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How Smart Data Tiering Makes Your Archive Modern

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June 2013

Hitachi Data Systems

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How Smart Data Tiering Makes Your Archive Modern

The Challenge: Extreme Growth of Digital Data

> *Unstructured data is projected to grow at a compound annual growth rate of more than 60%, opposed to about 20% CAGR for transactional data.*
>
> *– IDC Research*

Digital data is growing exponentially. Between the digitization of old content and the rapid creation of new files, digital storage is running at capacity for many organizations, and we know that the growth is not slowing down anytime soon. The challenge is that the amount of digital data that needs to be stored far surpasses the capabilities of single-tiered storage architectures.

For industries with diverse file formats such as media, entertainment, healthcare, government, video surveillance and logistics, the growth of unstructured data is quickly becoming a major data center challenge. Unstructured data cannot be categorized into relational databases, and thus needs to be stored in a file-system structure for seamless access. Unlike transactional or production data that needs to stay on high-performing media, most of this unstructured data is fixed content and will not be further modified. In fact, up to 80% of all data is never used or accessed after 90 days, but may require secure storage for compliance or business need. Thus, we need a way to categorize data and have it "live" on media that matches its performance requirements. This concept, referred to as data tiering, allows businesses to realize the greatest benefit from all types of storage, resulting in lower costs and improved hardware utilization.

The Solution: Active Archiving With a Tiered Storage Infrastructure

> **What Is Tiered Storage?**
>
> *Tiered storage is the strategic management of data across performance tiers to improve efficiency, reduce costs and automate file management.*

Intelligent storage tiering enables the most efficient use of storage media across the environment, from ultra-high-performance servers to cost-effective tape media. Today, data is usually categorized in 1 of 4 tiers. Tier 0 houses ultra-high-performance data and applications.

Tier 1, home to about 15% of a company's data, is used for mission-critical, revenue-generating data and applications. For a media and entertainment company, here you may find active production data, or A/V (audio and video) files for a project that is currently being edited. Tier 2 holds more backup and recovery applications, reference data and sensitive information. Finally, Tier 3 data refers to fixed content, archived files and long-term data.

Archived data refers to data that must be retained for future reference or for regulatory compliance. Archived data does not change. Tier 3 data is also largely unstructured, giving new index-driven technologies like IBM® Linear Tape File System™ (LTFS) an advantage for this type of storage. To effectively manage data across all storage tiers, hierarchical storage management (HSM) software automates the migration and management of data, according to user-set performance requirements.

The Hitachi NAS Platform and StrongBox Tier 3 Archive

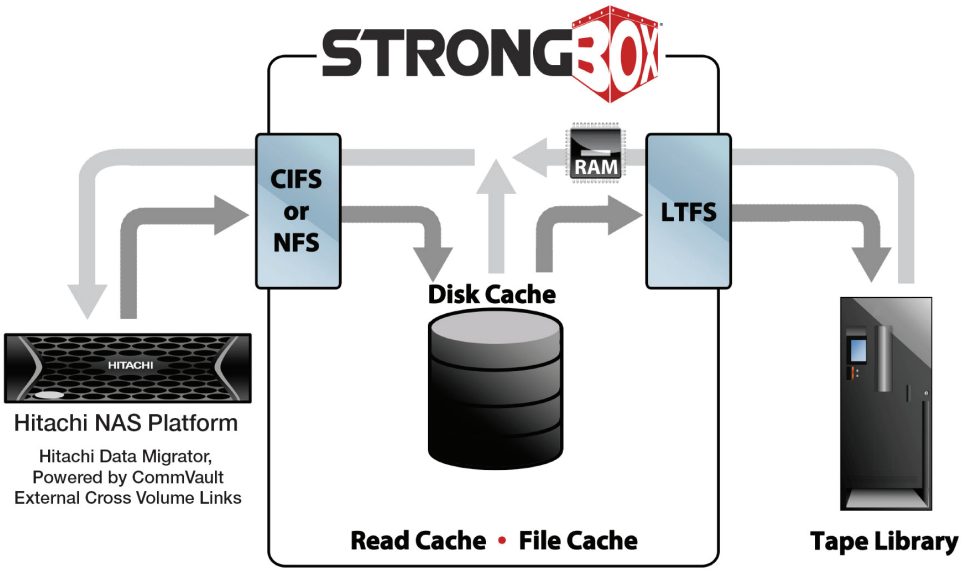
Hitachi NAS Platform and StrongBox Solution Highlights

- *Intelligent file tiering.*
- *Automated file transfer.*
- *Cost-effective active archive.*
- *Data tiering integration.*
- *NAS archival, based on LTFS.*
- *Single access point for file management.*

Because businesses require data availability that meets diverse performance needs, a combination of best-in-class components are needed to create an always-online data storage solution. Hitachi Data Systems and Crossroads have partnered to deliver a seamless, low-cost solution for data tiering and management with a low-cost archive (see Figure 1). Hitachi NAS Platform simplifies data management, using the Crossroads StrongBox LTFS archive for Tier 3 archiving. The combined solution provides a complete file management and archive solution to meet ever-growing data retention requirements.

