St. JOSEPH'S GROUP OF INSTITUTIONS
OMR, CHENNAI - 119

aws

Placement Empowerment Program

Cloud Computing and DevOps Centre

SECURE ACCESS WITH A BASTION HOST

(Set up a bastion host in a public subnet to securely access instances in a private subnet)

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INRODUCTION:

A ‘bastion host’ is a special-purpose server used to securely access resources in a private network from an external network, like the internet. It acts as a jump server or gateway for managing instances that do not have direct internet access.

Why Use a Bastion Host?

- Secure access: Prevents exposing all private servers to the internet.
- Controlled entry point: Only the bastion host is accessible from the internet.
- Better security: Reduces the attack surface by limiting SSH access to one server.
- Logging & Monitoring: You can track who accesses internal instances via the bastion.

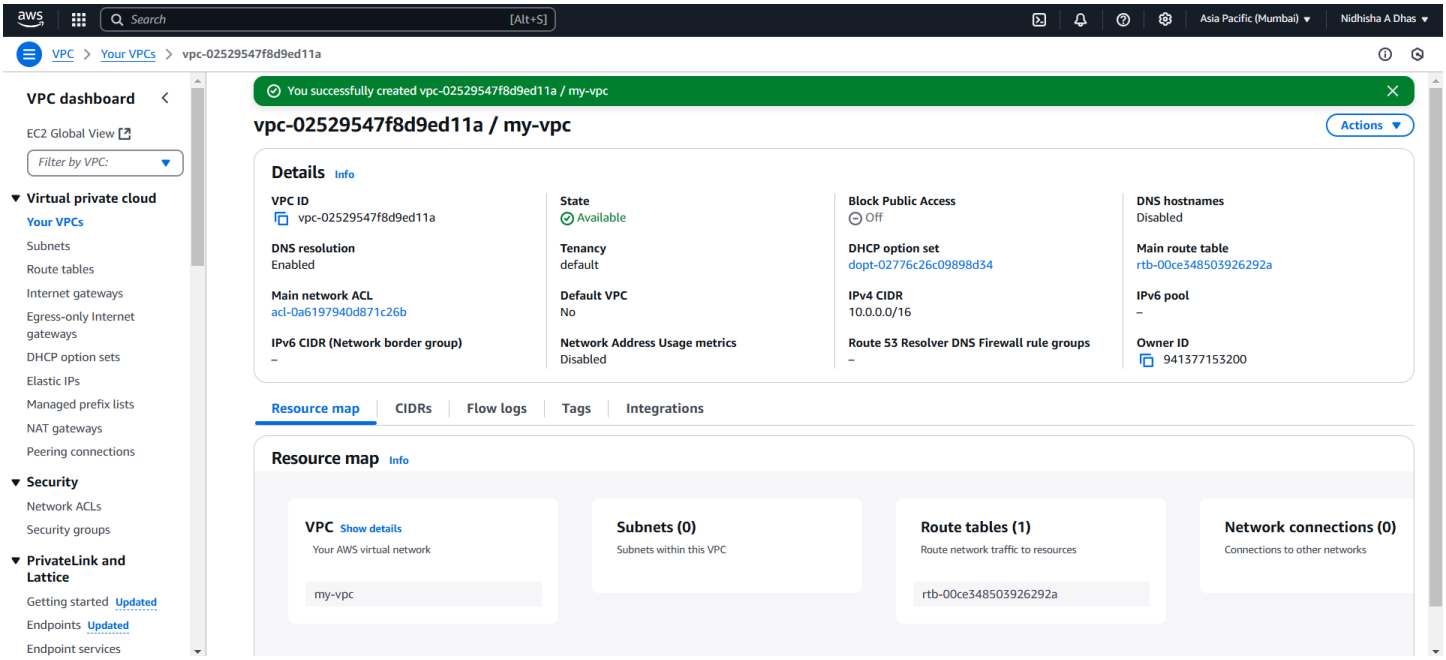
IMPORTANCE:

- Secure Access to Private Network.
- Reduced Attack Surface - Instead of exposing multiple instances to the internet, only the bastion host is accessible.
- Reduces the chances of brute-force attacks, malware infections, or unauthorized access.
- Enhances Network Segmentation - Separates public-facing components (bastion) from private infrastructure.

