

## StorNext 3.0 Product Update: Data Reduction Storage - Storage Disk with Data De-Duplication

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## Executive Summary

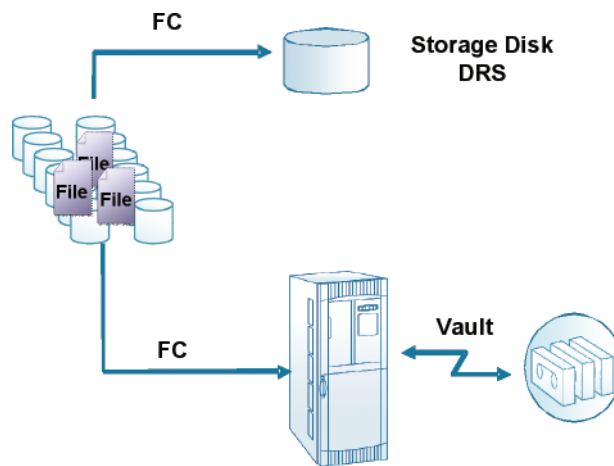
StorNext®, Quantum’s next generation data management solution, is engineered to enable rapid data sharing amongst servers and provide cost effective data retention. To date, cost effective data retention has been accomplished using a mix of low cost tape for deep archiving and mid-cost disk for active archiving (see Storage Disk Product Brief for details). With version 3.0, StorNext expands its data retention architecture to include a new storage type termed Data Reduction Storage (DRS).

DRS is a specialized form of Storage Disk that uses Quantum's patented de-duplication technology to reduce the amount of capacity consumed by files. DRS is unique because it tunes data reduction to the customer's specific data set and increases the likelihood that very high levels of data reduction can be achieved (up to 10x or more depending on data type and amount of data in the DRS volume). While organizations that maintain data for a long period of time will see the most saving from DRS, even organizations that dispose of data after a short time can achieve storage savings.

At a physical level, DRS is a local StorNext volume attached to the MetaData Controller (MDC). This guarantees the highest level of throughput possible (FC speed vs. LAN speeds). Like standard Storage Disk, DRS uses Storage Manager data movement policies to manage the migration of files from primary storage to DRS and back.

## Methodology

StorNext Storage Manager includes an integrated policy engine that automatically moves files from primary disk to one or more storage repositories (figure 1). This is done to reduce data retention costs and free up higher cost primary disk for new, more actively used digital assets. Quantum’s best practices recommend generating two copies of a file – one on tape for offsite disaster recovery and another on either tape or Storage Disk for near-line access.

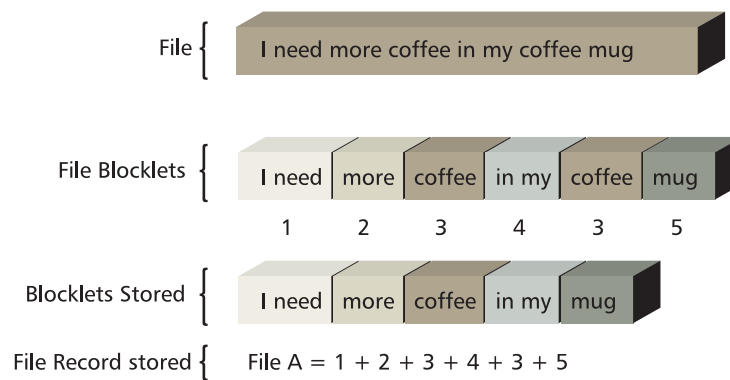


The decision to use either tape or Storage Disk for the near-line copy is based on cost (tape is less expensive) and access speed (disk is fast). Most customers choose tape, not disk, for their local copy because of the higher level of cost savings that tape provides and the fact that archived data is accessed infrequently, mitigating the need for fast access. For customers who only maintain files for a short period of time (e.g. post-production), even tape may be cost prohibitive. This is due to the entry cost of tape libraries (robot and frame cost as well as complexity of tape management) and a limited need to send data offsite. As a result, many organizations with short term storage requirements are less interested in data archiving solutions.

DRS removes these impediments by layering data de-duplication technology on top of Storage Disk. With DRS, de-duplication can provide capacity savings of potentially 10x or greater, making the \$/GB value much greater than even tape. Additionally, de-duplication enables storage savings even if data is maintained for a short time and then disposed. Understanding how this is accomplished requires a look at the way data de-duplication works.


As files are written into a DRS volume, they are analyzed by the de-duplication engine and broken into sub-file chunks called blocklets. Each blocklet is examined by the engine to see if it is unique. If it is, the blocklet is stored to disk and consumes capacity. If the blocklet is not unique, has already been stored before, it is discarded. After the entire file has been examined, a record is stored that explains what blocklets make up the file and how to rebuild the file.

**File A: I need more coffee in my coffee mug.**



As the graphic shows, capacity savings may be small at first, but as time passes and more data is stored, less capacity is required. In fact, the capacity savings can be extremely high (over 10x). This is because of several factors. First and foremost, Quantum's de-duplication is applied across every file. If 20 files have the same blocklet, it is removed from all 20 files. This allows global capacity savings. In addition, Quantum uses an intelligent algorithm to seek out common blocklets within files. It does not use fixed block ranges, but instead uses variable block ranges to aggressively identify and remove redundancy. And because the reduction is customer-specific, it can achieve greater savings than a "generic" off-the-shelf compression algorithm.

Capacity savings are not limited to organizations that stored data for long periods of time. This is because blocklets are not deleted when a file is deleted. Since a blocklet may be associated with multiple files, it must be maintained even after the file is deleted (only the file record is removed). As a result, even organizations that store data for 90 days and then remove it are building a "library" of blocklets that enables high levels of data reduction.

 For contact and product information, visit [quantum.com](http://quantum.com), call 800-677-6268 or send an email to [softwareinfo@quantum.com](mailto:softwareinfo@quantum.com)

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