

Simple Storage Service

Object storage built to store and retrieve any amount of data from anywhere

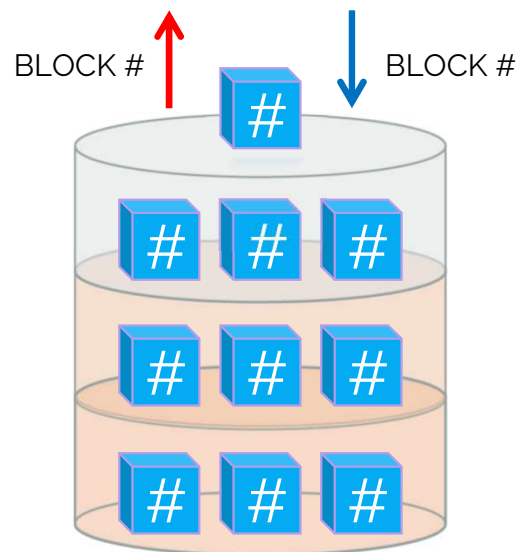


Amazon Simple Storage Service
(Amazon S3)

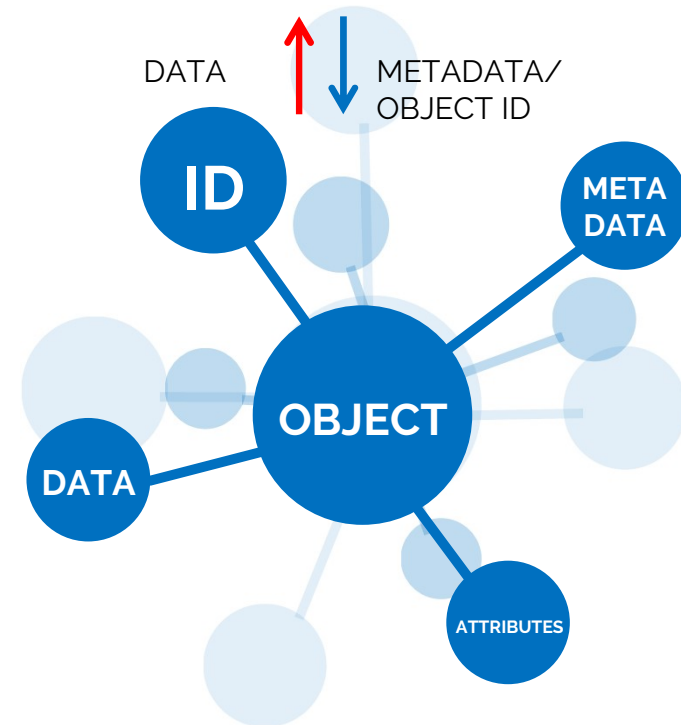


AWS Storage Options: Block vs. Object Storage

BLOCK STORAGE



OBJECT STORAGE



Storage

- Store data as **objects** in **buckets**
- Object is the file and any **metadata** that describes that file
- Store as many **objects** as you want
- Soft limit of 100 buckets per account
- Object size limit of 5 TB



Object



Bucket



Bucket with
objects



Amazon S3

To upload your data (photos, videos, documents, etc.):

