

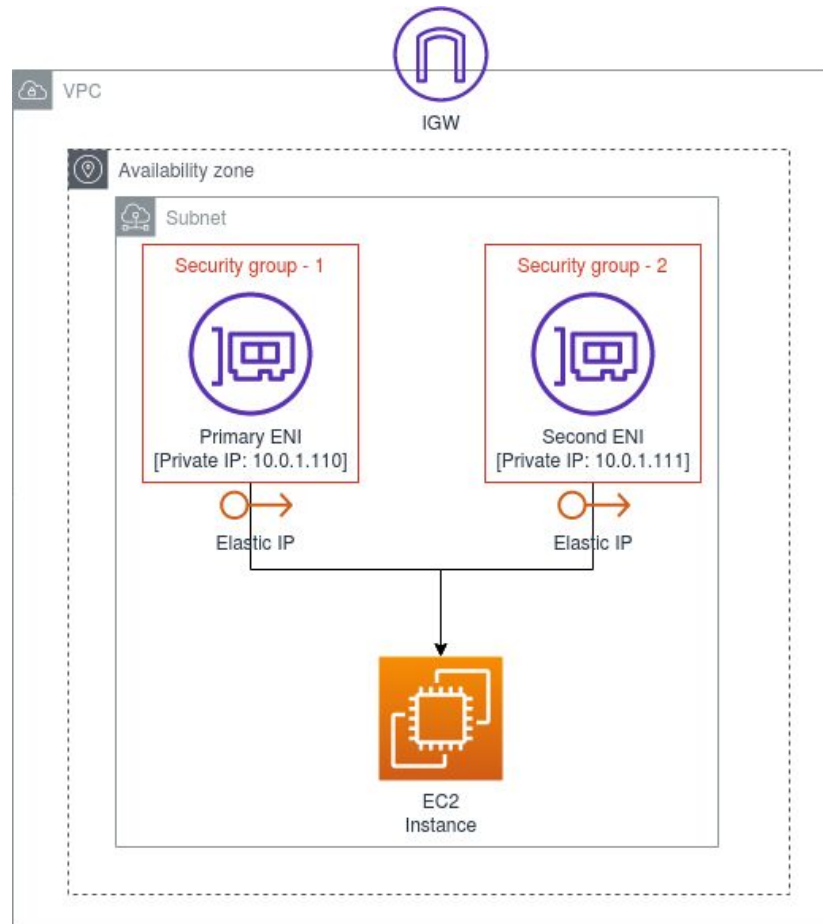
ENI → ENA → EFA

- Upto 10 GBPS
- VMDq
- TCP/IP
- Multiple ENI/instance
- Traffic can traverse across subnets
- VPC Networking, General purpose
- Default

- Upto 25 GBPS
- SR-IOV
- TCP/IP
- Single setting/per instance
- Traffic can traverse across subnets
- Low latency apps
- Optional on supported instance type

- Upto 100 GBPS
- OS-Bypass
- SRD
- One EFA per instance
- OS Bypass traffic is limited to single subnet and is not routable
- HPC and ML Apps
- Optional on supported instance type

Exam tip: HPC & Machine Learning >>>>> EFA



What will be migrated ?



On-Premises



Snowball

Which Service will be used ?

DATA



DataSync



DATABASE



**Database
Migration Service**



**VM
SERVER**



**Server Migration
Service**



Physical data transfer device

Migration Hub

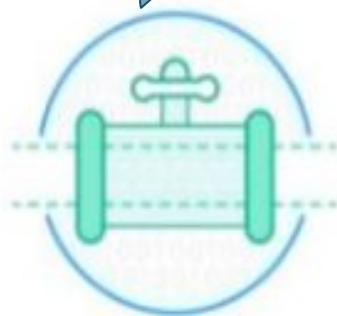
Real time
Streaming

Capture

Transfer/Load

Analyze

Kinesis
Video Stream



Kinesis Streams

Kinesis
Data Stream



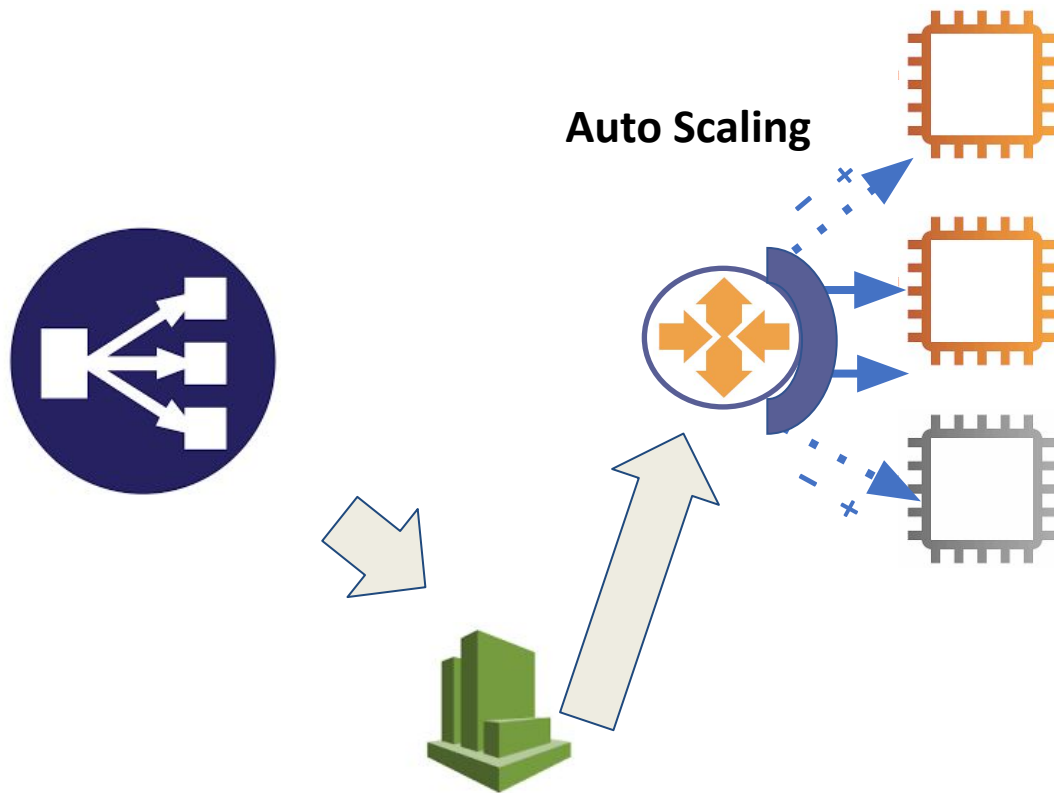
Kinesis Firehose

Load streaming data into
Amazon S3, Amazon
Redshift, and Amazon
Elasticsearch Service



Kinesis Analytics

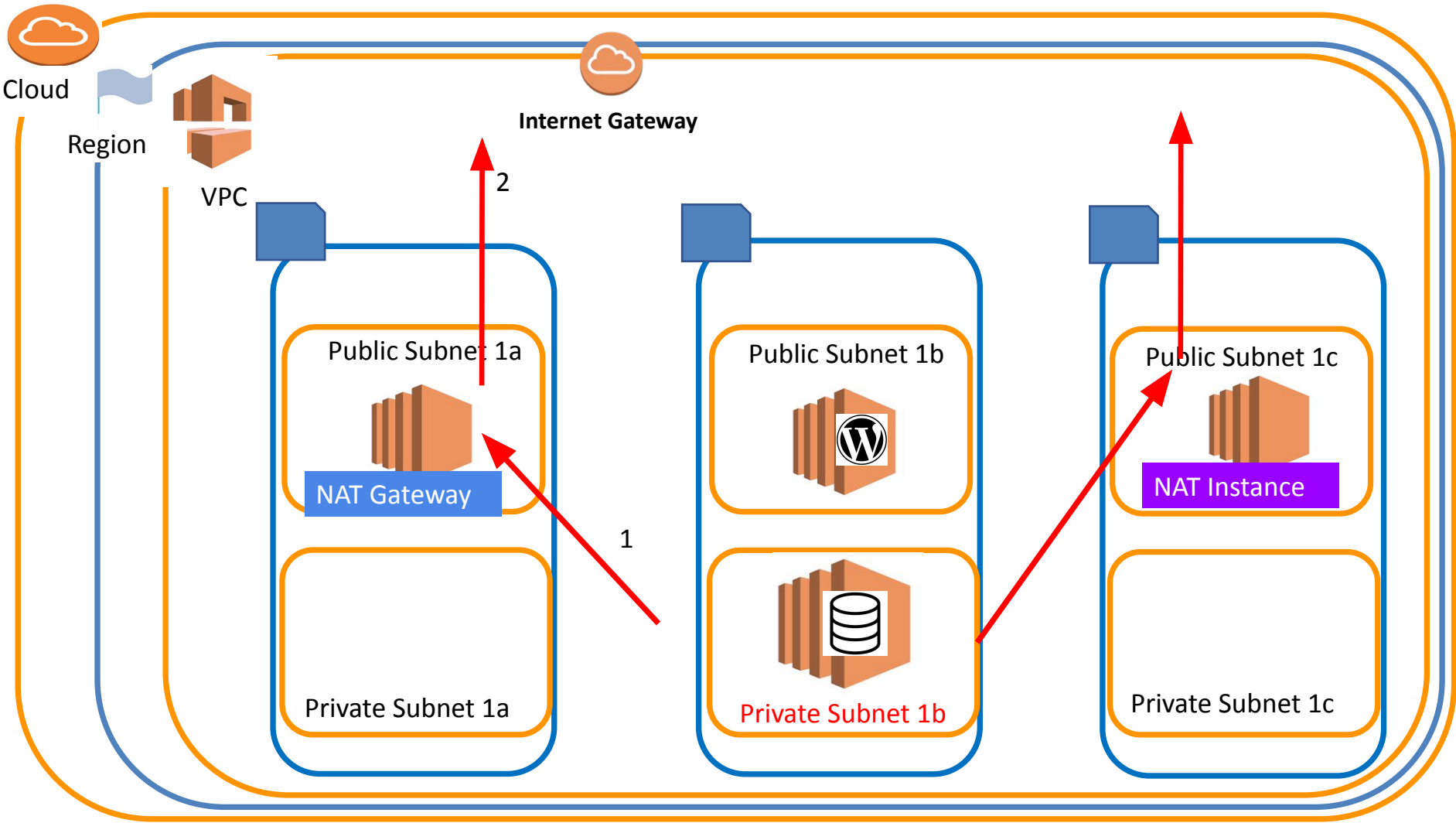
Analyze data streams
using standard SQL
queries



