Catch That Corruption Before It Catches You

Last week I got a mail from a reader that pointed at a certain Apple Mac OS X bug that causes JPEG files to become corrupted. I had never heard of such bugs but BGR's Alexander another one. This bit would sure make people from serious grief.

Apparently, the bug causes JPEG files to seemingly alter/corrupt/destroy/ruin/kill/eat/ate/chew/chewed/digest/shit/shitted/spew/spewed/puke/puked/spit/spat/lick/licked/bite/bit/gnaw/gnawed/chew/chewed/swallow/swallowed/gulp/gulped/devour/devoured/ingest/ingested/consume/consumed/take in/took in/absorb/absorbed/soak up/soaked up/drink in/drinked in/sponge up/sponged up/mop up/mopped up/wipe up/wiped up/dry up/dried up/drink up/drinked up/ingest/ingested/digest/digested

control. As the years advance, I'm seriously considering dropping digital altogether.

Posted by: Richard Tunwell | Wednesday, 25 October 2012 at 10:24 PM

I did some analysis a few years ago on the probability of data loss with two replicas of each file (different drives) versus three replicas of each file. The added reliability provided by a third replica is quite large, and I recommend it to anyone even marginally serious about data preservation. Drives fail - all drives, all manufacturers. It's a fact of life. Even the best manufacturer has an occasional dud. What you have to do is ensure that a failure doesn't cost you a lifetime of images.

Posted by: Bill Tyler | Wednesday, 25 October 2012 at 11:06 PM

If you are NOT one of the technically minded people - as most of the above posts plainly are - I would suggest a Drobo for onsite storage (and back it up offsite/cloud). They are simple to use, buy some disks, shove them in and plug it in. They can be set to allow for a disk failures at one time, are self-healing - just toss in a new drive to replace the dead one, and it all backs up.

It won't help you if the data is corrupt though- you'll just have lovely copies of corrupt data.

Posted by: Bear | Thursday, 24 October 2012 at 08:17 AM

The first priority with problems like you describe is to narrow the possible sources.
I'm assuming you are on a PC here. My experience comes from working for Microsoft and writing data data recovery software.

- First check event logs.
Open Control Panel, go to Administrative Tools and choose Event Viewer
- In Event Viewer select Microsoft > Windows > CorruptedFileRecovery Client. Only one folder under that is Operational. If there is a system problem there will be log entries describing what is happening. If number of events > 0, it's likely not an Operating System or Hardware problem. The problem would be with software you are using to download or view your images.

Another tactic is to open your Start Menu, and in the right column, choose Help & Support. A dialog will come up and at the top type in CHKDSK.
- The instructions for using Chkdsk will come up. Follow that. Back up all important data before running Chkdsk!

The resulting logs will tell you if you have a system problem. If only your photo files have problems, the problem is with the software you are using to download, store or view your image files. If Chkdsk shows problems with other files, the problem is with the Operating System or more likely hardware. But at least you will know where the problem is.

Gene

Posted by: Gene | Thursday, 24 October 2012 at 11:20 AM

Paraphrasing Kenneth Wajda here (he got to it first)

- Yes, I was having some trouble with corrupted files too, but troubleshooting revealed it was the storage medium, and never the original files themselves.

The little tabs on the hangers were getting worn out and the files kept falling to the bottom of the cabinet drawer. My solution was to replace the hanging files with three-ring binders. Very elegant solution it turns out.

The Print-File negative preservers are already, conveniently, pre-punched (i.e. "coded") to be fully compatible with these binders. Since this configuration change, which amounted to a complete overhaul of my filing system, (and which cost me $16!) haven't had a single file access problem. Fortunately, NONE of my files was ever actually corrupted at all. Whew!

Posted by: Phil Moore | Thursday, 24 October 2012 at 08:50 AM

My philosophy has been multiple backups on multiple media types (along with a tiered approach for more expensive media). In theory, everything gets backed up to an external hard drive and also burned to a blu-ray disk. For the tiering, I select my best/most important images and back them up online. Finally, I try not to delete anything from a flash card until I've backed it up.

In practice, I'm behind on everything, and the online backups rely on my having selected my best/most important images in Lightroom which I have done somewhat haphazardly.

