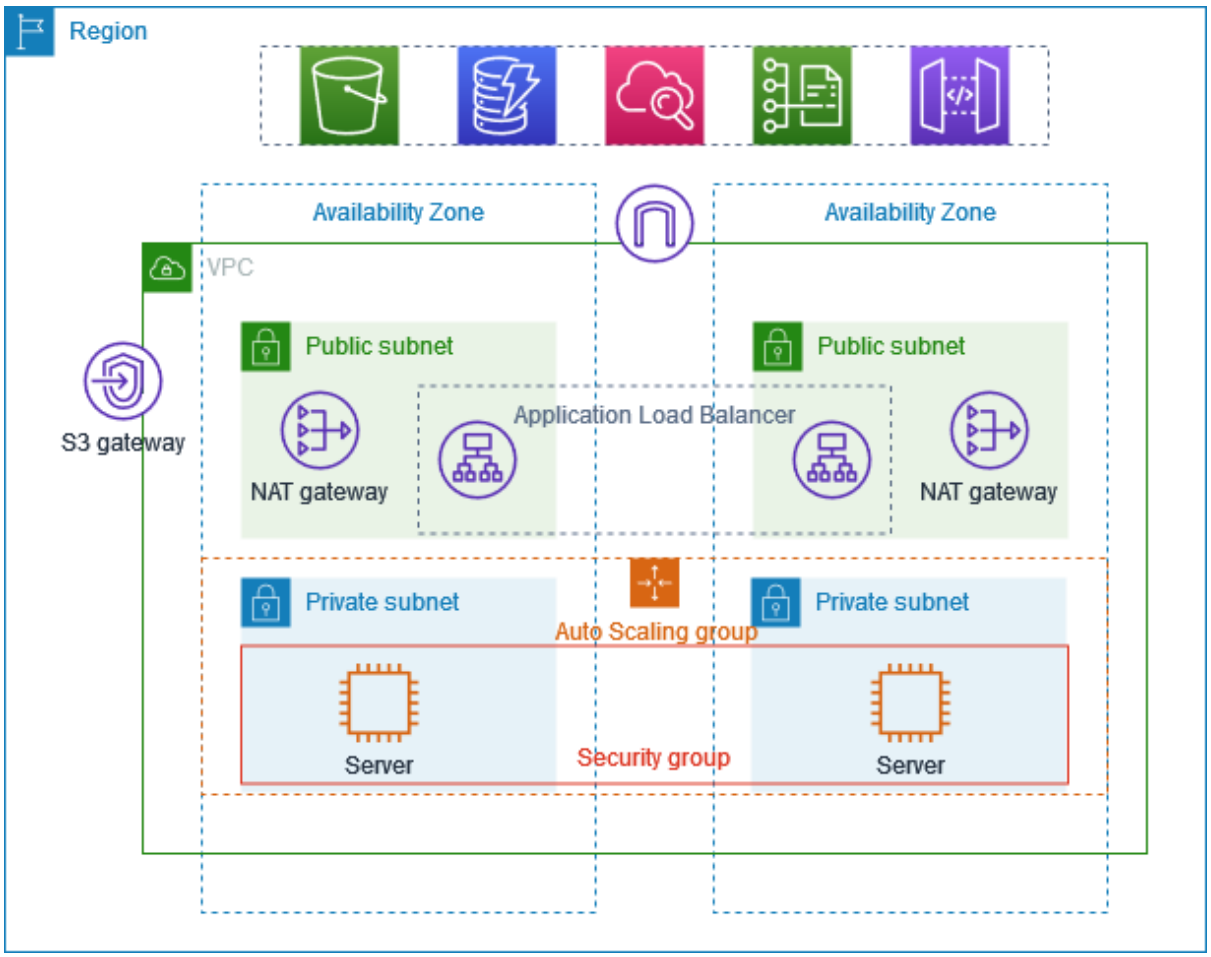
AWS Project Used In Production

So the reference of the vpc has been created form: https://docs.aws.amazon.com/vpc/latest/userguide/vpc-example-private-subnets-nat.html... On this we are created the Vpc Architecture



So mainly this project about how to create vpc and how to demonstrate our applications with in a vpc in production environment...

And to improve the resiliency. And you deploy the servers in two availablity zones . By using an auto scaling group and application load balancer. For additional security. You deploy the servers in private subnets .. The servers recives the request to the load balancer .. The server can connect to the internet through NATgateway improve the resiliency . You deploy the NATgateway in Two public availablity zones.....

Over View Of the Project :

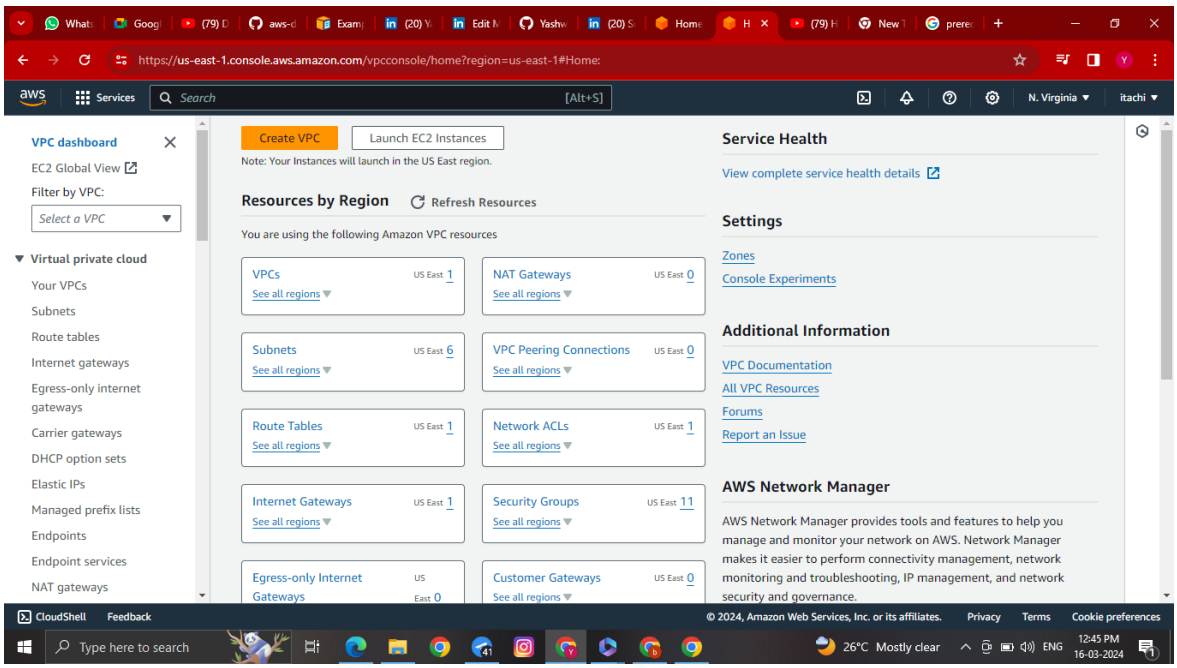
- So we have create the vpc that has public and private subnets in two availablity zones
- And each public subnets contains NATgate and load balancer node
- The server runs in private subnets and launch and teriminated by auto scaling group and recieve the traffic from the load balancer
- The server wich deploy on private subnet that can internet through NAT gateway...

Prerequisites for this project:

- Auto Scaling Group
- Load Balancer
- Target Group
- Bastion Host or Jump server

Stages of the project:

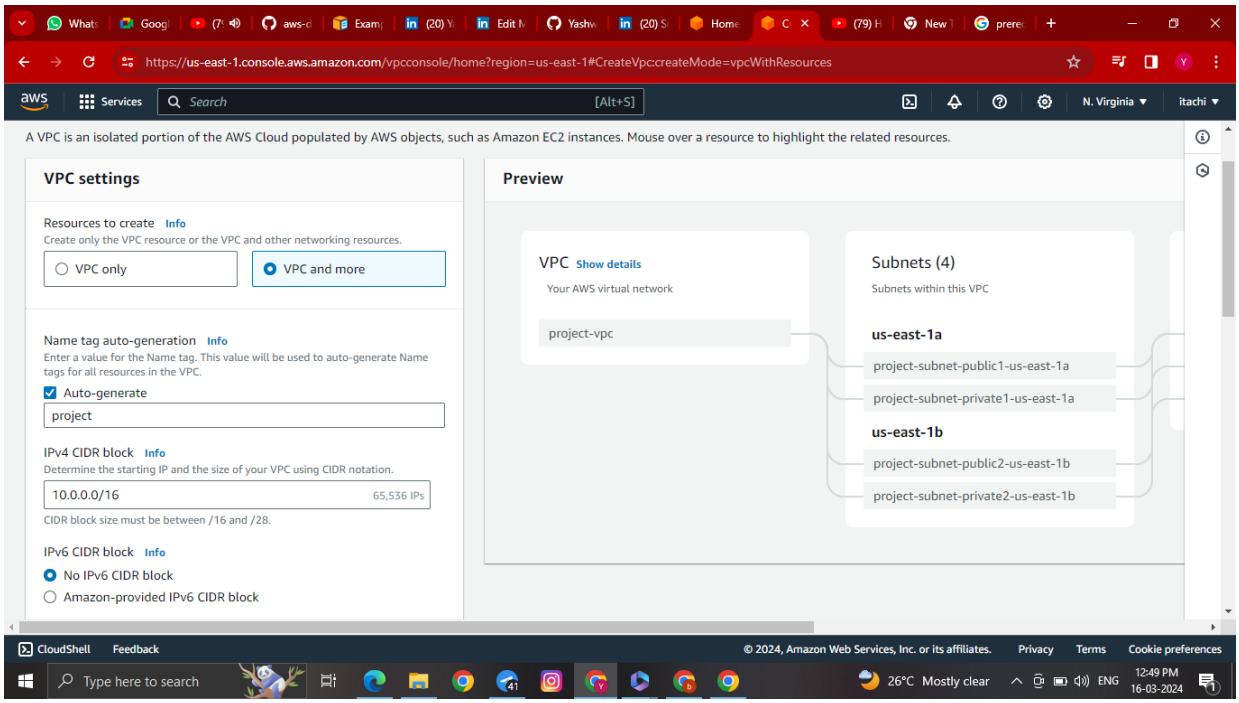
Stage1: on this stage we have create the vpc according to the vpc architecture