Hitachi NAS Platform offers high-performance file access while providing intelligent file management that delivers a user-friendly way for IT administrators to easily manage heterogeneous data types and media across all data tiers. Crossroads StrongBox LTFS NAS archive is a secure data vault for Tier 3 storage, using LTFS tape as the principal storage medium to keep costs down. Hitachi NAS Platform nonintrusively integrates into the existing data environment. It automatically controls the flow of data into StrongBox based on flexible user-set policies for maximum cost-savings and optimized performance benefits. This is all accomplished without the hassle of managing multiple systems. No 3rd-party HSM software is required; business-driven tiering capabilities of Hitachi NAS Platform enable seamless management of mission-critical data.

Figure 1. The Hitachi NAS Platform and StrongBox solution architecture creates an always-online data storage solution.



CIFS = Common Internet File System
NFS = Network File System
LTFS = Linear Tape File System

Seamless Content-on-Demand Across all Storage Tiers

What is LTFS?

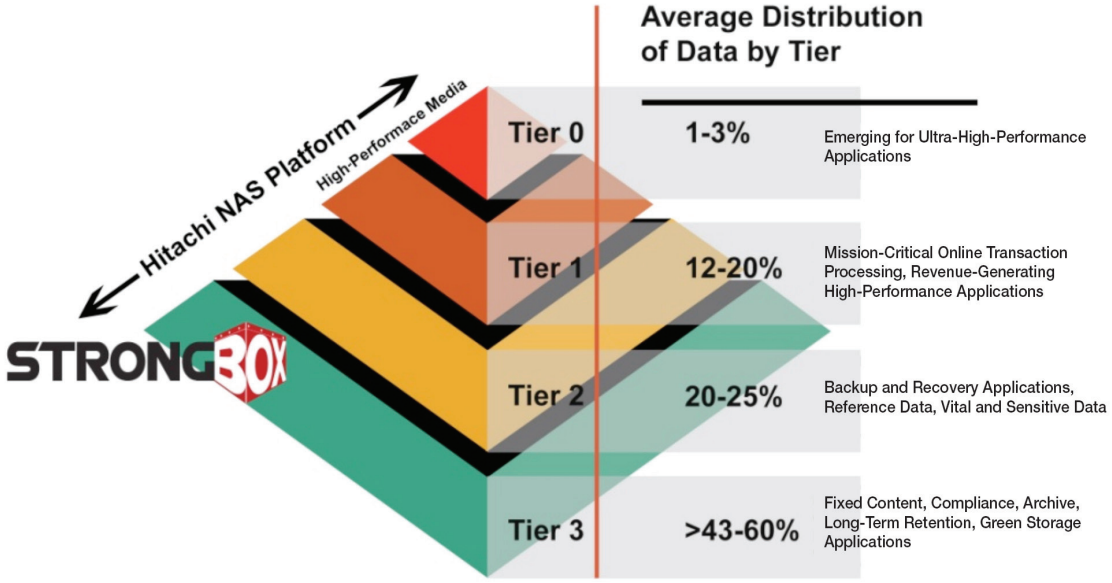
IBM Linear Tape File System (LTFS) technology refers to the open-standard, self-describing formatting of LTO-5 and LTO-6 tape media. LTFS enables tape partitioning and indexing for faster access to data.

When it comes to the archive, "infrequently accessed" doesn't mean that data is obsolete. For regulatory compliance or business reasons, files such as a past project's video data or financial documents from 1999 need to be securely stored. Often this "dead" data is boxed up and shipped to an off-site storage facility, likely on tape. This works until someone actually needs to access the data. Then, the IT department digs through records to find the data's location and deals with the hassle of getting the physical media back. It does this all without even knowing if that tape from x years ago is still readable, its information recoverable. Offline storage is not the answer for today's dynamic enterprise environment. This conclusion is especially evident when considering that minutes can make all the difference for delivering a project on time or having adequate information to make a crucial decision.

Active archiving is a data storage strategy in which users have online access to all of their data, all the time. With an active-archive architecture, data can be accessed fluidly, eliminating delays associated with offline storage. To enable an active archive, StrongBox connects to Hitachi NAS Platform and appears as an external file system. Through internal disk caching and policy-drive data management, StrongBox streamlines access from tape back to the requesting

application, Hitachi NAS platform. For end users, StrongBox is completely transparent and acts as one of the storage tiers within Hitachi NAS Platform (see Figure 2).

Figure 2. StrongBox connects to Hitachi NAS Platform and appears as an external file system.



Enhance Speed and Accessibility for NAS

This combined solution provides very fast access to archival data. Data is seamlessly metered back from StrongBox, and once retrieved from the archive, Hitachi NAS Platform delivers to the requesting client or application in seconds. StrongBox essentially employs tape-as-NAS with LTFS for accelerated data access. With this sophisticated archive, latencies are eliminated, and time to 1st byte is instantaneous. The intelligent storage architecture handles multiple, simultaneous requests, without compromised performance. Granular policies allow users to adjust read and write performance requirements according to their specific needs.

