

Amazon Polly

You can use Custom Lexicons to **customize pronunciation of specific words**

You can use Speech Synthesis Markup Language (**SSML**) and **SSML tag**
For example **<break>**, **<emphasis>**



You can select **Newsreader Speaking Style**

Brand Voice



Amazon Polly is a service that turns **text into lifelike speech**,



Support communications are generated across email, chat, social, and phone calls



Amazon S3
Text data and call transcripts are stored in an Amazon S3 data lake



Amazon Comprehend
Process the text to extract key phrases, entities, and sentiment for further analysis



Amazon Redshift
Extracted data is analyzed to identify what actions lead to the most positive customer outcomes



Insights are applied to customer service training to improve the rate of positive outcomes in less time

Example: In this example, a restaurant is reviewing a customer review to understand where they can improve their business.

Sample Text: I loved the burger, but the service was slow.

Text	Entity Type	Entity Confidence Score	Sentiment	Score
I	Person	0.99	Neutral	0.99
Burger	Other	0.99	Positive	0.99
Service	Attribute	0.99	Negative	0.99

Amazon Comprehend



Amazon Lex

Chatbots with conversational AI

Import Custom SSL Certificate To AWS Certificate Manager

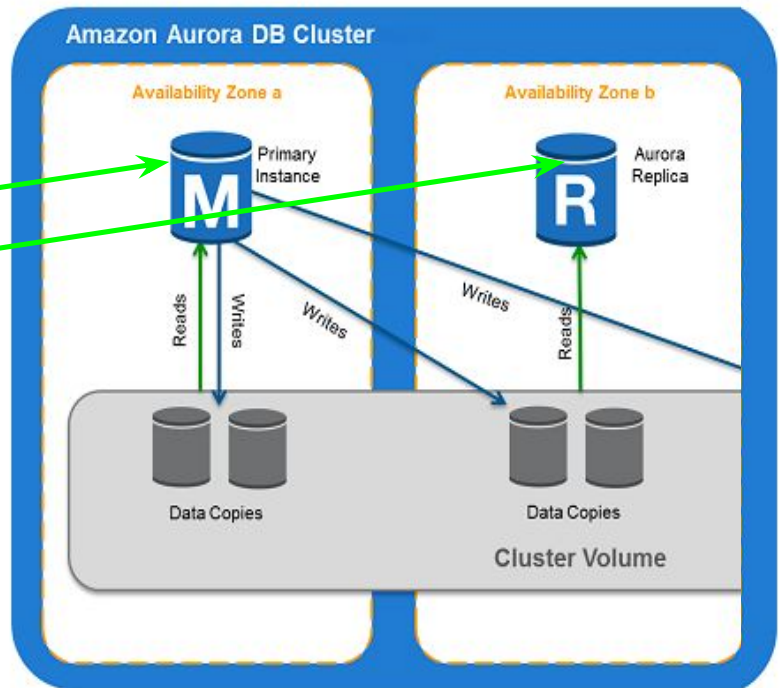


Importing

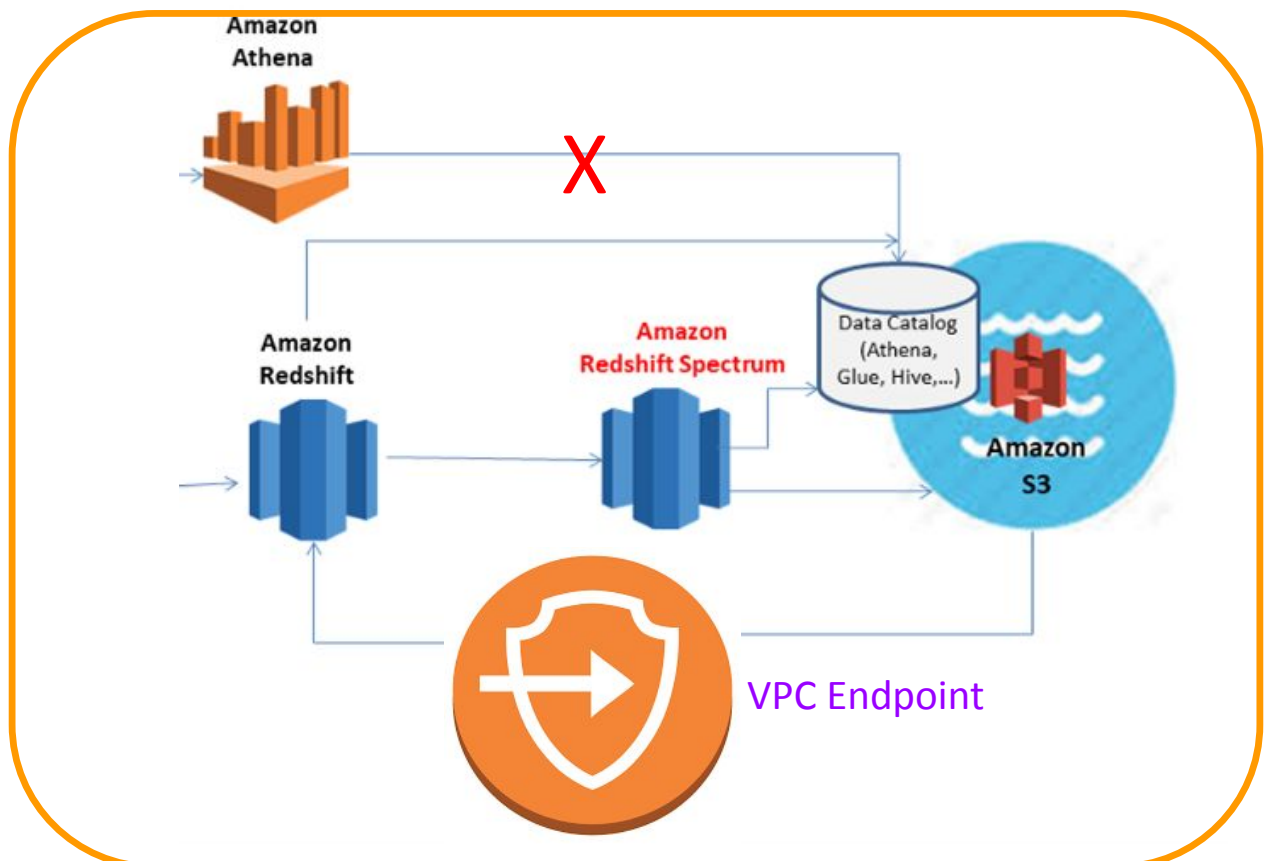
Only N.Virginia

Usage

Available for all
regions



- Cluster endpoint (Primary instance)
- Reader endpoint (Read replicas)
- Custom endpoints (Provides LB database connections with multiple)
- Instance endpoints (One specific DB instance)





Server-Side Encryption with Amazon S3-Managed Keys (SSE-S3)



Server-Side Encryption with KMS keys Stored in AWS Key Management Service (SSE-KMS)



Same as SSE-S3 but additionally you can track the key when and who use etc. Also it may charge.

Server-Side Encryption with Customer-Provided Keys (SSE-C)



You provide the key AWS provide the encryption



Real time data streaming tool



Visualization the data



Amazon Athena

Serverless -query Amazon S3



Amazon Glue

Extracting Data



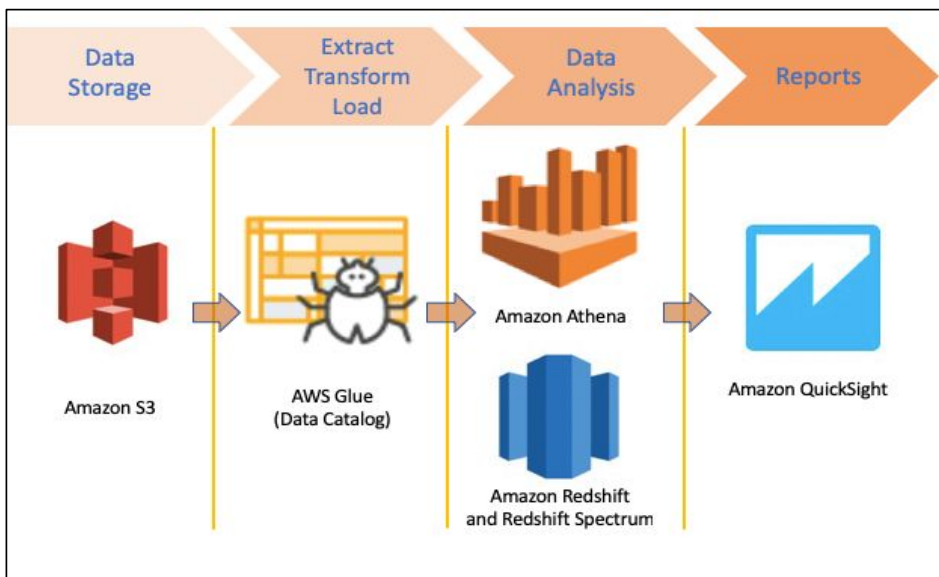
Amazon EMR

Amazon EMR is a **managed big data compute clusters** of Apache Spark, Apache Hive, Apache HBase, Apache Flink, Apache Hudi, and Presto.



Redshift with Spectrum

Amazon Redshift Spectrum- **query Amazon S3 for Redshift**

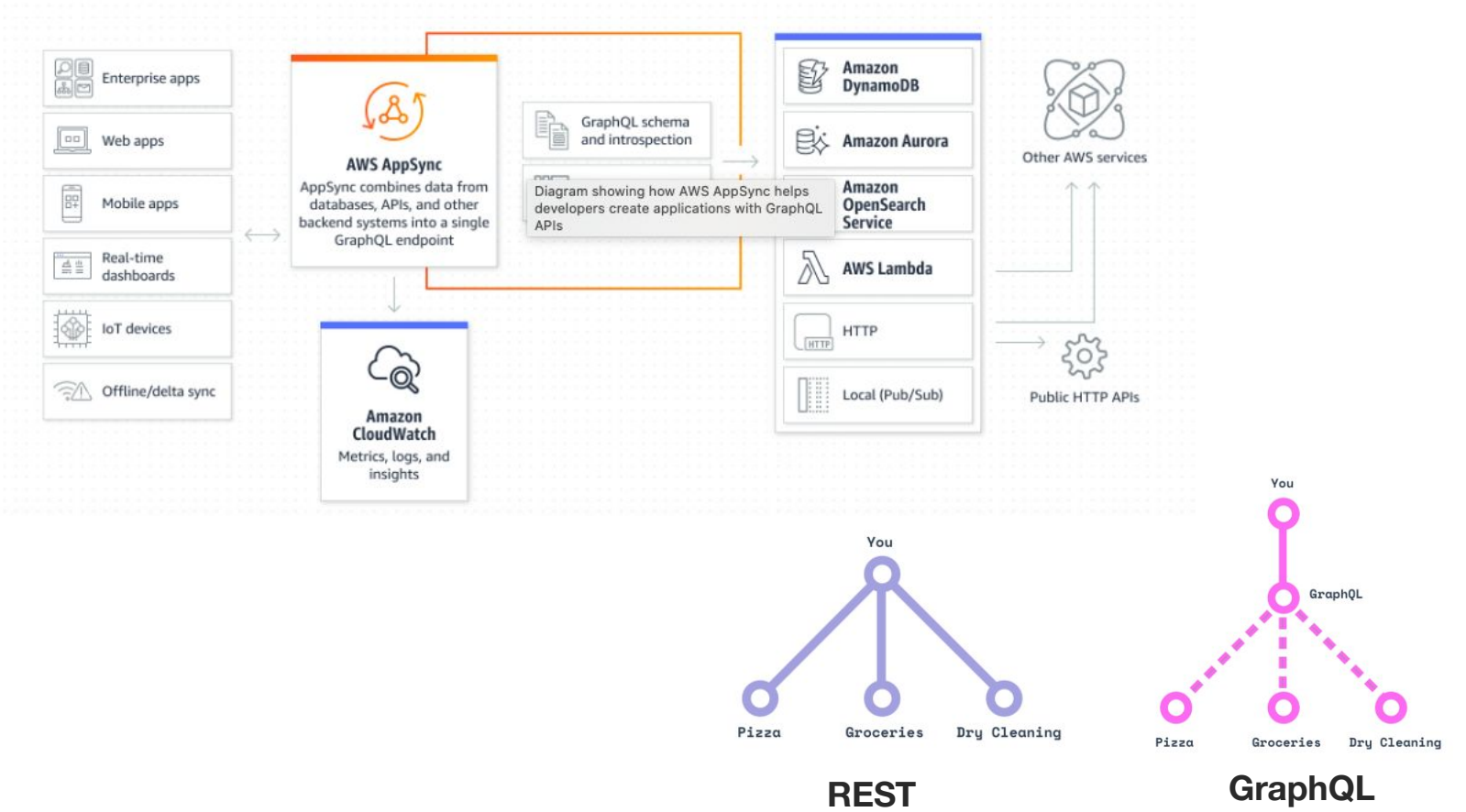


Glacier Retrieve Policies

- Free Tier Only Policy
- Max Retrieval Rate Policy
- No Retrieval Limit Policy

Glacier Retrieve Types

- Expedited 1–5 minutes
- Standard 3–5 hours
- Bulk 5–12 hours.





Amazon FSx for Windows



Amazon FSx for Lustre



- For windows Instance
- **Can't write/read S3**
- **Used with Windows Active directory**

- For Linux Instance
- **Can write/read S3**
- **No Windows Active directory solution**
- **HPC!!!!!!**

- For Linux Instance
- **Can't write/read S3**
- Increases and decreases the storage capacity automatically
- NFS

Deployment options for FSx for Lustre

Scratch File Systems are designed for temporary storage and shorter-term processing of data.

