

## Complete Details about interview and project explanation

AMS: Front End - Ec2  
POC : Back End - Ec2  
Database: Mysql 8.1 - RDS

Highly available + Highly Scalable + Security + Cost Optimization  
Calculate application running time, According that we can create infrastructure  
Domain Specific Infrastructure  
Security : SG / ACL  
High Available : Multi availability Zone  
Scalable: ASG

Ec2 -> Front End (Static Files) -> Backend(Php Application) -> RDS (DC/ DR)

DC-> Mumbai  
DR-> North Virginia

Route 53 -> Once DC down Traffic move to DR

Purchase Domain from Go Daddy or Route 53 -> Server in different Zone -> Load Balancer for balance load -> Static Content in S3.

Disaster Recovery:

Strategies available to your AWS, 4 different DR strategies, low cost and low complexity of making backup to more complex strategies using multiple active regions

Active and passive strategies use an active sites in one region and sites to host the workloads and server traffic, The passive sites are used for recovery and that was not share traffic until active goes down.

Backup and restore  
Pilot Light  
Warm Stand by  
Multi-site active/active  
Backup and Restore : migrating against the data loss and corruption  
Region replication : Replicating data from one to another

S3 DR: High Availability

As an additional disaster recovery strategy for your Amazon S3 data, enable S3 object versioning. Object versioning protects your data in S3 from the consequences of deletion or modification actions by retaining the original version before the action.

If you are using S3 replication to back up data to your DR region

S3: Security

Multi Factor Authentication: An additional layer of security that requires multi-factor authentication for changing Bucket Versioning settings and permanently deleting object versions.

DR strategies we can select based on business requirement,

If the new project arriving in your company

Cloud Architech -> Collect Requirement and Make designing -> Then provisioning resources

### Start Project:

Need to purchase Domain from GoDaddy -> Purchased as **bootlabsmahi.shop** -> The need to purchase certificate for serve https request ->

GoDaddy -> ACM or CA (Certificate Authority – Its kind of bonofied certificate) -> Aws Route 53 -> Create Hosted Zone -> Exchange Name server to GoDaddy -> RDS -> Roles -> Ec2 Instance -> User Date

### Application Architect :

**Data Center: From one Region We can done set up couple of Availablity Zone**

<https://bootlabsmahi.shop> -> Route 53 (Hosted Zone -> GoDaddy -> ) -> Load Balancer -> Ec2 (Php Application) deployment -> RDS (Application Data's are stored in RDS)

The same we have do backup to S3 Bucket

**Disastor Recovery : From another Region We can done set up couple of Availablity Zone**

<https://bootlabsmahi.shop> -> Route 53 (Hosted Zone -> GoDaddy -> ) -> Load Balancer -> Ec2 (Php Application) deployment -> RDS (Application Data's are stored in RDS)

Step1: Purchase one domain from GoDaddy else Aws Route 53



Step2: Create Certificate Manager (Request a certificate bashed on my Domain)

Aws Certificate manager handles the complexity of creating, Storing and reneing public and private SSL / TLS X509 certificate and keys that protect your aws websites and applications.

Purchase our certificate directly from AWS or Third party certificate in to ACM.

There is two type of certificate they will provide

Public Certificate : ACM certificate for all the browsers (By Default)

Private Certificate : you can export your private Certificate Authority you can use anywhere in internally.

Selfsigned Certificate

ACM Provides single domain name in to multiple domain names

If we need to protect un limited no of domain means aws recommend Wildcard certificate.

**Request public certificate**

**Domain names**  
Provide one or more domain names for your certificate.

**Fully qualified domain name** [info](#)

bootlabsmahi.shop [Remove](#)

\*.bootlabsmahi.shop [Remove](#)

[Add another name to this certificate](#)

You can add additional names to this certificate. For example, if you're requesting a certificate for "www.example.com", you might want to add the name "example.com" so that customers can reach your site by either name.

**Fully qualified domain name (FQDN)** [info](#)

A fully qualified domain name (FQDN) is the unique name of an organization or individual on the Internet. It must end in a top-level domain extension such as .com or .org.

Type the fully qualified domain name of the site that you want to secure with an SSL/TLS certificate (for example, www.example.com). Use an asterisk (\*) to request a wildcard certificate to protect several sites in the same domain. For example,

OR

**Request public certificate**

**Domain names**  
Provide one or more domain names for your certificate.

**Fully qualified domain name** [info](#)

\*.bootlabsmahi.shop [Remove](#)

[Add another name to this certificate](#)

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Type the fully qualified domain name of the site that you want to secure with an SSL/TLS certificate (for example, www.bootlabsmahi.shop). Use an asterisk (\*) to request a wildcard certificate to protect several sites in the same domain. For example, \*.bootlabsmahi.shop protects www.bootlabsmahi.shop, site.bootlabsmahi.shop, and images.bootlabsmahi.shop.

\*.bootlabsmahi.shop

**Domain Validation Method:**

**Validation method** [info](#)

Select a method for validating domain ownership.

☒ **DNS validation - recommended**  
Choose this option if you are authorized to modify the DNS configuration for the domains in your certificate request.

☐ **Email validation**  
Choose this option if you do not have permission or cannot obtain permission to modify the DNS configuration for the domains in your certificate request.

**Fully qualified domain name (FQDN)** [info](#)

A fully qualified domain name (FQDN) is the unique name of an organization or individual on the Internet. It must end in a top-level

**Key Algorithm:**

Key algorithm

Select an encryption algorithm. Some algorithms may not be supported by all AWS services.

☒ RSA 2048

RSA is the most widely used key type.

☐ ECDSA P 256

Equivalent in cryptographic strength to RSA 2048.

☐ ECDSA P 384

Equivalent in cryptographic strength to RSA 3072.

Tags

No tags associated with this resource.

Add new tag

Key can add up to 50 tags.

Cancel

Previous

Request

(FQDN) is the unique name of an organization or individual on the Internet. It must end in a top-level domain extension such as .com or .org.

Type the fully qualified domain name of the site that you want to secure with an SSL/TLS certificate (for example, www.example.com). Use an asterisk (\*) to request a wildcard certificate to protect several sites in the same domain. For example, \*.example.com protects www.example.com, site-example.com, and images.example.com.

**Learn more**

[Register a domain name](#)
[Requesting a public certificate](#)

After request :

AWS Certificate Manager (ACM)

List certificates

Request certificate

Import certificate

Successfully requested certificate with ID 5c0cc43b-0974-4094-8cb4-0679d8c06130

View certificate

A certificate request with a status of pending validation has been created. Further action is needed to complete the validation and approval of the certificate.

5c0cc43b-0974-4094-8cb4-0679d8c06130

Delete

Fully qualified domain name (FQDN)

A fully qualified domain name (FQDN) is the unique name of an organization or individual on the

## Validating domain ownership

Before aws CA certificate authority can issues a certificate for your sites aws ACM must prove that you own or control all of the domain names that specify in your request.

**Notes: Aws ACM should validate applies only the public trusted certificate issues by ACM, ACM does not validate domain ownership for the imported certificate or the certificate validated by private..**

AWS Certificate Manager (ACM)

List certificates

Request certificate

Import certificate

AWS Private CA

Domains (2)

Create records in Route 53

Export to CSV

Domain	Status	Renewal status	Type	CN
bootlabsmahi.shop	Pending validation	-	CNAME	
dk.bootlabsmahi.shop	Pending validation	-	CNAME	

Details

In use

No

Serial number

N/A

Requested at

February 11, 2023, 19:28:12 UTC+05:30

Renewal eligibility

Invalid

Domain name

bootlabsmahi.shop

Public key info

RSA 2048

Issued at

N/A

Number of additional names

1

Signature algorithm

SHA-256 with RSA

Not before

N/A

Can be used with

CloudFront, Elastic Load

Not after

Validating domain ownership

Before the Amazon certificate authority (CA) can issue a certificate for your site, AWS Certificate Manager (ACM) must prove that you own or control all of the domain names that you specify in your request. You can choose to prove your ownership with either Domain Name System (DNS) validation or email validation at the time you request a certificate. Validation applies only to publicly trusted certificates issued by ACM. ACM does not validate domain ownership for imported certificates or for certificates signed by a private CA.

**Learn more**

[Validating domain ownership](#)

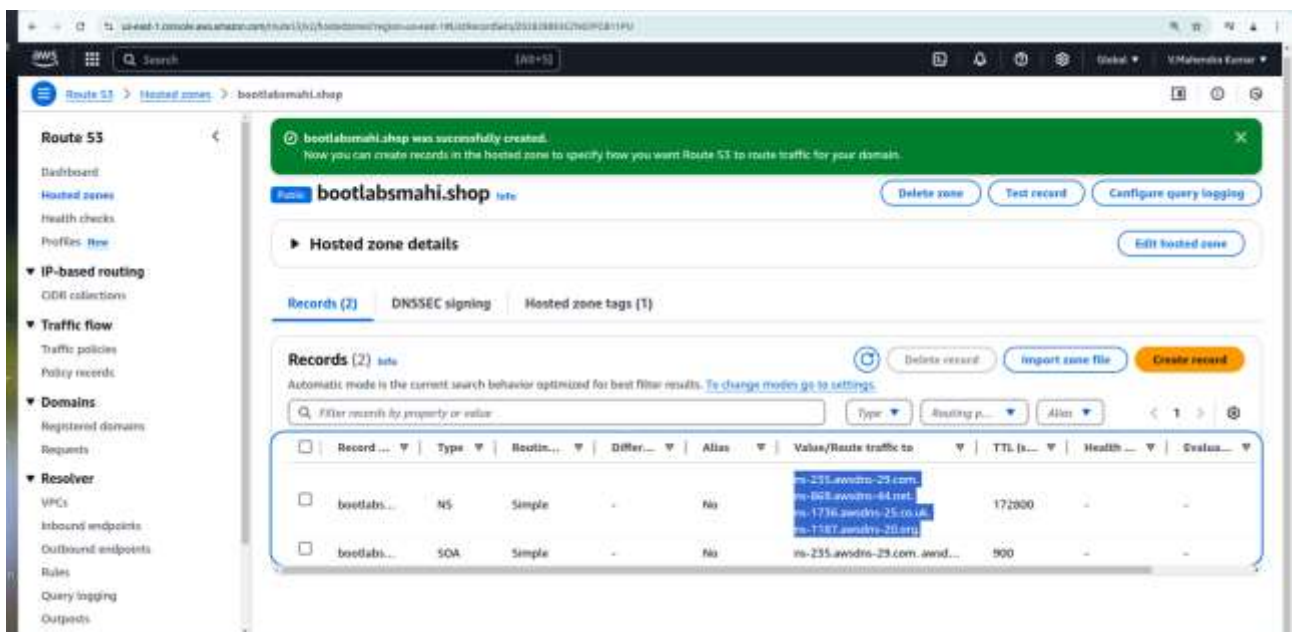
Step3: Route 53: Here we need to create records for purchased domain name.

