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Failure of storage media means the loss of integral data. Computer Science Labs are continually investigating the variety of problems that cause drives to fail.

A hard disk drive is a digitally encoded non-volatile storage device which stores data on rapidly rotating disks with magnetic surfaces called hard disk platters. The read-write heads of the hard disk drive are used to record and retrieve the data stored on the hard disk as the platter rotates at very high speed. Hard disk drives operate under extreme stress and will eventually fail due to general wear and tear accrued through age, or some form of malfunction or failure.



The chances of failure of a hard drive therefore increase greatly over time and ironically the chances are greatly increased as hard disk drives improve and develop. The phenomenon of hard disk failure is increasing; as we enlarge the read and write speed. Today we have the latest hard disk rotating at 15,000 rpm, this generates massive centrifugal force, a single adverse event in the course of normal operation can cause severe hard disk failure.

Hard disk failure

Hard disk drive failures can be generally classified in two categories. The first is where there is something physically wrong with the hard drive itself, the second is where there is no physical defect with the drive, but for some reason the information stored on the drive has become corrupted or not accessible.

Causes of failure

The following lists the main causes of hard drive failure:

- Firmware corruption
- Electronic failure & circuit board malfunction
- Logical errors
- Human errors

Computer Science Labs' research and development teams examine the types and causes of failure within hard drives and flash media.