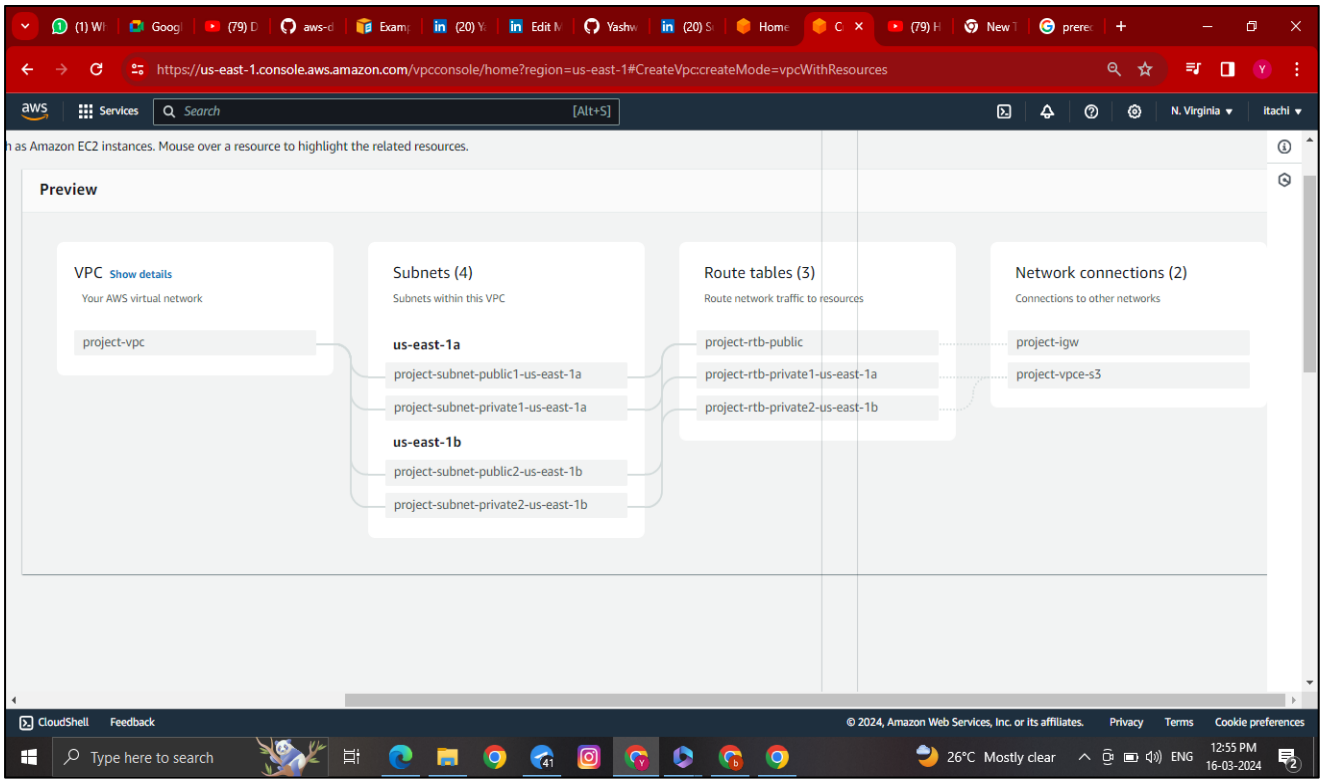


On the Creation of the vpc we have to select Vpc and More... not vpc only

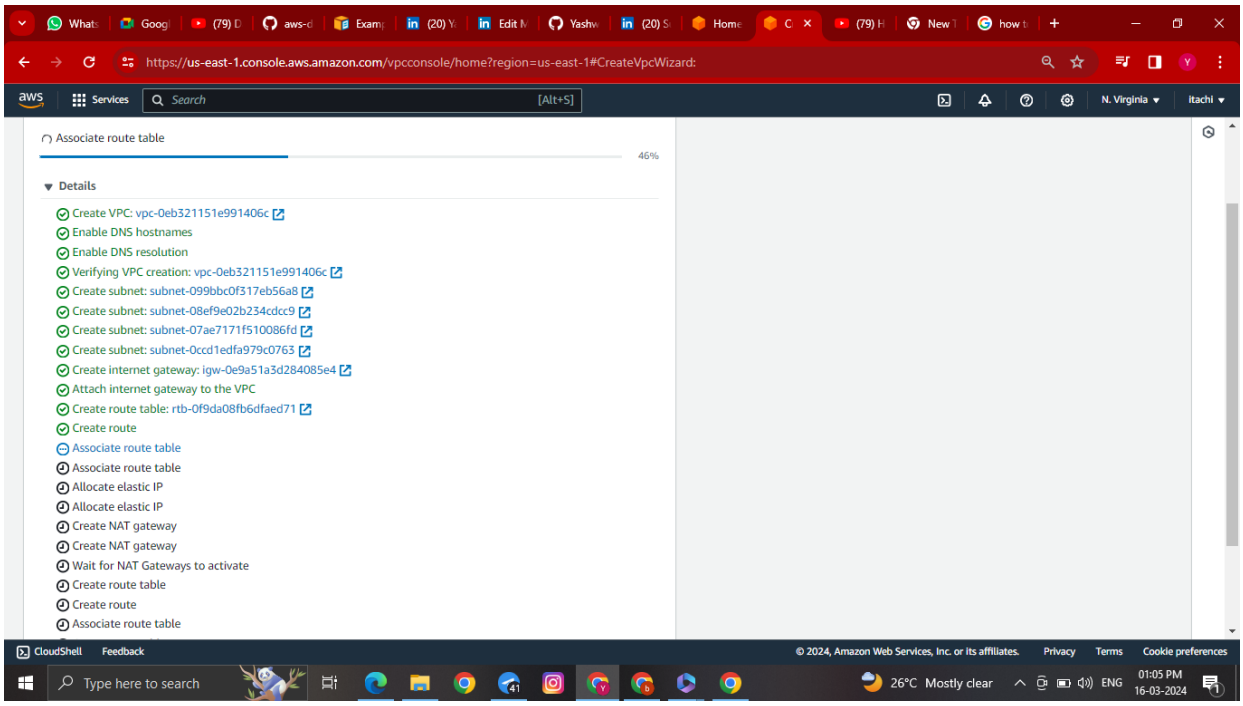
Here ther is small difference between the vpc only and vpc more ... That is in this Vpc and more Aws create at a time all subnets and route tables elastic ip Nat gateways etc ... What we want that can create at once

On the vpc only we have to create everything one by one we have to do configuration....

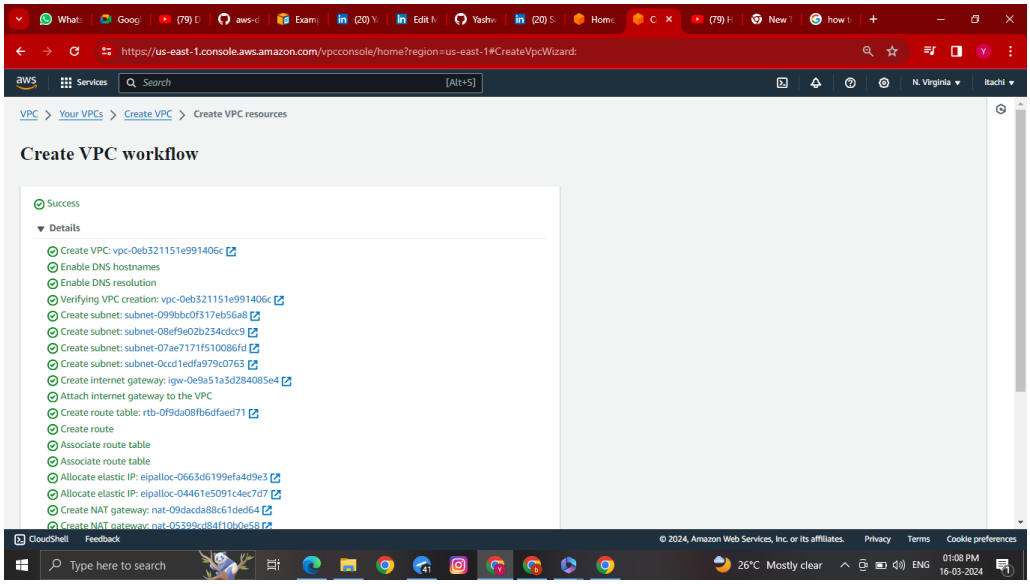




Set all thing according to the Vpc architecture with out Auto scaling and load balancer... We will add after the creation of vpc architecture..