Step1(a) ; Create Hosted Zone: When you want to use route 53 to route internet traffic for your domain or route internet traffic for your VPC. Then you can create a record in your hosted zone for the domain name bootlabsmahi.shop.



**Note: When your register domain in Route 53, A public hosted zone automatically created. You can also create a new hosted zone for sub domain.**

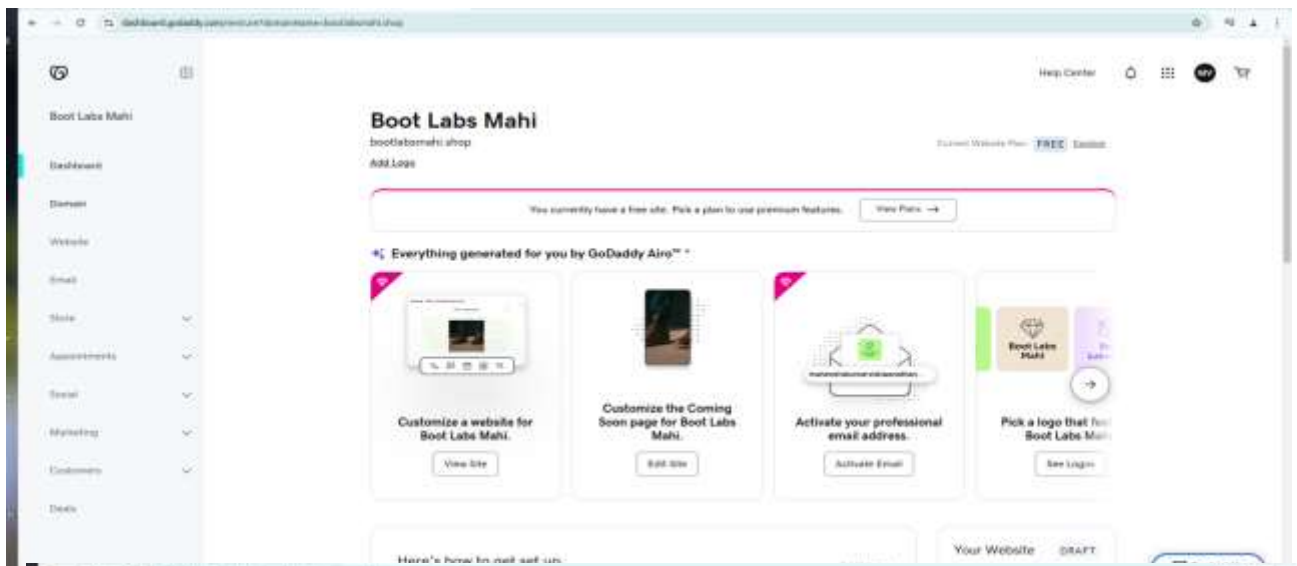
If you want to route traffic to your vpc you create a private hosted zone for your domain and associated a vpc to it.

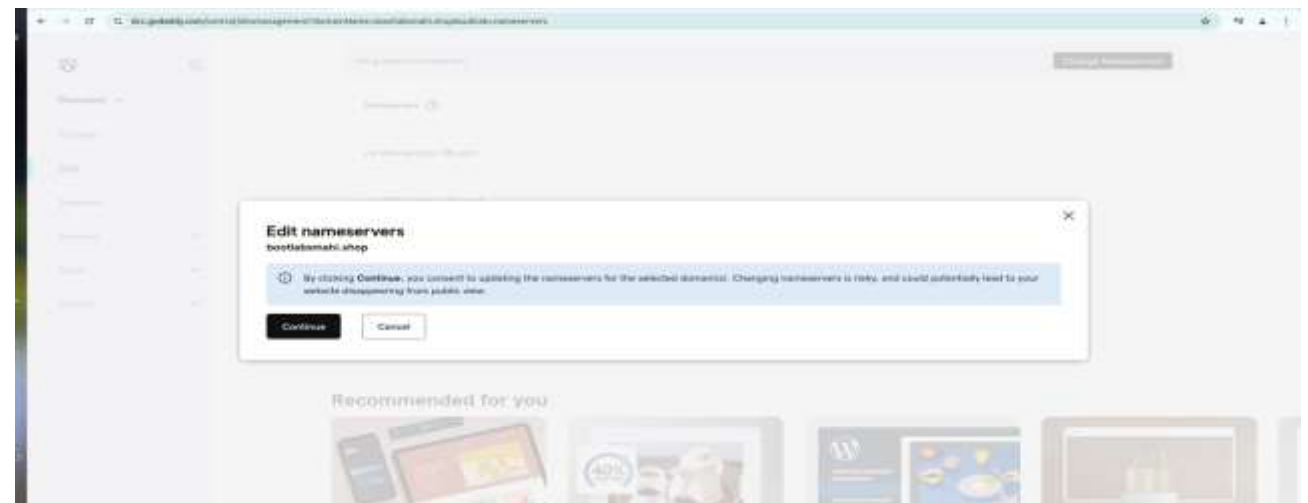
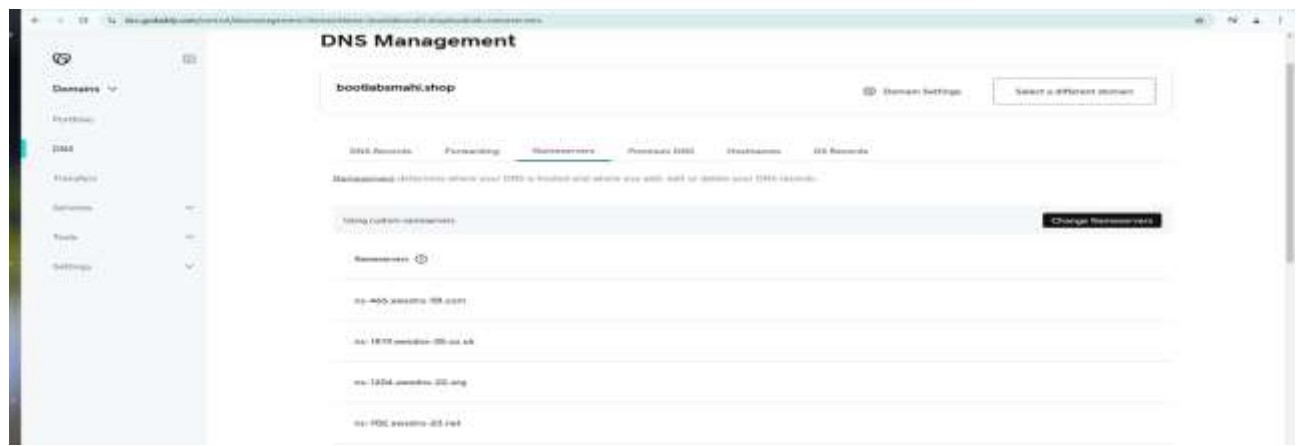
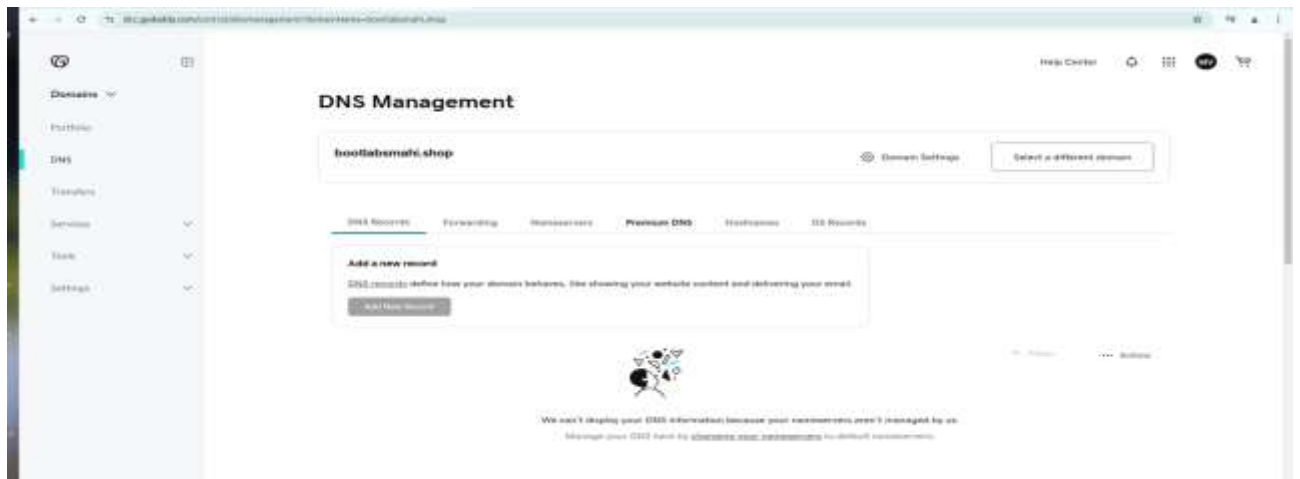


ns-235.awsdns-29.com  
 ns-869.awsdns-44.net  
 ns-1736.awsdns-25.co.uk  
 ns-1187.awsdns-20.org

We need to exchange above four name servers in to goDaddy, Because of user request comes to route 53 -> and Route 53 route traffic to -> Hosted zone -> Hosted zone route request to GoDaddy by using this nam server.

Go to your profile -> My product -> Then select purchased domain -> Click manage -> Then left side Domain -> Manage DNS -> Then select Name Server -> Then change record s.



