



Full Course in (Telugu)

CSE & IT TUTORIALS4U



AGENDA



- Cloud Computing Basics
- Introduction to AWS
- Creating AWS Account
- Storage Services
- Compute Services
- Network Services
- Database Services

AGENDA



- Management Services
- Security Services
- Application Services
- Analytics & ML
- Developer tools (Devops Services)
- Security Services
-

Cloud Computing Basics



AGENDA



Traditional IT Overview

What is Server?

How to Build Infrastructure?

What is Cloud?

What is Cloud Computing?

Real time cloud Services

Deploy Models

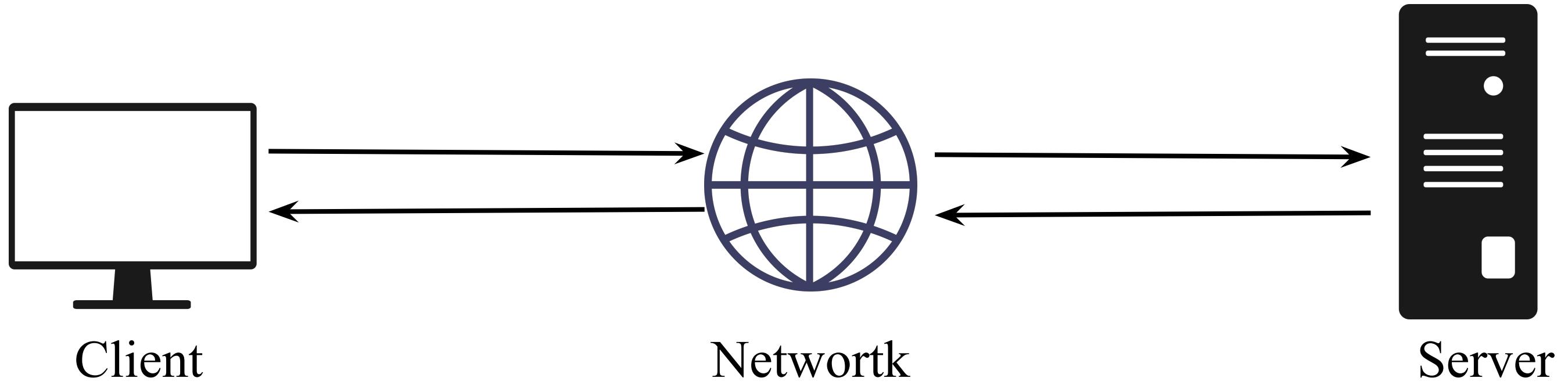
Characteristics of Cloud Computing

Advantages of Cloud Computing



Traditional IT Overview

How website works?



Ip Address:

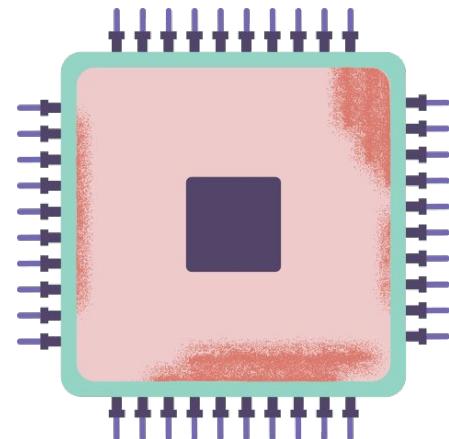
1.1.1.1

Ip Address:

3.3.3.3

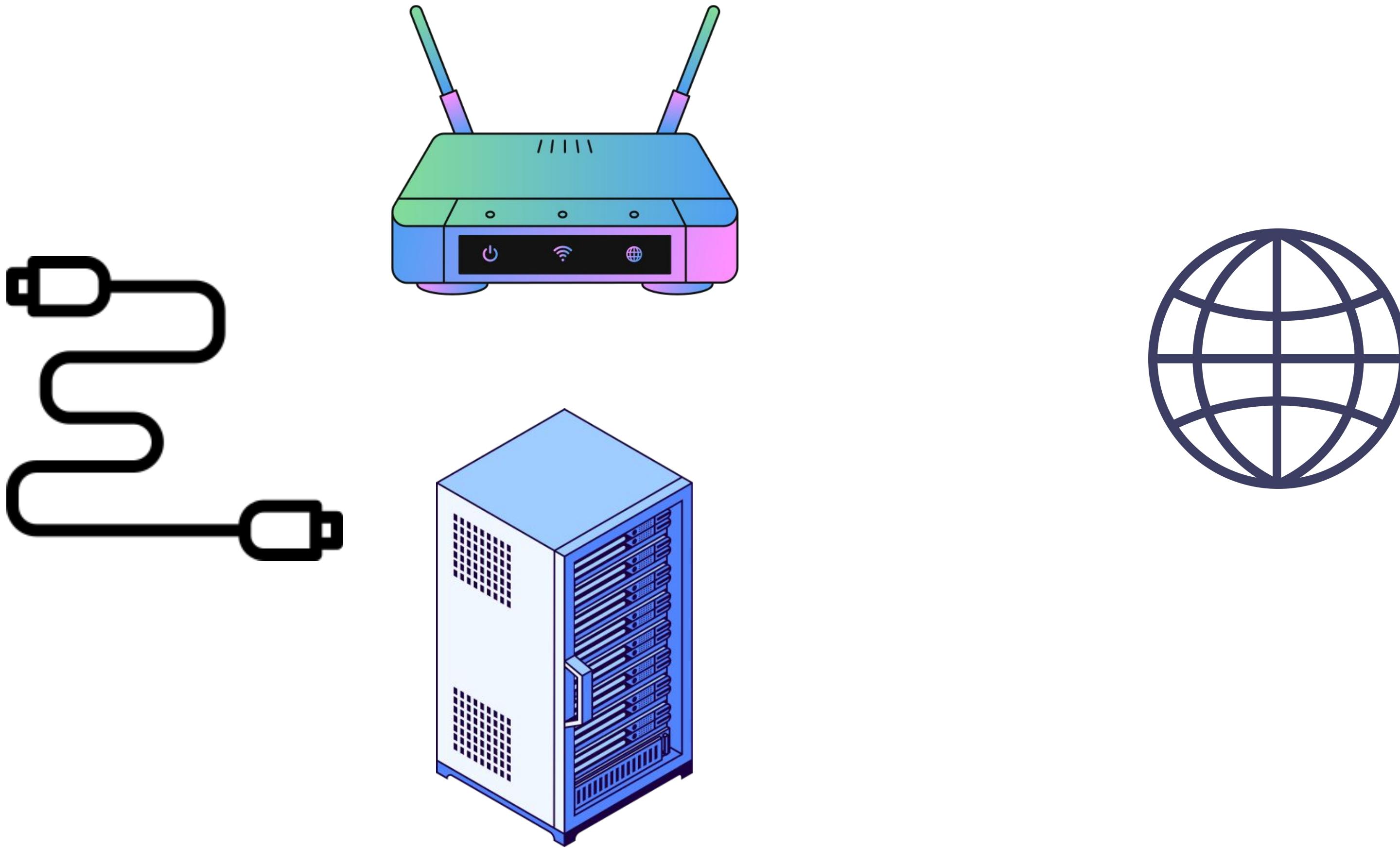


What is Server ?

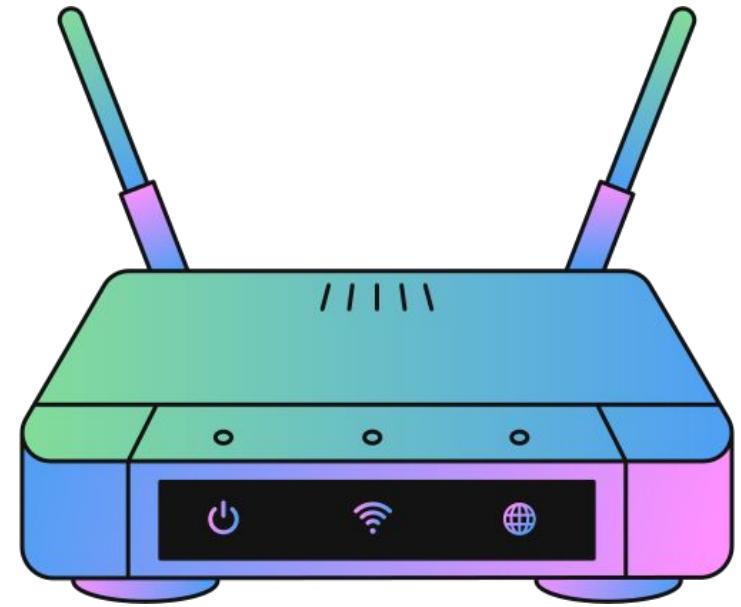




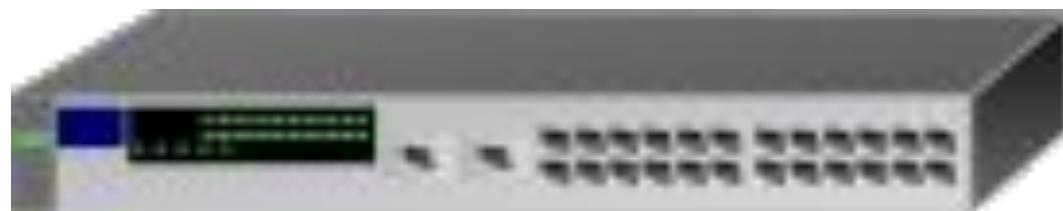
What is Network ?



What is Network ?

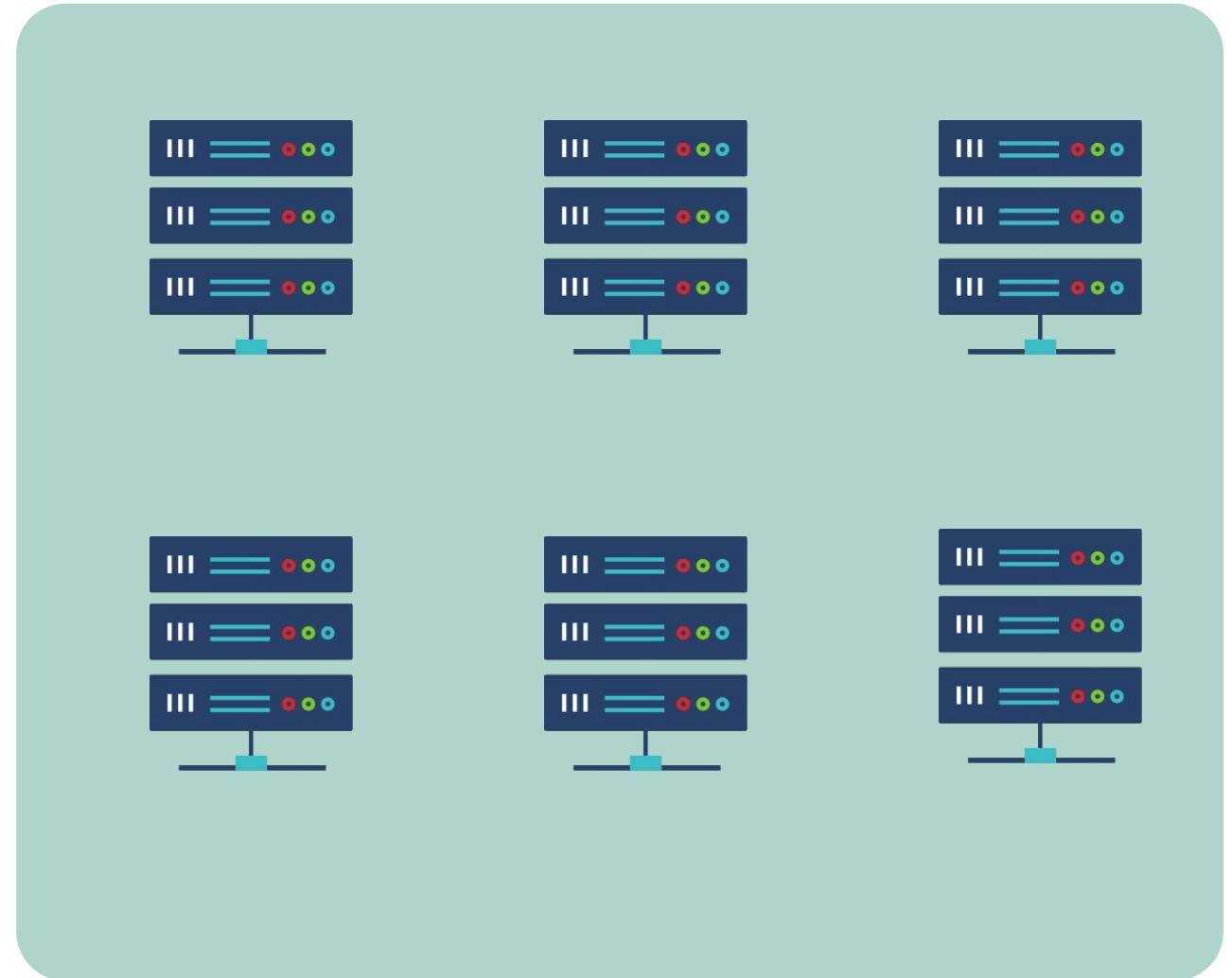
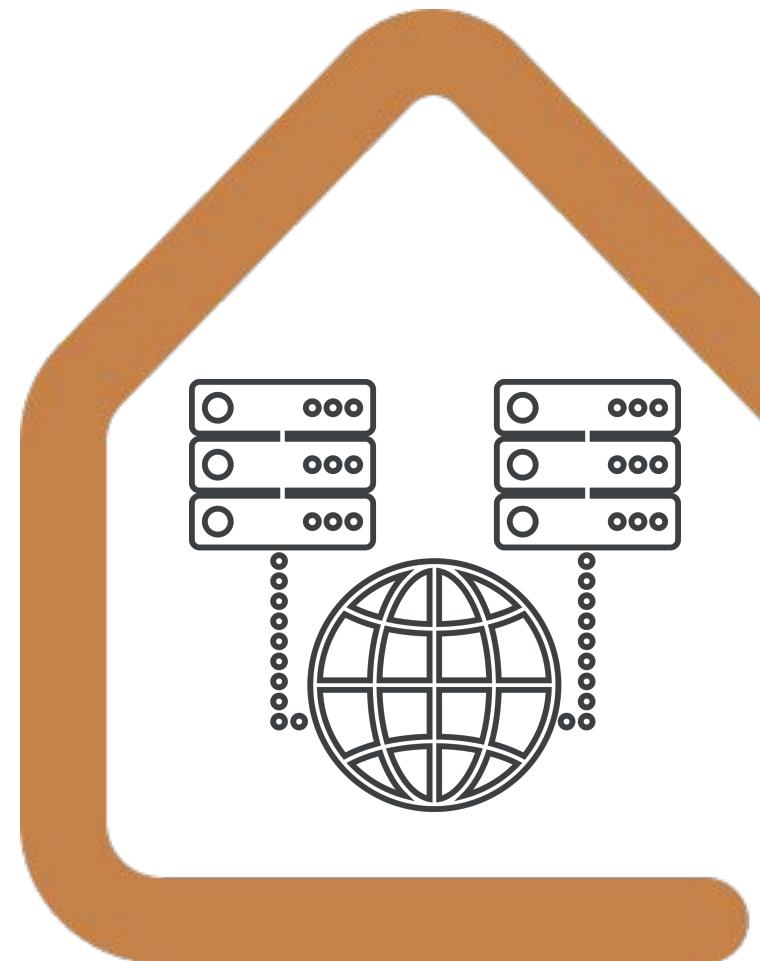


Device that forward data packet between computer networks



Takes a packet and send it to correct server/client on your network

How to build Infrastructure?



How to build Infrastructure?



- Pay or Rent for data centers
- Pay for power supply, cooling, maintenance
- Adding & Replacing hardware takes time
- Scaling is limited
- Hire 24/7 team to monitor infrastructure
- Deal with Disasters





WHAT IS CLOUD?

It is like a virtual server.

In this cloud we can store our files and we can access them through internet from anywhere in world.





WHAT IS CLOUD COMPUTING?

Cloud Computing Is the on- demand delivery [We use this when we needed] of compute power, data storage, application and other resources.
Through a cloud service platform with pay-as-you-go pricing

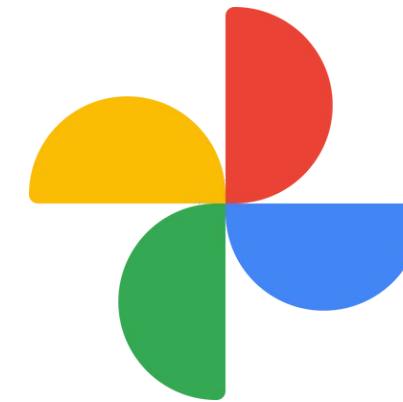








REAL TIME CLOUD SERVICES



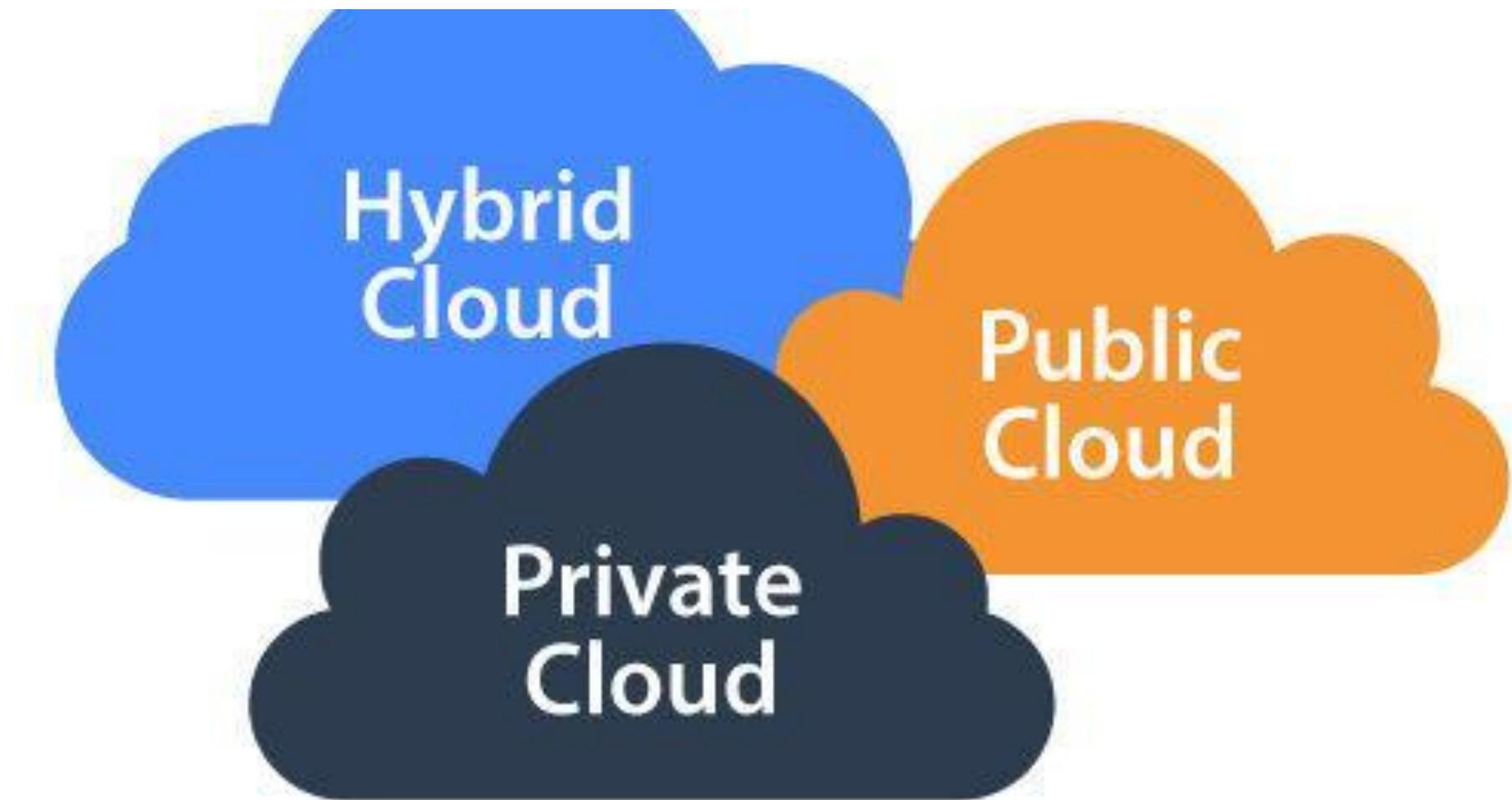
Pay only for your emails stored [No infrastructure]



WHAT IS CLOUD COMPUTING?

Deployment Models

- Public Cloud
- Private Cloud
- Hybrid Cloud





Deployment Models

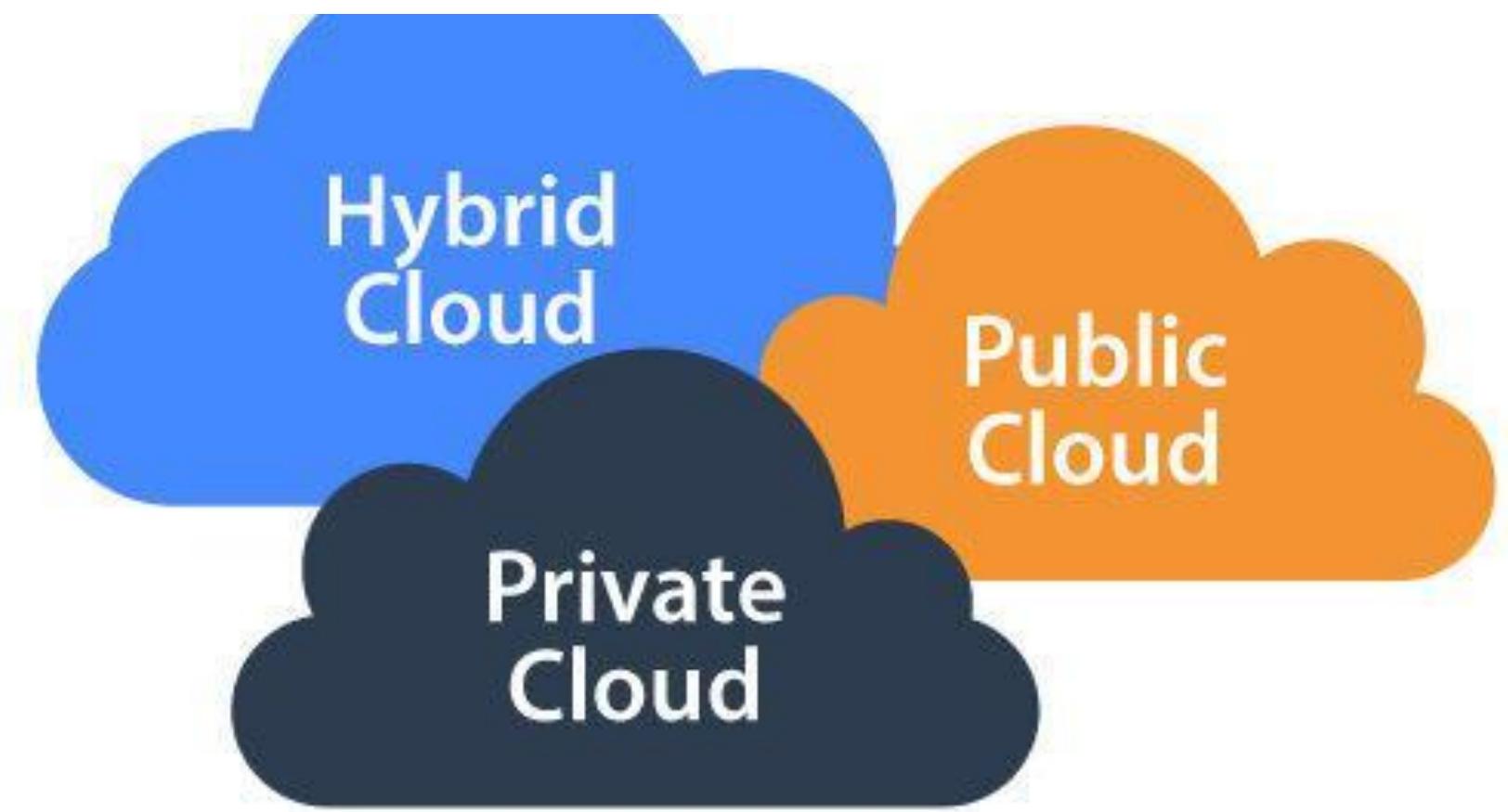
- Public Cloud:

Cloud resources owned and operated

by a 3rd party cloud service provider

deliver

Ex:

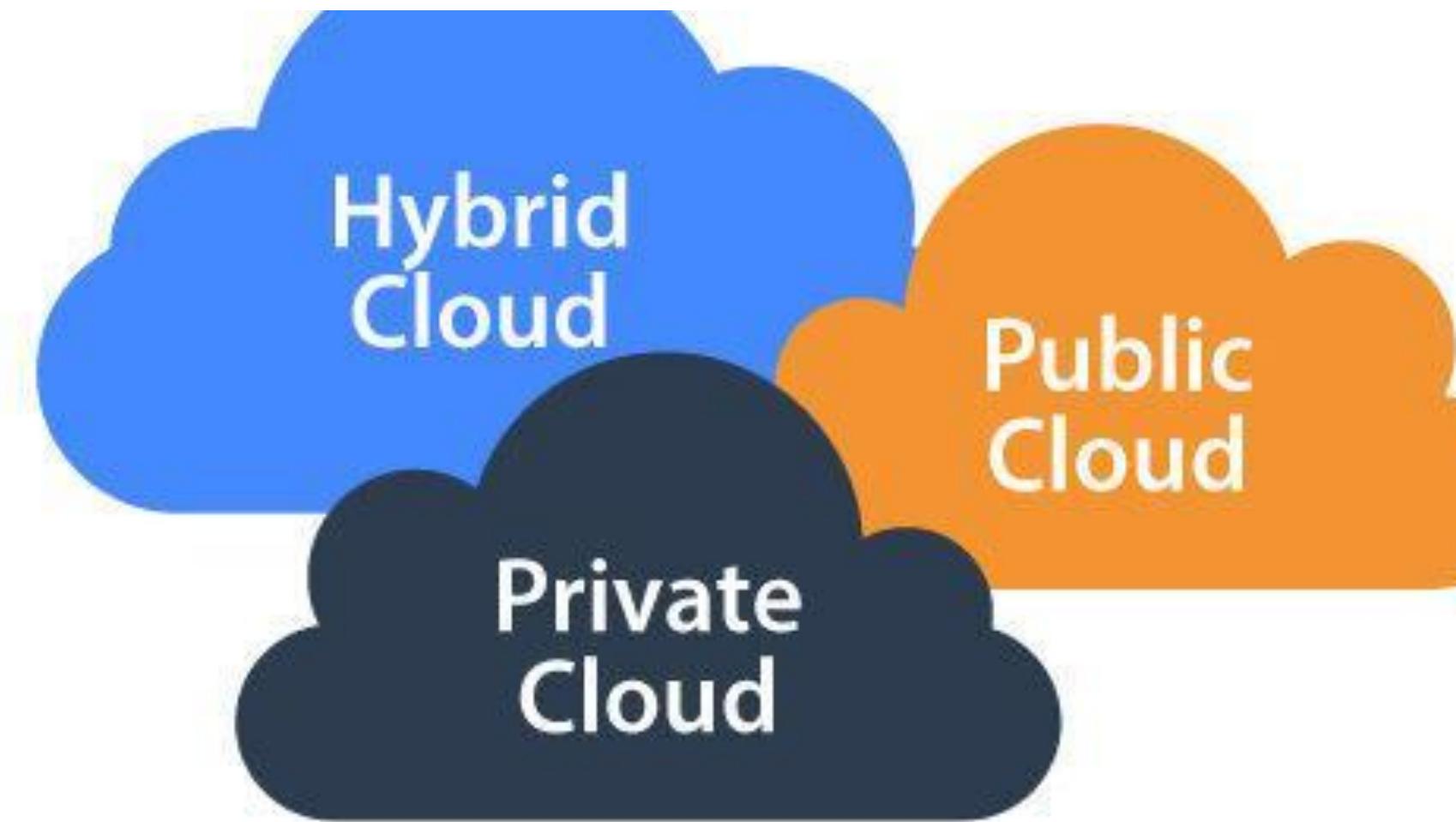




Deployment Models

2. Private Cloud:

A private cloud used by single organization, not exposed to public, complete control, security for sensitive application.

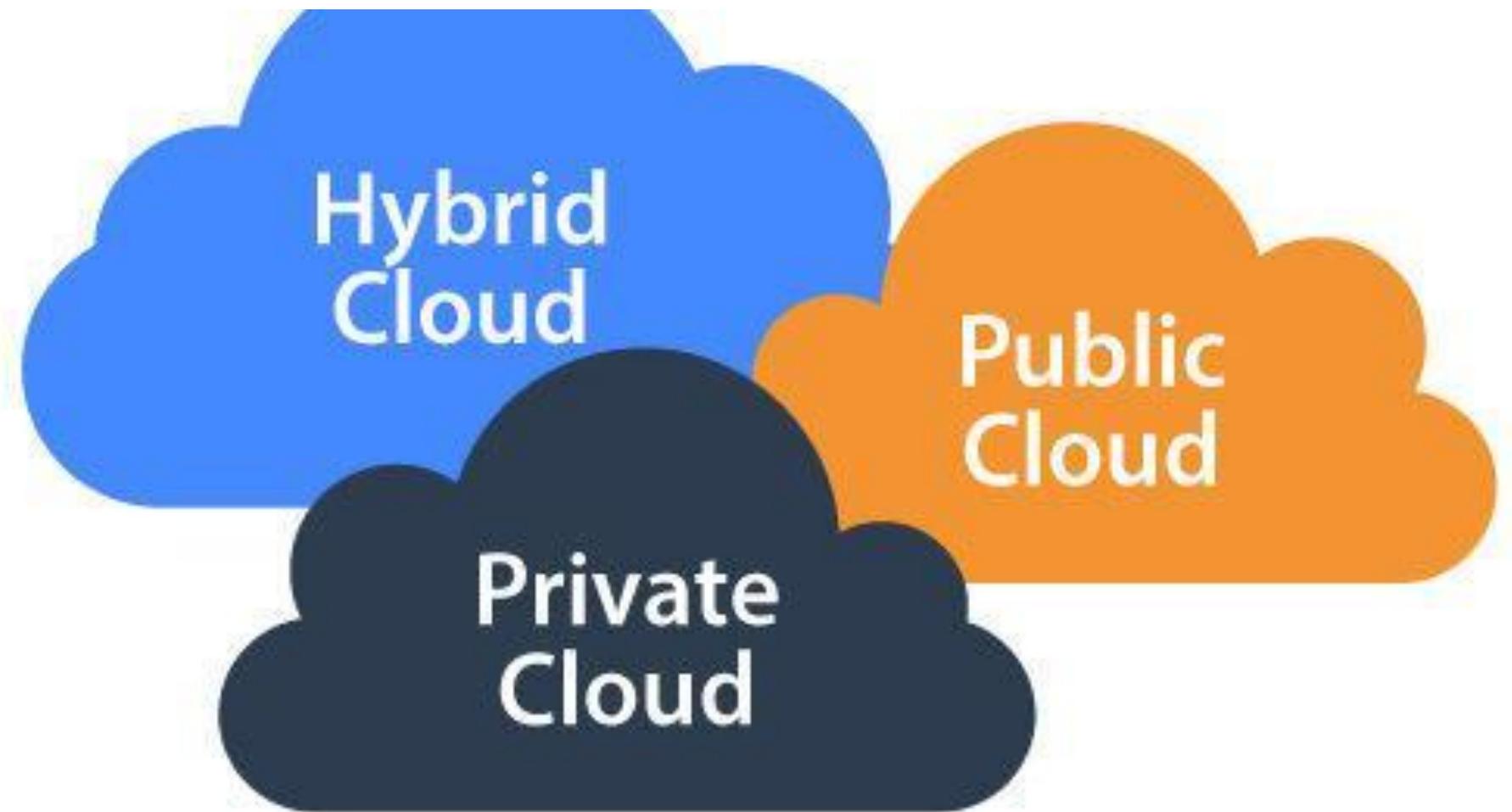


Me
Ex. **rackspace**[®]

Deployment Models

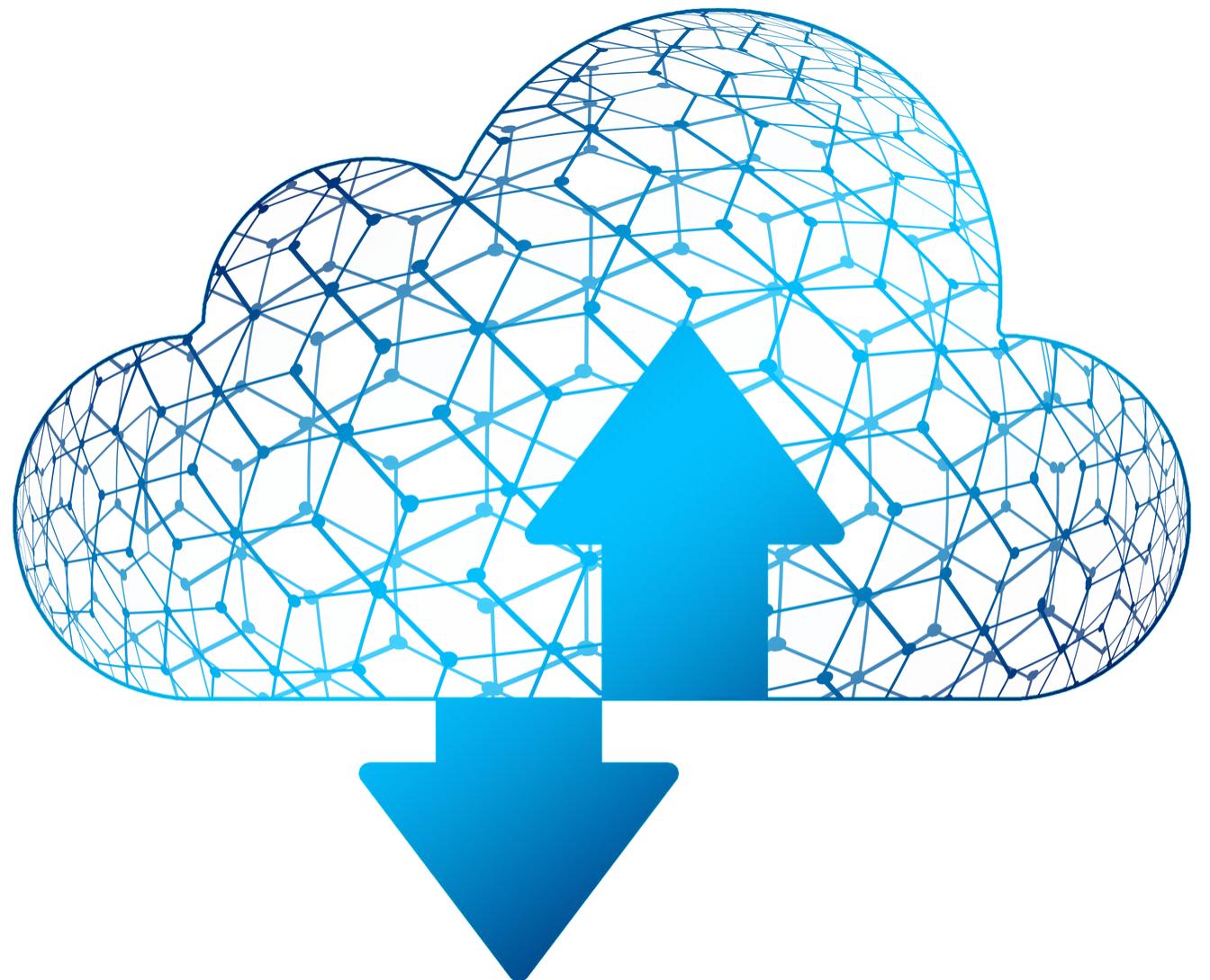
3. Hybrid Cloud:

A hybrid cloud consists the functionalities of both private and public cloud



Characterstics of Cloud Computing:

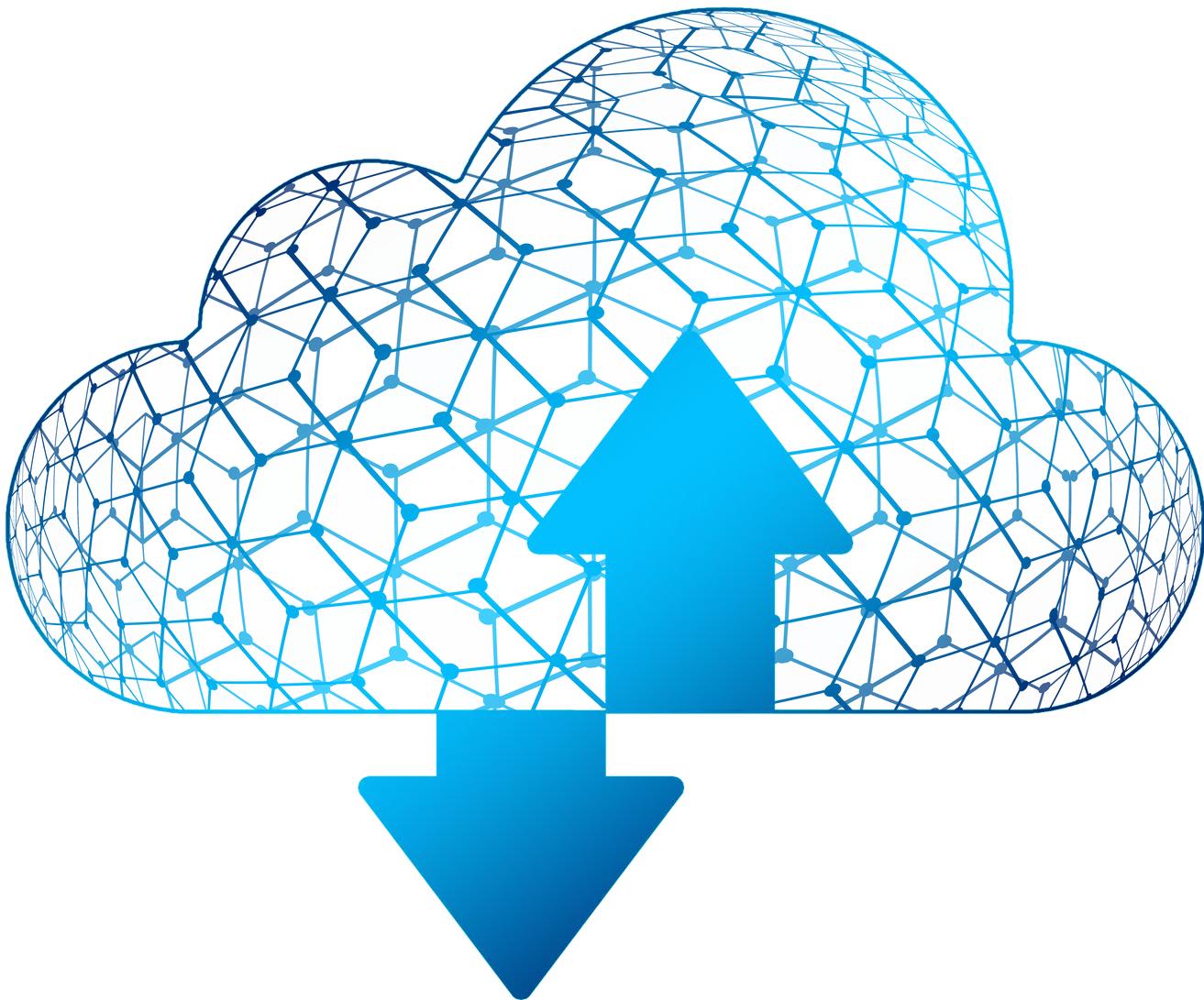
- On Demand self service
- Broad Network access
- Multi tenancy & Resource pooling
- Rapid Elasticity & Scalability
- Measured Service



Advantages of Cloud Computing:



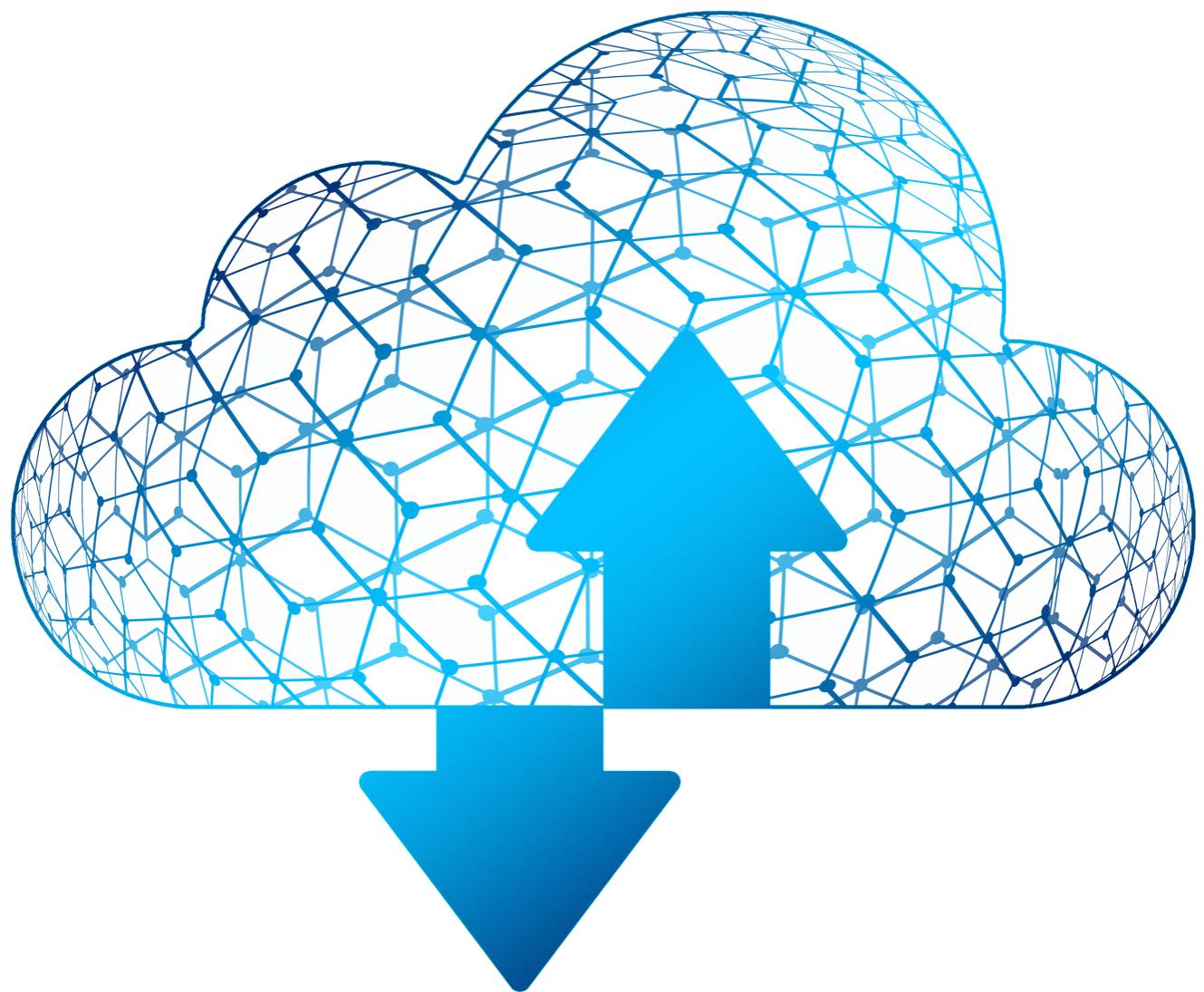
- Backup and restore data
- Improved Collaboration
- Excellent Accessibility
- Low maintenance cost
- Mobility
- Unlimited storage
- Data Security
- Pay-as-you-go