1. Create a **bucket** in one of the AWS Regions.
2. Upload any number of **objects** to the bucket.

Bucket

`https://s3-ap-south-1.amazonaws.com/[bucket name]/`

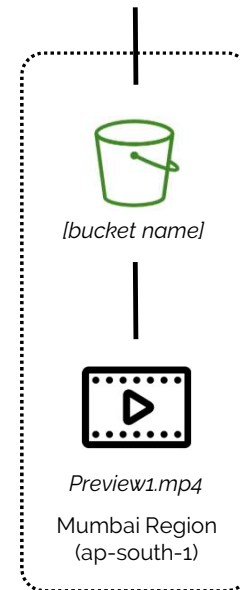
Region code Bucket name

Object

`https://s3-ap-south-1.amazonaws.com/[bucket name]/Preview1.mp4`

Key

Amazon S3



Access the Data Anywhere



Client



CLI

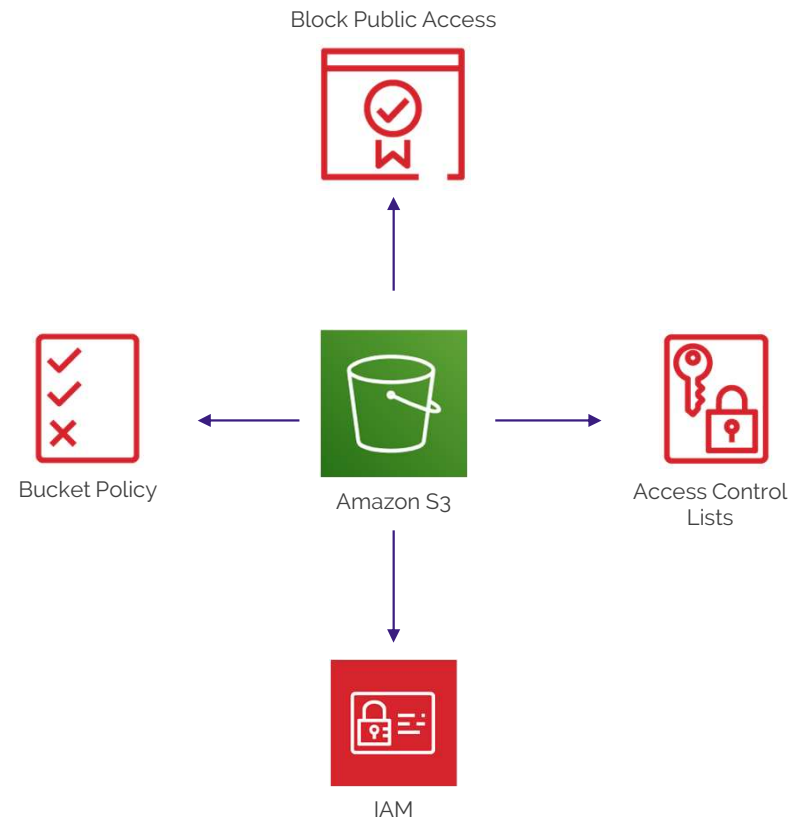


SDK

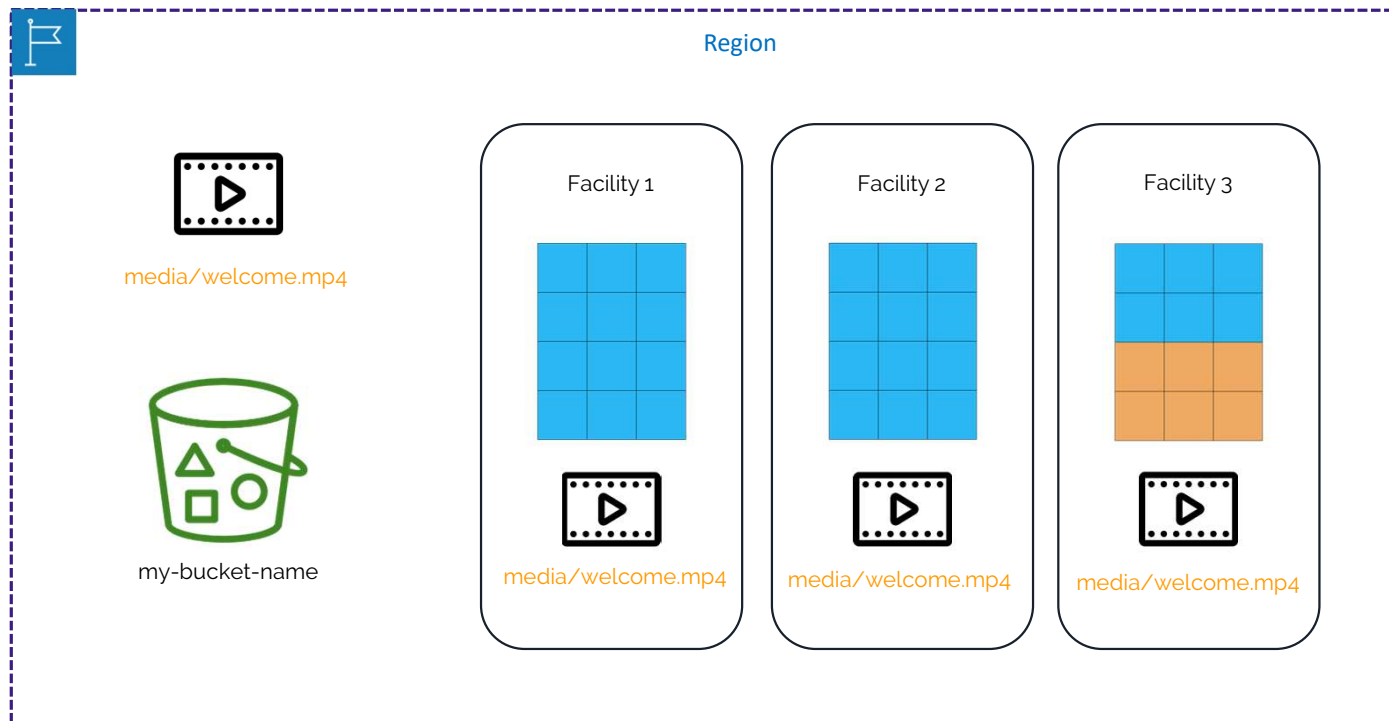


Access Restriction

- By default, all S3 buckets are private
- Restrict Access by:
 - Using IAM policies
 - Bucket policies
 - Use Amazon S3 Public Access Feature
 - Setting Access Control Lists



