



Core Storage Services in AWS

AWS (Amazon Web Services) offers a range of core storage services designed to provide scalable, durable, and cost-effective solutions for various data storage needs. Here's a brief overview of the main storage services in AWS:

1) Amazon Simple Storage Service



Amazon S3

Amazon Simple Storage Service (Amazon S3) is a fully managed, serverless, low-cost, object-level storage service. With Amazon S3, you store unlimited amounts of data (with different formats) on AWS. Amazon S3 offers multiple storage options.

Key Features:

- **Scalability:** Automatically scales to handle large volumes of data and high request rates.
- **Durability and Availability:** Provides 99.999999999% (11 9's) durability and a variety of storage classes for different availability needs.
- **Security:** Offers features like bucket policies, access control lists (ACLs), and encryption.
- **Cost-Effective:** Pay-as-you-go pricing with options like S3 Glacier for low-cost archival storage.



Amazon S3 storage classes

Amazon S3 offers a range of storage classes that you can choose from based on your workload's data access, resiliency, and cost requirements. For example, Amazon S3 storage classes are purpose-built to provide the lowest cost storage for different access patterns.



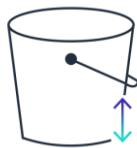
Amazon S3 Standard

Amazon S3 Standard is appropriate for various use cases, including cloud applications, dynamic websites, content distribution, mobile and gaming applications, and big data analytics.



Amazon S3 Intelligent-Tiering

Amazon S3 Intelligent-Tiering delivers milliseconds latency and high throughput performance for frequently, infrequently, and rarely accessed data in the Frequent, Infrequent, and Archive Instant Access tiers. You can use S3 Intelligent-Tiering as the default storage class for virtually any workload, especially data lakes, data analytics, new applications, and user-generated content.



Amazon S3 Standard-IA

Amazon S3 Standard-IA is for data accessed less frequently but requires rapid access when needed. S3 Standard-IA offers the high durability, high throughput, and low latency of Amazon S3 Standard with a low per GB storage price and per GB retrieval charge. This combination of low cost and high performance makes S3 Standard-IA ideal for long-term storage, backups, and data store for disaster recovery files.



Amazon S3 One Zone-IA

Amazon S3 One Zone-IA is for data accessed less frequently but requires rapid access when needed. For example, S3 One Zone-IA offers the same high durability, high throughput, and latency as Amazon S3 Standard with a low per GB storage price and per GB retrieval charge.



Amazon S3 storage classes are ideal for various use cases, including those with demanding performance needs, data residency requirements, unknown or changing access patterns, or archival storage needs.



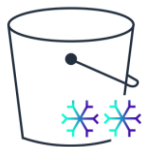
Amazon S3 Glacier Instant Retrieval

Amazon S3 Glacier Instant Retrieval is an archive storage class that delivers the lowest-cost storage for long-lived data that is rarely accessed and requires retrieval in milliseconds



Amazon S3 Glacier Flexible Retrieval

Amazon S3 Glacier Flexible Retrieval delivers the most flexible retrieval options that balance cost with access times ranging from minutes to hours and with free bulk retrievals. It is an ideal solution for backup, disaster recovery, and offsite data storage needs. When some data occasionally needs to be retrieved in minutes, you don't want to worry about costs.



Amazon S3 Glacier Deep Archive

Amazon S3 Glacier Deep Archive is lowest-cost storage class in Amazon S3 and supports long-term retention and digital preservation for data that can be accessed once or twice a year. It is designed for customers that retain data sets for 7—10 years or longer to meet regulatory compliance requirements. S3 Glacier Deep Archive can also be used for backup and disaster recovery use cases. It is a cost-effective and easy-to-manage alternative to magnetic tape systems, whether on-premises libraries or off-premises services.