Automate File Transfers With Native Tiering

Often, many simultaneous operation requests can cause contention for storage resources. The more various applications and systems, the more complicated this can get. With Hitachi NAS Platform and StrongBox, no external agents or software are needed to manage and access data. As performance requirements change over time, Hitachi NAS Platform facilitates high-performance file transfer and intelligent file management for all files in a data center environment, across all media and applications.

By moving inactive data off of high-performance tiers and into a low-cost tier, such as StrongBox, IT budgets find themselves improving rather than deflating. But, traditional archive management can be an IT administrator's worst

nightmare. The trick is turning a once-static medium into a dynamic, user-accessible storage repository. With StrongBox, data is always online; access is never compromised. StrongBox functions as a network-attached storage device and provides a simple file-system interface from which any network user can access files. StrongBox delivers flexibility, performance and economy when it comes to archive data.

Consolidate Unstructured Data for Simple Storage Management

Hitachi NAS Platform is designed for consolidating unstructured data through intelligent, policy-based file management and simplifying file transfer to the most efficient tiers while presenting the user a single point for management. The deduplication capabilities of Hitachi NAS Platform ensure that a single instance of a file is moved around the various tiers. The seamless integration of all data tiers with a cost-effective archive ensures that no unnecessary space is taken up on high-performance media. This integration also empowers IT administrators to effectively manage all data from a single Web-based portal.

Hitachi NAS Platform and StrongBox integration is ideal for data centers that need cost-effective consolidation without compromising data access. Unlike other HSM and file management software, Hitachi NAS Platform always maintains file metadata so that users can see where the data lives at any specific point in time. Data tiering is transparent and intrinsic to Hitachi NAS Platform, whereas with external file manager applications, data may be offline while in transit from one media to another.

Reduce Expenses: Acquisition, Operational and Maintenance

The economic value realized from data tiering becomes extremely evident when you start to look at long-term costs. A recent study found that the use of StrongBox as a Tier 3 storage solution reduced storage total cost of ownership (TCO) by more than 84% over a 10-year period. Using StrongBox reduced energy costs by 95% in the case of 1PB with 2 copies stored over a 10-year period.[1] Additionally, data stored in a secure archive does not require backup. Thus, intelligent file migration to StrongBox reduces the backup and restore window and minimizes network traffic during backup operations.

The Bottom Line

The explosion of digital data growth is in no way slowing. With widespread digitization of new and old files in healthcare, legal, government, media and entertainment markets, a one-size-fits-all data center strategy is not cost-effective, scalable or easily maintained. These challenges drive the need for smart data tiering and consolidated systems that facilitate big data management.

The value of the Hitachi NAS Platform and StrongBox solution for data management exists in the seamless integration of all data tiers with a scalable destination for cost-effective data storage needs. With simplified data management, Hitachi NAS Platform delivers significant improvements to speed and efficiency in the data center. At the same time, StrongBox propels high-capacity storage at the lowest cost per terabyte in the industry. By using Hitachi NAS Platform to regulate valuable space on high-performance media, data centers can maximize the use of expensive media. They can delay further hardware purchases, reduce the backup and restore window, and securely store files for as long as needed. With this strategic, intelligent data tiering, management and storage solution, IT administrators can begin to tackle never-ending mountains of data. And they can do so with the assurance that their solution is scalable and reliable, and that their data is always accessible, no matter where it resides.

[1] "Lowering Long-term Archive Costs with Crossroads Systems StrongBox," Brad Johns Consulting, LLC, 2013

Appendices

Appendix A: About Crossroads Systems

Crossroads Systems, Inc. (NASDAQ: CRDS) is a global provider of data archive solutions. Through the innovative use of new technologies, Crossroads delivers customer-driven solutions that enable proactive data security, advanced data archiving, optimized performance and significant cost-savings. Founded in 1996 and headquartered in Austin, Texas, Crossroads holds more than 100 patents and has been honored with numerous industry awards for data archiving, storage and protection.

Appendix B: About StrongBox

StrongBox is a shared storage solution purpose-built for data archiving and preservation. Using Linear Tape File System (LTFS) technology and intelligent storage architecture with standard file systems (CIFS/NFS), StrongBox empowers online, all-the-time file availability with uncompromised data protection, full data mobility, nonproprietary file storage and significant cost-savings. StrongBox unifies your archive — past and present — while providing seamless scalability and reliability for the future. Visit www.crossroads.com/products/strongbox.

Appendix C: About Hitachi NAS Platform

Hitachi NAS Platform is an advanced and integrated NAS solution from Hitachi Data Systems. It is a powerful tool for file sharing as well as file server consolidation, data protection and business-critical NAS workloads. Hitachi NAS Platform is well suited to data center environments as well as the workloads of medium organizations and remote data centers.

Appendix D: About Hitachi Data Systems Communications, Media and Entertainment (CME) Solutions

Hitachi Data Systems provides products and services specifically designed for CME environments. These solutions deliver dynamic capabilities that help organizations deal with critical challenges in capacity, performance and reliability. The company's CME portfolio spans from Hitachi NAS Platform to the highly scalable and reliable distributed object store, Hitachi Content Platform (HCP), and the intelligent, easy-to-manage Hitachi Unified Storage (HUS) family.

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WP-455-A DG June 2013