

STOREVAULT™
A NetApp Division

StoreVault and NetApp Snapshot™ Technology

Instant backup and instant restore

The backup window eliminated

Added data protection and ease of recovery



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introduction

Our daily dependence on business data and its immediate availability means that any loss of data can adversely impact the business. It might be a financial spreadsheet that got corrupted by a virus; it might be valuable client or vendor information that was accidentally deleted, or even an entire database that was maliciously overwritten. From time to time we all need to be able to go back and recover our files. Typically this involves going back through the backup tapes and rebuilding or recovering files and volumes, a process that can take hours, even days. Of course, this always seems to happen with the most important data at the most inconvenient time!

The use of Snapshot™ technology, which provides point-in-time images of the entire file system, enables instantaneous recovery of individual files, directories, or even the entire file system. Snapshot technology also removes the dreaded “backup-window” issue and provides a significant additional layer of protection for your data.

This paper explains the basics of NetApp Snapshot technology, its use, and how it can provide a significant layer of protection for your valuable data.

For more information, visit www.storevault.com.

how NetApp Snapshot technology can help you

Overview

A snapshot is a point-in-time image of the file system, which is taken instantly with no impact on system performance and with very little impact on storage capacity. Snapshots can be browsed in a directory structure that looks just like the original; in fact, the only difference is that the Snapshot directory is a read-only image of the file system frozen in time. A Snapshot can be recovered instantaneously to “revert back” to that point in time for an individual file, a folder, a directory, or even for the entire file system. Research has shown that the majority of restore requests are for individual files, but reverting the file system might be useful in the event of a virus infection or to reestablish a baseline environment for testing. The power of NetApp Snapshot is its simplicity – end users can even be authorized to recover their own files and directories from a Snapshot without systems administrator intervention.

An automated Snapshot scheme can provide a good part of an effective backup and recovery strategy. Because the Snapshot is a stable image of the file system taken at a point in time, it can be used as the source for backup to tape instead of using the primary data. Snapshots can replace incremental backups to tape, so that tape can just be used for archive and for disaster recovery; and since the Snapshot image is read-only, you can back up files without worrying about the issues surrounding locked, “in use,” or open files.

Also, the backup window becomes a thing of the past as backups to tape can be performed on a Snapshot – at any time, not just nights and weekends!

Unique Benefits of NetApp Snapshot Technology

NetApp Snapshot technology is unique in the way that it captures images of data, resulting in reduced storage costs and system administration time.

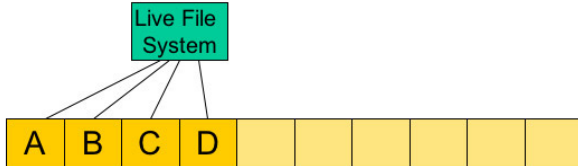
The NetApp Snapshot is integral to the way the file system works. The WAFL® (Write Anywhere File Layout) file system was developed by NetApp to enable high-performance, high-integrity storage systems. By using a set of pointers to the individual blocks of data, the file system knows where everything is. By making a copy of those pointers, and not the data, an instantaneous image of the entire file system can be captured. As data blocks are changed, pointers in the live file system are redirected to new blocks; however the Snapshot pointers still point to the original blocks to preserve that point-in-time image. When another Snapshot is taken, the new pointers are recorded against the current live file system.

Because each Snapshot contains only pointers and blocks that have changed, the size of the Snapshot is very small compared to the complete file system it represents. By default, NetApp reserves 20% of the available capacity of each volume for Snapshots, but this reserve is easily changed up or down by the administrator, depending on your needs.

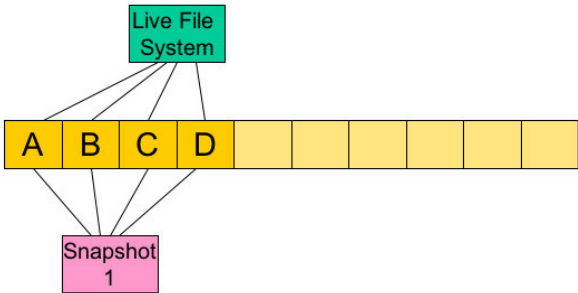
It is important to understand the limitations of non-NetApp implementations of Snapshot technology. Competitive offerings typically read and then write the old data to a new location before writing out the new data. This is often explained as a feature called “copy on write.” But this “feature” adds dramatically to the system overhead: for each block of data changed in the copy on write process, there is a read and two writes, compared to a single write for NetApp. By using NetApp Snapshot technology, you benefit from faster backup of data and reduced backup window time.