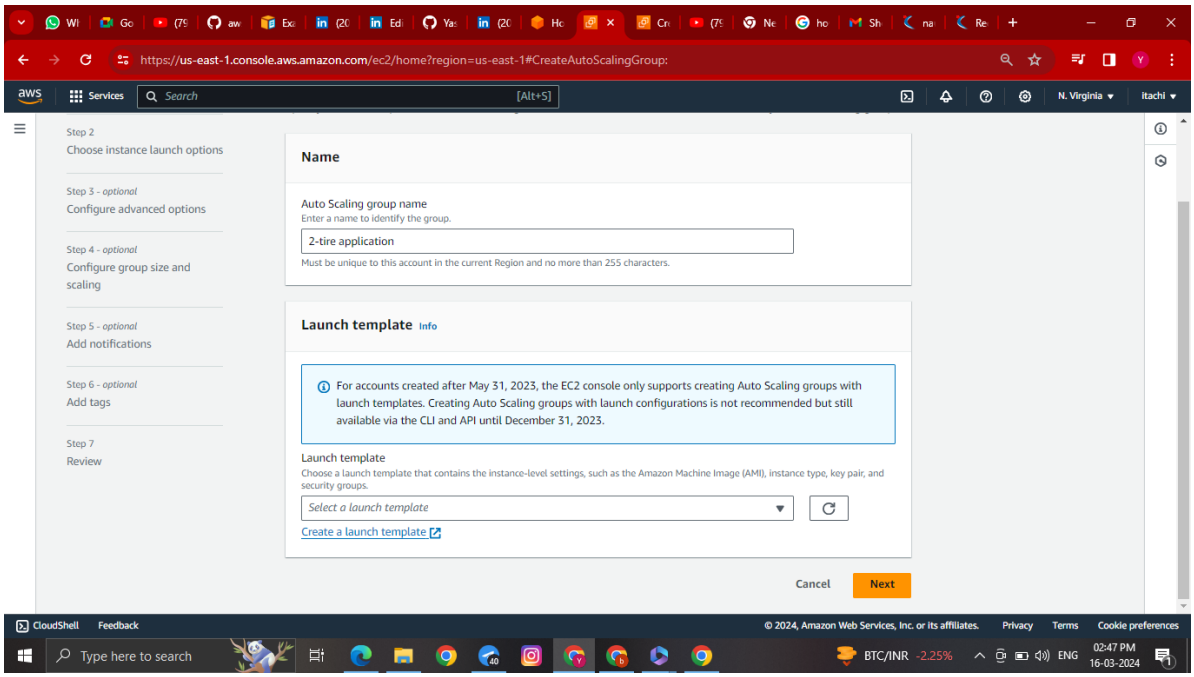
So the vpc was creating and soo it will take some time to create NatGateway



So successfully Vpc was created... Now we have create Autoscaling and loadbalancer.... Now goto Ec2 Dashboard and select Auto Scaling group

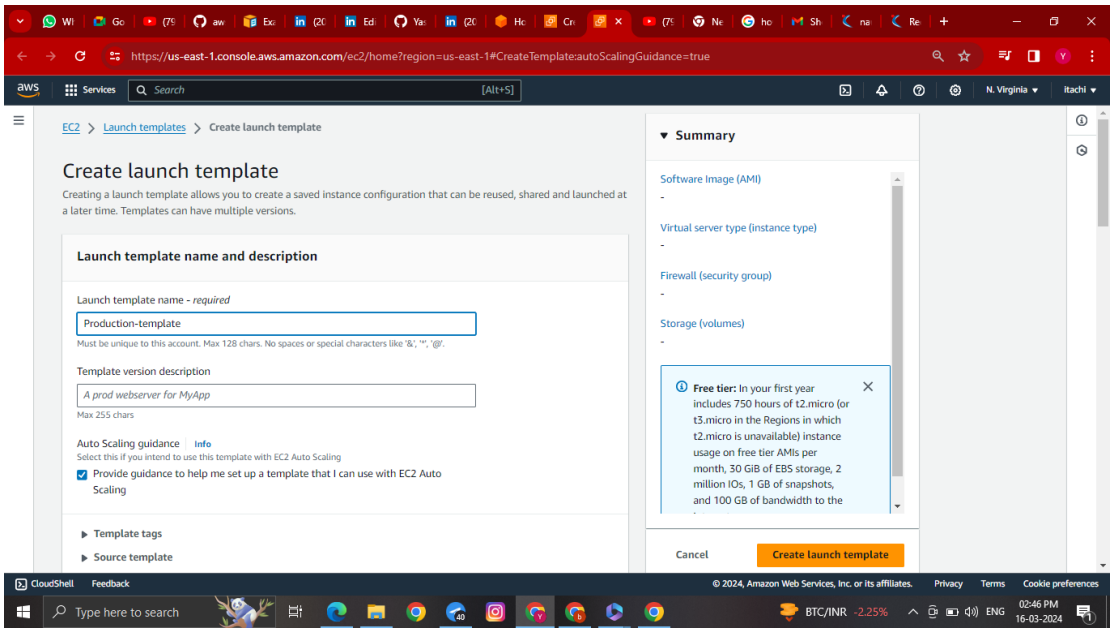
Stage2: Creation Of Auto Scaling Groups

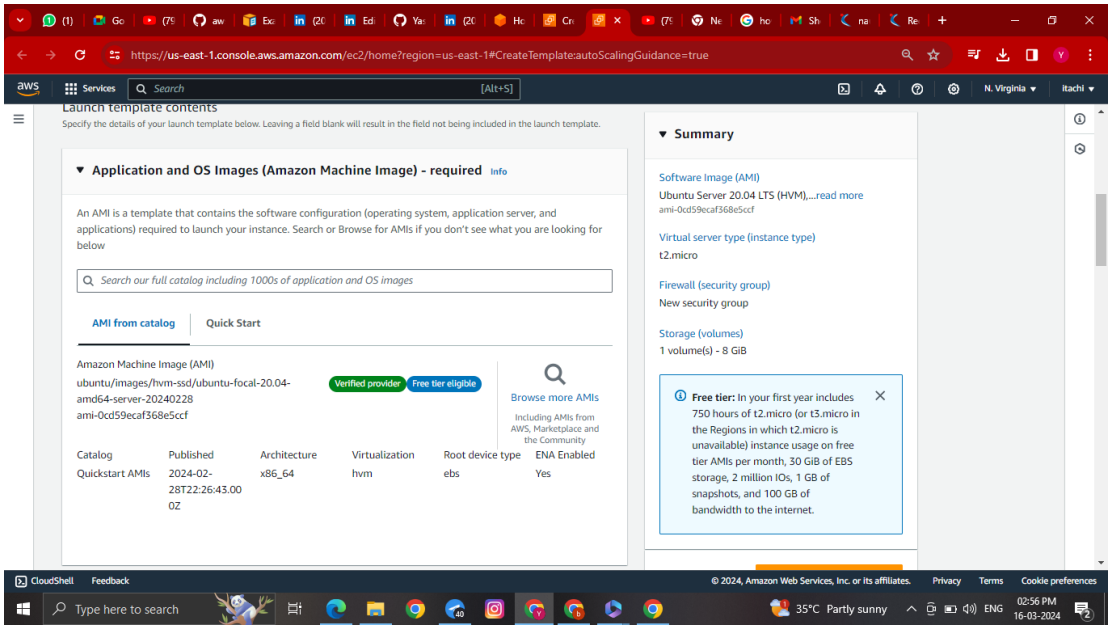
Click on create Auto scaling group and here we cannot launch auto scaling group directly ... so we can use Telmplates.. By using templates Across auto scaling group and it is a reference .. To understand how our auto scaling Behaviour...



Soo we want to create the template for our auto scaling group

Let create a template .... Note: Here am using Free tire resources on AWS..Am a fresher... and deploy a simple Pyhton based application




https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTemplate:autoScalingGuidance=true
Launch template contents
Specify the details of your launch template below. Leaving a field blank will result in the field not being included in the launch template.
Application and OS Images (Amazon Machine Image) - required Info
An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below
Search our full catalog including 1000s of application and OS images
AMI from catalog
Quick Start
Amazon Machine Image (AMI)
ubuntu/images/hvm-ssd/ubuntu-focal-20.04-amd64-server-20240228
ami-0cd59ecaf368e5ccf
Verified provider
Free tier eligible
Browse more AMIs
Including AMIs from AWS, Marketplace and the Community
Catalog
Quickstart AMIs
Published
2024-02-28T22:26:43.000Z
Architecture
x86_64
Virtualization
hvm
Root device type
ebs
ENA Enabled
Yes
Summary
Software Image (AMI)
Ubuntu Server 20.04 LTS (HVM),...read more
ami-0cd59ecaf368e5ccf
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.
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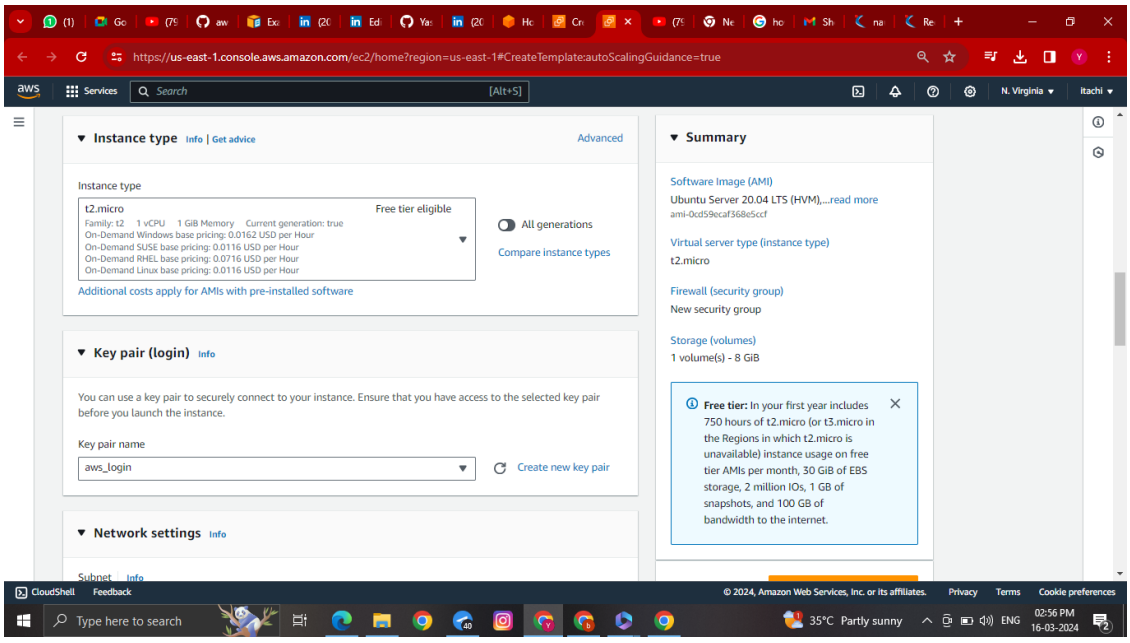
https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTemplate:autoScalingGuidance=true
Instance type Info | Get advice
Advanced
Instance type
t2.micro
Free tier eligible
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Windows base pricing: 0.0162 USD per Hour
On-Demand SUSE base pricing: 0.0116 USD per Hour
On-Demand RHEL base pricing: 0.0716 USD per Hour
On-Demand Linux base pricing: 0.0116 USD per Hour
All generations
Compare instance types
Additional costs apply for AMIs with pre-installed software
Key pair (login) Info
You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.
Key pair name
aws_login
Create new key pair
Network settings Info
Subnet Info
Summary
Software Image (AMI)
Ubuntu Server 20.04 LTS (HVM),...read more
ami-0cd59ecaf368e5ccf
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
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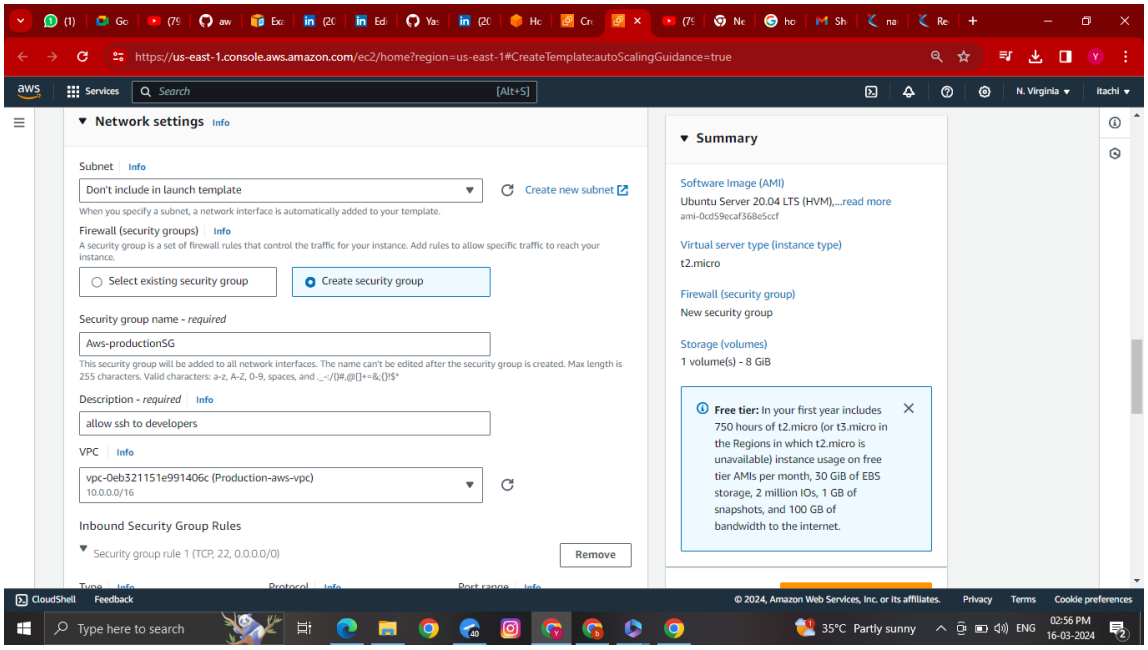
16-03-2024


