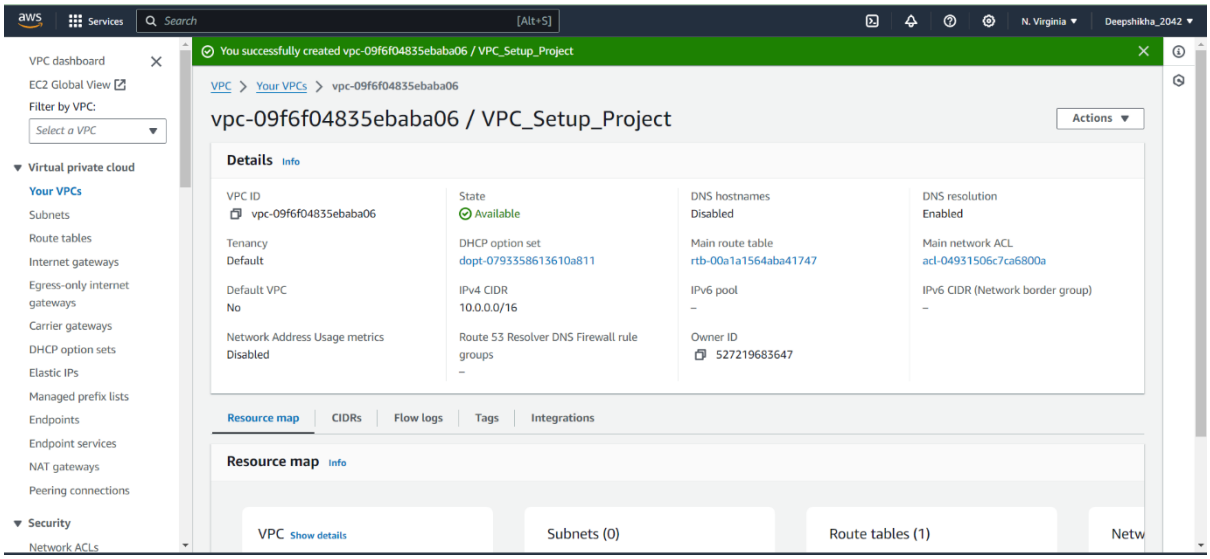
AWS Fortified Cloud Architecture
(BY : Deepshikha Paty)

✓ STEP 1:

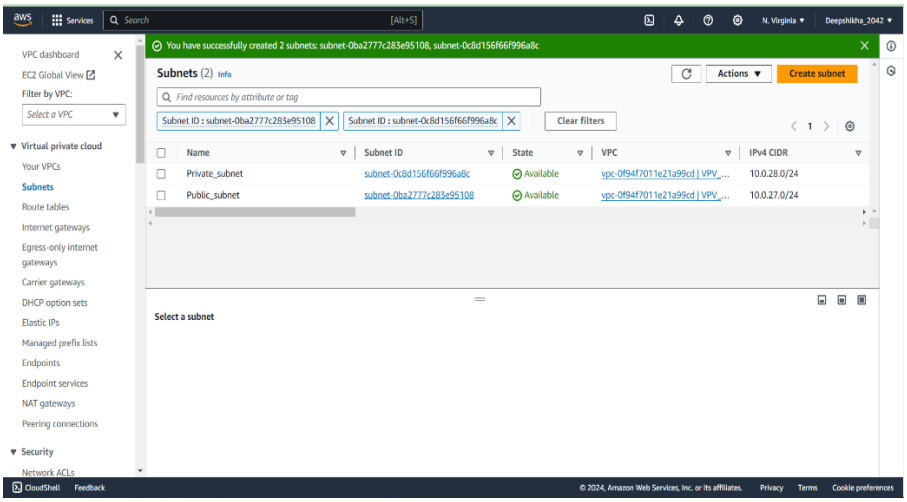
Created a VPC network of CIDR range 10.0.0.0/16



✓ STEP-2:

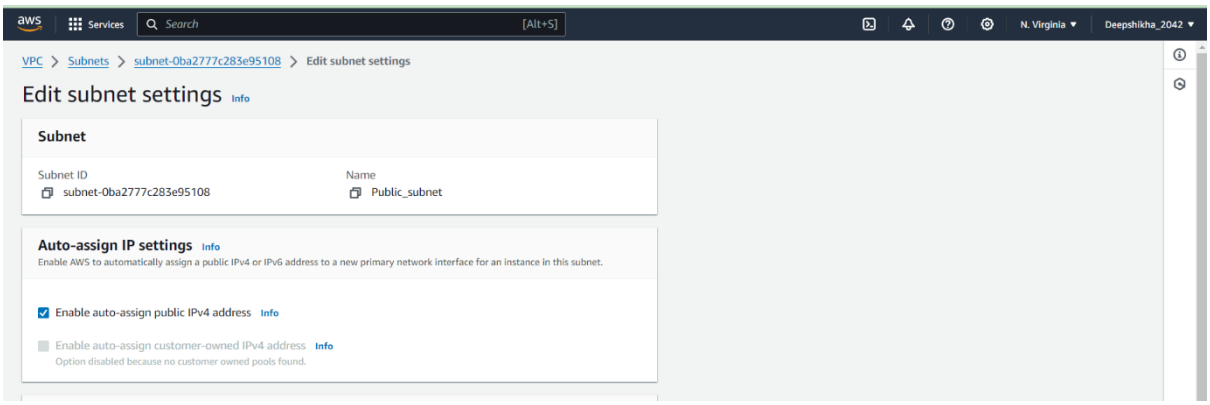
Inside this VPC, created two subnets.

1. Subnet-1 (Public)
    - Name- Public_subnet
    - CIDR: 10.0.27.0/24
    - Web-server
    - Availability-Zone: us-east-1a
2. Subnet-2 (Private)
    - Name- Private_subnet
    - CIDR:10.0.28.0/24
    - Database-server
    - Availability-Zone:us-east-1b



✓ STEP-3:

Made the subnet-1 as public by enabling public access.

