How Cloud Object Storage Can Solve Your Top Storage Problems

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INTRODUCTION

To achieve competitive differentiation in the digital era, many businesses are looking to their vast stores of company data. Their goal is to squeeze maximum value from disparate data sets, by applying next-generation analytics and intelligence in a way that will help them garner business and market insights.

But scaling, integrating, accessing, and analyzing rapidly growing data stores is difficult—maybe impossible—with traditional storage systems. Traditional architectures such as Storage Attached Networking (SAN) and Network Attached Storage (NAS) are not designed to handle escalating needs for scalability, speed, availability, and cost-effectiveness. Even when on-premises storage systems are upgraded—for example, with flash drives and software-defined management tools—they often fall short of performance needs for critical workloads, such as analytics and artificial intelligence. No wonder IT decision-makers surveyed by Frost & Sullivan name "growth of data storage" as their second-highest data center challenge (after "keeping up with new technology").

For critical and growing workloads, the answer may be to augment your traditional storage architectures (such as NAS and SAN) and traditional storage formats (such as file and block) with the simplicity and flexibility of cloud object storage. A cloud-based storage solution can scale to accommodate escalating volumes of unstructured data, while cost-effectively supporting the data protection and availability your workloads require. Furthermore, the right cloud object storage solution will fit into your hybrid IT strategy, enabling you to support your users and applications with optimal data deployments.

In this report, we review IT leaders' top storage challenges, and show how cloud object storage can mitigate them. We discuss workloads that are well-suited to cloud object storage. Finally, we provide a checklist of what to look for in a cloud object storage provider to ensure that your business needs are met.

TOP STORAGE PROBLEMS – AND HOW CLOUD OBJECT STORAGE CAN SOLVE THEM

While you may be getting by with your current storage system, the future will bring challenges that can strain your current storage to the point of risking business operations. Following are next-generation storage challenges businesses are facing, and how the right cloud object storage solution can address them.

Problem: Costs are spiraling out of control.

Traditional storage: As storage needs grow, adding capacity becomes a never-ending drain on the capital budget, at a time when 24% of IT decision-makers cite capital budget constraints as a top IT challenge. High maintenance costs also rank high (cited by 27%), as the growth results in greater costs and effort to implement, test, and manage each new cluster.

Cloud Object Storage: As with any cloud-hosted solution, subscribers avoid capital costs associated with purchasing equipment, and they can draw from the operating budget to pay for the capacity they need. The business may be able to align storage costs with data value—for example, paying less for infrequently accessed archival data. Businesses can also optimize costs by leveraging innovative technologies that minimize costs for duplicate data stores. For example, IBM's information dispersal technology limits capacity needs for backup copies without compromising data integrity.

Problem: Exponential data growth creates application performance issues.

Traditional storage: It's a physics problem. With traditional storage methods, as data grows, so grows the risk of poor application performance. That's because, with a hierarchical file storage format, queries must sift through all the data to find the needed data—a time-consuming challenge as data volumes grow. Furthermore, traditional formats are usually limited in the type and amount of metadata they store (usually file size and date), thus limiting the ability of applications and users to search for and quickly identify needed data.

Cloud Object Storage: As a format, cloud object storage is designed to scale without performance degradation. The flat (non-hierarchical) file format and rich metadata associated with cloud object storage means that content is quickly and easily accessible to any workload or application. To minimize network-induced latency that can impact application performance, storage can be placed in a cloud data center near applications or users (e.g., in the world regions where you do business).

Problem: Backup and recovery is lengthy and costly.

Traditional storage: Dynamic, high availability workloads require both snapshots of the data at a given point in time, and replication of the entire data set. But large content repositories require so much time and bandwidth that it's nearly impossible to keep up with fast-changing data: taking the data off-line for replication will disrupt the business. Furthermore, data integrity can be impacted if packets are lost during replication.

Cloud Object Storage: The right cloud object storage solution offers innovative ways to ensure data resiliency without replicating full data bases. For example, IBM Cloud Object Storage Information Dispersal allows the data set to be replicated from a subset of the data—which means you don't need to continually replicate the entire dataset. This ensures data integrity, while saving time associated with backup, and costs associated with storing replicated data sets.