https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTemplate:autoScalingGuidance=true
Services
Search
[Alt+S]
N. Virginia
itachi
Network settings Info
Subnet Info
Don't include in launch template
Create new subnet
When you specify a subnet, a network interface is automatically added to your template.
Firewall (security groups) Info
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.
Select existing security group
Create security group
Security group name - required
Aws-productionSG
This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and ._-:/()#,@[]+=&;{}!$*
Description - required Info
allow ssh to developers
VPC Info
vpc-0eb321151e991406c (Production-aws-vpc)
10.0.0.0/16
Inbound Security Group Rules
Security group rule 1 (TCP, 22, 0.0.0.0/0)
Remove
Summary
Software Image (AMI)
Ubuntu Server 20.04 LTS (HVM),...read more
ami-0cd59ecaf368e5ccf
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.
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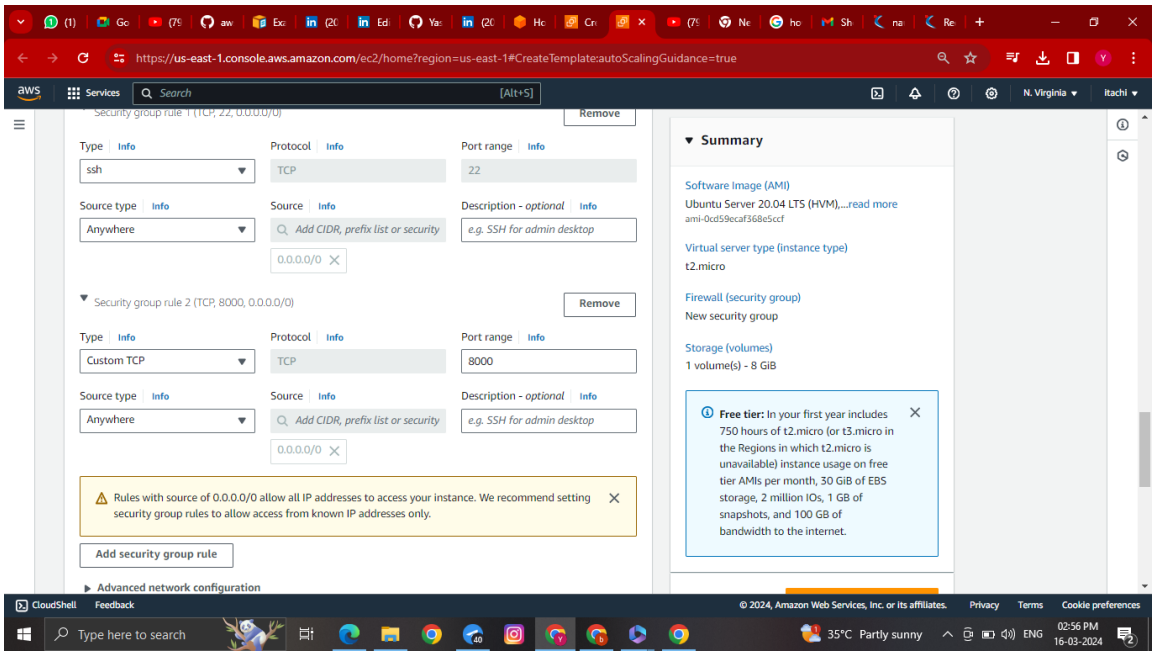
https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTemplate:autoScalingGuidance=true
Services
Search
[Alt+S]
N. Virginia
itachi
Remove
Type Info
ssh
Protocol Info
TCP
Port range Info
22
Source type Info
Anywhere
Source Info
Add CIDR, prefix list or security
0.0.0.0/0
Description - optional Info
e.g. SSH for admin desktop
Security group rule 2 (TCP, 8000, 0.0.0.0/0)
Remove
Type Info
Custom TCP
Protocol Info
TCP
Port range Info
8000
Source type Info
Anywhere
Source Info
Add CIDR, prefix list or security
0.0.0.0/0
Description - optional Info
e.g. SSH for admin desktop
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.
Add security group rule
Advanced network configuration
Summary
Software Image (AMI)
Ubuntu Server 20.04 LTS (HVM),...read more
ami-0cd59ecaf368e5ccf
Virtual server type (instance type)
t2.micro
Firewall (security group)
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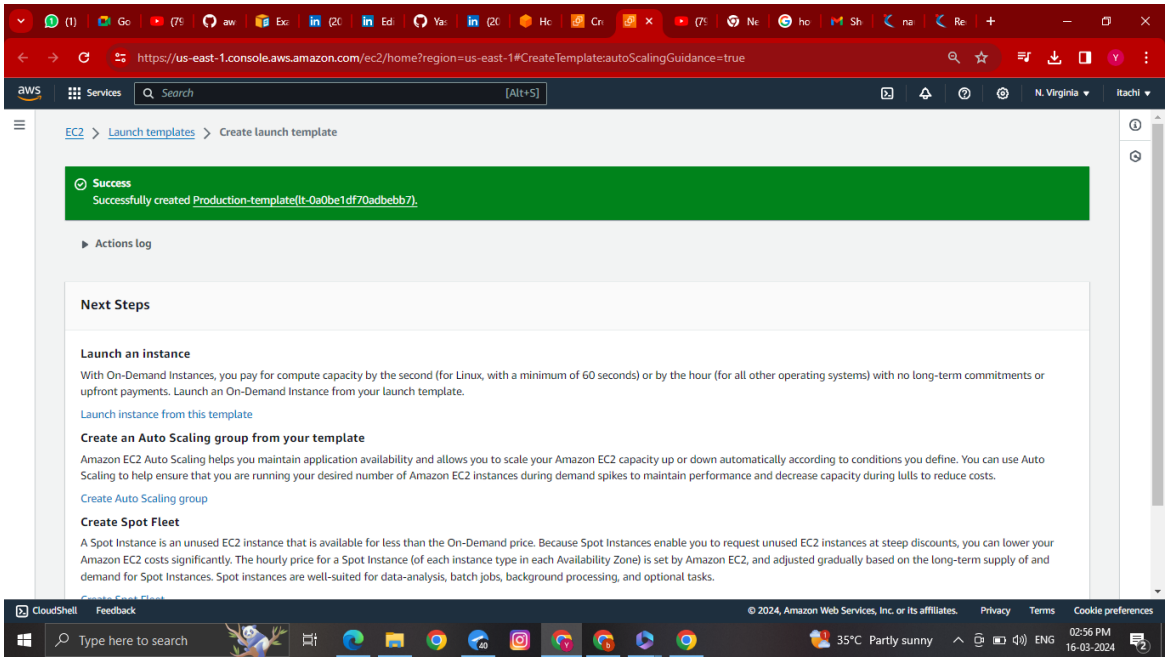
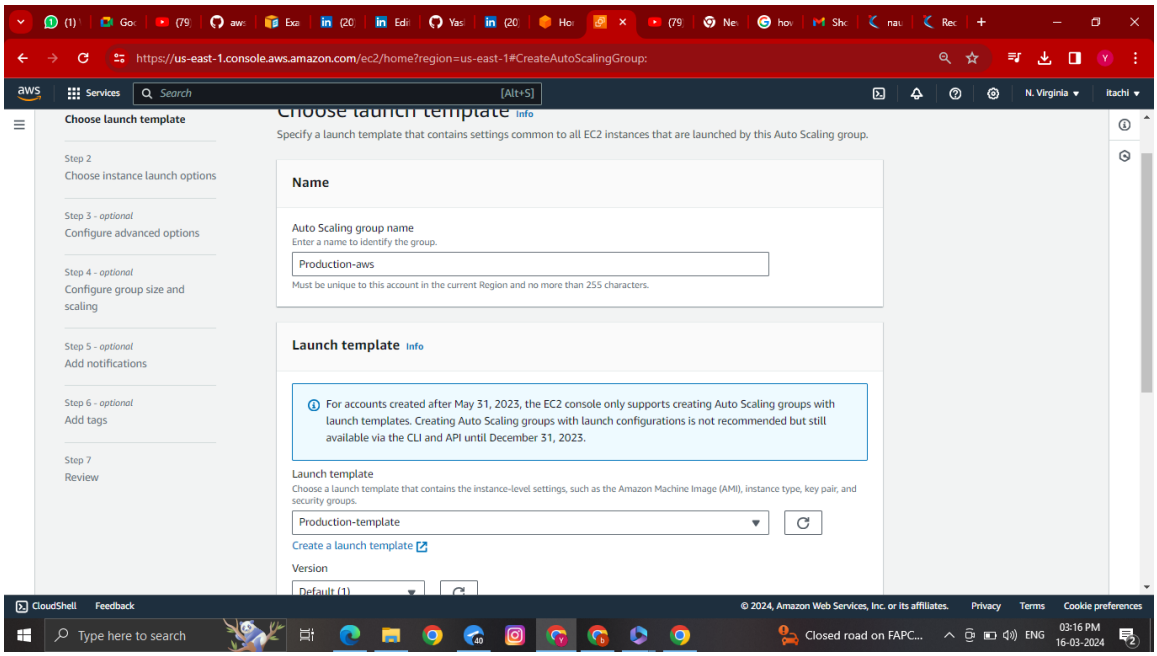
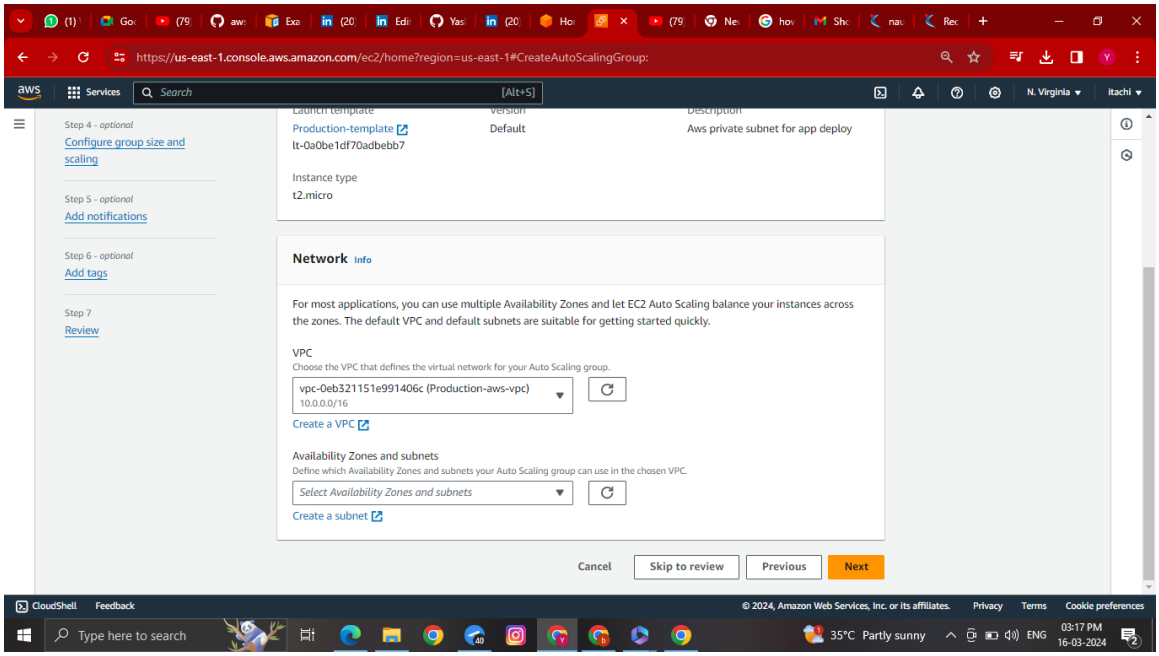
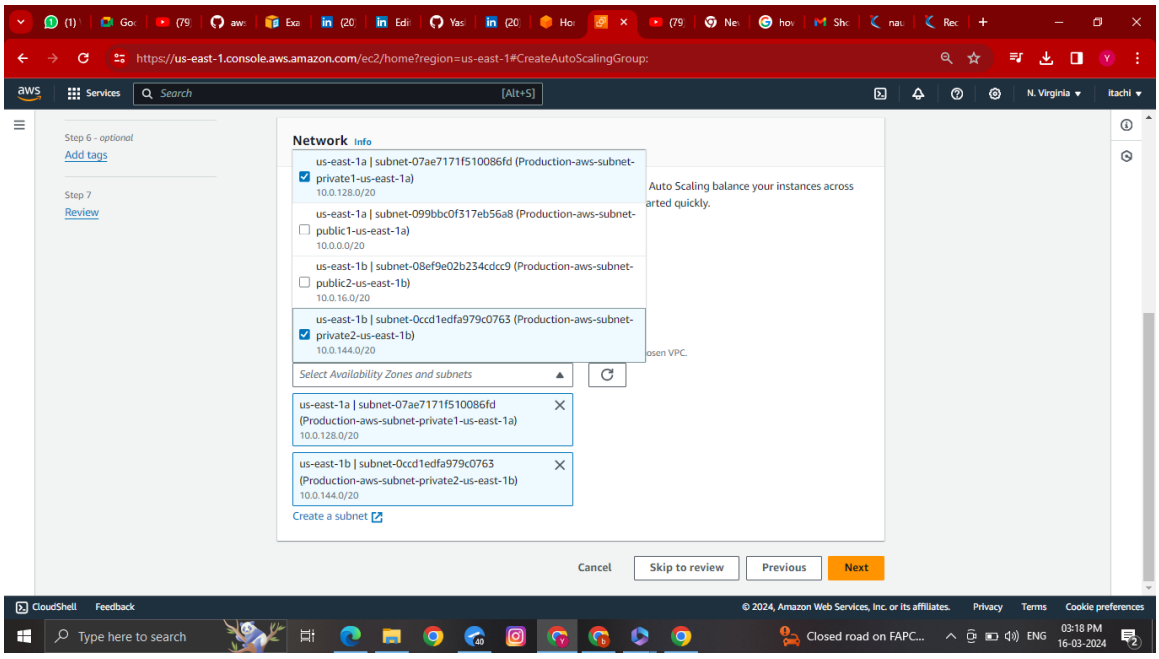


