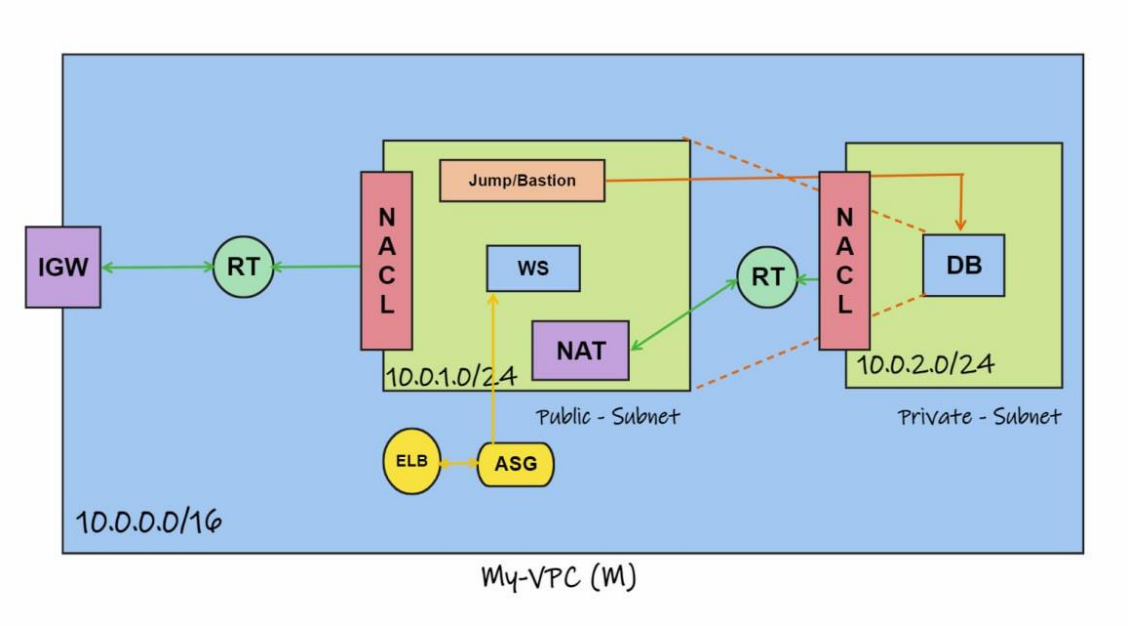
VPC ARCHITECTURE

VPC SERVICE:

VPC means Virtual Private Cloud . It is the service related to Network .
Let us see the architecture of this VPC Service.



We have various components in the structure of the VPC, such as:

- Vpc
- Subnets
- IGW
- Route tables
- Web server
- Database Server
- Jump/Baston Box
- NAT
- ASG
- ELB
- NACL

Let us briefly Understand the components one by one.

1. **VPC:**
   VPC is the main outline of the structure where we create all the components and operate the service.
   The CIDR range is 10.0.0.0/16.
2. **Subnets:**
   In VPC we have two kind of subnets they are public and private .By default all the subnets are public at the time of creation .If we have to create a private subnet then first create the public subnet and then

convert the public subnet to the private by enabling the subnet to public IP and then create the Internet Gateway and attach it to the VPC.

3. **IGW:**
   IGW means Internet Gateway .It is used to make the public subnet to private subnet and for internet connection.
4. **Route Tables:**
   We use Route tables to connect one subnet to other and IGW to subnets.
5. **Web server:**
   Web server is the server that produces the services to the user we have 2 ports to the webserver they are ssh and http ports.
6. **Database server:**
   Database server is the private one and have only access to the webserver along with administrator to make the changes in it.
   It have only one port called as MYSQL:3306.
7. **Jump Box:**
   Jump box is also called as Baston box ,it is used to securely connect the webserver to the database server through ssh port.
8. **NAT:**
   NAT means Network Address Translator , It have both public and private IP's and used to get the internet for the Database.
9. **ASG:**
   ASG means Auto Scaling Groups which launches the webserver automatically and attach webservers to Elastic Load Balancer.
   To create a ASG we require Launch template, scaling policies and ELB.
10. **Elastic Load Balancer:**
    Elastic load balancer is responsible for creating a valve in the network so that it acts as the common entry point of traffic ,balances the load and routes traffic only to the healthy server.
11. **NACL:**
    NACL means Network Access Control List , we can create a NACL of custom and main .

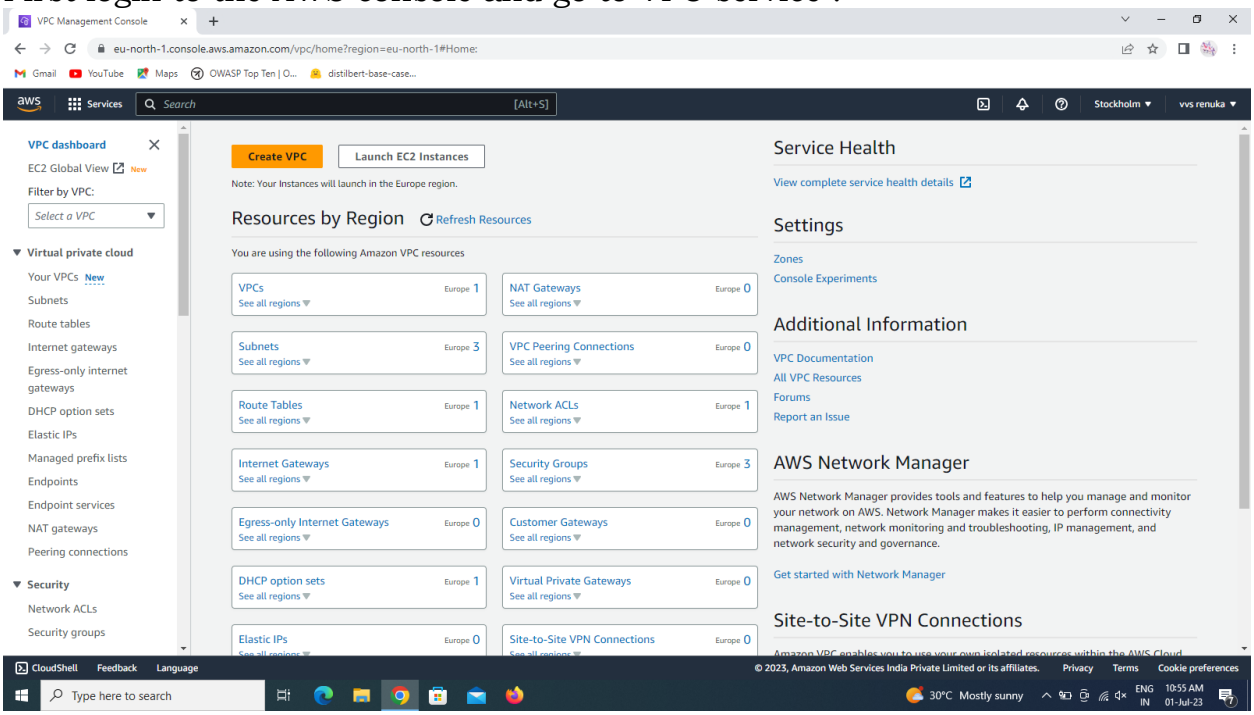
In this VPC structure we create the elastic load balancer and accommodate it in the launch template of the ASG.
We have given only one server to the ASG along with webserver in the public subnet.
The CIDR ranges of the subnets:
Public subnet – 10.0.1.0/24
Private subnet – 10.0.2.0/24

CREATION OF VPC STRUCTURE

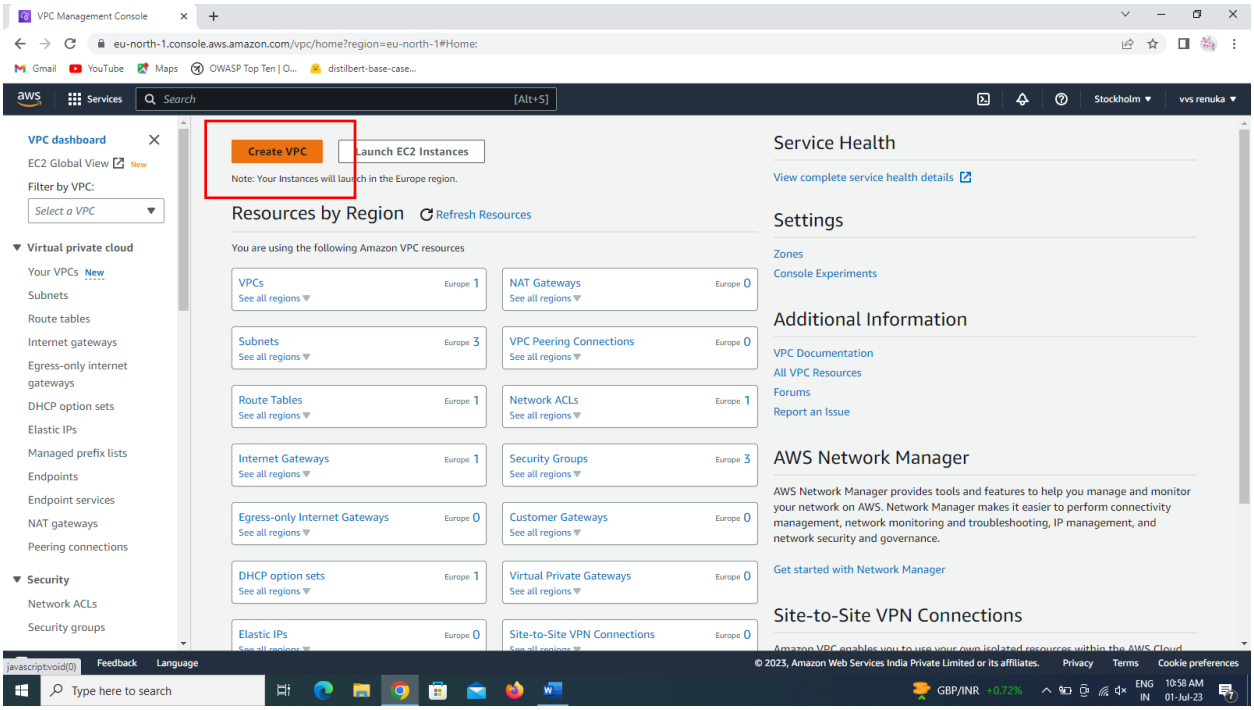
In creation of the VPC structure there are many steps . Let us see the steps involved in the creation of the VPC structure:

Creation of VPC outer structure

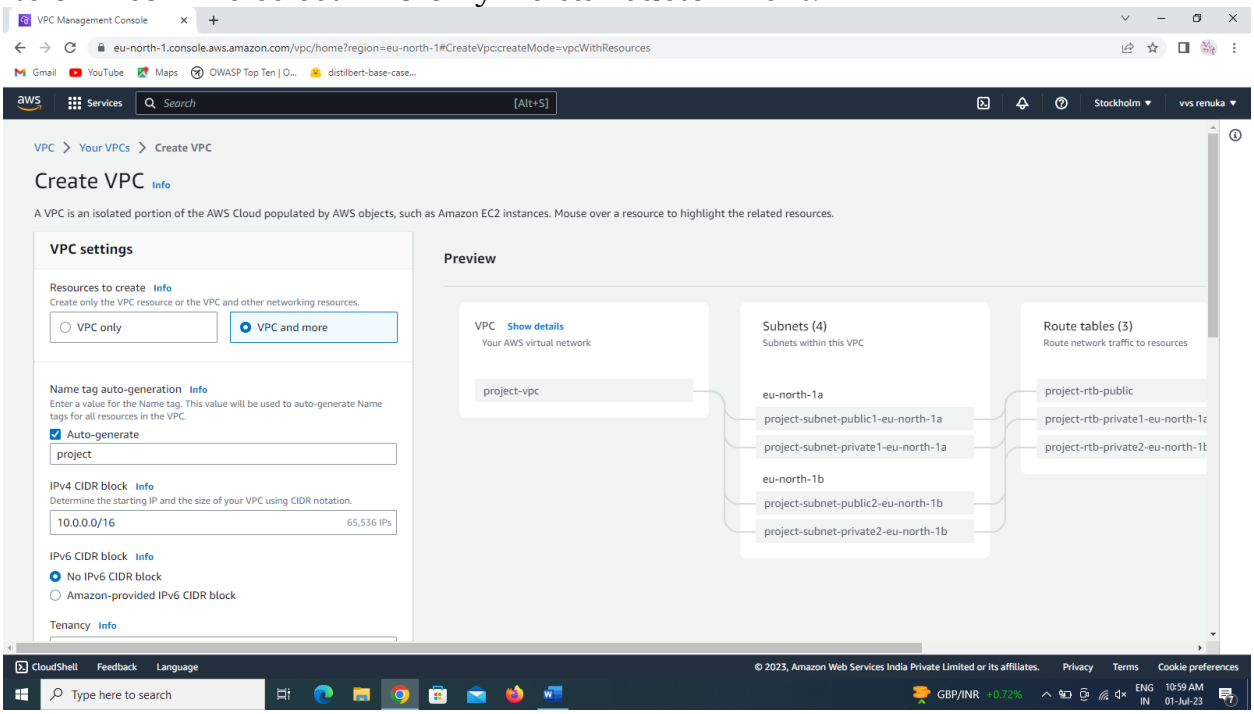
First login to the AWS console and go to VPC service .



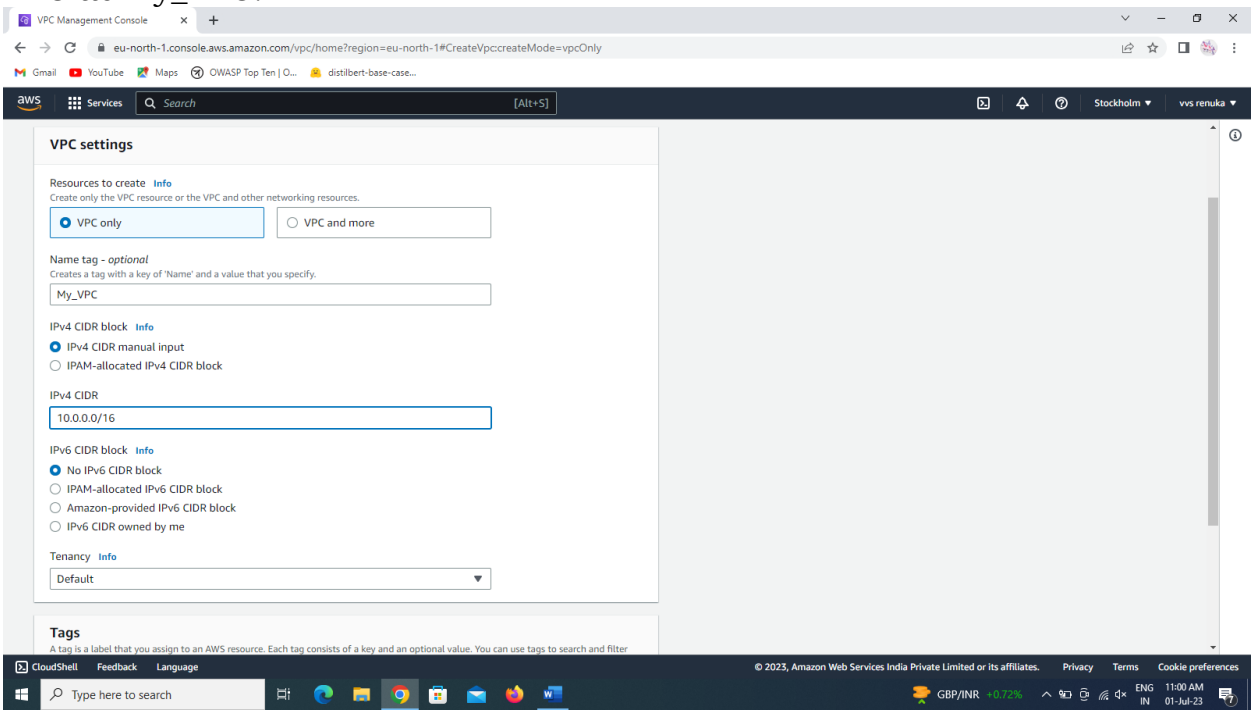
Select Create VPC to create a new VPC.



Next click on VPC only because if we select VPC and more it creates the VPC of its own so if we select VPC only we can customize it.

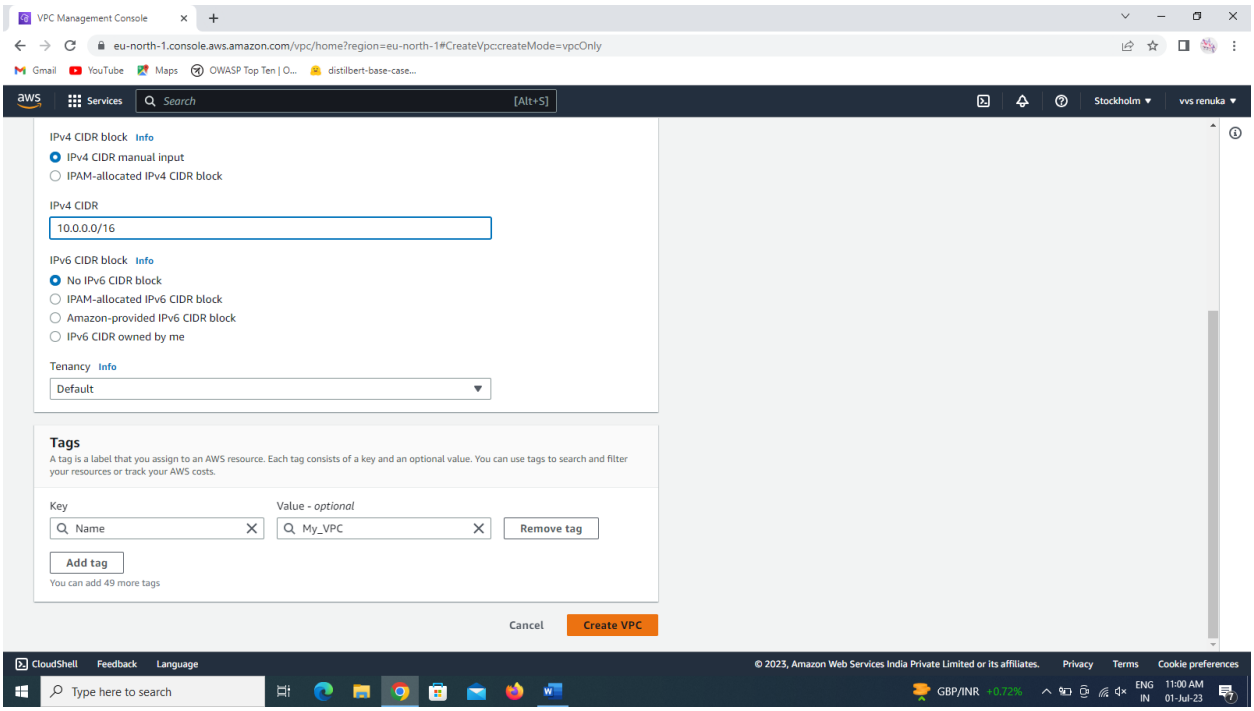


Now give the name to the VPC of your choice here I am giving the name of the VPC as My_VPC.

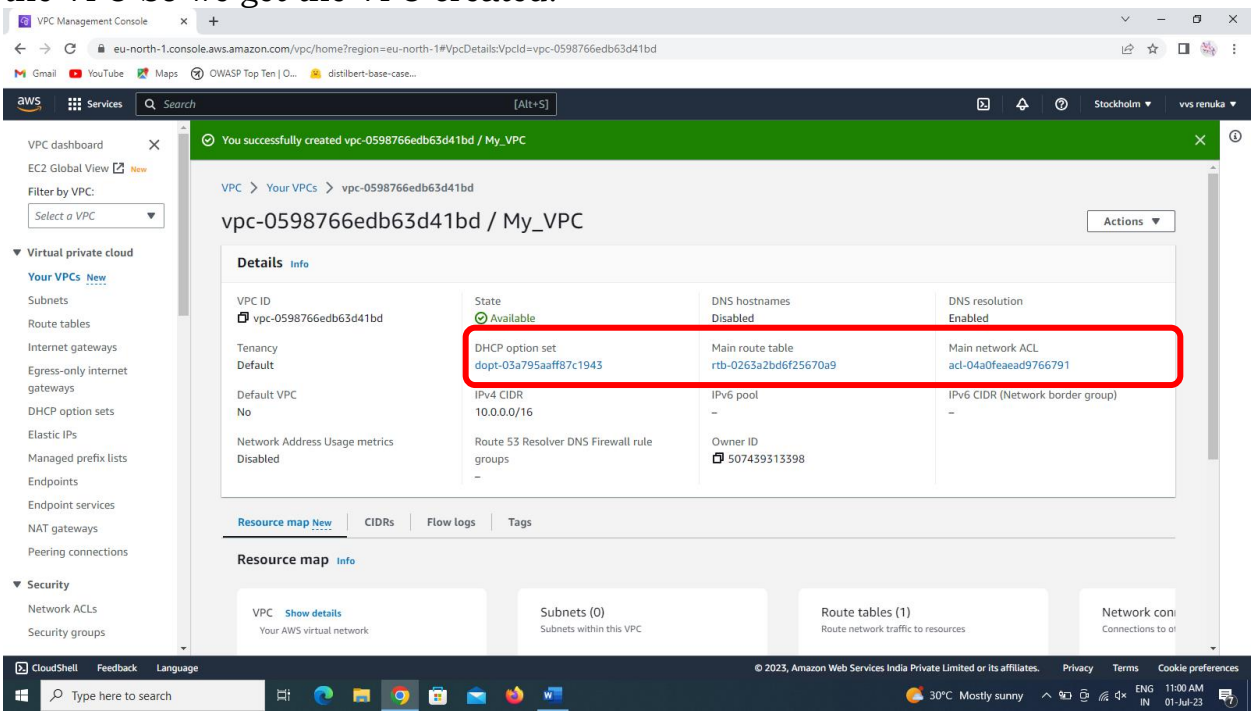


Also give the CIDR range of the VPC as 10.0.0.0/16 which we have seen earlier in the block diagram of the VPC Structure.

Now select the settings related to IPV6 CIDR as no IPV6 CIDR block because we are creating the VPC only in IPV4.



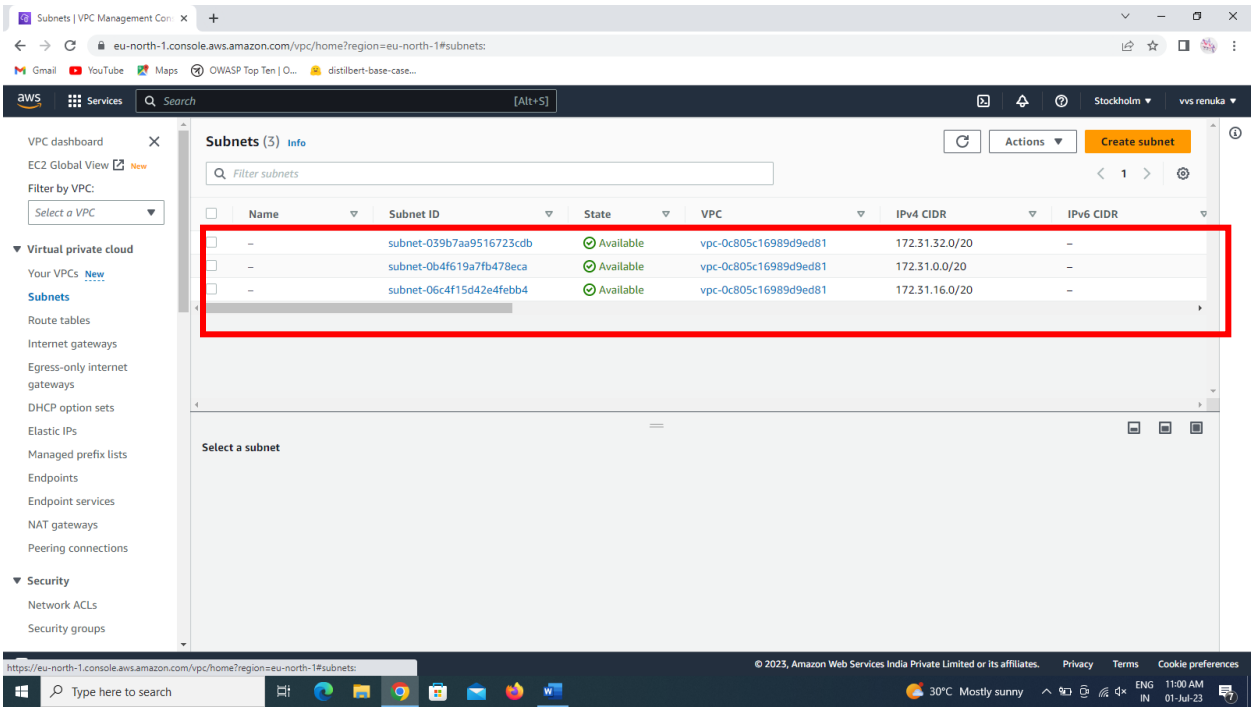
Now finally all the required columns to create the VPC so click on the create the VPC So we get the VPC created.



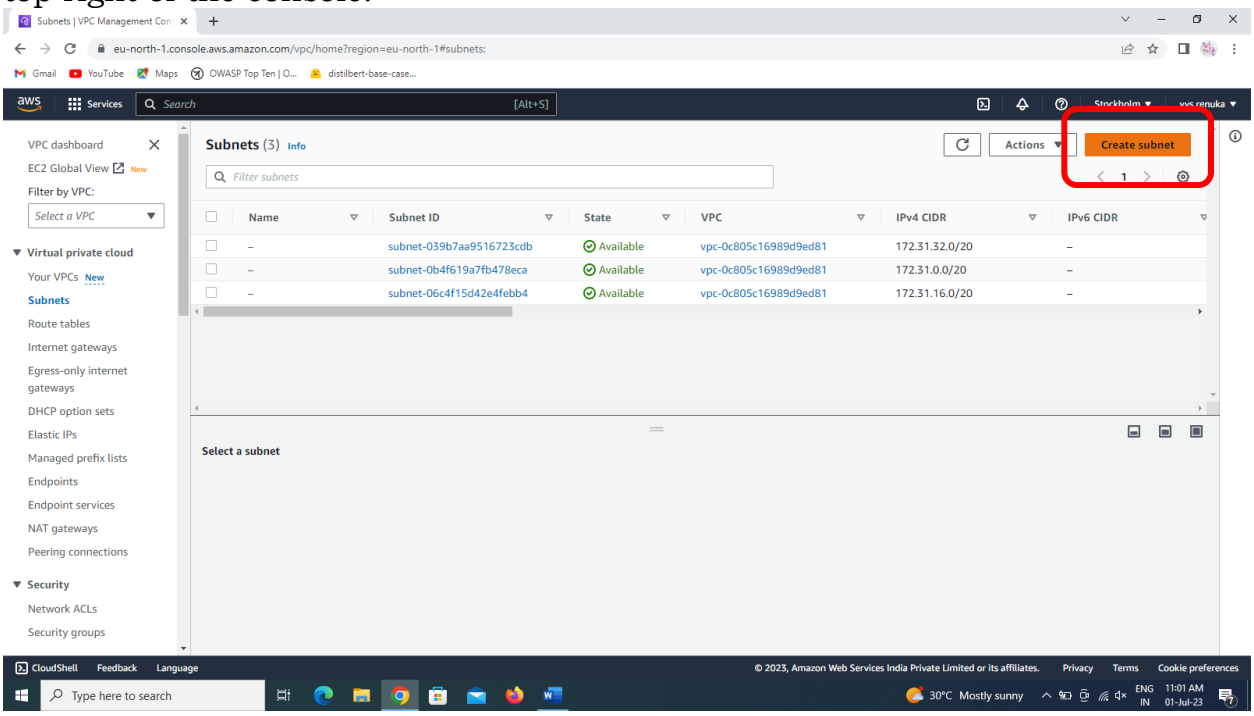
When a VPC is created we can see that there are three default things such as DHCP Option Set, Main Route table , Main NACL are created automatically.

Creation of Subnets

To create subnets go to subnets option in the VPC service which is located on the left pane , here we can find that already 3 subnets are created these subnets are related to the default VPC.

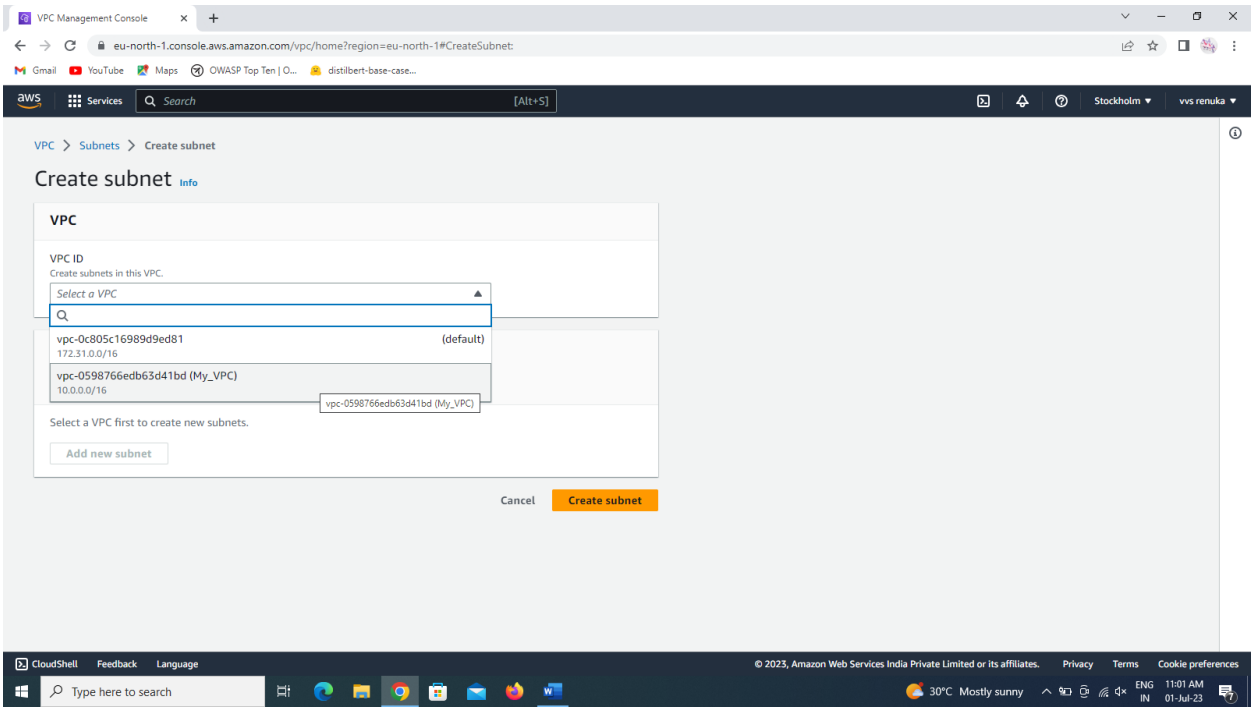


To create the subnets in MY_VPC select create subnet option which is on the top right of the console.

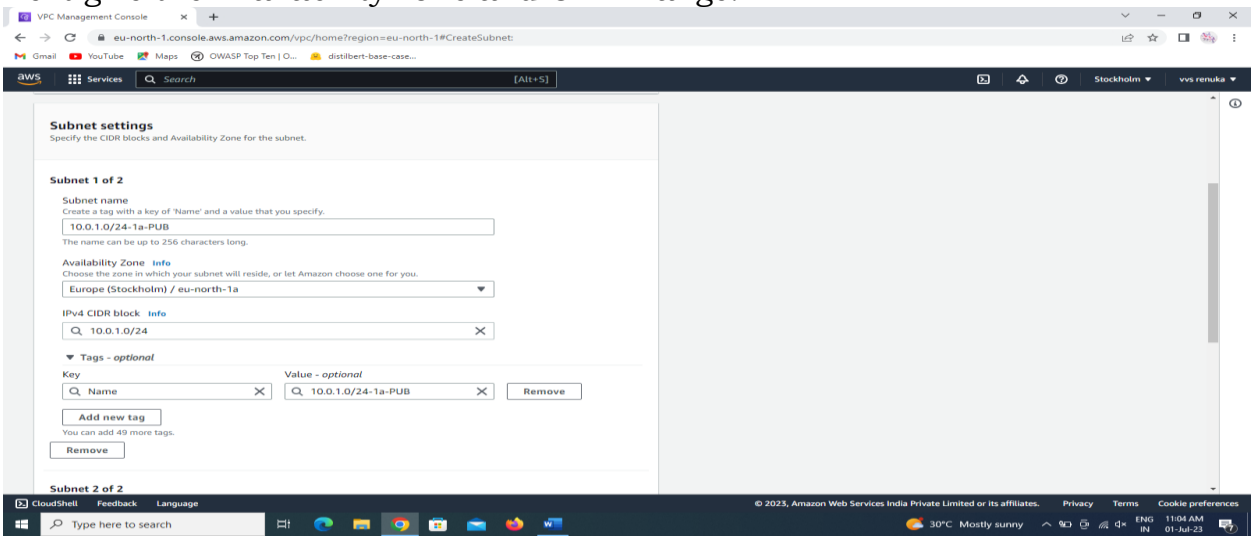


After clicking on the create subnet we get the page asking to select the VPC in which we have to create the subnets.

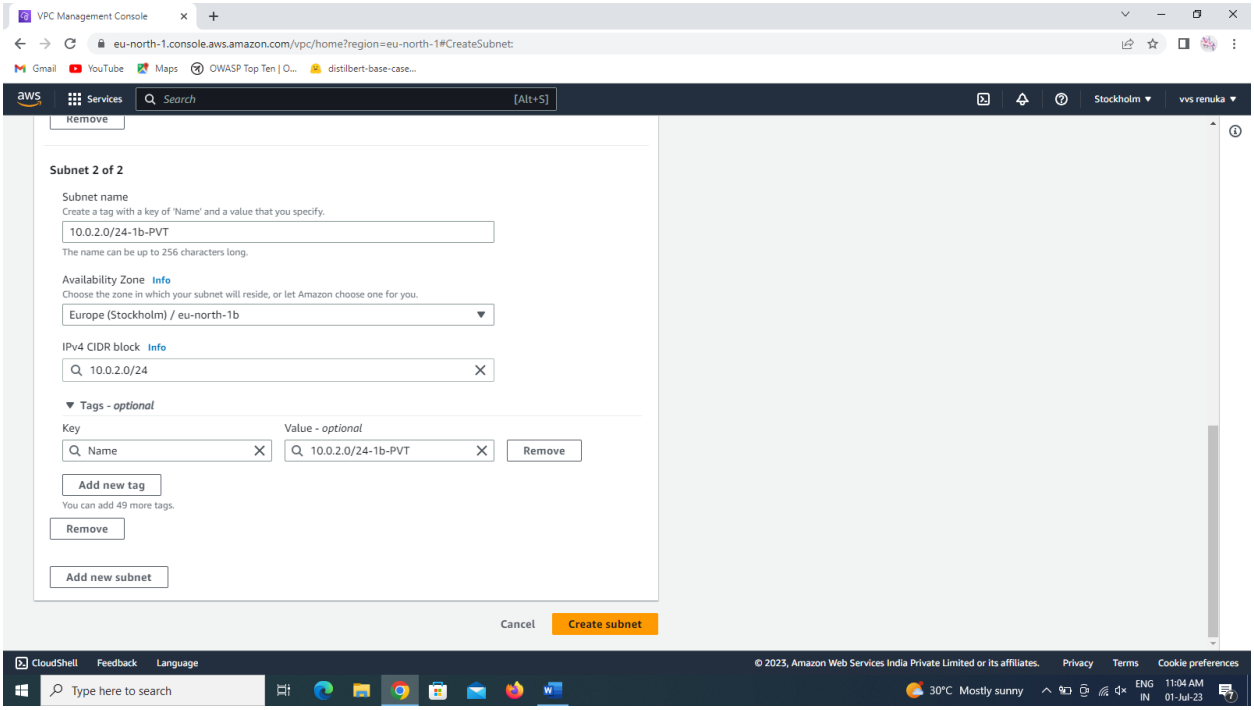
Now select the VPC in which we have to create the subnets to complete the VPC Structure.



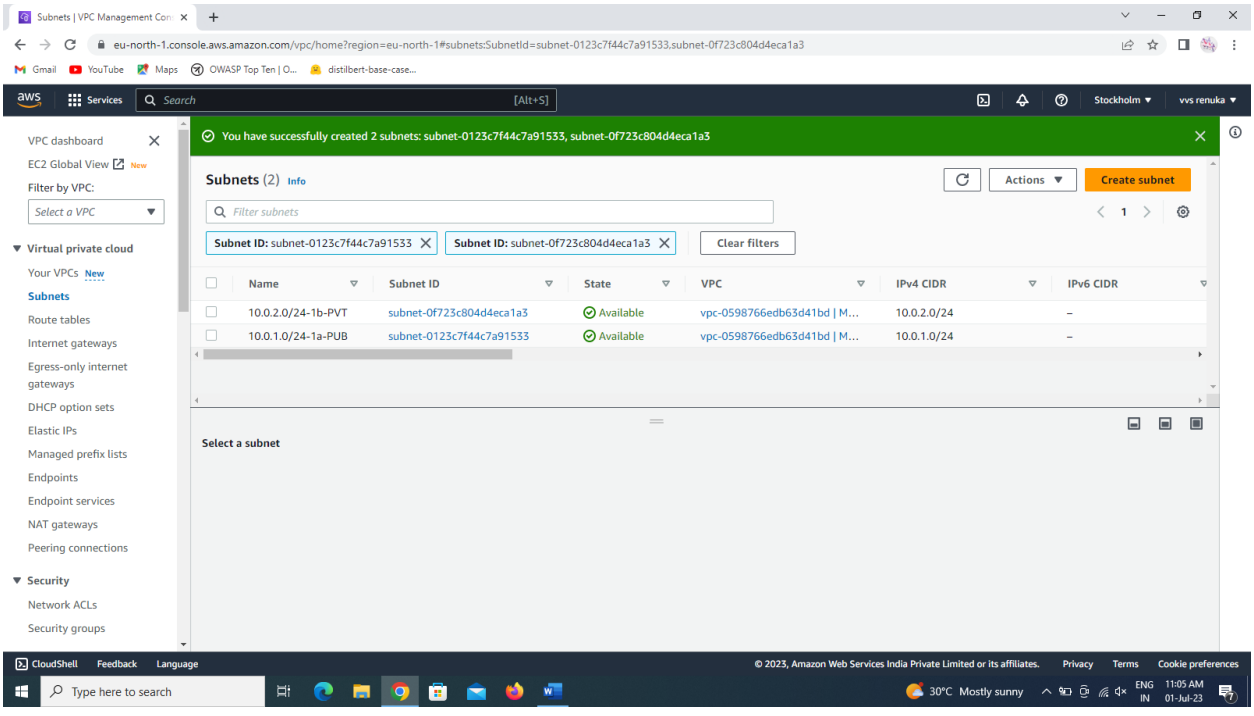
After the selection of the VPC we get the columns to select the qualities required in our subnets that we are going to be created in the VPC .
Here we create the 2 subnets one is public subnet and other one is private subnet but by default both the subnets are private later we make the required subnet as public subnet.
First subnet is Public Subnet
For this first give the name of the subnet as 10.0.1.0/24-1a-PUB
This is the format to easily identify the subnet , in the name of the subnet there are three regions they are CIDR range, Availability zone , type of the subnet.
CIDR range = 10.0.1.0/24
Availability zone = 1a
Type of the subnet = Public
Next give the Availability zone and CIDR range.



As we have created the public subnet like wise we have create the private subnet

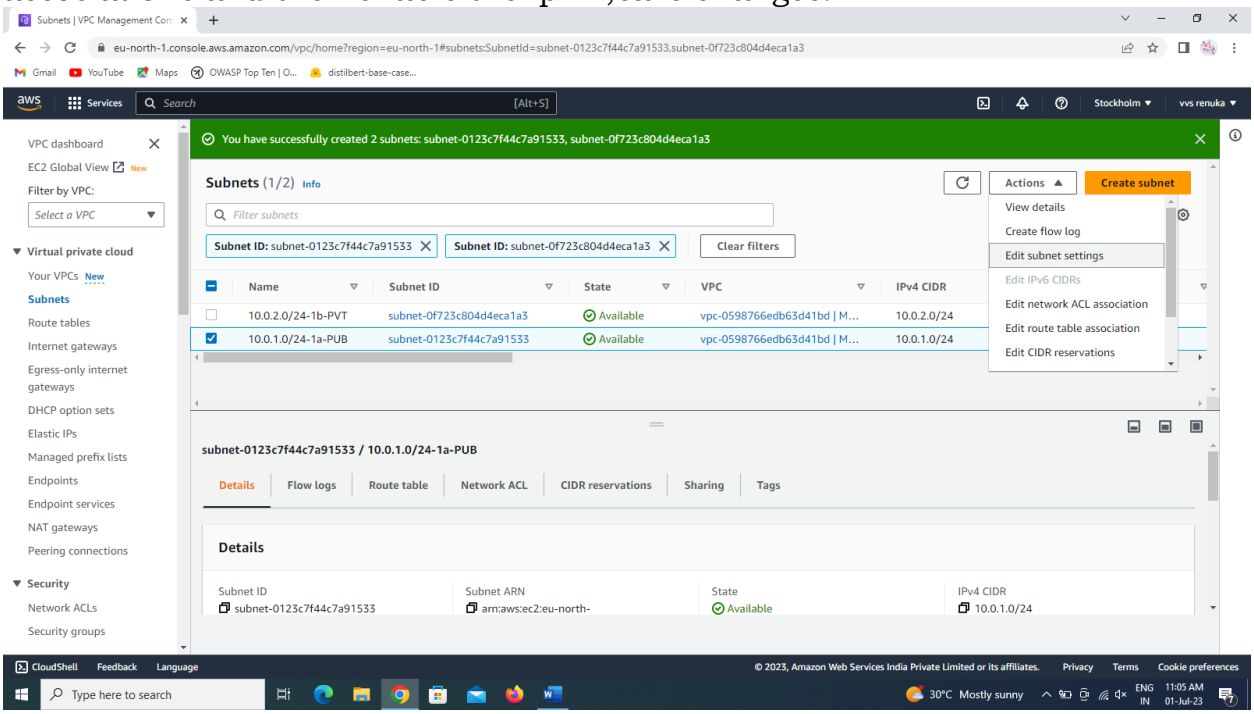


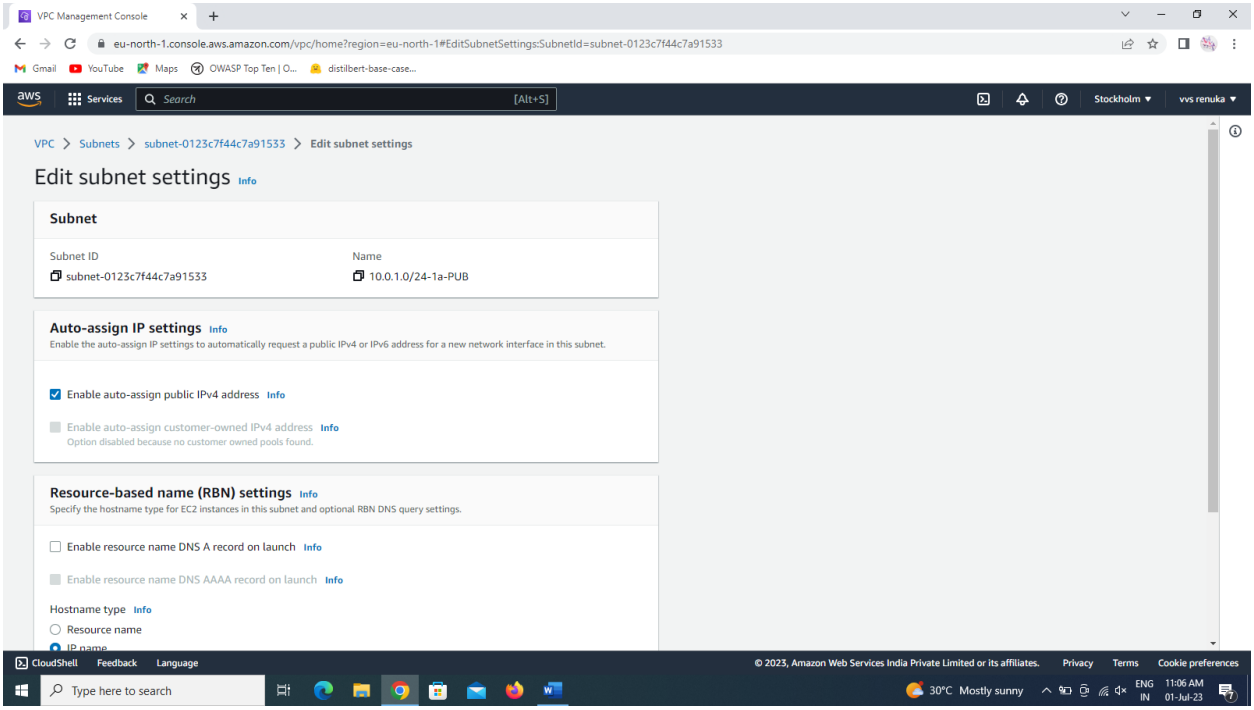
We can see that the 2 subnets are created successfully but the subnet that we have created as public is really not a public subnet it is just a public subnet for name .To make this subnet as public we have to enable the public and then create a IGW and connect it to the subnet.



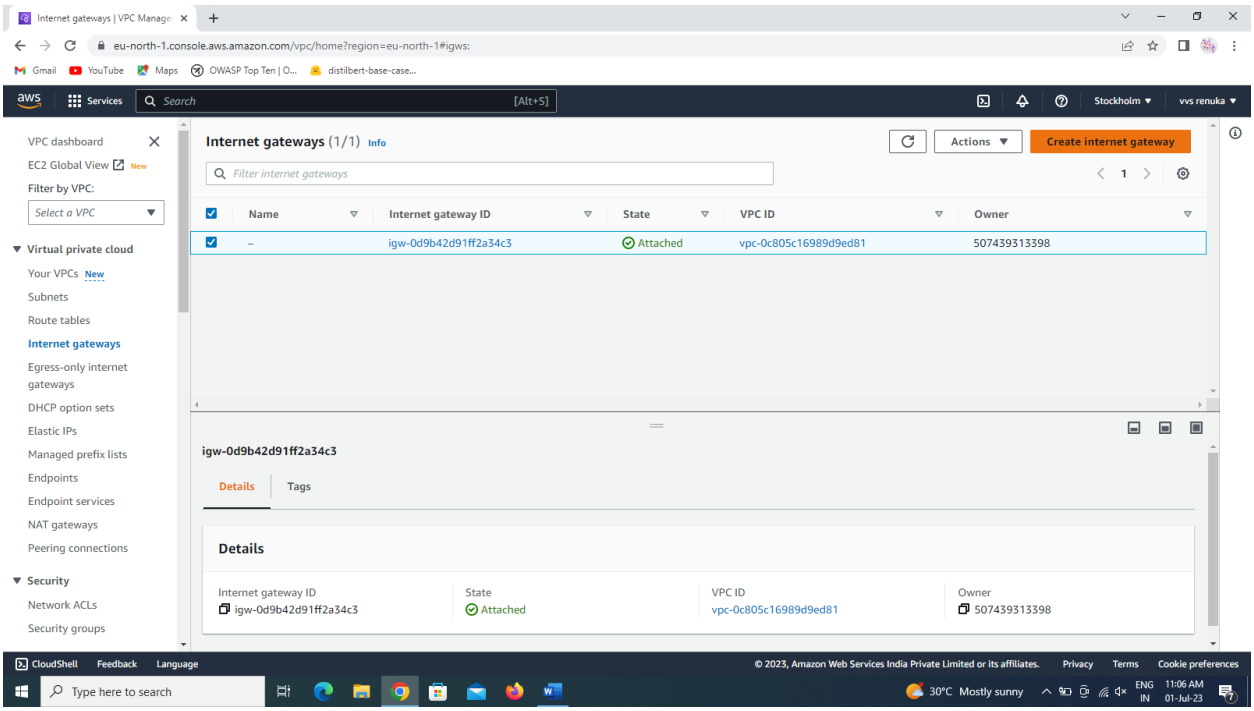
Making the public subnet as public

Select the public subnet and then go to actions and select edit subnet associations and then enable the ipv4 ,save changes.

