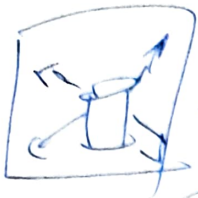


Module 7 : Amazon EBS

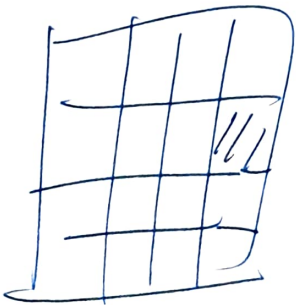


Provides persistent block storage with EC2 instances
volumes

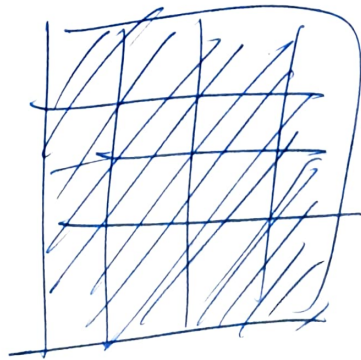
- means any storage device after power is shut off
i.e. non volatile
- Auto replicated in it av. zones.
High av. & durable.
- Scale usage up & down.

block level storage v/s object level storage

what if we want to change 1 character in 1 GB file?



Change one block
(part of the file)



Changes whole file

- Throughput, latency ↓, cost ↑ → block than object

→ EBS > block level - low latency

→ Can be ~~very~~ backed up automatically to S3
1st — baseline snapshot

[2nd
3rd
4th
⋮] → Captures any what is different
then ~~main~~ ~~prev~~ snapshot

EBS { Snapshots
Encryption (Free)
Elasticity ↑ cap or types

Volumes GB/month

~~20GB~~

Snapshots

GB/month

EB

Data transfer: Outbound has charge
Inbound doesn't.

III) Amazon S3



Object level storage

↳ Objects & resources are called buckets.

↳ Data stored as object

↳ Virtually unlimited storage:

Single object is limited to **5TB**.

Can be img, files, videos, etc.

S3 stores data in min of 3 Av. Zones

except S3 One Zone IA

↳ Standard

↳ Intelligent Tiering - moves data (Standard to IA)

↳ Standard IA

↳ One Zone IA

↳ Glacier (secondary data, less freq.)

↳ Glacier Deep archive (best cost, once / twice a yr)
↳ Retained in 12 hrs

Bucket path s3y

Region
Code

bucket
Name

Virtually Hosted

Bucket

B.N

R.C

1 bucket — Associated with ~~multiple~~ 1 Regions

↳ stored in multiple locations in that region

Access the data anywhere

AWS

Management

AWS

SDK

Console

CLI

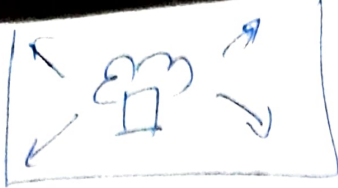
Programmatic Access

(key pair)

needed

bucket name — , ~~1~~ 1, 2, ..., a-z.

(III) ^{Amazon} EFS



- File Storage in AWS cloud
- Works well for bigdata & analytics, media processing workflows, content management & home directories
- Petabyte-scale, low latency file sys.
- Shared storage
- Elastic Capacity

Create ^{Amazon} EC2 resources & launch it

Create EFS

Create your mount targets in appropriate subnets

Connect your EC2 instance to mount targets

Verify the resources & protection of your AWS Account.

Amazon S3 Glacier



can store thus
up to 40 TB in size

↓ low cost

takes hours to extract data

(must restore
objects before
you can access them)

Archive — Any file stored in S3 Glacier

Vault — Contains many Archives

— Name

— Region

(1 each) → — ~~contains~~ policy (who can
Vault access access?)

Vault lock policy (No alterations)

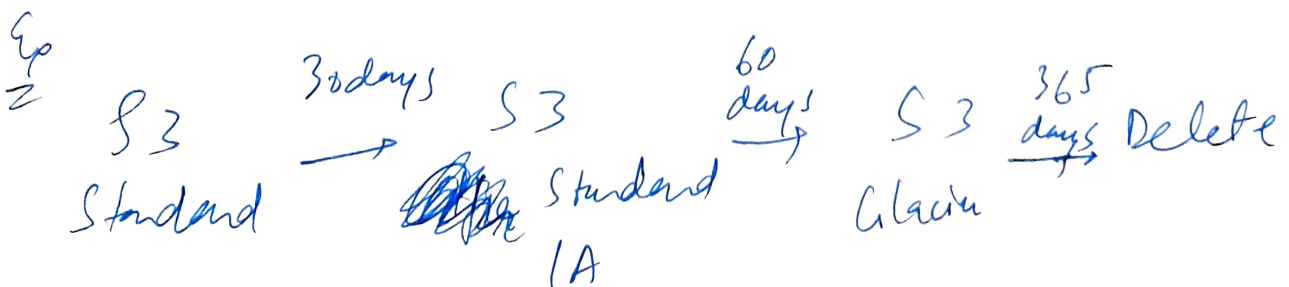
— Expedited: 1-5 mins (costly)

— Standard: 3-5 hrs (less costly)

— Bulk: 5-12 hrs (least costly)

