

THE CUTTING EDGE

(Editor's Note: This quarterly column is compiled by JCO Technology Editor Ronald Redmond. To help keep our readers on The Cutting Edge, Dr. Redmond will spotlight a particular area of orthodontic technology every three months. Your suggestions for future subjects or authors are welcome.)

The Advantages of Offsite Backups

In the past, the day was ruined when you couldn't find a patient's misplaced treatment chart. Imagine what could happen in case of a true natural disaster such as the recent fires in California, the hurricanes in Florida, or the flooding in Louisiana and Mississippi. I always thought these were things that happened to "other" offices and would never happen to me. Just in case, however, I placed my records in a fire-resistant filing cabinet—and prayed!

Most of us have now moved past paper-based records and are into the digital age. We smile as patient records are displayed on the monitors in our offices and homes. No more lost charts or financial records. No more files misplaced while transporting them between offices. Everything is stored neatly on computer hard drives, and access is simply a key stroke away. Behind our smile, however, lurks that nagging memory of the IT company's strong suggestion to back up all our data for safe storage. Backing up data is a little like brushing your teeth—you



Dr. Redmond



Fig. 1 Crashed hard drive.

know, "Only brush the ones you want to keep!" In IT parlance that equates to, "Only back up the data you cannot practice without".

Because I'm a bit more computer-literate than some of my colleagues, I understand the real possibility of a hard drive crashing and the potential for loss of data (Fig. 1). I understand that it would no longer be simply a lost chart; it is now possible to lose everything without sustaining a flood, hurricane, earthquake, or fire. If your IT person told you that all the data on your hard drive had been lost, but not to worry, because he could restore everything from your last backup, how many of you would experience cold chills down your spine?

I would like to tell you that your problems are over if you back up your data every evening (and at lunchtime if you have a large practice), but I can't. One office that had been dutifully

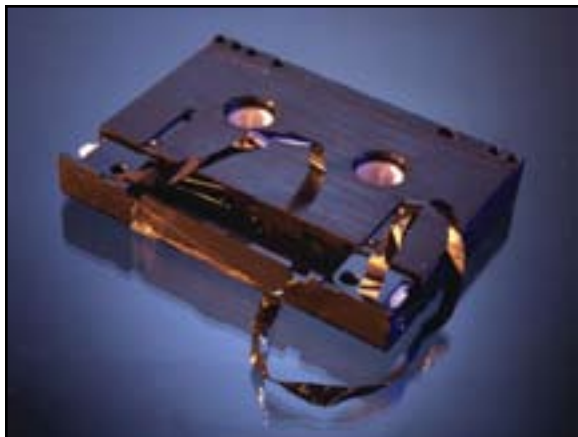


Fig. 2 Failed backup tape.

saving its data recently experienced a hard-drive failure. Staff members were not taking the backup off the premises each day for safekeeping, but then, this was not a fire or flood—only a hard-drive issue. They discovered, while trying to restore the data, that their backup tapes were defective and contained no files (Fig. 2). Another office reported a burglary in which nothing was stolen except the server. No problem, thought the orthodontist, we have a backup. Unfortunately, as in many offices, the current backup was still in the server. Good news, however—the older backup tapes were on the shelf above where the server had been kept. Unfortunately again, the tapes had not been cycled on a regular basis, and the most current tape was from three weeks before. The orthodontist could fire the person responsible for cycling the tapes, but that would be the least of his worries.

How could you possibly rebuild a practice after a disastrous loss of this nature? You might be able to resurrect the treatment plans for the patients under active treatment, but how would you reconstruct the financial accounts? Ask the patients or parents what they owe you? The schedule would be gone. The recall list (a gold mine in most offices) would be history. Would some of your staff even take the opportunity to depart? I can only imagine all the consequences.

I have not suffered from a natural disaster

in my own practice, but I have lost data that should have been protected by backup. I have placed “mirrored” hard drives in my servers, so that a hard-drive crash would only slow me down temporarily, because the data were actually stored on three drives simultaneously. I have backed up my data on tapes, portable hard drives, CD-ROMs, and DVDs. I have found that I need to be responsible for the safety of my data; if I delegate the task and don’t follow up, well, shame on me if a disaster occurs. I have learned to place the backup medium in the server periodically, move some of the data on the server to a temporary location on the hard drive, and then try to restore the same data from the backup to the hard drive. If it doesn’t work, I can simply move the data from the temporary location back to its original spot on the hard drive—but I make it a top priority to fix the problem. Simply assuming that the data on the backup is accurate, readable, and transferable is a folly you cannot afford. Remember the axiom: “Only back up the data you cannot practice without”.

Despite all these precautions, I have still lost data irretrievably. I had a backup tape, but the tape was too old to accurately restore all the data. Although I had tested the tape as described above, I had not discovered the worn-out section. Fortunately, all the treatment and financial data were intact, but the scheduling and recall files took a big hit.