STEP BY STEP OVERVIEW:

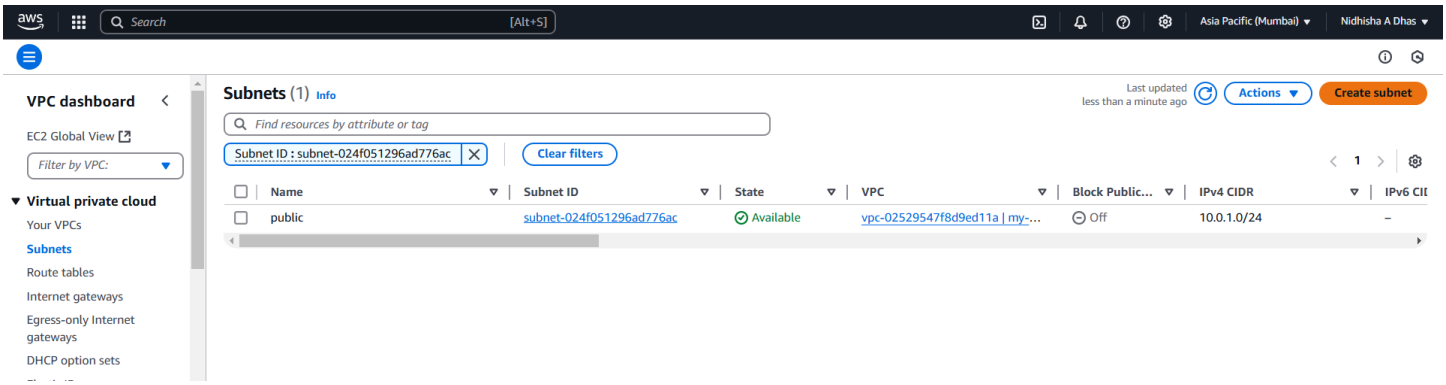
Step 1: CREATE VPC

- Login into your AWS console and navigate to VPC dashboard and create your own VPC.
- Specify the name tag, IPv4 CIDR block (10.0.0.0/16), IPv6 CIDR (optional)
- Then click create.



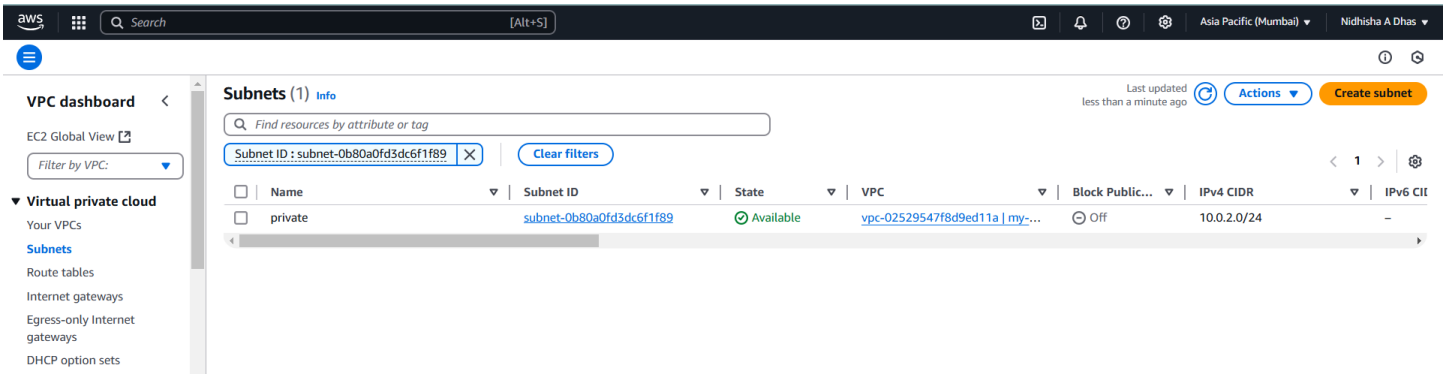
Step 2: CREATE A PUBLIC SUBNETS

- Click on create subnets and select the VPC you have just created.
- Create a public subnet with CIDR block of 10.0.1.0/24.
- Enable the ‘auto-assign’ public IP.