Problems solved by Cloud



- Flexibility
- Cost Effective
- Scalability
- Elasticity
- High Availability and fault tolerance
- Agility

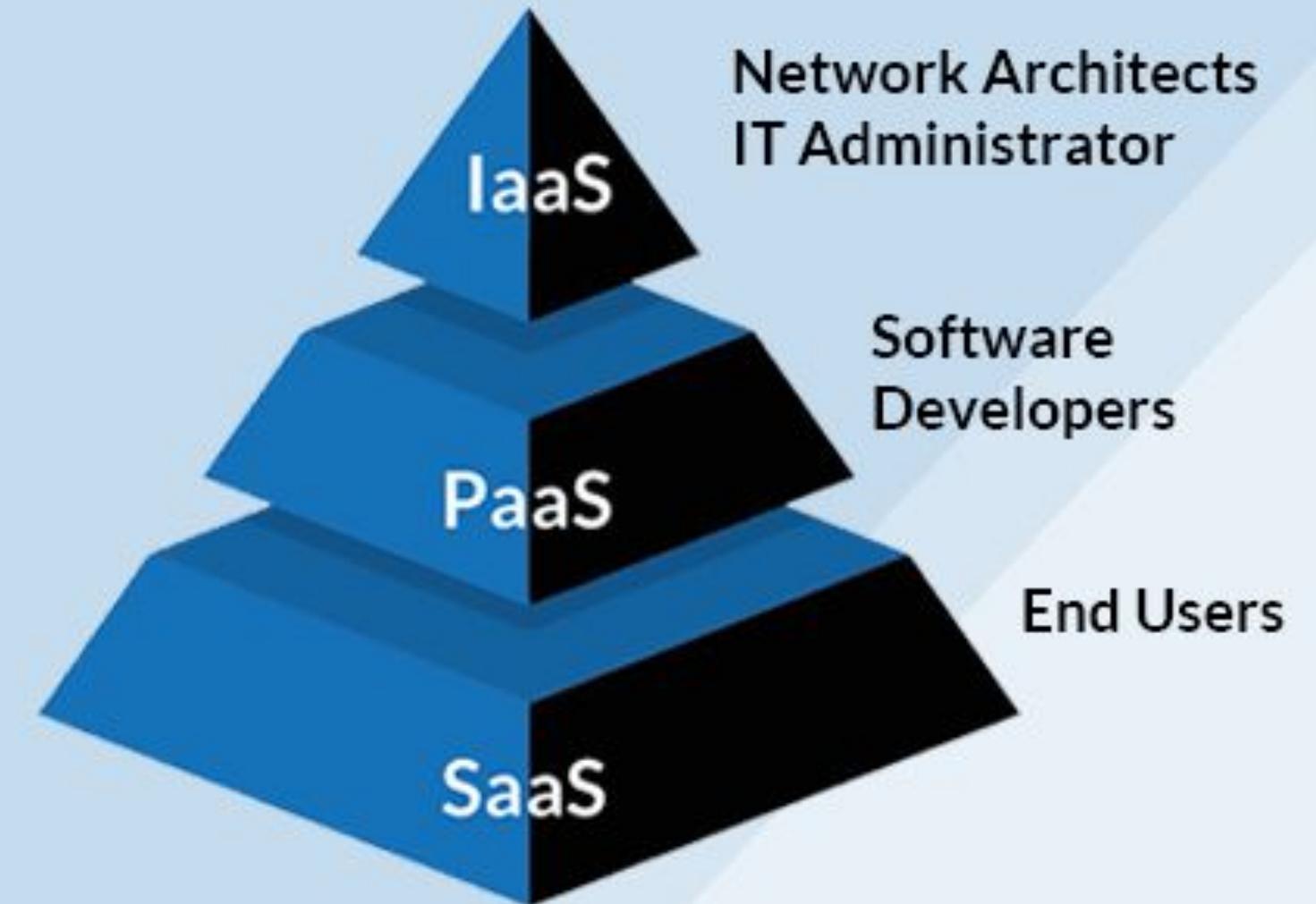


TYPES OF CLOUD COMPUTING

Service Models:

Cloud provide some services

- IaaS(Infrastructure as a Service)
- PaaS(Platform as a Service)
- SaaS(Software As a Service)



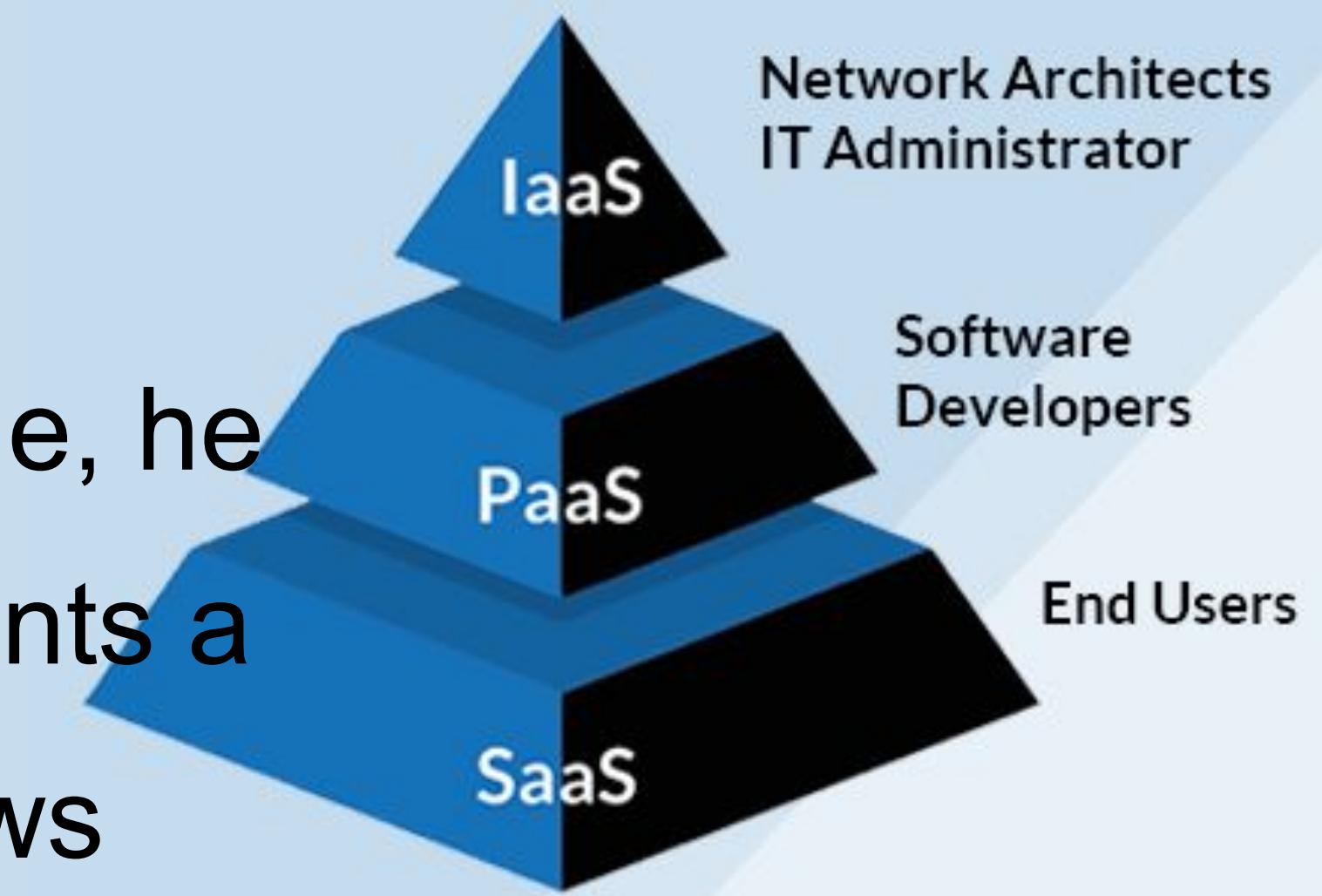
IAAS (INFRASTRUCTURE AS A SERVICE)



Provides virtual machine to customers as per requirement by cloud provider

Provides network, computers, data storage space

Ex: If the user wants a Linux machine, he gets a Linux machine, If the user wants a Windows machine, he gets a windows machine,

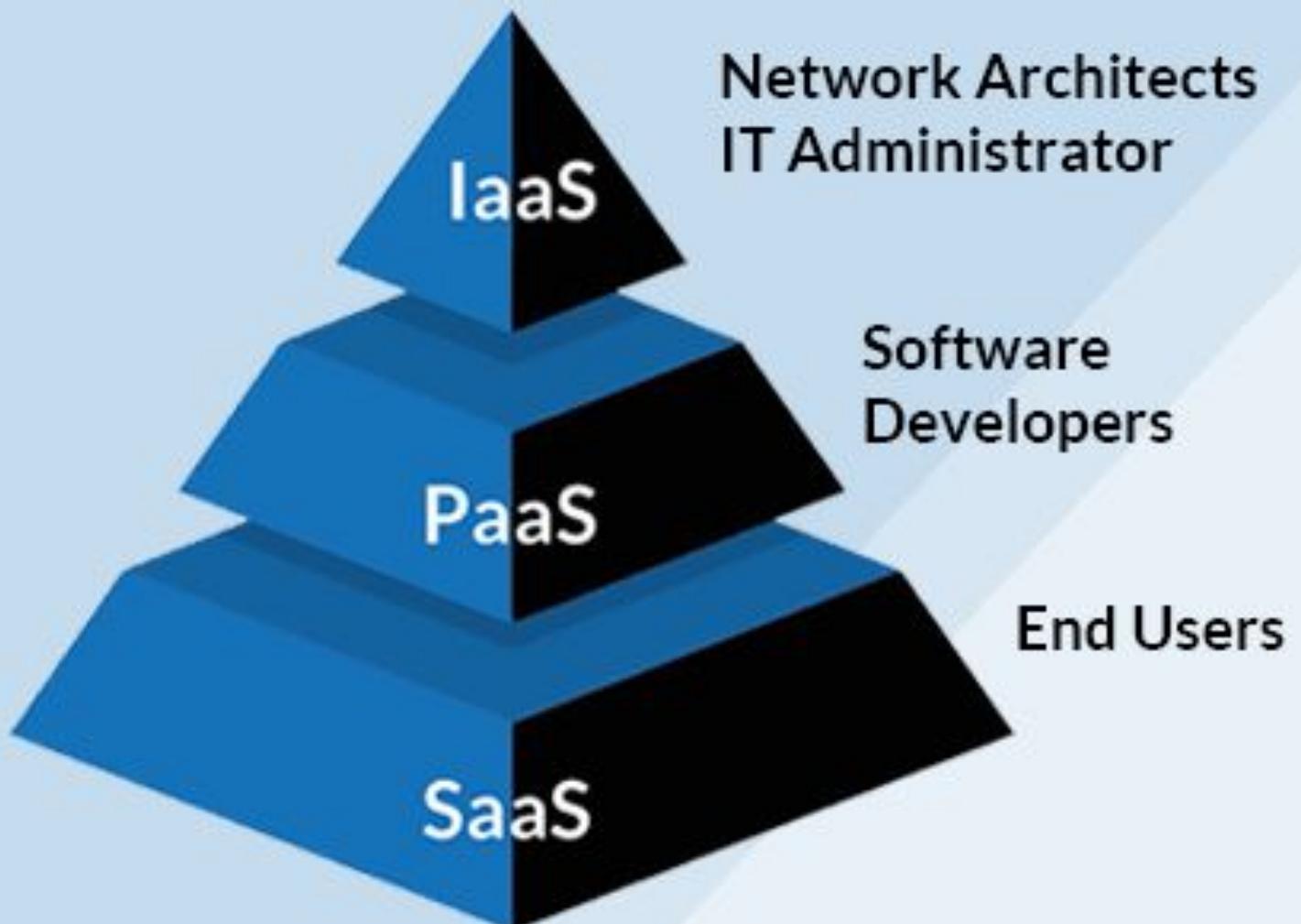


PAAS (PLATFORM AS A SERVICE)



PaaS is a complete development and deployment or management of your application in the cloud

Ex: No need to worry about server it will deploy our own code



SAAS (SOFTWARE AS A SERVICE)



SaaS applications (Web-based software, on-demand software, or hosted software)

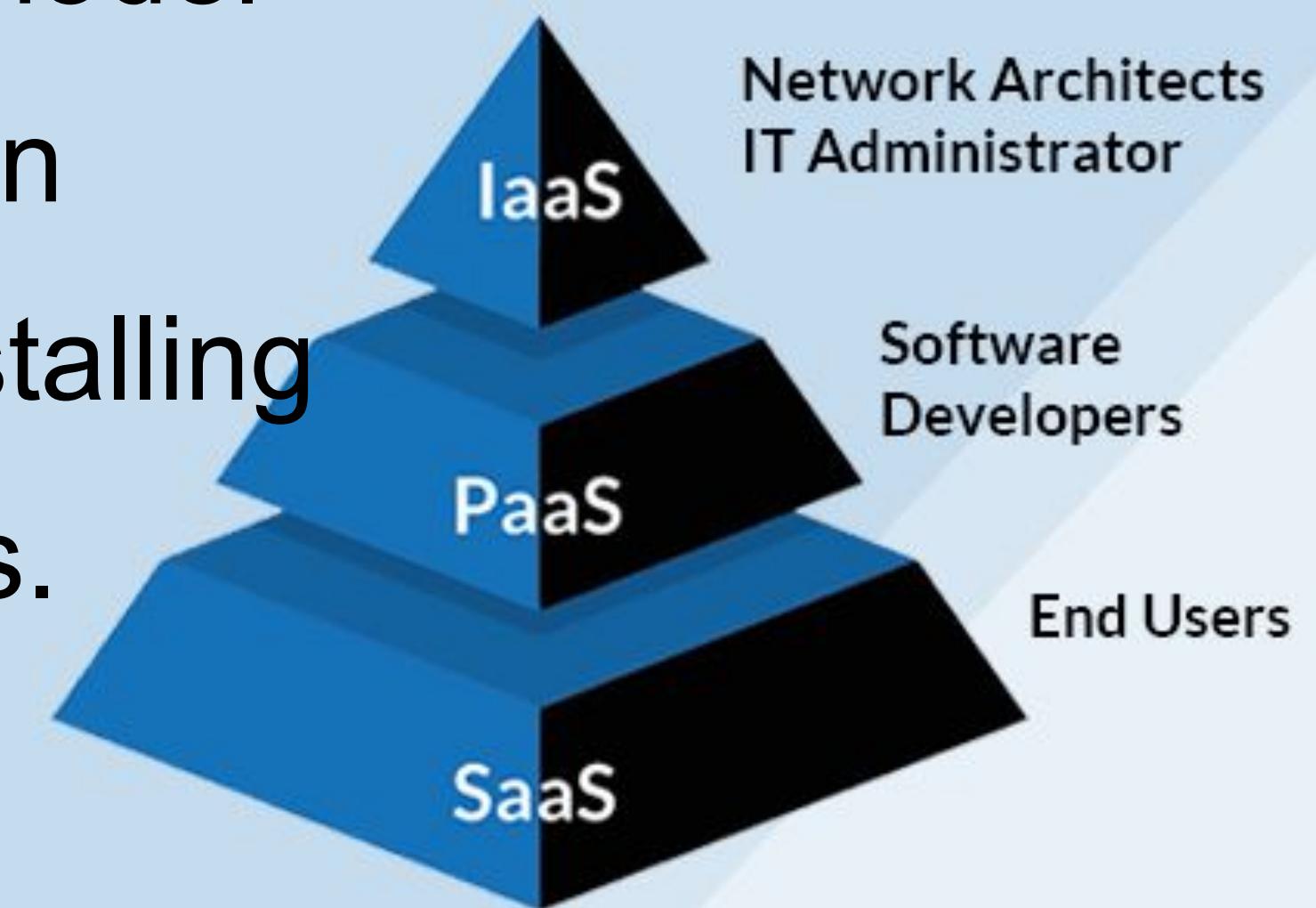
It is a cloud-based software delivery model

that allows SaaS applications to run on

SaaS providers' servers instead of installing

and maintaining software on-premises.

Ex: Netflix, AWS...





We have some major companies delivering the Cloud Computing Services(Service Providers). Some notable examples include the following:

- Amazon: Amazon Web Service(AWS)
- Google: Google Cloud Platform
- Microsoft: Microsoft Azure



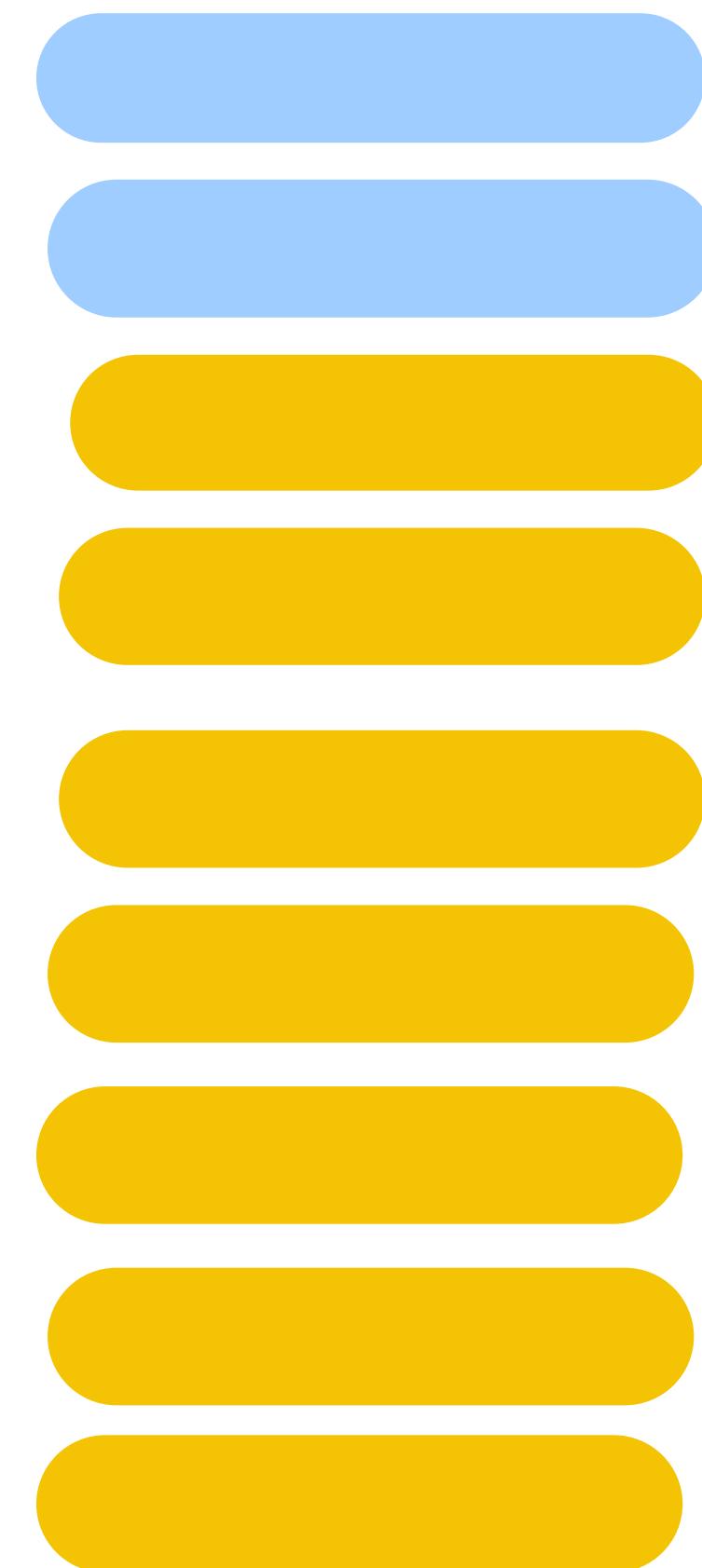
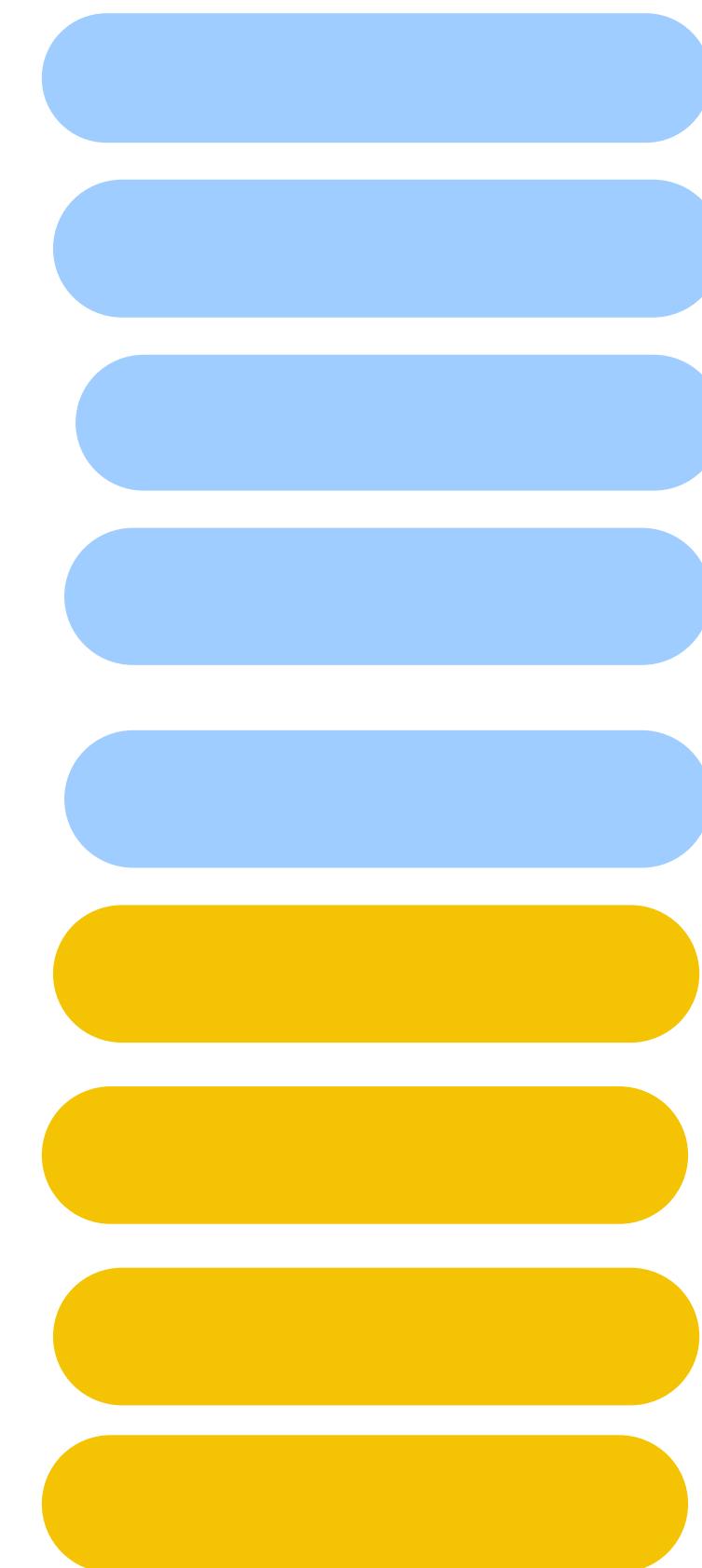
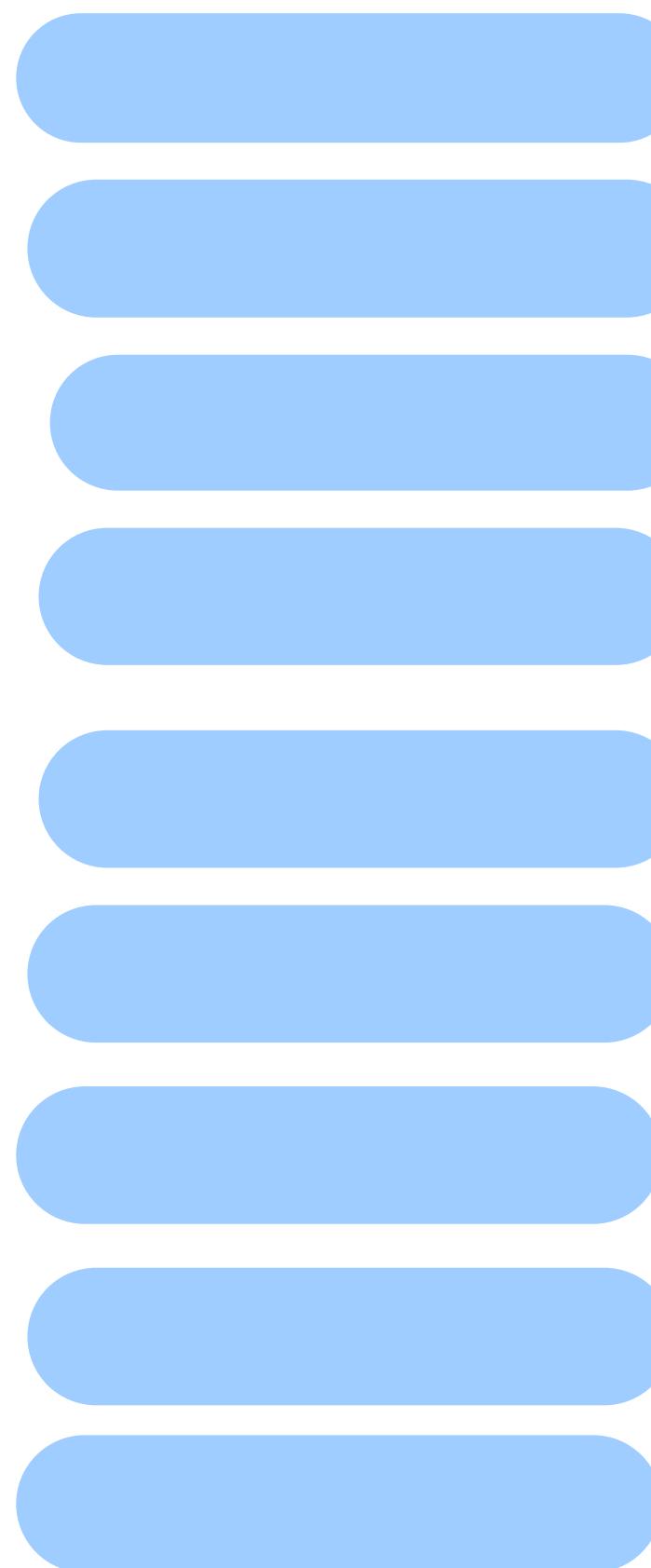


On- Premises

IaaS

PaaS

SaaS





Pricing of the cloud

Pay- as- you-go -pricing-model

- Compute
- Storage
- Data transfer out of the cloud



Getting Start with

aws

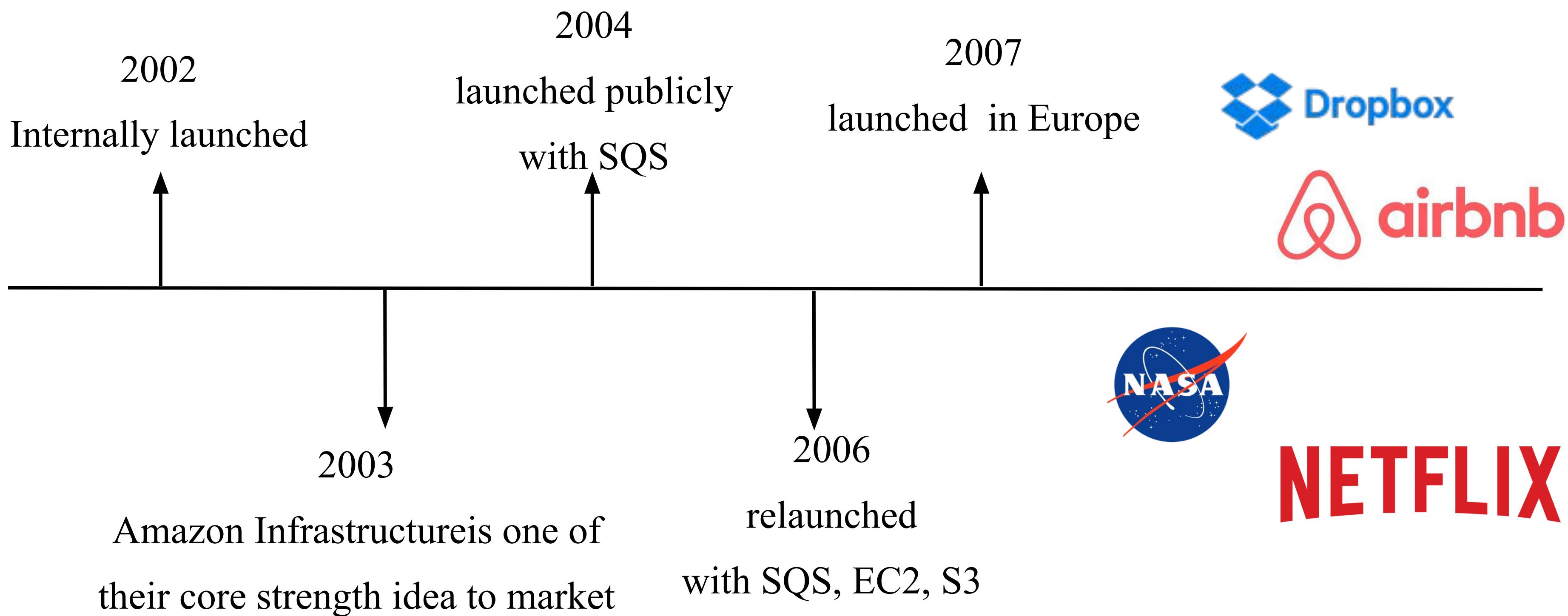




- AWS Cloud History
- AWS cloud Use cases
- What is AWS?
- Who Uses AWS?
- Why is AWS so Successful?
- Application of AWS
- AWS Global Infrastructure



AWS Cloud History





2019 AWS Annual Revenue - 80 billion

Dollars

AWS accounts 32% of market 2022

Microsoft Azure 23% of market

1M active users





AWS Cloud Use cases:

- AWS enable you to build sophisticated scalable applications
- Many industries using aws like Netflix, Activation, MacDonalds,
- Use cases include Enterprise, IT Backup & Storage, Bigdata analytic, Website Hosting, Social Apps, Gaming





WHAT IS AWS?

Amazon Web Services (or simply AWS) is a secure cloud services platform offering nearly everything businesses need to build sophisticated applications with flexibility, scalability, and reliability.



It is a “pay-as-you-go” billing model

WHO USES AWS?



Airbnb



Foursquare



Spotify



Ubisoft

NETFLIX

Netflix



Pinterest

WHY IS AWS SO SUCCESSFUL?

Companies report a key set of reasons for not only selecting Amazon Web Services but relying on it crucial parts of their IT infrastructure:

- Security and durability
- Experience
- Flexibility
- Ease of Use
- Scalability
- Cost savings



APPLICATION OF AWS

- Storage and backup
- Enterprise IT
- Mobile, Web, and Social Applications –
- Big Data
- Websites
- Gaming



AWS GLOBAL INFRASTRUCTURE



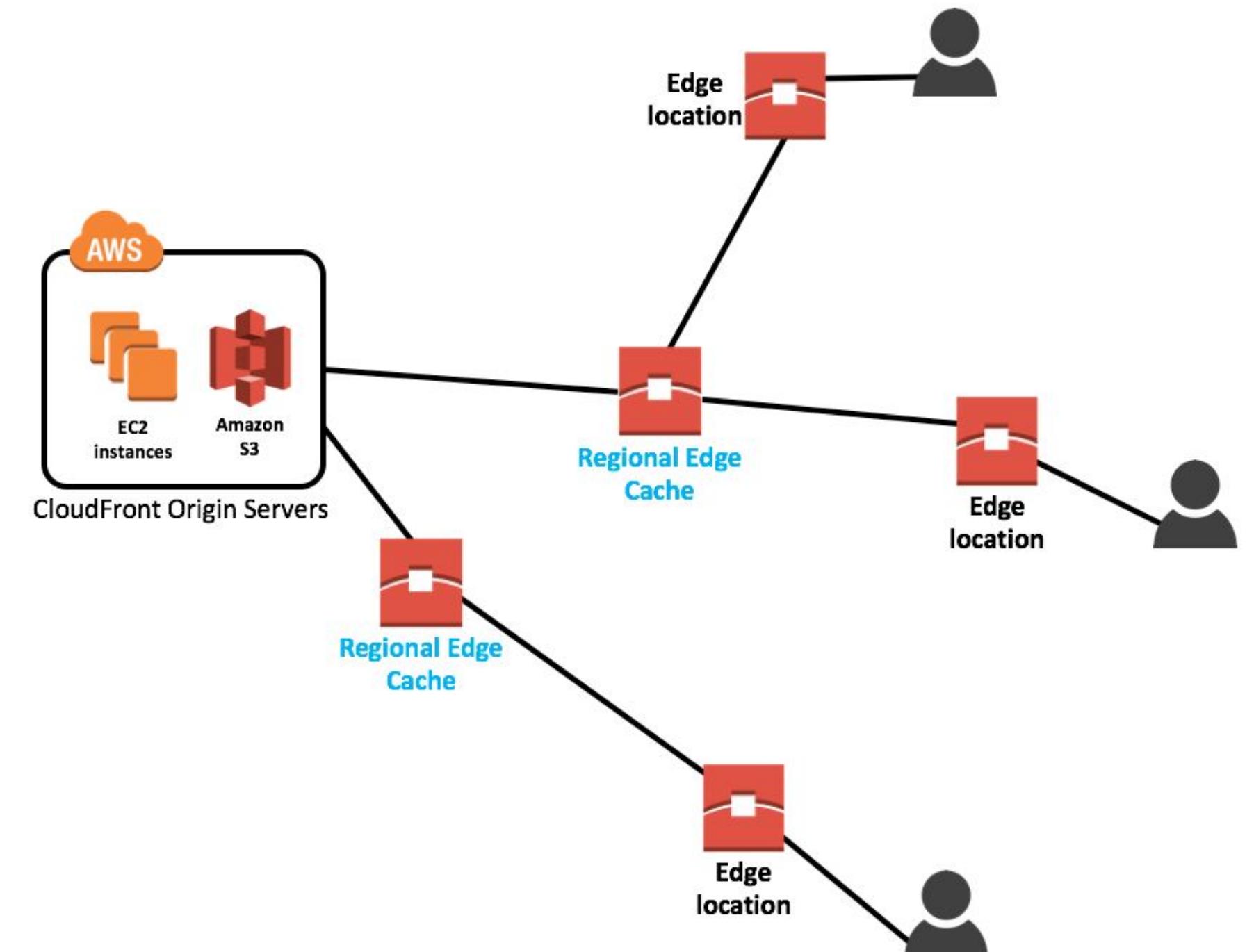
The AWS global infrastructure is divided into geographical regions.

The geographical regions are then divided into separate availability zones.

Components of Global Infrastructure

- Regions
- Availability Zones
- Data Centers
- Edge Locations

<https://infrastructure.aws/>



AWS GLOBAL INFRASTRUCTURE



Regions:

Regions all around world Names

of regions us-east-1, eu-west-3

....etc

Region= Cluster of Data Centers

All AWS Services are region
scoped

Name	Code Name
US East (N. Virginia)	us-east-1
US East (Ohio)	us-east-2
US West (N. California)	us-west-1
US West (Oregon)	us-west-2
Canada (Central)	ca-central-1
EU (Ireland)	eu-west-1
EU (Frankfurt)	eu-central-1
EU (London)	eu-west-2
Asia Pacific (Tokyo)	ap-northeast-1
Asia Pacific (Seoul)	ap-northeast-2
Asia Pacific (Singapore)	ap-southeast-1
Asia Pacific (Sydney)	ap-southeast-2
Asia Pacific (Mumbai)	ap-south-1
South America (São Paulo)	sa-east-1

AWS GLOBAL INFRASTRUCTURE



How to choose Regions?

To choose regions there are 3 factors

- Compliance
- Proximity
- Available Services
- Pricing

Name	Code Name
US East (N. Virginia)	us-east-1
US East (Ohio)	us-east-2
US West (N. California)	us-west-1
US West (Oregon)	us-west-2
Canada (Central)	ca-central-1
EU (Ireland)	eu-west-1
EU (Frankfurt)	eu-central-1
EU (London)	eu-west-2
Asia Pacific (Tokyo)	ap-northeast-1
Asia Pacific (Seoul)	ap-northeast-2
Asia Pacific (Singapore)	ap-southeast-1
Asia Pacific (Sydney)	ap-southeast-2
Asia Pacific (Mumbai)	ap-south-1
South America (São Paulo)	sa-east-1

AWS GLOBAL INFRASTRUCTURE



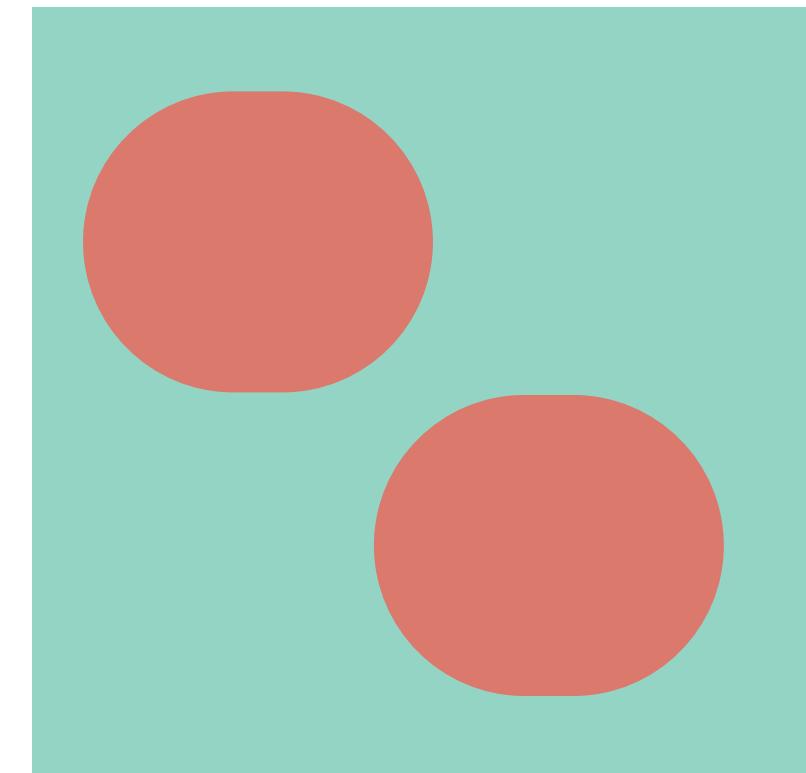
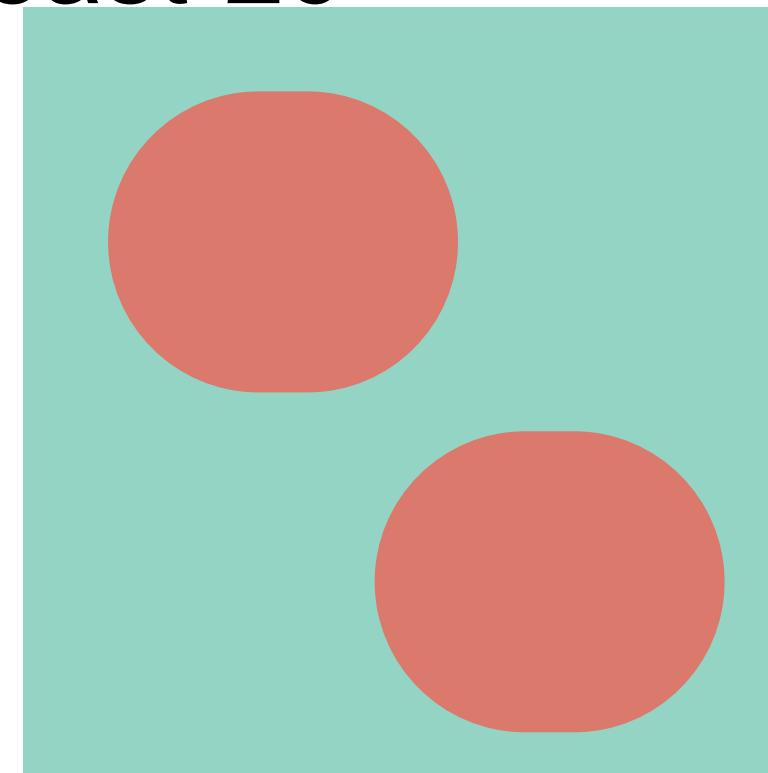
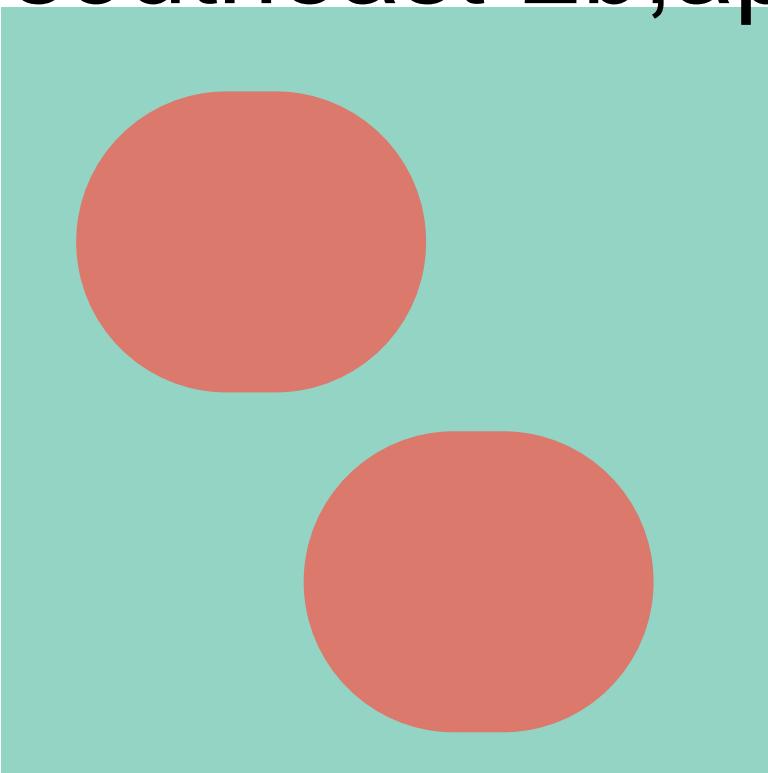
Availability Zones:

Each Region has many availability zones (min 3, max 3)

Ex: ap-southeast-2 ---> Sydney

It has 3 Availability Zones: ap-southeast-2a,

ap-southeast-2b, ap-southeast-2c



AWS GLOBAL INFRASTRUCTURE



EDGE LOCATION:

216 points of presence

[205 Edge locations & 11 Regional Caches]

84 cities across 42 countries

content delivered to end users with lower latency

AWS SERVICES



The catalog of services available from Amazon Web Services is extensive -- storage, migration, security, customer engagement, developer tools and dozens more. These are among the most commonly used services from AWS:

- EC2
 - Elastic Map Reduce
 - S3
 - Lambda
 - EBS



AWS ACCOUNT SIGNUP

Sign Up

e-mail

password

repeat password

Remember me

Sign up with social account:

The AWS logo consists of the word "aws" in a bold, black, sans-serif font, with a stylized orange smile underneath it.

