BABU BANARSI DAS UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

SUMMER TRAINING & INTERNSHIP PROJECT

AN ORGANIZATIONAL SETUP

SESSION:2024-25

SUBMITTED TO:

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TRAINER AT IKIGAI

SUBMITTED BY:

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B.TECH CSE 3rd year
1210432306 CS32

Acknowledgement

First and foremost, I would like to express my deepest gratitude to my project supervisor, Mr. Mudit Sir, for their invaluable guidance, constant support, and encouragement throughout the course of this project. Their insightful feedback and expertise were instrumental in shaping this work.

I am also grateful to him and the faculty members of the Computer Science & Engineering Department at BBD University for their assistance and for providing a conducive environment for research and learning.

Finally, I would like to extend my appreciation to all those who, in one way or another, contributed to the successful completion of this project.

Thank you.

SHIWANSH SRIVASTAVA

AN ORGANIZATIONAL SETUP

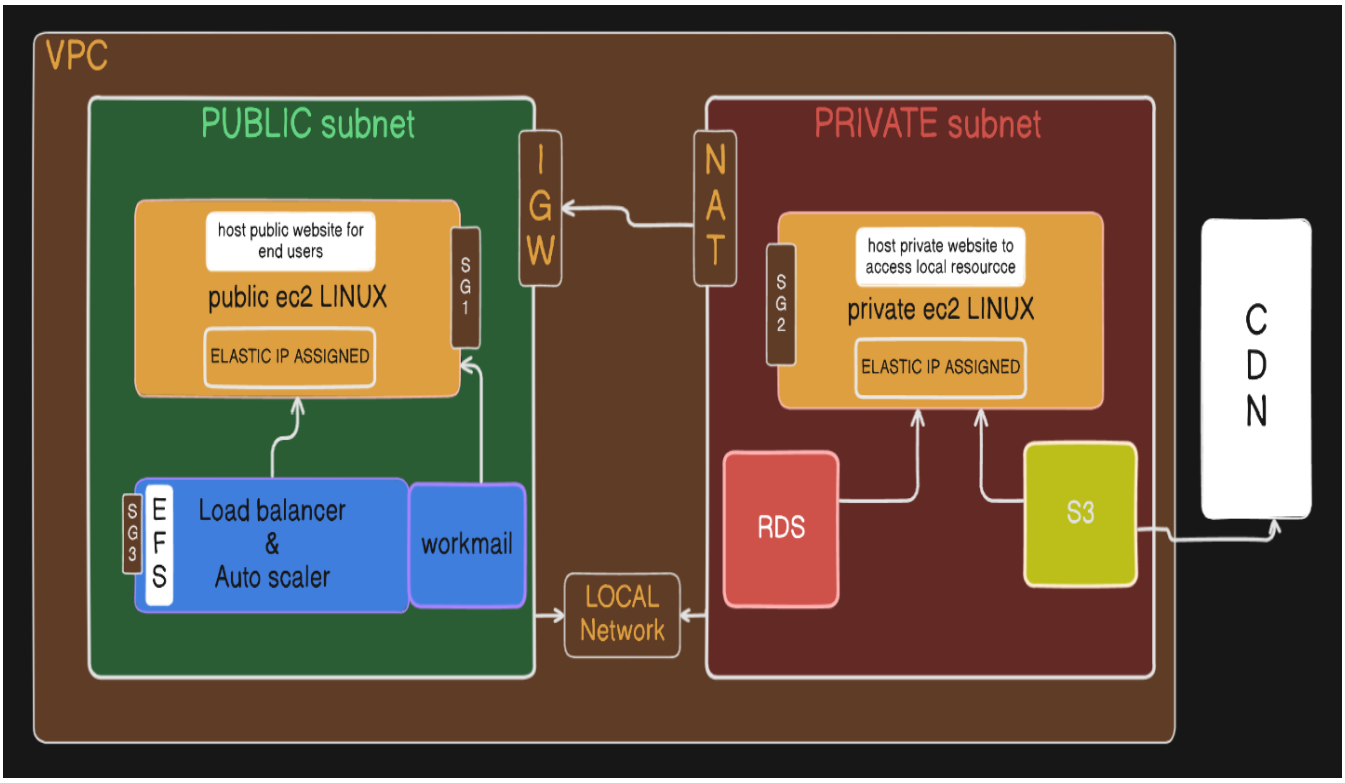
In this project, we are going to build an orgainsation which works on two networks: Public Network and Private Network .

The services available on public network can be accessed by the general audience but the services available on the private network are not available for general audiences and it can only be available for orgainzation admins.

The platform that we are using is Amazon aws.We will be using some of the aws services like EC2, S3, RDS, Autoscalers etc.

As AWS is a paid platform,So as long as it's keep on functioning, it will induce charges for it.

FRAMEWORK & COMPONENT



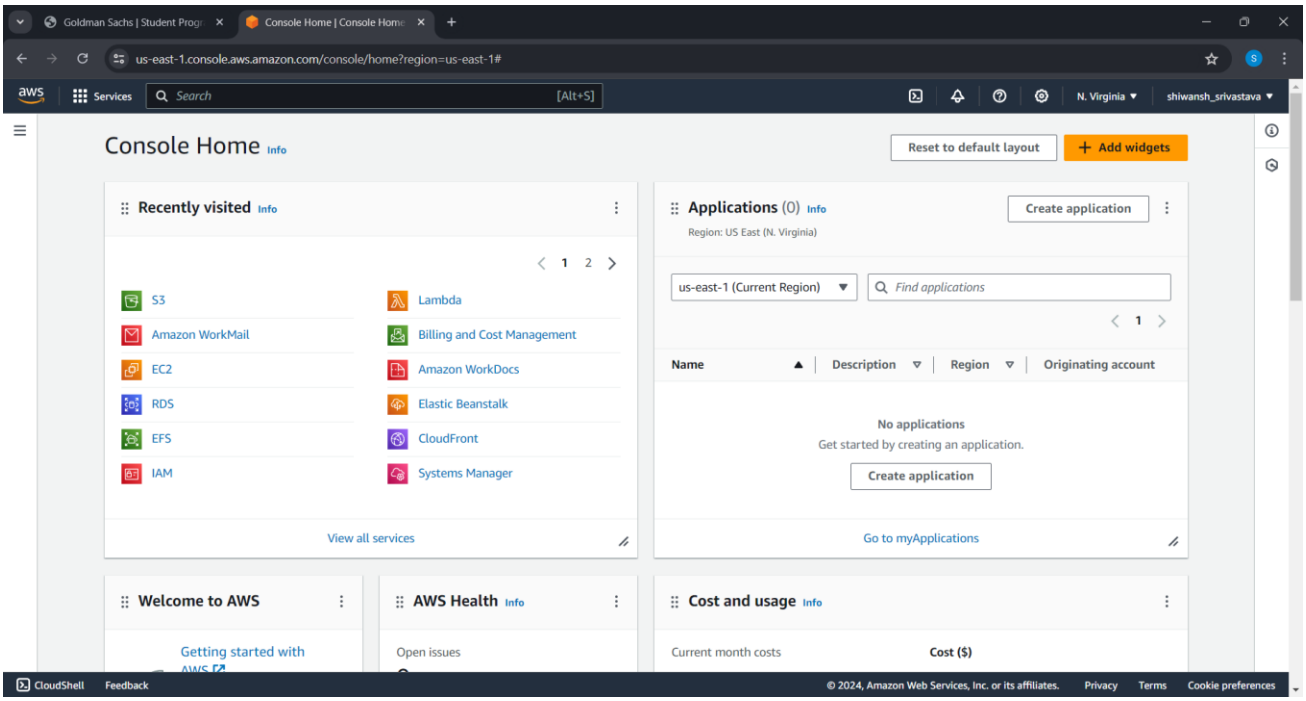
We are going to create this project on the basis of model shown above. It will contain the following components:-

- VPC
- EC2
- RDS
- S3
- CDN

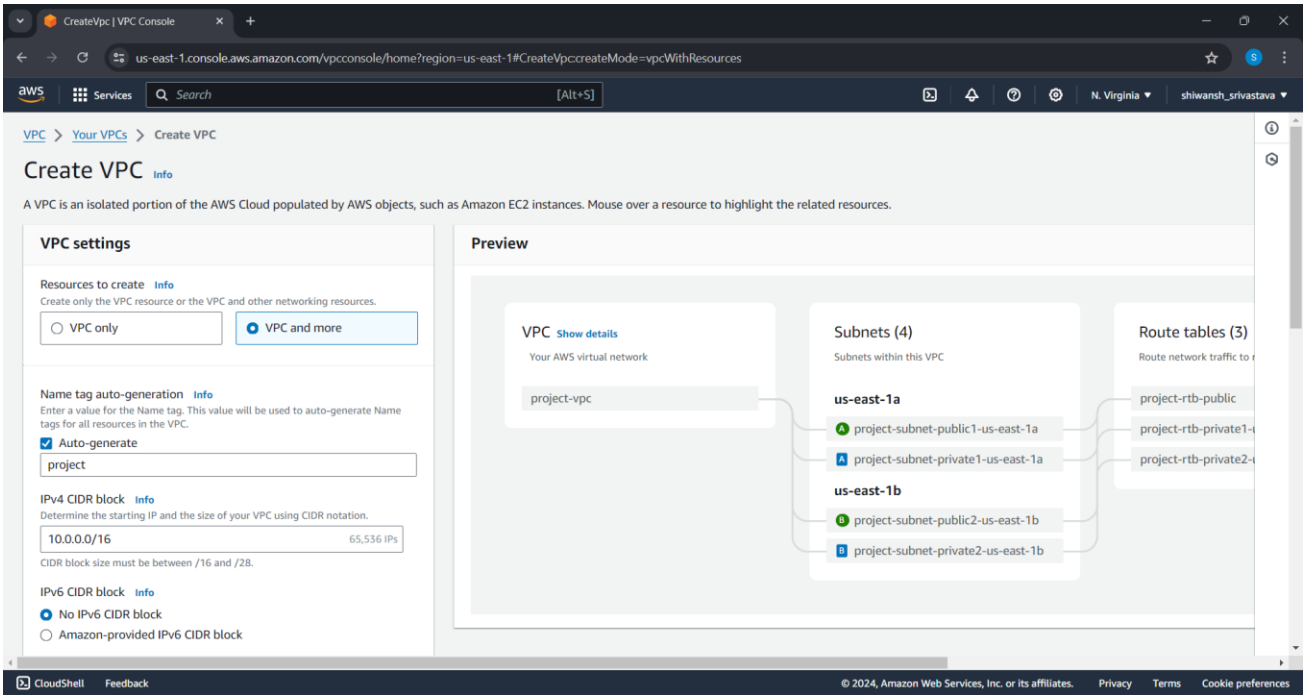
Designing VPC

To design VPC follow the given commands:

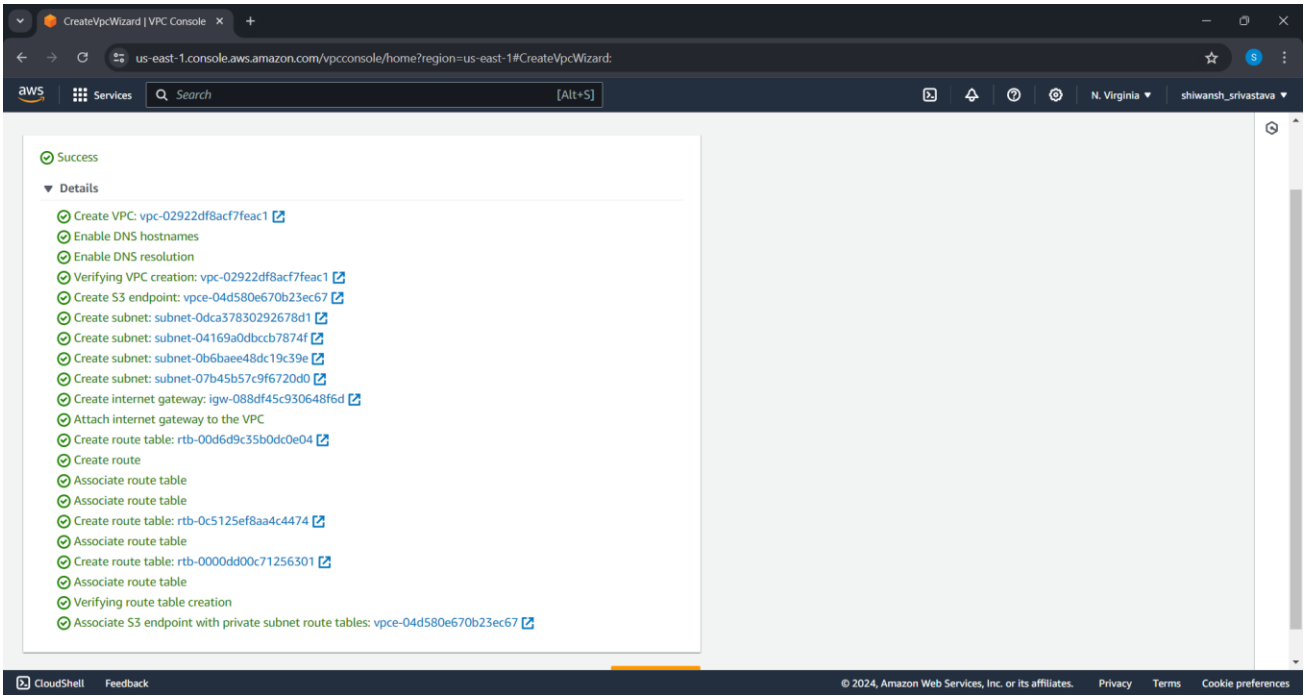
- Open console and search VPC.



- Click on create VPC.
- Now choose VPC and more.
- Choose the IP:10.0.0.0/16
- Choose at least 2 availability zones.
- Now select 2 public and private subnets
- Since we are making an orgainsational network, we are using larger subnets.