Persistent File Systems are designed for longer-term storage and workloads.

backed up your on-premises data

Storage Gateway

ISCSI

(Internet Small Computer System)

ISCSI

File Gateway****

Volume Gateway

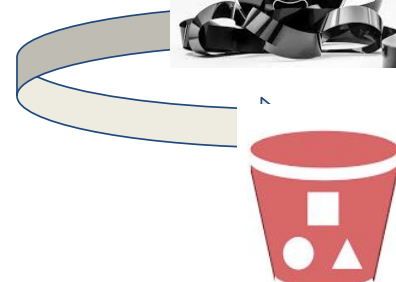
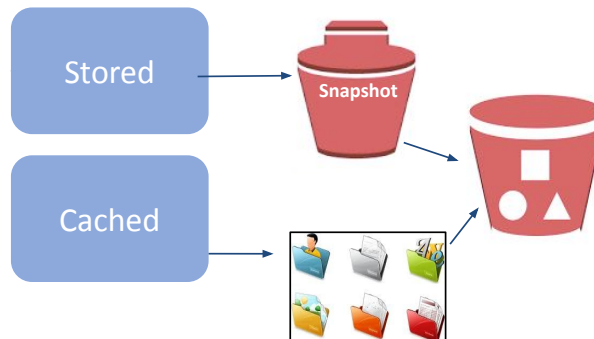
Tape Gateway

Network File System (NFS)
Server Message Block (SMB).

Stored

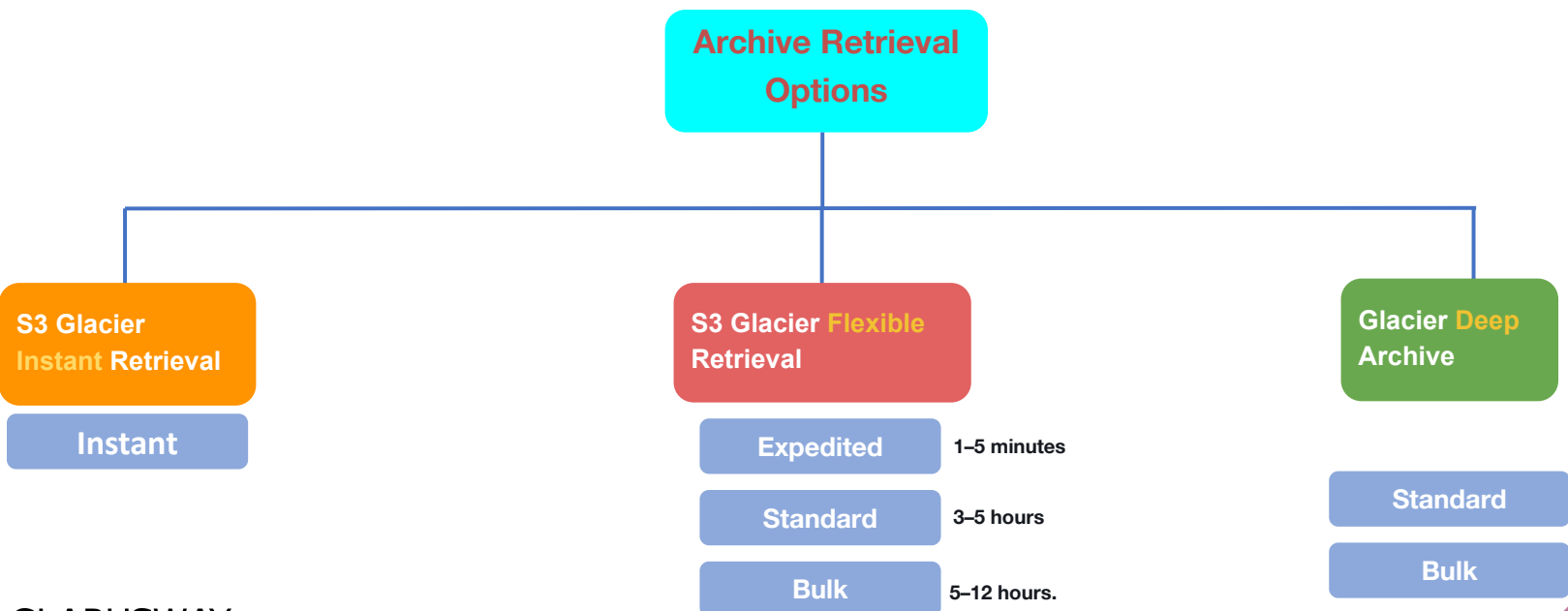
Snapshot

Cached

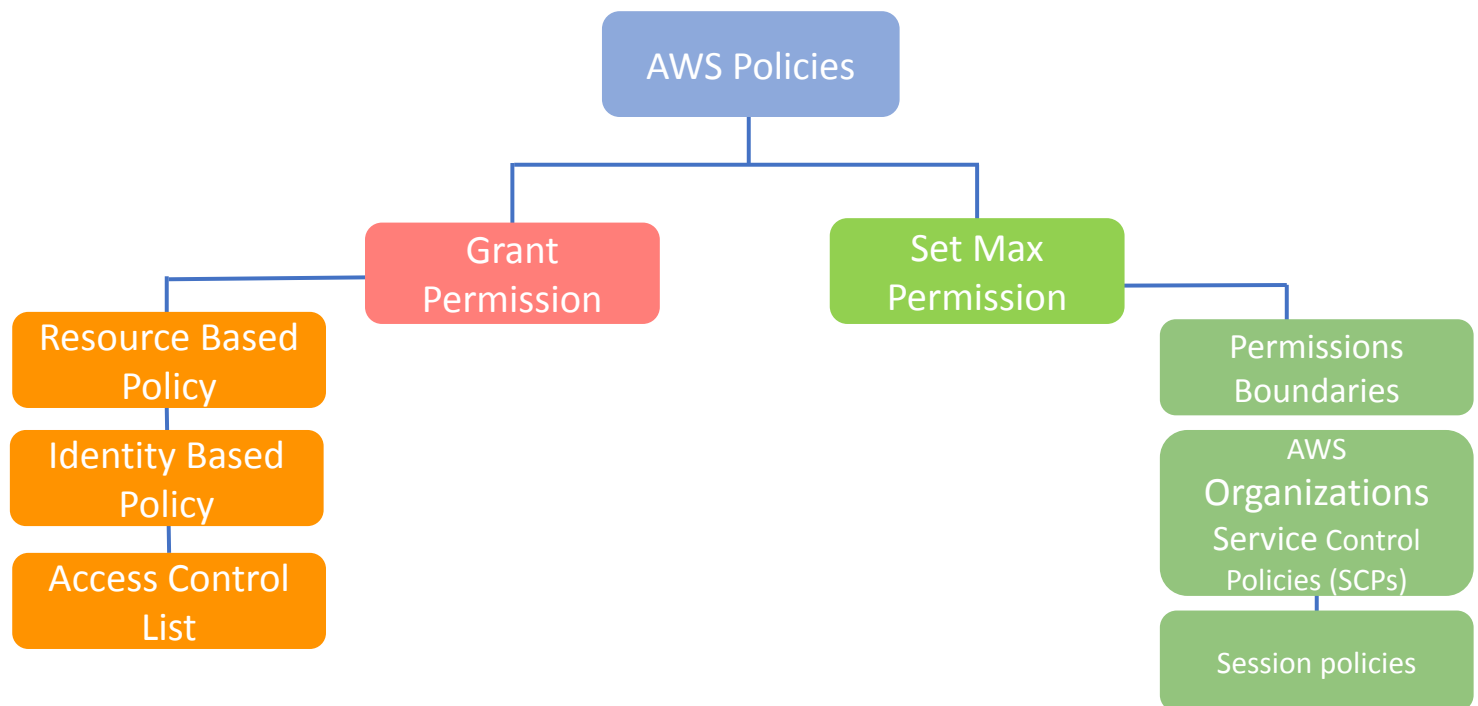


Storage Classes

Archive Retrieval Options



Policy Types



General

Name - optional

Name your file system.

Optional. Apply a name to your file system

Name can include letters, numbers, and +-=._:/ symbols, up to 256 characters.

Storage class [Learn more](#)

☒ Standard
Stores data redundantly across multiple AZs

☐ One Zone
Stores data redundantly within a single AZ

Automatic backups

Automatically backup your file system data with AWS Backup using recommended settings. Additional pricing applies. [Learn more](#)

☒ Enable automatic backups

Lifecycle management

EFS Intelligent-Tiering uses Lifecycle Management to automatically achieve the right price and performance blend for your application by moving your files between the Standard and Standard-Infrequent Access storage classes. [Learn more](#)

Transition into IA

Transition files from Standard to Standard-Infrequent Access.

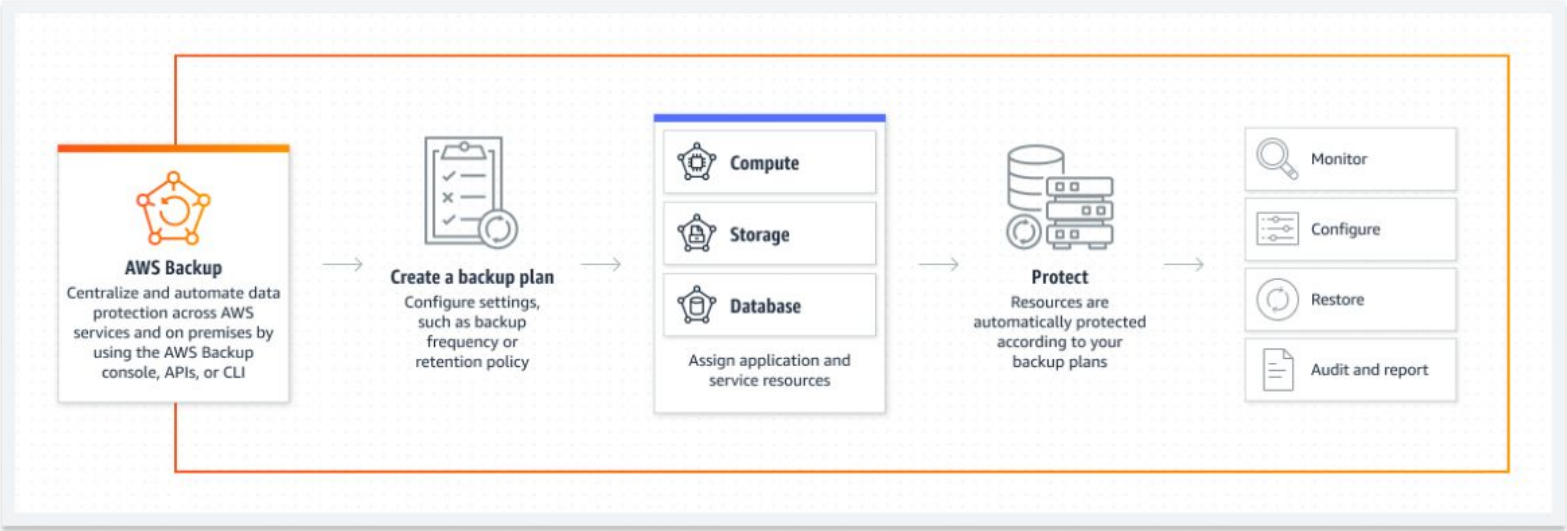
30 day(s) since last access

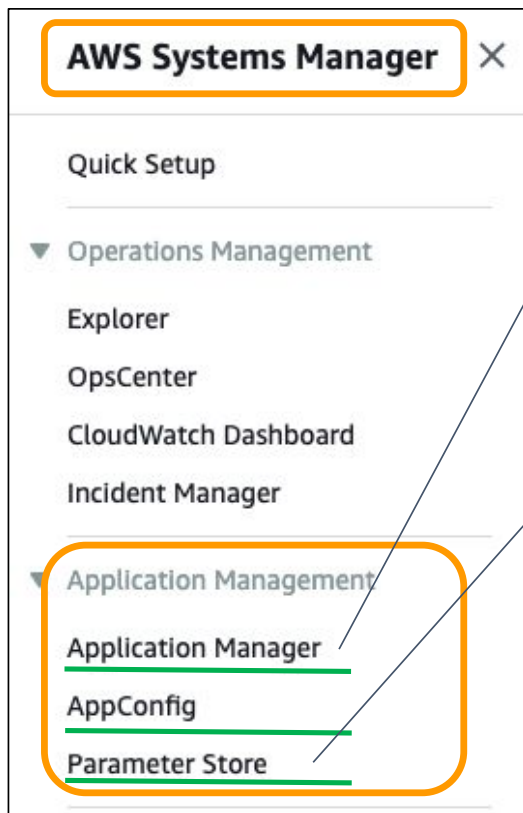
Transition out of IA

Transition files from Standard-Infrequent Access to Standard.