Problem: Storage management and administration is becoming too complex and burdensome.

Traditional storage: Attached storage, such as SAN and NAS, requires physical and logical maintenance activities as storage grows. The more clusters, the more complex the configurations—and the greater the maintenance demands on resource-constrained IT organizations.

Cloud Object Storage: In contrast, cloud object storage is designed to minimize the management burden. For cloud-hosted solutions, capacity planning and infrastructure maintenance are the responsibility of the cloud service provider. As storage volumes increase, cloud object storage is scalable without requiring the enterprise to assign additional technical resources.

Problem: Storage is in silos, with limited ability to access data.

Traditional storage: SAN and NAS storage is tied to a particular operating system. This limits the ability of the storage system to be accessed by multiple applications—which impacts the company's ability to use the data.

Cloud Object Storage: Cloud object storage supports flexible access to data by multiple users and workloads, including those that use new technologies such as containers, microservices, and serverless compute. Data lakes can be created from multiple sources and data sets, whether premises-based or cloud-hosted.

Problem: Access to archival data is a challenge.

Traditional storage: A traditional storage lifecycle assumes that archival data will rarely be activated, and therefore can be stored in inexpensive but inconvenient media and locations (for example, tape, off-premises vaults). Disk- and even cloud-based archival solutions are often touted for their low cost, rather than accessibility. But in the era of analytics, businesses need their archival data to be accessible to applications and users—without the high cost structure of active data.

Cloud Object Storage: A flexible cloud object storage service allows you to seamlessly archive older or less valuable data in the cloud, at a lower cost than primary data—while retaining the ability to quickly activate it as needed. This supports business goals for agility, and enables users and applications to maximize insights from all data assets.

Problem: In a hybrid environment, it's difficult to migrate and share data sets across infrastructures.

Traditional: Traditional storage systems in the enterprise data center are largely designed as standalone units, with limited ability to share data. Migration is a challenge—which is why many businesses tend to leave their legacy data on premises, even if it means limiting the usefulness of the data.

Cloud Object Storage: The right cloud object storage system offers flexible deployment models. For example, IBM Cloud Object Storage can be deployed both in a hosted cloud and on premises, allowing businesses to select whichever option is optimal for each workload. Data can seamlessly be migrated, backed up, or archived across environments, as needed. Note that the right cloud object storage provider will also offer migration services to help you with the initial move from legacy SAN/NAS to cloud object storage format.

WORKLOADS OPTIMALLY DEPLOYED IN CLOUD OBJECT STORAGE

The flexibility of object storage means it can work with many types of workloads. However, as IT leaders accept responsibility for assigning each workload to the optimal deployment model, they find that certain types of storage workloads lend themselves particularly well to public cloud-based object storage. Common use cases include:

- **Backup & recovery:** To ensure that critical data is always-available to applications, and to minimize data loss, organizations need a simple, seamless way to back up data stores and to easily recover them as needed—without paying for twice the capacity (for replicated data sets), and without paying exorbitant network fees. The right cloud object storage service can serve as a scalable, secure, and cost-efficient destination for backing up both premises-based and cloud-based storage.

- **Data archive:** As businesses seek maximum value from their company data, they are more likely to reach into their archives. Cloud Object Storage can provide a cost-effective archival option for older and less active data, while still enabling ready access, as needed, for users and applications.

- **Content repository:** Businesses are seeking cost efficiencies for storing and searching large amounts of data. Cloud object storage offers a scalable, low-cost way to store large data pools, such as multi-media libraries, medical images, and research data.

- **Analytics:** Next-generation analytics functionality is being embedded into more cloud platforms and applications. Cloud object storage offers a persistent, scalable storage layer for cloud-based analytics.

- **Cloud-native applications:** To ensure optimal performance, businesses often choose to place storage adjacent to the applications accessing it. Hosted cloud object storage is best positioned to support cloud-based applications.