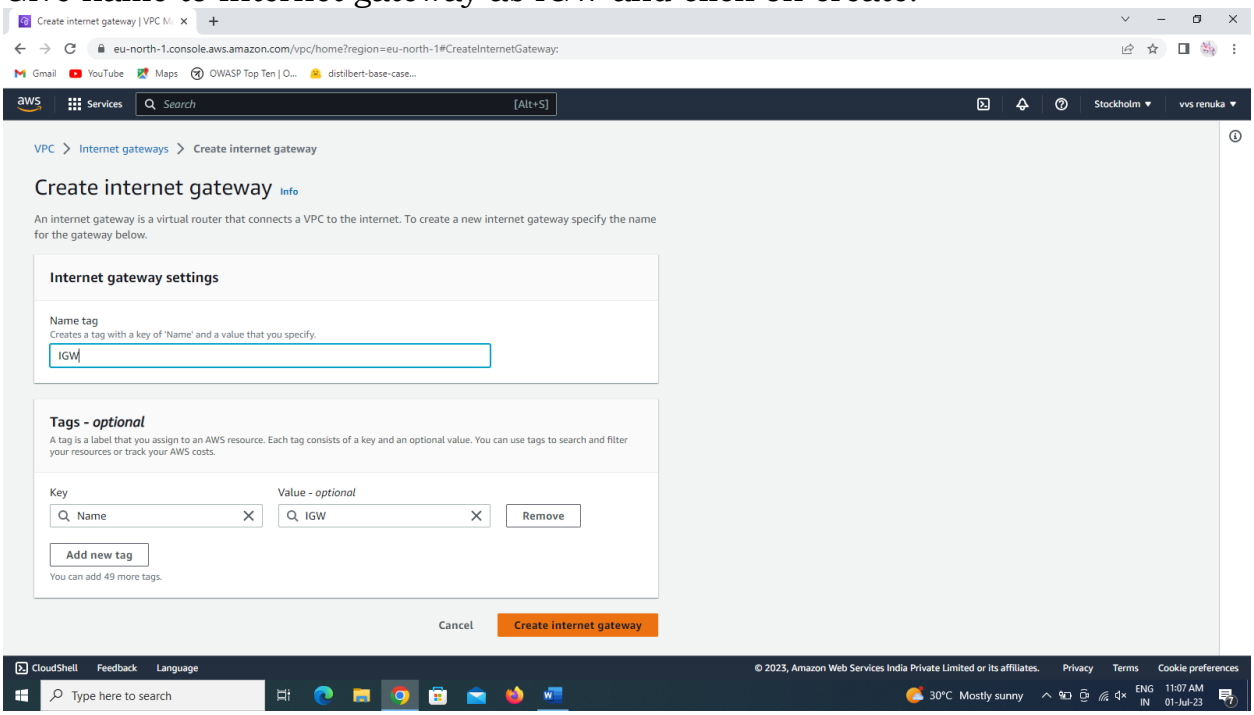




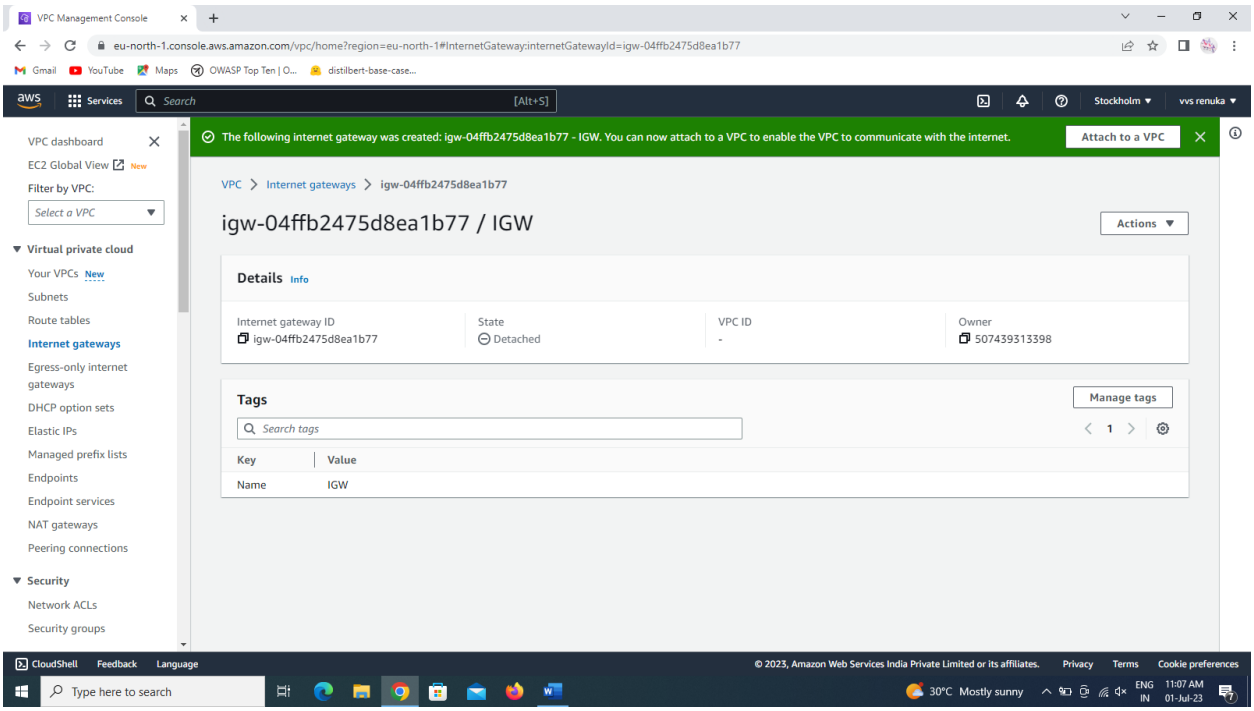
To create an Internet Gateway select the internet gateway option.



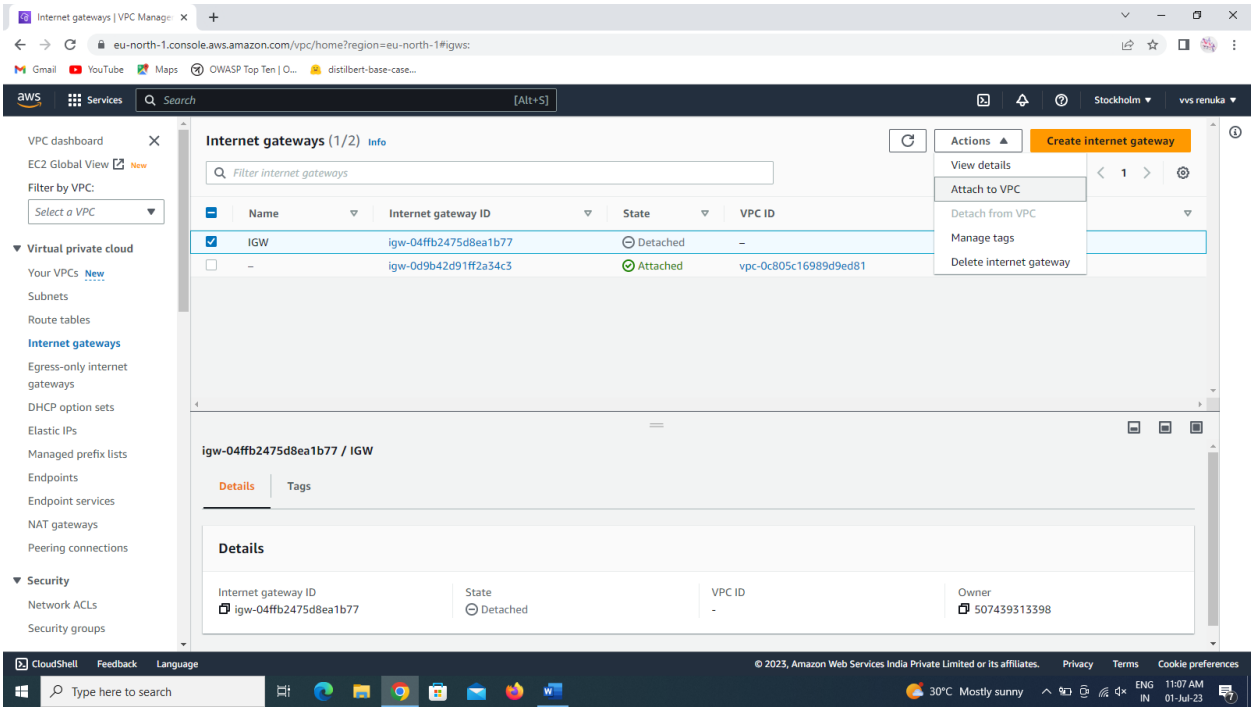
Give name to Internet gateway as IGW and click on create.

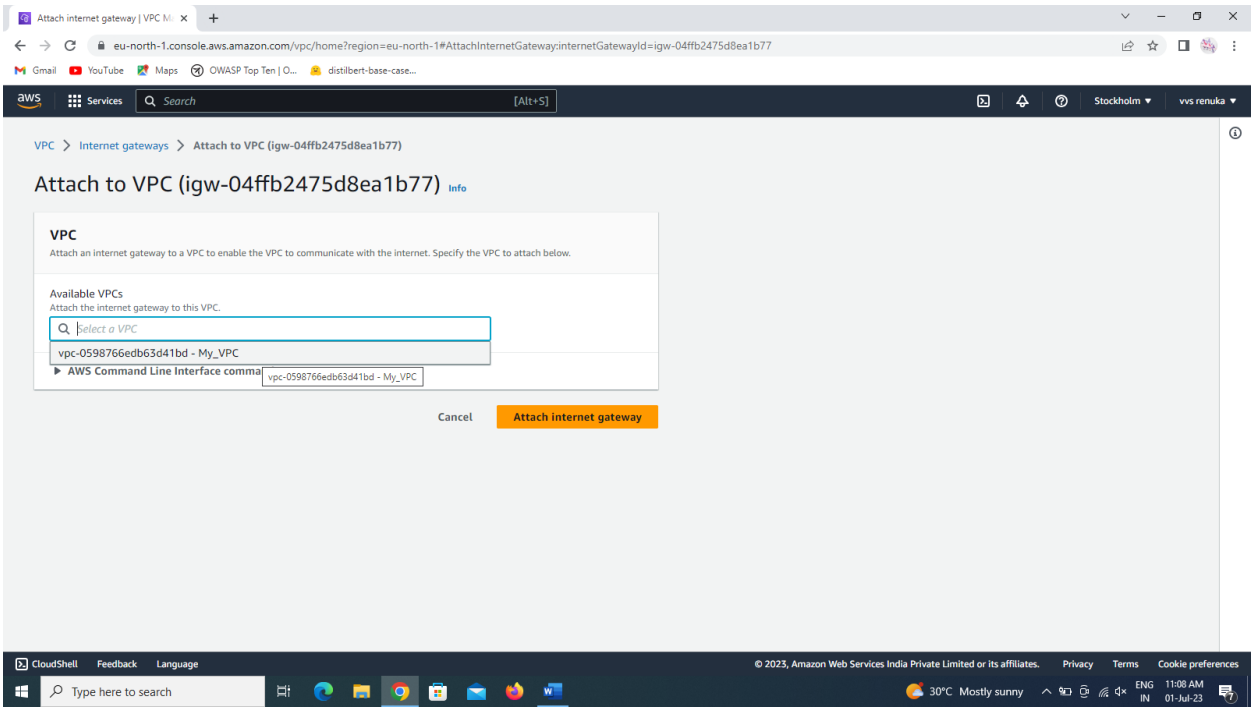


Now we can see that the IGW is created.

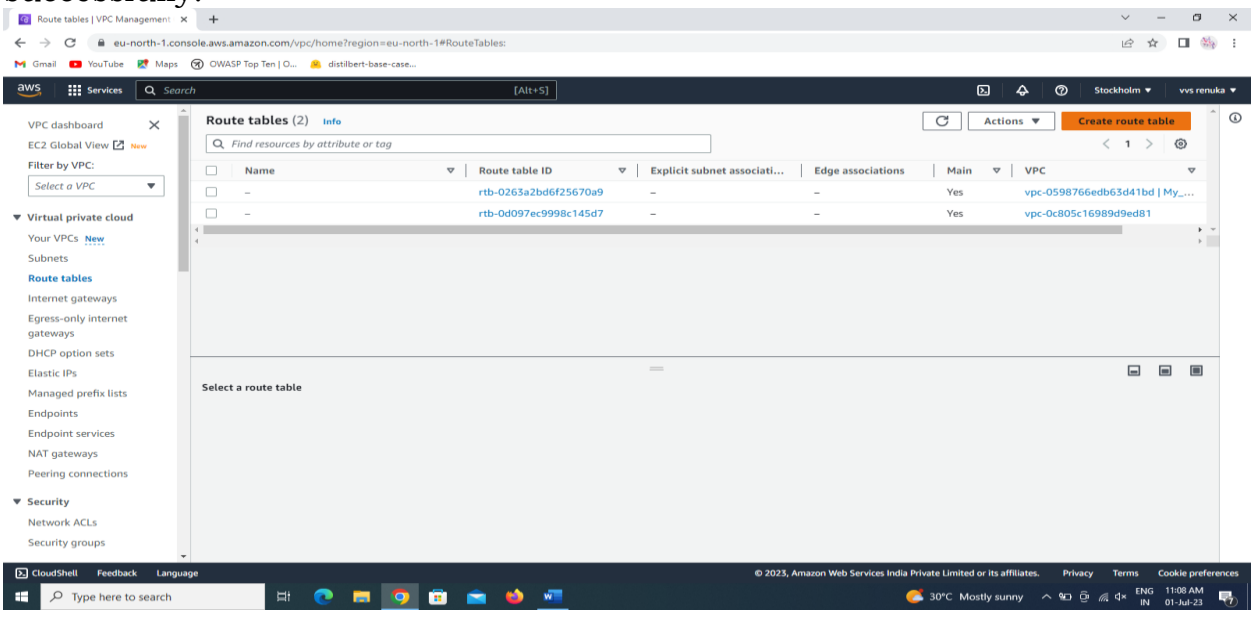


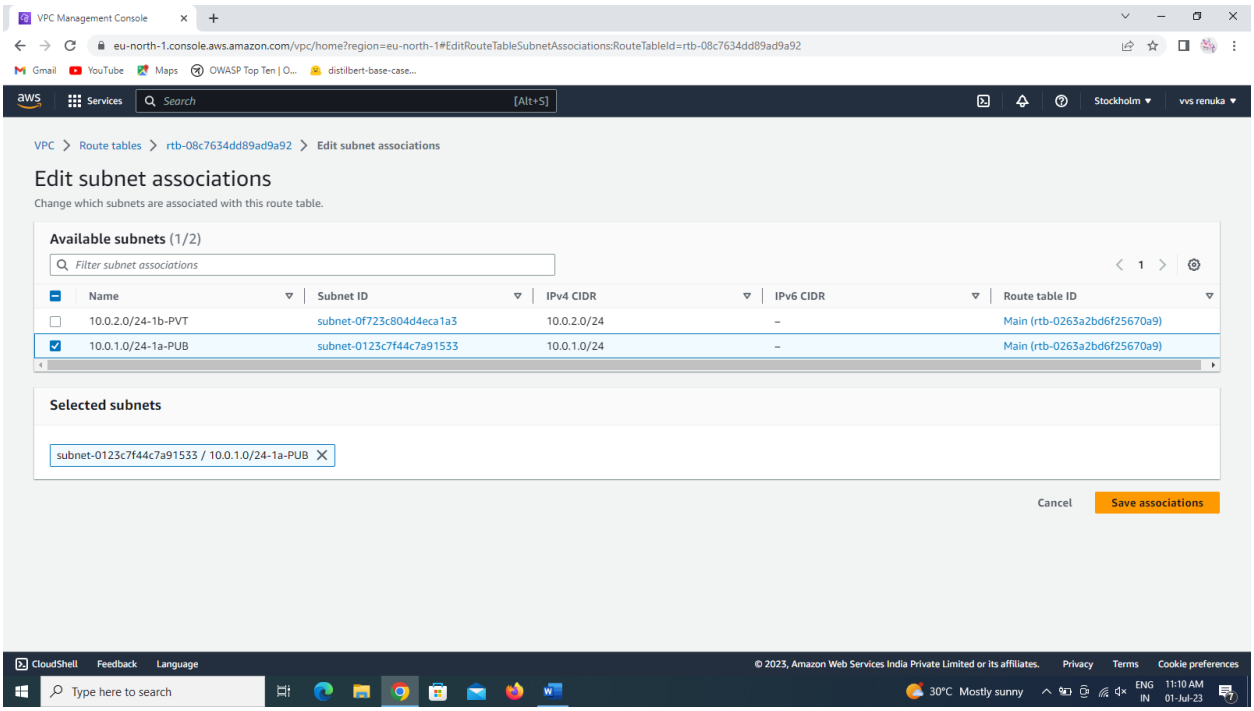
Now attach the IGW to the VPC .

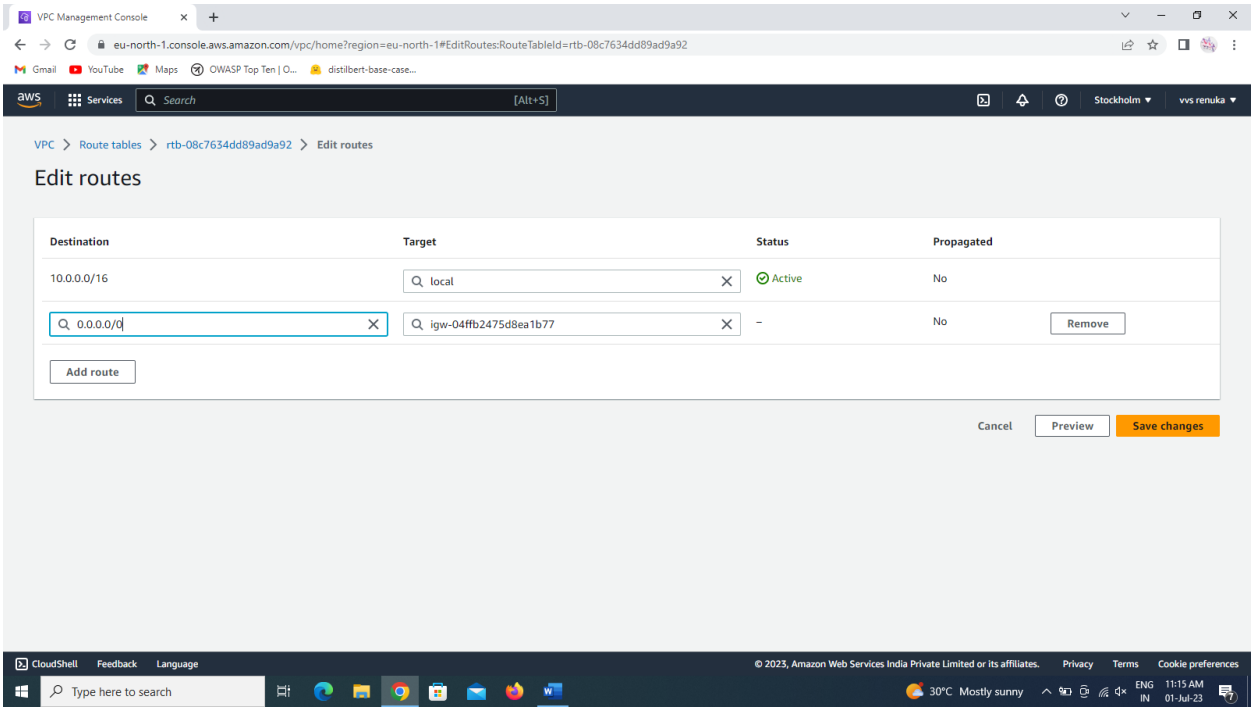




We have successfully created the internet gate way and attached it to the subnet to make it public for this we require to create a route table when a VPC is created a Route table is created which is main route table but to connect IGW to the public subnet we require a custom route table.
After creating the route table edit the subnet associations and add the public subnet to it but other end of the route table is not connected for this we reuire to the route of the IGW to the route table.
Now the connection between the subnet and IGW through RT was established successfully.



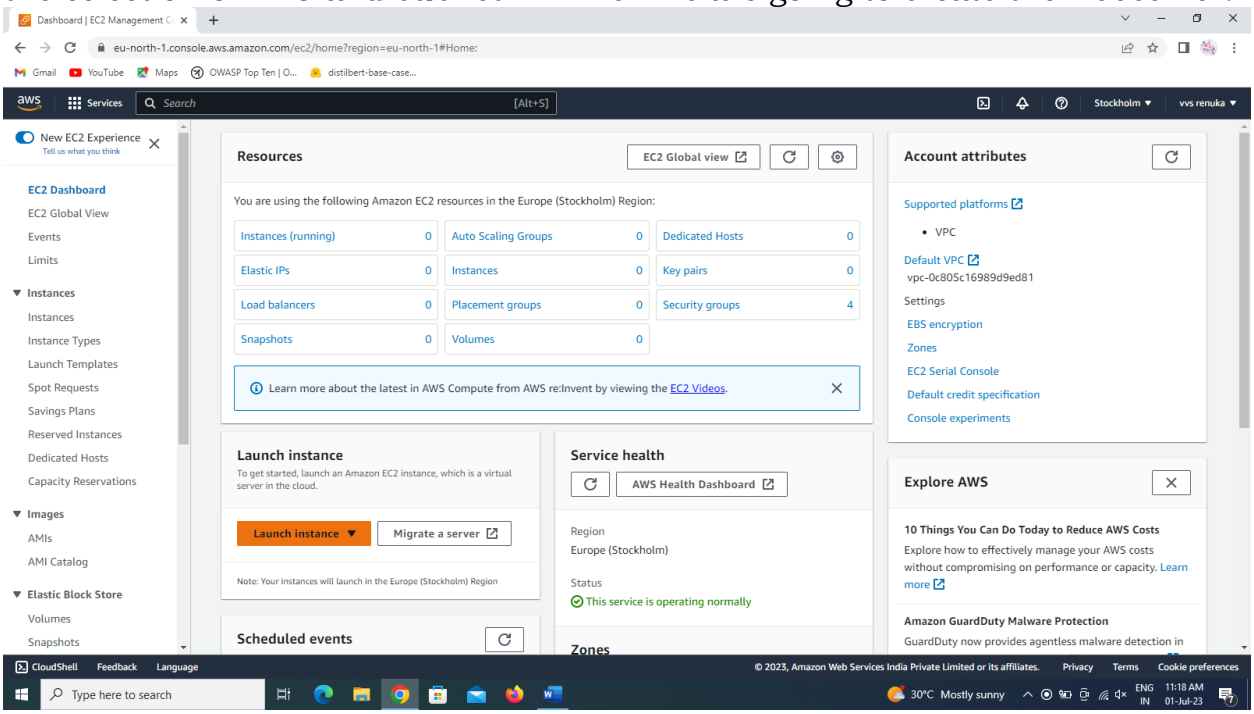


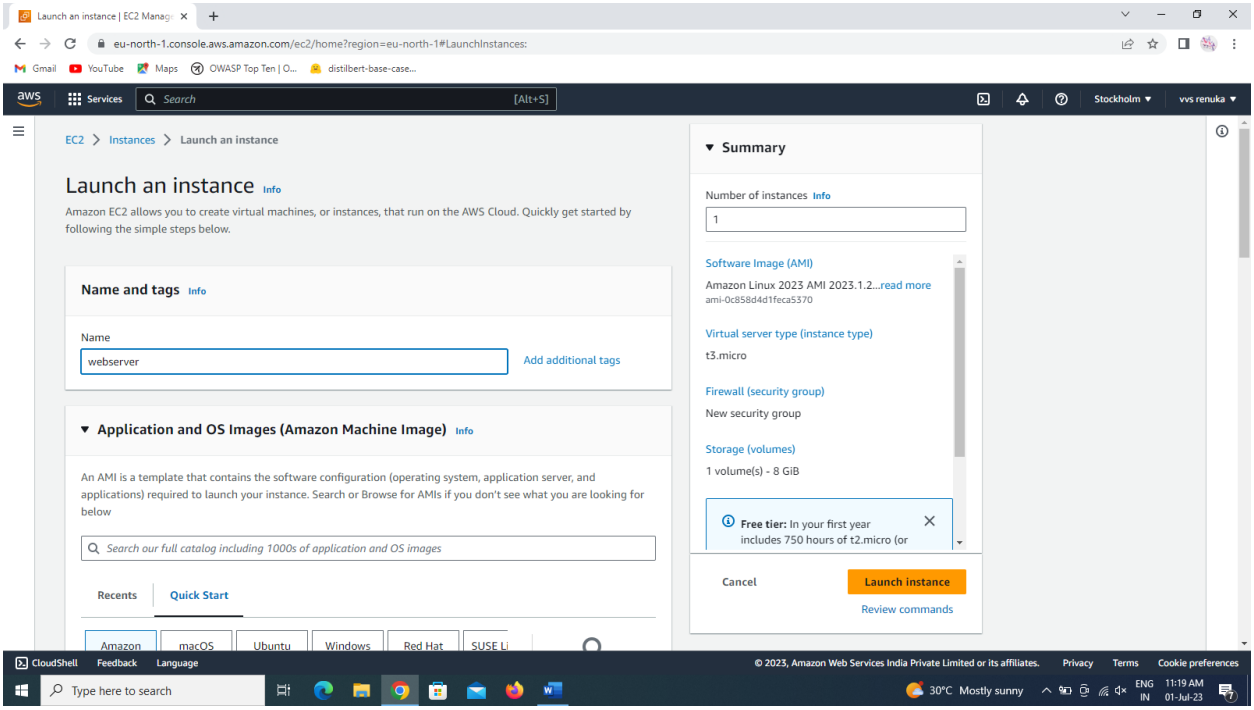


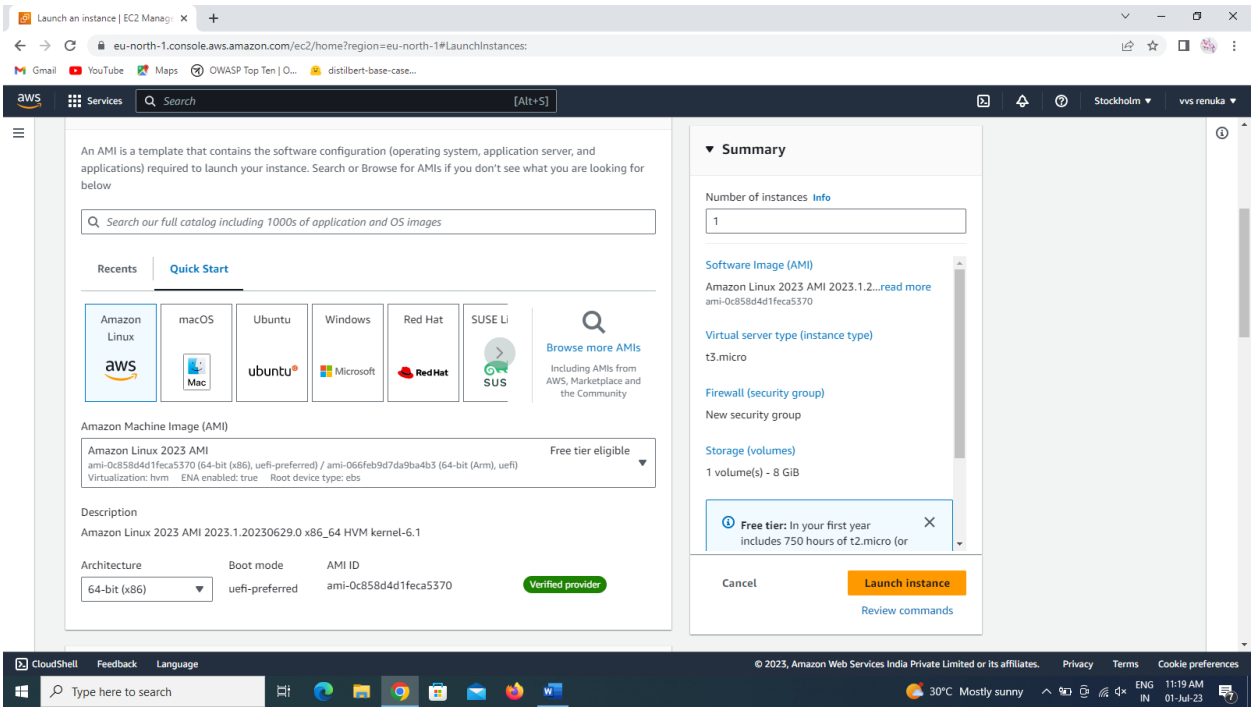
Creation of webserver

We have to create the webserver in the public subnet for this we have go to ec2 service and then create an instance named as webserver having the linux os , t3.micro as instance type . here I have created a new keypair named as ws and the security group is also named as ws for easy identification. Untill we have

seen only selection of security groups, security group rules but here we can see the selection of VPC and subnet in which we are going to create the webserver.






Launch an instance | EC2 Manag
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:
Gmail YouTube Maps OWASP Top Ten | O... distilbert-base-case...
aws Services Search [Alt+S] Stockholm vvs renuka
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
Recents Quick Start
Amazon Linux
macOS
Ubuntu
Windows
Red Hat
SUSE Li
Browse more AMIs
Including AMIs from AWS, Marketplace and the Community
Amazon Machine Image (AMI)
Amazon Linux 2023 AMI
ami-0c858d4d1feca5370 (64-bit (x86), uefi-preferred) / ami-066feb9d7da9ba4b3 (64-bit (Arm), uefi)
Virtualization: hvm ENA enabled: true Root device type: ebs
Free tier eligible
Description
Amazon Linux 2023 AMI 2023.1.20230629.0 x86_64 HVM kernel-6.1
Architecture
64-bit (x86)
Boot mode
uefi-preferred
AMI ID
ami-0c858d4d1feca5370
Verified provider
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.1.2...read more
ami-0c858d4d1feca5370
Virtual server type (instance type)
t3.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
Cancel
Launch instance
Review commands
CloudShell Feedback Language
© 2023, Amazon Web Services India Private Limited or its affiliates. Privacy Terms Cookie preferences
Type here to search
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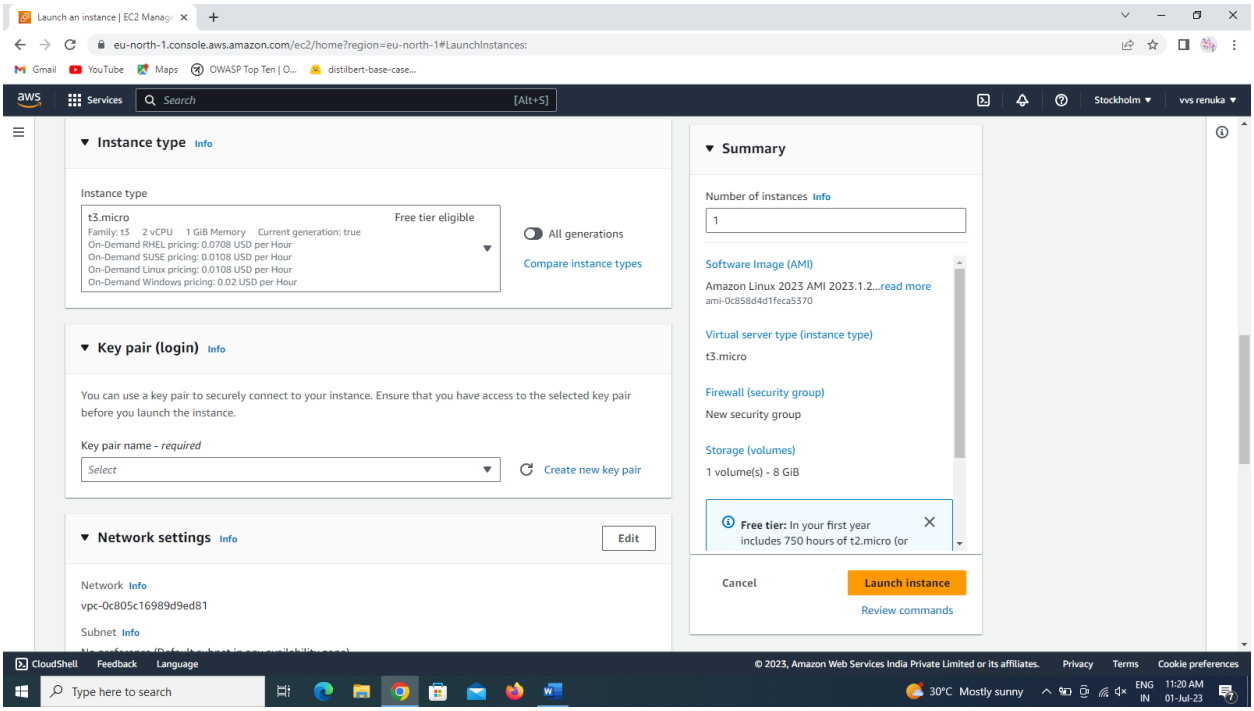
ENG IN 11:19 AM 01-Jul-23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eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:
Gmail YouTube Maps OWASP Top Ten | O... distilbert-base-case...
aws Services Search [Alt+S] Stockholm vvs renuka
Instance type Info
Instance type
t3.micro
Family: t3 2 vCPU 1 GiB Memory Current generation: true
On-Demand RHEL pricing: 0.0708 USD per Hour
On-Demand SUSE pricing: 0.0108 USD per Hour
On-Demand Linux pricing: 0.0108 USD per Hour
On-Demand Windows pricing: 0.02 USD per Hour
Free tier eligible
All generations
Compare instance types
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 - required
Select
Create new key pair
Network settings Info
Edit
Network Info
vpc-0c805c16989d9ed81
Subnet Info
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.1.2...read more
ami-0c858d4d1feca5370
Virtual server type (instance type)
t3.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
Cancel
Launch instance
Review commands
CloudShell Feedback Language
© 2023, Amazon Web Services India Private Limited or its affiliates. Privacy Terms Cookie preferences
Type here to search
30°C Mostly sunny
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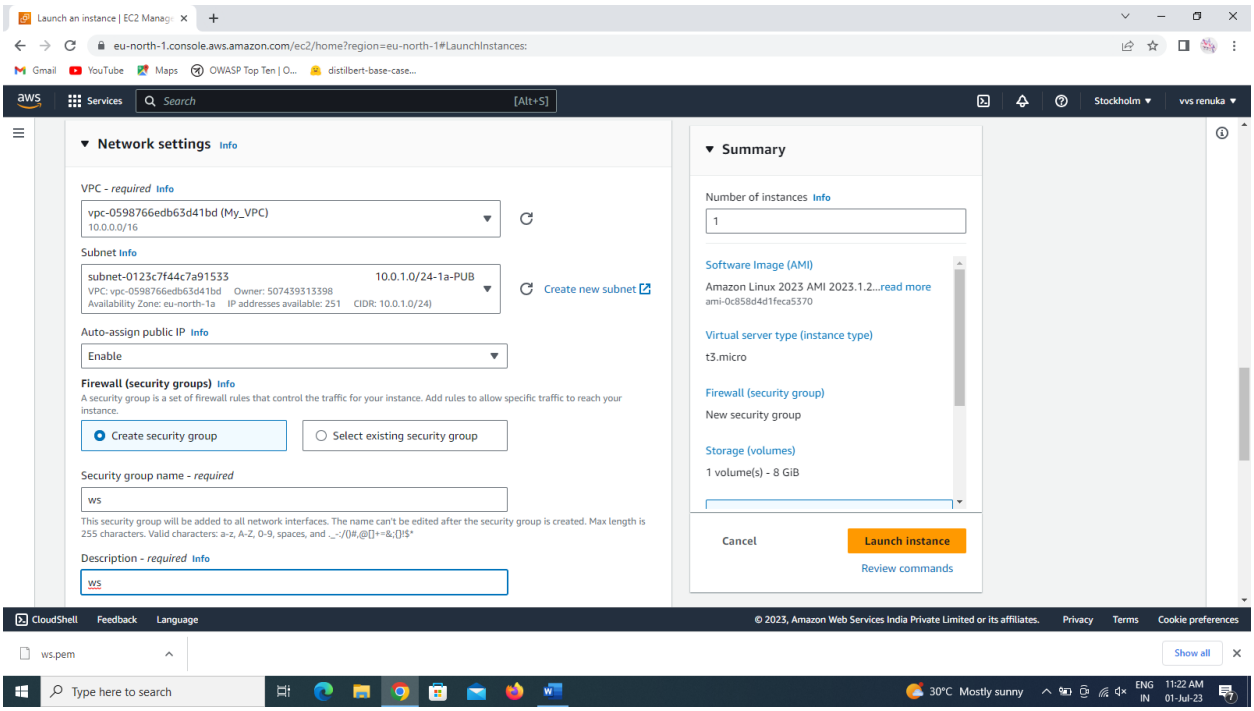
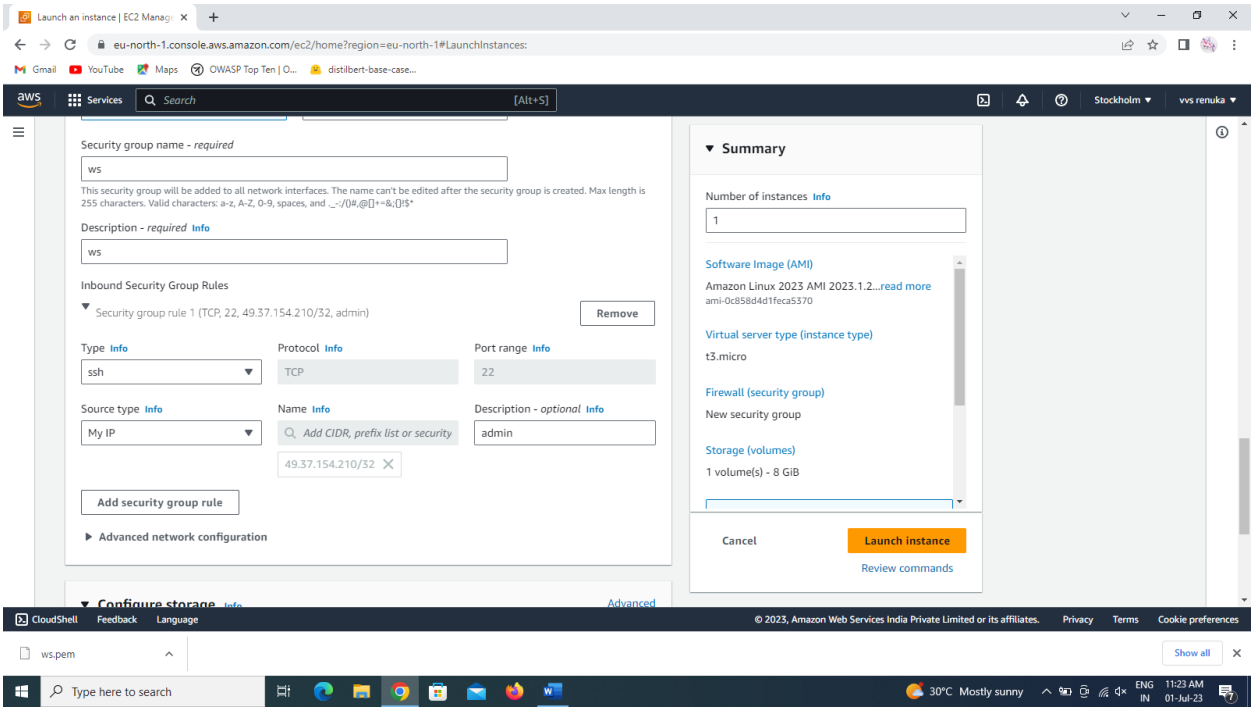
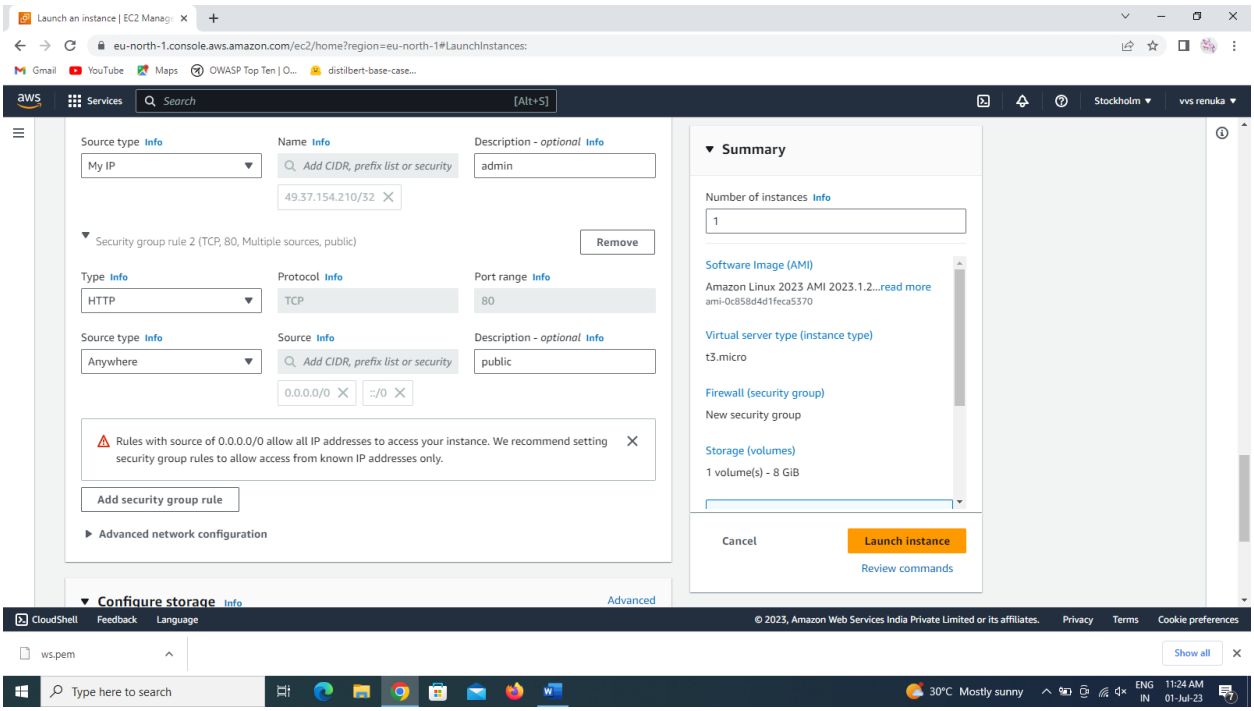




Here we create the webserver statically so we have to paste the bin bash commands.


Launch an instance | EC2 Manag
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:
Gmail
YouTube
Maps
OWASP Top Ten | O...
distilbert-base-case...
aws
Services
Search
[Alt+S]
Stockholm
vvs renuka
Source type Info
My IP
Name Info
Add CIDR, prefix list or security
Description - optional Info
admin
49.37.154.210/32
Security group rule 2 (TCP, 80, Multiple sources, public)
Remove
Type Info
HTTP
Protocol Info
TCP
Port range Info
80
Source type Info
Anywhere
Source Info
Add CIDR, prefix list or security
Description - optional Info
public
0.0.0.0/0
::/0
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
Configure storage Info
Advanced
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.1.2...read more
ami-0c858d4d1feca5370
Virtual server type (instance type)
t3.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Cancel
Launch instance
Review commands
CloudShell
Feedback
Language
© 2023, Amazon Web Services India Private Limited or its affiliates.
Privacy
Terms
Cookie preferences
ws.pem
Show all
Type here to search
30°C Mostly sunny
ENG
IN
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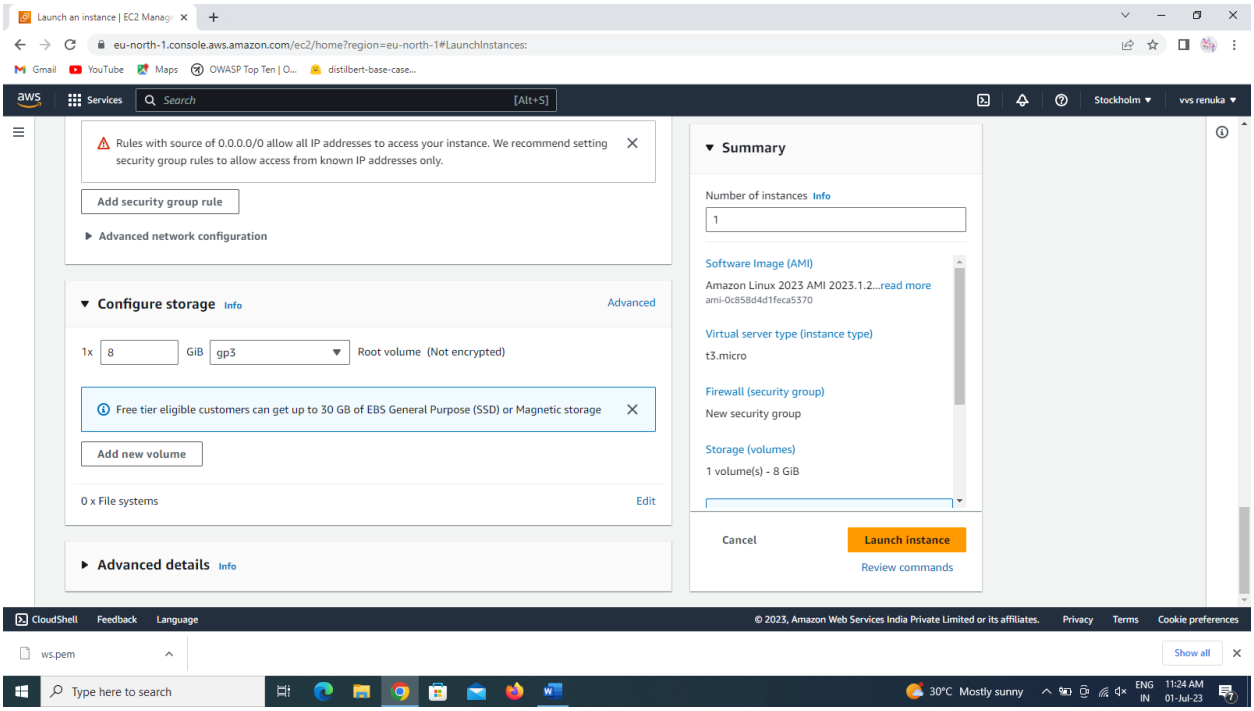
01-Jul-23


Launch an instance | EC2 Manag
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:
Gmail
YouTube
Maps
OWASP Top Ten | O...
distilbert-base-case...
aws
Services
Search
[Alt+S]
Stockholm
vvs renuka
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
Configure storage Info
Advanced
1x
8
GiB
gp3
Root volume (Not encrypted)
Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage
Add new volume
0 x File systems
Edit
Advanced details Info
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.1.2...read more
ami-0c858d4d1feca5370
Virtual server type (instance type)
t3.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Cancel
Launch instance
Review commands
CloudShell
Feedback
Language
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ws.pem
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IN
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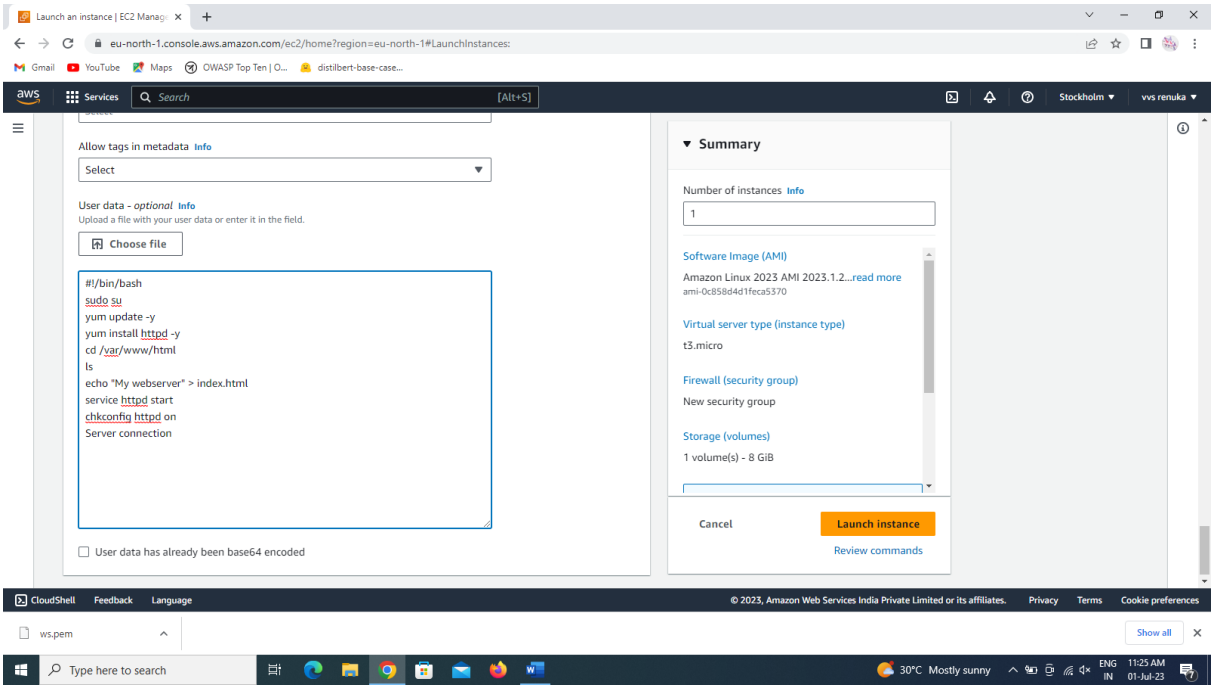
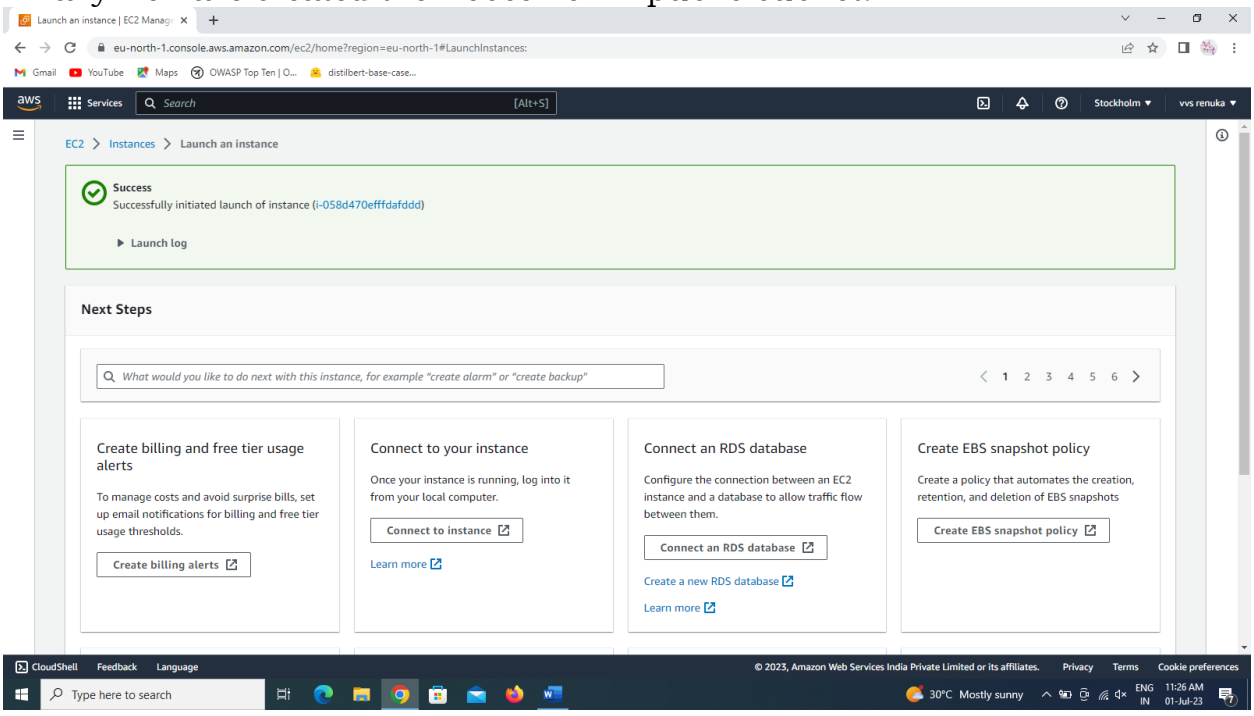
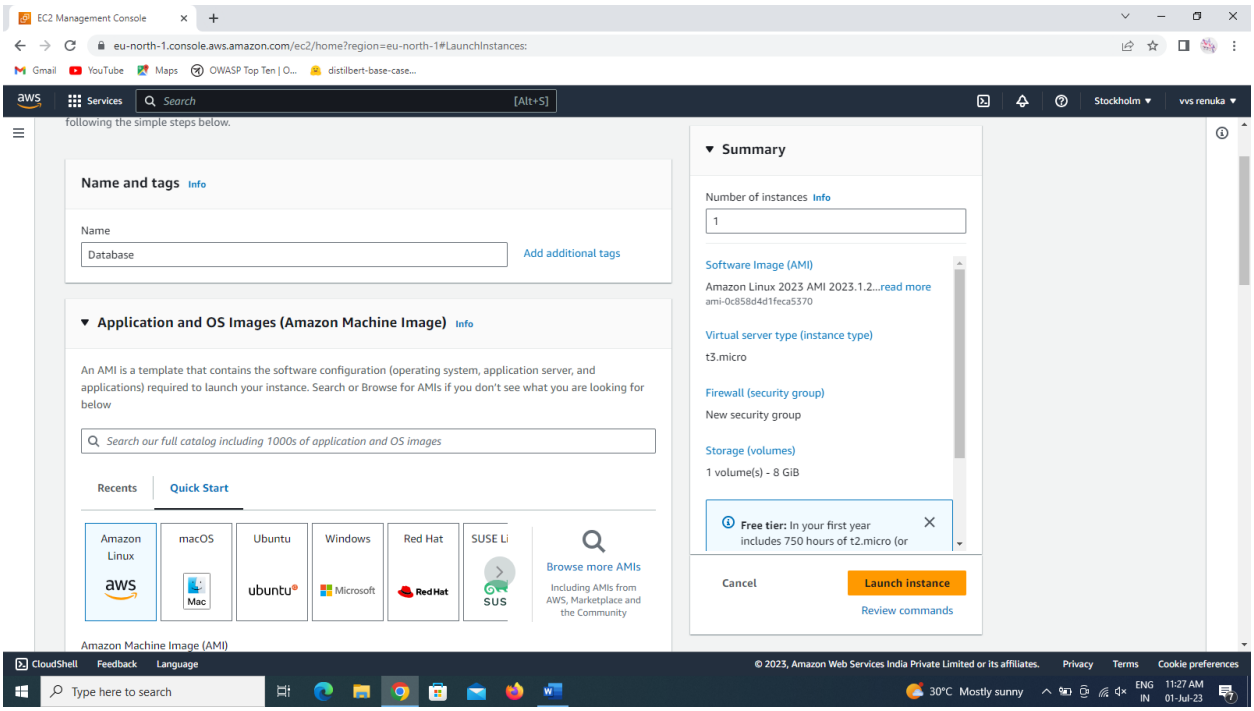
01-Jul-23



Finally we have created the webserver in public subnet.



