







AWS Certified Solutions Architect — Associate (SAA-C01)



Module 5

Storage - S3 & Glacier

Agenda

-  Amazon S3
-  S3 Structure & Pricing
-  S3 Use Cases
-  Amazon Glacier
-  Moving data into S3 & Glacier
-  Labs

AWS Storage portfolio

Block storage



Amazon
EBS

File storage



Amazon
EFS

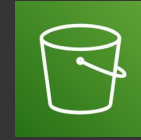


Amazon FSx for
Windows File Server

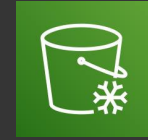


Amazon FSx
for Lustre

Object storage



Amazon S3



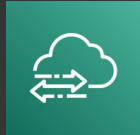
Amazon S3
Glacier

Hybrid



AWS Storage
Gateway family

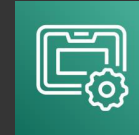
Transport and edge



AWS
DataSync

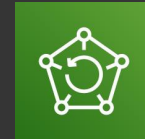


AWS Transfer
for SFTP



AWS Snow*
family

Backup



AWS
Backup

AWS Storage portfolio

Block storage



Amazon
EBS

File storage



Amazon
EFS

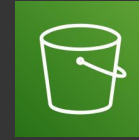


Amazon FSx for
Windows File Server

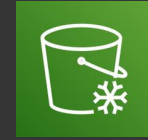


Amazon FSx
for Lustre

Object storage



Amazon S3



Amazon S3
Glacier

Hybrid

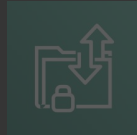


AWS Storage
Gateway family

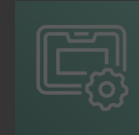
Transport and edge



AWS
DataSync

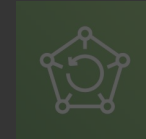


AWS Transfer
for SFTP



AWS Snow*
family

Backup



AWS
Backup

Simple Storage Service (S3)

Scalable Object Storage in the Cloud

- Object Storage for the Internet with 99.999999999% durability
- Store and retrieve any amount of data, at any time, from anywhere on the web
- Supports encryption, version control & lifecycle management
- Pay only for what you use
- 3 Storage Classes– Standard, Infrequent Access, Single Zone IA



Structure of S3

Buckets



Containers for objects stored in S3

- Organise the Amazon S3 namespace at the highest level
- Identify the account responsible for charges
- Play a role in access control
- Serve as the unit of aggregation for usage reporting

Objects



Fundamental entities stored in Amazon S3

- Consist of data & metadata
- Data portion is opaque to Amazon S3
- Metadata is a set of name-value pairs that describe the object
- Object is uniquely identified within a bucket by a key (name) and a version ID

Structure of S3

- 🗑 No directory hierarchy – path/prefix based.
- 🗑 Flat file system structure.