Sign up

[Read User License Agreement](#)



STORAGE SERVICES



STORAGE SERVICES

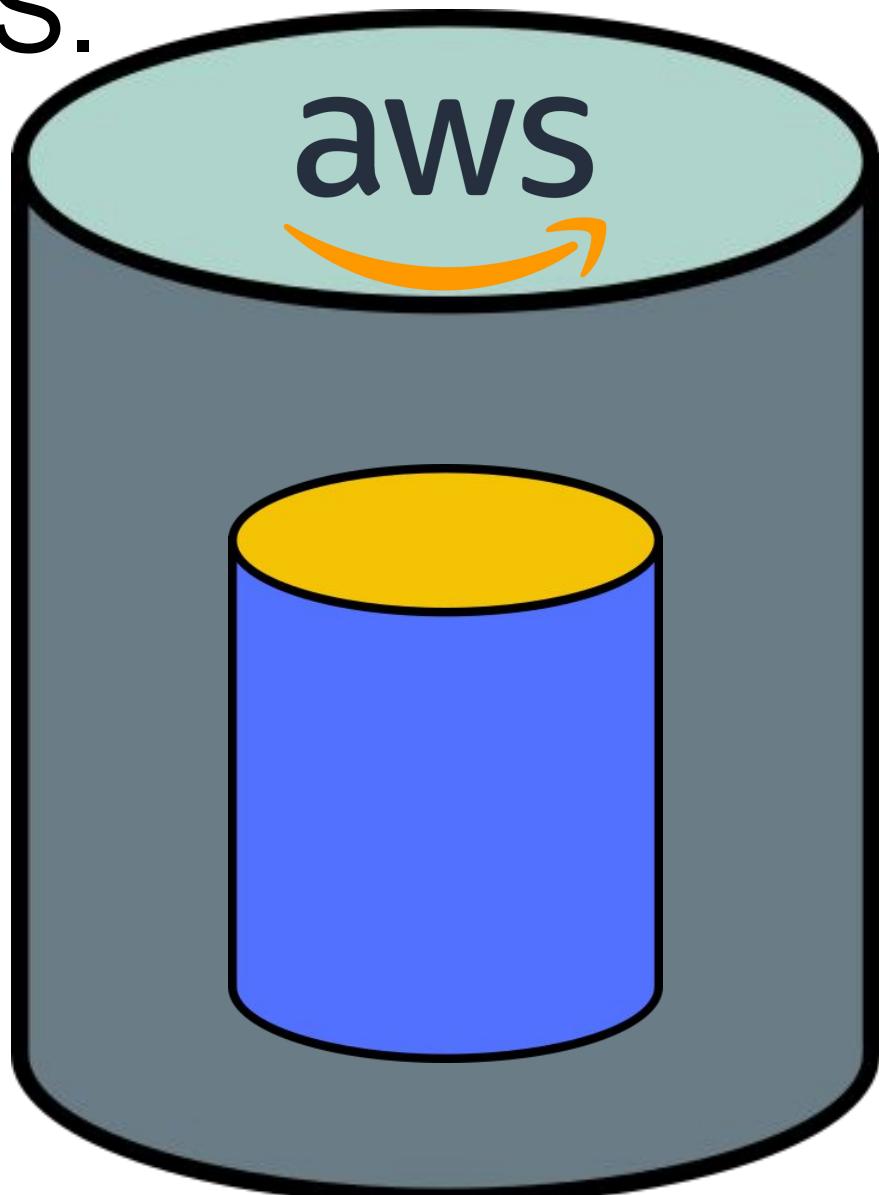


What is Storage Service?

To Store Data we are using Storage services in AWS.

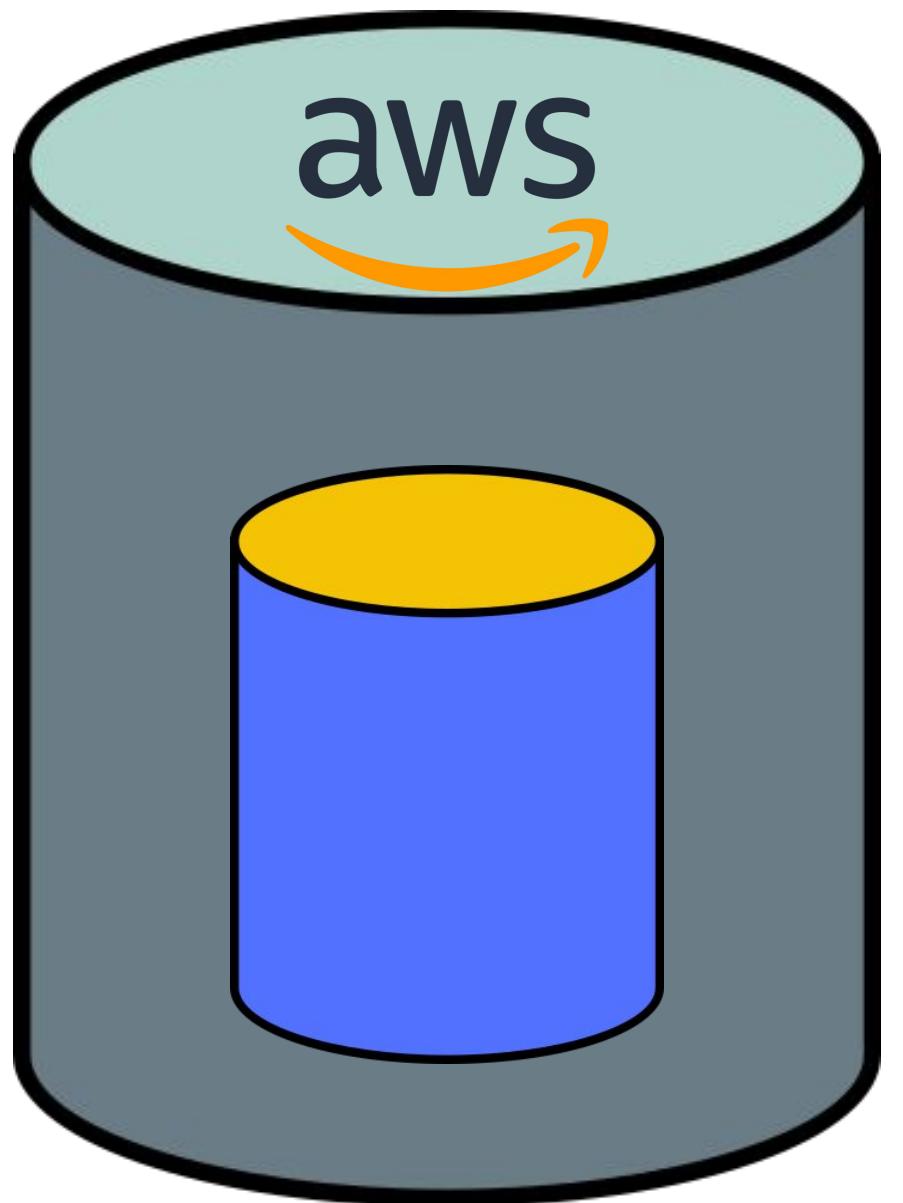
AWS has various storage types:

- 1.object storage
- 2.file storage
- 3.block storage services
- 4.backups
- 5.data migration options



Different Storage Services

1. Simple Storage Service (S3)
2. Elastic Block Storage (EBS)
3. Elastic File System (EFS)
4. Amazon Glacier.
5. Storage Gateway



S3 Service



S3 SIMPLE STORAGE SERVICE



What is AWS S3?

Amazon Simple Storage Service (S3) it is main building block of AWS

Many websites use AWS Services as backbone

Many AWS Services use s3 as integration



**Simple Storage Service
(Amazon S3)**

S3 SIMPLE STORAGE SERVICE



S3 Use cases:

- Backup & Storage
- Disaster Recovery
- Archive
- Hybrid Cloud Storage
- Application Hosting
- Media Hosting
- Data Lakes & Big data analytics
- Software delivery
- Static Websites



**Simple Storage Service
(Amazon S3)**

S3 SIMPLE STORAGE SERVICE



S3 Buckets:

S3 allows people to store data in the form of objects [Files] in buckets [directories]

Buckets must have unique names

Buckets are defined at region level

S3 look like a global service but buckets

created are in region



**Simple Storage Service
(Amazon S3)**

S3 SIMPLE STORAGE SERVICE



S3 Buckets Naming:

No uppercase, No Underscore

3-63 Characters long

Must start with lowercase letter or numbers

Not start with prefix like xn--

Non end with suffix -s3 alias

Ex: s3://bucket name/file name



S3 SIMPLE STORAGE SERVICE



S3 Objects (Content):

Object values are the content of body

Max Obj Size 5TB [5000GB]

If we are uploading file more than 5GB must use "multi-part-upload"

Metadata [list of text key/value pairs system or use metadata]

Tags [Unicode key/Value pair up to 10]

Version ID [If versioning enabled]



S3 SIMPLE STORAGE SERVICE



S3 Objects:

Objects [files] have a key

Key-Full path

s3://bucket name/file name.txt

s3://bucket name/my folder/another folder/file name.txt

Key composed of Prefix + Object

There is no concept of directories within
buckets

Key contain Slashes(/)



Simple Storage Service
(Amazon S3)



AWS S3 Working



S3

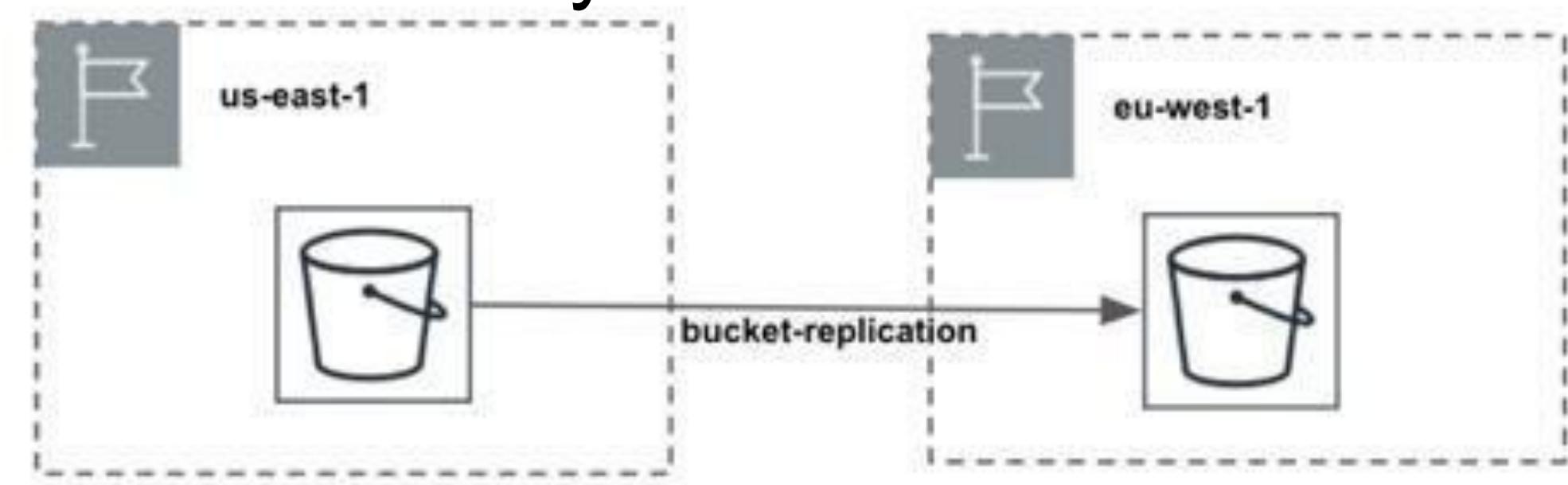


If we want move data from one region to other region

Backup in some other availability region or Want to move your data to some other region.

Cross-region Replication

Cross-region Replication enables user to either replicate or transfer data to some other location without any hassle.



S3



How is AWS S3 billed?

AWS S3 is affordable and flexible in its costing. It works on Pay Per Use, meaning, you only pay what you use.

Storage/month	Standard Storage	Standard – Infrequent Access Storage	Glacier Storage
First 1 TB / month	\$0.0300 per GB	\$0.0125 per GB	\$0.007 per GB
Next 49 TB / month	\$0.0295 per GB	\$0.0125 per GB	\$0.007 per GB
Next 450 TB / month	\$0.0295 per GB	\$0.0125 per GB	\$0.007 per GB
Next 500 TB / month	\$0.0285 per GB	\$0.0125 per GB	\$0.007 per GB

EBS Service



EBS



What is AWS EBS?

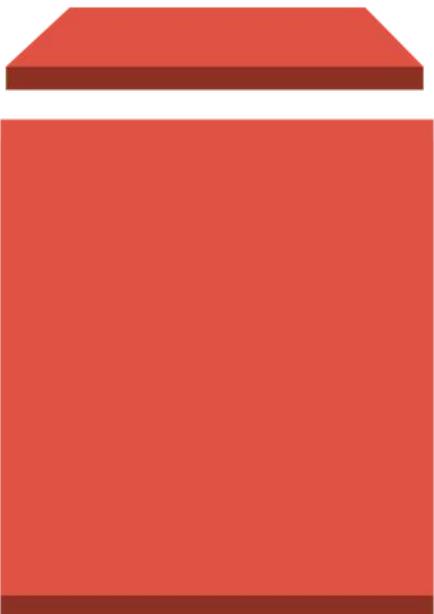
AWS EBS --Elastic Block Store.

It is storage object of EC2

We create an extra EBS Volume

We will take snapshot of volume and use that snapshot to create a copy of EBS Volume.

EBS Currently support max volume size 64TiB[Tebibyte]





EBS

HOW EBS WORK?

Steps to CREATE EBS Volume:

1. EC2 Management Console

2. Launch Instance

3. Choose AMI

4. Choose Instance Type

5. Configure Instance

6. Add Storage

7. Add Tags

8. Configure Security group

9. Reviews

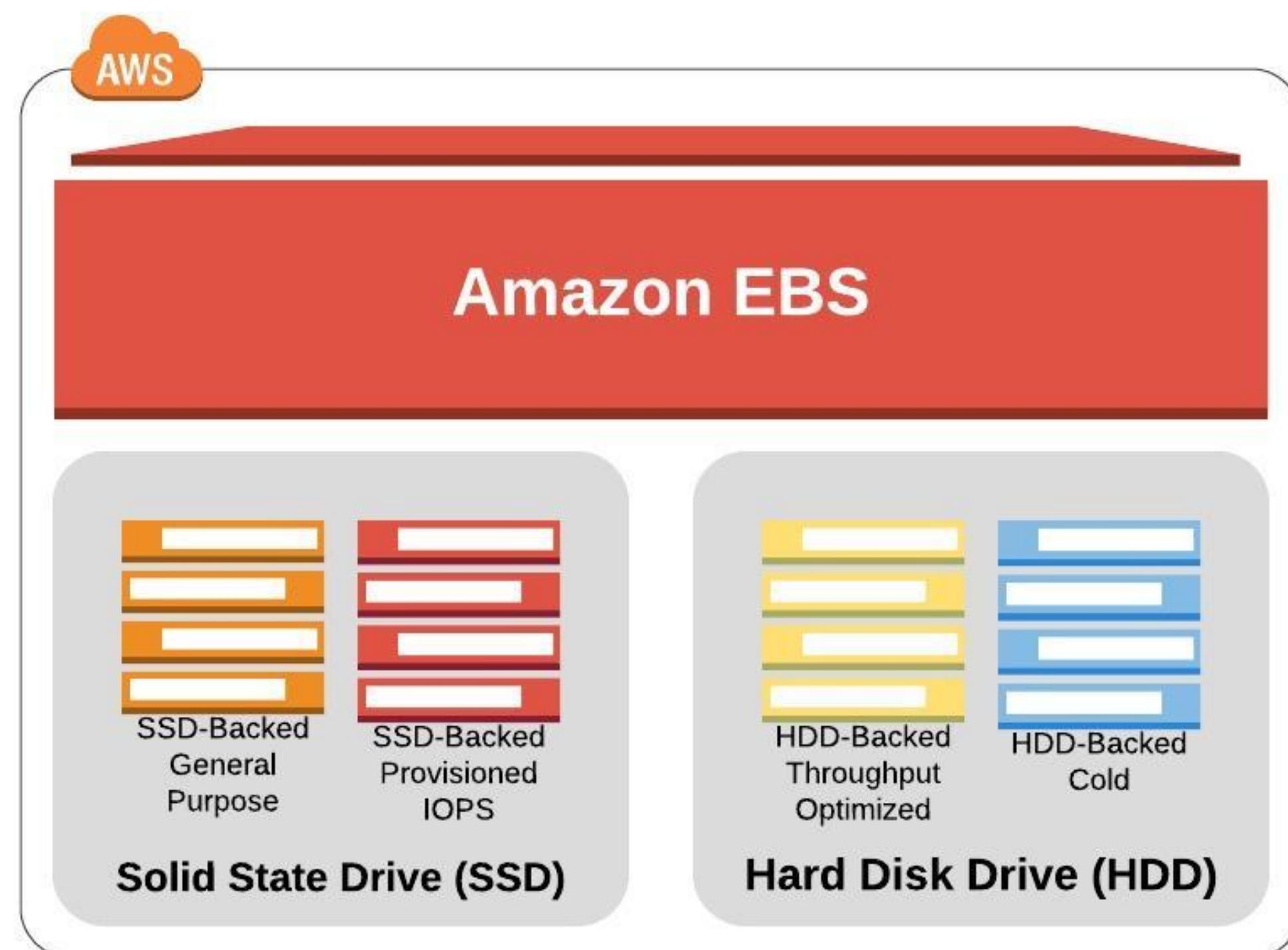
The screenshot shows the AWS EC2 Management Console interface. On the left, a sidebar menu includes options like 'EC2 Dashboard', 'Instances', 'Images', 'Elastic Block Store', and 'Network & Security'. The main content area is titled 'Resources' and displays resource counts: 2 Instances (running), 2 Instances, 0 Dedicated Hosts, 1 Key pairs, 0 Placement groups, 10 Security groups, 3 Volumes, and 1 Snapshots. Below this, a 'Launch instance' section prompts the user to start an Amazon EC2 instance. A 'Launch instance' button is highlighted with a cursor. To the right, there's a 'Service health' section showing the 'Europe (Stockholm)' region is operating normally, and a 'Zones' table listing three availability zones: eu-north-1a, eu-north-1b, and eu-north-1c, each associated with zone ID eun1-az1, eun1-az2, and eun1-az3 respectively.

EBS



Volume Types:

1. General Purpose SSD
2. Provisional IOPS SSD
3. COLD HDD
4. Throughput Optimised HDD
5. Magnetic



EBS



Volume Types:

1. General Purpose SSD (GP SSD):

Used for Transactional Workloads which require less than 16000 IOPS

1000MiB/s Throughput

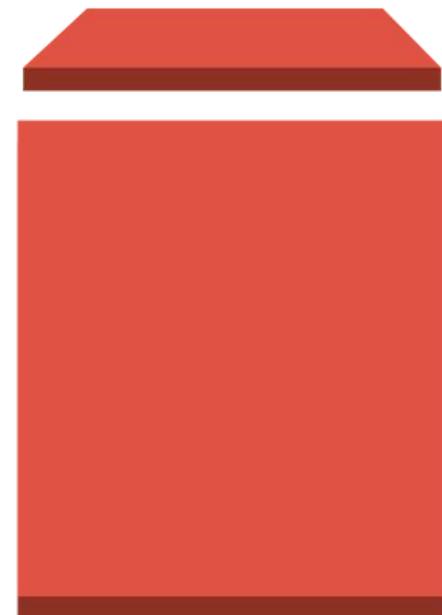
160-TiB Volume Size

GP SSD include gp2, gp3 types

gp2, gp3 range - 16000 IPS

gp2 for lower volume [Maximum throughput 250MiB/s]

gp3 volume [Maximum throughput 1000MiB/s]



EBS



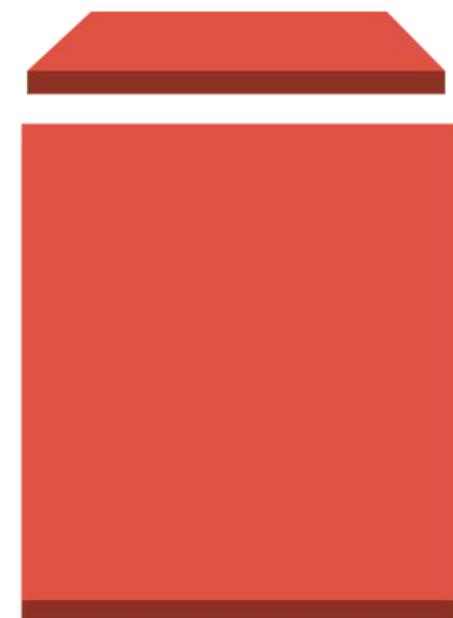
Volume Types:

2. Provisional IOPS SSD:

Include io2 volumes, io2 block express and io1 volumes

io1,io2--> Workload 64000IOPS per volume & 1000MiB throughput

io2 Block Express--> Workload 256000 IOPS per Volume & 4000MiB



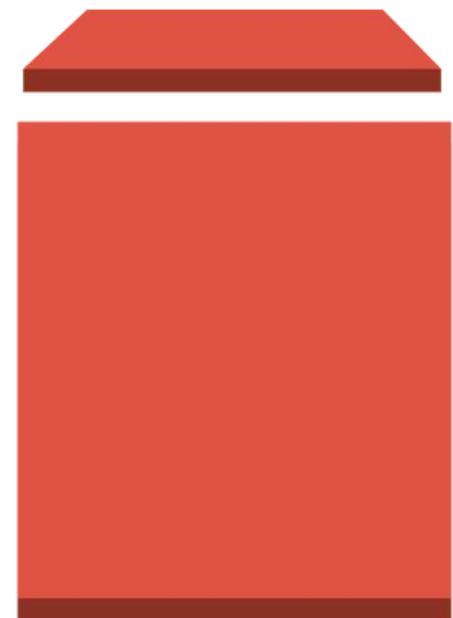
EBS



HDD Hard Disk Drive

HDD Volume 2 types:

- Cold HDD
- Throughput Optimized HDD



EBS



Volume Types:

3. Cold HDD:

Provides low cost magnetic storage it defines performance in throughput rather than IOPS

To access infrequent data we can use

Sc1 - Throughput Volume 250MiB/s



EBS



Volume Types:

4. Throughput Optimized HDD:

Volume type st1

Throughput volume 500 MiB/s

Volume Size -125 GiB-16TiB



EBS



Volume Types:

5. Magnetic:

EBS Volumes Backed by HDD

Used for smaller Datasets

Approximate volume -100IOPS

It is used for access infrequent data & performance consistency is not primary importance

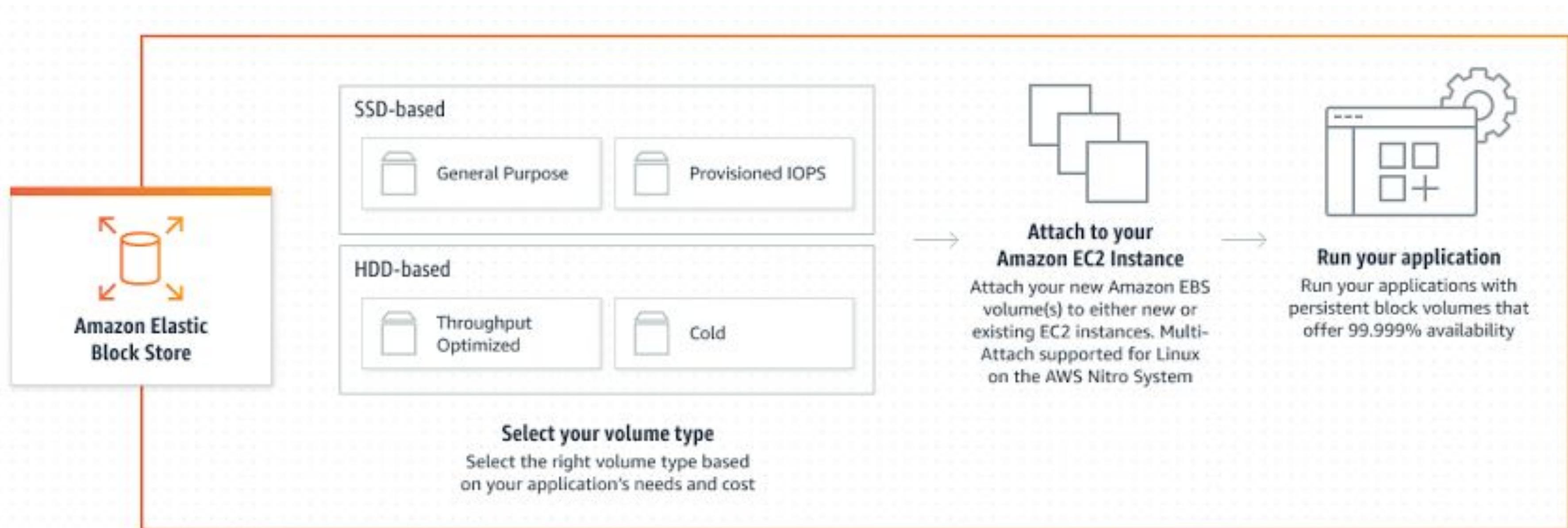
Volume Size 1GB to 1TB



EBS



EBS Working



EBS

AWS EBS vs AWS S3



EBS

Data is stored as blocks

Store block can size up to 16 tebibytes each
(17.6 terabytes)

Faster performance than AWS S3

Data can be modified

S3

Data is stored as objects

Individual object size can be up to 5,000
gigabytes (5 terabytes)

Data does not suffer loss, degradation, or a
corruption for a very long time

Data can not be modified, unless reuploaded

EFS Service





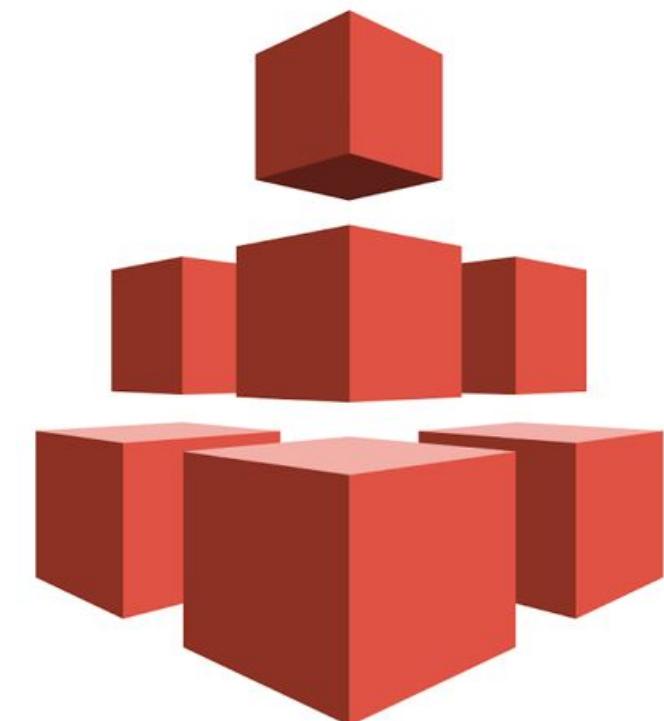
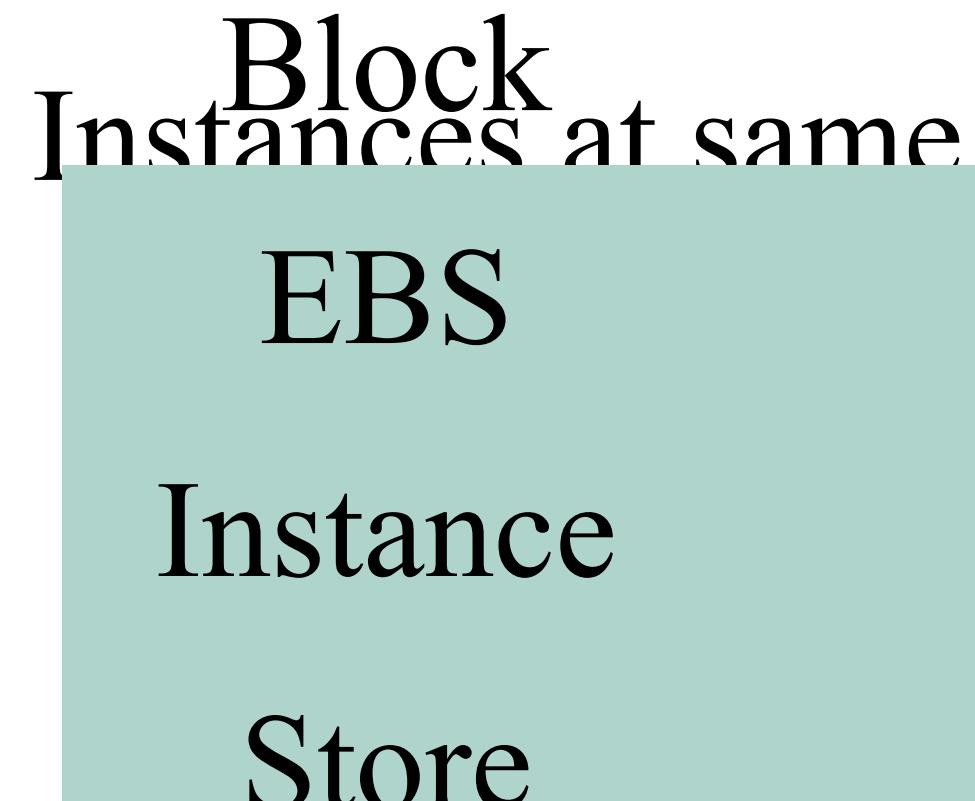
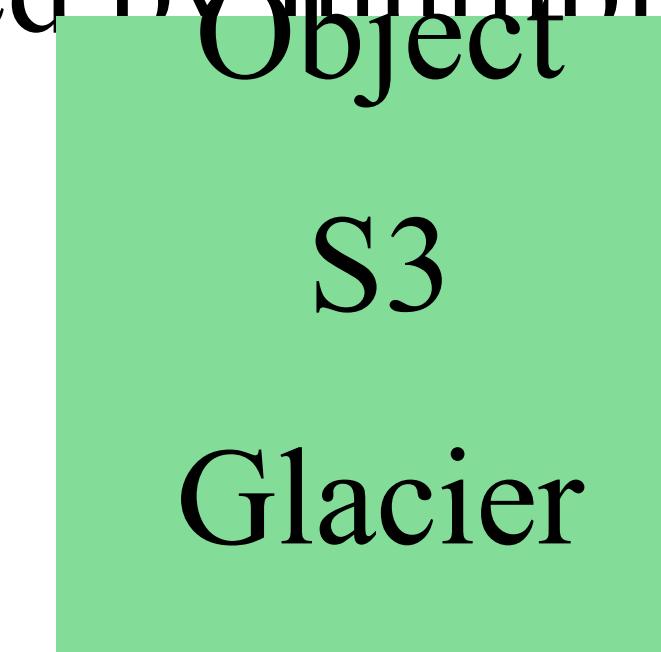
EFS

What is AWS EFS ?

AWS Elastic File System (EFS)

It is also used with EC2 Instances

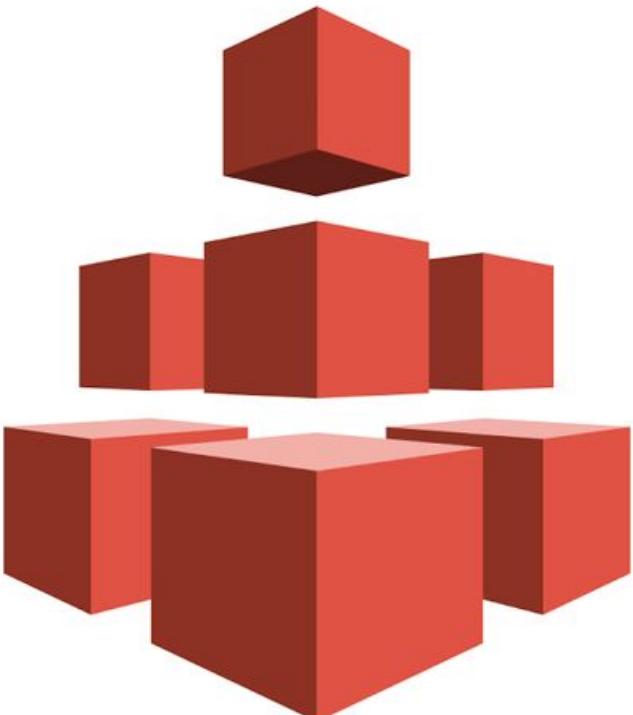
- Used as file storage for EC2
- Network Attached storage [NAS]
- Can be accessed by multiple Ec2 Instances at same time.



EFS

Advantages of EFS:

- Fully managed Service
- File system automatically grows and shrinks to petabytes size.
- Pay only for storage use
- Support thousands of connections
- Multi Available Zone Replication

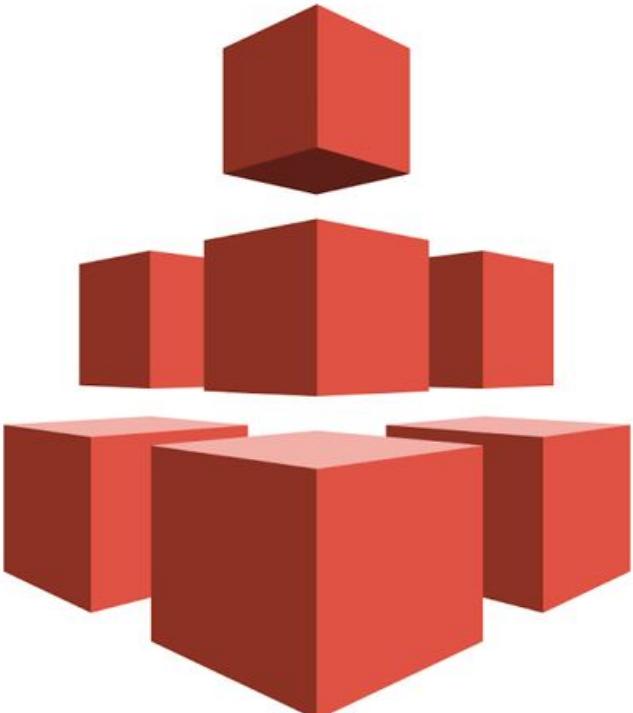




EFS

Disadvantages of EFS:

- Not available in all regions
- Cross region capability not available
- More complicated compared to s3 & EBS

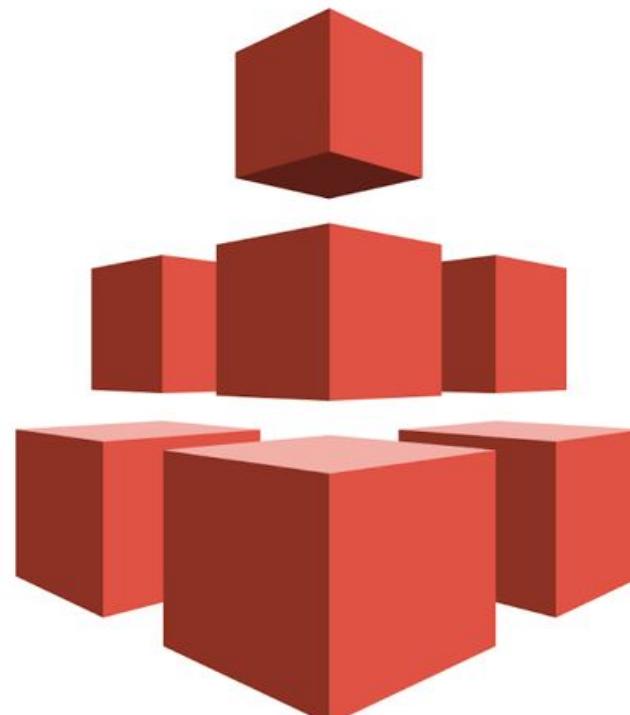




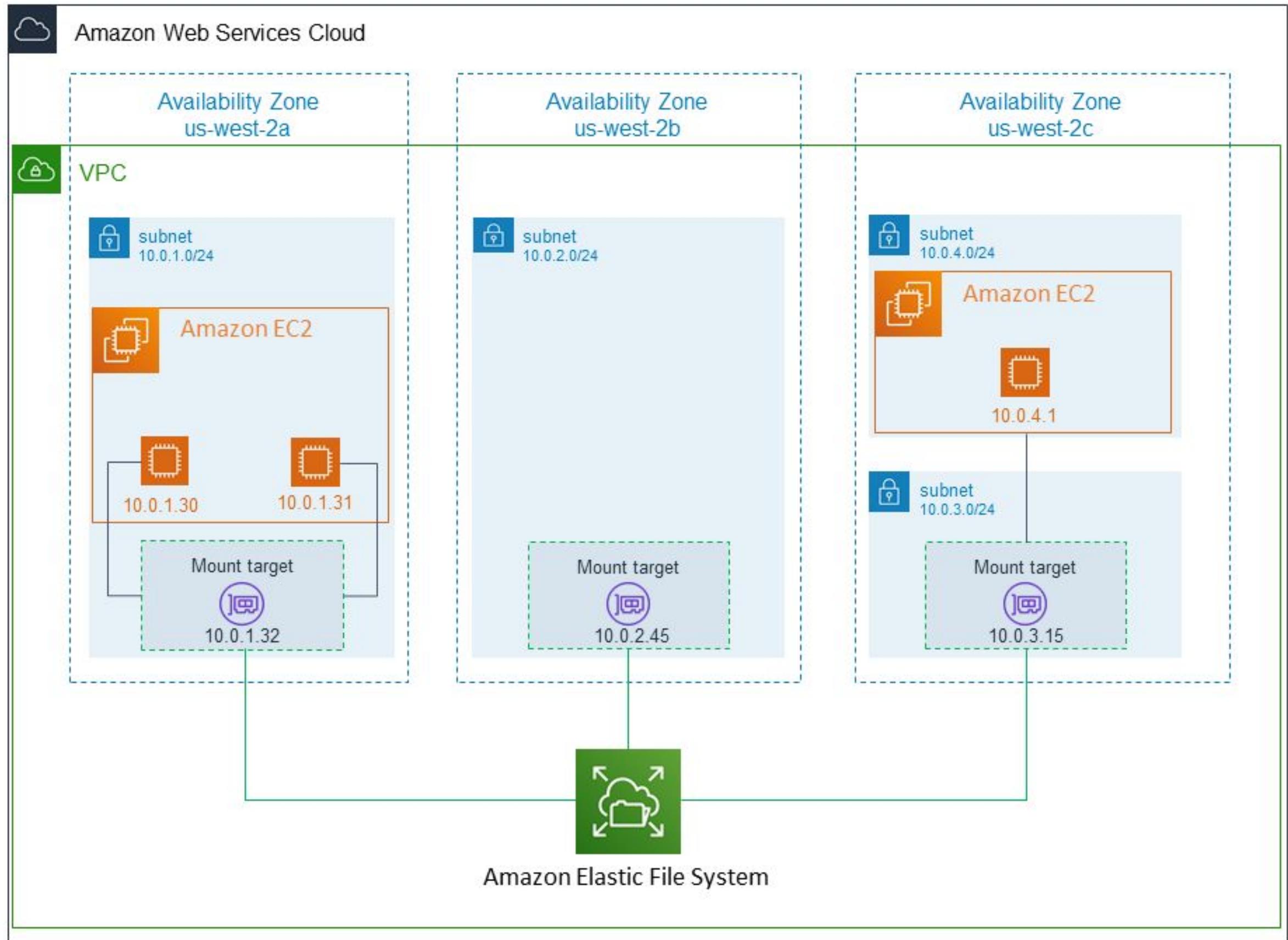
EFS

Accessing File System from EC2:

- Requires an NFS Client
- Mount file system using linux mount command
- It is similar to EBS & Instances store
- File system DNS name or mount point
- DNS name can be used to mount EFS on EC2



EFS WORKING



AWS EFS vs S3 vs EBS



Amazon S3	Amazon EBS	Amazon EFS
Can be publicly accessible	Accessible only via EC2 machine	Accessible via several EC2 machine and AWS services
Web interface	File system interface	Web and file interface
Object storage	Block storage	Object storage
Scalable	Hardly scalable	Scalable
Slower than EBS and EFS	Faster than both S3 and EFS	Faster than S3 but slower than EBS
Good for taking backups	Is meant for EC2 drive	Good for shareable applications and workloads
Max storage is unlimited	16 TB per 1 volume	unlimited size
Can be accessed within and outside a VPC	Accessed within 1 VPC	Accessed within 1 VPC

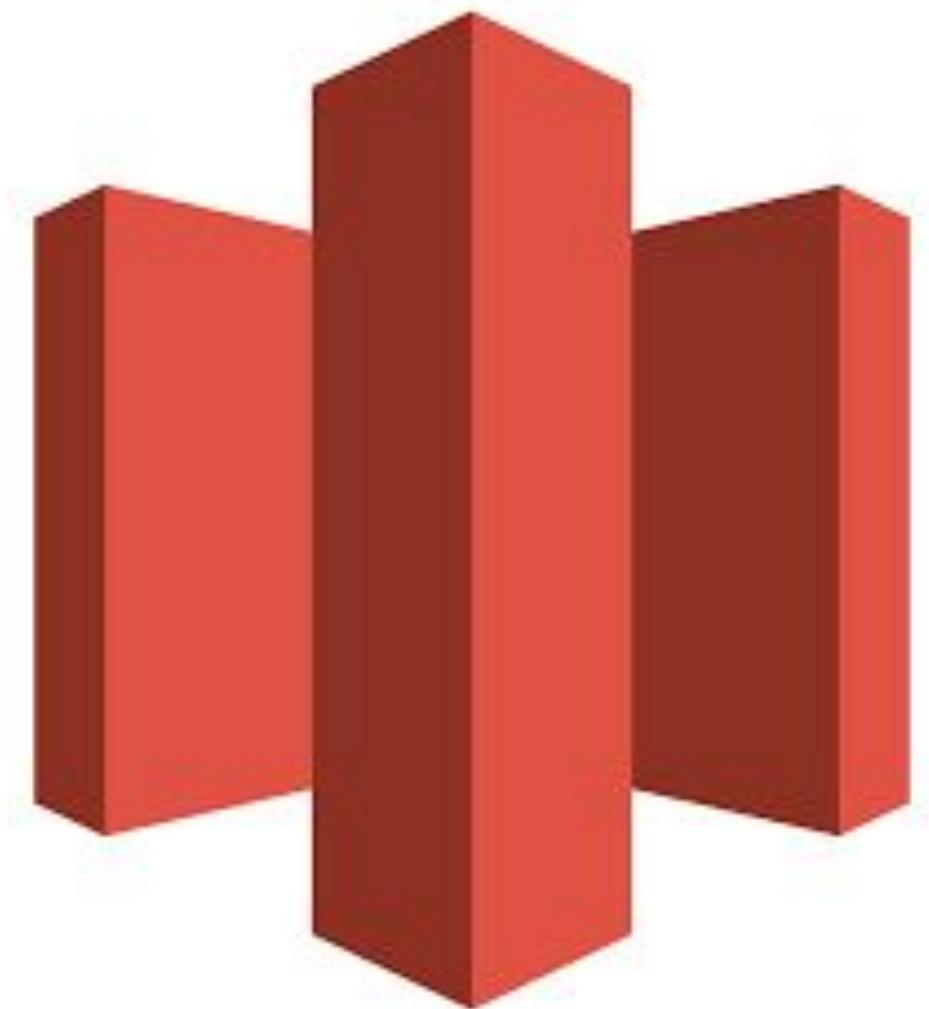
Glacier Service



AWS Glacier

It is long term secure durable storage classes for data archiving [storing] at lowest cost & million seconds access.