Now we also have to create the Data base server in the private subnet. Data base subnet also have same specifications related to os and type but name ,vpc ,subnet ,security group and security group rules are changed.


EC2 Management Console
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:
Gmail YouTube Maps OWASP Top Ten | O... distilbert-base-case...
aws Services Search [Alt+S] Stockholm vvs renuka
following the simple steps below.
Name and tags Info
Name
Database
Add additional tags
Application and OS Images (Amazon Machine Image) 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
Recents Quick Start
Amazon Linux
macOS
Ubuntu
Windows
Red Hat
SUSE Li
Browse more AMIs
Including AMIs from AWS, Marketplace and the Community
Amazon Machine Image (AMI)
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.1.2...read more
ami-0c858d4d1feca5370
Virtual server type (instance type)
t3.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
Cancel
Launch instance
Review commands
CloudShell Feedback Language
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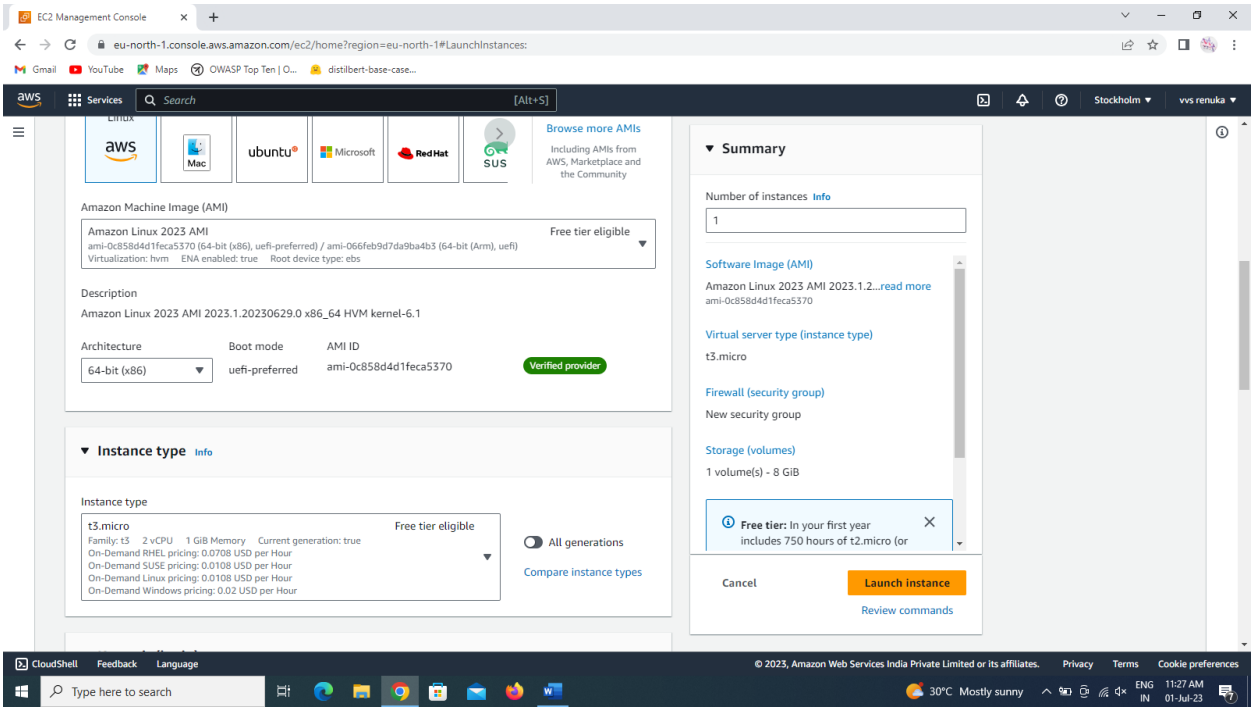
EC2 Management Console
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:
Gmail YouTube Maps OWASP Top Ten | O... distilbert-base-case...
aws Services Search [Alt+S] Stockholm vvs renuka
Browse more AMIs
Including AMIs from AWS, Marketplace and the Community
Amazon Machine Image (AMI)
Amazon Linux 2023 AMI
ami-0c858d4d1feca5370 (64-bit (x86), uefi-preferred) / ami-066feb9d7da9ba4b3 (64-bit (Arm), uefi)
Virtualization: hvm ENA enabled: true Root device type: ebs
Free tier eligible
Description
Amazon Linux 2023 AMI 2023.1.20230629.0 x86_64 HVM kernel-6.1
Architecture
64-bit (x86)
Boot mode
uefi-preferred
AMI ID
ami-0c858d4d1feca5370
Verified provider
Instance type Info
Instance type
t3.micro
Free tier eligible
Family: t3 2 vCPU 1 GiB Memory Current generation: true
On-Demand RHEL pricing: 0.0708 USD per Hour
On-Demand SUSE pricing: 0.0108 USD per Hour
On-Demand Linux pricing: 0.0108 USD per Hour
On-Demand Windows pricing: 0.02 USD per Hour
All generations
Compare instance types
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.1.2...read more
ami-0c858d4d1feca5370
Virtual server type (instance type)
t3.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
Cancel
Launch instance
Review commands
CloudShell Feedback Language
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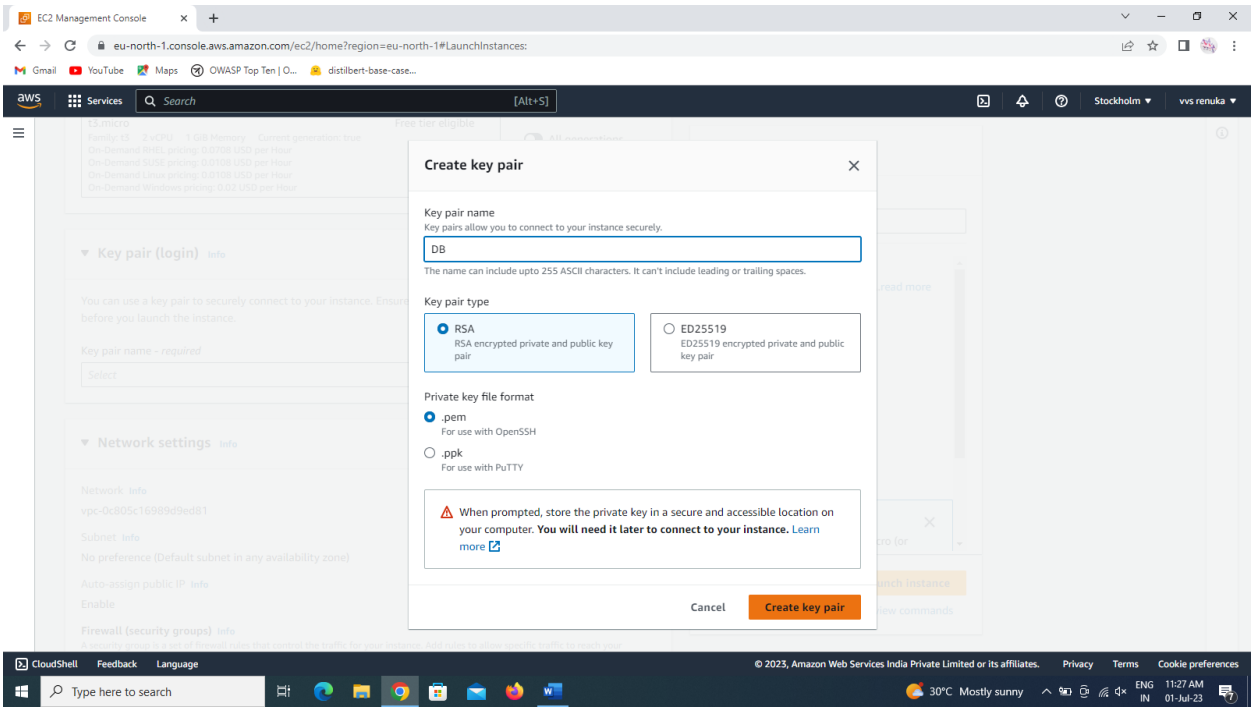
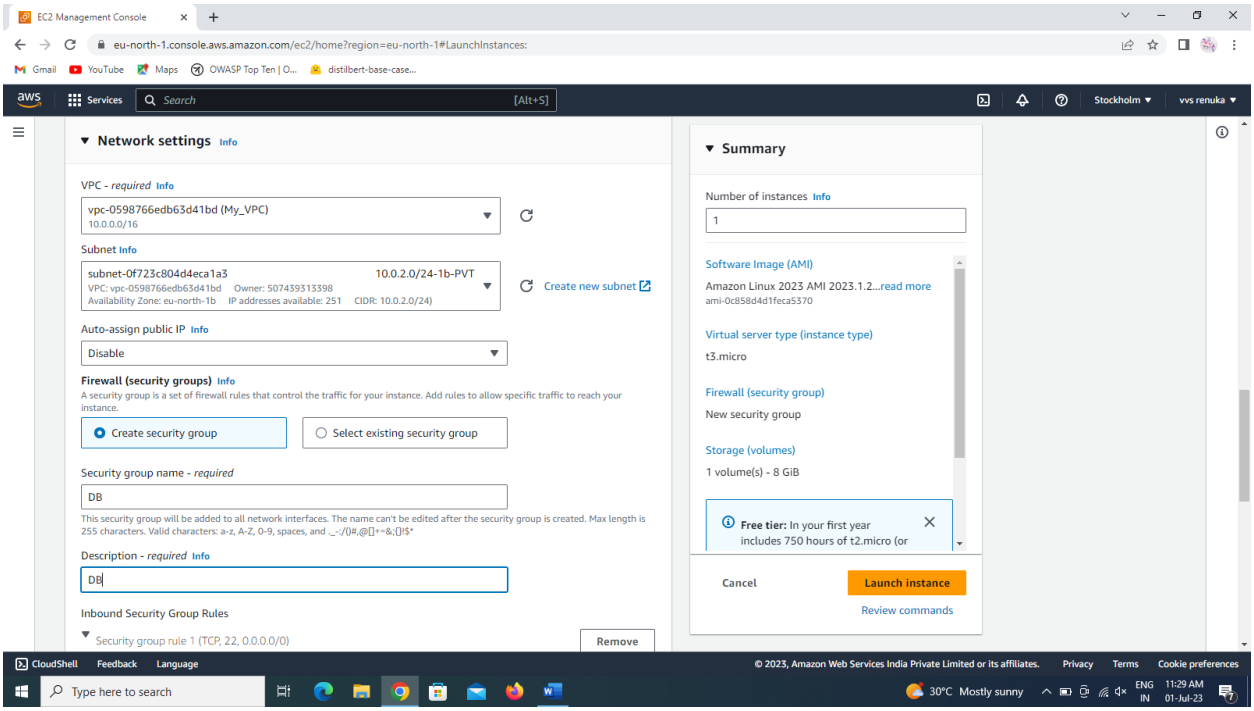
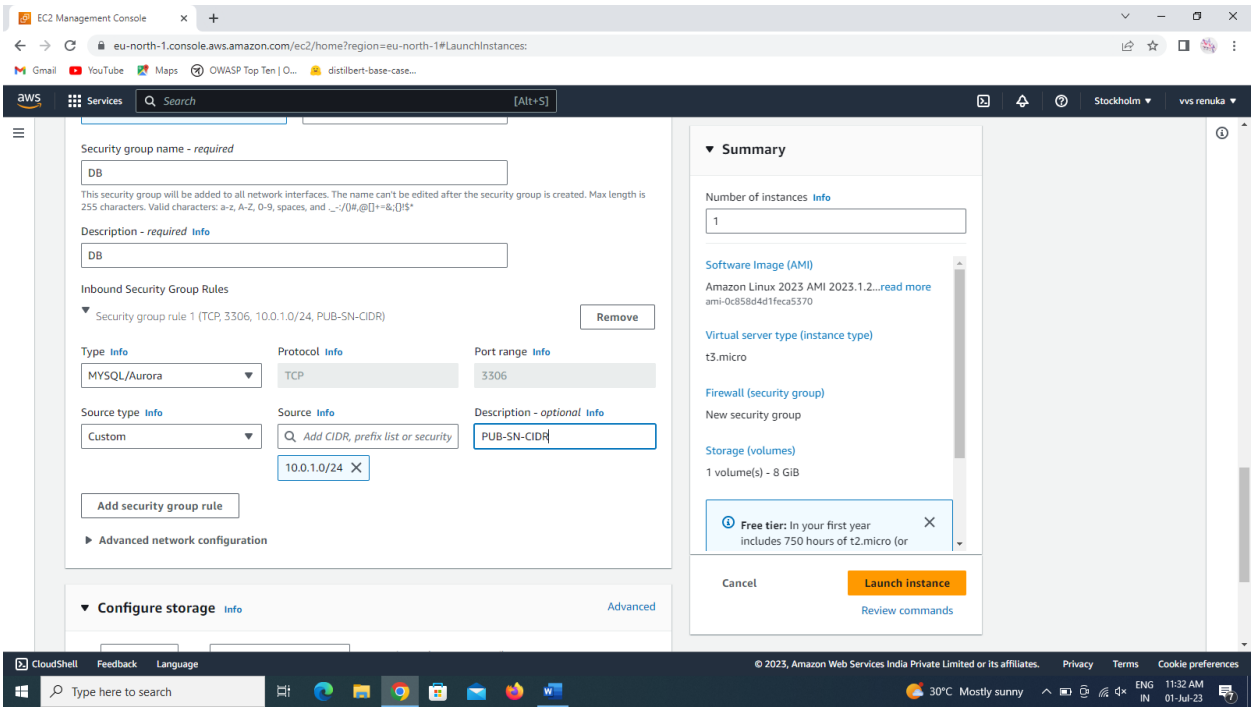
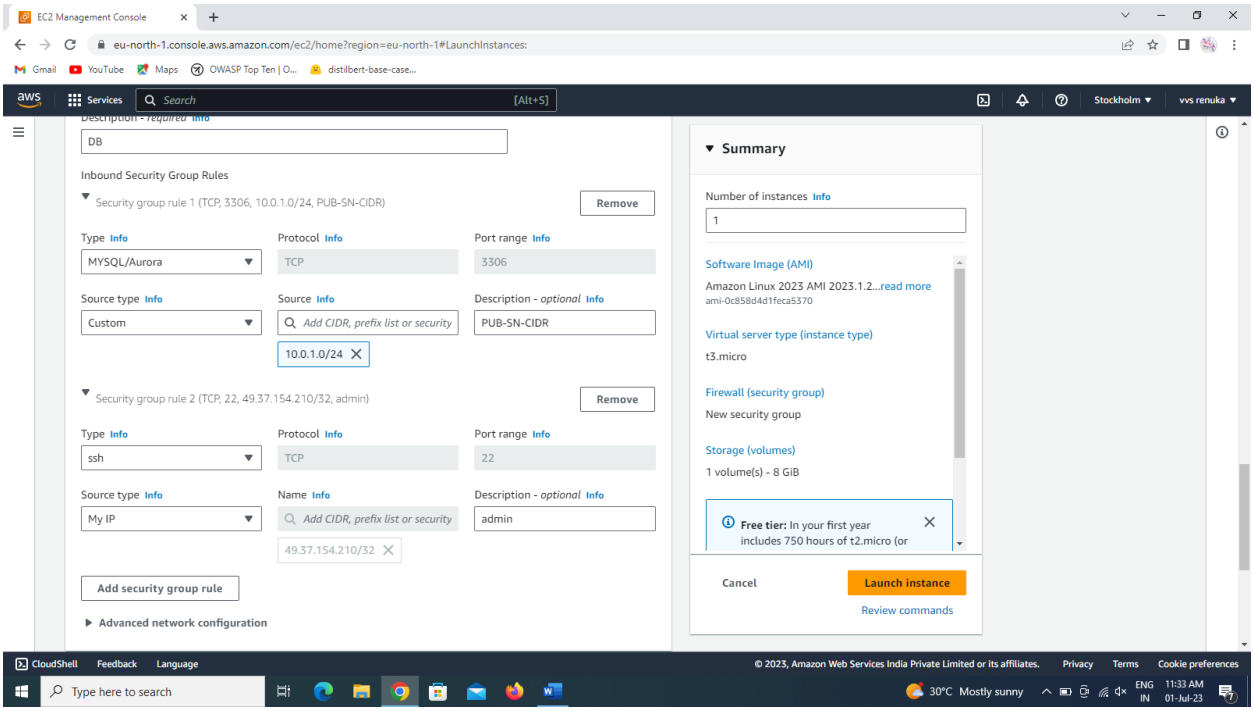
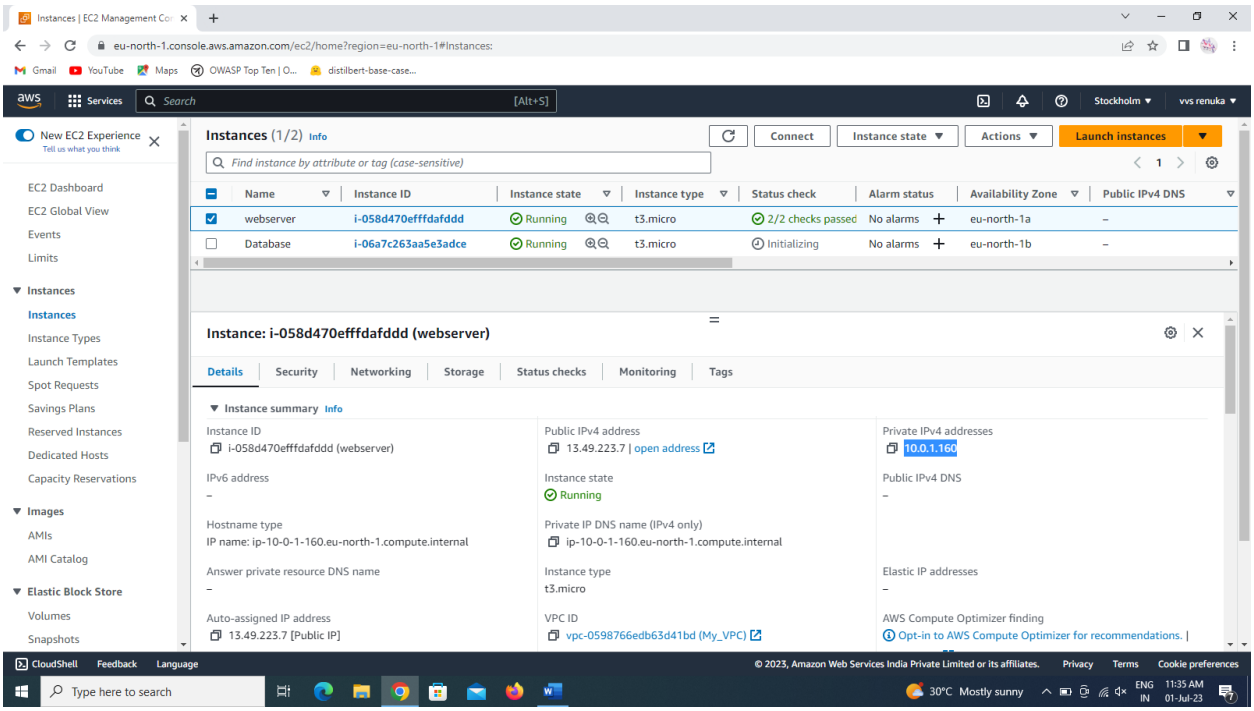

EC2 Management Console
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:
Create key pair
Key pair name
Key pairs allow you to connect to your instance securely.
DB
The name can include upto 255 ASCII characters. It can't include leading or trailing spaces.
Key pair type
RSA
RSA encrypted private and public key pair
ED25519
ED25519 encrypted private and public key pair
Private key file format
.pem
For use with OpenSSH
.ppk
For use with PuTTY
When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. Learn more
Cancel
Create key pair


EC2 Management Console
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:
Network settings
VPC - required
vpc-0598766edb63d41bd (My_VPC)
10.0.0.0/16
Subnet
subnet-0f723c804d4eca1a3
10.0.2.0/24-1b-PVT
Create new subnet
Auto-assign public IP
Disable
Firewall (security groups)
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.
Create security group
Select existing security group
Security group name - required
DB
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
DB
Inbound Security Group Rules
Security group rule 1 (TCP, 22, 0.0.0.0/0)
Remove
Summary
Number of instances
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.1.2...read more
ami-0c858d4d1feca5370
Virtual server type (instance type)
t3.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
Cancel
Launch instance
Review commands





After creation of servers in the let us check whether the webserver is working or not.


Instances | EC2 Management Co
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Instances:
Gmail YouTube Maps OWASP Top Ten | O... distilbert-base-case...
aws Services Search [Alt+S] Stockholm vvs renuka
New EC2 Experience
Tell us what you think
EC2 Dashboard
EC2 Global View
Events
Limits
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Instances (1/2) Info
Connect
Instance state
Actions
Launch instances
Find instance by attribute or tag (case-sensitive)
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
webserver
i-058d470efffdafddd
Running
t3.micro
2/2 checks passed
No alarms
eu-north-1a
Database
i-06a7c263aa5e3adce
Running
t3.micro
Initializing
No alarms
eu-north-1b
Instance: i-058d470efffdafddd (webserver)
Details
Security
Networking
Storage
Status checks
Monitoring
Tags
Instance summary Info
Instance ID
i-058d470efffdafddd (webserver)
Public IPv4 address
13.49.223.7 | open address
Private IPv4 addresses
10.0.1.160
IPv6 address
Instance state
Running
Public IPv4 DNS
Hostname type
IP name: ip-10-0-1-160.eu-north-1.compute.internal
Private IP DNS name (IPv4 only)
ip-10-0-1-160.eu-north-1.compute.internal
Answer private resource DNS name
Instance type
t3.micro
Elastic IP addresses
Auto-assigned IP address
13.49.223.7 [Public IP]
VPC ID
vpc-0598766edb63d41bd (My_VPC)
AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations.
CloudShell Feedback Language
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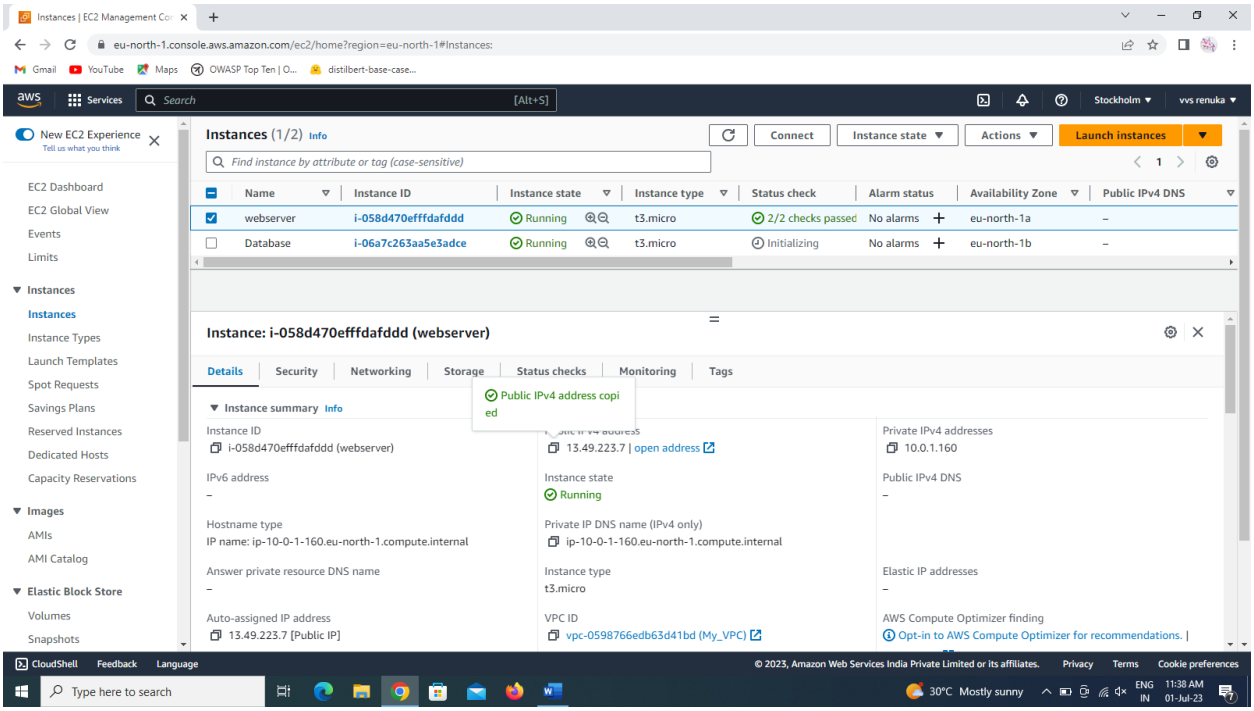
Instances | EC2 Management Co
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Instances:
Gmail YouTube Maps OWASP Top Ten | O... distilbert-base-case...
aws Services Search [Alt+S] Stockholm vvs renuka
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Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Instances (1/2) Info
Connect
Instance state
Actions
Launch instances
Find instance by attribute or tag (case-sensitive)
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
webserver
i-058d470efffdafddd
Running
t3.micro
2/2 checks passed
No alarms
eu-north-1a
Database
i-06a7c263aa5e3adce
Running
t3.micro
Initializing
No alarms
eu-north-1b
Instance: i-058d470efffdafddd (webserver)
Details
Security
Networking
Storage
Status checks
Monitoring
Tags
Public IPv4 address copied
Instance summary Info
Instance ID
i-058d470efffdafddd (webserver)
13.49.223.7 | open address
Private IPv4 addresses
10.0.1.160
IPv6 address
Instance state
Running
Public IPv4 DNS
Hostname type
IP name: ip-10-0-1-160.eu-north-1.compute.internal
Private IP DNS name (IPv4 only)
ip-10-0-1-160.eu-north-1.compute.internal
Answer private resource DNS name
Instance type
t3.micro
Elastic IP addresses
Auto-assigned IP address
13.49.223.7 [Public IP]
VPC ID
vpc-0598766edb63d41bd (My_VPC)
AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations.
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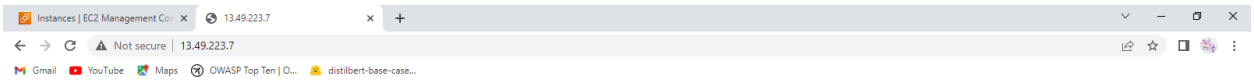
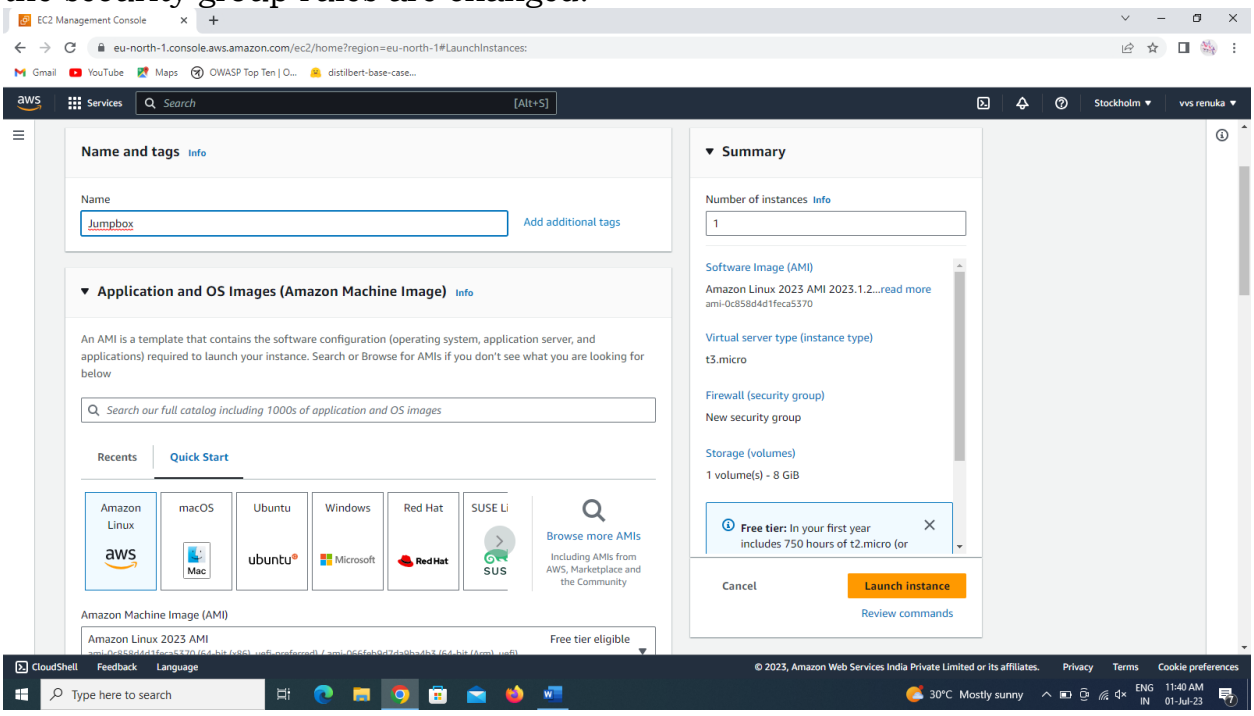
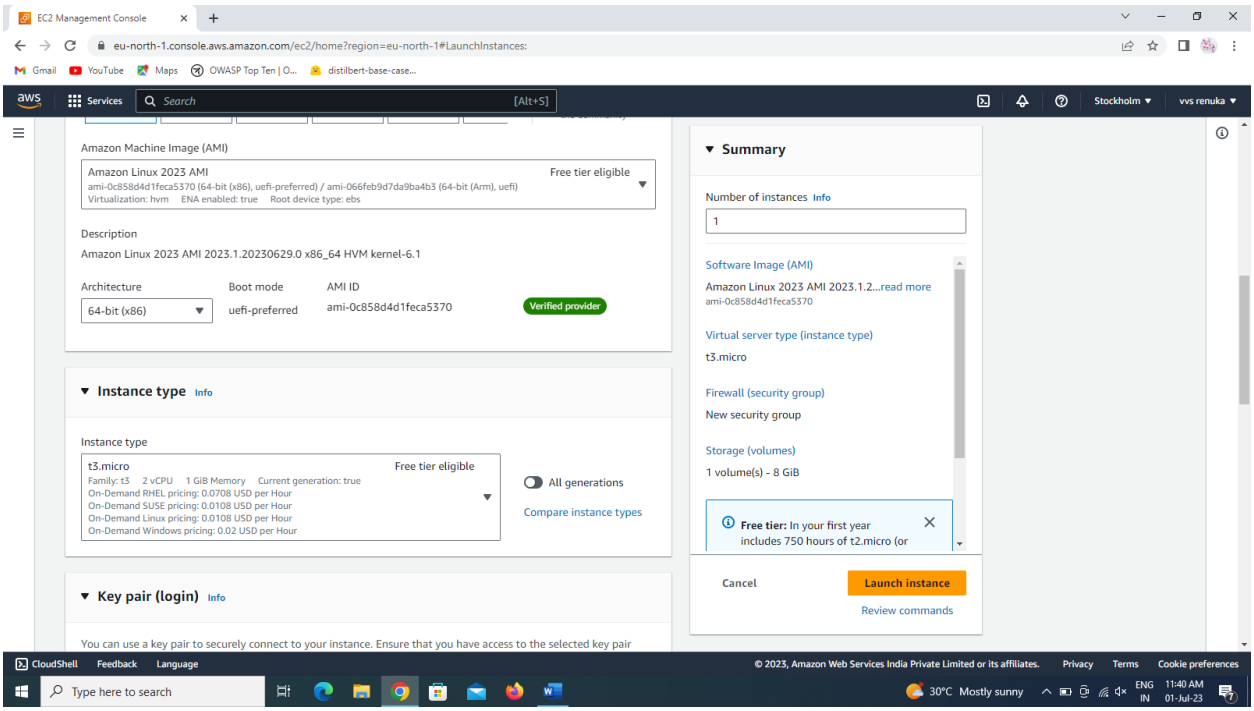


We can see here that the webserver is working so we have to connect the database and webserver for this we have to create the jump or baston box so that the connection is secured.
For creation of jump box we have to create an instance named as jump box and linux os with t3.micro as instance type same as webserver instance but only the security group rules are changed.




EC2 Management Console
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:
Services
Search
[Alt+S]
Stockholm
vvs renuka
Amazon Machine Image (AMI)
Amazon Linux 2023 AMI
Free tier eligible
Description
Amazon Linux 2023 AMI 2023.1.20230629.0 x86_64 HVM kernel-6.1
Architecture
Boot mode
AMI ID
64-bit (x86)
uefi-preferred
ami-0c858d4d1feca5370
Verified provider
Instance type Info
Instance type
t3.micro
Free tier eligible
All generations
Compare instance types
Key pair (login) Info
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.1.2...read more
Virtual server type (instance type)
t3.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
Cancel
Launch instance
Review commands
CloudShell
Feedback
Language
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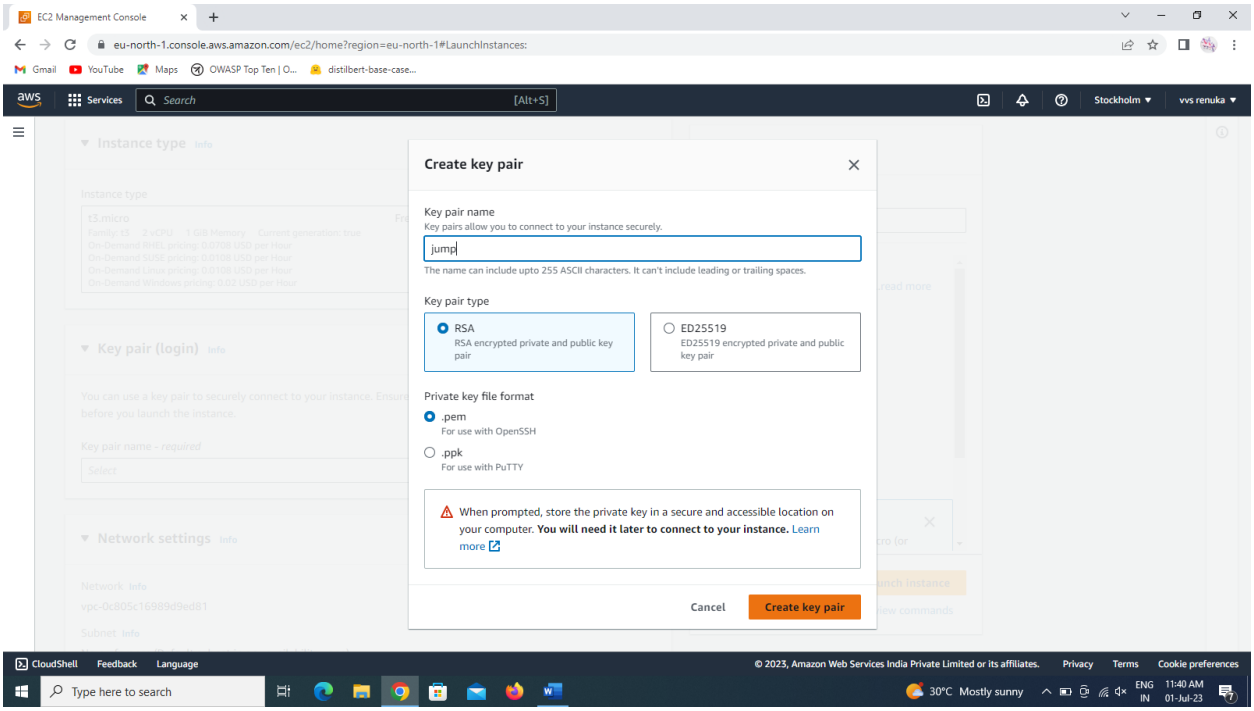
EC2 Management Console
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:
Create key pair
Key pair name
Key pairs allow you to connect to your instance securely.
jump
The name can include upto 255 ASCII characters. It can't include leading or trailing spaces.
Key pair type
RSA
RSA encrypted private and public key pair
ED25519
ED25519 encrypted private and public key pair
Private key file format
.pem
For use with OpenSSH
.ppk
For use with PuTTY
When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. Learn more
Cancel
Create key pair
CloudShell
Feedback
Language
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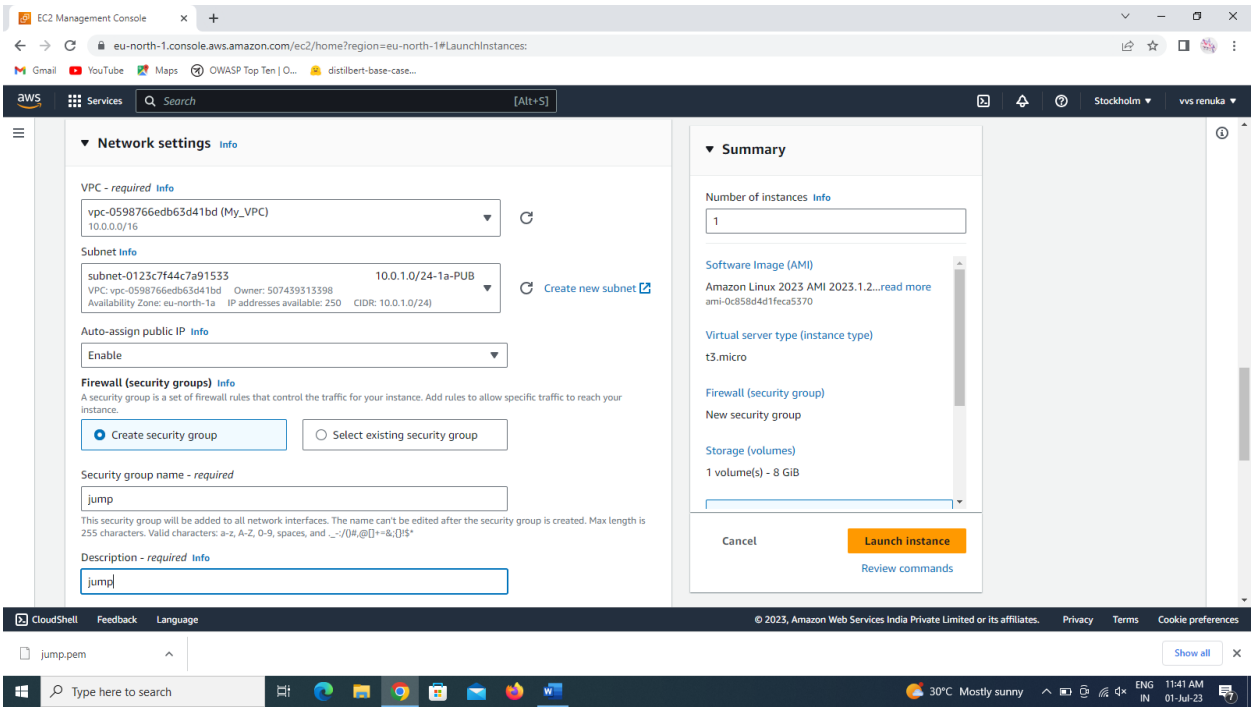
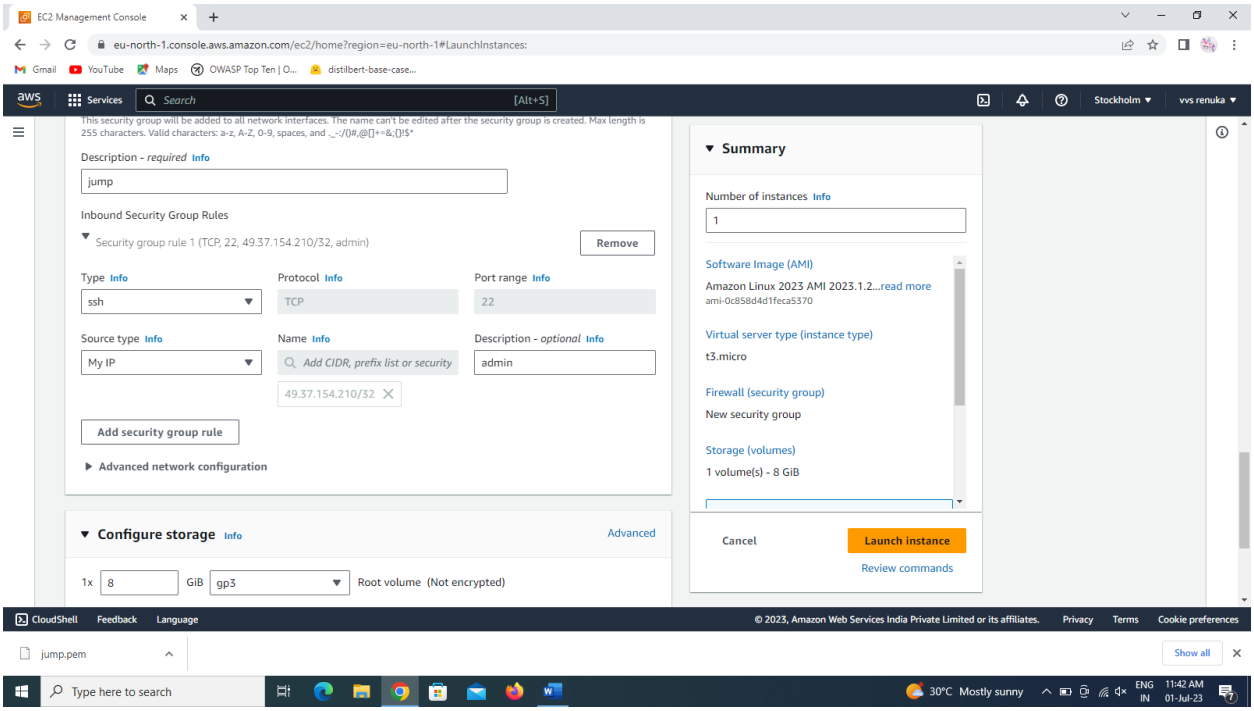
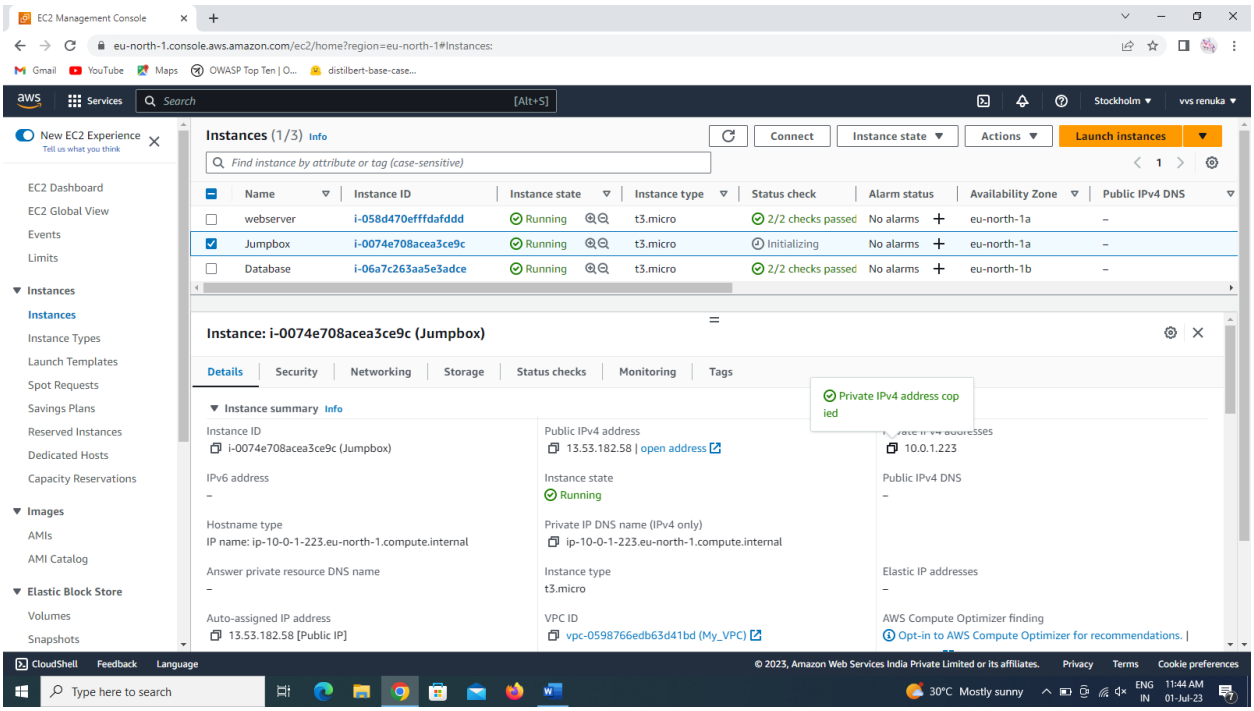




Now copy the private ip address of the jump box and paste in the security groups inbound rules of the database server.