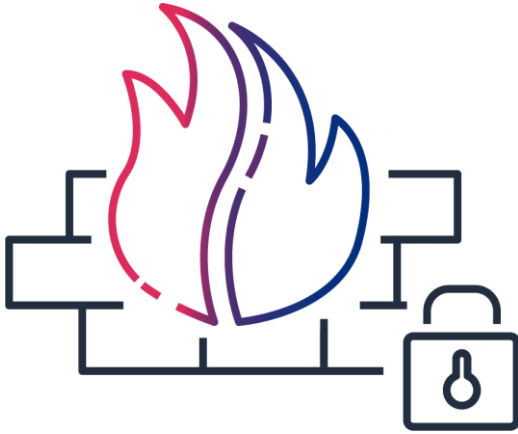


Amazon S3 Outposts

Amazon S3 on Outposts delivers object storage to your on-premises AWS Outposts environment. Using the S3 APIs and features available in AWS Regions today, S3 on Outposts makes it easy to store and retrieve data on your Outpost, secure the data, control access, tag, and report on it.



Some of the Amazon S3 storage benefits



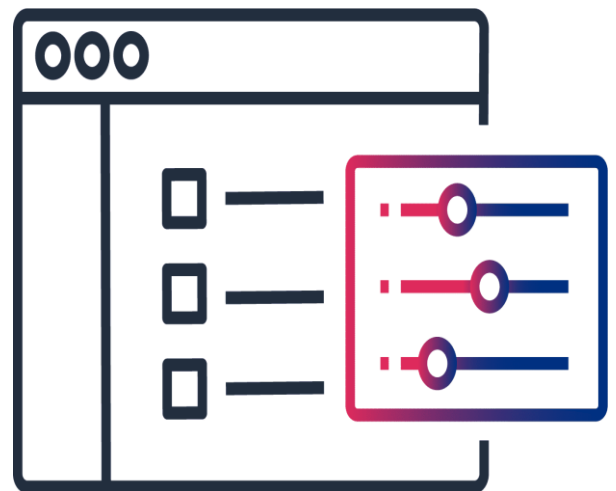
- Highly Durable storage solution:
Amazon S3 gives you confidence that there is **very little** chance for Amazon S3 to lose or break your object after you have uploaded it.
It is designed for 99.999999999 percent durability.

- Support for Event Triggers:

With this support, you can build event-driven applications.

To create thumbnails of your photos to arrive in your S3 bucket:

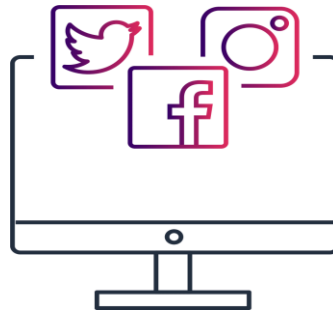
- You can create event triggers on each object "put the request."
- This triggers the AWS Lambda function that runs a code to transform the image into a thumbnail, sending the result to another S3 bucket.





Amazon S3 use cases

1) Content storage and distribution



- Benefit from the unlimited storage capacity for **big data workloads**, using Amazon S3 as a data lake for large amounts of data.
- Store various **types of content**, including **media content**.

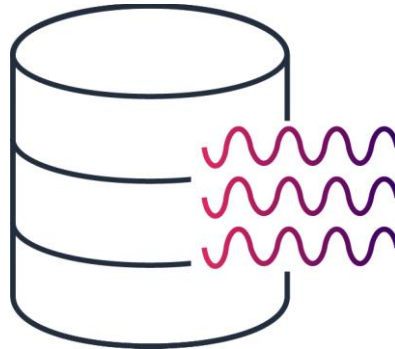
2) Backup and archiving



- Use Amazon S3 for durably storing backups (even from different AWS services).
- Amazon S3 Glacier is a great choice when:
 - You have to archive your data for long periods of time.
 - You need low-cost storage.
 - You must make sure your archives will not be deleted for a period of time (vault lock).



3) Build a data lake



- Run big data analytics, artificial intelligence (AI), machine learning (ML), and high-performance computing (HPC) applications to unlock data insights.

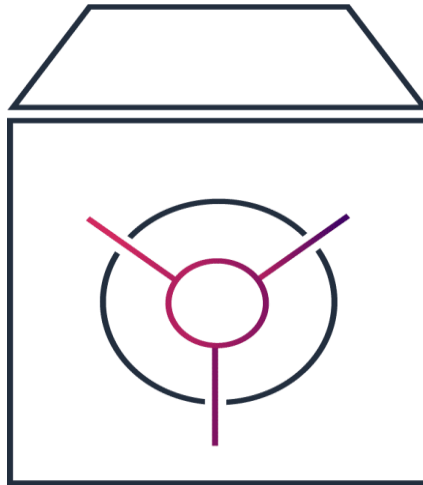
4) Backup and restore critical data



- Meet Recovery Time Objectives (RTO), Recovery Point Objectives (RPO), and compliance requirements with S3's robust replication features.