`https://abc999.s3.amazonaws.com/newfolder/05-10-2018/abc.txt`

Bucket Name

Key

Globally Unique

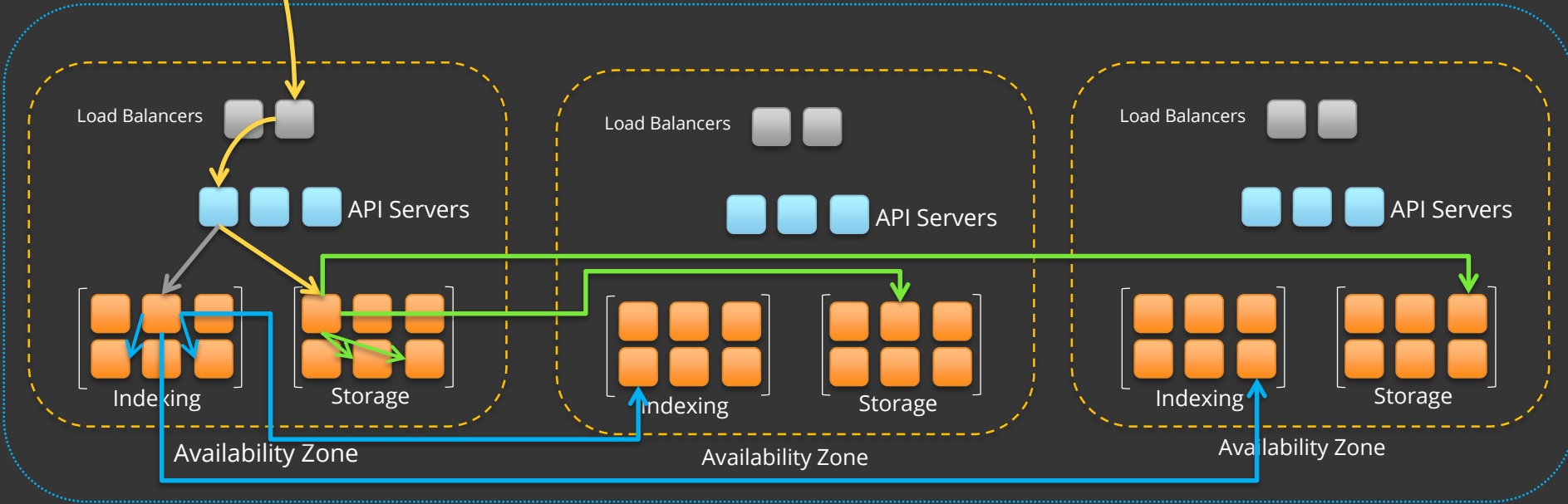
Structure of S3



A web store, not a file system

Write once, Read many

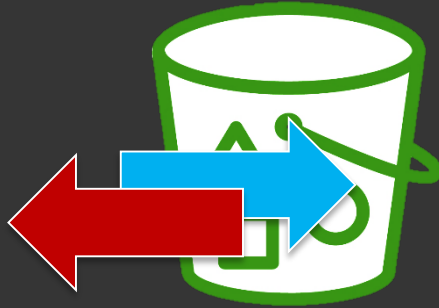
Eventually Consistent



Charge Basis



How Much
(Size)



How Often
(Access Frequency)



How Accessible
(Availability)

S3 Pricing

S3 Standard

S3 Standard-IA

S3 One Zone-IA

Durability

99.999999999%

Availability

99.99%

99.9%

99.5%

Data Storage (per GB)

\$0.023

\$0.0125

\$0.01

Data Retrievals (per GB)

Nil

\$0.01

\$0.01

PUT, COPY, or POST Requests (per 1K Requests)

\$0.005

\$0.01

\$0.01

GET, SELECT and all other Requests (per 1K Requests)

\$0.0004

\$0.001

\$0.001

Features of S3

Web Hosting

Encryption

Versioning

Bucket
Policies

Lifecycle
Policies

Cross-Region
Replication

Transfer
Acceleration

Signed
URL/Cookie

Logging

Requestor
Pays

Storage
Management

Events

Analytics

Tags

API/CLI

Common Use Cases — High Level

1

Backup and Storage

- Provide data backup and storage services for others. e.g. Dropbox
- As a storage location/DR for your backup applications. e.g. Veeam, NetApp
- Everyday document storage and cloud disk. e.g. Excel, Word, PDFs, Cloudberry Drive.

2

Software Delivery

- Host your software & applications that customers can download.
- Use it in conjunction with other services for continuous deployment of applications into your environment.

3

Application Hosting

- Provide services that deploy, install, and manage web apps.
- store raw or temp data & objects that your applications need.

4

Media Hosting

- Build a redundant, scalable, and highly available infrastructure that hosts video, photo, or music uploads and downloads.
- Store web media elements & content to offload storage and traffic load from web servers.

Common Use Cases — Expanded

1

Backup &
Archiving

2

Disaster
Recovery

3

Content
Storage &
Distribution

4

Static
Website
Hosting

5

Cloud-native
Application
Data

6

Big Data
Analytics

Glacier

Archive Storage in the Cloud

- Low cost storage for archiving and backup
- No limit to amount of data stored
- Pay only for what you use
- Simple integration with S3
- Secure and durable – Vault Lock



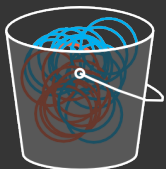
Glacier	Expedited	Standard	Bulk
Data Storage (per GB/Month)	\$0.004		
Retrieval Time	(1 — 5 mins)	(3 — 5 hrs)	(5 — 12 hrs)
Retrievals (per GB)	\$0.03	\$0.01	\$0.0025
Requests - Retrieval (Per 1K Req)	\$10.00	\$0.05	\$0.025
Requests - Upload (Per 1K Req)	\$0.05		

****LISTVAULTS, GETJOBOUTPUT, DELETE† and all other Requests are free.**

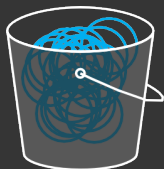
Your choice of Amazon S3 storage classes



