

Creating Tiered Storage Architectures with Data Dynamics StorageX and Microsoft Distributed File System (DFS)



➤ Data Dynamics StorageX:
A New Paradigm in File
Lifecycle Management

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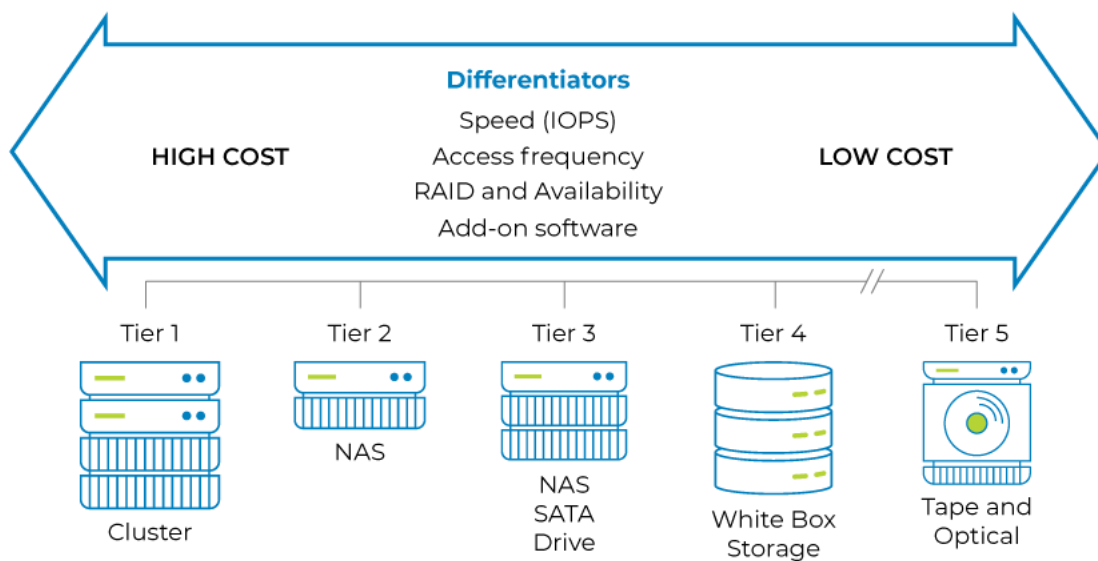
Executive Summary

As an organization's storage continues to grow, there is a need for solutions that enable proper classification of data so storage policies can be aligned with business priorities. An organization can reduce its total cost of storage ownership by transferring less-important data to less-costly storage systems, thereby freeing up space on its premium storage systems to store more valuable data. This process of creating tiers of storage can be implemented by classifying data based on certain parameters, and then matching each classification of data to the appropriate tier of storage through intelligent data migration.

Data Dynamics StorageX® enables the creation of tiers of storage across different tiers of file based storage. StorageX accomplishes this through policies that automate the enterprise-wide selection, movement, and placement of data based on file meta data and attributes. As a result, administrators can optimize the lifecycle costs of data across the enterprise by using StorageX to align storage practices with organizational objectives.

Introduction

StorageX is unique in its implementation of storage tiers, as users remain unaware of physical data transfers leveraging Microsoft's Distributed File System (DFS). This capability results in a significant reduction in migration-related administration as well as uninterrupted access to distributed data for users.



The Need for Tiers of Storage

There are several reasons for implementing storage tiers across an enterprise, two of which are overcoming low capacity utilization and inadequate Hierarchical Storage Management (HSM) strategies, as described in the following sections.

Overcoming Low Capacity Utilization

Data growth takes place unevenly on storage systems across the enterprise, depending on the varied nature of applications and user groups in different locations. This imbalanced growth of data storage and the associated proliferation of file servers and NAS appliances have resulted in acute management challenges for IT administrators as well as difficulties in access for users.

Every file server is managed as an independent storage resource. Administrators prefer to expand disk capacities of a few devices in order to avoid the administration challenges associated with managing distributed devices. Over time, storage on a few file servers far exceeds the collective storage on the majority of distributed file servers. As a result, the network's overall capacity utilization remains low, while a few primary file servers become overburdened. Lower capacity utilization means wasted hardware expenditures, as well as increased TCO from managing multiple independent devices.

