

# Use AWS Cloud Storage to gain economic and operational advantages

Optimize AWS Storage usage and reinvest cost savings to drive innovation and business transformation

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#### INTRODUCTION

# Reliable, scalable, and secure cloud storage for your data

Millions of Amazon Web Services (AWS) customers around the world rely on <u>AWS Storage services</u> to transform their businesses, increase agility, reduce costs, and accelerate innovation. With AWS, organizations can choose from a broad portfolio of storage solutions with deep functionality for storing, accessing, protecting, and analyzing their data.

Whether you require solutions for one or any combination of object, file, or block storage architectures, AWS has you covered. The portfolio of AWS Storage services makes it easy and cost-effective for you to to store your data in the cloud at unlimited scale, which frees you up to dedicate more of your valuable time and resources to serving your customers, enhancing your applications, and innovating to accelerate business growth.

#### The value of cost-optimized cloud storage

With AWS, you can focus on business innovation rather than on infrastructure. AWS enables you to simplify and optimize data ingestion and storage and decrease the time to analyze, visualize, and generate insights that unlock new data-driven opportunities. In fact, analyst firm <u>Enterprise Strategy Group</u> (ESG) validated that AWS Cloud Infrastructure offers a 66 percent lower 3-year total cost of ownership compared to on premises (with savings of 69 percent on storage, 66 percent on networking, and 63 percent on compute). Migrating onpremises workloads to AWS provides organizations with reduced costs, increased performance, improved operational efficiency, faster time to value, and improved business agility.

At AWS, we understand the importance of optimizing costs without compromising performance. That's why our storage portfolio offers an array of efficiency and optimization services and features. You can leverage our intelligent storage classes, automatic data tiering, dynamic lifecycle policies, and robust observability and management capabilities to achieve peak cost optimization. We empower you to gain operational and economic advantages for your organization, ensuring that you extract maximum value from your storage investments and put your data to work by taking advantage of cloud <u>analytics</u>, <u>artificial intelligence (AI) and</u> machine learning (ML) services, and more.

In this eBook, we explore the exceptional value AWS Storage can bring to your organization. Our comprehensive storage services are designed to optimize your costs—and propel your business forward in today's rapidly evolving digital landscape.

### Download the ESG report: Save up to 66% by migrating to AWS Cloud Infrastructure >

#### **OBJECT STORAGE**

### **Cost-effectively store and retrieve any amount of data from anywhere with object storage**

AWS offers solutions for object storage that help optimize your costs—all while providing storage performance that boosts productivity and accelerates business growth.

### Achieve unprecedented scalability and savings with Amazon S3

Built on a unique architecture and offering an industry-leading combination of durability, security, availability, and performance at a virtually unlimited scale, <u>Amazon Simple</u> <u>Storage Service</u> (Amazon S3) stands apart as the ultimate object storage service. The fundamentals of Amazon S3 are areas that you might not ever see—except that it just works. And we are constantly optimizing costs to be able to pass along savings to you. Anyone who has ever operated their own storage at scale knows that delivering on those fundamentals all at once is hard. It takes a lot of time, effort, and experience to get it right. We focus every day on raising the bar on these fundamentals. This frees up your time to focus on innovation instead of on figuring out how to durably store and retain your data. Over the course of 17 years, it has been Amazon S3 and its execution on the fundamentals that has earned the trust of millions of customers of all sizes and from all industries.

And with a diverse range of <u>Amazon S3 storage classes</u> to choose from, you have the ability to leverage the optimal storage for your specific workload's access frequency, resiliency, and cost requirements. All Amazon S3 storage classes are purpose-built to offer the most cost-effective storage solution for various access patterns.

#### Automate cost savings with Amazon S3 Intelligent-Tiering

Are your data access patterns unknown or constantly evolving? Enter <u>Amazon S3</u> <u>Intelligent-Tiering</u>, the groundbreaking storage class that delivers automatic cost savings. Amazon S3 Intelligent-Tiering optimizes storage costs by automatically moving data to the most cost-effective storage tier—without any performance impact or operational burden.

Since its launch in 2018, AWS customers have collectively saved over \$1 billion by using Amazon S3 Intelligent-Tiering—and those savings continue to accumulate.

