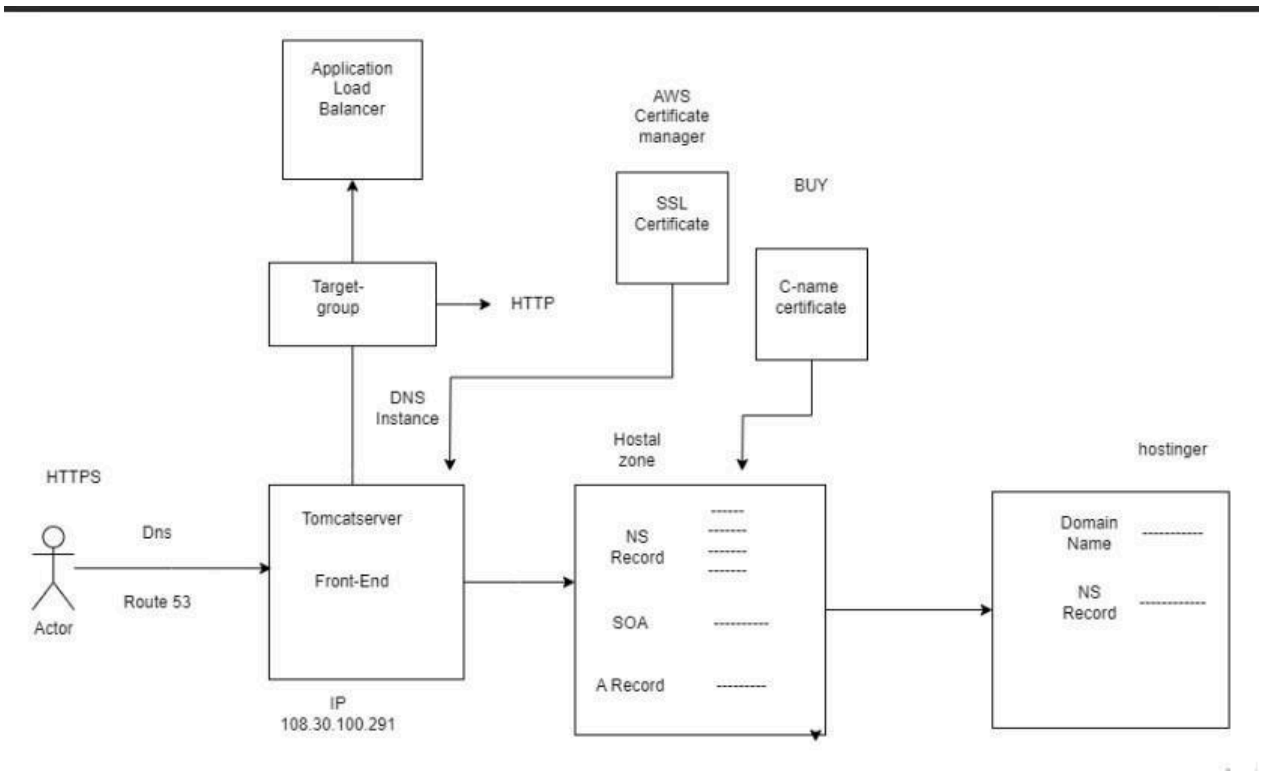
Route 53

Task : Create Hosted Zone in Route53 ,bind ip with 3rd party Domain provider and make website ssl certified using ACM and Application Load Balancer in AWS.

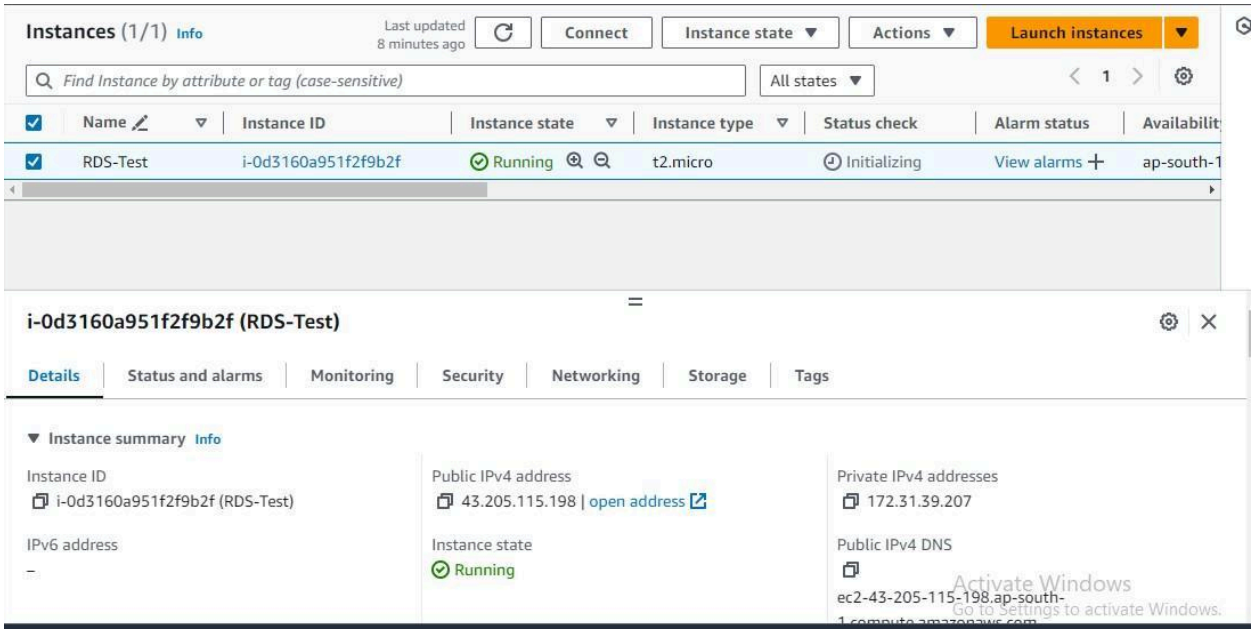
- Amazon Route 53 is a highly available and scalable Domain Name System(DNS) web service. Route 53 connect user requests to internet applications running on AWS or on- premises.
- It is essential for conversion of user friendly domain names into IP addresses so that internet communication can proceed without difficulties.