We can access infrequent data we can store infrequent data in glacier instead of storing in s3.



AWS Glacier

3 Types of Glacier Retrievals:

- **Instance retrievals:** Archival storage that delivers low cost storage with milliseconds retrievals
- **Flexibility retrievals:** Archival data which doesn't require immediate access but need flexibility to retrieve large datasets at no cost within 5-12hrs
- **Deep Archive:** To save even more (or) long lived archive storage such as compliance archives & digital media preservation within 12hrs

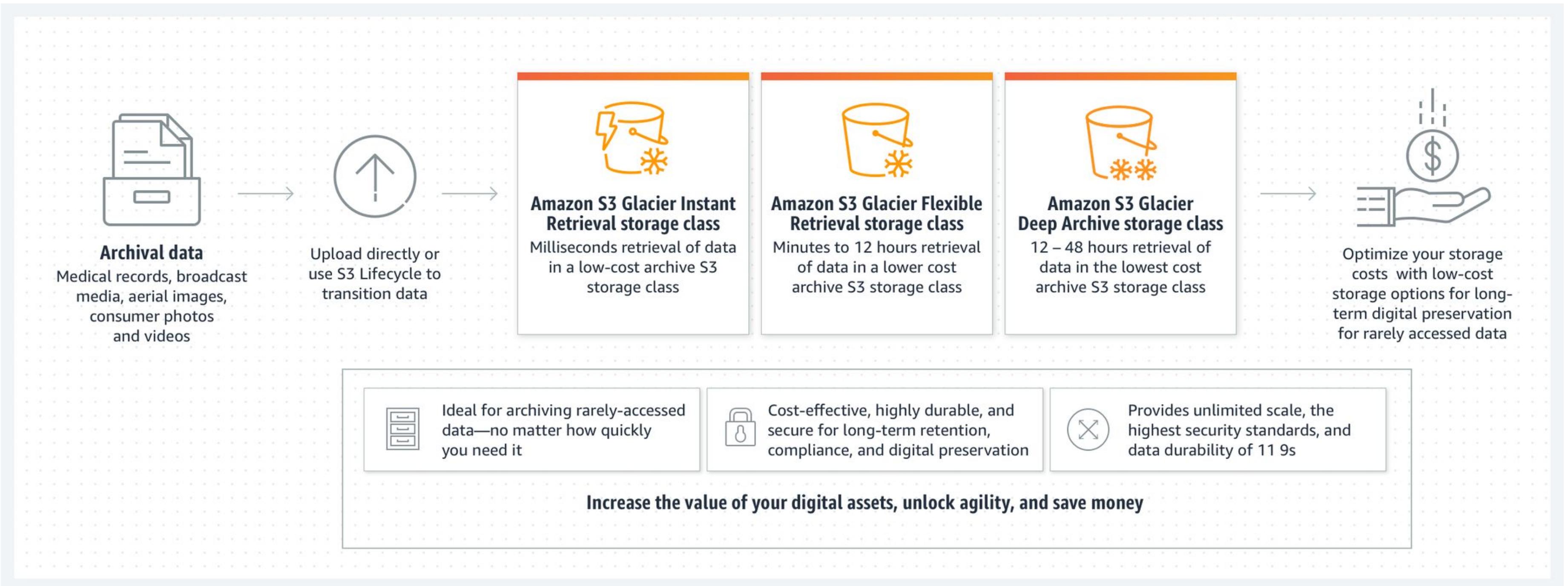
AWS Glacier

Benefits of Amazon Glacier

Amazon Glacier offers the following benefits:

- Retrievals as quick as milliseconds
- Unmatched Durability & scalability
- Most comprehensive & compliance capabilities
- Lowest Cost
- Most supported by partners vendors & AWS services
- Consistent across your life cycle

AWS Glacier



Storage

Gateway



aws
amazon

Storage Gateway

It is hybrid cloud storage service that gives you on premises access to virtually unlimited storage cloud.

We use storage gateway to simplify storage manage system and reduce cose for hybrid cloud storage



Storage Gateway

AWS Storage Gateway supports three storage interfaces:

Tape Gateway :

Stores virtual tapes in s3 and creates new ones automatically, simplify management

It contain virtual tape library

- Virtual tape drivers
- Virtual media changer



Storage Gateway

AWS Storage Gateway supports three storage interfaces:

S3 File Gateway :

Customer can use s3 File gateway as backup of on premises file data. These file s3 access via NFS & SMB from data center or EC2

FSX File Gateway:

This provides fast,low latency on premises access to fully managed highly reliable and scalable file shares in a cloud using SMB protocol.

Customers can stores & access file data in



Storage Gateway

AWS Storage Gateway supports three storage interfaces:

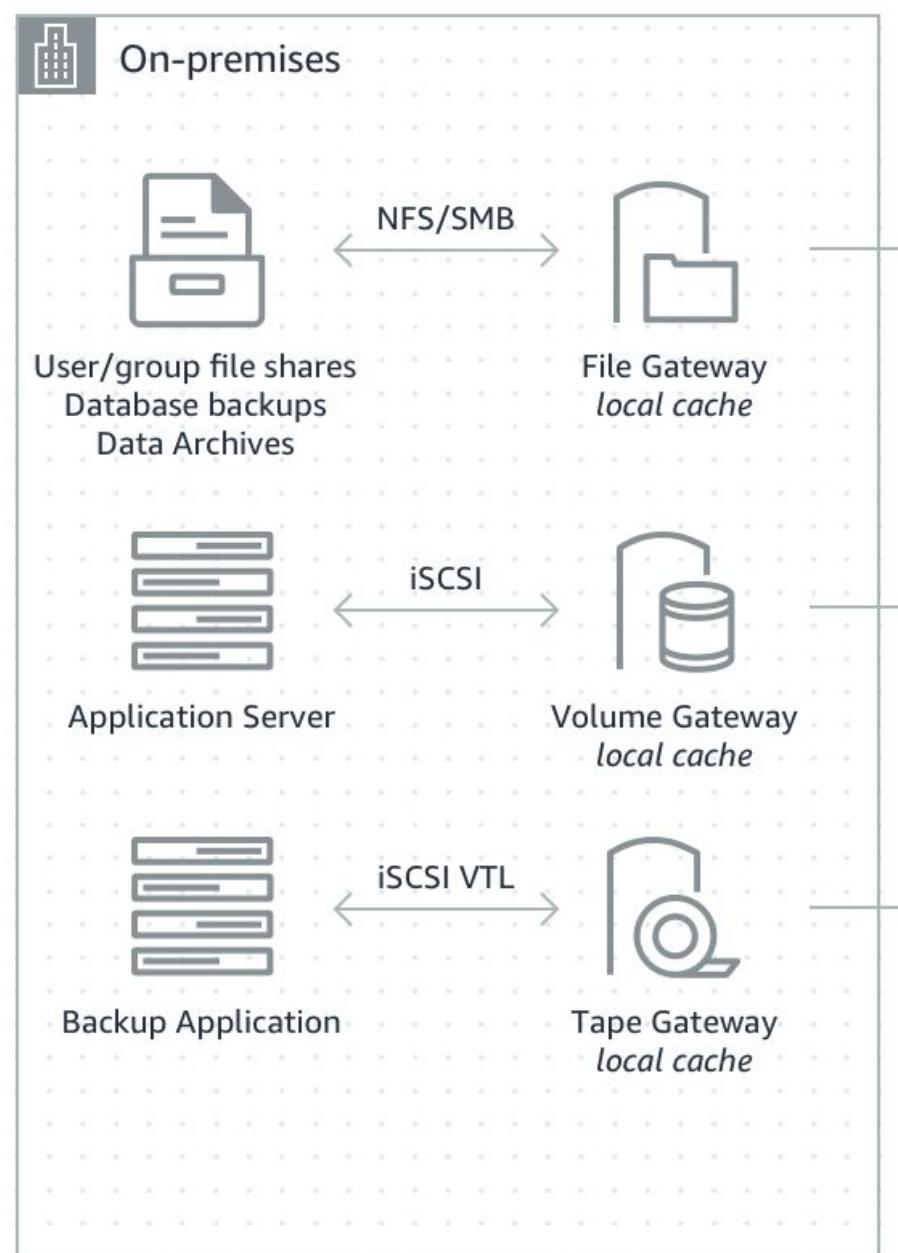
Volume Gateway :

Present application as block storage volume using iSCSI protocol.

Data in this gateway in the form of snapshots and these data stored in EBS

Volume backups stored in EBS snapshots.

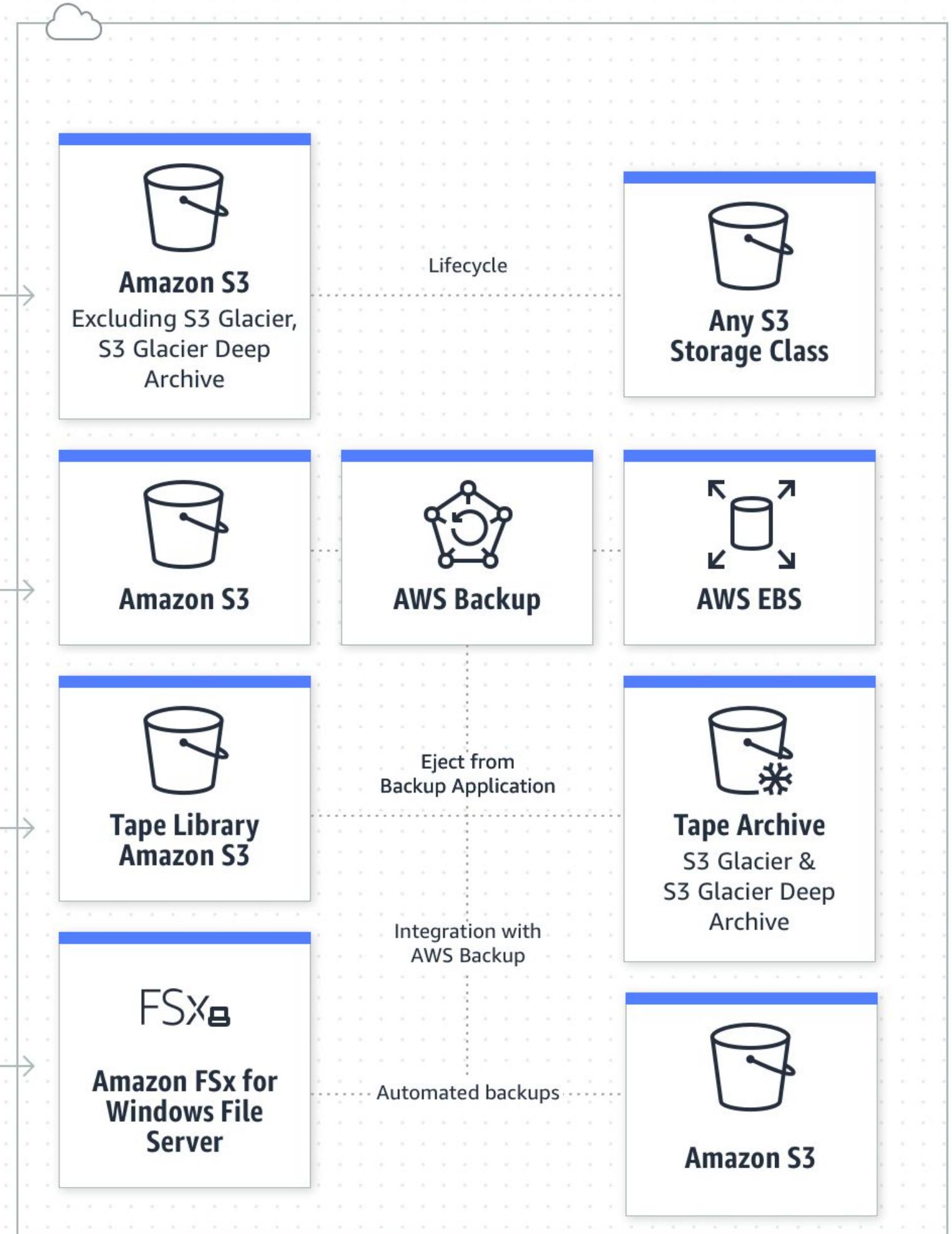




Encryption in Transit
AWS Direct Connect
or Internet



AWS Storage Gateway
Service Endpoint Options:
Internet, Amazon VPC, FIPS



Gateway Deployment options:
VMware, Hyper-V, KVM, or
hardware appliance

COMPUTE SERVICES



COMPUTE SERVICES



What are Compute Services?

Also known as IaaS , Compute platforms supply a virtual server instance and storage and API's lets users migrate workloads to virtual machine



Compute Services

COMPUTE SERVICES



- EC2 - Amazon Elastic Compute Cloud
- ECS - Amazon Elastic Container Service
- AWS Lambda
- AWS Lightsail



Compute Services

EC2 SERVICES



aws

EC2 - Amazon Elastic Compute Cloud

- Introduction to AWS EC2
- Features of EC2
- Types of EC2 Computing instances
- Advantages of Amazon EC2
- What Is EBS Volume?
- What Is EBS Snapshot?
- Amazon EC2 Pricing





EC2 - Amazon Elastic Compute Cloud

One of the most popular AWS Offering

EC2-Elastic Compute Cloud--IaaS

Mainly consists in capability of

- Renting Virtual Machines [EC2]
- Storing Data on Virtual Drives [EBS]
- Distributing load across machine [ELB]
- Scaling service using auto scaling group [ASG]

EC2 is fundamental for understand cloud



Amazon
EC2



EC2 - Amazon Elastic Compute Cloud

EC2 Sizing & Configuration Options:

OS Linux Windows or Mac OS

How much compute power & cores [CPU]

How much RAM

How much Storage space:

- Network attached [EBS & EFS]
- Hardware [EC2 Instance Store]

Network Card: Speed of card, public IP Address

Firewall Rules: Security Group





EC2 - Amazon Elastic Compute Cloud

EC2 User Data:

To Bootstrap instance it used

Script only run once at instance first start

EC2 user data is used to automate boot task:

- Installing Updates
- Installing Software
- Downloading common files from internet
- Anything you can think of

EC2 user data script runs with root user



Amazon
EC2



EC2 - Amazon Elastic Compute Cloud

EC2 Instance Type:

We have 100's of Instance's

Instance Size	vCPU	Memory (GiB)	Instance Storage (GiB)	Network Bandwidth (Gbps)	EBS Bandwidth (Gbps)
m6i.large	2	8	EBS-Only	Up to 12.5	Up to 10
m6i.xlarge	4	16	EBS-Only	Up to 12.5	Up to 10
m6i.2xlarge	8	32	EBS-Only	Up to 12.5	Up to 10
m6i.4xlarge	16	64	EBS-Only	Up to 12.5	Up to 10
m6i.8xlarge	32	128	EBS-Only	12.5	10
m6i.12xlarge	48	192	EBS-Only	18.75	15
m6i.16xlarge	64	256	EBS-Only	25	20
m6i.24xlarge	96	384	EBS-Only	37.5	30
m6i.32xlarge	128	512	EBS-Only	50	40

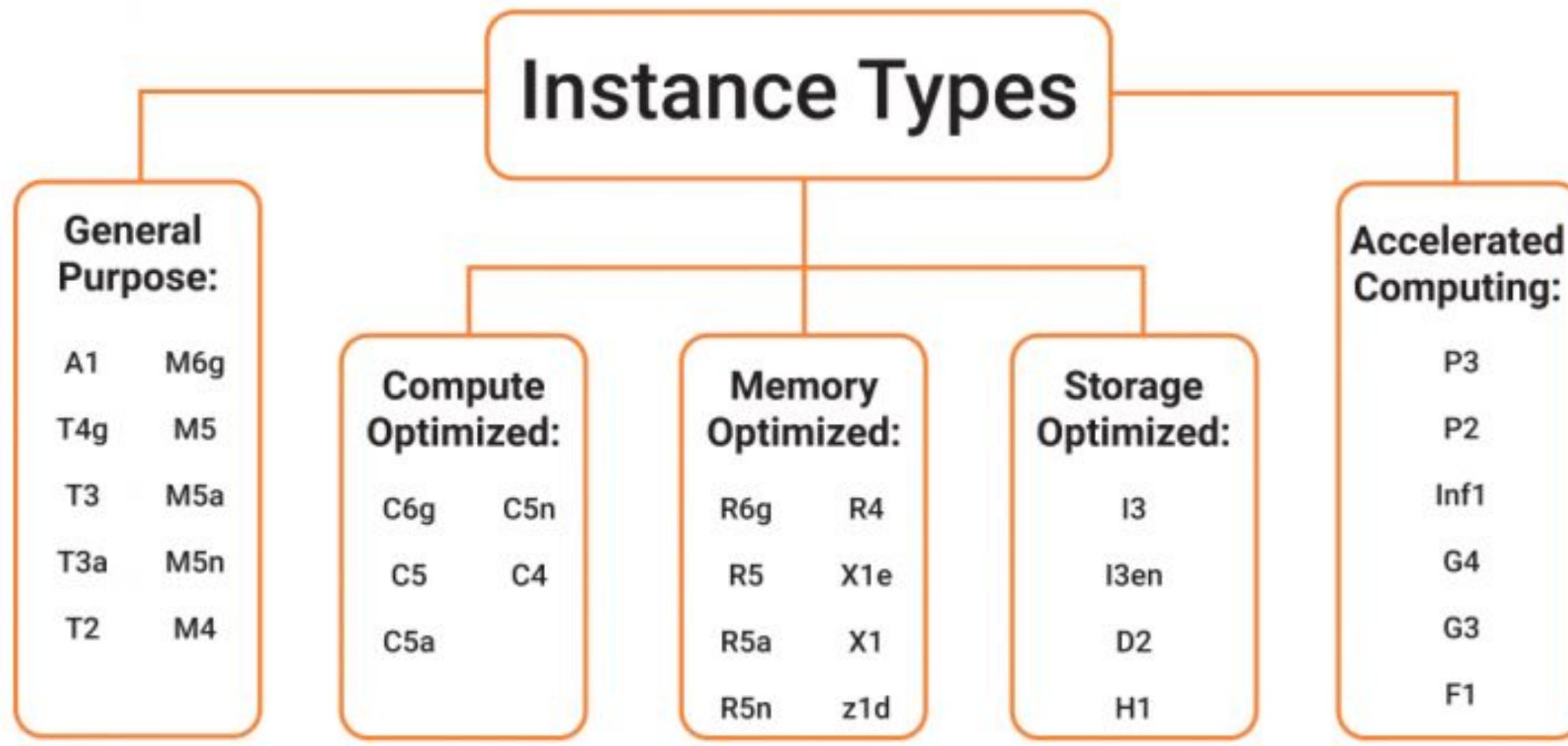


Amazon
EC2

EC2 - Amazon Elastic Compute Cloud



Types of EC2 Computing instances

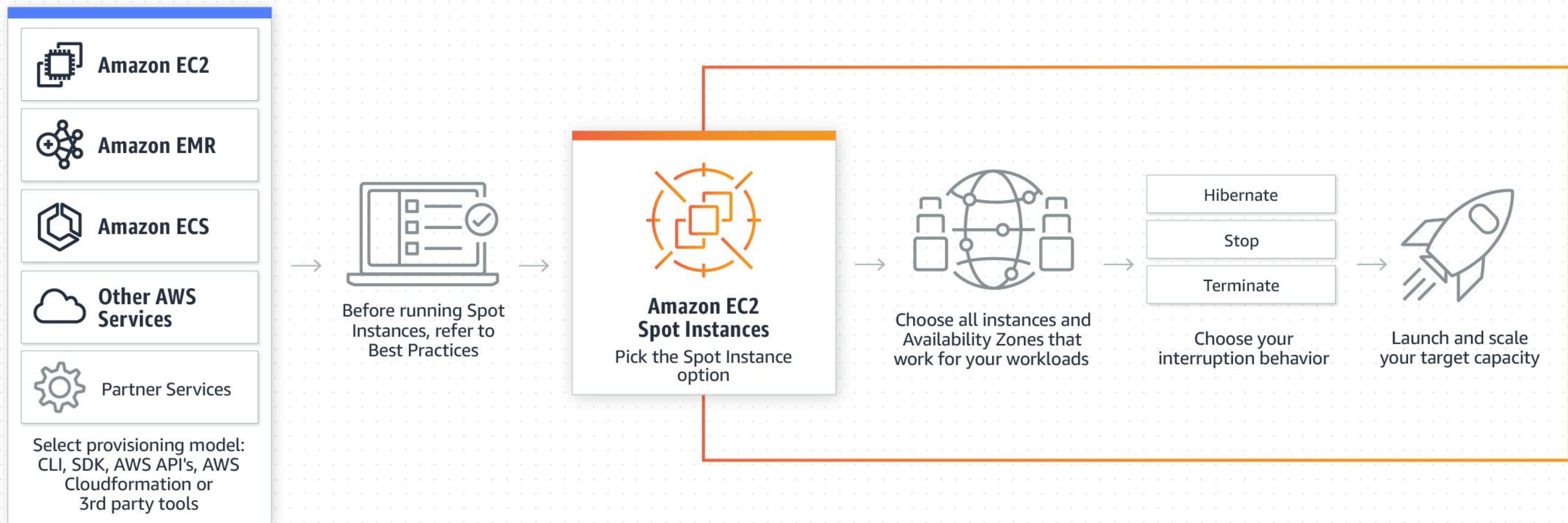


Amazon
EC2

EC2 - Amazon Elastic Compute Cloud



Working of EC2



EC2 - Amazon Elastic Compute Cloud



Amazon EC2 Pricing

- You can get started with Amazon EC2 for free.

Instance name	On-demand hourly rate
a1.medium	\$0.0255
a1.4xlarge	\$0.408
t3.nano	\$0.0052
t3.medium	\$0.0416
t3.large	\$0.0832
t3.2xlarge	\$0.3328



Amazon
EC2

Lambda SERVICES



Lambda Service



What is Serverless?

Developers no need to manage servers

Just deploy code ... Functions

Serverless == FaaS [Function as a Service]

This Serverless concept developed in AWS Lambda

AWS lambda can manage databases, Messaging, Storage ... etc

Serverless is not mean there is no server

It means no need to manage /Provision

Some AWS Services without server :

- S3
- Dynamo DB



AWS Lambda

Lambda Service



What is Lambda

EC2:

- Virtual Servers in Cloud
- Limited by RAM, CPU
- Continuously Running
- Scaling [Add or Remove Servers]

Lambda:

- No servers
- Virtual Functions
- Limited by Time



Lambda Service



Benefits of Lambda:

1. Easy Pricing:

- Pay per request and complete time
- Free tier of 1,000,000 AWS lambda requests and 4,00,000 GB'S of Compute time

2. Integrated with AWS Services

3. Event Driven:

- Functions get invoked when needed [Recent Services]

4. Integrated with many programming languages

5. Easy to monitoring through cloud watch

6. Easy to get more resources per function



Lambda Service



Lambda Language Support:

Node.js, Python, Java, C#[.Net], Golang, C#/Power shell, Ruby,

Customize Runtime API

Lambda container Image

Must implement Lambda runtime API

ECS/Fargate is preferred for running ~~arbitrary docker images~~



New Thumbnail in S3

Metadata in Dynamo DB



AWS Lambda



Image name

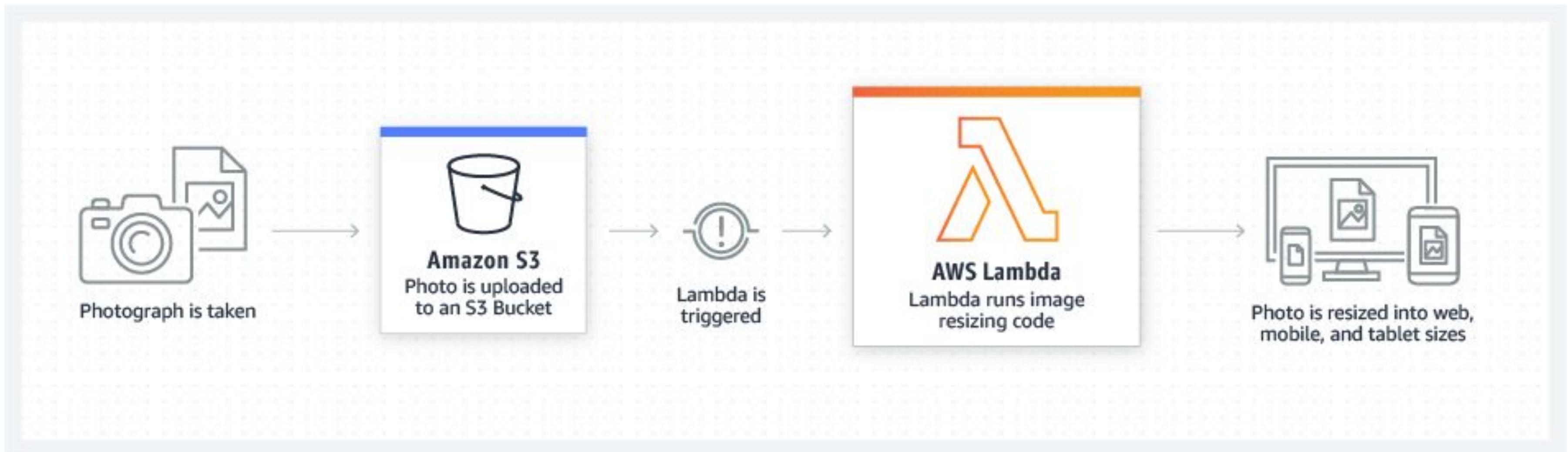
Image size

Creation Time

Lambda Service



Lambda Working



Lambda Service



Lambda Pricing

Pay per calls:

- First 1,00,000,00 request are free
- \$0.20 per 1 million requests [\$0.0000002 per req]

Pay per Duration

- 400000 GB seconds of compute time per month
- 400000 seconds if function -1GB RAM
- 3,200,000 seconds if function- 128MB RAM

After \$1.00 for 600,000 GB seconds

Very Cheap to run AWS lambda so its very popular



ECS SERVICES



ECS - Amazon Elastic Container Service

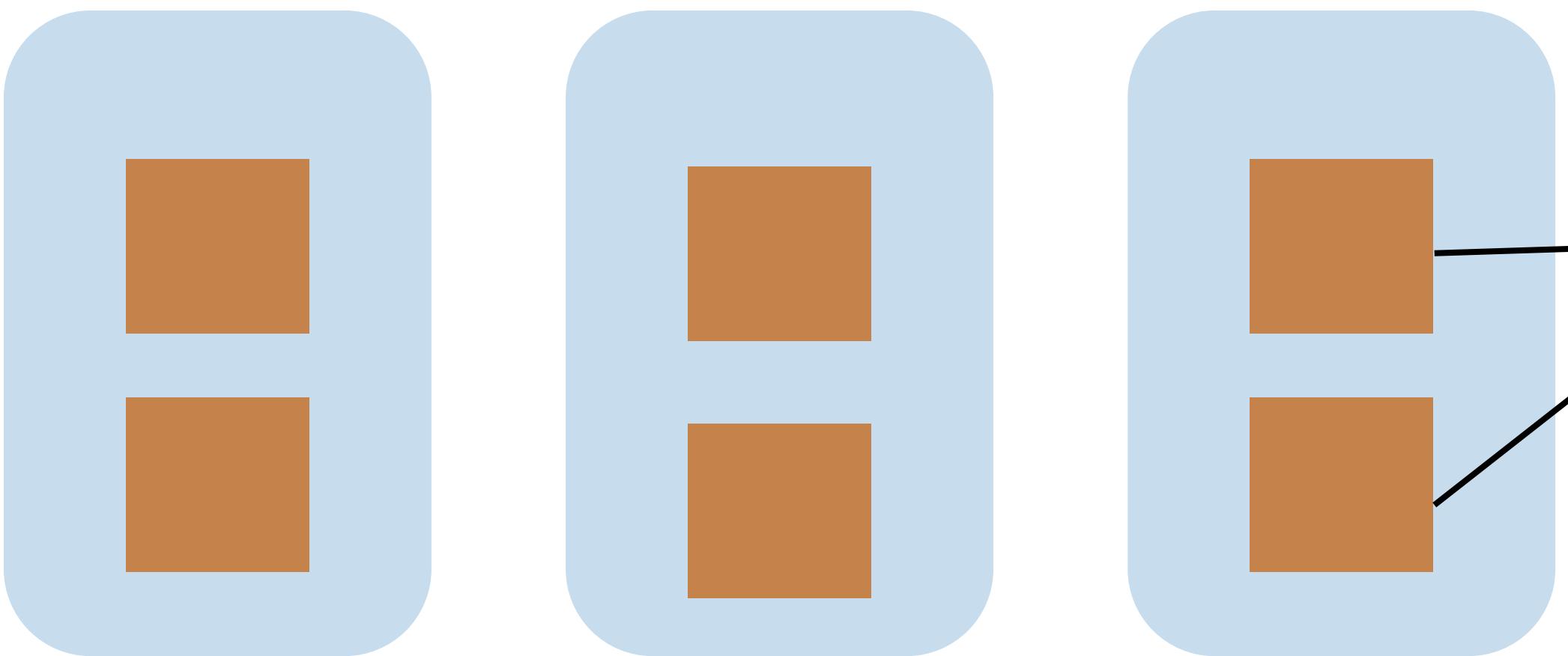


Launch Docker containers on AWS

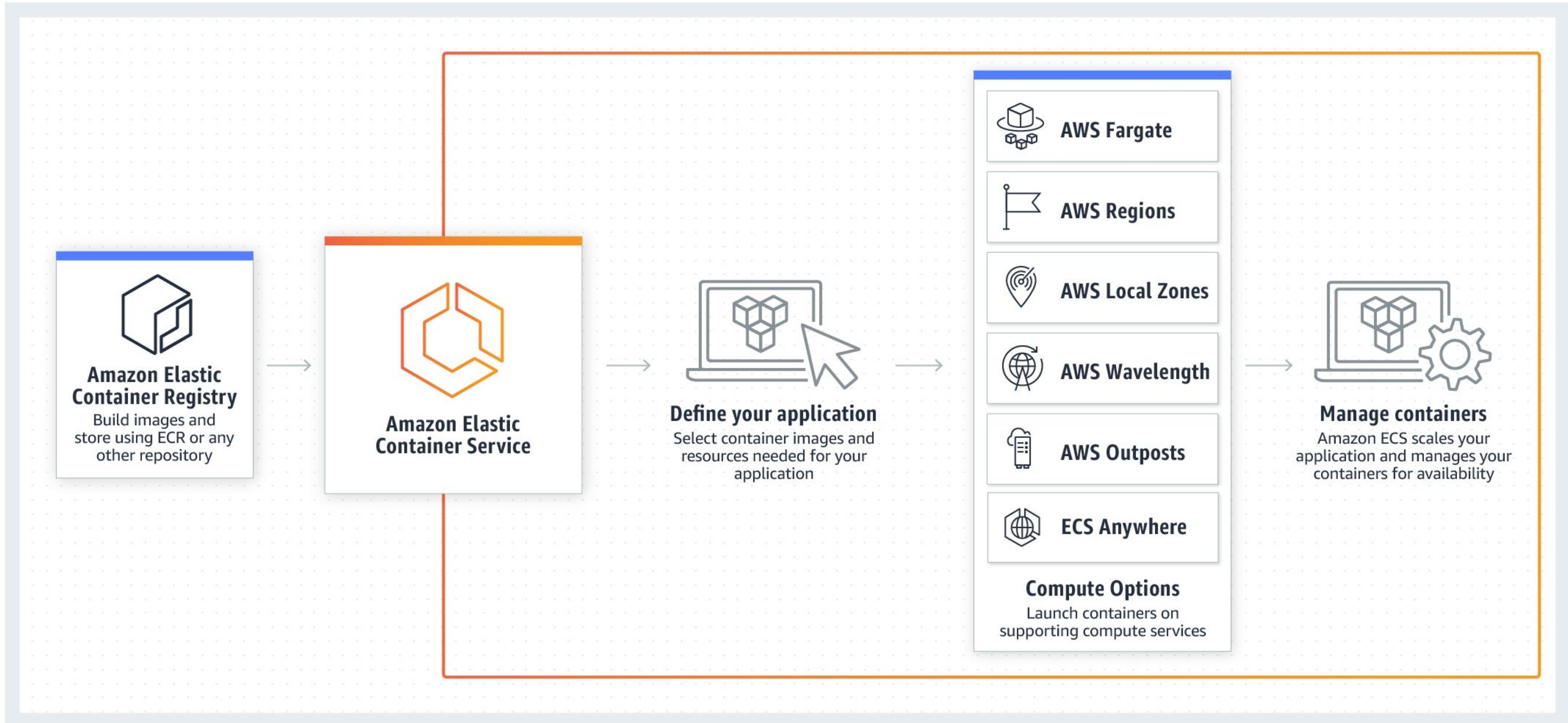
Provision & maintain infrastructure (EC2)

AWS Takes care of starting / stopping containers

Has Integration with application load balancer



ECS - Amazon Elastic Container Service



Lightsail SERVICES



Lightsail



It is a virtual servers, Storage, DB & Networking

Low & predictable pricing

Simpler alternative to using EC2, RDS, ELB

People with little cloud experience

Can setup notifications & monitoring of your lightsail resources

Use cases:

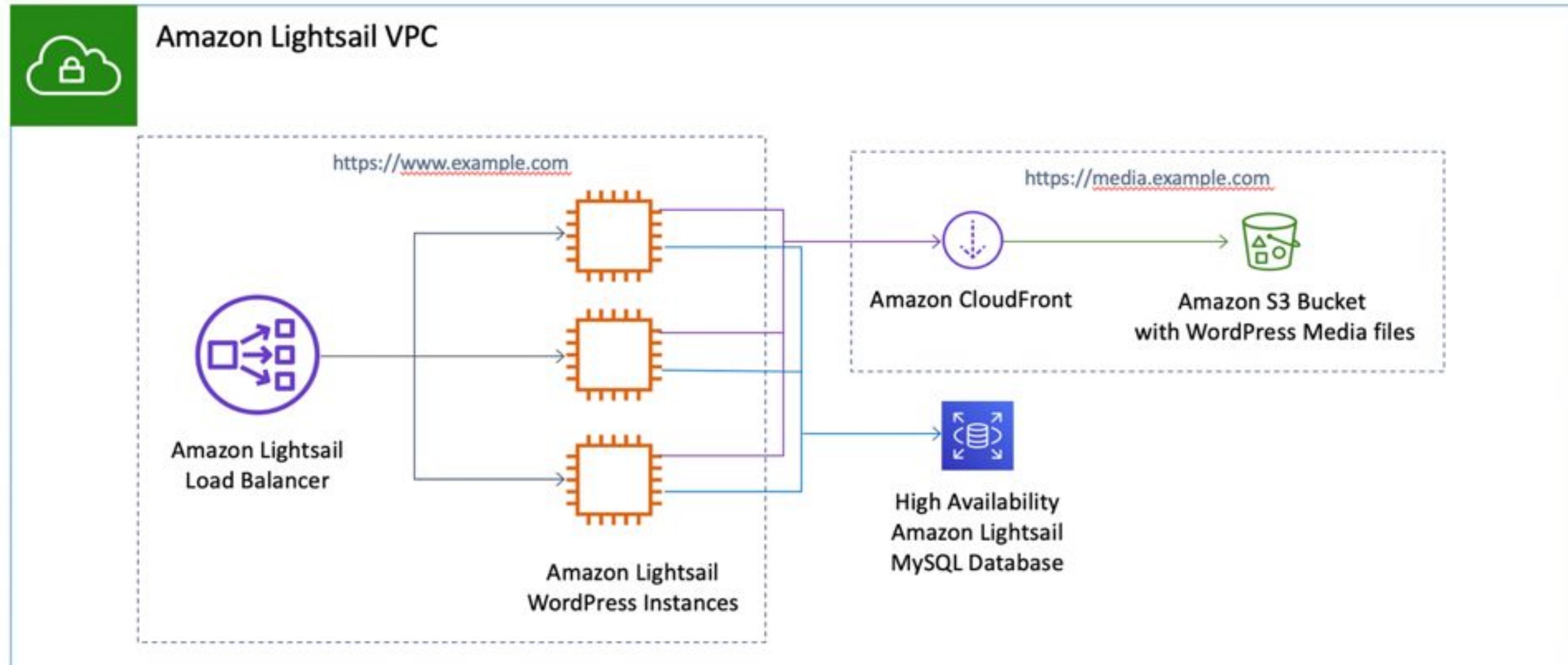
- Simple Web Application [Templates LAMP, Node.js]
- Websites [Templates for Wordpress, Magento, Plesk]
- Dev/Test Environment

High Availability but no auto scaling , limited AWS integrations

It is separate service because not integrated with AWS



Lightsail



NETWORK SERVICES





What are Network Services?

Network services are applications at the network application layer that connect users working in offices, branches, or remote locations to applications and data in a network. These services typically run on servers.





Network Services

- Cloud Front
- VPC
- Direct Connect
- ELD
- Route 53
- API Gateway



Amazon
EC2

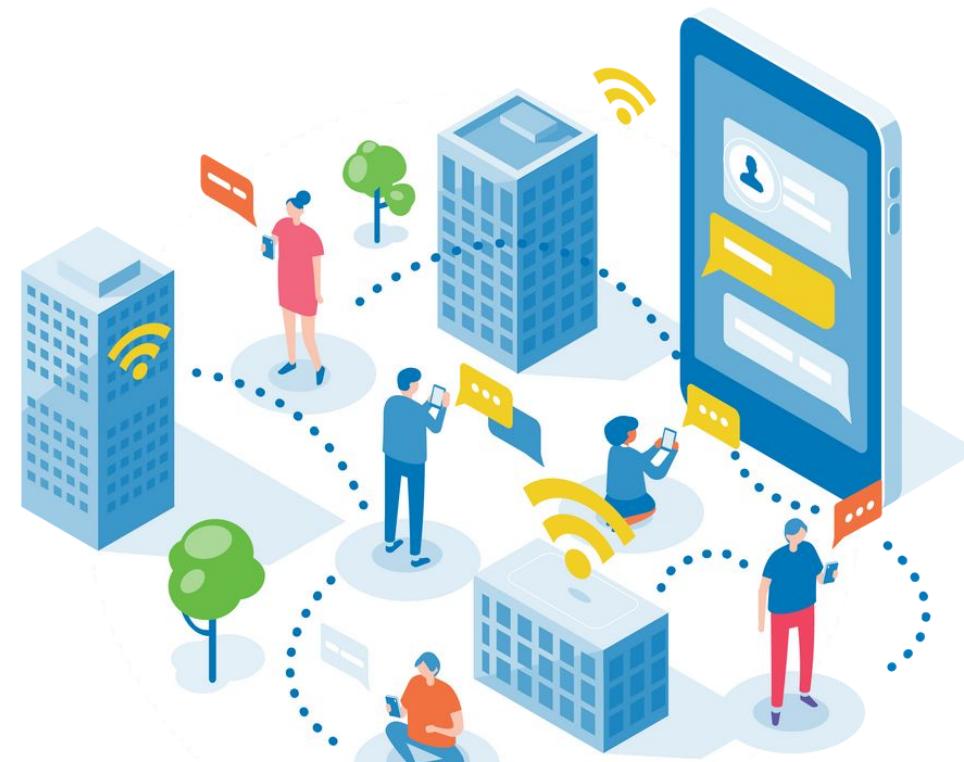
VPC SERVICES



What is Network Services?



Network services are applications at the network application layer that connect users working in offices, branches, or remote locations to applications and data in a network. These services typically run on servers.