Auto Scaling

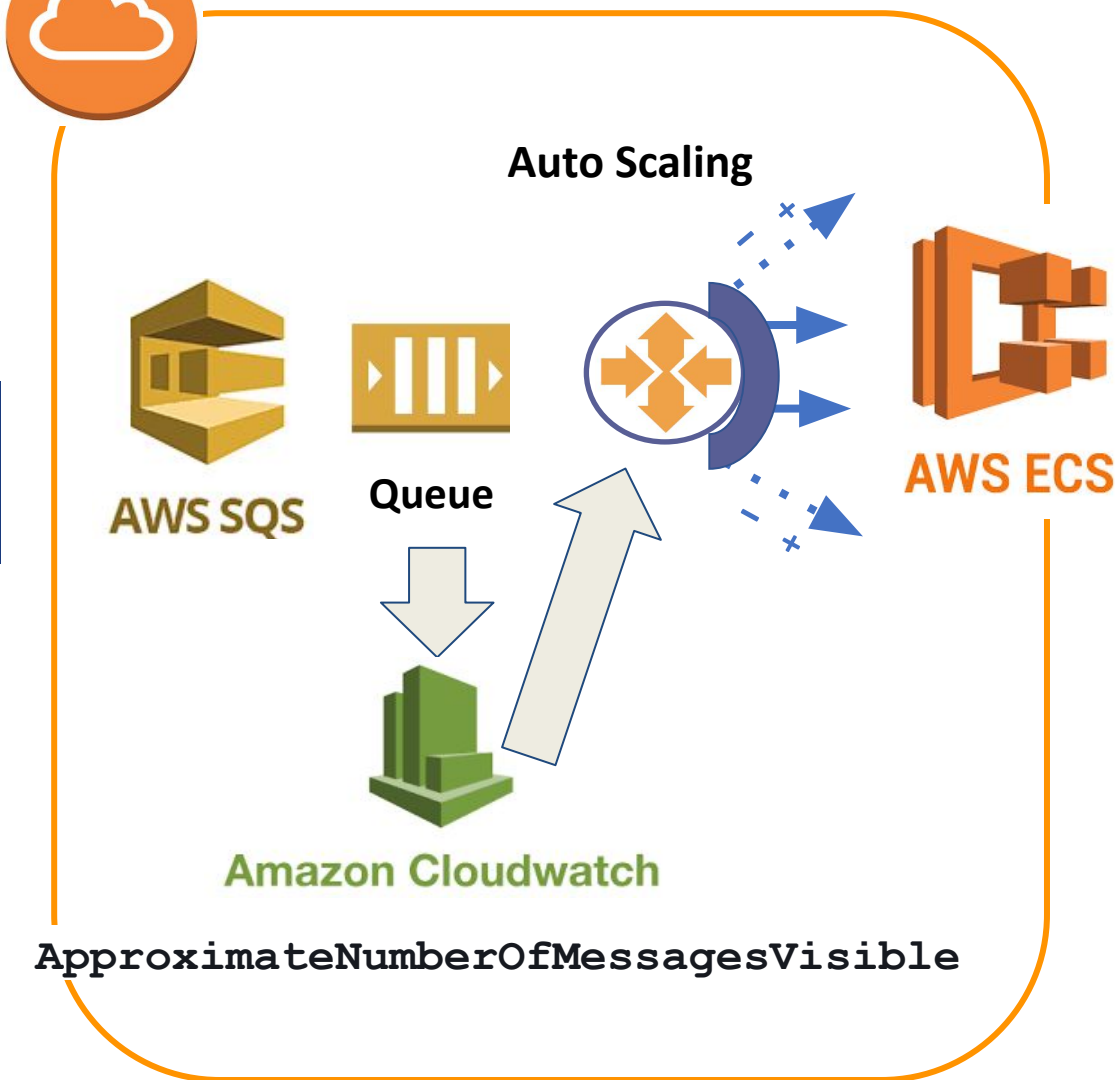
Amazon Cloudwatch

CPU utilization



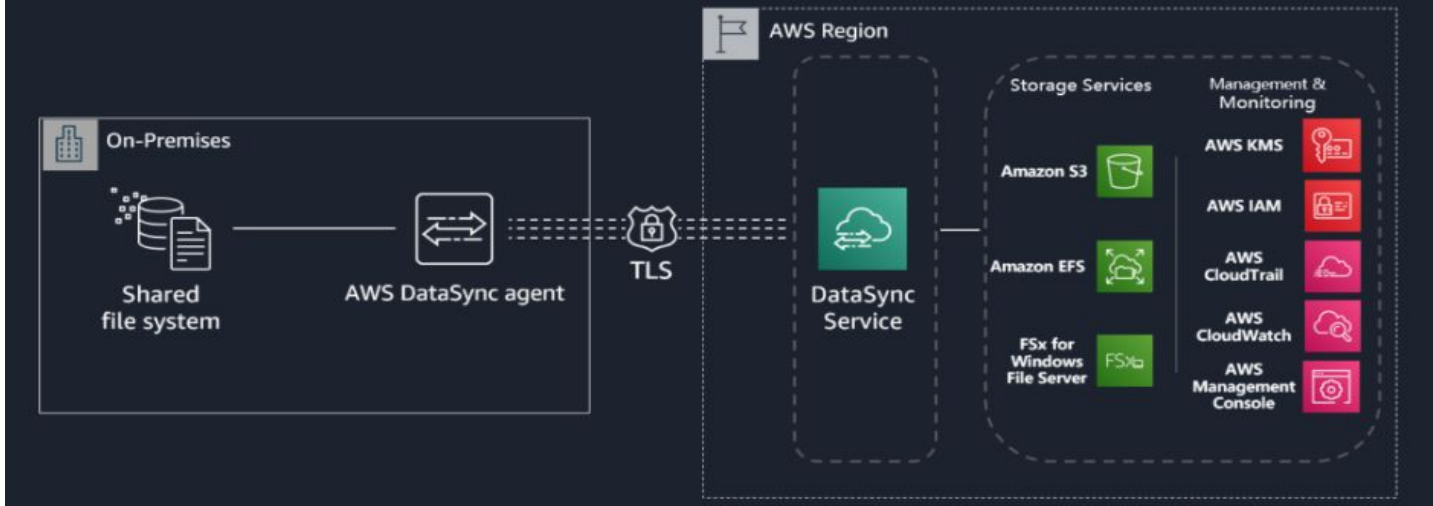


Data Center

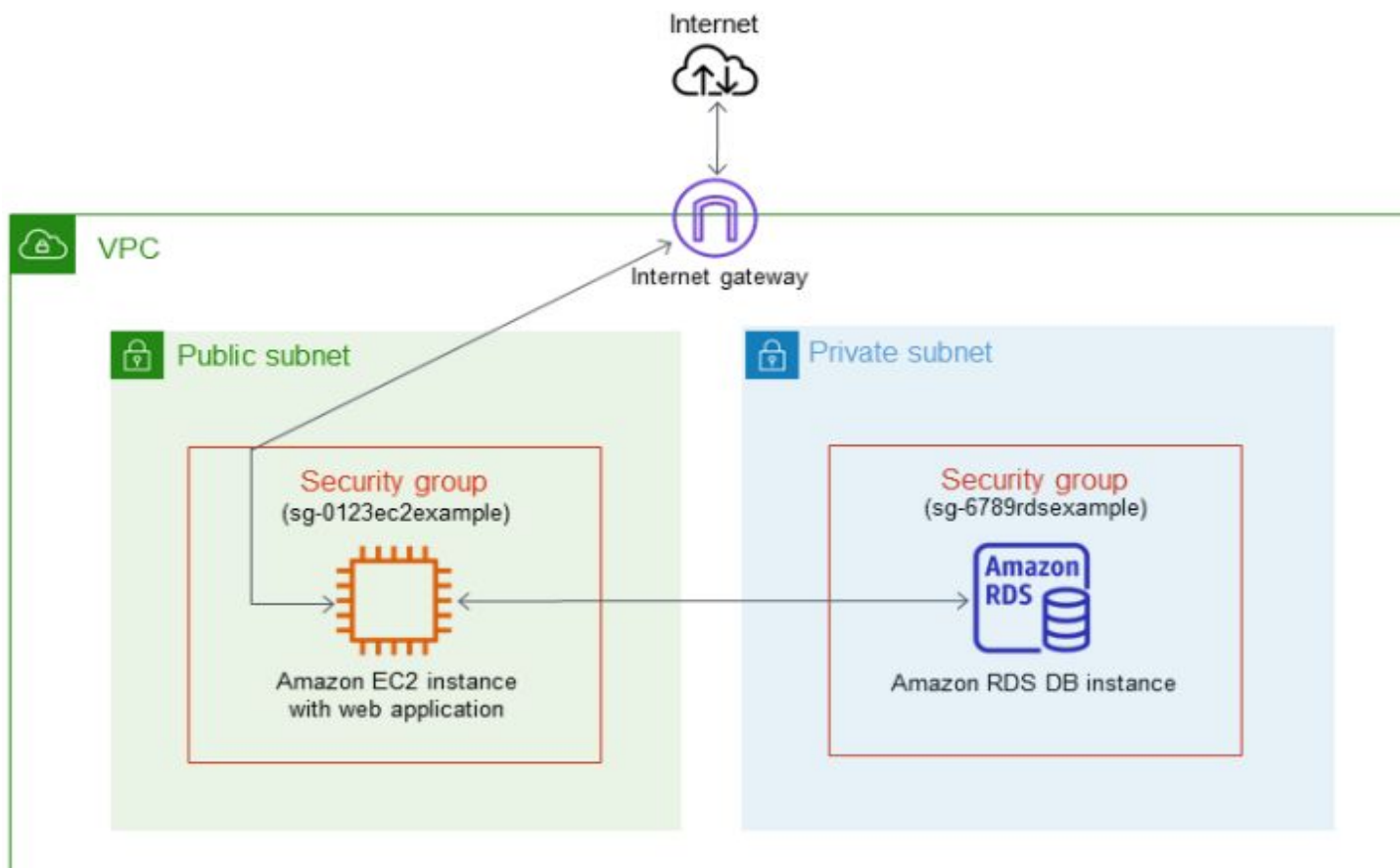


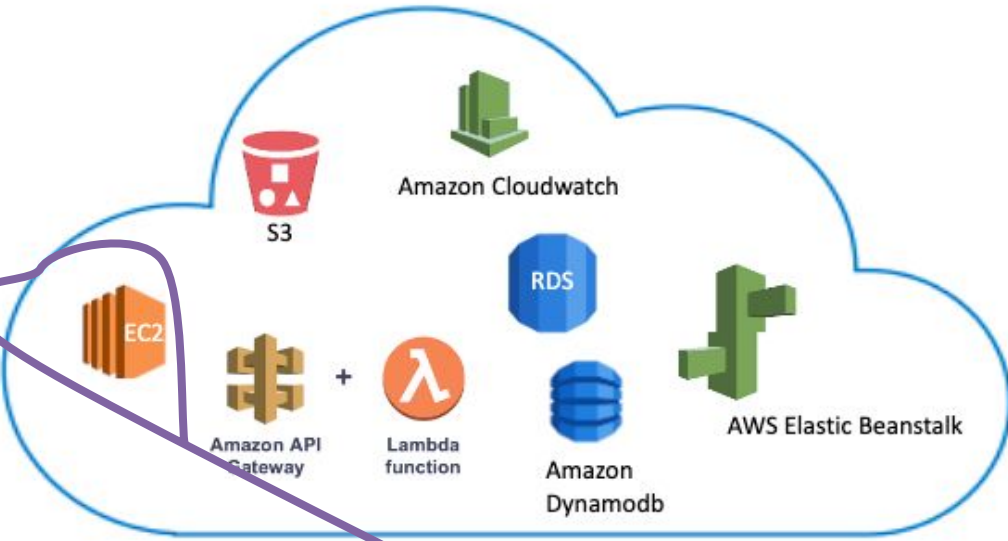
How does AWS DataSync work?

Simplifies, automates, and accelerates data transfer to or from AWS

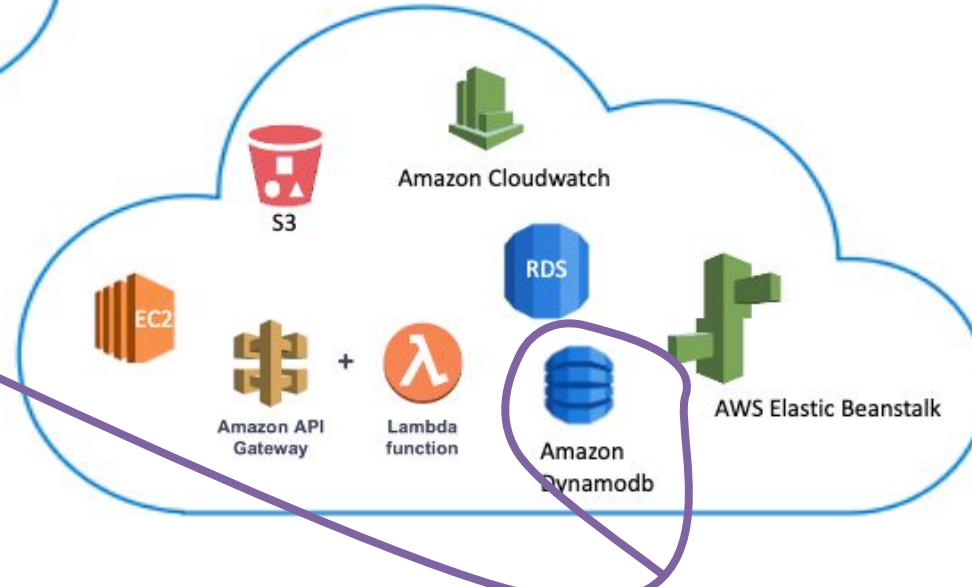


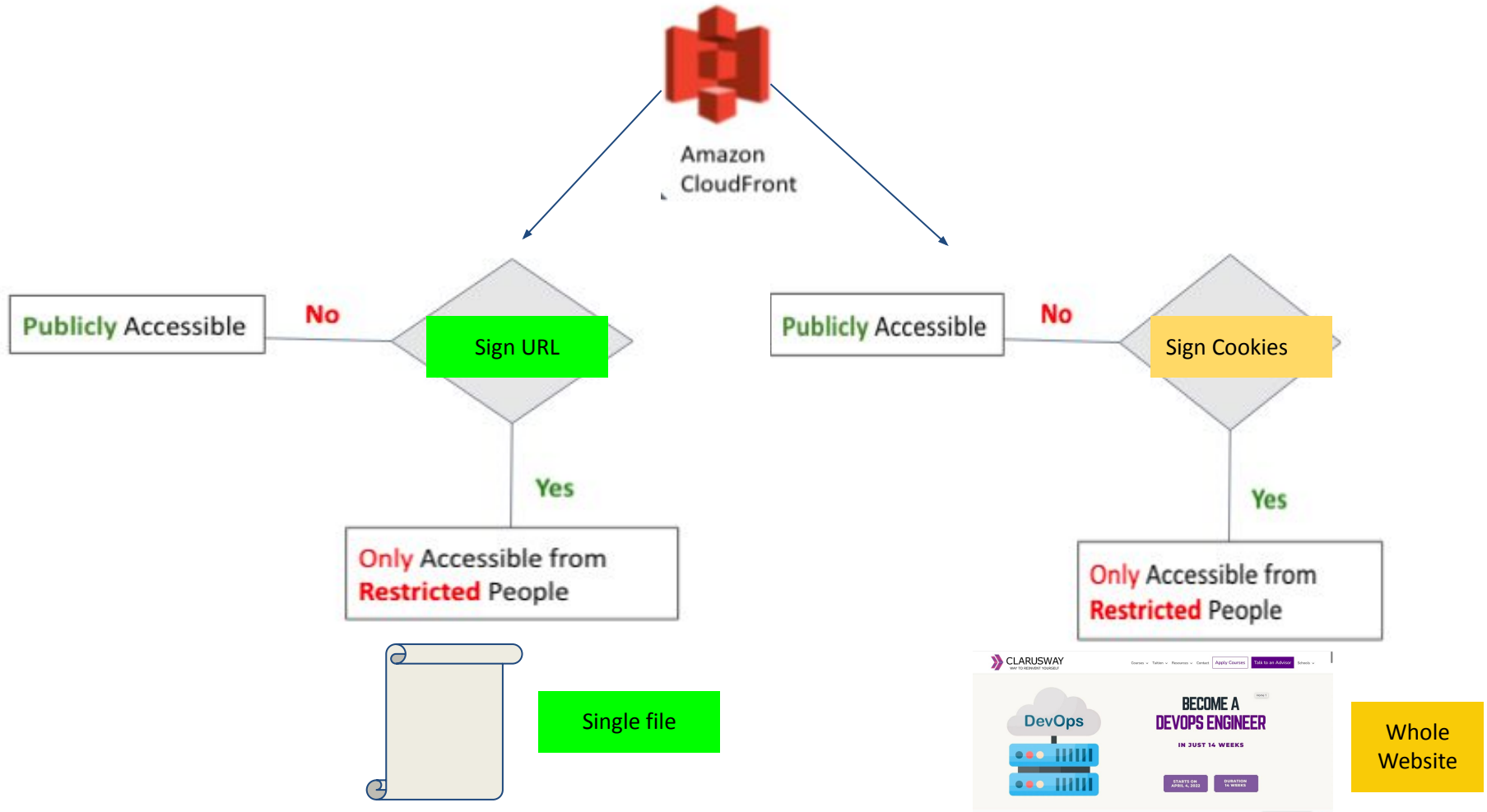
- **Public endpoints:**
- **Federal Information Processing Standard (FIPS) endpoints:** USA and Canada
- **Virtual private cloud (VPC) endpoints:** If you use a VPC endpoint, all communication from DataSync to AWS occurs through the endpoint in your AWS VPC. This establishes a private connection between your self-managed storage system, your VPC, and AWS services, providing extra security as your data is copied over the network.



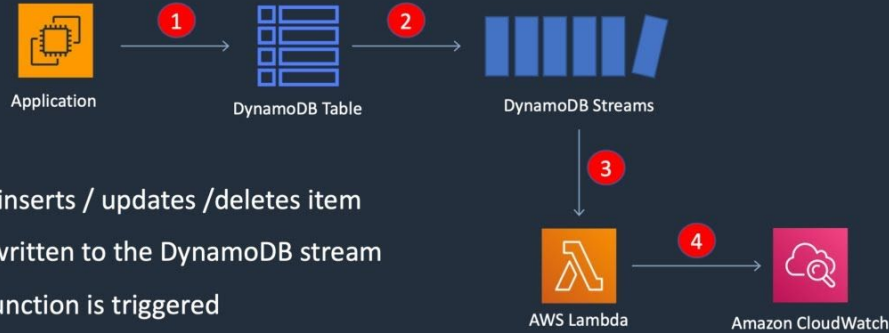


**IAM
Role**





Amazon DynamoDB Streams



1. Application inserts / updates / deletes item
2. A record is written to the DynamoDB stream
3. A Lambda function is triggered
4. The Lambda function writes to CloudWatch Logs

When enabled, DynamoDB Streams captures a time-ordered sequence of item-level modifications in a DynamoDB table and durably stores the information for **up to 24 hours**. **Applications can access a series of stream *records*, which contain an item change, from a DynamoDB stream in near real time.**



1



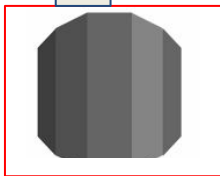
23 JULY
00:01



24 JULY
00:01



25 JULY
00:01



26 JULY



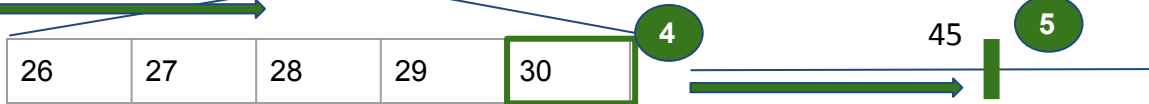
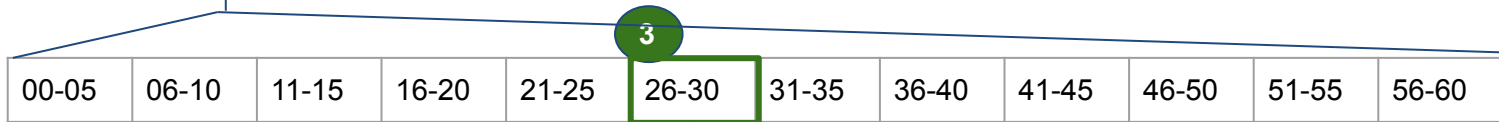
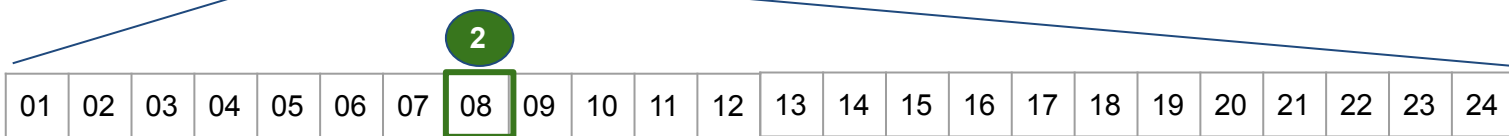
Point in time
recovery

DESIRED :

