

## Backing up Your Digital Images

by Photographer Raymond Klass

There is perhaps no word more infamous in the digital photography world as "Workflow". It has come to represent all that drives digital photographers to pull their hair out in frustration and confusion. Manufacturers strike fear in photographers insisting that their products are the only workflow solution.

Workflow literally means the method or process involved from start to finish. One of the most important, and perhaps one of the most confusing steps involved in the digital photographer's workflow is insuring that their images are safe and secure. A myriad of products have hit the market in the past few years that have really changed the face of image storage and backup.

It can seem that a degree in computer science is necessary to make sense of these ever-changing storage options. With names like Firewire, eSATA, RAID, PCI, and IEEE 1394 to name a few, these new advancements can be confusing to say the least.

This article is aimed at making sense of some of these new technologies, and helping to explain how they can be used to enhance your personal workflow. While there is no one solution for everyone, some of these new technologies can save both money and time, while providing better image security than ever before.

Before I get into the details of this technology, it's worthwhile to take a minute to discuss the goals of a successful backup and storage system. First are foremost, you should always have at least 2 copies of your digital files, on 2 separate storage devices. Secondly, these two storage devices should be



located in two physically different places, such as one being stored at a primary residence, and one located in an office or at a family members house. Lastly, the backup process should be as simple and automated as possible. This makes it easier for us busy photographers to make the time to properly maintain our image library.

At the beginning of the digital photographic revolution, many used CDs or DVDs to backup files, leaving their most important or commonly used files on their computer's hard drive. This approach accomplished the first and primary goal of backing up your files – it got them on 2 different media sources. There are 2 major problems with this approach however. First, CDs and DVDs take a long time to write, and compared to the file sizes of most camera files, they hold very few images. Secondly, the more archival CD-R and DVD-R media cannot be re-written, so if you update an image, you need to write a new CD or DVD to back it up.

At this point in time, I see many photographers using external Hard Drives – both as a temporary storage while on location, and as a more permanent solution at home. These drives are great because they allow one to store many images as a time, they are portable, and they can be updated when a file changes.

There have been some significant updates to external hard drives in the past few years. First, there are four main types of connections for hard drives:

USB / USB 2.0: There aren't many USB drives still being sold, most have switched to the faster USB 2.0 designation. These drives are the most common on the market, and work for both PCs and Macintosh computers. They are available in almost all computing stores.

Firewire / IEEE 1394 / IEEE 1394a / IEEE 1394b: Firewire is a connection predating USB, but hasn't received as broad support as USB has, and so it isn't as common as USB drives. Firewire ports are standard on most Macintosh systems, and are available as an option on many PCs. Just as there are two speeds of USB, there are 2 speeds of Firewire, Firewire 400 (also known as IEEE 1394a) and Firewire 800 (also known as IEEE 1394b).





Firewire 800 is twice as fast at transferring information as Firewire 400.

eSATA: This is a very new connection for hard drives, and has developed to facilitate super fast information speeds. Many tower computers – both PCs and Macintoshes come with these ports. Some laptops can be fitted with a special card (called a PCI card), to provide one of these ports. This is the fastest common hard drive connection.

LAN: Although this is not a common connection for home computer users, LAN hard drives have been around for a long time. LAN stands for Local Area Network – basically a local form of internet – this is a hard drive you access through Ethernet cable. These are gaining popularity as many people are installing wireless networks in their home. This type of hard drive can be accessed by multiple computers and multiple users simultaneously.

Most PC users would be wise to stick with USB 2.0 hard drives, unless your computer is equipped with a Firewire port. Macintosh users should look for Firewire 400 drives, or Firewire 800 (if you have the port). On paper, USB 2.0 is actually a hair faster than Firewire 400, but in practice, Firewire 400 typically works faster. Firewire 800 is by far faster than both, and if you have the port, eSATA is the fastest of all, almost 4 times faster than Firewire 800. This speed is really only necessary when dealing with large uncompressed video feeds - most still photographers will do fine with Firewire 400 or 800.

Now that you know which hard drives work the best, the task of backing up and securing those images warrants a new look. Though the technology has been around for many years, RAID systems have only gained popularity by consumers in the past year or so. RAID stands for Redundant

Array of Independent Disks, and in practice means that a small processor coordinates the saving of your files.