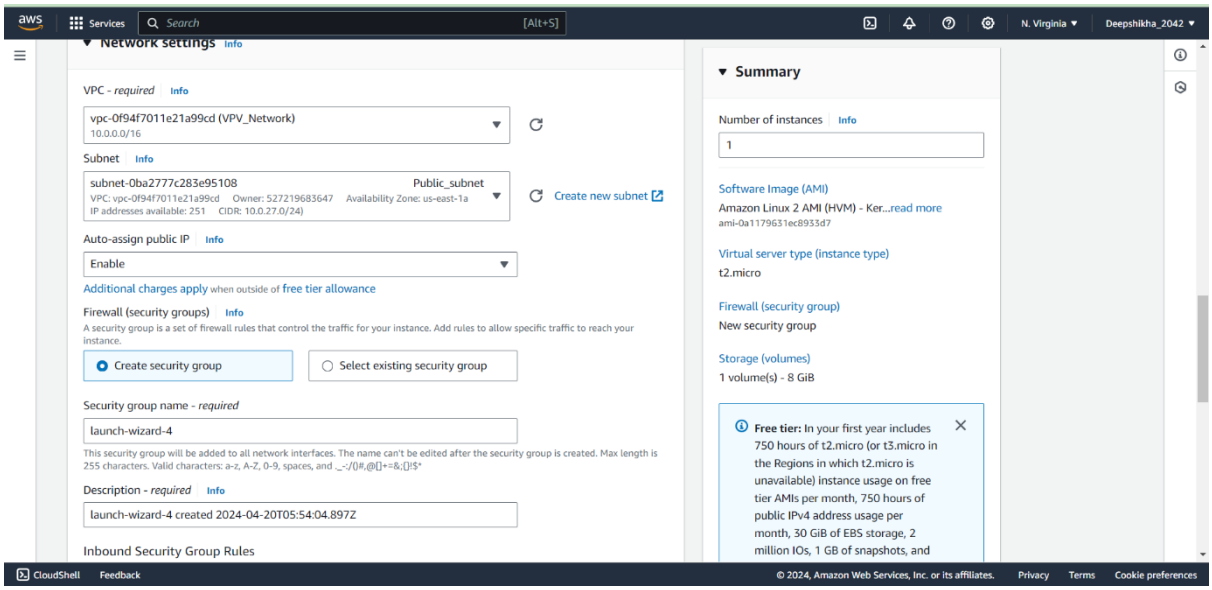


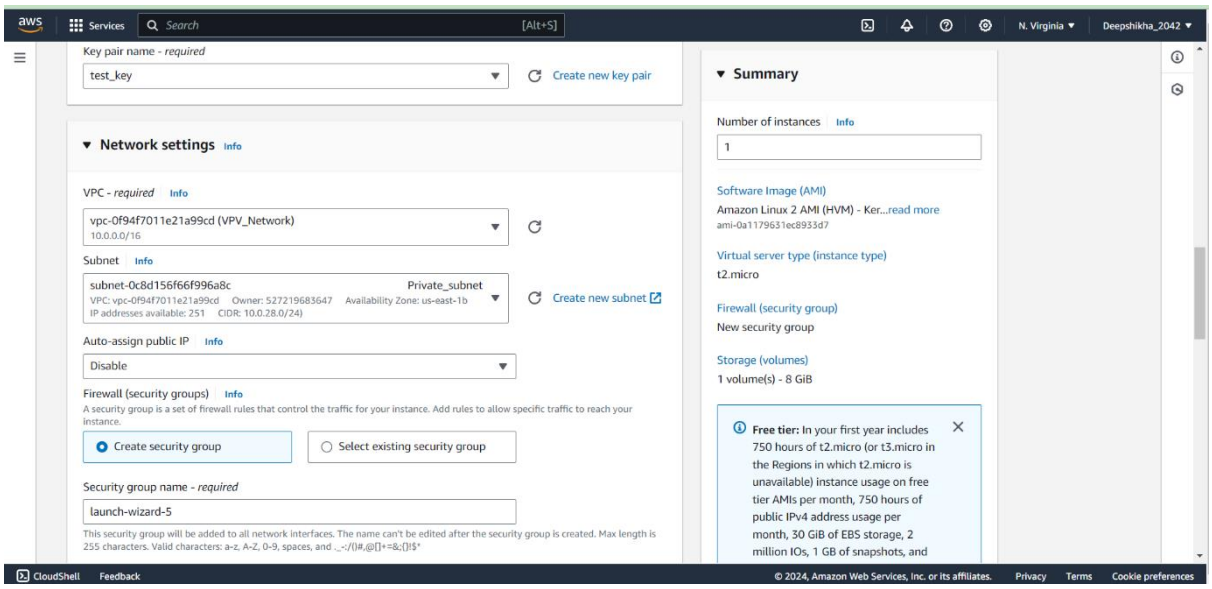
✓ STEP-4:

Then, I deployed a web-server (EC2-instance) and a database-server (EC2-instance) in the public and private subnet respectively.

NOTE:

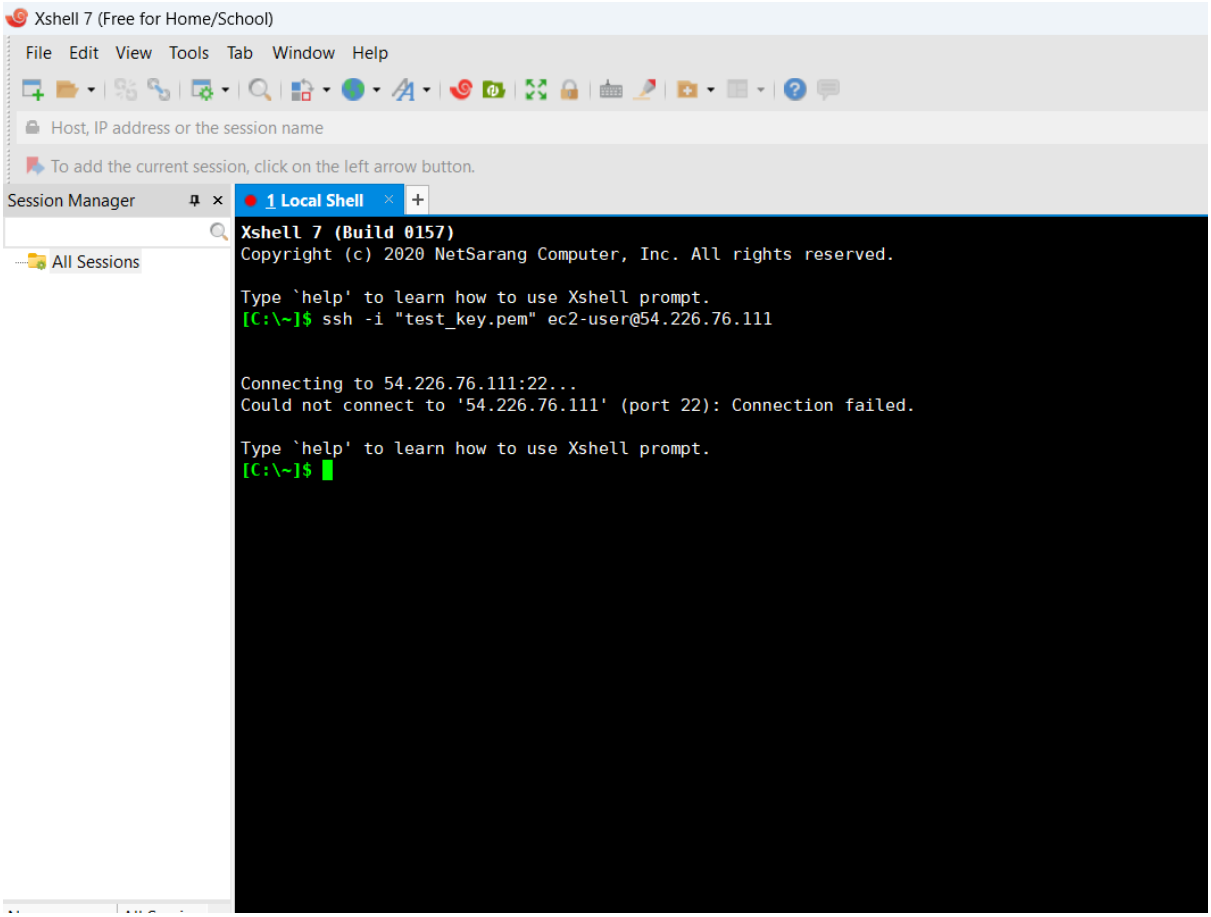
- **The public and private subnet, both are into different availability zone.**
- **The resources of public subnet and private subnet are hence present in different availability zone.**