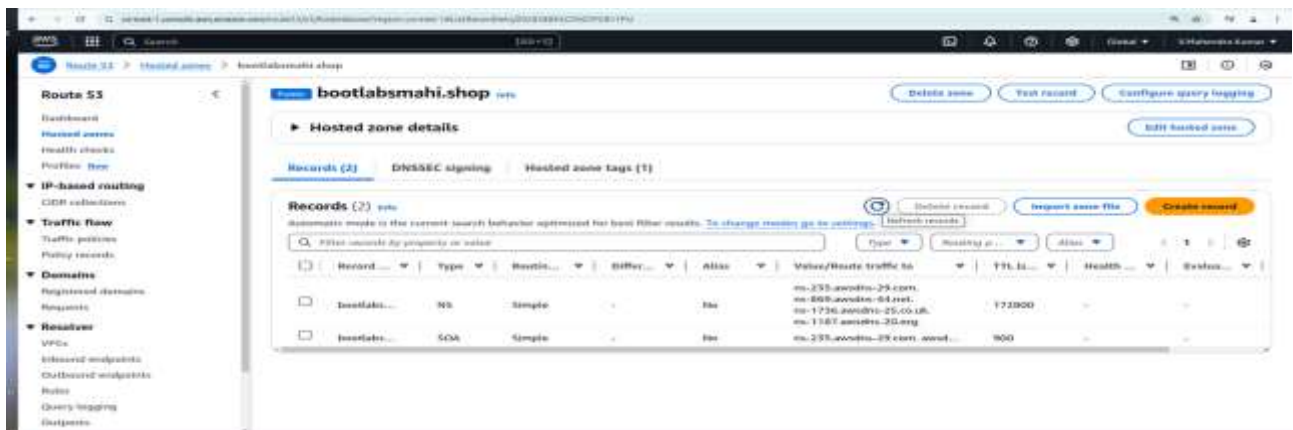


Now create Records in route 53: To set record from ACM in to route 53





Before Record Set create from Acn to Route 53:



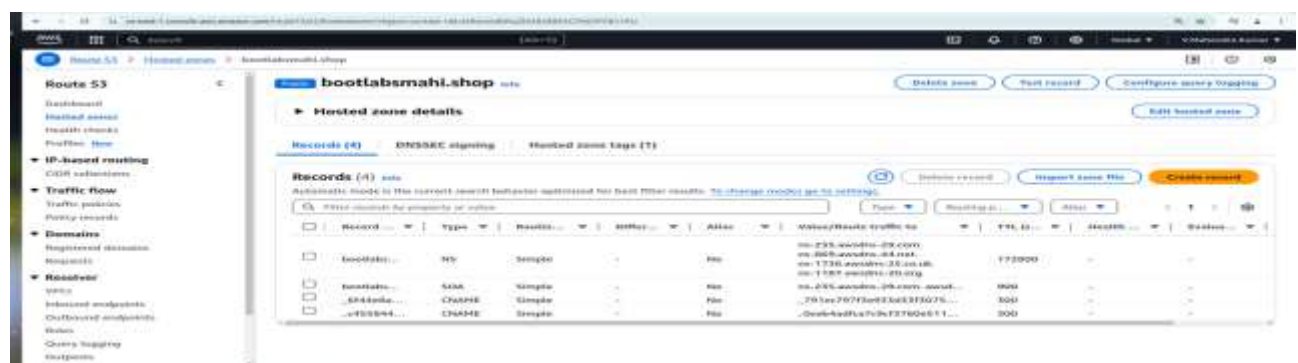


After Record Set create from Acme to Route 53: Added Cname record.

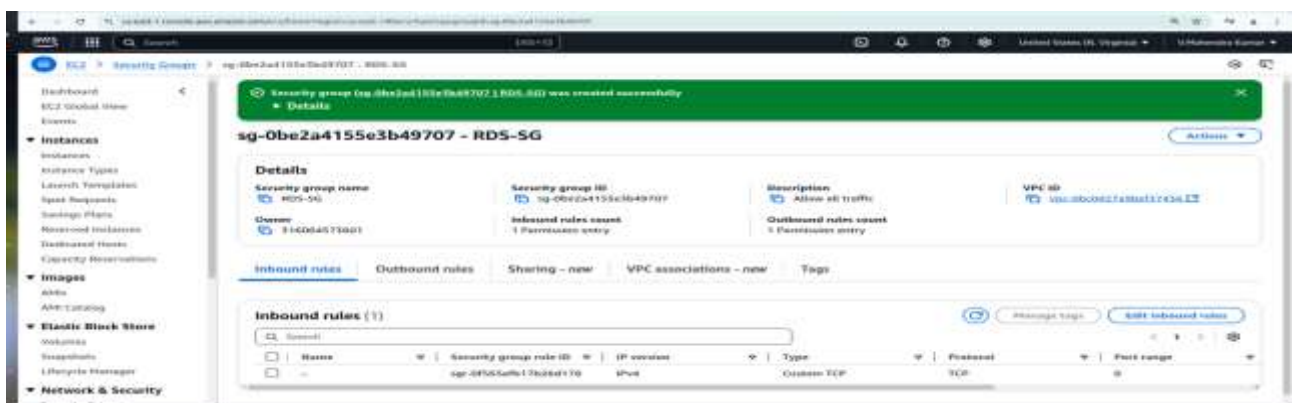
Steps 3: Now need to create RDS,

We need to create couple of RDS for DC and DR

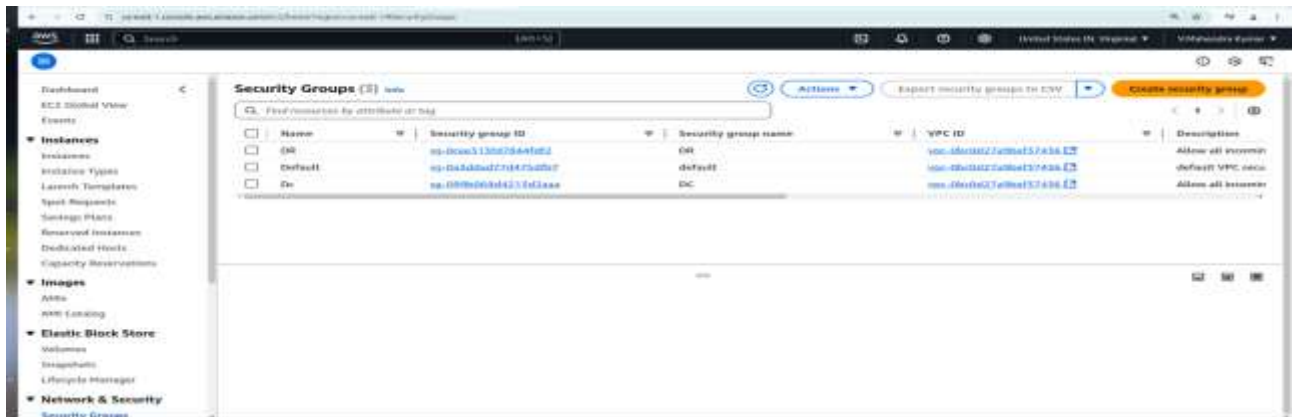
Before create RDS we need to create Default or owned Vpc.



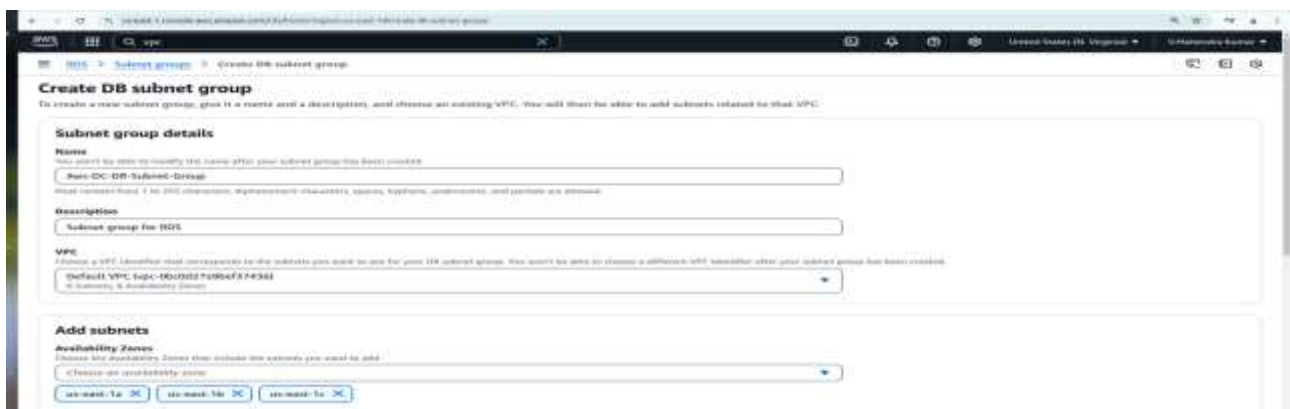
Then need to create Security Group: Allow all traffic from inbound rule.



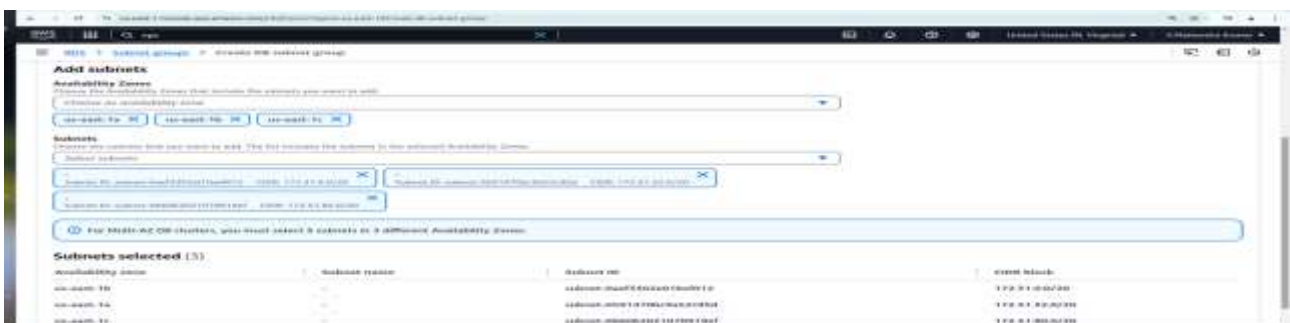
## Security Group for Both production (DC) and Disaster Recovery (DR)

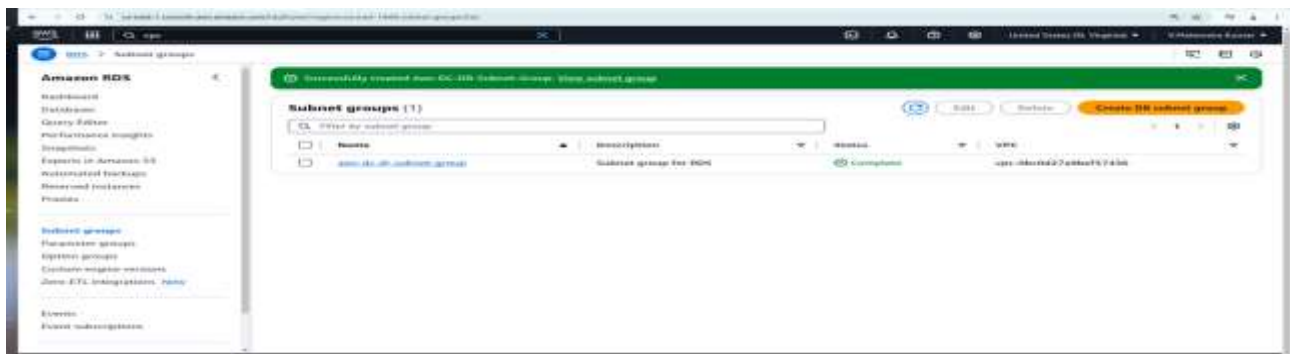


Then create subnet group for RDS instance: Collection of subnets used to designate cluster in an Amazon vpc, When creating a cluster you can specify subnet group.



