AWS – S3- Simple Storage Service

VISHWANATH M S

VISHWACLOUDLAB.COM

Agenda

- **Amazon S3 Concepts & Fundamentals**

- **Versioning & Cross-Region replication**

- **Encryption and Security Features**

- **Time-Limited Access to Objects**

- **Namespaces**

- **Access Controls**

- **Storage Classes**

- **LifeCycle Rules**

- **Website Hosting**

- **Audit Logs**

AWS – S3
Simple Storage service

Benefits of S3

Use Cases

Content Storage & Distribution

Big Data Analytics

Static Website hosting

Cloud-native Application Data

Disaster recovery

Backup & Archiving

Accessed via API's

Concepts of S3

- Bucket
  - It is like a Containers
  - Bucket name has to be UNIQUE across all the regions of AWS and all accounts.
    - Eg:- Like your Gmail ID
  - By Default max of 100 Buckets can be create per Account.
  - Each Object has an limitation of 5TB.
- Objects
  - Entities Stored in S3
  - Consist of Data and Metadata
  - Metadata is a set of name-value pairs that describe the object
  - Object is uniquely identified within a bucket by a Key and a Version ID.
- Files and Folders can be uploaded and downloaded Directly from the Web links.
- There is no Dedicated instance created for storing the data.
- Buckets are created on Region Level.

Storage Classes: Comparing Durability and Availability

Storage Class	Durability (designed for)	Availability (designed for)	Other Considerations
STANDARD	99.999999999%	99.99%	None
STANDARD_IA	99.999999999%	99.9%	There is a retrieval fee for STANDARD_IA objects. This class is most suitable for infrequently accessed data.
ONEZONE_IA	99.999999999%	99.5%	Not resilient to the loss of the Availability Zone.
GLACIER	99.999999999%	99.99% (after you restore objects)	GLACIER objects are not available for real-time access. You must first restore archived objects before you can access them
RRS	99.99%	99.99%	None

Storage Class Pricing

| Storage Class	Pricing
S3 Standard Storage	$0.023 Per GB
S3 Standard Storage – IA	$0.0125 Per GB
S3 – One – Zone - IA	$0.01 Per GB

Options in S3

- Can Enable Versioning

- Encryptions – AWS or KMS

- Read/Write access to the Bucket

- Read/Write access to the Files

- Server Logging

Versioning & Cross-Region replication

- Versioning is a means of keeping multiple variants of an object in the same bucket.

- Versioning is enabled on the bucket level.

- Amazon S3 automatically generates a unique version ID for the object being stored.
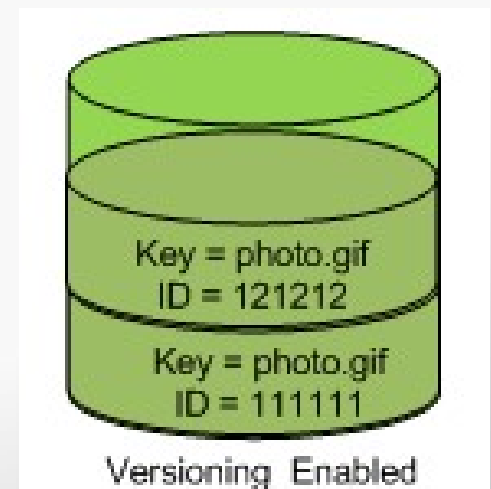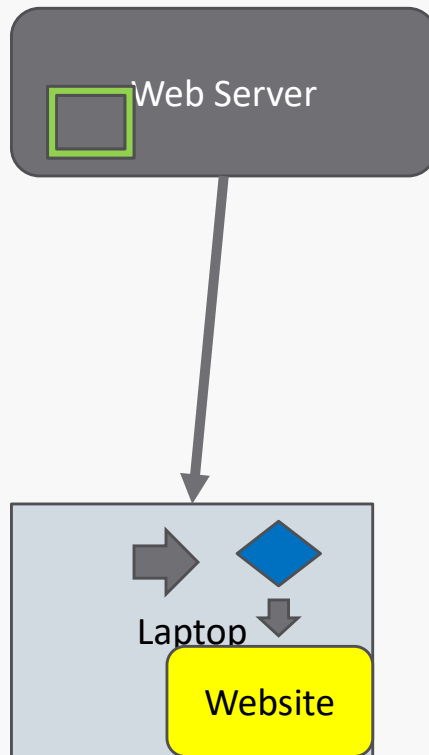
AWS – S3 – Web Hosting

2 Types of Hosting is available

- Client based Hosting
- Server based Hosting

Client based Hosting

Web Server

Laptop

Website

- The website page gets downloaded to the Laptop
- Then the page is proceed and shown on the screen.