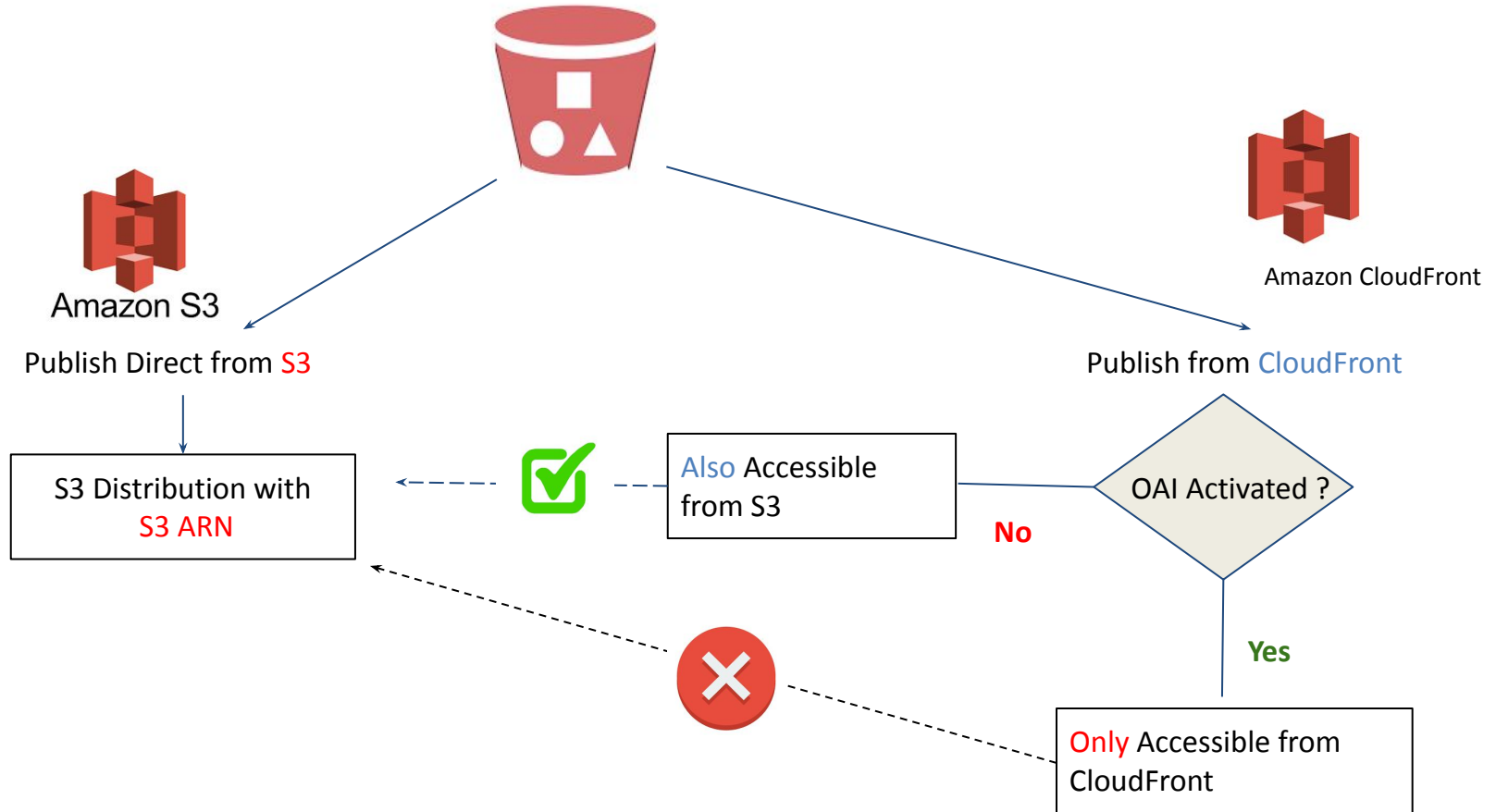
23 JULY 2021
08:30:45

Snapshot

Transaction
Logs



S3 static Web Hosting



Real time
Streaming

Capture

Transfer/Load

Analyze

Kinesis
Video Stream



Kinesis Streams

Kinesis
Data Stream



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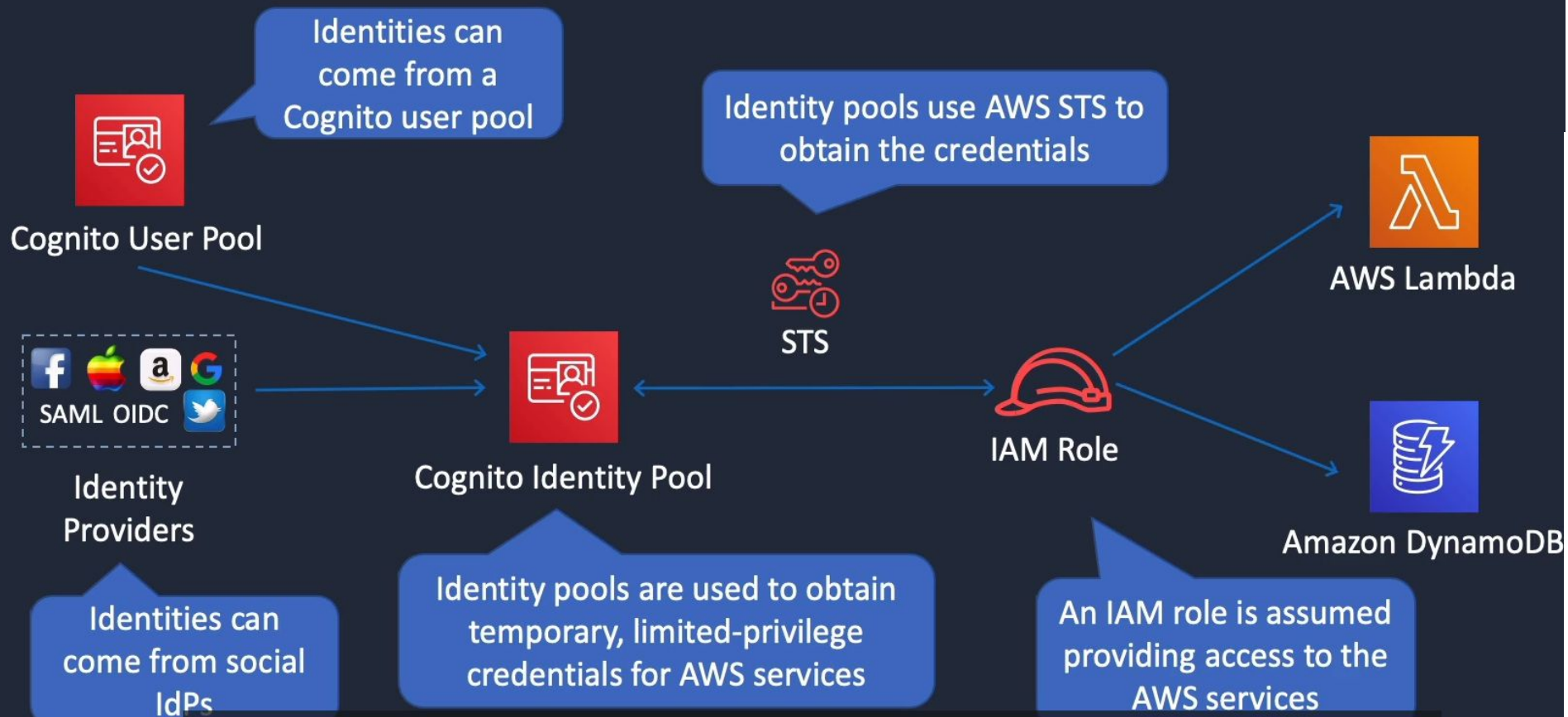


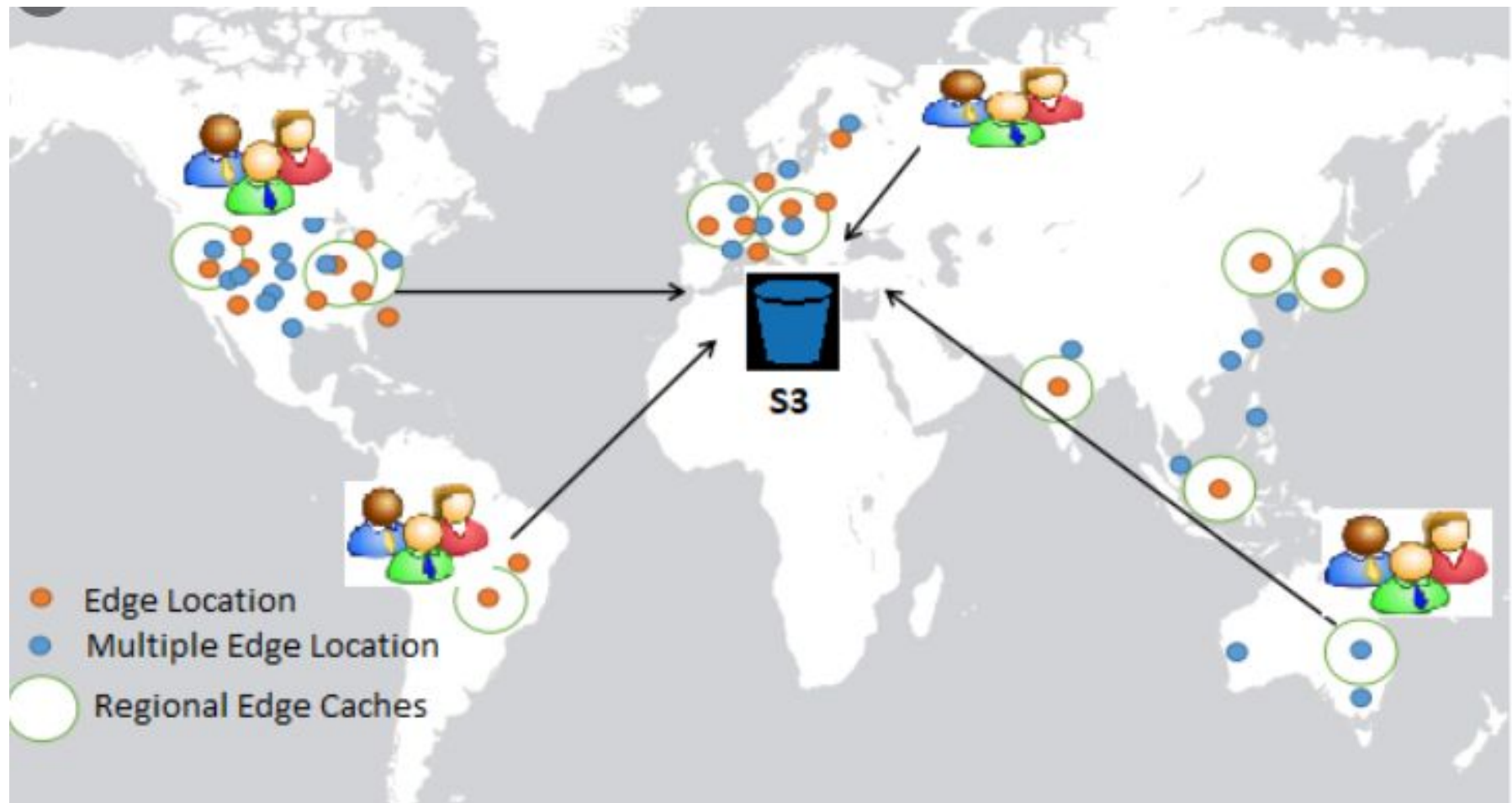
**Server Migration
Service**



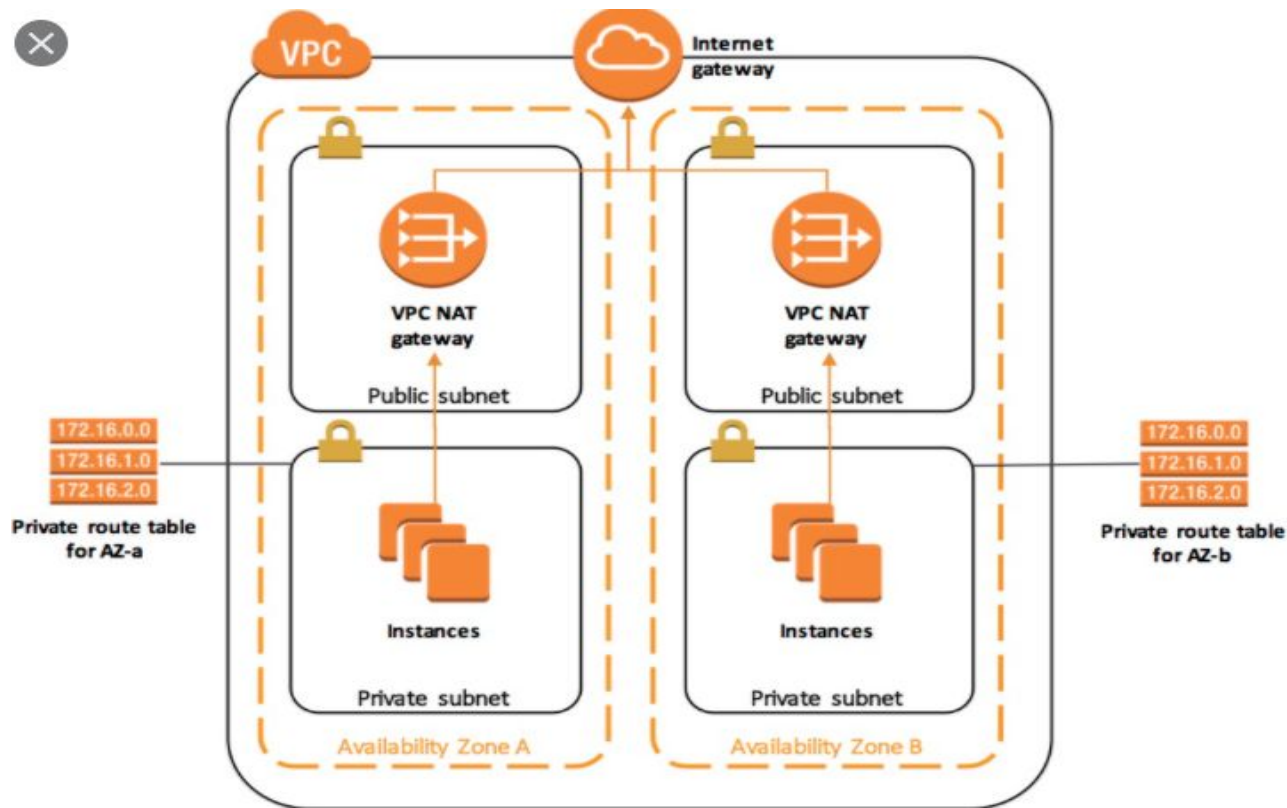
Physical data transfer device

Migration Hub





If you have resources in multiple Availability Zones and they share one NAT Gateway, in the event that the NAT Gateway's Availability Zone is down, resources in the other Availability Zones lose internet access. To create an Availability Zone-independent architecture, create a NAT Gateway in each Availability Zone and configure your routing to ensure that resources use the NAT Gateway in the same Availability Zone.



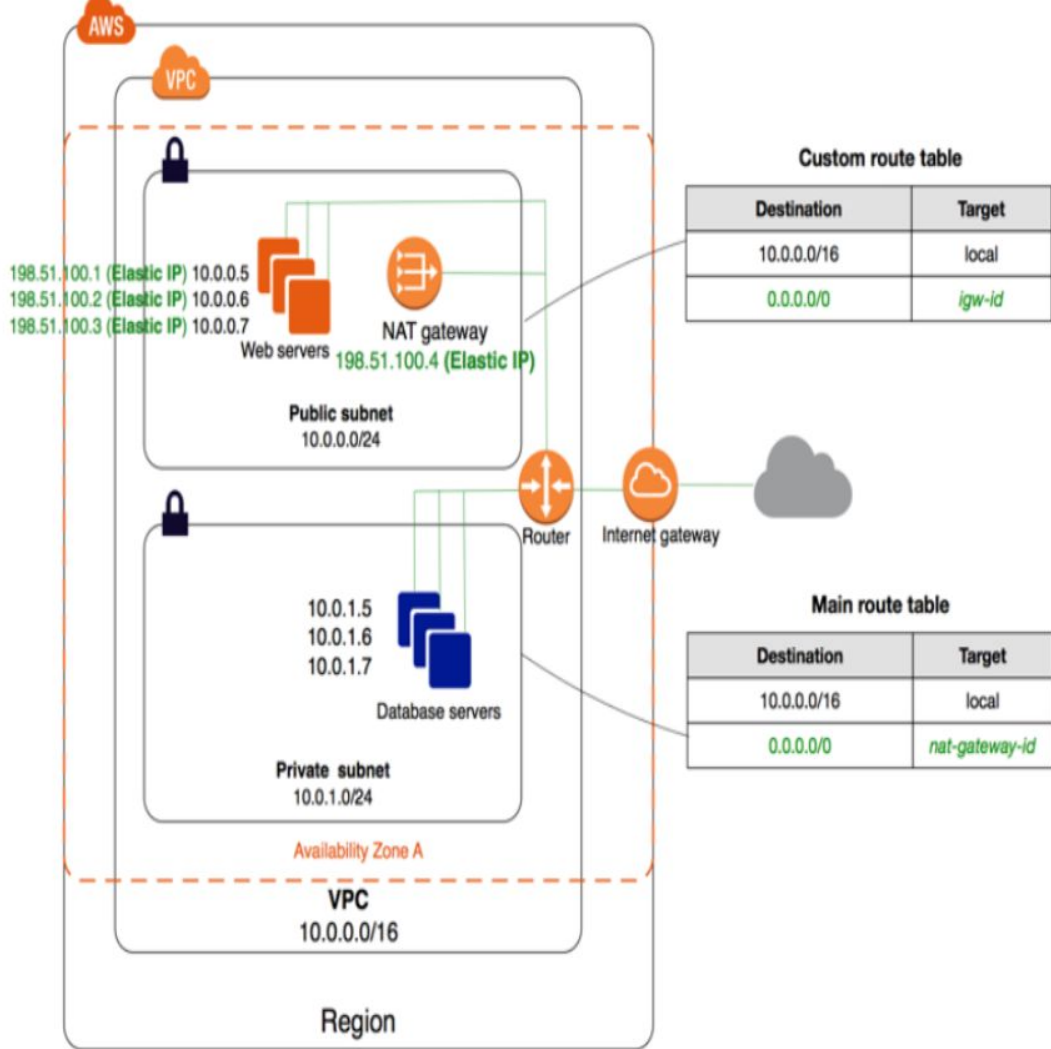
Amazon Aurora Key Features

Aurora Feature	Benefit
High performance and scalability	Offers high performance, self-healing storage that scales up to 64TB, point-in-time recovery and continuous backup to S3
DB compatibility	Compatible with existing MySQL and PostgreSQL open source databases
Aurora Replicas	In-region read scaling and failover target – up to 15 (can use Auto Scaling)
MySQL Read Replicas	Cross-region cluster with read scaling and failover target – up to 5 (each can have up to 15 Aurora Replicas)
Global Database	Cross-region cluster with read scaling (fast replication / low latency reads). Can remove secondary and promote
Multi-Master	Scales out writes within a region. In preview currently and will not appear on the exam
Serverless	On-demand, autoscaling configuration for Amazon Aurora - does not support read replicas or public IPs (can only access through VPC or Direct Connect - not VPN)

Throughput

5x MySQL RDS

3x PostgreSQL RDS



mycloudtrails3bucket-mk

private bucket

Objects

Properties

Permissions

Metrics

Management

Access Points

Objects (1)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access:



Copy URL

Open

Download

Delete

Actions ▼

Create folder

Upload



Find objects by prefix



Name

it contains one file ▲

Type ▼

Last modified



Yeni Metin Belgesi.txt

txt

May 25, 2021, 15:48:52 (UTC+03:00)

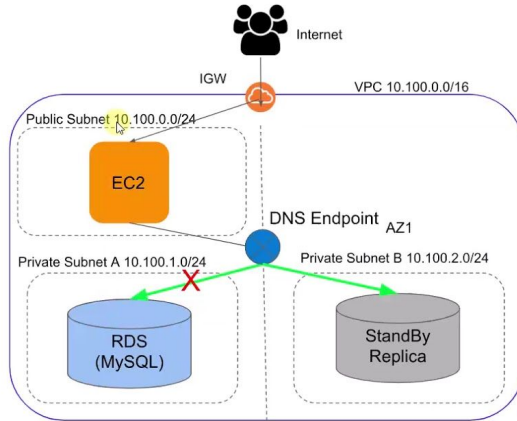
```
$ aws s3 presign s3://mycloudtrails3bucket-mk/"Yeni Metin Belgesi.txt" --expires-in 30  
https://mycloudtrails3bucket-mk.s3.us-east-1.amazonaws.com/Yeni%20Metin%20Belgesi.txt?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAY3YMFVJJYLFDLWV5%2F20210525%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20210525T125743Z&X-Amz-Expires=30&X-Amz-SignedHeaders=host&X-Amz-Signature=b02d2c978829ff3bed34001380b8b9e0b51262727d2b37391c4b5c12e0d6f31c
```

In the question : there will be a rds mysql and is expected a high number of read and writes.
Which ebs types supports this?

