

### Case Study: Hard Disk Crash Recovery

**“Oh No!, Not Now!”** This is what you may think when you see your computer boot up to a black or blue screen instead of your normal desktop. The screen you see may be black or blue, and has some indecipherable text. The text may or may not reveal what is wrong, but the bottom line is your computer won't boot up... so now what do you do?

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Once you have had that “Oh No!” moment, what you do next will be crucial in determining whether your data can be recovered. Some things that may seem obvious will actually cause you to lose all your data. The ultimate goal is to recover the entire system, so it's important to do the right things...

**A few words about backup:** you need at least two copies of your data, and one copy should be always off-site. Whether you use multiple hard disks in a daily / weekly rotation, or an online “Cloud” backup service, you need to have a functional backup always. Recovery of damaged hard disks is not guaranteed: by the time the problem is noticeable, it may be too late.

#### Step 1: Don't do any further damage... Read the black or blue screen error text.

The error message will give clues to what is wrong. Especially if it is a black screen, you will receive a message something like “NTLDR missing” or “Disk Not Found”. This is a definite warning that it is a disk error, and you should immediately stop trying to boot up the system. If it is a blue screen, you will have to read the error text and judge what the error is, there are many possibilities other than disk problems.

- After one or two shutdown/reboot cycles, it will become apparent that something is very wrong.
- Don't go beyond one or two reboots, you will cause more damage to the hard disk.
- **Don't use the computer's “Recovery Disk” option**
  - Some manufacturers provide a “recover” option, but don't use it – recovery ERASES your data!
  - After your data is known to be safely stored elsewhere, the recovery option may then be useful.

#### Step 2: Call in a professional

Yes, this may seem self-serving, but especially if you don't have backups, or the backups are no good, you will need to rescue as much data as possible from the failed hard disk. Whether you call me or any other service, get a pro.

#### Step 2a: If you have backups, start the restore process

Assuming you have a good backup files, the simplest option is to obtain a new hard disk and restore the backup to the new hard disk. This is a relatively simple process:

- Remove failed disk, install a new hard disk
- Boot from recovery CD, and restore the hard disk from the backup.
- Reboot after restore completes, and resume normal operation... Done!

## **Step2b: If you don't have a backup, attempt data rescue and rebuild the computer**

If you don't have a backup, your only option is a rebuild. Another reason to rebuild: if you were experiencing software problems before the crash, you may not want to use the restore option, the restore will put just back the same old problems. In that case, a rebuilding the software is a better option, and then restore data files only.

- Remove failed disk, install a new hard disk
- Install Operating System plus all updates and patches
- Install Applications Software: Word Processing, Spreadsheet, etc.
- Restore data only from backup
- If Backup not available, attempt Data Rescue:
  - Attach failed disk to functioning computer with recovery adapter cable
  - Use specialized software to locate, diagnose, and re-assemble data files
  - Restore found data to rebuilt hard disk
  - ***In some cases, the data is not recoverable due to hardware damage***
    - The only option in this case is “clean room” recovery – disk is taken to a “clean room” lab
    - The disk is disassembled, and installed in a test rig that can spin the disk and read data
    - This step costs a minimum of \$300, up to \$5000 or higher, and at least a week's time
    - Usually reserved for highly critical business data, but some individuals will use this option

## **Step 3: Post-recovery cleanup:**

After recovery is complete, you may not be finished yet. You may need to re-install or initialize printers, network connections, scanners, or other peripherals. Additionally, serialized software (software that uses hardware serial numbers to establish license or identity validity) will need to be re-initialized. This applies to software such as Microsoft Office, Quickbooks, and any Point-of-Sale software/hardware that transmits credit cards transactions.

I experienced this recently at a client site – after restore, Quickbooks appeared to work OK, yet when the first credit card payment was attempted - it failed. A call to tech support revealed that the card swipe, PIN pad, and receipt printer had to be re-initialized for security purposes individually.

## **Step 4: Post-recovery analysis:**

Did the recovery go smoothly? If not, now is the time to document the entire process, good and bad. You'd hate to have to re-learn it all over should it ever happen again. It may also be time to think about upgrading the process – software always keeps improving, and there are better ways to do backup than existed even a couple years ago. Online backup is a great example – services that did not exist two years ago are now robust, cheap, and reliable.

You may also have discovered that the software you depend upon is outdated – again, using Quickbooks as an example, the publisher (Intuit Corp.) no longer supports versions older than 2009. Intuit will provide tech support, but it comes at a high cost – you have to upgrade to the current version to get help. Microsoft no longer supports Windows98, Windows2000, and WindowsXP-SP2. Other versions such as WindowsXP-SP3 and Vista will join them sometime in late 2011. Now may be the time to do those long-delayed software and hardware upgrades.

## **Summary:**

If you have any questions about data backup or recovery, please call me – let's make sure you don't lose data!