Selected multiple Availability zone for RDS high availability

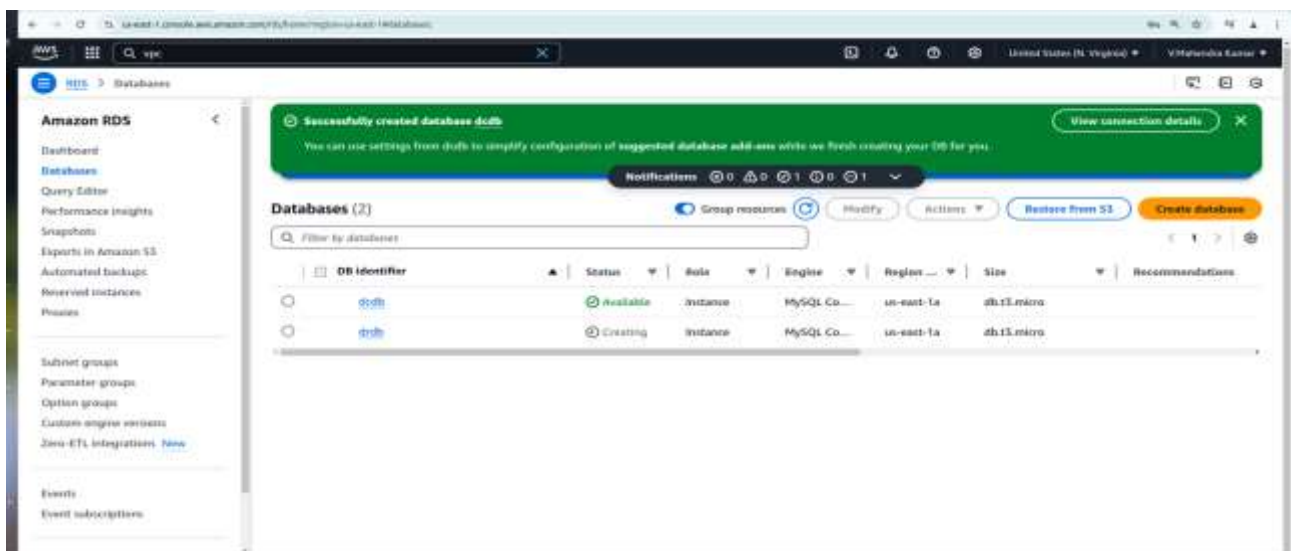




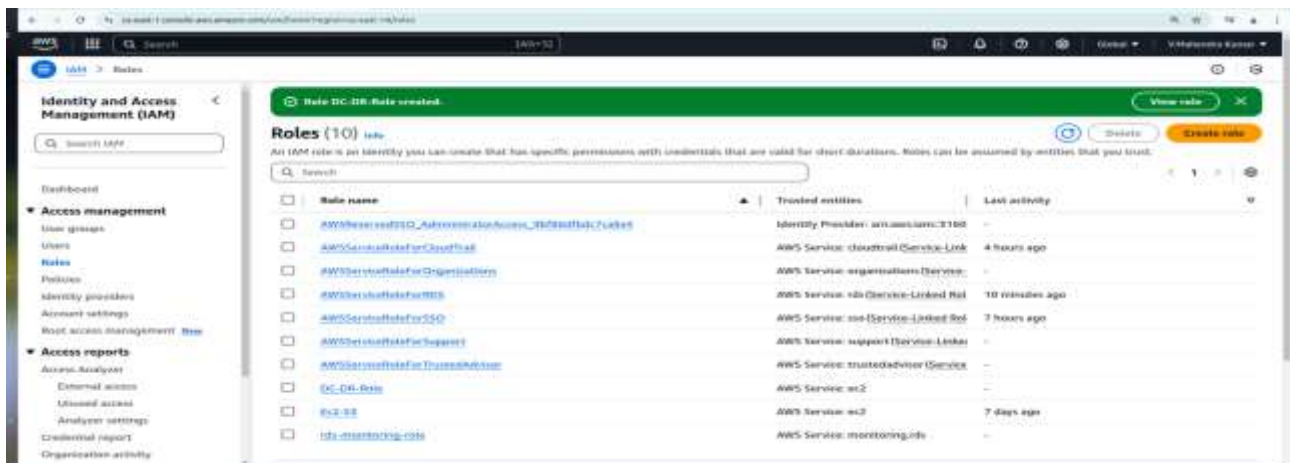
Then Need to create two Database for production (DC) and DR:

DB\_Name : DCDB  
 User\_Name : admin  
 Password : Mahender

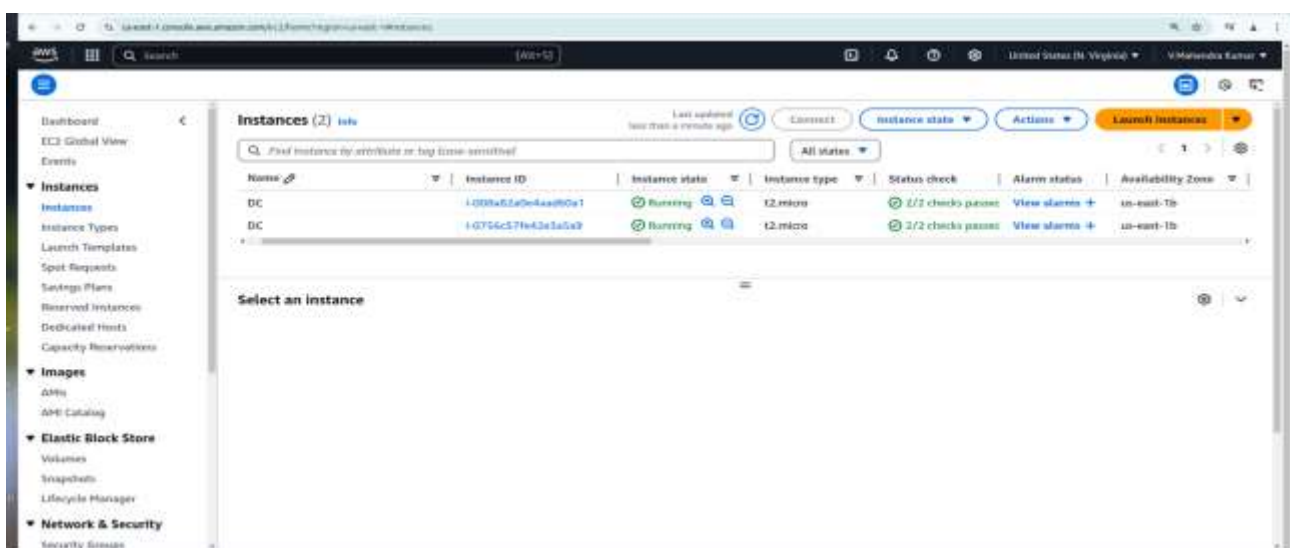
DB\_name : DRDB  
 User\_name: admin  
 Password: Mahender



Create IAM role with administrator access.



Then create couple of Ec2 instance for deploy our application (One for DC and Another one for DR)



Check application from both DC and DR server's.

Instance 1: 3.238.138.135



Instance 2: 3.236.75.46



Instance 1: 3.238.138.135



Instance 2: 3.236.75.46

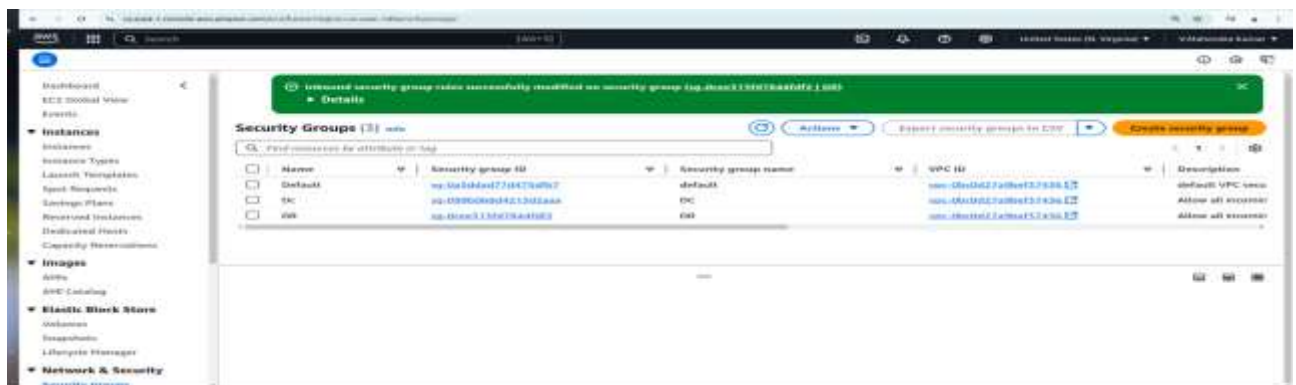


From the DR instance while connect with the DB using endpoint and credentials am facing 504 Gateway Timeout error.



This error happend because of missing inbound entry from security group which is attached in DB instance.

After make inbound entry we can able to connect Ec2 instance traffic with RDS instance.