EC2 Management Console
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Instances:
Instances (1/3) Info
Connect
Instance state
Actions
Launch instances
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
webserver i-058d470efffdafddd Running t3.micro 2/2 checks passed No alarms eu-north-1a
Jumpbox i-0074e708acea3ce9c Running t3.micro Initializing No alarms eu-north-1a
Database i-06a7c263aa5e3adce Running t3.micro 2/2 checks passed No alarms eu-north-1b
Instance: i-0074e708acea3ce9c (Jumpbox)
Details
Security
Networking
Storage
Status checks
Monitoring
Tags
Instance summary Info
Instance ID
i-0074e708acea3ce9c (Jumpbox)
Public IPv4 address
13.53.182.58 | open address
10.0.1.223
IPv6 address
Instance state
Running
Public IPv4 DNS
Hostname type
IP name: ip-10-0-1-223.eu-north-1.compute.internal
Private IP DNS name (IPv4 only)
ip-10-0-1-223.eu-north-1.compute.internal
Answer private resource DNS name
Instance type
t3.micro
Elastic IP addresses
Auto-assigned IP address
13.53.182.58 [Public IP]
VPC ID
vpc-0598766edb63d41bd (My_VPC)
AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations.
Private IPv4 address copied
CloudShell
Feedback
Language
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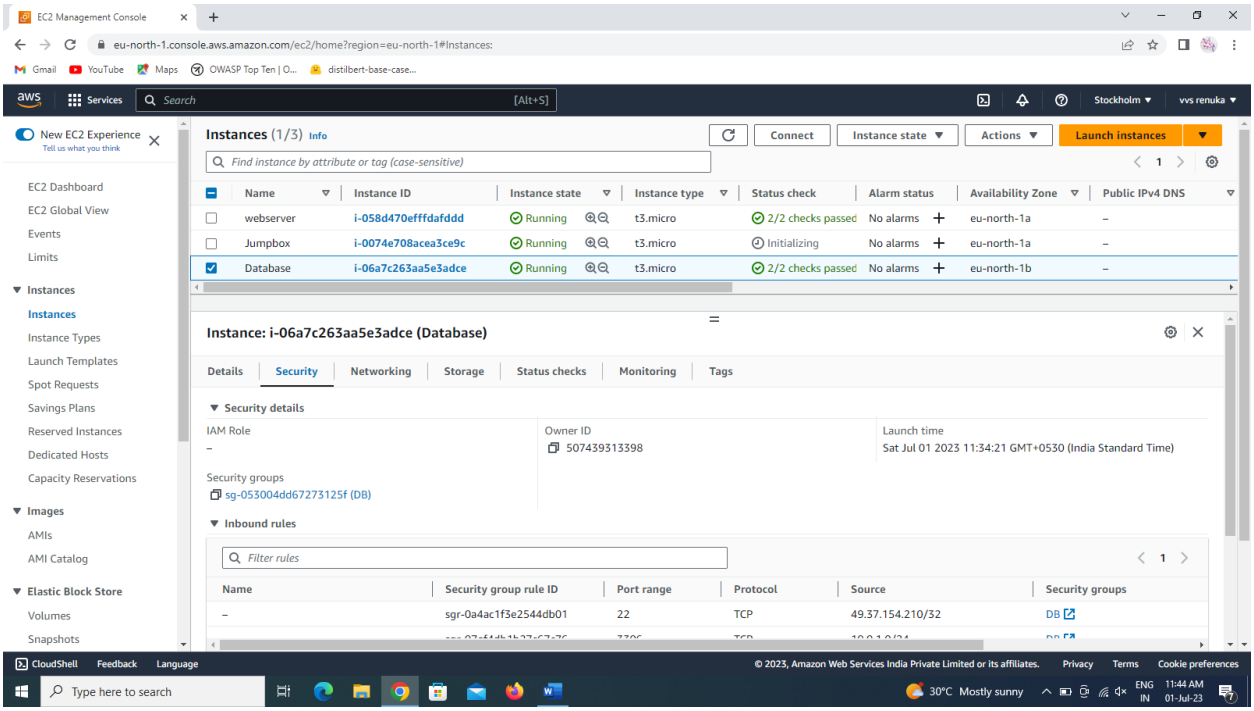
EC2 Management Console
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Instances:
Instances (1/3) Info
Connect
Instance state
Actions
Launch instances
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
webserver i-058d470efffdafddd Running t3.micro 2/2 checks passed No alarms eu-north-1a
Jumpbox i-0074e708acea3ce9c Running t3.micro Initializing No alarms eu-north-1a
Database i-06a7c263aa5e3adce Running t3.micro 2/2 checks passed No alarms eu-north-1b
Instance: i-06a7c263aa5e3adce (Database)
Details
Security
Networking
Storage
Status checks
Monitoring
Tags
Security details
IAM Role
Owner ID
507439313398
Launch time
Sat Jul 01 2023 11:34:21 GMT+0530 (India Standard Time)
Security groups
sg-053004dd67273125f (DB)
Inbound rules
Filter rules
Name
Security group rule ID
Port range
Protocol
Source
Security groups
sgr-0a4ac1f3e2544db01
22
TCP
49.37.154.210/32
DB
CloudShell
Feedback
Language
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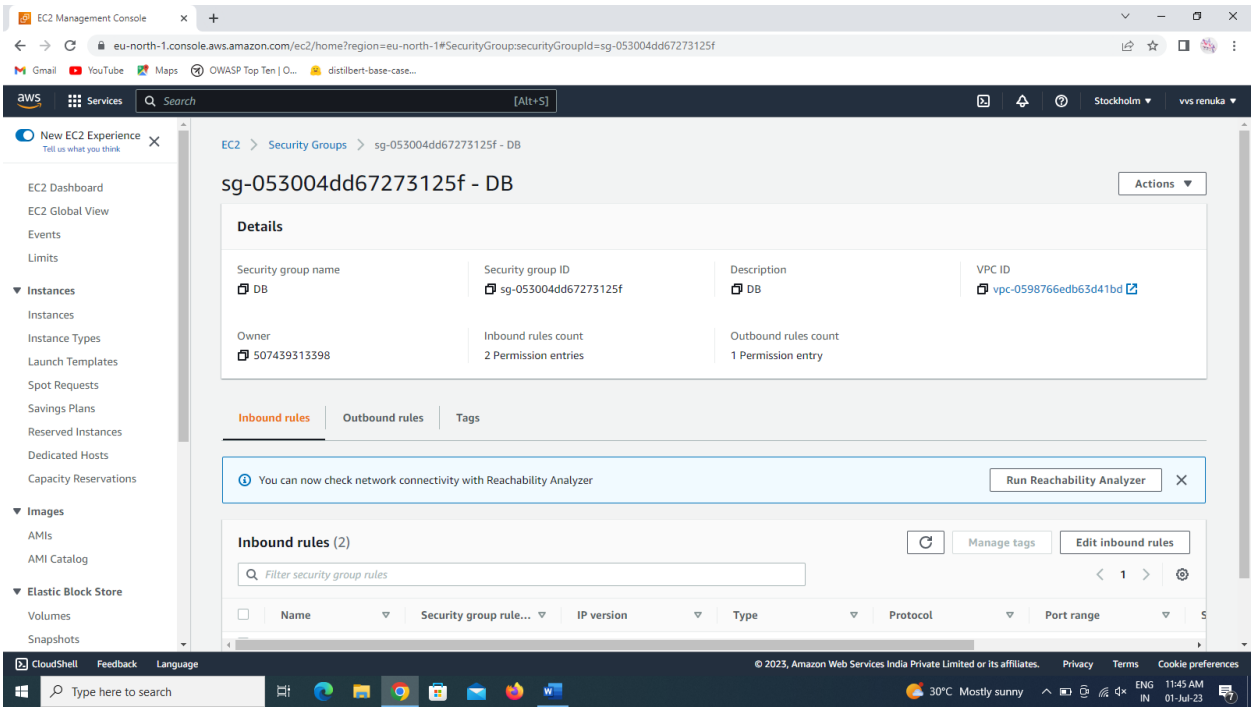
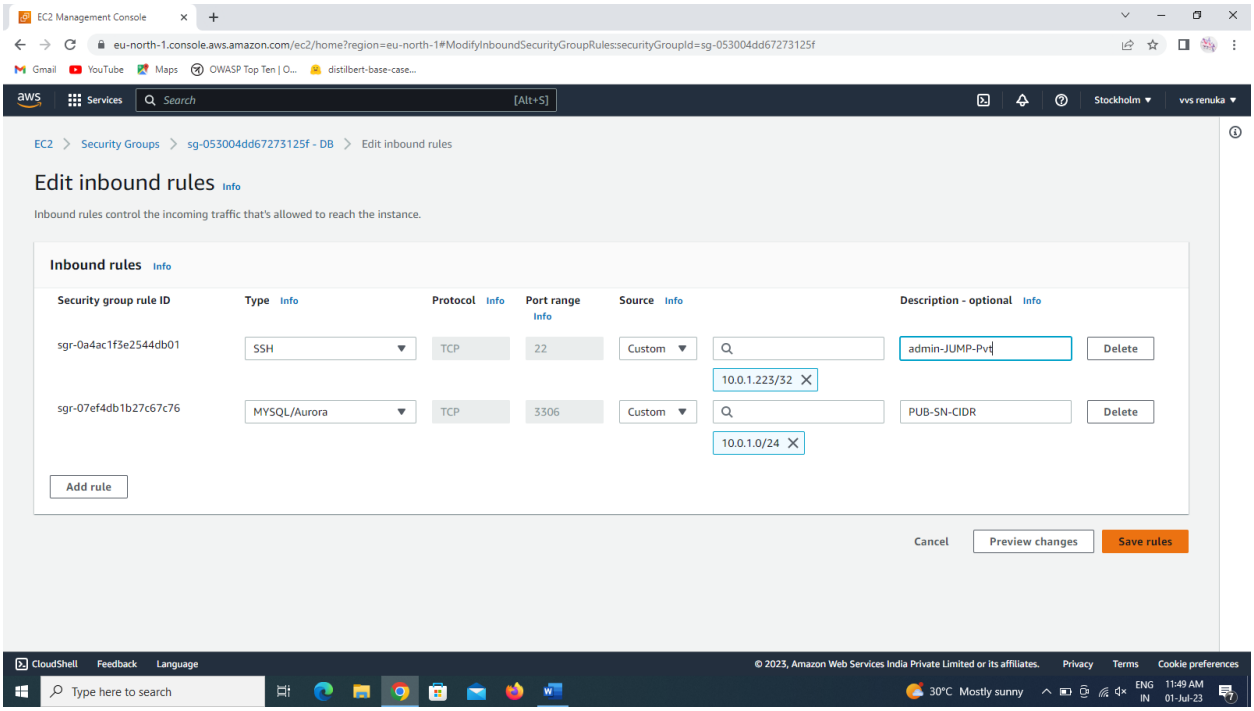
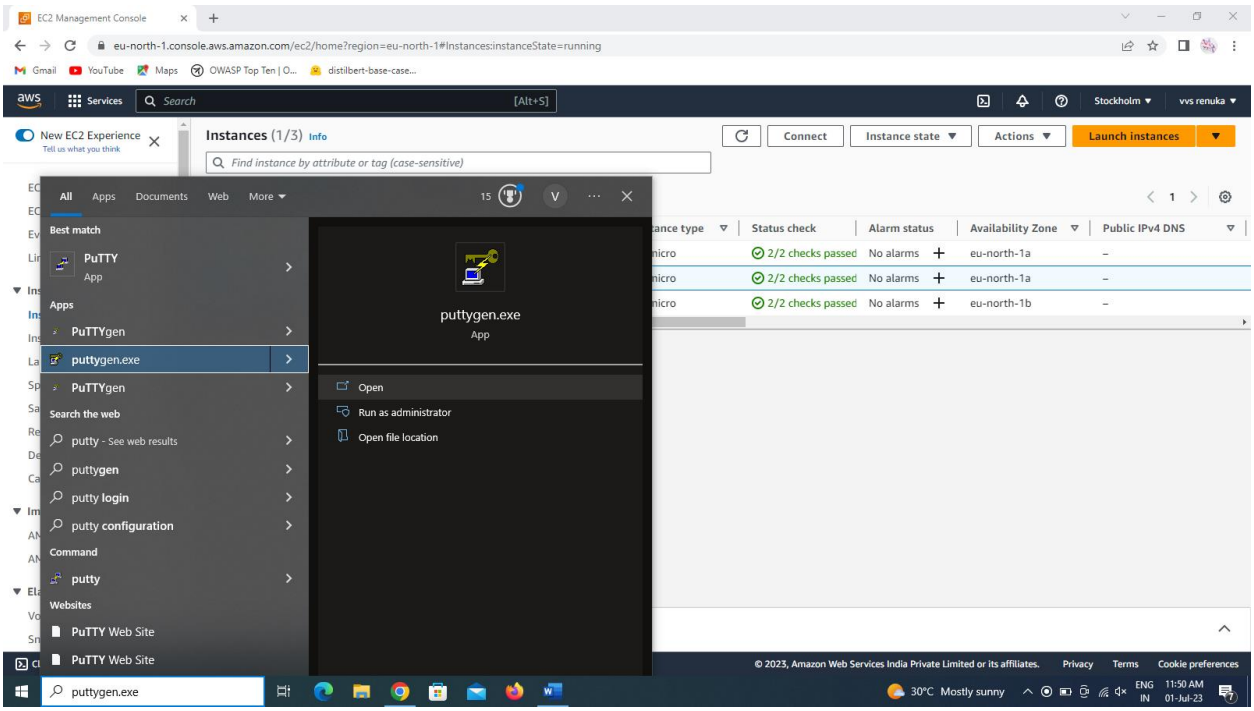




To connect jump box to the data base server in private subnet securely first open the putty generator and generate a .ppk file to the keypair of the jumpbox, Also save the ppk file to the computer.


EC2 Management Console
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Instances:instanceState=running
Instances (1/3) Info
Connect
Instance state
Actions
Launch instances
All
Apps
Documents
Web
More
Best match
PuTTY
App
Apps
PuTTYgen
puttygen.exe
PuTTYgen
Search the web
putty - See web results
puttygen
putty login
putty configuration
Command
putty
Websites
PuTTY Web Site
PuTTY Web Site
puttygen.exe
App
Open
Run as administrator
Open file location
puttygen.exe
Status check
Alarm status
Availability Zone
Public IPv4 DNS
2/2 checks passed
No alarms
eu-north-1a
eu-north-1b
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30°C Mostly sunny
ENG
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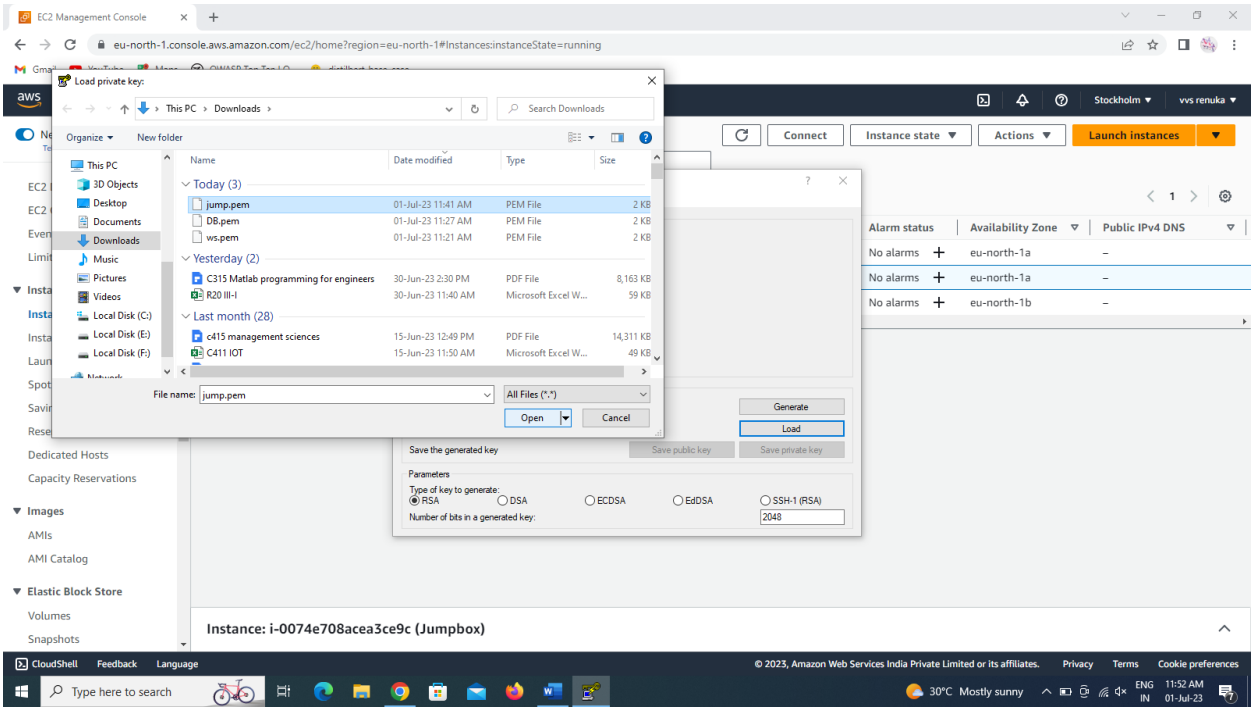
11:50 AM
01-Jul-23


EC2 Management Console
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Instances:instanceState=running
Load private key:
This PC
Downloads
Search Downloads
Organize
New folder
Name
Date modified
Type
Size
Today (3)
jump.pem
01-Jul-23 11:41 AM
PEM File
2 KB
DB.pem
01-Jul-23 11:27 AM
PEM File
2 KB
ws.pem
01-Jul-23 11:21 AM
PEM File
2 KB
Yesterday (2)
C315 Matlab programming for engineers
30-Jun-23 2:30 PM
PDF File
8,163 KB
R20 III-I
30-Jun-23 11:40 AM
Microsoft Excel W...
59 KB
Last month (28)
c415 management sciences
15-Jun-23 12:49 PM
PDF File
14,311 KB
C411 IOT
15-Jun-23 11:50 AM
Microsoft Excel W...
49 KB
File name: jump.pem
All Files (*.*)
Open
Cancel
Generate
Load
Save the generated key
Save public key
Save private key
Parameters
Type of key to generate:
RSA
DSA
ECDSA
EdDSA
SSH-1 (RSA)
Number of bits in a generated key:
2048
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Instance: i-0074e708acea3ce9c (Jumpbox)
CloudShell
Feedback
Language
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Type here to search
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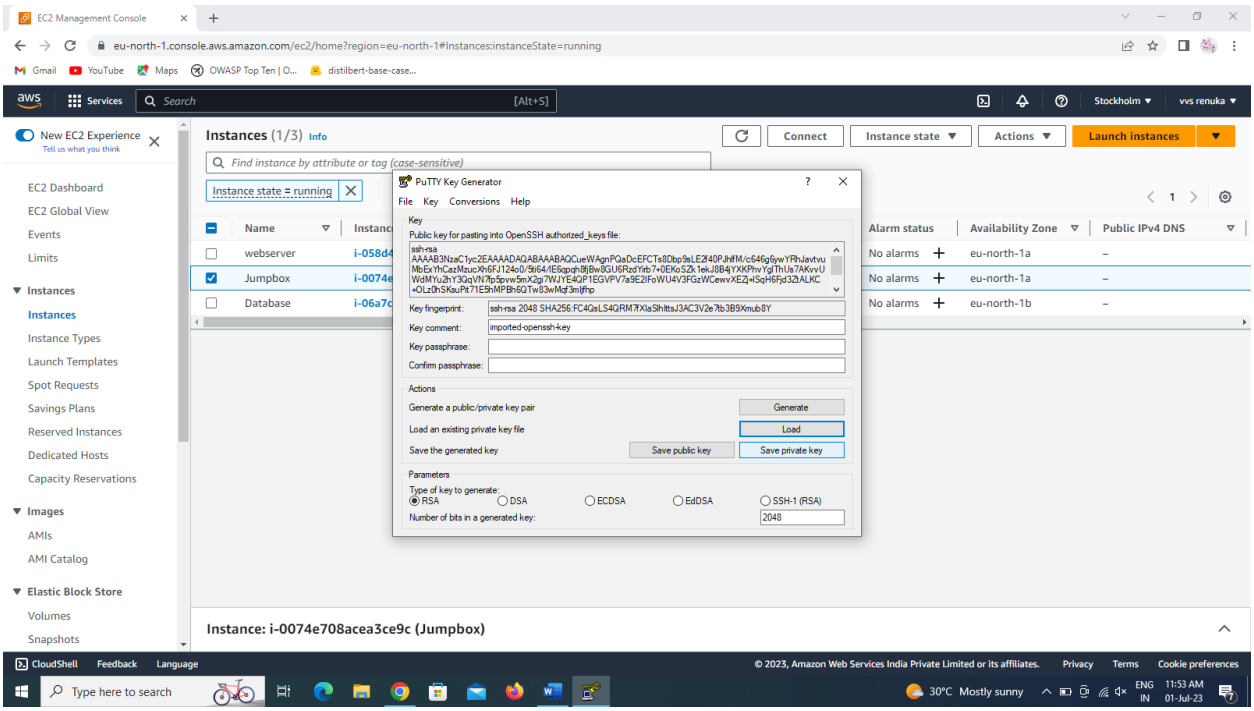
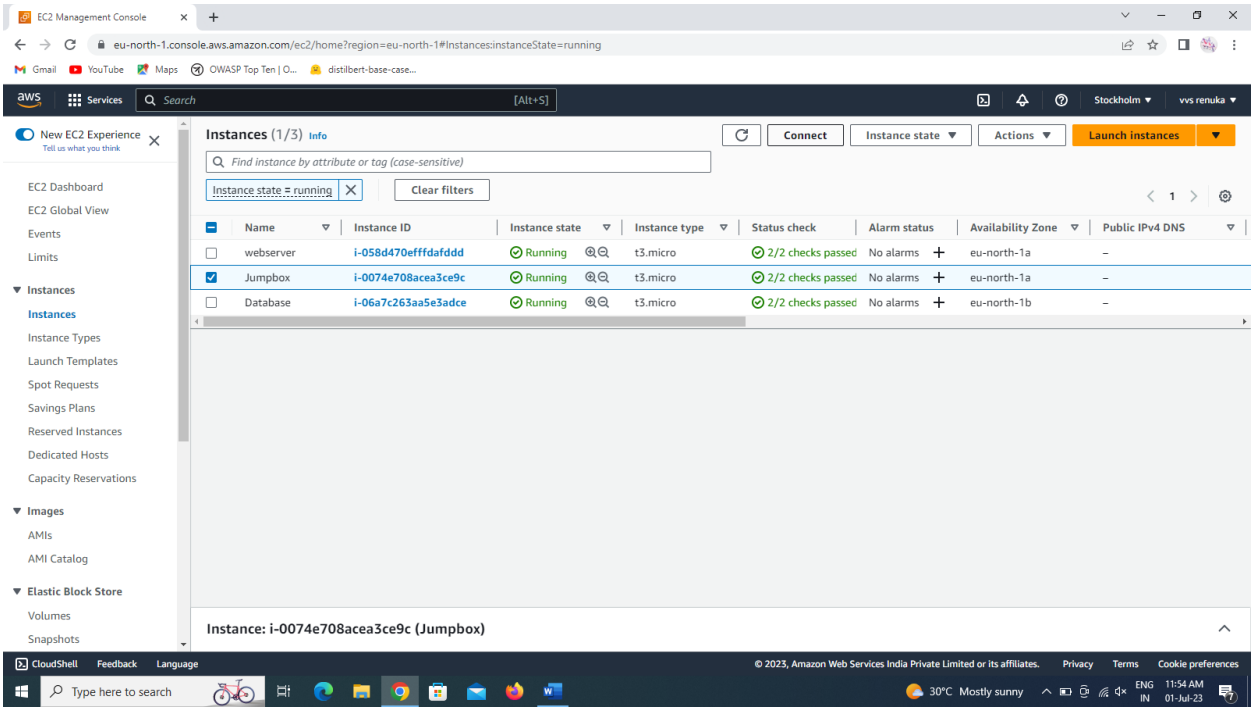
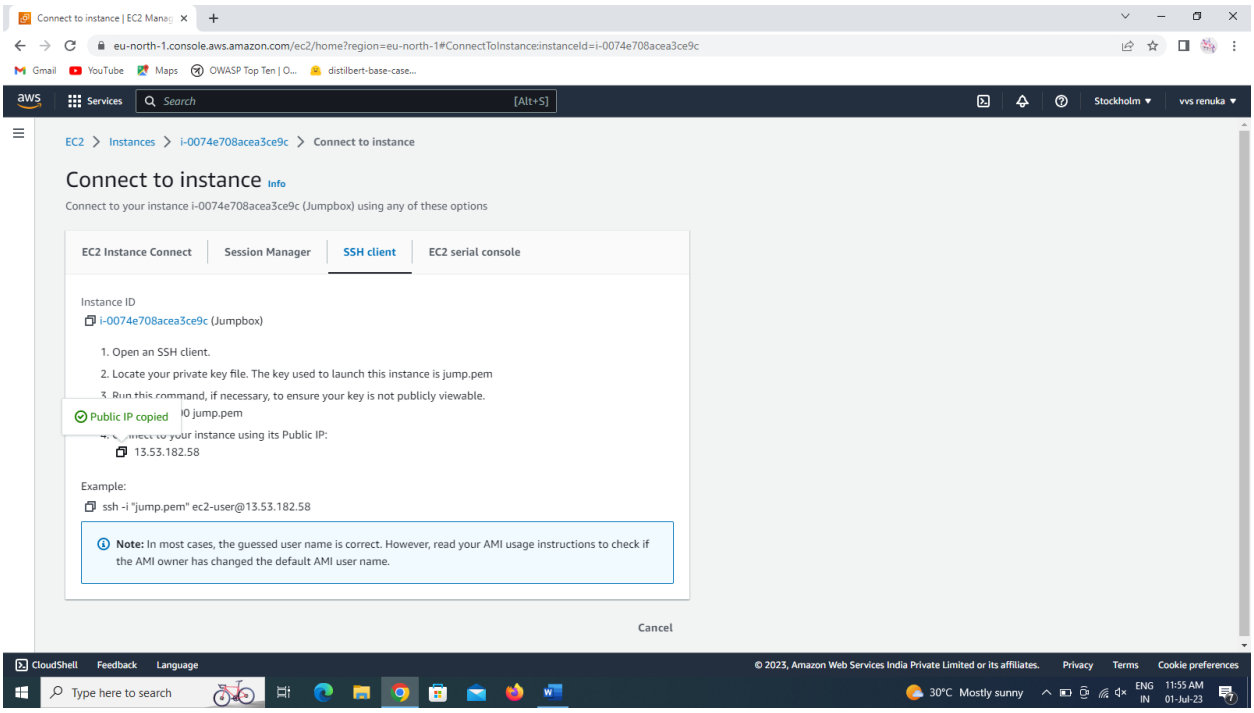
ENG
IN
11:52 AM
01-Jul-23

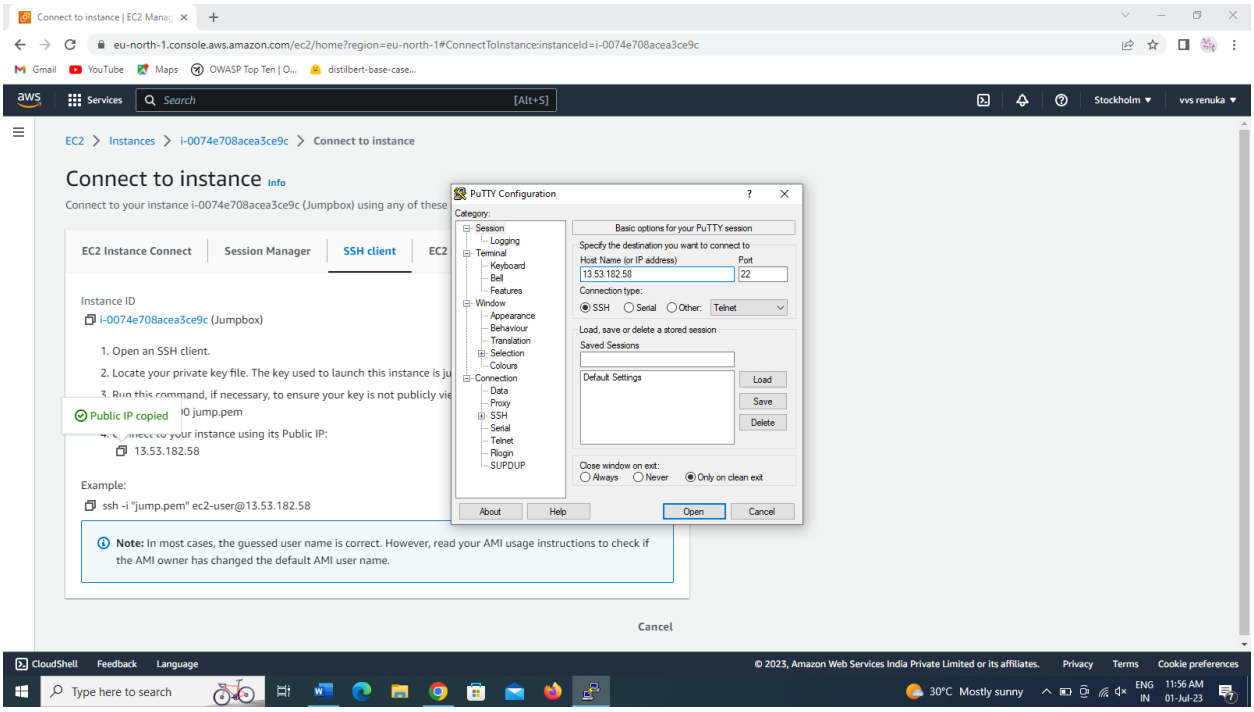


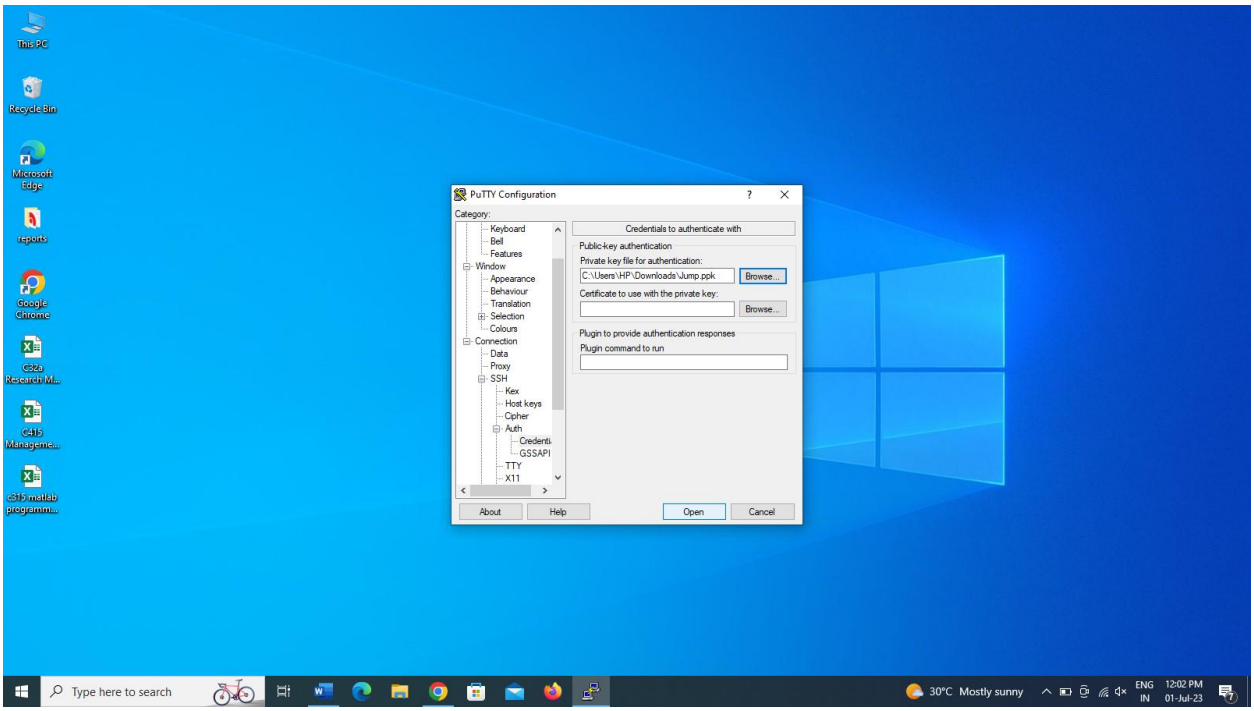
Now select the jumpbox , select the connect option so that we can connect with the jumpbox and access the files and perform operations on it.



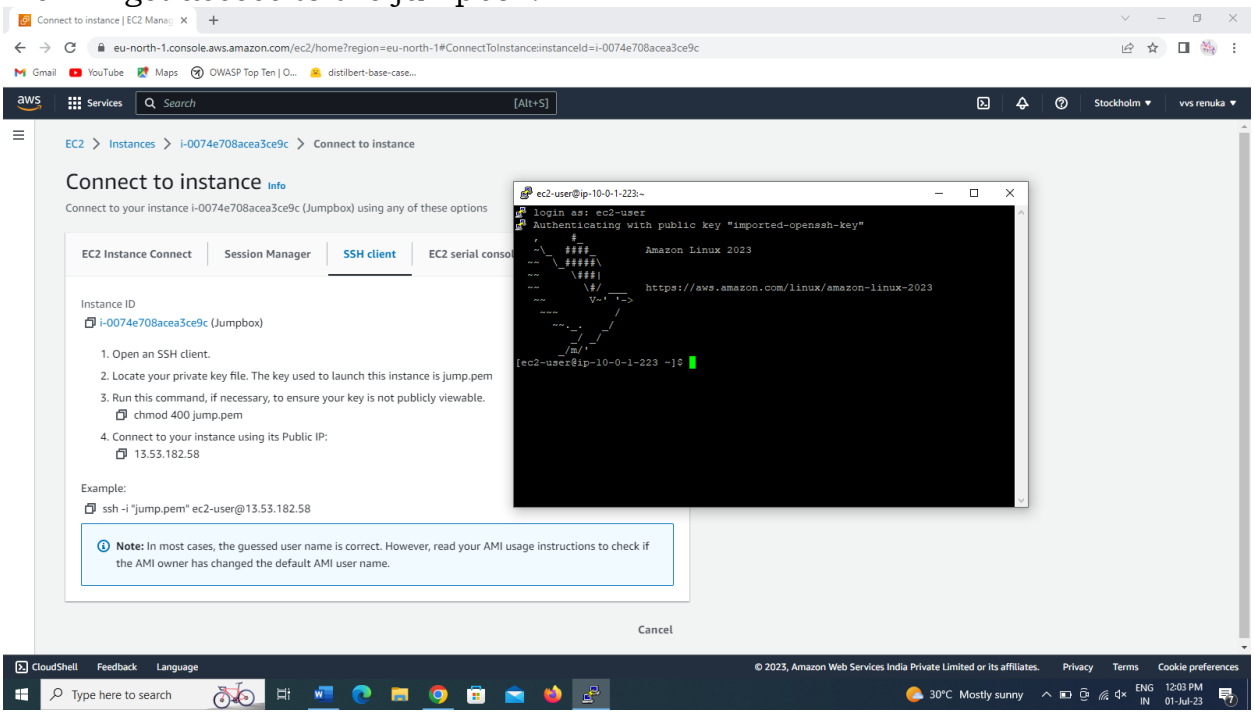
Copy the public ip address of the jumpbox and place it as the hostname in the putty and give the ppk file in the credentials which is present under auth tab of ssh.



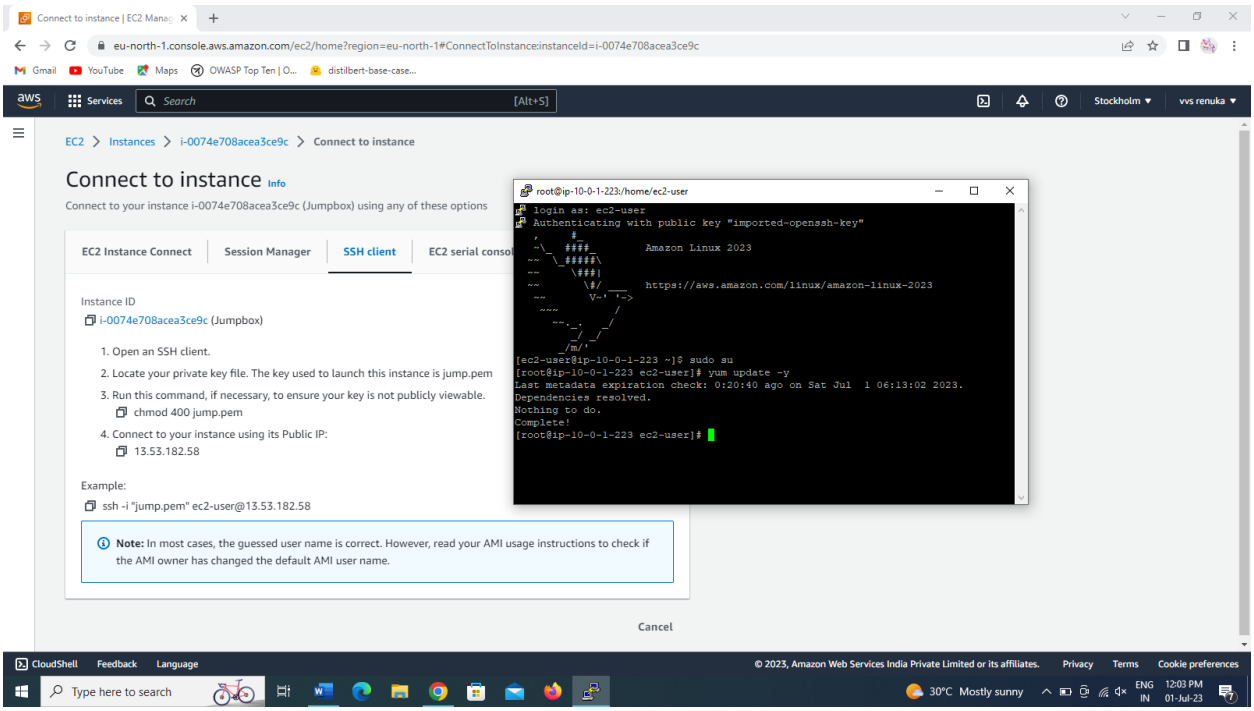




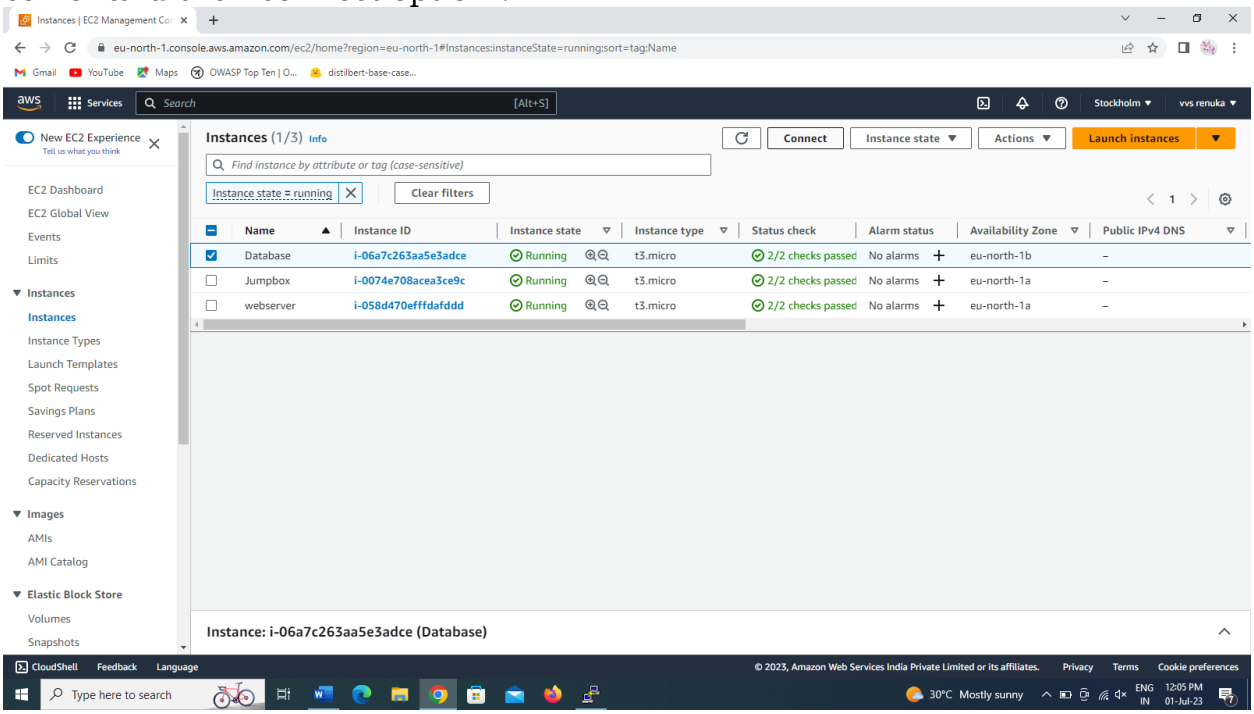
Now select open option and give the login as ec2-user and enter.
We will get access to the jumpbox.



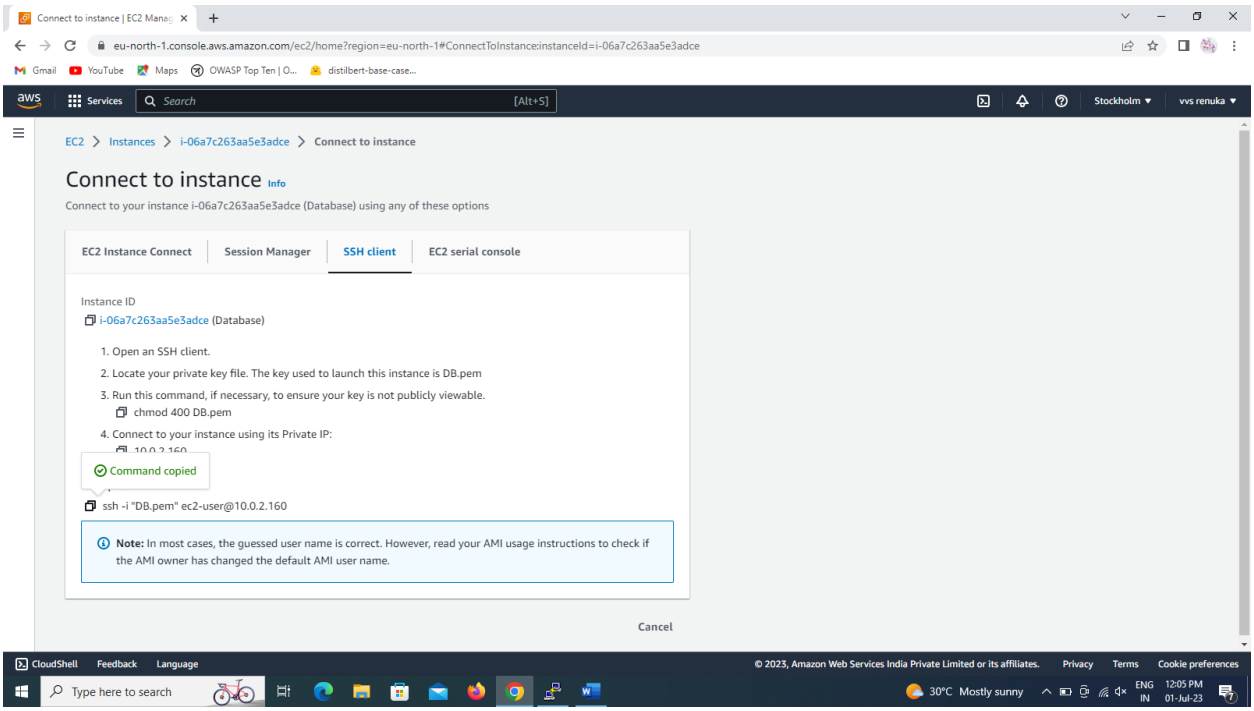
Now type the commands as sudo su ,yum update -y so that we can check whether our linux instance is upto data and lets us to know that if it have any updates.



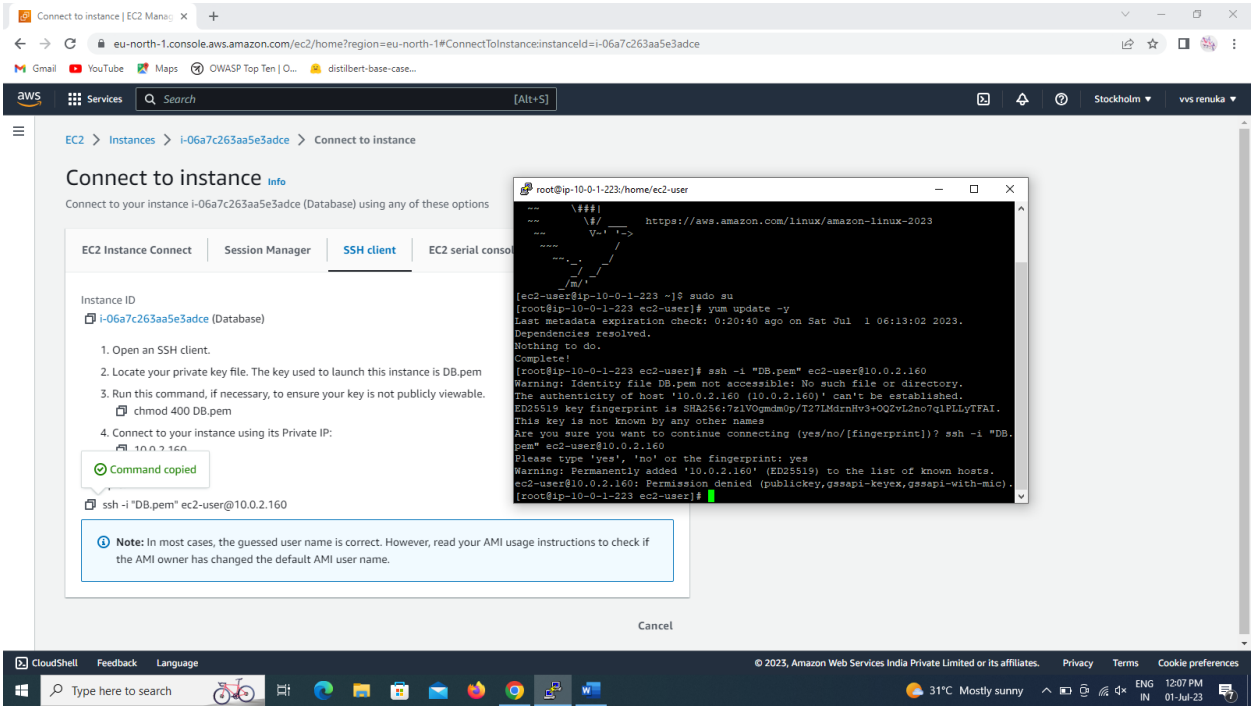
Here we can see that the instance is up to date and there are no updates to be made , Now to connect the database to jump box copy ,select the database server and then connect option .



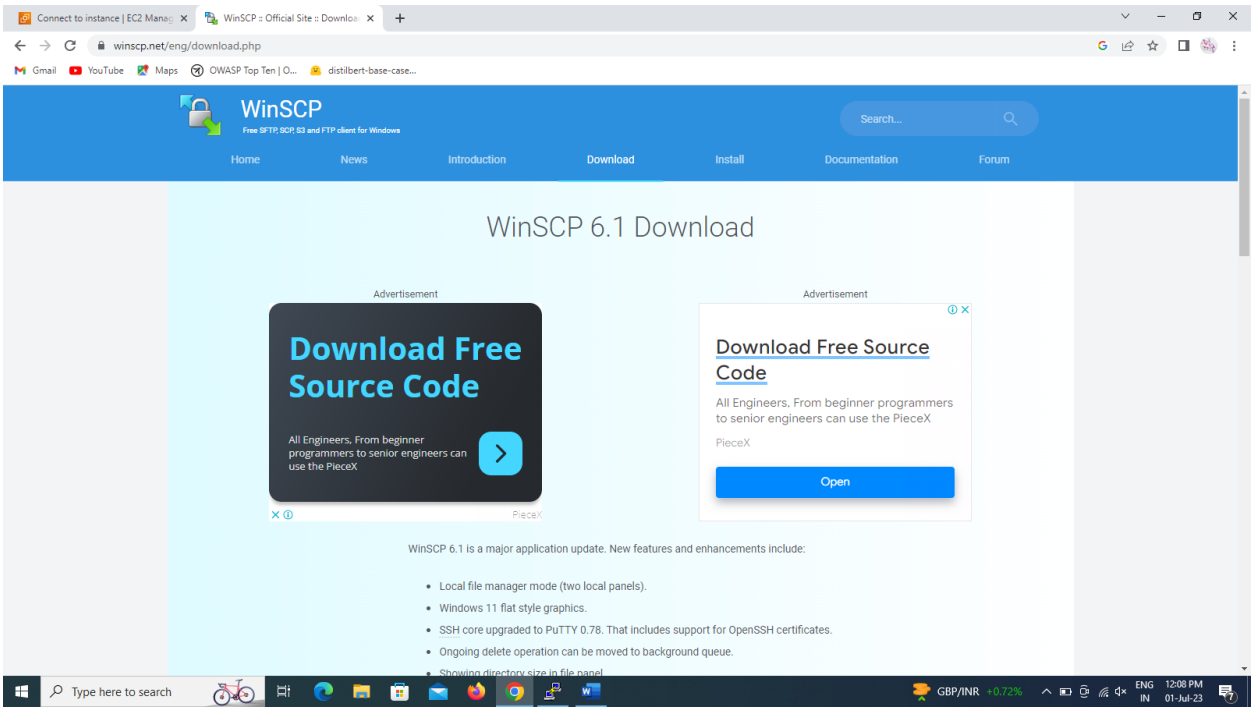
After that copy the command which allows us to get connected i.e. ssh.....



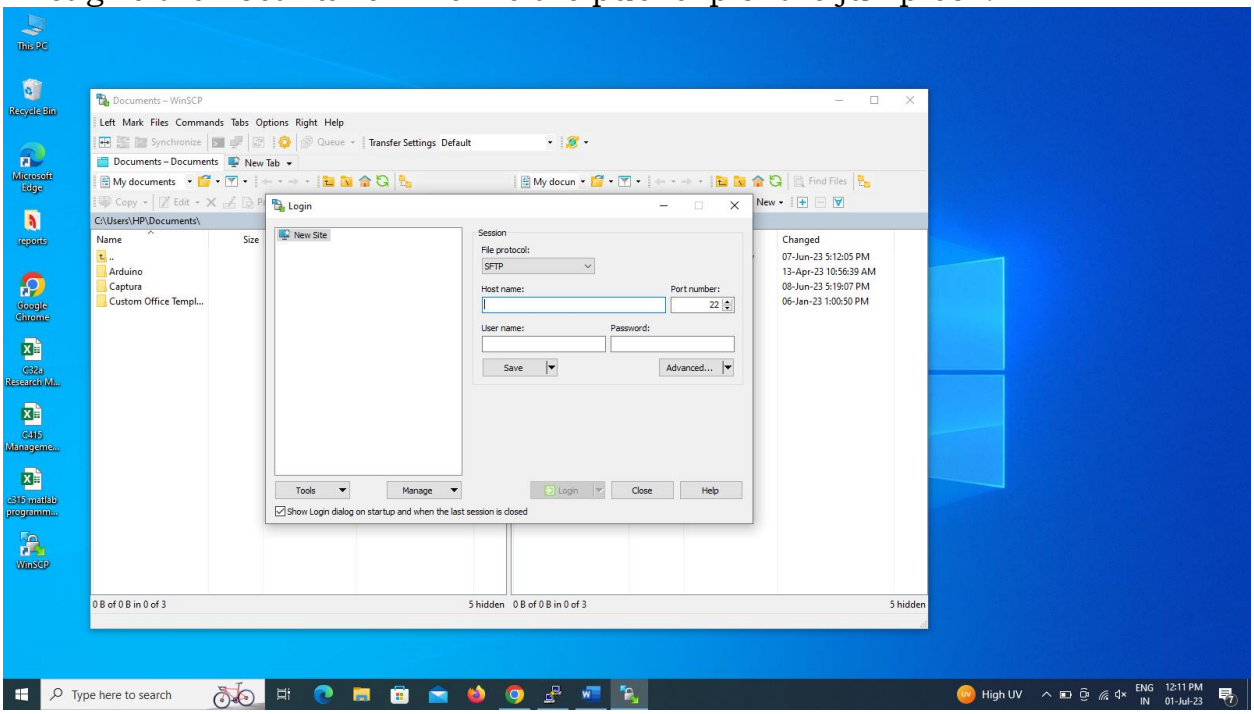
Paste the command in the linux instance.