Redundant Storage in Region



S3 Encryption

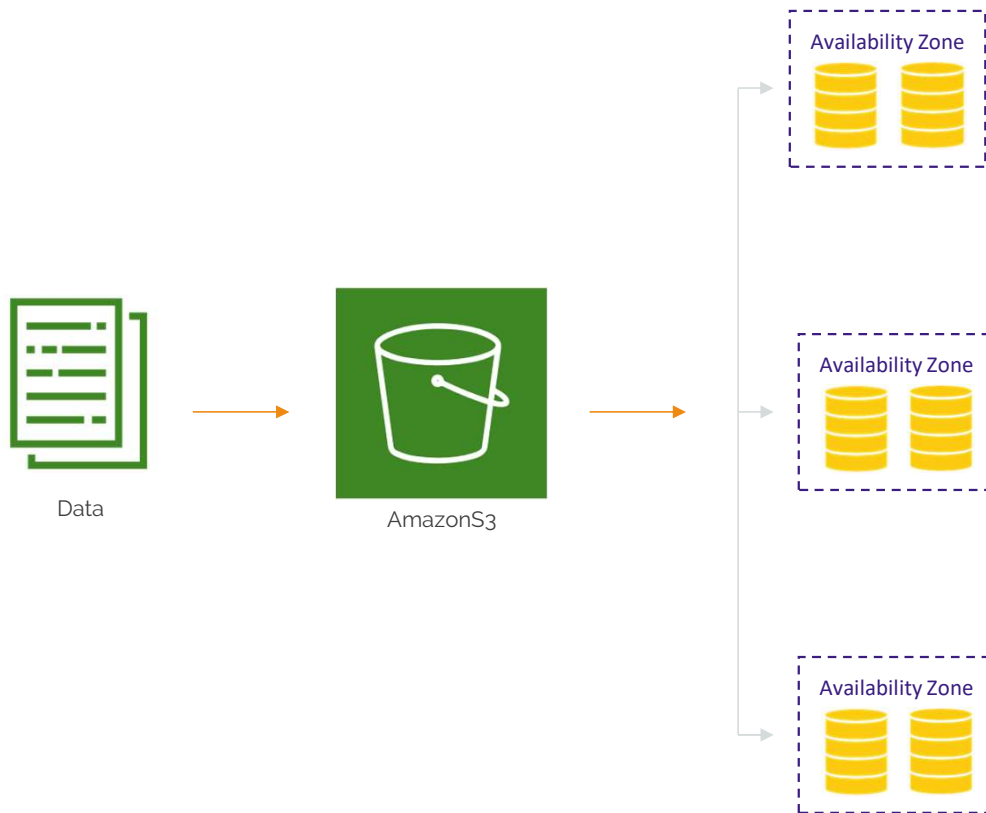
Data Encryption at Rest

Encryption	Working
SSE-S3	Use existing encryption key for AES-256
SSE-KMS	Use keys provided by S3 to encrypt objects or use your own master keys (CMK)
SSE-C	You manage the keys and S3 manages the encryption
Client – Side	Encrypt objects using your own local encryption process before uploading to S3



Durability

S3 offers **99.999999999%** of durability **by copying data across multiple AZ in region**



Availability

S3 offers **99.99%** of availability =

Levels of Availability:

	Percent of Uptime	Max Downtime per Year	Equivalent Downtime per Day
1 Nine	90%	36.5 days	2.4 hrs.
2 Nines	99%	3.65 days	14 min
3 Nines	99.9%	8.76 hrs.	86 sec
4 Nines	99.99%	52.6 min	8.6 sec
5 Nines	99.999%	5.25 min	.86 sec