None

AWS Backup

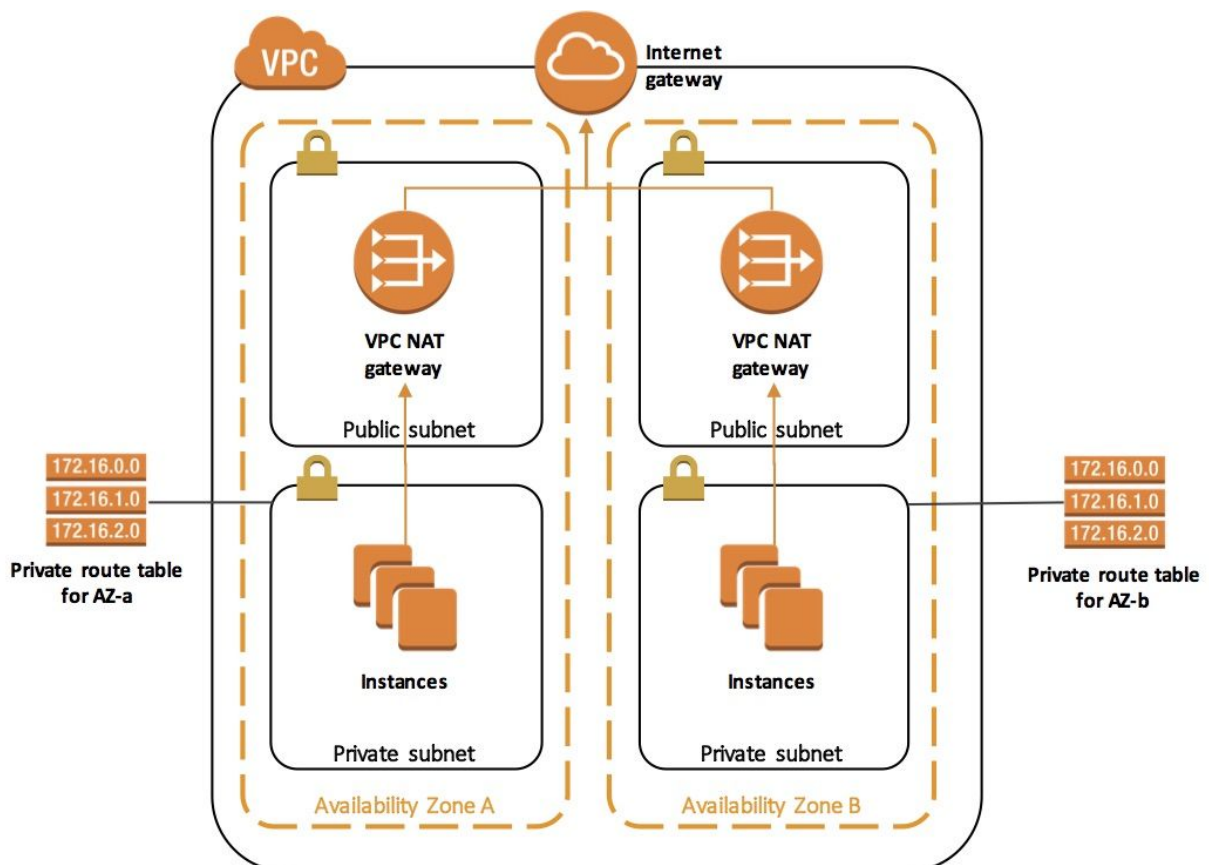




Application Manager, a capability of AWS Systems Manager, helps **DevOps engineers investigate and remediate issues** with their AWS resources in the context of their applications and clusters.

Parameter Store can store data such as **passwords, database strings, Amazon Machine Image (AMI) IDs, and license codes as parameter values**. You can store values as **plain text or encrypted data**.

Secrets Manager enables you to replace hardcoded credentials in your code, including **DB passwords, with an API call** to Secrets Manager to retrieve the secret programmatically.



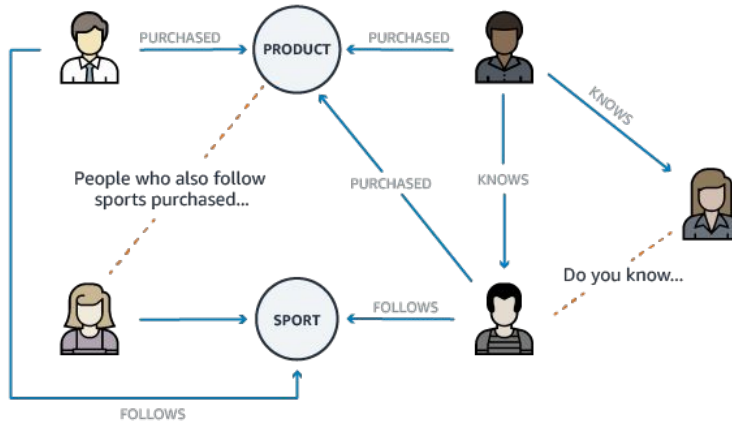


SQL

NoSQL

MongoDB-compatible
Databases

Fully managed
Graph Database



Amazon DocumentDB



DynamoDB



MongoDB-compatible
Databases

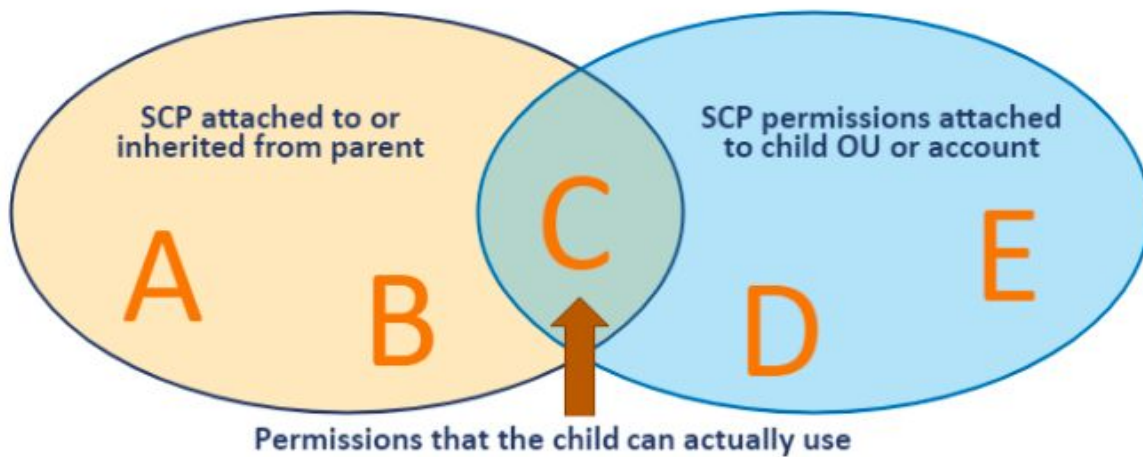
Managed Apache
Cassandra-compatible Database

Fully managed
Graph Database

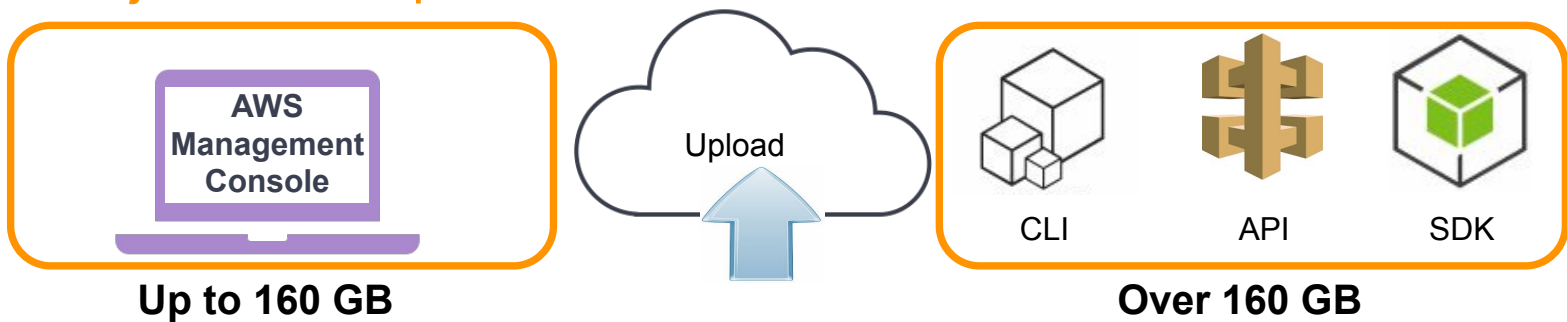
(NoSQL)

(NoSQL)

(NoSQL)

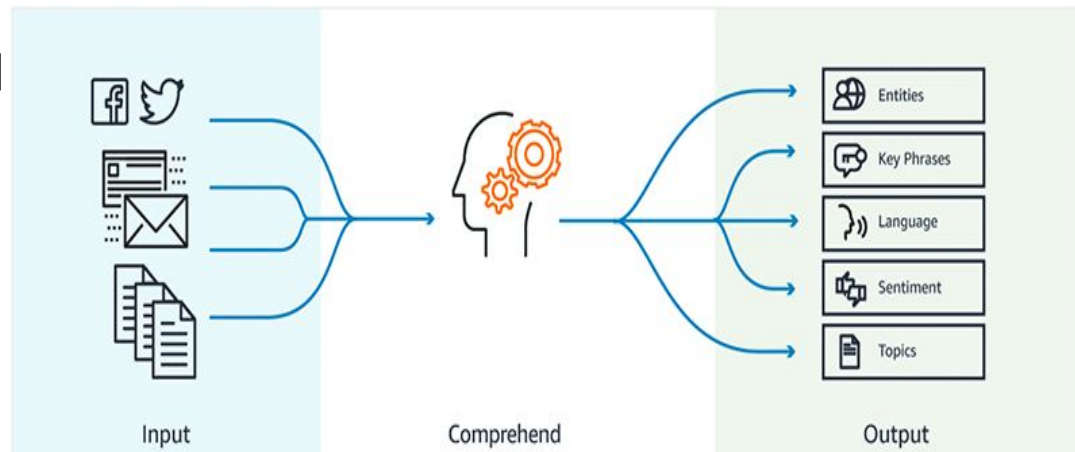


Object in S3-Upload



- The max. size of an object you can upload via **AWS Management Console** is **160 GB**.
- For uploading a file **greater than 160 GB**, the AWS CLI, AWS SDK, or API is needed to be used
- The max size of a **single file** can be put in a bucket is **5 TB**.

Amazon Comprehend



Q: Who has access to my content that is processed and stored by Amazon Comprehend?

Only authorized employees will have access to your content that is processed by Amazon Comprehend. Your trust, privacy, and the security of your content are our highest priority and we implement appropriate and sophisticated technical and physical controls, including encryption at rest and in transit, designed to prevent unauthorized access to, or disclosure of, your content and ensure that our use complies with our commitments to you. Please see the AWS [data privacy FAQs](#) for more information.

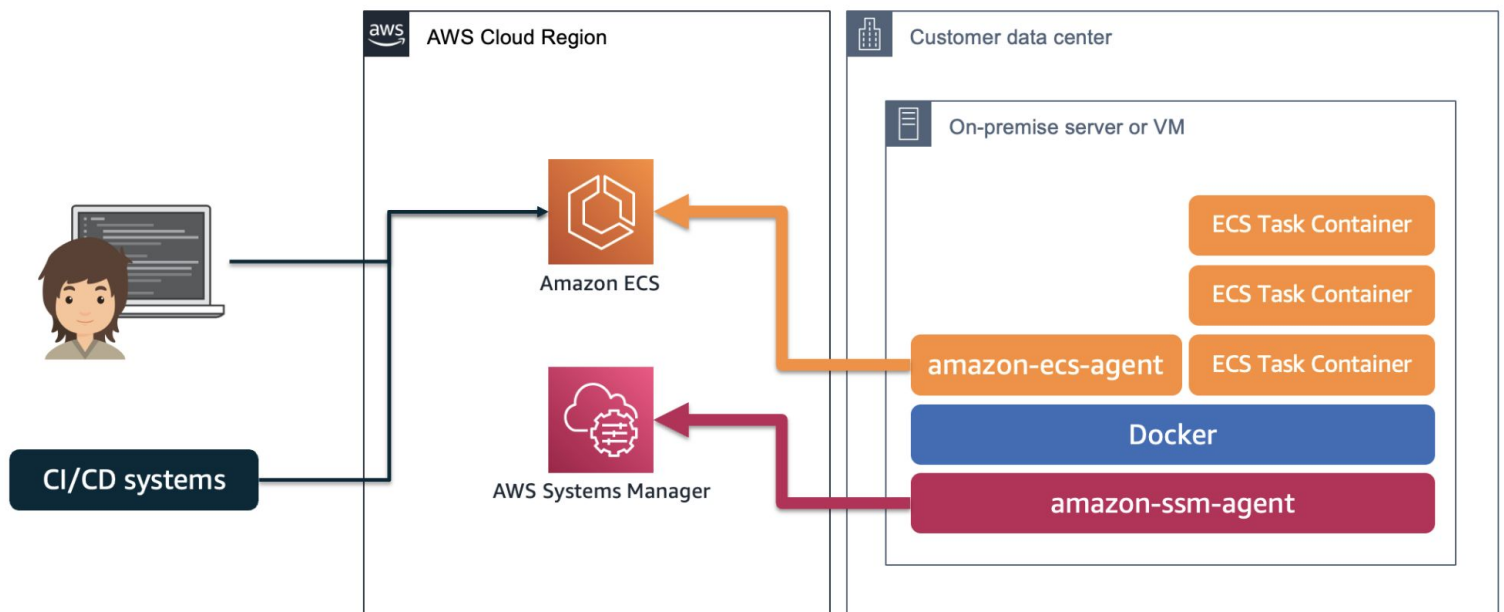
[Show less](#)

Q: Do I still own my content that is processed and stored by Amazon Comprehend?

You always retain ownership of your content and we will only use your content with your consent.