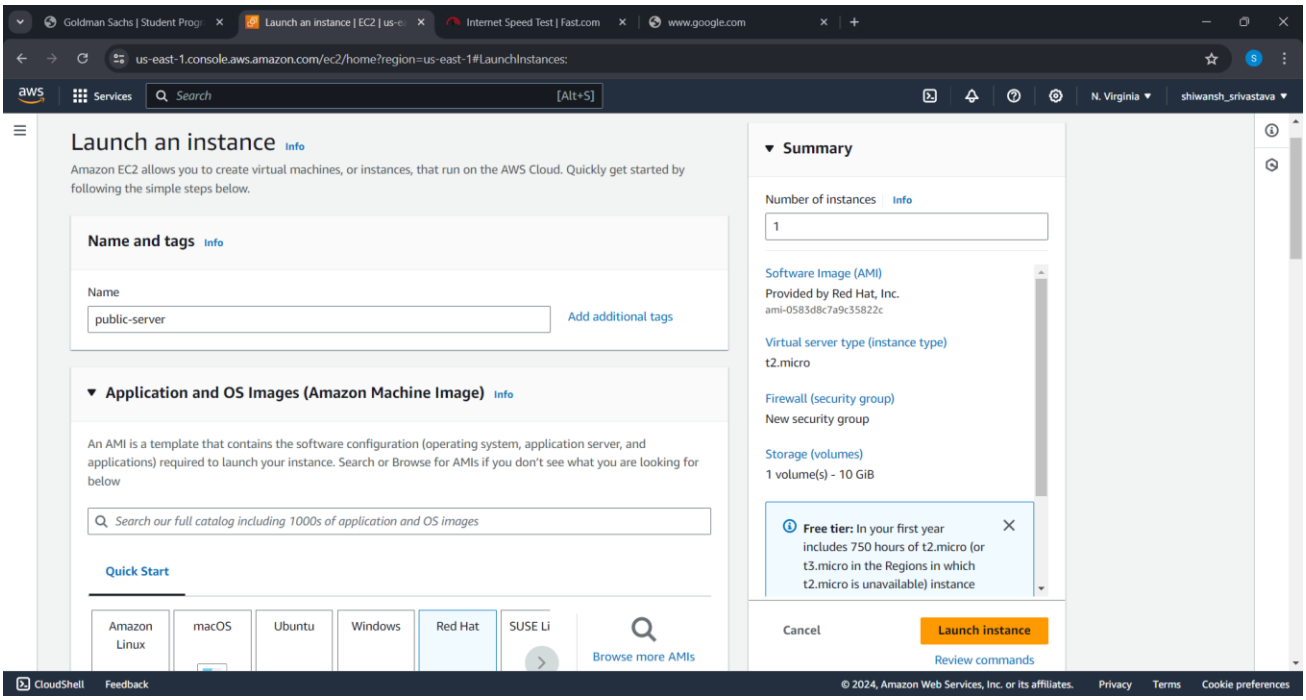


- Choose NAT gateway as none.
- Choose S3 gateway as VPC endpoints.
- Create VPC.

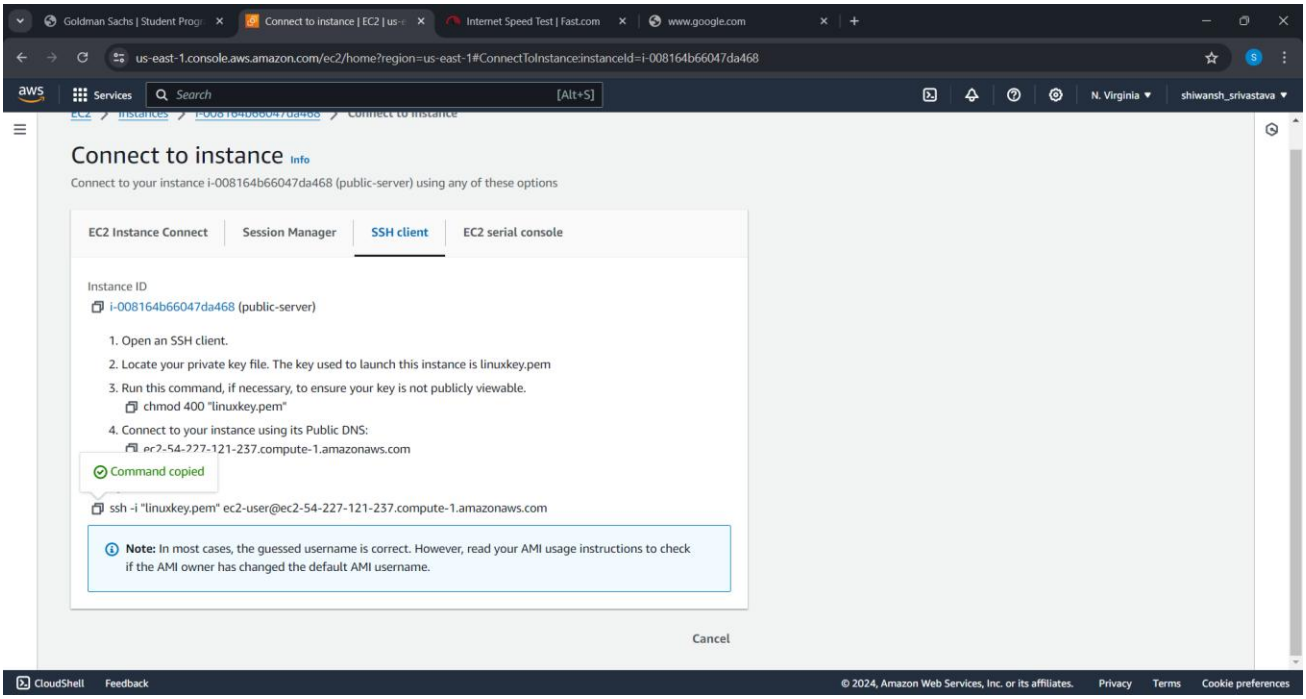


Creating a Public Instance

- Search EC2.
- Click on launch instance.



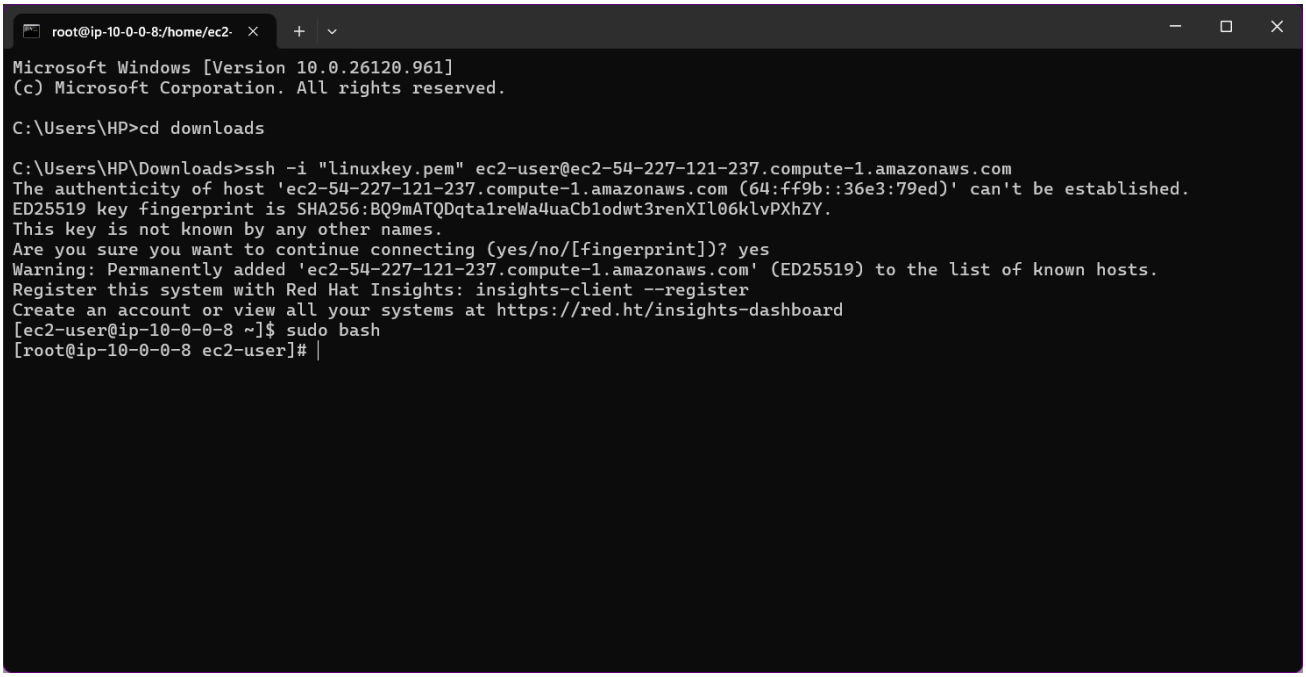
- Choose Linux OS.
- Select a key pair.
- In network configuration choose your project VPC and public subnet.
- Enable auto assign IP.
- And launch instance.
- Now click on connect instance.
- And choose SSH client.



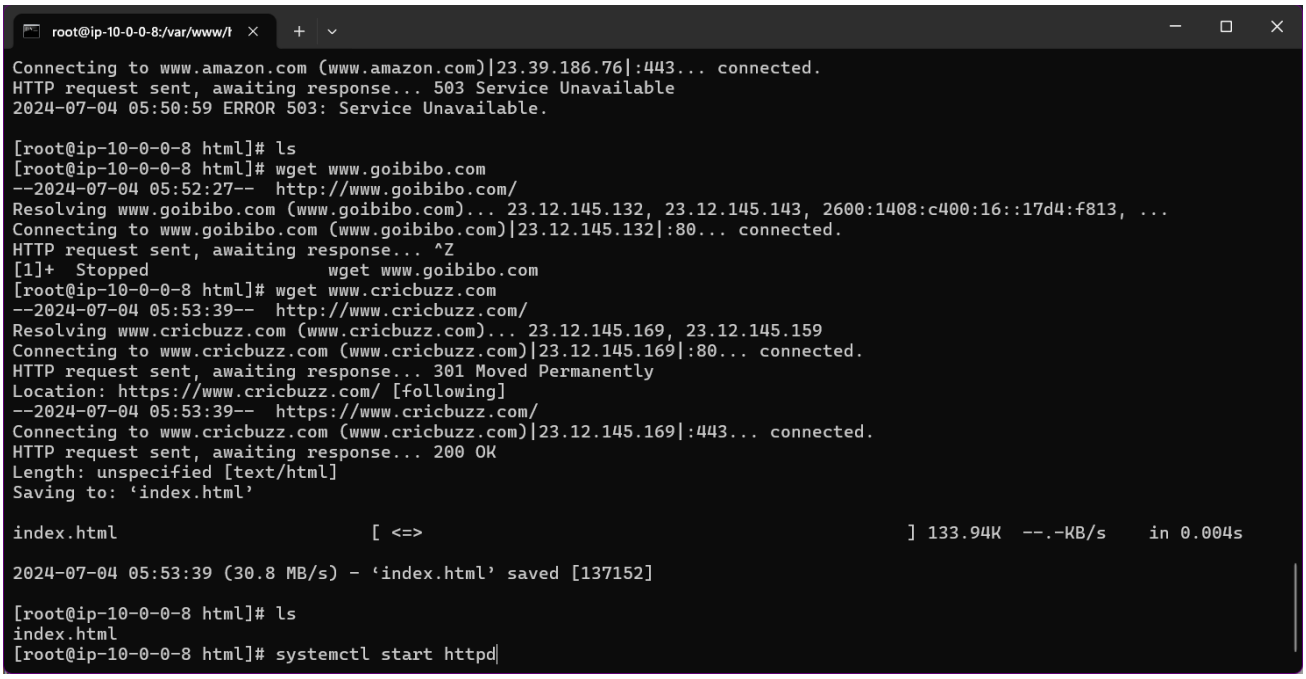
- Copy the last command shown in the above image.
- Now open your systems terminal and write the following commands:

1. cd downloads
2. paste the copied command
3. yes
4. sudo bash

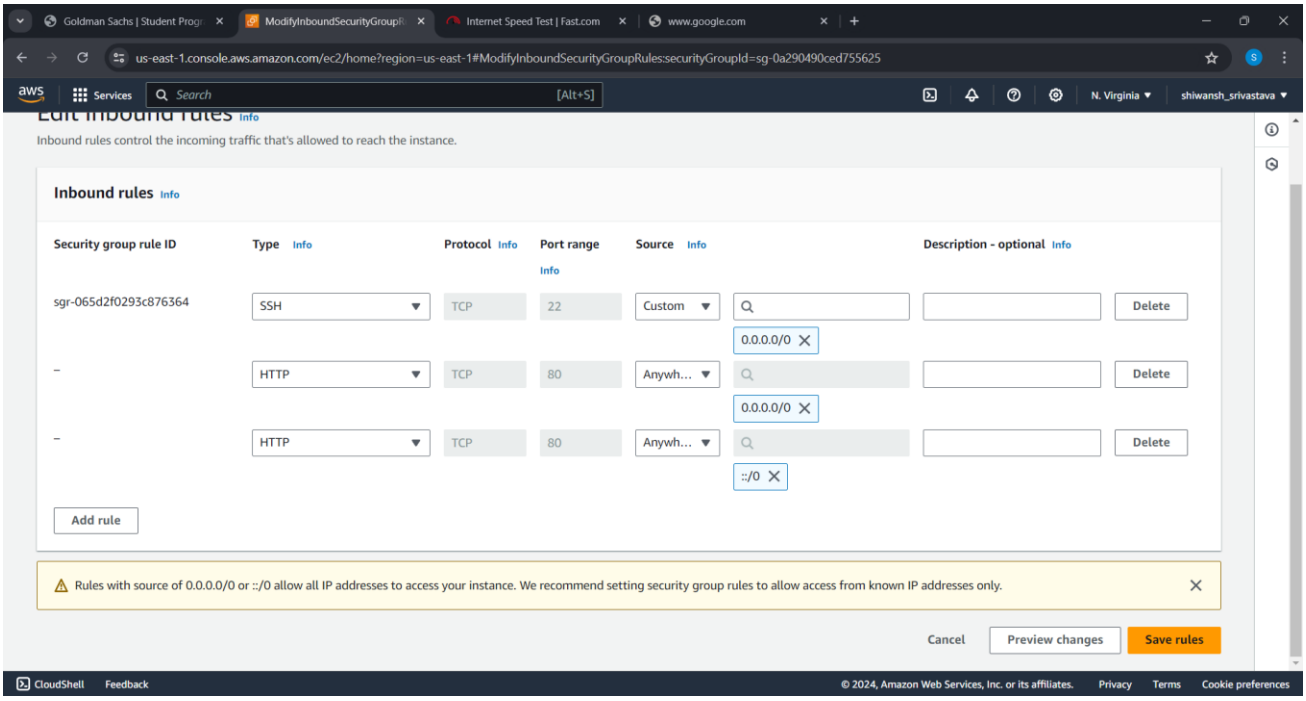
- Now you are in your instance.