- Typical example
  - Html pages
  - Videos
  - Audios

- Means, the data is only stored in the central webserver

- Processing of that data happens on the machine that is accessing it

VISHWACLOUDLAB.COM

Server based Hosting

Web Server

Laptop

WEB Page
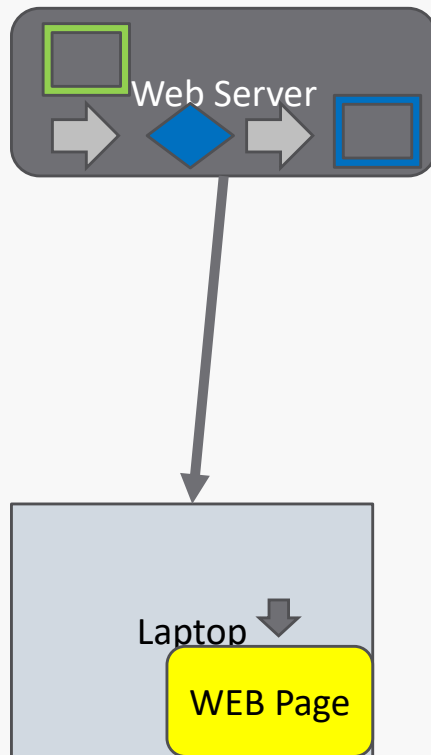
- The script file is processed on the server itself
- Only the output is sent to the machine that is accessing it.

- Typical example
  - Java based
  - .net
  - Python
  - php

S3- Web Hosting

- You can host a static website on Amazon Simple Storage Service (Amazon S3)
- They might also contain client-side scripts such HTML, Node.js.

- Amazon S3 **does not** support server-side scripting such as such as PHP, JSP, or ASP.NET.

AWS – S3 – Replication

S3 – Replication – Use Case

- To Maintain Audit compliance

- As a DR/BCP Plan, customer might need data to be replicated in different location.

- To Give users a local access within that country for a faster access.

S3- Replication

- It is a copy of the existing S3 Bucket

- Replication of S3 bucket CAN be done in the same Region or Diff region.

- Either complete Bucket can be replicated or based on some "Prefix" values data can be replicated.

- Replication can be done to a Different Account S3 Bucket as well.

  - Create a Bucket Policy on the destination Bucket to allow the source aws account to copy the data.

- Replication is a backup of the Source Bucket.

  - If the file is deleted on the Source bucket , it would NOT be deleted on the destination bucket automatically.

- Replication is effective to the files uploaded after Enabling the Replication feature

S3 – Replication - Pricing

Cross-Region Replication Pricing

You pay the Amazon S3 charges for

Storage

Requests

Inter-region data transfer for the replicated copy of data in addition to the storage charges for the primary copy.

Pricing for the replicated copy of storage is based on the destination region, while pricing for requests and inter-region data transfer are based on the source region.

S3 - Lifecycle

- 3 Types of LifeCycle of S3 Bucket
  - The Data in S3 Can be moved to "Standard –IA"
  - The Data in S3 Can be moved to "Once-Zone – IA"
  - The Data in S3 Can be Archived(moved and OFFline data) to "**Glacier**"

- To transition the data to "**Standard-IA**" and "**one-Zone-IA**", the data has to be min of "**30**" days old.

- To Archive the data to **Glacier**, the data can be min of "1" day old

- We can apply the rules either on "Current Version" or "Previous Version's" of the files.

- Once the data is set to expire, we **cannot RETRIVE** the data after it is deleted.

S3 – LifeCycle – Glacier – Output

Glacier - Pricing

Storage pricing

Region: [US East (N. Virginia) ⇕]

- $0.004 per GB / Month

Retrieval pricing

Region: [US East (N. Virginia) ⇕]

Retrieval Time	Data Retrievals
Expedited	$0.03 per GB
Standard	$0.01 per GB
Bulk	$0.0025 per GB

Retrieval request pricing

Region: US East (N. Virginia) ⇕

Retrieval Time	Retrieval Requests
Expedited	$10.00 per 1,000 requests
Standard	$0.05 per 1,000 requests
Bulk	$0.025 per 1,000 requests

*Expedited On-Demand requests, like EC2 On-Demand instances, are available the vast majority of the time.

Provisioned expedited retrieval

Region: US East (N. Virginia) ⇕

- $100.00 per Provisioned Capacity Unit**