Cloud Computing / Devops (S3 from Scratch)

Points to Cover :-

→ AWS   → S3   → S3 Benefits

→ Objects and buckets in S3

→ How does Amazon S3 works

→ Functionality of S3

* **Cloud Computing**

Distribution of computing services via internet including servers, storage, databases, networking, software, analytics, and intelligence.

* **AWS**

A cloud computing platform used to manage and maintain hardware and infrastructure of resources. Reduces the expense and complexity of purchasing and running resources on site for businesses and individuals.
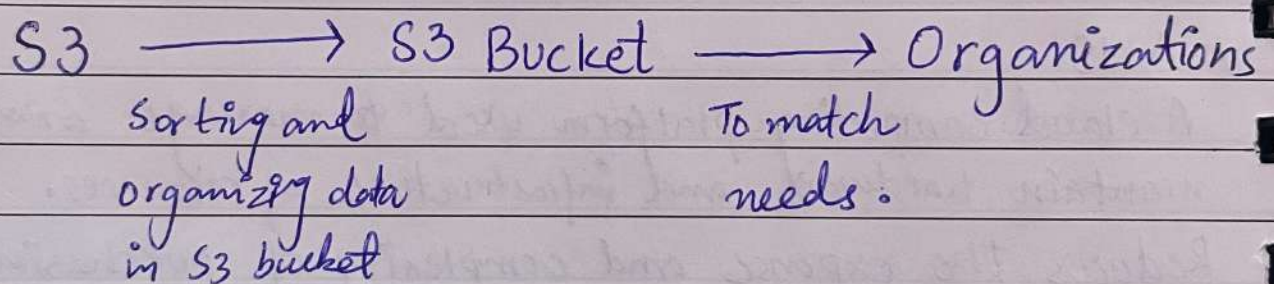
Comprehensive and simple to use computing platform.

* **S3**

Amazon S3 is an object storage service from Amazon that provides industry leading scability, data availability, security and performance.

Serverless storage service where we are not looking anything behind the covers. Data availability is globally. We can add security policies at bucket level data is secure and encrypted as well. IAM policies are there in which we can choose who or when can have access to our objects.

S3 has simple management capabilities that allows to organize the data and fine tune access controls to match specific commercial, organizational needs.

S3 $\longrightarrow$ S3 Bucket $\longrightarrow$ Organizations

Sorting and organizing data in S3 bucket

To match needs.

Amazon S3 is designed for durability and saves data for millions of apps for businesses all over the world.

Benefits of S3

→ Performance, scalibility, availability and durability are top class in industry.

→ Many cost effective storage classes are available.

→ Security, compliance, and auditing capabilities are great.

→ Manage data and access permissions with ease.

→ Query in place and on demand processing.

→ Most widely use cloud storage service.

Objects and Buckets in S3

Objects

→ They are fundamental entities stored in Amazon S3.

→ It consists of data as well as it's metadata.

→ S3 can't access the content or data inside the objects.

→ It can read only the metadata with object.

→ It allocates a unique version ID for the object when some data is added to bucket.

Buckets

→ Buckets are logical containers where objects are stored and then uploaded to Amazon S3.

→ There will never be an object without a Bucket.

→ There is no windows explorer like hierarchy.

→ One can create buckets in any region of the world.

→ Accessed globally because it uses http protocol.

Object → into → Bucket
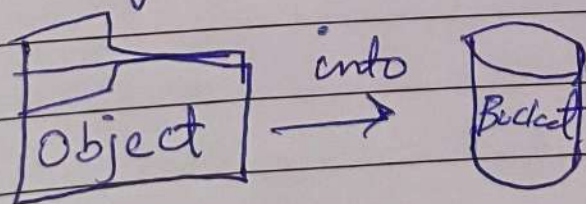
Working of Amazon S3

When files are uploaded to the bucket, the user will specify the type of S3 storage class to be used for those specific objects.

S3 Storage Classes

→ S3 standard → (Default and most expensive at all)

→ S3 standard - 1A → (Data is long lived and not frequently access)

→ S3 Intelligent - Tiering → Automatically transfer object to next class

→ S3 One Zone - 1A → (Infrequently access) + (Suitable for data)

→ S3 Glacier → (Long term storage + cheapest storage)

→ S3 Glacier Deep Archive

Once object get colder. Colder means like your actions patterns you are accessing it less over the time its get colder. We will transfer that files to the next storage class until S3 glacier deep archive which is extremely cold. So we gonna have the cheapest storage service.

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Features of S3

→ Lifecycle Management (like storage classes)
Go to S3 → choose bucket → Lifecycle configuration
→ Create lifecycle rule.
You can select transition of object between storage classes choosing the time period.

→ Bucket policy
It is an IAM policy which lets you allow and deny permissions to your S3 & resources.
• AWS policy generator is perfect.
It will generate the custom policy JSON automatically for you.

→ Data encryption
Both client side encryption and server side encryption.

→ Versioning → Enable bucket versioning.
Shows history of all the activites or changes.
Specific version id and type all modification is shown.

→ Cross Region Replication (CRR)
Allows automatic copying of every object uploaded to your buckets in your different AWS regions.