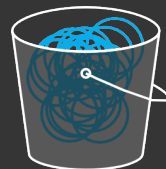
S3 Standard



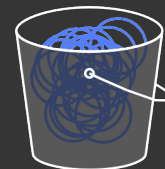
S3 Intelligent-Tiering



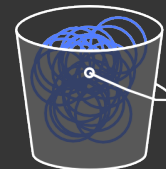
S3 Standard-IA



S3 One Zone-IA



S3 Glacier



**S3 Glacier
Deep Archive**

Frequent ←

Access Frequency

→ *Infrequent*

- Active, frequently accessed data
- Milliseconds access
- ≥ 3 AZ
- \$0.0210/GB

- Data with changing access patterns
- Milliseconds access
- ≥ 3 AZ
- \$0.0210 to \$0.0125/GB
- Monitoring fee per obj.
- Min. storage duration

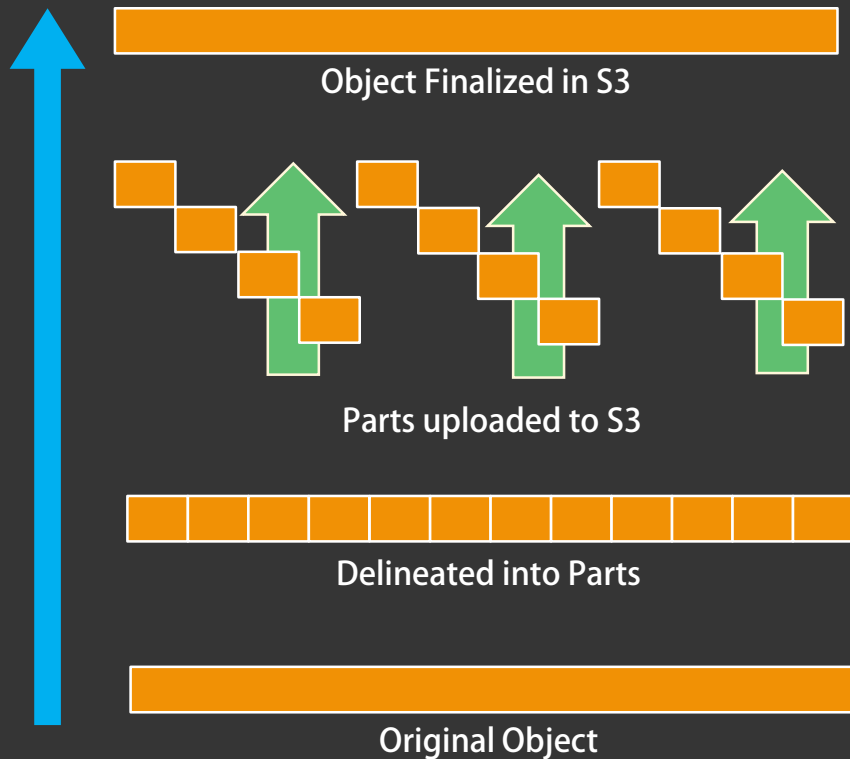
- Infrequently accessed data
- Milliseconds access
- ≥ 3 AZ
- \$0.0125/GB
- Retrieval fee per GB
- Min. storage duration
- Min. object size

- Re-creatable, less accessed data
- Milliseconds access
- 1 AZ
- \$0.0100/GB
- Retrieval fee per GB
- Min. storage duration
- Min. object size

- Archive data
- Select minutes or hours
- ≥ 3 AZ
- \$0.0040/GB
- Retrieval fee per GB
- Min. storage duration
- Min. object size

- Archive data
- Select 12 or 48 hours
- ≥ 3 AZ
- \$0.00099/GB
- Retrieval fee per GB
- Min. storage duration
- Min. object size

Multi-part Upload Data to S3



Item	Specification
Maximum object size	5 TB
Maximum number of parts per upload	10,000
Part numbers	1 to 10,000 (inclusive)
Part size	5 MB to 5 GB, last part can be < 5 MB
Maximum number of parts returned for a list parts request	1000
Maximum number of multipart uploads returned in a list multipart uploads request	1000

Getting Data into AWS



AWS
Import/Export



AWS Snowball



AWS Snowmobile



Storage Gateway

Storage Gateway



Labs

Thank You!

Q & A