BLINN.COMmunications
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Preparation: Being Able to Smile at a Catastrophe

Computer technicians say there are two kinds of computer owners: Those who have experienced a system failure and those who will experience a system failure. Each of these groups has subsets: Those who recover and those who don't.

Computers have been used in offices and homes for 30 years or more. How many files have you collected in that time and what would you do if every file you have suddenly became unavailable?

For me, that would be about 61 thousand photographs, more than 100 thousand files associated with websites, tens of thousands of graphic design images, five thousand or more word processor and spreadsheet documents, tax records dating back more than 20 years, time-billing records for a similar period, 12 thousand of my wife's photographs, and an absurdly large number of email messages that we've saved.

Because I want to survive a catastrophic loss of files, I've taken several precautions, the most important of which is making sure that essential files are backed up in more than one place. After all, disks fail.

Computers, disk drives, and other components are a lot more reliable now than they used to be. Until recently, corporations replaced computers every three years. Many still do because they can take advantage of performance improvements in hardware, but others have moved to four- or five-year replacement schedules. Depending on what the computer is used for, additional speed may not be needed and increasing the service period for computers by one third or two thirds is an easy way to save money.

Corporate IT departments may also require that all files be stored on servers, not on individual computers. This policy alone simplifies recovery when an employee's computer fails. The IT department needs only to prepare a replacement computer and deliver it to the user. This in uncommon for home users, and simply having a server doesn't ensure recovery.

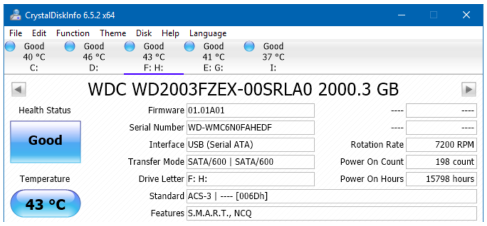
Having a central server doesn't guarantee recovery from a catastrophic failure. The component most likely to fail is the disk drive and having a complete backup is the only way to recover.

Disk Drive Disasters

Unlike automobiles that often show easily detected early warnings, disk drives usually fail suddenly. Some may provide hints, though.

Most disks manufactured in the past decade include self-monitoring, analysis and reporting (SMART) technology that attempts to detect and report various indicators of drive reliability with the intent of anticipating imminent hardware failures.

Checking all disk drives in or attached to a computer or server with an application such as Crystal Disk Info may provide some warning. I run the application monthly and watch for any indication that any of the drives may be having a problem. My primary computer has five disk drives with in-service times ranging from about two years (15,800 hours) to about five years (43,173 hours).



WDC WD2003FZEX-00SRLA0 2000.3 GB

Health Status: Good
Temperature: 43 °C
Firmware: 01.01A01
Serial Number: WD-WMC6N0FAHEDF
Interface: USB (Serial ATA)
Transfer Mode: SATA/600 | SATA/600
Drive Letter: F: H:
Standard: ACS-3 | ---- [006Dh]
Features: S.M.A.R.T., NCQ
----: ----
----: ----
Rotation Rate: 7200 RPM
Power On Count: 198 count
Power On Hours: 15798 hours

Any given disk drive may fail ten minutes after being installed or still be running after more than a decade.

Replacing drives that are more than 5 years old is a good proactive measure. That said, I know of some commercial operations that routinely run disk drives until they fail. This can be done because the drives are in redundant array of inexpensive disks (RAID) configurations. When a RAID drive fails, it can be replaced and data that was on the disk will be recovered from the other drives. Should two drives fail simultaneously, data would need to be recovered from backup.

A Recipe for Failure

Disk drives can be partitioned to appear as more than one logical drive. Using the "second" disk drive for backup is a bad idea for several reasons.

When a disk drive fails, the entire physical drive fails. No matter how many partitions have been created to make logical drives, a failure of the physical drive will destroy all the data on all logical drives.

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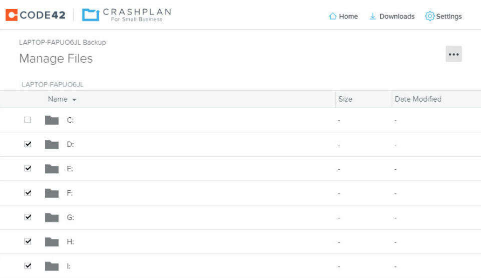
Additionally, anything that happens to the computer happens to any installed drives. Examples: Theft. Fire. Elephant stampede. A desktop computer may have several physical drives, but keeping everything in a single box still creates a single point of failure.

Another option is installing a second drive in the computer or attaching an external USB drive to the computer for backup. While slightly better than backing files up to the same drive, the backup will still be lost if the computer is destroyed by flood, fire, tornado, earthquake, or elephant stampede.

Preparing for Success

To be dependable, a backup must be maintained at a location other than where the computer is. The backup process should also be continuous or nearly so.

I use a multi-part system and recommend this process for anyone who is seriously concerned about losing data.