Diagramatic Representation:

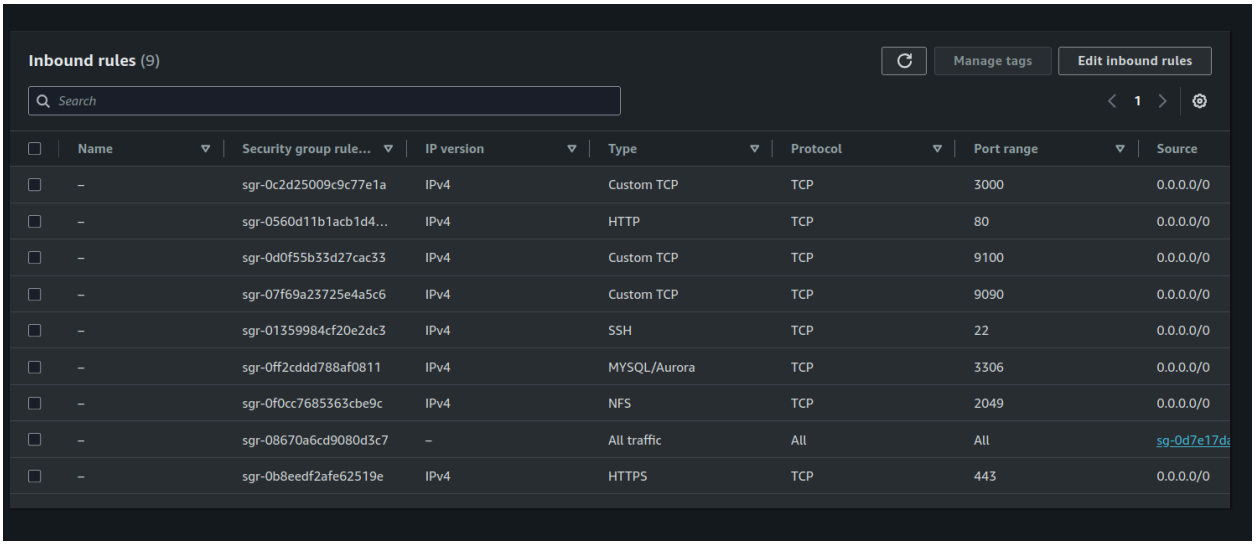


step 1: Create an instance & connect using it : -
Ssh -i private_rsa_key ec2-user@public_ip

What is an ec2 instance ? → An EC2 instance is a virtual server provided by Amazon Web Services (AWS) that allows users to run applications on the cloud with scalable computing resources. It can be configured with various operating systems, storage options, and network settings to meet specific needs.



whitelist port 443,80,22 in security group



<u>Step 2</u>: Now Install the apache2 server in our ec2 instance

What is apache2?
→apache2 is the Apache HTTP Server, an open-source web server software used to serve web pages and applications over the internet. It handles requests from clients (like browsers) and delivers the requested content, often running on Linux-based systems.

sudo apt install apache2

then move to home directory of

apache2 cd /var/www/html/

Remove index.html file that already exit

```
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-11-100:~$ cd /var/www/html/
ubuntu@ip-172-31-11-100:/var/www/html$ ls
index.html
ubuntu@ip-172-31-11-100:/var/www/html$ rm -rvf index.html
```

step 3: Now download the free css template

Sudo wget
https://www.free-css.com/assets/files/free-css-templates/download/page295/guarder.zip

Unzip the file

Sudo apt install unzip

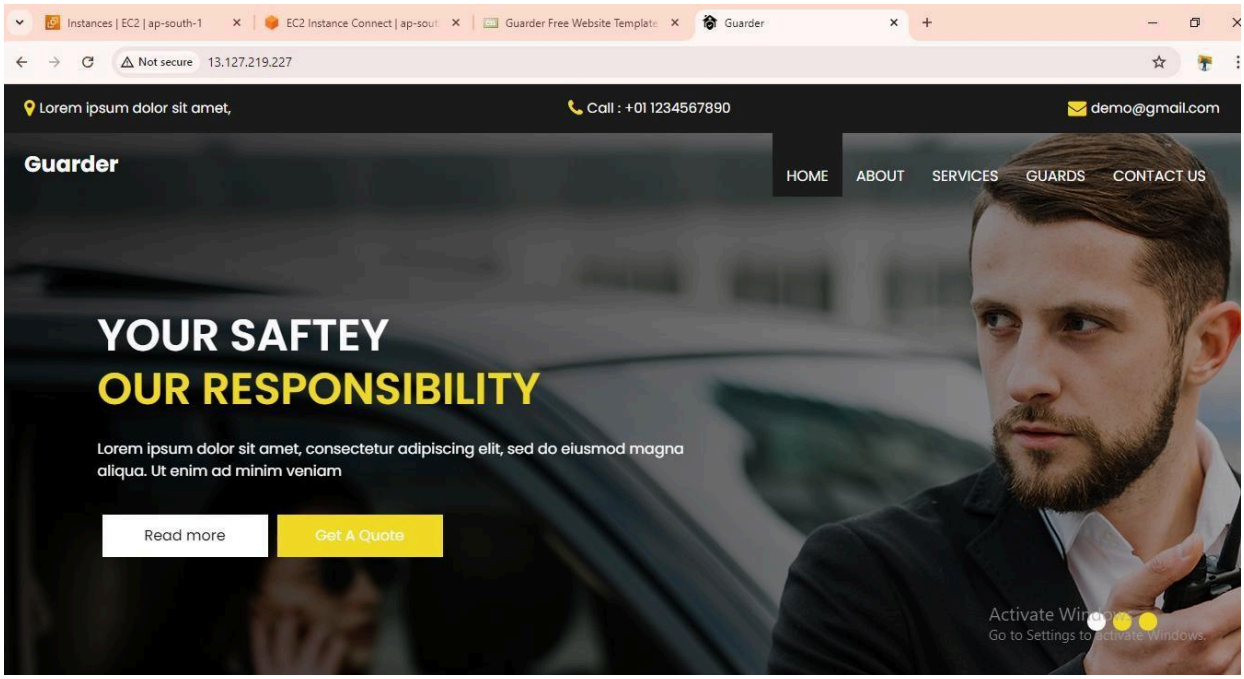
Now move only file from unzip directory to HTML

directory sudo mv guarder-html/*

/var/www/html

```
ubuntu@ip-172-31-11-100:~$ ls
guarder-html  guarder.zip
ubuntu@ip-172-31-11-100:~$ sudo mv guarder-html/* /var/www/html
ubuntu@ip-172-31-11-100:~$ cd /var/www/html/
ubuntu@ip-172-31-11-100:/var/www/html$ ls
about.html  contact.html  css  fonts  guard.html  images  index.html  js  service.html
ubuntu@ip-172-31-11-100:/var/www/html$
```

Public ip to host website


Instances | EC2 | ap-south-1
EC2 Instance Connect | ap-sout
Guarder Free Website Template
Guarder
Not secure
13.127.219.227
Lorem ipsum dolor sit amet,
Call : +01 1234567890
demo@gmail.com
Guarder
HOME
ABOUT
SERVICES
GUARDS
CONTACT US
YOUR SAFTEY
OUR RESPONSIBILITY
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod magna aliqua. Ut enim ad minim veniam
Read more
Get A Quote
Activate Windows
Go to Settings to activate Windows.

<u>Step 5</u>: Purchase a domain from 3rd party vendor.
Here we will use hostinger as a 3rd party domain provider and we will use prathameshenterprises.shop domain.

What is Domain ?
–> A domain is a human-readable address used to access websites on the internet, such as "example.com." It serves as a user-friendly way to identify and reach specific IP addresses, which are the underlying numerical addresses of servers hosting the website.

<u>Step 6:</u> Now Create Hosted Zone in Route53 to bind our domain with our public ip .

Here we can purchase Domain from

various venders Example:- Hostinger,

GoDaddy, Bigrock, etc…

- **We use domain to identify websites and make them easier for people to access.**

Then create hosted zones from Route53 service

- A hosted zone is a container for records, and records contain information about how you want to route traffic for a specific domain.

Domain name Info

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

prathameshenterprises.shop

Valid characters: a-z, 0-9, ! " # $ % & ' ( ) * + , - / : ; < = > ? @ [\ ] ^ _ ` { | } . ~

Description - *optional* Info

This value lets you distinguish hosted zones that have the same name.