VPC -Virtual Private Cloud

IP Internet Protocol

IPV4-Internet protocol version 4 [4.3 billion IP Addresses]

Public IPV4- Used on Internet

- EC2 we have to stop and start it [Default]

Private IPV4 -Used for private networks [LAN]

- Fixed EC2 instance even if you start or stop



Amazon Virtual
Private Cloud (VPC)



VPC - Virtual Private Cloud

Elastic IP:

Allows you to attach a fixed public IPV4 address to EC2 Instance

Elastic IP = Public IPV4 + EC2

IPV6 - Internet protocol version 6

[3.4×10^{38} Address]



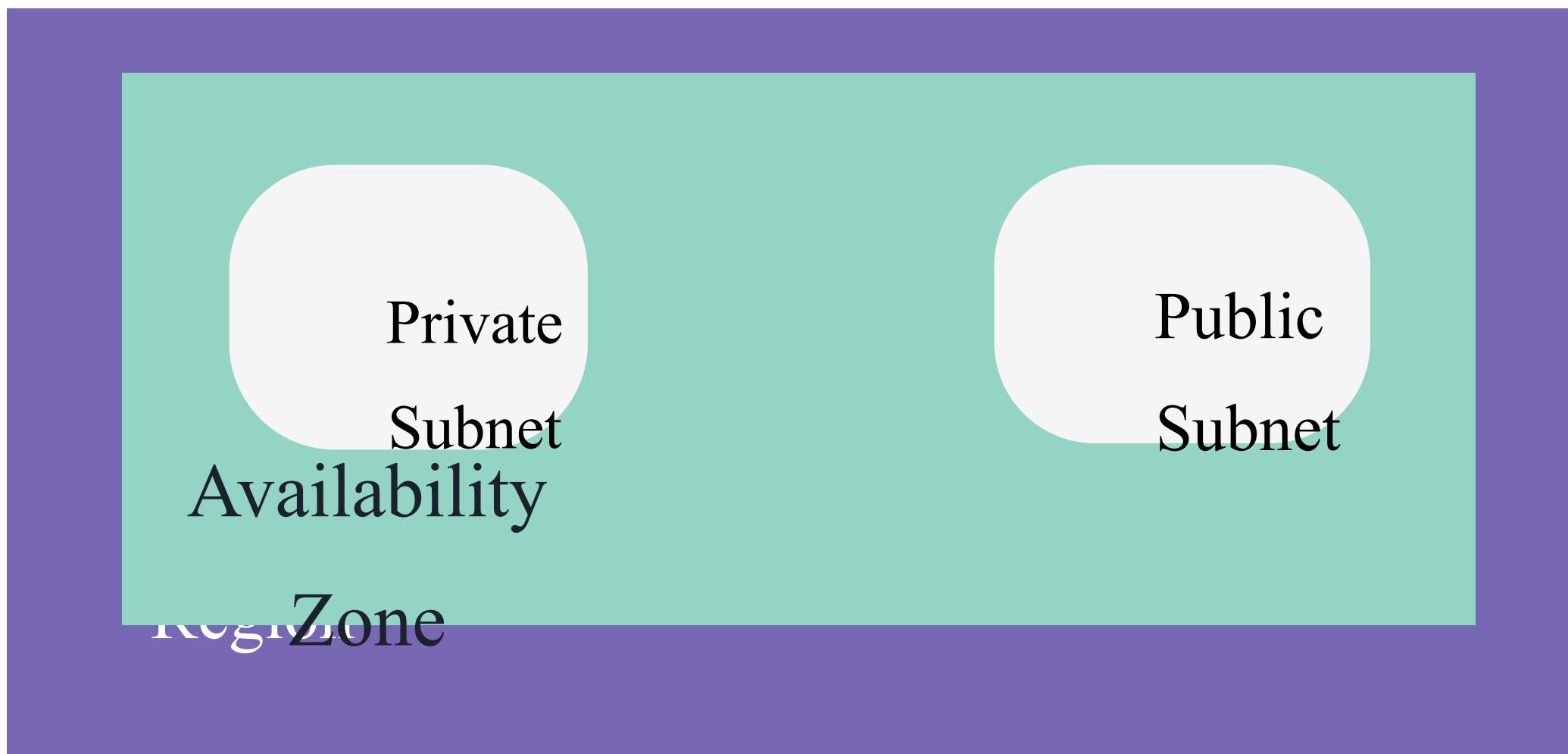
Amazon Virtual
Private Cloud (VPC)



VPC -Virtual Private Cloud

It is a private network to deploy your r4esource [Regional Resources]

Subnet allows you to partition you to partition your network inside VPC
[Availability Zones]



Amazon Virtual
Private Cloud (VPC)



VPC -Virtual Private Cloud

Public subnet has direct connectivity to internet

Private subnet cannot access through internet

To define access to the internet and between subnets we use route tables

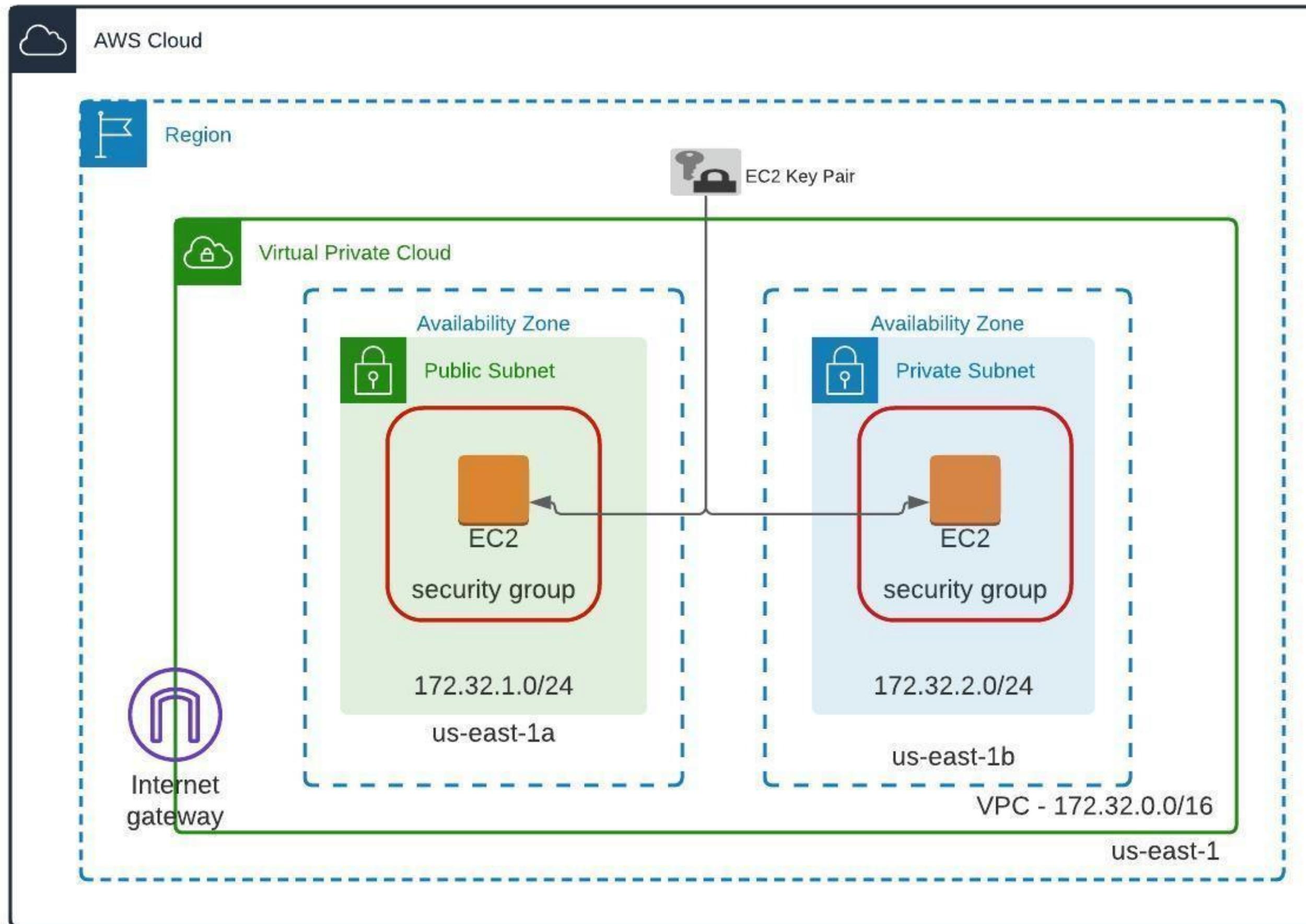
Public Network -->load balancer

Private Network-->Database instead of VPC



Amazon Virtual
Private Cloud (VPC)

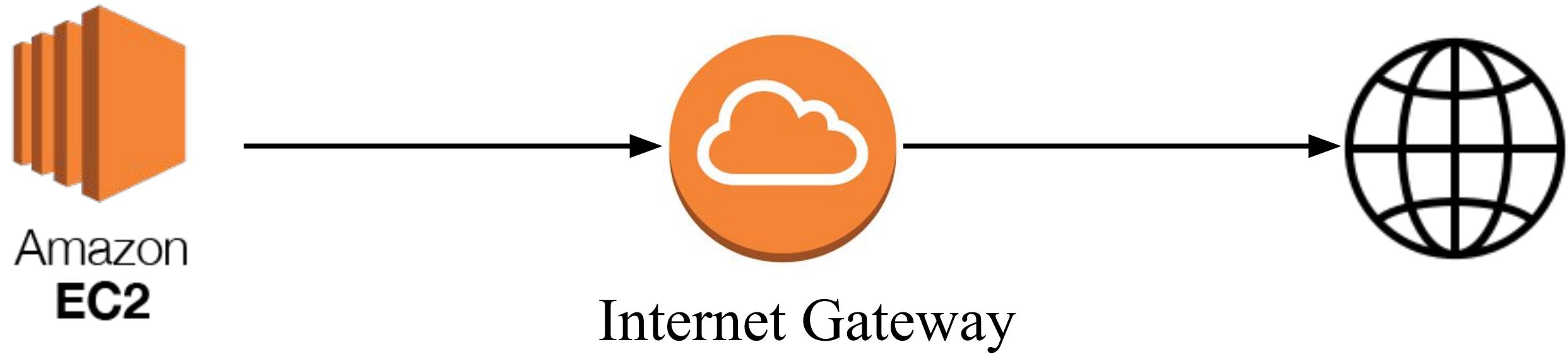
VPC -Virtual Private Cloud





Internet gateway

Internet gateway helps our VPC to connect EC2 instances without internet



Public subnet have a route to internet gateway



Amazon Virtual
Private Cloud (VPC)



NAT Gateway & NAT Instances:

NAT Gateway managed by AWS

NAT Instances are self managed

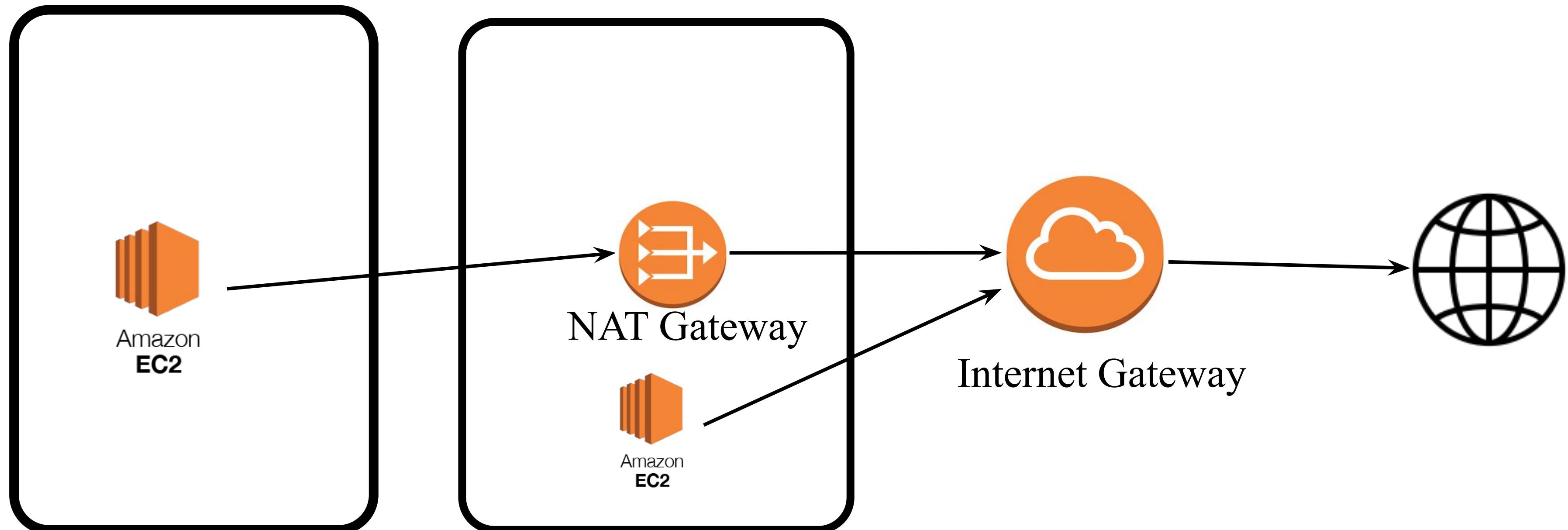
These allows your instances in your private subnets to access internet while remaining private.



NAT Gateway & NAT Instances:

Private Subnet

Public Subnet





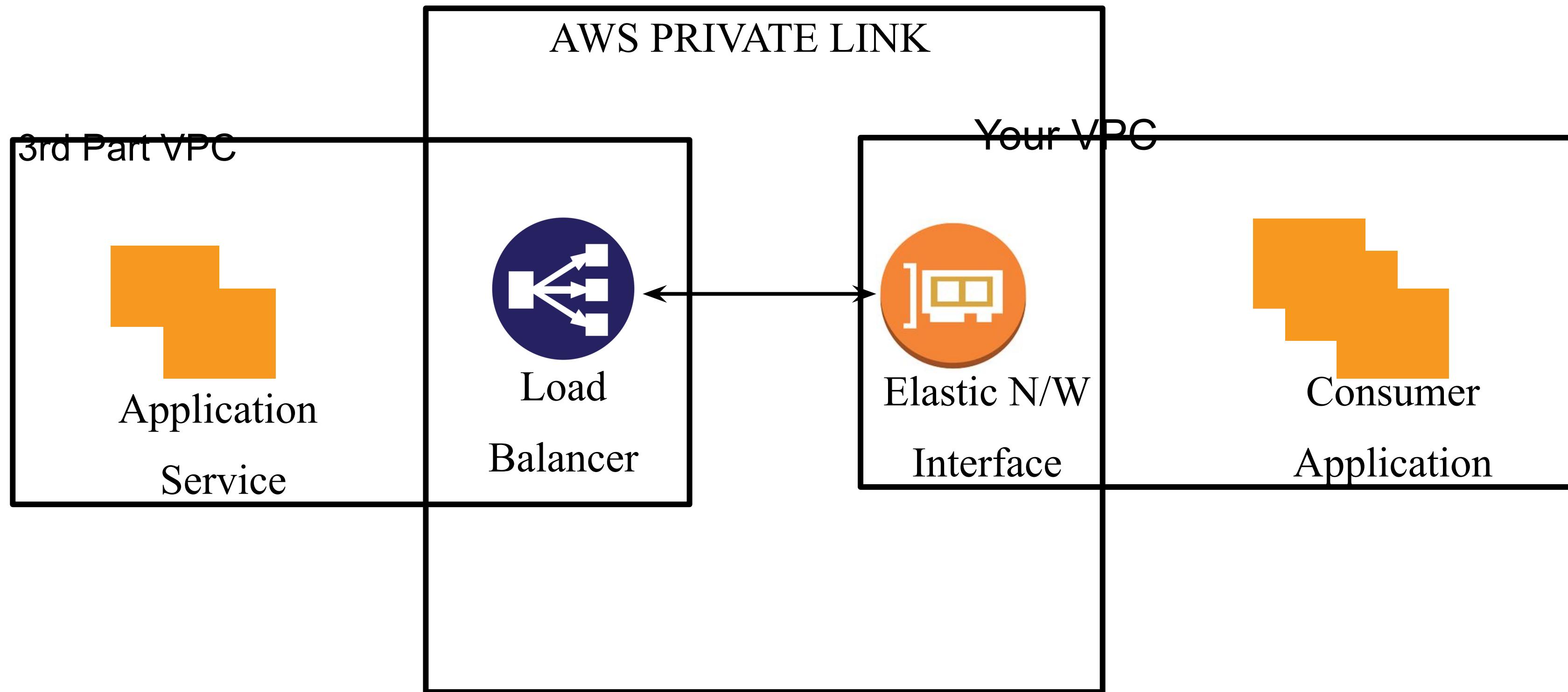
VPC Contains: Subnets, Route Tables, Internet Gateways, NAT Gateways

To Launch VPC Steps:

- Choose AMI
- Choose Instance Type
- Configure Instances
- Add Storage
- Add Tags
- Configure security group
- Review



AWS Private Link:





VPN:

Connect from your computer using VPN to Private Network

Ex :

EC2 Instances in private IP if you want to connect you can use VPN

[Verify that you're in private network]

Cloud Front SERVICES





Cloud Front:

- It is content delivery network
- Improves read performance, content is cached at the edge
- Improve user experience
- 216 points of presence globally [Edge Locations]
- To distribute content globally DDOS protection
- Our services are world wide we have to protect our data

Ex:

If you want access data in different region you can access by your nearest edge location



Cloud Front Origins:

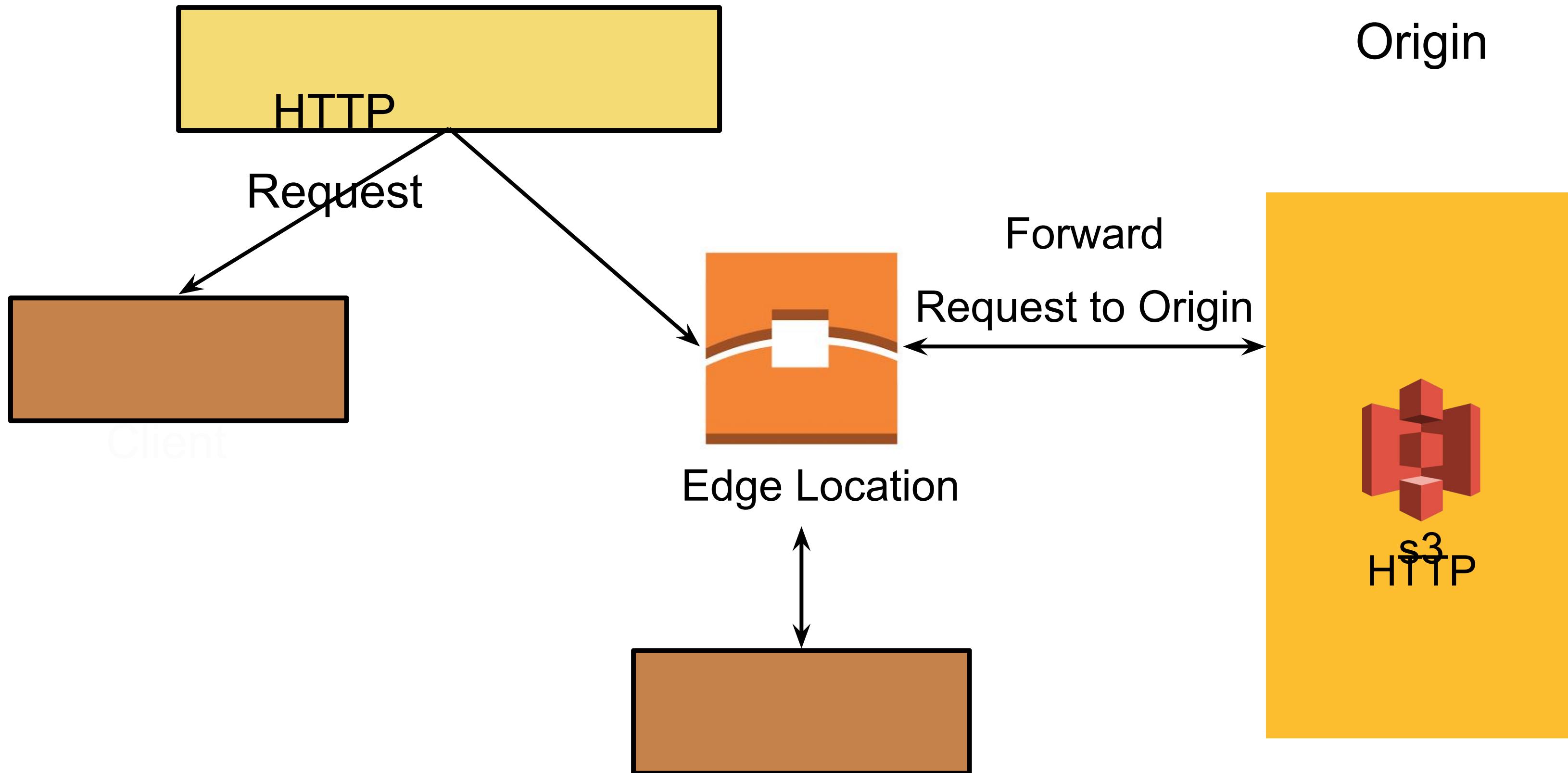
1.S3 Bucket:

- For Distributing files and caching them at the edge
- enhanced security with cloud front Origin Access Control [OAC]
- OAC replacing OA Identity
- Cloud front can be used as to upload files to s3

2. Custom Origin:

- Application Load Balancer
- EC2 Instances

Cloud Front Origins:



Route 53 SERVICES





Route 53

Route 53 is a managed DNS [Domain Name System]

DNS :

Collection of results & records which helps clients understand how to reach a server through URL's

Common Records in AWS

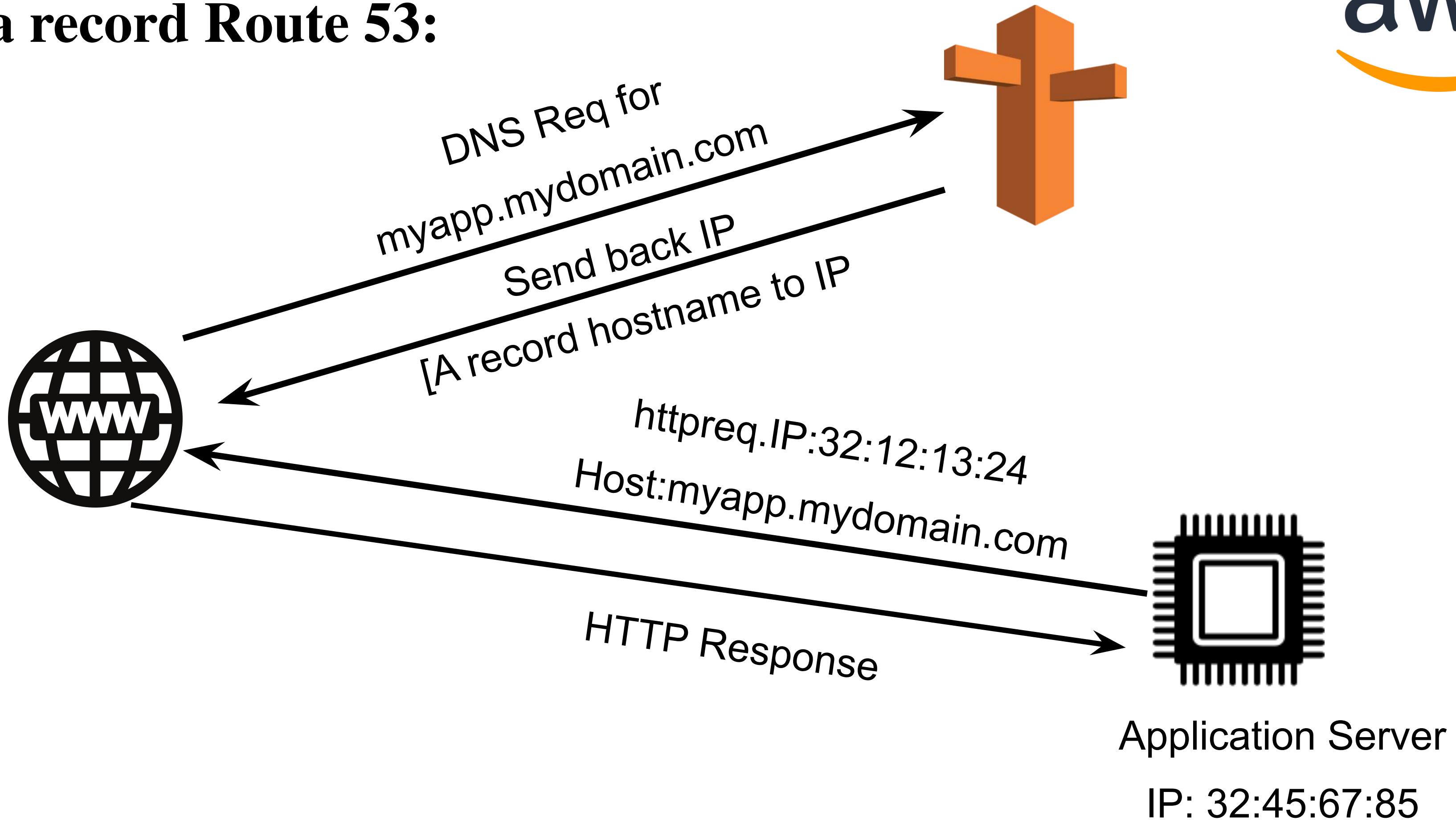
www.google.com---> 12.34.56.78---->IPV4

www.google.com--->2001:0:9d38:6ab8:1cbd:3acd:a95a:b1c2-->IPV6

Search google.com--> www.google.com-->CName: hostname to



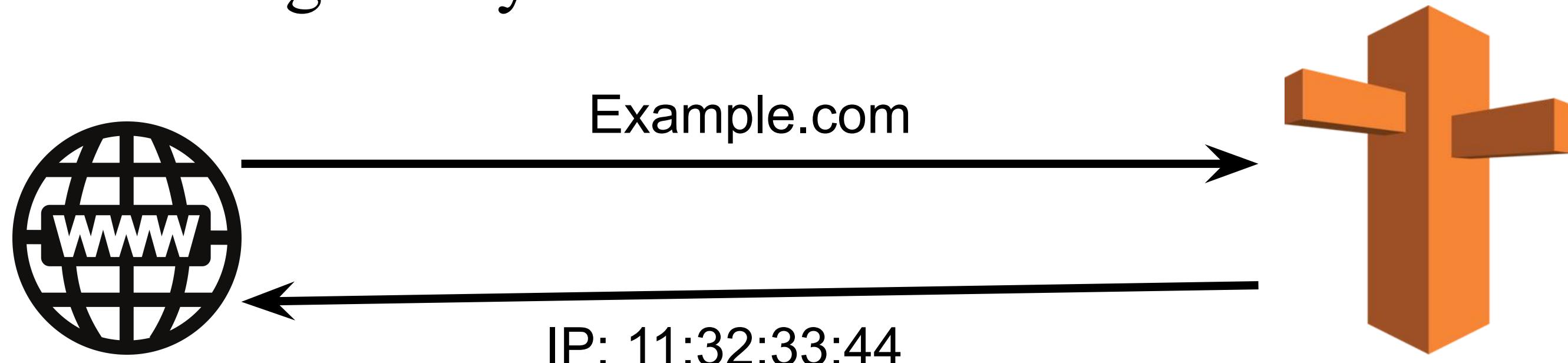
For a record Route 53:



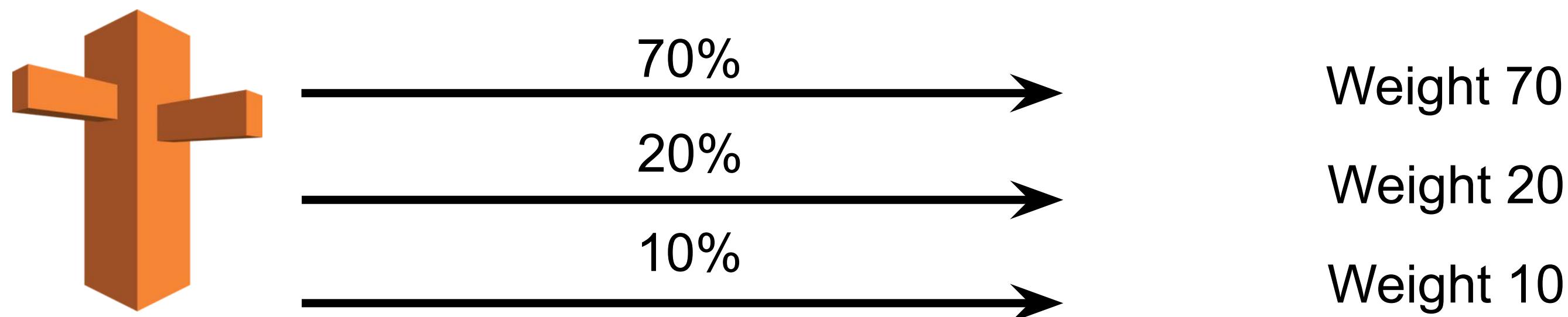


Route 53 Policies:

1. Simple Routing Policy:



2. Weighted Routing Policy:





Route 53 Policies:

3. Latency Routing Policy:

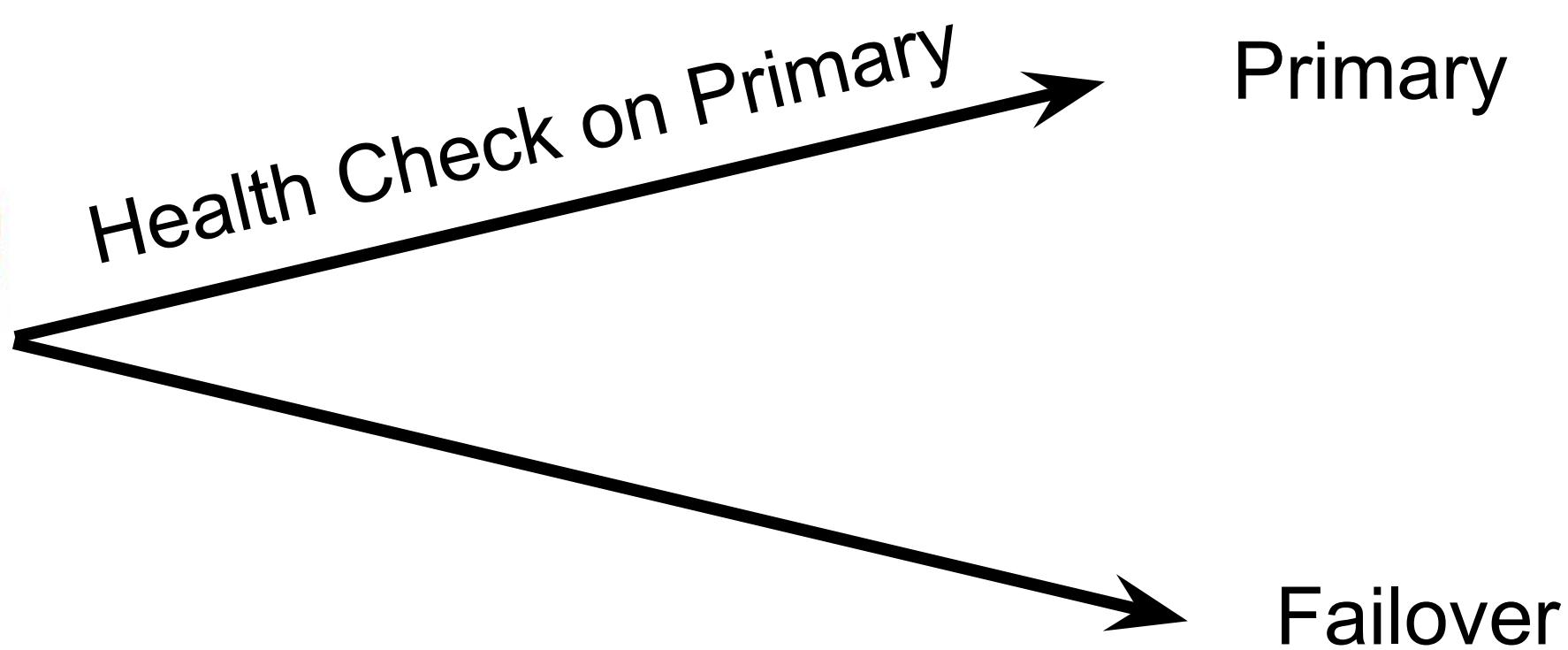
User's all around world one at North America & another at Australia

Users directed to closest server

4. Failover Routing Policy:



S3



Elastic Load Balancer SERVICES

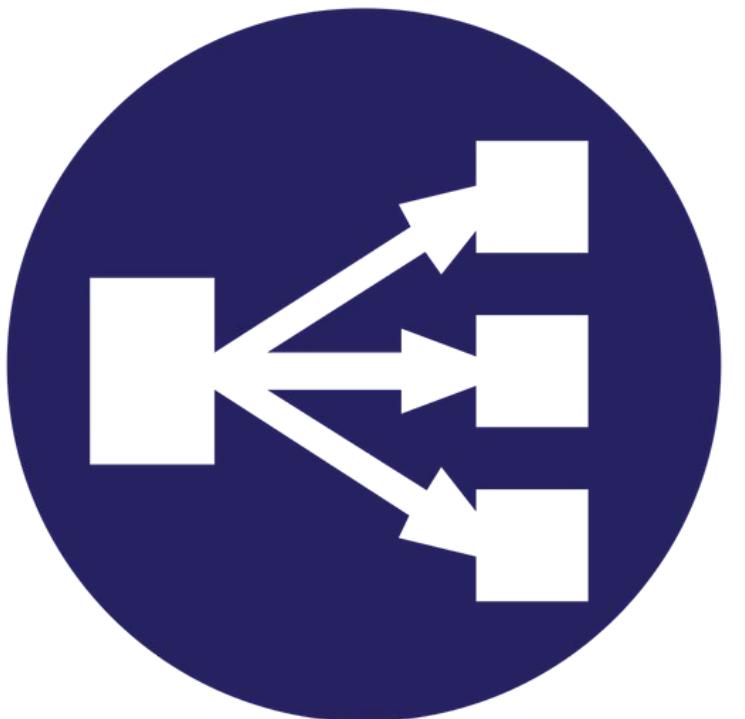




Elastic Load Balancer:

Elastic Load Balancer automatically distribute your incoming traffic across multiple target such as EC2,Containers, IP Address.

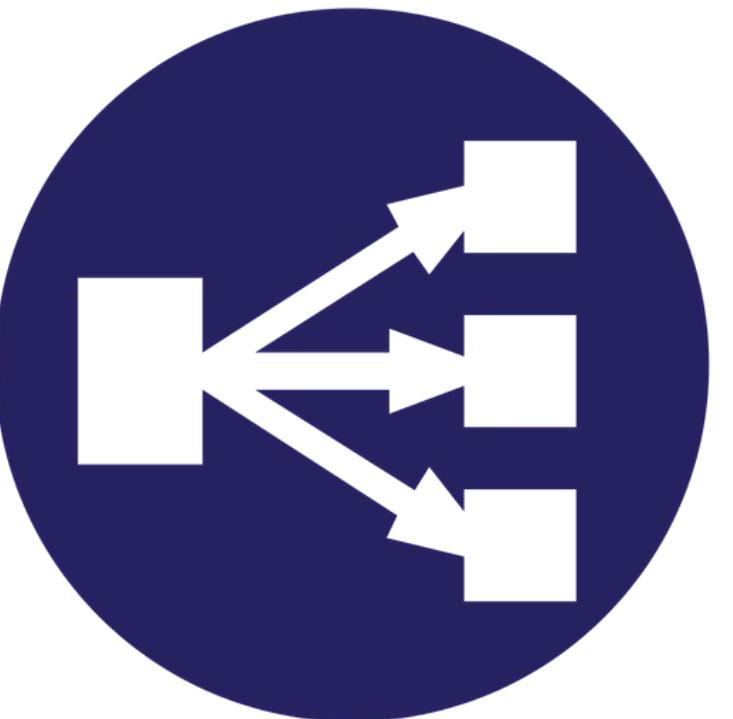
Load Balancer distributes workloads across multiple compute resources such as virtual servers





Features of Elastic Load Balancer:

- It supports different load balancer
- application load balancer
- Network load balancer
- Gateway load balance
- Classic Load Balancer

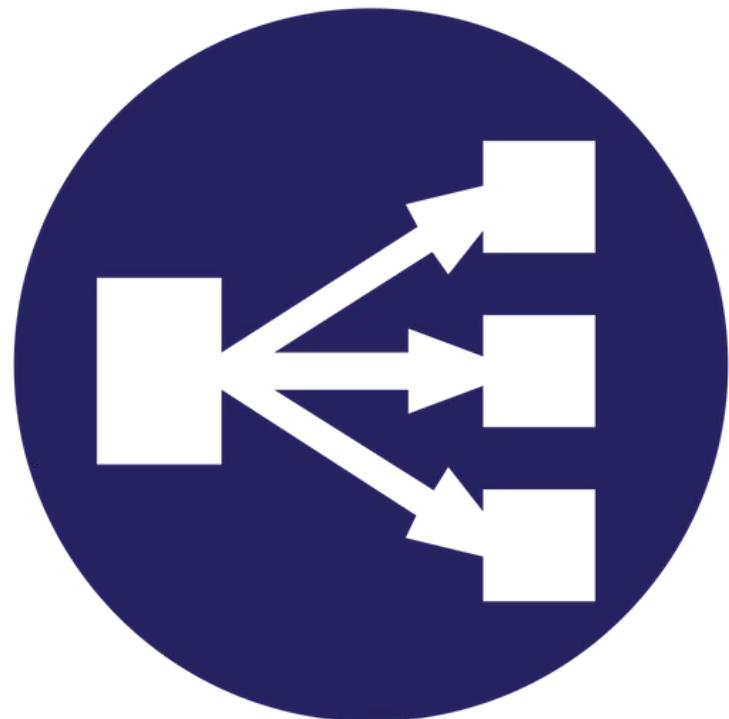




Accessing Elastic Load Balancer:

You can create, access, manage your load balancer

- AWS Management Console
- AWS CLI (Command Line Interface)
- SDK's
- Query API



Direct Connect SERVICES



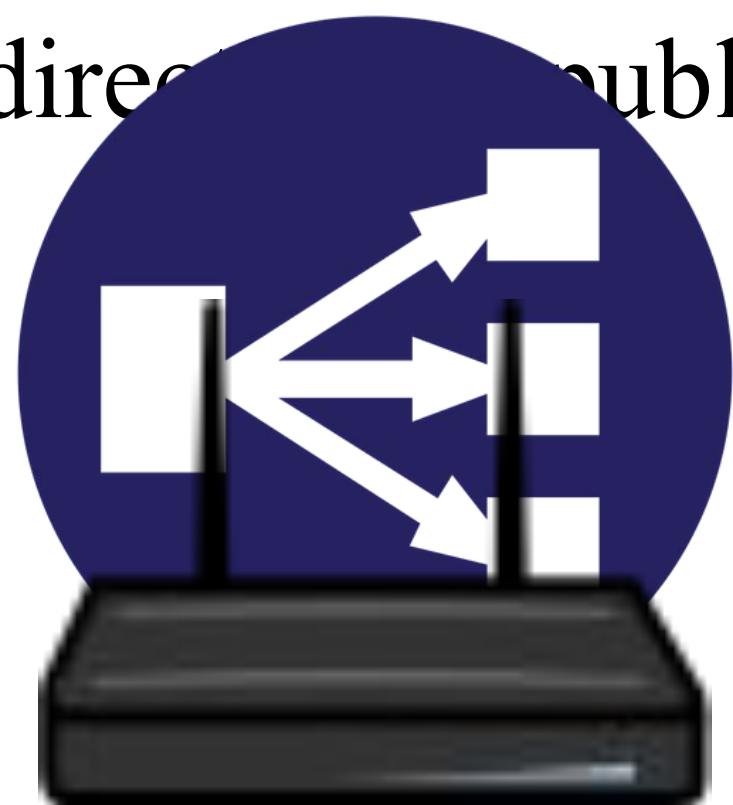
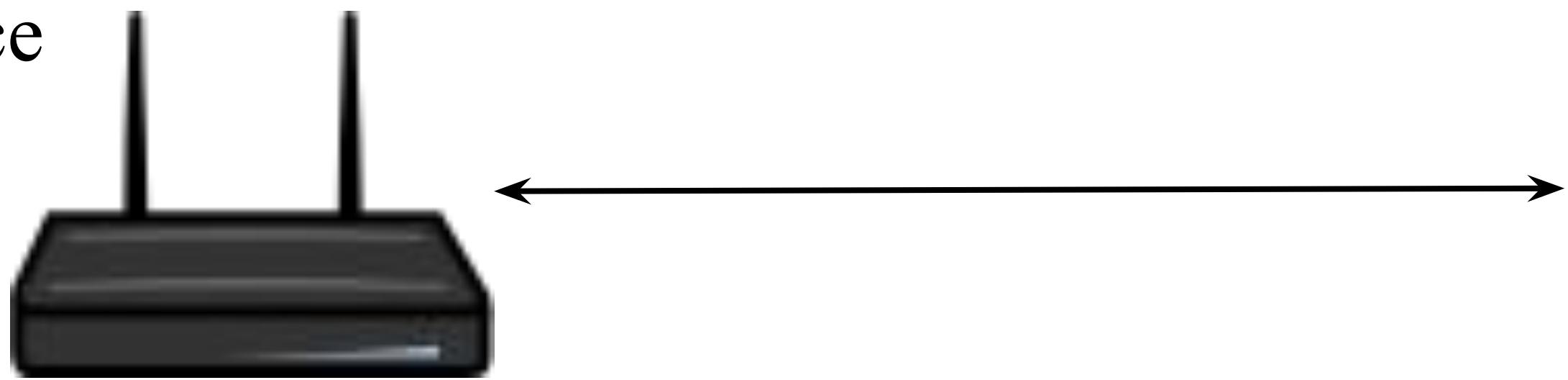


Direct Connect:

It is a network service that provides an alternative to using the internet to utilize cloud services

Direct Connect links your internal network between direct connect locations over standard ethernet fiber optic cable

Within connection you can create virtual interface direct to public AWS Service





Components of Direct Connect:

Connections:

Create a connection in an AWS direct connect location to establish a network connection from your premises to AWS Region

Virtual Interface:

Create a virtual interface to enable access to AWS services. A public virtual interface enables access to public services like s3

API Gateway SERVICES





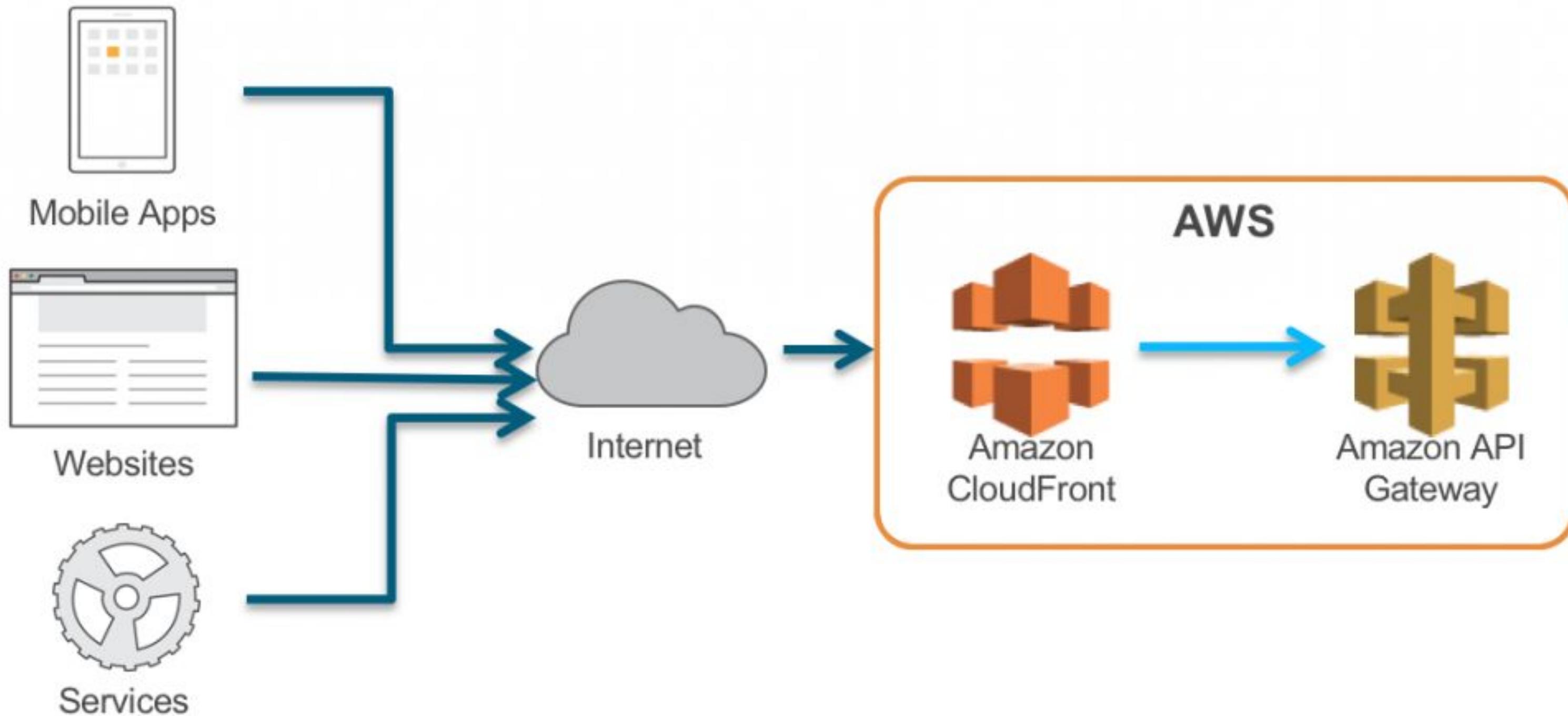
API GATEWAY

Secure front door for applications to access data, business logic or functionality from your back-end services

Serverless: Simple, Flexible, fully managed, pay-as-you-go service it handles all aspects of creating & operating robust API for application back ends.



