digital still- and video-cameras and MP3 players. And all of a sudden, their hard drives began filling up with images, movies and music that really mattered to their owners because they documented their lives.

The average image coming off a digital still camera is between 0.5 and 1.5Mb in size. The average home movie runs to 2Gb or more. Music compressed using MP3 or equivalent formats requires 1Mb per minute. Add it all up and pretty soon you find that 80Gb doesn't look so big any more.

For the average user, backing up 80Gb of data is not a trivial task - it's the equivalent of 120 CDs or 17 DVDs. Which is why I suspect that much of this precious personal information - all those photographs, movies and music collections - has been wholly entrusted to electromechanical devices that are certain to fail.

And I raise the matter now because some of the disks holding this stuff are coming to the end of their service life. If I'm right, the next few years are going to see a lot of

anguish from computer users who have suddenly realised that hard disk failure involves more than just inconvenience and loss of face.

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