



Are You Prepared for a Computer Disaster?

TODAY'S COMPUTERS ARE MUCH MORE RELIABLE THAN IN THE EARLY DAYS OF PERSONAL COMPUTERS.

SOME PEOPLE MAY NEVER ENCOUNTER A CATASTROPHIC FAILURE, BUT BEING PREPARED FOR ONE THAT

NEVER OCCURS IS BETTER THAN BEING UNPREPARED FOR ONE THAT DOES.

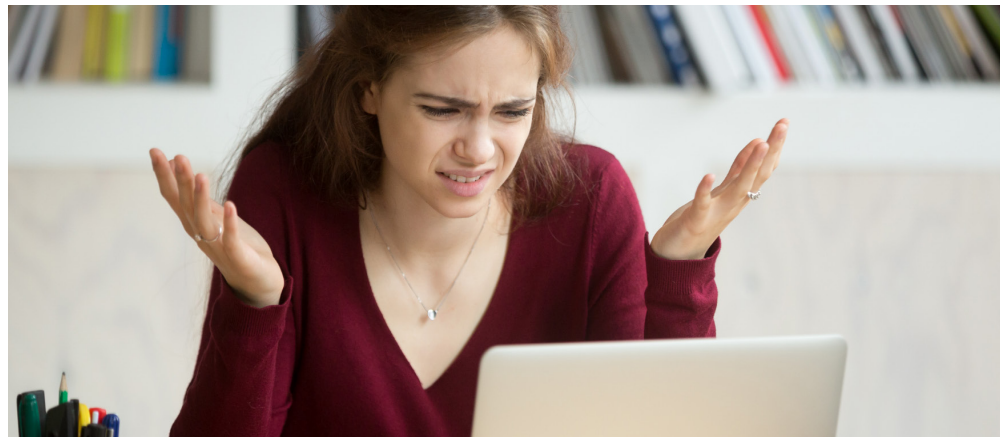
Solid-state disk drives can fail, just as any electronic component can fail, but they are generally more reliable than mechanical drives because there are no moving parts. You've probably heard that there are only two kinds of computer users: Those who have experienced a hard disk crash and those who will. That's no longer entirely accurate.

The person who replaces a computer every three to five years may never have to deal with a disk crash or any other mechanical or electronic failure. Components are built better than they used to be.

There's a computer that was built sometime prior to 2010 on my desk. It came with Windows 7 and I probably upgraded it to Windows 8 and then it became a Linux computer. It has run reliably for a decade.

A data management company I'm familiar with sometimes ran mechanical disk drives on their servers for 10 years or more. These were RAID devices that could recover from individual disk failures. RAID has two possible meanings: *Redundant array of inexpensive disks* (the original term) and now *redundant array of independent disks*.

The 10-year-old computer on my desk isn't in daily use for mission-critical activities. The company that ran the decade-old disk drives was using them for mission-critical tasks, but the ability of the RAID drives to rebuild all data on all drives so long as no more than one drive failed, coupled with a robust daily backup system, eliminated virtually all risk.



It's not just electronic and mechanical failures that cause problems, though. Fires, tornadoes, and other weather events can destroy hardware. Human error can wipe entire disk drives. Thieves can breach network security and encrypt or delete data.

Fun fact: There is a command on Unix and Linux systems that, if issued by someone with root permissions, will delete data, applications, and even the operating system. This is one reason why no Linux or Unix user should ever be allowed to run as root.

Being Ready

SO MANY THREATS EXIST THAT IT'S IMPOSSIBLE TO ENUMERATE ALL OF THEM, SO WHAT'S IMPORTANT IS DEVELOPING A RECOVERY PLAN THAT CAN DEAL WITH ANY PROBLEM, ANTICIPATED OR NOT.

Computers are critical to the ongoing operation of most businesses. Billing records are stored on the computer. Work in progress is

COMPUTER PROBLEMS USUALLY OCCUR WITH LITTLE OR NO WARNING. ALTHOUGH HAVING A GOOD BACKUP IS ONE ESSENTIAL ASPECT TO ENSURE RECOVERY, IT'S IMPORTANT TO CONSIDER WHAT INTERIM STEPS WILL BE NEEDED WHILE DAMAGED EQUIPMENT IS REPAIRED OR REPLACED.

there. Correspondence with clients is maintained on the system. What would happen to a business that suddenly lost all of its data?

An organization that's unprepared for such a disaster is unlikely to survive. Any organization that maintains accounts receivable is out of luck if the receivables file disappears. Customers who receive no invoices or statements are unlikely to send payments.

A big part of being ready is nothing more than having a reliable backup.

Having more than one copy of the backup is helpful, but having at least one is essential. If you have just a single backup, it should be located in a separate building from where the computer is located. Home users sometimes work out agreements with neighbors to store each other's backups. That still leaves

the backup vulnerable to widespread damage such as that caused by hurricanes, tornadoes, and earthquakes.

Consider two types of backup: One for the operating system and applications, and the other for data.

The operating system and applications are usually backed up as a disk image, a process that records information from the disk sector by sector. If the disk drive fails, the user replaces the disk drive and then loads a special application to restore the sectors from the backup device. The operating system, applications, and settings will all be recovered.