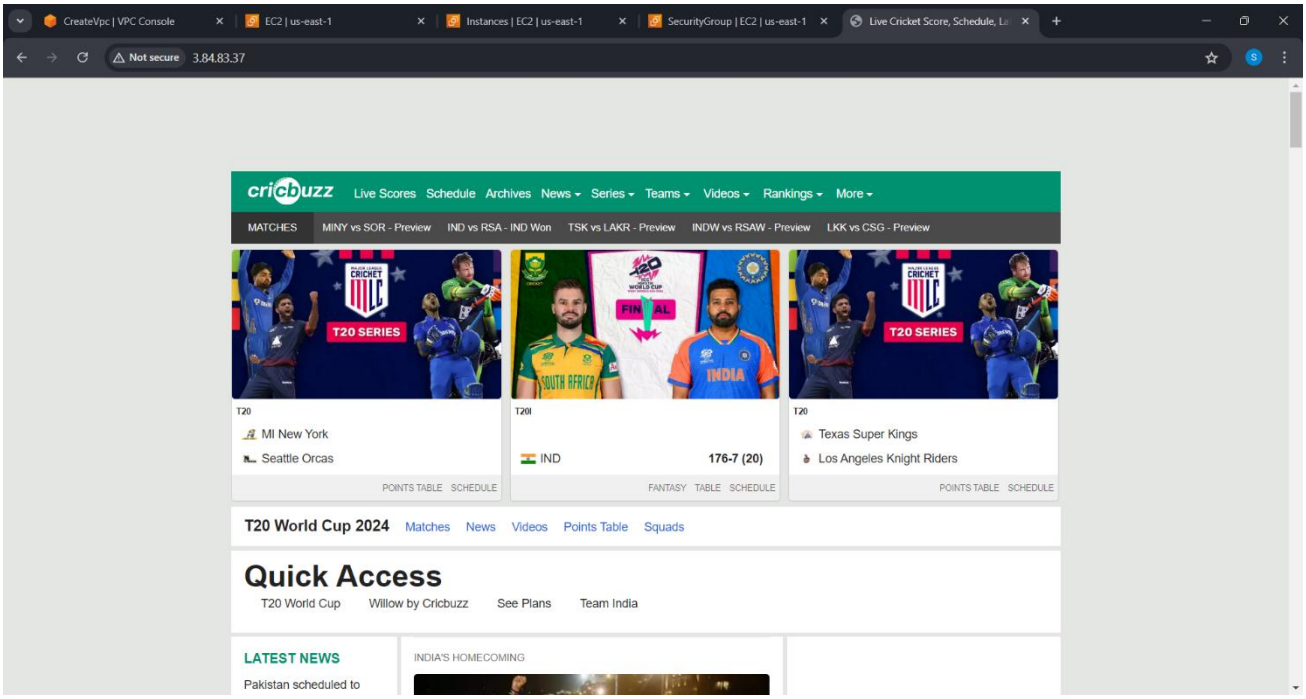
- Now enter the following commands for instance configuration: yum install httpd -y; yum install wget* -y; cd /var/www/html; wget www.cricbuzz.com;systemctl start httpd



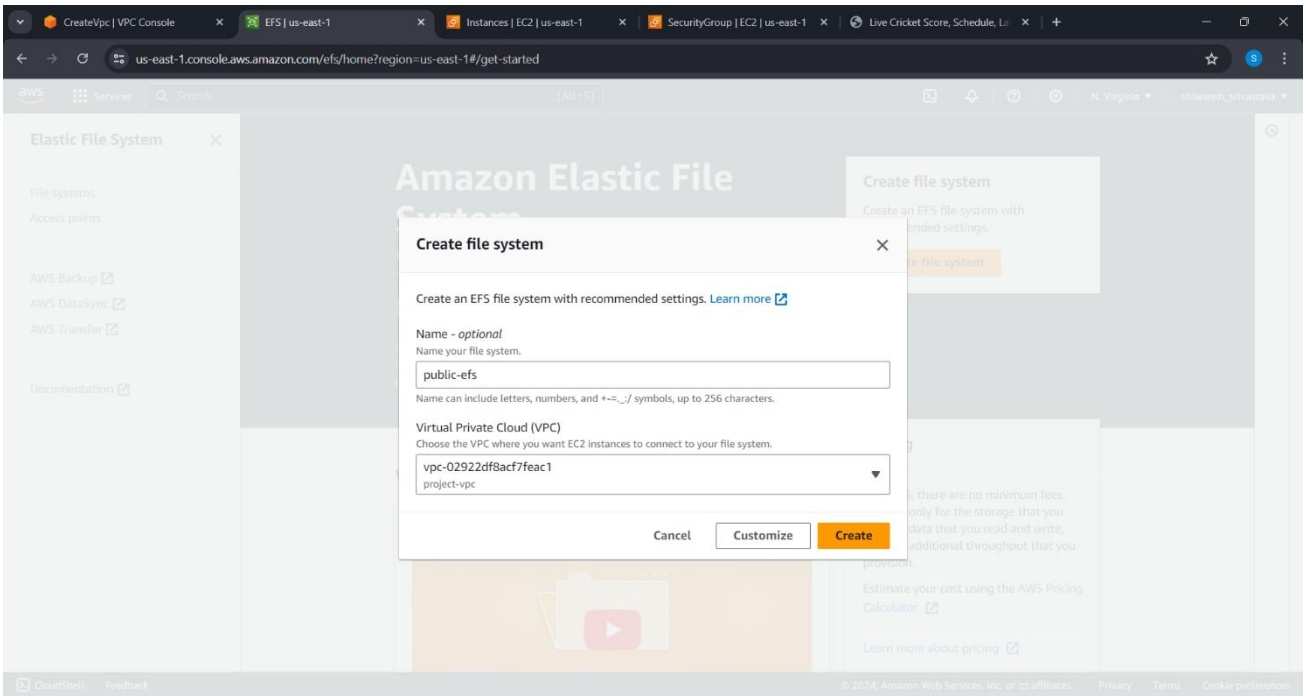
- Now go you AWS console and open your instance security group.
- There add new inbound rules for HTTP for all IPv4 and IPv6.



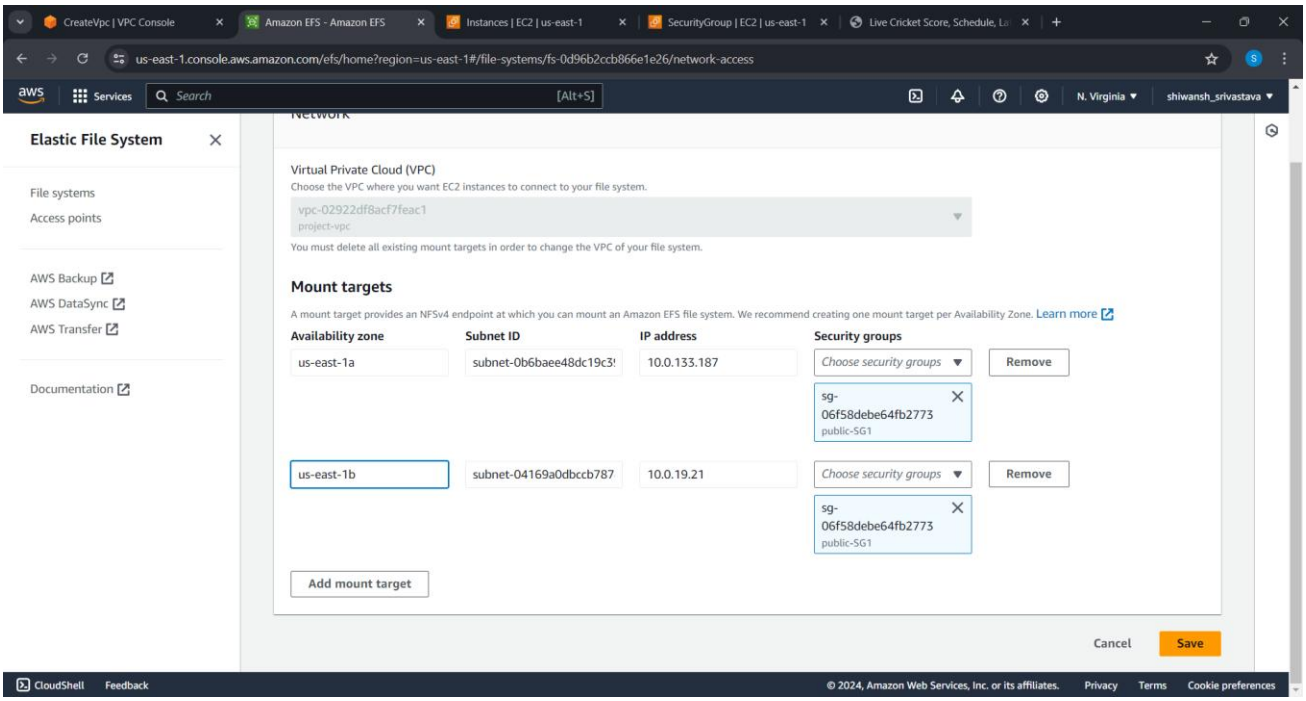
- Now copy the public address of you instance and check whether your website is working properly or not.



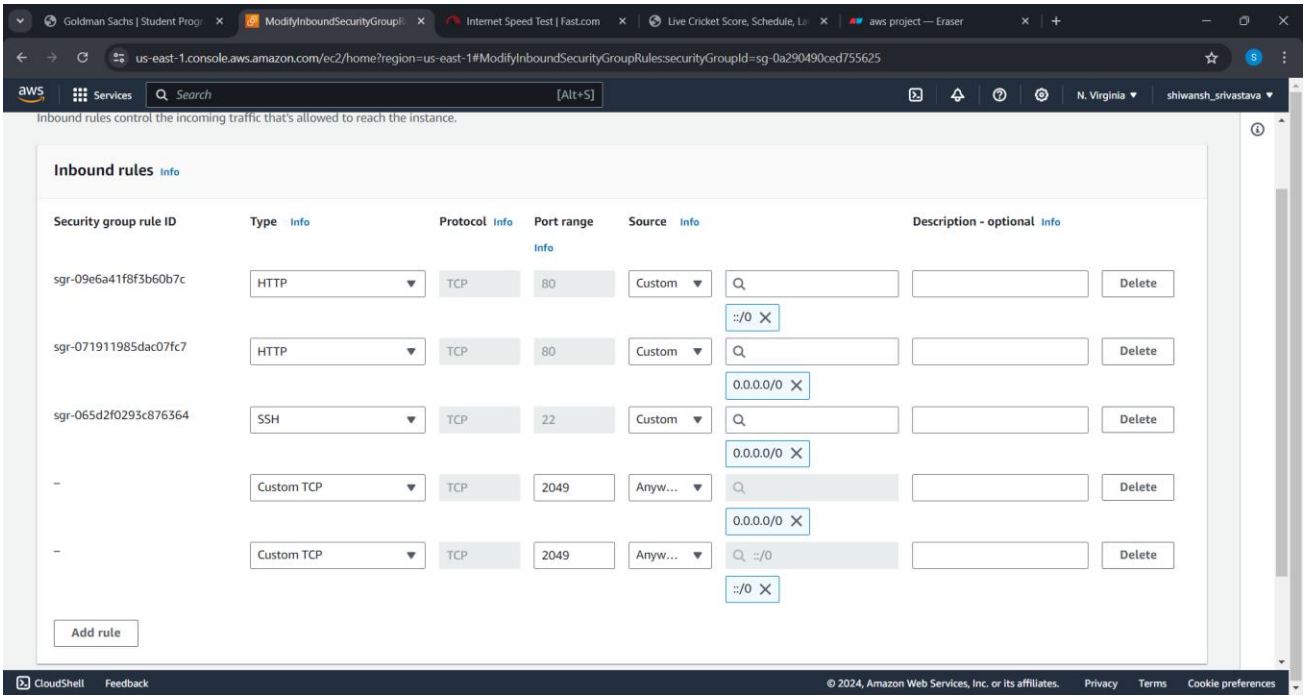
- Now you have to connect EFS to your instance.
- Search EFS and click on create



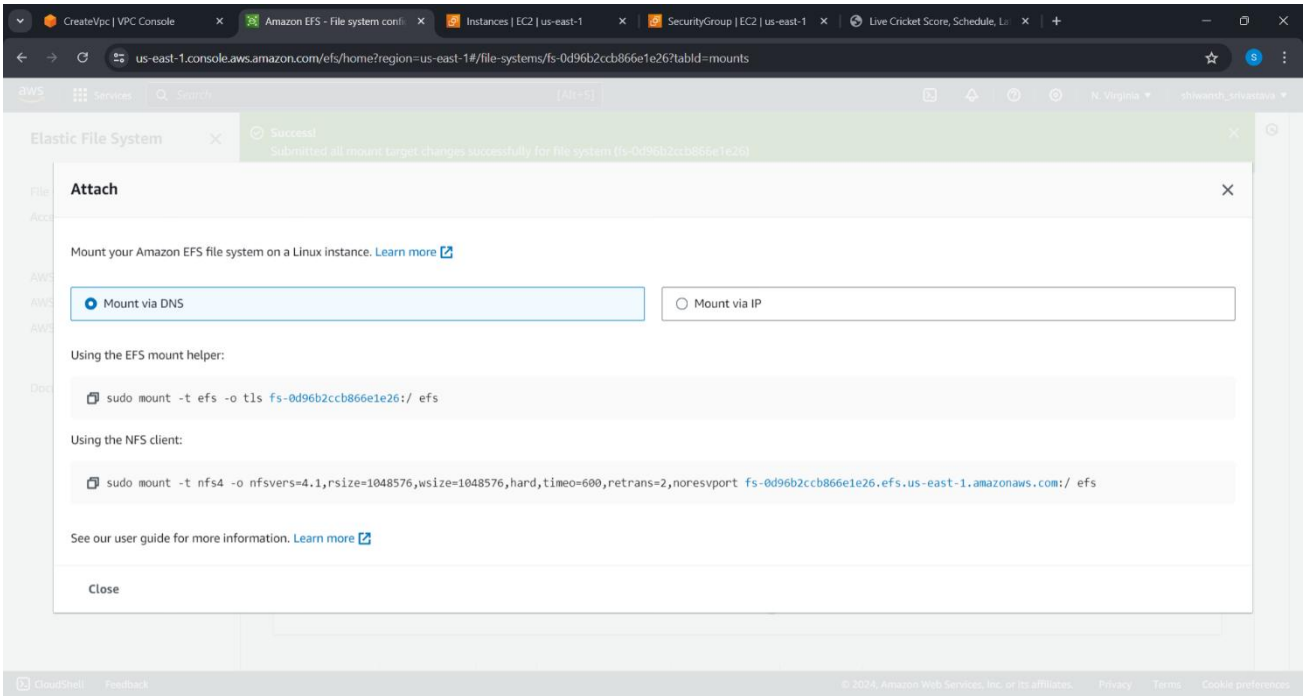
- Choose your project VPC while creating it.
- After creating efs in their network add your instance secruity group instead of default security group.



