

Advantages of Cloud Computing ~~for~~

1-) Trade capital expense for variable expense =

Pay only for how much you consume.

Pay only for what you use.

2-) Benefit from massive economies of scale.

You will never have the same purchasing power as Amazon.

3-) Stop Guessing about capacity

→ Cloud can scale with your business needs, with no long term contracts.

4-) Increase speed and agility

5-) Stop spending money running and maintaining data centers

→ Not at managing infrastructure. Let someone else manage that for you.

6-) Go global in minutes

→ Easily deploy your app in multiple regions.

3 types of cloud computing ~~for~~

* Infrastructure As a Service (IaaS)

✗ Platform As a Service(PaaS)

✗ Software As a Service(SaaS)

✗ Infrastructure As a Service(IaaS)

→ Manage server physical or virtual - operating S.

✗ EC2

✗ Platform As a Service(PaaS) - EBSS

→ Someone manage hardware or operating system.

→ Focus your applications.

→ Someone worries about security - patching - updates.

✗ Software As a Service(SaaS)

→ Gmail

→ You worry about only software.

3 Types of Cloud Computing Deployments

✗ Public Cloud - AWS - Azure - GCP

✗ Hybrid Cloud - Mixture of public and private

✗ Private Cloud (or On Premises) - You manage it your data center - Openstack or VMware

Compute

✗ EC2

✗ Lambda

Databases

x RDS

x DynamoDB

Storage - S3

x Simple Storage Service

x Glacier

Network

x VPC

x Route 53 - DNS

~~x~~ 25 Regions x 72 AZ x

AZ

→ data centers

Region

x consist of 2 or more AZ.

Edge locations

x endpoints for AWS x used for caching content.

x CloudFront, CDN

Choosing the right AWS Region?

x Data Sovereignty laws

x latency to end users

x AWS Services IDs - east primary location.

Support Plan

Basic

Free

| | | |
|------------|----------|-------------------------------------|
| Developer | \$29 | technical question. 12-24h response |
| Business | \$100 | 1 hour response. |
| Enterprise | \$15.000 | 15 minutes response. |

IAM (Identity Access Management)

→ It is global

→ When you create a group or user, created globally.

Access to AWS 3 ways:

- ✗ Console

- ✗ Command-line

- ✗ SDK

Credential Reports

- ✗ Passwords

→ When pass is enabled

→ last used → last changed → must be next
changed

Access Keys

- ✗ When access key is active
- ✗ last used
- ✗ last rotated

- ✗ what service access key was last used.

MFA

→ Whether MFA has been enabled.

Services → IAM → left bottom "Credential Report"

S3 101

Simple Storage Service

• 2006

fundamental service.

"It is object-based,
not suitable to install
operating system".

- Safe place to store your files
- Object-based storage "files"
- Data is spread across multiple devices and facilities
- Files can be 0 bytes - 5TB.
- Files are stored in buckets - folder.
- Bucket name must be unique.
- After upload file to S3, you will receive HTTP 200 code

How does data consistency work for S3?

- Read and write consistency for PUTS of new objects
- PUTS and Deletes (can take some time to propagate)

→ If you write new file and read it immediately

→ If you update an EXISTING file or delete a file
you may get the older version. Because it can take some
time to propagate.

- ✗ 99.9% availability
- ✗ 99.999999999% durability [Remember 11x9s] S3 information

Features:

Tiered Storage Available

Lifecycle Management

Versioning

Encryption

Protect your data using "Access Control lists" and "Bucket Policies"

S3 Standard ~~IMPORTANT~~

- ✗ multiple device and facilities
- ✗ is designed to sustain the loss of 2 facilities.

S3 - IA

- ✗ Infrequently Accessed
- ✗ Data is accessed less frequently.
- ✗ lower fee than S3, but you are charged a retrieval fee.

S3 One Zone - IA

- ✗ lower - lower cost option
- ✗ do not require the multiple Availability Zone.

S3 - Intelligent Tiering

- Machine Learning
- automatically moving data to the most-cost effective access tier.

S3 - Glacier

- Secure, durable - low cost storage for data archiving
- Cheaper than on-premises solutions

S3 Glacier Deep Archive

- Amazon S3's lowest-cost storage class.
- Retrieval time of 12 hours is acceptable.

S3 Charges:

- Storage
- Requests
- Storage Management Pricing
- Data Transfer Pricing
- Transfer Acceleration.
- Cross Region Replication Pricing.

→ Fast - easy - secure transfers of files over long distances between your end users and an S3 bucket. Globally distributed edge locations.

→ Cross region someone upload file europe than

replicate the main bucket USA.

Key fundamentals of S3 are;

- Key (This is simply the name of the object)
- Value (This is simply the data and is made up of a sequence of bytes).

Restricting Bucket Access

- Bucket policies - Applies across the whole bucket.
- Object policies - Applies to individual files.
- IAM Policies to Users & Groups - Applies to Users & Groups.

Exam Tips

- You can use bucket policies to make entire S3 buckets public.
- You can use S3 to host STATIC websites (such as .html). Websites that require database connections like Wordpress etc.
- S3 Scales automatically to meet your demand.
 - Some enterprises will put static websites S3 they think about large number of requests (Movie preview)

S3 Versioning

Exam Tips

- Stores all versions of an object.
- Great backup tool
- Versioning cannot be disabled. - suspended
- Integrates with lifecycle rules
- Versioning's MFA Delete capability.

Cloud Front

- A content delivery network (CDN) is a system of distributed servers (network) that deliver webpages and other web content to a user based on the geographic locations of the user.

Key Terminology

Edge locations = This is the location where content will be cached. This is separate to an AWS Region / AZ.

Origin = This is the origin of all the files that the CDN will distribute.

→ S3 Bucket, EC2 Instance, Elastic Load Balancer, Route 53.

Distribution = Consists of a collection of Edge Locations.

CDN Types

- * Web Distribution = Typically used for websites.
- * RTMP Distribution = Used for media streaming.

Services → Cloud front → create web distribution → choose S3 bucket → others default settings.

- * Edge locations are not just READ only - you can write to them too. (put an object on to them).
- * Objects cached for the life of the TTL (Time to Live)
- * You can clear cached objects, but you will be charged.

EC2

- * Elastic Compute Cloud
- * Virtual server.

EC2 Models

- * 1-) On Demand → short term
 - * Pay the fixed rate by the hour or second.

2-) Reserved → Standard / convertible / scheduled

- * Provides a capacity reservation.
- * Offer significant discount.
- * Contract Terms are 1 or 3 year terms.

3-) Spot → flexible start-end /

- Enables you to bid whatever price you want for instance capacity.

4-) Dedicated Hosts →

- Physically EC2 server dedicated for your use.
- Can help you reduce costs by allowing you to use your existing server.

EBS

- Virtual hardisk attached to EC2.
- EBS volumes are placed in a specific Availability Zone.

SSD

- General purpose SSD(GP2)
- Provisioned IOPS SSD (IOP1) = Highest performance.

Magnetic

- Throughput Optimized HDD(ST1)
- Cold HDD(SC1)

Magnetic = Previous Generation.