API GATEWAY



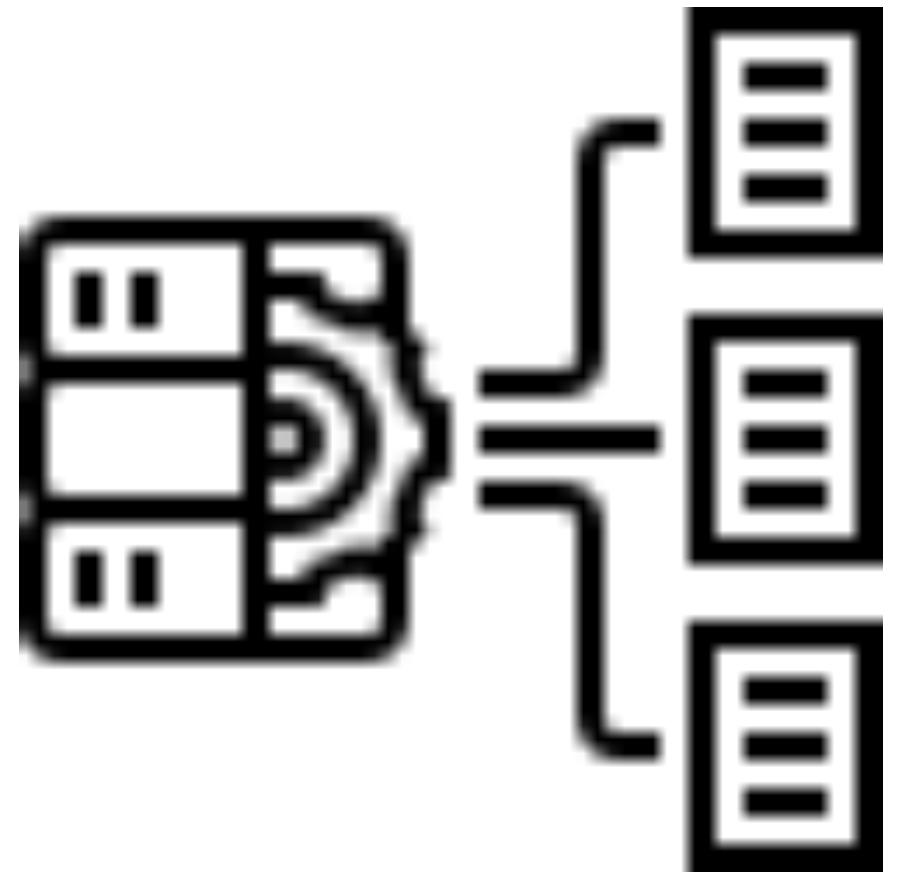
DATABASE SERVICES





What is Database Service?

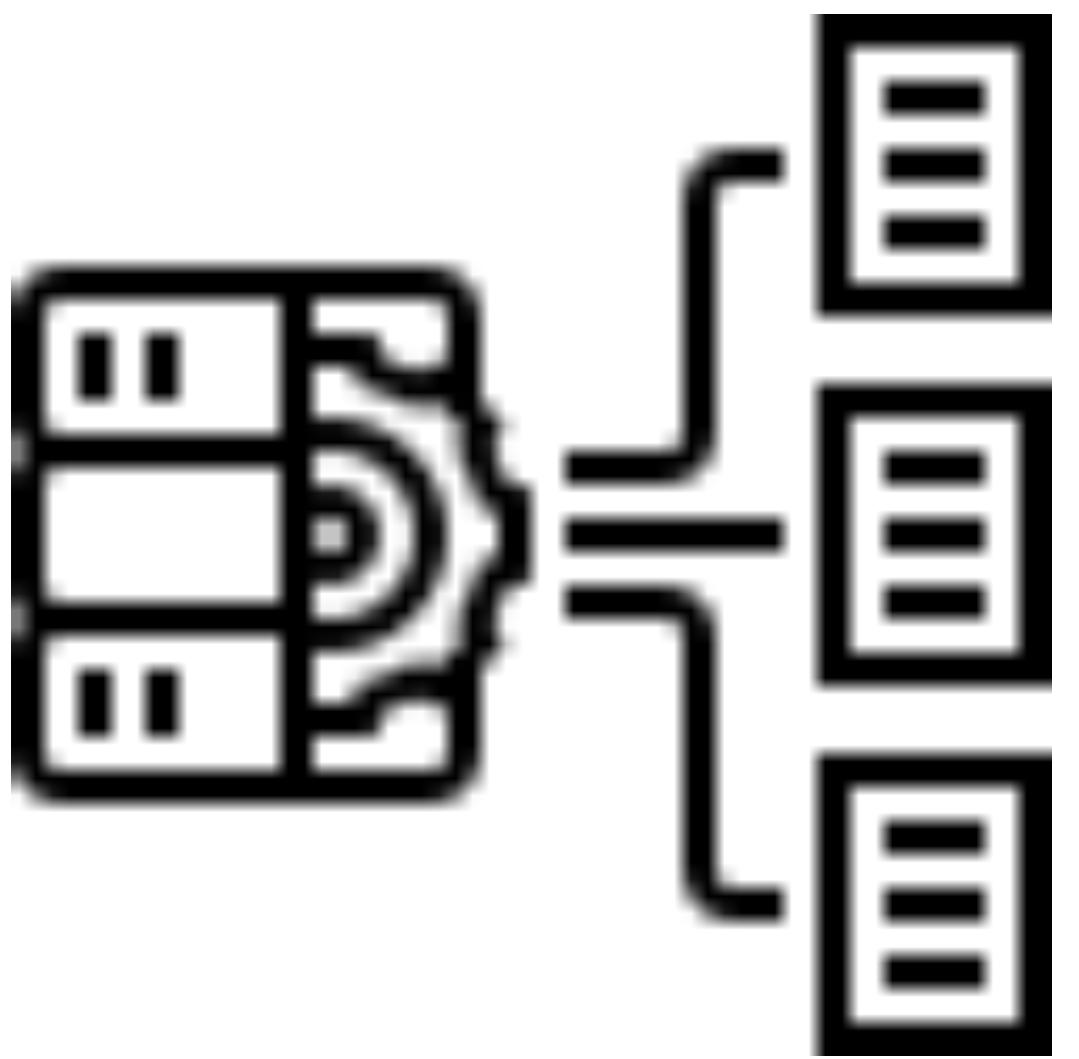
Database service is a cloud computing managed service offering that provides access to a database without requiring the setup of physical hardware, the installation of software or the need to configure the database.





Database Service

- RDS
- Dynamo DB
- Redshift
- Elastic Cache
- DMS
- Neptune



RDS SERVICES

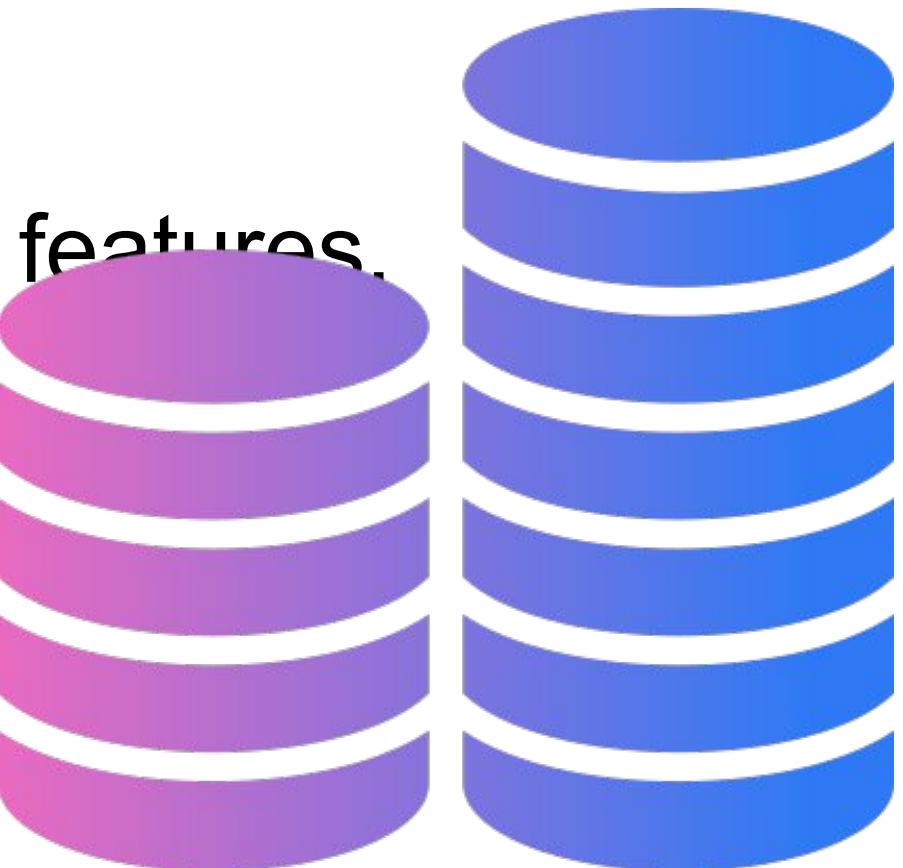


aws



What is Database?

- Storing data on disk [EFS,EBS, EC2,S3] can have its limits
- Sometimes you want to store data in DB
- You can structure data
- You build indexes to efficiently query/Search through the data
- Define relationships between your datasets
- Databases are optimized for a purpose and come with different features, shapes and constraints





Types of Databases

1. Relational Database:

Looks Like Excel

Tables are linked with each other

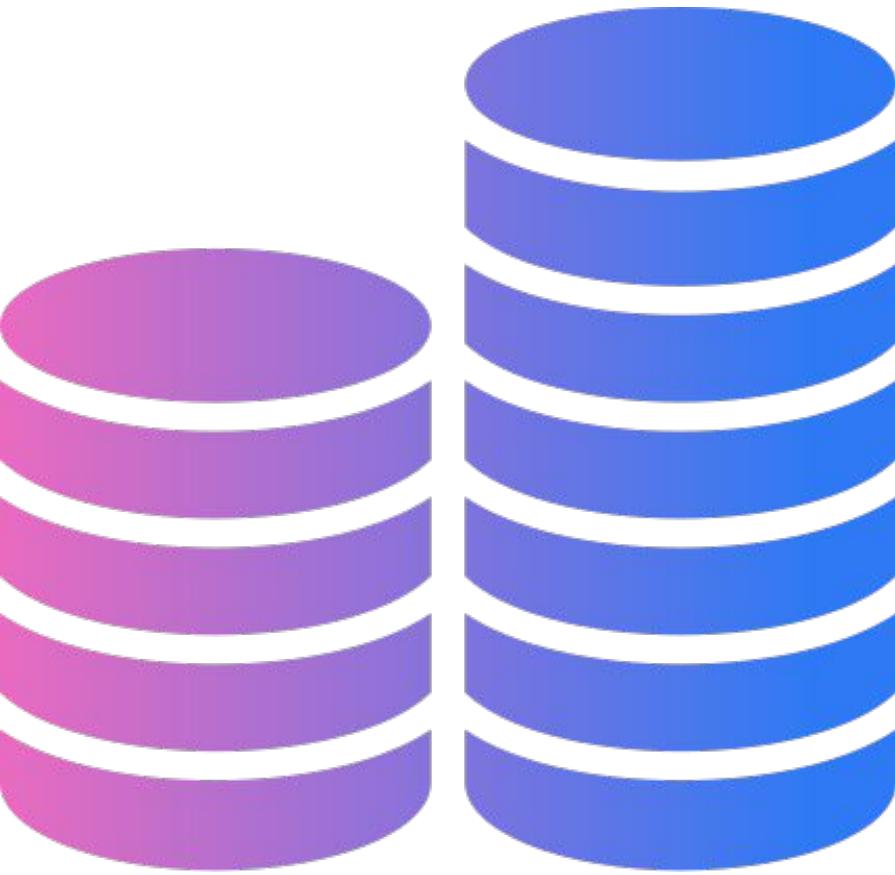
Ex: Student, Department, Subjects

We can use SQL Language to perform queries

2. NoSQL Database:

No SQL = Non SQL : Non Relational Database

These are purpose built for specific data models and have flexible schemas for building modern application





Benefits of Databases

- 1. Flexibility:** Easy to evolve data model
- 2. Scalable :** Designed to scale out by using distributed cluster
- 3. High Performance:** Optimized for the specific data model
- 4. Highly Functional:** Types optimized for the data model

Ex: Key Value, Document, Graph, in-memory,
search databases





No SQL Data

Ex: JSON

JSON - Data in the form of JSON for no SQL

JSON - JavaScript Object Notation

Common from of data that fits into a NOSQL Model

Data can be Nested

Fields can change over time

Support for new types: Arrays



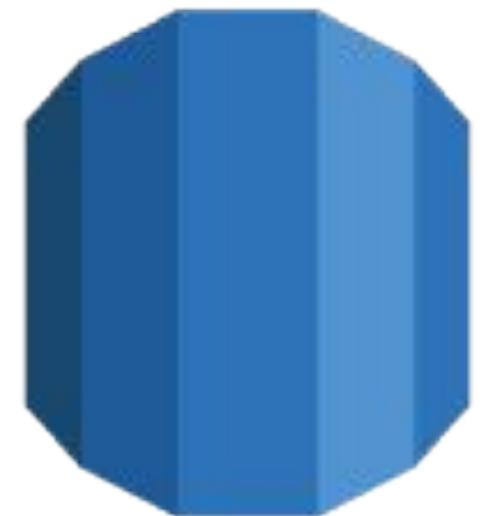
RDS - Relational Database Service



Managed Database Service for Database it is used for SQL as Query Language.

Allows you to create Database in cloud that are managed by AWS

- Postgress
- MySQL
- MariaDB
- Oracle
- Microsoft SQL Server
- Aurora [AWS]

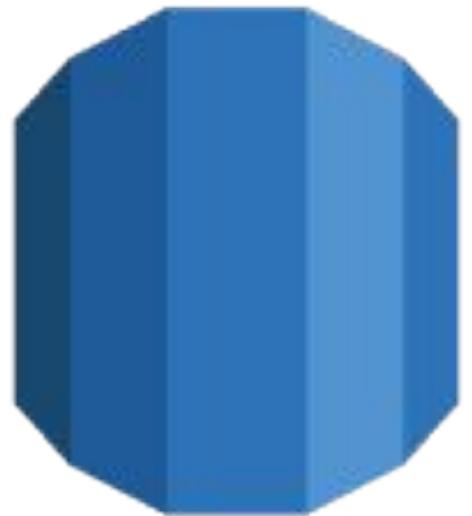


Amazon
RDS

Advantage over using RDS vs Deploying DB on EC2

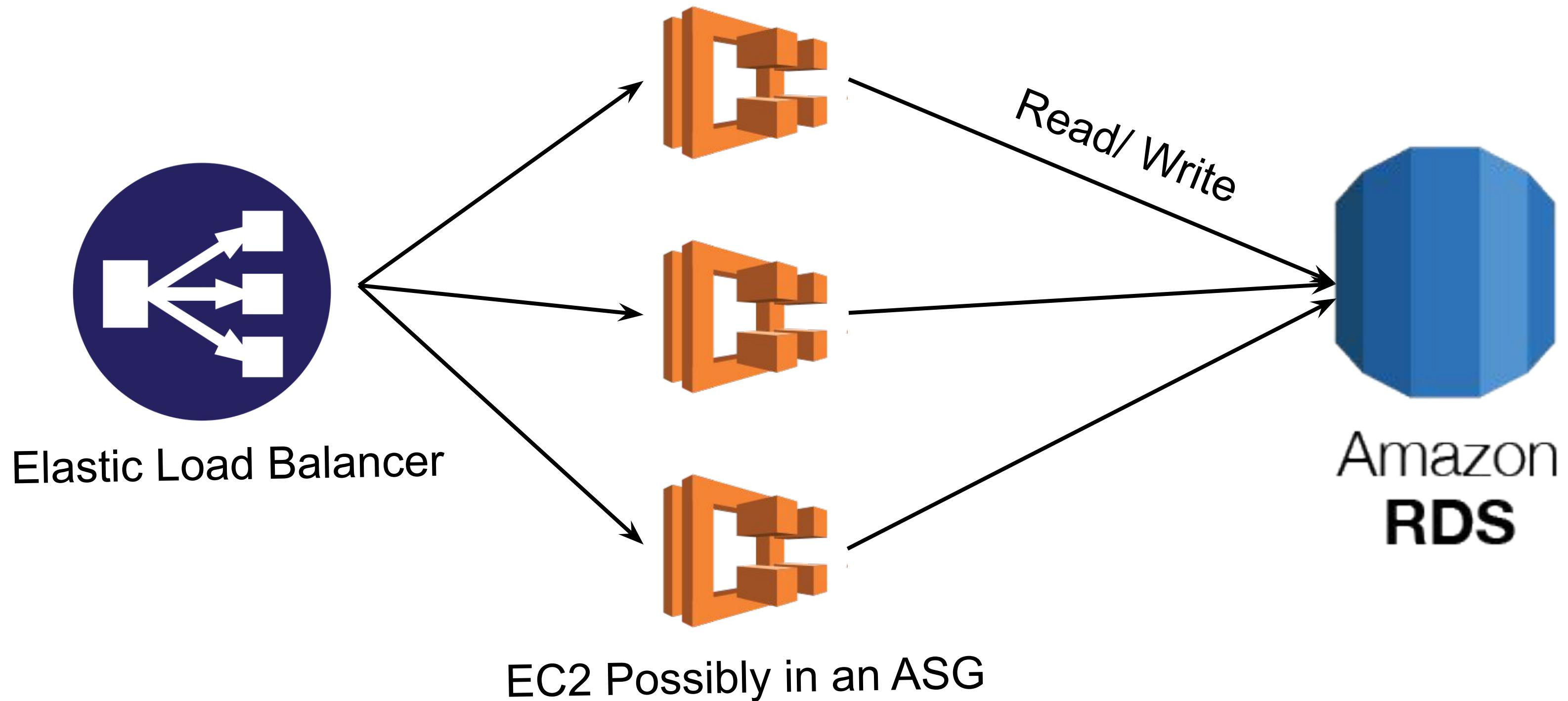


- RDS is a managed service
- Automated provisioning OS Patching
- Continuous backup and restore to specific timestamp
- Monitoring Dashboards
- read Replicas for improved read performance
- Multi Availability Zone setup for Disaster Recovery
- Maintenance Windows for upgrades
- Scaling Capability [Virtual & Horizontal]
- Storage backed by EBS



Amazon
RDS

RDS Solution Architecture



RDS Deployment

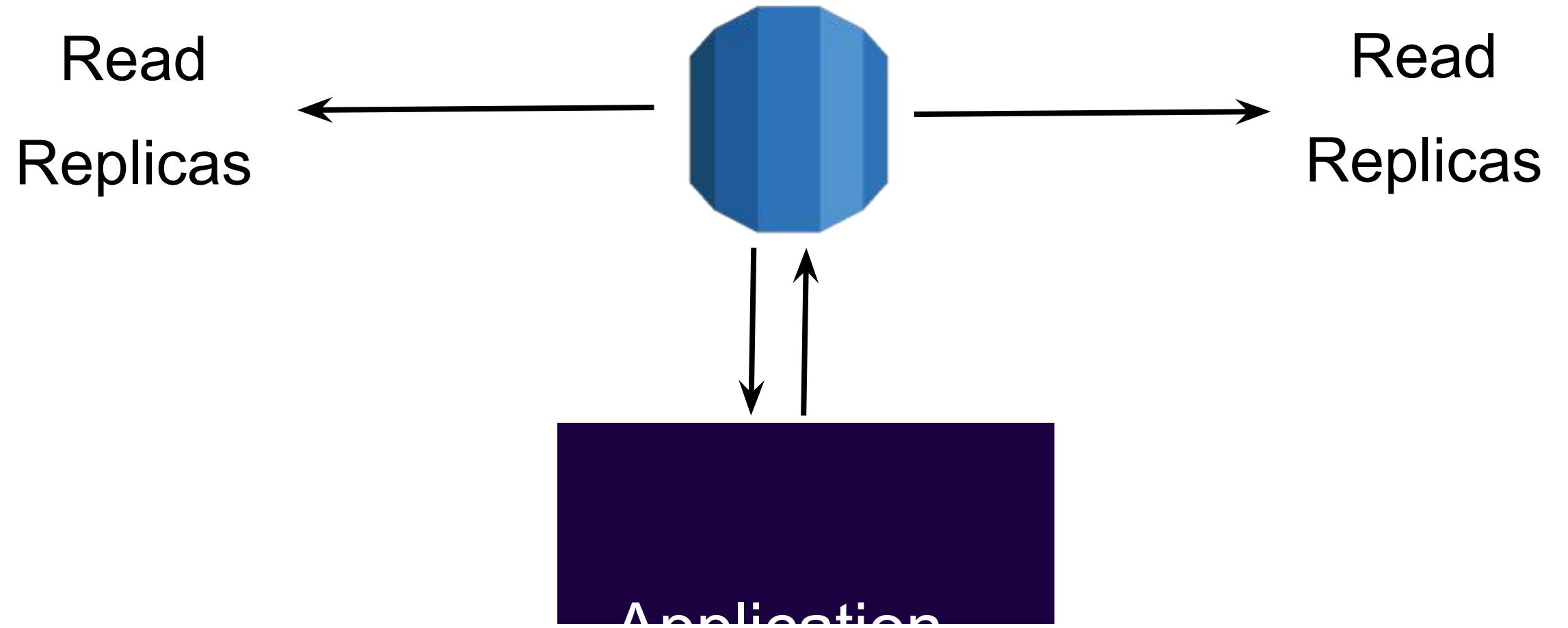


Read Replicas:

Scale the read workload of your Database

Can create upto 15 Read Replicas

Data is only written to main Database

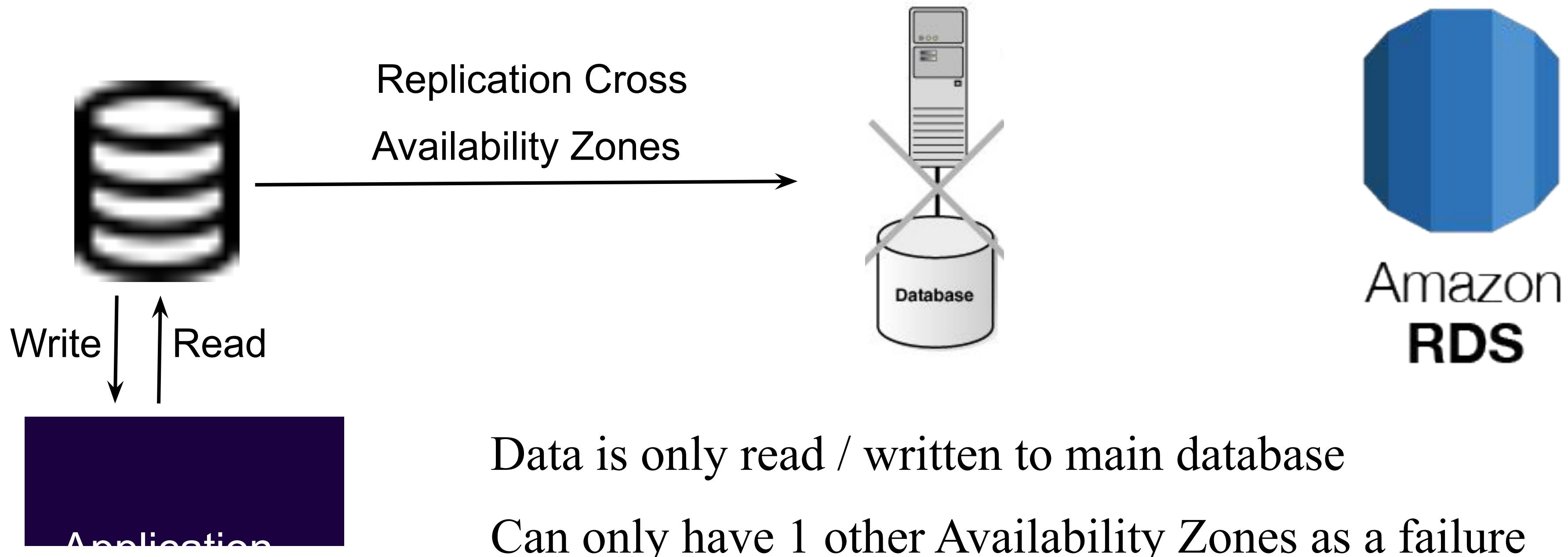


RDS Deployment



Multi Availability Zones

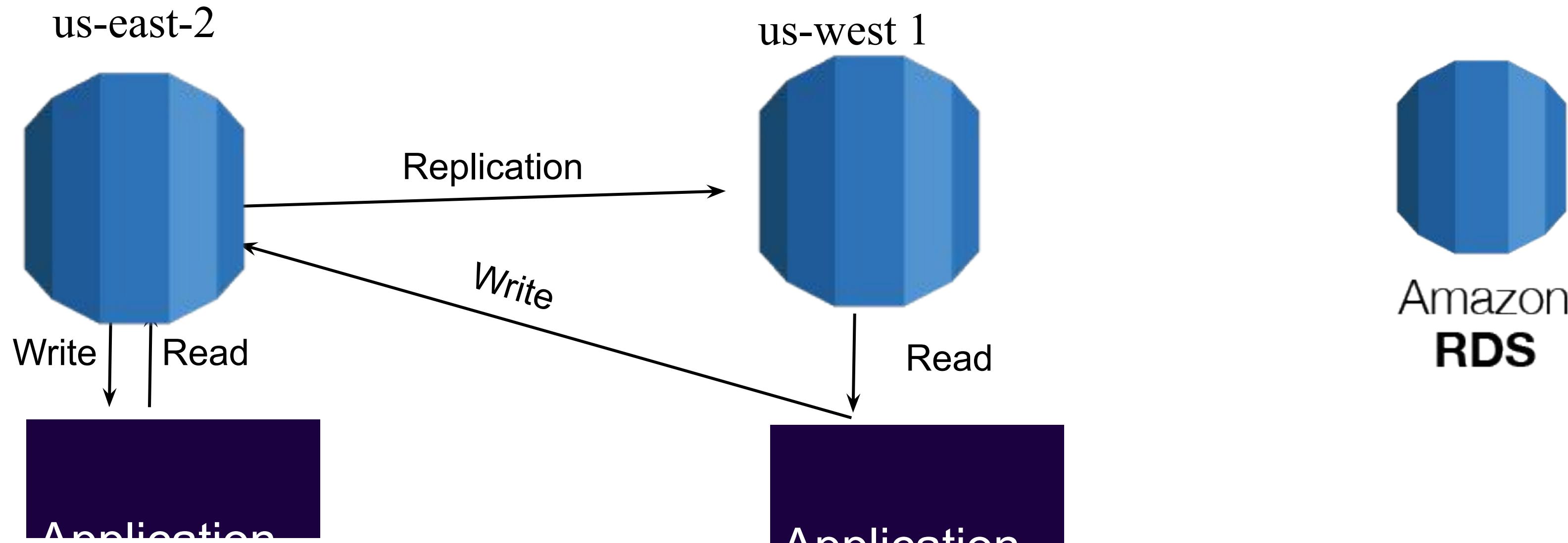
Failover in case of Availability Zones outage



RDS Deployment



Multi Region



- Disaster recovery in case of region issue
- Local Performance for global records
- Replication Cost

Elastic Cache SERVICES





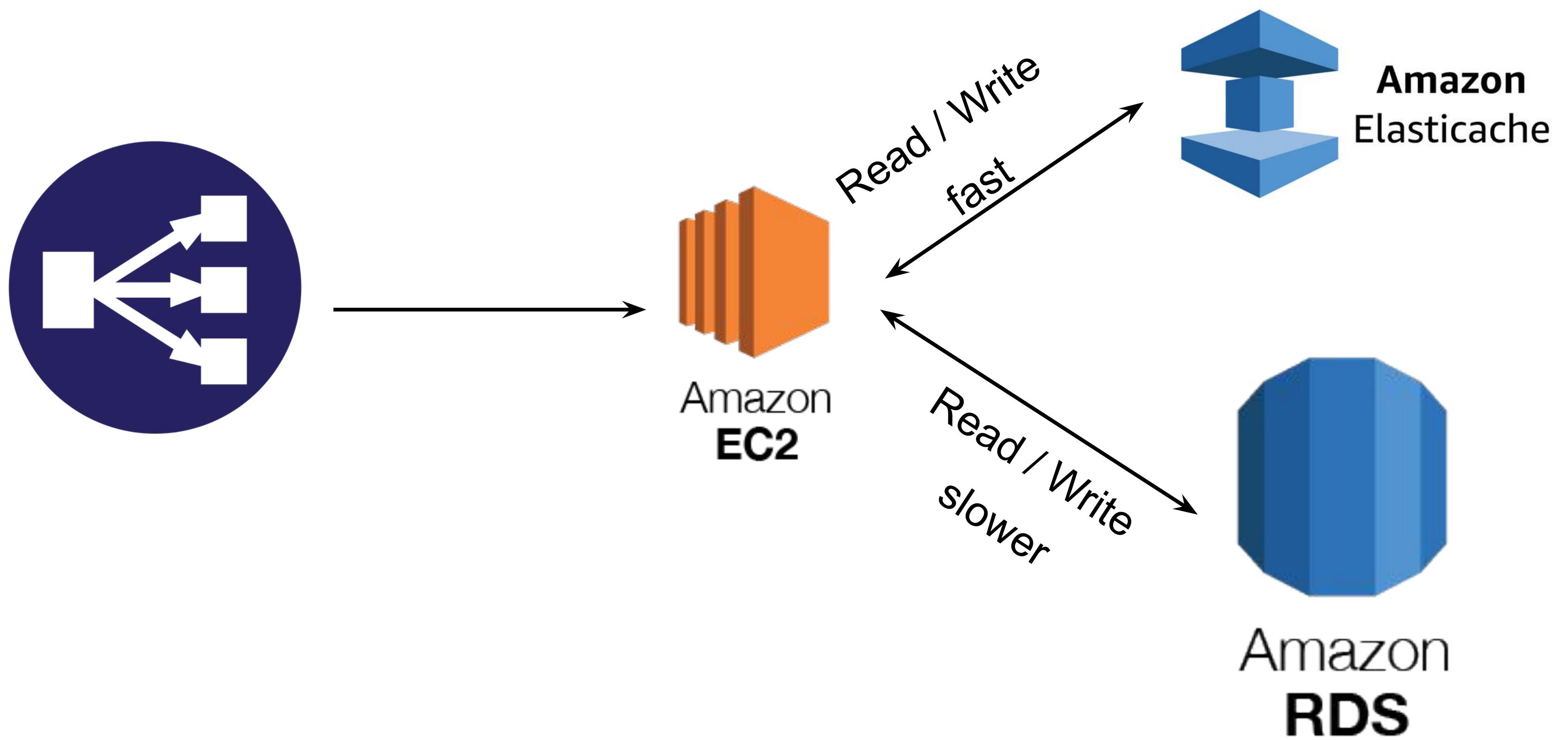
Elastic Cache:

- Same way RDS is to get managed relational DB'S
- Elastic Cache is to get managed Redis cached or Memory Cached
- Caches are in memory database with high low latency
- Helps reduce load off databases for read intensive workloads
- AWS take care of operating system maintenance /Patching, Optimization, setup, configuration, monitoring failure recovery and backups





Elastic Cache:



Dynamo DB SERVICES





Dynamo DB

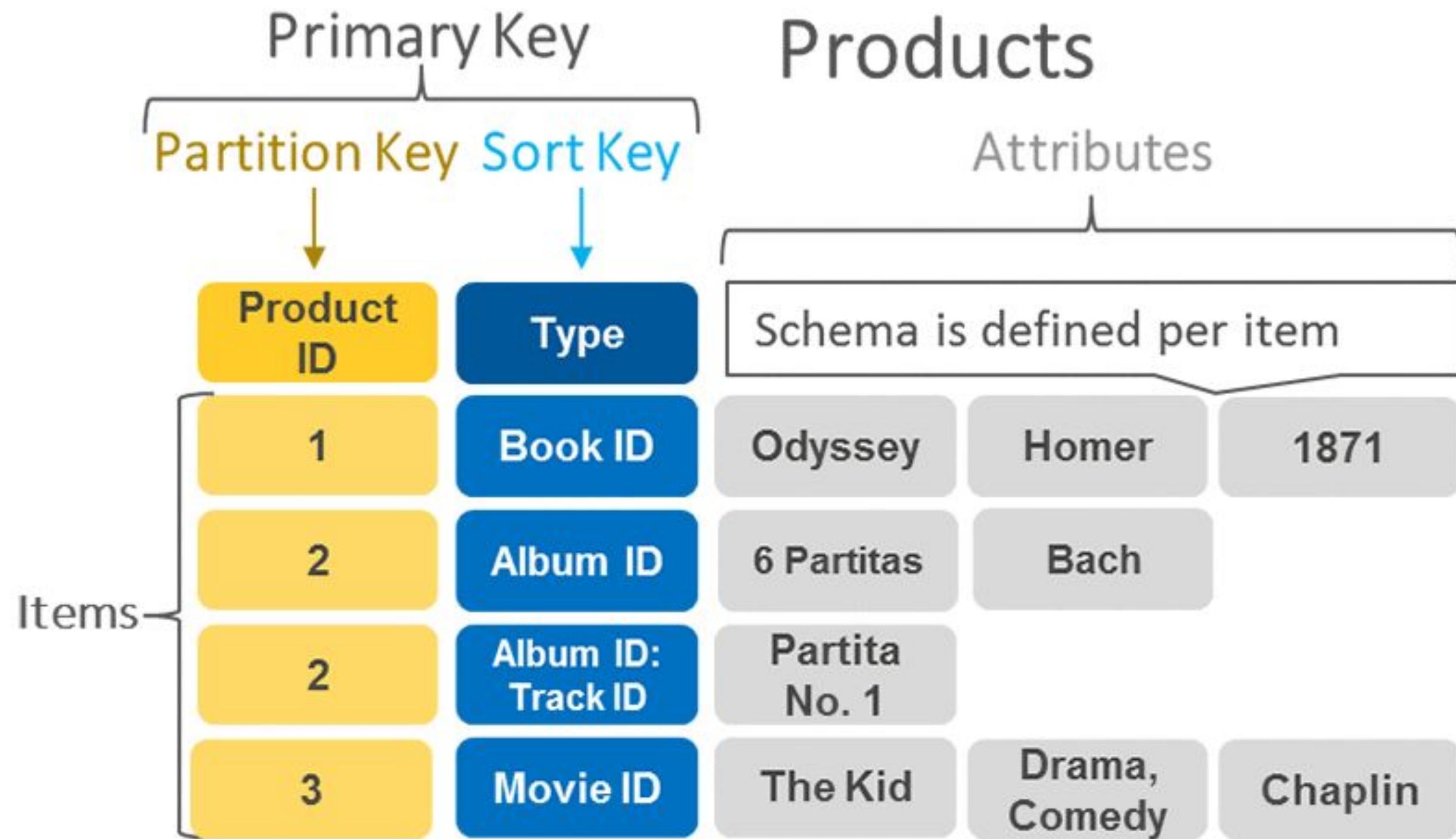
- Fully managed highly available with replication across Availability Zones
- No SQL database not a relational database
- Scales to massive workloads distributed "serverless" database
- Millions of requests per seconds, trillions of row, 100's of TB of Storage
- Fast and consistent in performance
- Single digit millisecond latency low latency retrieval
- Low cost and auto scaling capability
- Standard& infrequent access table class





Dynamo DB Types of Data

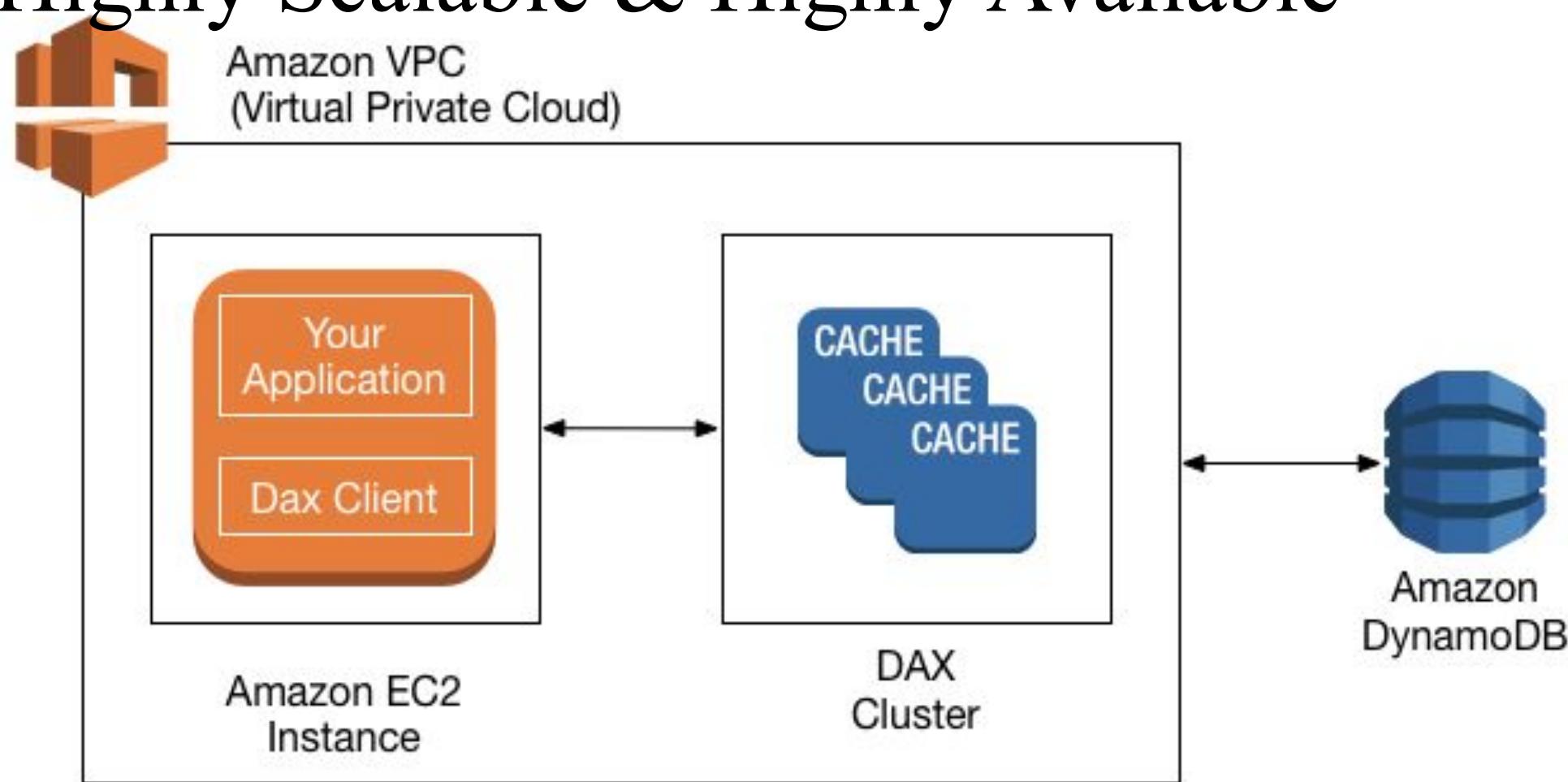
It is key/value Database



Dynamo DB Accelerator -DAX



- Fully Managed in-memory cache for Dynamo DB
- 10X performance improvement
- single digit latency to microseconds
- Latency When access your Dynamo DB
- Secure, Highly Scalable & Highly Available



Redshift SERVICES



Red Shift



- Based on Postgres SQL not used for OLTP
- Its OLAP- Online analytical processing
- 10x better performance than other data warehouses, scale to PB's of data
- Column storage of data [Instead of row data]
- Massively parallel Query Execution , Highly available
- Pay-as-you-go based on the instances provisioned
- Has SQL interface for performing queries
- BI tools such as AWS Quicksight or Tableau integrate with it



DMS SERVICES



DMS - Database Migration Services



Quickly and securely migrate DB to AWS resilient self-healing

The source DB remains available during the migration

Supports:

1. Homogenous migrations

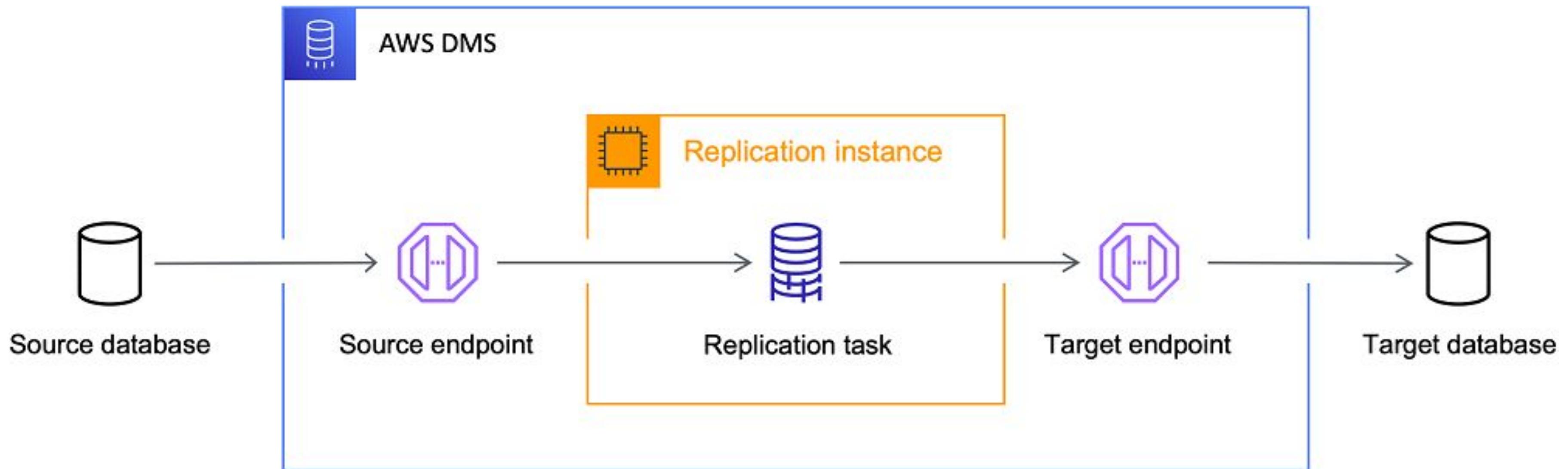
Ex: Oracle to Oracle

2. Heterogeneous Migration

Ex: Microsoft SQL to Aurora



DMS - Database Migration Services



Neptune SERVICES



Neptune



- Fully managed graph Database
- A popular graphset would be social Network

Ex: Social Media Network

- Highly available across 3 availability zones with upto 15 read replicas
- Build and run application working with highly connected datasets
- Optimized for these complex and hard queries.
- Can store upto billions of relations and query graph with milliseconds latency
- Highly available with replications across multiple availability zones
- Great for knowledge graphs, Fraud Detection, recommendation engines, social networking



Amazon Neptune

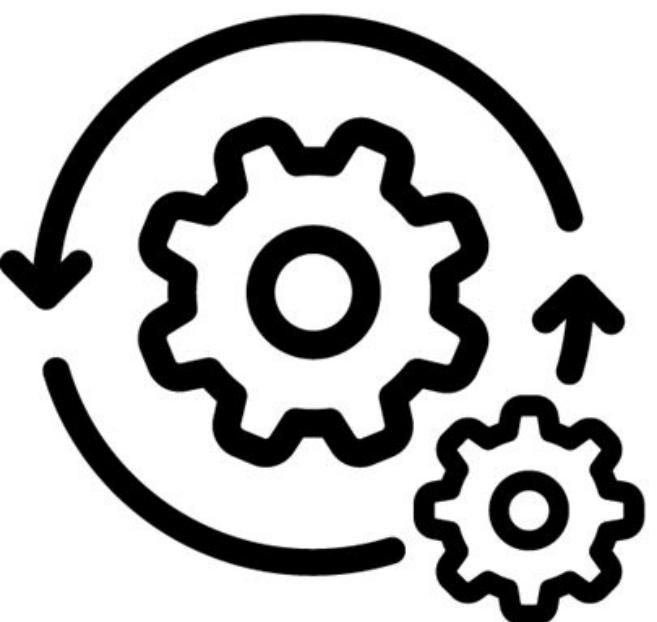
Management SERVICES



What are Management Services?



