

10/05/2022

⇒ Create an S3 Bucket & upload HTML data in Test file?

* Log into AWS Console

↓ Go to

* S3 Bucket

↓ Click.

* Create a Bucket

↳

Bucket name

Give an unique name for my Bucket creation

↓ AWS Region

Select required Region

↓ Object Ownership

↓ ACLs Enabled

under this Block all public access

↓

Click This I Acknowledge

↓

Bucket version

Disable

Enable

↓

* Click on Create bucket ✓

↓

* Click on, The newly created S3 Bucket page will open.

↓ Click on upload & Add files.

* Upload a Demo/Reference HTML file downloaded wif it which will be in the download like ami-test.txt.

↓ The file gets uploaded successfully

↓ Then go to

ACL's (Access control).

↓ Check public access is enabled & Cross check.

↓ Go to

Permissions & Edit

↳ Everyone access (Public)

Read Write

I acknowledge

Click ↳ Save changes ⇒ Copy the object URL, open in new tab the uploaded HTML file will open.

*Object Expired
in S3 bucket*

→ Create a role in IAM if S3 Read Only is not available?

* Log into AWS console

↓ Go to :

* IAM

↓ Click on left downwards.

* Roles

↓ :

* Create role

↳ AWS service

use Cases :

VDEG

↓ :

Next ✓

* Search for S3 Read Only policies for permission & click on it.

↓ Next ✓

↓ :

* Name, Review & Create Page will open.

Role name :

S3 read only / my name :

↓ :

Create Role ✓

* The S3 Read Only with a role will be Created & Activated.

⇒ Create a Snapshot from the volume?

* Log into AWS Console

↓ Go to

* EC2 Dashboard

↓

* Newly Created EC2 Instance

↓ Left side Downwards

* Snapshot

↳ Create a Snapshot

↳ Snapshot settings will arise.

(a) Volume Type Info Page will Open.

↳ Volume

↓

(b) Volume ID

↳ Select newly created volume/Existing volume

(c)

↳ Go to Newly Created EC2 Instance

↳ Storage

↳ Check Cross Verify

Volume ID & Select it.

(c) Description

↳ Snapshot of demogspiders/EC2 instance name.

↳ Create Snapshot

↓

Successfully Created

(Snapshot of demogspiders)

* The newly created Snapshot will appear & modify or Rename the Snapshot file & instance & save it.

⇒ Create AMI from the Snapshot Created?

* with the Newly Created Snapshot file

Select EC2 & Go to

* Actions

↳ Create an Image from Snapshot

↓ Information Page will open.

.. Snapshot ID

along with (Snapshot description name)

* Image name

A descriptive name for the image

demogspidersAMI

Description

A description for the Image.

AMI being Created from Snapshot

↳ Create Image ✓

↓ After Creating Go to LHS downward

* Image

↳ AMI ✓

↳ The newly created AMI from Created Snapshot will display

↓

* Modify or Rename the AMI ^(After AMI) & Save it

→ Launch EC2 Instance from the Created AMI in d/f Availability Zone?

* By Selecting with the newly created AMI

↓ Go to

* Launch Instance from AMI

↓

* The new ^{Launch} EC2 Instance/Creating Page will Open

Configure

EC2 Instance from AMI ✓

② Keypair

Select a existing keypair / Create a new keypair ✓

③ Network Setting

Subnet

Edit ✓

Selected

Check for

Go to EC2 Instances → AZ

Select D/F AZ

→ AZ

↓

* Launch Instance ✓

Launch Instance Successful.

Cross Verify [✓] Newly Launched

* The instance will appear as launched in D/F availability zones

④

* We can observe a ^{new} EC2 Instance with launched in D/F AZ

↓

- * Select the EC2 Instance created file.
- ↳ Add Security Group Modify Security option
- ↳ Click on Security groups.
- ↳ sg-HighRisk103
- ↳ Edit Inbound Rules
- ↳ Add rule
- Edit Outbound rules
- ↳ Add [HTTP] → Port number [0-65535]
- ↳ Save Rule
- ↳ Add rule
- ↳ Add
- ↳ http Custom
- ↳ [Source/Target] → Same VPC
- ↳ Go to & Select
- * Latest EC2 Instance file.
- ↳ copy
- ↳ Public IP & address
- ↳ Paste it in
- ↳ Open new window / Incognito mode of window.
- ↳ After that -
- * Amazon EC2 AMI Test (Black background page will display)

What is the Same Region Replication (SRR)?

- * It is used to Copy objects across Amazon S3 buckets in the same AWS region.
- * Amazon S3 now supports automatic and asynchronous replication of newly uploaded S3 objects to a destination bucket in the same AWS Region.
- * It automatically replicates data b/w buckets within the same AWS Region.
- * SRR can be used to make a second copy of data in the same AWS Region.
- * Replication can be setup at a Bucket level
 - ④ a Shared prefix level
 - ⑤ Object level
- ↳ using S3 object tags

→ What is Cross Region Replication (CRR)?

- * It allows you to replicate or copy your data in two different regions.
- * Every object uploaded to an S3 bucket is automatically replicated to a destination bucket in a diff AWS region that you choose.

→ How to delete a Snapshot? & How to Deregister your AMI?

Steps to Deregister!

AMI → Log into AWS console
↓ Go to

* EC2 Dashboard
↓ Go to CloudWatch

* ~~Images~~ Images
↳ AMI's

↳ The AMI image created ^{for a particular EC2 instance} will display & Select it.