For those who store all of their data on the computer's boot drive, an image backup will also collect those files, but there's a better option no matter where the data files are stored.

“A BACKUP APPLICATION SUCH AS CODE42 (PREVIOUSLY KNOWN AS CRASHPLAN) BACKS UP NEW AND MODIFIED FILES CONTINUOUSLY AND, BETTER STILL, KEEPS MULTIPLE COPIES OF THE FILES.”

The operating system and applications change infrequently, but data files are in a constant state of flux as the user adds files, modifies files, and deletes files. Email messages flow in every few minutes. Spreadsheets and other documents are reviewed and edited. Change is constant.

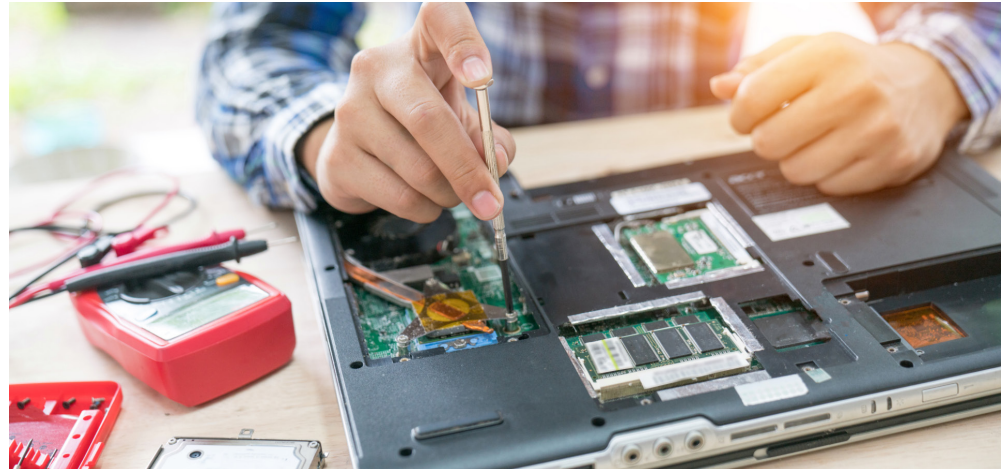
The backup needs for data files are different from those for the operating system and applications.

A backup application such as Code42 (previously known as CrashPlan) backs up new and modified files continuously and, better still, keeps multiple copies of the files. If you've ever made mistakes when working with a document and wished that you could just go back to last week's copy of the document, file versioning is what you need.

This is also important because malware may attack a computer slowly so that the user won't notice what's going on until it's too late. When malware changes a file, the backup system will send it to the cloud-based server and overwrite the good version. Backup systems that offer file versioning can

go beyond the most recent copy of the file to find one that hasn't been attacked.

Losing the operating system, applications, and settings is a major inconvenience, but these files can be restored with relative ease



AS IMPORTANT AS BACKUP IS, IT WON'T SOLVE EVERY PROBLEM. IF THE COMPUTER HAS BEEN DAMAGED OR DESTROYED, REPAIRING OR REPLACING IT WILL TAKE MORE TIME THAN SIMPLY RESTORING FILES TO UNDAMAGED EQUIPMENT. PLANNING FOR INTERIM OPERATIONS IS ESSENTIAL.

temporarily while the primary computer is being repaired or replaced.

Several years ago when I still had a desktop computer in a big box, an internal component failed and the computer spent nearly a week in the computer shop. I used a notebook computer during the interim. I was limited to using just the monitor in the notebook computer instead of two large monitors, but the notebook system had nearly all of the of the essential programs installed.

I didn't have the time billing application on the laptop, so keeping track of time was fully manual for a week. But every other application I needed was there.

If something like that would happen today, I would be able to call on the Surface Pro tablet computer. The time billing application isn't installed there, either, but the power supply acts as a docking station, so I would be able to connect both large monitors and the external disk drives. This isn't something that I look forward to doing, but it's comforting to know there's no need for panic.

You can't prepare for everything, but it is possible to prepare for a lot of the bad things that might happen. Using a morning or afternoon to think about how things might go wrong and how you can mitigate the damage eliminates a lot of stress when something does go bad. **Ω**

even if you don't have a backup. Losing data files, however, is a catastrophe. These are files that are difficult to recreate and some files, such as photos and videos simply cannot be recreated at all. If they're not on backup, they're gone.

Planning for the Interim

BEING READY FOR A PROBLEM INVOLVES MORE THAN JUST BACKUP, THOUGH. WHEN SOMETHING GOES WRONG, A PREPARED RECOVERY PLAN CAN HELP.

Large enterprises often have disaster recovery plans that are much more involved than what's needed for home office or small office users. One single piece of equipment can help immeasurably: An older computer that's retained for use in an emergency.

If a disk drive fails, obtaining and installing a replacement could take as little as a few hours depending on how close you are to a store that sells computer equipment. But if the computer's CPU or motherboard fails, the process will take longer. If you have an older computer that has your primary applications installed, that device can be placed in service