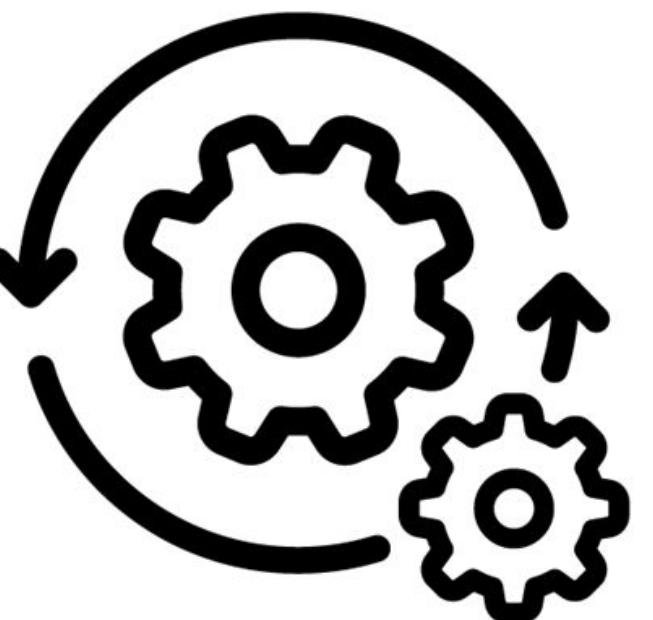
A management services agreement can include many responsibilities, such as handling your employee payroll, developing and managing employee benefit programs, bookkeeping and accounting, maintaining company records, processing accounts payable and receivable, securing insurance for the company, and providing advice and consulting services for any number of needs.



Types of Management Services



- Cloud Formation
- AWS Service Catalog
- Cloud watch
- AWS System Manager
- Cloud Trail



Cloud Formation

SERVICES



Cloud Formation



Cloud Formation is a declaration way of outlining AWS Infrastructure, for any resources.

Ex: Within cloud formation template

- I want a security group
- I want 2 EC2 instances using this security group
- I want S3 Bucket
- I want load balancer in front of these machines

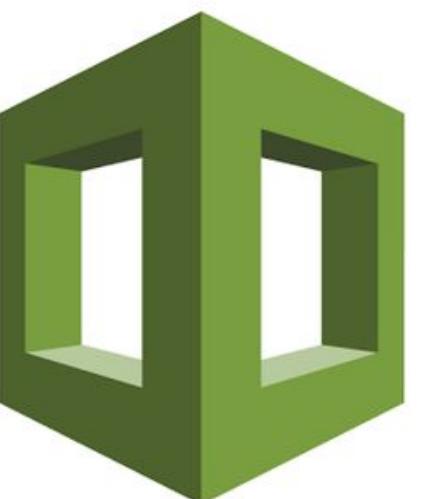
Then cloud formation creates those for you in order with exact configuration



Benefits of Cloud Formation



- Infrastructure as a code
- Cost
- Saving Strategy
- Productivity
- Don't re-invent the wheel



CloudFormation

Cloud Formation



1 Create or use an existing template

2 Save locally or in S3 bucket

3 Use AWS CloudFormation to create a stack based on your template. It constructs and configures your stack resources.

Cloud Watch SERVICES



Cloud Watch



- Used to monitor cloud
- Cloud watch provides metrics for every service in AWS
- Metrics is variable to monitor [CPU utilization, Network]
- Metrics have timestamps
- Can create cloud watch dashboard of metrics

Ex: Billing metric



AWS CloudWatch

Cloud Watch



Important Metrics:

1. EC2 Instance: CPU Utilization, Status Checks, Network [Not RAM]

Default metrics every 5 mins

Option for detailed monitoring metrics for every 1 min

2. EBS Volume: Disk Read/Write

3. S3 Bucket: Bucket size byte, Number of Objects all requests

4. Billing : Total estimate charge

5. Service Limits: How much you have been using service API

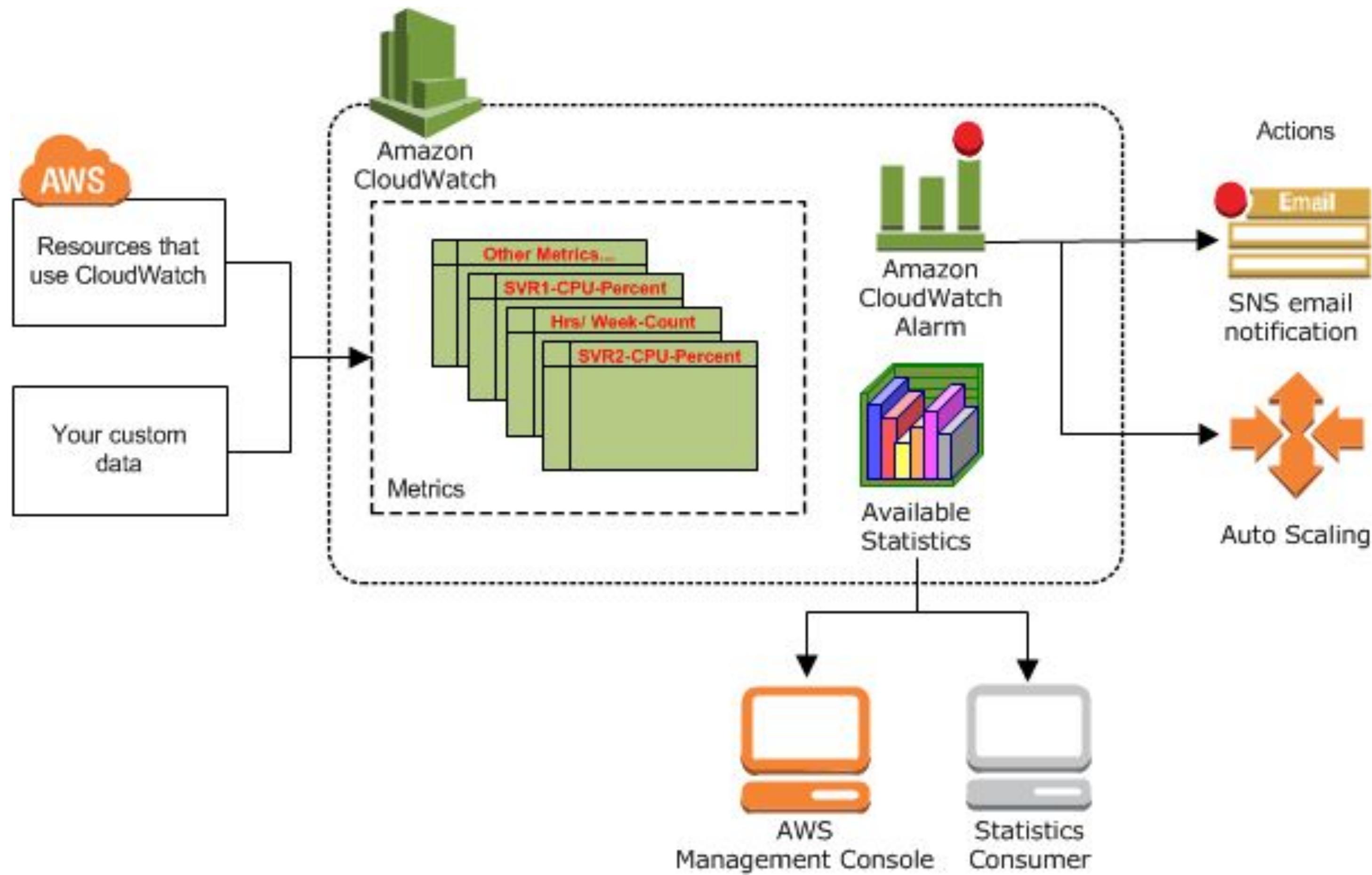
6. Custom metrics



AWS CloudWatch

To trigger notifications for each metrics we can use cloud alarms

Cloud Watch



AWS Service Catalog SERVICES



AWS Service Catalog



Create and manage catalogs of IT Services that approved by AWS

Service Catalog allows organizations to centrally manage all common deployed IT Services



aws service catalog

Benefits of AWS Service Catalog



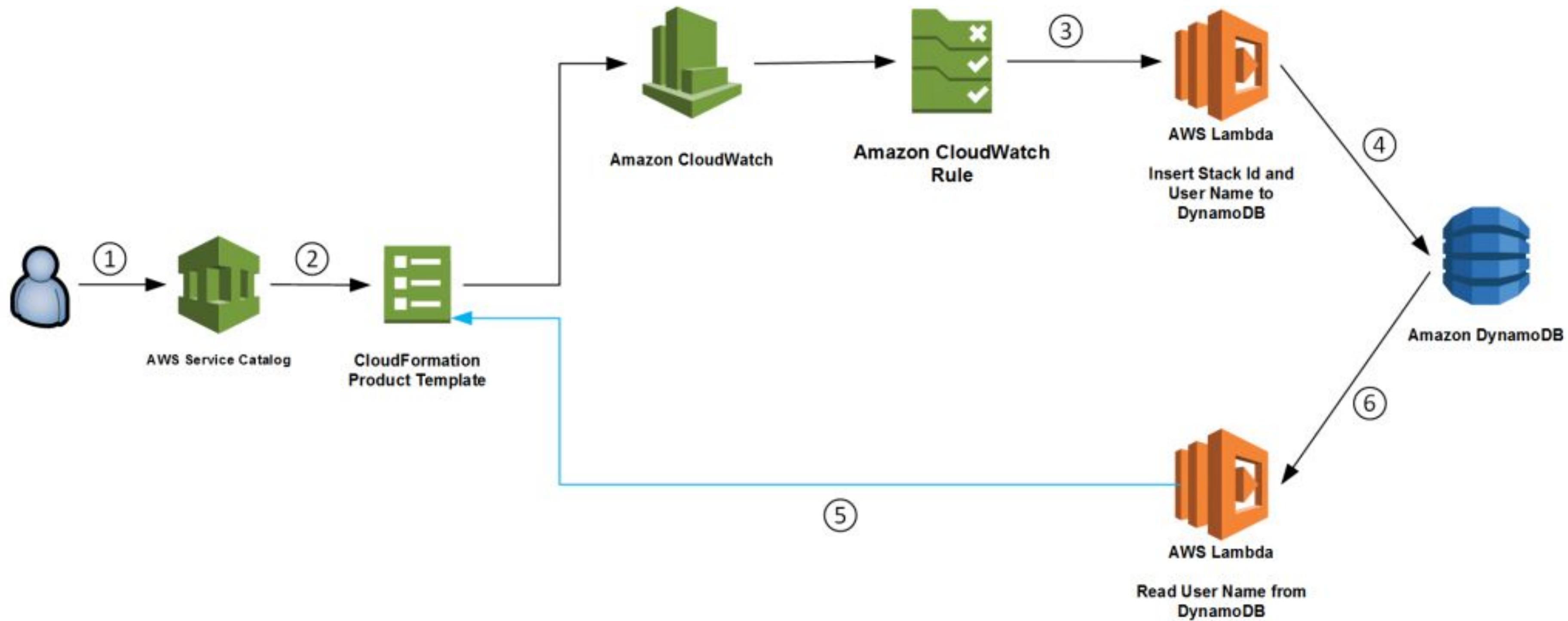
- Standardization
- Self Service discovery and launch
- Fine grain access control
- Extensibility and version control



aws service catalog



aws service catalog



AWS System Manager SERVICES



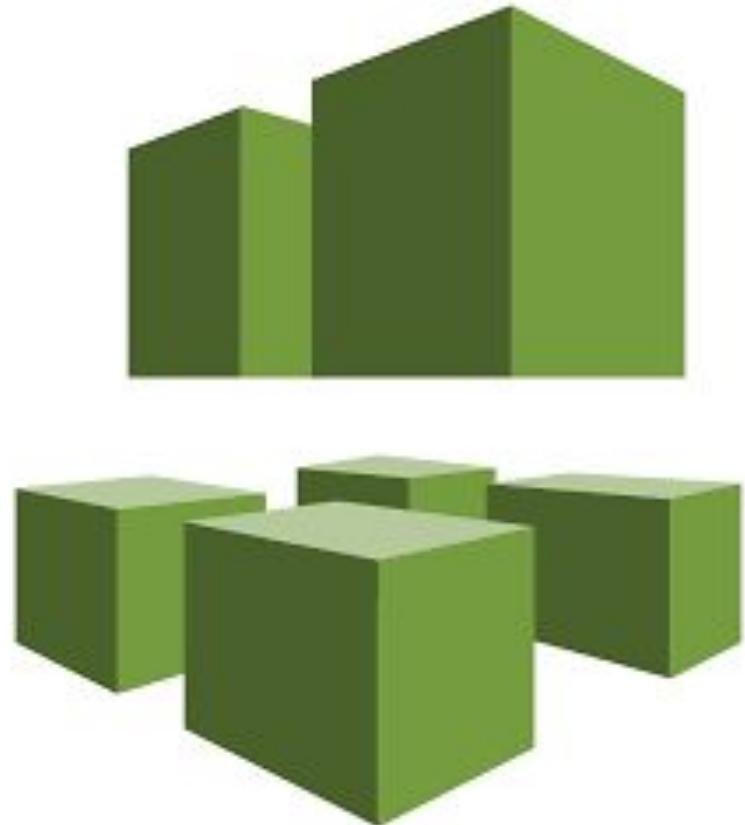
AWS System Manager



It is a operation hub for AWS application and resources & secure end to end management solution for hybrid cloud environment

How System Manager Works

- Access system manager
- Choose system manager capability
- Verification and processing
- Reporting
- System manager operation management capabilities



AWS System Manager



System Manager Capabilities

- Application management
- Change management
- Node management
- Operations management
- Quick setup
- Shared resources



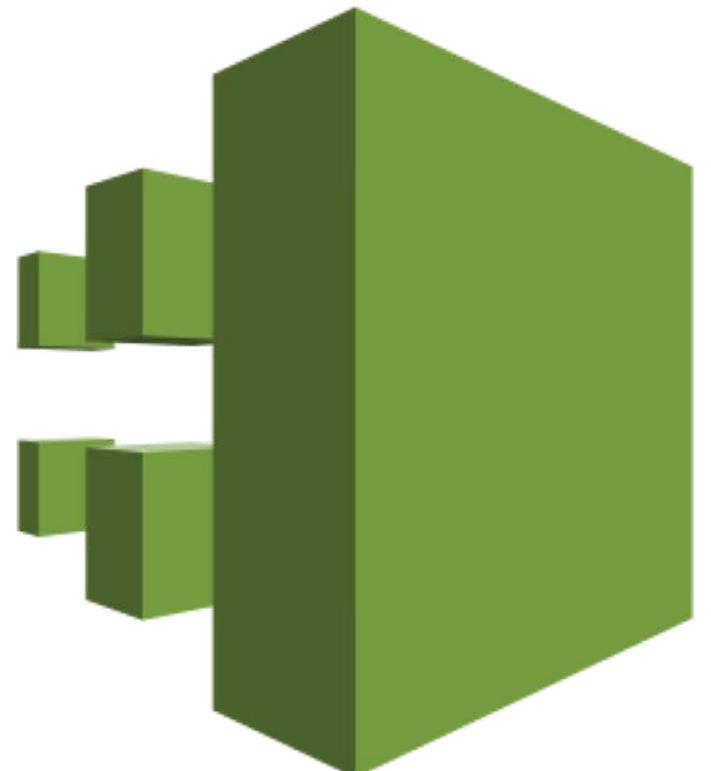
Cloud Trail SERVICES



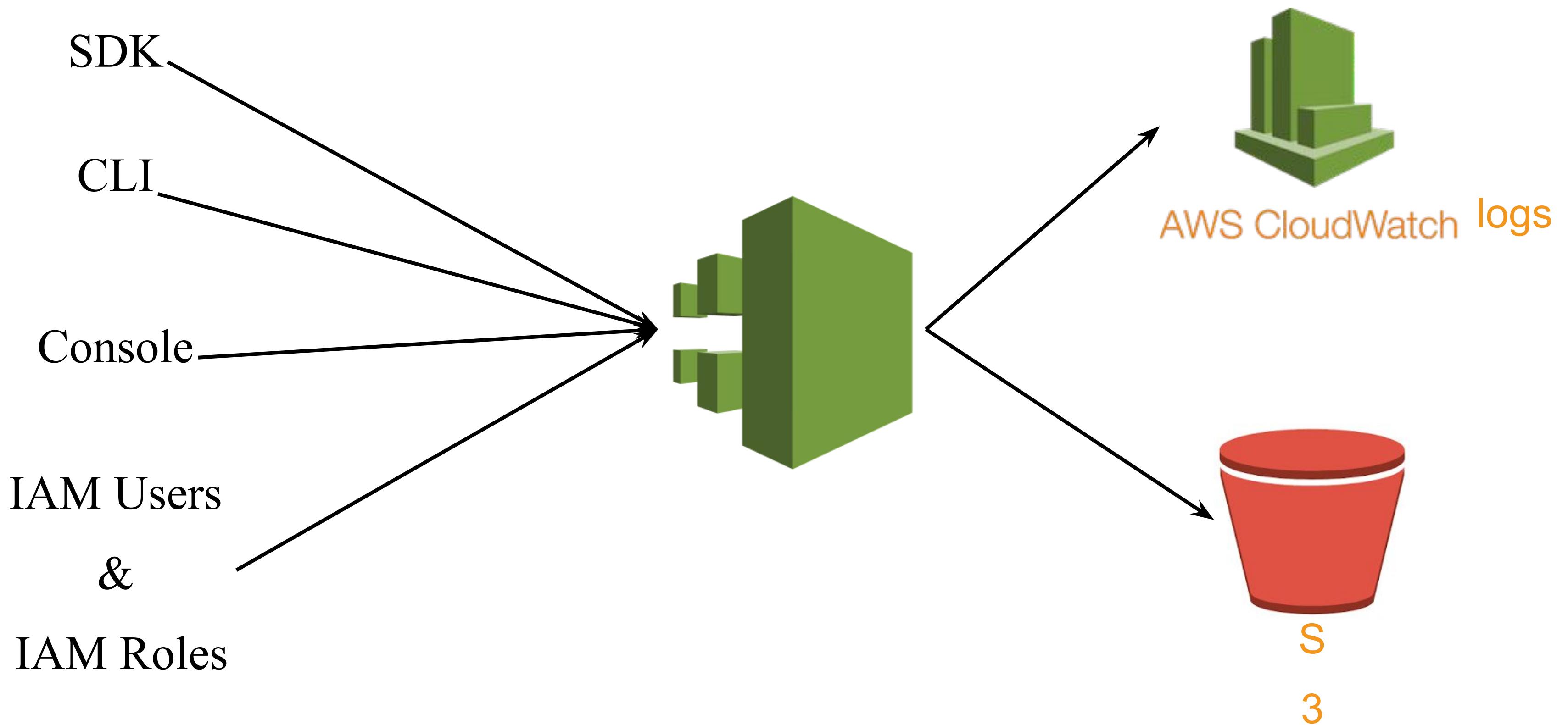
CloudTrail



- This service provides governance, compliance and audit for your AWS account
- It is enabled by default
- Get an history of events/ API calls made within your AWS account by Console, SDK, CLI
- Put logs from cloud trail into cloud watch logs s3
- Cloud trail can be applied to all regions(default) or Single region
- If resource deleted in AWS, Investigate cloud trail first



CloudTrail



APPLICATION SERVICES

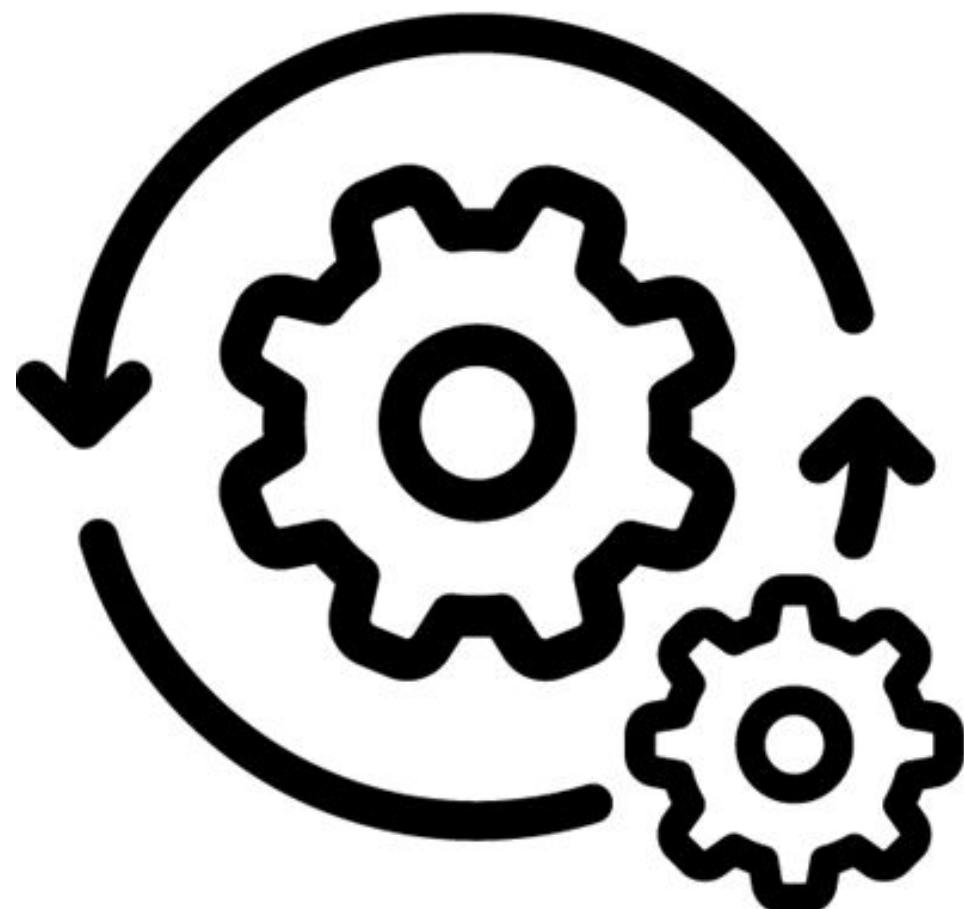
aws

The AWS logo consists of the lowercase letters "aws" in white, positioned above a thick orange curved arrow pointing to the right. The arrow is set against a dark blue circular background.



What are Application Services?

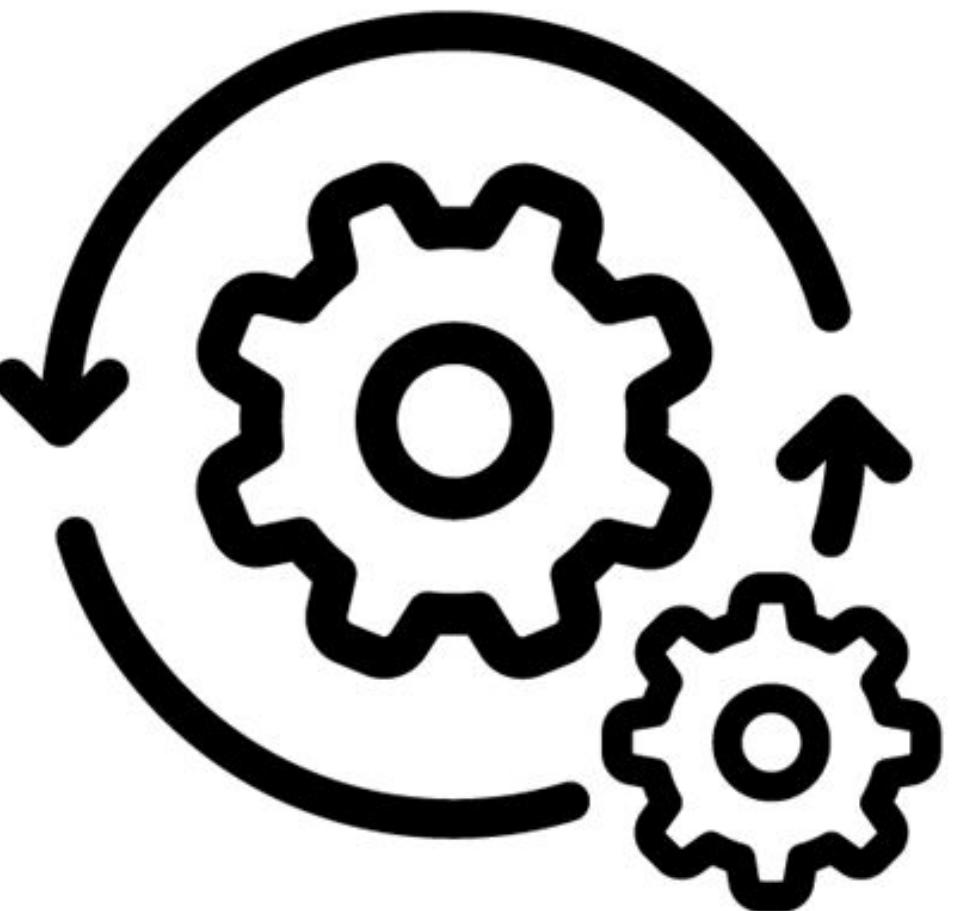
Application services are software solutions that improve the speed, security, and operability of applications.





Types of Application Services?

- Step Functions
- SWF
- SQS



Step Functions SERVICES



Step Functions



- Visual workflow service that helps developers use AWS Services to build distributed applications automate processes, orchestrate microservices and create data & ML Pipeline
- Serverless Orchestration Service



Step Functions

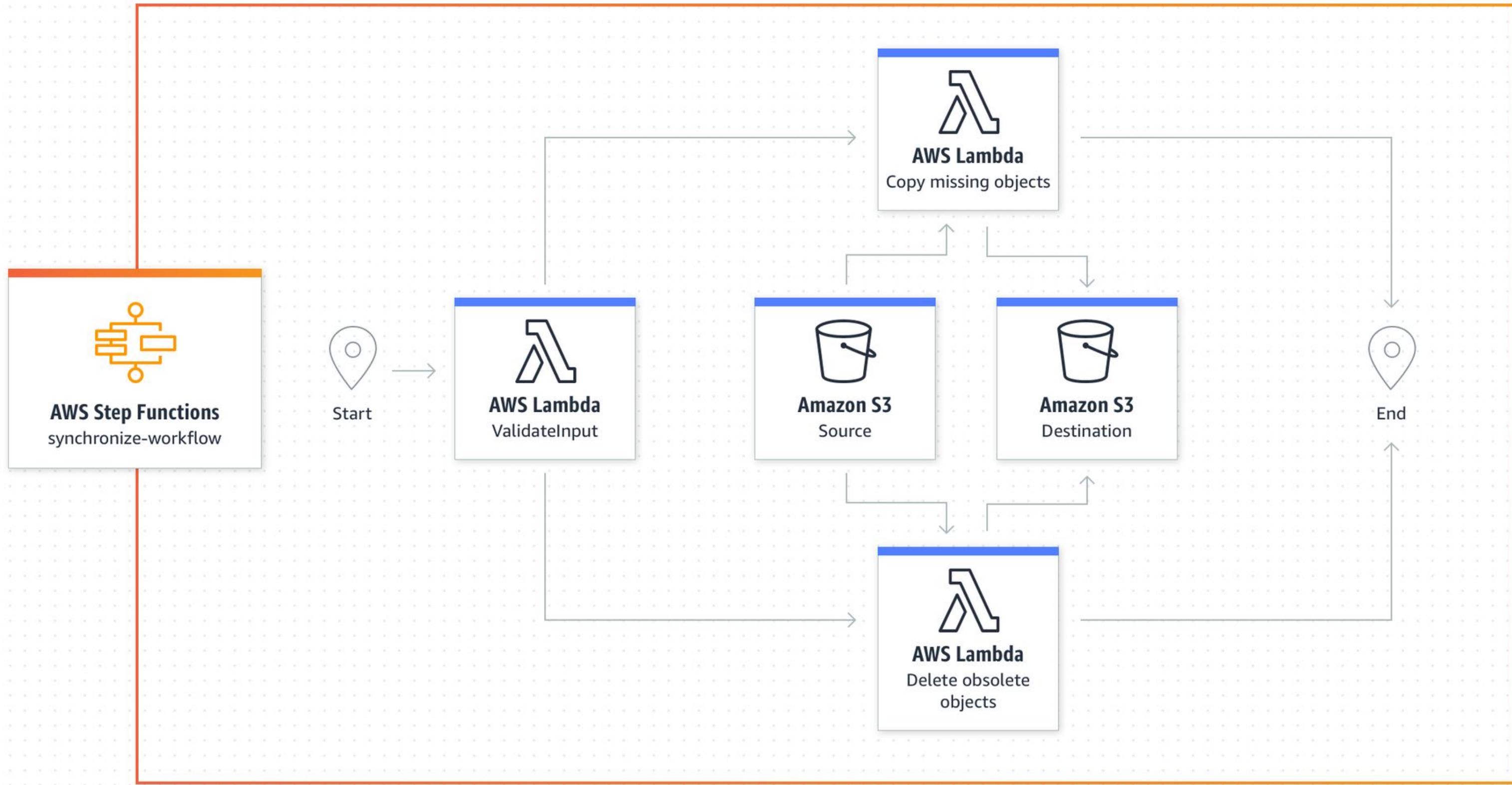


Use Cases:

- Function Orchestration
- Branching
- Error handling
- Human in the loop
- Parallel processing
- Dynamic Parallelism



Step Functions



SWF SERVICES



aws

SWF -Simple Workflow Service



- SWF is a Web service easy to coordinate work across distributed application components
- Fully managed workflow service for building scalable resilient applications
- Provides simple API calls that can be executed from code & run on EC2

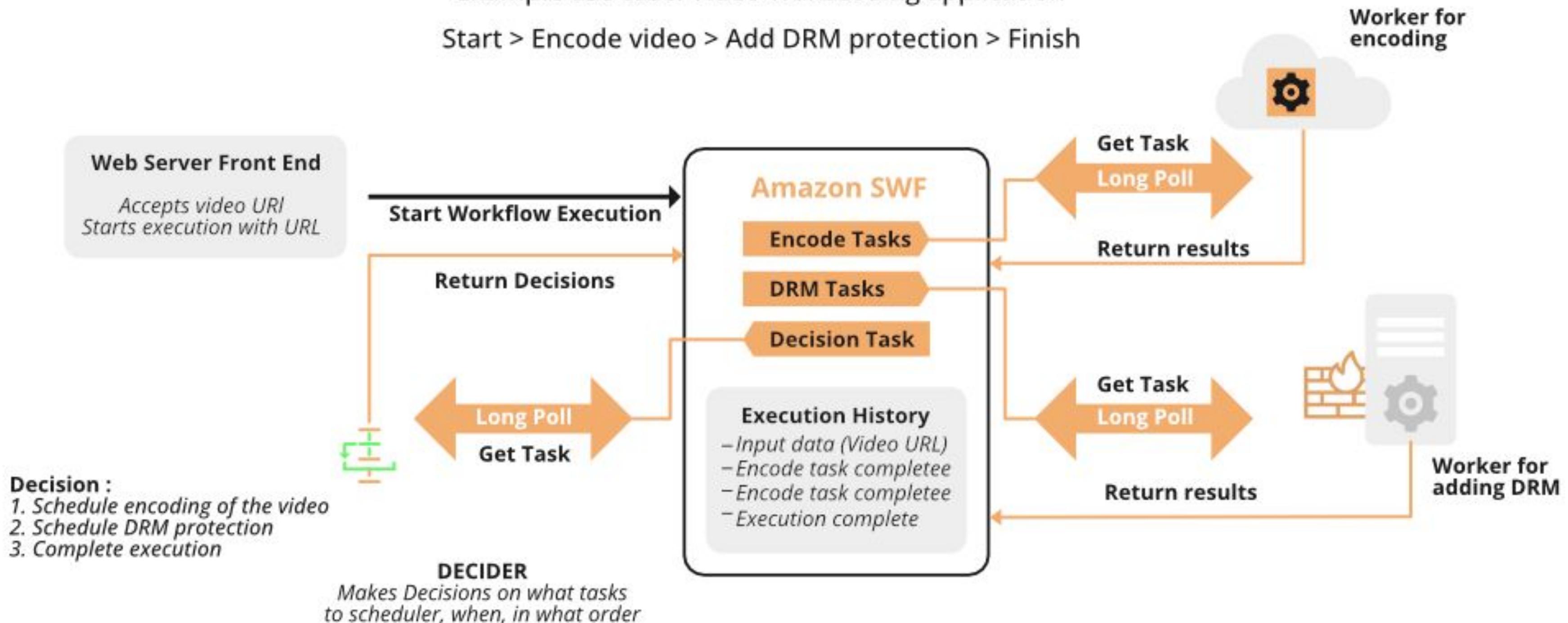




SWF -Simple Workflow Service

Example use case: Video Transcoding application

Start > Encode video > Add DRM protection > Finish



SQS

SERVICES



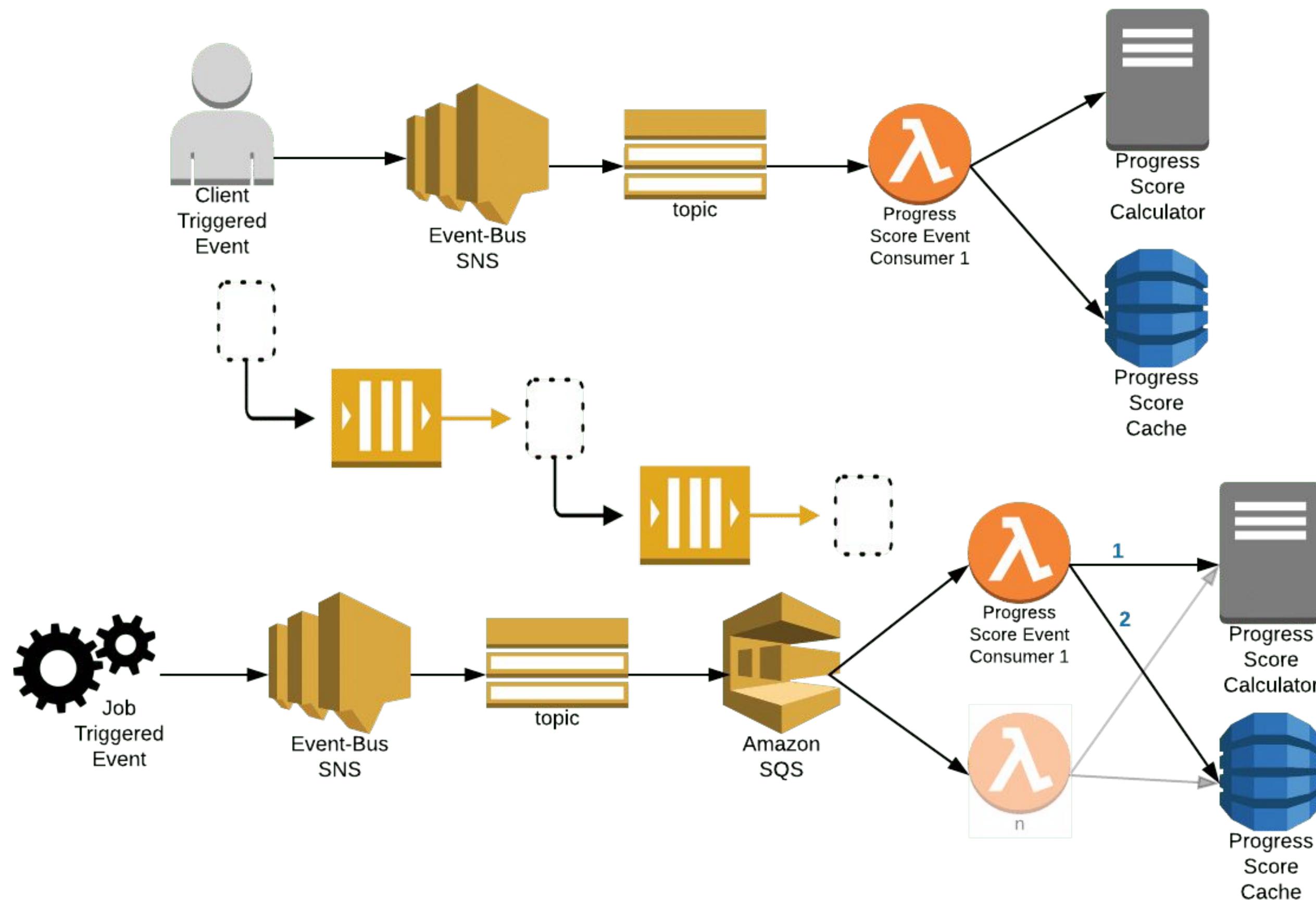
SQS -Simple Queue Service



Securable, Durable and available hosted queue that integrate and distribute software system & components



SQS -Simple Queue Service



ANALYTICS SERVICES





What is Analytics Services?

AWS analytics services are purpose-built to help you quickly extract data insights using the most appropriate tool for the job, and are optimized to give you the best performance, scale, and cost for your needs.



