



SECURING THE FUTURE OF YOUR DATA™



QStar White Paper Tiered Storage

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Introduction

The Data Management Dilemma

IT organizations today are facing relentless growth of data volumes. Applications are creating more and larger files. Users rarely delete data making access to files more time consuming, contributing to lower productivity. The price of hard disk storage has come down significantly over the last 5 years. Thus, the trend has been to buy more hardware. This solution, however, creates complex and cumbersome storage environments that require more maintenance, management and money to operate. Buying hardware also breeds inefficiency.

IT departments often set aside large amounts of free storage space to prevent capacity failures. Analysts report UNIX and Windows storage utilization rates from 20 to 50 percent. On top of this, consider that 60 to 80 percent of the data in these systems has often not been accessed in months or even years. These architectures waste system resources, require more attention from administrators, increase backup costs and take longer to restore from failure.

By addressing these inefficiencies, organizations can tap into unused storage space they have already purchased, streamline data protection and disaster recovery operations, consolidate hardware and reduce operational overhead. To accomplish this, there are only a few viable options, delete data or move it.

“Corporate data is increasing by 50 to 70 percent per year.”

--Horison Information Strategies

Data deletion will free up significant amounts of space, but is not always ideal. Deletion is a manual process that carries the risks of data loss and unpleasant legal ramifications, as many regulations prevent data from being deleted or destroyed. Archiving can be automated, but forces companies to train and support users on the archive application and often requires dedicated storage.

The Solution

Storage management through the utilization of tiers has brought about a means of managing data over a network in which the data resides on specific storage devices based on the value of the data. Intelligent storage management software that facilitates the management of files across storage resources to house data in the most appropriate media given its usage patterns and value to the organization is the basic concept behind tiered storage management. Heavily used or time sensitive data is stored on high performance media and static data resides on less costly removable media.



Migration/Deletion Policies

- *Time – Modification or Access*
- *Threshold – Watermarks*
- *File Types – Extensions*
- *Search – Regular Expressions*
- *File Size – Greater Than, Less Than, Between Two Sizes*

Administrators create policies to sweep storage looking for files of a certain age, size, name, type or location. When the storage management application finds a file that meets the policy, it is copied to alternate storage device. Once the data is moved to the appropriate location, the application can delete the original file and create a placeholder or tag for the file, allowing users and applications seamless access to the data, regardless of its physical location.

Because of the policy-based nature of tiered storage management, it is ideal for managing the data lifecycle. When data is created and used heavily, it resides on the fastest disks for fast access. As files are accessed less frequently, the software moves data to less costly, lower performance disk such as a SATA-NAS device. The application can also leverage tape and optical libraries as storage.

Tiered storage management applications also have the ability to monitor disk capacity and react to critical capacity conditions. The software is configured to provide a minimum amount of free space on a given volume, say 20 percent. If the software detects that the volume has less than 20 percent of capacity available, data is relocated from the volume to alternate media. Space is immediately freed and the administrator can address the capacity issue when she/he has the time.



Valuable in its own right, this feature also allows organizations to increase their utilization rates and therefore consolidate their hardware. Much of the unused storage on a disk is allocated so that users and applications have sufficient free space. Administrators would rather over-provision storage than have to spend all day, every day managing it. By using a policy based tiered storage methodology to monitor storage and automatically move data, administrators can run disks at 70 to 80 percent of capacity without fear of out-of-space failures. This allows each server to store more of the active data. Since there is less data to store on the disk, and because less of the disk is dedicated to free space, organizations need less hardware and can reduce the number of servers in their environment.

QStar Solution

An efficient storage environment streamlines operations like backup and restore which complete much more quickly and consume far less media. Backup jobs will only copy the small placeholder file rather than the entire file. Since the migrated files have not been accessed, their data has not changed since it was last backed up and does not need to be copied again. Restores are also more efficient. Rather than restore all the data in the environment, administrators need only concern themselves with restoring the data that is critical to getting operations running again. The tiered based managed data, which hadn't been used in x number of days anyway, can be restored when the time is available.

QStar Network Migrator utilizes advanced policy management for client side data movement to NAS storage servers on the network. QStar MultiStor utilizes advanced policy management for NAS server based data movement through storage tiers to archive devices. By combining the two products, QStar can move data from client side server applications to NAS storage pools on the network, and then to archive hardware once the data is no longer accessed frequently.

Either one or a combination of File Modification, File Extensions, Regular Expression Searches and High Water Mark attributes can define policies. Once archive retention dates have been met, QStar MultiStor or Network Migrator are also designed to automatically delete files based on individual rules set on a monitored file system basis.

Both Network Migrator and MultiStor manage the following properties:

► **Time Based**

Creation or Modification Dates can be monitored and files can be automatically archived when certain thresholds are met. Many implementations include a scan and approval phase that must be completed before the file can be archived. These same criteria can also be monitored for automatic deletion when certain time thresholds are met. This is essential for companies requiring compliancy solutions.

► **Extensions**

Certain files may be automatically archived dependent upon the extensions. Alternatively, an exclusion list can be created to migrate all files except the files matching the extensions listed. In addition specific file extensions may be flagged for deletion. This is effective when monitoring user home directories to remove non-authorized material or when temporary files need not be archived.

► **Search Criteria**

Files will be archived when the file's name matches a specified pattern, i.e." Archive any file with the string 'project1' in the name". Files can also be deleted based on a file's name matching a specified pattern. This method can be used to remove all the files from a finished project that share a common nomenclature.

► **Disk Usage**

Files will be archived when a certain space threshold is reached. This policy ensures that the monitored file space never reaches full capacity, causing an "Out of Space" error.

► **File Size**

The system is designed to identify and archive or delete all files that are larger than, smaller than or in between the range of two size values. This policy ensures larger files do not consume large quantities of primary storage space.

► **Copy on Close**

MultiStor and Storage Migrator can be set to copy files to removable archive media when they are closed after creation, a file is renamed, a file attribute is changed, or an existing file is modified. Files that have been archived to removable archive media no longer need to be backed up, and thus reducing the backup window, adding to the overall return on investment.

► **Synchronized Closed Files (Copy and Verify)**

The Synchronized Closed File option allows synchronizing an existing file system to an Integral Volume set. This utility is used to copy local files to an alternative location making a complete real time copy of the source data. This feature can be used to provide a real time backup copy of a data set, eliminating the time it takes to facilitate a restore during the recovery process after a server or system failure.

► **File Versioning**

MultiStor or Network Migrator will compare the modification date and file size of the source file and the file on the specific remote destination. If they match, the system will re-link to the current remote file that already exists. Should either the modification date or the file size not match, then the remote file will be renamed with the time stamp extension and the source file will be migrated to the remote location maintaining the files original name.

Conclusion

Today's businesses requires policy based data management, a multi-tiered storage infrastructure to meet the varying service levels and cost requirements, and active archiving solutions to retain information for regulatory, legal, intellectual property and other requirements. An active approach to these challenges saves companies considerable amounts of money, increases worker productivity, as well as reducing the risk of legal or regulatory issues. In addition, it improves the service levels of a business.



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info@qstar.com
info@qstar.it

www.qstar.com

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