## Take advantage of low-cost archive storage with Amazon S3 Glacier

The Amazon S3 Glacier storage classes provide you with long-term, secure, and durable storage options to optimally archive your data at the lowest cost. For long-term data stored over 90 days, you can consider these low cost archive storage options. The Amazon S3 Glacier storage classes (Amazon S3 Glacier Instant Retrieval, Amazon S3 Glacier Flexible Retrieval, and Amazon S3 Glacier Deep Archive) are purpose-built for colder data, providing you with retrieval flexibility from milliseconds to days, in addition to the ability to store long term archive data as low as \$1 per terabyte per month.

Leading companies, such as <u>Electronic Arts</u>, <u>Snap</u>, <u>PGA Tour</u>, <u>Warner Bros</u>., <u>CNN</u>, <u>Capital One</u>, <u>NASCAR</u>, <u>Canva</u>, <u>Pinterest</u>, <u>Photobox</u>, <u>NASDAQ</u>, and many others, use the S3 Glacier storage classes to modernize their data archive, put their cold data to work, and optimize costs.

<sup>1</sup> Lin, B., "Airbnb Details Road Map to Lower Cloud Costs," The Wall Street Journal, November 2022

 <sup>2</sup> Borys, C., "Shutterstock transforms IT and saves 60% on storage costs with Amazon S3," AWS Storage Blog, July 2022
<sup>3</sup> "Snap Optimizes Cost Savings While Storing Over 1.5 Trillion Photos and Videos on Amazon S3 Glacier Instant Retrieval," AWS customer story, 2022 **Customers have saved over** 

**\$1B** by using S3 Intelligent-Tiering

### 🚫 airbnb

In 2020 alone, AWS helped Airbnb achieve \$63.5M in storage savings<sup>1</sup>

### shutterstr.ck

Using Amazon S3 Intelligent-Tiering, Shutterstock realized 60% lower storage costs<sup>2</sup>

Snap saved tens of millions of dollars by using Amazon S3 Glacier to cost-effectively store 1.5T of photos and videos<sup>3</sup>



## illumina

After only 3 months of using Amazon S3 Intelligent-Tiering and lifecycle policies, Illumina reduced carbon emissions by 89% and achieved a 60% reduction in storage costs<sup>4</sup>

#### **OBJECT STORAGE**

### Automate storage class transition with Amazon S3 lifecycle policies

Shifting access patterns can make it challenging to determine the most cost-effective storage class for your datasets—especially as your data ages and becomes less active. If your data access patterns are known, you can use **Amazon S3 lifecycle policies** to further optimize your storage costs with minimal effort—even as your datasets grow to millions or even billions of individual objects.

With Amazon S3 lifecycle policies, you can automate the transition of your data to infrequent access or archive storage classes based on predefined rules. This helpful capability allows you to cost-effectively store your data throughout its lifecycle, ensuring you pay only for the storage you need at any given stage. You not only reduce storage costs, but you also gain back the valuable time previously spent managing storage classes. This allows you to redirect resources and free up your team to focus on business innovation.

#### **OBJECT STORAGE**

# Further optimize costs with Amazon S3 observability and analysis features

Amazon S3 offers several observability and analysis features that can help optimize your costs. With these helpful tools, you can gain deeper insights into your storage usage, analyze trends, and make informed decisions to maximize cost savings at scale.

<u>Amazon S3 Storage Lens</u> provides organization-wide visibility into your object storage, allowing you to understand usage patterns and activity trends across your entire infrastructure. With automated alarms and anomaly detection, Amazon S3 Storage Lens empowers you to identify areas for cost optimization and data protection and to take immediate action.

The tool's interactive dashboard, which is preconfigured for all customers, presents visualizations that enable you to optimize the retention of non-current versions, reduce storage of incomplete multipart uploads, and ensure adherence to lifecycle rule policies.

## Additional services and features that help maximize storage cost visibility

Amazon S3 offers additional features for fine-grained insights into object-and userlevel activities. <u>Amazon S3 Inventory</u>, <u>Amazon S3 server access logs</u>, and <u>Amazon</u> <u>CloudWatch metrics for Amazon S3</u> deliver detailed reports and metrics on object storage metadata, requests, replication, and more.