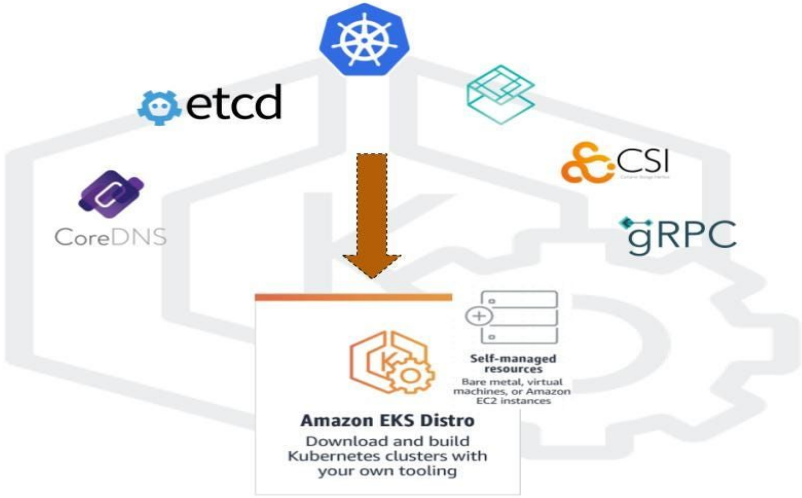
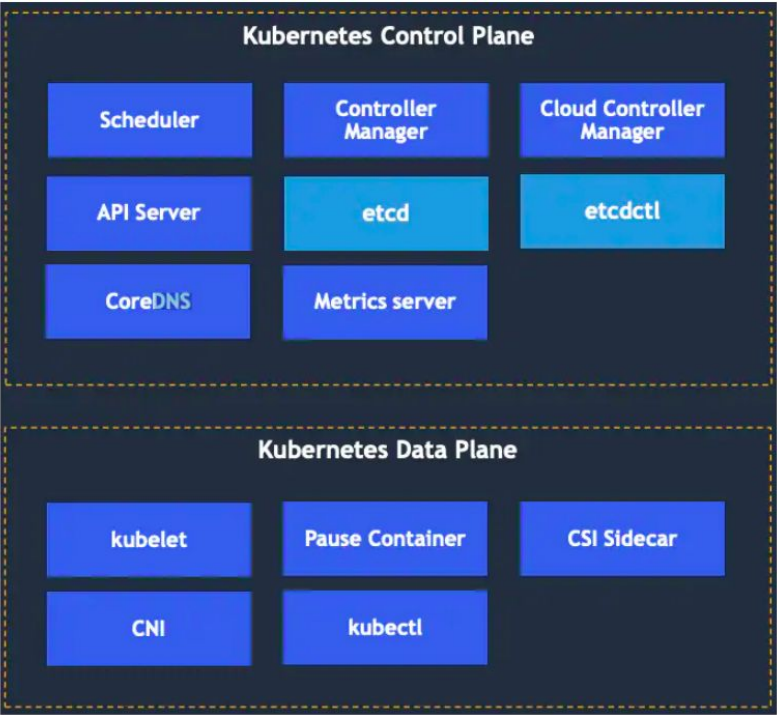
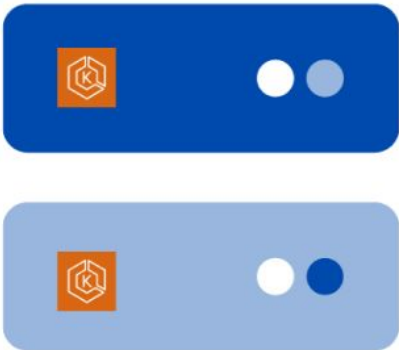
[Show less](#)

ECS Anywhere Overview



EKS Anywhere on Bare Metal

NO NEED FOR VIRTUALIZATION





AWS X-Ray supports

(Amazon EC2),
 Amazon ECS),
 AWS Lambda,
 AWS Elastic Beanstalk.

MySQL and PostgreSQL databases (self-hosted, Amazon RDS, Amazon Aurora),
 Amazon DynamoDB.

Amazon Simple Queue Service and Amazon Simple Notification Service.

AWS WAF

- Web Application Firewall (WAF) operates specifically at protocol **layer 7** and monitors **HTTP traffic**
- Typically protects web applications against specific attacks:
 - **cross-site forgery**
 - **cross-site-scripting (XSS)**
 - **SQL injection**
 - **Distributed-denial-of-service (DDoS)**

AWS Shield Advanced

AWS Shield Advanced provide protections against **Distributed Denial of Service (DDoS)** attacks for AWS resources at the

- Network layer (**layer 3**)
- Transport layers (**layer 4**)
- The application layer (**layer 7**).

Database authentication

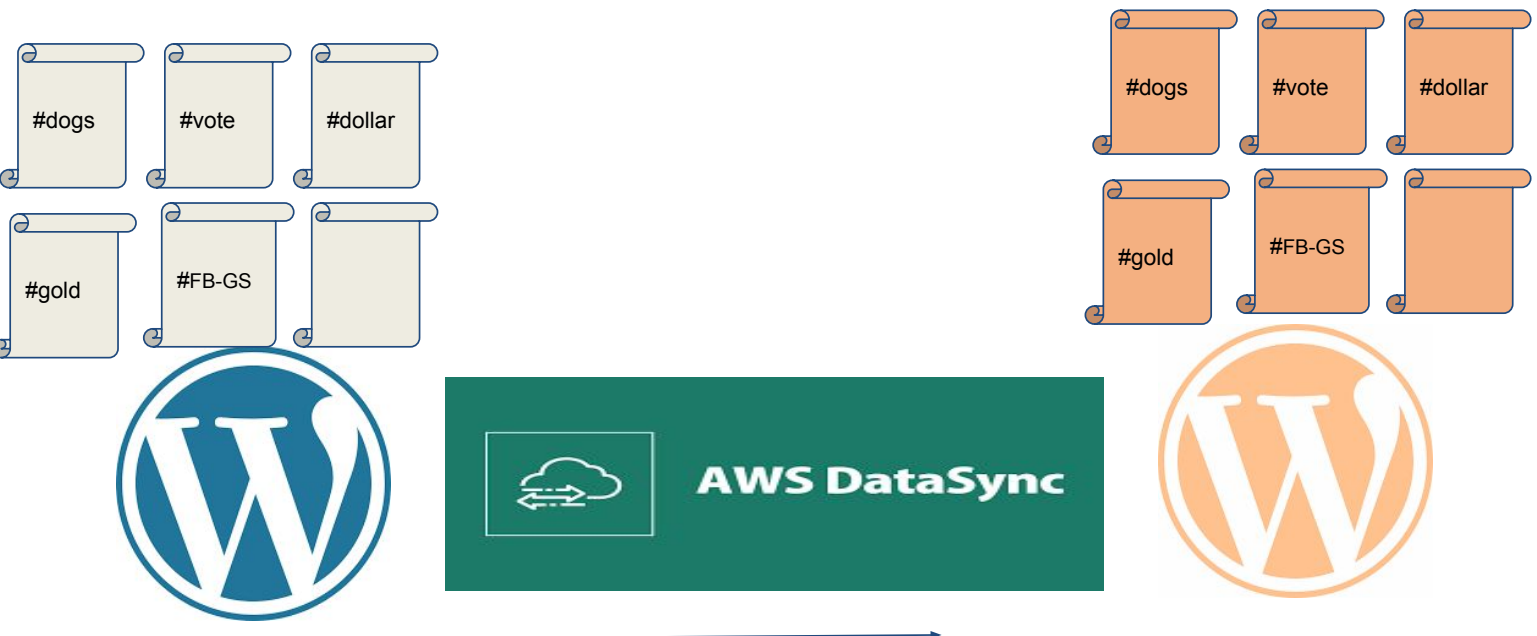
Database authentication options [Info](#)

- ☒ **Password authentication**
Authenticates using database passwords.
- ☐ **Password and IAM database authentication (not available for Multi-AZ DB cluster)**
Authenticates using the database password and user credentials through AWS IAM users and roles.
- ☐ **Password and Kerberos authentication (not available for Multi-AZ DB cluster)**
Choose a directory in which you want to allow authorized users to authenticate with this DB instance using Kerberos Authentication.

Using IAM authentication with Aurora MySQL

With Aurora MySQL, authentication is handled by `AWSAuthenticationPlugin`—an AWS-provided plugin that works seamlessly with IAM to authenticate your IAM users. Connect to the DB cluster and issue the `CREATE USER` statement, as shown in the following example.

```
CREATE USER jane_doe IDENTIFIED WITH AWSAuthenticationPlugin AS 'RDS';
```