The hosted zone is used for...

The description can have up to 256 characters. 0/256

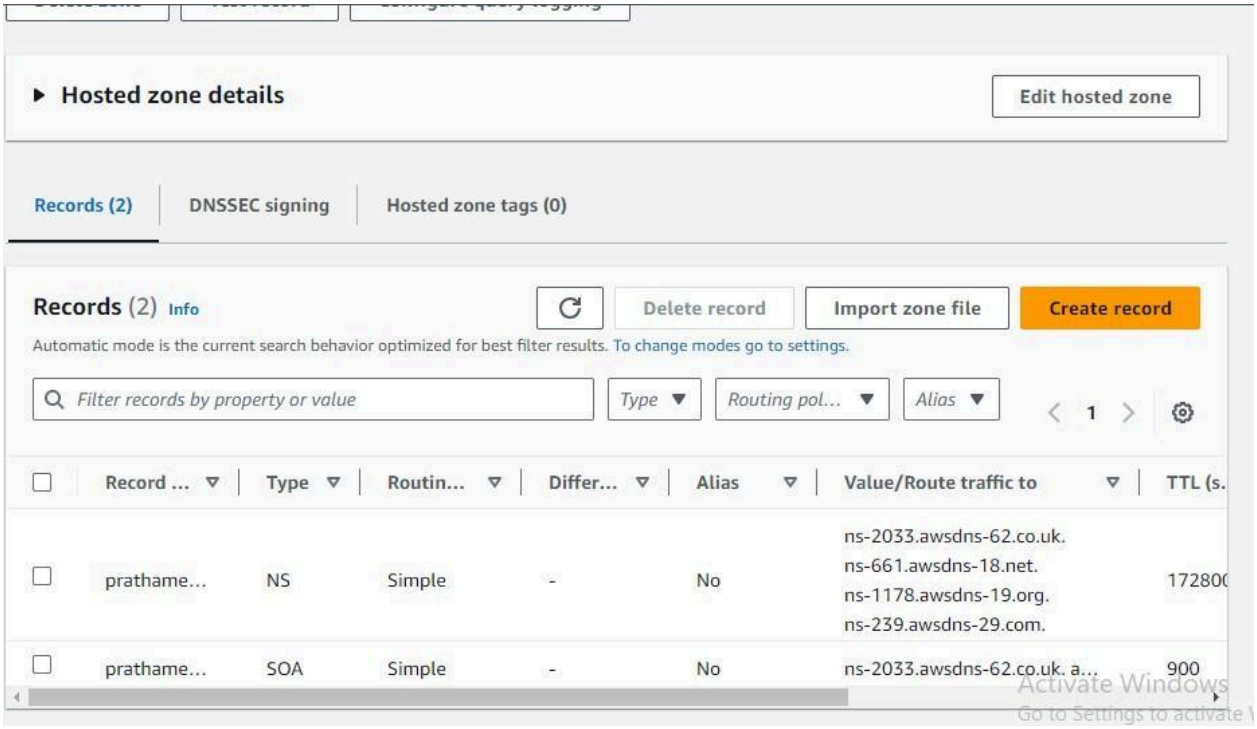
Type Info

The type indicates whether you want to route traffic on the internet or in an Amazon VPC.

- (●) **Public hosted zone**
  A public hosted zone determines how traffic is routed on the internet.
- ( ) **Private hosted zone**
  A private hosted zone determines how traffic is routed within an Amazon VPC.

Tags Info

Apply tags to hosted zones to help organize and identify them.



After creating hosted zone create Record

- Record is created to define how traffic is routed for a domain

and its subdomains. There are two types of hosted zones: public

and private

- Public hosted zones : contain recors that specify how traffic is routed on the internet.
- Private hosted zones: Contain records that specify how traffic is routed within one or more Amazon Virtual Private Clouds(Amazon VPCs)

Create record Info

Quick create record

Switch to wizard

▼ Record 1

Delete

Record name Info

subdomain prathameshenterprises.shop

Keep blank to create a record for the root domain.

Record type Info

A – Routes traffic to an IPv4 address and some AWS resources

Alias

Value Info

192.0.2.235

Enter multiple values on separate lines.

Record name Info

subdomain prathameshenterprises.shop

Keep blank to create a record for the root domain.

Record type Info

A – Routes traffic to an IPv4 address and some AWS resources

Alias

Value Info

13.127.219.227

Enter multiple values on separate lines.

TTL (seconds) Info

60

1m 1h 1d

Recommended values: 60 to 172800 (two days)