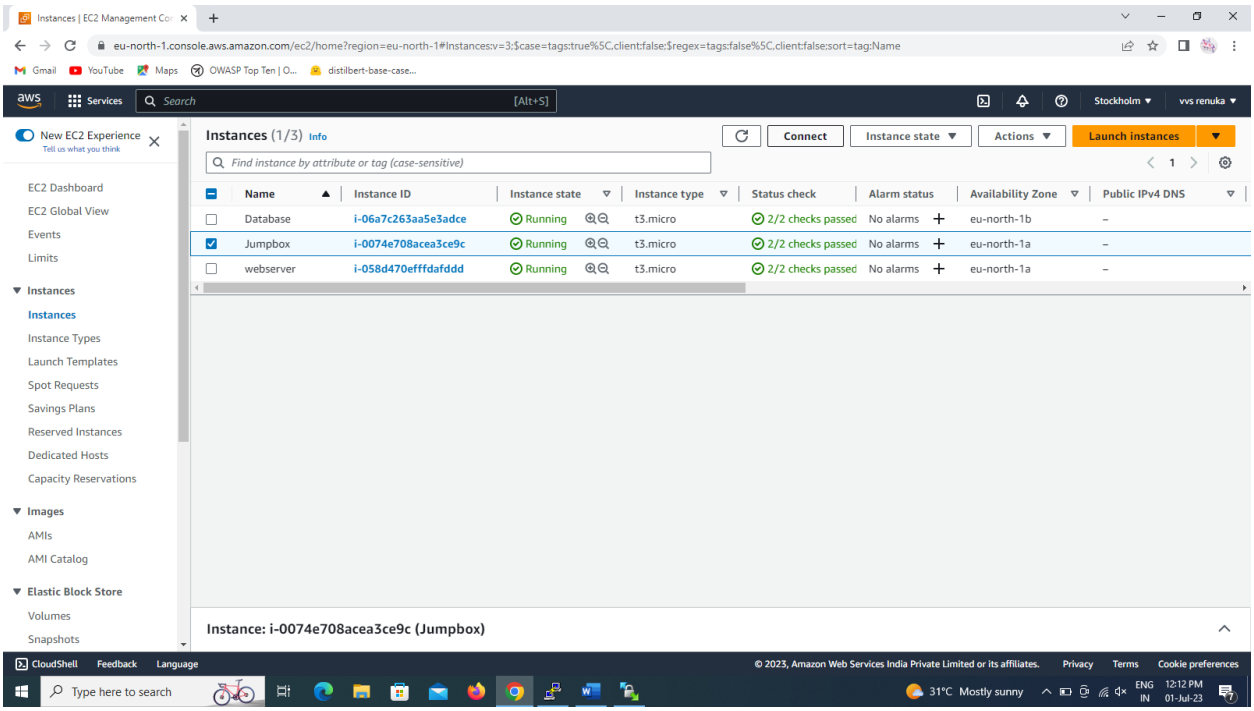


Now we can see that it throughs an error that the pem file named as DB is not found.so, we have to move the DB file from database to the jumpbox .
To perform this action we require a software named as winscp.
So first download and install the software in our computer.



After installing we have to login to the new session to transfer the file .
Logging in to the WINSCP is similar to the logging process of the putty.
First give the host name which is the public ip of the jump box.




Instances | EC2 Management Co
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#Instances:v=3;$case=tags:true%5C,client:false;$regex=tags:false%5C,client:false;sort=tag:Name
Gmail
YouTube
Maps
OWASP Top Ten | O...
distilbert-base-case...
aws
Services
Search
[Alt+S]
Stockholm
vvs renuka
New EC2 Experience
Tell us what you think
EC2 Dashboard
EC2 Global View
Events
Limits
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Instances (1/3) Info
Connect
Instance state
Actions
Launch instances
Find instance by attribute or tag (case-sensitive)
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
Database
i-06a7c263aa5e3adce
Running
t3.micro
2/2 checks passed
No alarms
eu-north-1b
Jumpbox
i-0074e708acea3ce9c
Running
t3.micro
2/2 checks passed
No alarms
eu-north-1a
webserver
i-058d470efffdafddd
Running
t3.micro
2/2 checks passed
No alarms
eu-north-1a
Instance: i-0074e708acea3ce9c (Jumpbox)
CloudShell
Feedback
Language
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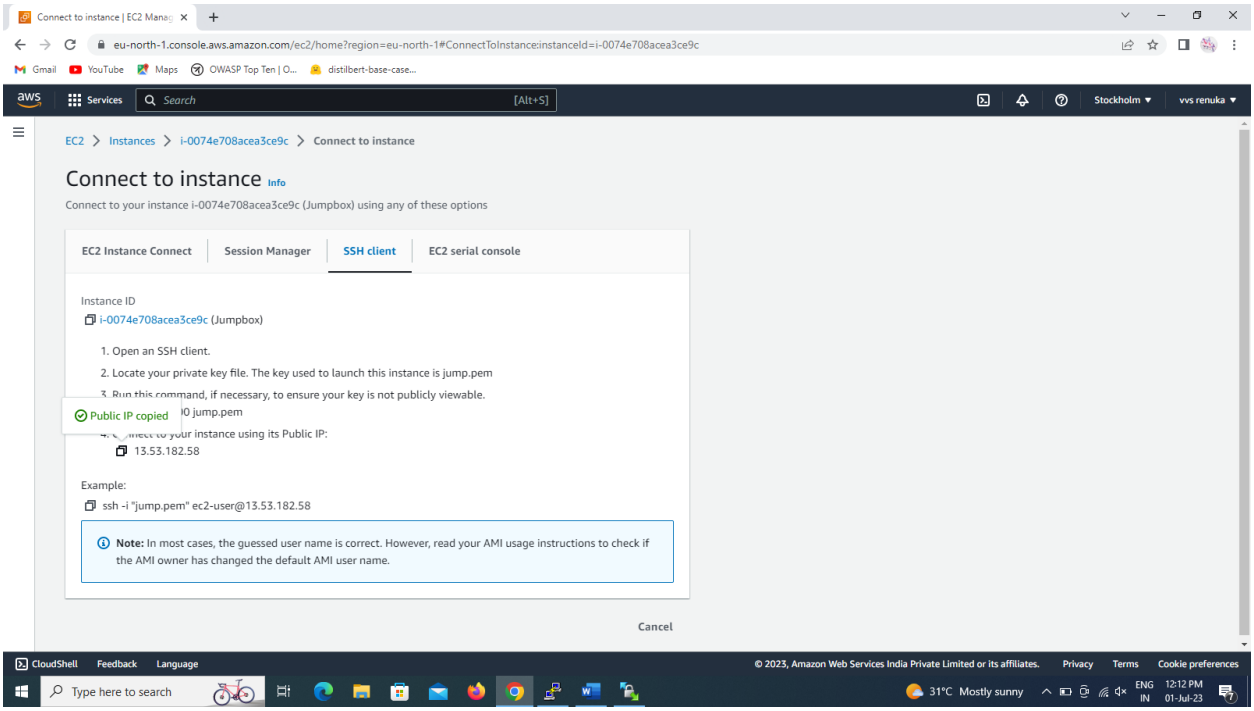
31°C Mostly sunny
ENG IN
12:12 PM 01-Jul-23


Connect to instance | EC2 Manag
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#ConnectToInstance:instanceId=i-0074e708acea3ce9c
Gmail
YouTube
Maps
OWASP Top Ten | O...
distilbert-base-case...
aws
Services
Search
[Alt+S]
Stockholm
vvs renuka
EC2 > Instances > i-0074e708acea3ce9c > Connect to instance
Connect to instance Info
Connect to your instance i-0074e708acea3ce9c (Jumpbox) using any of these options
EC2 Instance Connect
Session Manager
SSH client
EC2 serial console
Instance ID
i-0074e708acea3ce9c (Jumpbox)
1. Open an SSH client.
2. Locate your private key file. The key used to launch this instance is jump.pem
Public IP copied
13.53.182.58
Example:
ssh -i "jump.pem" ec2-user@13.53.182.58
Note: In most cases, the guessed user name is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.
Cancel
CloudShell
Feedback
Language
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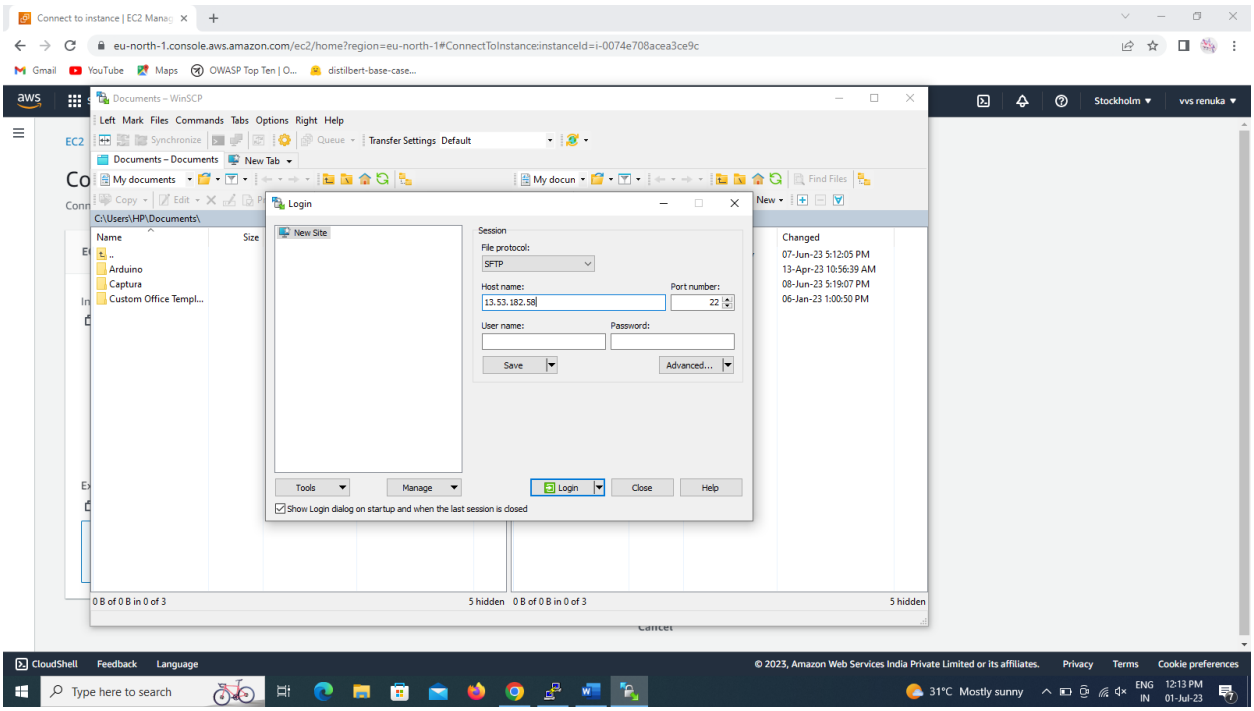
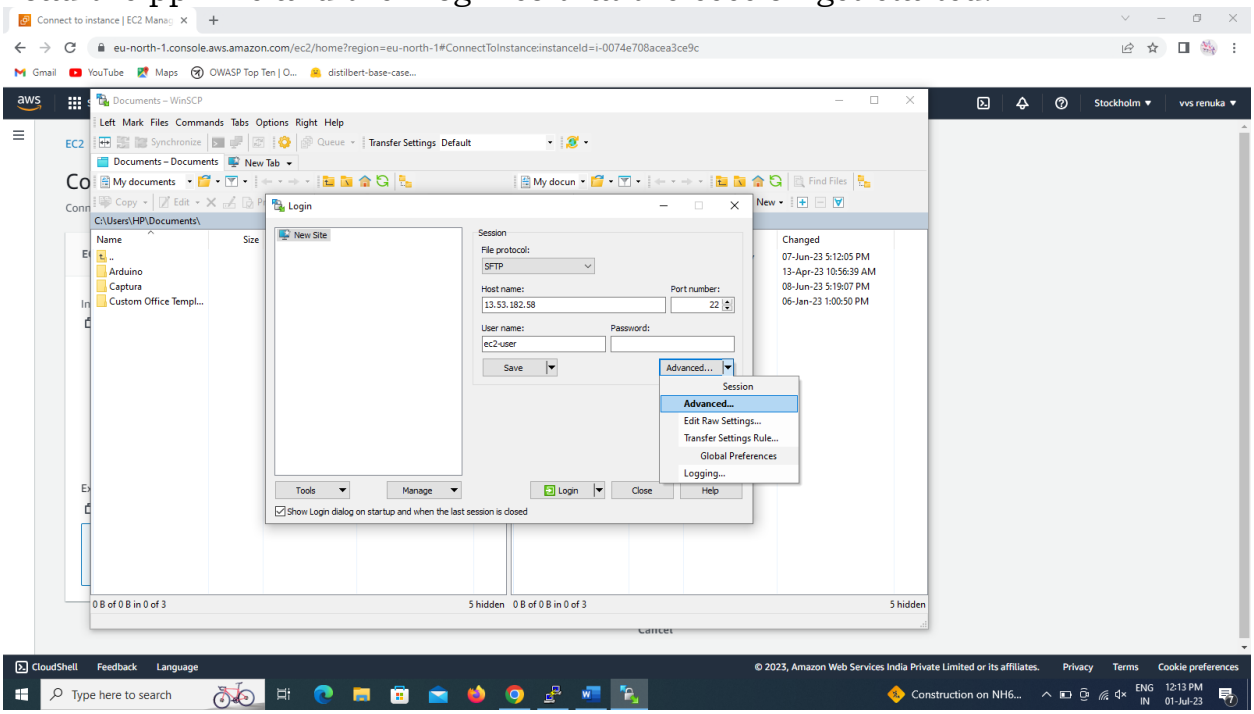
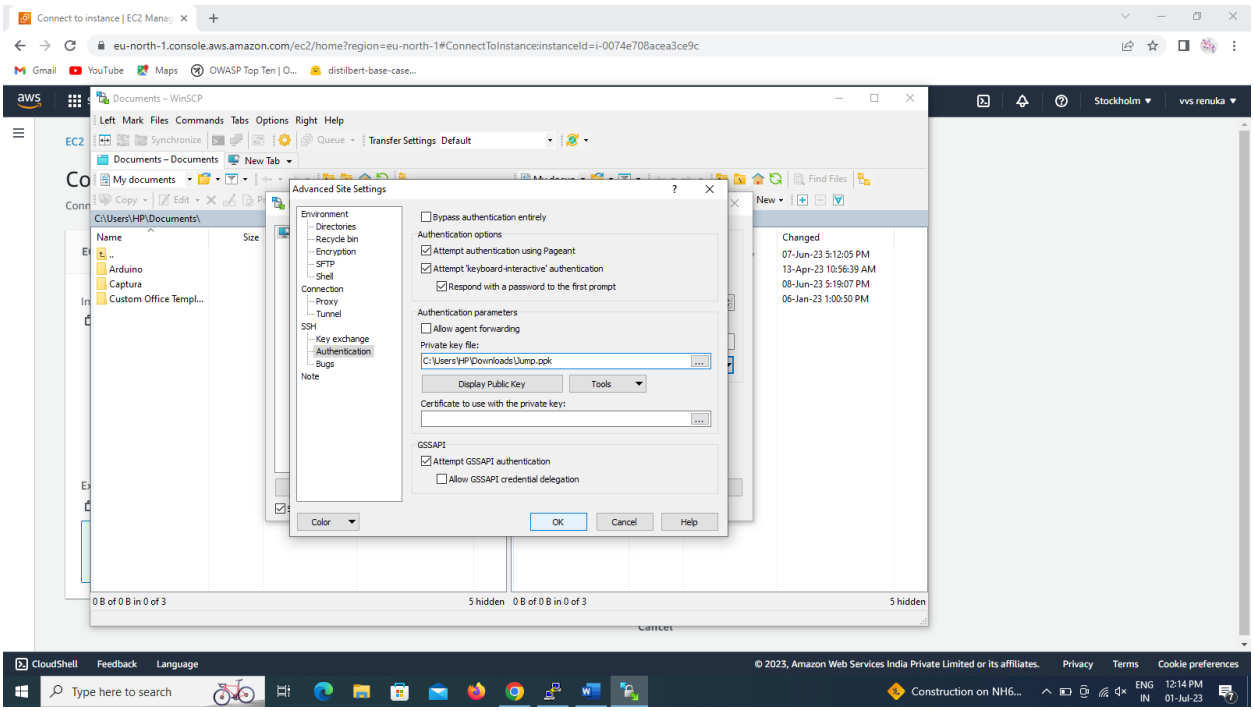
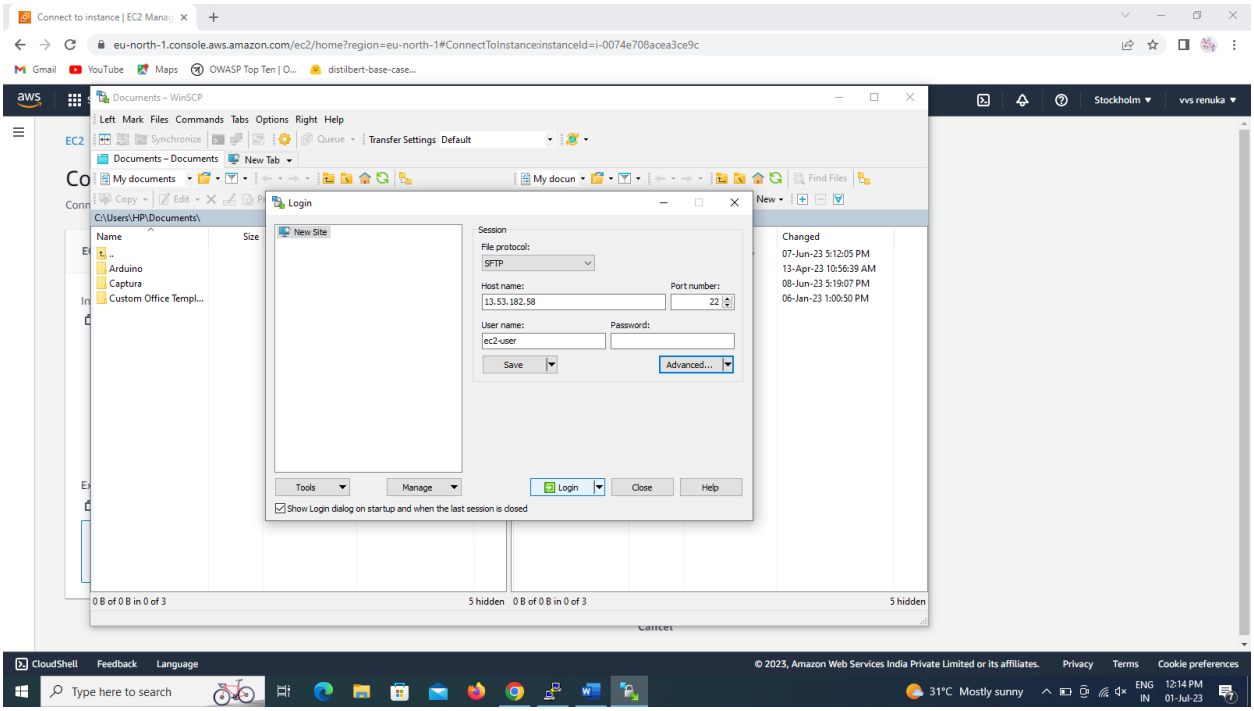


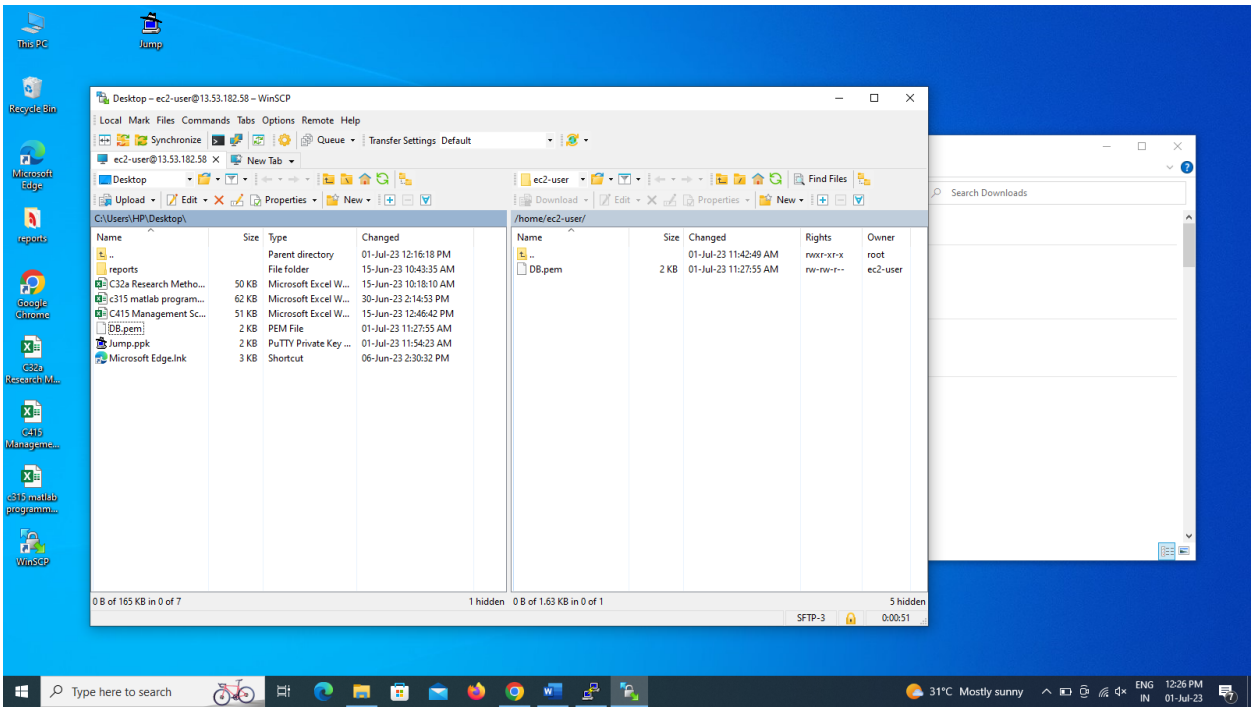
Next give the username and go to advanced settings.
Load the ppk file and then login so that the session get started.



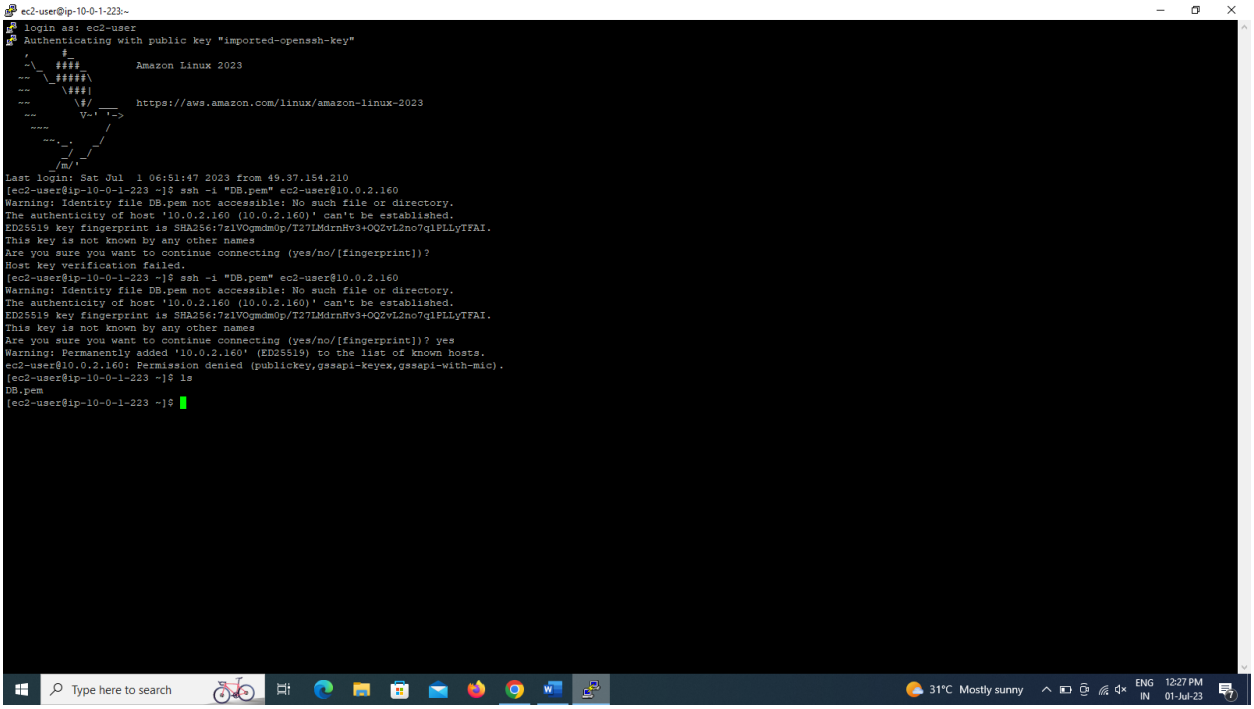


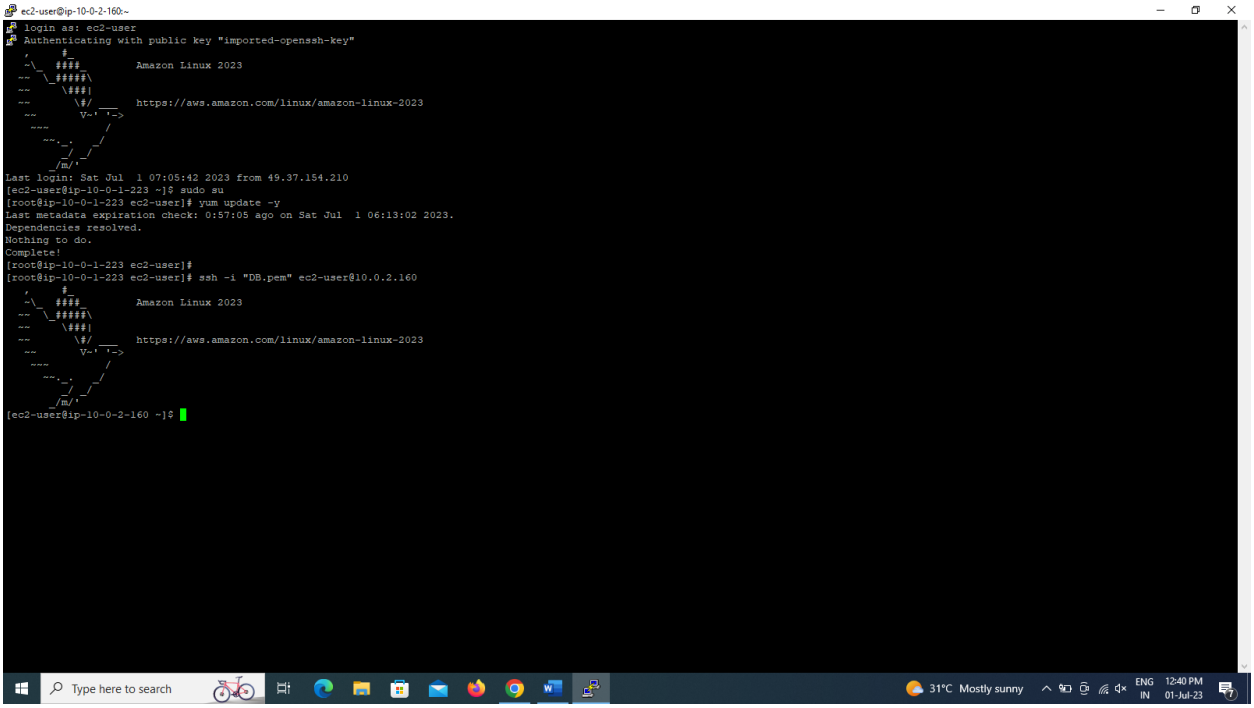


As the session is created now copy the DB file to the jump box instance .

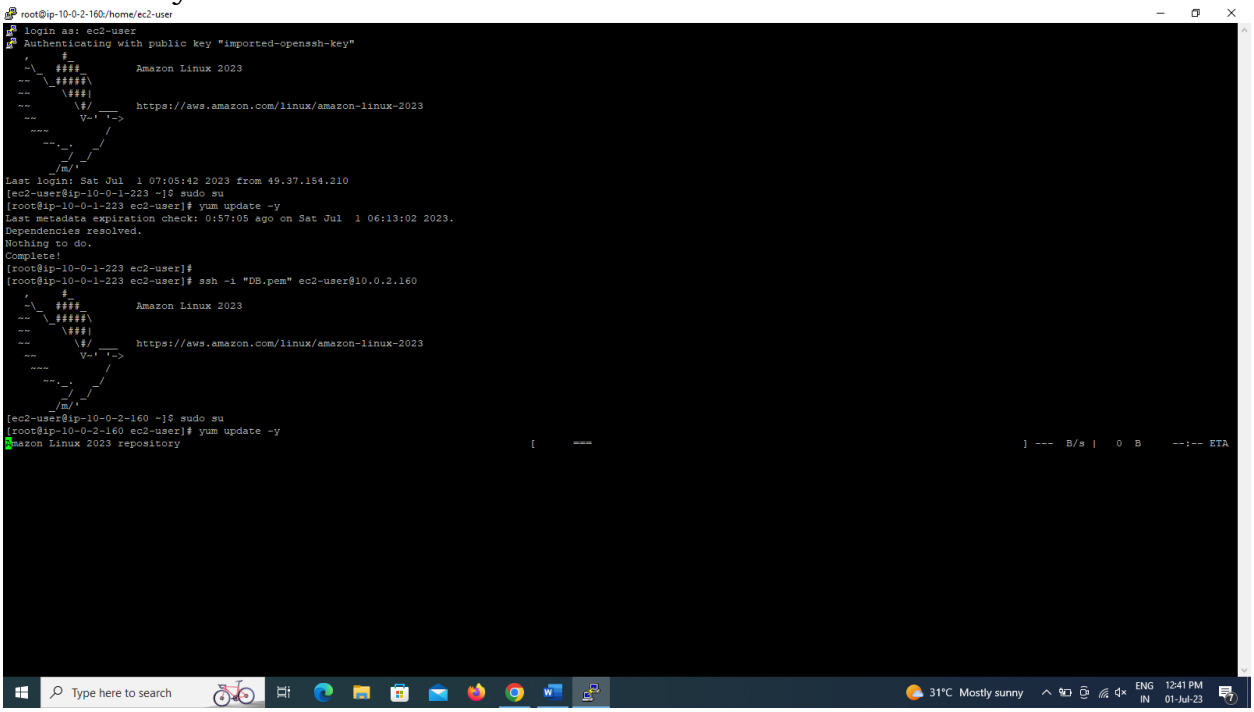


Now go to jumpbox and copy paste the previous command and we get them connected.





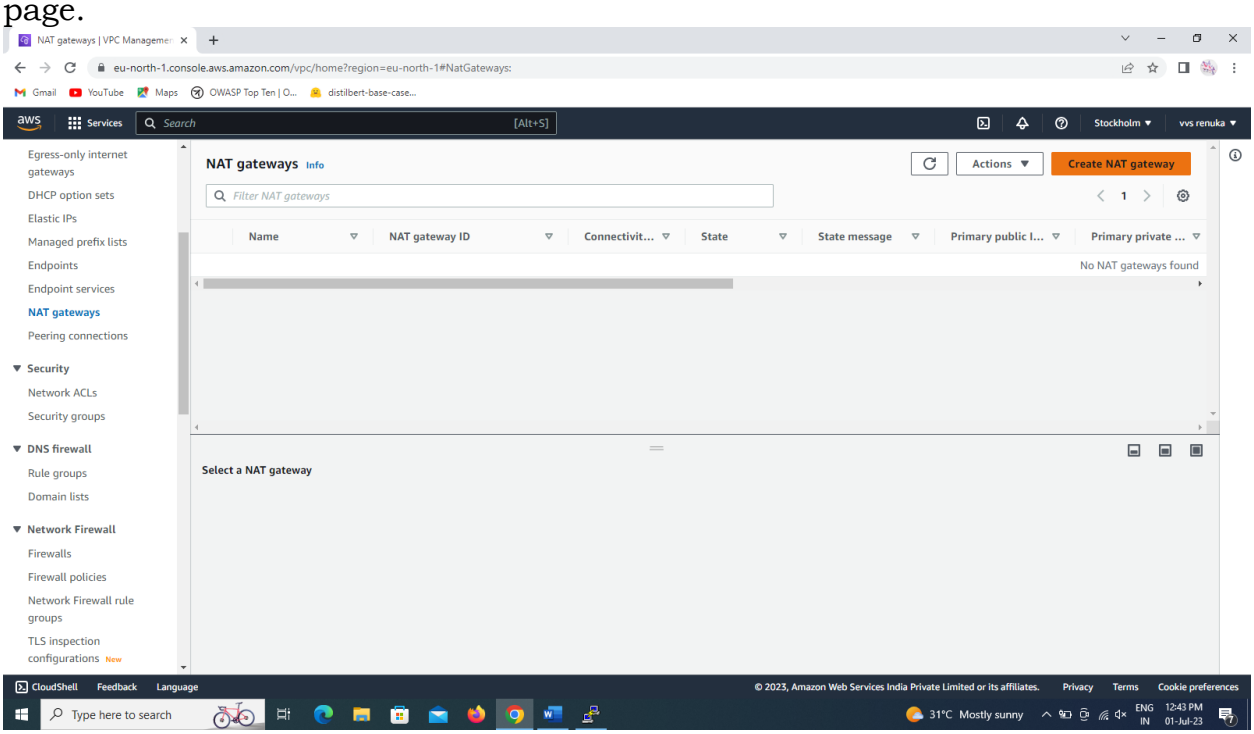
Now check whether there are any updates and if there is any internet connectivity or not.



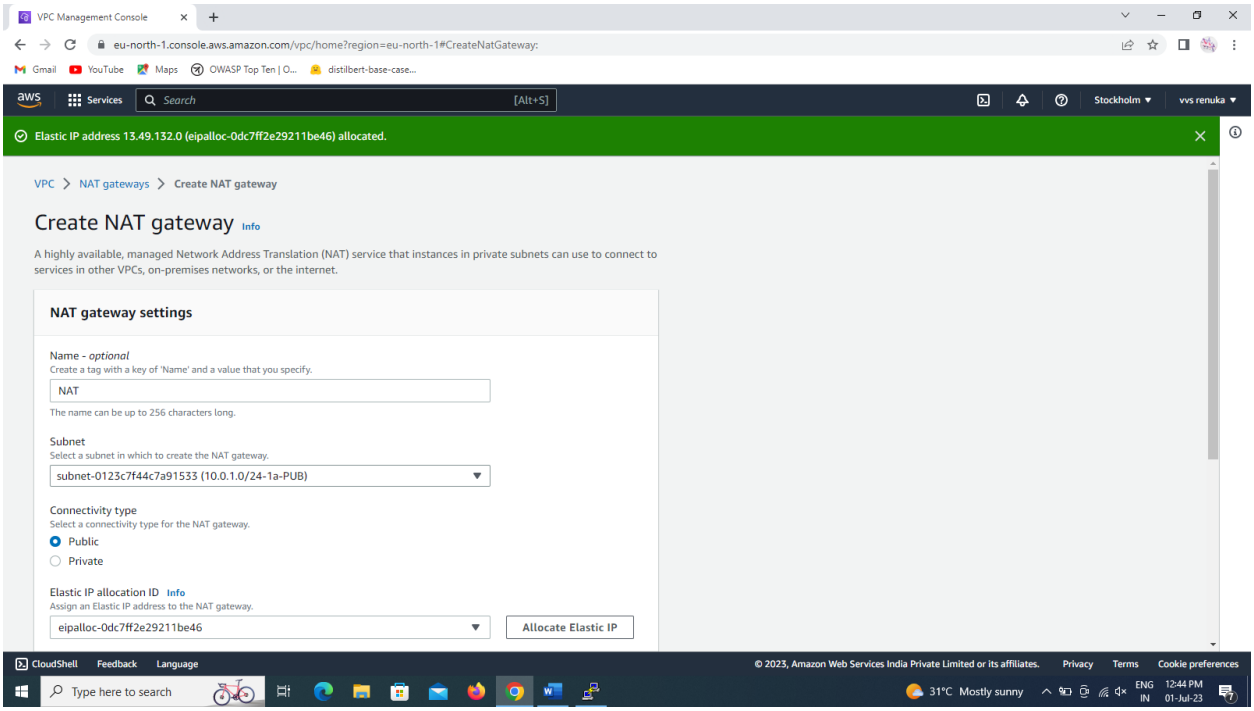
We find that there is no internet connectivity for this we have to create the NAT.

Creation of NAT

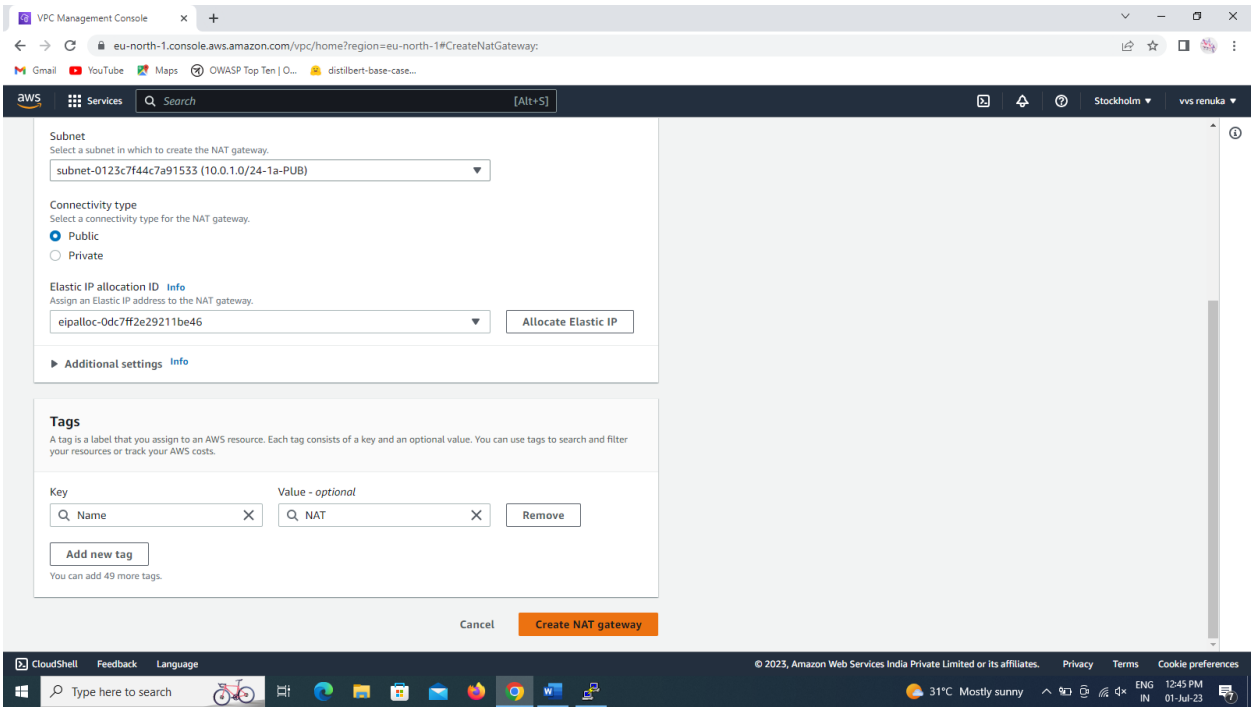
First go to VPC service and select the NAT option which is on the left side of the page.



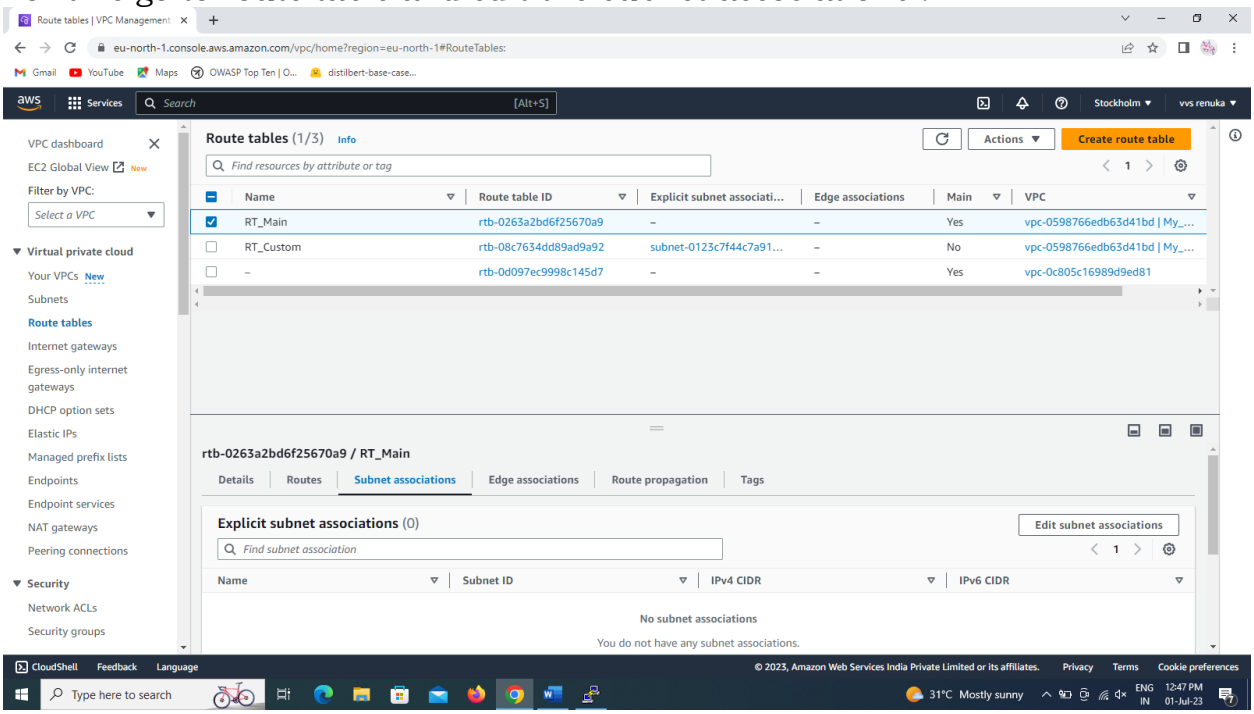
Give the name of the NAT and other settings required.

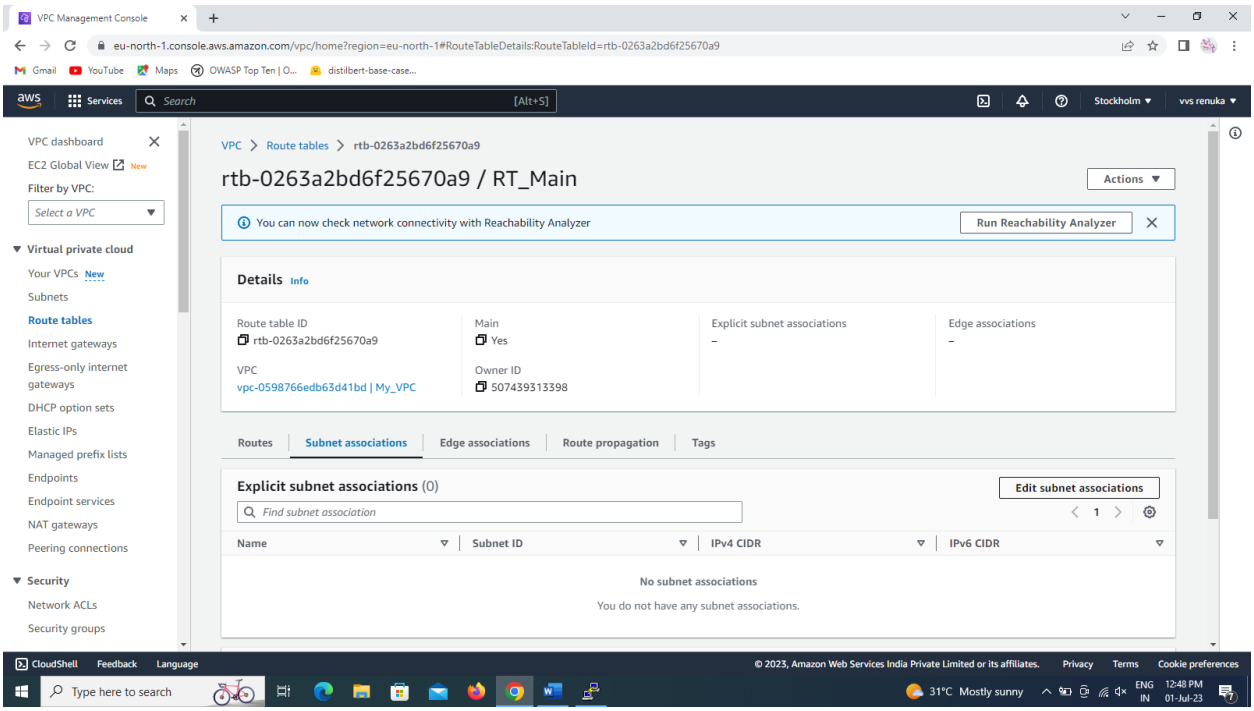


We also have to allocate the elastic IP.

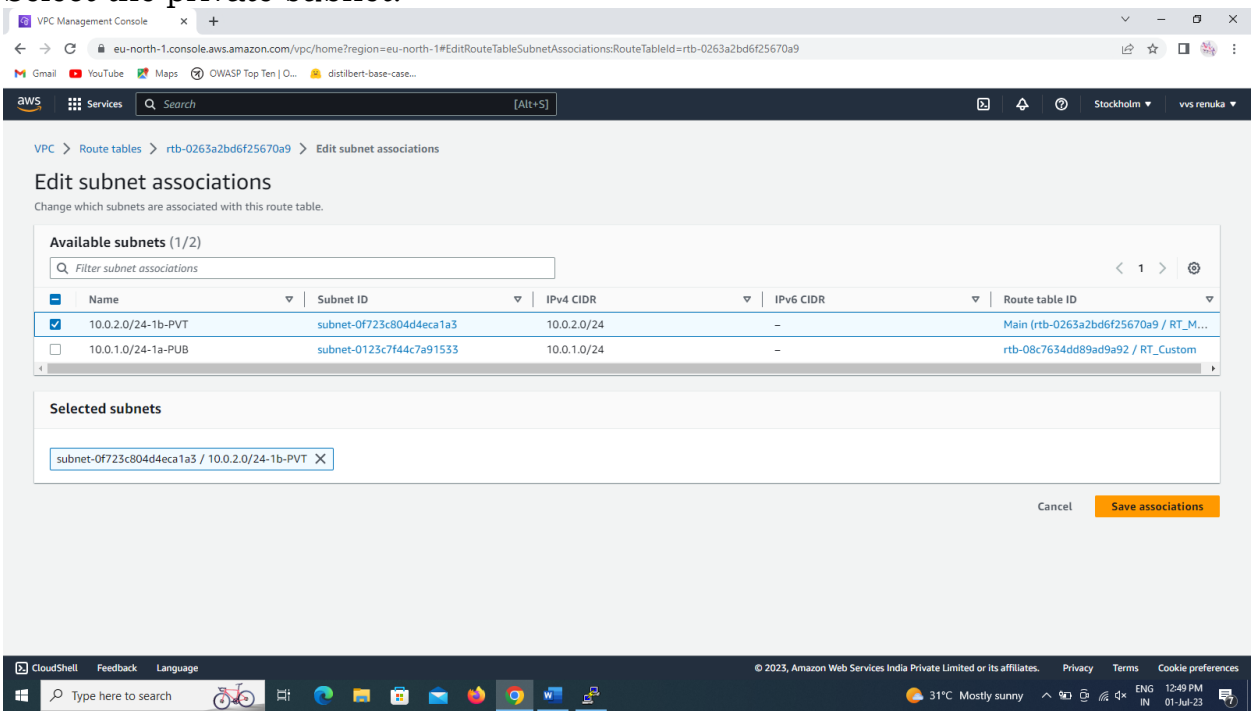


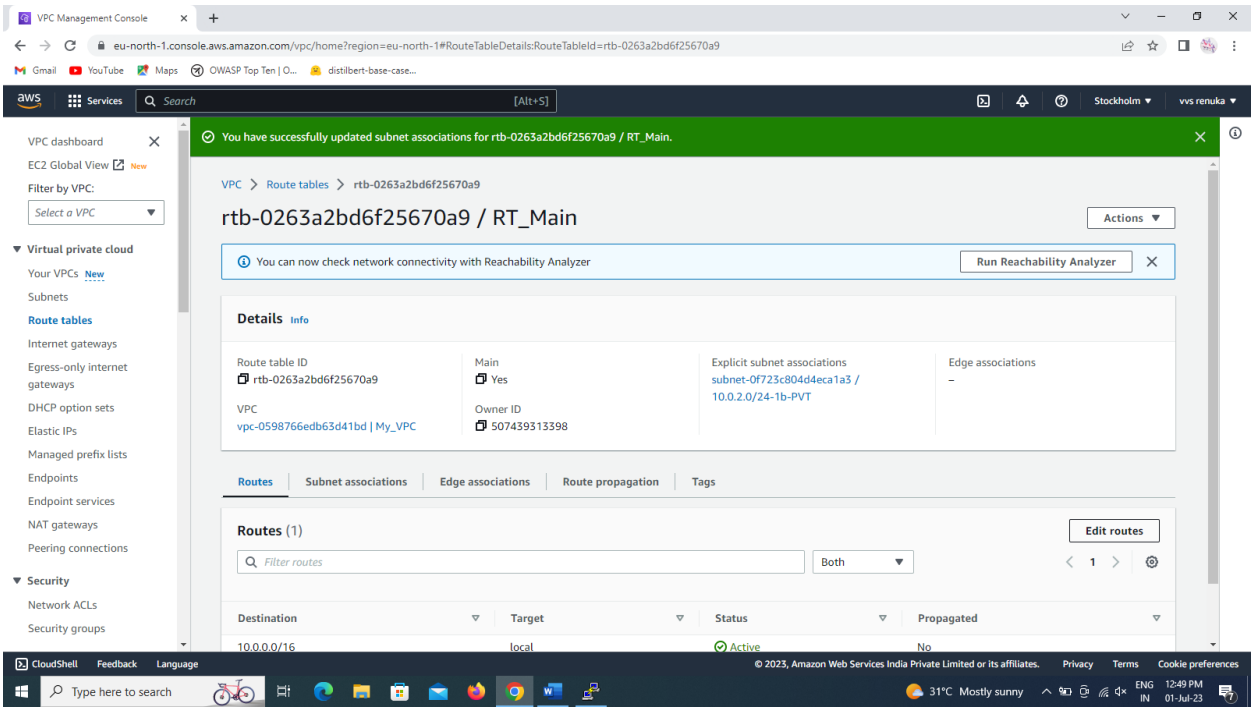
By using the main route table we can connect the NAT to the database to get internet connectivity.
For this go to route table and edit the subnet associations .