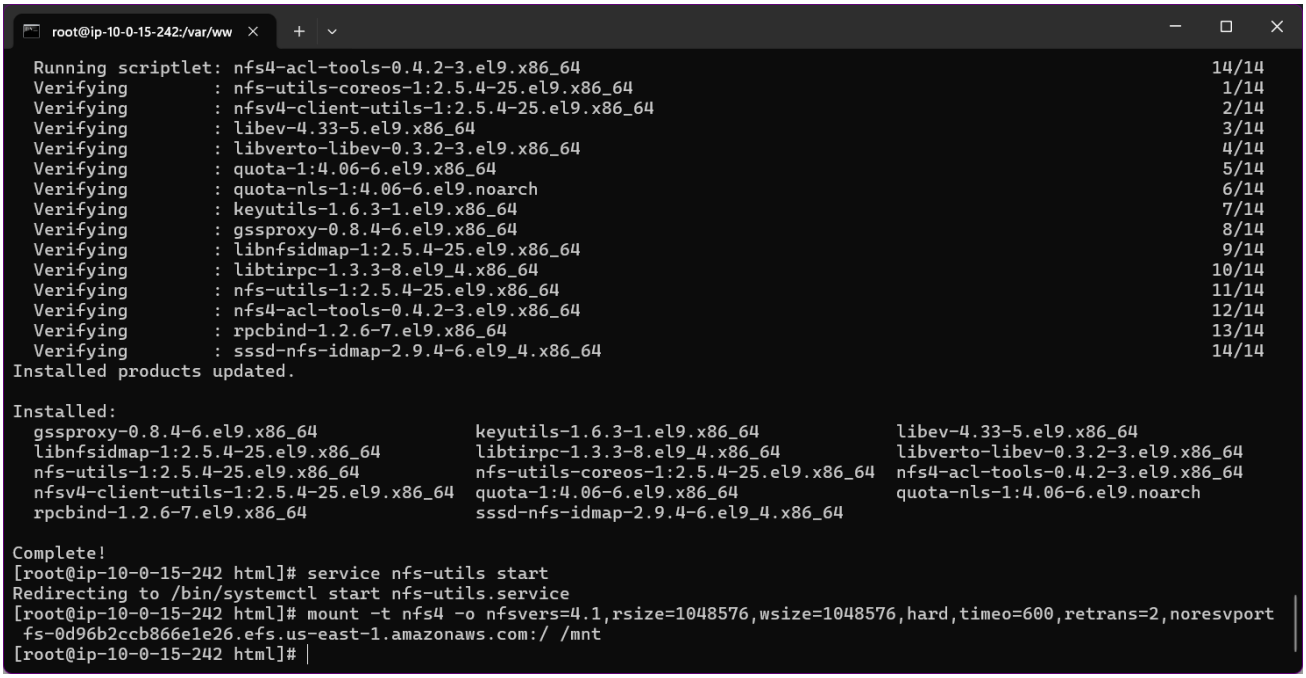
- Now add new inbound rule in your security group for port 2049 for all IPv4 and IPv6.



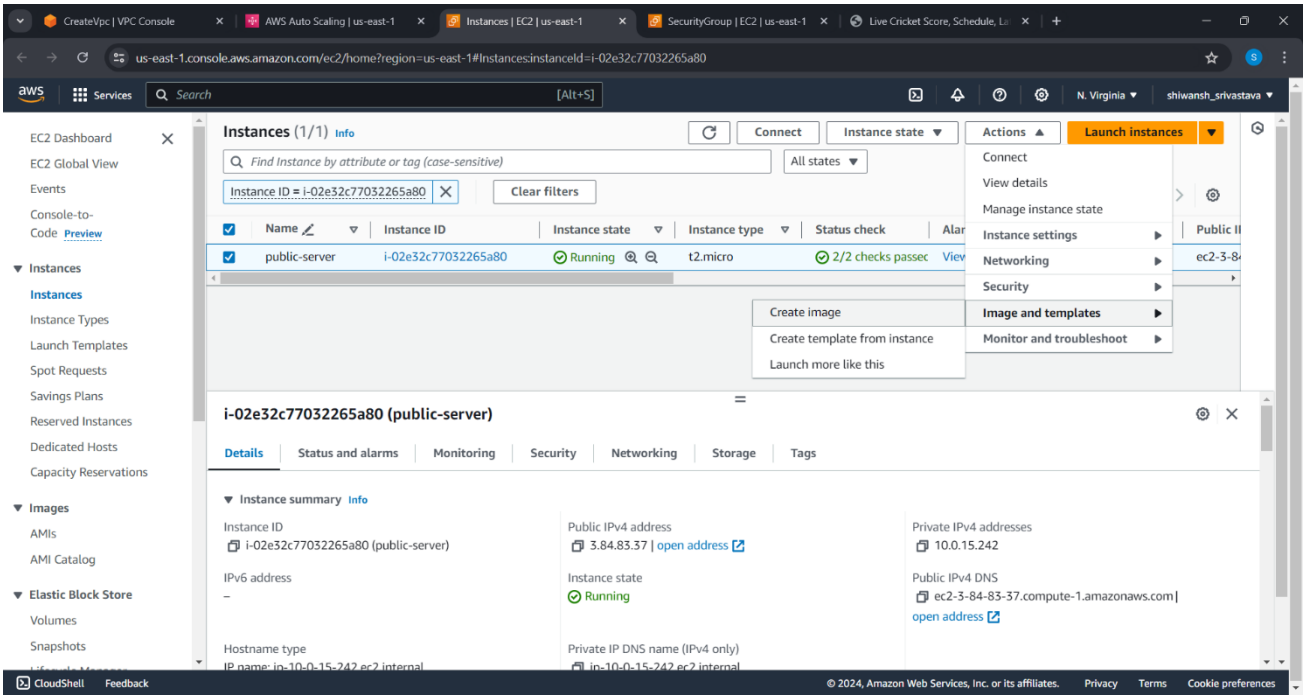
- Now open your efs and click on attach and copy the NFS client command.



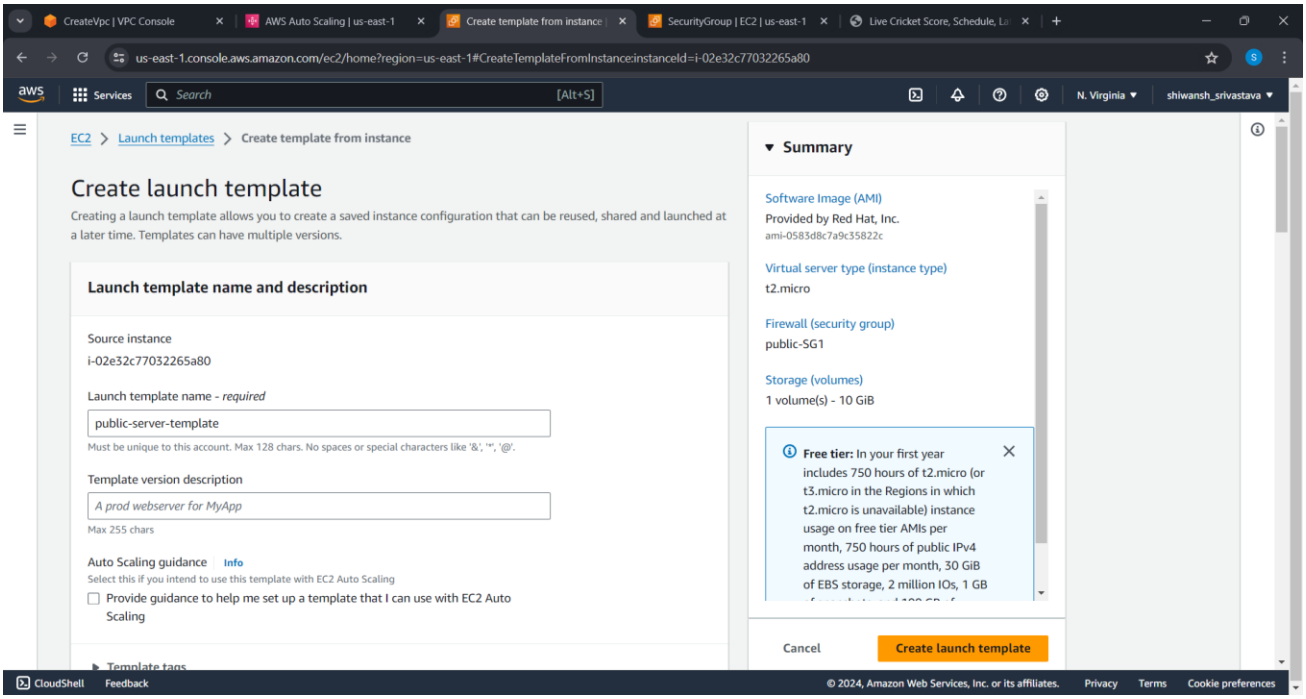
- Now go to your instance terminal and write the commands: yum install nfs* -y;service nfs- utils start; paste the command and remove sudo from start and in end instead of efs write /mnt
- To auto install all the services in boot situation write: systemctl httpd on



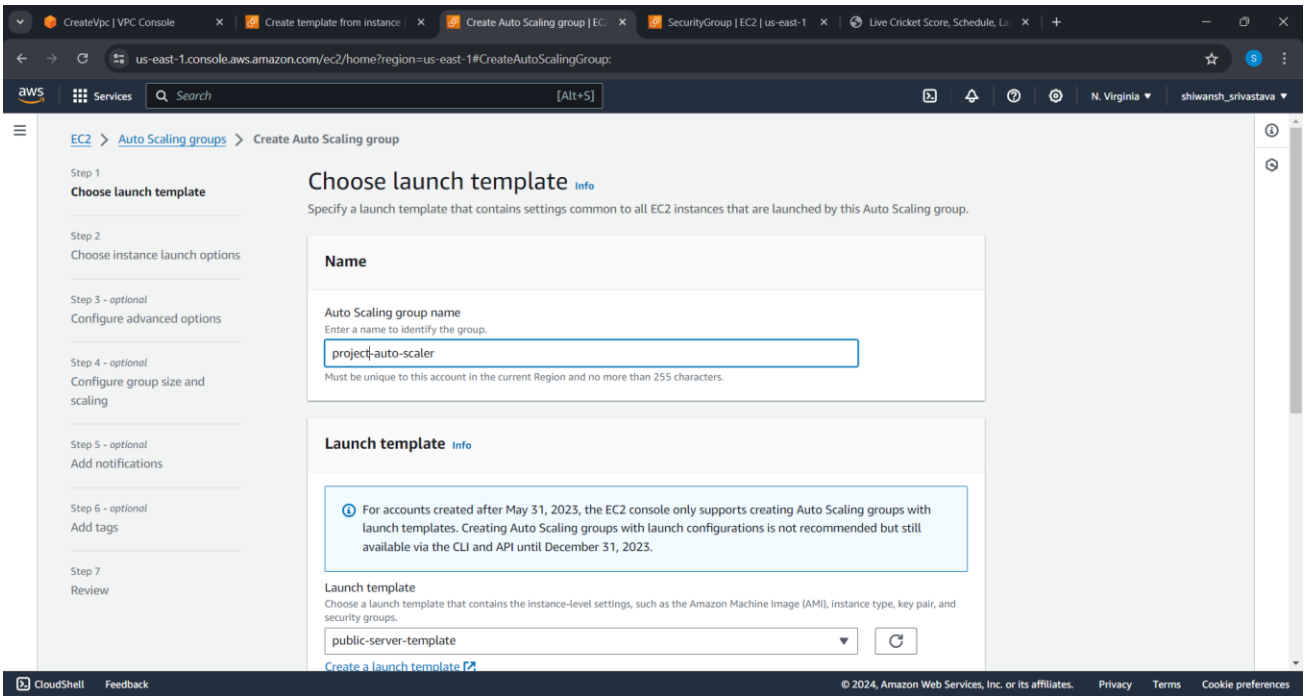
- Now to create and auto scaler for our public instance create an image of the instance first.



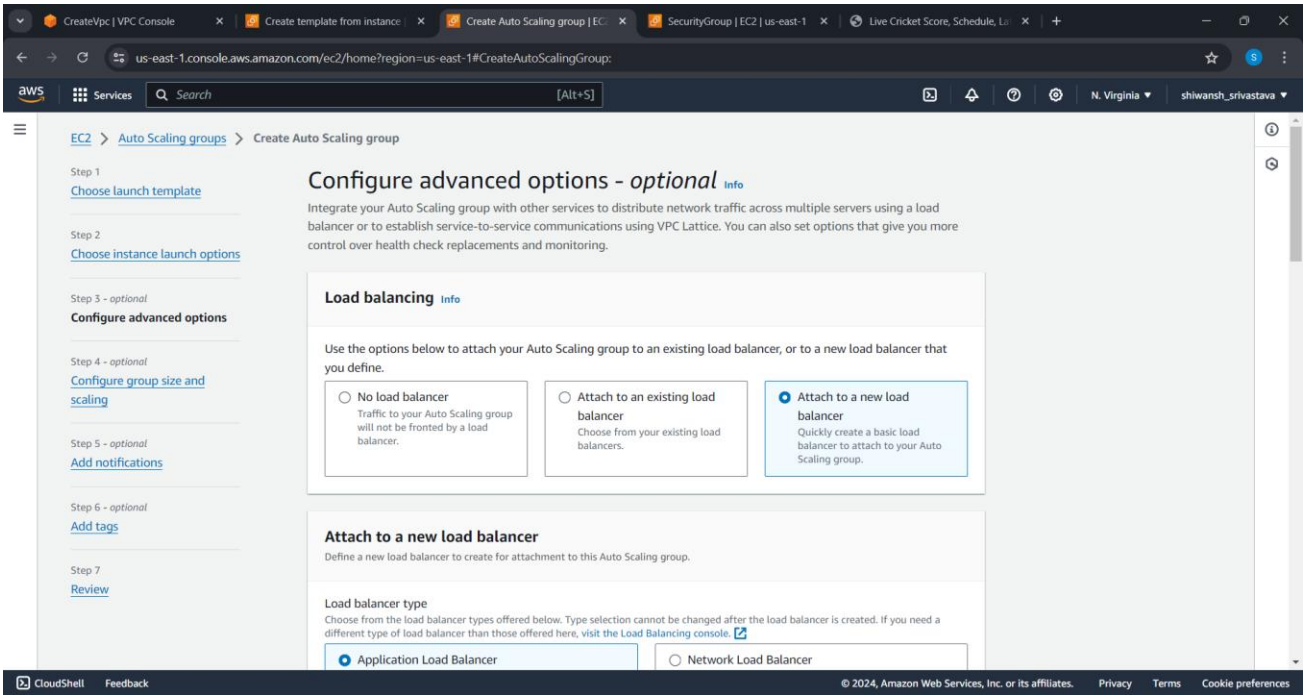
- Now create launch template.