Posted by: mrsgrier | Thursday, 24 October 2012 at 09:46 AM

Dear Richard,

I agree. It's much easier to control the situation with film. The fact that, by its nature, it's a single point failure situation means you know where to devote your efforts. The majority of my negatives are in airtight pouches in a deep freeze in the garage. Not only are they well stabilized, but they're well protected against a major earthquake (digging the freezer out of the rubble could be a major undertaking, but the film is going to be intact) and many fires, so long as the whole structure doesn't burn to the very ground (it takes quite a while for the internal temperature of the deep freeze to rise high enough to damage the film).

It's a set it and forget it situation. As you well know, digital is not.

Of course, in both situations, if you don't engage in good practices your photographs are at risk. The couple of commenters talking about their file cabinets and manila folders are living in fools' paradises. They're working with no protections against single-point failures (burglary, vandalism, fire, flood, earthquake, tornado...)and while such failures aren't likely, if it happens they're going to lose everything.

Apropos your (dis-) comfort level, I think the most telling point is that I could relate my film preservation techniques in 16 words. I thought about summarizing my digital preservation techniques and realized that would take a whole column (which I shall probably write at some point).

That kind of says it all. It's not at all hard to preserve digital information, but it sure is a lot more involved.

pax \ Ctein
[Please excuse any word-salad. MacSpeech in training!]
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-- Ctein's Online Gallery http://ctein.com
-- Digital Restorations http://photo-repair.com
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Posted by: ctein | Thursday, 24 October 2012 at 09:46 PM

...oh, I may have neglected to mention, I really meant my file cabinetS, since there are actually five, not just the one, as I may have implied in a previous comment, which I'm afraid greatly simplified my storage methods. Please allow me to elaborate: Each of these "Cabinets", which is in reality a titanium reinforced capsule containing that group of negatives (which are stored in archivally safe polypropylene sleeves, BTW), and has been cryogenically preserved in a series of concrete and steel vaults equipped with "Nuvoguard" (TM) insulation, Halon fire protection systems and offsite surveillance and control. As an added measure of safety, the five cabinets have been strategically located and buried, to a depth of one-half mile (I though a full mile to be a tad excessive) in five different mountains, in different ranges on seperate continents. In the event of a catastrophe, this is to insure that should something happen to one of the cabinets, only one-fifth of my archive should be risked.

So you see, Ctein, it may appear that I am living in a "Fools Paradise" indeed, but at any given time, only one-fifth of my negatives are actually at risk from any single failure, which, while painful as it may be, would be a tolerable loss.

[*Hey, Maus, I'll handle the satire around here,[g] --Ed.*]

Posted by: Phil Moore | Friday, 25 October 2012 at 08:40 AM

Ctein

My point was merely that risk = likelihood * vulnerability * value.

With digital, you can mitigate vulnerability, but likelihood appears to be high. Means lots of work and attentiveness in my experience.

With film there are less ways to mitigate vulnerability, your freezer notwithstanding, but the risks you itemise are pretty unlikely where I live. So I sleep easier, while I know the digital gremlins are chewing away all the time.

Posted by: Richard Tunwell | Friday, 25 October 2012 at 09:05 AM

Dear Phil,

You're making light of a serious situation, and I am NOT joking. Back in the days of film-only, those of us in the know spent many hours and articles trying to educate film photographers about proper film storage, which is not what you and Ken are doing. Your practices, are unfortunately, typical ones.

The historical facts are this-- most (as in almost all) photographers will lose the use of some of their film over their lifetime. Some (more than an insignificant number) will lose the use of most of their film. The theoretical archival life of a film image is like the theoretical life of a human being--only a very small fraction of humans achieve that.

That's not a projection nor supposition, like the future durability of digital images. That's known.

Not making real efforts to preserve your photographs is like not having auto or health or fire insurance. You may go through life never needing it. That doesn't make it a smart bet.

Smugly crowing about how much better off film photographers are than digital photographers, even if true (arguable), doesn't make it one bit a smarter bet. It's a gamble that's still stacked against you.

There's plenty of literature out there on film preservation. All film photographers can educate themselves on how to do this properly and it's not beyond their technical or economic means.

Most won't. And that's no joke.

pax / Ctein

Posted by: Ctein | Friday, 26 October 2012 at 12:41 AM

Ctein - I wish you wouldn't take my attempt at a little humor too seriously. I am well aware that proper, safe archiving and storage of media, whether film or digital, is a serious matter and I realize that's what this post was attempting to address.