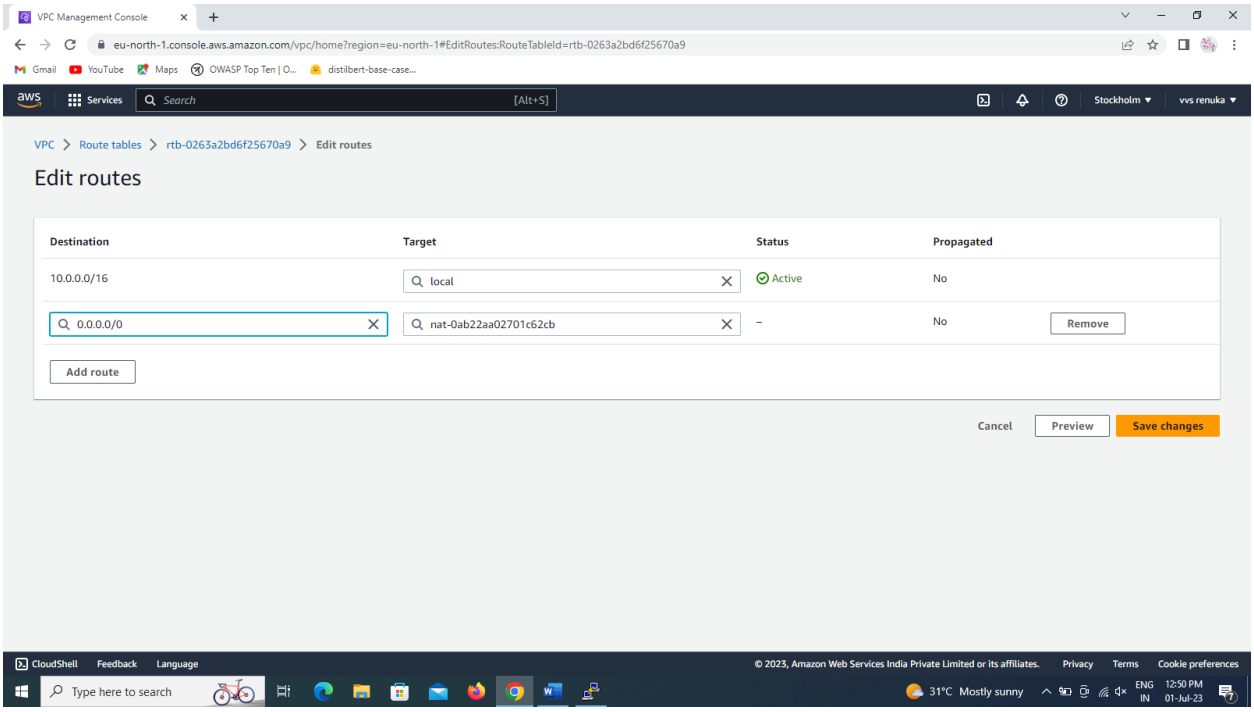


Select the private subnet.

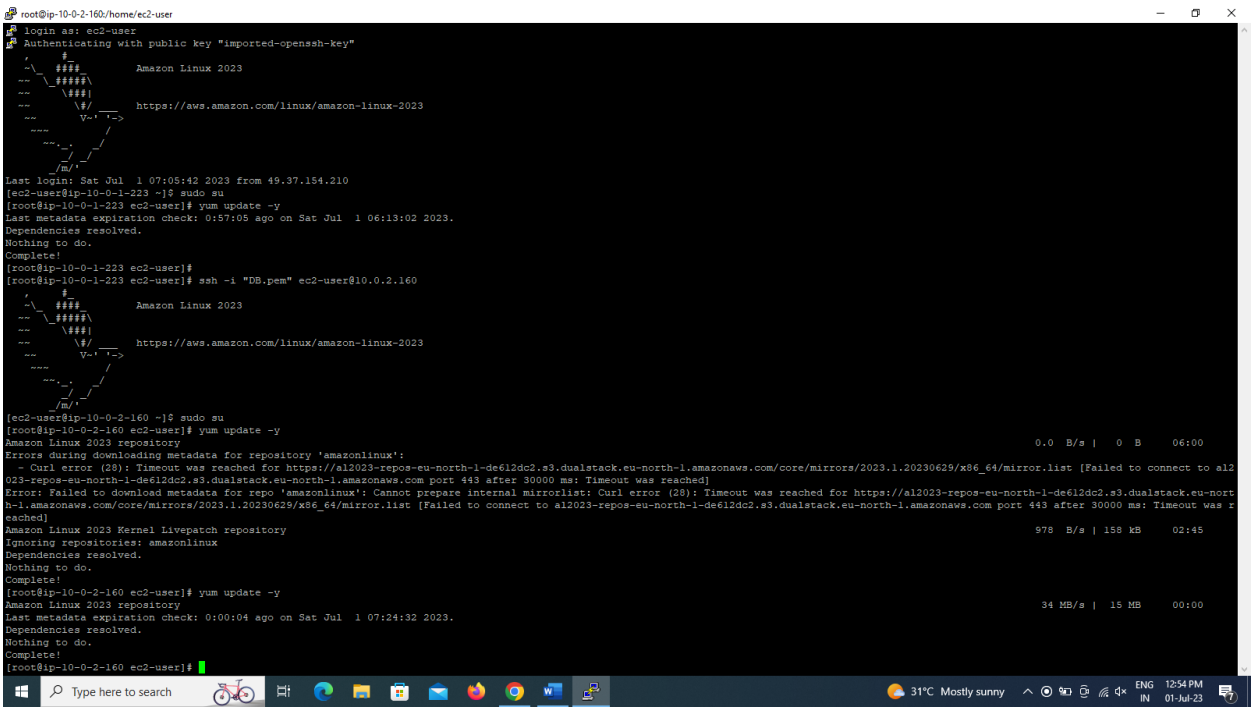




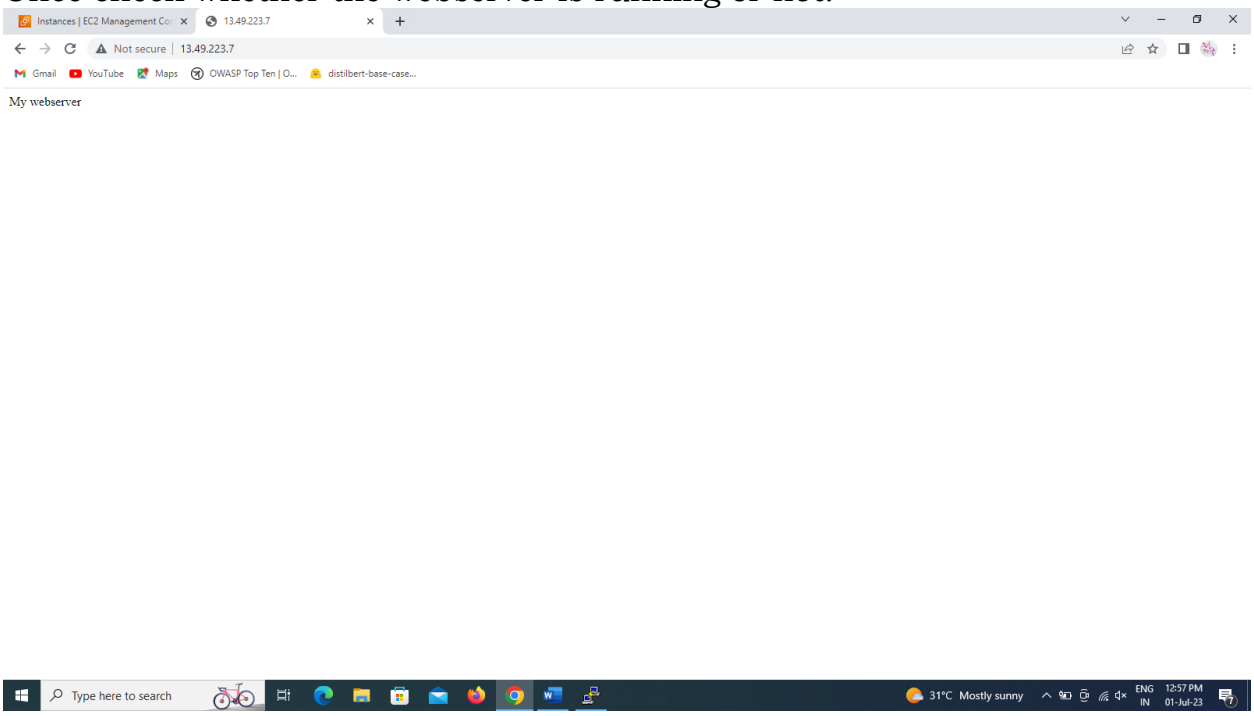
Now add the route to the route table.



Finally we get the internet connectivity.

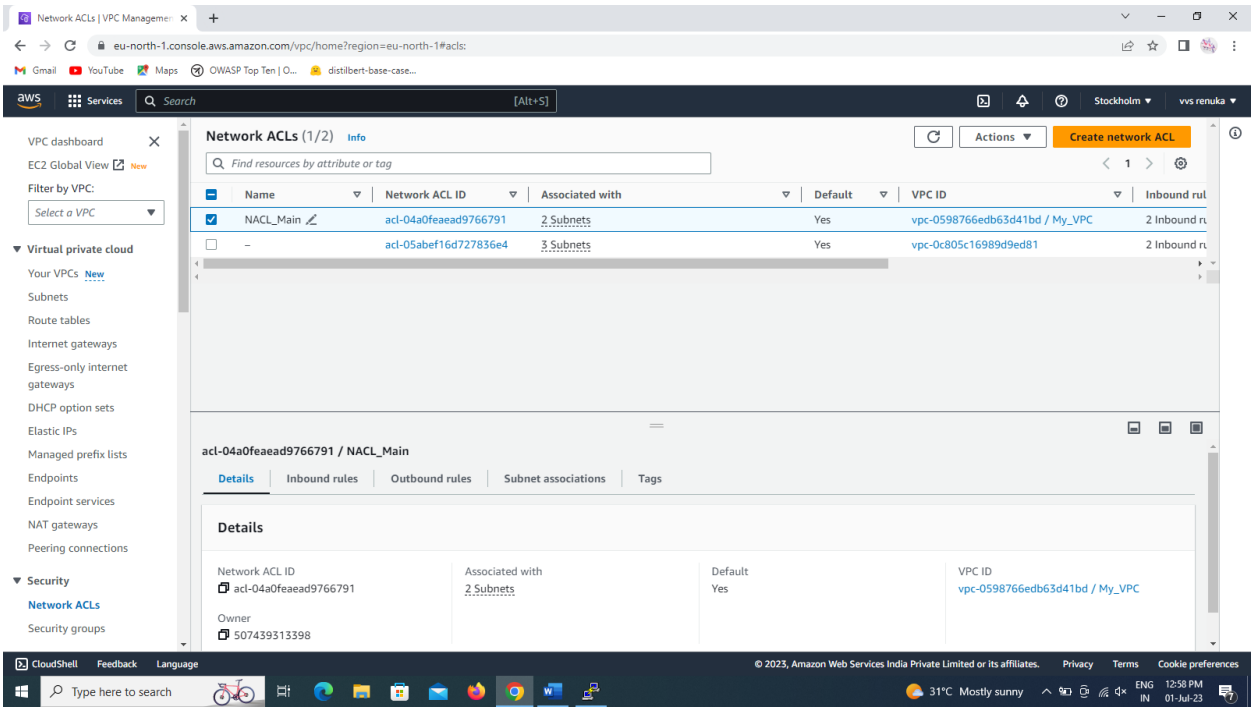


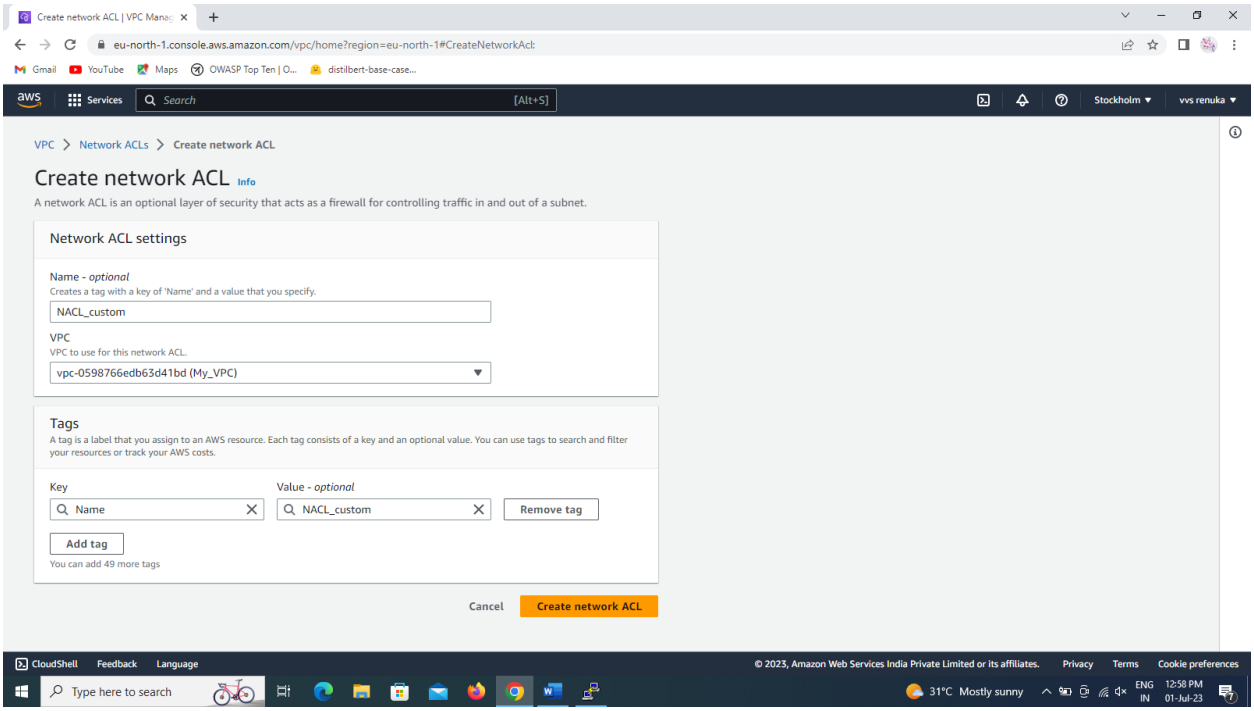
Once check whether the webserver is running or not.



We have to create the NACL to the subnets.

For public subnet we have to create custom NACL.


Network ACLs | VPC Management
eu-north-1.console.aws.amazon.com/vpc/home?region=eu-north-1#acls:
Gmail YouTube Maps OWASP Top Ten | O... distilbert-base-case...
aws Services Search [Alt+S] Stockholm vvs renuka
VPC dashboard
EC2 Global View New
Filter by VPC:
Select a VPC
Virtual private cloud
Your VPCs New
Subnets
Route tables
Internet gateways
Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
Endpoints
Endpoint services
NAT gateways
Peering connections
Security
Network ACLs
Security groups
Network ACLs (1/2) Info
Actions
Create network ACL
Find resources by attribute or tag
Name
Network ACL ID
Associated with
Default
VPC ID
Inbound rul
NACL_Main
acl-04a0feaead9766791
2 Subnets
Yes
vpc-0598766edb63d41bd / My_VPC
2 Inbound ru
–
acl-05abef16d727836e4
3 Subnets
Yes
vpc-0c805c16989d9ed81
2 Inbound ru
acl-04a0feaead9766791 / NACL_Main
Details
Inbound rules
Outbound rules
Subnet associations
Tags
Details
Network ACL ID
acl-04a0feaead9766791
Associated with
2 Subnets
Default
Yes
VPC ID
vpc-0598766edb63d41bd / My_VPC
Owner
507439313398
CloudShell Feedback Language
© 2023, Amazon Web Services India Private Limited or its affiliates. Privacy Terms Cookie preferences
Type here to search
31°C Mostly sunny
ENG IN 12:58 PM 01-Jul-23


Create network ACL | VPC Manag
eu-north-1.console.aws.amazon.com/vpc/home?region=eu-north-1#CreateNetworkAcl:
Gmail YouTube Maps OWASP Top Ten | O... distilbert-base-case...
aws Services Search [Alt+S] Stockholm vvs renuka
VPC > Network ACLs > Create network ACL
Create network ACL Info
A network ACL is an optional layer of security that acts as a firewall for controlling traffic in and out of a subnet.
Network ACL settings
Name - optional
Creates a tag with a key of 'Name' and a value that you specify.
NACL_custom
VPC
VPC to use for this network ACL.
vpc-0598766edb63d41bd (My_VPC)
Tags
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.
Key
Value - optional
Name
NACL_custom
Remove tag
Add tag
You can add 49 more tags
Cancel
Create network ACL
CloudShell Feedback Language
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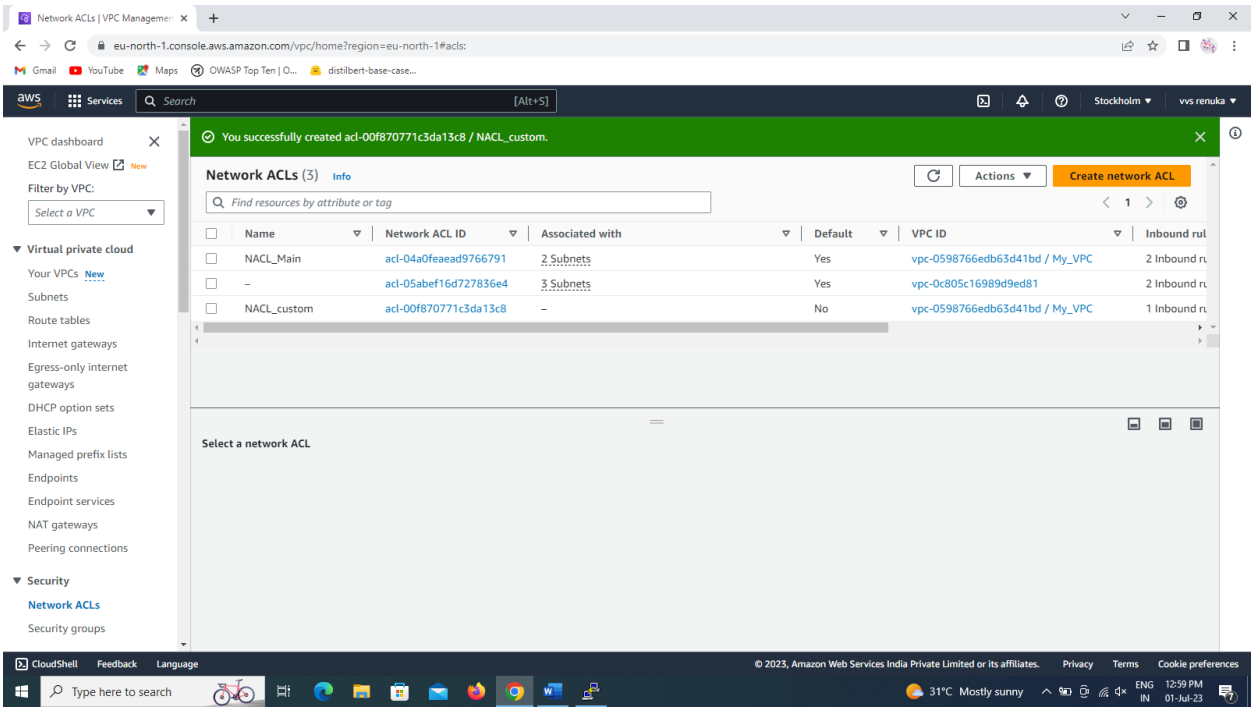
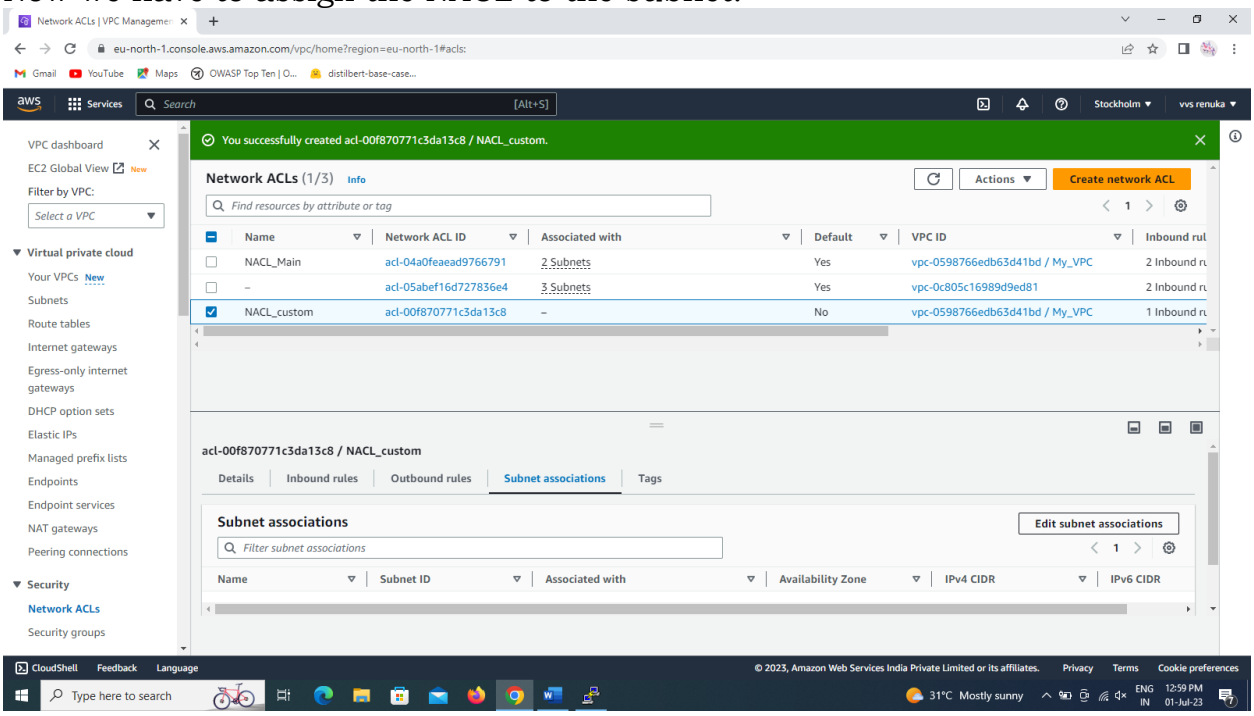
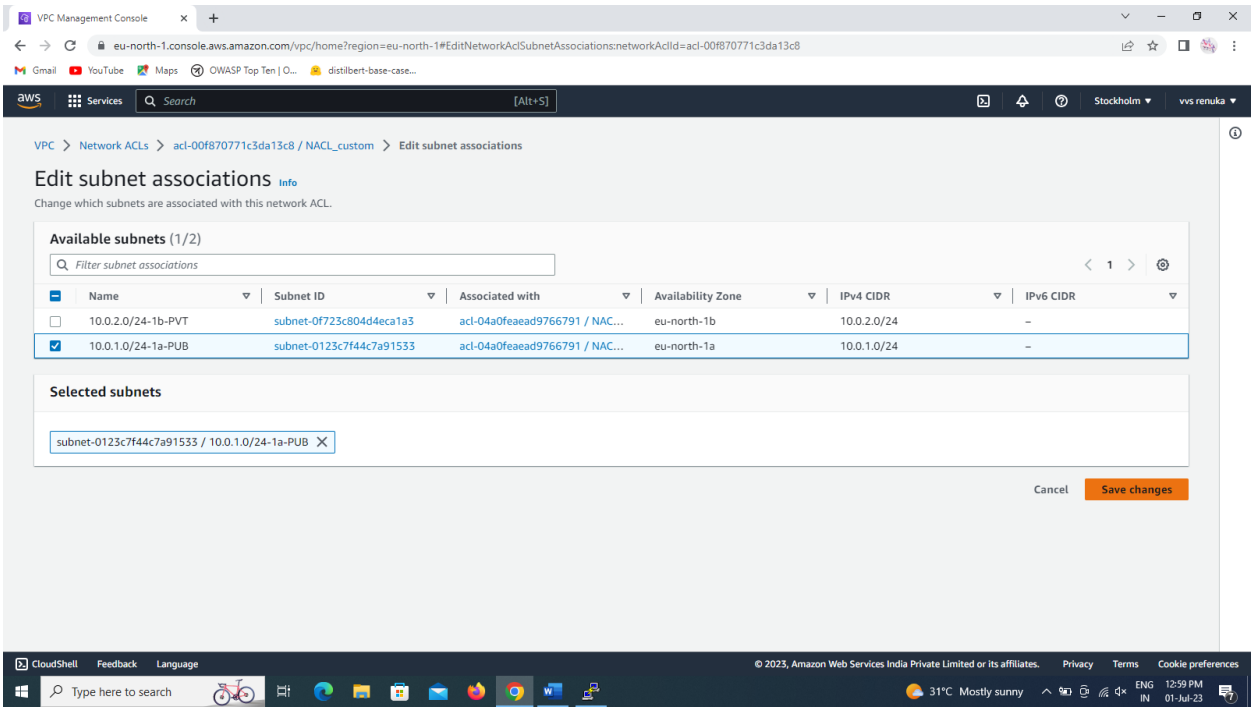
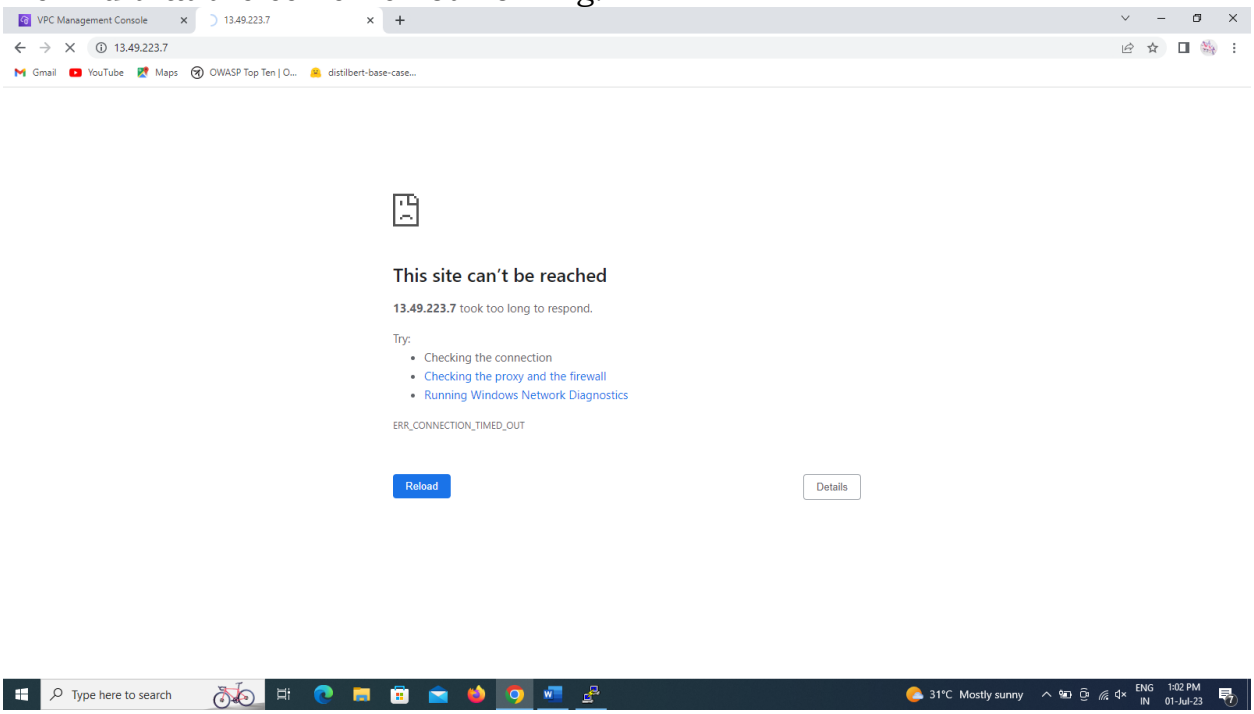


Now we have to assign the NACL to the subnet.

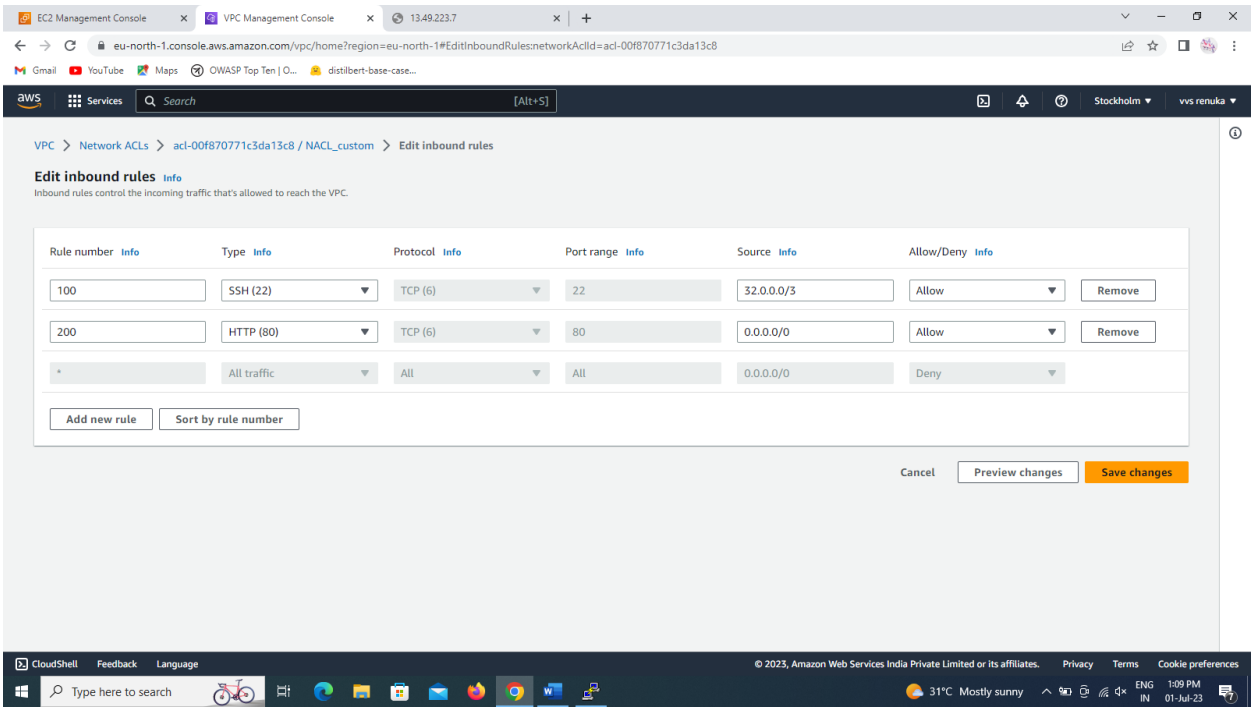


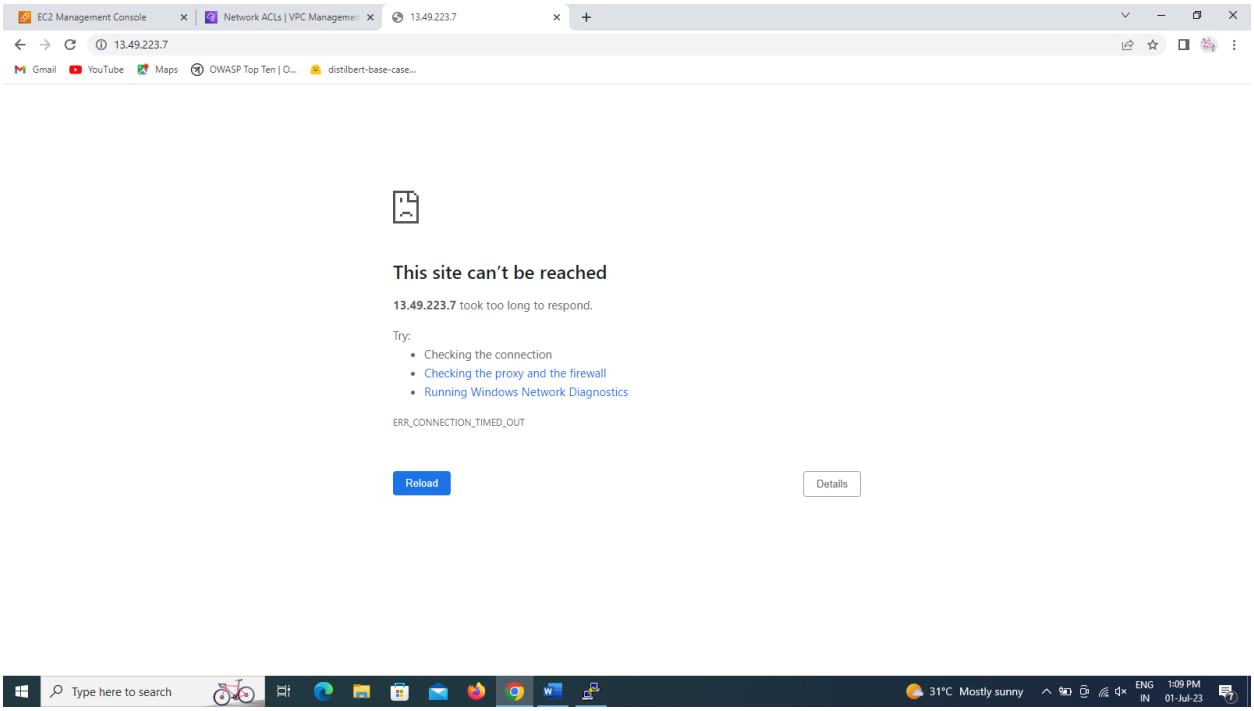


Now go and check whether the webserver is working or not.
We find that the server is not working.

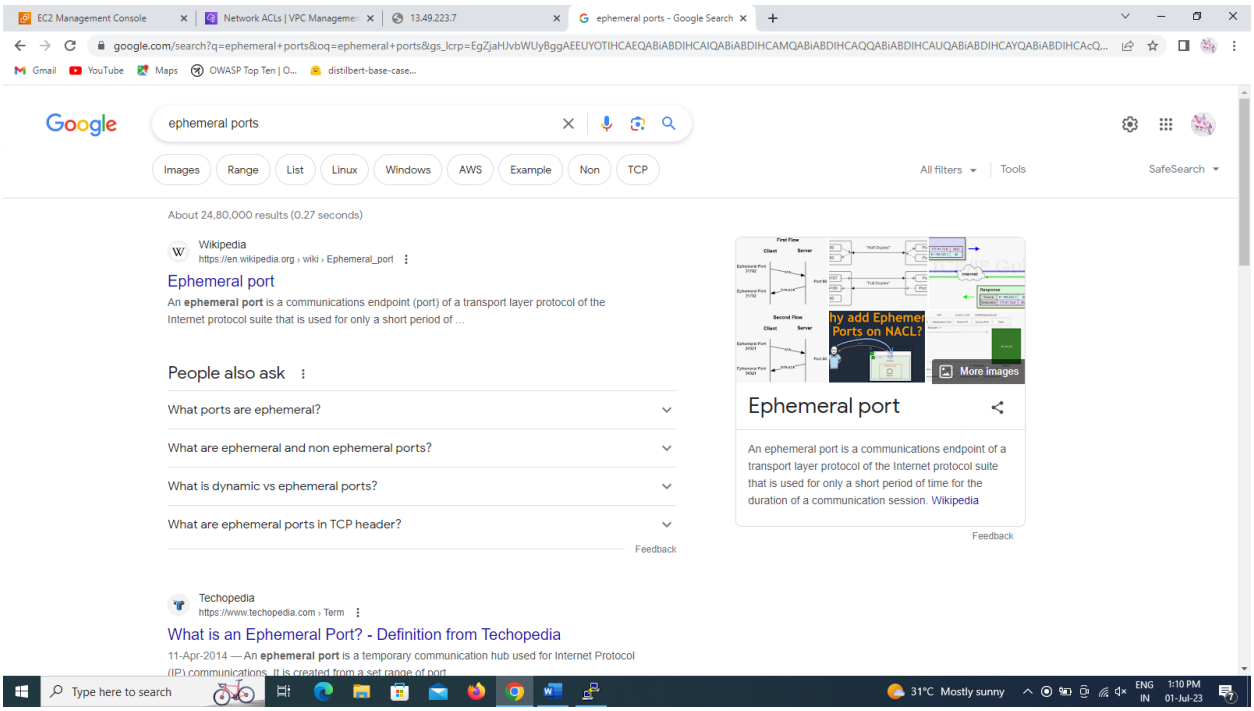


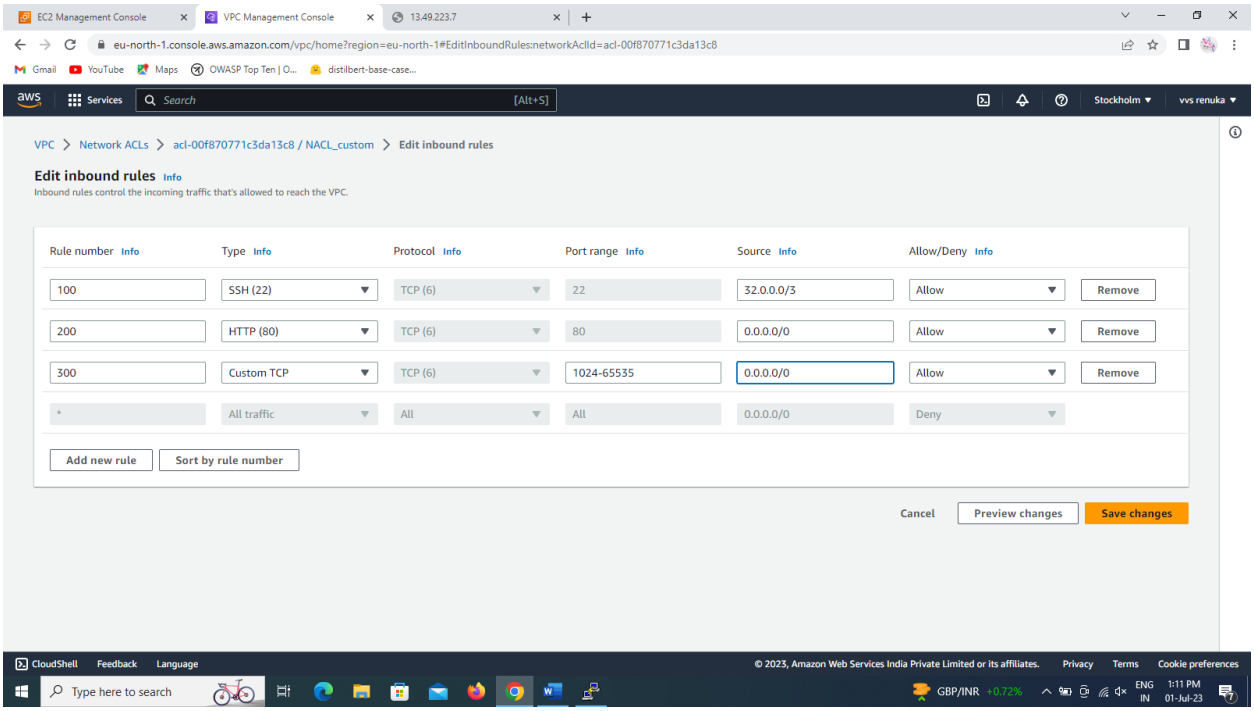
Now go to NACL custom and edit the inbound rules and check the website.



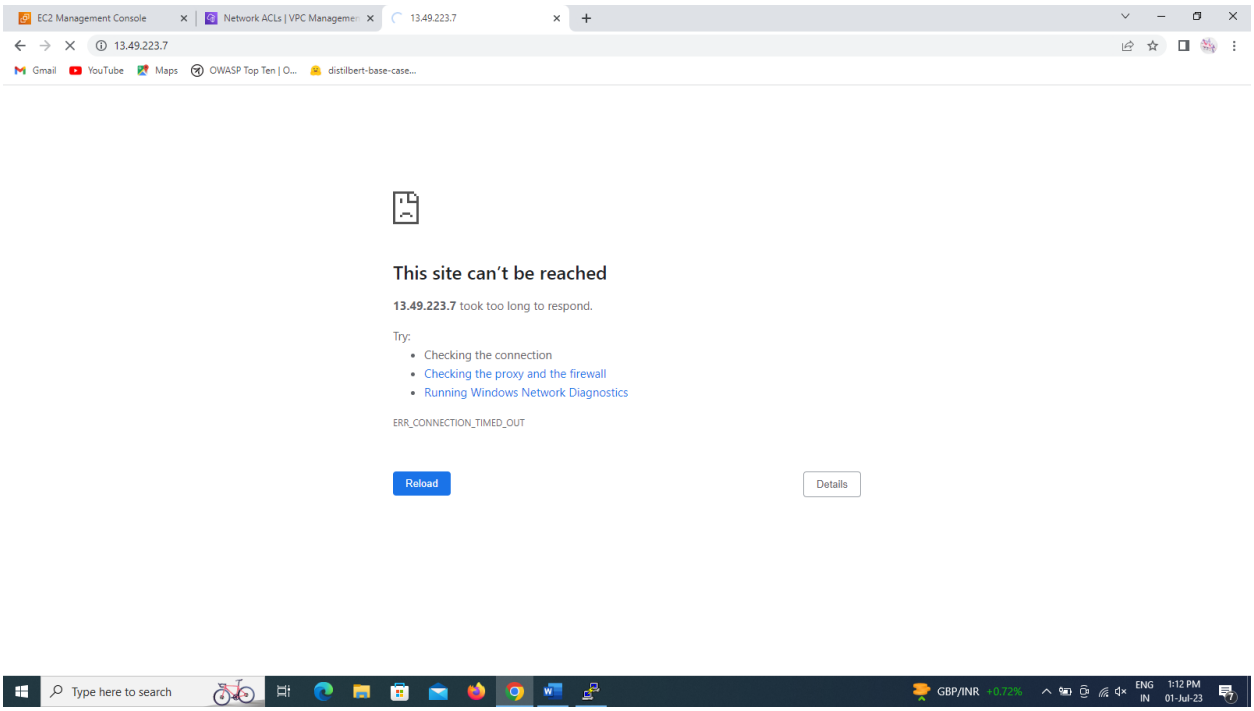


Even though we have edited the inbound rules there is a rule which is denied so here comes the role of the ephemeral ports.

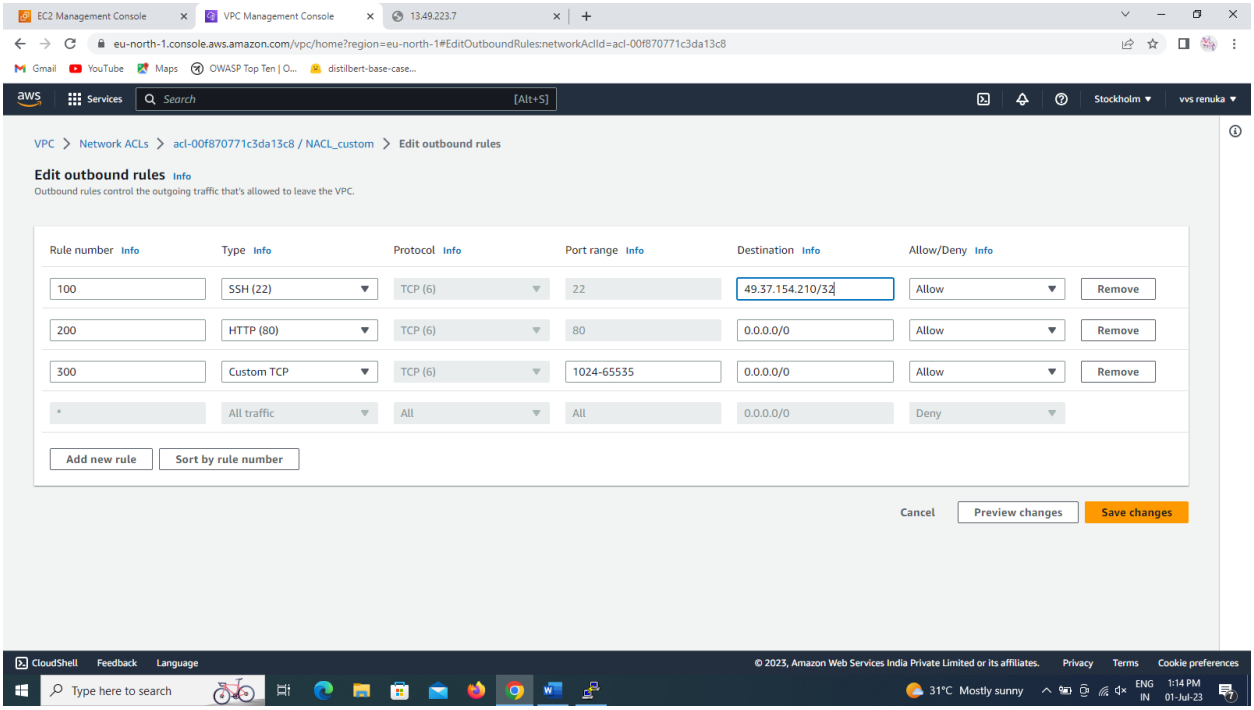




Even though the changes made we don't get the website worked.



So to solve this not only inbound rules outbound rules also to be edited.



Now we can see that the server is running successfully and securely.