Types of Analytics Services



- EMR
- Athena
- Cloud Search



EMR

SERVICES



EMR - Elastic MapReduce



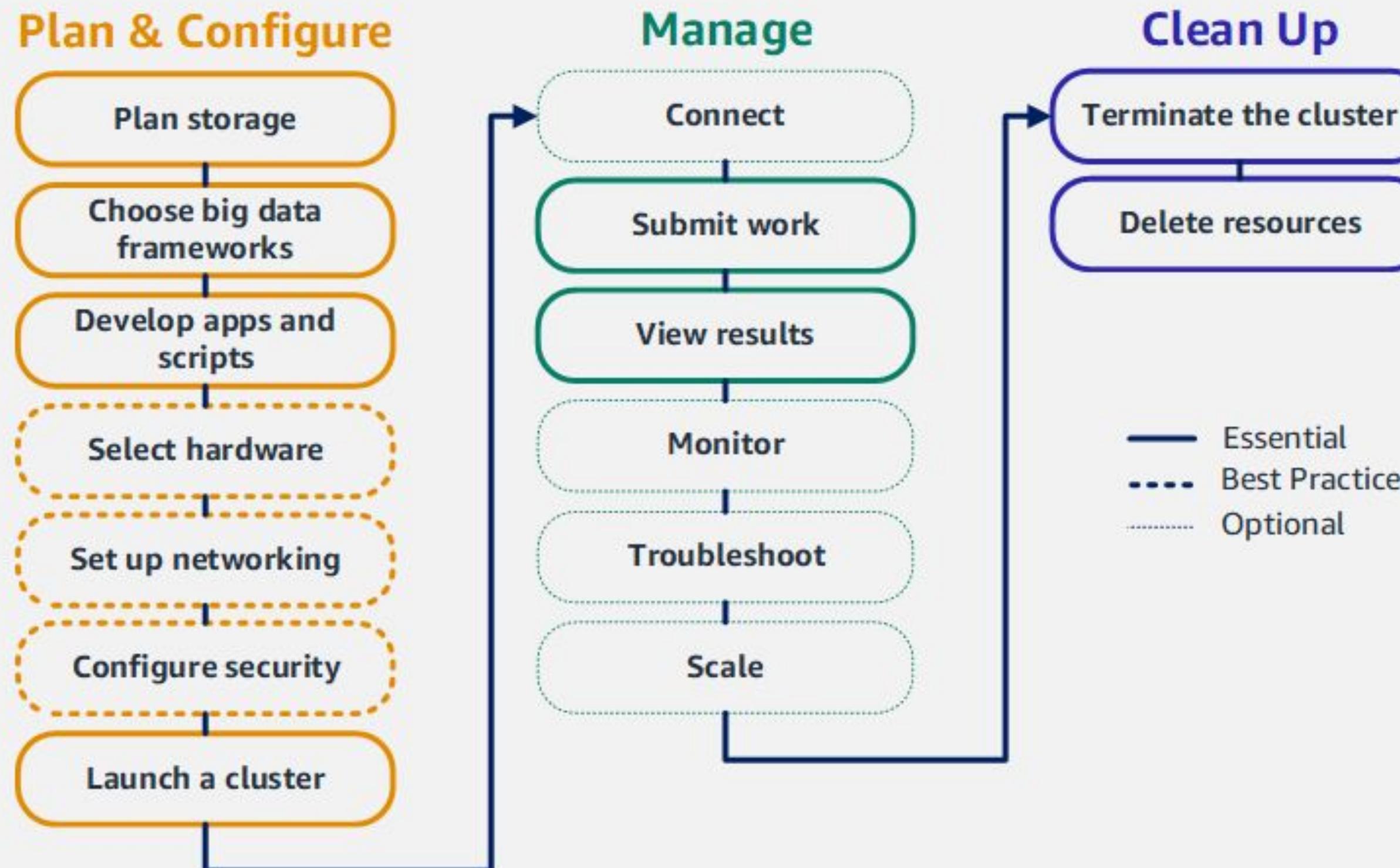
- It is a cluster platforms that runs on big data frameworks like hadoop, spark
- To process & analyze vast amount of data for analysis purpose and business intelligence workloads
- We can run a cluster and process data using spark or hadoop we can store data which is processed data in s3



EMR - Elastic MapReduce



EMR Workflow



ATHENA SERVICES



ATHENA



- It is an interactive query service that makes easy to retrieve data which is stored in S3
- Here we are using SQL
- Serverless , There is no infrastructure to manage and you pay only for the queries that you run



ATHENA



Benefits of ATHENA:

- Start Querying Instantly
- Pay Per Query
- Open, Powerful Standard
- Fast, Really Fast



Cloud Search SERVICES



Cloud Search



Managed service in AWS Cloud, it makes simple and cost effective to setup, manage and scale a search solution for website or application

It supports 34 languages and popular search features such as highlighting
autocomplete geospatial search



Cloud Search



Benefits of Cloud Search

- Simple
- Scalable
- Reliable
- High Performance
- Fully Managed
- Rich Search Feature
- Cost Effective



DEVOPS SERVICES



CSE & IT TUTORIAL 4U



What are Devops Services?

DevOps is the combination of cultural philosophies, practices, and tools that increases an organization's ability to deliver applications and services at high velocity: evolving and improving products at a faster pace than organizations using traditional software development and infrastructure management processes.



Types of Devops Services



- Cloud 9
- Code Star
- Elastic Beanstalk
- Code Build
- Code Pipeline
- Code Commit
- Code Deploy
- Code Artifacts



Cloud9 SERVICES



Cloud9



- AWS Cloud9 is a cloud IDE for writing and running code
- "Classic IDE" are downloaded on computer before being used
- Cloud IDE we can use in any web browser we can access anywhere through internet
- AWS Cloud 9 also allows for code collaboration in real-time [Pair Programming]
- Ex: More than 2 people can collaborate and work on same code



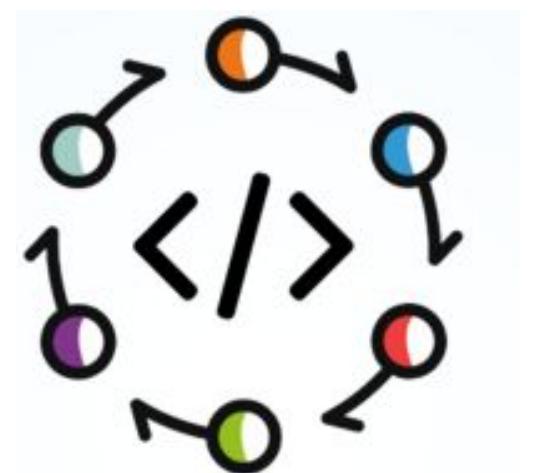
Code Star SERVICES



Code Star



- Unified UI to easily manage software development activities in one place
- In this code strat we have code repository, Code Commit, Code pipeline, Code build ... etc
- Quick way to get started correctly setup code, Code Commit, Code pipeline, Code build, Elastic Beanstalk, EC2
- We can edit code 'in-the-cloud' using AWS cloud 9



Beanstalk SERVICES

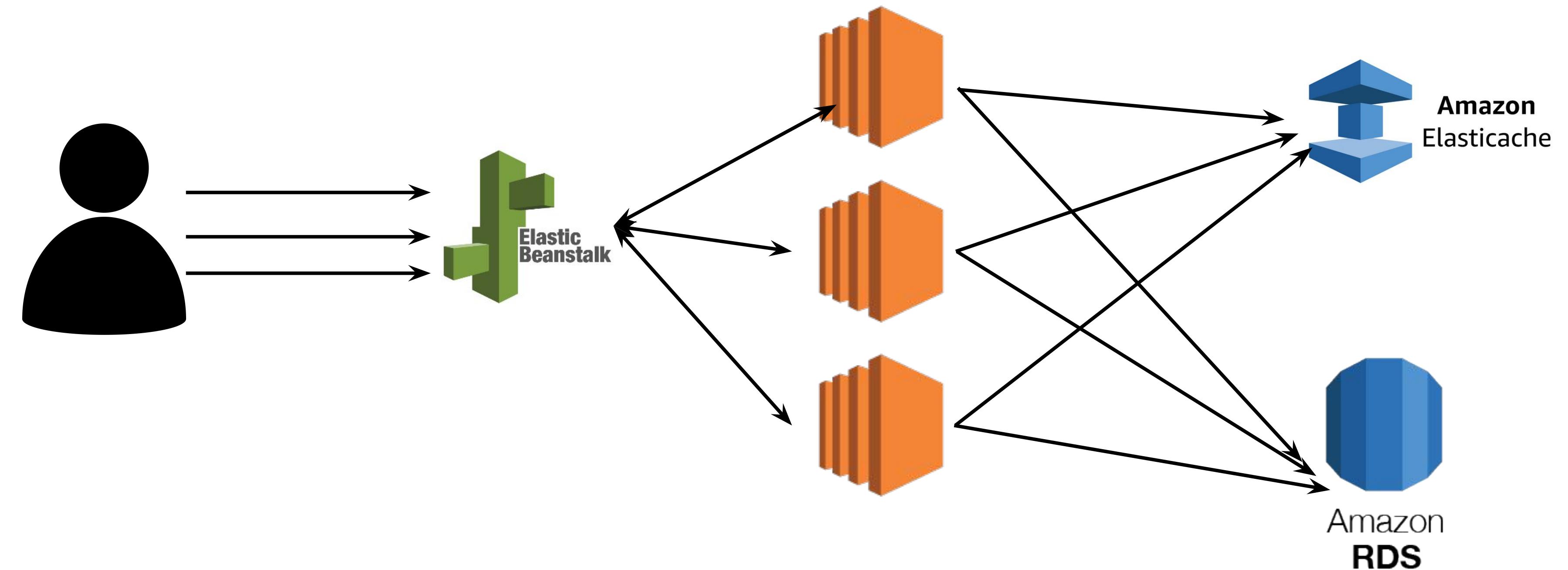


Elastic Beanstalk



Elastic Cache : Store / Retrieve

Session Data + Cached Data





Developers Problems:

- Managing infrastructure
- Deploying Code
- Configure all the database, Load Balance
- Scaling Concerns
- Most Web Apps Have same architecture

(Application Load Balancer + Auto Scaling Group)

6. All the developers want is for their code to run
7. Possibly consistently across different applications and environments

Elastic Beanstalk



- Developer centric view for deploying applications on AWS
- It uses all components we have seen before EC2, ASG, ELB, RDS
- But all in one view that easy
- We still have full control over configuration
- Beanstalk -PaaS
- We are just worry about code
- Beanstalk is free but you pay for underlying instances



Code Build SERVICES



Codebuild



Code Building service in cloud

Compile source code and run, test and produce packages that are ready to be deployed.



Codebuild



Code Build Benefits:

- Fully Managed, Serverless
- Continuously Scalable & Highly available
- Secure
- Pay-as-you-go-pricing-only pay for build time



AWS CodeBuild

Codepipeline SERVICES



Code Pipeline



Orchestrate different steps to have the code automatically pushed to production

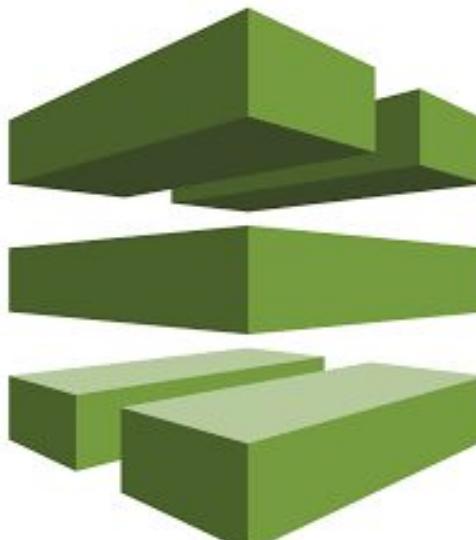
Code--> Build--->Test--> Provision --->Deploy

To execute all steps we want pipeline

basis for CICD [Continuous Integration & Continuous Delivery]

Code Pipeline --Orchestration Layer

Code Commit--> Code Build --->Deploy-->Beanstalk

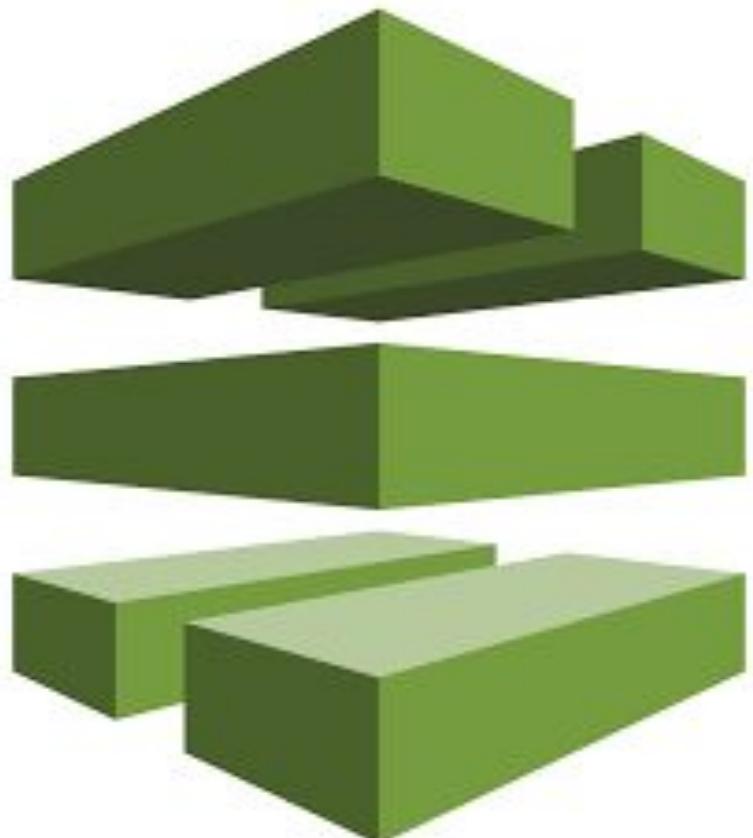


Codepipeline



Codepipeline Benefits

- Fully Managed ,Compatible with Codecommit, Code build, Code Deploy, Elastic Beanstalk, Cloud Formation, Github, 3rd Party Services
- Fast Delivery and rapid updates



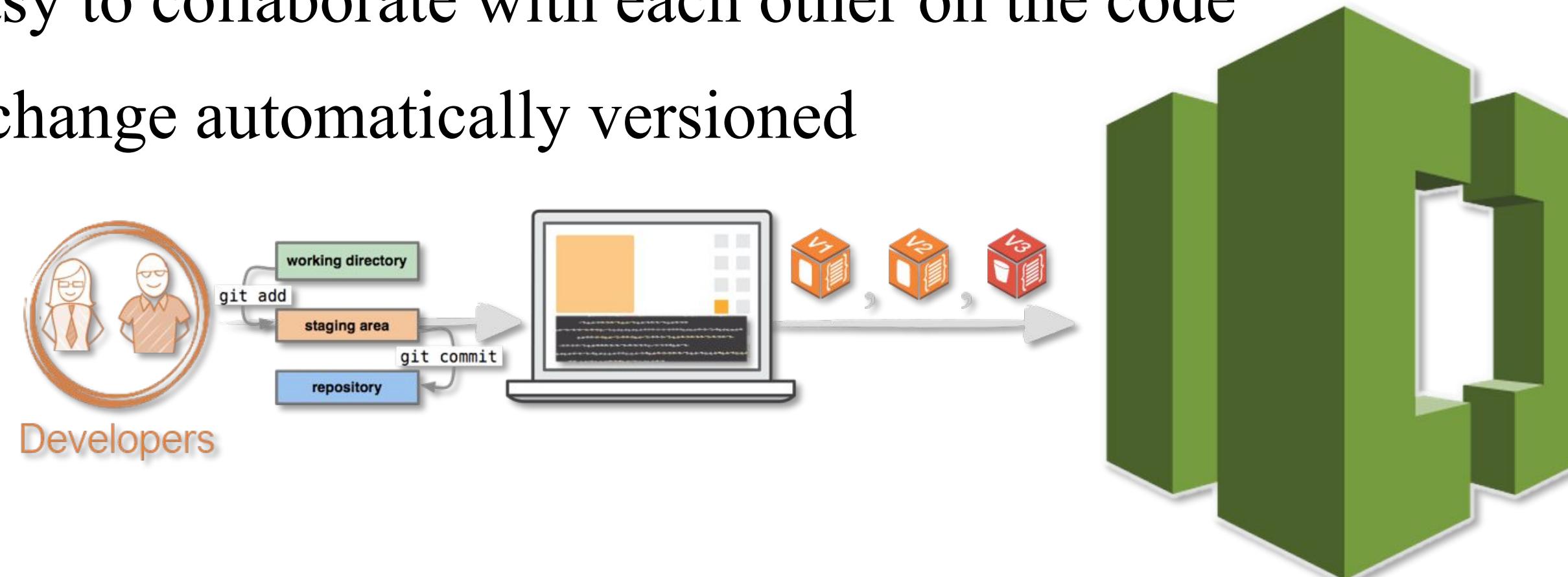
Code Commit SERVICES



Code Commit



- Before pushing code to servers it has to be stored somewhere
- Developers usually store code in repository using git technology
- A famous public offering is Github, AWS Competing product is code commit
- We can store our code in AWS using Code Commit
- It is Source based service that hosts git based repositories
- Make it easy to collaborate with each other on the code
- The code change automatically versioned



Code Commit Benefits



- Fully Managed code repository
- Scalable & highly available
- Private, Secured, Integrated with AWS



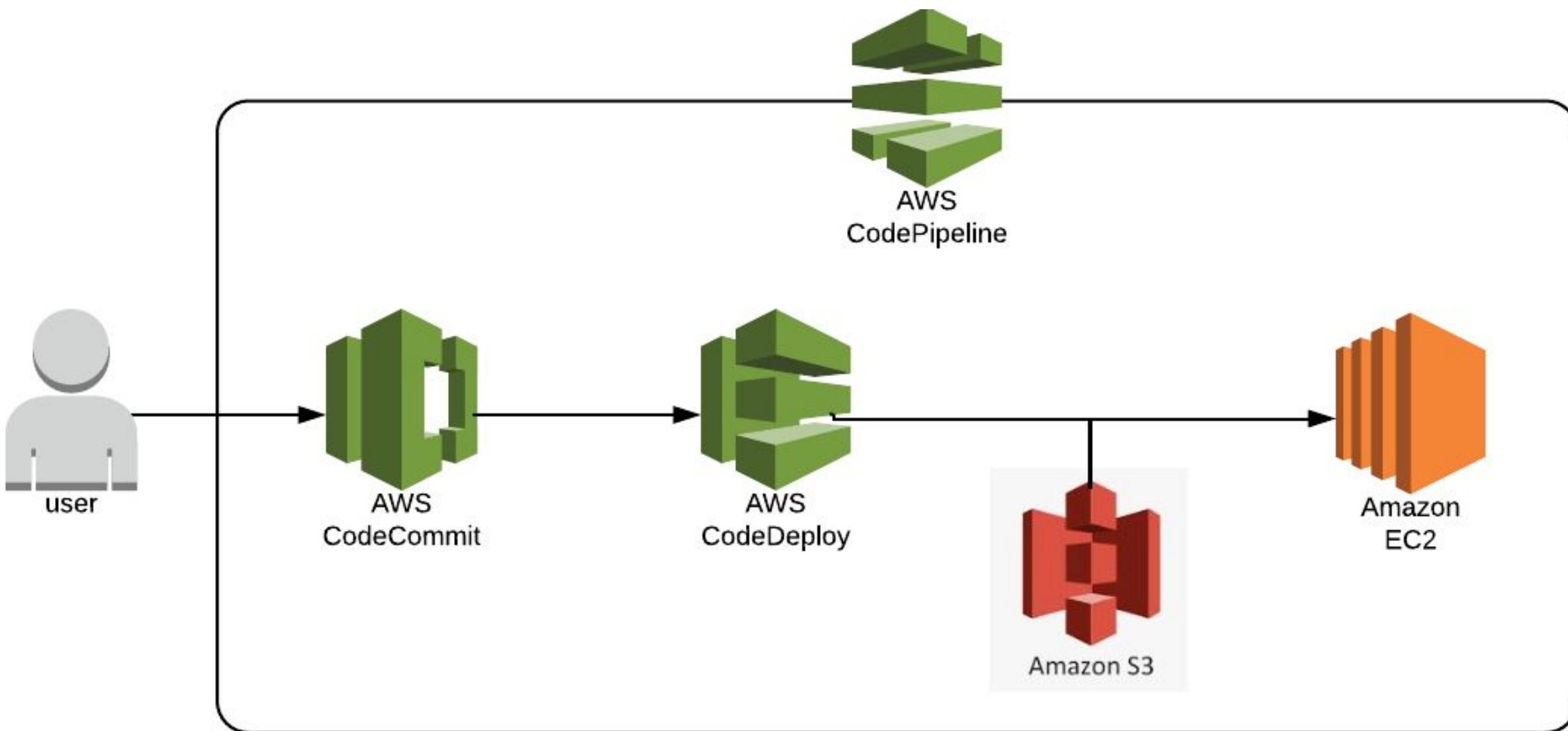
Code Deploy SERVICES



Code Deploy



- We want to deploy our application automatically
- To deploy work with EC2
- Work with On-premises servers
- Hybrid Services
- Servers



Code Artifacts SERVICES



Code Artifacts



- Storing and retrieving dependencies [Software Packages depend on each other to be build] is called artifact management
- Traditionally you need to setup your own artifacts management
- **Code Artifact** : Is Serve, Scalable and cost effective artifact management for software development
- Works with common dependency management tools such as Maven, Gradle, npm, turine, PIP and Nuget
- Developers and cloud build can then retrieve dependencies straight from artifact



SECURITY SERVICES



What are security services?



AWS Security is responsible for protecting the global infrastructure that runs all the Amazon Web Services cloud services and the cloud itself. This infrastructure includes the hardware, software, and networks. Amazon Web Services has its priority in protecting this network.



Types of security services



- Artifacts
- Certificates Manager
- Secrets Manager
- Inspector
- Cloud HSM
- Cognito
- IAM



Artifacts SERVICES



ARTIFACTS



Artifacts is not really a service

Portal that provides customers with on-demand access to AWS Compliance documentation and AWS agreements

Artifacts reports:

Allows you to download AWS Security and compliance documents from 3rd party auditors like AWS Certifications, Payment Card Industry [PCI], and System and Organization Control [SOC], reports

Artifacts Agreement: Allows you to review accept and track the status of AWS Agreements such as BAA, HIPAA for individual account or in your Organization



Certificate Manager

SERVICES

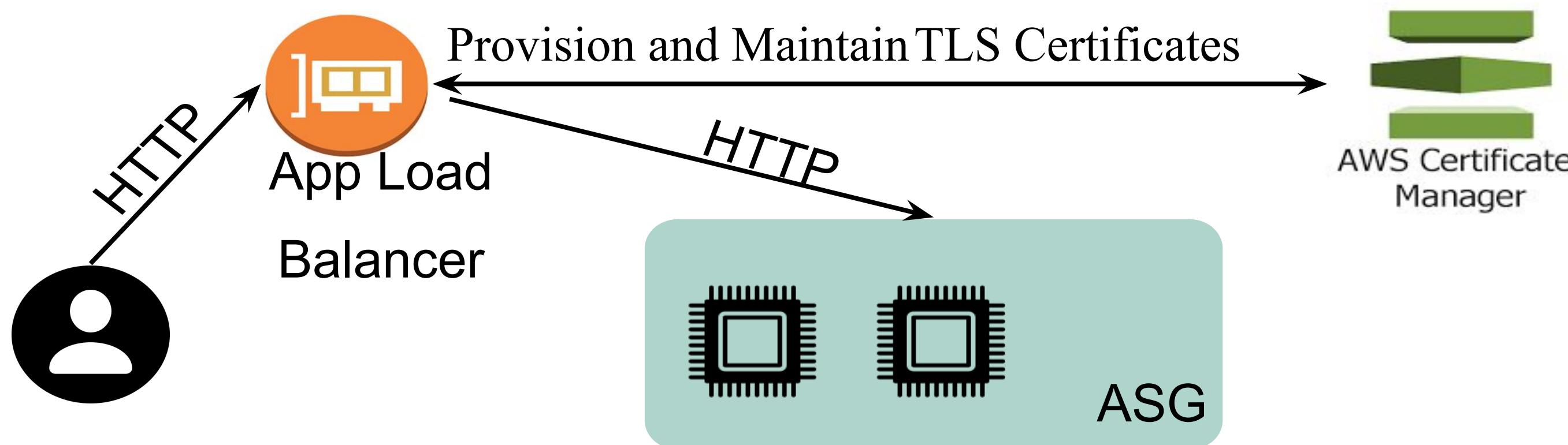


aws
A yellow curved arrow pointing upwards and to the right, positioned below the lowercase "aws" text.

Certificates Manager



- Easily provision , manage, deploy SSL/TLS certificates
- Used to provide in-flight encryption for websites [HTTPS]
- Support both public and private TLS Certificates
- Free of Charge for Public TLS Certificate
- Integration with ELB, CloudFront, API's On gateway



Secrets Manager SERVICES



Secrets Manager



- Newer Service, meant for storing secrets
- Capability of rotation of secrets every X [Any Number] days
- Automate generation of secrets on rotation [Lambda]
- Integration with AWS RDS [MYSQL, Postgresql, Aurora]
- Secrets are encrypted using KMS
- Mostly meant for RDS Integration



AWS Secrets Manager

Inspector SERVICES



Inspector

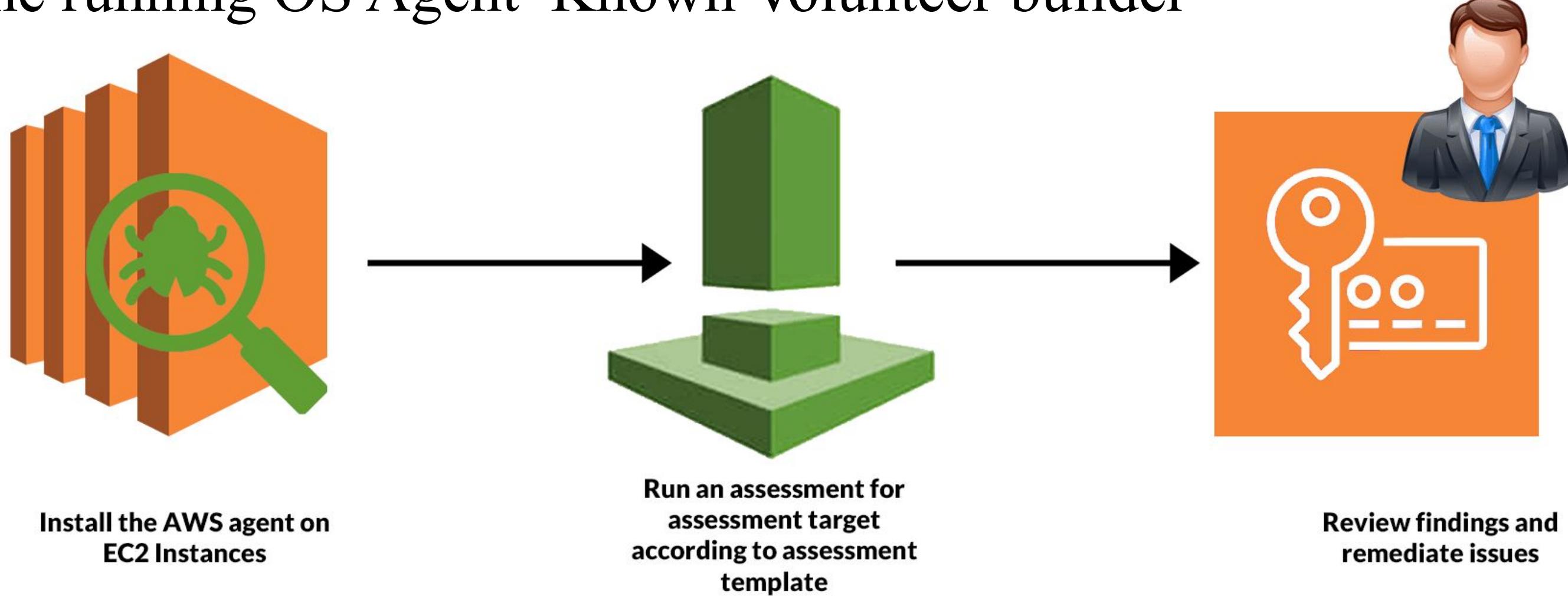


Automated Security Assessments

For EC2 Instance:

Leaving SSN [AWS System Manager] Agent

Analyze the running OS Agent Known Volunteer builder



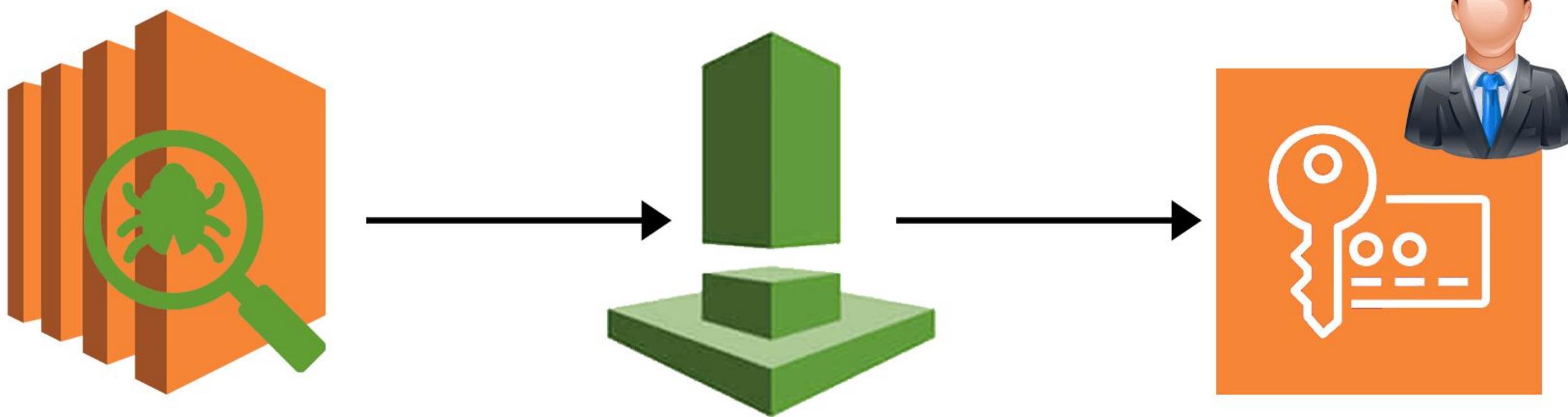
Inspector

For Lambda Functions:

Identify Software vulnerabilities in function code and package dependencies

Assessment of function as they are deployed

Reporting & Integration with AWS Security Hub



Install the AWS agent on
EC2 Instances

Run an assessment for
assessment target
according to assessment
template

Review findings and
remediate issues



Cloud HSM SERVICES

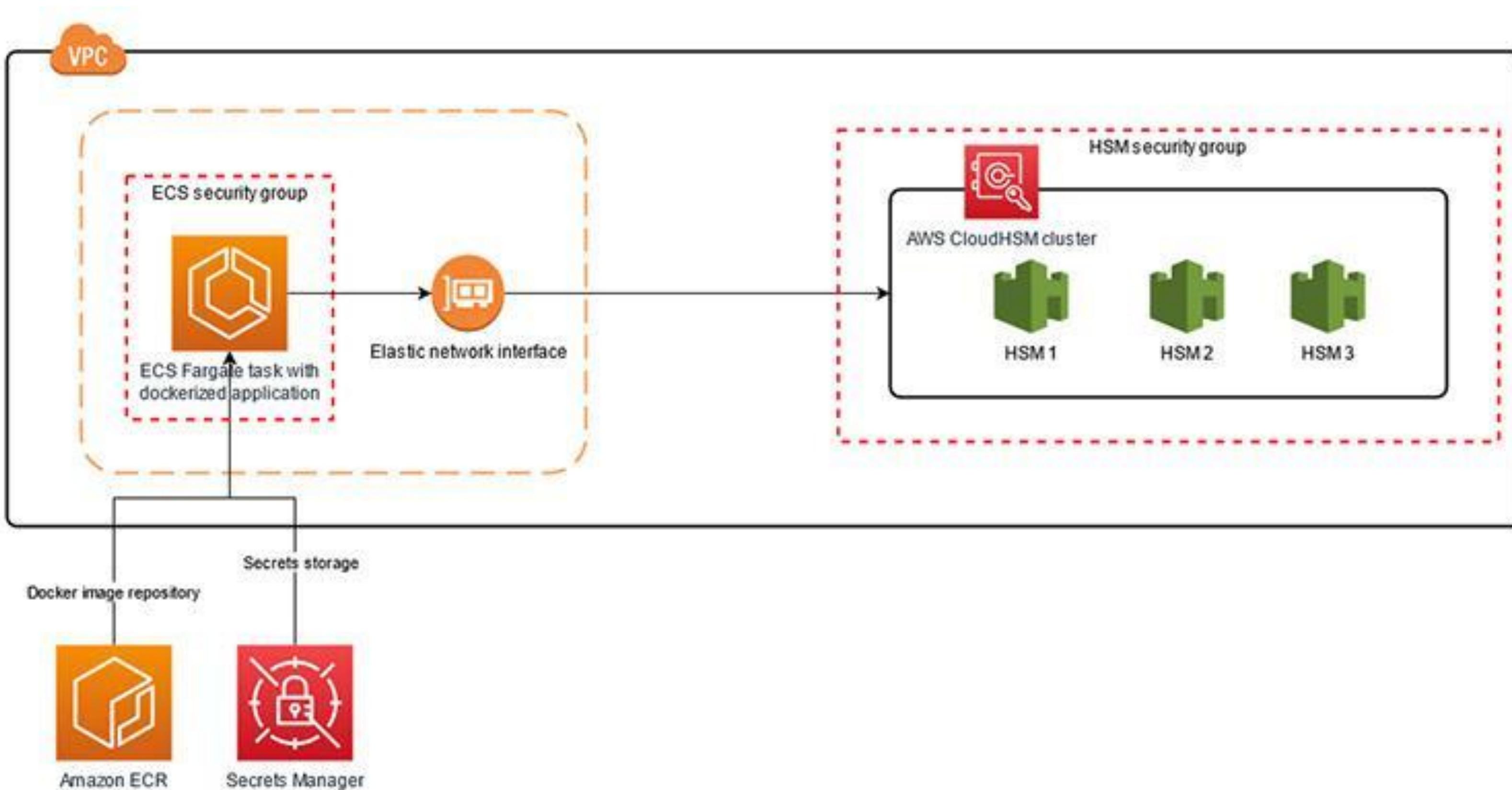


CLOUD HSM



- KSM --Key Management Services
- AWS Manages the software for encryption
- Anytime you hear "encryption" for AWS Service
- Encryption Opt-in : EBS, S3 Redshift, RDS, EFS
- Encryption automatically enabled: Cloud Trail Logs, S3 Glacier
- CloudHSM ->AWS Provision encryption hardware
- Dedicated hardware
- You manage your own encryption keys entirely

CLOUD HSM



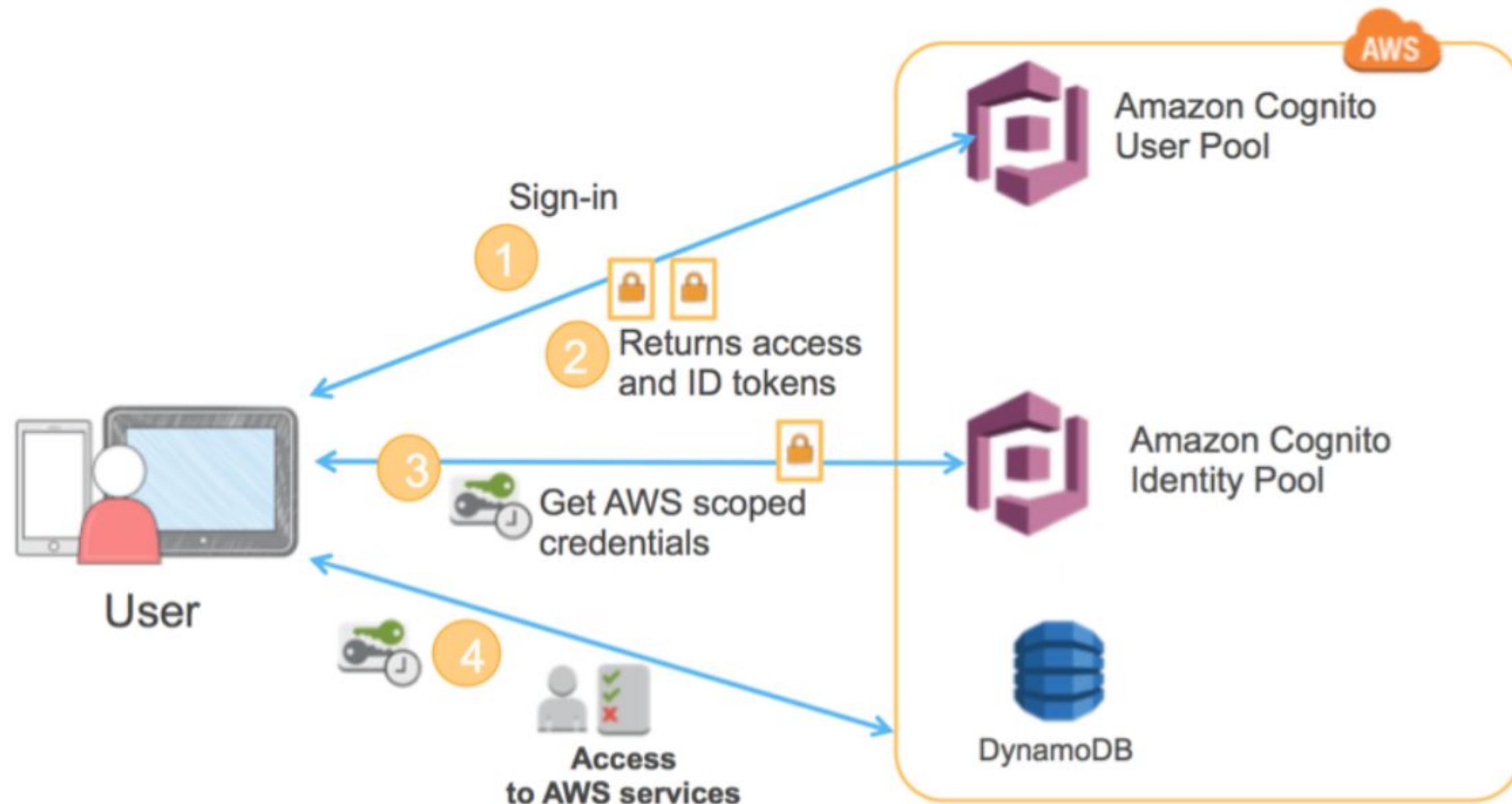
Cognito SERVICES



Cognito



We can add signup, sign-in feature and control access to your Web or Mobile Application



IAM SERVICES



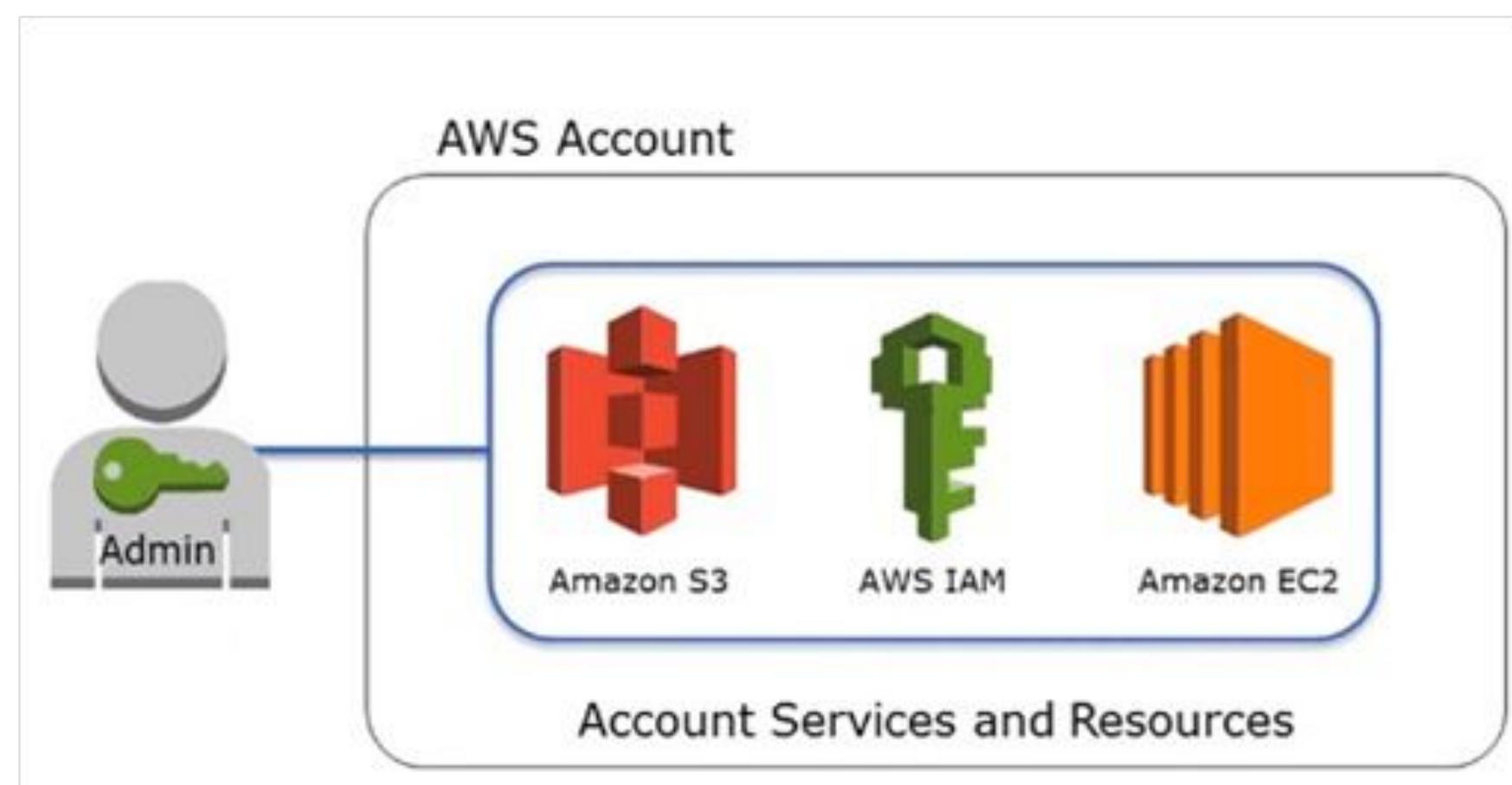
IAM-Identity Access Management



- It is a web service that helps you securely control access to AWS resources
- With IAM we can centrally manage permission control AWS resources
- By Using IAM to control who is authenticated and authorized to use resources

Ex: Sign -in AWS account

- You can access all Services
- Identity root user AWS account user
- To sign in we use email & password



IAM-Identity Access Management



IAM Features:

- Shared access to AWS account
- Granular permissions
- Secure access to AWS resources for application that run on EC2
- Multi Factor Authentication
- Identity Federation
- Integrated with many AWS Services



IAM-Identity Access Management



Access IAM :

AWS Management Console

AWS Command Line Tools (CLI-Command Line Interface)

AWS SDK [Software Development Kit]

IAM Query API





Thank You