↓ Go to

* Actions

↳ Click Deregister

↳ Click ✓

* The AMI file gets Deregistered successfully.
↓ Refresh it.

↓ Then goes to CloudWatch.

Steps to Delete Snapshot!

* Snapshots

↳ Select

Created Snapshot for Particular AMI image file.

↳ Go to Actions

↳ Click Delete Snapshot

↓ Yes Delete ✓

* The Created Snapshot for particular AMI file is deleted successfully.

(*)

Note:- ① At first, we have to Deregister AMI for any instances ^{before proceeding to go} to delete any snapshot.

② Before deleting the any S3 Bucket we have to do At first, Empty the Bucket & Then we have to move on to delete the S3 bucket.

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⇒ What are the D/f AWS Storage Services Available in AWS?

- ① Simple Storage Service (S3)
- ② Elastic Block Storage (EBS)
- ③ Elastic File System (EFS)
- ④ Amazon FSx for Lustre
- ⑤ Amazon S3 Glaciers
- ⑥ Amazon FSx for windows FileServer
- ⑦ AWS Storage Gateway.

⇒ Explain d/f b/w?

<u>Category</u>	<u>S3</u>	v/s <u>EBS</u>	v/s <u>EFS</u>
① Storage type	Object Storage	→ Block Storage	→ File Storage
② Pricing	Pay as you use	→ Pay for Provisioned Capacity	Pay as you use.
③ Scalability	unlimited storage	→ Limited storage	→ unlimited storage.
④ Durability	Stored Redundantly across multiple AZ's	→ Stored Redundantly in a single AZ	→ Stored Redundantly across multiple AZ's.
⑤ Availability	Mad is 99.99% with S3 Standard	→ 99.99%.	→ No SLA's.
⑥ Security	Support Data at Rest & Data in Transit encryption		
⑦ Backup & Restore	Use versioning or Cross Region Replication	→ Automated Backups and Snapshots	→ EFS to EFS Replication.
⑧ Performance	Slower Than EBS & EFS	→ Faster Than EFS & S3	→ Faster Than S3, Slower Than EBS
⑨ Accessibility	Publicly & Privately Accessible	→ Accessible only via the attached EC2 instance	→ Accessible Simultaneously from multiple EC2 & On-premises instance
⑩ Interface	Web Interface	→ File System Interface	→ Web File System Interface.
⑪ uses Cases	media, Entertainment, Big data analytics, backups & archives, web serving & Content management	→ Boot volumes, Transactional & NoSQL databases, data warehousing ETL	→ Same as S3 & also Home directories.

v/s Amazon Glaciers

Interface → API

Concurrency → Low

Consistency → Consistent

Latency → 3 options available

Size → 40TB/archive, unlimited

. Durability → 99.9999.1.

use case → Action

\Rightarrow Diff classes of S_3 or Category of S_3 ?

OS3 Standard

④ 53 one zone - IA

④ Scout posts

② 53 Standard-IA

⑤ S3 Glaciers

③ 53 Intelligent-Turing

⑥ 53 Glacier Des Archies

3 Glaciers
Described

@ 5 Standard

⑥ 53 Intelligent

① 5^o Ste

S_p Standard

Szone

② ~~Designed for Availability~~ \Rightarrow 99.99% \rightarrow 99.9% \rightarrow 99.9% \rightarrow 99.5% \rightarrow 99.99% \rightarrow 99.9%

③ Availability \Rightarrow 99.9.1. \rightarrow 99.1. \rightarrow 99.1. \rightarrow 99.1. \rightarrow 99.9.1. \rightarrow 99.9.1.

④ Availability Zones $\geq 3 \rightarrow \geq 3 \rightarrow \geq 3 \rightarrow 1 \rightarrow \geq 3 \rightarrow \geq 3$

⑤ Minimum Capacity \Rightarrow N/A \rightarrow N/A \rightarrow 128KB \rightarrow 128KB \rightarrow 40KB \rightarrow 100 days \rightarrow 180 days
Per object

⑥ Minimum Storage \Rightarrow N/A \rightarrow 30 days \rightarrow 30 days \rightarrow 30 days \rightarrow 10 days
 duration Charge \rightarrow Per GBT \rightarrow Per GB \rightarrow Per GB \rightarrow Per GB

④ Retrieval fee → N/A → N/A → Per GB Retrieved → Per GRD → Retrieved Retrieved

⑧ First byte latency \Rightarrow milliseconds \rightarrow milliseconds \rightarrow milliseconds \rightarrow milliseconds \rightarrow minutes
of hours \rightarrow Select hours \rightarrow Select

⑨ Storage type → object → object → object → object → object → object

③ recycle \Rightarrow yes \rightarrow yes \rightarrow yes \rightarrow yes \rightarrow yes \rightarrow yes.

⇒ How to generate a bucket policy & give a user specific access on the S3 bucket.

* At first, Select the newly created S3 Bucket [with Everyone (Public) and For both object level & S3 bucket wise, the policy should be well]

Then,
Go to
Permissions

Click Bucket Policy -> (In the line checkmark)

[Edit] ✓

↳ [Policy generator] ✓

↓
* Amazon policy generator Page will open.

Step 1!

Select Type of policy S3 bucket Policy ✓

Step 2 (Add Statement)

Effect & Allow Open.

* Giving the policy for
specific user.

Principal: New to Put ARN of the user here.