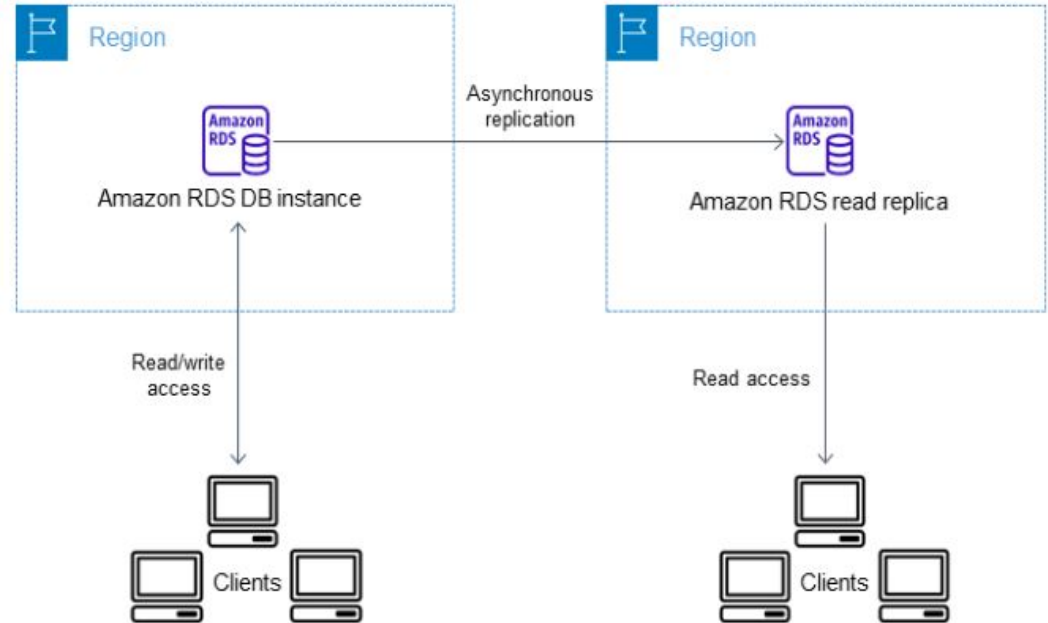
Solid State Drives (SSD)						Hard Disk Drives (HDD)	
Volume Type	EBS Provisioned IOPS SSD (io2 Block Express)	EBS Provisioned IOPS SSD (io2)	EBS Provisioned IOPS SSD (io1)	EBS General Purpose SSD (gp3) announced Dec 1, 2020	EBS General Purpose SSD (gp2)*	Throughput Optimized HDD (st1)	Cold HDD (sc1)
Short Description	Highest performance SSD volume designed for business-critical latency-sensitive transactional workloads	Highest performance and highest durability SSD volume designed for latency-sensitive transactional workloads	Highest performance SSD volume designed for latency-sensitive transactional workloads	Lowest cost SSD volume that balances price performance for a wide variety of transactional workloads	General Purpose SSD volume that balances price performance for a wide variety of transactional workloads	Low cost HDD volume designed for frequently accessed, throughput intensive workloads	Lowest cost HDD volume designed for less frequently accessed workloads
Durability	99.999%		99.8% - 99.9% durability			99.8% - 99.9% durability	
Use Cases	Largest, most I/O intensive, mission critical deployments of NoSQL and relational databases such as Oracle, SAP HANA, Microsoft SQL Server, and SAS Analytics	I/O-intensive NoSQL and relational databases	I/O-intensive NoSQL and relational databases	Virtual desktops, medium sized single instance databases such as Microsoft SQL Server and Oracle, latency sensitive interactive applications, boot volumes, and dev/test environments	Virtual desktops, medium sized single instance databases such as Microsoft SQL Server and Oracle, latency sensitive interactive applications, boot volumes, and dev/test environments	Big data, data warehouses, log processing	Colder data requiring fewer scans per day

With Amazon RDS, you can create a MariaDB, MySQL, Oracle, or PostgreSQL read replica in a different AWS Region from the source DB instance. Creating a cross-Region read replica isn't supported for SQL Server on Amazon RDS.

RDS Multi-AZ Failover



Availability - Failover-Senkron



Performance- Asenkron

Real time
Streaming

Capture

Transfer/Load

Analyze

Kinesis
Video Stream



Kinesis Streams

Kinesis
Data Stream



Kinesis Firehose

Load streaming data into
Amazon S3, Amazon
Redshift, and Amazon
Elasticsearch Service



Kinesis Analytics

Analyze data streams
using standard SQL
queries

Step 5: Add EC2 Instances

The table below lists all your running EC2 Instances. Check the boxes in the Select column to add those instances to this load balancer.

VPC vpc-f52d178f (172.31.0.0/16) | default-vpc

<input type="checkbox"/>	Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR
<input type="checkbox"/>	i-0667836734e141b24	Cloudwatch_instance	stopped	launch-wizard-40	us-east-1d	subnet-ed49bccc	172.31.80.0/20
<input type="checkbox"/>	i-09a81ac9ed47f33a3	pet-clinic-demo-server	stopped	launch-wizard-21	us-east-1f	subnet-3246e63c	172.31.64.0/20
<input type="checkbox"/>	i-0c8b559e55c99cfe1	Jenkins Server of tomy-jenkinsserver-p...	stopped	tomy-jenkinsserver-petclinic-JenkinsS...	us-east-1f	subnet-3246e63c	172.31.64.0/20
<input type="checkbox"/>	i-030841b79c0f01e67	tyler-nexus-server	stopped	Nexus-SG	us-east-1f	subnet-3246e63c	172.31.64.0/20
<input type="checkbox"/>	i-090276ecb3211442a	Jenkins Server of walter-petclinic	stopped	walter-petclinic-JenkinsServerSecurity...	us-east-1f	subnet-3246e63c	172.31.64.0/20
<input type="checkbox"/>	i-0b55a1469f490baf	tyler-nexus-server	stopped	tyler-nexus-SG	us-east-1f	subnet-3246e63c	172.31.64.0/20

Availability Zone Distribution

1 instance in us-east-1d

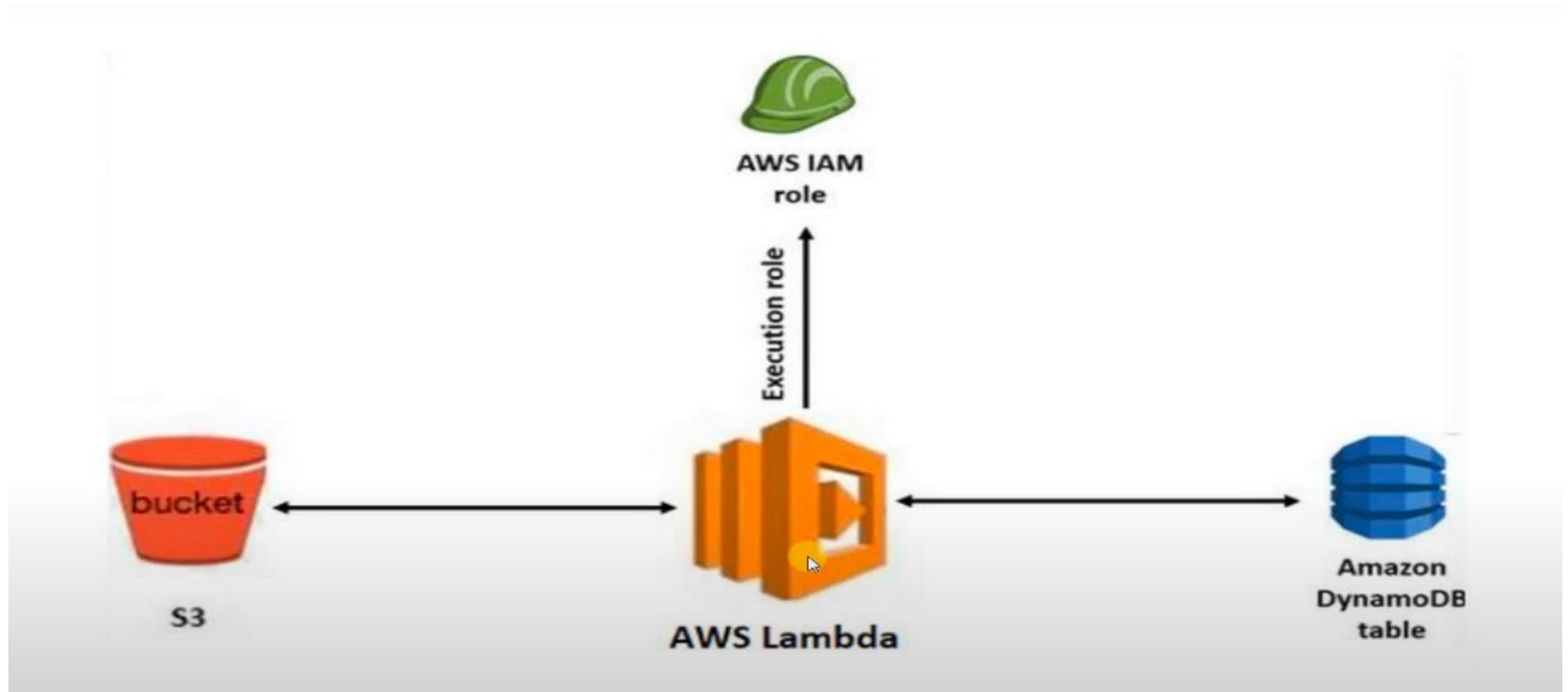
☒ Enable Cross-Zone Load Balancing

☒ Enable Connection Draining

seconds

Cross-zone load balancing distributes traffic evenly across all targets in the Availability Zones enabled for the load balancer.

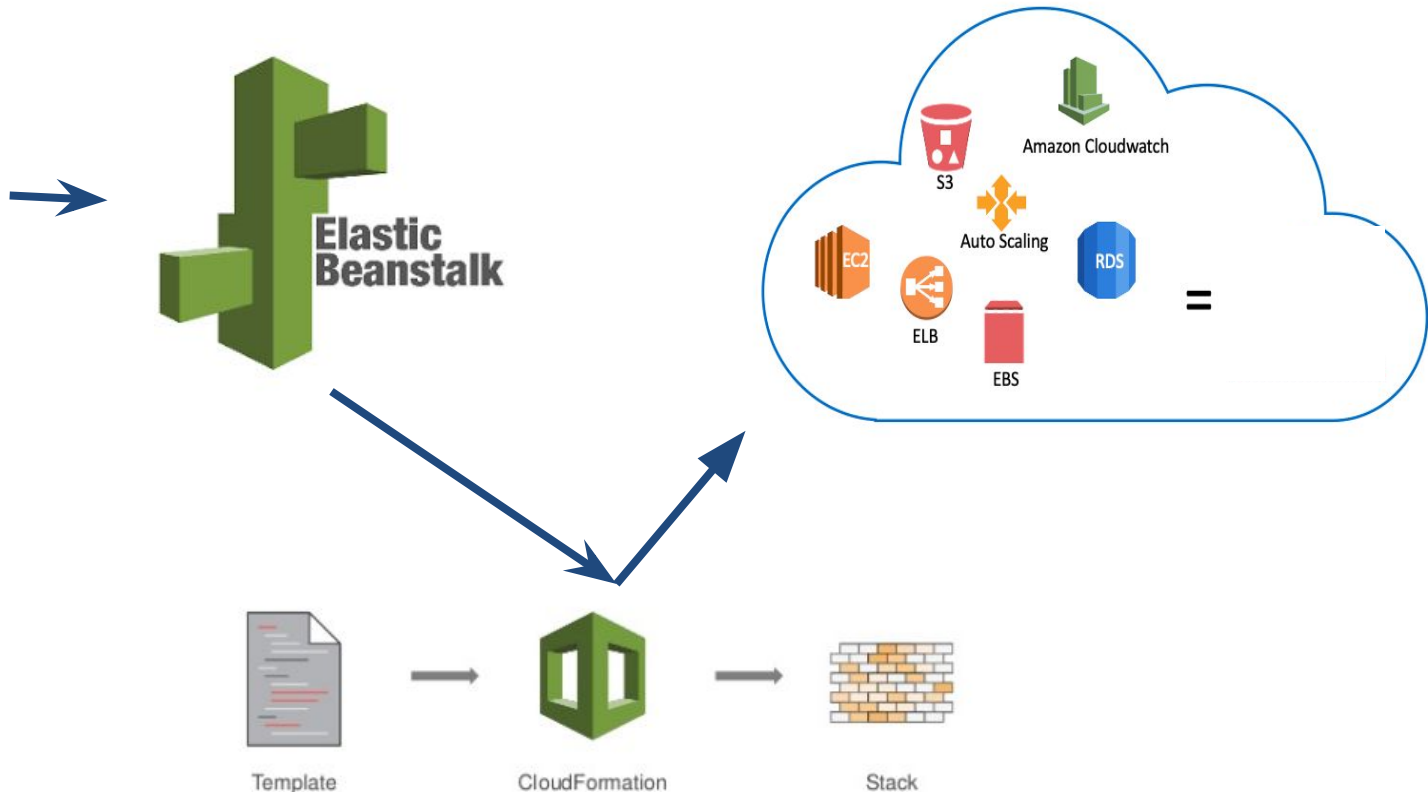
Exam tip: DynamoDb and Metadata

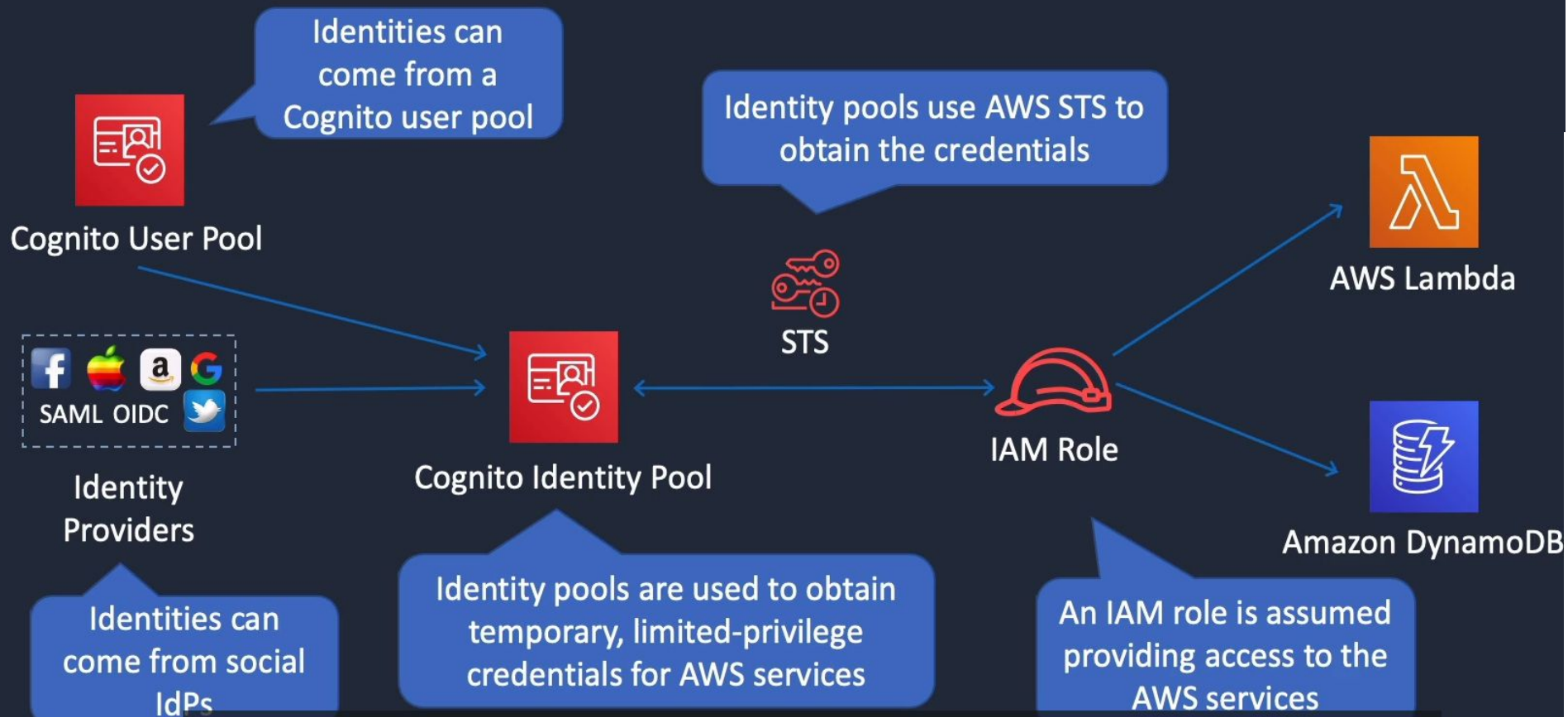


Introduction to Elastic Beanstalk

Why AWS Elastic Beanstalk?

```
14 return d[len1][len2];  
15 }  
16  
17 template<class T>  
18 unsigned int levenshtein_distance(const T& s1, const T& s2) {  
19     unsigned int len1 = s1.size(), len2 = s2.size();  
20     const size_t test = col(len2), prevCol(len2);  
21     vector<unsigned int> col(len2);  
22  
23     for (unsigned int i = 0; i < len1; i++) {  
24         prevCol[i] = i; // i == len2; i++ {  
25             for (unsigned int j = 0; j < len2; j++) {  
26                 col[j] = min(1 + prevCol[j], 1 + prevCol[j-1]);  
27                 if (s1[i] == s2[j]) {  
28                     col[j] = min(col[j], prevCol[j-1]);  
29                 }  
30             }  
31             prevCol = col; // prevCol[j-1];  
32     }  
33     return prevCol[len2];  
34 }
```





