

Super Solutions Data Recovery Advice

HARD DRIVES

A recovery case from a Hard Drive usually comes into 5 main categories:

1. Logical Failure:

Where the drive itself is working fine, but the data is inaccessible. For example, when the drive has been accidentally formatted, or the file table has become corrupted. Also applicable if a manufacturers "System Recovery" has been performed; if this is the case then it is ESSENTIAL that you do not use the PC at all. Immediately shut it down and seek professional advice. If you continue to use the machine, then there is a very good possibility that the data area will be overwritten (for example with temporary internet files) and your personal data will be lost **FOR GOOD!**

2. Media Issues:

Where the drive has developed bad sectors, making it difficult or impossible to access via any Windows based operating system. This can be most commonly diagnosed by the fact that the hard drive is seen correctly in the BIOS (i.e. Correct Model number and capacity) and the computer locks up (freezes) when you try to access the drive. In this case a sector-by-sector image of your entire drive must be made onto a known good drive, and then specialist software must be used to extract your data from this image. We have various specialist cloning facilities, costing thousands of dollars each, which use combinations of soft/hard resets of the drive, as well as powering the drive down if necessary, to ensure the best possible image of the faulty drive.

3. Electronic Failure:

Where the logic board (PCB) has failed or died. This can be most commonly diagnosed by a completely dead drive, burning smell or making clicking noises. In this case a perfectly compatible PCB has to be located to re-enable access to the drive. This is NOT a simple matter, as nearly all drives have ROM (Mainly WD & Seagate) or NVRAM (IBM/Hitachi) information programmed into the PCB itself. This information has to be read off to a file, and then re-programmed into the donor PCB. This requires specialist hardware & software, again costing many thousands of dollars, to do this. In some models, such as Toshiba laptop drives, this ROM info is absolutely UNIQUE to the drive and so the original PCB must be repaired to facilitate the recovery. We have surface mount and hot-air soldering facilities to do this. Also, more often than not the electronic failure has also caused partial media problems (bad sectors), so an image needs to be made and worked from (see above Category 2 failure)

4. Firmware Failure:

This is where some modules of "firmware" on the actual platters of the drive have become damaged or corrupted. The drive requires these modules to be read from the Service Area (SA) of the drive, before it will start up and become ready. This often manifests itself by the drive spinning up as normal and sounding OK, but is inaccessible in the PC's BIOS. It may be seen as its factory alias (e.g. "Athena" for some Maxtor drives, or "HAWK" for some WD models). To recover from this requires extremely specialist hardware and software plus years of experience and technical knowledge to repair the SA. This requires great skill and resources (such as replacement modules from compatible stock/library drives), as one small error can render your drive irrecoverable. Likewise, more often than not, the firmware failure has also caused partial media problems (bad sectors), so an image needs to be made and worked from (see above Category 2 failure), especially in cases where the "G-List" (Growing defect list) has been damaged or corrupted.

5. Physical Failure:

In this case, a physical fault is preventing your drive starting up. This can range from a single failed head, through complete head stack failure, to motor failure. A single head failure can be diagnosed when the drive ID's OK and starts to image well, but in patches (e.g. Our Software Imager may image 150,000 sectors perfectly, then 50,000 inaccessible, and so on. In this case 1 of 4 heads has failed). A complete head stack failure usually manifests itself by clicking from the drive when it is started up. If your drive clicks at all then DO NOT UNDER ANY CIRCUMSTANCES continue to try and access it, or put it in the freezer (an "old wives tale" that WILL almost certainly destroy your data FOR GOOD). In the case of head failure, your drive needs to be disassembled in a dust-free clean room environment and the offending heads removed. Then the replacement heads need to be fitted, this is an EXTREMELY skilled job and not to be undertaken by unskilled personnel. Any Tom, Dick or Harry can buy a clean room and claim to be a "data recovery specialist", but it takes years of training and practice to be able to perform this procedure successfully. Replacement heads are also very difficult to locate sometimes, due to compatibility issues, so large resources and vast product knowledge is required. Fortunately we have thousands of spares in stock, and access to worldwide partners to locate the more difficult to find parts. In the case of motor failure, this is usually shown by the drive not spinning up at all, or making a quiet buzzing sound. In most cases, a motor failure requires the heads and platters to be removed and placed into a wood working chassis. Once more, great skill, techniques and specialist equipment is required to do this. Finally, more often than not, the failure has also caused partial media problems (bad sectors), so an image needs to be made and worked from (see above Category 2 failure).

More common failures by Manufacturer:

Toshiba - Head Failure (clicking), Motor Failure (not spinning or rattling noises)

Hitachi - PCB failure (dead), Head Failure (loud clicking)

WD - PCB (dead or clicking), Head Failure (loud clicking), SA Failure (spinning up but not seen in BIOS)

Seagate - Head Failure (quiet clicking), Motor Failure (Not spinning and quiet "Buzz buzz buzz" sound)

Maxtor - Firmware Failure (Seen incorrectly in BIOS), Head Failure (clicking)

Samsung - Head Failure (Clicking), PCB (dead)

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