* If we should give policy for
multiple user we should
Put (One, (B/w ARN we
should put))

AWS Service Amazon S3 All Services ("")

Actions: All Actions ("")

Amazon Resource Name
(ARN)

Newly Created
S3 Bucket ARN should give Bucket ARN
Selected S3 Bucket ARN
Starting from this page

Add Conditions (optional).

[Add Statement] ✓

Step 1:
Any user available in
If Go to
IAM user
User
Select a particular user
at first Created, Selected
will get user ARN
User Copy
User ARN
Publication
Principal [user ARN]

* Once we give Add statement we can able to see.
Principal (s)

am:aws:iam::56847607:users/Pju

what user we are giving
access

Step 3:

Effect	Action	Resource	Condition
Allow	S3:*	arn:aws:s3:::cloud92323	NotSet

Allow

→

Storage

→

Bucket

arn:aws:s3:::cloud92323

For this particular
Bucket

[Generate Policy] ✓

↓
* Policy JSON Document Page will open

↓ Copy the content which is present in the box & Paste it in
Edit Bucket Policy Box Just
in the Table

* [Save changes] ✓

Now, the user can have the access to bucket & whatever actions required can be performed on the bucket & also can give user level permission for a bucket.

Principal user
(Boji).

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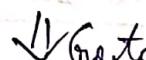
→ What is lifecycle rule? write the steps with screenshots (Any rule like transition from one class to other)?
It is a set of rules that define the actions applied by S3 to a group of objects.

* Lifecycle Rule Create steps in S3 bucket.

At first, * Amazon S3



Buckets



* Select an Existing Bucket / Existing Bucket
↓ Go to
Click on Management & click.

* Lifecycle Rule Create.



Create a Lifecycle Rule.

① Lifecycle rule name

Give Lifecycle denoted to Intelligent
Bucket name

② Choose a rule type

↳ limit scope of this rule using one or more filters

o Apply all objects in the Bucket.

③ Lifecycle rule actions

↳ move current versions of objects & w/ storage classes.

- move non-current
- Expire current versions of objects
- Permanently delete non-current versions of objects
- Delete expired object delete markers or incomplete multipart uploads.

④ Transitions Current version of objects & w/ storage classes.

Choose storage class Transition

One Zone IA

Days after object creation

90

Minimum of 30 days should greater.

⑤ Object Tags

Key

Transitions

Value - optional

Zone

Create rule

* Lifecycle Rule "refer to where object classes" Successfully Created/added in S3 Configuration

↓ Then Go & Select

* Created lifecycle rule file in lifecycle configuration type

↳ Delete

↳ Enter

⇒ write the hands on steps of CRR?

* Cross Region Replication steps in a S3 bucket

1st Bucket ⇒ Amazon S3

↓ Go to

* Create Bucket

④ Bucket name -

Given /DB123

⑤ AWS Region -

Asia Pacific (Tokyo) ap-northeast-1

2nd Bucket ⇒ * Create Bucket

↳ Bucket name

Given /DB231

⑥ AWS Region -

Note: In AWS Region we have to select diff region for replication South America (S3 & Paul) sa-east-1

⑦ ACL's enabled

⑧ Block all public access
unlock

I acknowledge.

⑨ Bucket versioning

⑩ Disable
⑪ Enable

Create bucket

Note: Always For Replication we have to enable Bucket Version

⑫ Bucket Versioning

⑬ Disable

⑭ Enable

Create bucket

Newly

* Create Bucket will display

* The Another newly created bucket will display

After creation of 2 new buckets

Go to Select

Click 1st Created Bucket /DB123/

* Management

↳ Replication rule

↳ Create Replication rule

→ Replication Rule Configuration Page will open

↳ Replication Rule name .

Give, Replicate from DB123 to DB321

④ Source Bucket .

Choose a rule scope .

⑤ limit scope of this rule

✓ Apply to all objects in the bucket .

⑥ Destination

Bucket name +

Choose the bucket that will receive replicated objects

Select & Create Bucket is, DB321 by → Browse S3 ✓

⑦ IAM role .

↳ Choose an existing IAM role .

⑧ Enter IAM role ARN

Give: Create a new role ↴ Next ↴ Next ↴

Save ✓

→ Replicate existing objects?

↳ No, do not replicate existing objects

⑨ Yes, replicate existing objects

Submit ✓

✓ After this

→ The Replication Configuration gets successfully updated

✓ Go to

→ Create Replication Job

↳ Choose Region & Manifest Info Page will open .

↳ Next .

↳ Select Godown & click .

↳ Replicate

↳ Next .

✓

→ Configuration additional option Page will open

↓ Godown

① Completion report

Path to Completion Report destination

Choose already created bucket DB321 by using view [] Browse S3 ✓
Choose path.

② Permissions

IAM role

Owner Creates a new role View [] ✓

After that
↓ If Then go to

Next [] ✓

* 1st Created bucket is, DB123 & Select

Goto permissions

↳ ACL should be Edited to give all publication.

↳ Everyone (Publication) Read Write Acknowledge .

Save changes ✓

↓ Then,

* Repeat the ACL Editing Step for 2nd Created bucket also .

↳ Save changes ✓

↓ Then goto 1st bucket

* Upload any Temporary file/Image

↳ After uploading file/ image in 1st Created bucket

Goto check in

* 2nd Bucket with diff Region

File can see .

The Replicated file ^{which is} uploaded in 1st bucket is present

Copied in 2nd bucket .