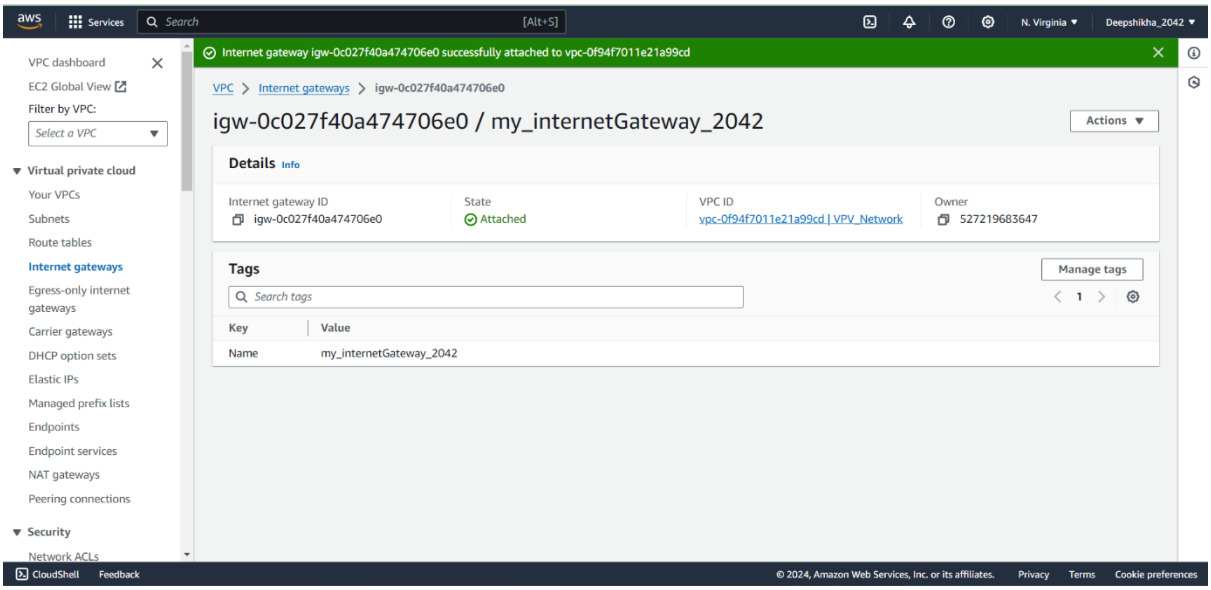
✓ STEP-5:

After that, I tried connecting the web-server, but could not connect. This is because, the internet-gateway is not defined yet.



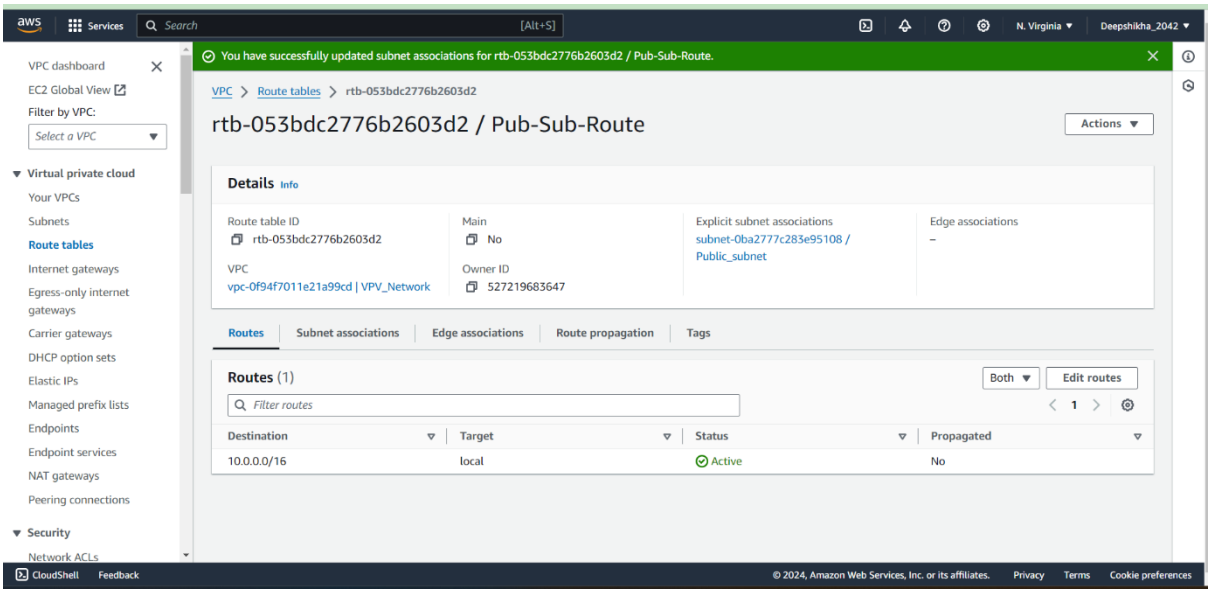
✓ STEP-6:

Hence, I created internet-gateway and attached it to the VPC that I just created.

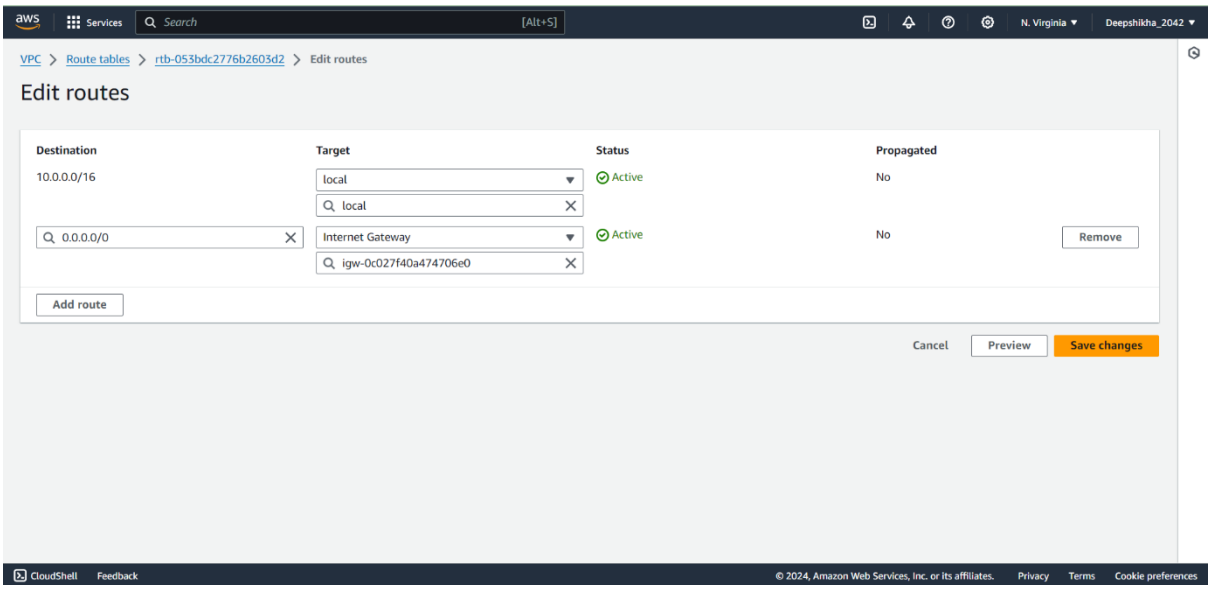


✓ STEP-7:

Then, I defined routing. I created a route table for the public subnet and associated that route-table with the public subnet.