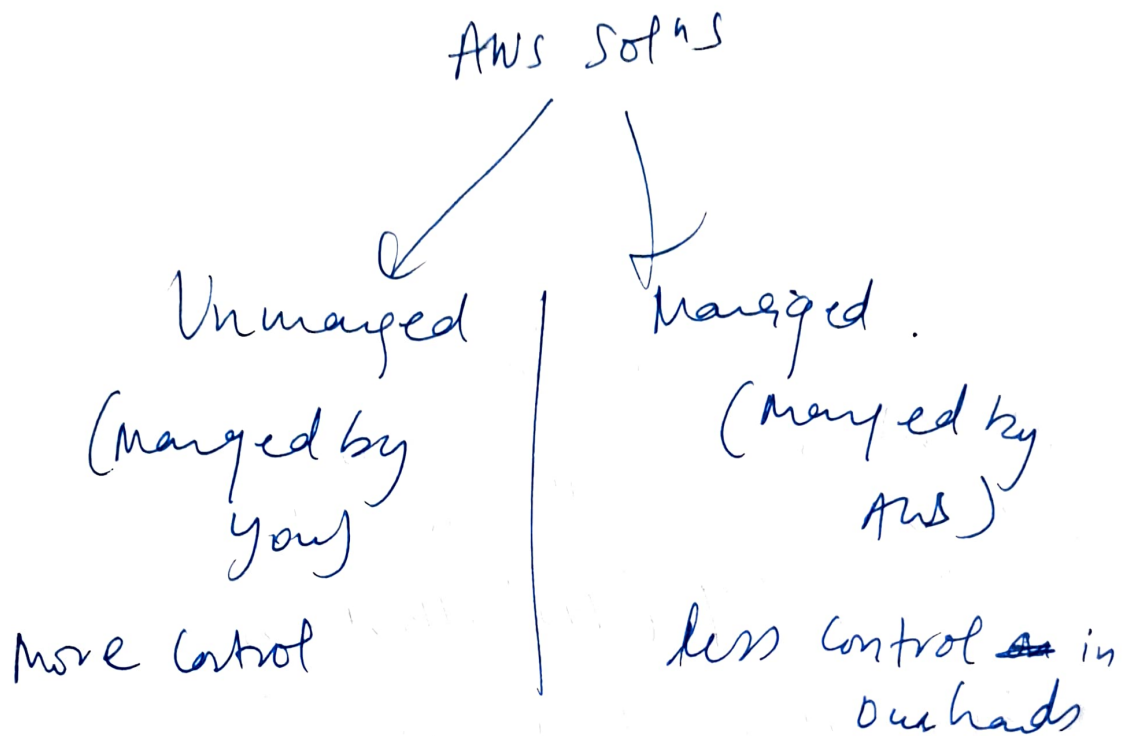
— Auto self healing & can do checks regularly

Lifecycle Policies: Delete or move
objects based on age



Module 8 : Databases

(I) Amazon RDS



∴ Amazon RDS — managed service that sets up & operates a RDB in cloud.

→ Manage Services Responsibilities

- ↳ You manage appⁿ optimization
- ↳ AWS manage everything else

DB instance — Isolated DB environment
Class CPU, memory, Net. Pa.

DBS instance storage — SSD, IOPS, Magnetic
Ex Aurora, Oracle, MariaDB, MySQL,
PostgreSQL, Microsoft SQL Server

↳ Multi AZ. Deployment
(High Availability)

↳ Read Replicas — For apps with high
read ~~conf~~ configurations

↳ Updc — hour — billing

↳ type of instance used impact cost

(II) DynamoDB

Relational v/s Non Relational DB
(SQL)

Data storage	Rows & Columns	Key-Value Document Graph
Schemas	Fixed	Dynamic
	Uses SQL	Focus on collec ⁿ of documents
	Vertical	Horizontal.
		(- main datasets choice)

Dynamo DB — NoSQL

- Unlimited storage
- low latency queries
- Scalable read/write throughput
- Items having diff attributes.

Tables, Indexes, attributes

2 primary keys:

Partition key & Partition & sort key

Index in a table must have a key.

AWS Redshift



Analyze all data using SQL & business analysis tools.

→ fully managed data warehouse

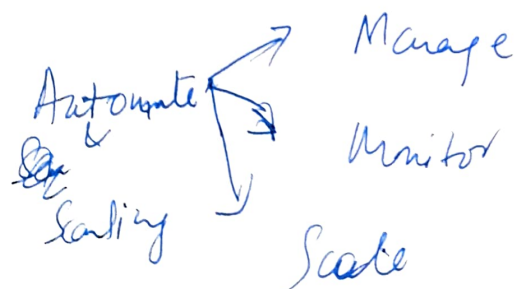
→ Analyse in secs.

Other use cases:

SaaS

Leader & ~~re~~ computer nodes Big Data

Pay for what you use



Aurum

mysql & postgresql RDB.

- Automate time ~~here~~ consuming tasks

- Highly available

- ~~Simple~~ Simple, Compatible, Managed service,
Fast & available, Pay-as-you-go

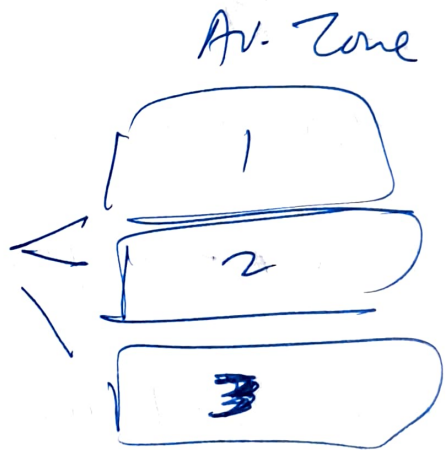
Why this?

Aurum
Answer

- (High available)

backed up to S3

- Resilient



Ans well Architcture Framework

Guid for designing Infrastructure

- ↳ Secure
- ↳ High Performing
- ↳ Resilient
- ↳ Efficient