Routing policy Info

Simple routing

Add another record

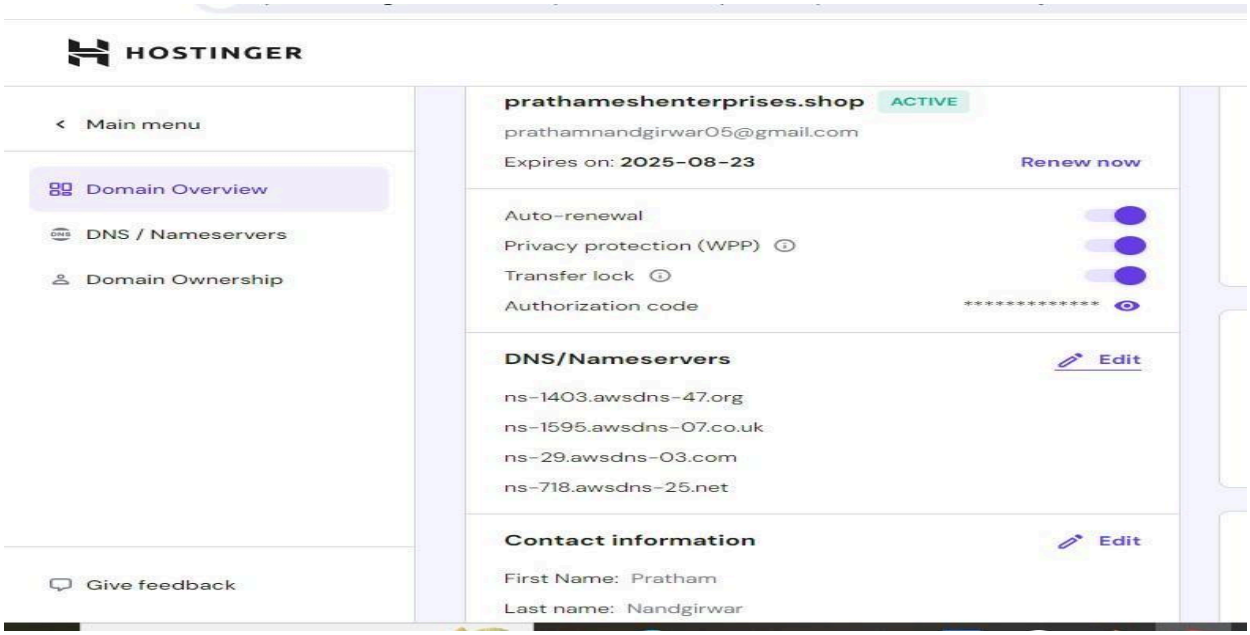
Cancel Create records

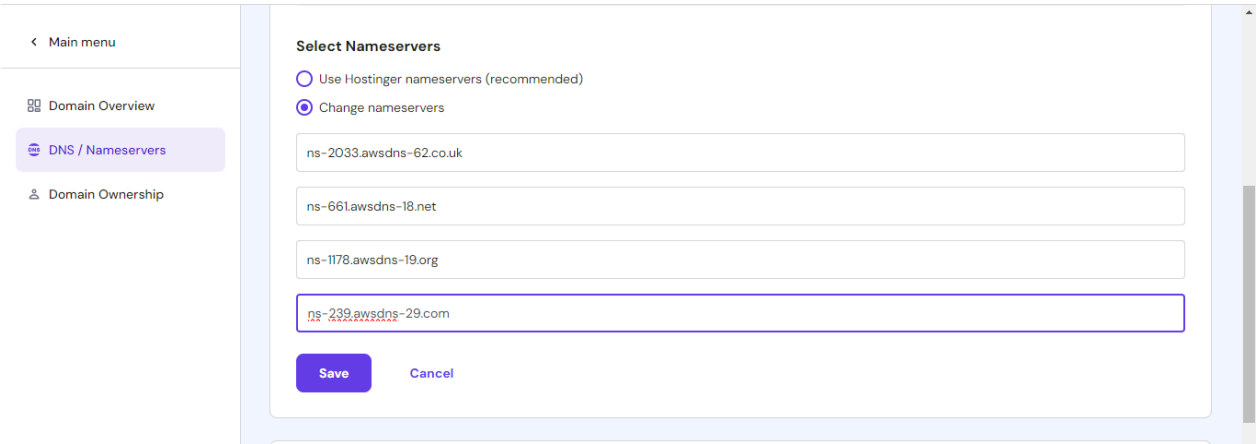
<u>Step 7</u>:After Creating Hosted Zone it will give us 2 records NS and SOA.

The NS Records are to copied to our hostinger nameservers.

DNS//:Nameservers

- Here we change nameservers for our domain name and telling the internet to look elsewhere to find details about where our website can be found.



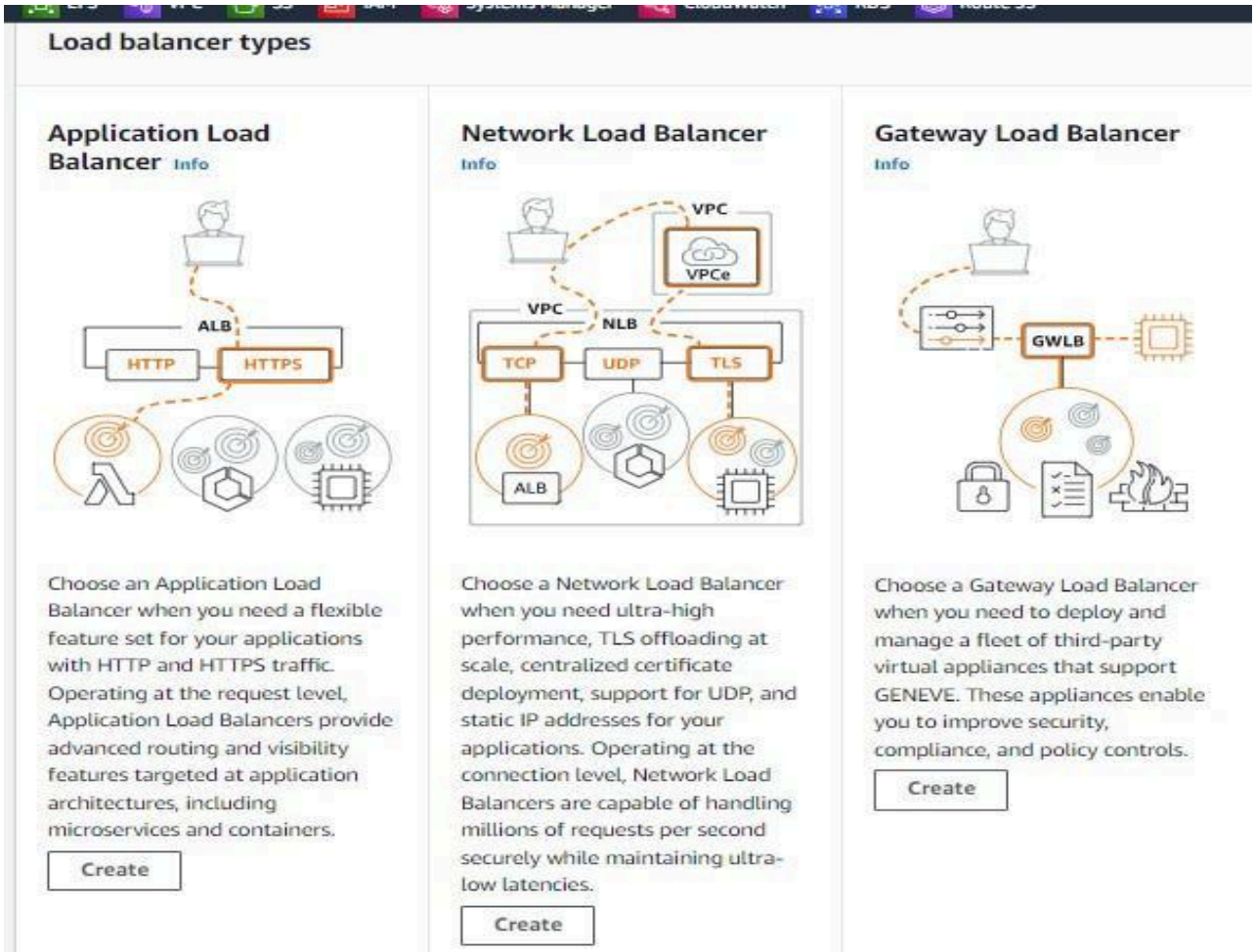


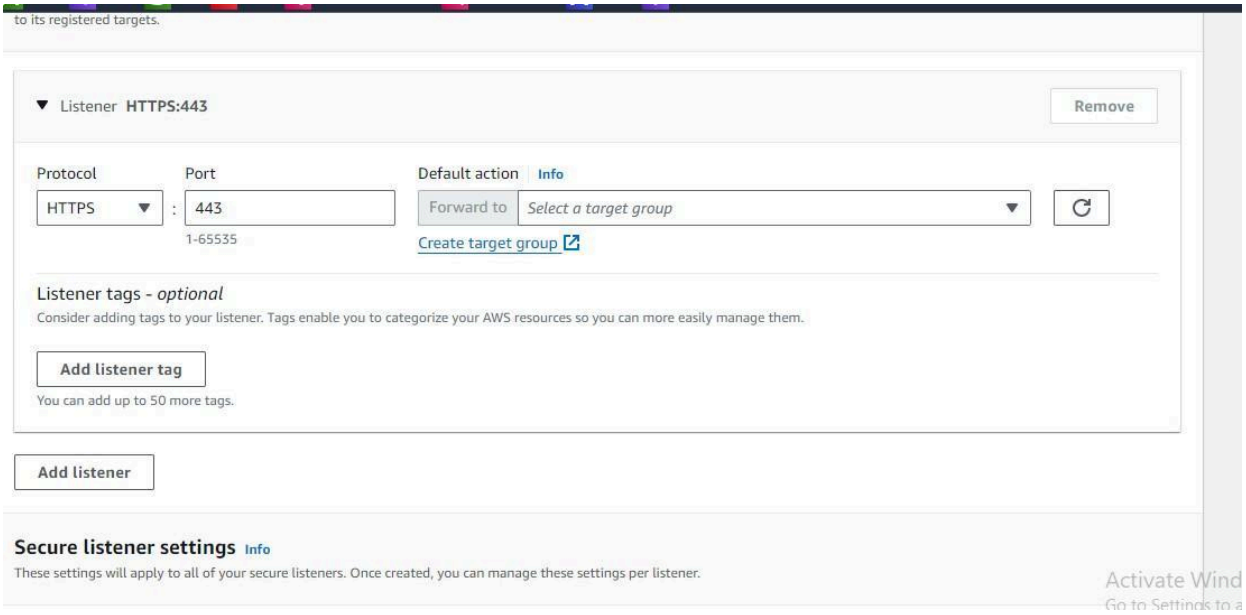
<u>Step 8</u>: Now We need to create a <u>Application Load balancer and Target Group</u> for using the ACM Certificate so we can redirect from http to https.