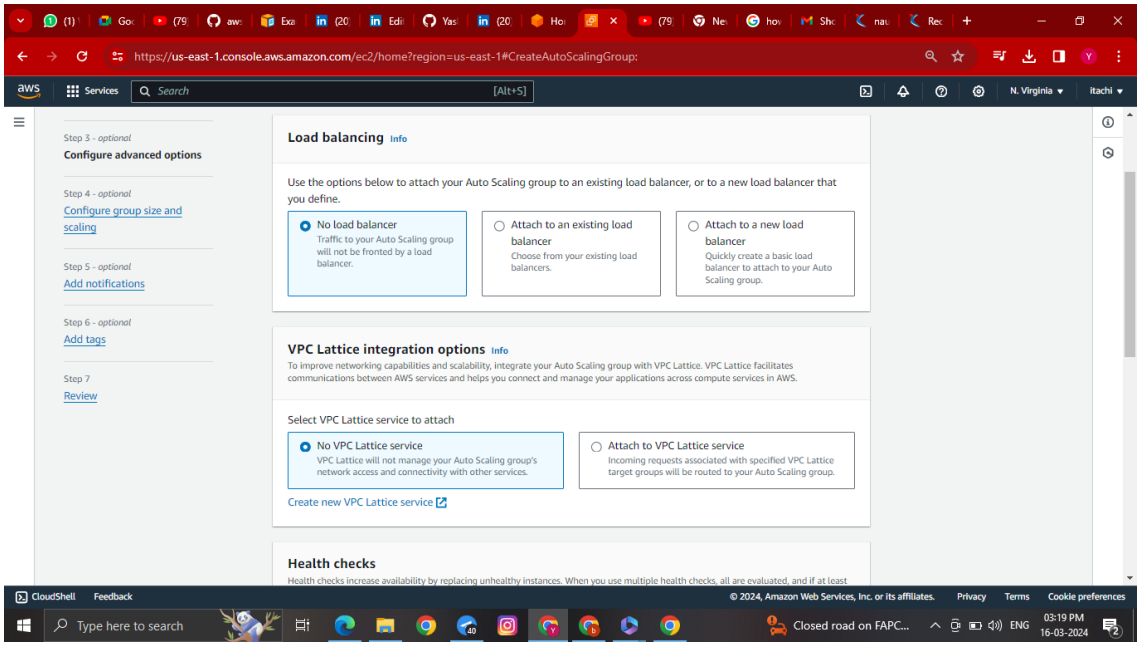
So The templated was created .... we have to create Auto scaling by using template