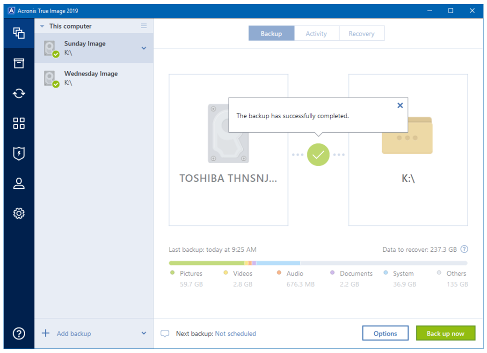
LAPTOP-FAPUO6JL Backup

Manage Files

LAPTOP-FAPUO6JL

	Name	Size	Date Modified
□	C:	-	-
☑	D:	-	-
☑	E:	-	-
☑	F:	-	-
☑	G:	-	-
☑	H:	-	-
☑	I:	-	-

Files are backed up continuously to Code42's CrashPlan service. The servers are in Minneapolis and I'm in Columbus. A physical event could destroy my computer. A physical event could destroy Code42's servers. Because Minneapolis is about 700 miles from Columbus, it's unlikely that both will be affected by the same event and, should that happen, restoring computer files will probably not be my top priority. Files need to be restored via the internet and this is a slow process even with a fast connection.



Sunday Image
K:\

Wednesday Image
K:\

The backup has successfully completed.

Last backup: today at 9:25 AM

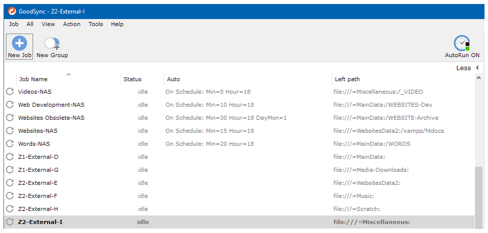
Data to recover: 237.3 GB

Pictures 59.7 GB
Videos 2.8 GB
Audio 676.3 MB
Documents 2.2 GB
System 36.9 GB
Others 135 GB

Next backup: Not scheduled

CrashPlan doesn't back up the operating system and program files. These files are less important than the data, but being able to restore the boot drive is helpful. I use Acronis True Image to back up the operating system and programs to external USB drives – one drive on Wednesdays and a second drive on Sundays.

Because restoring data from Code42's servers would be relatively slow, I also back up the data drives using GoodSync each Wednesday. These backups are to portable USB drives that I store off-site. If a catastrophic failure occurs, most files could be restored from the external disk drives and I would then use CrashPlan to recover recently changed files.



Job Name	Status	Auto	Left path
Videos-NAS	idle	On Schedule: Min=5 Hour=18	file:///=Miscellaneous:/_VIDEO
Web Development-NAS	idle	On Schedule: Min=10 Hour=18	file:///=MainData:/WEBSITES-Dev
Websites Obsolete-NAS	idle	On Schedule: Min=30 Hour=18 DayMon=1	file:///=MainData:/WEBSITE-Archive
Websites-NAS	idle	On Schedule: Min=15 Hour=18	file:///=WebsitesData2:/xampp/htdocs
Words-NAS	idle	On Schedule: Min=20 Hour=18	file:///=MainData:/WORDS
Z1-External-D	idle		file:///=MainData:
Z1-External-G	idle		file:///=Media-Downloads:
Z2-External-E	idle		file:///=WebsitesData2:
Z2-External-F	idle		file:///=Music:
Z2-External-H	idle		file:///=Scratch:
Z2-External-I	**idle**		**file:///=Miscellaneous:**

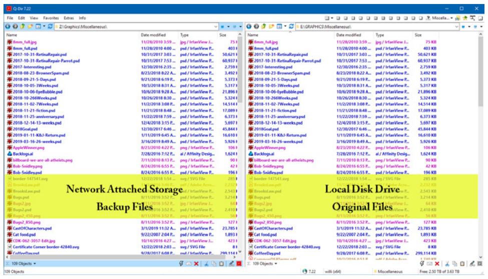
GoodSync also runs on my wife's computer and copies all of her photographs, documents, and email messages to a directory on my primary computer so that the files will be backed up to CrashPlan and to the external disk drives.

I have one additional backup location: A network attached storage (NAS) drive that's connected to the router. GoodSync updates important working files to this drive an hour after they're created or changed. This is protection against *stupid user errors*.

For example, this week I opened a file in Photoshop so that I could use it as the basis for a new illustration. I intended to save it using a new name to retain both files.

Ooops! I forgot to save the file using the new name, made changes, and then saved the file. So the old file had been overwritten. After saving the file with a new name, I wanted to recover the old file.

There were several options: CrashPlan would have the old file, but I would need to start recovery mode. The external USB drive would have the file, but I would have to fetch the drive and connect it. The NAS drive also had the old file and it's always available, so all I had to do was copy the file from there to the proper location on the computer.