The Offsite Option

During the reconstruction of our schedule and recall lists, I had a phone call from a friend, Dr. Marc Lemchen. Without knowing about my data loss, Marc asked if I had ever considered offsite backups. I told him that I had looked into it in the past, but felt the process was too slow for a large practice. He suggested I take another look at the possibility, and he recommended Oak Tree Storage* (Fig. 3). That conversation occurred nearly two years ago.

*Oak Tree Storage, LLC, 553 Park Ave., New York, NY 10065; www.oaktreestorage.com.



Fig. 3 Oak Tree Storage home page.

In my ensuing investigation of offsite backups, I discovered that broadband had helped expedite uploading, but that the most significant improvement was the method Oak Tree used for backing up large files. In the past, if something changed in a large file, the entire file had to be backed up again. In Oak Tree's system, however, each large file is divided into 100 parts (or more), and each part carries a "marker" indicating whether anything within that 1/100 has been modified since the last backup. Rather than backing up the entire file if only 3/100 have been modified, the system backs up only those modified portions. I'm sure you can see how this would speed up the process. The Oak Tree software allows many user-defined attributes—for example, how long data should be stored, and how many 100ths have to change before a large file is backed up in its entirety (Fig. 4).

Two months after beginning to back up my office servers and my personal laptop to Oak Tree every evening, I lost all the Inbox mail from Outlook Express on my laptop. To most of you, that might not be a serious problem, but I use my Inbox as a record of my past activities and as a memory jogger, sorting it by categories such as PCSO, AAO, USC, and UOP. I currently have 10,544 e-mails in my Inbox—in other words, just about my entire history. When I lost the Inbox, I tried to find the data on my laptop. I called

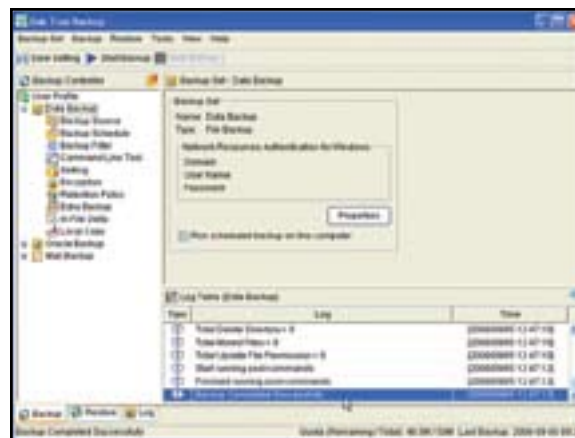


Fig. 4 Oak Tree Storage backup manager.

Microsoft and pleaded for help. I called my IT guy, who had no solution. The mail was gone. Then I went online, started the Oak Tree Storage software, found the missing Outlook Express files, and restored them to my laptop. Elapsed time: 30 minutes. All I lost was the Inbox e-mail from that day, because it would have been backed up that night. But the ultimate test was still to come.

In addition to all those past e-mails, I store board minutes, Schulman Group agendas and financial information, PowerPoint presentations, technical papers, and photos on my laptop. Recently, just before a three-week trip to China, my laptop went "blue screen". For those who haven't experienced this catastrophe, it means my computer had died, and my chances of retrieving my data were slim to none. I did all the usual things—called Microsoft and Toshiba, called my IT guy, even tried to fix it myself. Nothing worked; I had to buy a new laptop. I had saved the program software that had come with the computer on CDs and DVDs, so I loaded that, then went online to download programs that I had acquired through the Internet. Once the program software had been completely reinstalled, I went online again, accessed the Oak Tree backup files for my laptop, and started to restore all the data. The restoration took 12-14 hours, but everything was back on my laptop, including the three-hour PowerPoint presentation I was giving



Fig. 5 Offsite Backup Solutions home page.



Fig. 6 Rhinoback home page.

in Beijing a few weeks later.

Today, using Oak Tree Storage for offsite backups has become as second-nature to me as putting on my seat belt when I drive a car. I don't really think about it, I just do it; after all, it's automatic, secure, reliable, and offsite. No longer do I worry about the delegation of this vital responsibility. I still, however, check the reliability of the backup system periodically—after all, it is my practice.

Other Providers

In preparing this column, I researched other online backup systems. Offsite Backup Solutions** (Fig. 5), Rhinoback*** (Fig. 6), and Offsite Backups† (Fig. 7) function in a similar fashion to Oak Tree Storage. Each requires an initial setup fee and a monthly fee based on the storage space required. All use data-compression algorithms and are compliant with the Health Insurance Portability and Accountability Act of 1996 (HIPAA). Each company only backs up files that have changed since the last backup, which saves time and network bandwidth, and each verifies data integrity before it is stored on the backup server.



Fig. 7 Offsite Backups home page.

Offsite backups have come of age. Continued improvements in cost-effectiveness resulting from increased bandwidth, better compression algorithms, and more efficient disk storage have combined to make offsite backup the system of choice for most businesses. Healthcare providers are required by law (HIPAA) to back up all patient data. More important, preservation of practice data is our professional responsibility. Remember, “Only back up the data you cannot practice without”.

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†Offsite Backups, www.offsitebackups.com.