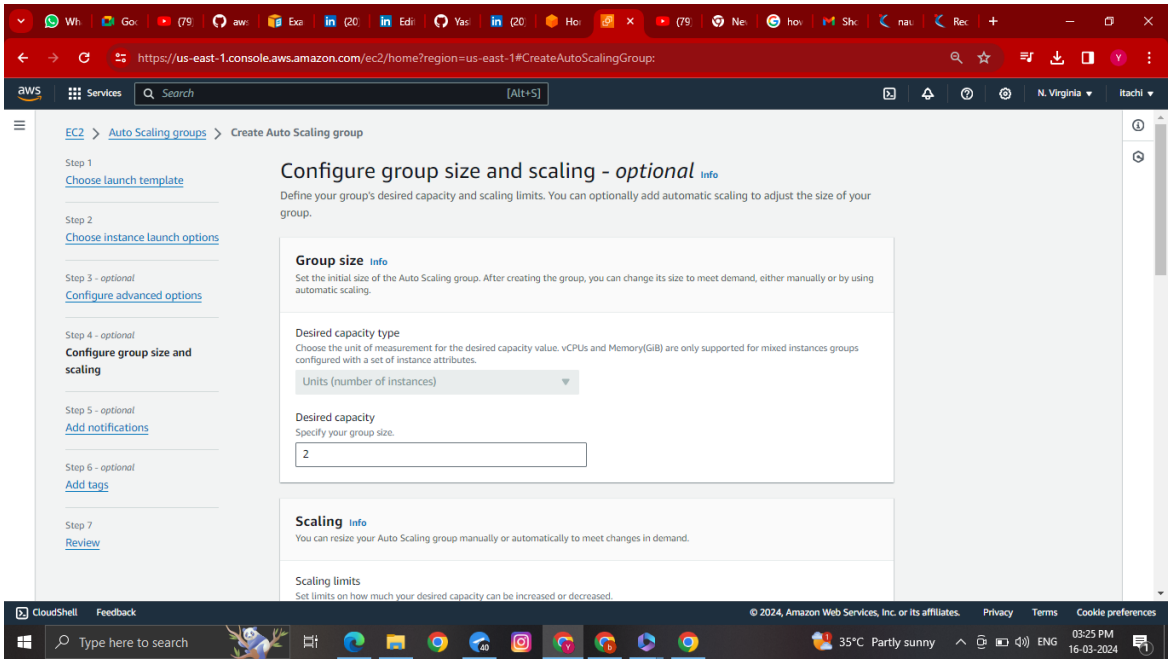




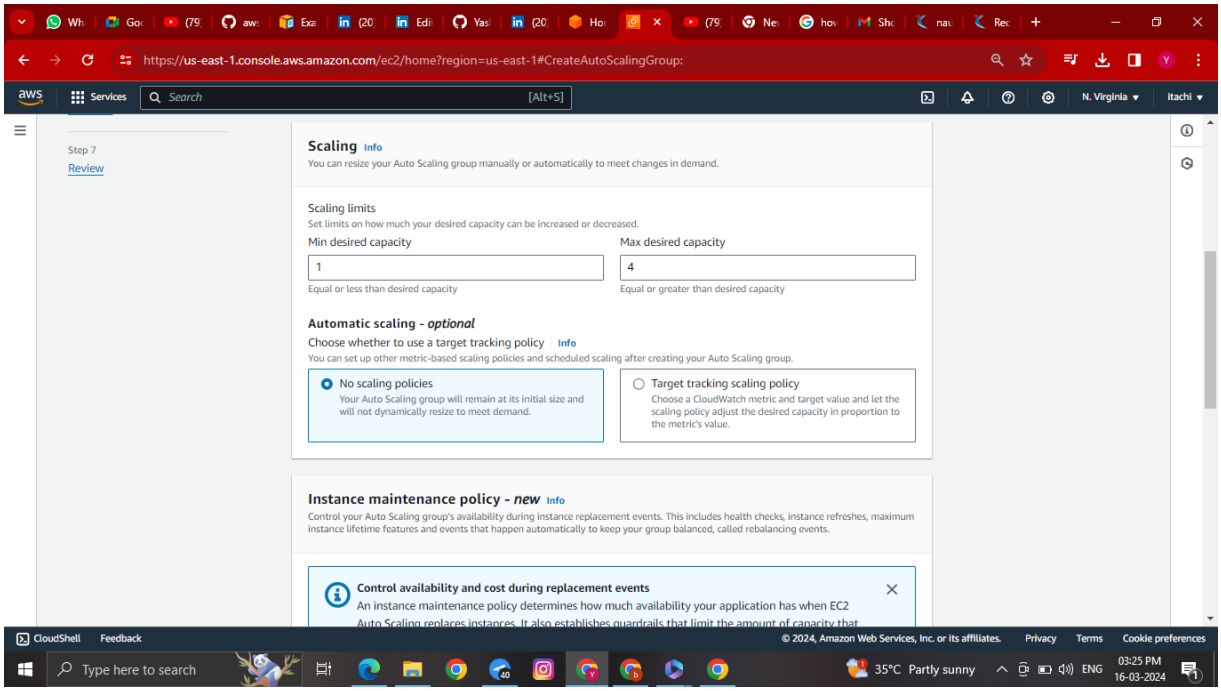
On networking area we have to select the our created vpc and we can add multiple subnets on availablity zones like 1a or 1b after selecting the subnets we have to select next



Here we are not creating load balancer to private subnets.... beacuse we no need the load balancer to the private cloud ... we need load balancer for application...



Group Size in this Desired capacity we have set how many instance we have to launch on this we have select Minimun we have to select 1 and maximum we have to 4 beacause here maxium means when there is a heavy traffic on our instance the Auto scaling group will do to 4 or 5 how many we have select on maximum..


https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateAutoScalingGroup:
Services
Search
[Alt+S]
N. Virginia
itachi
Step 7
Review
Scaling Info
You can resize your Auto Scaling group manually or automatically to meet changes in demand.
Scaling limits
Set limits on how much your desired capacity can be increased or decreased.
Min desired capacity
1
Equal or less than desired capacity
Max desired capacity
4
Equal or greater than desired capacity
Automatic scaling - optional
Choose whether to use a target tracking policy Info
You can set up other metric-based scaling policies and scheduled scaling after creating your Auto Scaling group.
No scaling policies
Your Auto Scaling group will remain at its initial size and will not dynamically resize to meet demand.
Target tracking scaling policy
Choose a CloudWatch metric and target value and let the scaling policy adjust the desired capacity in proportion to the metric's value.
Instance maintenance policy - new Info
Control your Auto Scaling group's availability during instance replacement events. This includes health checks, instance refreshes, maximum instance lifetime features and events that happen automatically to keep your group balanced, called rebalancing events.
Control availability and cost during replacement events
An instance maintenance policy determines how much availability your application has when EC2
CloudShell
Feedback
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03:25 PM
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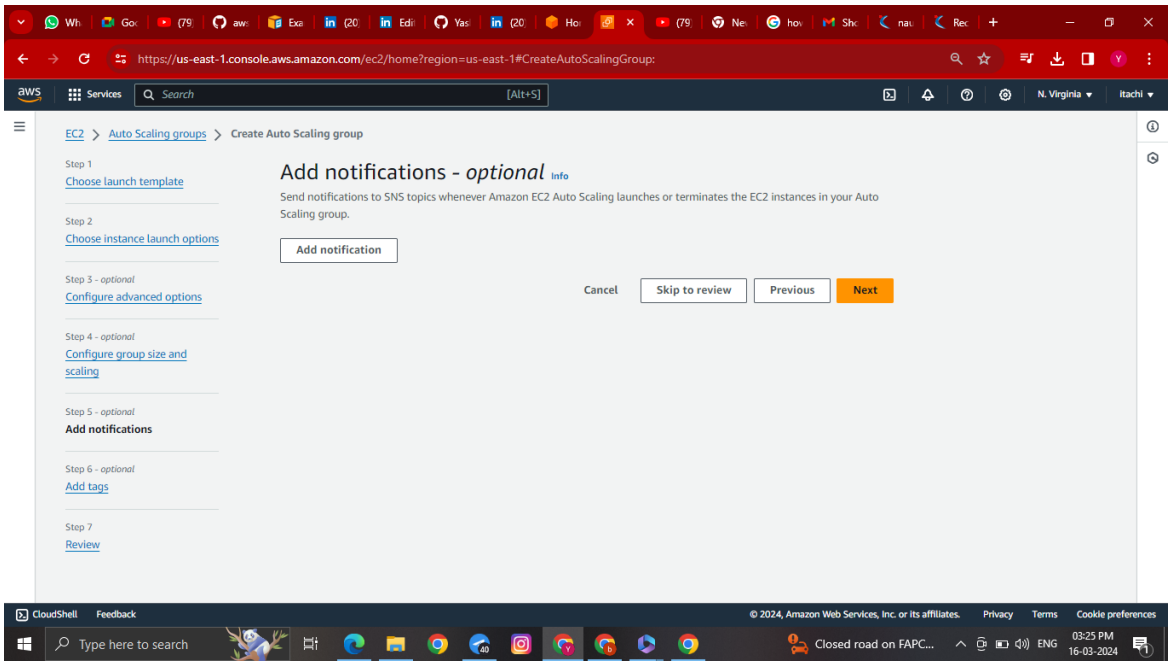
https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateAutoScalingGroup:
Services
Search
[Alt+S]
N. Virginia
itachi
EC2 > Auto Scaling groups > Create Auto Scaling group
Step 1
Choose launch template
Step 2
Choose instance launch options
Step 3 - optional
Configure advanced options
Step 4 - optional
Configure group size and scaling
Step 5 - optional
Add notifications
Step 6 - optional
Add tags
Step 7
Review
Add notifications - optional Info
Send notifications to SNS topics whenever Amazon EC2 Auto Scaling launches or terminates the EC2 instances in your Auto Scaling group.
Add notification
Cancel
Skip to review
Previous
Next
CloudShell
Feedback
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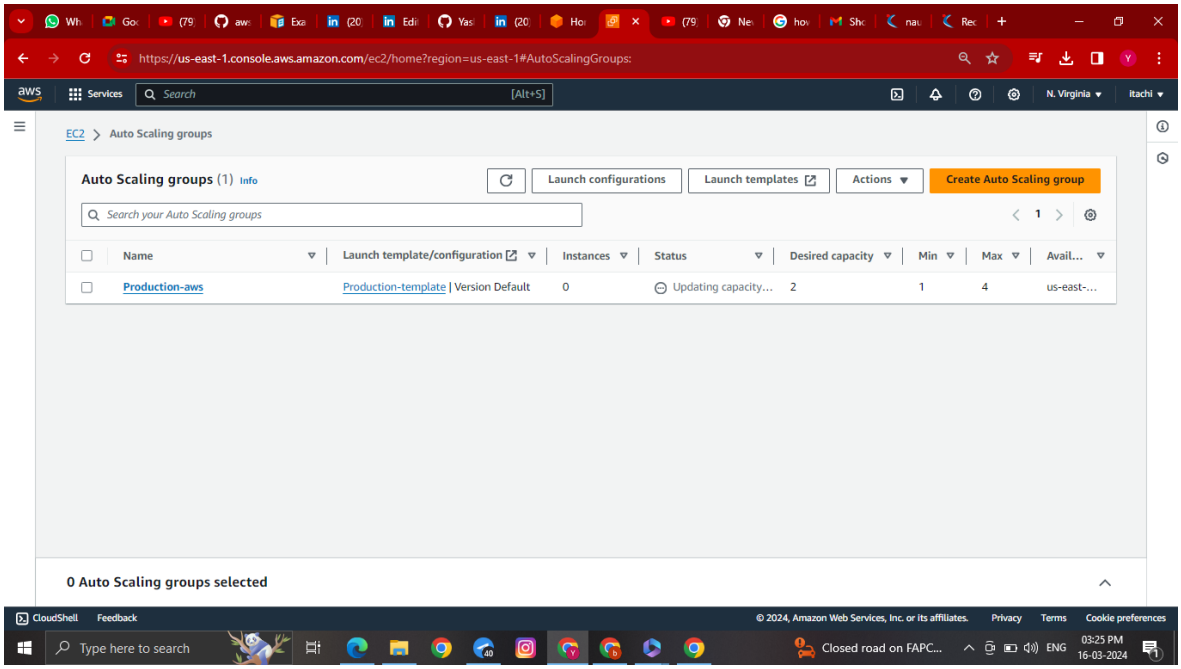
Terms
Cookie preferences
Type here to search
Closed road on FAPC...
ENG
03:25 PM
16-03-2024



So we are created Auto scaling group and also attarch to the Vpc also.....