**Instance 1: 3.238.138.135**

[illegible]

### Instance 2: 3.236.75.46

```

root@kali:~# ssh -i generated.pem ec2-user@3.230.75.40
The authenticity of host '3.230.75.40 (3.230.75.40)' can't be established.
RSA key fingerprint is SHA256:Wk3SchuohdntYsYdizd0cLmXKzFzF6cyTzrV0dM.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '3.230.75.40' (ED25519) to the list of known hosts.
root@kali:~# ssh -i generated.pem ec2-user@3.230.75.40
Amazon Linux 2
root@kali:~#
AL2 End of Life is 2026-06-30.

A newer version of Amazon Linux is available:
Amazon Linux 2023, GA and supported until 2028-03-15.
https://aws.amazon.com/linux/amazon-linux-2023/

[ec2-user@ip-172-31-14-130 ~]$
ec2-user@ip-172-31-14-130 ~$
ec2-user@ip-172-31-14-130 ~$
ec2-user@ip-172-31-14-130 ~$ cd /var/www/html/
ec2-user@ip-172-31-14-130 ~$ ls
total 236
-rw-r--r-- 1 root root 4 Feb 11 17:28 health.html
-rw-r--r-- 1 root root 485 Feb 11 17:28 index.php
-rw-r--r-- 1 root root 19915 Feb 11 17:25 license.txt
-rw-r--r-- 1 root root 7469 Feb 11 17:25 readme.html
-rw-r--r-- 1 root root 1302 Feb 11 17:25 wp-activate.php
-rw-r--r-- 1 root root 4886 Feb 11 17:25 wp-blog.php
-rw-r--r-- 1 root root 831 Feb 11 17:25 wp-blog-header.php
-rw-r--r-- 1 root root 2323 Feb 11 17:25 wp-comments-post.php
-rw-r--r-- 1 root root 3334 Feb 11 17:25 wp-config-sample.php
-rw-r--r-- 1 root root 32 Feb 11 17:44 wp-content
-rw-r--r-- 1 root root 5617 Feb 11 17:25 wp-cron.php
-rw-r--r-- 1 root root 12288 Feb 11 17:25 wp-includes
-rw-r--r-- 1 root root 2382 Feb 11 17:25 wp-links-opml.php
-rw-r--r-- 1 root root 3917 Feb 11 17:25 wp-load.php
-rw-r--r-- 1 root root 51367 Feb 11 17:25 wp-login.php
-rw-r--r-- 1 root root 9543 Feb 11 17:25 wp-mail.php
-rw-r--r-- 1 root root 23012 Feb 11 17:25 wp-settings.php
-rw-r--r-- 1 root root 34885 Feb 11 17:25 wp-signup.php
-rw-r--r-- 1 root root 5162 Feb 11 17:25 wp-trackback.php
-rw-r--r-- 1 root root 3244 Feb 11 17:25 wpxmlrpc.php
[ec2-user@ip-172-31-14-130 html]$

```

**After connection establish between Ec2 and RDS we can able to successfully login wordpress application**

**Instance 1: 3.238.138.135**



### Instance 2: 3.236.75.46



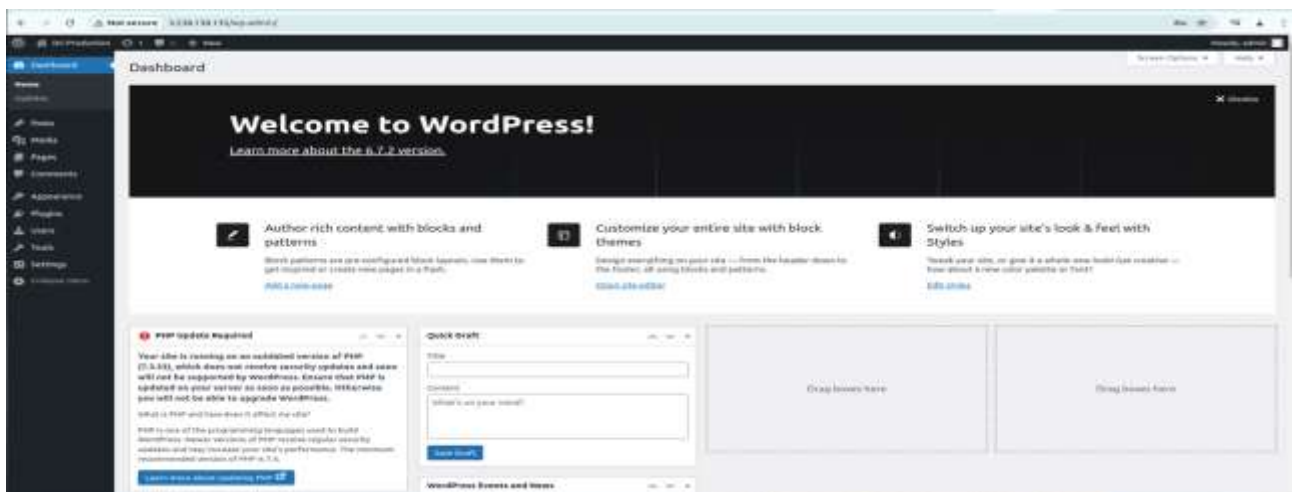
Instance 1: 3.238.138.135



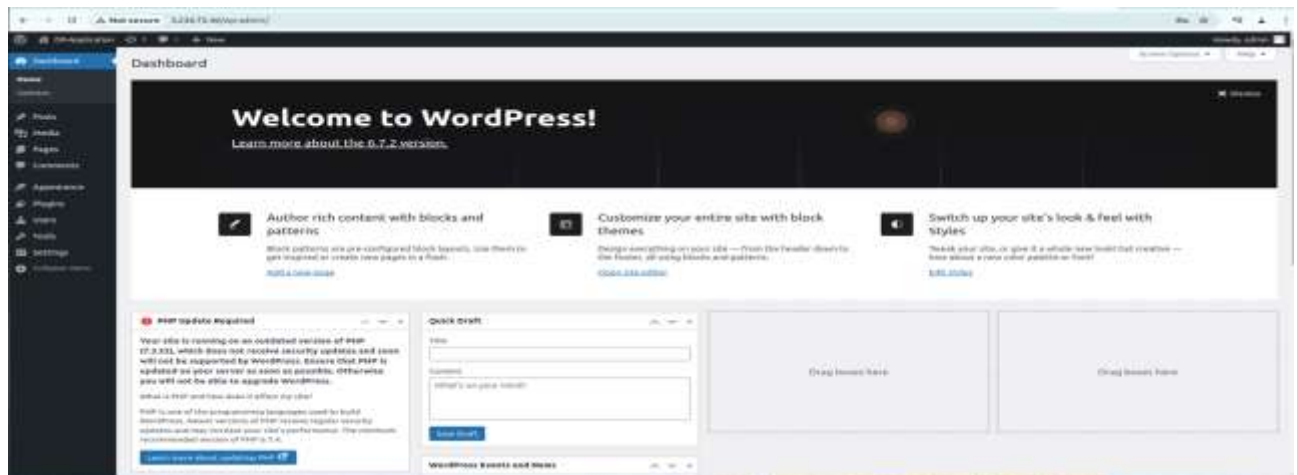
Instance 2: 3.236.75.46



Instance 1: 3.238.138.135 : Home page of Wordpress from Production Server



## Instance 2: 3.236.75.46 Home page of Wordpress from DR Server



## Instance 1: 3.238.138.135 New from Wordpress in Production Server



## Instance 2: 3.236.75.46 New from Wordpress in DR Server

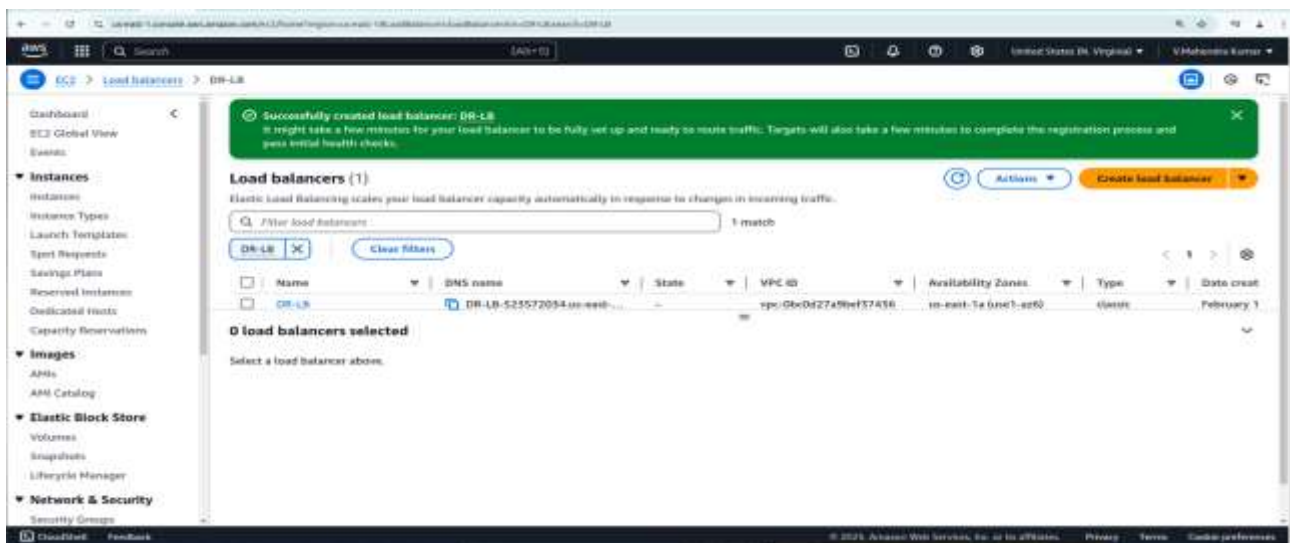


Now we need to create classic load balancer,

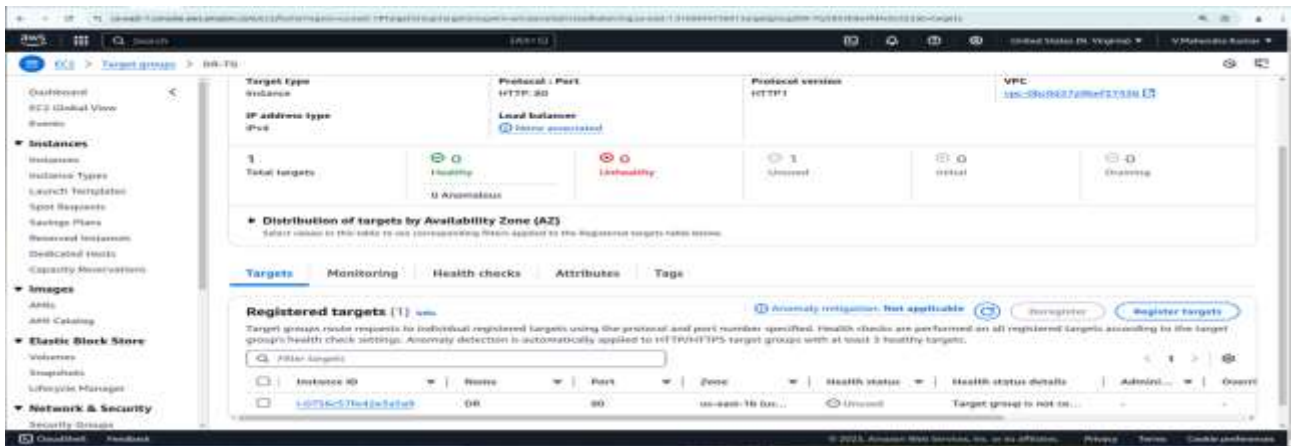
**Dc-Load Balancer**



## DR- Load Balancer



Guys i got unused status for my targets due to this i could not reach application.