Not that I don't take it least a tiny bit of pleasure poking fun at some of the problems digital photographers encounter, film definitely had - and has - its own shortfalls and risks, if only of a slightly (though not by much) nature. In fact, I myself have many many digitized files of my negatives and prints, carefully stored on redundant onsite and offsite drives as it would be a terrible loss if something were to happen to them.

Phil

Posted by: Phil Moore | Friday, 26 October 2012 at 02:16 PM

Controlled- humidity cold storage of my film photos is, if not beyond my means, at least beyond my energy levels. It also makes getting at anything to do anything with it a much bigger project.

It's interesting that is true for me, because buying a big chest freezer and a bunch of ziploc bags, finding floor space for it, and keeping the power on, is actually not that much money or effort.

I guess I'm just a computer geek at heart; spending hundreds of hours scanning and editing film images, and the time and effort to keep my fileserver and backup system working, doesn't seem like nearly as much trouble, but by any objective measure it's hugely more time and money. Then again, it's not just for photographic images, either, though by byte count that's certainly the majority of the content. And the scanning isn't just for preservation, it makes the images much more useful to me today.

Posted by: David Dyer-Bennet | Saturday, 06 October 2012 at 07:09 PM

My film, too, is in plastic protectors in paper packaging (except for a small minority in plastic sealed binders). But I *have* experienced considerable bit-rot in the film collection, both in the area of surface scratches and fading of colors. I'm also now starting to see some yellowing of negatives from early processing batches I did myself (bad fixing, I believe).

Posted by: David Dyer-Bennet | Saturday, 06 October 2012 at 07:09 PM

I just would like to point out that if the corruption happened on the primary work drive then this defect will of course be transferred to all backups, be they on- or offsite. Cloud based services won't prevent that. You will only have one more corrupted copy.

One can use a tool such as HDDHealth (Freeware, http://www.puntosoft.com/) to keep a watch on the general health status of a disk drive (I'm Windows only so don't know about MacOS software but I guess equivalent tools exist). Another article on CNet: http://news.cnet.com/8301-11310_3-6746872-38/how-to-monitor-hard-drive-health-with-diskcheckup-for-windows/

Also, keep in mind that almost all backup software is not able to test file integrity. At least none that I know. For them change is change, whether it's user generated (deleted text from Word document, run filter on images) or due to hardware or other failures. They can only verify that the backup process itself went correctly, i. e. source file and backup file are identical. If the source is already corrupted you're out of luck.

Everything else would mean for the backup software to open the files and interpret them. Simple errors such as wrong file headers (which usually tells the opening software what kind of file to expect) can be detected but you could have a perfectly fine JPEG from a file format point of view but the content itself is completely scrambled or half the image is missing. It would still open without errors. Imagine copying a text written in a language you don't understand. You could make a perfect copy of the original given to you but you would not know if paragraphs are missing or if it's full of spelling mistakes or other errors because to do not understand the language.
Of course such a feature would slow down the backup process extremely.

Averting such errors is difficult. Monitoring the health of your drives is a good way to begin with (you might need to check your BIOS setting if S.M.A.R.T. is enabled (monitoring system build in almost all HDDs from the last 10 years. It records defects, temperature of the disk etc.). If you get SMART-Errors it's time to go shopping for a new HDD and have a look at your data. These error messages are usually early warnings. Bad sectors are being remapped to good ones by the drive's firmware and data lost at that stage usually has not occurred yet. But nevertheless it's a good idea to switch out the drive.

For everything else the only way of keeping loss minimal in case of corruption is an archive of several file versions. So even if in a newer backup the corruption has taken place, you at least have an older version to fall back to. Of course this means having a lot of storage at your disposal.

Oh, and RAID will NOT directly prevent corruption. It will only multiply it across the disks (yes, this is generalized and not entirely true, depending mostly on the RAID controller and the source of the corruption and so on but just assume it doesn't).

By the way it's always a good idea to eject flash drives (USB-Stick, SD-Cards etc.) via the respective OS functions instead of just pulling it out to prevent the operating system from accessing the drive while it's being pulled. That can also have severe impacts on file integrity on the respective drive if the OS was still writing or reading the drive.

Regards, Marcus G.

Posted by: Marcus Gabriels | Wednesday, 10 October 2012 at 04:14 AM

The comments to this entry are closed.