What is Application Load balancer ?
→ An Application Load Balancer (ALB) is an AWS service that distributes incoming application traffic across multiple targets, such as EC2 instances, based on request content, improving availability and scalability. It operates at the application layer (Layer 7) of the OSI model and supports advanced routing features like path-based and host-based routing.

What is Target Group ?
→ A target group in AWS is a set of resources, such as EC2 instances or IP addresses, that the Application Load Balancer routes traffic to based on the configured rules. It allows you to manage and

monitor the health of these resources and balance the load among them.



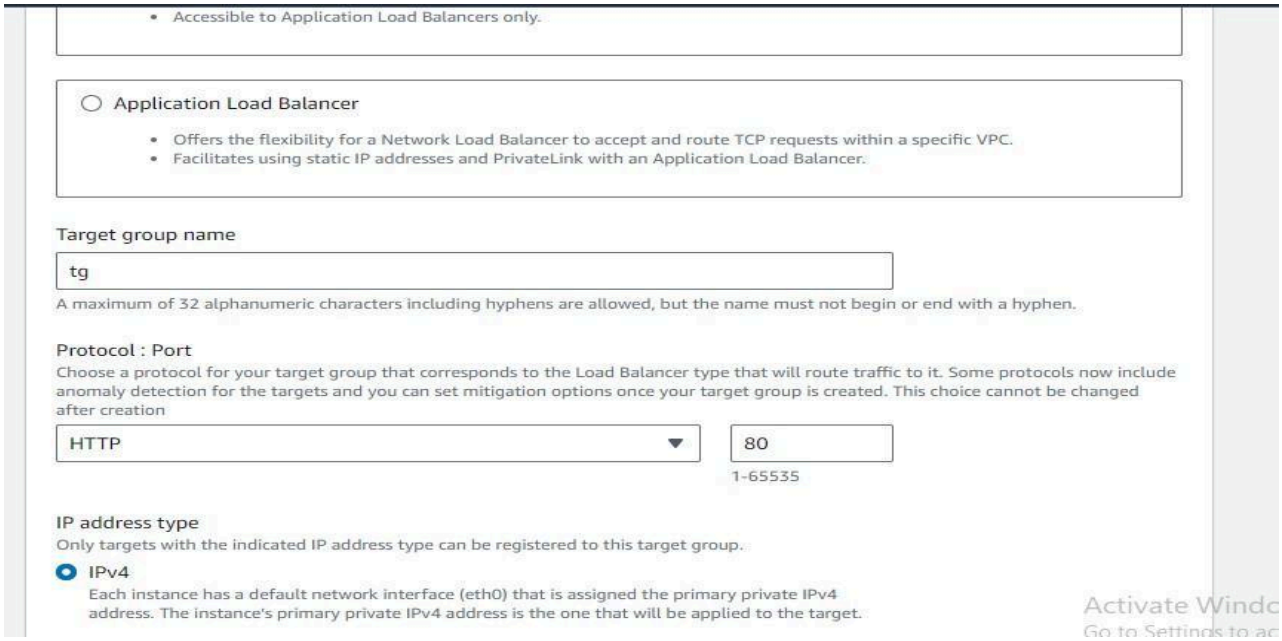


Here change the protocol to HTTPS

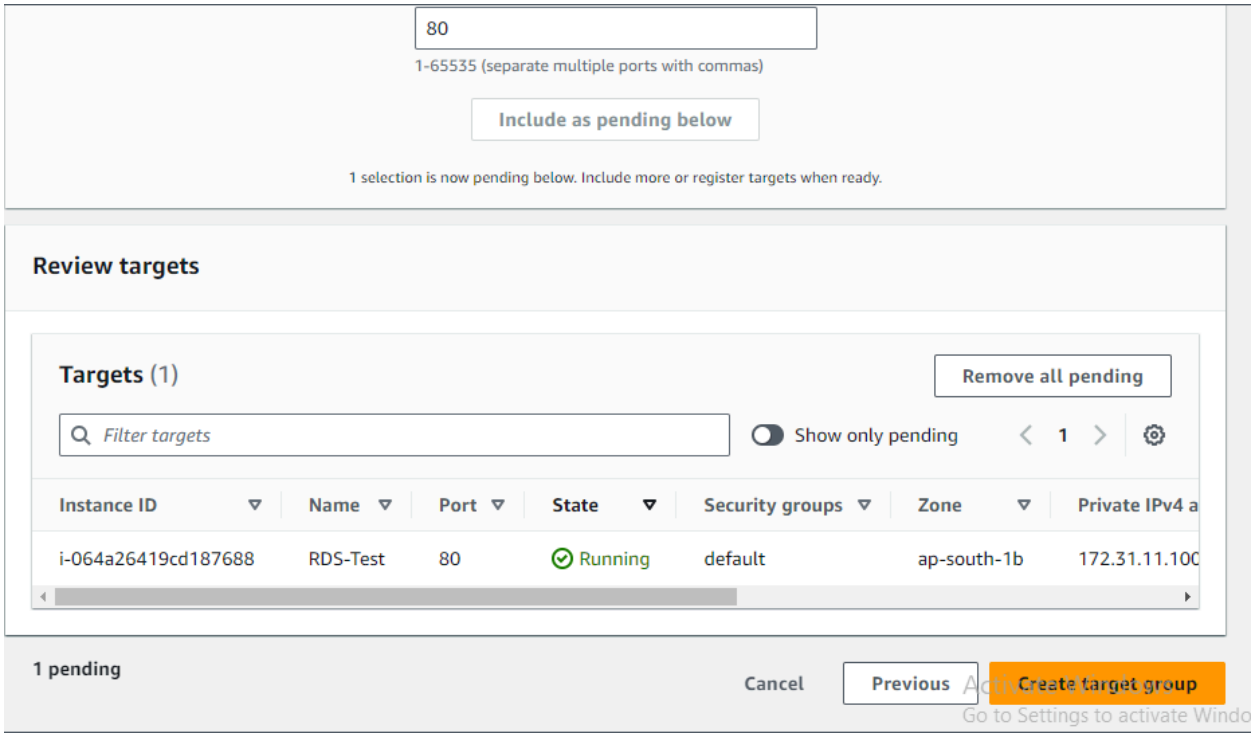
- Here we change port to https to provide encryption to the data & secure our website.