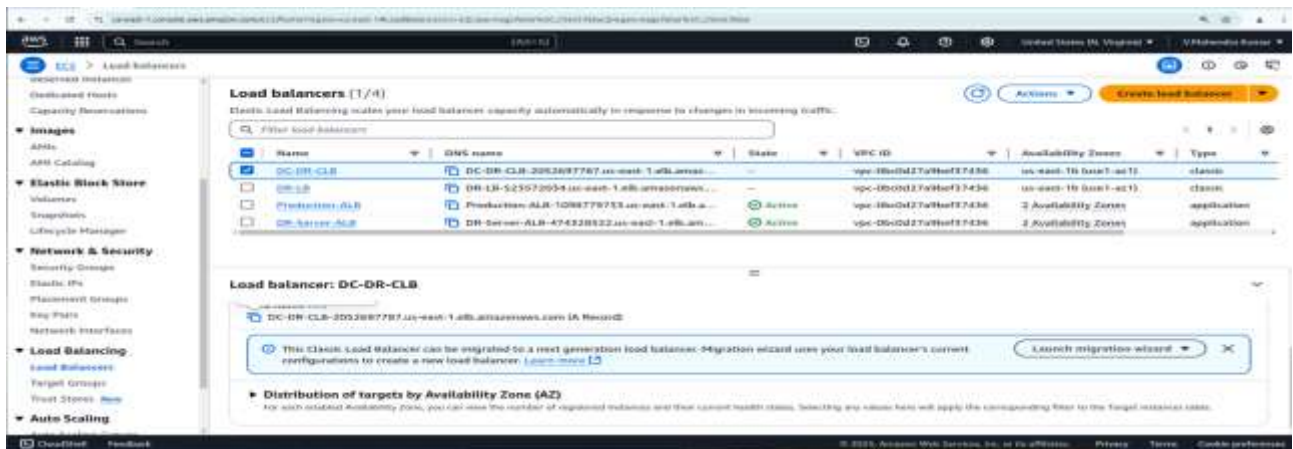


I Founded issues that i have launched my ec2 instance in us-east-1b, But here my load balancer target group created in us-east-1a, Oppsssssss

After chaged Zone now successfully reach application

DR-LB: DR-LB-523572034.us-east-1.elb.amazonaws.com

DC-DR-CLB : DC-DR-CLB-2052697787.us-east-1.elb.amazonaws.com

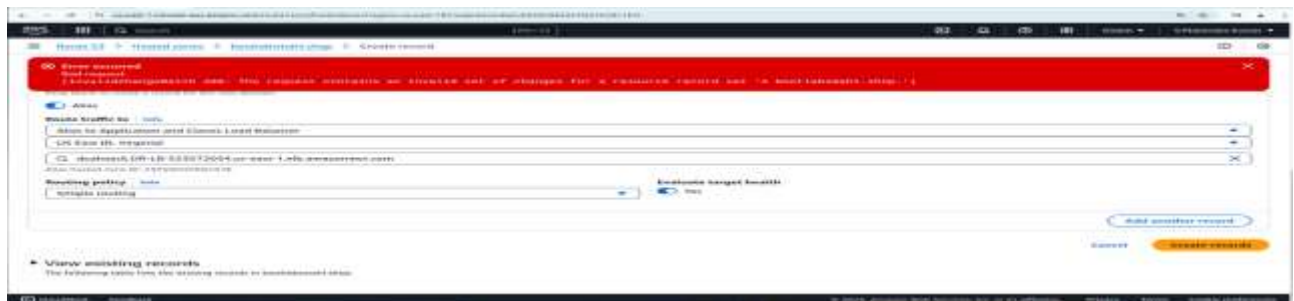






Now create a record set from route 53 and route traffic from classic load balancer in to route 53 (Domain) route 53 route application traffic as per the routing policy.

We have issues while create A records with simple routing policy.



Issue is when we create one more record for DR we should mention the record name as DR or something else

Propagation has been done and INSYNC status



Now can see addition 2 more A records .





Here i can able to reach both Production application server as well DR server with my domain name

Prduction : <http://bootlabsmahi.shop/>

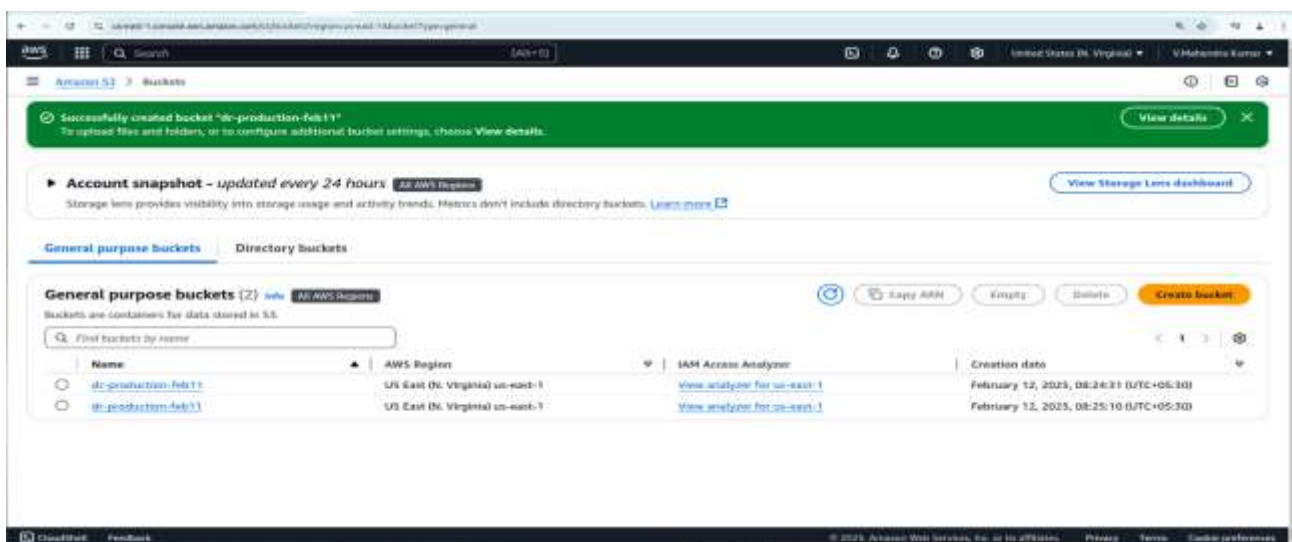
DR : <http://dr.bootlabsmahi.shop/>



DR : <http://dr.bootlabsmahi.shop/>



Now we need to create couple of bucket for make sync between production in to DR.



Now start sync content from Production in to S3, Then start sync content from S3 in to DR

PRODUCTION:

```
*/2 * * * * aws s3 sync --delete /var/www/html/wp-content/uploads s3://dc-production-feb11
*/2 * * * * aws s3 sync --delete /var/www/html/ s3://dr-production-feb11
```

DR:

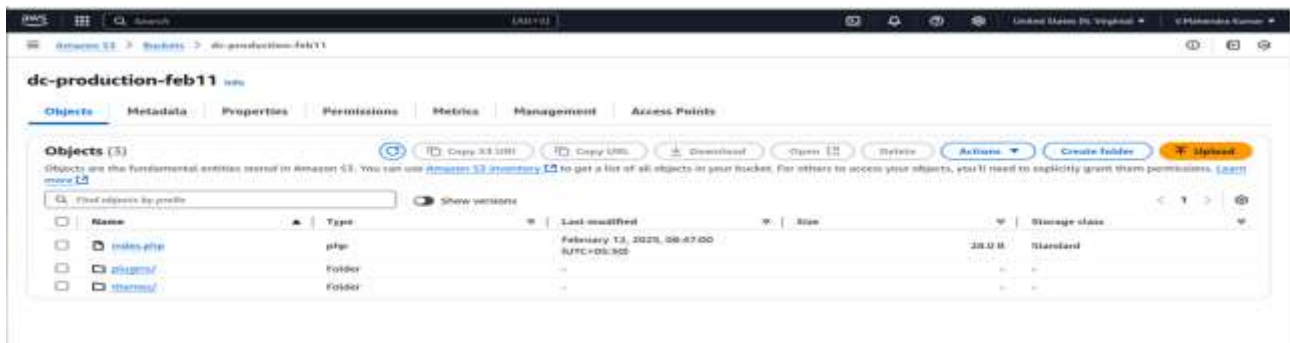
```
*/2 * * * * aws s3 sync --delete s3://dc-production-feb11 /var/www/html/wp-content/uploads
*/2 * * * * aws s3 sync --delete s3://dr-production-feb11/var/www/html/
```

We can connect both production and DR instance and list bucket.

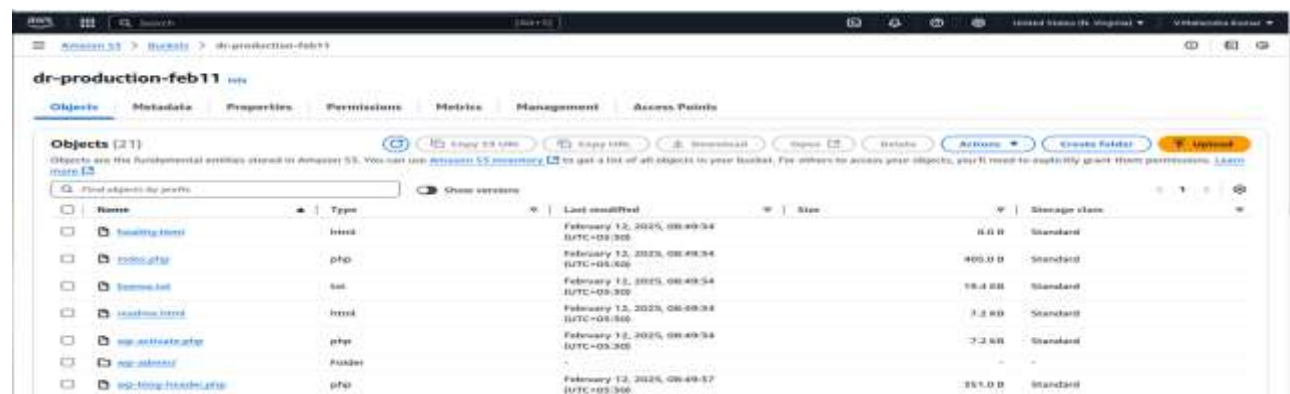


```
*/2 * * * * aws s3 sync --delete /var/www/html/wp-content/uploads s3://dc-production-feb11
```





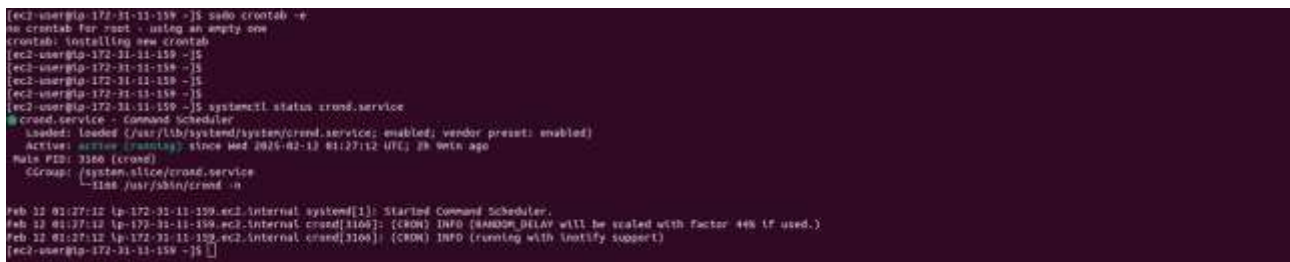
\* / 2 \* \* \* \* aws s3 sync --delete /var/www/html/ s3://dr-production-feb11