→ This are the Process in Cross-Region Replication .

⇒ What is S3 Object Lock?

- * It is an Amazon S3 feature that allows you to store objects using a write once, read many (WORM) model.
- * It prevents object version deletion during a user-defined retention period.

⇒ S3 Glacier Vault Lock?

- * It allows you to easily deploy and enforce compliance controls for individual S3 Glacier vaults with a vault lock policy.
- * You can specify controls such as "write once read many" (WORM) in a vault lock policy and lock the policy from future edits. Once locked, the policy can no longer be changed.

⇒ What is SRR? Explain with Handson steps?

After, click on Amazon S3

↳ Go to

* Existing Bucket or Create New Bucket

↳ Choose Bucket

* Make sure in properties → Versioning is enabled in Bucket
in permissions → The objects in access to public

↳ Go to

* Management

↳ Create Replication Rule

↳ Replication Rule Configuration Page will open

① Replication rule name.

Give

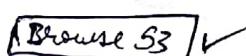


② Destination

Bucket name.

Choose bucket that will receive replicated objects

Give,



③ IAM Role

Choose from existing IAM role
 Enter IAM role ARN

Give,
 view

✓ * Replicate Existing Object? will display

Existing object

① No, do not replicate existing object

② Yes, replicate existing objects

Cancal

✓ * Replication Configuration gets successfully updated in Some Region.

- Replication rule name: Status Destination Bucket Destination Region
- Replication Enabled. S3://^{chosen} destination bucketname SameRegion

✓ Then go to S3 console.

1st step chosen Bucket (Source Bucket)

↳ upload any file in 1st Bucket (Source Bucket) any [index.html, html file, image]

↳ After uploading

✓ Go to

2nd step chosen Existing Bucket (Destination Bucket)

↳ The file uploaded in 1st Bucket will be replicated in 2nd Bucket.

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What is DNS? Explain?

⇒ DNS → Domain name system.

* It turns domain names into IP addresses, which browsers use to load Internet Pages.

* It is the phonebook of the Internet.

* It helps the world wide web scale. Since, it is used by many off computers that are all connected to the network.

* It is a naming database in which Internet domain names are located and translated into Internet protocol (IP) addresses.

What is Route 53?

* AWS Route 53 is a DNS Service that connects the Internet traffic to appropriate servers hosting the requested web application.

* It is a highly available & Scalable domain name system (DNS) service intended to give business and developers a reliable way to direct end users to applications.

* Eg: It translates names like www.example.com into the numeric IP addresses like 192.0.

What is HostedZone?

* It is analogous to a traditional DNS zone file; it represents a collection of records that can be managed together, belonging to a single parent domain name.

* It is a container for records, & records contain information about how you want to route traffic for a specific domain such as example.com & its subdomain (a.example.com).

* In Route 53, a Hosted Zone is a container for managing the DNS records on a domain that uses Route 53 as its DNS provider.

Subdomain?

* It is an additional section of your main domain name.

* These are created to help organize & navigate to diff sections of your main website -

⇒ Features of Route 53?

- ① DNS Failover:- It helps the user to automatically detect an outage of its website and then redirect your end users to another location where your website application is working properly.
- ② Traffic Flow:- It routes end users to the endpoint which provides a better user experience.
- ③ Health Checks:- It automatically checks & monitors the health and performance of the applications or resources.
- ④ Weighted Balancing:- It routes traffic b/w several services via a round-robin algorithm. It also allows the user to set its own weight.
- ⑤ Root Domain Website Floating:- It allows the user to access its website without specifying the www in the web address or the search bar.
- ⑥ Domain Registration:- It registers the domain name of the website (if needed), with the AWS console.
- ⑦ ELB Integration:- Route 53 helps the user to easily map his/her root domain because Route 53 is integrated with Elastic Load Balancer (ELB). It can be implemented in very little time while maintaining a high level of reliability with customers.
- ⑧ Scalable:- It can handle large volume queries without the user's interaction automatically.

⇒ What is Single Point of Failure?

- * It represents the failure of a single H/w Component that can lead to loss of data access or potential loss of data.
- * It is a potential risk posed by a flaw in the design, Implementation or Configuration of a circuit or system.

⇒ What is AutoScaling?

- * It monitors your applications & automatically adjust capacity to maintain steady, predictable performance at the lowest possible cost.
- * It is the way to automatically scale the computing resources of your application based on the load on a server farm.

⇒ Drawbacks of Vertical Scaling?

- ① Limited Scaling.
- ② The risk of downtime is much higher than H/Z Scaling.
- ③ Greater risk of outages & H/w failures.
- ④ Finite scope of upgradability in the future.
- ⑤ Severe vendor lock-in.
- ⑥ The cost of implementing is expensive.

⇒ What is load balancing?

- * It is the process of distributing network traffic across multiple servers.
- * It is also known as server farm or server pool.
- * It is used to improve the concurrent user capacity and overall reliability of applications.

⇒ What is

- ① High availability - These are the systems that are dependable enough to operate continuously without failing.
 - * These eliminate single point of failure.

- ② Fault tolerance - It is the quality of a computer system that gracefully handles the failure of component H/w or S/w.

⇒ What are the D/f types of load balancers?

Types of Load Balancers

3 Types

① Application Load Balancer

- * Operates at the request level
- * Supports IP addresses, Lambda functions & containers as targets.
- * Routes based on the content of the request (Layer 7).
- * Supports path-based, host-based routing, query string parameter-based routing, source IP address-based routing.