Before Going to Application Load balancer We have install application to the server

Check out the instance there will come two instance are created without any public Ipv4 address We can only see private IP addresses By this Auto scaling we can see two instances are created so we cannot access the instance directly on ssh because public IP addresses are present so we are using Bastion Host method : scp -i /Users/yashwanth/Downloads/(Pem file belong to server on this we deploy simple python based application) /yashwanth/Downloads/ (Pem file belong to server on this we deploy simple python based application)/ubuntu@Ip of the Bastion Host :/home/ubuntu by this command we can securly copy the pem key to any another instance and Again login into

And check the pem file came or not and alogin into server instance ssh-i pemfile name ubuntu(her we use ubuntu or amazon linux is ec2-user and rehat also belong to ec2-user)@ server private ipv4..... On we are login install python3 on that machine and create a file with name of index.html (vim index.html this is command) and we want to run the application on port 8000

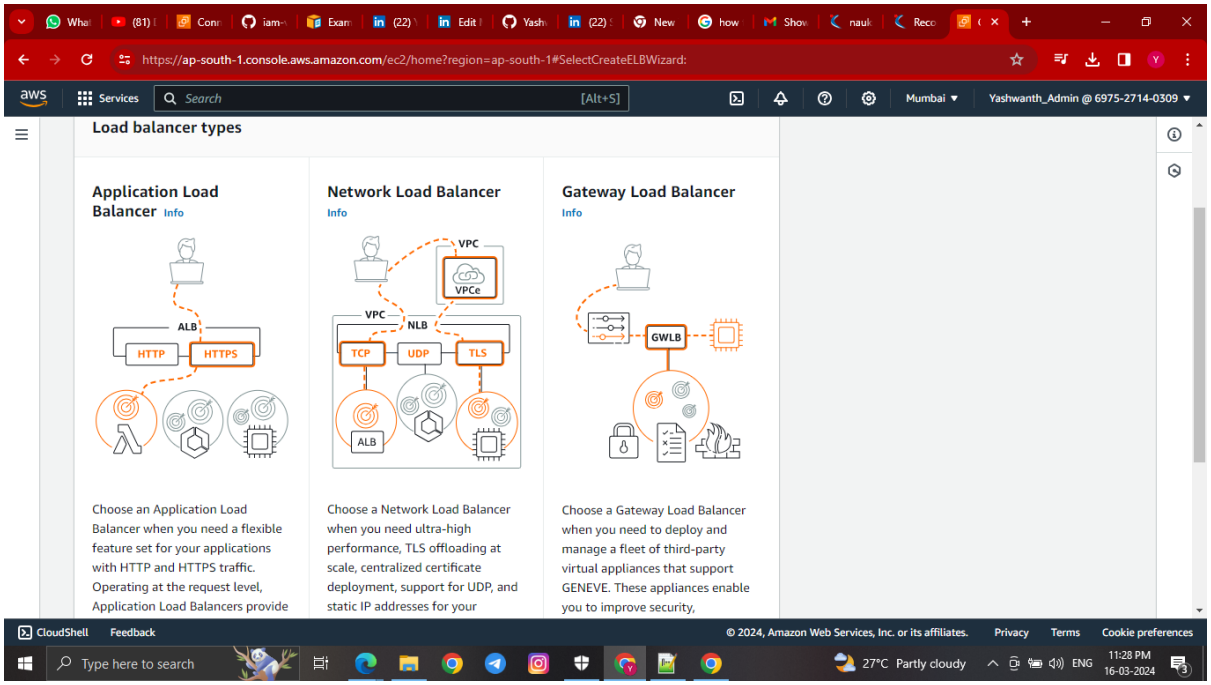
So we are using python command (python3 -m http.server 8000/) on this command we are deploying the html on 8000 port and Same repeat ro second instance.... So here installing and running was completed.

Stage2: Load Balancer and Target groups\

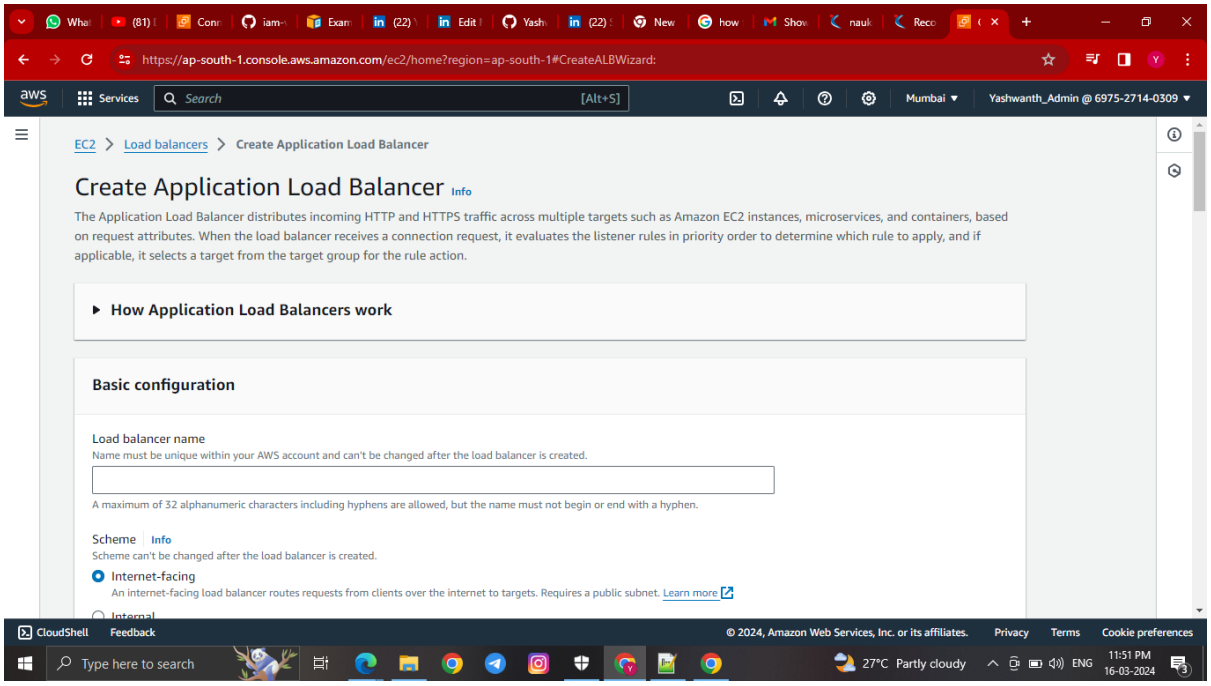
Now to create load balancer go to search bar and search load balancer

And Create the load balancer on that we can see three types of road balancer

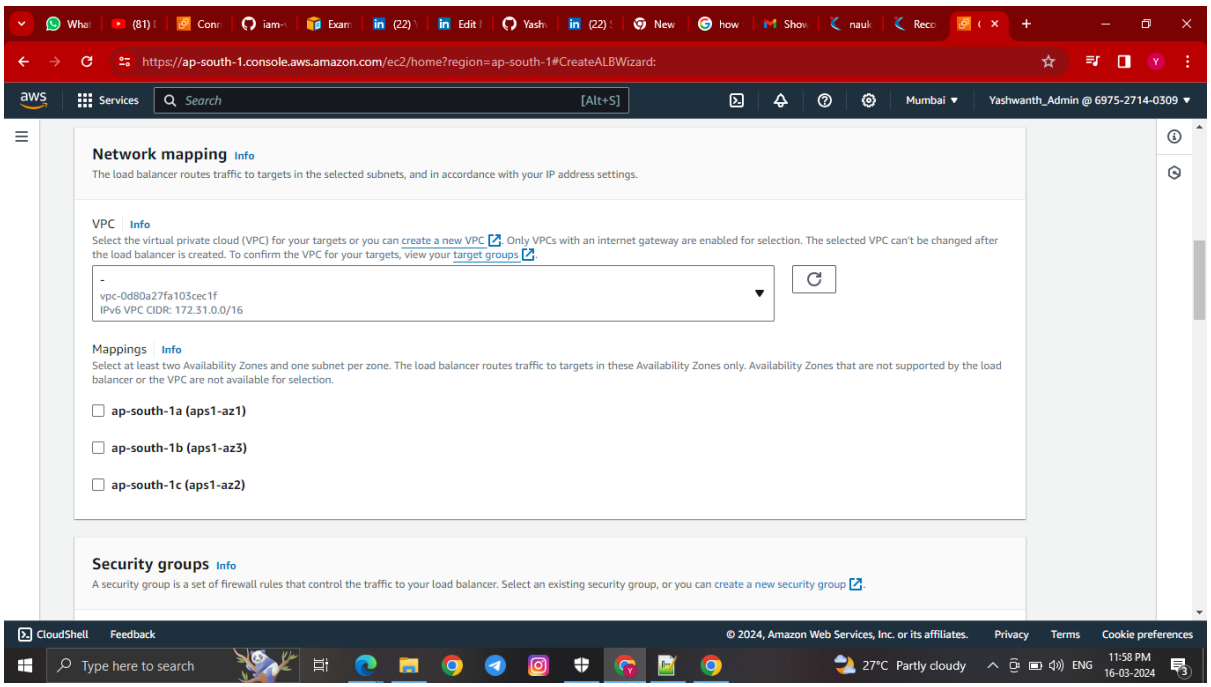
1. Application Load balancer 2. Network load balancer 3. Gateway load balancer