5) Archive data



- Move data archives to the Amazon S3 Glacier storage classes to lower costs, eliminate operational complexities, and gain new insights.

6) Run cloud-native apps



- Build fast, powerful mobile and web-based cloud-native apps that scale automatically in a highly available configuration.



2) Amazon Elastic Block Storage



Amazon EBS is a high-performance block storage service designed for use with Amazon EC2 (Elastic Compute Cloud) instances. It provides persistent storage that remains available even after the instance is terminated, making it suitable for data that needs to persist beyond the lifecycle of a single EC2 instance.

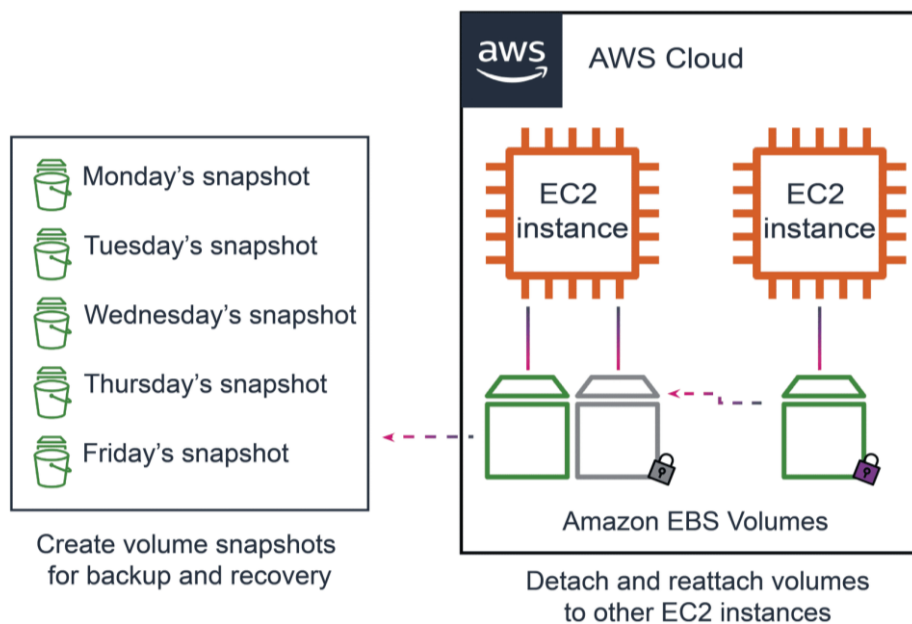
Amazon EBS has the following benefits:

- Persistent network-attached block storage for instances that can persist even after the EC2 instance to which this storage is attached is terminated
- Different drive types
- Scalable
- Pay only for what you provision
- Snapshot functionality
- Encryption available to enhance security



More information about Amazon EBS includes the following:

- As data is very important, you have the opportunity to take incremental snapshots of the volume. You can keep them indefinitely while having the opportunity to recover the volumes when needed.
- When you encrypt Amazon EBS volume, all the data in the volume, data traveling between the instance and EBS are encrypted.
- When you encrypt EBS volume, snapshots taken from these volumes are encrypted.
- Just like Amazon EC2, you have control over how much and what type of SSD/HDD of storage you provision and if you need to scale it you can modify your volume.



This diagram shows how working with Amazon EC2 instances helps you store your data in EBS volumes



3) Amazon Elastic File System

- When you need a serverless shared file system, you can use Amazon Elastic File System (Amazon EFS).
- Amazon EFS provides serverless, fully elastic file storage so that you can share file data without provisioning or managing storage capacity and performance.
- With Amazon EFS, you can build high performing and cost-optimized file systems on AWS benefitting from the built-in-elasticity, durability, and availability

More about EFS:



Serverless shared and scalable storage



Elastic, simple, and highly reliable



Performant and cost optimized



Full AWS compute integration



Highly durable and available



Four storage classes