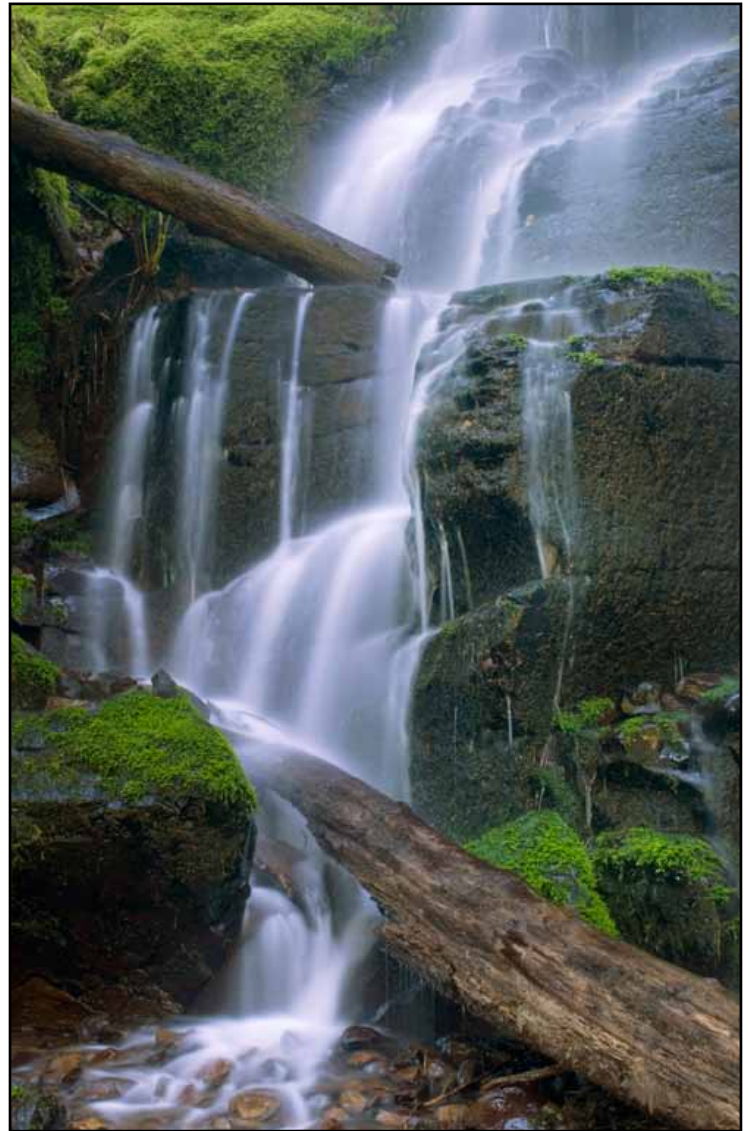
These systems traditionally have been used in 2 main capacities. Hospitals and large institutions use a version of RAID called RAID 1. In its simplest form, RAID 1 utilizes 2 disks, and a copy of the saved file is automatically put on each of the 2 disks. Thus, if one disk should fail, the other disk has a complete copy of the information. This automatic backup is a great feature for photographers who process large amounts of data, it makes our file security an automatic happening, and not something we need to remember at the end of the day.

The second type of RAID is RAID 0, and this configuration puts disk speed ahead of safety. When a file is saved, half of the file is put on one disk, while the other half is put on a second disk. Audio and video producers use this configuration when processing large amounts of information like creating special effects, when saving speed would be a limiting factor. The important distinction here is that if either one of the 2 drives fail in this configuration, all the data is lost.

Realizing that this RAID type of storage would help photographers and AV professionals, many hard drive manufacturers have begun offering these multi-drive units. Western Digital, Lacie, Drobo, and CalDigit among others, all offer solutions of varying costs and sizes that can be configured as RAID 1 for photographers, or RAID 0 for video professionals.

While these new RAID drives can make backup a lot easier, they're not a perfect solution. If you were to accidentally delete a file on one drive, the software automatically deletes the file on the second drive. Also, both drives could be harmed if there is a power surge, or your computer catches a virus.

The ideal storage solution is a mix of the old and the new. I recommend purchasing one of these new RAID drives – remember that because you are



duplicating all the data, you will only be able to use half the manufacturers advertised storage space. This means that a 1 GB drive will only provide half a gigabyte, or 500 MBs of storage.

Attach this RAID drive to your computer as a primary drive to use at home. This will create an automatic backup of your files as soon as you save them – a great first line of defense in securing your files. Unfortunately this doesn't accomplish all of our goals – we still need to have a copy of the files in another location. For this, I would recommend purchasing a large external hard drive, and periodically copying the RAID drive onto it – perhaps once a month. Store this drive in a safe place away from the RAID drive – preferably in



another location entirely, like at an office, or a bank safe deposit box, or at a family members house.

As with any electrical item, store all your drives in cool dry places, out of direct sunlight. One further consideration would be to purchase a UPS (Uninterruptible Power Source) for your computer and drives, as these will provide more protection against power surges and will give you the time to safely shut down your computer should a power interruption happen.

Regardless of whether you're using Photoshop, Lightroom, Aperture, or another program to manage your files, file security is still a matter of having more than one copy of your images. A large RAID drive provides a great – no fuss way to automatically backup files as soon as they're created. Adding a second drive to store files in another location and periodically update them will provide you with a top notch, inexpensive, backup system to secure your digital pictures.