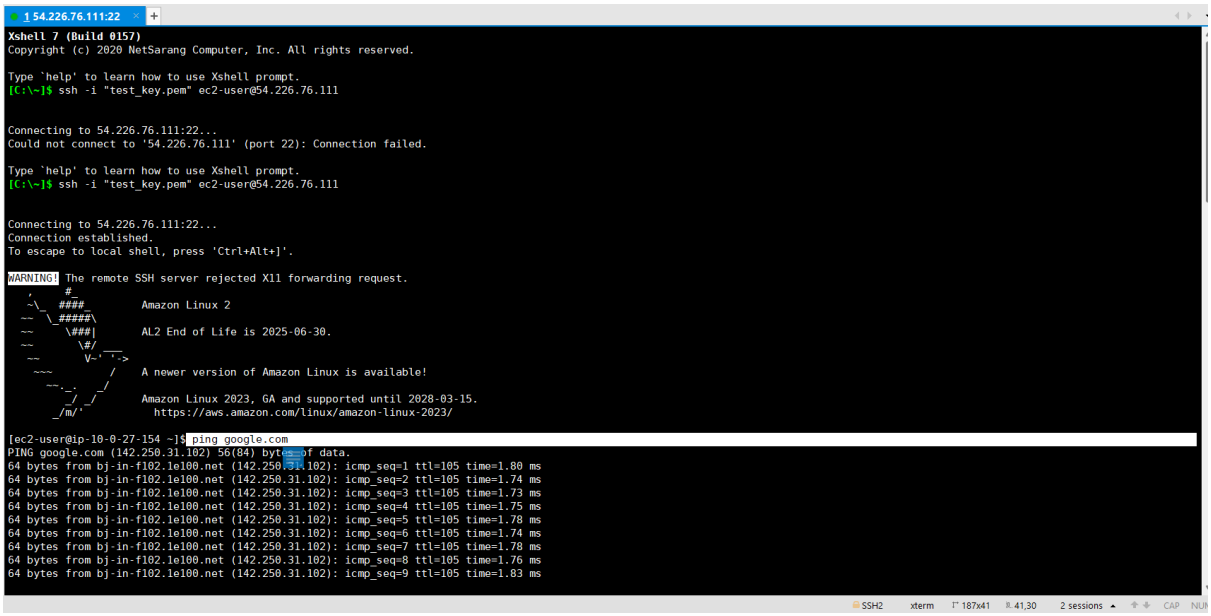


In the route-table, I added the policy for the subnet to access the internet via the internet-gateway.



✓ STEP-8:

Since I have the internet access now, I can connect to the web-server present in the public subnet. Also, the internet can be accessed from the web-server.

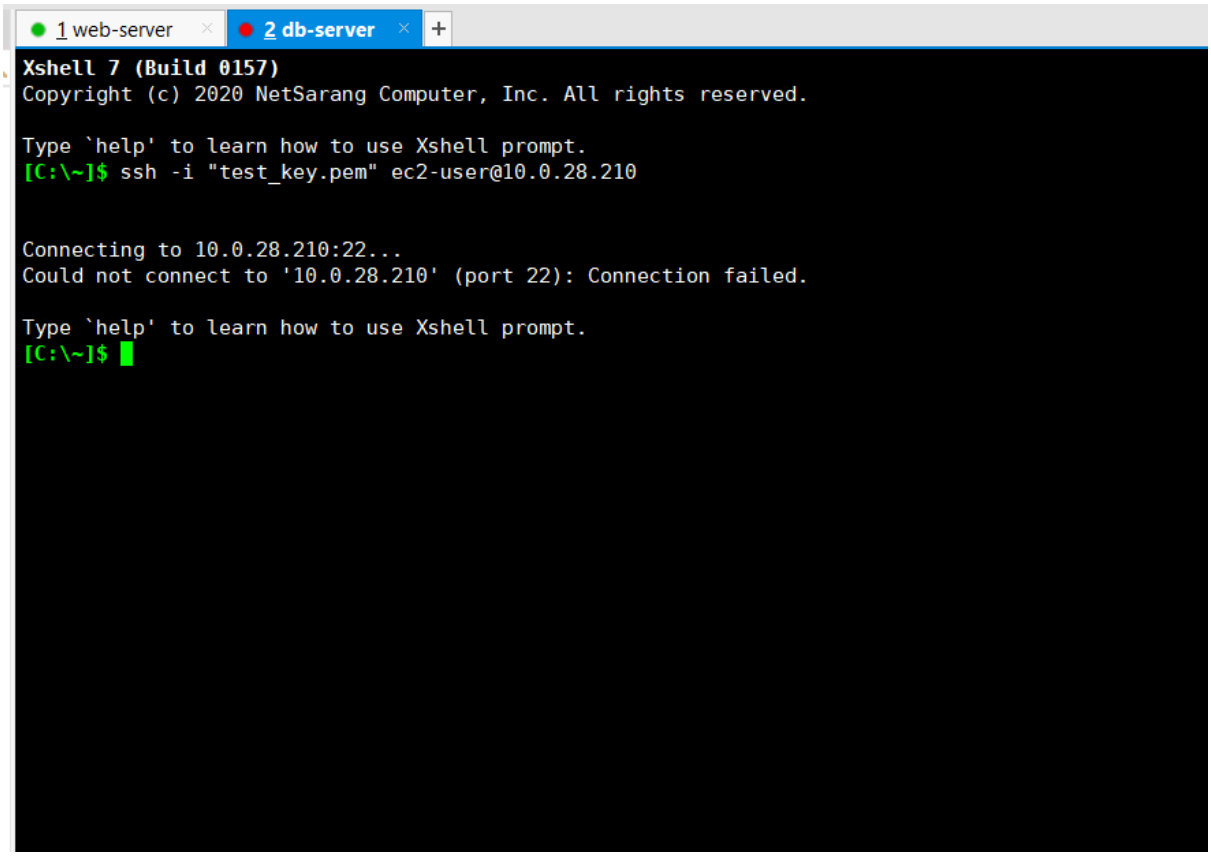


Web-server ⟷ Internet

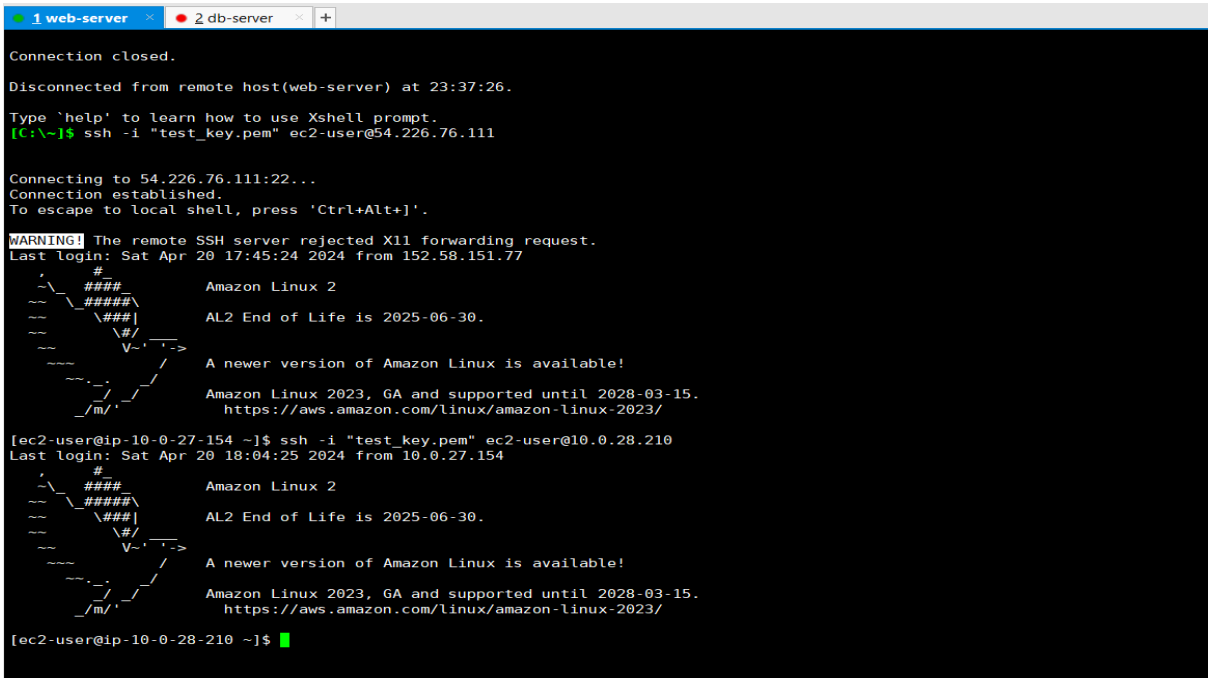
TWO-WAY COMMUNICATION

✓ STEP-9:

Then, I tried connecting the database-server present in the private subnet using the SSH command but I could not because it has only private IP address, hence cannot be accessed publicly.