Example of NetApp Snapshot Technology in Action

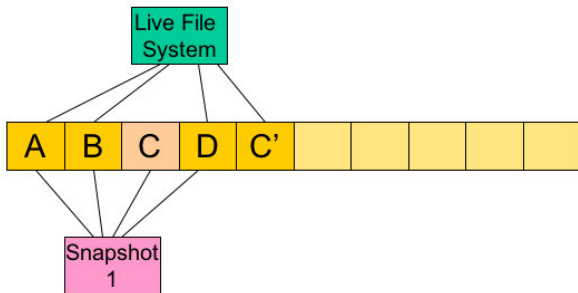
The following figures assume that the file system is writing a file that consists of the blocks A, B, C, and D.



The live file system writes the blocks A, B, C, and D to disk and locates them with pointers.

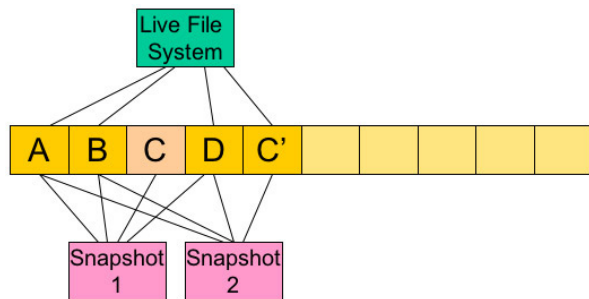


A Snapshot is taken – no data is read, written, or copied to disk, the Snapshot simply points to the current locations.

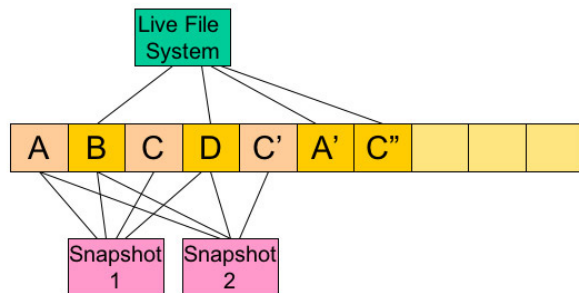


The live file system modifies block C, and writes C' to disk – there is no change to block C. The live file system points to C' instead of C. The Snapshot still points to block C, which is unchanged.

StoreVault and NetApp Snapshot™ Technology



Snapshot 2 is taken by pointing to the current blocks indicated by the live file system. No data is read, written, or copied to disk, so there is no performance impact on the system.



As more changes are made to the file system, it is clear that the Snapshots are still able to recreate the file as it was at the time they were taken.

Get Started Easily

Snapshots are as easy to set up and to use as they are to take. The intuitive Windows®-based GUI leads you through the set-up process. Snapshots can be automatically set at predetermined times, or they can be taken as required. Up to 250 rotating Snapshots can be retained per volume. When 250 Snapshots have been taken, the oldest is removed to make room for the newest.

Instant Snapshot Recovery

Recovery of data from a Snapshot appears just as fast as if a user is opening a file from a network location. Users can easily recover

their own deleted or corrupted files from Snapshots because all of the security permissions that were with the original files stay with the Snapshots. There is no need to restore an entire backup tape just to get to a couple of files. Simply open the Snapshot folder for the time you want to go back to, and you will find all the files in a read-only format, ready to be restored with the click of a button.

summary

NetApp Snapshot technology is an extremely simple to use yet powerful solution that allows businesses to manage their backups and recovery far more efficiently than snapshot offerings from other vendors. This advantage translates into superior utilization of available storage, lower storage costs, greater savings in administrator time, and faster backup and restores of data.

A Snapshot can be taken instantly with no impact on applications or performance. Snapshot images can be reviewed as easily as looking at your own hard drive. A Snapshot can be instantly restored to effectively travel back in time! Snapshot technology is integral to every storage platform from NetApp, from our large enterprise-level solutions to our small and medium business

solutions, including our StoreVault systems.

The new StoreVault S500 is an all-in-one scalable network storage solution that allows first-time NAS and SAN users to simplify not only the installation process, but also the day-to-day protection and management of their data. StoreVault provides access to the powerful data storage management tools and capabilities that have previously been available only to large IT shops.

To find out more about how StoreVault and Snapshots can provide additional protection for your business data, please visit www.storevault.com.



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About Network Appliance

Network Appliance is a world leader in network storage solutions for today's data-intensive world. Since its inception in 1992, Network Appliance has delivered technology, product, and partner firsts that simplify data management. Information about Network Appliance solutions and services is available at www.netapp.com.

For more information on StoreVault, a NetApp division, go to www.storevault.com.

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