Versioning

Versioning lets you maintain multiple copies of the same file in the bucket

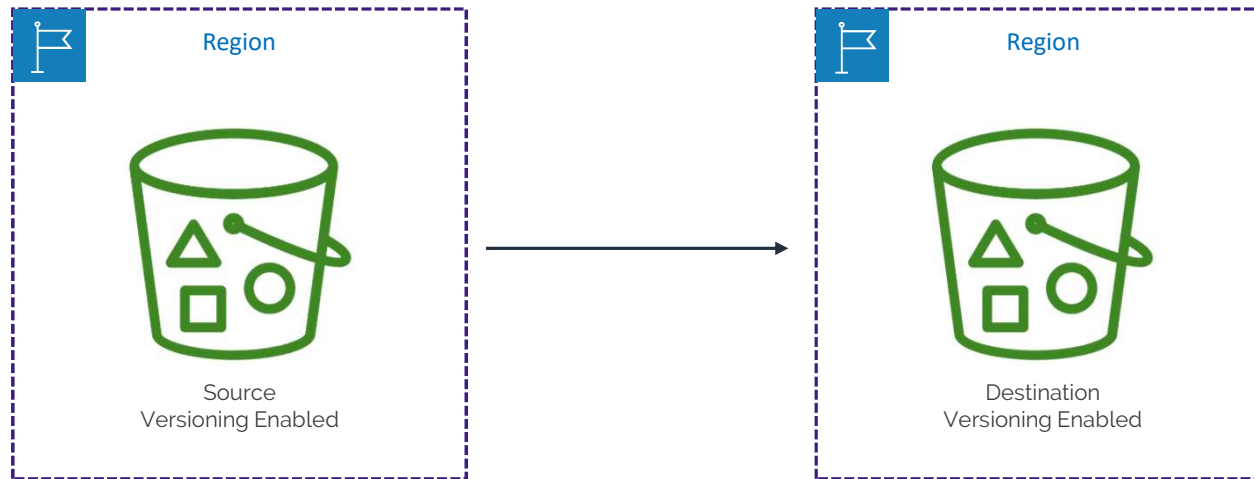


Versioning Enabled



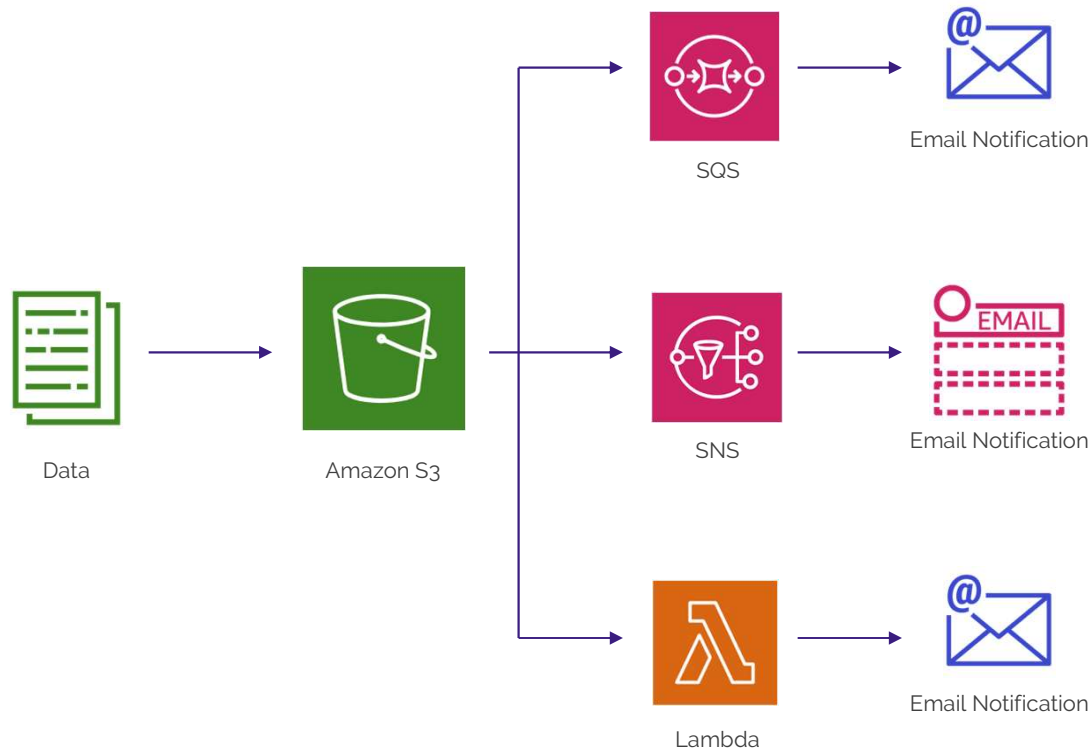
Replication

Replication allows you to automatically copy data between buckets asynchronously



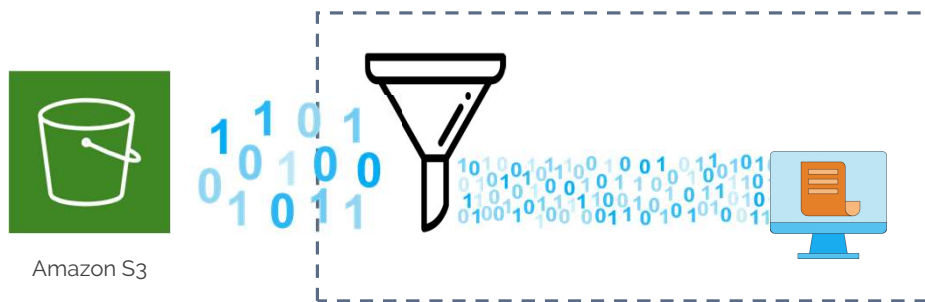
Notifications

Events can trigger Actions





S3 Select

Run **SQL queries** on data using **S3 Select**



Storage Classes

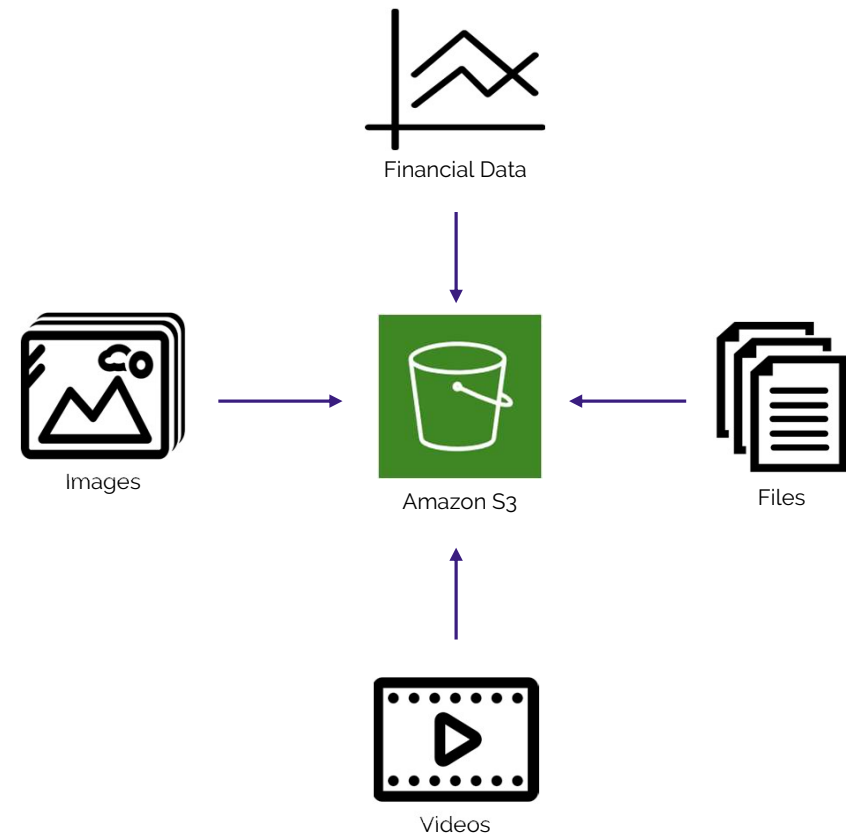
Storage for infrequently accessed data at cheaper rates

-  Amazon S3 Standard
-  Amazon S3 Standard: Infrequent Access
-  Amazon S3 Intelligent Tiering
-  Amazon S3 One Zone-Infrequent Access
-  Amazon Glacier
-  Amazon Glacier Deep Archive








Common Use Cases

- Static content
- Financial Data
- Storing application assets
- Static web hosting
- Backup and Disaster Recovery (DR)
- Staging area for big data



Namespace

-  Bucket names must be between 3 and 63 characters long.
-  Bucket names must be a series of one or more labels.
-  AWS recommends separating labels with a single period (.).
-  Bucket names can contain lowercase letters, numbers, and hyphens.
-  Each label must start and end with a lowercase letter or a number.



Server Access Logging

- Track requests to bucket
- Access log record
 - Requester
 - Bucket name
 - Request Time
 - Request Action
 - Response Status
 - Error Code
- No charge
- Source and target owned by same AWS account and same Region



Amazon S3 Pricing

- Pay only for what you use, including:
 - GBs per month
 - Transfer OUT to other regions
 - PUT, COPY, POST, LIST, and GET requests
- You do NOT have to pay for:
 - Transfers IN to Amazon S3.
 - Transfers OUT from Amazon S3 to Amazon CloudFront or Amazon EC2 in the same region.



Amazon S3: Storage Pricing

1. Storage

- Number of objects and their size

2. Storage Class

- Depends on access patterns of data

3. Data Transfer

- Pay for the data that goes outside the region

4. Number of requests

- Charges for requests (GET, PUT, LIST, POST methods)



In Review

- Amazon S3 is a fully managed cloud storage service
- Store a virtually unlimited number of objects
- Pay for only what you use
- Access at any time, from anywhere
- Amazon S3 offers rich security controls