We want to select Application Load balancer By this application load balancer we can manage the traffice of the Application and create the application load balancer click on that....The interface look like that

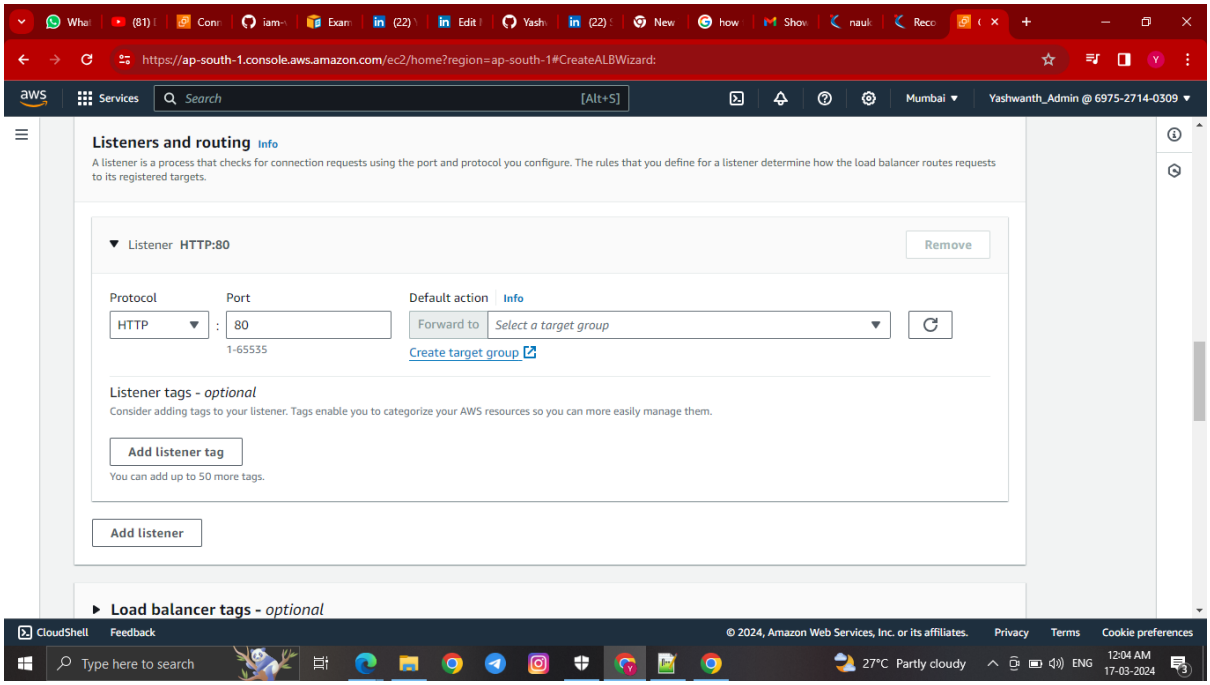


It is the application loadbalancer Mainly it contains Http and Https Which is L7(layer 7) load balancer.. Soo provide the loadbalancer name... And Load balancer must be in inter-facing(which means An internet-facing load balancer routes requests from clients over the internet to targets.) Next Network mapping the load balancer must be connected to publice Ipv4 not to the private Ipv4... If We are connected to private Ipv4 it will show error because the load balancer must have internet gate way...

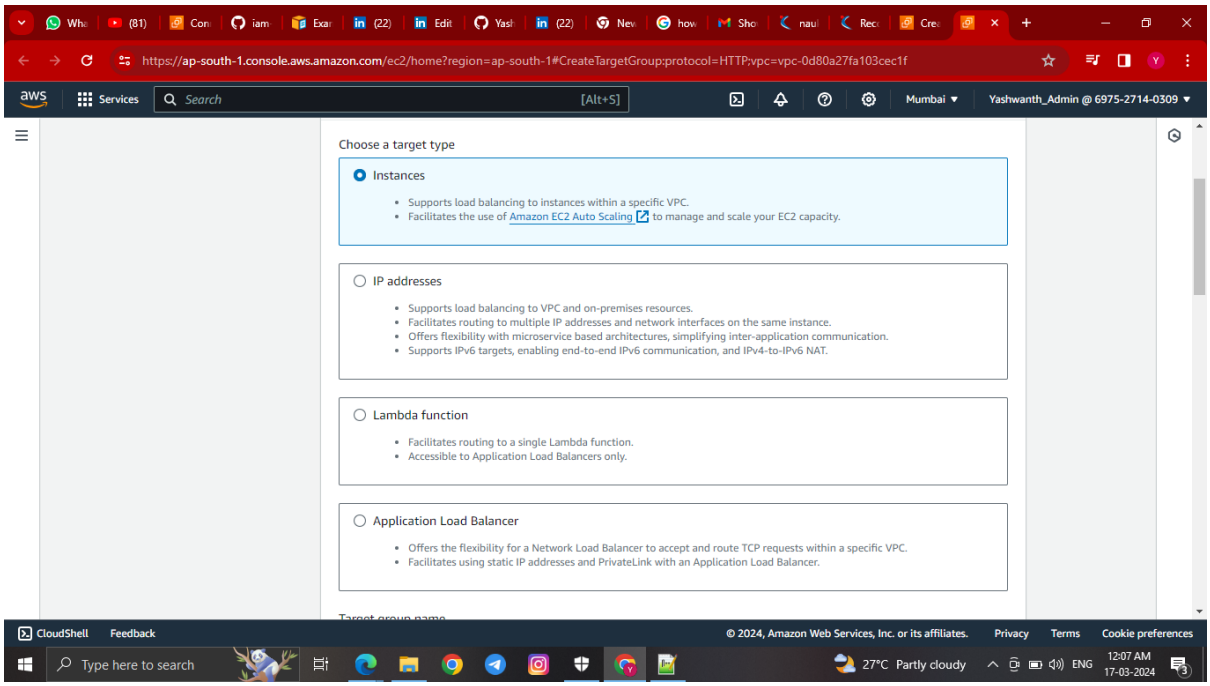


On this network mapping we use our created Vpc and We mapp the our two public Subnets.... Next Security Groups We can Give any security groups or we

can create new security group... Here the security group will check have they give http port access or not and permission... here we dont have to give the default vpc.....

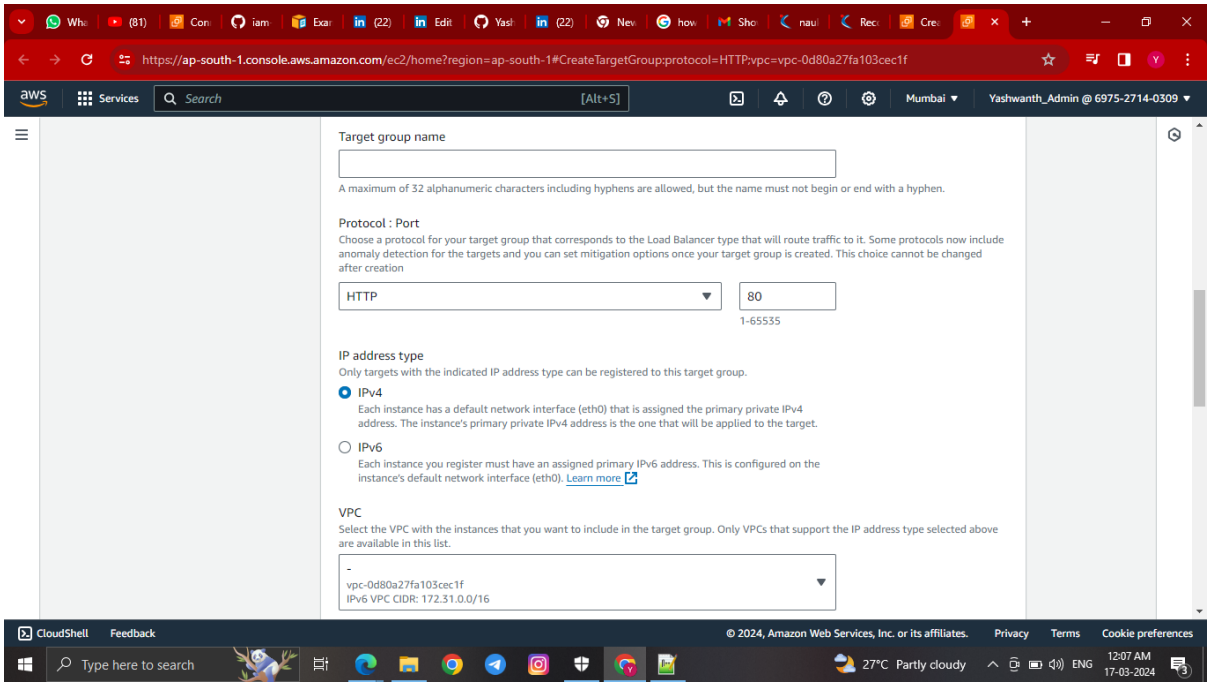


Next Listeners and Routing Before going to Listeners and Routing we have to create the Target Group where we will define which instave will access able



So this target group is for instance we have to select the instance and name the target group and we have to give protocol port on which port we will deploy the application port was http and port 8000 because our application deploy on

that port and click on create the Target groups will be created



Now we have add the target group on Listeners and Routing we should leave the default http and port 80.. Note there must be add existing seurity group http access without http access there will be an error).... After Creation of load balancer was completed. Load balancer comes to active we can access our applications on both server instancer through the Load balancer .....

Completed.....