Organizations need ways to enhance storage capacity utilization and optimize storage costs based on the value of data to the organization. By implementing tiers of storage, organizations can overcome some key data management challenges:

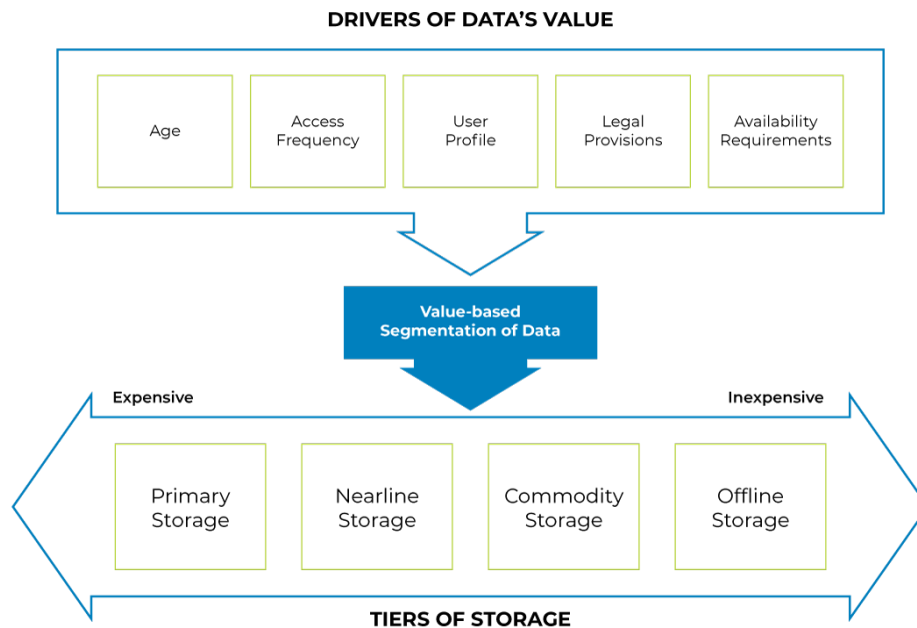
- Increased storage requirements placed on primary (expensive) storage while secondary storage remains underutilized
- Inability to effectively place data on different types of storage based on its relative business value
- Inefficient access to data due to concentration of data on certain file servers while other devices get accessed infrequently
- High cost of backup in the absence of appropriate classification of data, resulting in excess data protection for non-mission-critical data

Overcoming Inadequate HSM and Similar Solutions

While certain products today attempt to provide tiers of storage, including traditional HSM solutions, their narrow scope in terms of vendor platforms supported or the disruption they cause to users limits their benefit. Some key deterrents to implementing tiers of storage include:

- High user downtime resulting from both tedious data migration procedures and long restore windows for archived data
- Significant administrative effort in restoring user access to migrated data
- Lack of solutions that can migrate data across heterogeneous storage platforms to increase the utilization of legacy hardware
- Lack of centralized management of distributed data to reduce administrative complexity (creation of storage tiers entails the distribution of data, which might result in islands of storage)
- Inability to organize data intelligently and present it to users logically to match business objectives
- Longer restore periods that do not enable the sharing of data and that often require users to access migrated data through a separate interface

StorageX is a data management solution that overcomes all of the above limitations to deliver a simple yet powerful solution to implement tiers of storage across NAS CIFS- and NFS-based disk-based storage devices, independent of their location or performance characteristics.



StorageX Overview

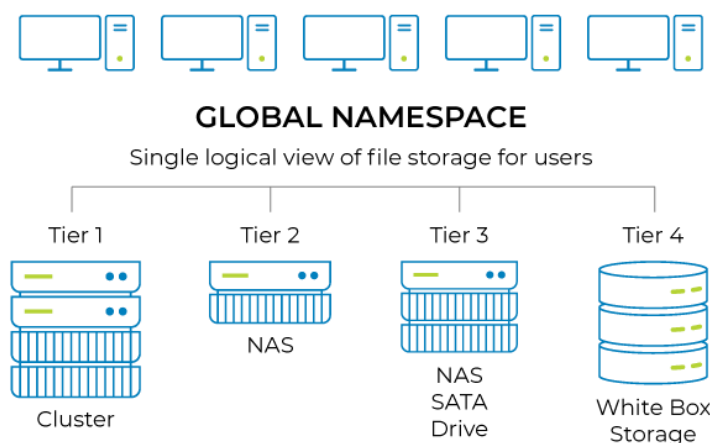
StorageX is the industry's leading file and data management solution. It enables aggregation and centralized management of networked file storage, making it possible for storage administrators to add, consolidate, migrate, and fail over filers and Windows servers. More importantly, when used in conjunction with DFS technology, it provides administrators with powerful policies that enable them to perform these tasks with minimal downtime to users. Users also benefit from simplified access to their data as StorageX creates a unified view of data distributed across heterogeneous storage platforms.

StorageX simplifies enterprise file storage management in heterogeneous NAS environments, directly addressing the needs of both administrators and users by increasing data availability, minimizing user downtime, optimizing storage capacity, and simplifying storage management—all leading to a significant reduction in the cost of networked storage infrastructures.