② Network Load Balancer

- * Operates at the connection level
- * Routes connections based on IP protocol data (Layer 4)
- * Offers ultra-high performance, low latency & TLS offloading at scale.
- * Can have static IP/Elastic IP

- * Supports UDP & static IP addresses as targets.

④ Gateway Load Balance

③ Classic Load Balancer

- * old generation; not recommended for new applications
- * performs routing at layer 4 & layer 7
- * use for existing applications running in EC2 classic.

⇒ Do hands on, Create Domain name, Create Hosted Zone in AWS for EC2 instance, Check whether its working?

Step 1

Create a Hosted Zone → Logging AWS management Console

|| Go to Search

* Route 53 Dashboard

↳ Hosted Zones on CH-S

↓

↳ Create Hosted Zone

* Create Hosted Zone Type Page will display

① Domain Name

This is the name of the domain that you want to route traffic for.

coop.ae → write the domain name downloaded from Geoname website.

② Description - optional

This is using for my website.

③ Type

Public HZ

Private HZ

↓ Then

Create Hosted Zone

Step 2 A Hosted Zone Created Successfully

After successful creation of Hosted Zone, we can see by default creation of 2 records along with Route Traffic which is created by AWS.

↓ Then

* Create Record. i.e., Create A Record.

↓
* opea.tk Info Page will open

① Record name info

Subdomain

opea.tk

Record type Info

A - Routes traffic to an IP address or some AWS resources

Switch To wizard.

② Value Info

Step 6!

Eg Instance Public IP Address Should be entered in this Box

103.4.12.91 → got from 3rd step!

To get Eg Instance Public Address follow below steps

↓

* The Route traffic which is created by default in Step 4 Should be copied & Paste it in a Temporary Note pad file.

↓ To do mapping .

Routing Policy

✓/checkbox Simple Routing

Create a Records

* Records for opea.tk are successfully gets Created.

↓ Then go to new tab & enter URL

opea.tk

↳ If any file, webserver is present in Domain
Then it will show in the Domain system.

Step for Creating.
Domainname :-

First, Go to freenom.com / Select any website which provides

If Go to freenom.com. Name for user

* Sign in through Google.

↓ Go to

Services

↳ Register/Create a new Domain

3rd step:

Find a new Domain
Enter opea.tk

Check Availability

opea.tk

Free → Click here & Save Domain
on Freenom domain
in Freenom account

* The Domain which is free for the users will gets

↓

2nd step! Go to opea.tk the domain which is saved in Freenom.com website in our A/c.

↓ Go to

* my domain created & saved

↓ click

opea.tk → Manage Domain

↓ Management Tools

↓ Name Servers

↓ Select

↓ Use Custom Name Servers

1. Copy the Route Traffic Parted in Note Pad file

Individually for Endpoints

2.

3.

4.

↓ Change Name Server

↓ Then go to EG & Create an new EG Instance

Name :

route 53 Service

↓ Time

Launch New Instance & Open it.

↓ Then

103.4.12.91

We will get IP Address of EG Instance which should be entered in Step 6 .

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⇒ What is Launch Template?

* It's a new capability that enables a new way to template your launch requests.

* It contains the configuration information to launch an instance so that you do not have to specify them each time you launch an instance.

①

* These are used when you launch an instance using AWS EC2 Console, AWS SDK, or a command line tool.

* These enable you to store the parameters (AMI, Instance type, Security groups, Key Pairs etc).

* It is merely a group of all of the configurations that create & configure an EC2 instance.

⇒ Hands on - Create Launch Template?

* AWS Console, for EC2 instances

↓ on LTS

* Launch Templates

↳ Create New Launch Template

↳ Create Launch Template Info Page will display

② Launch Template name - required

myLaunch

③ Template version description

NewLaunchTemplate

④ Auto Scaling guidance info

click on this Provide guidance to help me setup a template that I can use with
EC2 Auto Scaling

Launch Template Contents

Application & OS Images (AMI) - required info

Recent

⑤ Recently
launched

⑤ Instance type

Select from the only m1, t2 micro. ▶

Compare Instance type

⑥ Key Pair name :

Select Existing Key Pair

Create new keypair

⑦ Network Settings

Firewall (Security group) Info :

self existing → show means selecting

Select Existing Security group

Create https:// protocol to enable it

Create Security group.

Security group name :
Give / Webpage

Security groups Info

Compare Security group
Rules.

Launch
Create Templates

View Launch Templates

* The Created new launch Template gets Created Successfully

⇒ Hands on - Create AutoScaling groups?

Step 1: * After Creation of new launch Template

✓ Go to Auto Scaling Groups in EC2 dashboard

* Auto Scaling Groups

↳ Create Auto Scaling groups

↓

* Choose launch template or Configuration Info Page will display

① Auto scaling group name :

New autoscale group

② Launch template info .

Select the newly created launch template from Step 1.

Next

✓

Choose instance launch options. Info Page will open

① VPC → no change here

② Availability zones and Subnets

AutoScaling will create
Instance in 3 of AZ

Now select minimum 3 availability zones.

Next ✓

Configure advanced options. Info Page will open.

③ Load balancing - optional info

No load balance

Attach an existing LB

Attach to a new LB

④ Health checks - optional

EC2 ELB

Next ✓

Configure group size & scaling policies. Info

⑤ Group size - optional info

Desired Capacity

At first 1 Then change to 2 in 3 seconds

Minimum Capacity

1 → 2

Maximum Capacity

1 → 2

⑥ Scaling Policies - optional

Target track Policy

No done.