You can pair these features with services like <u>Amazon Athena</u> and <u>Amazon</u> <u>QuickSight</u> to create custom queries and visualizations. This can help you uncover valuable insights about access patterns and optimize your storage costs accordingly.

### *-*upstox

Using Amazon S3 Storage Lens saves online stock trading platform Upstox \$1M per year<sup>5</sup>



#### FILE STORAGE

## The most comprehensive range of file services in the cloud

AWS file storage offerings provide a variety of options to meet different application requirements, allowing you to choose the most suitable solution based on your specific use case, performance needs, and compatibility with your applications and workflows. Your business can gain a competitive advantage by focusing on core operations while relying on AWS for scalable, highly available, durable, and secure file storage solutions.

AWS offers the industry's widest portfolio of fully managed shared storage, providing infrastructure provisioning, patching, and backups while allowing you to choose the optimal file system technology to meet your workload requirements. AWS file storage services, including <u>Amazon Elastic File System</u> (Amazon EFS) and <u>Amazon FSx</u>, help you address the diverse needs of your file-based applications and workloads.

AWS file storage makes it easy and cost effective to migrate, run, and scale feature-rich, high-performance file storage, without making changes to your applications or workflows. It is readily accessible from virtually all forms of AWS compute, helping you innovate faster by integrating with other AWS services. AWS file storage also has one of the industry's lowest cost file

storage in the cloud, allowing you to retire technical debt, reduce operational overhead, and lower TCO.

### Reduce costs with serverless, fully elastic file storage

With Amazon EFS, you have the choice of storage classes designed to rightsize your workload requirements and cost objectives. The <u>Amazon EFS Standard</u> <u>storage class</u> is the default high performance storage class available with multi-AZ resilience and high-availability. To best serve workloads that don't need the highest levels of durability and availability, you can choose the <u>Amazon EFS One Zone storage classes</u>, which redundantly stores data within a single Availability Zone to help you reduce storage costs by 47 percent compared to Amazon EFS Standard. Industry leaders like <u>Johnson & Johnson</u>, <u>T-Mobile</u>, <u>Discover</u>, and <u>Spokeo</u> are benefiting from substantial cost savings by using Amazon EFS.

Let's delve into two key features of Amazon EFS that enhance cost optimization to an even greater degree.



#### Reduce costs for lesser-used files with Amazon EFS Infrequent Access storage classes

In addition to the Amazon EFS Standard and Amazon EFS One Zone storage classes, Amazon EFS offers specialized storage classes for infrequently accessed files. The <u>Amazon EFS</u> <u>Standard-Infrequent Access</u> (EFS Standard-IA) and <u>Amazon EFS One Zone-Infrequent</u> <u>Access</u> (EFS One Zone-IA) storage classes are designed to be cost-optimized for files that are accessed less frequently. Whether you need to meet auditing and retention requirements, create nearline backups, or keep occasionally used data easily accessible, these storage classes help reduce your costs—with no code or operational changes required.

## Automate storage class movement with Amazon EFS lifecycle policies and data tiering

To further enhance cost optimization, <u>Amazon EFS Lifecycle Management</u> automates the movement of less frequently accessed files between different storage classes. Amazon EFS Lifecycle Management seamlessly transitions your files between Amazon EFS Standard and Amazon EFS Standard-IA storage or between Amazon EFS One Zone and Amazon EFS One Zone-IA storage, resulting in cost reductions of up to 92 percent.<sup>6</sup>

Similar to Amazon S3 Intelligent-Tiering, Amazon EFS Intelligent-Tiering optimizes costs for workloads with changing access patterns by placing your data in the appropriate storage class based on file access patterns. But Amazon EFS doesn't stop at data movement cost optimization—it also offers **elastic throughput**, which automatically delivers application throughput performance when you're unsure of your application's peak throughput. That means there's no longer any need to overpay for idle resources just to ensure that certain performance requirements are met.

## Johnson 4 Johnson

With Amazon EFS, Johnson & Johnson accelerated time to insight and achieved 37% lower storage costs<sup>7</sup>





#### FILE STORAGE

# Run highly performant, cost-effective file systems with Amazon FSx

Eliminate the complexities and performance challenges of self-managing storage with <u>Amazon FSx</u>. This family of fully managed file storage services is built on the latest AWS compute, networking, and disk technologies to provide high performance and lower total cost of ownership (TCO). Plus, with AWS handling the storage infrastructure, you can focus on maximizing efficiency and driving innovation. Join the ranks of industry leaders like <u>Rev</u> and <u>T-Mobile</u> in reducing costs and improving performance with Amazon FSx.