Production Server (DC) :

\* / 2 \* \* \* \* aws s3 sync --delete /var/www/html/wp-content/uploads s3://dc-production-feb11

\* / 2 \* \* \* \* aws s3 sync --delete /var/www/html/ s3://dr-production-feb11



```
*/2 * * * * aws s3 sync --delete s3://dc-production-feb11 /var/www/html/wp-content/uploads
*/2 * * * * aws s3 sync --delete s3://dr-production-feb11 /var/www/html/
```

DR:

```
*/2 * * * * aws s3 sync --delete s3://dc-production-feb11 /var/www/html/wp-content/uploads
```

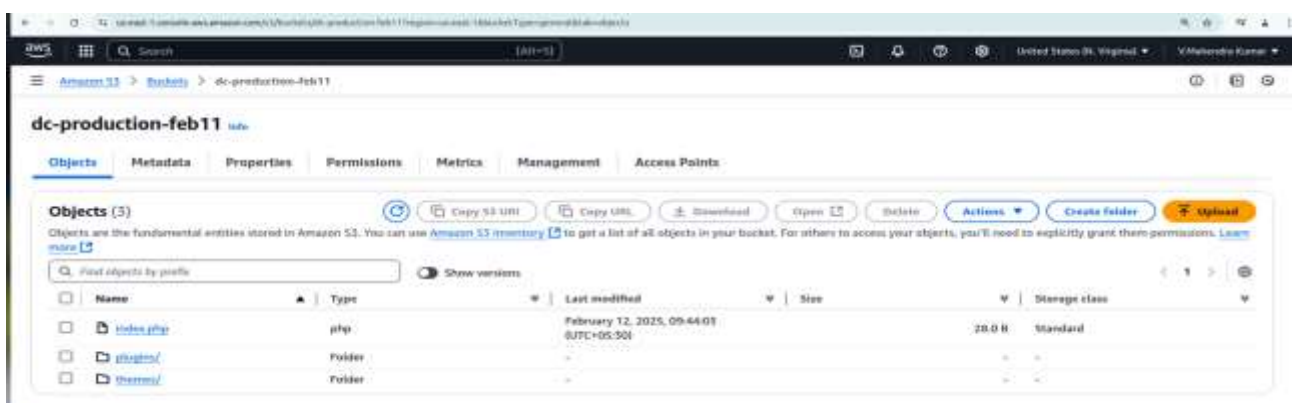
```
*/2 * * * * aws s3 sync --delete s3://dr-production-feb11 /var/www/html/
```

```
ec2-user@ip-172-31-14-150 ~]$
ec2-user@ip-172-31-14-150 ~]$
ec2-user@ip-172-31-14-150 ~]$
ec2-user@ip-172-31-14-150 ~]$
ec2-user@ip-172-31-14-150 ~]$
ec2-user@ip-172-31-14-150 ~]$
ec2-user@ip-172-31-14-150 ~]$
ec2-user@ip-172-31-14-150 ~]$ systemctl status cron.service
● cron.service - Command Scheduler
   Loaded: loaded (/usr/lib/systemd/system/cron.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2025-02-11 19:38:08 UTC; 7h ago
     Main PID: 3185 (cron)
    CGroup: /system.slice/cron.service
            └─3185 /usr/sbin/cron -n

Feb 11 19:38:00 ip-172-31-14-150.ec2.internal systemd[1]: Started Command Scheduler.
Feb 11 19:38:00 ip-172-31-14-150.ec2.internal cron[3185]: (CRON) INFO (RANDOM_DELAY will be scaled with factor 88% if used.)
Feb 11 19:38:00 ip-172-31-14-150.ec2.internal cron[3185]: (CRON) INFO (running with inotify support)
ec2-user@ip-172-31-14-150 ~]$
```

```
*/2 * * * * aws s3 sync --delete s3://dc-production-feb11 /var/www/html/wp-content/
*/2 * * * * aws s3 sync --delete s3://dr-production-feb11 /var/www/html/
```

After successfully set and cron has been started every 2 min and synced data from production in to DR.



After sync content from the production in to DR server, Now both server have the same content distributed.

Name	Type	Last modified	Size	Storage class
bootstrap.sh	Asset	February 12, 2023, 09:42:09 UTC+05:30	5.0 KB	Standard
index.php	php	February 12, 2023, 09:42:09 UTC+05:30	403.0 B	Standard
composer.txt	txt	February 12, 2023, 09:42:09 UTC+05:30	15.4 KB	Standard
readme.html	html	February 12, 2023, 09:42:09 UTC+05:30	7.2 KB	Standard
wp-includes.php	php	February 12, 2023, 09:42:09 UTC+05:30	3.2 KB	Standard
wp-admin.php	php	February 12, 2023, 09:42:09 UTC+05:30	3.2 KB	Standard
wp-admin-functions.php	php	February 12, 2023, 09:42:09 UTC+05:30	35.4 KB	Standard

Production : <http://bootlabsmahi.shop/>



DR: <http://dr.bootlabsmahi.shop/>

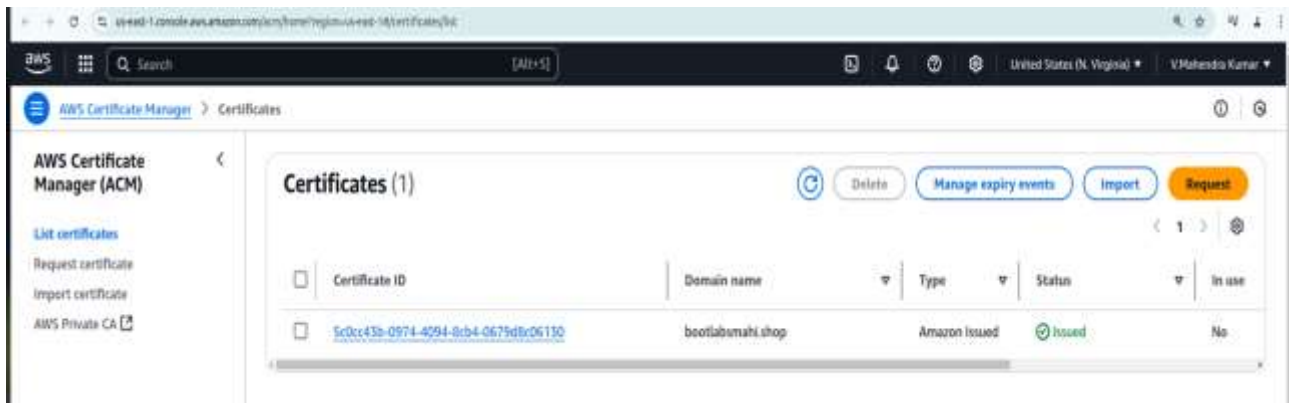


Here if once production goes down content serve from the DR server. Because of S3 bucket sync every 2 min from prod to DR.

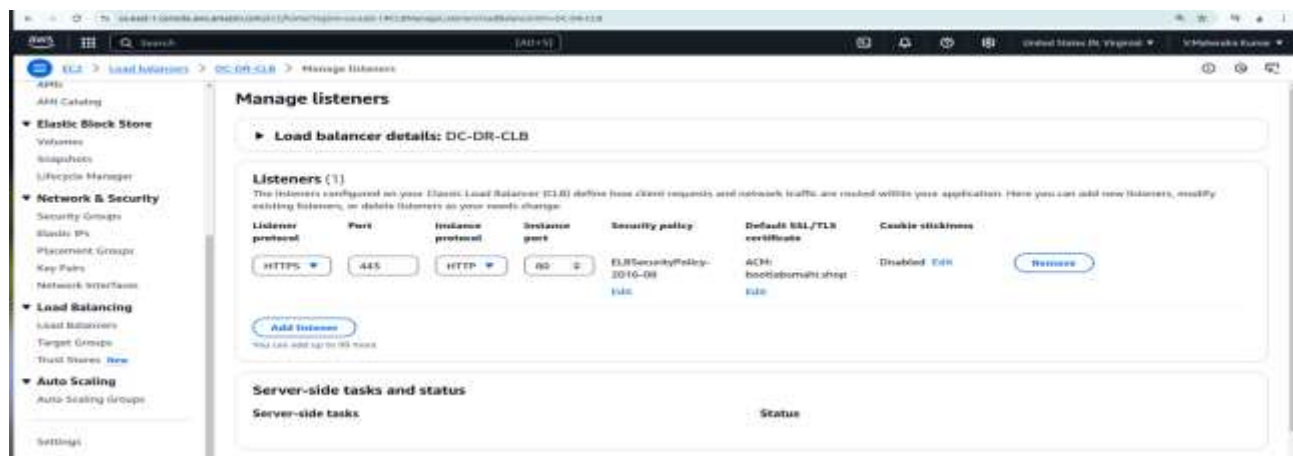
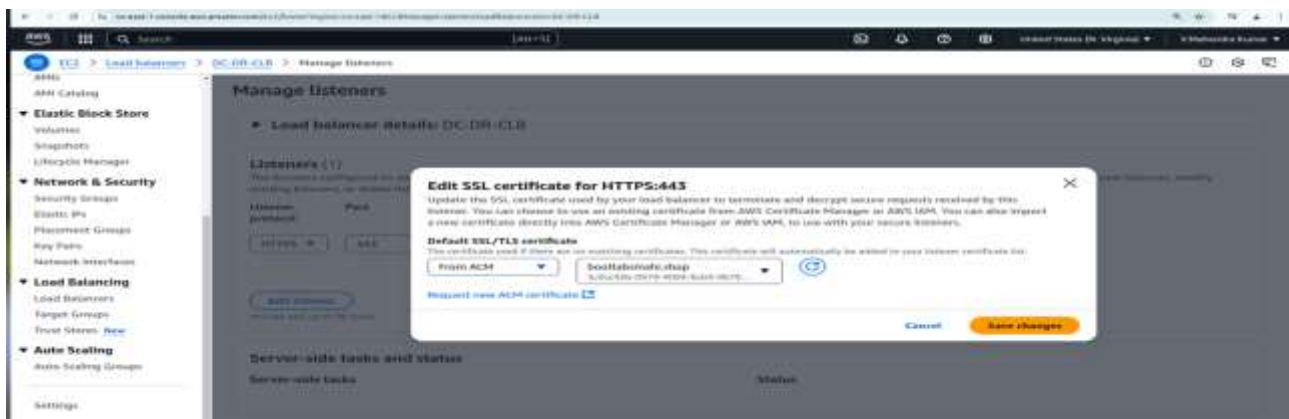
Now i want to serve my content in secure way (from http to https)