Next ✓

* Add notifications Page will open

Next ✓

* Add Tags info Page will open.

Next ✓

At last

* Review Info Page will open.

↳ Create Auto Scaling group ✓

After Creating ASG

* Again Go to Auto Scaling groups

↳ we can able to see

↳ 2 diff instances Running
by of desired quantity on it.
we have given 2 no's.

Go to Instances management in any one of the instances

↳ Check about its activity → it is successful.

↳ Check about Healthy check → Healthy or not.
on instance.

↓ click on

In any ^{one} of the instances & Copy Public IP address of that instance

↳ open the new tab

↳ ~~Copied~~ Paste the Public IP address Copied from instance Env.

↳ It shows:

↳ Connection of web Page of Instance like,

This Amazon EC2 instance is located in

Availability Zone: ap-northeast-1a

↳ Refresh it The other AZ will open

Do same process for other Diff instances.

⇒ Hands on steps - Create Target group

* EG



* Target groups

↳ Create Target group



* Specify group details Page will open

① Choose a target type

② Instances

③ IP addresses

④ Lambda function

⑤ Application Load Balancer

Step 2.

⑥ Target group name

Give, TG3

[Next] ✓



* Register Targets Page will show



In the Available instances

Select, The Selected instances with D/L AZ will present here.

↓ Select that instance

Include as pending below

The selected instances

are included in Register Targets

[Create Target Group] ✓



* The Created Target group gets successful

Hands on Steps - Create load Balancer?

⇒ After Target group creation

↓ Go to LHS on EG Dashboard.

⇒ Load Balancers

↳ Create Load Balancer.

Click & Select.

↳ Create Application Load Balancer

↓
⇒ Create Application LB Page will show.

① LB name

Give, New application load balance.

② Network mapping

Click on these ap-Northeast-1a
3 click Box
 ap-nre-1c

③ Listener - HTTP-80

Protocol Port Delegation Info
HTTP 80 Forward to Select a target group, TGS by type of Target group.

✓

Extra step ↓

⇒ Target Groups → Check about Health check → It shows in Green colour.

↓
⇒ Load Balancer

Click on

Created LB.

On Description

Copy the DNS link

↳ Open a new tab

↳ Paste the DNS link Copied to id

↓
⇒ This Amazon EG Instance is located in AZ or E-1d
Refesh this
The other EG instance with Diff AZ will open.

↓ Then go to .

- ✓ Created Auto Scaling Group
 * Auto Scaling Group
 Click on Created new ASG Export
 ↳ Load Balancing ✓
 ↳ Edit new ASG Info page will open.
 Load Balancers.
 ✓ Application Network Gateway LB Target
 ↳ Select created Target Group To 3/HTTP
 O Classic Load Balancers.
 ✓

- ✓ Go to
 * Automatic Scaling
 ↳ Create dynamic scaling policy
 ↳ Dynamic Scaling Policy Page will open.
 ① Policy type Target Tracking Policy

② Scaling Policy name.

Target Tracking Policy

③ Metric type

Application/LB request Count per Target

④ Target value

5.

Target Group

TG3.

✓

- ✓ Then Go to Route 53
 * Registers in Route 53 by Creating a record to Edit a record.
 ↳ Enable Alias Optional
 ① Enable Application
 ③ AZ Region
 ② LB name
 ⑤ Routing Policy Simple Round Robin
 ✓

After mapping in Route 53

In LB

Select a LB

↳ Copy DNS Link

↳ Open new tab

↳ Paste DNS link copied in a LB & Enter.

↓ Then

* The Amazon EC2 instance is located in AZ ap-nor-1d.
will open.

17/05/2022

⇒ what is VPC?

- * It is a logically Isolated virtual network in the AWS cloud within the region.
- * It is a Secure, Isolated private cloud hosted within a public cloud.
- * It gives you full control over your virtual networking environment, including resource placement, connectivity & security.
- * It enables you to launch AWS resources into a virtual n/w that you defined.

⇒ Subnet?

- * It is a range of IP addresses so it is a key component in VPC.
- * It is a logical sub-division of an IP network.
- * It is also an splitting up an IP network by IP address.
- * Subnets can be created to group instances together w.r.t to your security & operational needs.

⇒ Internet Gateway?

- * It is a horizontally scaled, redundant and highly available VPC component that allows communication b/w your VPC & the Internet.
- * It can transfer communications b/w an enterprise network & the Internet.
- * It is a logical connection b/w an Amazon VPC & Internet.

⇒ Router?

- * It is a device that connects two or more packet-switched networks or subnetworks.
- * Functions are:
 - ① Managing traffic b/w these n/w by forwarding data packets to their intended IP addresses.
 - ② Allow multiple devices to use the same Internet connection.

⇒ What is Peering Connection?

- * It is a networking connection b/w two VPC's that enables you to route traffic b/w them using private IPv4 addresses or IPv6 addresses.
- * It is a method that allows two networks to connect and exchange traffic directly without having to pay a third party to carry traffic across the Internet.
- * It is a one-to-one relationship b/w two VPC's.
- * Helps to facilitate the transfer of data.

⇒ VPC End Points?