☐ B.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Action": [
        "dynamodb:BatchGetItem",
        "dynamodb:BatchPutItem",
        "dynamodb:BatchDeleteItem"
      ],
      "Effect": "Allow",
      "Resource": [
        "arn:aws:dynamodb:region:account:table/TABLENAME",
        "arn:aws:dynamodb:region:account:table/TABLENAME/*"
      ]
    }
  ]
}
```

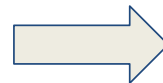
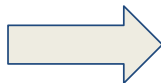


When request submissions exceed the steady-state request rate and burst limits, API Gateway begins to throttle requests. Clients may receive **429 Too Many Requests** error responses at this point.

GET



API



DynamoDB

Concurrency is the number of requests that your function is serving at any given time.

When requests come in faster than your function can scale, or when your function is at maximum concurrency, **additional requests fail with a throttling error (429 status code).**

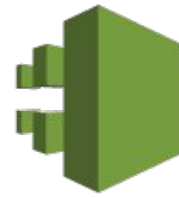


Amazon CloudWatch

What is going on?

Who did ?

- user
- role
- aws services



Amazon
CloudTrail

Enable

From Cloudwatch
Console

From Related
Services console



Amazon
API Gateway

execution logging

- requests and responses.

accesslogging



Amazon S3

Publish Direct from S3



Amazon CloudFront

S3 Distribution with
S3 URL

PreSigned URL
URL is changed

Signed URL
URL is changed

Only specific file

Signed Cookies

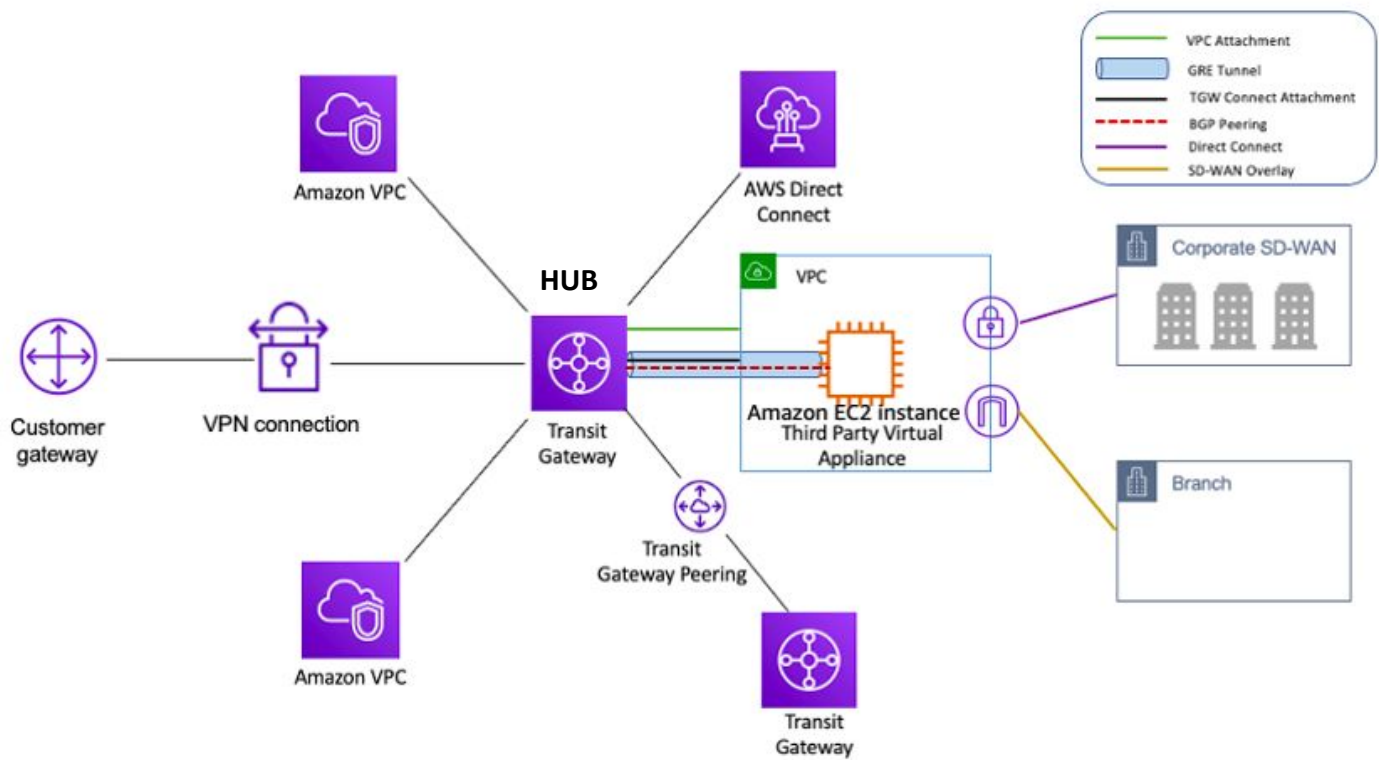
As same as the
Cloudfront URL

Whole Website/multiple file

Publicly Accessible

Only Accessible from
restricted people

-Object based not
bucket based



Snapshot permissions

Preferences

You are sharing an unencrypted DB snapshot. When you share an unencrypted DB snapshot, you give the other account permission to make a copy of the DB snapshot and to restore a database from your DB snapshot.

DB snapshot
dataabase-01-snapshot

DB snapshot visibility

☒ Private
☐ Public

AWS account ID

123456789123

Add

AWS account ID

Delete

123456789123

Delete

Cancel

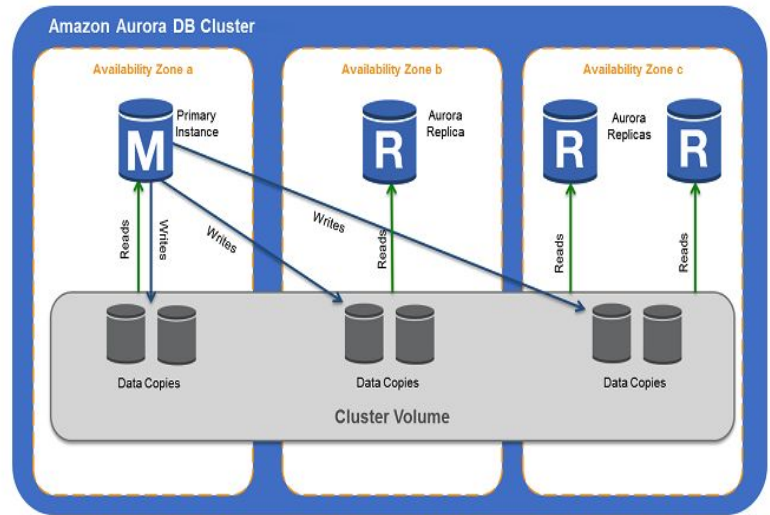
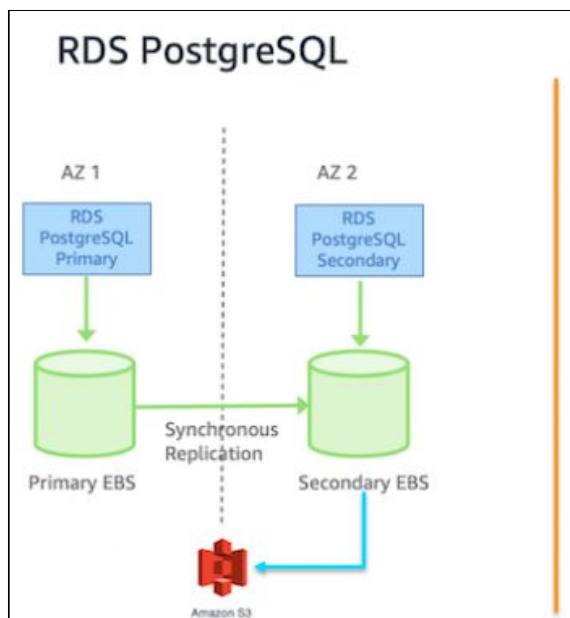
Save



First copy
then
restore

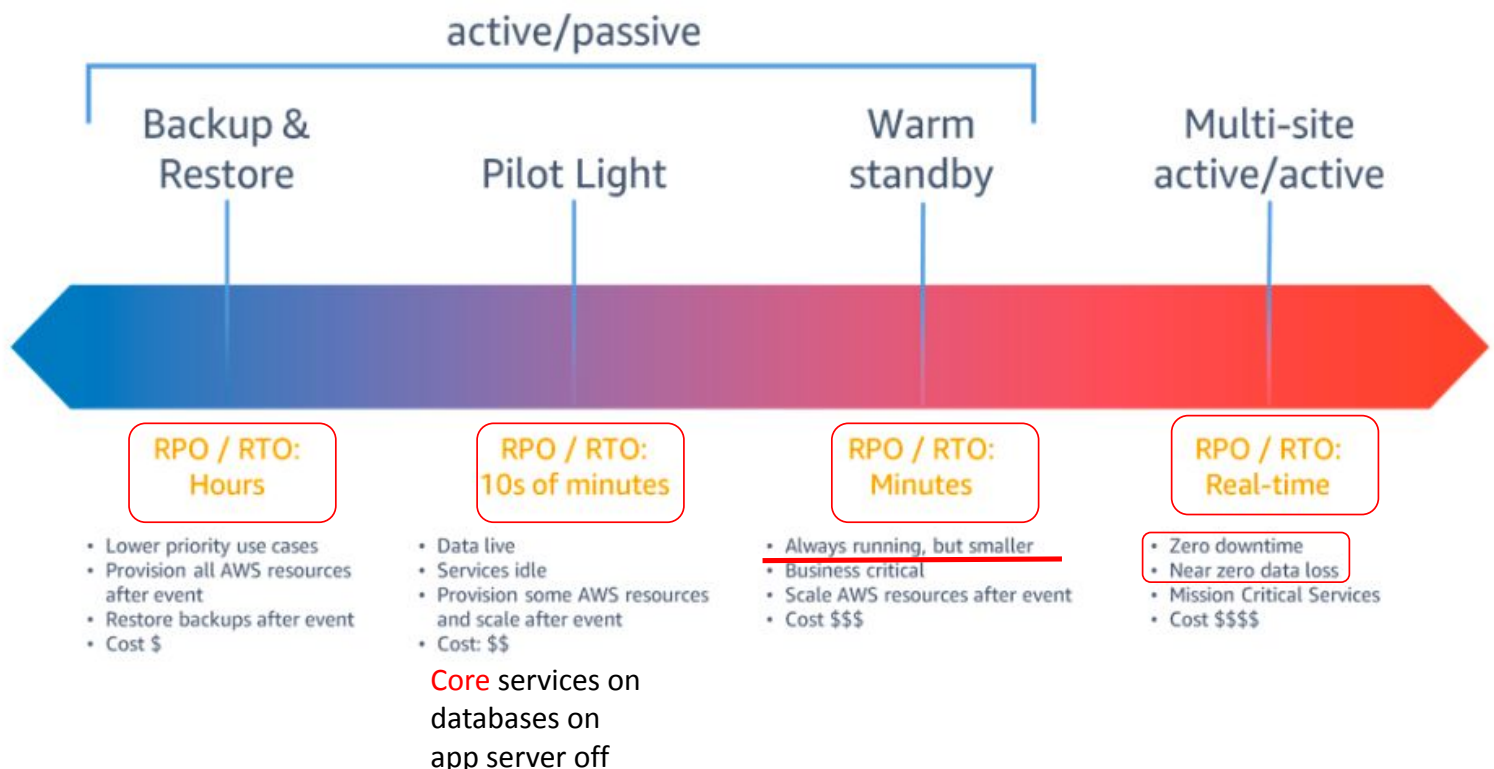


Direct
restore

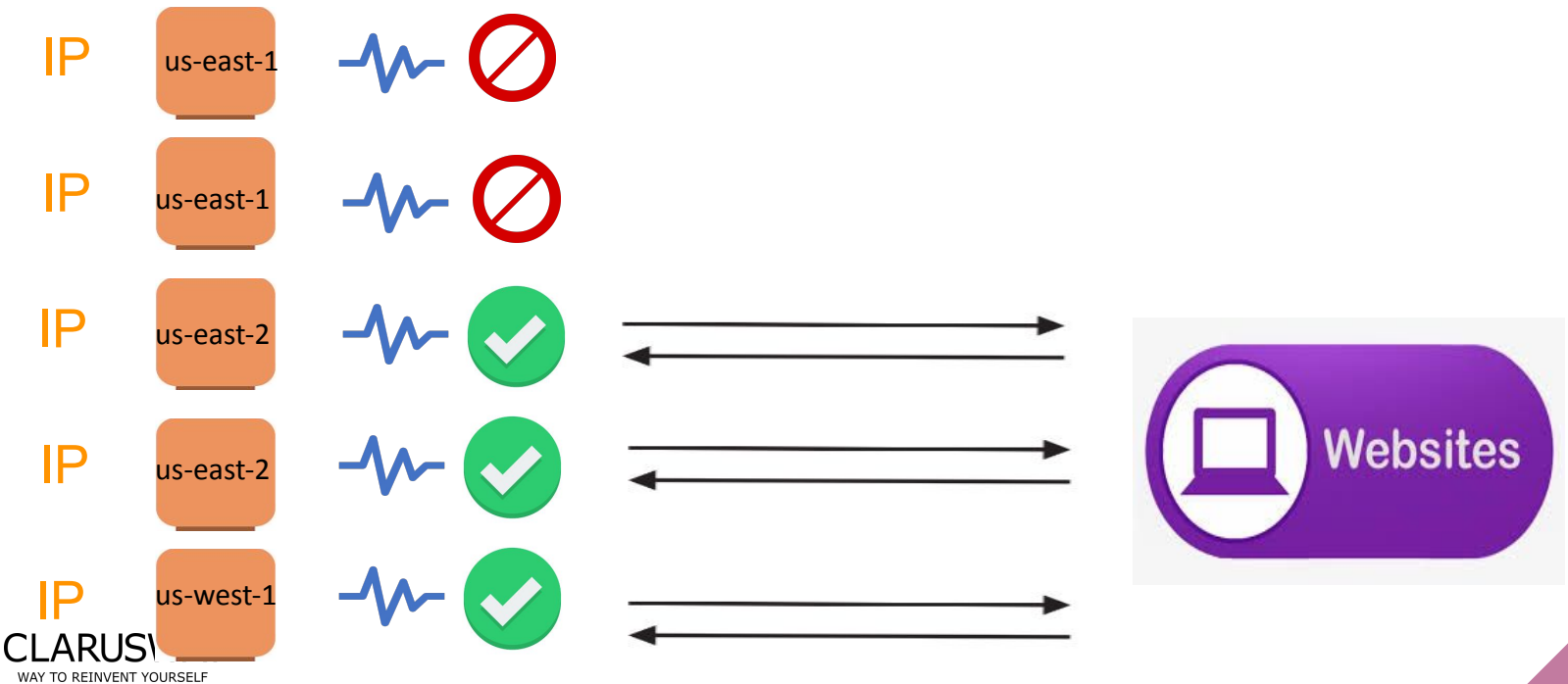


- **Storage auto-repair** >>> Prevent **disk failure and data loss** >>> Back up with cluster volume
- **Survivable page cache** >>> Cache and database mechanism is separate.
So even the DB fails, cache still works
- **Crash recovery** >>> Designed to recover from a crash **almost instantaneously**

Recovery Time Objective (RTO) >>>>> How much time it takes ?
Recovery Point Objective (RPO) >>>>> Avoiding losing data



Multivalue Answer Routing Policy (8 IPs)



Snapshots (1/20)

Owned by me Search

Name	Snapshot ID	Size	Description
<input checked="" type="checkbox"/> AWS Application Migration Service Base Snapshot	snap-0536abcf5b9947b64	1 GiB	AWS Appli
<input type="checkbox"/> terraform_example	snap-079a82f599ea388b8	8 GiB	Created by

Snapshot ID: snap-0536abcf5b9947b64 (AWS Application Migration Service Base Snapshot)

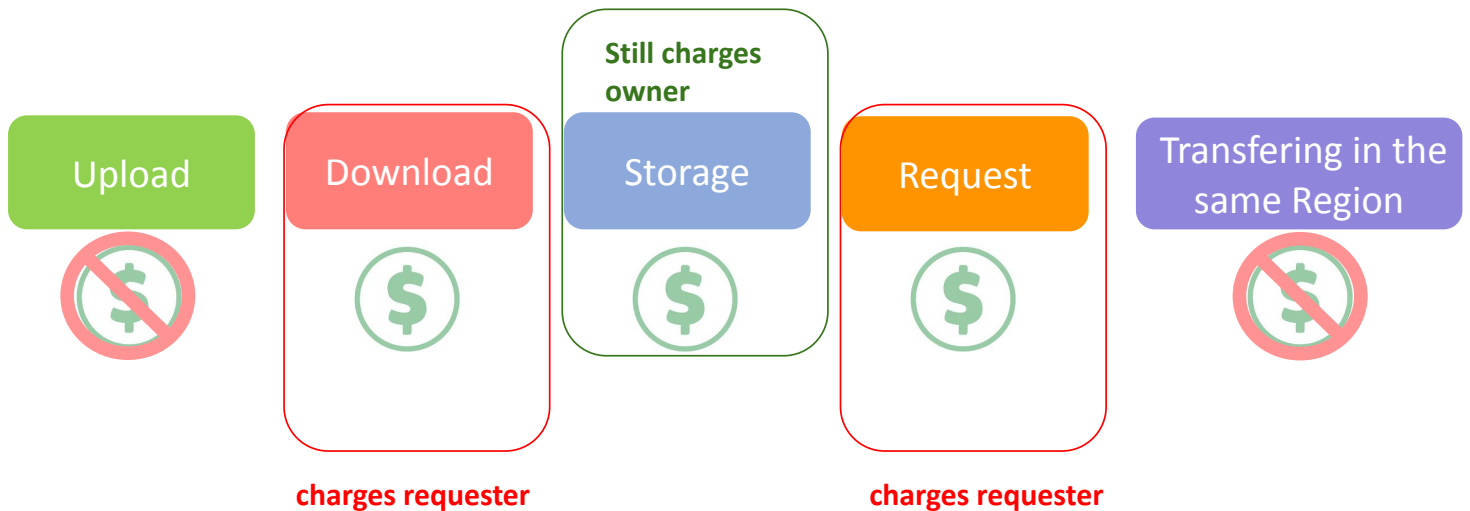
Details	Permissions	Storage tier	Tags