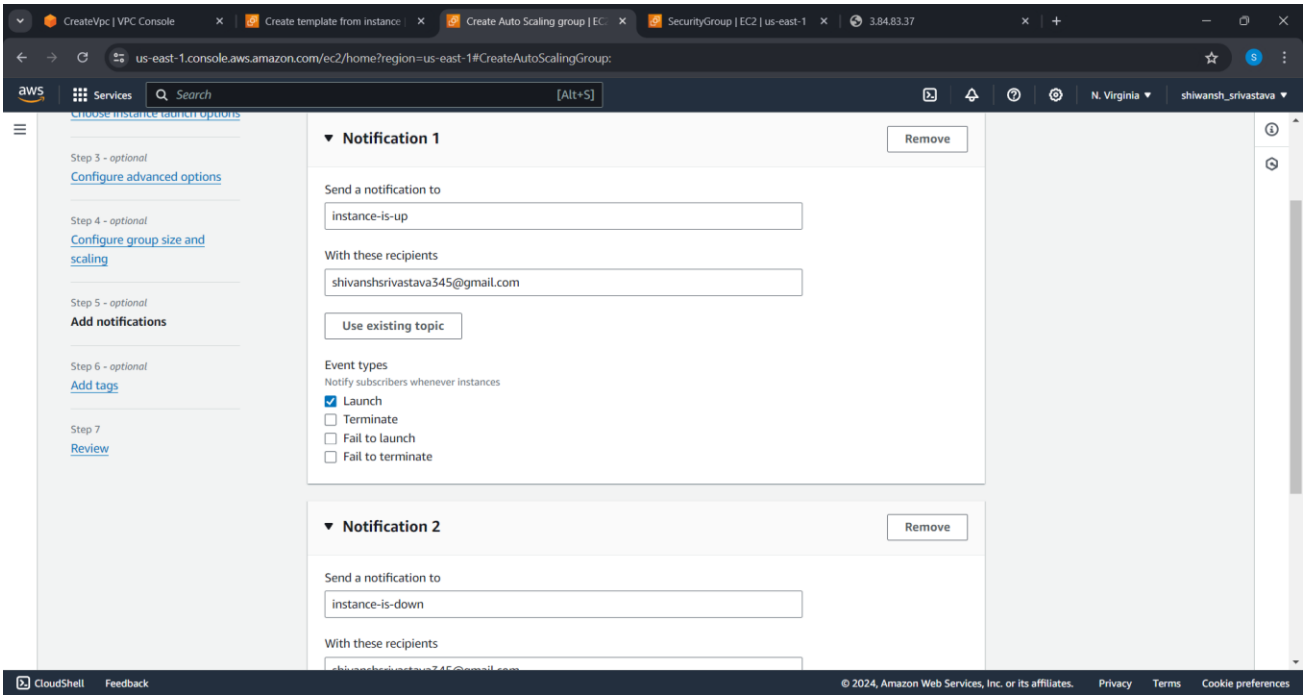
- Now search auto scaler and click on create.
- Give a name to your auto scaler.
- Choose your created launch template



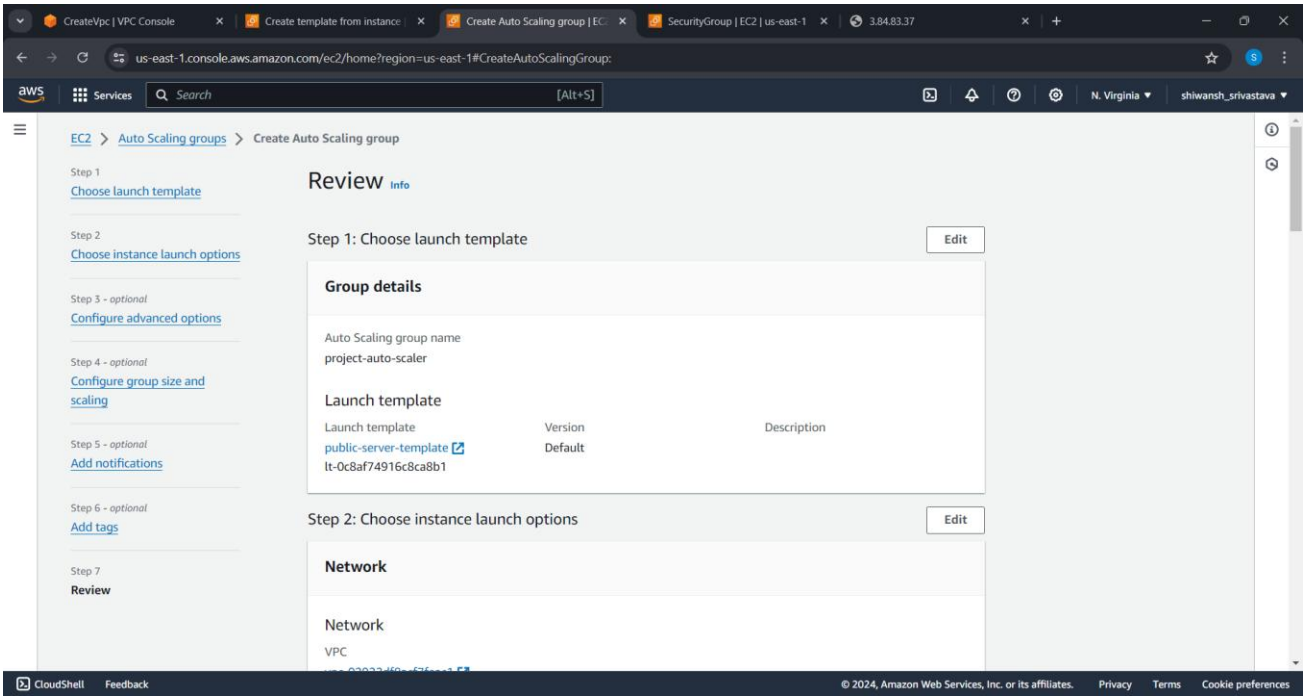
- Now create a new load balancer.



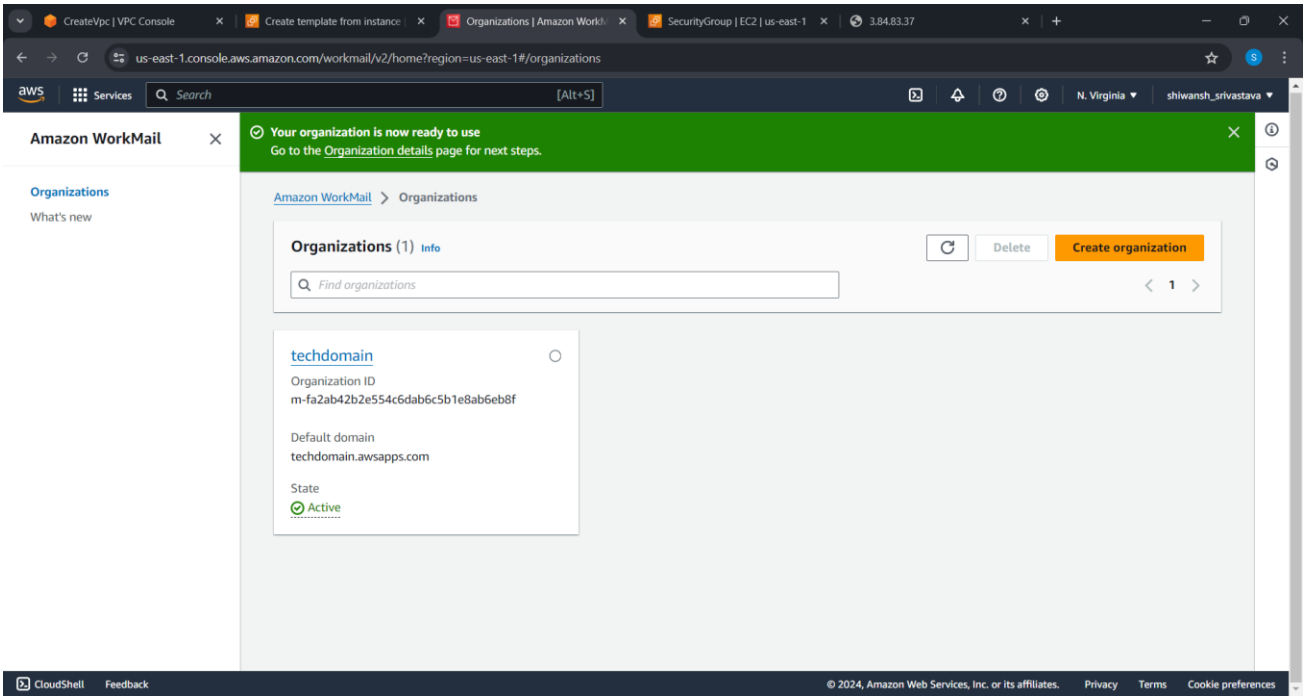
- Set the max capacity up to 10.
- Choose tracking scaling policies.
- Set average CPU utilization percentage to 50 and instance warmup time to 10.
- Add notifications to get an update whenever your instance is up or terminated.



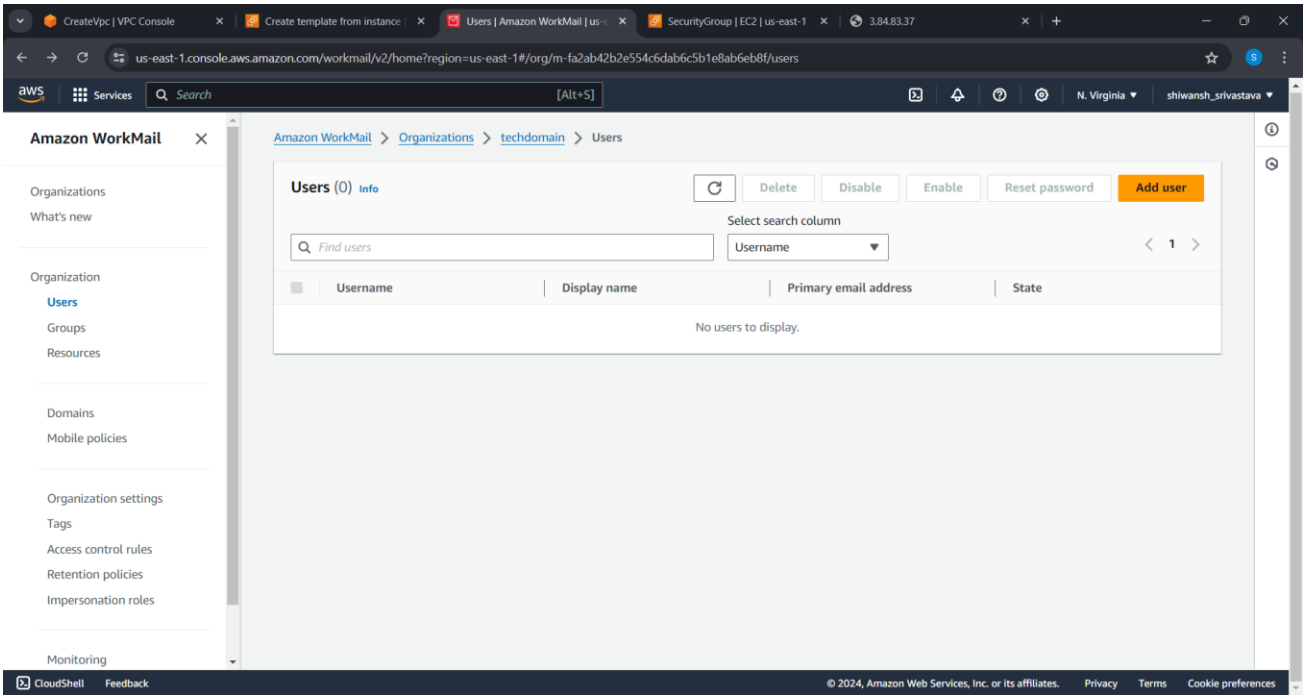
- Now take a review of all configurations and create.



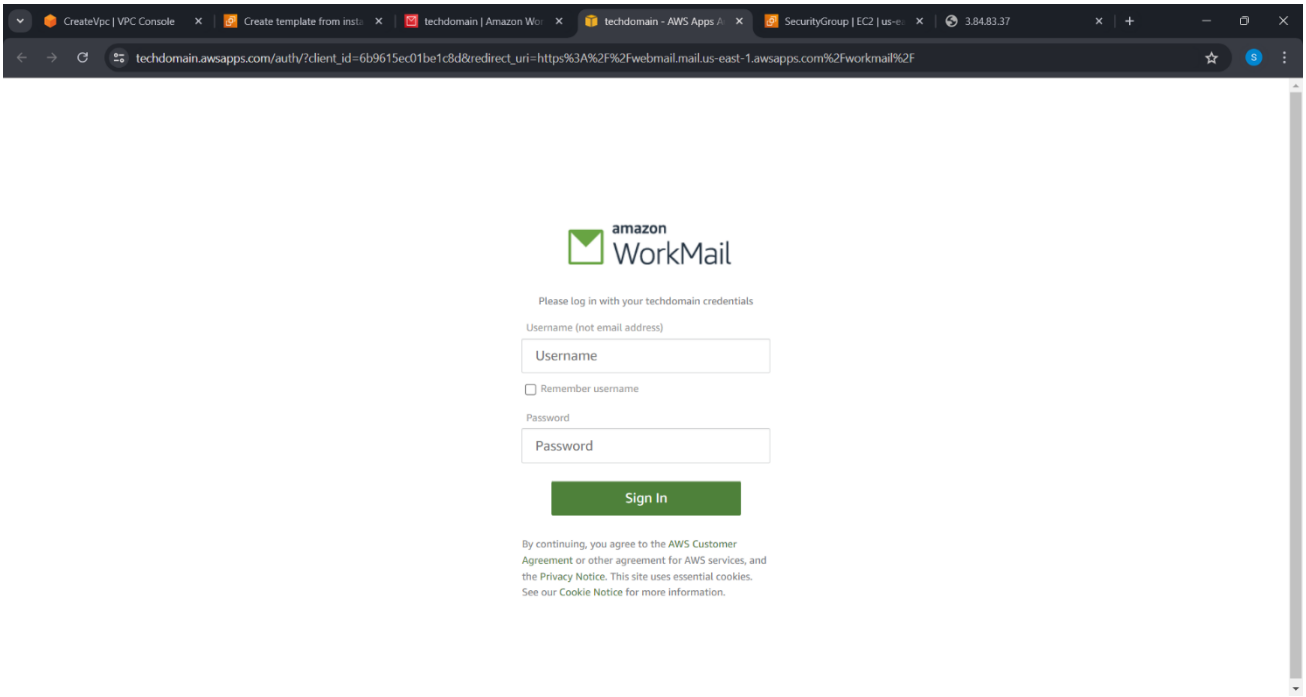
- Now we must attach the workmail for our organization.
- Search workmail and click on create
- Choose your organization domain and create.