- * It is a virtual device which is highly scaled, redundant & highly available.
- Provides communication b/w EC2 instances within your virtual private cloud and other supported AWS services without introducing availability risks or bandwidth constraints on your network traffic.
- * It enables you to privately connect your VPC to supported AWS services, VPC endpoint services powered by private link without requiring an Internet gateway, NAT device, VPN connection, or AWS Direct Connect connection.
- * It allows communication b/w instances in your VPC & services, without imposing availability risks or bandwidth constraints on your network traffic.

⇒ NAT Instance?

- * A NAT (Network Address Translation) instance is an EC2 instance that lives in your public subnet.
- * It allows your private instances outgoing connectivity to the Internet while at the same time blocking inbound traffic from the Internet.
- * Enables internet access for EC2 instances in private subnets managed by you.

⇒ NAT Gateway?

- * It is a highly available AWS managed service that makes it easy to connect to the Internet from instances within a private subnet in an Amazon Virtual Private Cloud (Amazon VPC).
- * It is used to enable instances present in a private subnet to help connect to the Internet or AWS services.
- * It forwards the traffic from instances present in private subnet to the Internet or AWS services.

⇒ Virtual Private Gateway?

- * It is a ~~direct~~ logical, fully redundant distributed edge routing function that sits at the edge of your VPC.
- * On AWS Side of the site to site VPN Connection, a virtual Private Gateway Provides two VPN endpoints (tunnels) for automatic failover.
- * VPG are VPN Concentrators on AWS side of the VPN Connection b/w the two networks.
- * It is the entry & exit Point on the outside side of a VPN Connection.

⇒ Customer Gateway?

- * It represents a physical device or a software application on the customer's side of the VPN Connection.
- * It is a resource that is installed on the customer side & is often linked to the provider side.
- * It is a resource that you create in AWS that represents the customer gateway device in your on-premises network.

⇒ AWS Direct Connect?

- * It is a network service that provides an alternative to using the Internet to utilize AWS cloud services.
- * It enables customers to have low latency, secure & private connections to AWS for workloads which require higher speed or lower latency than the Internet.

⇒ Security group?

- * It acts as a virtual firewall, controlling the traffic that is allowed to reach & leave the resources that it is associated with.
- * It acts like a firewall for your Amazon EC2 Instances Controlling both Inbound & outbound traffic.

⇒ Network ACL? (Access control list).

- * It is an optional layer of security for your VPC that acts as a firewall for controlling traffic in and out of one or more subnets.
- * It helps to provide a layer of security to the Amazon web services stack.

⇒ What is CIDR?

- * CIDR → Classless Inter-Domain Routing
- * It is also known as Supernetting.
- * It is a method of assigning Internet protocol (IP) addresses that improves the efficiency of address distribution and replace the previous system based on class A, B & C networks.
- * It is a compact method for specifying IP addresses and their routing suffixes.

19/05/2022

⇒ Diff b/w

NAT Gateway

- ① Managed by AWS
- ② Elastic IP that cannot be detached.
- ③ No Security groups
- ④ Scalability upto 45 Gbps
- ⑤ Provides automatic high availability within an AZ & can be placed in multiple AZ's
- ⑥ Can ^{not} be used as Bastion Server
- ⑦ Does not support Port forwarding

⇒ Diff b/w

Security Group

- ① Operates at the Instance level (^{1st} layer of defense)
- ② Supports allow rules only
- ③ It is Stateful; Return traffic is automatically allowed, regardless of any rules.
- ④ We evaluate all rules before deciding whether to allow traffic.
- ⑤ Applies to an instance only if someone specifies the security group when launching the instance, or associates the security group with the instance later on.

NAT Instance

- ① Managed by you & on your own.
- ② Elastic IP that can be detached.
- ③ Can use Security groups / need to assign Security groups.
- ④ Scale up (Instance type) manually and use Enhanced Networking.
- ⑤ No high availability - Scripted / Auto-scaled using multiple NAT's in multiple Subnets.
- ⑥ ~~Can't be used as Bastion Host~~
- ⑦ Can implement port forwarding through manual customization.

Network ACL's

- ① Operates at the Subnet level (^{2nd} layer of defense).
- ② Supports allow & deny rules.
- ③ It is Stateless; Return traffic must be explicitly allowed by rules.
- ④ We process rules in order of order when deciding whether to allow traffic.
- ⑤ Automatically applies to all instances in the Subnets it's associated with (Backup layer of defense, so you don't have to rely on someone specifying the security group).

⇒ What is,

① Public IP Address:

- * It is designed for communication outside the local network (Internet).
- * Assigned by your ISP.
- * Globally unique to the Internet.
- * Recognized on the Internet.

② Private IP Address:

- * Designed for communication within the local network.

- * Assigned to a device by a router.
- * Unique only within your local network & unique to the device.
- * Not Recognized on the Internet.

③ Elastic IP Address:

- * It is a static, public IPv4 address designed for dynamic cloud computing.

- * It is a reserved Public IP address that you can assign to any EC2 instance in a particular region, until you choose to release it.

- * By using Elastic IP address can mask the failure of an instance or software by rapidly remapping the address to another instance in your account.

⇒ What is Direct Connect?

- * AWS Direct Connect is a cloud service that links your network directly to AWS to deliver consistent, low latency performance.

- * A direct connection is a situation in which one computer is directly linked to another computer by a cable instead of a network.

⇒ AWS Transit Gateway?

- * It connects your Amazon Virtual Private Clouds (VPC's) and on-premises networks through a central hub.
- * It scales elastically based on the volume of network traffic.