EC2 Management Console
Network ACLs | VPC Management
13.49.223.7
Not secure | 13.49.223.7
Gmail
YouTube
Maps
OWASP Top Ten | O...
distilbert-base-case...
My webserver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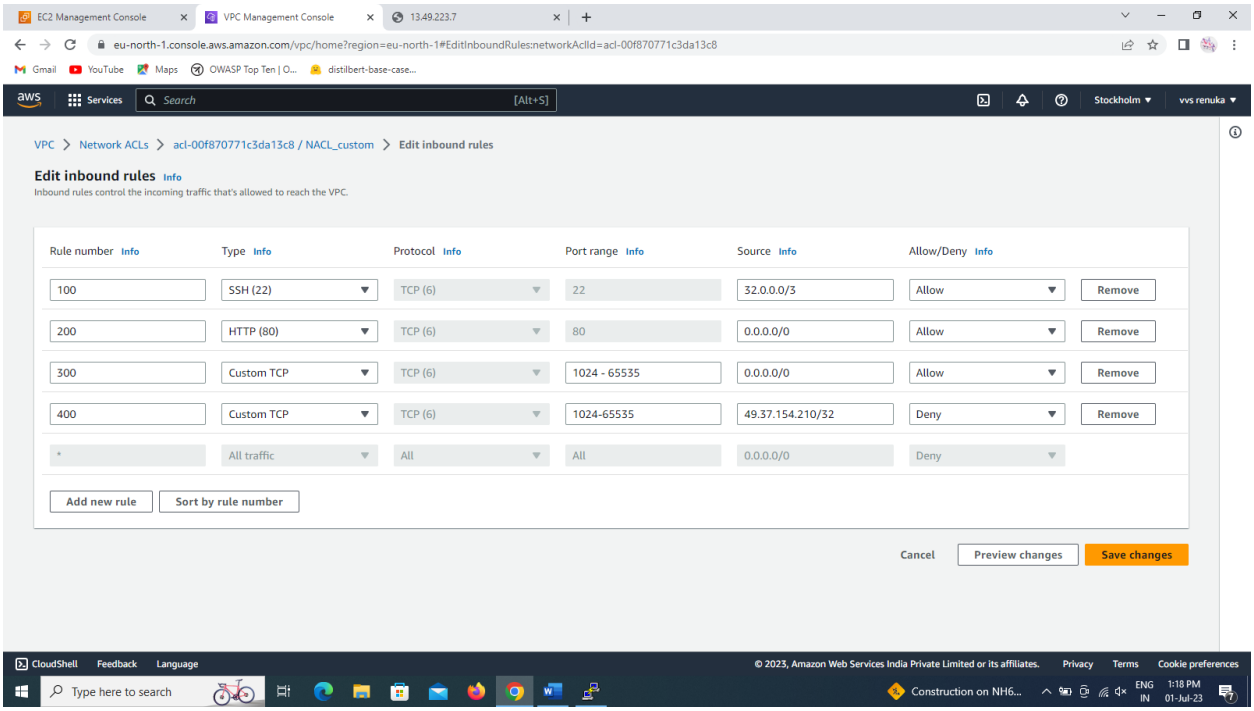
EC2 Management Console
VPC Management Console
13.49.223.7
eu-north-1.console.aws.amazon.com/vpc/home?region=eu-north-1#EditInboundRules:networkAclId=acl-00f870771c3da13c8
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YouTube
Maps
OWASP Top Ten | O...
distilbert-base-case...
aws
Services
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vvs renuka
VPC > Network ACLs > acl-00f870771c3da13c8 / NACL_custom > Edit inbound rules
Edit inbound rules Info
Inbound rules control the incoming traffic that's allowed to reach the VPC.
Rule number Info
Type Info
Protocol Info
Port range Info
Source Info
Allow/Deny Info
100
SSH (22)
TCP (6)
22
32.0.0.0/3
Allow
Remove
200
HTTP (80)
TCP (6)
80
0.0.0.0/0
Allow
Remove
300
Custom TCP
TCP (6)
1024 - 65535
0.0.0.0/0
Allow
Remove
400
Custom TCP
TCP (6)
1024-65535
49.37.154.210/32
Deny
Remove
*
All traffic
All
All
0.0.0.0/0
Deny
Add new rule
Sort by rule number
Cancel
Preview changes
Save changes
CloudShell
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Construction on NH6...
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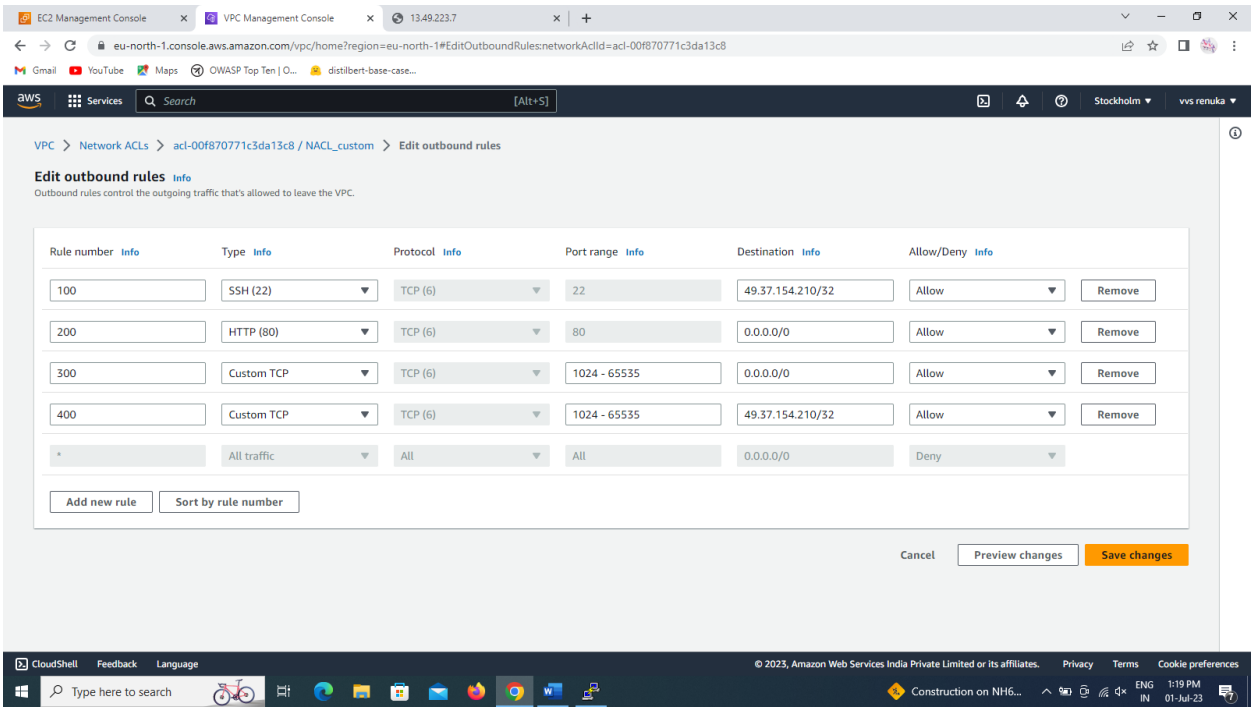
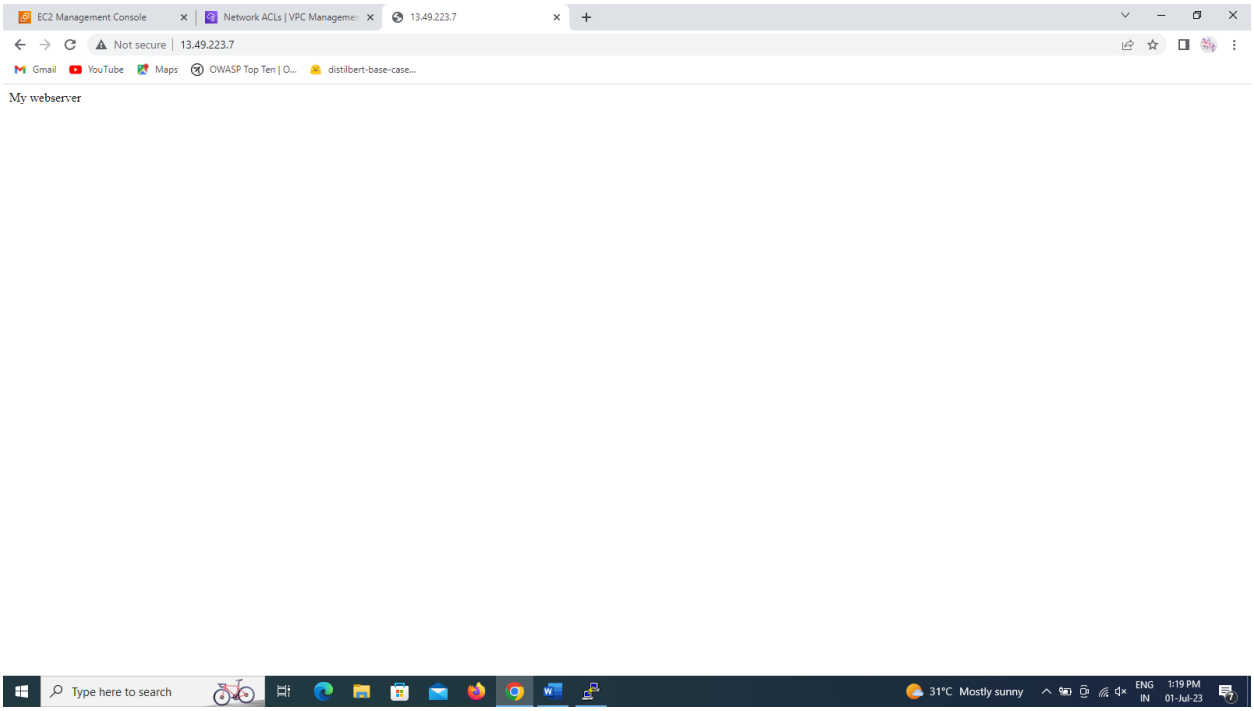
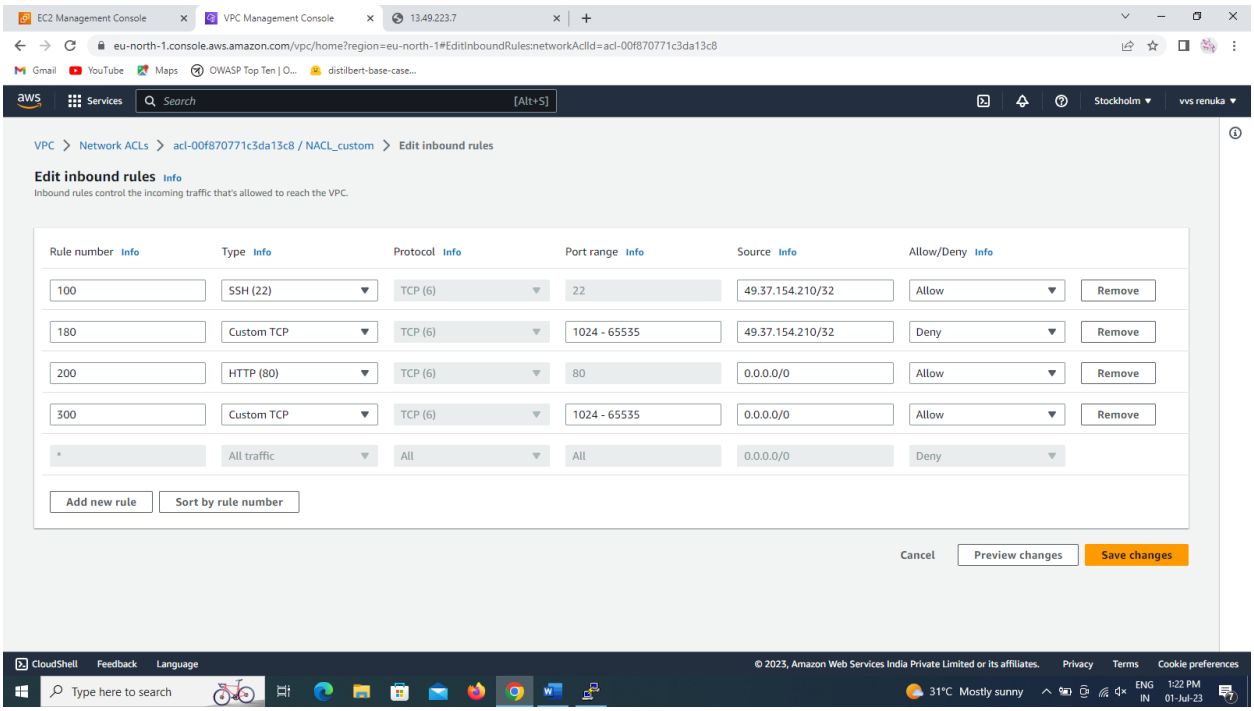




If we have to make a particular user denied from this access to the website then we can add that particular users Ip address and make him blocked .


EC2 Management Console
VPC Management Console
13.49.223.7
eu-north-1.console.aws.amazon.com/vpc/home?region=eu-north-1#EditInboundRules:networkAclId=acl-00f870771c3da13c8
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YouTube
Maps
OWASP Top Ten | O...
distilbert-base-case...
aws
Services
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vvs renuka
VPC > Network ACLs > acl-00f870771c3da13c8 / NACL_custom > Edit inbound rules
Edit inbound rules Info
Inbound rules control the incoming traffic that's allowed to reach the VPC.
Rule number Info
Type Info
Protocol Info
Port range Info
Source Info
Allow/Deny Info
100
SSH (22)
TCP (6)
22
49.37.154.210/32
Allow
Remove
180
Custom TCP
TCP (6)
1024 - 65535
49.37.154.210/32
Deny
Remove
200
HTTP (80)
TCP (6)
80
0.0.0.0/0
Allow
Remove
300
Custom TCP
TCP (6)
1024 - 65535
0.0.0.0/0
Allow
Remove
*
All traffic
All
All
0.0.0.0/0
Deny
Add new rule
Sort by rule number
Cancel
Preview changes
Save changes
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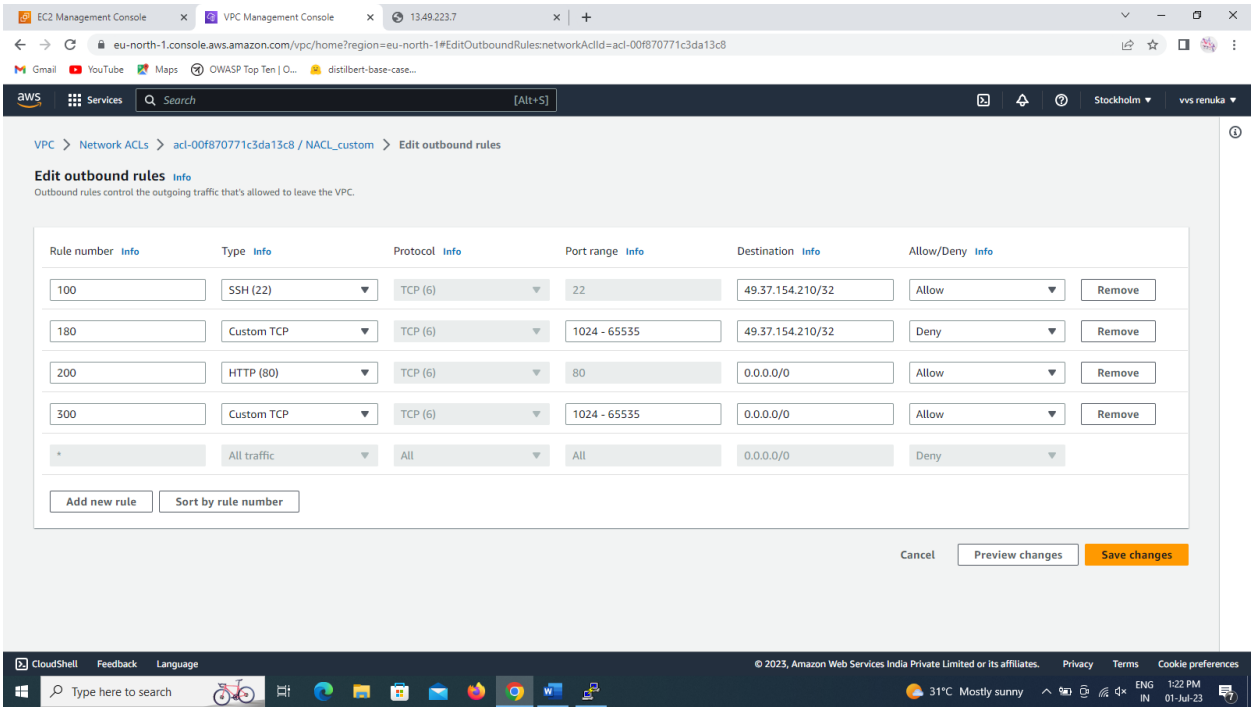
EC2 Management Console
VPC Management Console
13.49.223.7
eu-north-1.console.aws.amazon.com/vpc/home?region=eu-north-1#EditOutboundRules:networkAclId=acl-00f870771c3da13c8
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YouTube
Maps
OWASP Top Ten | O...
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aws
Services
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vvs renuka
VPC > Network ACLs > acl-00f870771c3da13c8 / NACL_custom > Edit outbound rules
Edit outbound rules Info
Outbound rules control the outgoing traffic that's allowed to leave the VPC.
Rule number Info
Type Info
Protocol Info
Port range Info
Destination Info
Allow/Deny Info
100
SSH (22)
TCP (6)
22
49.37.154.210/32
Allow
Remove
180
Custom TCP
TCP (6)
1024 - 65535
49.37.154.210/32
Deny
Remove
200
HTTP (80)
TCP (6)
80
0.0.0.0/0
Allow
Remove
300
Custom TCP
TCP (6)
1024 - 65535
0.0.0.0/0
Allow
Remove
*
All traffic
All
All
0.0.0.0/0
Deny
Add new rule
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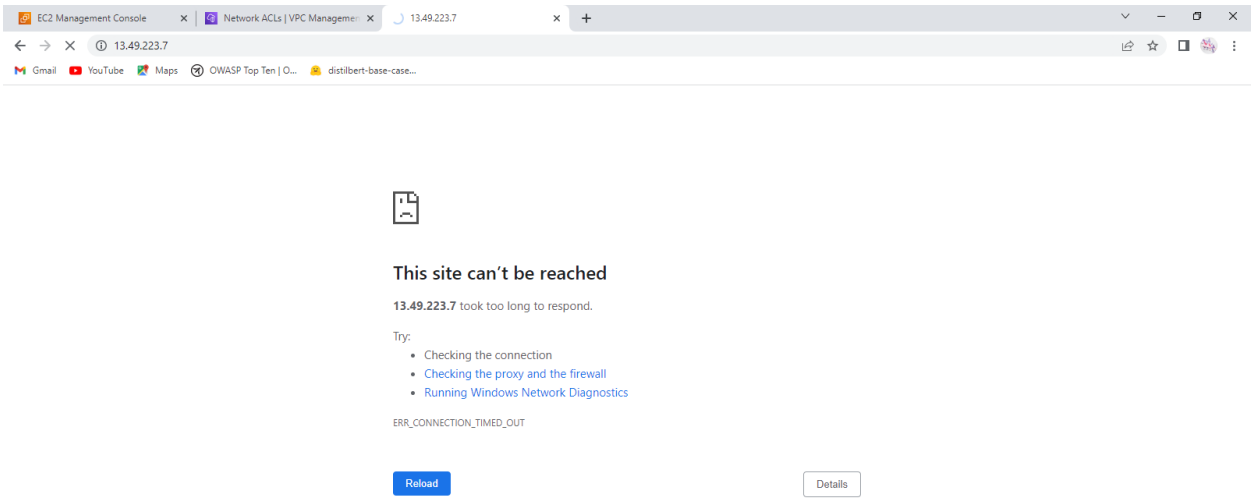
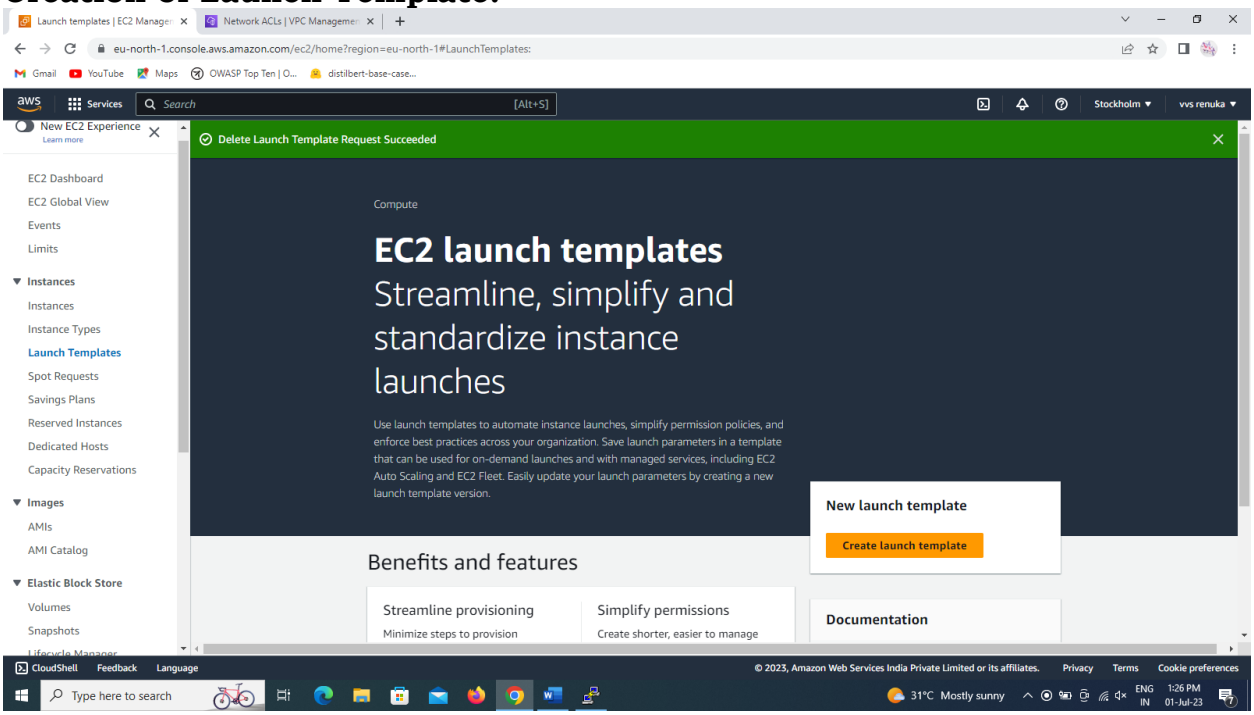
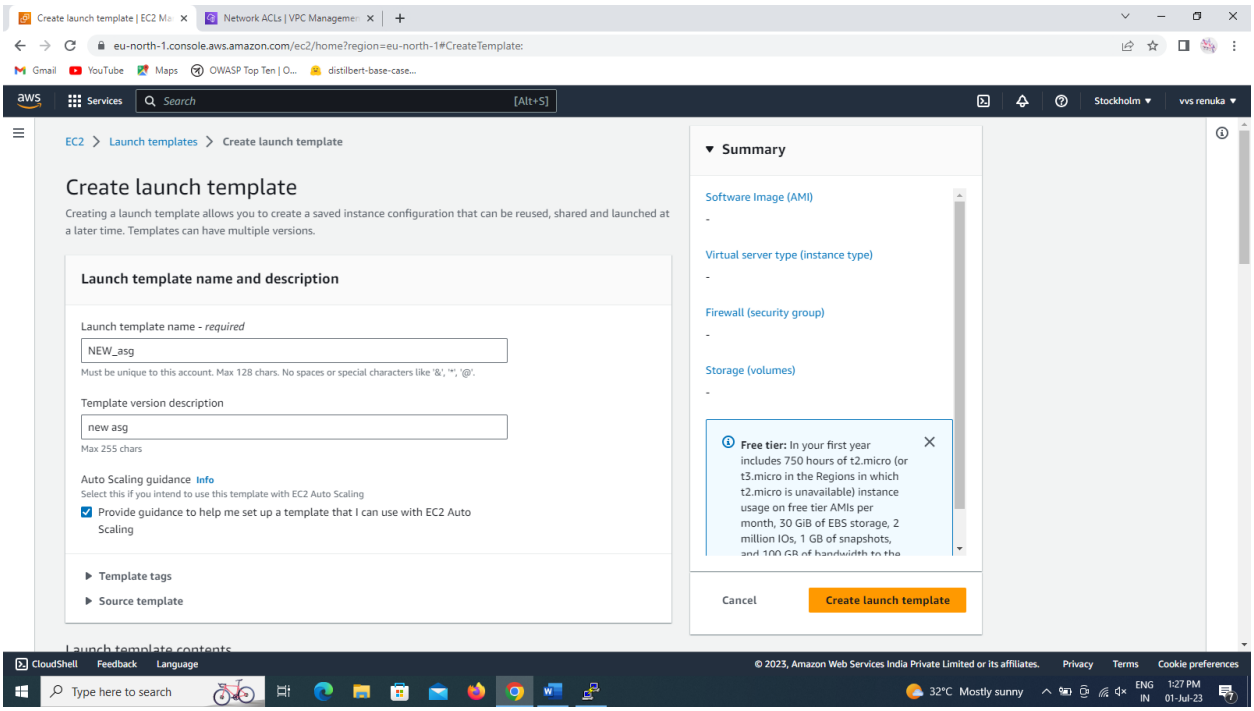


Finally to balance the traffic between the servers we have to create an elastic load balancer along with the ASG.
For this first we have to create the launch template.

Creation of Launch Template.



Name the launch template and give the settings required such as keypair, security group, subnet in which it is going to be created , VPC etc...


Create launch template | EC2 Ma
Network ACLs | VPC Manageme
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#CreateTemplate:
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Maps
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distilbert-base-case...
aws
Services
Search
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vvs renuka
EC2 > Launch templates > Create launch template
Create launch template
Creating a launch template allows you to create a saved instance configuration that can be reused, shared and launched at a later time. Templates can have multiple versions.
Launch template name and description
Launch template name - required
NEW_asg
Must be unique to this account. Max 128 chars. No spaces or special characters like '&', '*', '@'.
Template version description
new asg
Max 255 chars
Auto Scaling guidance Info
Select this if you intend to use this template with EC2 Auto Scaling
Provide guidance to help me set up a template that I can use with EC2 Auto Scaling
Template tags
Source template
Summary
Software Image (AMI)
-
Virtual server type (instance type)
-
Firewall (security group)
-
Storage (volumes)
-
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,
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Create launch template
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Language
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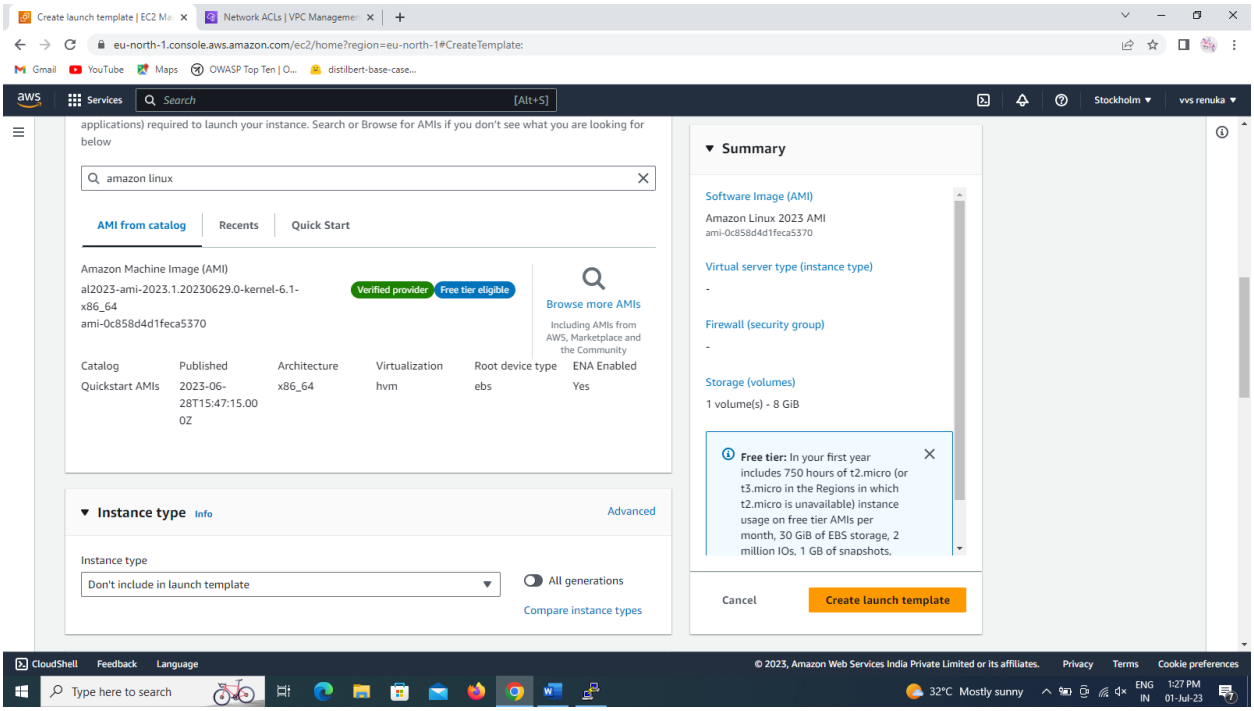
Create launch template | EC2 Ma
Network ACLs | VPC Manageme
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#CreateTemplate:
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YouTube
Maps
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distilbert-base-case...
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Services
Search
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vvs renuka
applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below
amazon linux
AMI from catalog
Recents
Quick Start
Amazon Machine Image (AMI)
al2023-ami-2023.1.20230629.0-kernel-6.1-x86_64
ami-0c858d4d1feca5370
Verified provider
Free tier eligible
Browse more AMIs
Including AMIs from AWS, Marketplace and the Community
Catalog
Published
Architecture
Virtualization
Root device type
ENA Enabled
Quickstart AMIs
2023-06-28T15:47:15.000Z
x86_64
hvm
ebs
Yes
Instance type Info
Advanced
Instance type
Don't include in launch template
All generations
Compare instance types
Summary
Software Image (AMI)
Amazon Linux 2023 AMI
ami-0c858d4d1feca5370
Virtual server type (instance type)
-
Firewall (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,
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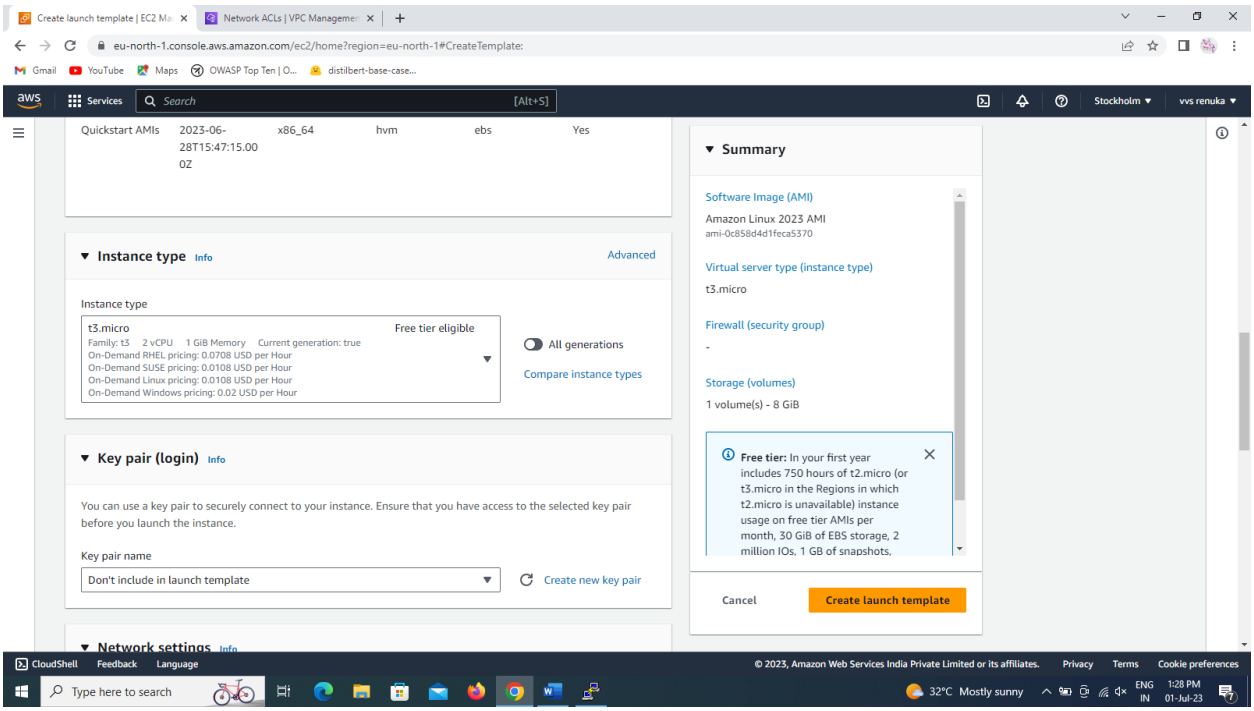
Create launch template | EC2 Ma
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YouTube
Maps
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vvs renuka
Quickstart AMIs
2023-06-28T15:47:15.000Z
x86_64
hvm
ebs
Yes
Instance type Info
Advanced
Instance type
t3.micro
Free tier eligible
Family: t3 2 vCPU 1 GiB Memory Current generation: true
On-Demand RHEL pricing: 0.0708 USD per Hour
On-Demand SUSE pricing: 0.0108 USD per Hour
On-Demand Linux pricing: 0.0108 USD per Hour
On-Demand Windows pricing: 0.02 USD per Hour
All generations
Compare instance types
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
Don't include in launch template
Create new key pair
Network settings Info
Summary
Software Image (AMI)
Amazon Linux 2023 AMI
ami-0c858d4d1feca5370
Virtual server type (instance type)
t3.micro
Firewall (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,
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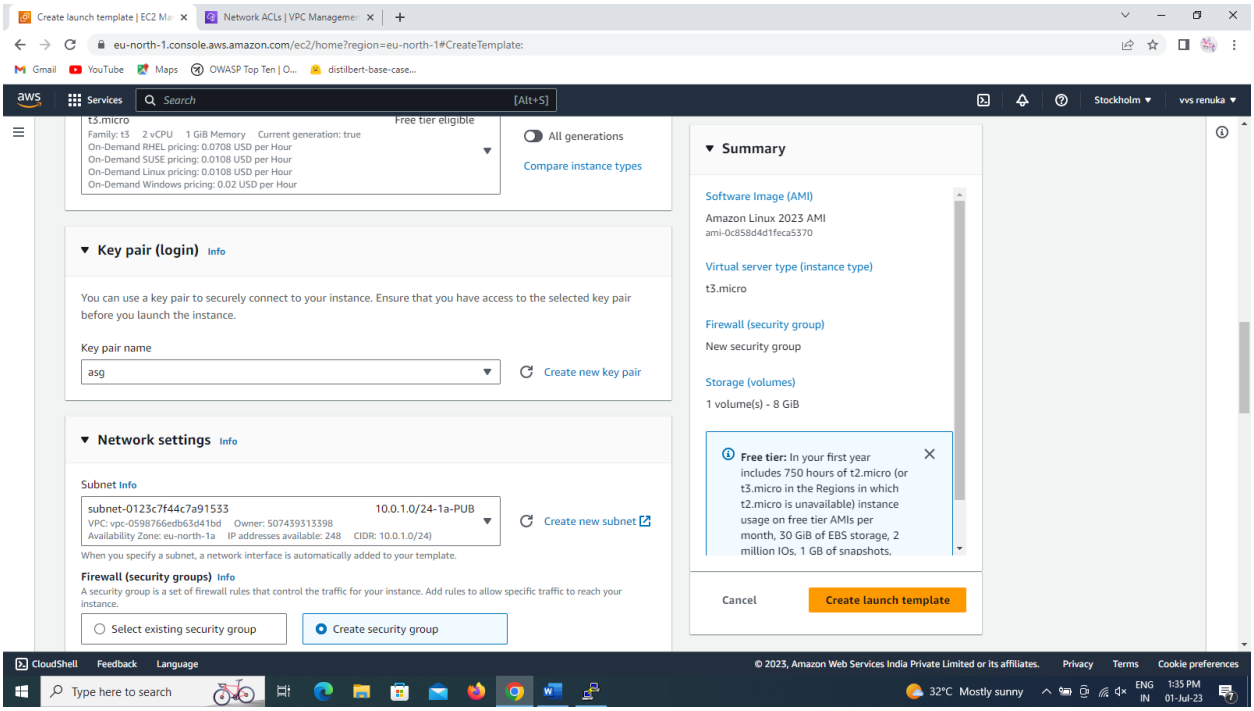
Create launch template | EC2 Ma
Network ACLs | VPC Managemer
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#CreateTemplate:
Gmail
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aws
Services
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Stockholm
vvs renuka
t3.micro
Free tier eligible
Family: t3 2 vCPU 1 GiB Memory Current generation: true
On-Demand RHEL pricing: 0.0708 USD per Hour
On-Demand SUSE pricing: 0.0108 USD per Hour
On-Demand Linux pricing: 0.0108 USD per Hour
On-Demand Windows pricing: 0.02 USD per Hour
All generations
Compare instance types
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
asg
Create new key pair
Network settings Info
Subnet Info
subnet-0123c7f44c7a91533
10.0.1.0/24-1a-PUB
VPC: vpc-0598766edb63d41bd Owner: 507439313398
Availability Zone: eu-north-1a IP addresses available: 248 CIDR: 10.0.1.0/24)
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
Summary
Software Image (AMI)
Amazon Linux 2023 AMI
ami-0c858d4d1feca5370
Virtual server type (instance type)
t3.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,
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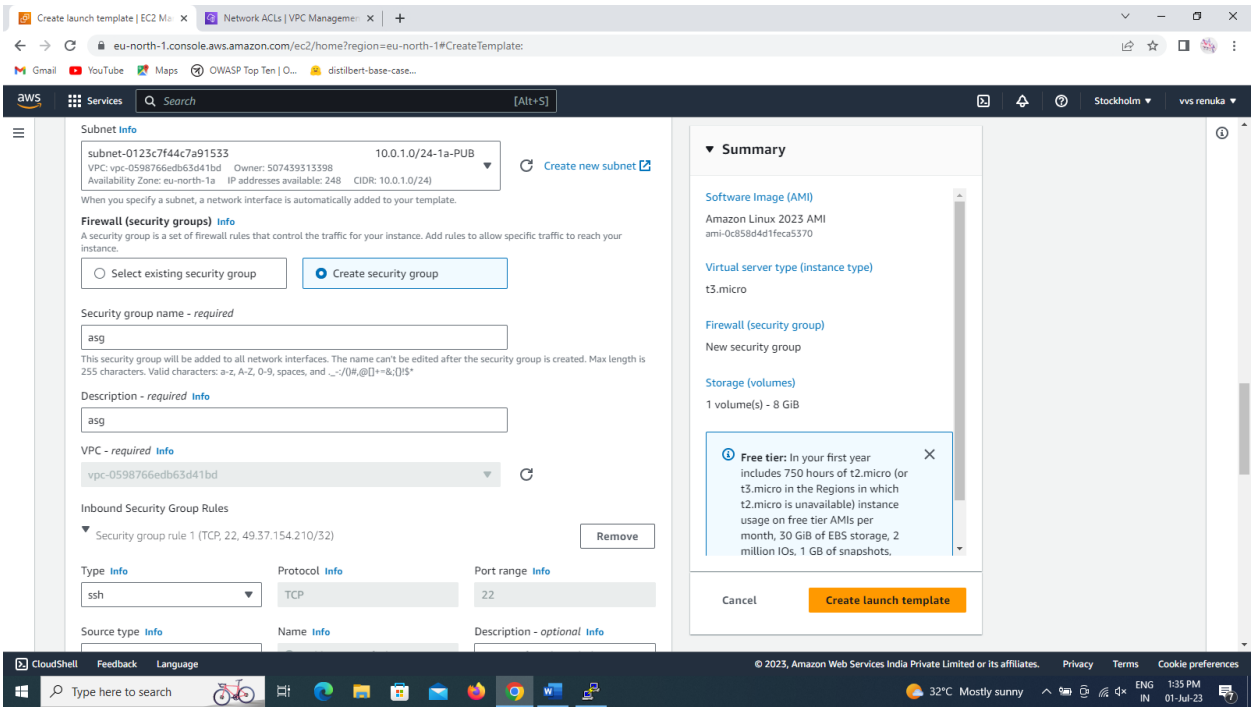
Create launch template | EC2 Ma
Network ACLs | VPC Manageme
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#CreateTemplate:
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Stockholm
vvs renuka
Subnet Info
subnet-0123c7f44c7a91533
10.0.1.0/24-1a-PUB
VPC: vpc-0598766edb63d41bd Owner: 507439313398
Availability Zone: eu-north-1a IP addresses available: 248 CIDR: 10.0.1.0/24)
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
asg
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
asg
VPC - required Info
vpc-0598766edb63d41bd
Inbound Security Group Rules
Security group rule 1 (TCP, 22, 49.37.154.210/32)
Remove
Type Info
ssh
Protocol Info
TCP
Port range Info
22
Source type Info
Name Info
Description - optional Info
Summary
Software Image (AMI)
Amazon Linux 2023 AMI
ami-0c858d4d1feca5370
Virtual server type (instance type)
t3.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,
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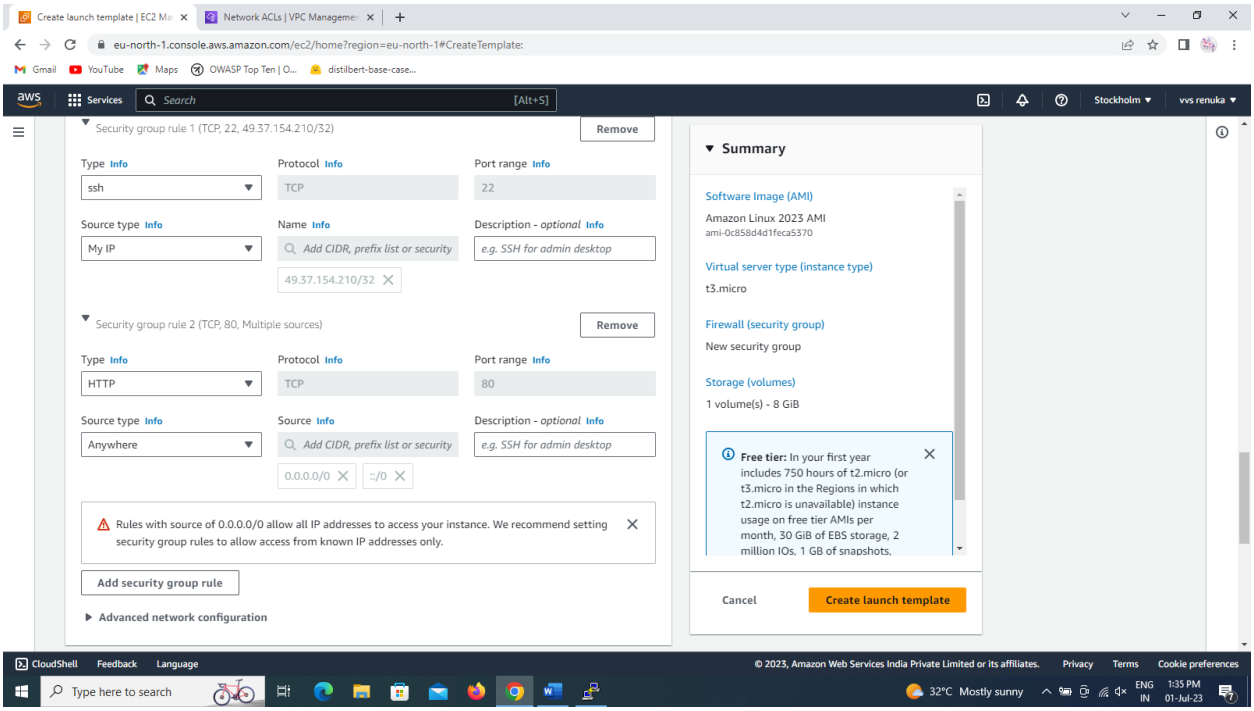
Create launch template | EC2 Ma
Network ACLs | VPC Manageme
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#CreateTemplate:
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distilbert-base-case...
aws
Services
Search
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Stockholm
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Security group rule 1 (TCP, 22, 49.37.154.210/32)
Remove
Type Info
ssh
Protocol Info
TCP
Port range Info
22
Source type Info
My IP
Name Info
Add CIDR, prefix list or security
Description - optional Info
e.g. SSH for admin desktop
49.37.154.210/32
Security group rule 2 (TCP, 80, Multiple sources)
Remove
Type Info
HTTP
Protocol Info
TCP
Port range Info
80
Source type Info
Anywhere
Source Info
Add CIDR, prefix list or security
Description - optional Info
e.g. SSH for admin desktop
0.0.0.0/0
::/0
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)
Amazon Linux 2023 AMI
ami-0c858d4d1feca5370
Virtual server type (instance type)
t3.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,
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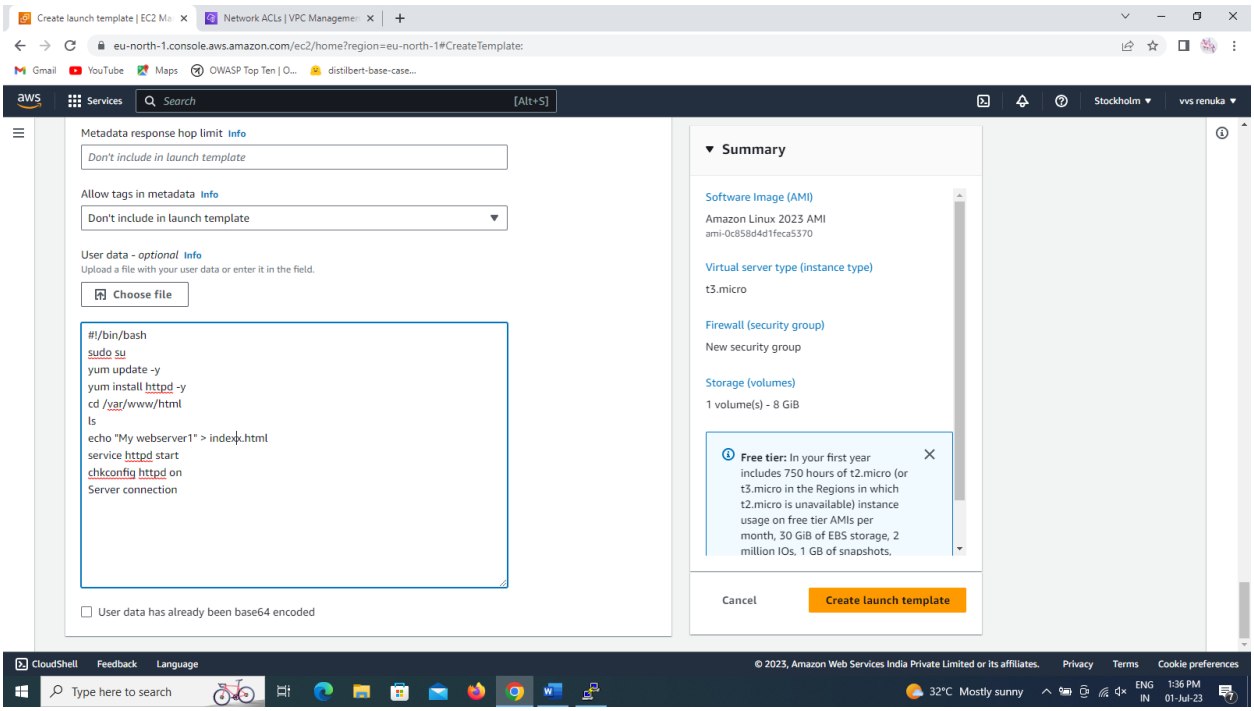
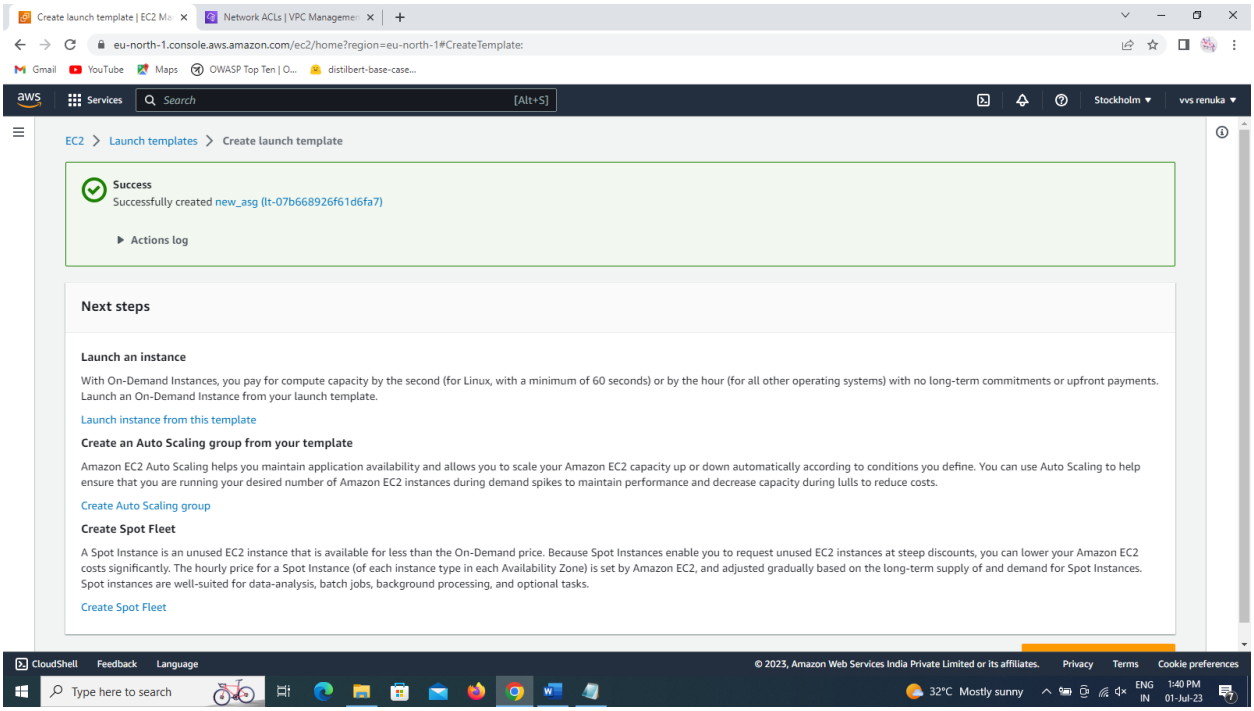
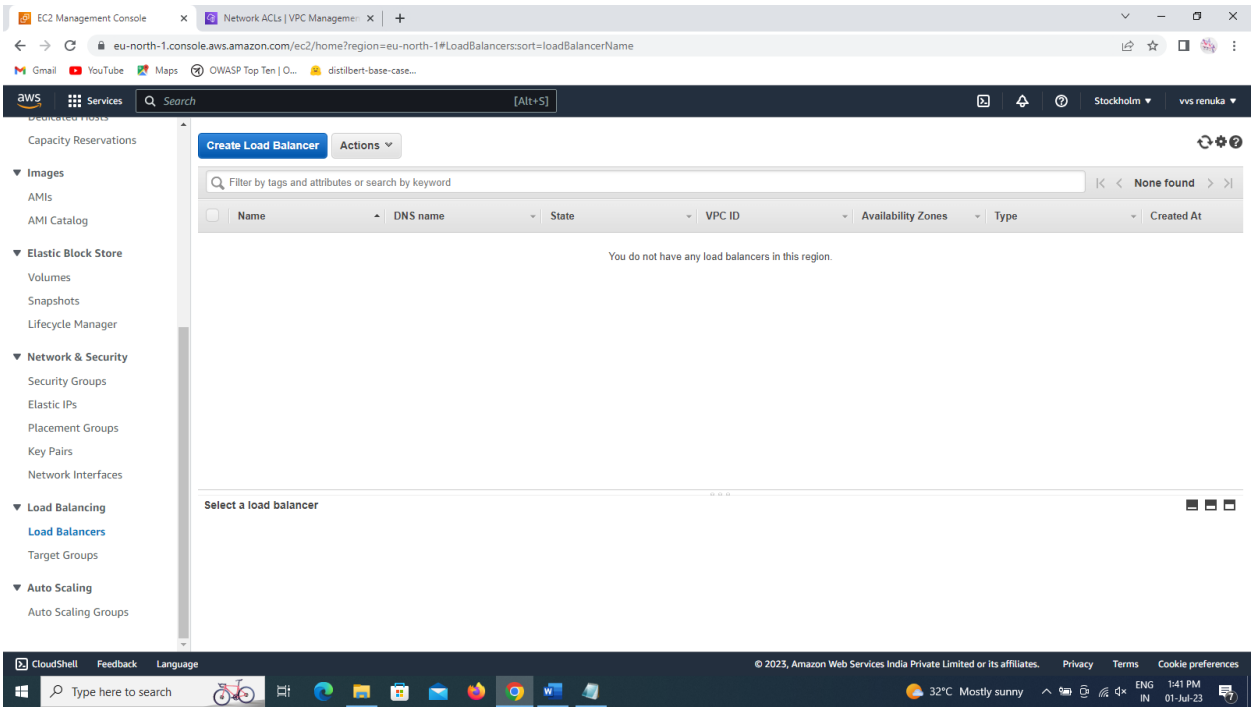




Next we have to create the classic elastic load balancer.