#### Harness the power of efficiency features on Amazon FSx

Amazon FSx provides a diverse selection of cost-effective and high-performing file storage solutions. These solutions support various use cases such as computeintensive workloads, IT applications, databases, and network-attached storage (NAS) workloads, including content management, user home directories, team collaboration shares, and disaster recovery destinations for on-premises workloads.

For example, Amazon FSx supports a rich set of storage efficiency features, including data deduplication and compression, which can reduce storage consumption by up to 50–65 percent for general-purpose workloads.<sup>8</sup>

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## Save even more with Amazon FSx cost-optimized storage types and data tiering

<u>Amazon FSx for Windows File Server</u> offers two cost-optimized storage types to address different needs. The hard disk drive (HDD) storage type is ideal for a wide range of file shares, while the solid-state drive (SSD) storage type caters to latency-sensitive workloads. Choosing the appropriate storage type can drive substantial cost savings.

Additionally, <u>Amazon FSx for NetApp ONTAP</u> automatically moves infrequently accessed data from a performant SSD storage tier to a costoptimized, <u>fully elastic capacity pool</u> that can scale to petabytes in size. <u>Ayesa</u>, a global technology and engineering services provider, reduced its storage costs by 50 percent using this feature. Even high-performance workloads can be optimized for greater cost-efficiency. If your <u>Amazon FSx for Lustre</u> workloads are throughput bound and you don't need the low latencies and high IOPS of SSD-based storage, then migrating to an HDD-based persistent file system can give you the performance you need at a substantially lower cost. Amazon FSx also includes another highly performant service with <u>Amazon FSx for OpenZFS</u> that delivers millions of IOPS and compression efficiencies like FSx for Lustre to help you achieve faster time to insights while reducing your storage footprint and costs.

<u>Amazon File Cache</u> provides a high-speed, fully managed cache on AWS that makes it easier to process file data, regardless of where it's stored. Amazon File Cache enables customers to save costs by augmenting compute capacity without additional capital expense.

#### Amazon FSx delivers proven success across 4 leading file systems

#### **NetApp ONTAP**

Medical software pioneer Advanced MD reduced storage costs by 70% and lowered operational overhead by 80%.

#### **OpenZFS**

Artificial intelligence (AI) leader Rev accelerated model training and lowered operational costs by up to 30%.

#### **Windows File Server**

Global ERP provider Infor reduced storage costs by up to 50% for its SQL databases.

#### **Lustre**

T-Mobile doubled its performance for SAS Grid workloads and realized \$1.5 million in annual savings.



#### **BLOCK STORAGE**

# **Optimize storage performance and costs with block storage at any scale**

For block storage, <u>Amazon Elastic Block Store</u> (Amazon EBS) offers a range of volume types, enabling you to optimize storage performance and costs for a wide array of applications. This frees you to tailor a solution that meets the specific needs of your workload.

AWS customers generally begin their Amazon EBS journey by using its gp2 volume type—a balanced SSD-based volume for **general-purpose block storage** that increases performance as its volume size grows. This takes the guesswork out of balancing storage performance and costs.

When you're ready for more granular control over cost optimization, you can seamlessly migrate to the gp3 volume type, which allows you to scale performance and throughput independent of storage capacity. As a newer generation general-purpose volume, gp3 provides a 20 percent lower price per gigabyte compared to gp2, enabling substantial cost savings.<sup>9</sup>

#### Save even more with Amazon EBS Elastic Volumes

With <u>Amazon EBS Elastic Volumes</u>, you gain the flexibility to change the volume type, storage, and performance of your Amazon EBS volumes at any time, independently and without any downtime. You can dynamically optimize costs based on the specific needs of your workloads, eliminating concerns about over-provisioning. Best of all, Amazon EBS Elastic Volumes is a free service for all AWS customers.

