Challenge

- **Budget Constraints.** Need affordable high-density system to implement an enterprise-class storage cloud
- **Scalability/Serviceability.** Deliver non-disruptive capacity and performance scaling, data repairs and upgrades
- **Availability Requirements.** Ensure easy access to data regardless of where it is stored, how old it is or even if a data center goes offline
- **Complexity Sprawl.** Simplify overall deployment and management of storage infrastructure and operations

Solution

HGST Active Archive System is a complete out of the box object-based cloud storage solution. It’s a fully integrated rack-level system that delivers cloud economics and manageability to handle the massive growth of data. Utilizing breakthrough 8TB second-generation HelioSeal® hard drives, the system's modular scalable architecture fits 4.7 petabytes of raw storage in a single rack with aggregate throughput up to 3.5GB/s.

In an era of massive data growth and tight budgets, it’s not surprising that many enterprise IT organizations have identified managing unstructured data growth as a major concern. With the amount of data more than doubling every two years, the status quo quickly breaks down. Traditional storage systems are straining to keep up. Administrators are struggling to manage and secure the data while businesses want to use more of it to increase agility and competitiveness. This places new demands on IT to store data forever on hard drives so it is instantly available to the business.

Object storage is the technology of choice today for private and public storage clouds given its ability to efficiently manage data at enormous scale. The largest cloud service providers have been using object storage for years to meet their fast growing user base of millions who are creating, storing and accessing trillions of objects.

Enterprise IT has had to rethink their approach to managing data growth. With data privacy and security a paramount concern, they are following suit by implementing private storage clouds. IDC estimates the object storage market will be $28B by 2018, growing at nearly a 30% CAGR.

They get the best of both worlds, cloud-scale economics with the performance, security, and flexibility of being in their own data center. They put more and more archive data online for analytics, monetization, and collaboration and simplify their storage infrastructure and operations in the process.

Object Storage for Storage Clouds

The ease and benefit of deploying a private storage cloud is changing the way companies think about storage. Similarly, object storage is changing the way they think about storage systems and challenging them to eliminate outdated concepts for managing petabyte-scale data. Object storage attributes include:

- **Elastic Scalability** - The ability to quickly and non disruptively add capacity and throughput performance to meet ongoing data growth. Facilitates Storage-as-a-Service model with on-demand use.
- **High Durability and Availability** - Utilizes advanced erasure coding to deliver multiple nines durability. Strong data consistency model for enterprise applications. Self-healing on failing drives, nodes, and full data centers – a fail-in-place service model with non disruptive repairs to restore the durability policy.
- **Access to Data Anywhere, Any Time, Any Device** - Web-based protocols like HTTP and S3 for direct object access. Unified view of data in a global namespace. Support for different service level agreements (SLAs).
- **Cost Efficiency** - Ability to leverage a single high durability platform for a range of use cases. Eliminates cost and complexity of separate backup, archive and disaster recovery systems. Automated self healing reduces operational complexity and administrative costs.
These and other object storage attributes are closely aligned with the private and public storage cloud requirements. Enterprise IT and Cloud Service Providers considering implementing a storage cloud should consider object storage as the foundation for their cloud storage infrastructure for unstructured data.

Storage Clouds Are Essential to Managing Data Growth

As enterprise IT attempts to manage petabyte-scale data growth with traditional storage infrastructures, they encounter a number of challenging issues:

- Inefficient use of existing storage infrastructure using performance storage to keep less active but important data online, replica copies
- User disruption when adding capacity, load rebalancing, reclaiming space, upgrades and RAID rebuilds
- Supports a global workforce using mobile devices to access, update, and create content
- Data can be isolated making it difficult to access in order to extract value or facilitate collaboration

While not all companies are experiencing multi-petabyte data growth, the scale of growth is still significant. Small and midsize businesses are adopting greater use of public cloud storage services for backup, active archiving, and collaboration needs. Large enterprises with more pressing needs for data security, performance, and overall flexibility are deploying private on-premise storage clouds.

Importance of Choosing the Right API

Object storage is ideal for web-based workloads that have high read/write concurrency such as media assets, application data, and user-generated content. Objects are accessed directly via a REST API like HTTP or Amazon’s Simple Storage Service (S3) API. To take full advantage of object storage, applications should be designed to use these APIs rather than rely on traditional file-based storage protocols. Amazon’s S3 has become the de facto standard API for storage clouds. One reason is the robust ecosystem that contains more than 950 applications, tools, and software services using the S3 API. Application examples include backup, archiving, collaboration, media management and others as well. There are tools that help with API integration, bucket management and data movement, too. Using the S3 API also enables a hybrid cloud model that enterprises are using to augment their rapidly growing storage needs.

Figure 1. Simplified Enterprise Cloud Storage Infrastructure

*Requires NAS Gateway
HGST Object Storage System – Simplicity at Scale™

For enterprises struggling with massive data growth and limited resources, HGST Active Archive System is an object storage system that optimizes existing storage infrastructure with an easy to use cloud-scale active archive for global collaboration and long-term data retention.

Up and Running Quickly – Easy to Use

The HGST Active Archive System removes the challenges of architecting, purchasing and operating cloud-scale storage solutions. As an integrated rack-level system, it’s up and running in minutes. Put it in place, connect the power, configure the network connections and it’s online, presenting an S3-compliant object interface and global namespace.

Highest Levels of Data Durability and Availability

At the heart of the HGST Active Archive System is EasiScale™ object storage software, ensuring valuable data is well protected using advanced rateless erasure coding. Patented BitSpread® technology delivers unbreakable durability at 15-nines, keeping data consistent and available even during a full data center outage in a multi-site deployment.

With patented BitDynamics® technology, data remains bit-perfect and protected against bit-level corruption. The system automatically detects these and other issues and rapidly self-heals in the background without user disruption or IT intervention.

Compelling Total Cost of Ownership (TCO)

With an HGST Active Archive System, enterprises no longer have to weigh the risks of a public cloud against the cost to build an internal private storage cloud. Through software and hardware innovation and integration, the system delivers cloud-like scale and efficiency at low $/TB and watts/TB.

Starting with total storage capacity required, a single copy of data can be distributed across multiple data centers, eliminating the need for expensive replica copies saving up to 60% in extra storage costs. Utilizing patented helium-filled hard drives, the system demands up to 60% less power and cooling than white-box alternatives.

Where data center floor space is a premium, the system’s innovative design delivers the highest capacity per square foot in the industry. With 8TB second generation HelioSeal® hard drives, a single rack holds 4.7 petabytes of raw capacity and delivers up to 3.5GB per second total throughput. Performance scales linearly with added capacity to meet the needs of large and growing user base.

The TCO story goes one step further by reducing the complexity and cost of having multiple storage tiers. Expensive primary storage is dedicated to transactional and processing intensive workloads, while near-line, backup, and archive tiers can now be consolidated into a single storage cloud tier with the HGST Active Archive System. Figure 1 on the previous page shows what a simplified two-tier storage enterprise infrastructure might look like.

The breakthrough cost and simplicity of installation and operations ensure IT can focus on activities that generate value for the business.

To learn more visit http://www.hgst.com/activearchive.

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