EC2 Management Console
Network ACLs | VPC Management
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LoadBalancers:sort=loadBalancerName
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Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Load Balancing
Load Balancers
Target Groups
Auto Scaling
Auto Scaling Groups
Create Load Balancer
Actions
Filter by tags and attributes or search by keyword
None found
Name
DNS name
State
VPC ID
Availability Zones
Type
Created At
You do not have any load balancers in this region.
Select a load balancer
CloudShell
Feedback
Language
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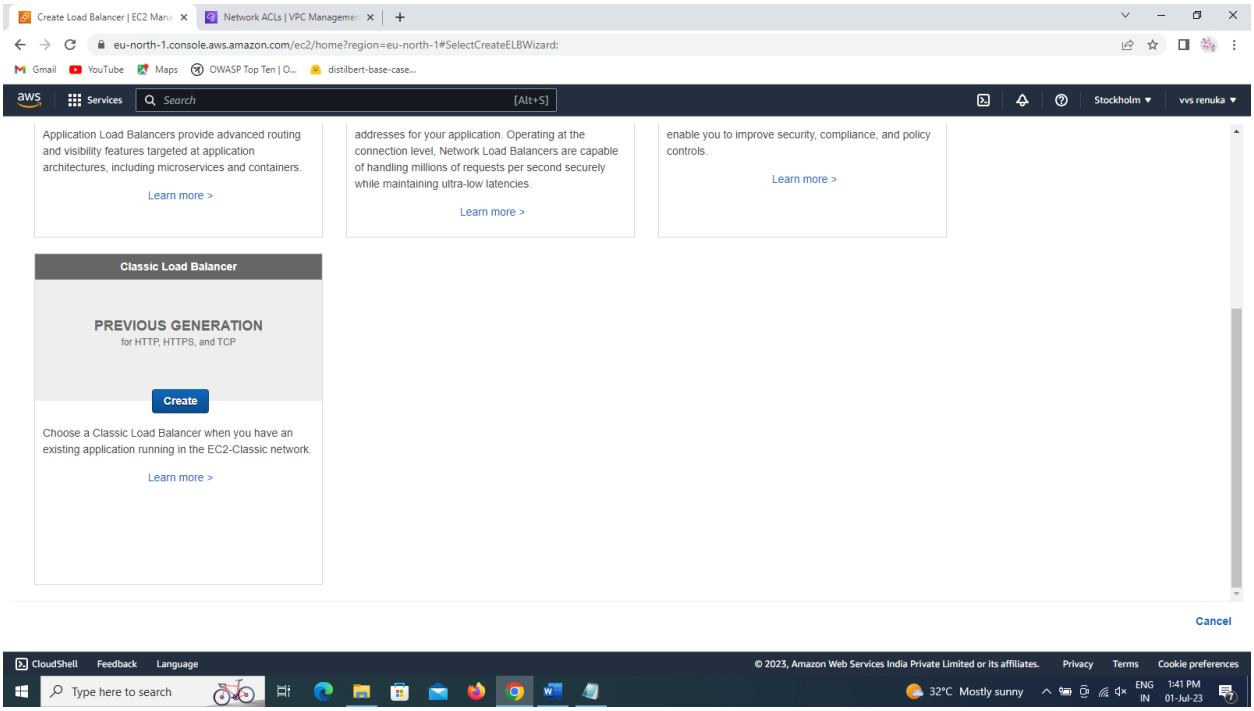
Create Load Balancer | EC2 Mana
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Application Load Balancers provide advanced routing and visibility features targeted at application architectures, including microservices and containers.
Learn more >
addresses for your application. Operating at the connection level, Network Load Balancers are capable of handling millions of requests per second securely while maintaining ultra-low latencies.
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enable you to improve security, compliance, and policy controls.
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for HTTP, HTTPS, and TCP
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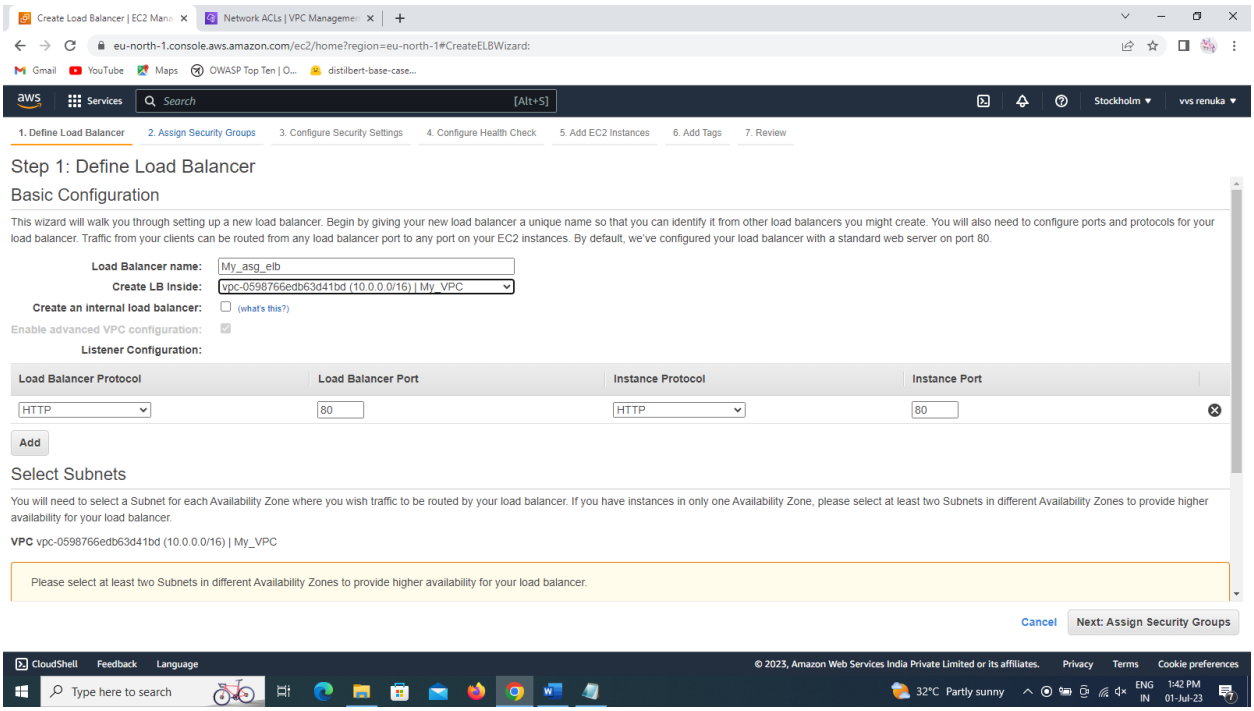
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aws Services Search [Alt+S] Stockholm vvs renuka
1. Define Load Balancer 2. Assign Security Groups 3. Configure Security Settings 4. Configure Health Check 5. Add EC2 Instances 6. Add Tags 7. Review
Step 1: Define Load Balancer
Basic Configuration
This wizard will walk you through setting up a new load balancer. Begin by giving your new load balancer a unique name so that you can identify it from other load balancers you might create. You will also need to configure ports and protocols for your load balancer. Traffic from your clients can be routed from any load balancer port to any port on your EC2 instances. By default, we've configured your load balancer with a standard web server on port 80.
Load Balancer name: My_asg_elb
Create LB inside: vpc-0598766edb63d41bd (10.0.0.0/16) | My_VPC
Create an internal load balancer: (what's this?)
Enable advanced VPC configuration:
Listener Configuration:
Load Balancer Protocol
Load Balancer Port
Instance Protocol
Instance Port
HTTP
80
HTTP
80
Add
Select Subnets
You will need to select a Subnet for each Availability Zone where you wish traffic to be routed by your load balancer. If you have instances in only one Availability Zone, please select at least two Subnets in different Availability Zones to provide higher availability for your load balancer.
VPC vpc-0598766edb63d41bd (10.0.0.0/16) | My_VPC
Please select at least two Subnets in different Availability Zones to provide higher availability for your load balancer.
Cancel
Next: Assign Security Groups
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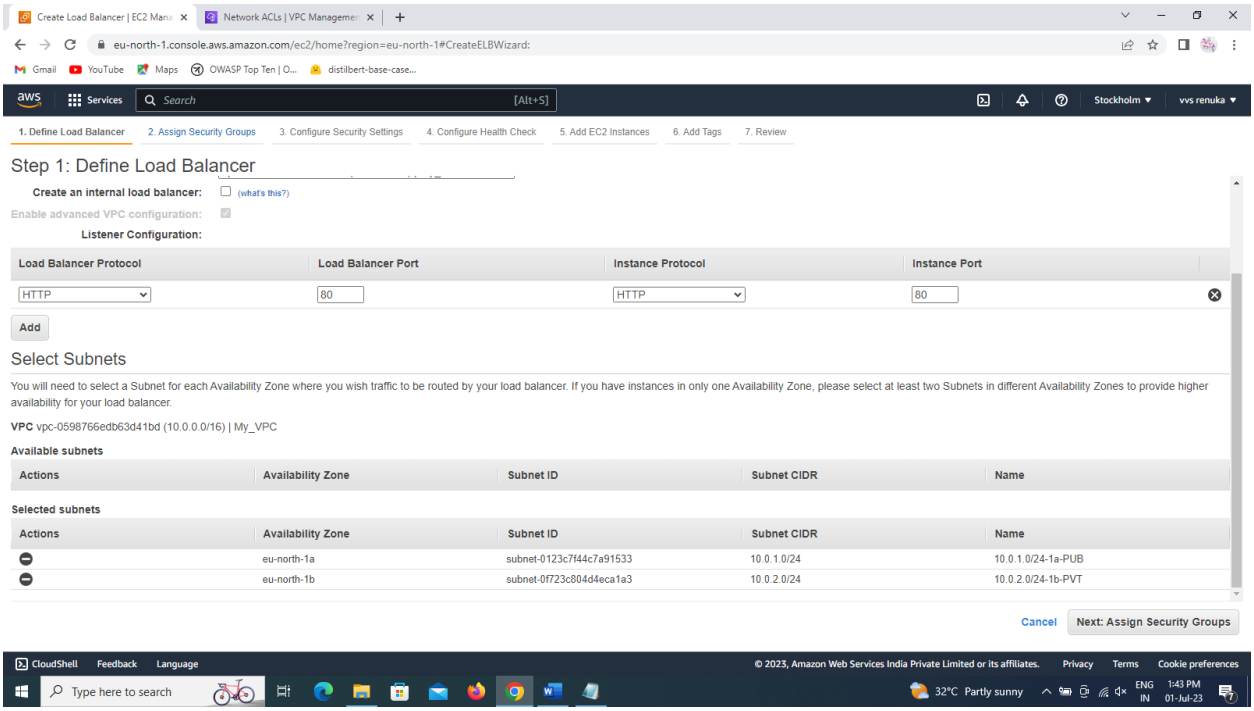
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1. Define Load Balancer 2. Assign Security Groups 3. Configure Security Settings 4. Configure Health Check 5. Add EC2 Instances 6. Add Tags 7. Review
Step 1: Define Load Balancer
Create an internal load balancer: (what's this?)
Enable advanced VPC configuration:
Listener Configuration:
Load Balancer Protocol
Load Balancer Port
Instance Protocol
Instance Port
HTTP
80
HTTP
80
Add
Select Subnets
You will need to select a Subnet for each Availability Zone where you wish traffic to be routed by your load balancer. If you have instances in only one Availability Zone, please select at least two Subnets in different Availability Zones to provide higher availability for your load balancer.
VPC vpc-0598766edb63d41bd (10.0.0.0/16) | My_VPC
Available subnets
Actions
Availability Zone
Subnet ID
Subnet CIDR
Name
Selected subnets
Actions
Availability Zone
Subnet ID
Subnet CIDR
Name
eu-north-1a
subnet-0123c7f44c7a91533
10.0.1.0/24
10.0.1.0/24-1a-PUB
eu-north-1b
subnet-0f723c804d4eca1a3
10.0.2.0/24
10.0.2.0/24-1b-PVT
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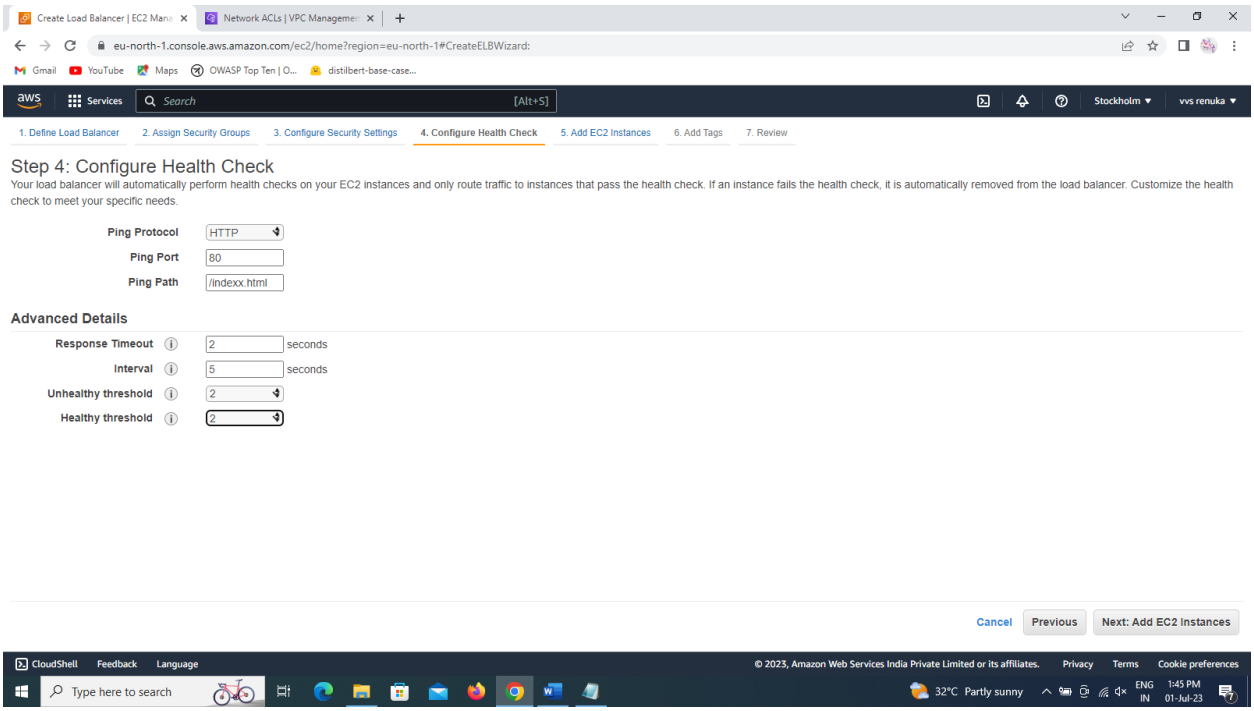
Create Load Balancer | EC2 Mana
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1. Define Load Balancer
2. Assign Security Groups
3. Configure Security Settings
4. Configure Health Check
5. Add EC2 Instances
6. Add Tags
7. Review
Step 4: Configure Health Check
Your load balancer will automatically perform health checks on your EC2 instances and only route traffic to instances that pass the health check. If an instance fails the health check, it is automatically removed from the load balancer. Customize the health check to meet your specific needs.
Ping Protocol
HTTP
Ping Port
80
Ping Path
/indexx.html
Advanced Details
Response Timeout
2
seconds
Interval
5
seconds
Unhealthy threshold
2
Healthy threshold
2
Cancel
Previous
Next: Add EC2 Instances
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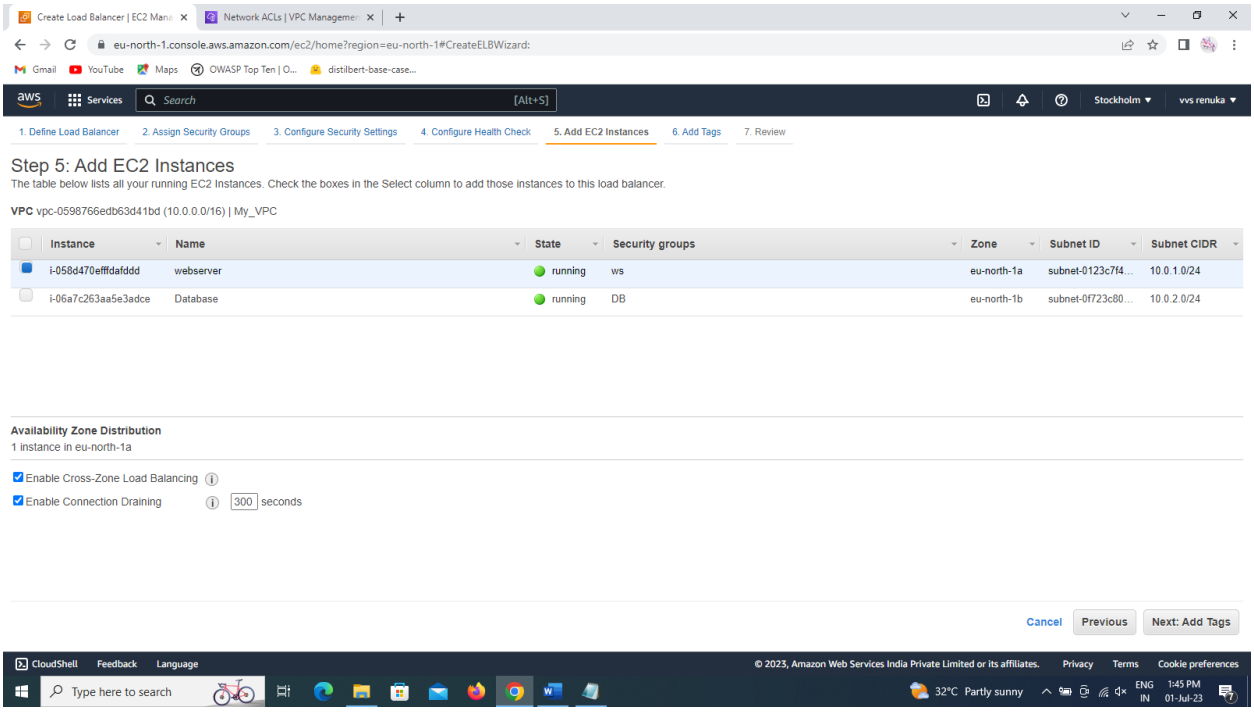
Create Load Balancer | EC2 Mana
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vvs renuka
1. Define Load Balancer
2. Assign Security Groups
3. Configure Security Settings
4. Configure Health Check
5. Add EC2 Instances
6. Add Tags
7. Review
Step 5: Add EC2 Instances
The table below lists all your running EC2 Instances. Check the boxes in the Select column to add those instances to this load balancer.
VPC vpc-0598766edb63d41bd (10.0.0.0/16) | My_VPC
Instance
Name
State
Security groups
Zone
Subnet ID
Subnet CIDR
i-058d470efffdafddd
webserver
running
ws
eu-north-1a
subnet-0123c7f4...
10.0.1.0/24
i-06a7c263aa5e3adce
Database
running
DB
eu-north-1b
subnet-0f723c80...
10.0.2.0/24
Availability Zone Distribution
1 instance in eu-north-1a
Enable Cross-Zone Load Balancing
Enable Connection Draining
300
seconds
Cancel
Previous
Next: Add Tags
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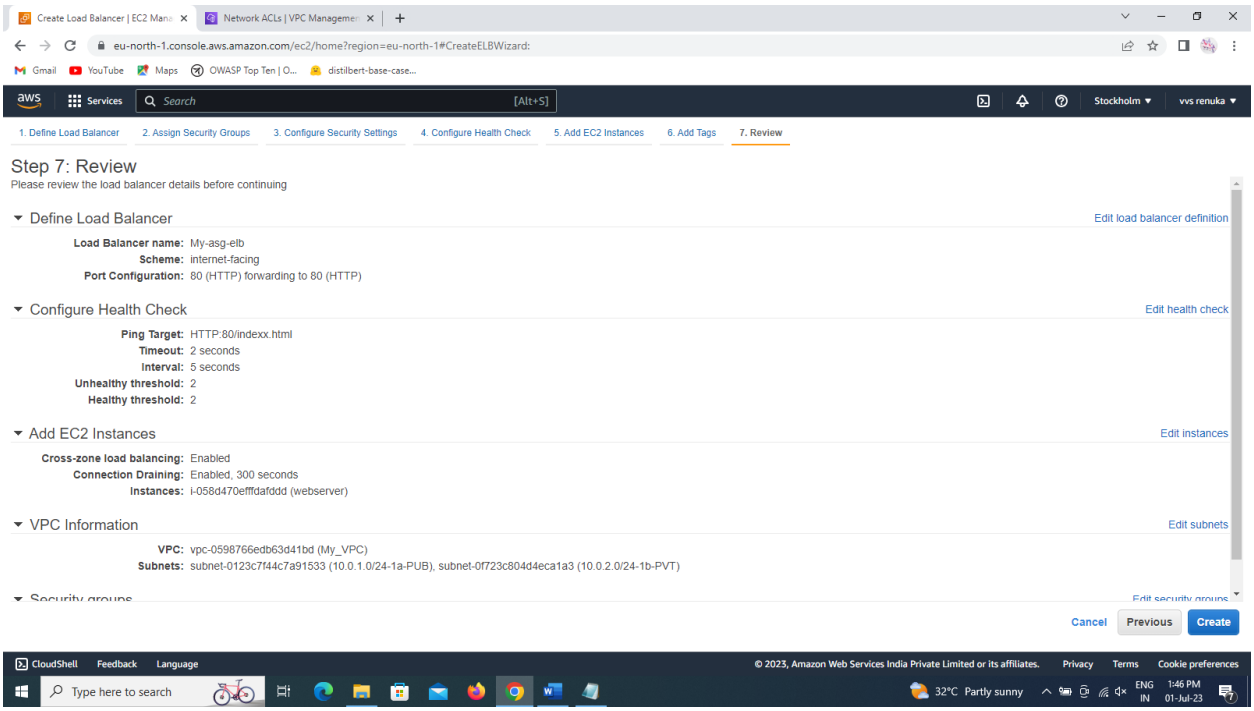
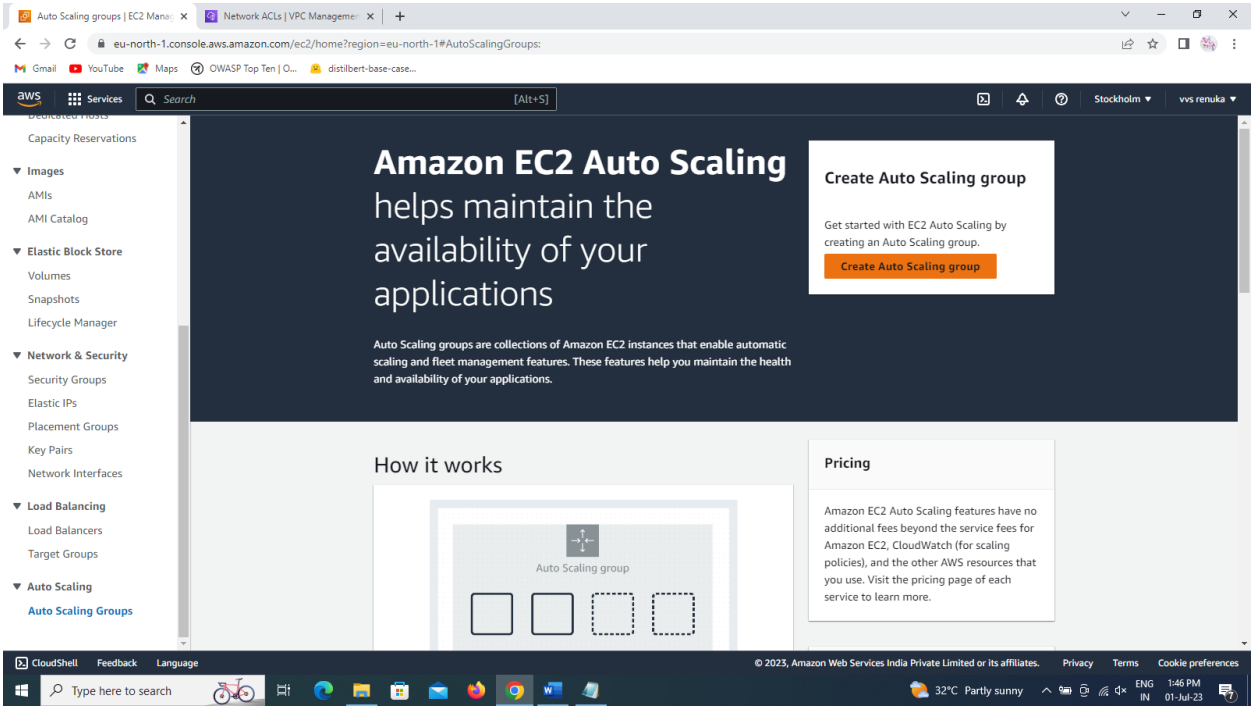
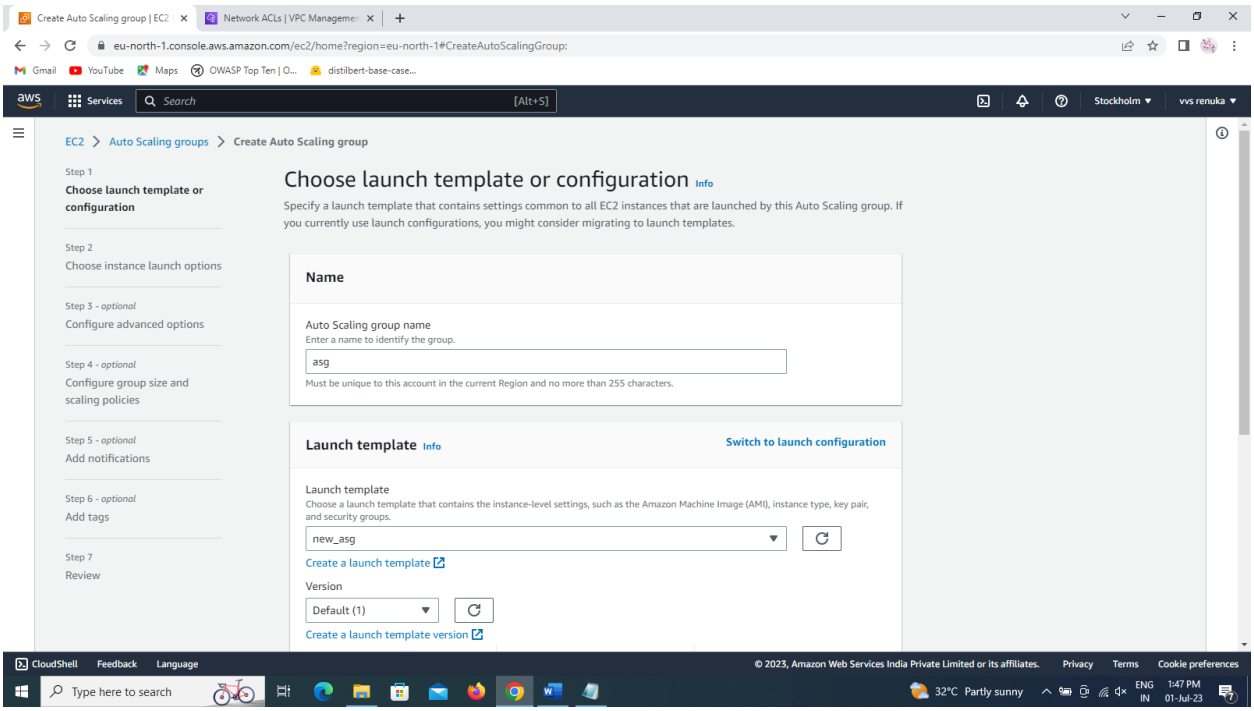


Finally create an ASG and connect it the webserver in the public subnet to control the traffic.



Select the launch template that we have created earlier.


Create Auto Scaling group | EC2
Network ACLs | VPC Management
eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#CreateAutoScalingGroup:
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EC2 > Auto Scaling groups > Create Auto Scaling group
Step 1
Choose launch template or configuration
Step 2
Choose instance launch options
Step 3 - optional
Configure advanced options
Step 4 - optional
Configure group size and scaling policies
Step 5 - optional
Add notifications
Step 6 - optional
Add tags
Step 7
Review
Choose launch template or configuration Info
Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group. If you currently use launch configurations, you might consider migrating to launch templates.
Name
Auto Scaling group name
Enter a name to identify the group.
asg
Must be unique to this account in the current Region and no more than 255 characters.
Launch template Info
Switch to launch configuration
Launch template
Choose a launch template that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.
new_asg
Create a launch template
Version
Default (1)
Create a launch template version
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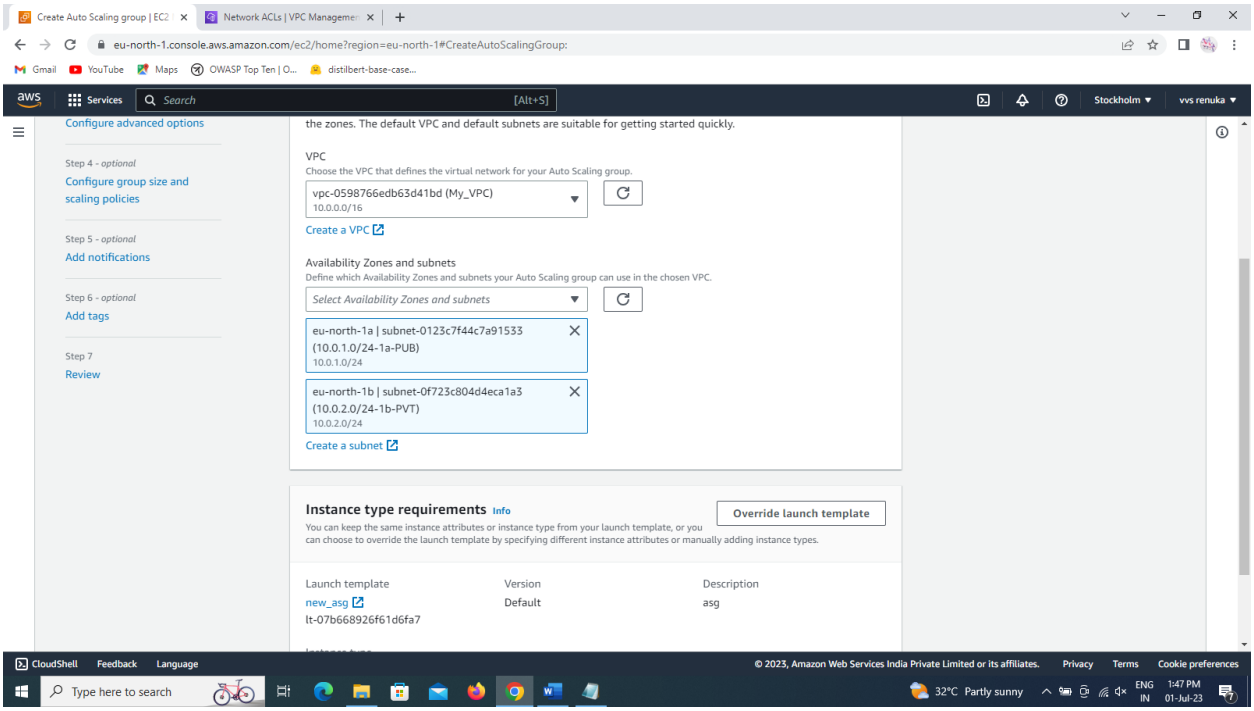
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Configure advanced options
Step 4 - optional
Configure group size and scaling policies
Step 5 - optional
Add notifications
Step 6 - optional
Add tags
Step 7
Review
the zones. The default VPC and default subnets are suitable for getting started quickly.
VPC
Choose the VPC that defines the virtual network for your Auto Scaling group.
vpc-0598766edb63d41bd (My_VPC)
10.0.0.0/16
Create a VPC
Availability Zones and subnets
Define which Availability Zones and subnets your Auto Scaling group can use in the chosen VPC.
Select Availability Zones and subnets
eu-north-1a | subnet-0123c7f44c7a91533 (10.0.1.0/24-1a-PUB)
10.0.1.0/24
eu-north-1b | subnet-0f723c804d4eca1a3 (10.0.2.0/24-1b-PVT)
10.0.2.0/24
Create a subnet
Instance type requirements Info
Override launch template
You can keep the same instance attributes or instance type from your launch template, or you can choose to override the launch template by specifying different instance attributes or manually adding instance types.
Launch template
new_asg
lt-07b668926f61d6fa7
Version
Default
Description
asg
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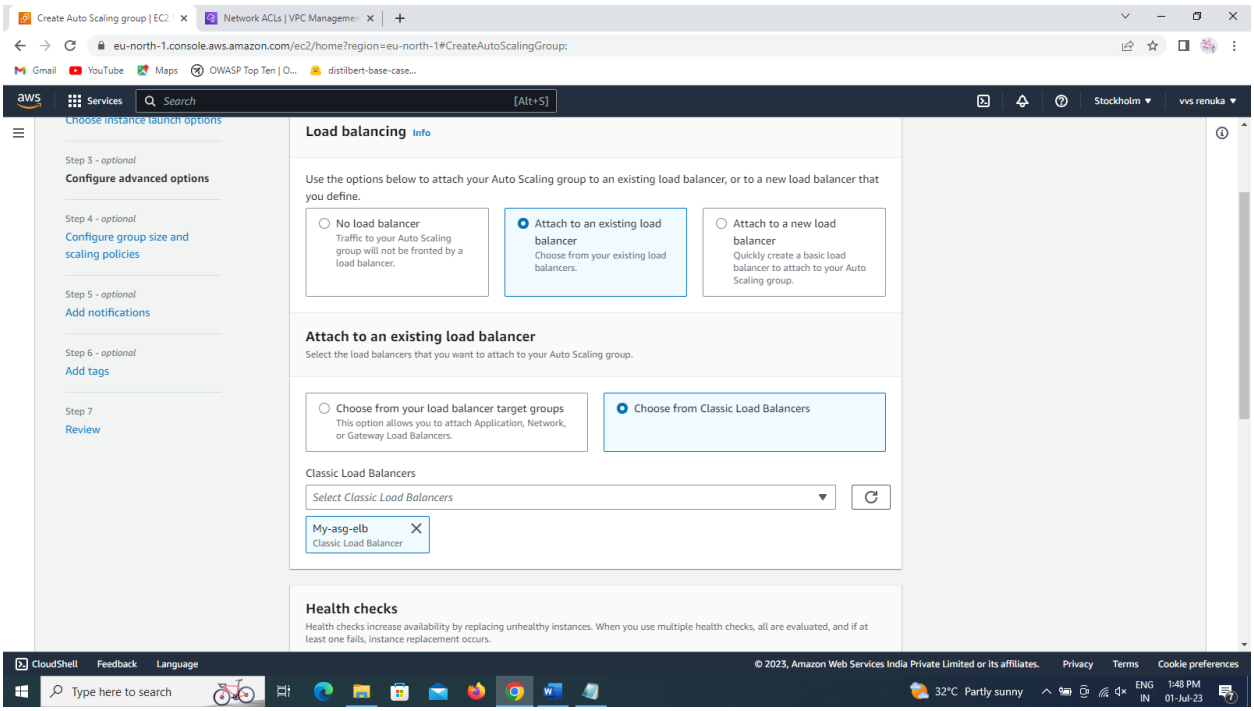
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Choose instance launch options
Step 3 - optional
Configure advanced options
Step 4 - optional
Configure group size and scaling policies
Step 5 - optional
Add notifications
Step 6 - optional
Add tags
Step 7
Review
Load balancing Info
Use the options below to attach your Auto Scaling group to an existing load balancer, or to a new load balancer that you define.
No load balancer
Traffic to your Auto Scaling group will not be fronted by a load balancer.
Attach to an existing load balancer
Choose from your existing load balancers.
Attach to a new load balancer
Quickly create a basic load balancer to attach to your Auto Scaling group.
Attach to an existing load balancer
Select the load balancers that you want to attach to your Auto Scaling group.
Choose from your load balancer target groups
This option allows you to attach Application, Network, or Gateway Load Balancers.
Choose from Classic Load Balancers
Classic Load Balancers
Select Classic Load Balancers
My-asg-elb
Classic Load Balancer
Health checks
Health checks increase availability by replacing unhealthy instances. When you use multiple health checks, all are evaluated, and if at least one fails, instance replacement occurs.
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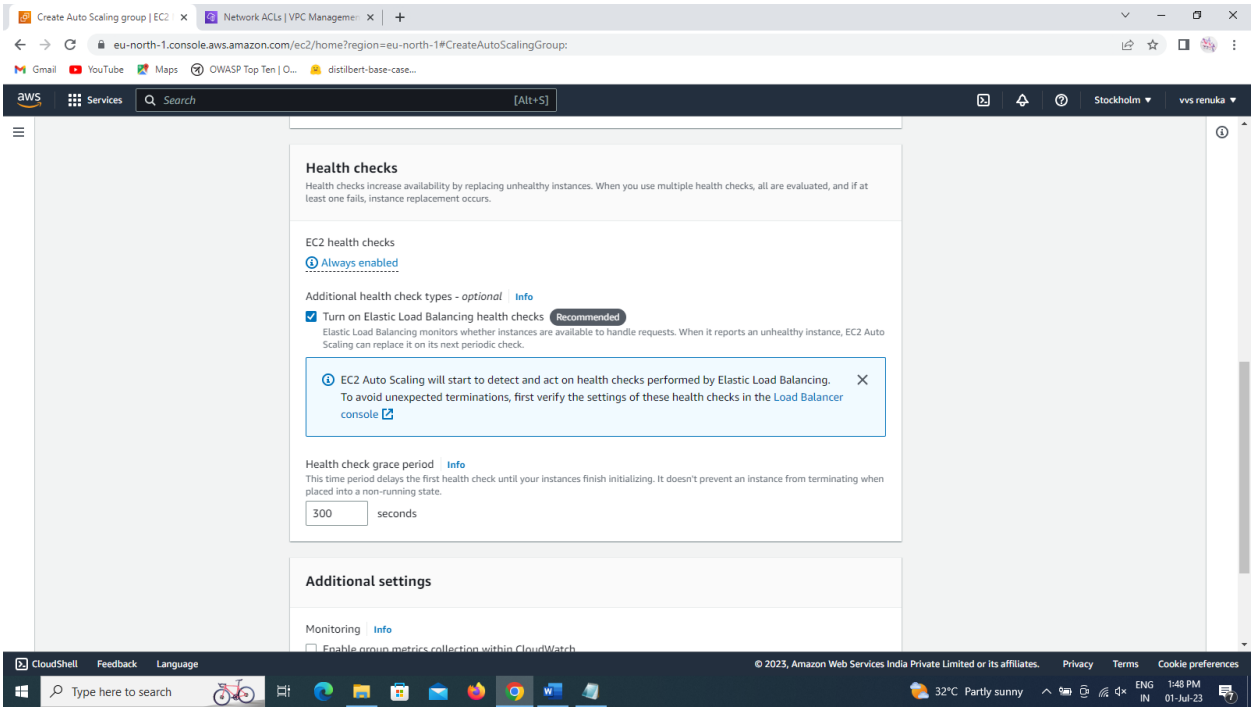
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Health checks
Health checks increase availability by replacing unhealthy instances. When you use multiple health checks, all are evaluated, and if at least one fails, instance replacement occurs.
EC2 health checks
Always enabled
Additional health check types - optional Info
Turn on Elastic Load Balancing health checks Recommended
Elastic Load Balancing monitors whether instances are available to handle requests. When it reports an unhealthy instance, EC2 Auto Scaling can replace it on its next periodic check.
EC2 Auto Scaling will start to detect and act on health checks performed by Elastic Load Balancing. To avoid unexpected terminations, first verify the settings of these health checks in the Load Balancer console
Health check grace period Info
This time period delays the first health check until your instances finish initializing. It doesn't prevent an instance from terminating when placed into a non-running state.
300
seconds
Additional settings
Monitoring Info
Enable group metrics collection within CloudWatch
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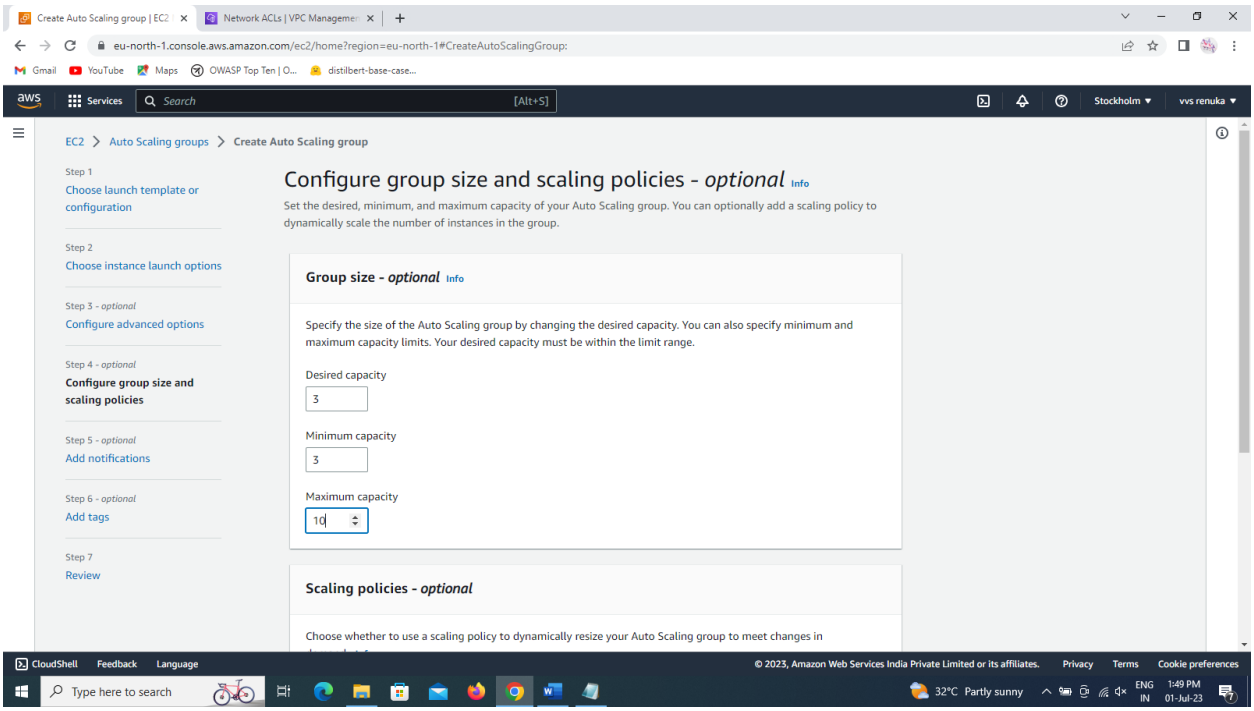
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vvs renuka
EC2 > Auto Scaling groups > Create Auto Scaling group
Step 1
Choose launch template or configuration
Step 2
Choose instance launch options
Step 3 - optional
Configure advanced options
Step 4 - optional
Configure group size and scaling policies
Step 5 - optional
Add notifications
Step 6 - optional
Add tags
Step 7
Review
Configure group size and scaling policies - optional Info
Set the desired, minimum, and maximum capacity of your Auto Scaling group. You can optionally add a scaling policy to dynamically scale the number of instances in the group.
Group size - optional Info
Specify the size of the Auto Scaling group by changing the desired capacity. You can also specify minimum and maximum capacity limits. Your desired capacity must be within the limit range.
Desired capacity
3
Minimum capacity
3
Maximum capacity
10
Scaling policies - optional
Choose whether to use a scaling policy to dynamically resize your Auto Scaling group to meet changes in
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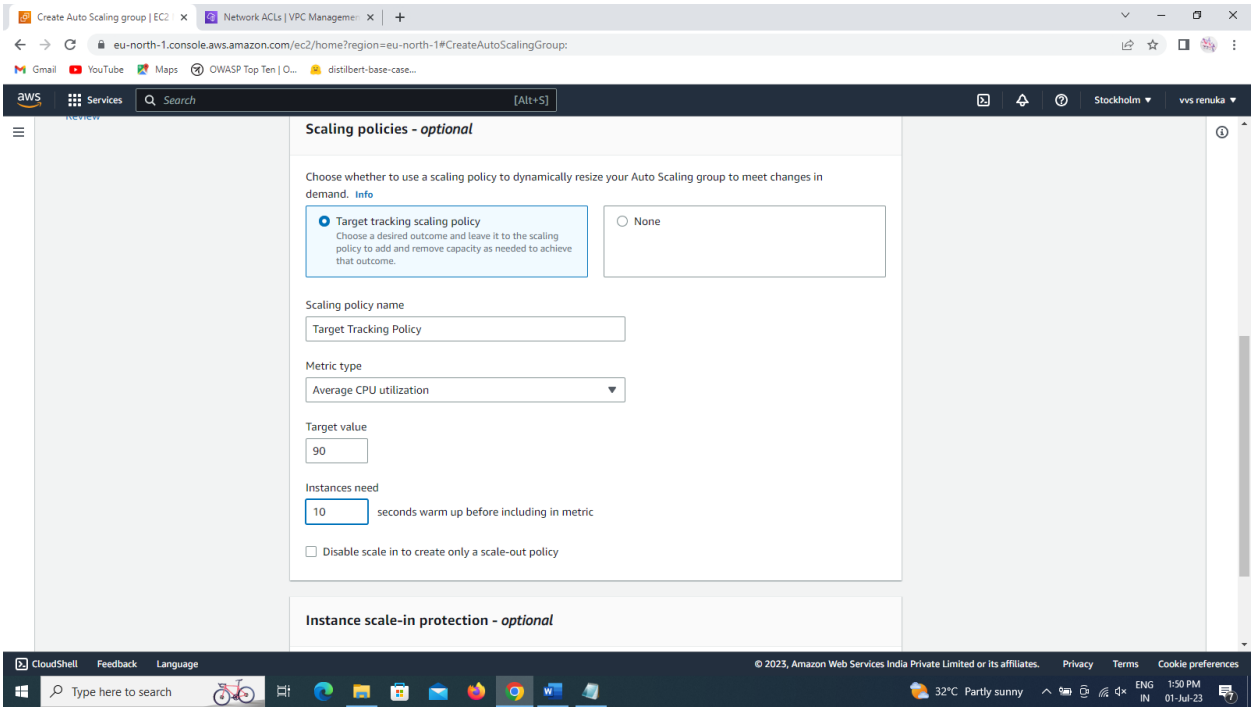
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Review
Scaling policies - optional
Choose whether to use a scaling policy to dynamically resize your Auto Scaling group to meet changes in demand. Info
Target tracking scaling policy
Choose a desired outcome and leave it to the scaling policy to add and remove capacity as needed to achieve that outcome.
None
Scaling policy name
Target Tracking Policy
Metric type
Average CPU utilization
Target value
90
Instances need
10
seconds warm up before including in metric
Disable scale in to create only a scale-out policy
Instance scale-in protection - optional
CloudShell
Feedback
Language
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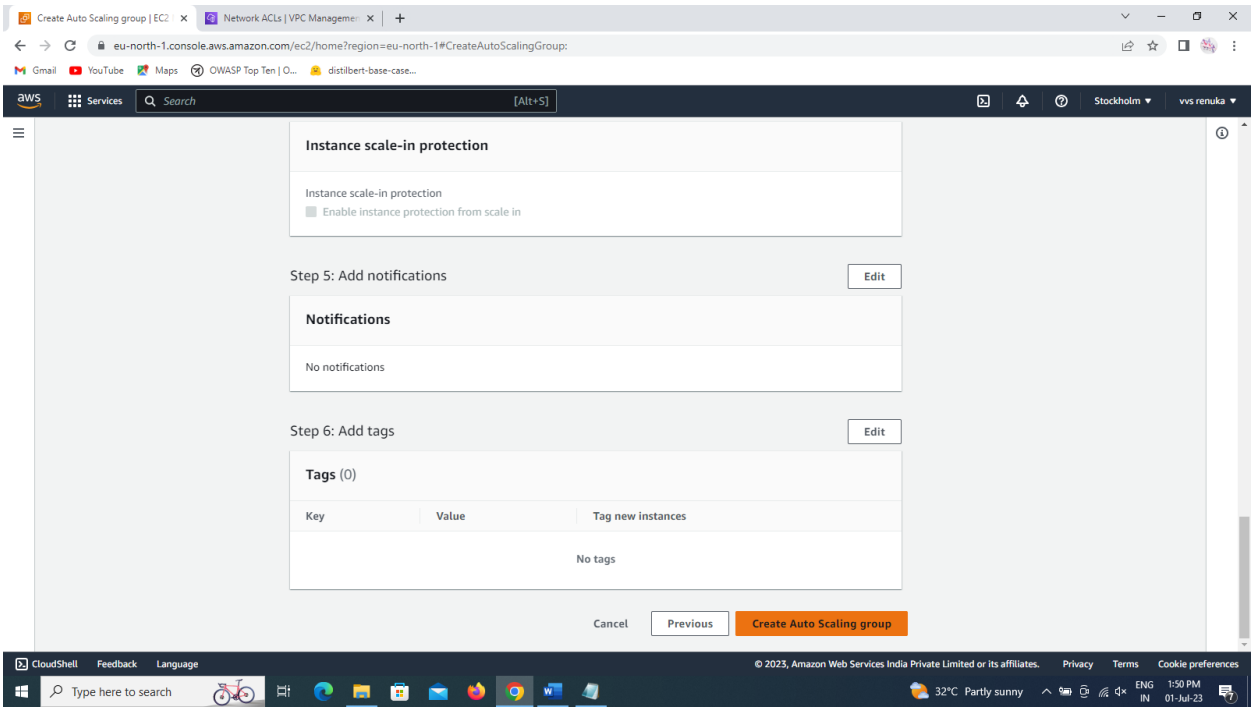
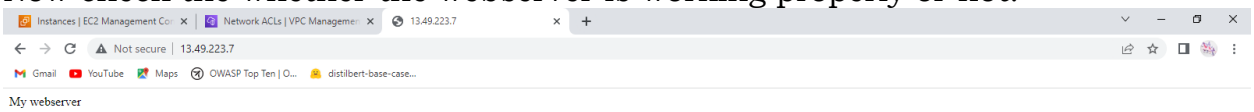
Type here to search
32°C Partly sunny
ENG IN
1:50 PM 01-Jul-23



Now check the whether the webserver is working properly or not.



Finally we have successfully created the VPC Strucure.

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