### ₩ DEVO

Security analytics innovator Devo saved 20% on storage costs by migrating to gp3—and using Amazon EBS Elastic Volumes to dynamically adjust performance for additional cost savings<sup>10</sup>



### Johnson & Johnson

Johnson & Johnson seamlessly migrated over 100k snapshots to Amazon EBS Snapshots Archive in less than 2 months, resulting in a projected \$1M annual cost savings<sup>11</sup>

#### **BLOCK STORAGE**

### Drive additional savings with Amazon EBS backup and lifecycle management features

Amazon EBS offers robust backup and lifecycle management features and integrations that provide further opportunities to optimize your block storage costs.

<u>Amazon EBS Snapshots</u> provide incremental, point-in-time copies of your block storage data, capturing only the changes made since the last snapshot. This approach makes snapshots cost-effective and ideal for frequent backups. And, by using <u>Amazon EBS Snapshots Archive</u> for long-term retention (over 90 days) of infrequently accessed snapshots, you can achieve savings of up to 75 percent.

To monitor and optimize snapshot usage and expenditure, you can leverage tools like <u>AWS Cost Explorer</u>. This allows you to track your snapshot usage and take informed actions to optimize storage costs as needed.

You can also simplify the management of Amazon EBS Snapshots by integrating them with <u>Amazon Data Lifecycle Manager</u>. This free feature enables you to create policies that automate the creation, deletion, retention, and sharing of snapshots. Plus, Amazon Data Lifecycle Manager can help optimize storage costs by automatically deleting outdated backups or moving infrequently accessed snapshots to Amazon EBS Snapshots Archive based on your specified policies.

<sup>11</sup> "Johnson & Johnson Delivers Compliance at Scale and Lowers Cost Using Amazon EBS," AWS customer story, 2022

#### ADDITIONAL SERVICES

# **Complete your journey to storage cost optimization**

AWS offers several more services and solutions that help optimize your storage costs. Many of these tools are not specific to object, file, or block storage and can drive efficiencies across multiple storage types.

To conclude this review of how you can benefit from storage cost optimization with AWS, let's examine two of these services: **AWS DataSync** and **AWS Backup**.

#### Simplify and streamline data migrations with AWS DataSync

With <u>AWS DataSync</u>, you can simplify, automate, and accelerate the copying of file and object data to and from AWS. This fully managed online data transfer and discovery service seamlessly scales as data loads increase, streamlining migration planning and reducing on-premises data movement costs.

<u>AWS DataSync Discovery</u> automatically collects and analyzes data about on-premises storage performance and capacity usage. It then delivers valuable insights and recommendations to help you understand your storage needs, quickly identify which data to migrate, select the AWS Storage services that align to your requirements, and ultimately move your data to AWS in a fast, cost-effective manner.

#### Safeguard data and audit data protection with AWS Backup

**AWS Backup** helps optimize costs by helping to improve your data protection posture and reduce data loss, accelerating recovery time, and automating the protection of your application resources across a comprehensive range of capabilities. Leverage automated backup scheduling and retention management, and centralized protection monitoring. Access <u>AWS Key Management Service</u> (AWS KMS), integrated backup encryption, and cross-account management and delegated administrator support with <u>AWS Organizations</u>. Benefit from data protection auditing and compliance reporting with <u>AWS Backup Audit Manager</u>. Activate immutable vaults leveraging the write-once, read-many (WORM) model with <u>AWS Backup Vault Lock</u>.

### Santos

Using AWS Backup, global energy company Santos reduced backup costs by 50% and spent 80% less time performing backups<sup>12</sup>



CONCLUSION

## Next steps

In this era of unprecedented data growth and evolving business landscapes, optimizing your storage costs is not just a choice—it's a strategic imperative. The AWS Storage portfolio empowers your organization to reinvent your business with data and unlock critical competitive advantages by delivering an unrivaled depth of functionality, all backed by a commitment to help you get the most value from your cloud spend.

With AWS, you can choose from a broad range of services and features to harness the power of data with maximum cost-efficiency. The AWS Storage portfolio offers storage classes, lifecycle policies, automatic data tiering, and observability and analysis capabilities that you can take advantage of immediately to reduce the cost of storing, accessing, protecting, and analyzing your valuable data.

Join the millions of customers around the world using AWS Storage to transform their businesses, increase agility, reduce costs, and accelerate innovation.

Learn more >