

Backing Up to External Hard Drives

Abstract

Technological advances now make it possible for inexpensive, external hard drives to play an important role in the backup process for a business, but backup software must be sophisticated enough to take advantage them. Backing up to external hard drives can be a cost-effective, easy-to-manage strategy which provides for onsite/offsite media rotation, allowing companies to store vital data in a secure offsite location for disaster recovery purposes. External hard drive backup is not for everyone, but it has clear advantages for businesses whose backups fit onto one or more external hard drives, and do not wish to implement more expensive high-end tape solutions.

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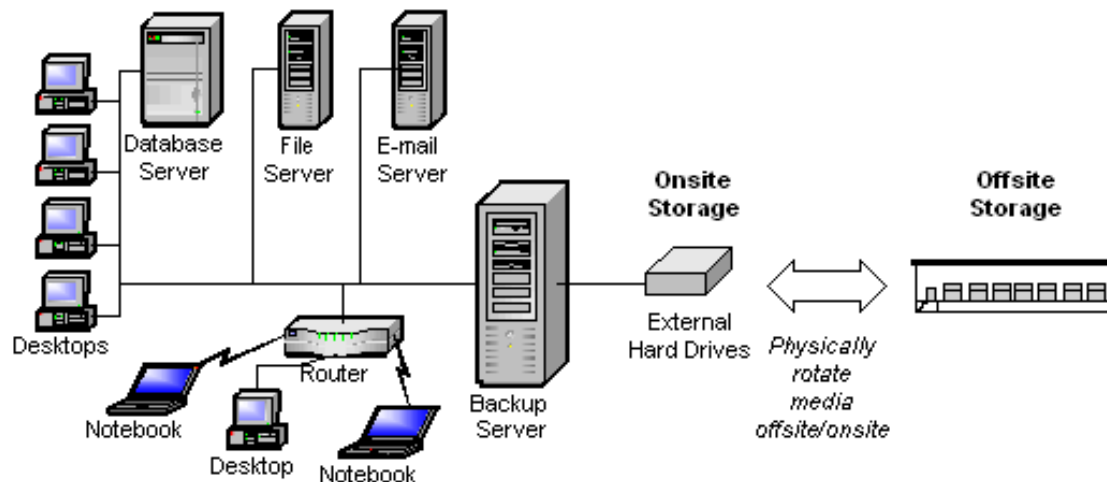
Overview

Technological advances now make it possible for inexpensive, external hard drives to play an important role in the backup process for a business, but backup software must be sophisticated enough to take advantage them. Backing up to external hard drives can be a cost-effective, easy-to-manage strategy which provides for onsite/offsite media rotation, allowing companies to store vital data in a secure offsite location for disaster recovery purposes. External hard drive backup is not for everyone, but it has clear advantages for businesses whose backups fit onto one or more external hard drives, and do not wish to implement more expensive high-end tape solutions.

Easy to Manage

External hard drives can be easily transported offsite to protect data from disasters such as flood, fire, or earthquake. Because a high-capacity external hard drive can hold more data than a typical tape, backups to a hard drive can run unattended without requiring the manual insertion of additional tapes or the purchase of a more costly tape autoloader. Rather than juggling and tracking a half-dozen or more tapes using a complex process, a backup administrator simply uses two external hard drives. As shown in **Figure 1**, one drive remains onsite for performing backups. Another is stored securely offsite for disaster recovery purposes. The two hard drives are switched periodically to update the offsite data and to protect the recent data by moving it offsite.

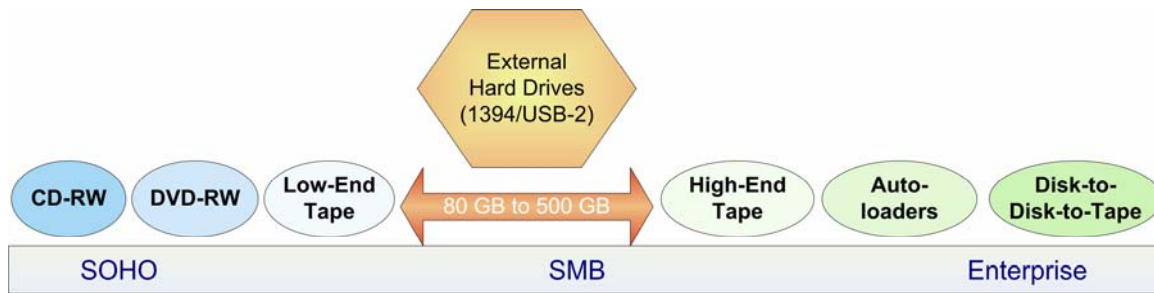
Figure 1 Backing up to external hard drives and implementing onsite/offsite media rotation