Then create target group

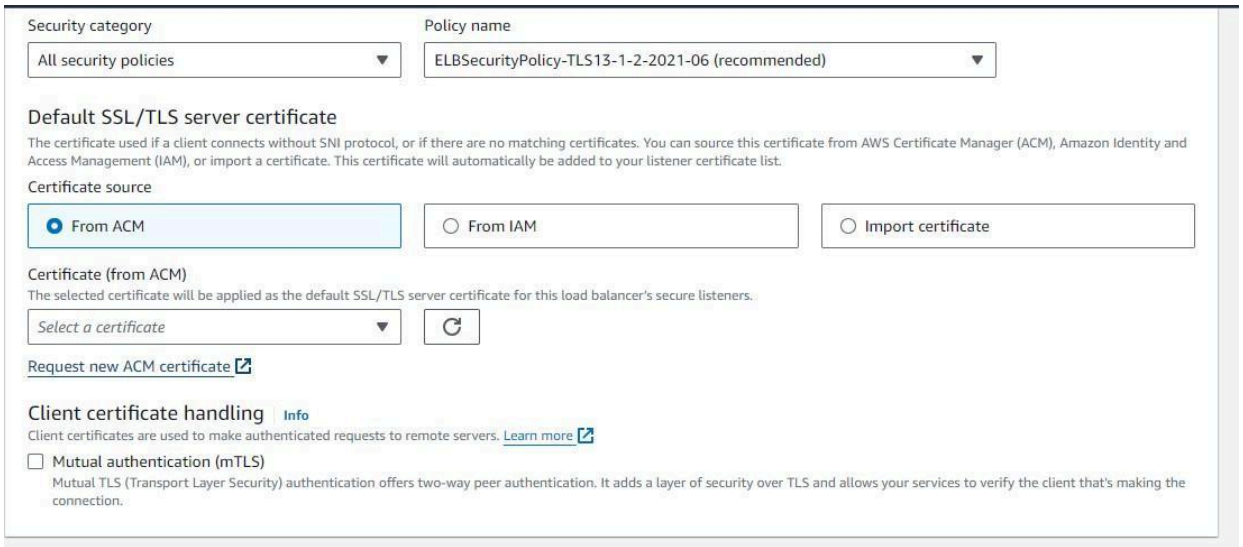
- Target groups are used to route traffic to specific application endpoints.



Here change the protocol to HTTP



Now attach the target group to load balancer

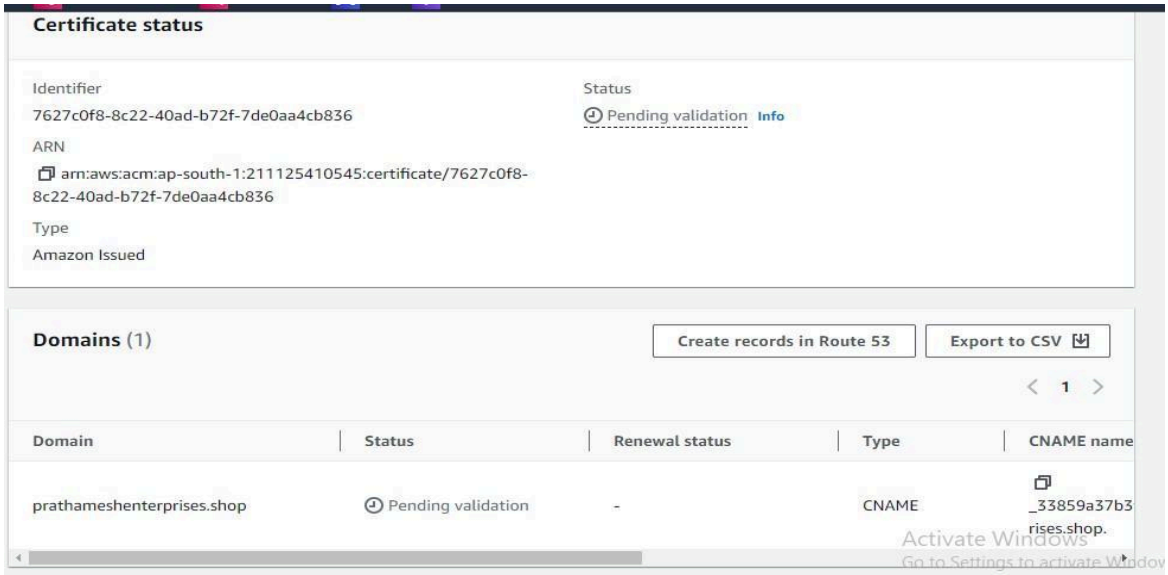


<u>Step</u> 9: Now our domain is working property but the connection is not secured as we have not attached any ssl certificate with our domain.

<u>So now we will Request a ssl Certificate from ACM Service in aws .</u>

What is ACM →ACM (AWS Certificate Manager) is a service by AWS that allows you to easily provision, manage, and deploy SSL/TLS certificates for use with AWS services and your websites to secure network communications.ACM is designed to protect and manage the private keys used with SSL/TLS certificates..

Here we have to give domain name



<u>Step 10</u> : After Creating Certificate create CName record in Our hosted zone .

What is CName record ? →
When using ACM (AWS Certificate Manager), a CNAME record is often required to verify domain ownership. AWS provides a unique CNAME that you must add to your DNS records, which allows ACM to confirm that you control the domain before issuing an SSL/TLS certificate.

AWS Certificate Manager > Certificates > 7627c0f8-8c22-40ad-b72f-7de0aa4cb836 >
Create DNS records in Amazon Route 53

Create DNS records in Amazon Route 53 (1/1)

Search domains

1 match

Validation status = Pending validation | Validation status = Failed | Is domain in Route 53? = Yes

Clear filters

1

Domain	Validation status	Is domain in Route 53?
prathameshenterprises.shop	Pending validation	Yes

Cancel | Create records

AWS Certificate Manager > Certificates > 7627c0f8-8c22-40ad-b72f-7de0aa4cb836

7627c0f8-8c22-40ad-b72f-7de0aa4cb836

Delete

Certificate status

Identifier
7627c0f8-8c22-40ad-b72f-7de0aa4cb836

Status
Issued

ARN
arn:aws:acm:ap-south-1:211125410545:certificate/7627c0f8-8c22-40ad-b72f-7de0aa4cb836