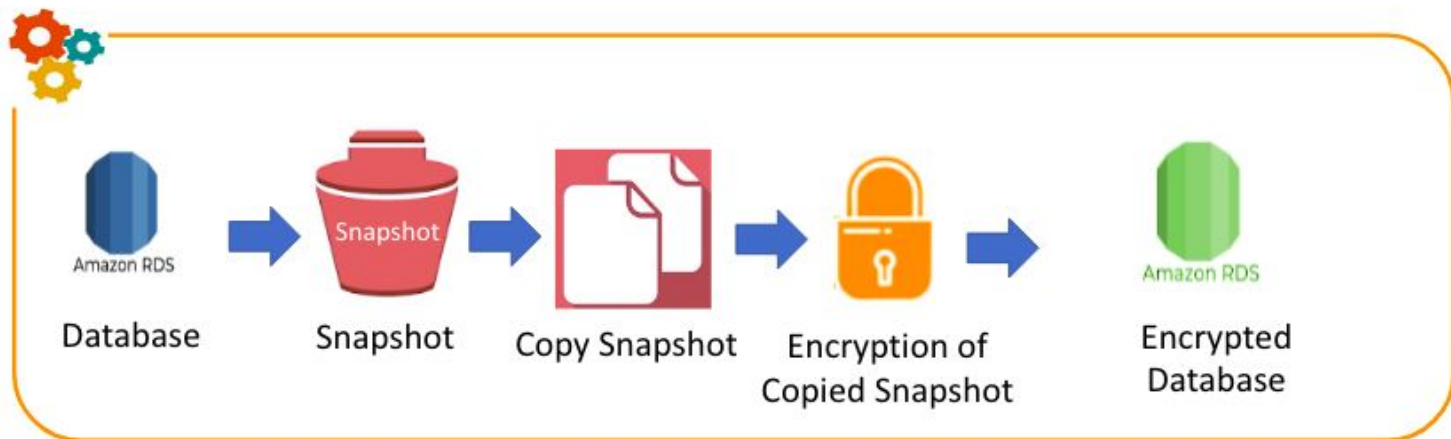
Storage Classes

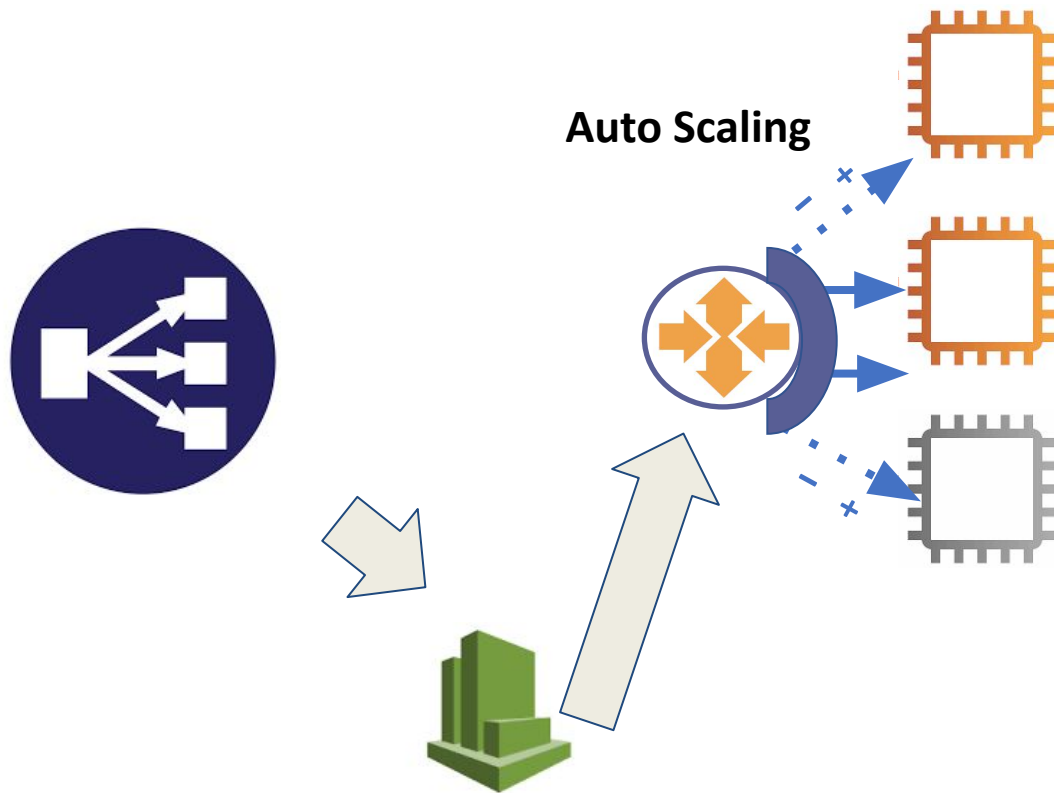
Standard IA (Infrequent Access)

Infrequently
Accessed Data



- Standard IA (Infrequent Access) is a convenient for **infrequently accessed files**
- But in case of access, it provides you to reach the file **quickly**.
- In fact, it designed for the data which requires less frequent access, but with **longer storage time than the Standard** class
- It is **cheaper than Standard** class **as long as** you access **infrequently**.



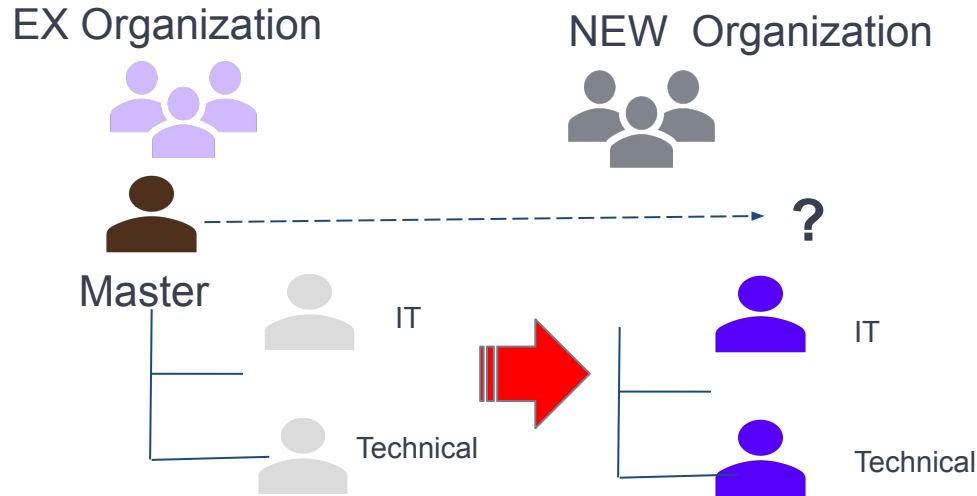


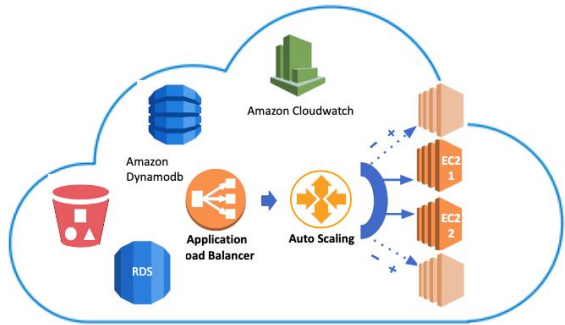
Amazon Cloudwatch

CPU utilization

MEMBER AND MASTER ACCOUNT LEAVING PROCESS

1. Remove the **member account** from the old Organization.
2. Send an invite to the **member account** from the new Organization.
3. Accept the invite to the new Organization from the **member account**.
- 4. Delete the old Organization.
5. Send an invite to the **master account**
6. Accept the invite to the new Organization from the **master account**





Component	Description
Templates	The JSON or YAML text file that contains the instructions for building out the AWS environment
Stacks	The entire environment described by the template and created, updated, and deleted as a single unit
StackSets	AWS CloudFormation StackSets extends the functionality of stacks by enabling you to create, update, or delete stacks across multiple accounts and regions with a single operation
Change Sets	A summary of proposed changes to your stack that will allow you to see how those changes might impact your existing resources before implementing them

OpsWorks Stacks **CloudFormation** Elastic Beanstalk

Multi-Value Answer Policies let you configure Route53 to return multiple values such as IP addresses for your web-servers, in response to DNS queries.

Multiple values can be specified for almost any record. Route53 automatically performs health-checks on resources and only returns values of ones deemed healthy.

Similar to Simple Routing, however with an added health check for your record set resources.

Routing Policy: Multivalue Answer

Route 53 responds to DNS queries with up to eight healthy records selected at random. [Learn More](#)

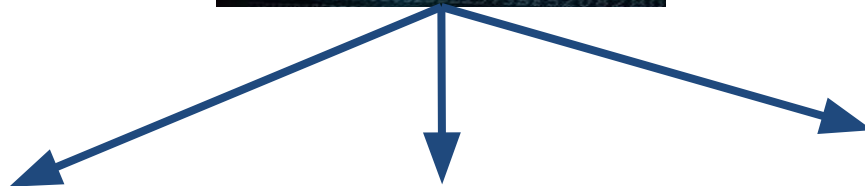
Set ID: multivalue

Description of this record set that is unique within the group of multivalue answer sets.
Example:
Route to Seattle data center

Associate with Health Check: ☐ Yes ☒ No



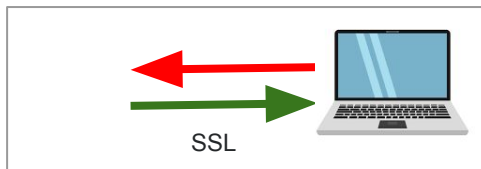
Exam tip: Weighted Routing Policy is for blue-green deployment



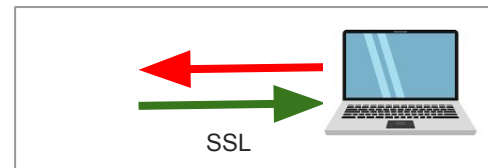
Server Side Encryption (**At Rest**)



Encryption in **Transition**



Client Side Encryption
(**Transition+At Rest**)



Failover Scenario



EC2
Volumes



Snapshot



Amazon AMI



EC2 Instance




Additional configurations ☒ Use defaults

These configurations are optional, and default settings have been defined to help you get started with your cluster. Turn off "Use defaults" to modify these settings now.

▼ Network and security

Virtual private cloud (VPC)

This VPC defines the virtual networking environment for this cluster. Choose a VPC that has a subnet group. Only valid VPCs are enabled in the list.

 You can't change the VPC associated with this cluster after the cluster has been created. [Learn more](#)  

VPC security groups

This VPC security group defines which subnets and IP ranges the cluster can use in the VPC.

default 
sg-e82ceac9

Cluster subnet group

Choose the Amazon Redshift subnet group to launch the cluster in.

Availability Zone

Specify the Availability Zone that you want the cluster to be created in. Otherwise, Amazon Redshift chooses an Availability Zone for you.

Enhanced VPC routing

Forces cluster traffic through a VPC.

☒ Disabled

☐ Enabled 

Publicly accessible

Allow instances and devices outside the VPC connect to your database through the cluster endpoint.

☒ No



Data sources

Seamlessly connect to your data wherever it lives - in the cloud, in 3rd party applications, or on-premises



Amazon QuickSight Featuring ML Insights



Dashboards

Create and share dashboards that include ML-powered anomaly detection, forecasting, and auto-narratives



Email Reports

Send email reports with auto-narratives



Embedded Analytics

Embed ML Enabled dashboards in your apps



aws



External



**Custom key store
(CloudHSM)**

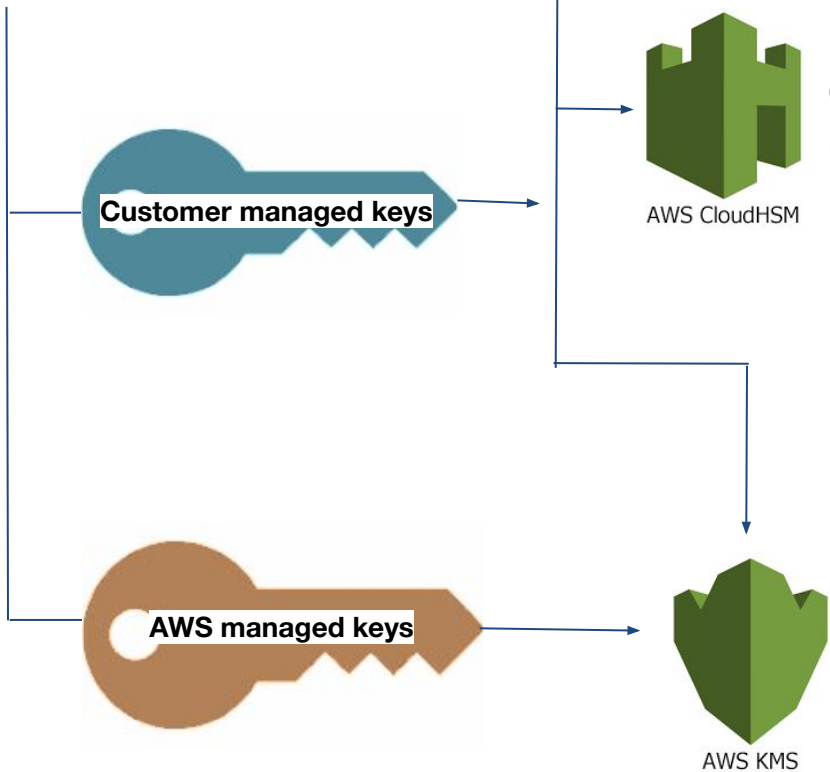
AWS CloudHSM

Customer managed keys

AWS managed keys



AWS KMS



Create function [Info](#)

Choose one of the following options to create your function.

Author from scratch ☒

Start with a simple Hello World example.

Use a blueprint ☐

Build a Lambda application from sample code and configuration presets for common use cases.

Container image ☐

Select a container image to deploy for your function.

Browse serverless app repository ☐

Deploy a sample Lambda application from the AWS Serverless Application Repository.

Basic information

Function name

Enter a name that describes the purpose of your function.

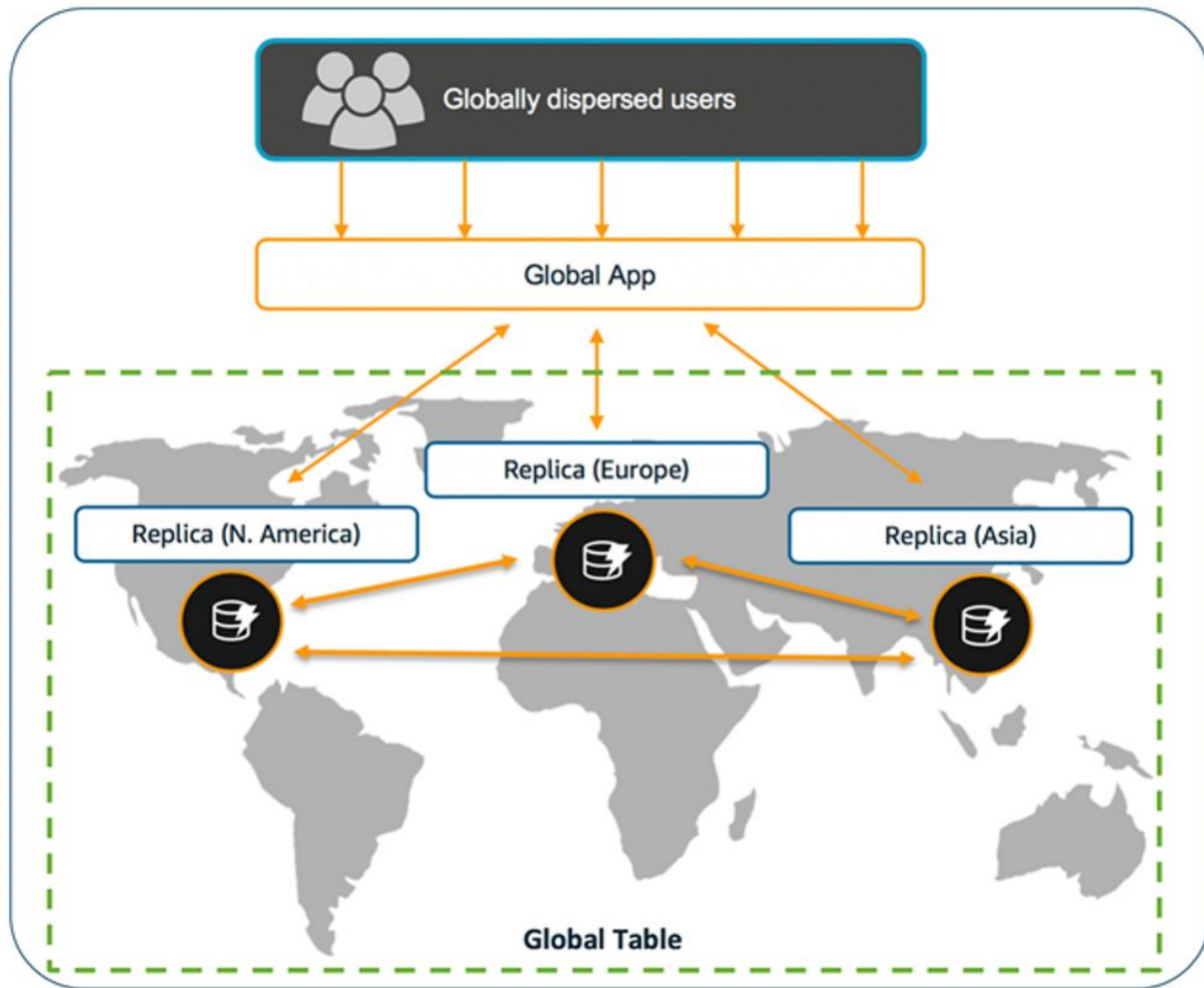
myFunctionName

Use only letters, numbers, hyphens, or underscores with no spaces.

Runtime [Info](#)

Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.