DFS Namespace Overview

StorageX uses Microsoft DFS namespace technology to unify heterogeneous file storage that is distributed throughout the enterprise. It provides users with a single, logical view of distributed files, thereby enabling intuitive access to data.

A DFS Namespace does for file storage what DNS does for networking. It allows clients to access files without knowing their location, just as they access Web sites without knowing the IP addresses. Through the use of DFS namespace technology, StorageX lets administrators aggregate file storage across heterogeneous, geographically distributed storage platforms like a single file system. This virtualization of the storage architecture can span an entire corporate environment and makes the data's physical location irrelevant to users.



How StorageX Enables Tiers of Storage

StorageX simplifies the implementation of storage tiers:

1. Administrators can use the automated migration policy to migrate data across tiers without affecting users' view of storage.
2. Administrators benefit from StorageX task automation since it simplifies migration and eliminates the need for remapping drive letters.
3. StorageX also enables administrators to exercise significant control over the migration process by providing a variety of attributes for classifying data.
4. Users no longer face downtime as their links to data on the primary device (Tier 1) are dynamically changed to point to the secondary device (Tier 2) storage.
5. Storage on all NAS devices can now be viewed through a central interface, simplifying the planning process for creating tiers of storage, and enabling increased capacity utilization.
6. Administrators present users with a Logical View that reflects business objectives rather than physical data paths.
7. Most importantly, administrators can migrate data to create tiers of storage without affecting users, because the logical view remains unchanged. In Figure 4, as folders C and D are moved from Tier 1 storage to Tier 2 storage, users continue to see them as previously under a logical "Marketing" folder in the Logical View.

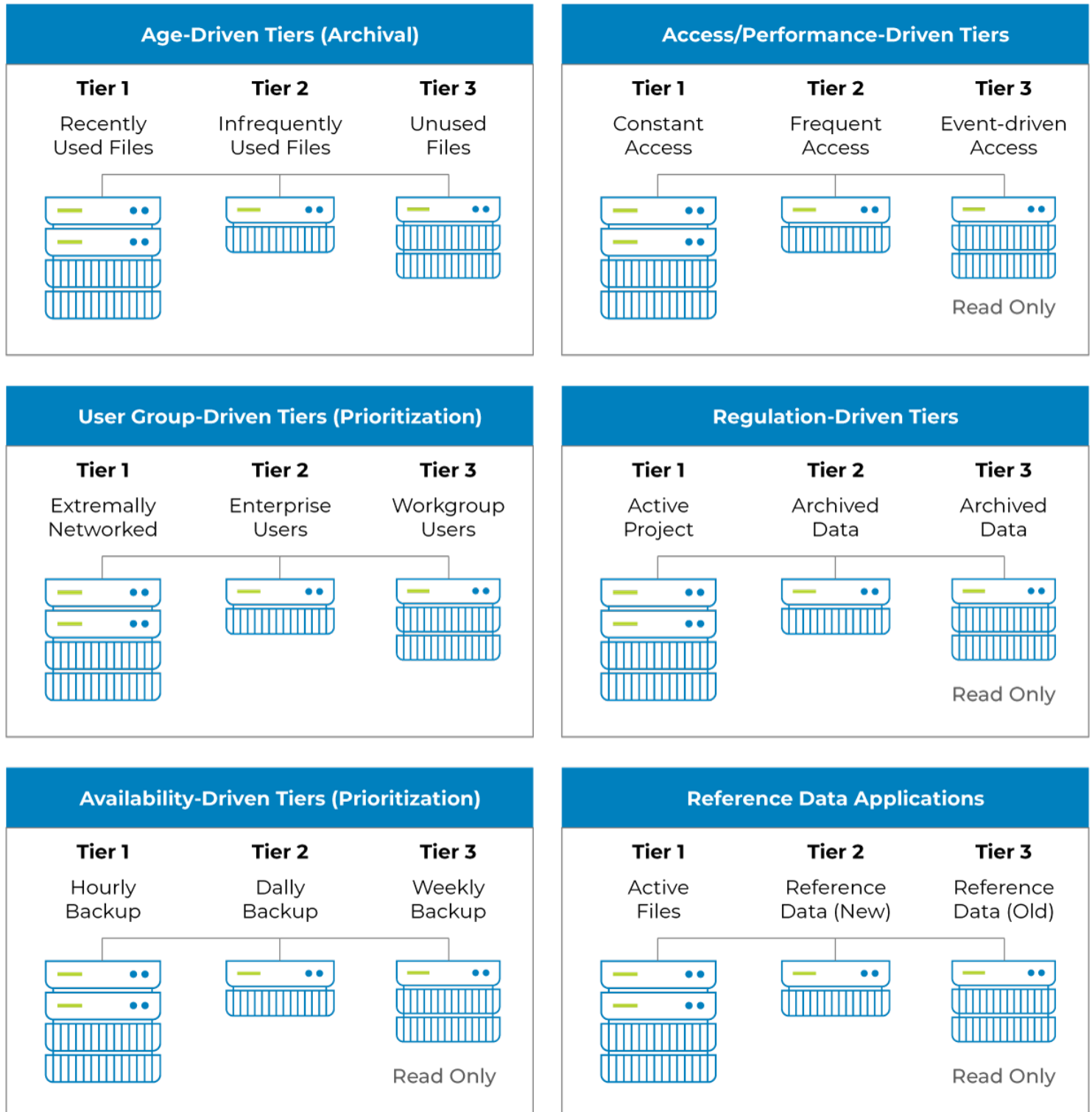
Features and Benefits of StorageX-Enabled Tiers of Storage