* Transit gateway acts as a Regional virtual router for traffic flowing b/w your virtual private clouds (VPC's) and on-premises networks.

⇒ What is VPN & its Diff types?

- * VPN (Virtual Private Network) protects your information by masking your devices' IP address, encrypting your data & routing it through secure networks to services in far away states or even other countries.
- * It is a service that protects your Internet Connection and Privacy online.
- * It is an encrypted connection over the Internet from a device to a network.
- * It allows a user to connect to a private network over the Internet securely and privately.

The Diff types of VPN are,

① Personal VPN's.

④ Site-to-Site VPN's

② Remote Access VPN's

③ Mobile VPN's

⑤ Site to Site VPN: It is designed to securely connect two geographically distributed sites.

⑥ Remote Access VPN: It is designed to link remote users securely to a Corporate Network.

⇒ Hands on - Allocate an Elastic IP Address to an EC2 instance & Release it (Including steps with Screenshot)

* AWS Console

↓ Go to Select
Start # Create a new EC2 Instance of Running Instance

↓ Select an instance & L-H-S Downwards on EC2 Dashboard

* Elastic IP's

↓ Allocate Elastic IP Address Info Page will open

↓ Network Border Group Info

① Select an created or running instances AZ here

② Public IPv4 address pool

✓ Anywhere pool of IPv4 address

Allocate ✓

- Actions
- The Elastic IP address gets allocated successfully & edit the file names & save it.
- Select that Allocated Elastic IP file & Go to actions.
- Actions**
- Associate Elastic IP address
- Elastic Associate IP address Page will display.

(a) Instance

Instance ID of Running Instance selected

Select the Created Instance at Step 2.

(b) Before Allocation is done Go & check in the Instances the Elastic IP address will be Null or Private IP Address.

Enter the Instance Private IP.

Associate

Then Go to Instances again.

Instances

Select Created Eg. Instance Or Running Instances.

Check in Elastic IP address.

Elastic IP address has become the Public address.

After (ie Both IP will be same) After Association.

Stop / Shut down the Instance Created one.

The Elastic IP will not get released or removed.

Again

Start the Instances

The Elastic IP will not get changed/released.

Then go to

Elastic IP with Selected instance,

- * Actions
 - ↳ Disassociate Elastic IP Address
 - ↓ click Disassociate (Removing the Association in it)
 - ↳ Then again Go to Actions
 - ↳ Release Elastic IP Address
 - ↓ click Release
 - ↓ Then go to EC2 Instance & check it in Elastic IP, it will get removed OR it gets released.

Hands on - Create a Custom VPC?

AWS Console

↓ Go to

VPC

↳ your VPC

↳ Create VPC

↳ Info Page will open.

VPC Settings

① VPC only OR VPC, Subnets, etc.

② Name tag - optional

Give, myvpc

③ IPv4 manual IP

④ IPv4 CIDR

Give, 10.0.0.0/16

Create VPC

↓
The VPC gets Created Success within a range

↓ Then Go to

Subnets

↳ Create Subnet

* Subnet Info Page will display

↳ @ VPC ID

>Select the Created VPC

(b) Subnet settings

1st Subnet

Subnet 1 of 1

Subnet name.

Give, Public-1A

(c) AZ Info.

Choose 1-a in it.

(d) IPv4 CIDR Block Info.

Give, 10.0.1.0/24

Add new Subnet

2nd Subnet

Subnet 2 of 2

* S.N

Give, Public-1B

* AZ Info

Choose 1-C

* IPv4 CIDR Block Info

Give, 10.0.2.0/24

3rd Subnet

Subnet 3 of 3

* S.N

Give, Private-1A

* AZ Info

Choose 1-d

* IPv4 CIDR Block Info

Give, 10.0.3.0/24

Create Subnet

* The 3 Subnets are created successfully with their Routes, A25th Table

↓ Go to Create
Route Tables

↳ Create RouteTable

↳ Info Page will open.

① Name - optional

Private - RT (RoutingTable)

② VPC

Select the Created VPC is, myvpc ✓

↓ Go & Click on

↳ [Create RouteTable] ✓

Edit the 1st existing RT has main-RT ✓
Save it -

* Created RouteTable is, Private - RT .

[Go to]

Subnet association

↳ Edit Subnet association

Click here

↳ Private-1A (CreatedSubnet)

↓ Then go to
Save association ✓
Explicitly Associated

* Internet Gateway

Click /

↳ Create I.G.W.

↳ Info Page will open

③ Name Tag .

Give MyIGW

>Create IGW ✓

④ Once the IGW gets Created we have to attach it to VPC. ✓
↓ Go to Actions & click

* Attach to VPC

Select my vpc

Attach I.G.W ✓

↓ Go to

* RouteTable

Click Main-RT

↳ Edit Routes

↳ Page will display .

Click on Add Routes

0.0.0.0/0

Choose Internet Gateway

MyIGW which we created .

↓ Then Go to

↳ [Save changes] ✓

- ↓
- * Subnet
1st step ↗ choose Created Public - IA
↳ Actions
↳ Edit Subnet Settings
↳ Auto assign IP settings Info
↳ Enable auto assign Public IP Address
↓ Save changes ↗ Save ✓
* Same process do for Subnet from 1st step to
Public - IB
↳ Save ✓
* This are the Procedure to do Customer's VPC & Instances which we launch
Subnets which is created able to use the Internet
They can send the traffic & receive the traffic through the
Internet is Only with the Public Subnets it is Possible.