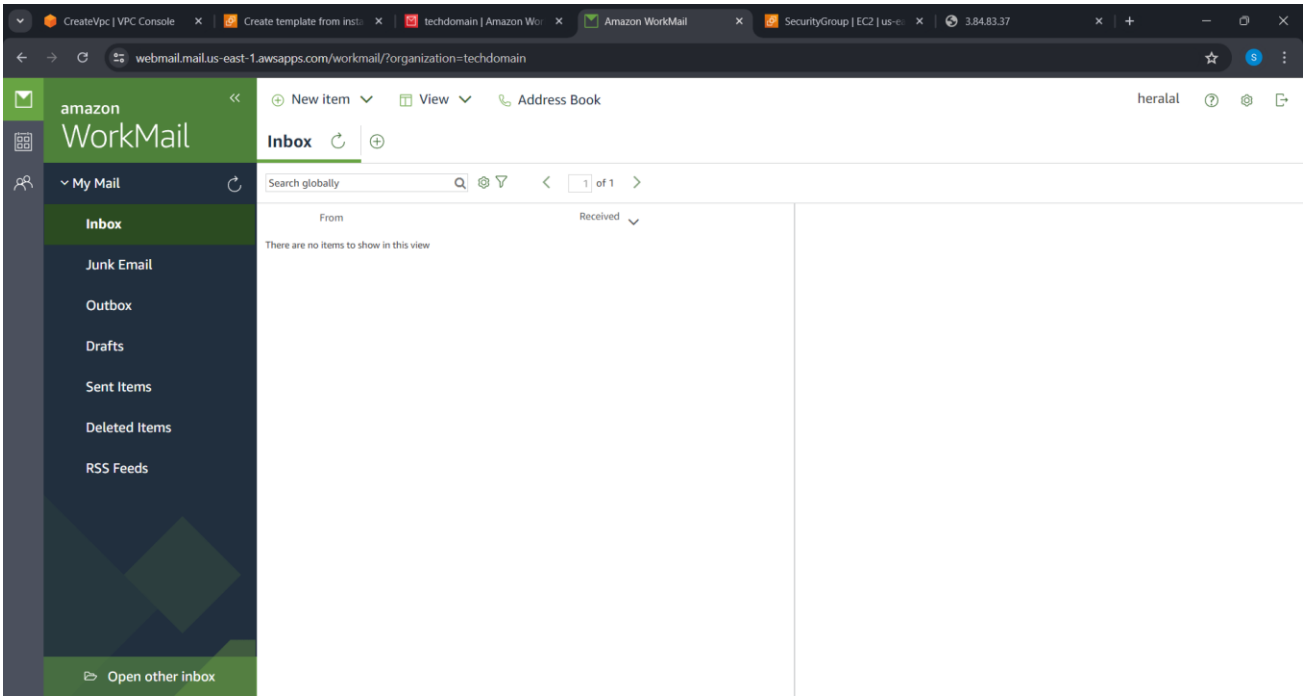
- Now add some users to your organization.



- Now open your organization and click on amazon mail web application link.



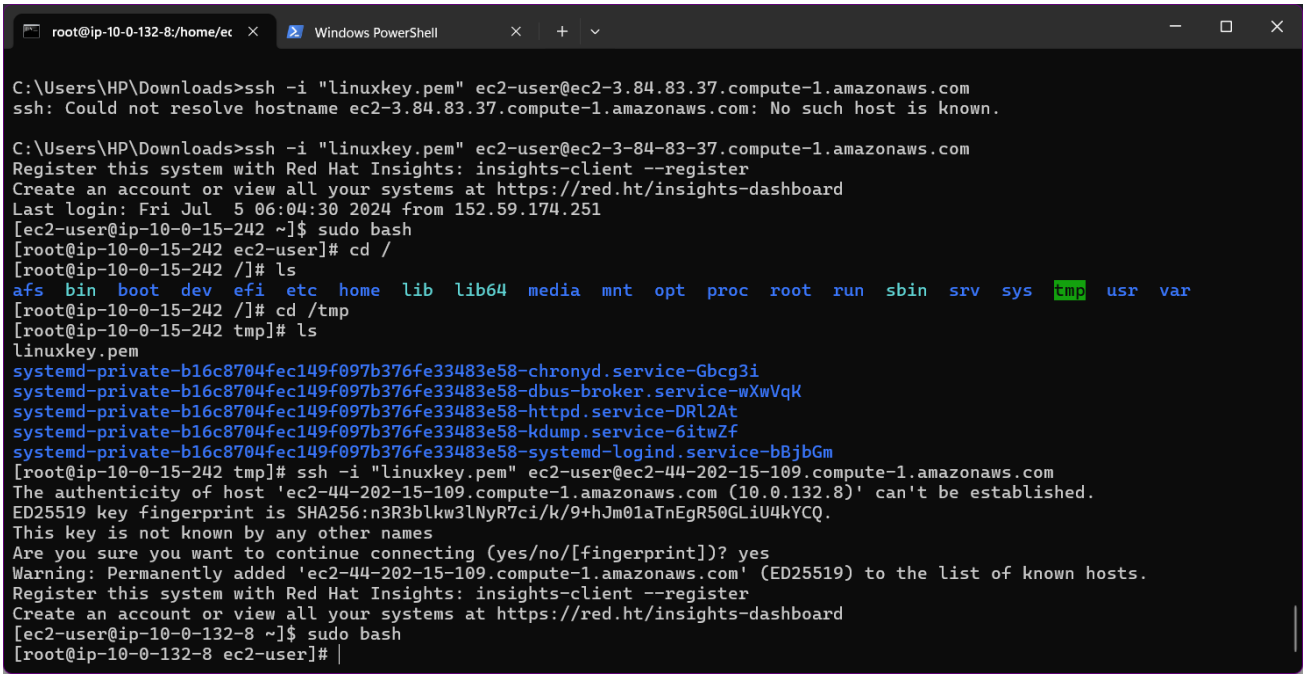
- You can check your mail services by login as a user.
- You can choose any user details to check your mail services.



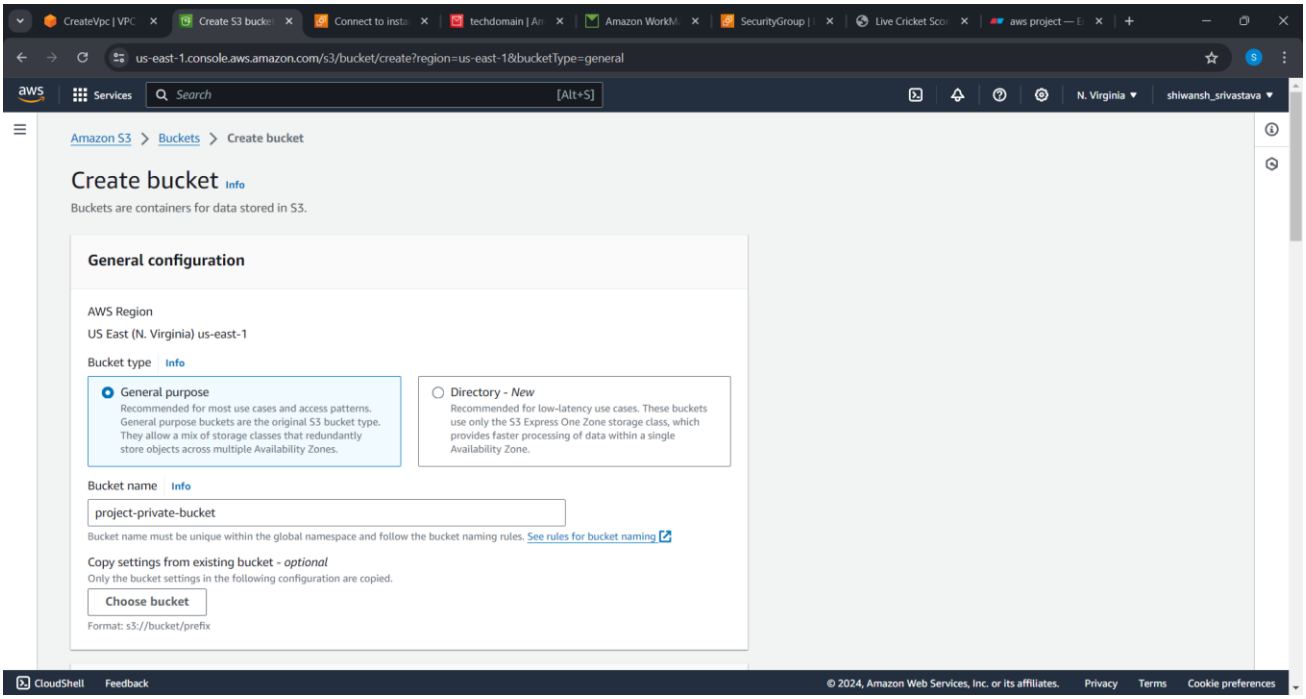
Creating Private Instance

- Now launch a private instance with same configuration of public instance just in subnets choose private subnet of same availability zone.
- Since this instance is on private network it can’t be accessed directly through internet.
- You first need to upload your keypair to your public instance from your computer.
- Write following commands in your device’s terminal: cd downloads; scp -i .\linuxkey.pem .\linuxkey.pem ec2-user@3.84.83.37:/tmp
- Now open your instance terminal and write following commands:

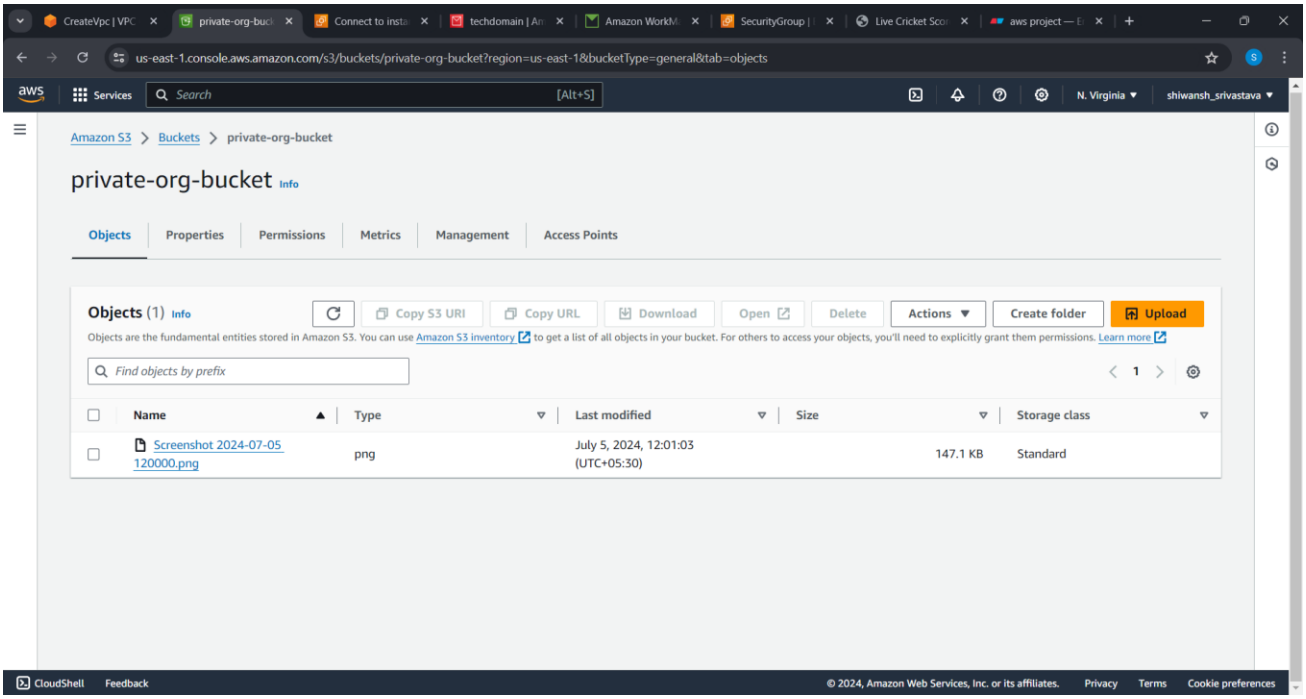
cd /tmp; ssh -i linuxkey.pem ec2-user@44.202.15.109; yes ; sudo bash



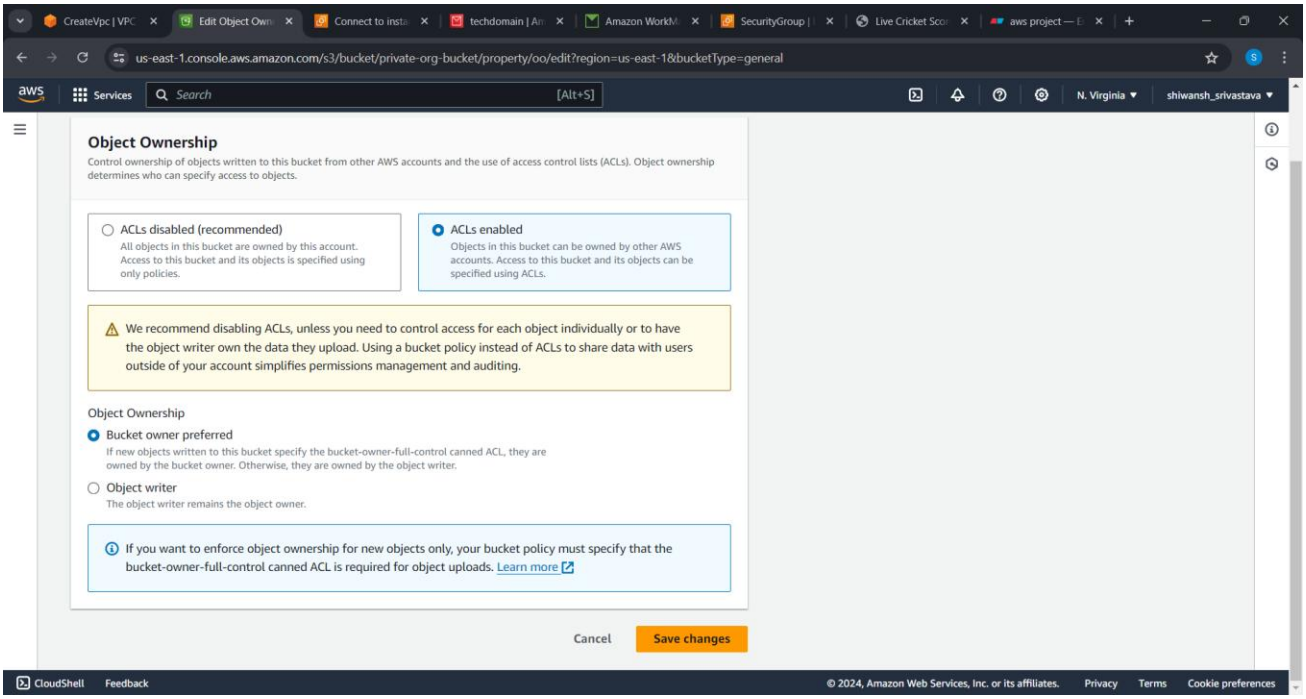
- Now we must create an S3 bucket.
- Search S3 and click on create bucket.
- Don’t enable ACLs whiles creating a bucket it can be enabled later.