Cost Effective

Backing up to external hard drives is cost effective for companies whose backups fit onto one or more external hard drives. For example, two external hard drives capable of holding 500 GB of data each can be purchased for less than \$800. With tape, a company would spend at least \$2500 for an autoloader and \$500 for 2 sets of media, for a combined cost of \$3000 or more.

Figure 2 External hard drives meet the needs of many small businesses



Business-Class Data Protection

Low-end backup software cannot utilize external hard drives to provide business-class data protection. These solutions, as well as drag-and-drop, mirroring, and disk duplication might provide adequate protection for personal users with minimal data by transferring certain files to the external hard drive, but they typically do not provide the following important business-class backup attributes:

- **Retain past versions of files and folders.** Backups must provide multiple recovery points by saving past versions of files and folders. Merely duplicating files to an external hard drive — as with synchronization or mirroring — replaces all previous files and retains only the last data backed up. If a problem occurs on a computer and is not caught before the synchronization or mirroring operation is performed, there would be just one restore point, which would also have the problem.
- **Incremental backups.** To save time, backup software must provide fast incremental backups, which only need to capture new and changed files. Drag-and-drop or disk duplication strategies are time consuming because they usually copy all of the files and folders each time, often exceeding the backup window.
- **System state.** In addition to protecting files and folders, a business-class backup solution must protect device drivers, the Windows registry, operating system settings, and applications and their settings.
- **Networked computers.** Protection should be available for networked computers including those that run the popular Windows, Macintosh, Linux, NetWare, and Solaris operating systems. Protection should encompass file servers, desktops, notebooks, and 24x7 applications (for example, Exchange Server and SQL Server).
- **Scheduled backups and backup reports.** Backup administrators must be able to schedule automated backups and receive easy-to-understand backup reports that make the backup review process painless.

Onsite/Offsite Media Rotation

Traditional business-class backup software cannot utilize external hard disks because it is designed around the assumption that tape will be used as the final storage media, and then rotated offsite. The software uses complex and unforgiving strategies to use and track the tapes and rotate them offsite.

For example, with the commonly used grandfather-father-son strategy, two weeks of daily backups may be done with 8 *son* tapes. During the third week the administrator can reuse the first week of son tapes for daily backups. *Father* backups, which are time-consuming full backups, are done for 3 consecutive weeks before the media of the oldest father backup is reused. *Grandfather* backups are monthly full backups, which must also be performed and retained for the system to work. Matters are complicated by the need to keep tapes onsite for restores, and offsite for disaster protection. This is all too much for any business that does not have dedicated trained, professionals to execute the backup strategy.

Because these tape rotation strategies are built into the design of most backup software, the software cannot back up to external hard drives unless it treats each drive as a tape. This requires purchasing far more

external hard drives than are necessary, and does not solve the difficulties of grandfather-father-son scheduling. This is an expensive and impractical solution, especially for a small or medium business.

Using EMC Retrospect with External Hard Drives

Unlike traditional backup software, EMC Retrospect eases media use and offsite rotation by using *Backup Sets*. A Backup Set is Retrospect's method for storing and tracking backups. Typically two Backup Sets are created, one stays onsite, and one is stored offsite for disaster protection. A Backup Set is media independent, so it can be comprised of tapes, CD/DVDs, or one or more external hard drives. It uses as many pieces of media as required in order to hold the backups. With just two Backup Sets, each residing on a separate external hard drive, a complete onsite/offsite backup strategy is easily implemented.

Media rotation is a simple matter of swapping the Backup Sets and bringing the offsite media up to date. Retrospect is the only software that can make offsite media current without performing a time-consuming full backup. When offsite tapes or external hard drives are brought onsite, Retrospect quickly brings them up to date by backing up only data that is new or that has changed since the last backup to that Backup Set. With Retrospect, media rotation is so efficient that it can be performed more than once a week — even daily for maximum protection.