Snapshot ID snap-0536abcf5b9947b64 (AWS Application Migration Service Base Snapshot)	Size 1 GiB	Progress Available (100%)	Started Fri Dec 10 2021 23:04:32 GMT+0300 (GMT+03:00)
Owner 046402772087	Volume ID vol-0205c7f9191916b77	KMS key ID -	Product codes -
Encryption Not encrypted	KMS key ARN -		

Actions

- Create volume from snapshot
- Create image from snapshot
- Copy snapshot
- Modify permissions
- Manage fast snapshot restore
- Archive snapshot**
- Restore snapshot from archive
- Change restore period
- Delete snapshot
- Manage tags

When you need to access an archived snapshot, you can restore it from the archive tier to the standard tier, and then use it

Requester Pays buckets for storage transfers and usage



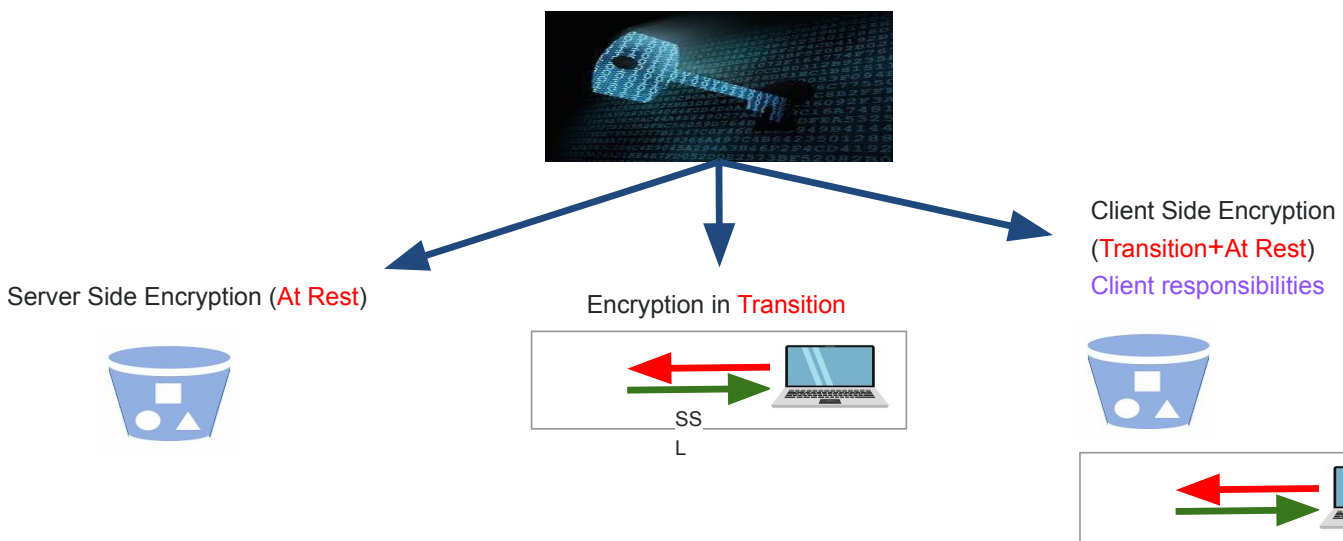
After you configure a bucket to be a Requester Pays bucket, requesters must include `x-amz-request-payer` in their API request header, for **DELETE, GET, HEAD, POST, and PUT requests**, or as a parameter in a REST request to show that they understand that they will be charged for the **request and the data download**.

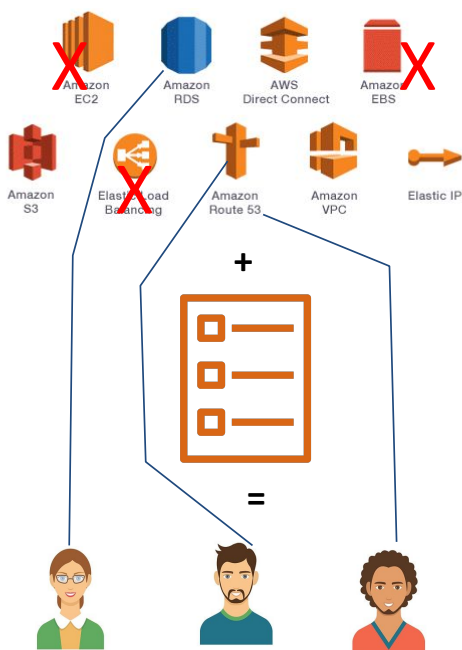
WAY TO REINVENT YOURSELF

Client-side encryption is the act of encrypting your data locally to ensure its security as it passes to the Amazon S3 service. The Amazon S3 service receives your encrypted data; it does not play a role in encrypting or decrypting it.

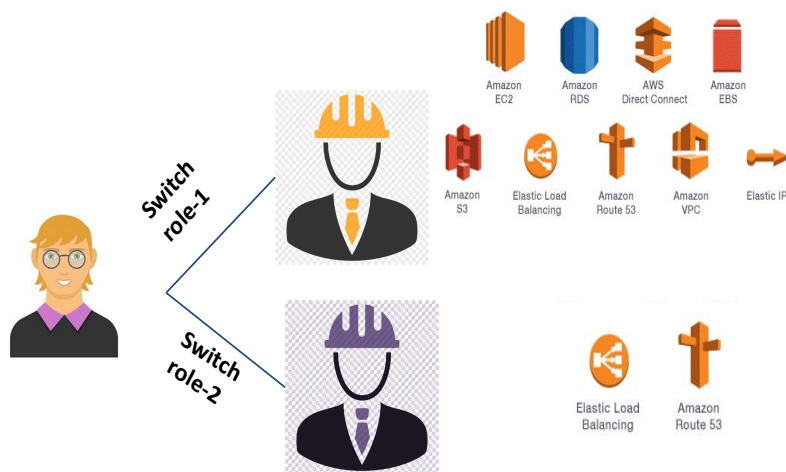
To enable client-side encryption, you have the following options:

1. Use a key stored in AWS Key Management Service (AWS KMS). You encrypt data with KMS key. S3 it does not play a role in encrypting or decrypting it.
2. Use a key that you store within **your application**.





Vs



You need to switch the role to take action

Resource based Policy can not be attach all resources .(For example **except Lambda and Serverless App Repo** you can not attach any rbp for any compute service including EC2)

You can use **only one** role at the same time

Summary of AWS Security Services

AWS WAF /Web App. Firewall

Preventative

L7 protection on AWS APIGW, AWS ALBs, and AWS CloudFront

Security Groups /Host-Based Firewall

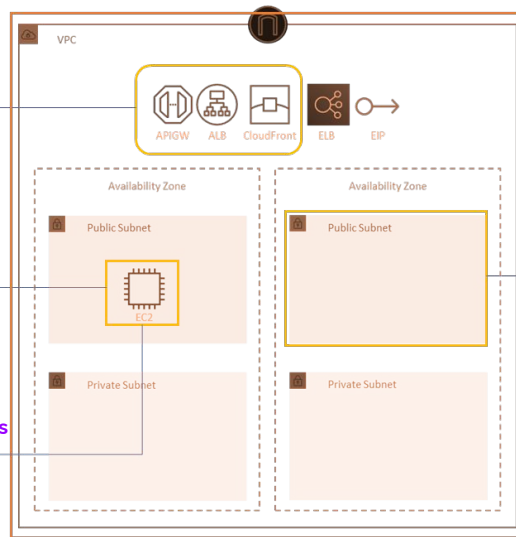
Preventative

IP/Port/Protocol filtering protection on instances

AWS Inspector /Vulnerability Scanners

Detective

Rule-based vulnerability detection



AWS Network Firewall

Preventative

IP/Port/Protocol filtering at VPC

/Intrusion Prevention/Detection System

Network Access Control List (NACL) / Network Firewall

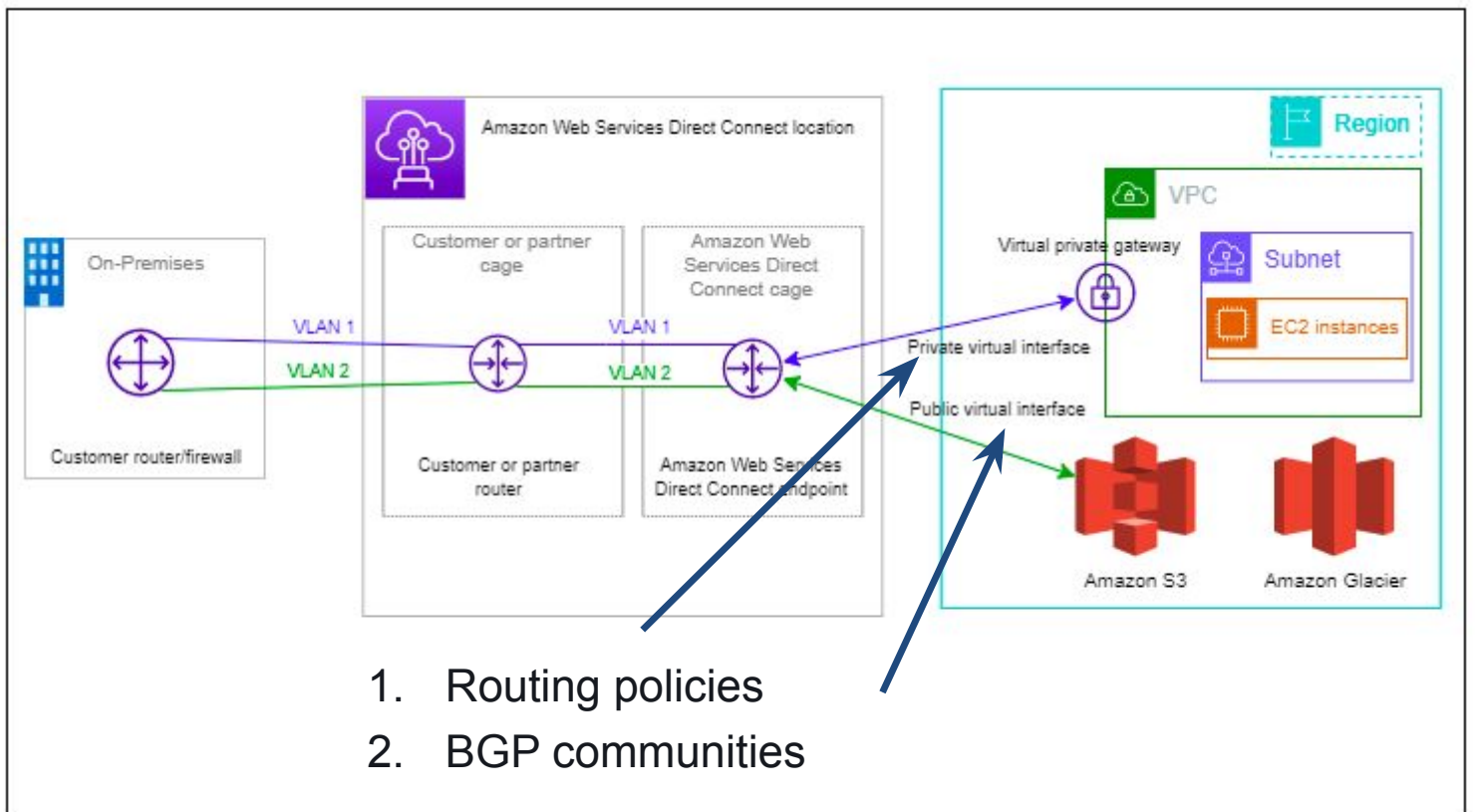
Preventative

IP/Port/Protocol filtering at subnet level

GuardDuty / Security Information and Event Management (SIEM)

Detective

Log monitoring and alerting



For Cloudtrail Logs

Server-Side Encryption with Amazon S3-Managed Keys (SSE-S3)



Server-Side Encryption with KMS keys Stored in AWS Key Management Service (SSE-KMS)



Server-Side Encryption with Customer-Provided Keys (SSE-C)



Amazon FSx file systems

FSx_N

Amazon FSx for NetApp ONTAP

Fully managed shared storage built on NetApp's popular ONTAP file system.

FSx_Z

Amazon FSx for OpenZFS

Fully managed shared storage built on the popular OpenZFS file system.

FSx_W

Amazon FSx for Windows File Server

Fully managed shared storage built on Windows Server.

FSx_L

Amazon FSx for Lustre