.NET Core 3.1 (C#/PowerShell)





Publicly Accessible

No

Sign URL

Yes

Only Accessible from
Restricted People

Single file

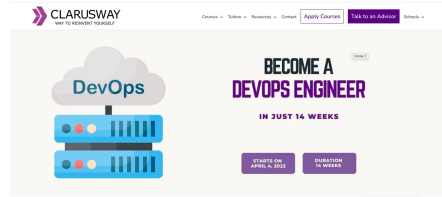
Publicly Accessible

No

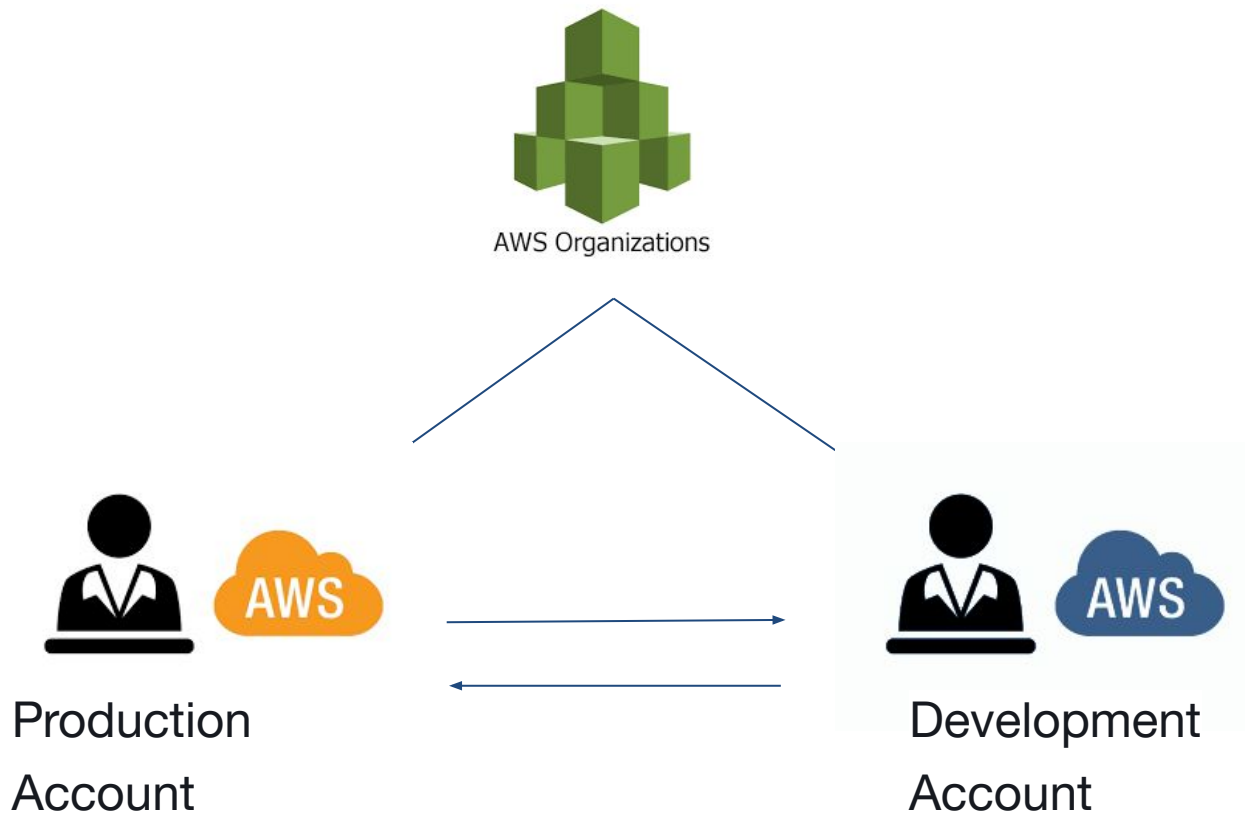
Sign Cookies

Yes

Only Accessible from
Restricted People



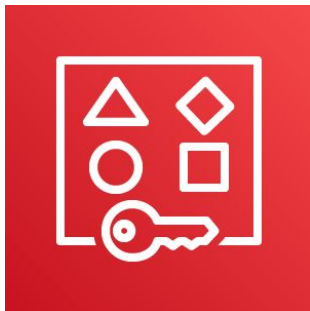
Whole
Website



Enable resource sharing in AWS Organizations with RAM



A



B



Production



Development

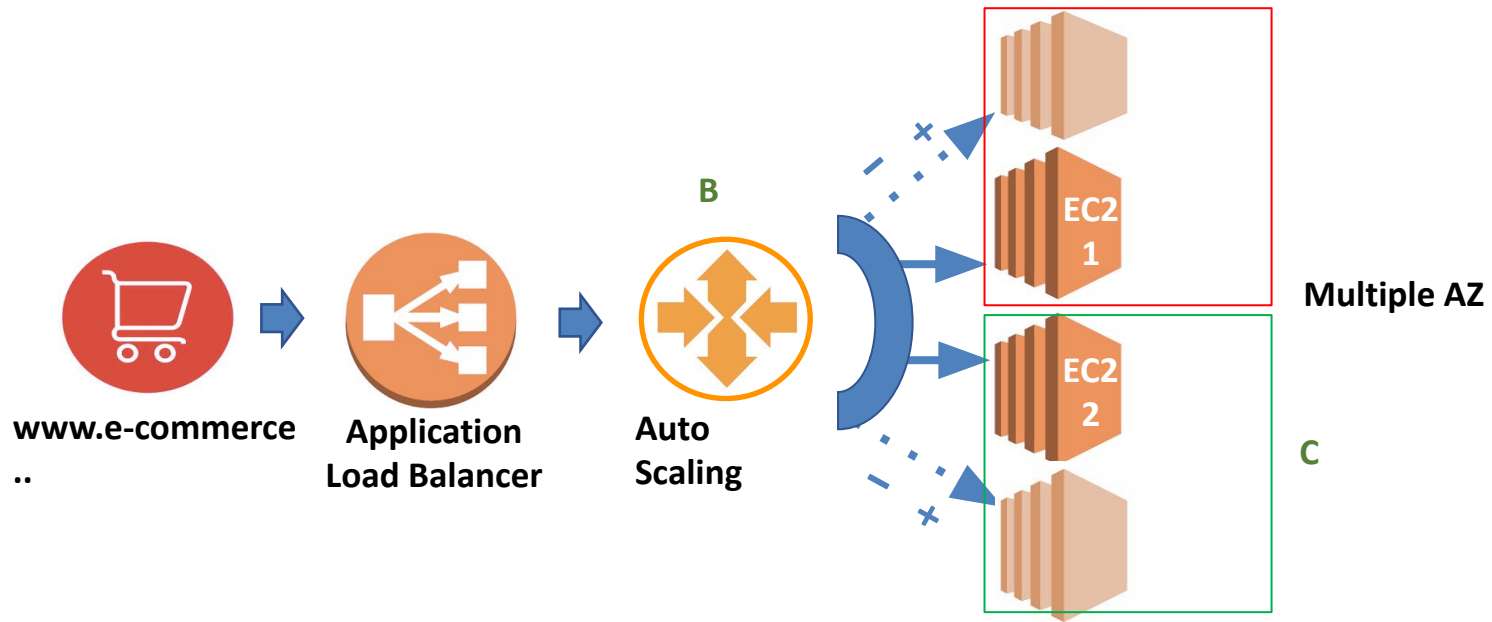
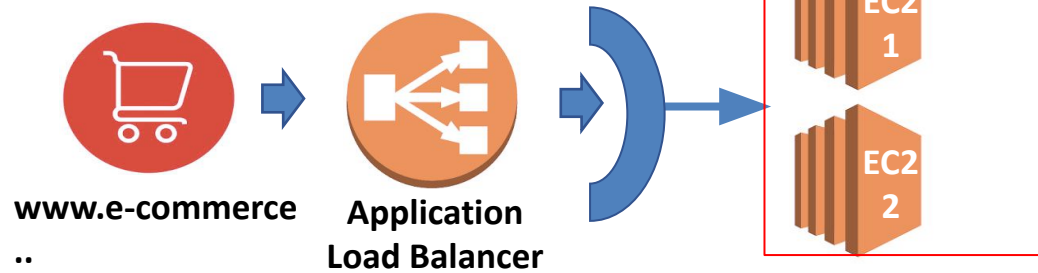


Full Stack



Sales

Single AZ



**backed up your
on-premises data**

Storage Gateway

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

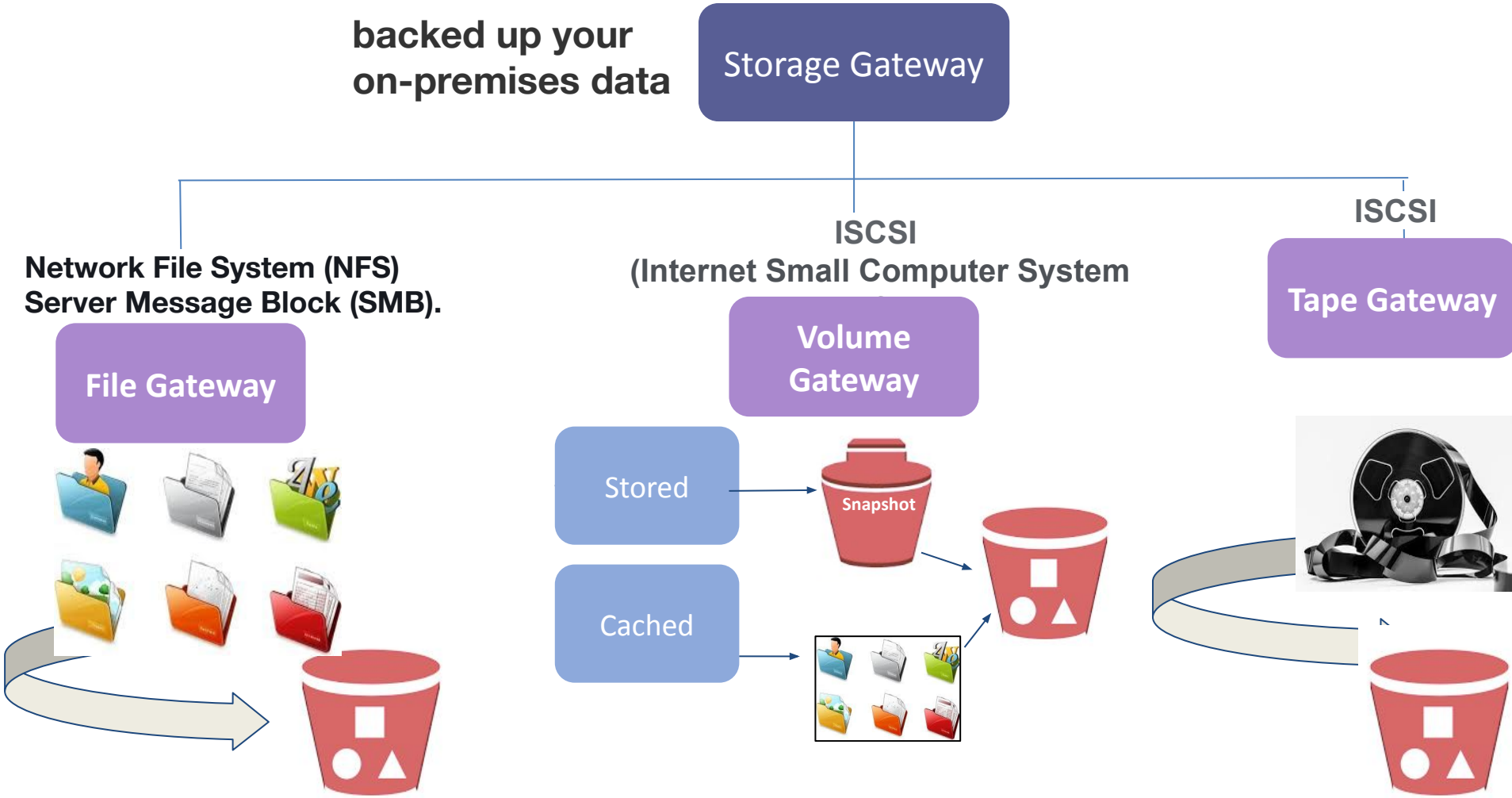
File Gateway

**ISCSI
(Internet Small Computer System**

Volume
Gateway

ISCSI

Tape Gateway



Info: The term **legacy** database commonly refers to a database that has been in use for many years and is therefore unsuitable for modern apps and environments.

- DMS create a replication instance for migrating. Your databases are fully operational when migrating.

- **Homogeneous** database migrations (**Oracle to Oracle**) (need **Engine conversion**)

Heterogenous database migrations (**Microsoft SQL to Aurora**) (**Use SCT**)

- Use **SCT (Schema conversion tool)** from one schema to another schema for **Heterogenous** migrations

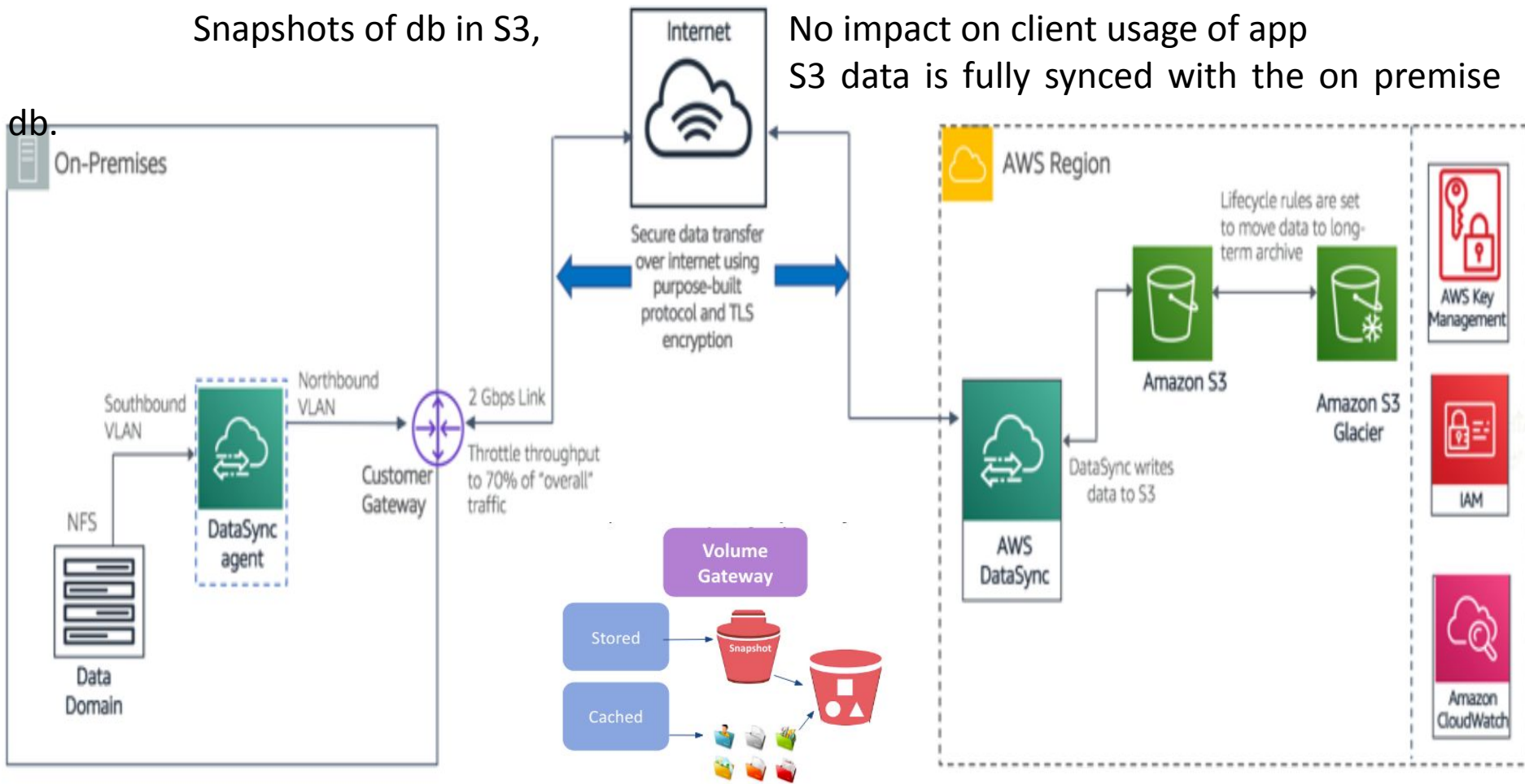
From **Legacy** to **DynamoDb** >>>>>> **Heterogenous** database migrations

