

# **Introduction to Windows XP**

## **Appendix H: Hard Drive Failures**

Hard Drive Failures

The majority of hard disk failures are mechanical. These failures, in general, fall into three categories: 1) wearing of parts (old age), 2) premature failure (defective drive) and 3) shock (you shouldn't kick the computer). Typically these failures are bearing failures and/or banging of the read/write heads into the delicate spinning platters where the data is magnetically recorded. In normal operation the read/write heads do not touch the platter; they float on a film of air created by the spinning platter.

In recent years with the advances in technology drives have become more robust. Ball bearings are being replaced by air bearings, which are more robust, and a clever monitoring system called S.M.A.R.T has been implemented. S.M.A.R.T. can report on many parameters affecting the life of the drive and therefore can help in detecting potential failures of the drive. The detail information and parameters monitored depends on the manufacture. However, all manufacturers cover the basic parameters. Typical information provided are: platter RPM, head seek failures, time to spin up, write/read attempts, bad sectors, how many hours the drive has operated, how often has it been turned on and off, temperature, physical data.

The nice part about S.M.A.R.T. is you don't have to be an expert to use it (you also can't be a neophyte) to detect impending failures of your hard drive. If S.M.A.R.T. monitoring is available in your BIOS, the BIOS will check and alert you to potential disk failures. You can also use a S.M.A.R.T. disk-monitoring program. You can get a free utility called Diskcheck from [www.passmark.com/products/diskcheckup.htm](http://www.passmark.com/products/diskcheckup.htm). The program is easy to use and it will display S.M.A.R.T. features supported by your drive. It also has a good help section which will help you interpret the data. Ariolic software's "Active Smart" (about \$30) is another program that monitors the drive and provides status information and notifies you of potential failures. If you have trouble finding the program at the stores try [www.ariolic.com/activesmart/](http://www.ariolic.com/activesmart/). If you get a warning from these programs, immediately make a total backup of the drive and replace it.

If you are an experienced user and come to the point where you have to recover data because of a failure consider the following programs:

- Spinrite 6.0, [www.spinrite.com](http://www.spinrite.com), for fixing and moving bad data blocks.
- Ontrack's Easy Data Recovery, [www.ontrack.com](http://www.ontrack.com), for in-depth investigation and extracting/recovery of data.