Certificate issues by ACM:

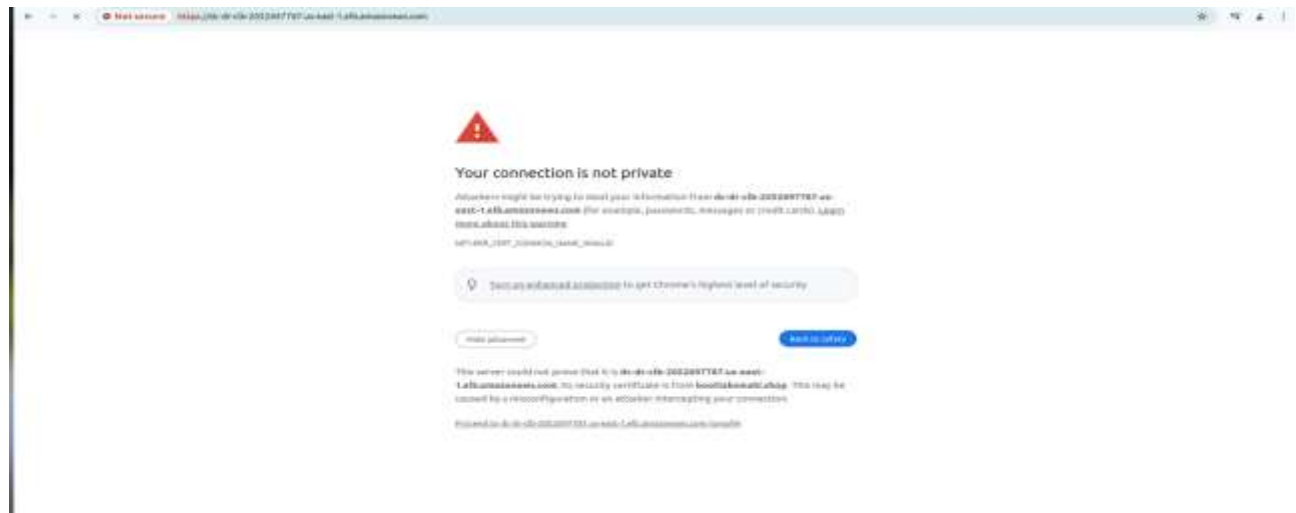




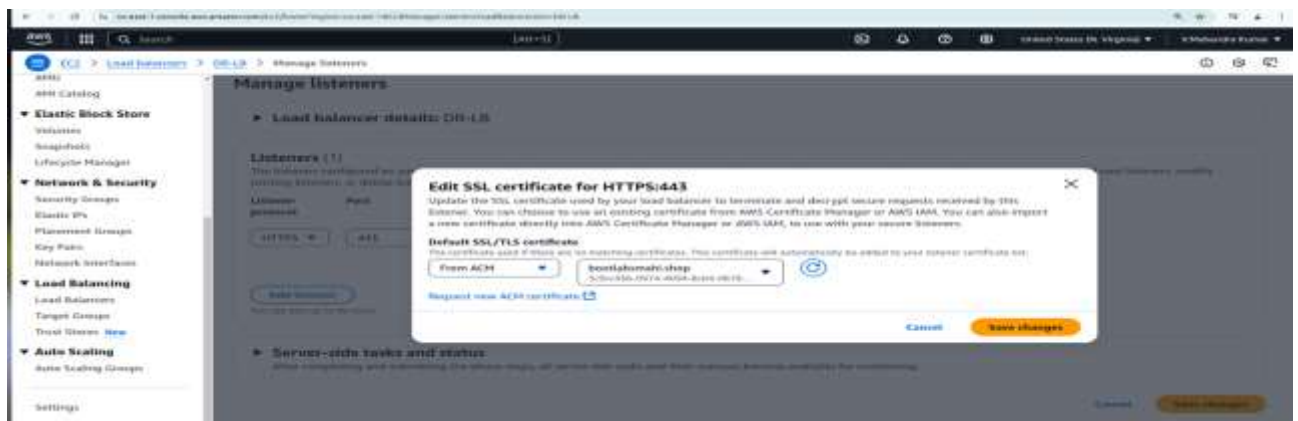
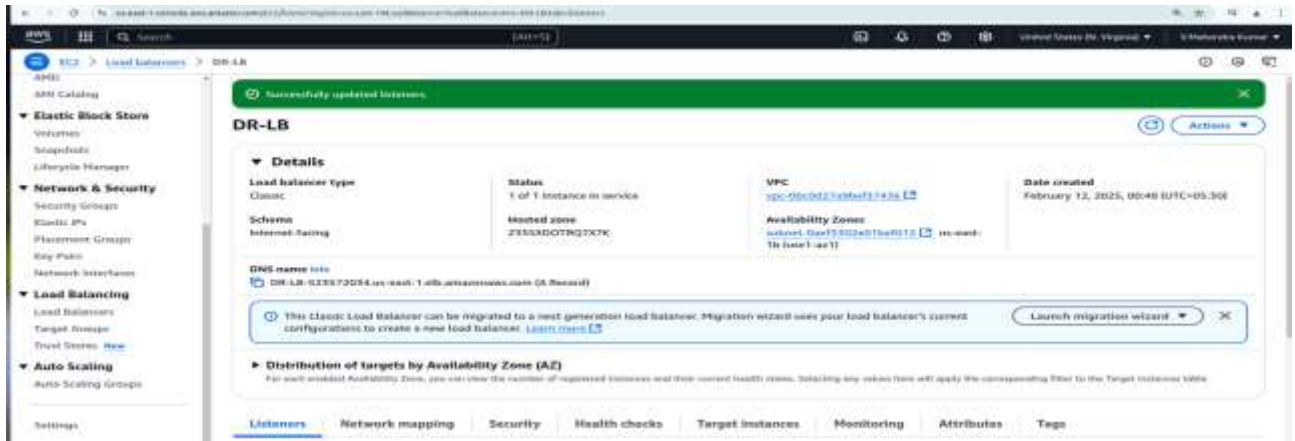
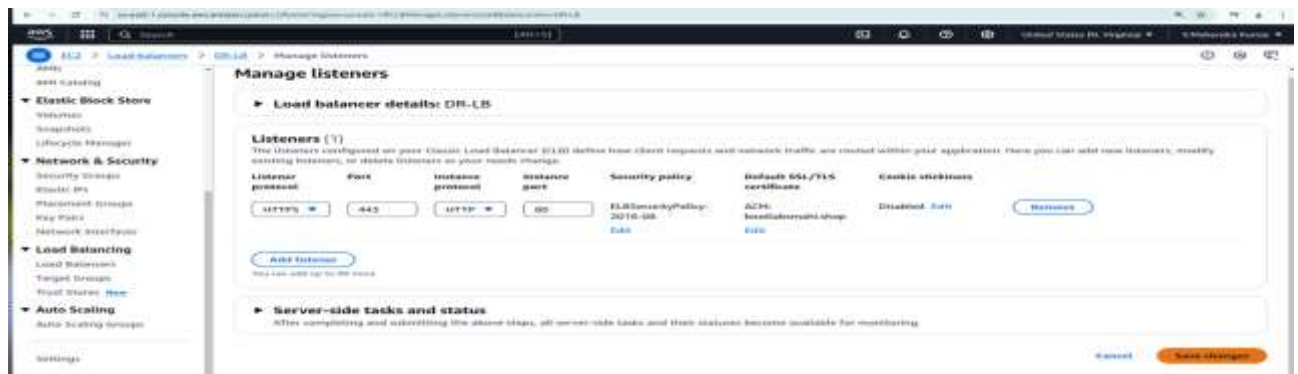
Configure listener from http in to https:

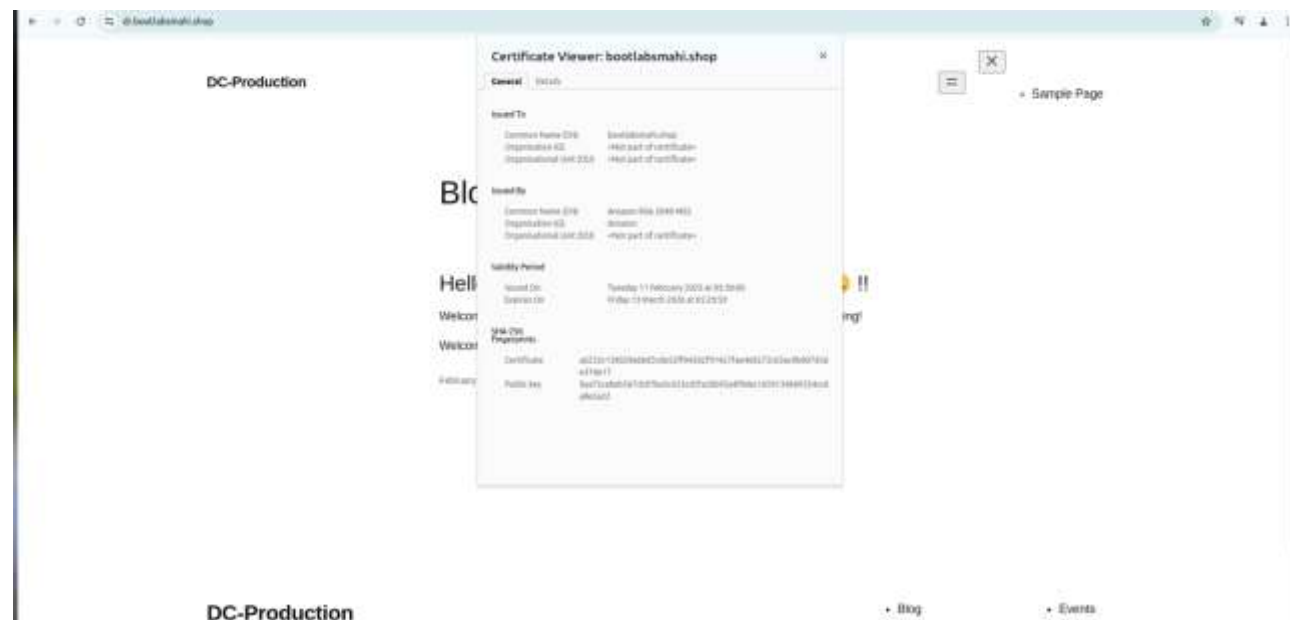






DR:





All The Best