

## BACK UP YOUR PHOTOS

Your hard drive will fail eventually, and will take your photos with it. You will either have to pay a lot of money to get them back, or you will lose them forever. If you value your photos, and your other documents, you need to have a backup strategy.

Your plan should include some, or all, of these methods:

1. A second hard drive with software to back up all changes **automatically** every day.
2. Another hard drive (or other media such as a flash drive) to **manually** back up photos as they are loaded on your computer.
3. Another hard drive, etc. to back up photos periodically to be kept **offsite**.
4. Photo storage on the **web**.

## AUTOMATIC BACKUP FOR YOUR ENTIRE COMPUTER

Consider software that backs up your entire hard drive automatically and includes a disaster recovery feature to restore your data on demand. Here is a review of some of them:

<http://www.toptenreviews.com/software/backup-recovery/best-data-backup-software/>

I recommend NovaBackup by NovaStor. After it is installed, you back up your hard drive to an external hard drive (or flash drive, etc), then set a backup schedule; for example, back up every day at 6 PM. From then on, the program will back up any changes you made on your computer automatically. The cost is \$29.95 to buy it, but \$49.95 to renew every year.

External hard drives cost about \$60 for a 1 TB to \$130.00 for a 4 TB size at Staples. (see notes).



## MANUAL PHOTO BACKUP

I recommend another external hard drive just for photos. Every time you upload photos to your computer, immediately copy them to this hard drive before you delete them from the (SD, Micro SD, etc.) card in your camera. No special software is needed. Just copy and paste from the folder on your computer.

## OFFSITE PHOTO BACKUP

If you really want to be safe, copy your photos to another hard drive, flash drive, etc., and keep it somewhere outside your home, like a safety deposit box, or a relative's house. Since the hard drive

won't be handy whenever you upload photos to your computer, you will probably have to add several batches at a time every couple of weeks.

You should not use an ordinary hard drive for offsite backup because they are too fragile to move around a lot. Look for rugged portable hard drives, and expect to pay more. The best is probably an ioSafe, which will withstand dropping 20 feet, 5000 pounds of crush pressure, chemical contamination, immersion for three days, and includes a data recovery service. A 500 GB drive is \$650.00 and 1 TB is \$1050.00.

<https://iosafe.com/store/products-rugged-portable-SSD-buy>

There are other much less expensive rugged hard drives that aren't quite as impressive, but much more rugged than the usual desktop external drives. You can expect to pay \$100.00 to \$200.00 for a 2 TB drive on Amazon.com.

<http://hddmag.com/2016/10/best-rugged-external-hard-drives.html>

## WEB STORAGE

You can back up your computer, phone, and tablet photos to online storage sites. The advantages are:

1. No backup hard drive is needed.
2. The backup is off site.
3. It is convenient for phones and tablets which are not normally copied to a computer. For example, iPhones and iPads can be set up to back up to iCloud or iTunes automatically.

<https://support.apple.com/en-us/HT203977>

Here's one way to back up Android devices:

<https://support.google.com/photos/answer/6193313?co=GENIE.Platform%3DAndroid&hl=en>

Disadvantages are:

1. A very fast internet service would be needed for large volume uploads from computers.
2. File sizes are restricted by some services, and some (like Flickr) don't accept RAW files.
3. There could be security issues, since we know that any online site can be hacked.

Here are some suggested sites for photo backup on the internet:

<http://download.cnet.com/guides/best-online-photo-storage/>

## NOTES:

Byte = One unit of computer memory size.

MB = Megabyte. A megabyte is about one million bytes. Your photo could be about 6 MB in size.

GB = Gigabyte. A gigabyte is roughly one billion bytes.

TB = Terabyte. A terabyte is roughly one trillion bytes.

Therefore, if your photos are 6 MB each, a 1 TB hard drive will hold about 166,666 photos.