Z:\Graphics\Miscellaneous\

Name	Date modified	Type	Size
8mm_full.jpg	11/28/2010 3:59 ...	jpg / IrfanView J...	75 I
8mm_full.psd	11/28/2010 4:00 ...	psd / IrfanView P...	403 I
2017-10-31-RetinaRepair.psd	10/31/2017 3:03 ...	psd / IrfanView P...	50,621 I
2017-10-31-RetinaRepair-Parrot.psd	10/31/2017 7:53 ...	psd / IrfanView P...	60,937 I
2017-Interesting.psd	12/30/2016 2:35 ...	psd / IrfanView P...	2,759 I
2018-08-23-BrowserSpam.psd	8/23/2018 8:22 A...	psd / IrfanView P...	3,492 I
2018-09-21-5-Days.psd	9/21/2018 6:19 P...	psd / IrfanView P...	5,373 I
2018-10-05-3Weeks.psd	10/3/2018 8:31 A...	psd / IrfanView P...	5,317 I
2018-10-06-EyeBubble.psd	10/6/2018 9:28 A...	psd / IrfanView P...	21,896 I
2018-10-266Weeks.psd	10/26/2018 8:30 ...	psd / IrfanView P...	5,324 I
2018-11-02-7Weeks.psd	11/2/2018 3:08 P...	psd / IrfanView P...	14,514 I
2018-11-21-fiction.psd	11/21/2018 8:48 ...	psd / IrfanView P...	17,089 I
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2019-01-11-K&J-Return.psd	1/11/2019 6:45 A...	psd / IrfanView P...	16,610 I
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AppleWinner.png	8/23/2010 4:22 P...	png / IrfanView P...	106 I
Backlogs.ai	7/28/2016 7:12 P...	ai / Affinity Desig...	1,624 I
billboard-we-are-all-atheists.png	7/11/2010 8:13 P...	png / IrfanView P...	90 I
Bob-Snidley.png	8/24/2016 6:55 P...	png / IrfanView P...	42 I
Bob-Snidley.psd	8/24/2016 6:55 P...	psd / IrfanView P...	196 I
border-147541.svg	12/22/2018 1:54 ...	svg / SVG File	285 I
BrooksLaw.pdf	11/1/2016 3:46 P...	pdf / Adobe Acro...	2,232 I
BrooksLaw.psd	[illegible]	psd / IrfanView P...	2,543 I
Bugs.psd	8/11/2016 3:52 P...	psd / IrfanView P...	3,214 I
Bugs2.jpg	8/11/2016 3:52 P...	jpg / IrfanView J...	64 I
Bugs2.psd	8/11/2016 3:52 P...	psd / IrfanView P...	2,410 I
Bugs2_450.png	8/11/2016 3:52 P...	png / IrfanView P...	56 I
Bugs2_850.png	8/11/2016 3:52 P...	png / IrfanView P...	127 I
CastOfCharacters.psd	3/1/2019 11:32 A...	psd / IrfanView P...	23,785 I
Cat food.psd	9/22/2007 2:04 P...	psd / IrfanView P...	1,893 I
CDK-062-3057-Edit.jpg	10/14/2016 4:27 ...	jpg / IrfanView J...	423 I
Certificate Corner border-42840.svg	12/22/2018 2:03 ...	svg / SVG File	8 I
CoffeeDay.psd	9/28/2017 6:08 P...	psd / IrfanView P...	299,114 I

109 Objects

E:\GRAPHICS\Miscellaneous\

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8mm_full.jpg	11/28/2010 3:59 ...	jpg / IrfanView J...	75 KB
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109 Objects

109 Objects 7.22 willi (x64) Miscellaneous Free: 2.50 TB of 3.63 TB

Overemphasizing Backup?

It may seem that I spend a lot of time talking about the importance of backup. That's probably because I do.

It's important! Too important to leave until next year, next month, next week, or even tomorrow. If you don't have a complete, current, validated backup in place now, then now is the time to do something about it.

If a disk drive fails on your home computer and your spouse learns that all of the family's financial records, photographs, and other documents are gone, the news will probably not be met with great rejoicing.

For businesses, the outlook is bleak. An article by J. Colin Petersen, the CEO of an IT outsourcing firm wrote in 2015 "80% of businesses won't go under after a data loss disaster, but they might wish they had."

Let's say that a computer malfunction destroys your financial records. You can be reasonably certain that all of the company's creditors will still have a record of what your company owes and will send bills, invoices, statements, and (eventually) collectors. On the other hand, it's less likely that you'll receive payments from your clients if you're unable to send invoices and statements to them.

The situation would be even worse if your business consists entirely or largely of intellectual property that resides on the computer. If you've ever had to recreate even a few minutes worth of work lost to a computer crash, you can imagine how difficult it would be to recreate weeks, months, or years worth of work.

It doesn't have to be that way. Take a few minutes right now to work out a reliable way to protect the data on your computers. Ω