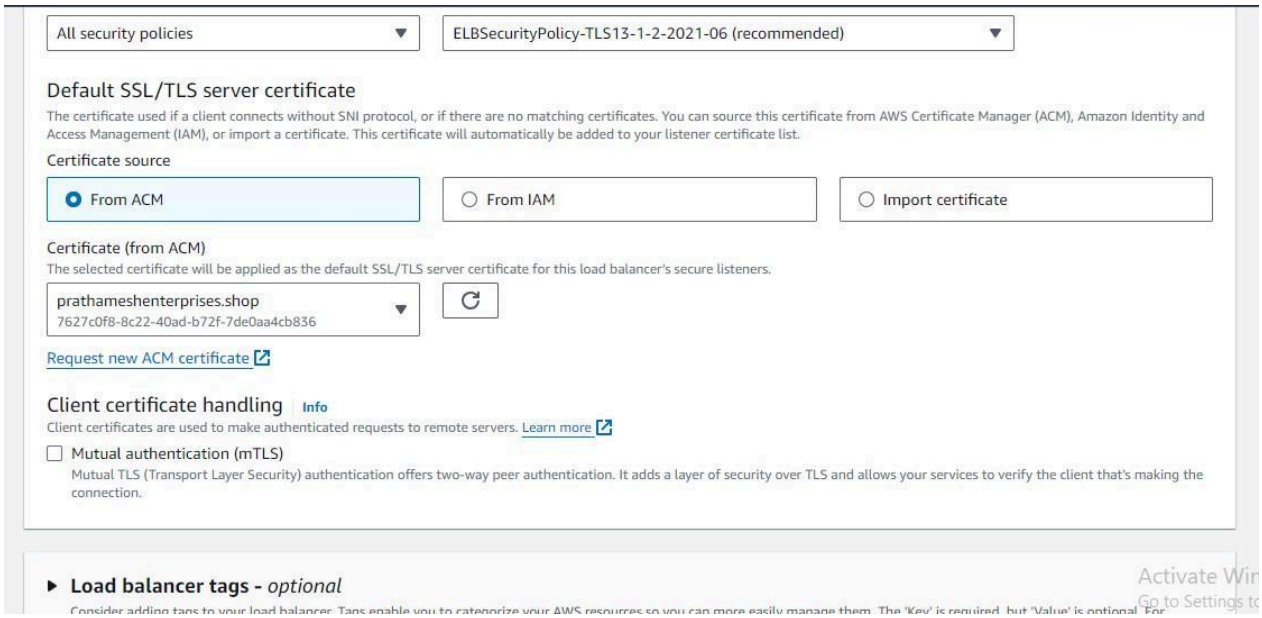
Type
Amazon Issued

Domains (1)

Create records in Route 53 | Export to CSV

1

After receiving certificate add it to load balancer



<u>Step 11:</u> Now We have to Edit the A Record to point the domain to the load balancer dns instead ot public ip.

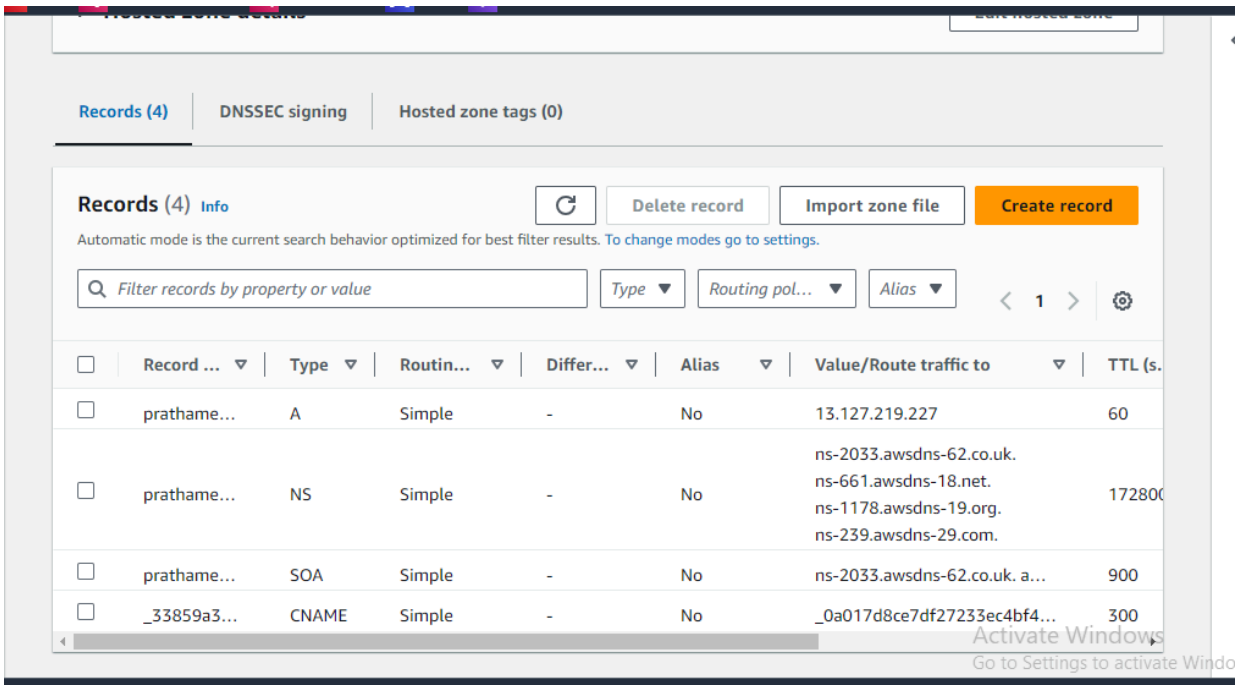
Here we use Routing Policies→

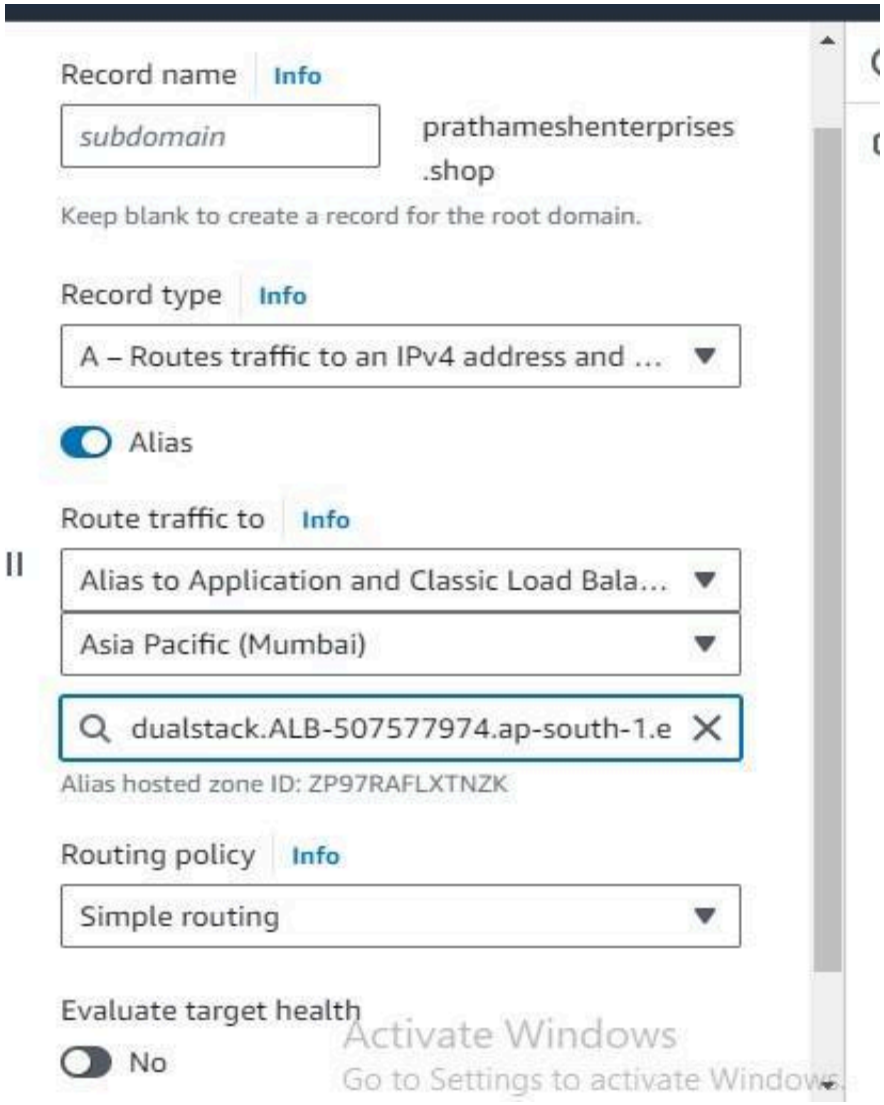
Routing policies in Route 53 define how DNS queries are handled. They determine which IP address or resource is returned based on factors like health, latency, or geography.