Fully managed shared storage built on the world's most popular high-performance file system.

- Compatible with Windows Active Directory

- HPC
- Compatible with S3

- Compatible with FSx File Gateway

backed up your on-premises data

Storage Gateway

ISCSI

(Internet Small Computer System)

ISCSI

Tape Gateway

File Gateway****

Volume Gateway

Stored

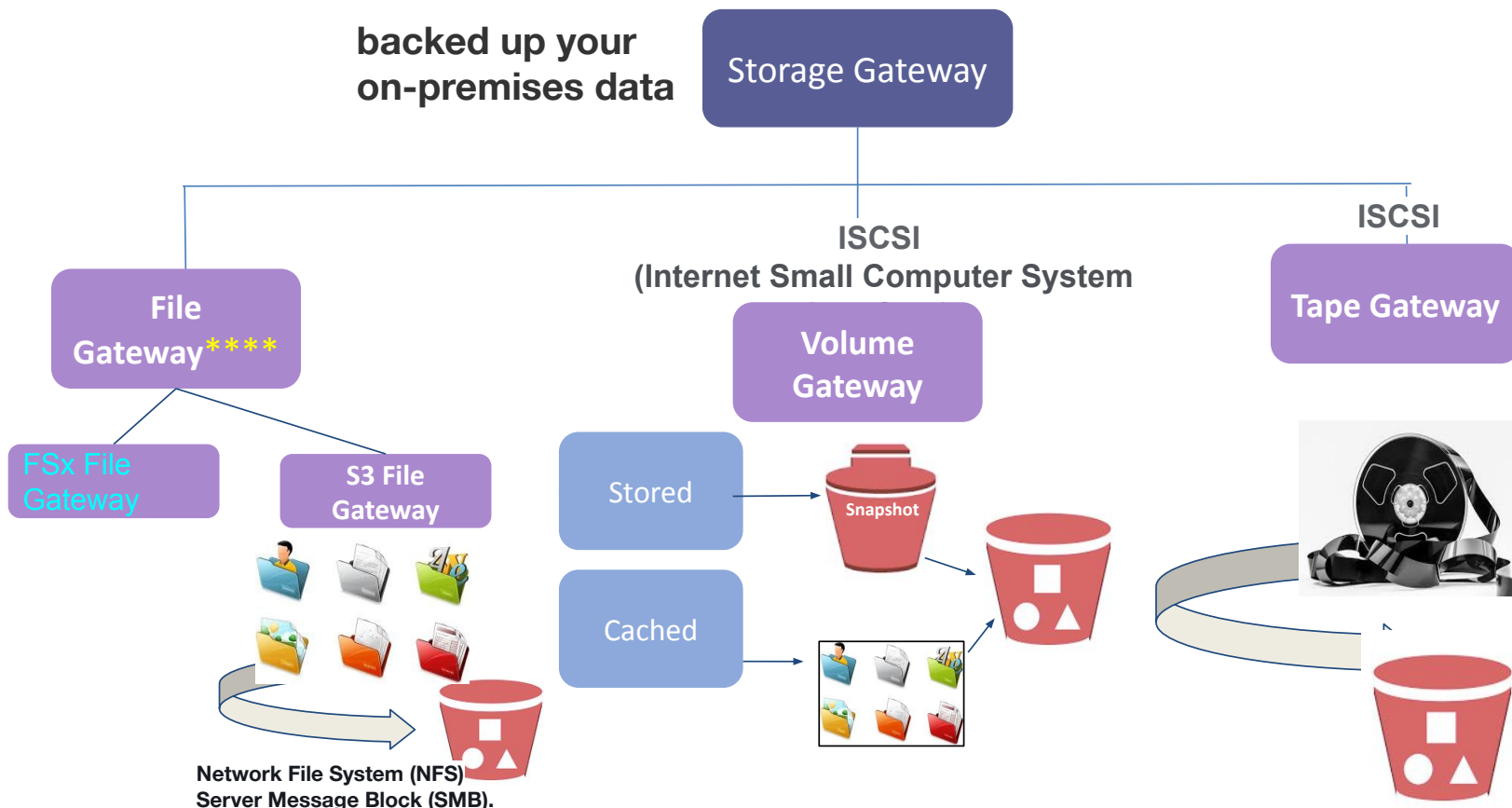
Snapshot












Cached












S3 File Gateway

FSx File Gateway

Network File System (NFS)
Server Message Block (SMB).



Database type	Use cases	AWS service
Relational	Traditional applications, enterprise resource planning (ERP), customer relationship management (CRM), ecommerce	 Amazon Aurora  Amazon RDS  Amazon Redshift
Key-value	High-traffic web applications, ecommerce systems, gaming applications	 Amazon DynamoDB
In-memory	Caching, session management, gaming leaderboards, geospatial applications	 Amazon ElastiCache  Amazon MemoryDB for Redis
Document	Content management, catalogs, user profiles JSON workloads	 Amazon DocumentDB (with MongoDB compatibility)
Wide column	High-scale industrial apps for equipment maintenance, fleet management, and route optimization	 * Amazon Keyspaces Apache Cassandra
Graph	Fraud detection, social networking, recommendation engines	 Amazon Neptune
Time series	Internet of Things (IoT) applications, DevOps, industrial telemetry	 Amazon Timestream
Ledger	Systems of record, supply chain, registrations, banking transactions	 Amazon Ledger Database Services (QLDB)

Database type	Use cases	AWS service
Relational	Traditional applications, enterprise resource planning (ERP), customer relationship management (CRM), ecommerce	 Amazon Aurora  Amazon RDS  Amazon Redshift
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Time series	Internet of Things (IoT) applications, DevOps, industrial telemetry	 Amazon Timestream
Ledger	Systems of record, supply chain, registrations, banking transactions	 Amazon Ledger Database Services (QLDB)

Volume 1 (AMI Root) (Custom)

Storage type [Info](#)

EBS

Device name - *required* [Info](#)

/dev/xvda

Snapshot [Info](#)

snap-07bb85133b158fe99

Size (GiB) [Info](#)

8

Volume type [Info](#)

gp2

IOPS [Info](#)

100 / 3000

Delete on termination [Info](#)

Yes

Encrypted [Info](#)

Encrypted

KMS key [Info](#)

Select

Q |

Specify a custom value...

Select

(default) aws/ebs

Key ID: 050b1069-46f9-4999-8119-b665edf12e38

149cfd4c-85e0-43d7-8477-3cd965cb65e1

Add new volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose

File systems

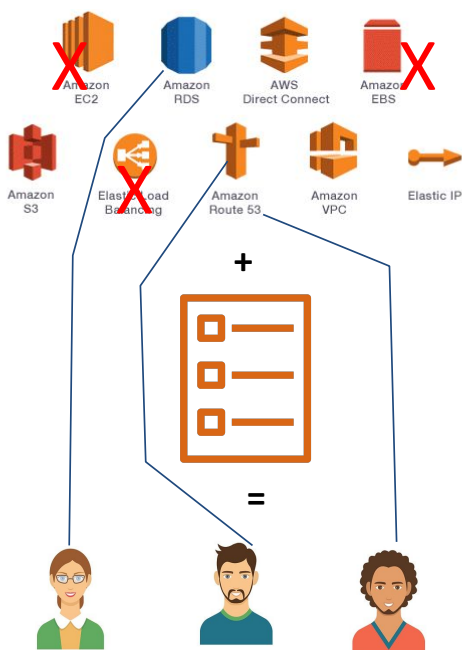
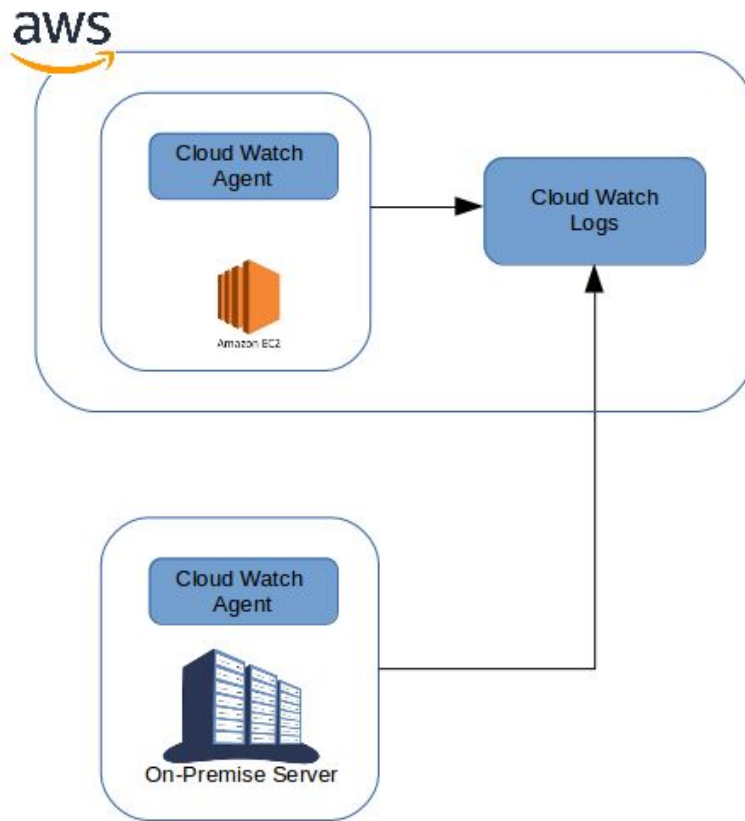
CLA
WAY TO REINVENT YOURSELF

An *elastic network interface* is a logical networking component in a VPC that represents a virtual network card. It can include the following attributes:

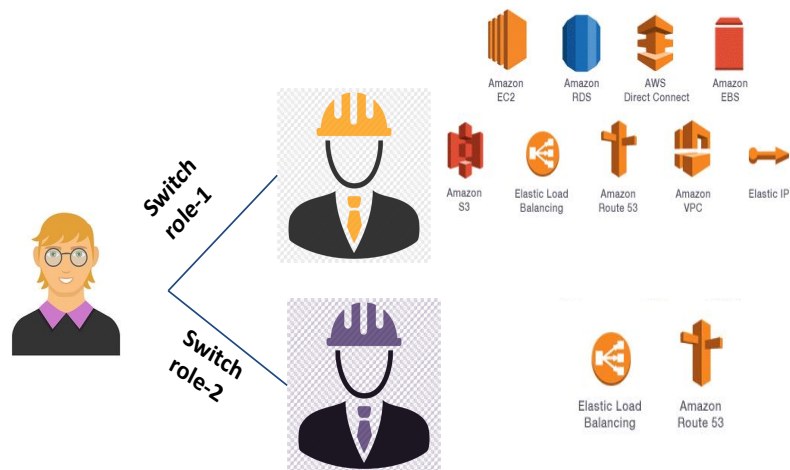
- A primary private IPv4 address from the IPv4 address range of your VPC
- One or more secondary private IPv4 addresses from the IPv4 address range of your VPC
- One Elastic IP address (IPv4) per private IPv4 address
- One public IPv4 address
- One or more IPv6 addresses
- One or more security groups
- A MAC address
- A source/destination check flag
- A description