Then I tried accessing the database-server present in private-server from the web-server present in the public subnet. I observed that I can access it (database-server) via the web-server since they are connected to each other because both of them are under same network and the web-server has the internet access.

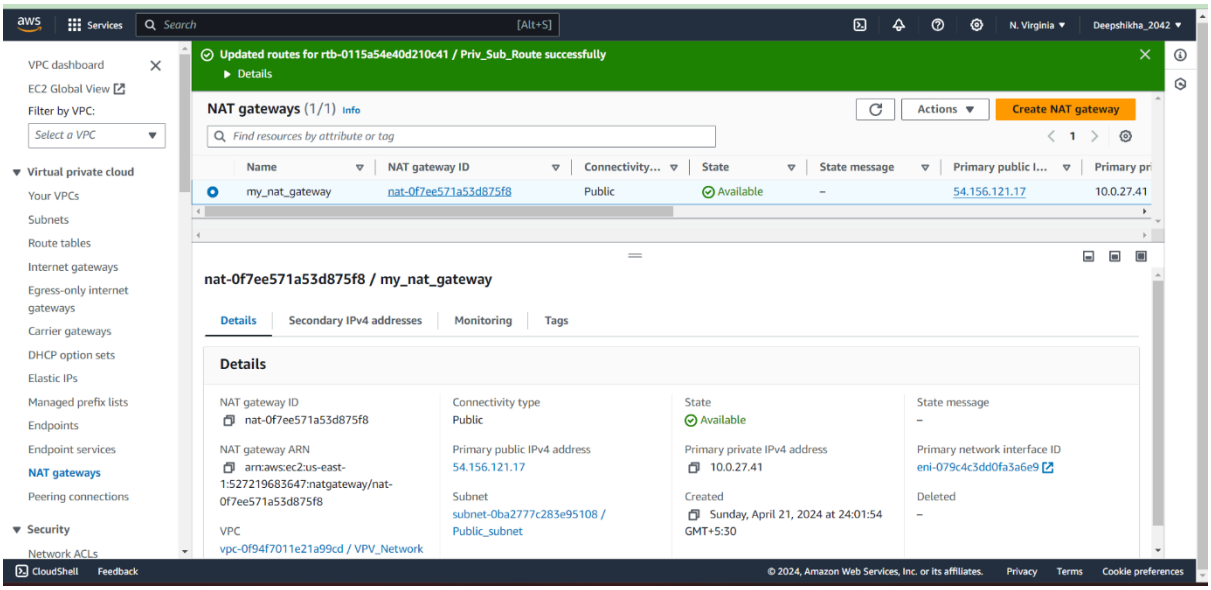


Neither the database-server can be accessed from outside as it has only private IP address, nor one can access internet from the database-server.

✓ STEP-10:

(First way to access the database-server using NAT-GATEWAY)

To access the internet from the database-server, we need to define a NAT-Gateway. So, I created a NAT-Gateway inside the public subnet.

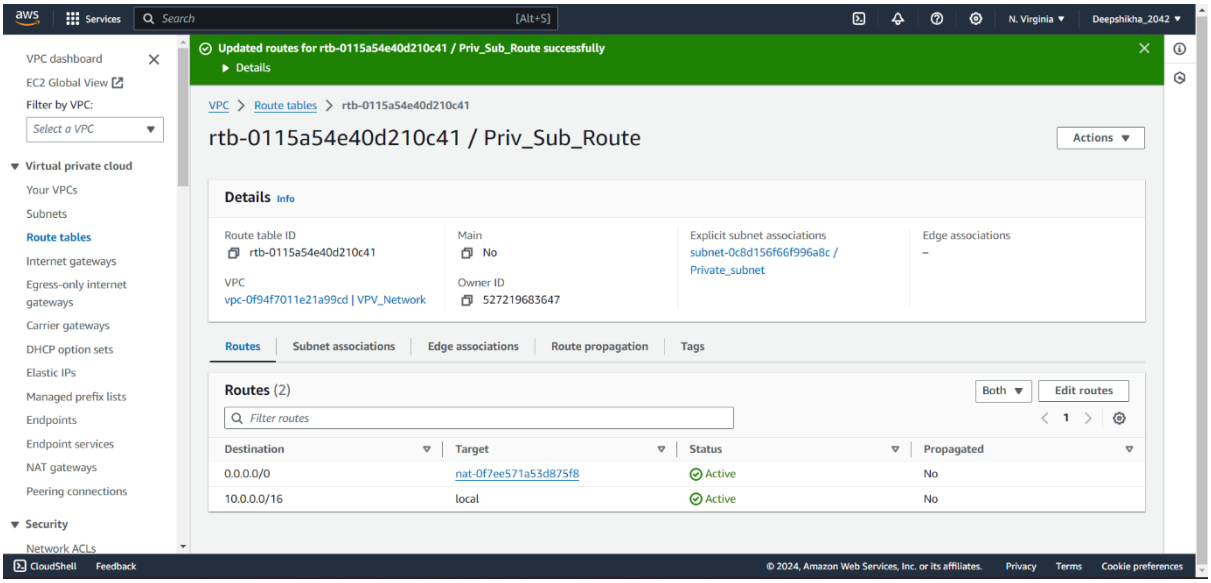


✓ STEP-11:

Firstly, I created a route-table and associated that with the private subnet.

In the route-table, I added routing policies for private subnet to access the internet via NAT-Gateway.

Now, I can access internet from the database-server.