StorageX provides a wide range of business benefits.

Feature	Benefit
High level of automation	<ul style="list-style-type: none">▪ Reduces administrative tasks involved with classification of files for migration across tiers▪ Simplifies management of actual migration by automating pre-migration and post-migration tasks through policies▪ Minimizes room for error by reducing manual intervention in complex data movement processes
Centralized management of heterogeneous storage	<ul style="list-style-type: none">▪ Simplifies management of multiple devices by creating a single pool of storage▪ Enables efficient monitoring and management of enterprise-wide capacity utilization by aggregating storage resources▪ Provides a central interface to set policies for creating and maintaining storage tiers▪ Provides a common platform to manage NAS storage resources, thereby enabling the preservation of legacy investments
Policy-based migration of data across storage tiers	<ul style="list-style-type: none">▪ Enables administrators to take actions based on business and operational objectives▪ Provides recurring benefits as policies can be used repeatedly▪ Enables standardization across the enterprise and facilitates best practices
Intelligent data movement attributes	<ul style="list-style-type: none">▪ Provides flexibility and control for the migration process
Non-disruptive data movement	<ul style="list-style-type: none">▪ Minimizes user downtime as access to data remains unaffected by data transfers across filers and servers▪ Does not affect existing backup strategies and other operational procedures
Business view of data independent of physical storage tiers	<ul style="list-style-type: none">▪ Enhances user access by providing intuitive/business views of storage rather than drive letters▪ Enables the scaling of physical storage independent of the logical views, thereby insulating users from complexity in the physical infrastructure

Key Solution Scenarios

Following are some typical cases where StorageX can implement tiers of storage:



The Data Dynamics StorageX Value Proposition

StorageX provides a wide range of technical and business benefits across the enterprise.

User-level advantages include:

- Increased productivity by eliminating downtime resulting from long restore windows
- Enhanced access to data as processing gets distributed across multiple devices
- Consistent access to data despite changes to the underlying storage, since users access their data through a logical layer (the DFS namespace)

Administrator-level advantages include:

- Automation that reduces tasks involved with managing data throughout its lifecycle
- Simplified migration by a central interface that can intelligently manage storage tiers across the enterprise
- The ability to organize data logically (by department, division, geography, application, user group, performance requirements, and so on), enabling the prioritization of data as well as the optimization of resources
- Enhanced backup and reduced cost of business continuance as tiers can be created to reflect availability requirements
- Significantly reduced administrative effort and migration attributes that enable intelligent data movement

Manager-level advantages include:

- The alignment of data storage policies with business needs
- Optimized lifecycle costs of storing file data
- The preservation of legacy hardware investments, further reducing storage costs
- Improved capacity utilization that eases the demand for additional storage hardware
- Minimized user downtime during migration, resulting in increased revenues
- Automation through policies to minimize the need for overtime, resulting in lower staff costs

Conclusion

Tiered storage infrastructures represent a new paradigm in the utilization of networked storage. Organizations need to implement tiers of storage to control the spiraling costs of storage acquisition and the associated costs of storage management. StorageX is the ideal solution for creating storage tiers because it is heterogeneous in scope, distributed in nature, and non-disruptive to users. It is also cost-effective and standards-based, thereby preventing the need to alter existing practices and infrastructures. By using StorageX to implement tiers of storage, organizations can enjoy a significant reduction in the cost of storage ownership by optimizing the placement of data on different storage systems based on its value to the organization.

Data Dynamics is the pioneer of unified unstructured data management platform. With 26 of the Fortune 100 global customers worldwide, Data Dynamics enables organizations to analyze, move, manage, and modernize their data anywhere. Data Dynamics accelerates the adoption of hybrid, public and multi-cloud strategies, builds higher quality SLAs, and improves business process modernizations. For more information, visit www.datadynamicsinc.com.



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