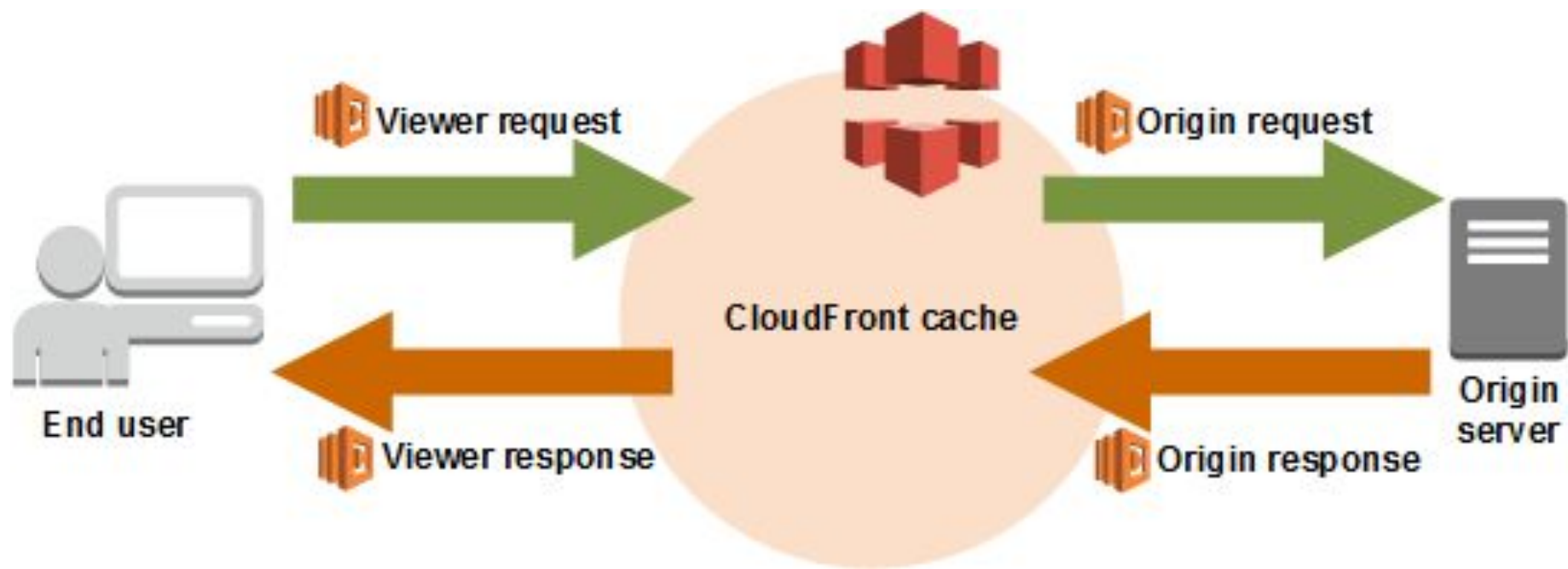


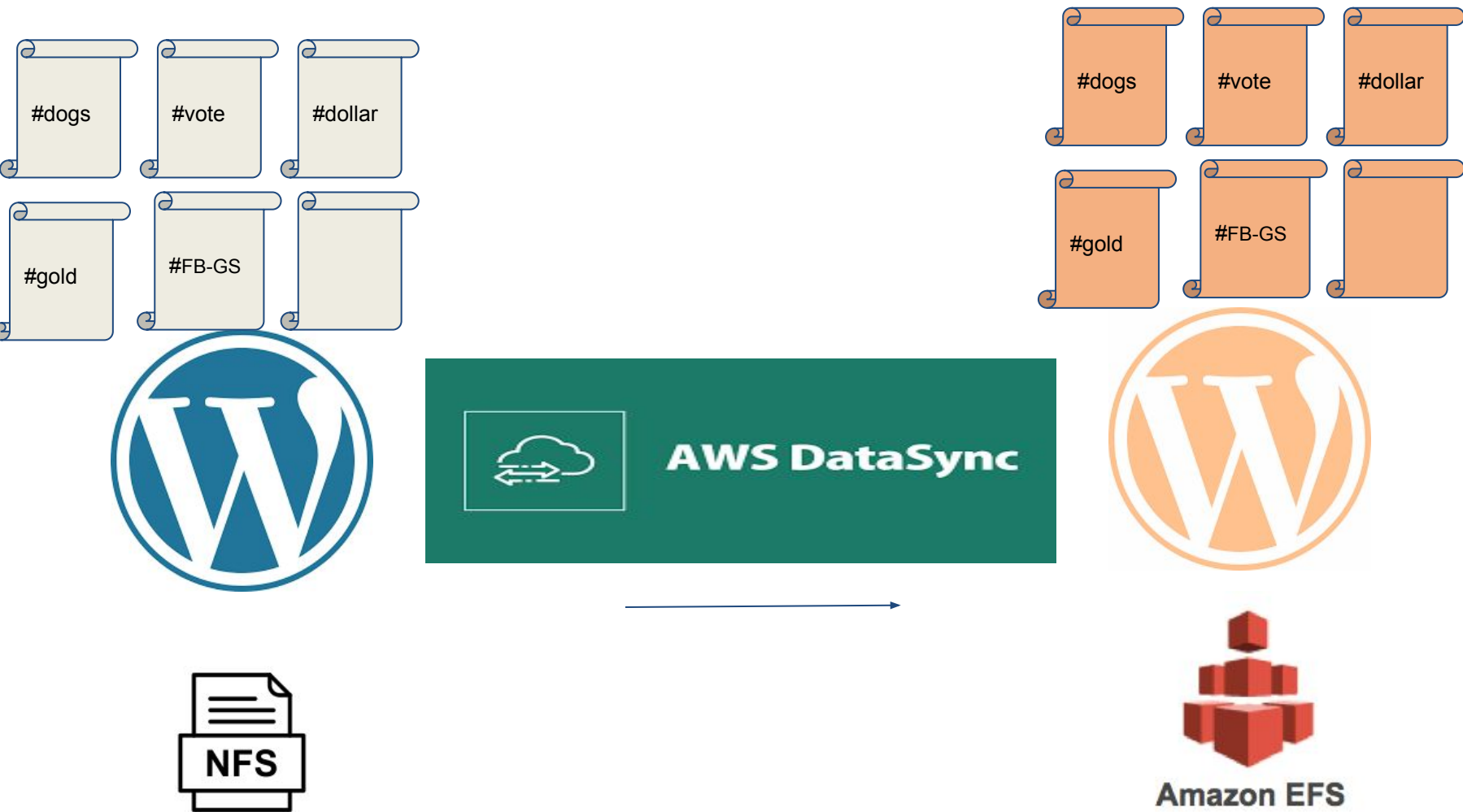
SCT (Schema conversion tool)

KEY words: Transfer db to AWS ,
Snapshots of db in S3,
db.

No impact on client usage of app
S3 data is fully synced with the on premise







Architecting for the Cloud AWS

Best Practices

A stateless application is an application that does not need knowledge of previous interactions and does not store session information. For example, an application that, given the same input, provides the same response to any end user, is a stateless application.

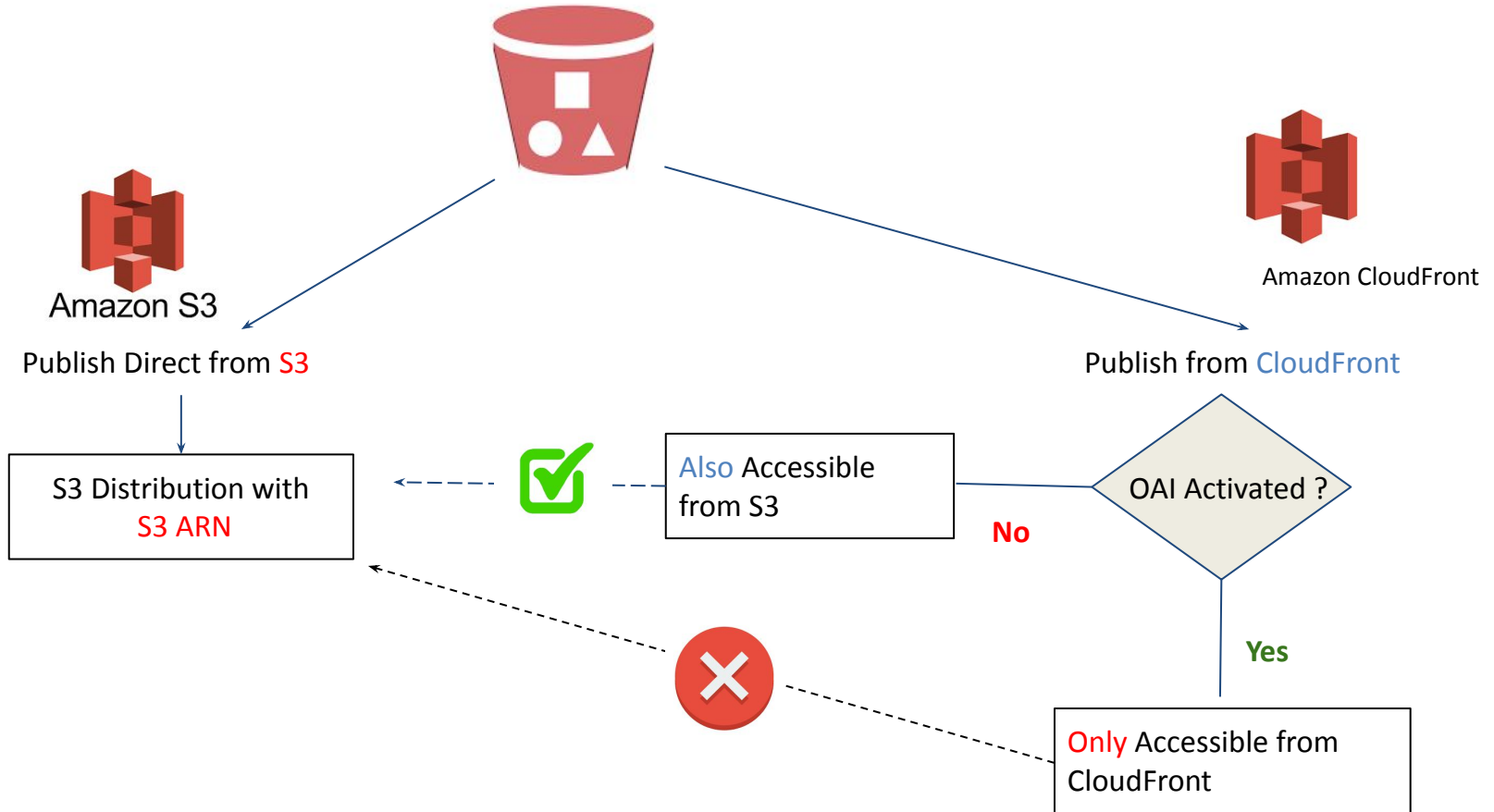


AWS Lambda

Couple :













Lambda=Stateless

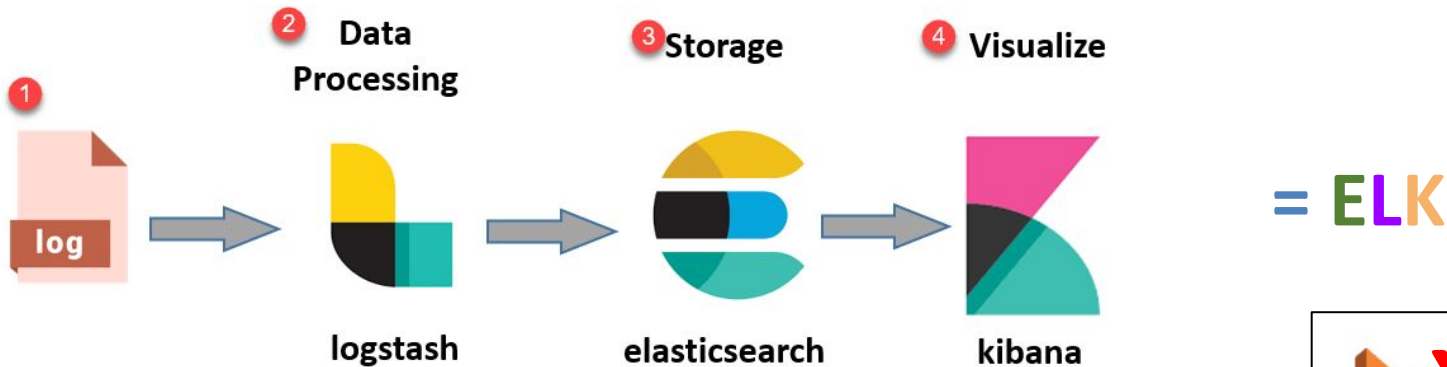
- **Source of the distribution** >>>> OAI >>> from Where
- **Restricted user** >>>> Pre Sign url/cookies >>>> Who (Slide-10)



Edit Behavior

Default Cache Behavior Settings

Path Pattern	Default (*)	
Origin or Origin Group	<div>S3-media-sharing-website-bucket</div>	
Viewer Protocol Policy	<div><input checked="" type="radio"/> HTTP and HTTPS </div> <div><input type="radio"/> Redirect HTTP to HTTPS</div> <div><input type="radio"/> HTTPS Only</div>	 by default it is http and https.
Allowed HTTP Methods	<div><input checked="" type="radio"/> GET, HEAD</div> <div><input type="radio"/> GET, HEAD, OPTIONS</div> <div><input type="radio"/> GET, HEAD, OPTIONS, PUT, POST, PATCH, DELETE</div>	
Field-level Encryption Config	<div></div>	
Cached HTTP Methods	GET, HEAD (Cached by default)	
Cache and origin request settings	<div><input checked="" type="radio"/> Use a cache policy and origin request policy</div> <div><input type="radio"/> Use legacy cache settings</div>	
Cache Policy	<div>Managed-CachingOptimized</div> <div></div> <div>Create a new policy</div>	
	<div>View policy details</div> <div>Learn More</div>	
Origin Request Policy	<div></div> <div></div> <div>Create a new policy</div>	
	<div>View policy details</div> <div>Learn More</div>	
Smooth Streaming	<div><input type="radio"/> Yes</div> <div><input checked="" type="radio"/> No</div>	
Restrict Viewer Access (Use Signed URLs or Signed Cookies)	<div><input type="radio"/> Yes</div> <div><input checked="" type="radio"/> No</div>	