There are 8 types of routing policy

- **Simple routing policy** Use for a single resource that performs a given function for your domain.
- **Failover routing policy** Use when you want to configure active-passive failover.
- **Geolocation routing policy** Use when you want to route traffic based on the location of your users.
- **Geoproximity routing policy** Use when you want to route traffic based on the location of your resources and, optionally, shift traffic from resources in one location to resources in another location.
- **Latency routing policy** Use when you have resources in multiple AWS Regions and you want to route traffic to the Region that provides the best latency .
- **IP-based routing policy** Use when you want to route traffic based on the location of your users, and have the IP addresses that the traffic originates from.
- **Multivalue answer routing policy** Use when you want Route 53 to respond to DNS queries with up to eight healthy records selected at random.

- **Weighted routing policy** Use to route traffic to multiple resources in proportions that you specify .

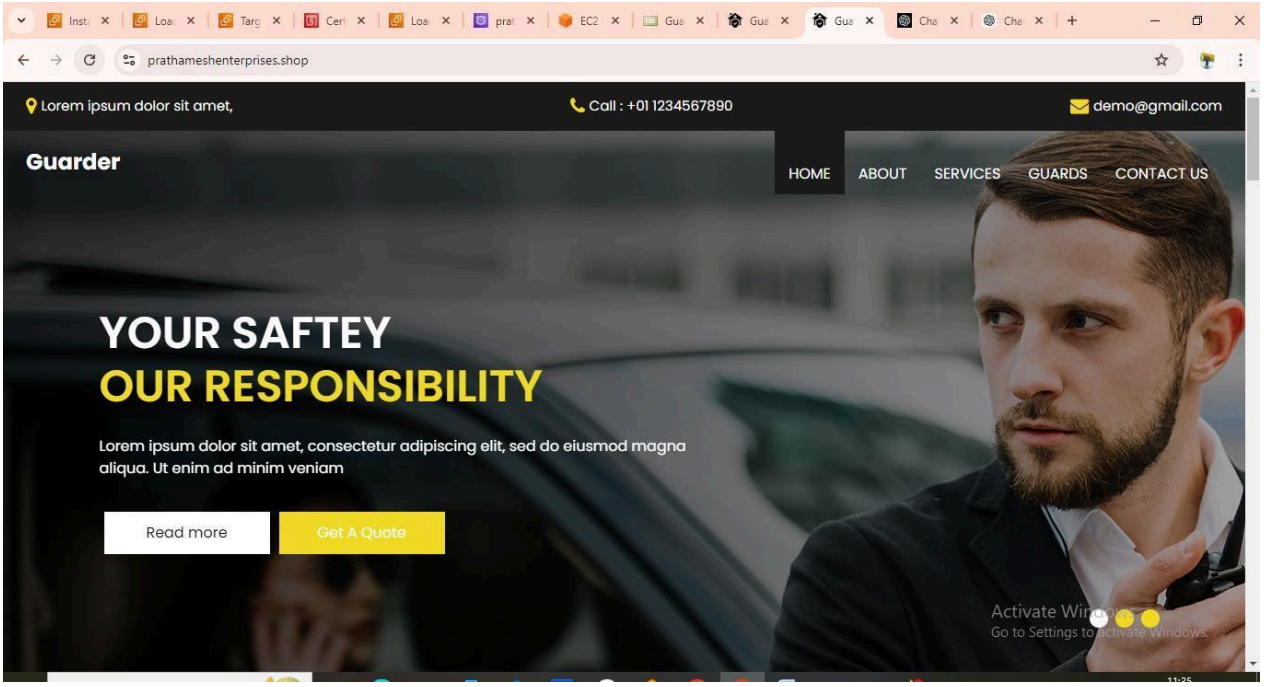




<u>Step 12:</u> Now hit the prathmeshenterprises.shop domain in any browser .

Here , we can see Our domain is now showing connection secure as we have attached the SSL Certificate to it .

https://prathameshenterprises.shop/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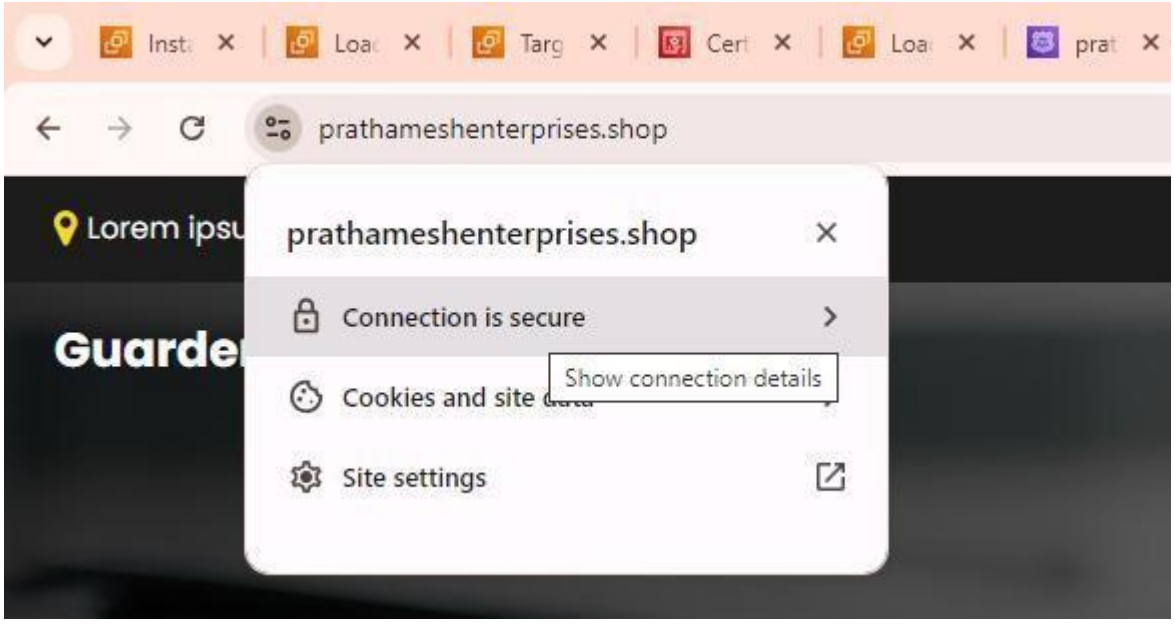
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Connection is secure
Show connection details
Cookies and site
Site settings