WHAT TO LOOK FOR IN A CLOUD OBJECT STORAGE SERVICE

While most leading cloud service providers offer cloud object storage, not all services are able to meet the escalating needs of businesses. To help you select the right cloud object storage partner for your business, here is a checklist of capabilities to look for:

- **Scalability without performance degradation:** Your company will likely need to store growing volumes of data that will rarely diminish (because even archival data may prove useful in future). The right provider will allow you to scale out, as needed, without compromising on performance.

- **Data durability/availability across regions:** Stored content must be available and accessible as needed. The right provider provides strong business continuity and availability assurances, without requiring you to pay extra to replicate content across cloud centers. Choose an option in which data resiliency is architected in. For example, IBM Cloud Object Storage offers a unique architecture that relies on patented data dispersal and erasure coding technologies, to ensure data consistency in real time (not eventual consistency); as well as ensuring that data remains available and secure, even if a site goes down.

- **Data privacy/security:** The provider's ability to address security, compliance, and data sovereignty concerns is paramount to the choice of a cloud provider. Ensure that your provider encrypts all cloud data with advanced encryption standards, and also secures your data as it traverses the network. Also understand how the provider assures that your data will be protected if a data center is breached, no matter where it is located.

- **Data sovereignty/compliance:** Businesses—not their cloud partners—are primarily responsible for ensuring regulatory compliance, wherever they do business. To protect your business, as well as your customers, choose a partner with cloud centers in the places where you do business around the world.

- **Flexible deployment options (private, public, hybrid):** Many business workflows require accessing local storage, as well as easily-accessible non-active content. A cloud object storage solution with flexible deployment options (on-premises, dedicated hosted cloud, and public cloud), can simplify management and control across the hybrid environment, while enabling you to deploy storage optimally.

- **Flexible interfaces/APIs:** Application Program Interfaces (APIs) for leading proprietary and open source object storage protocols will allow organizations to ingest, utilize, and manage a wide variety of content from traditional and unconventional sources and types. For example, IBM Cloud Object Storage supports APIs for S3 and OpenStack Swift. It also offers interfaces for Network File System (NFS) and Server Message Block (SMB) storage protocols.

- **Attractive cost-to-performance ratio:** In comparing cloud object storage providers, consider total costs for all your cloud-based storage, not just the storage cost-per-GB. Consider costs associated with ensuring the level of availability you need, including storage and data transfer costs for any replication activities to achieve geographic redundancy. With IBM Cloud Object Storage, the patented geo-dispersal technology essentially allows you to pay once to store your data across multiple data centers, and without incurring inter-regional data transfer charges.

THE LAST WORD

As businesses place greater reliance on data and analytics to fuel their growth, they are rethinking their storage strategies. No longer simply a repository, storage solutions must meet escalating enterprise needs for data protection, accessibility, availability, integration, application performance, and cost-effectiveness. That is why many businesses are incorporating cloud object storage into their IT environments. With the right cloud object storage provider, businesses can continue to grow their valuable data stores without compromising performance—all at a reasonable, usage-based cost. For data-dependent businesses, the right cloud object storage solution is an effective and attractive alternative to traditional storage architectures and formats, allowing them to meet tomorrow's needs today.

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About IBM Cloud Object Storage

IBM Cloud Object Storage system for on-prem deployments is a breakthrough platform for storing large amounts of unstructured data as objects. This transformational software-defined object storage is leading the way with **scalability, security, simplicity and efficiency**; and is available as an integrated storage system or an easy to deploy software-only solution. IBM Cloud Object Storage is ideal for use cases such as remote file collaboration, backup or archive repository, and as a content repository for images, video and voice. Service providers and industries such as media and entertainment, healthcare and financial services are gravitating to the advantages of object storage. Clients can start with as few as three commodity x86 server nodes, or as little as 72 TB of useable storage; and grow to petabytes or even exebytes. By combining a single copy of protected data and the ability to lock down data using policy based WORM storage, this solution is quickly becoming the choice for many industries—like finance, healthcare and government—which have compliance or other data retention requirements.

For more information on IBM Cloud Object Storage, click here.

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