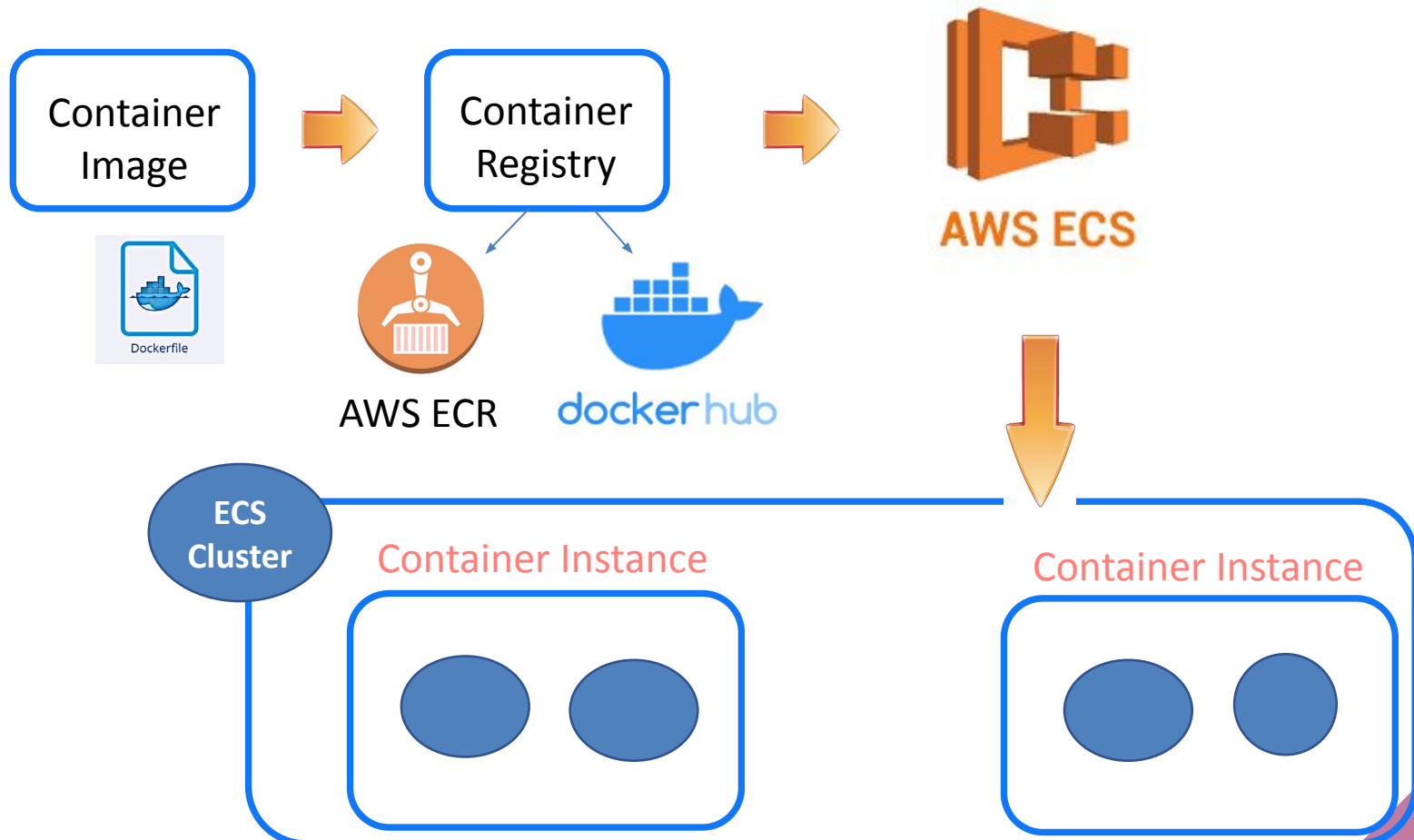


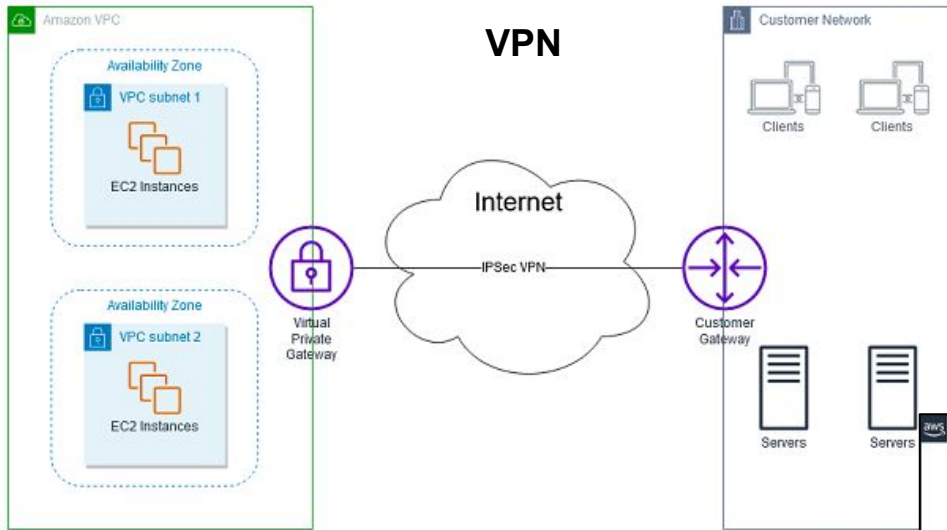
Not open source till January 21, 2021



Data Firehouse
S3
Cloudwatch Logs
AIOT

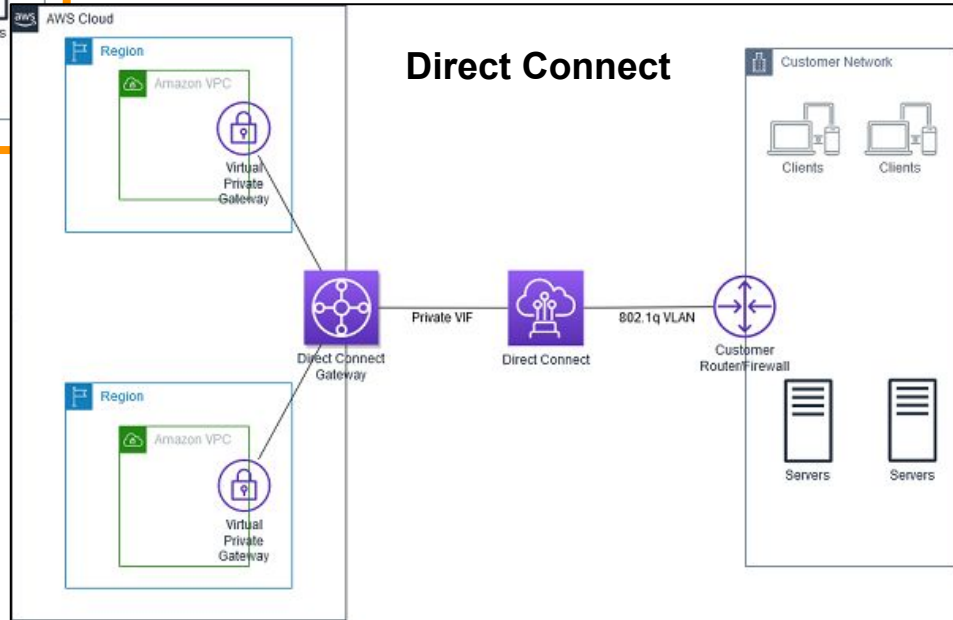
- (already built-in support no need lambda)
- + need lambda to be trigger
- (already built-in support no need lambda)
- (use MQTT)





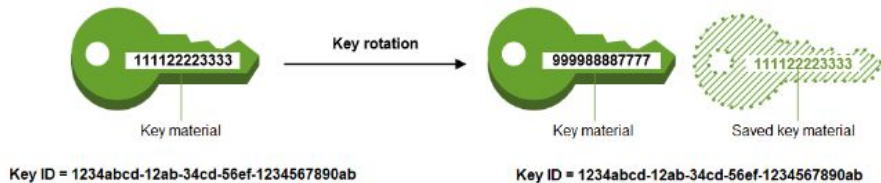
Within the term "IPsec," "IP" stands for "Internet Protocol" and "sec" for "secure."

VPN connections are very cheap (**\$37.20/month**)
Built in a few minutes



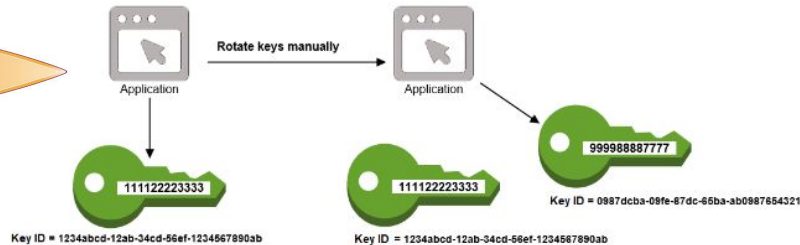
Rotating AWS KMS keys

Automatic key rotation is supported only on symmetric KMS keys

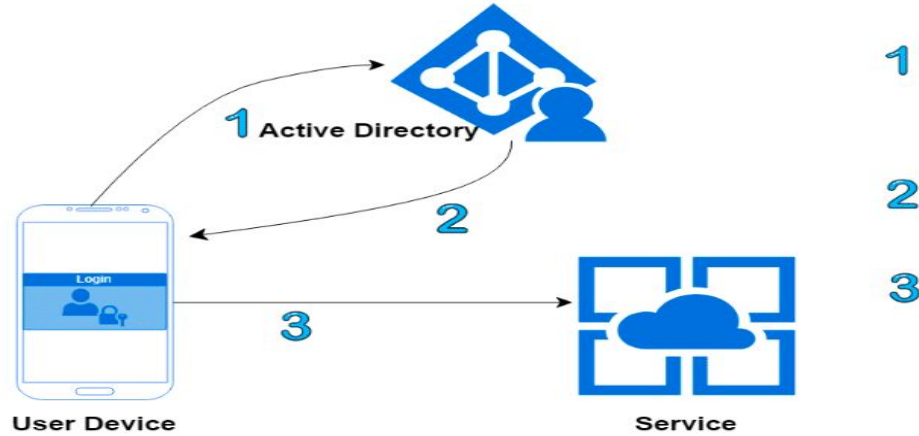


Automatic key rotation is *not* supported on the following types of KMS keys, but you can rotate these KMS keys manually.

- Asymmetric KMS keys
- KMS keys in custom key stores
- KMS keys with imported key material



Basic Active Directory Authentication



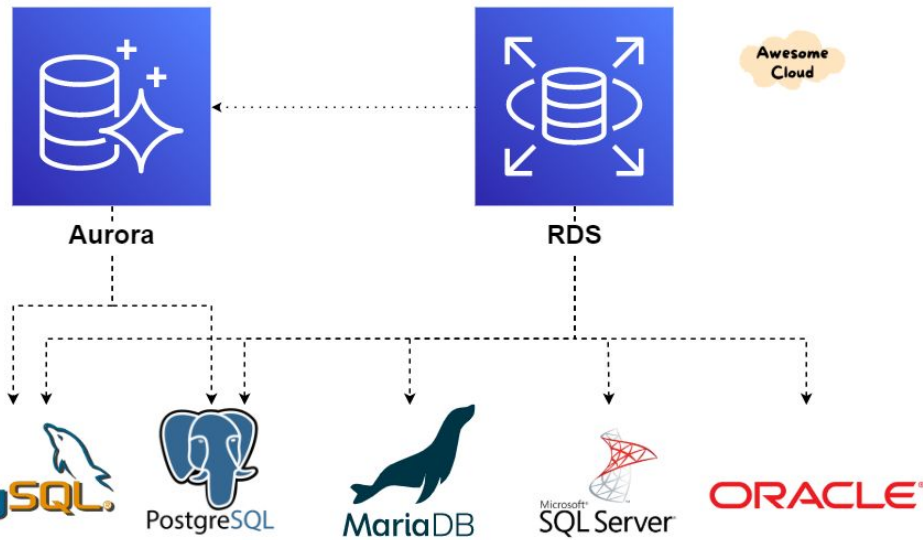
**AWS Directory
Service for
Microsoft Active
Directory**

Simple AD

AD Connector

Amazon Cognito





RDS Mysql can grow to 16 Tb

Aurora (Mysql) automatically up to 128 Tb.

In the question : Migrate 5 tb Mysql to AWS. 5Tb will increase in the future.

Getting started wizard

Step 1: Create identity pool

Step 2: Set permissions

Create new identity pool

Identity pools are used to store end user identities. To declare a new identity pool, enter a unique name.

Identity pool name*



Example: My App Name

▼ Unauthenticated identities ⓘ

Amazon Cognito can support unauthenticated identities by providing a unique identifier and AWS credentials for users who do not authenticate with an identity provider. If your application allows customers to use the application without logging in, you can enable access for unauthenticated identities. [Learn more about unauthenticated identities.](#)



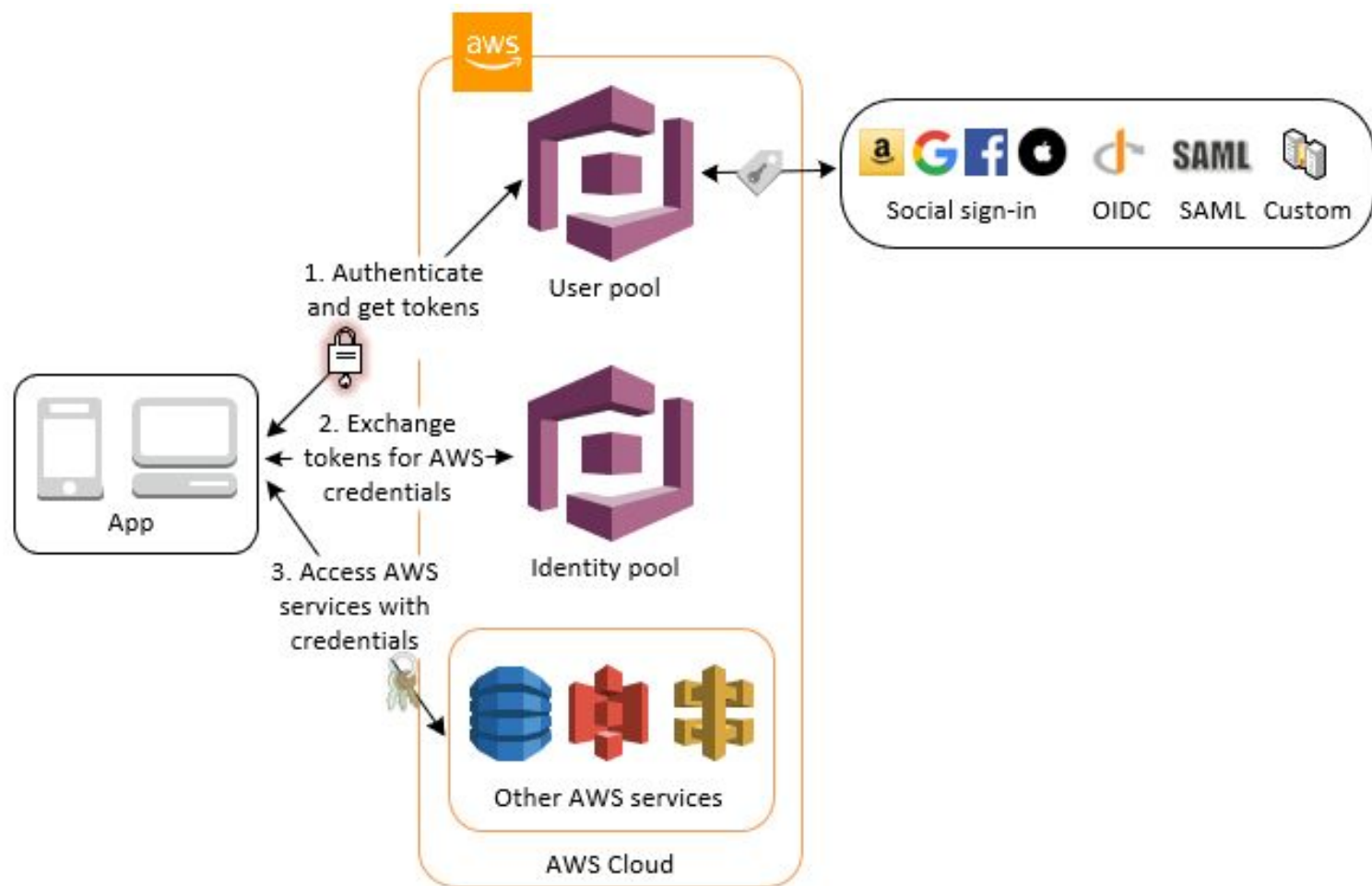
Enable access to unauthenticated identities

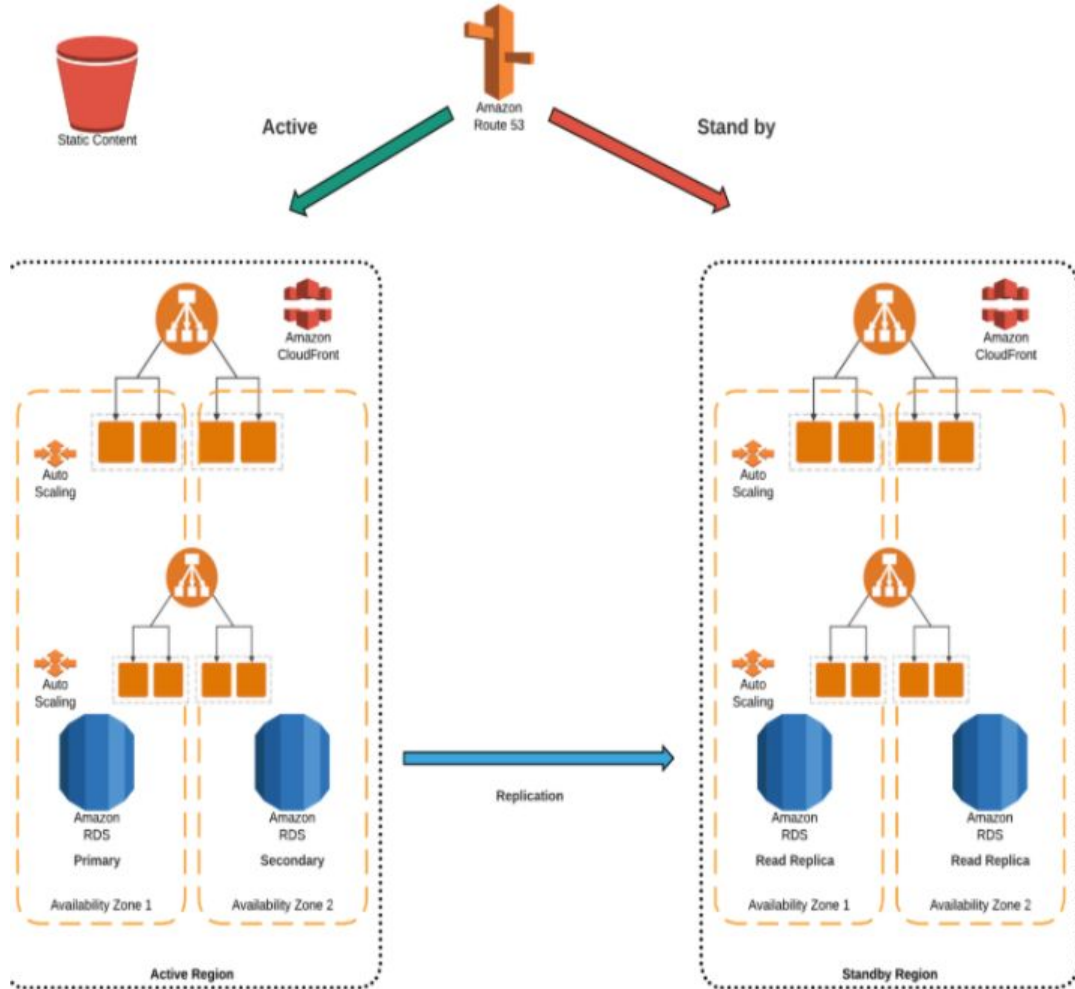
▶ Authentication providers ⓘ

* Required

Cancel

Create Pool





99.95 % SLA

For more information on the Elastic Load Balancing please refer to the URL below:



User IP: 7.8.9.10/32



Connection Request

No	Type-Port
1	SSH-22

Security Group-Inbound

Type	Protocol	Port Range	Source
SSH-22	TCP(6)	22	0.0.0.0/0

Inbound Network ACL

Rule	Type	Protocol	Port Range	Source	Allow/Deny
100	SSH-22	TCP(6)	22	0.0.0.0/0	DENY
*	ALL Traffic	ALL	ALL	0.0.0.0/0	DENY

Outbound Network ACL

Rule	Type	Protocol	Port Range	Source	Allow/Deny
100	SSH-22	TCP(6)	22	0.0.0.0/0	ALLOW
*	ALL Traffic	ALL	ALL	0.0.0.0/0	DENY



User

User IP: 7.8.9.10/32



EC2

Security Group-Inbound

Type	Protocol	Port Range	Source
SSH-22	TCP(6)	22	0.0.0.0/0

Connection Request	
No	Type-Port
1	SSH-22

Inbound Network ACL

Rule	Type	Protocol	Port Range	Source	Allow/Deny
100	SSH-22	TCP(6)	22	0.0.0.0/0	ALLOW
*	ALL Traffic	ALL	ALL	0.0.0.0/0	DENY

Outbound Network ACL

Rule	Type	Protocol	Port Range	Source	Allow/Deny
100	SSH-22	TCP(6)	22	0.0.0.0/0	ALLOW
*	ALL Traffic	ALL	ALL	0.0.0.0/0	DENY

The 12 requirements of PCI are:

Install and maintain a firewall configuration to protect cardholder data

Do not use vendor-supplied defaults for system passwords and other security parameters

Protect stored cardholder data

Encrypt transmission of cardholder data across open, public networks

Use and regularly update anti-virus software or programs

Develop and maintain secure systems and applications

Restrict access to cardholder data by business need to know

Assign a unique ID to each person with computer access

Restrict physical access to cardholder data

Track and monitor all access to network resources and cardholder data

Regularly test security systems and processes

Maintain a policy that addresses information security for all personnel

PCI Payment Card Industry



CSAA Practice Test 2

Oswaldo

18 Agu 2022