Retrospect Products That Support External Hard Drives

The EMC Retrospect family of backup and restore products delivers business-class backups for use with external hard drives. Retrospect retains past versions of files and folders, providing multiple valid restore points to protect against data loss or corruption. It protects system state information such as device drivers, operating system settings, and applications and their settings. And, after the initial full backup, Retrospect saves time by performing fast incremental backups, which back up only new or changed files and folders. Backup administrators can set up backups to occur on a regular schedule. Retrospect sends backup administrators simple, understandable reports that make it easy to check the status of daily backups.

Retrospect for Windows Products

Retrospect for Windows utilizes proven automated technology to make backups and restores easy, fast, and accurate by backing up networked Windows, Mac OS, Linux, Solaris, and NetWare computers to a Windows backup computer. .

Retrospect Multi Server Edition

Designed for small or medium businesses (SMBs) with multiple servers, Retrospect Multi Server runs on a Microsoft Windows server and backs up networked file servers, business-critical application servers, desktops, and notebooks.

Retrospect Single Server Edition

Designed for SMBs with a single server, Retrospect Single Server protects the server on which it runs plus networked desktops and notebooks. Client licenses can be purchased to protect networked servers.

Retrospect Small Business Server Premium Edition

Designed for SMBs using Microsoft Windows Small Business Server Premium Edition, Retrospect Small Business Server Premium Edition protects the server as well as networked desktop and notebook computers. Client licenses can be purchased to protect networked servers. Retrospect Small Business Server Premium Edition includes the Retrospect Exchange Server Agent and Retrospect SQL Server Agent add-ons, and the ability to create a server disaster recovery CD.

Retrospect Small Business Server Standard Edition

Designed for SMBs using Microsoft Windows Small Business Server Standard Edition, Retrospect Small Business Server Standard Edition protects the server as well as networked desktop and notebook computers. Client licenses can be purchased to protect networked servers. Retrospect Small Business Server Standard Edition includes the Retrospect Exchange Server Agent add-on and the ability to create a server disaster recovery CD.

Retrospect Disk-to-Disk Edition

Designed for SMBs with a single server backing up exclusively to hard disks, Retrospect Disk-to-Disk Edition performs cost-effective, business-class backups to 1394 or USB2 external hard drives. Disk-to-Disk Edition protects the server it runs on, including 24x7 server applications. Client licenses can extend protection to networked servers, desktops, and notebooks. Disk-to-Disk Edition does not back up to tape.

Retrospect Professional Edition

Designed for homes and home offices, Retrospect Professional Edition delivers proven business-class data protection capabilities in an easy-to-use software product. It protects the Windows desktop or notebook on which it is installed, plus two other networked desktops or notebooks. Client licenses can be purchased to extend protection to additional desktops and notebooks. Retrospect Professional supports a large variety of backup devices such as external hard disks, CD/DVD drives, or tape drives.

Retrospect for Macintosh Products

Retrospect for Macintosh utilizes proven automated technology to make backups and restores easy, fast, and accurate by backing up networked Windows, Mac OS, and Linux computers to a Mac OS backup computer.

Retrospect Server Edition

Designed for small or medium businesses (SMBs) with multiple servers, Retrospect Server Edition runs on a Mac OS server and protects 100 networked computers, including desktops, notebooks, and Mac OS servers. Client licenses are available to protect additional networked computers.

Retrospect Workgroup Edition

Designed for small or medium businesses (SMBs) with a single Mac OS server, Retrospect Workgroup Edition protects the server it runs on and 20 networked Macintosh, Windows, or Red Hat Linux desktops and notebooks. Client licenses are available to protect additional networked computers.

Retrospect Desktop Edition

Designed for homes and home offices, Retrospect Desktop Edition runs on a Mac OS desktop/notebook computer and protects two additional networked desktop/notebook computers running Macintosh, Windows, or Red Hat Linux. Client licenses are available to protect additional networked computers.

Conclusion

For companies whose backups fit onto one or more external hard drives, there is now an alternative that is more convenient than manually using multiple low-end tapes in a single tape drive, and more cost-effective than investing in a tape autoloader. However, most backup software lacks key capabilities that are necessary for backing up to external hard drives. Only Retrospect has features that work optimally with external hard drives, allowing small companies to make the best use of their personnel and financial resources to implement a backup strategy that meets their needs.