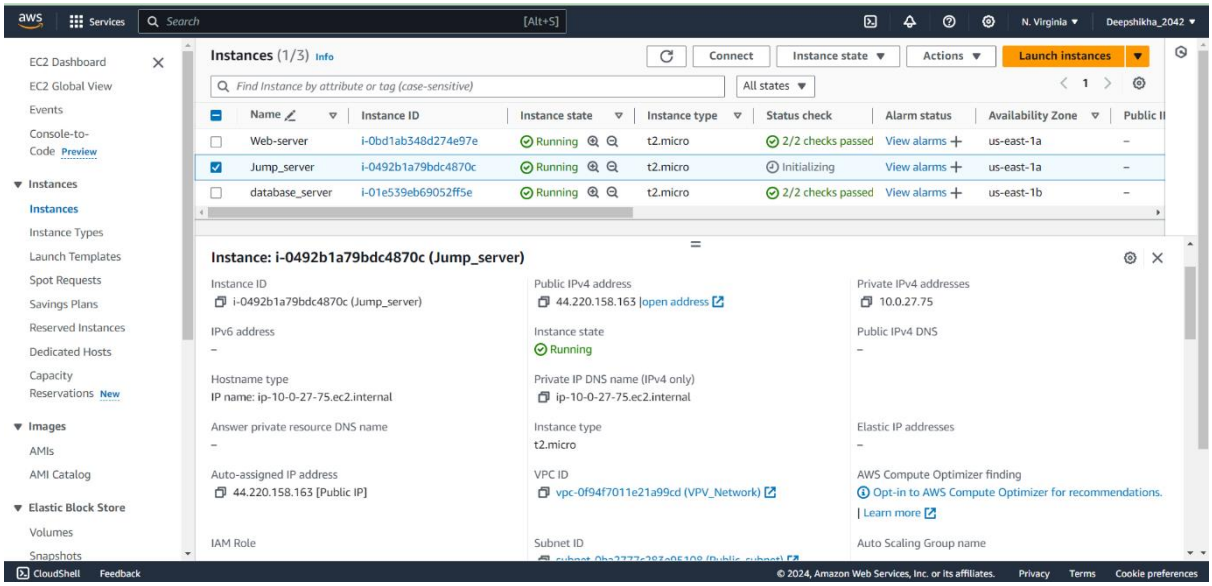


✓ STEP-12:

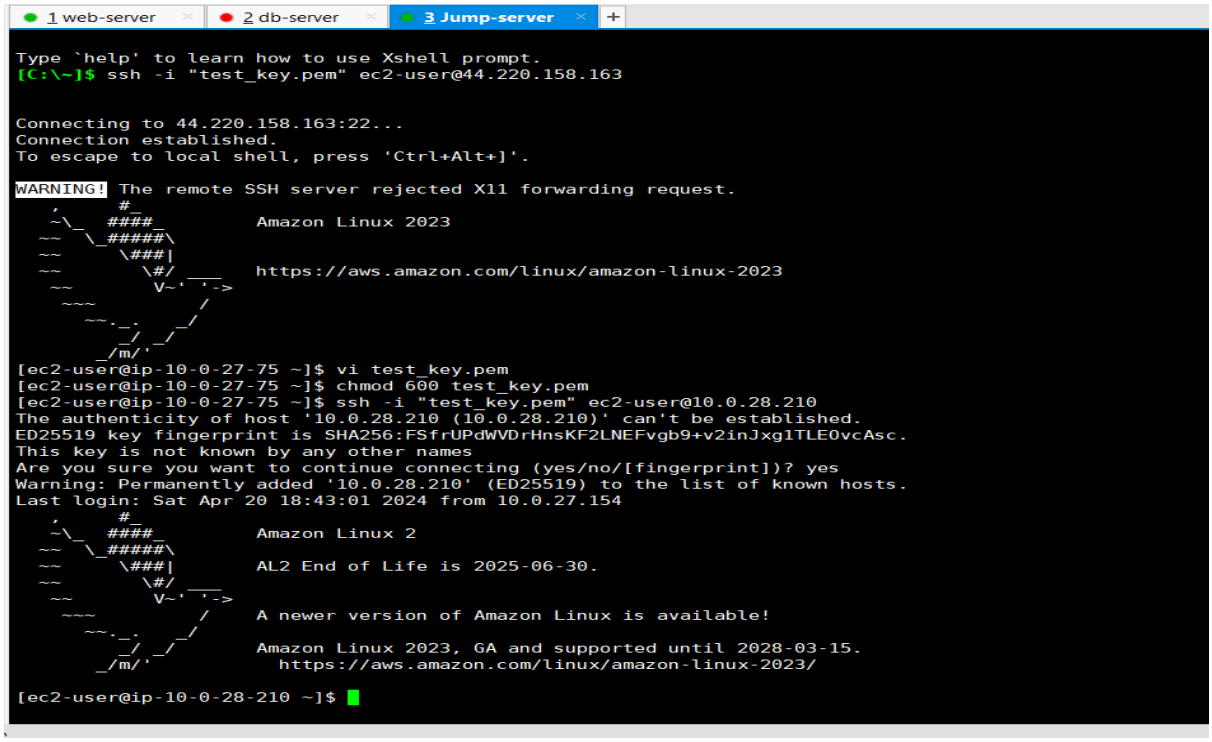
But, what if a developer (a database administrator may be) want the access to the database-server? Does he need to access it via the web-server every single time?

We want to give the access of the database-server to the developer only, not to the public.

For this, I created a jump server.



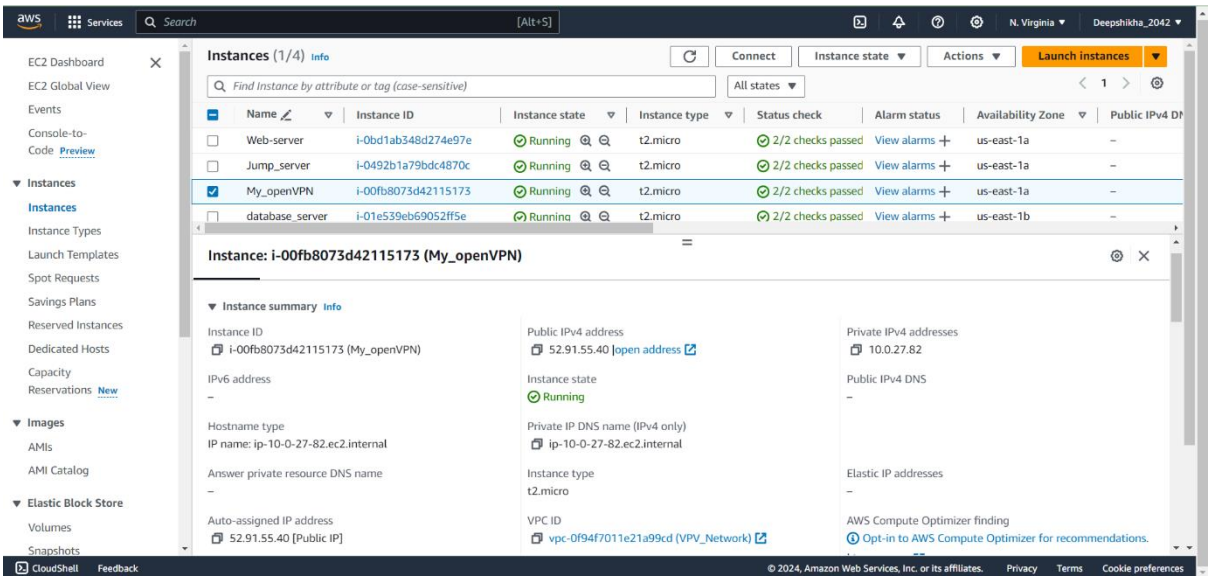
One can access the database-server via the web-server, but it is better to have a different server (jump-server) for accessing purpose. This is because, the web-server already have different important roles (application purpose)



✓ STEP-13:

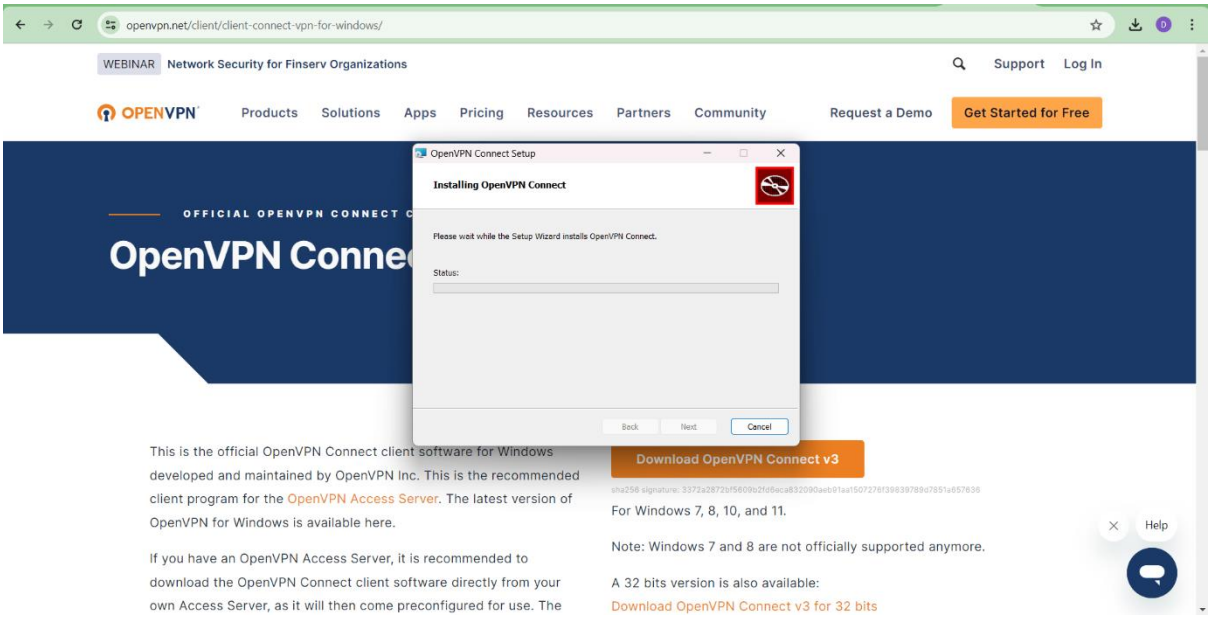
(Second way to access the database-server using OpenVPN)

I created OpenVPN in the public subnet.



✓ STEP-14:

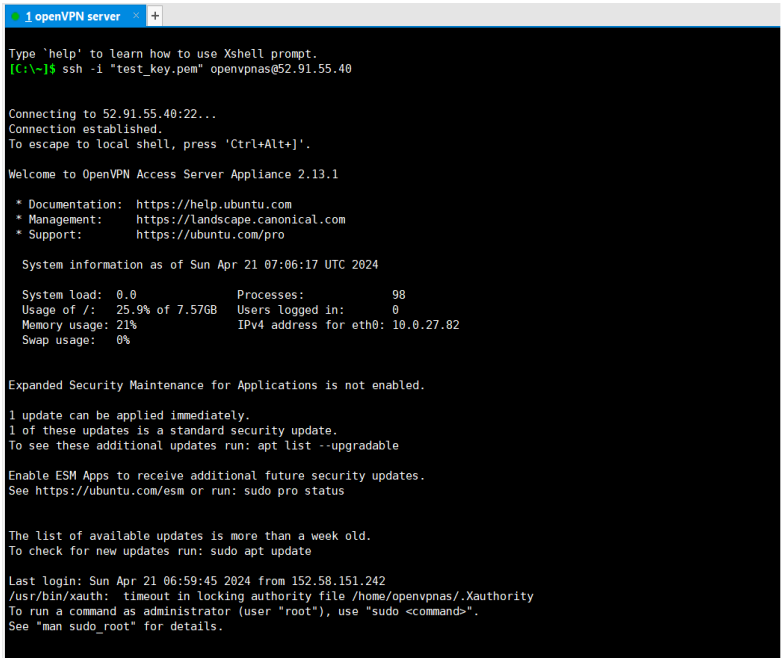
Installed VPN Client in the system.

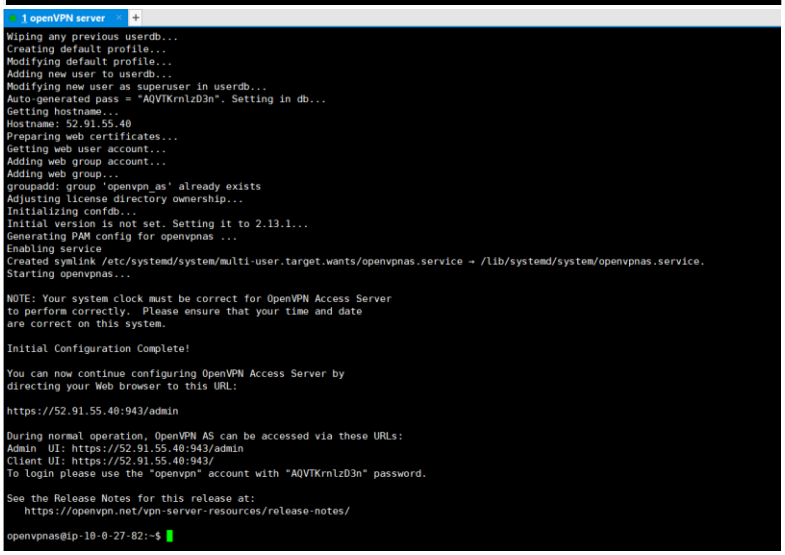


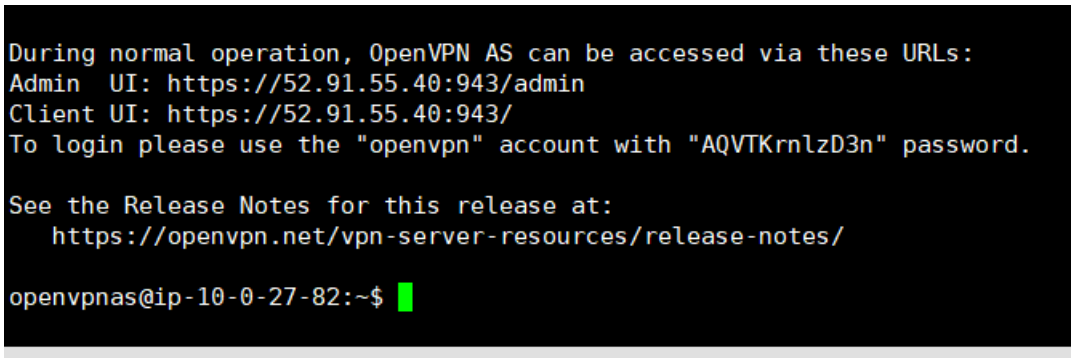
✓ STEP-15:

Then, I connected to the VPN server and I got the following credentials:

- Admin UI
- Client UI
- Access ID and Password

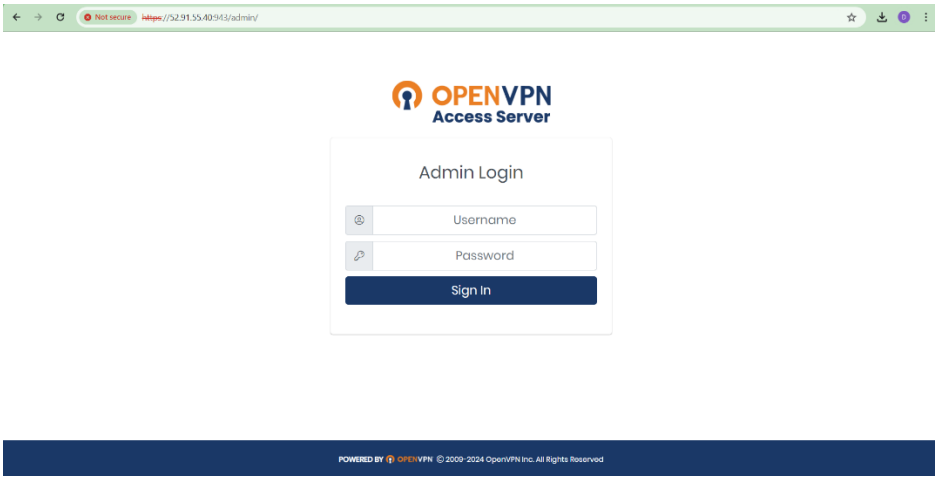




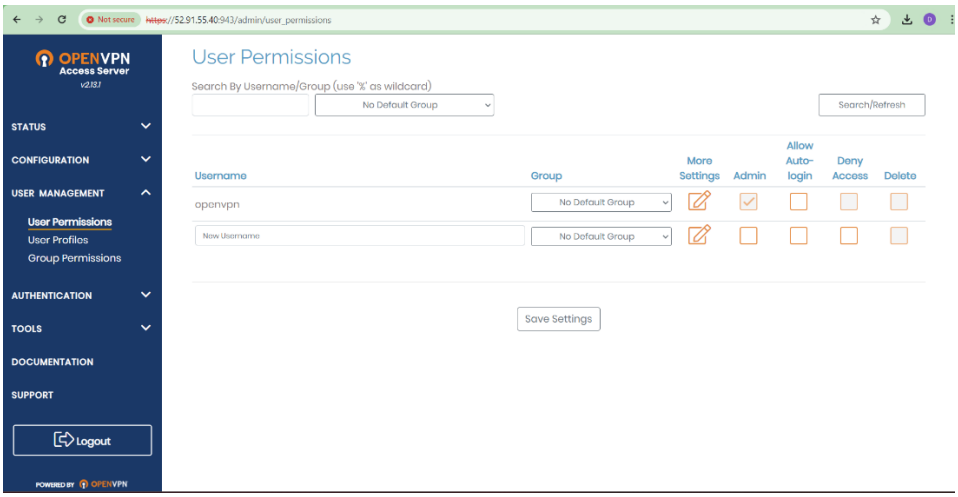


✓ STEP-16:

Then, I just pasted the Admin UI in the search engine and got the following page.

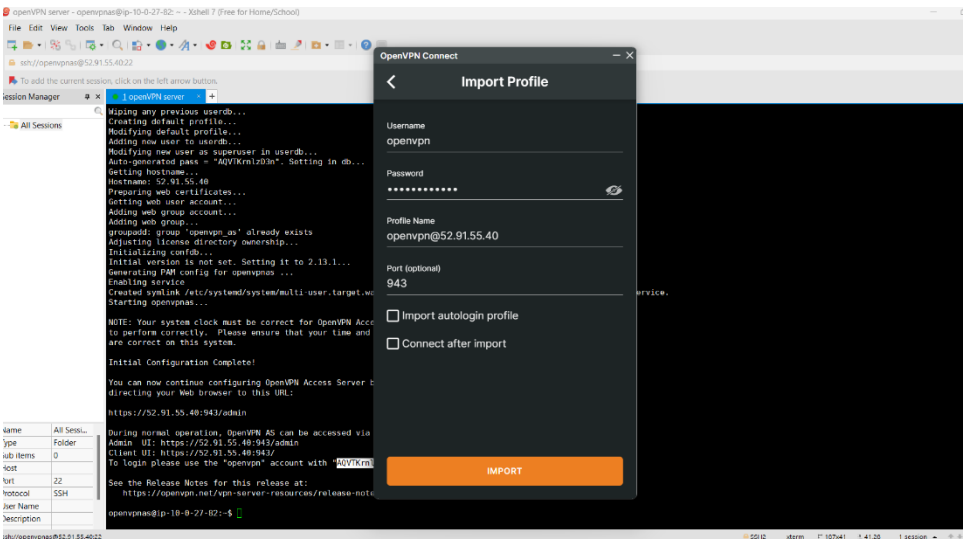


From here, one can handle user permission, group permission, user profile etc.

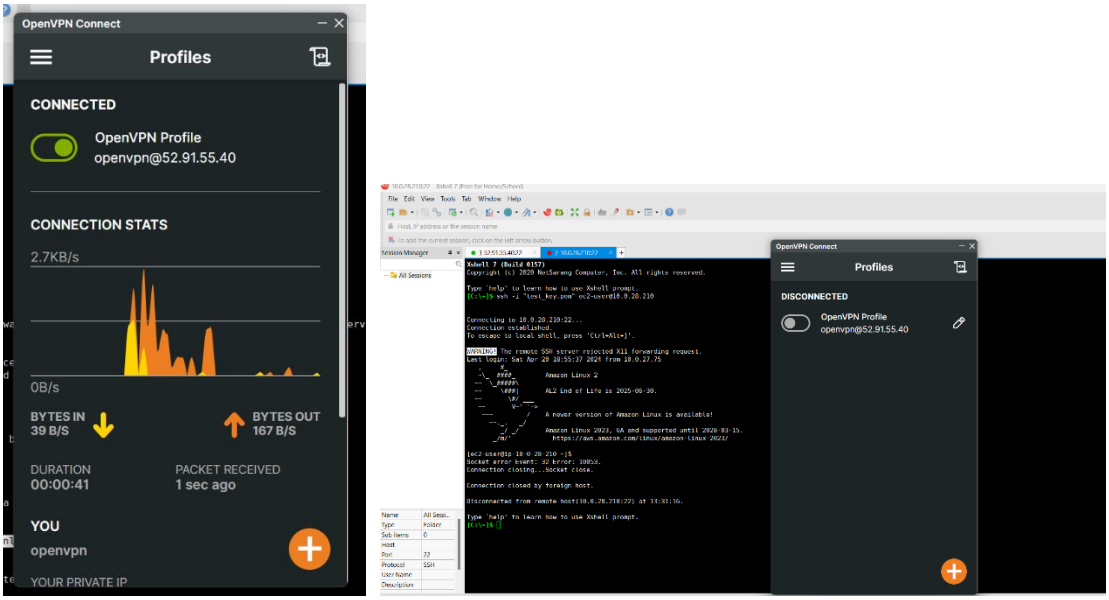


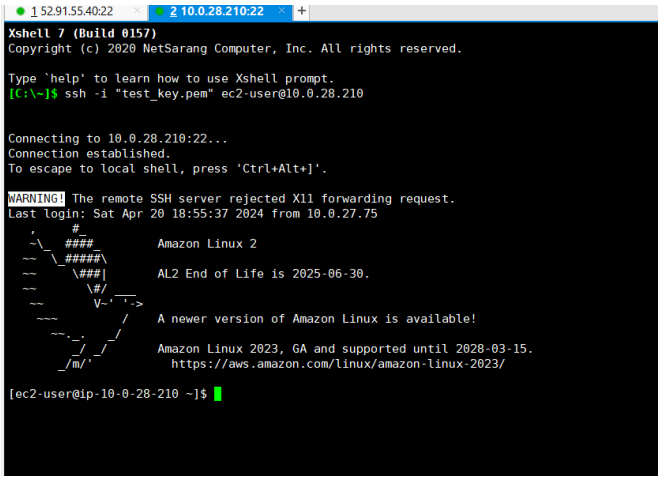
✓ STEP-17:

Using the Client UI, Access id and password, I was able to connect to the AWS account. Now I (or may be the database-administrator) can connect to the AWS account even using the private IP address.



The database-administrator can connect and disconnect to the AWS account based on the requirements.





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