Hard Drive Failure Factors

Magnetic storage media or hard drive and disks as they are more commonly known today offer almost exponentionialy increasing storage for computer users needs today, such as is required for video, audio and picture files. Adhering to the same footprint and physical size hard drives were first designed with, they have grown massively to currently 1TB (1 Terabyte) for a single hard drive, in relatively short time frames.

Moore's law as it is often called which predicts the pace of CPU speeds and suggests that CPU speed would double every 18 months (something which it has done its inception by Mr. Moore of Intel) there has been no such "law" or roadmap for hard disk drives. All of this extra storage capacity has been very welcome by computer users; however there has been a tradeoff with ever increasing storage capacities and overall longevity of the media, and ultimately the reliability of media holding your all important media.

Spinning magnetic storage media are prone to several areas of weakness some of which is inherent to the internal structure and design, other failure points are external. Hard drive technology is based on a electro mechanical design with spinning platters often made of glass or ceramics then coated via a process called splutter, this layer then is encoded and decoded via a head stack assembly which operates to very precise and repeatable accuracy, a typical modern hard drive will operate to less than 1 micron.

The major internal issues that can be instrumental in failure and data loss are Head Crash, Heat and Power Cycling.

Head crash

This is when the head assembly comes into direct contact with an area of the surface media it is not designed to (some hard drive technology allows the head to land on the inner portion of the media), the contact damage may be exacerbated if the head has suffered from damage and or there may be oxides or other contaminant within the disk enclosure, head crash symptoms usually manifest themselves via unusual noises such as clicking, ticking, scratching or clunking the media must be switched off immediately to preserve any possibility of data recovery. Areal density and bits per inch have squeezed the technology such that inevitably the tolerances of the media are very precise.

Heat

The ambient temperature of the computer system and the hard drive itself also are a concern for data integrity and longevity a simple hard drive cooling fan could save you from data loss, as hard drive media both internally and externally are prone to failure to heat.

Power cycling

Power cycling to hard drive media can result in hard disk failure and can be completely eliminated via a reputable UPS system.

There is nothing more frustrating than losing the important documents or data that you've spent so much time creating. If you have suffered such a loss you know how it feels. The best way to prevent data loss from happening is to be prepared for it. Thus, backuping up your important data on a CD DVD or external Hard drive, using uninterrupted power supply (UPS) units and having in place hard drive cooling fans are crucial actions that can save lots of headaches.

In case of emergency

In case you find yourselves in the unfortunate but likely position of hard drive failure and are unable to recover your data any other way then professional data recovery services exist that can help you get your valuable data back. These services are relatively inexpensive for the data that you probably want to recover. On top of that they usually charge you only if they succeed in retrieving your data.

Giorgos Kontopoulos is the web promoter of XYTRON LTD a leading provider of Data Recovery Services in UK. Xytron provides hard drive data recovery as well as services for server raid, desktop data, laptop data, CD DVD data, Legacy and Smart Media.

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