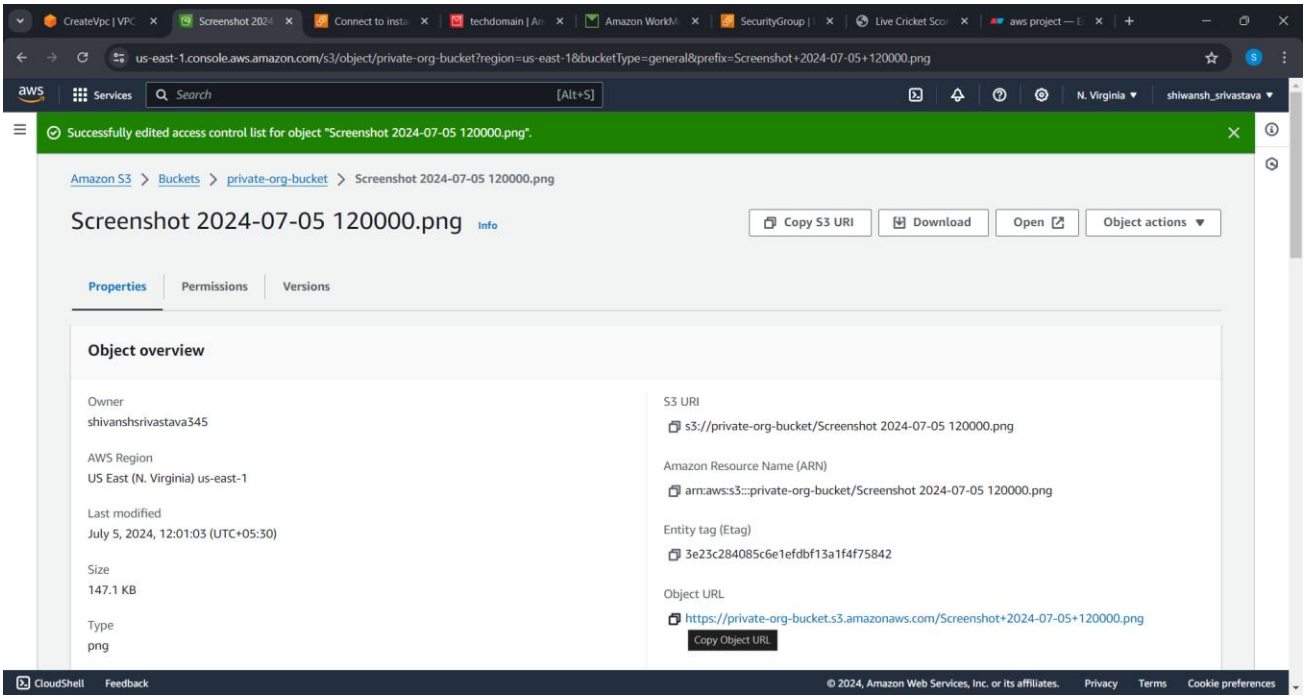
- Now upload an object in the bucket.

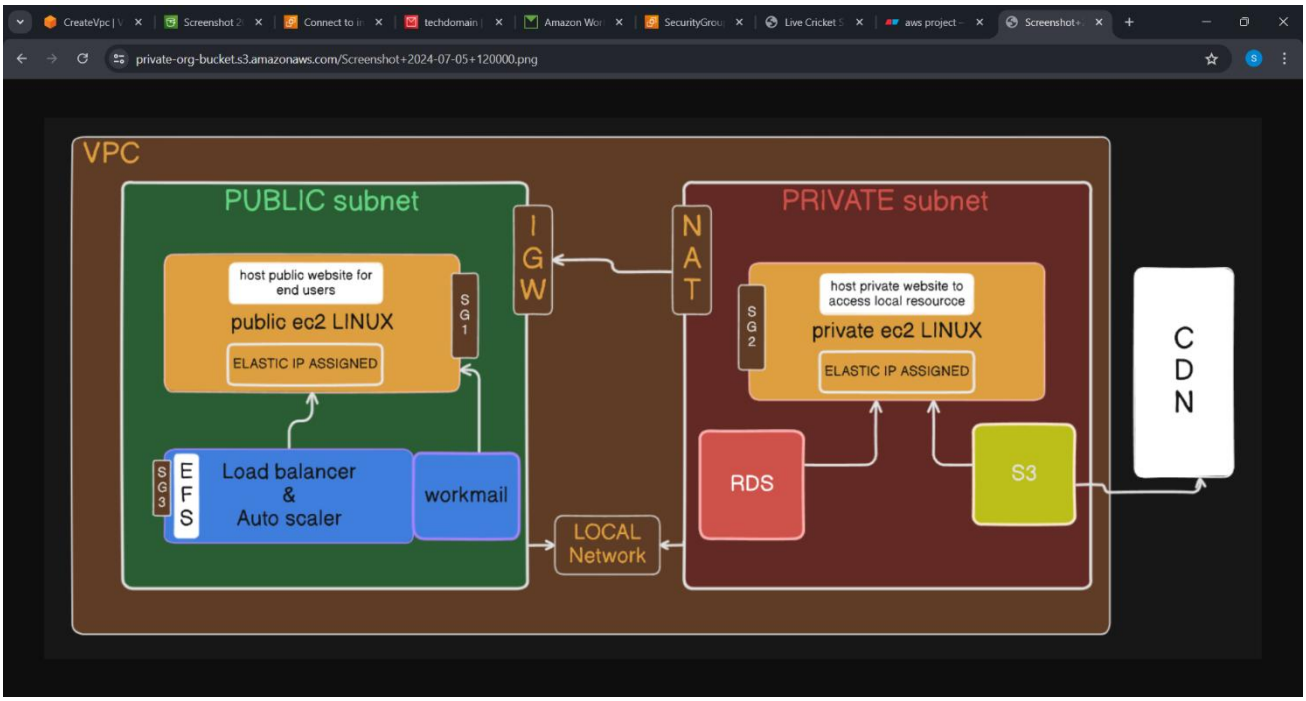


- Now inside bucket permissions enable ACLs.

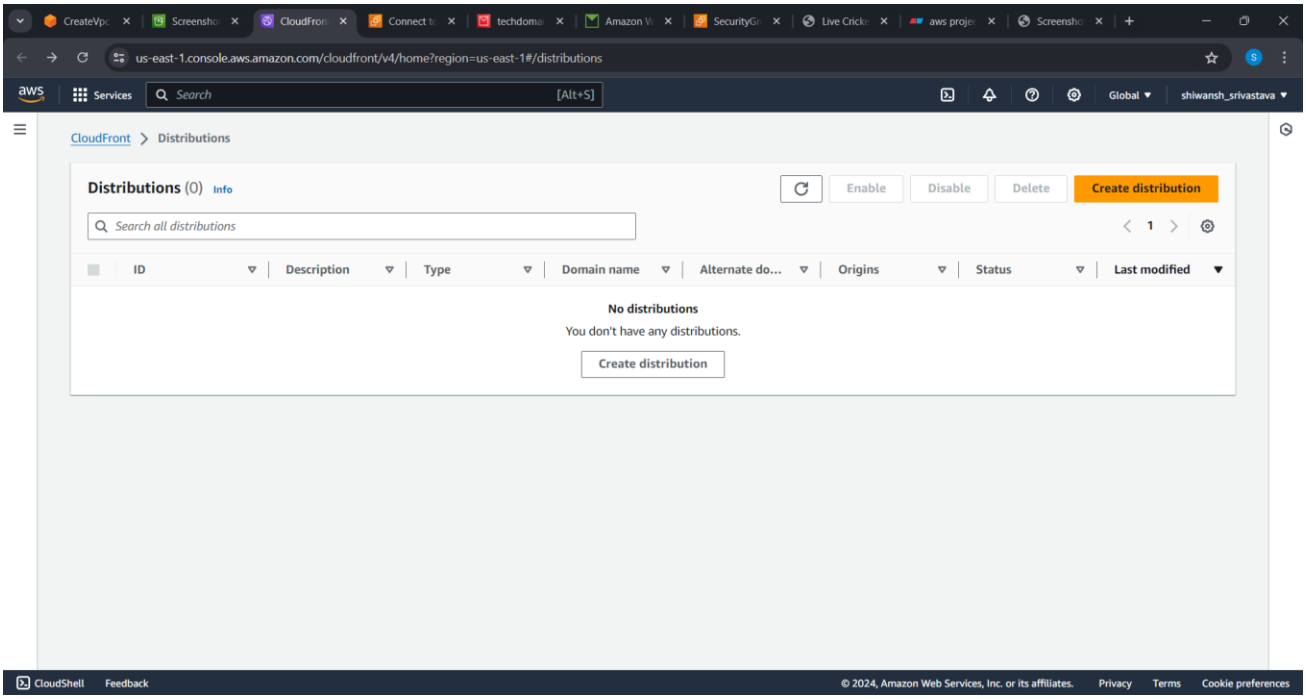


- Edit access control list of both bucket and object.
- Now open the object and copy the objects public URL to check the accessibility of the object.

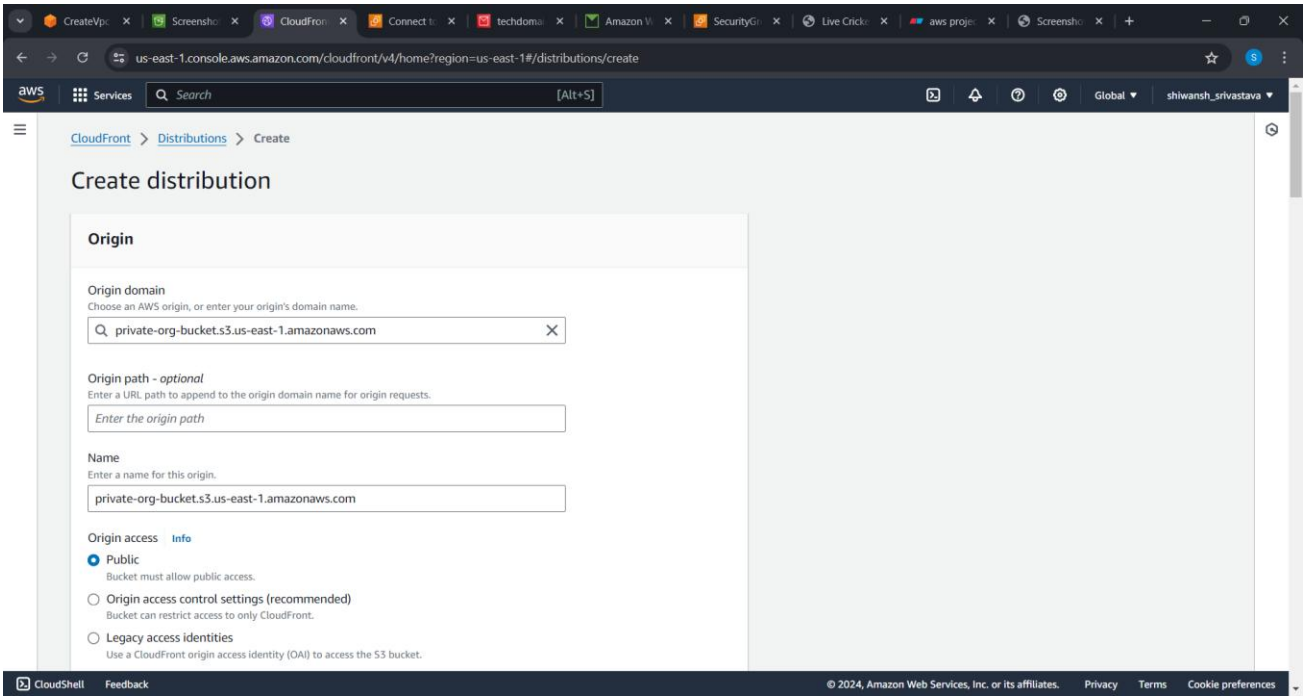




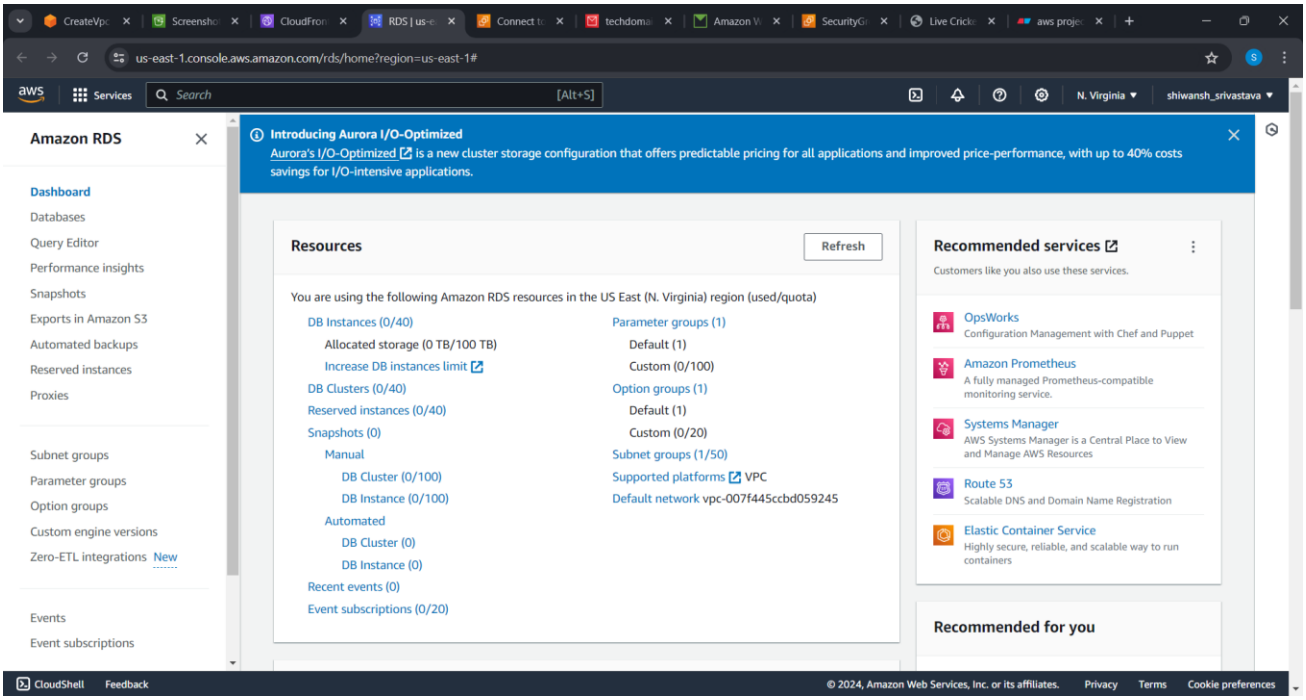
- Now create CloudFront distribution in all edge locations in world.
- Search CloudFront and click create.