When you move a network interface from one instance to another, **network traffic is redirected to the new instance.**



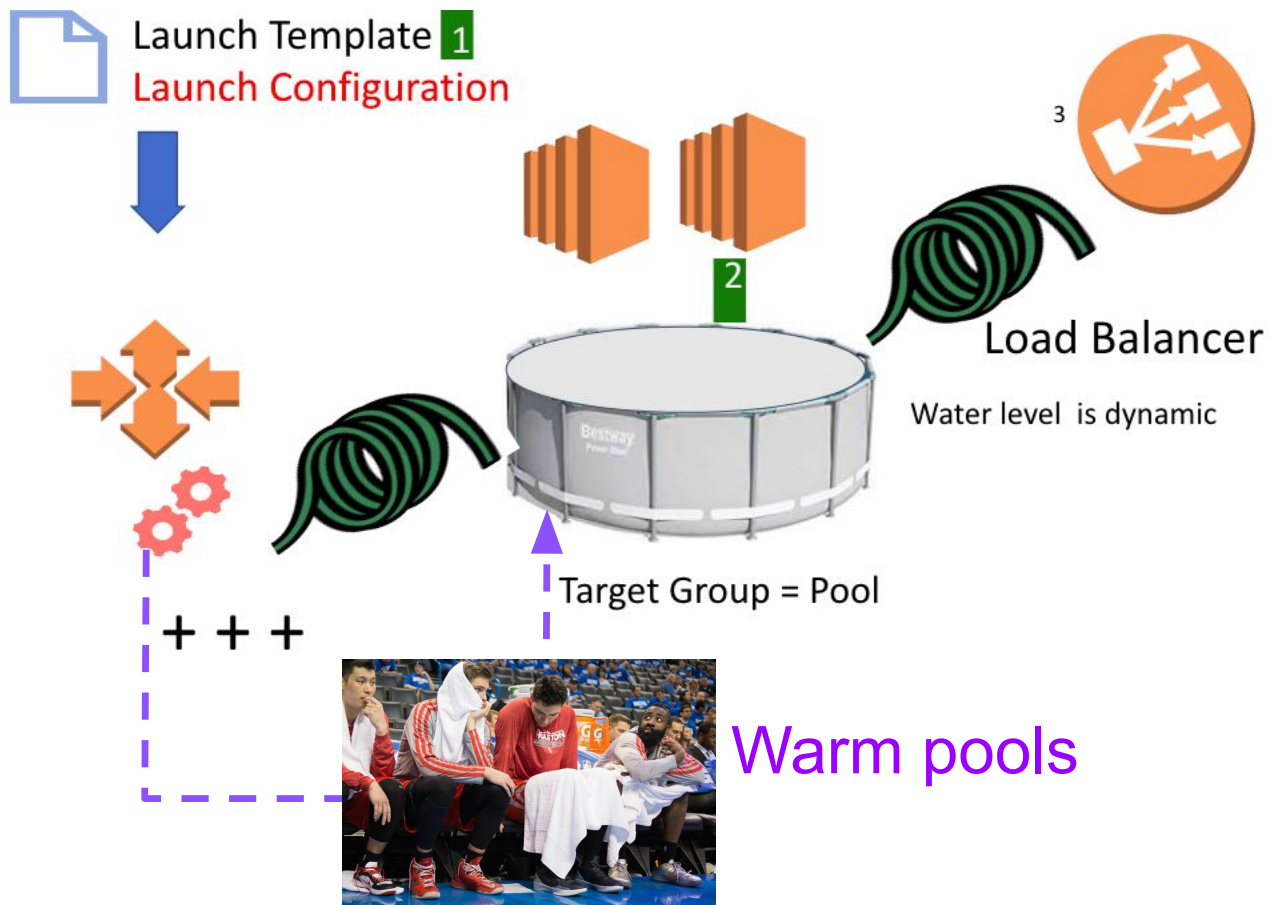
Vs



You need to switch the role to take action

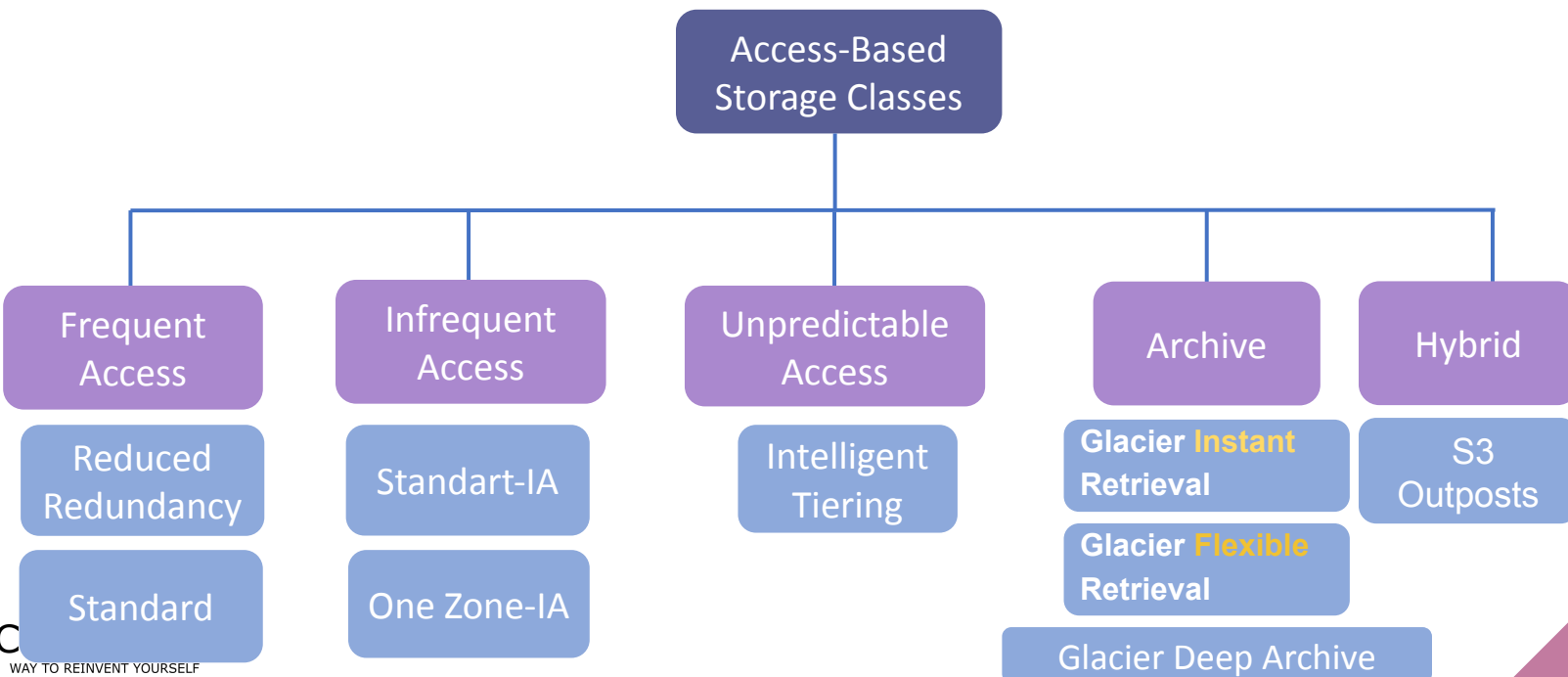
Resource based Policy can not be attach all resources .(For example **except Lambda and Serveless App Repo** you can not attach any rbp for any compute service including EC2)

You can use **only one** role at the same time



Storage Classes

Summary of Storage Classes

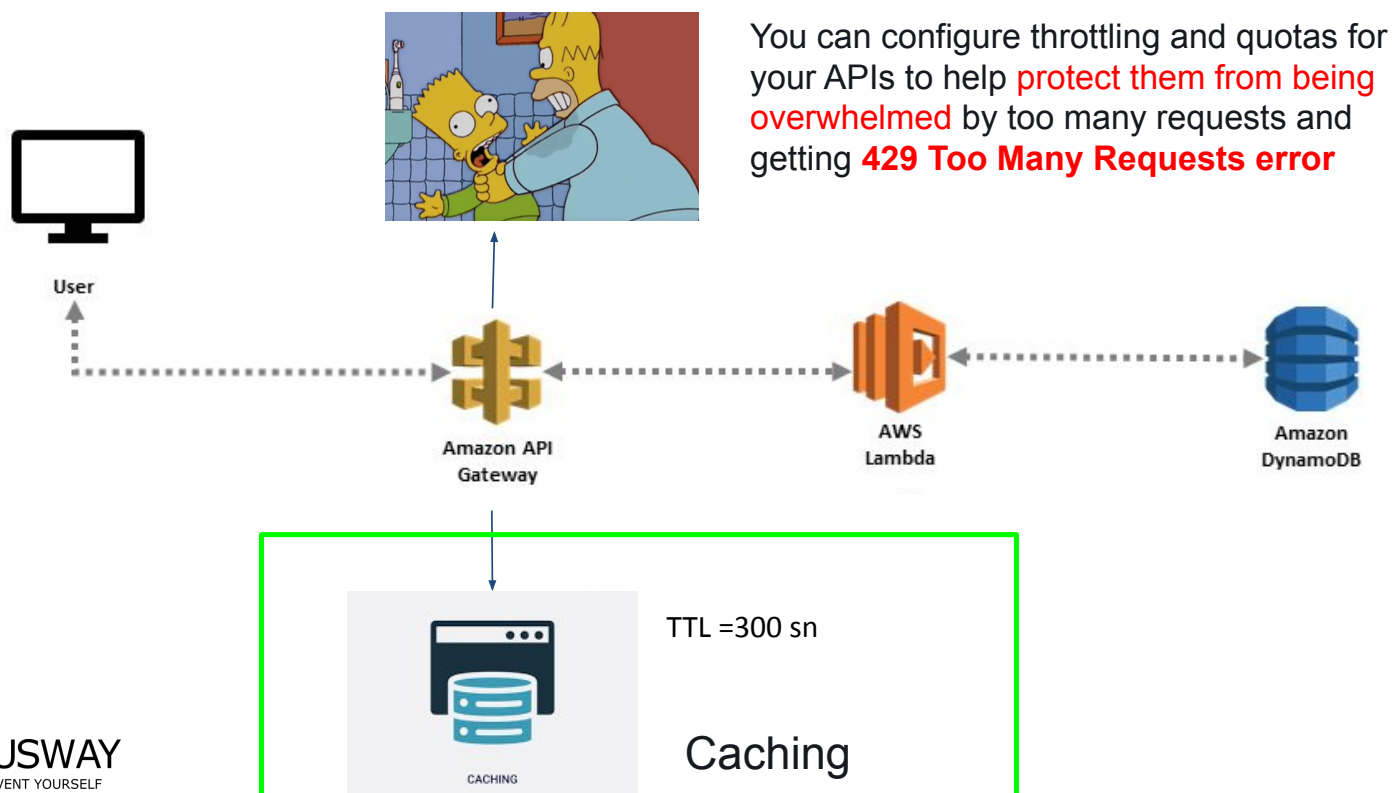


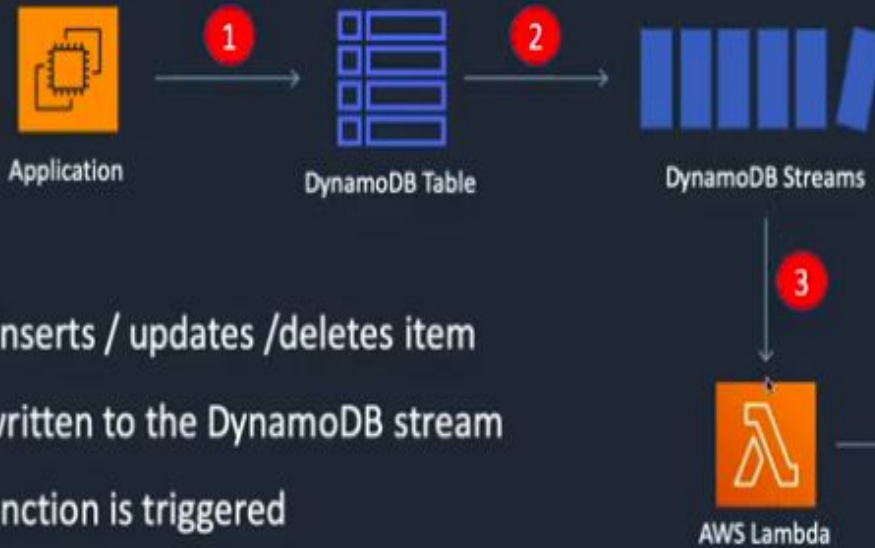
With Amazon S3 Select, you can use simple structured query language (SQL) statements to filter the contents of an Amazon S3 object and retrieve just the subset of data that you need. By using Amazon S3 Select to filter this data, you can reduce the amount of data that Amazon S3 transfers, which reduces the cost and latency to retrieve this data.

The following limits apply when using Amazon S3 Select:

- The maximum length of a SQL expression is 256 KB.
- The maximum length of a record in the input or result is 1 MB.
- Amazon S3 Select can only emit nested data using the JSON output format.
- You cannot specify the S3 Glacier Flexible Retrieval, S3 Glacier Deep Archive, or REDUCED_REDUNDANCY storage classes. For more information, about storage classes see [Storage Classes](#).

Throttle API requests





What will be migrated ?

Which Service will be used ?



On-Premises



Snowball

DATA



DataSync



DATABASE



Database Migration Service



VM SERVER



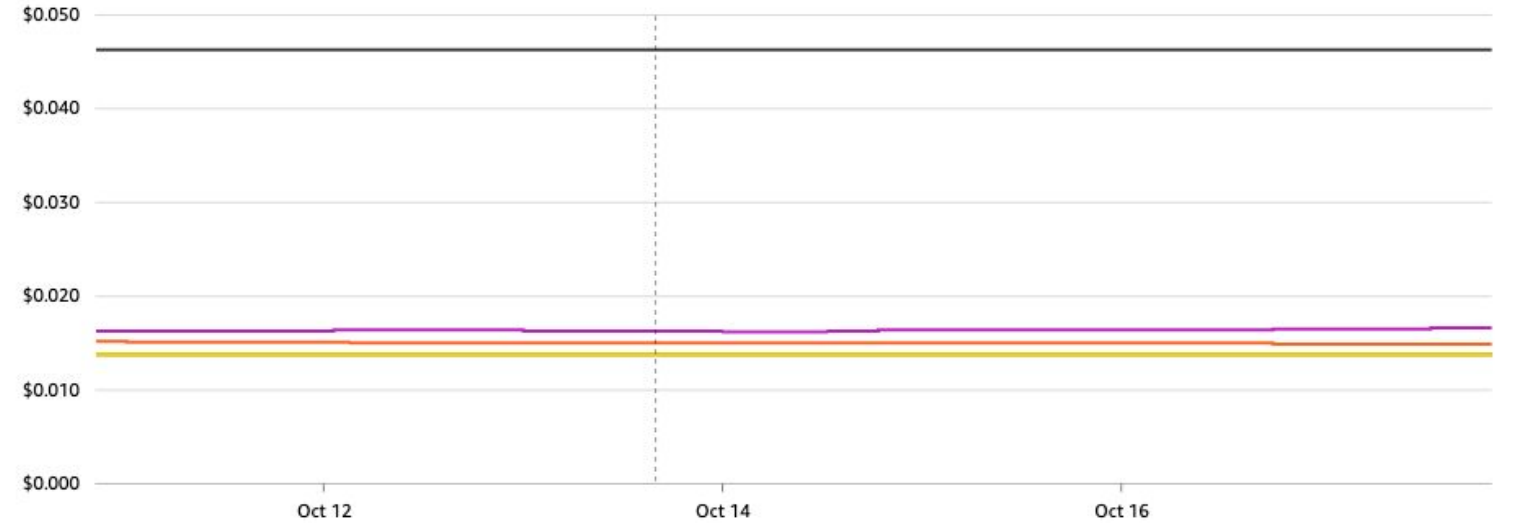
Server Migration Service



Physical data transfer device

Migration Hub

<input checked="" type="checkbox"/> ● On-Demand price	<input checked="" type="checkbox"/> ● us-east-1a	<input checked="" type="checkbox"/> ● us-east-1b	<input checked="" type="checkbox"/> ● us-east-1c	<input checked="" type="checkbox"/> ● us-east-1d
\$0.0464 <small>Oct 13 2022, 23:50</small>	\$0.0139 <small>Oct 13 2022, 23:50</small>	\$0.0139 <small>Oct 13 2022, 23:50</small>	\$0.0139 <small>Oct 13 2022, 23:50</small>	\$0.0139 <small>Oct 13 2022, 23:50</small>
\$0.0464 <small>Average hourly cost</small>	\$0.0139 <small>Average hourly cost</small>	\$0.0139 <small>Average hourly cost</small>	\$0.0139 <small>Average hourly cost</small>	\$0.0139 <small>Average hourly cost</small>
	70.04% <small>Average savings</small>	70.04% <small>Average savings</small>	70.04% <small>Average savings</small>	70.04% <small>Average savings</small>



otto (fs-01f5416a63a3f3590)

DeleteAttach

GeneralEdit

Performance mode

General Purpose

Throughput mode

Bursting

Lifecycle management

Automatic backups

Enabled

Encrypted

95c231cd-c4f7-4db7-9e1f-048dc8508b82 (aws/elasticfilesystem)

File system state

Metered sizeMonitoringTagsFile system policyAccess pointsNetworkReplication

Replication

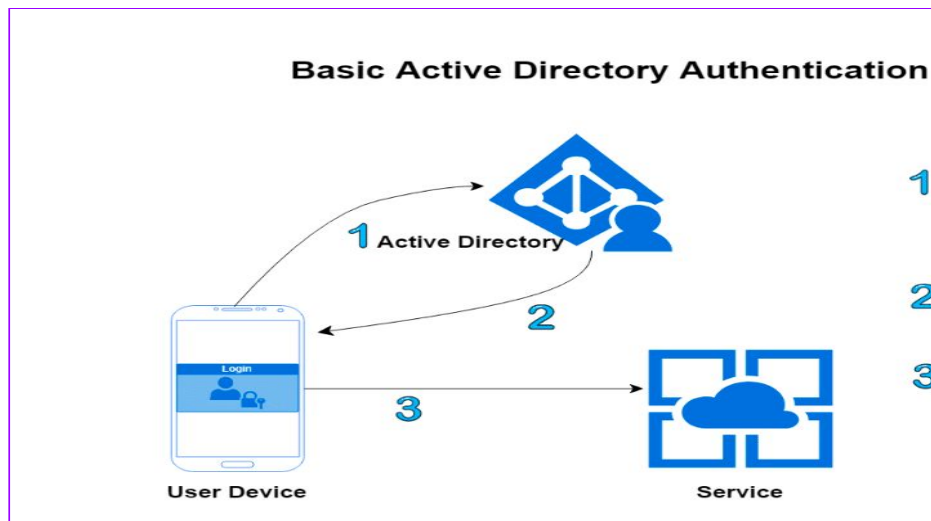
Replicate your file system to one additional AWS Region or the same AWS Region.

Delete replicationCreate replication

No replication

This file system is not being replicated.

Create replication



**AWS Directory
Service for
Microsoft Active
Directory**

Simple AD

AD Connector

Amazon Cognito



CSAA 03 Practice Test 2