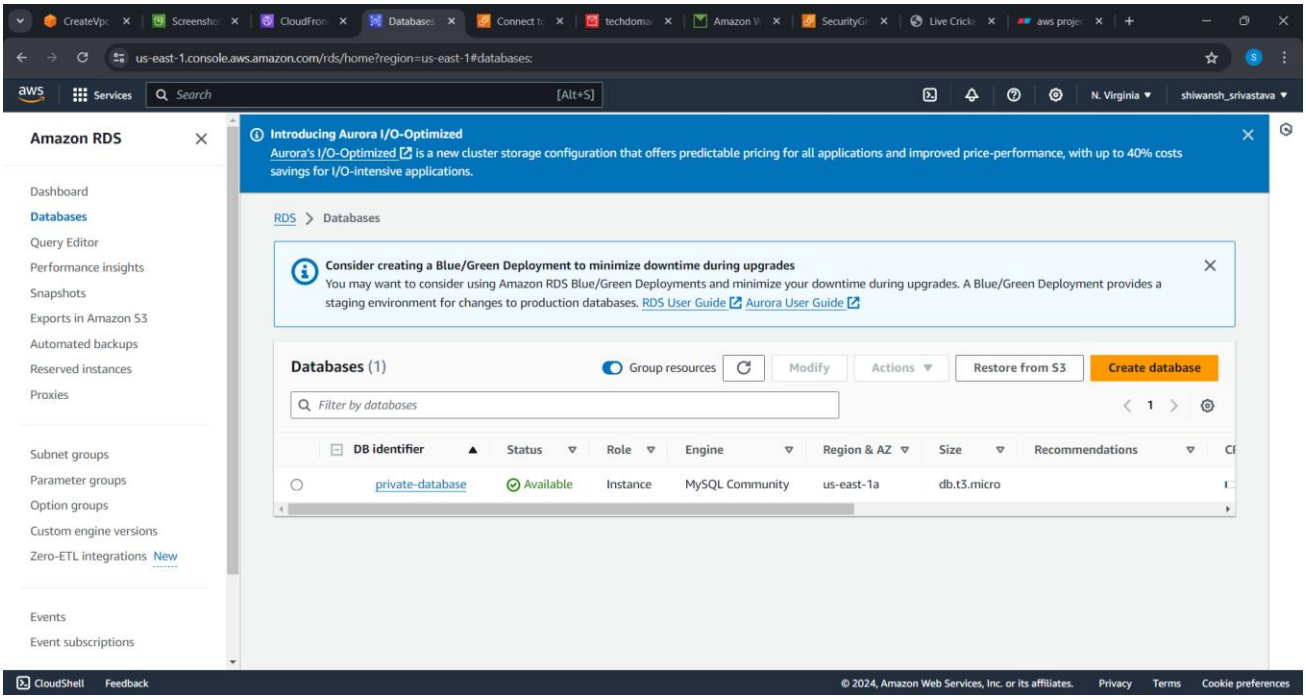
- Choose a domain and name for your distribution.
- Set origin access to public.



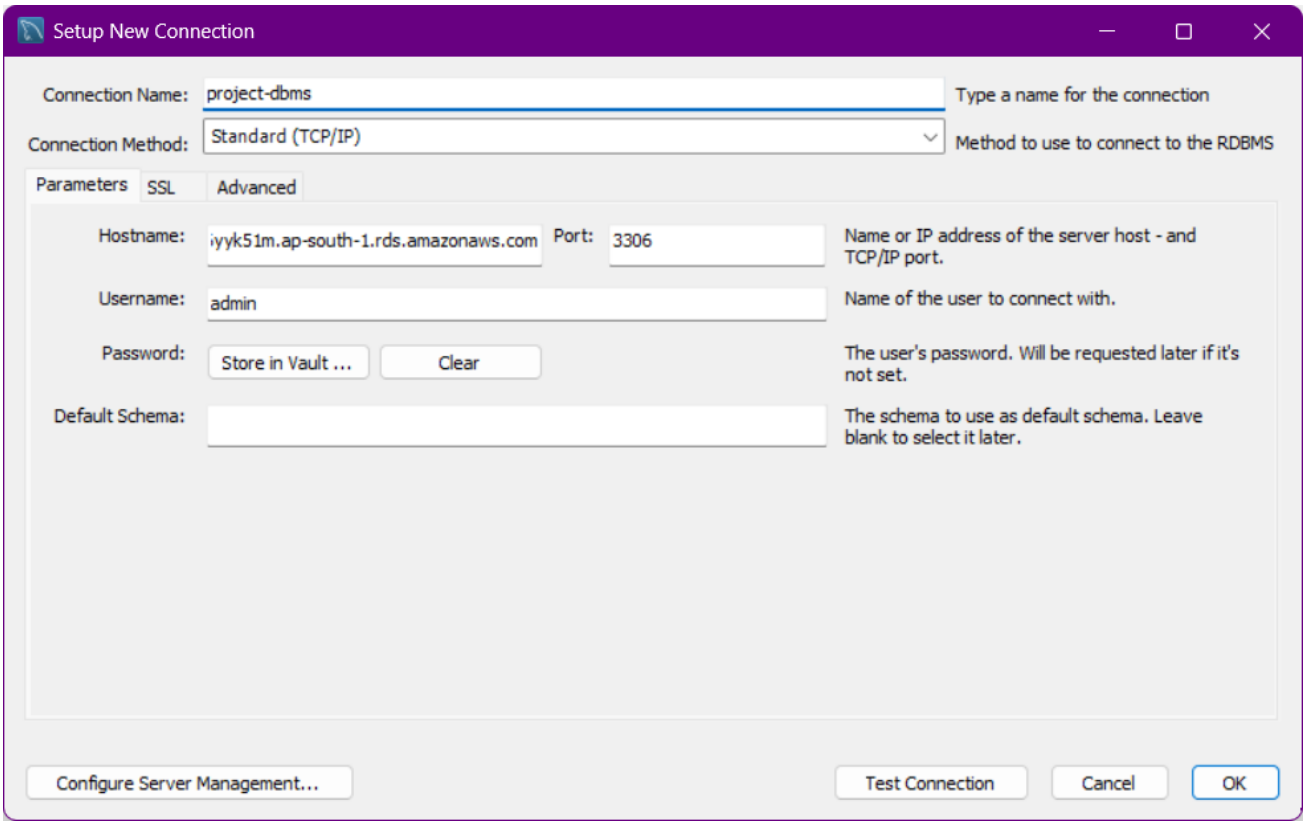
- Now we must create a database for our private networks or instance.
- Search RDS and click on create data base.



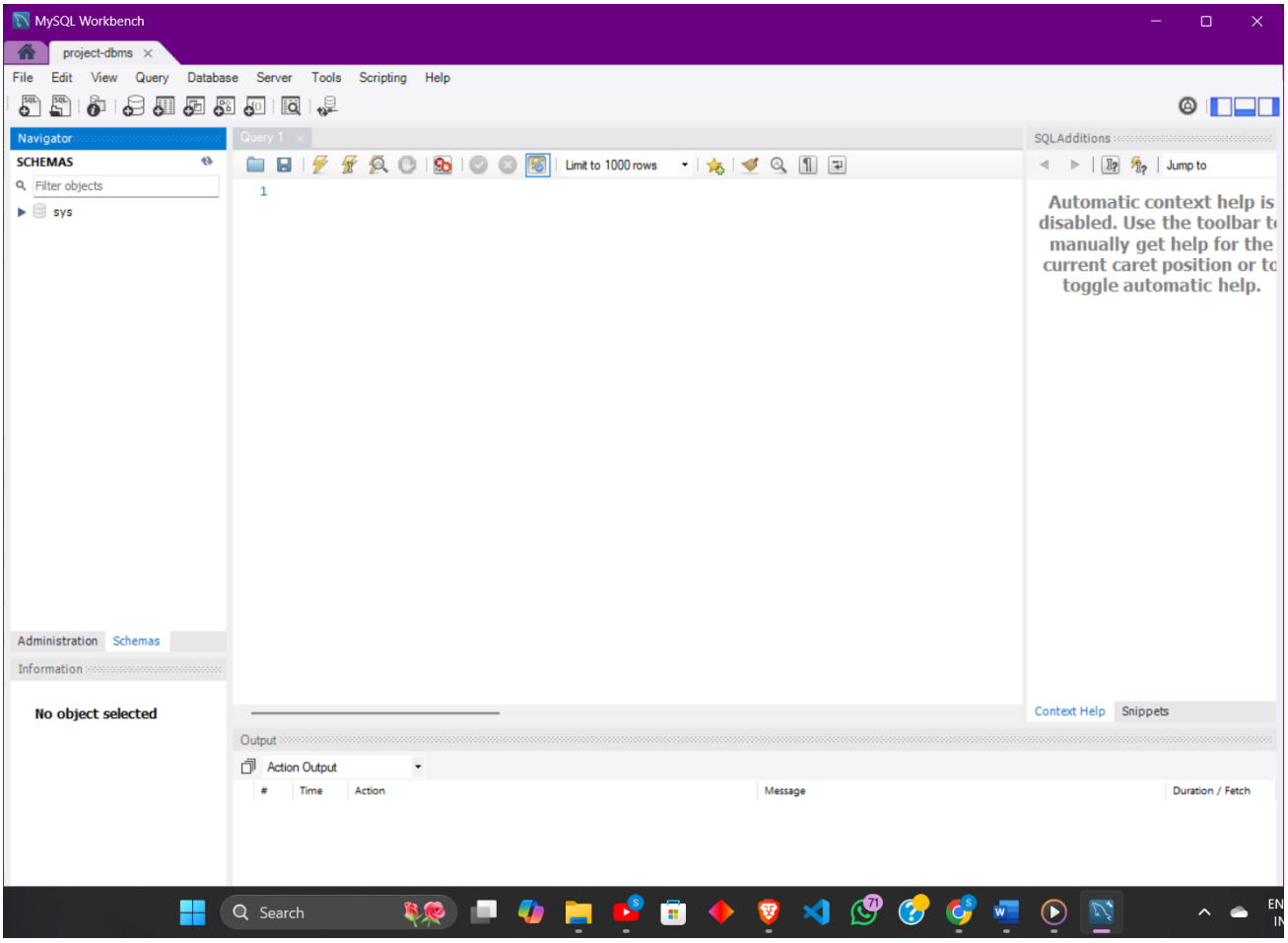
- Choose the standard settings.
- Select MySQL software and select free tier setup.
- Now create a password for your database.
- In networks section set publicly accessible.
- Create database.



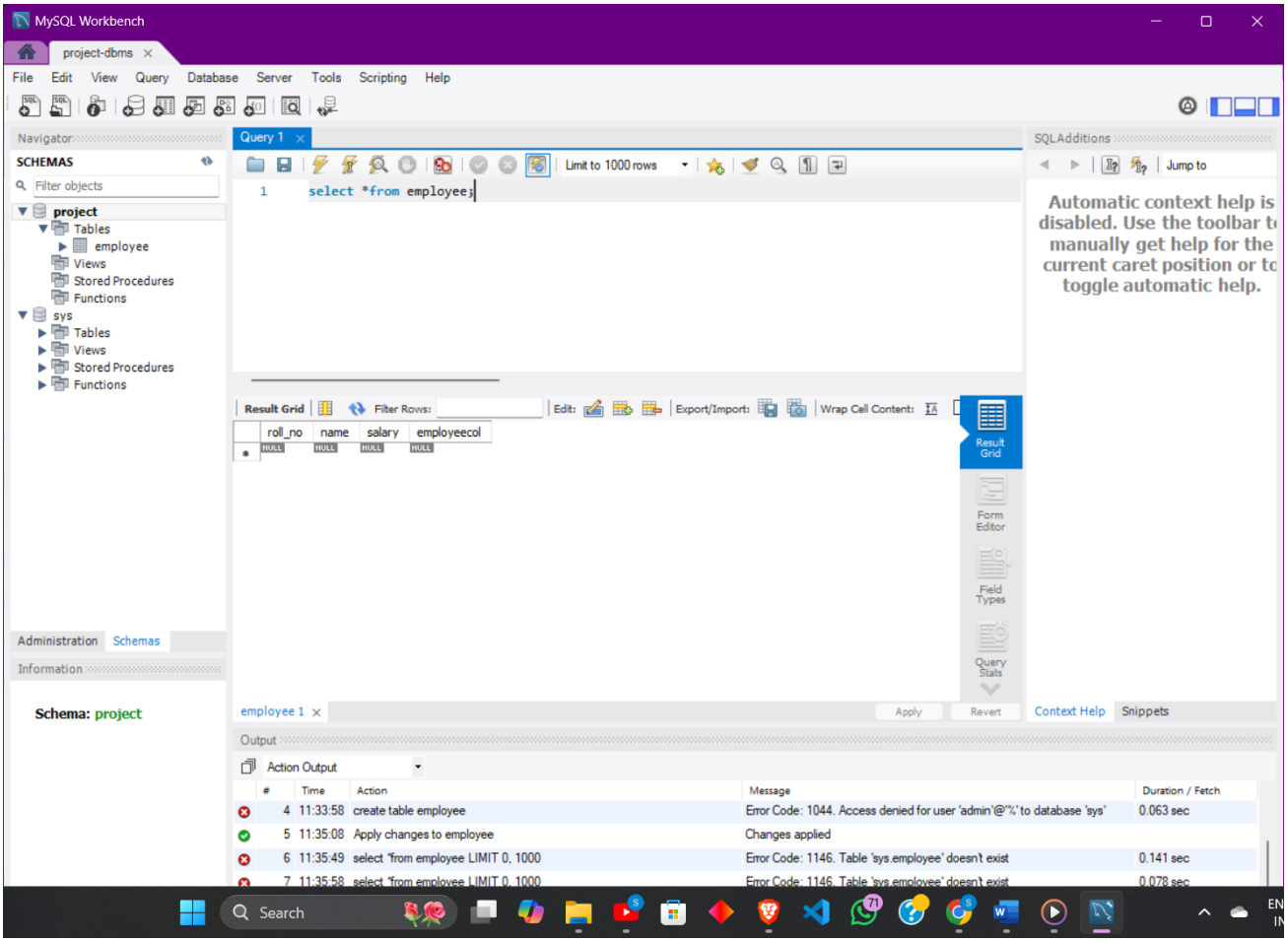
- Open MySQL in your device and setup new connection.



- Now enter your password and open your created RDS.



- You can check the proper working of your database by creating schemas and tables.


MySQL Workbench
project-dbms
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
project
Tables
employee
Views
Stored Procedures
Functions
sys
Tables
Views
Stored Procedures
Functions
Administration Schemas
Information
Schema: project
Query 1
Limit to 1000 rows
1 select *from employee;
SQLAdditions
Jump to
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
roll_no name salary employeecol
NULL NULL NULL NULL
Result Grid
Form Editor
Field Types
Query Stats
employee 1
Apply
Revert
Context Help
Snippets
Output
Action Output
Time Action Message Duration / Fetch
4 11:33:58 create table employee Error Code: 1044. Access denied for user 'admin'@'%' to database 'sys' 0.063 sec
5 11:35:08 Apply changes to employee Changes applied
6 11:35:49 select 'from employee LIMIT 0, 1000 Error Code: 1146. Table 'sys.employee' doesn't exist 0.141 sec
7 11:35:58 select 'from employee LIMIT 0, 1000 Error Code: 1146. Table 'sys.employee' doesn't exist 0.078 sec
Search

So, after following all these aforementioned steps our organisation will have two subnets of private networks with connected storage and database which will accessible only to the administrator and the public network in which the websites are hosted that are publicly available and it will help us in this setting up organisational infrastructure at a low cost and helps us to make our setup more scalable as we need in need future.

As we know, how cloud computing is gaining popularity in the current world scenario these skills will help us to make our organization more cost effective and scalable.