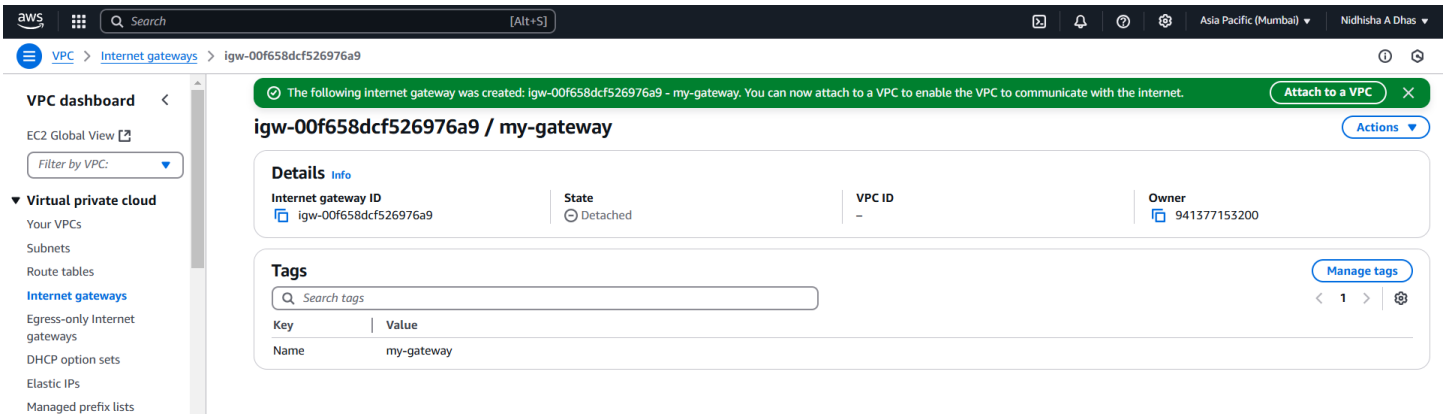
Step 3: CREATE A PRIVATE SUBNET

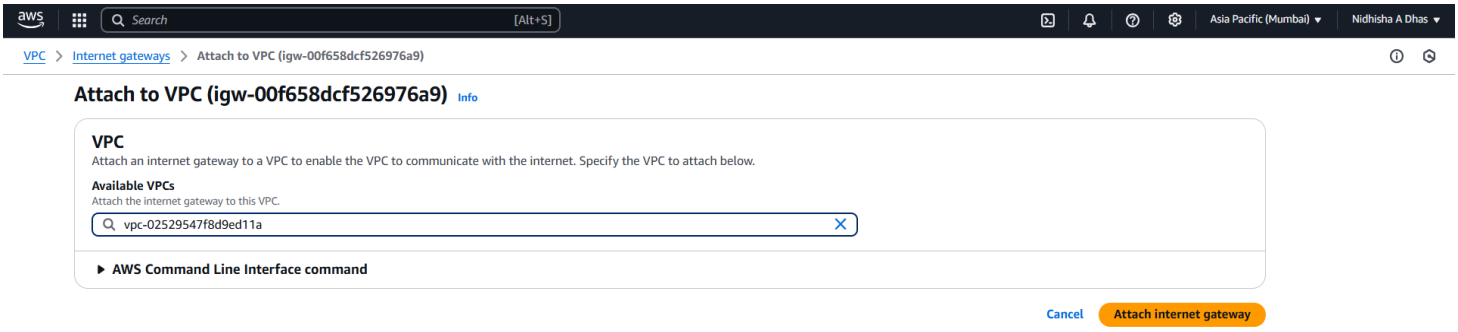
- Click on create subnets and select the VPC you have just created.
- Create a private subnet with CIDR block of 10.0.2.0/24.
- Don’t enable the ‘auto-assign’ public IP.

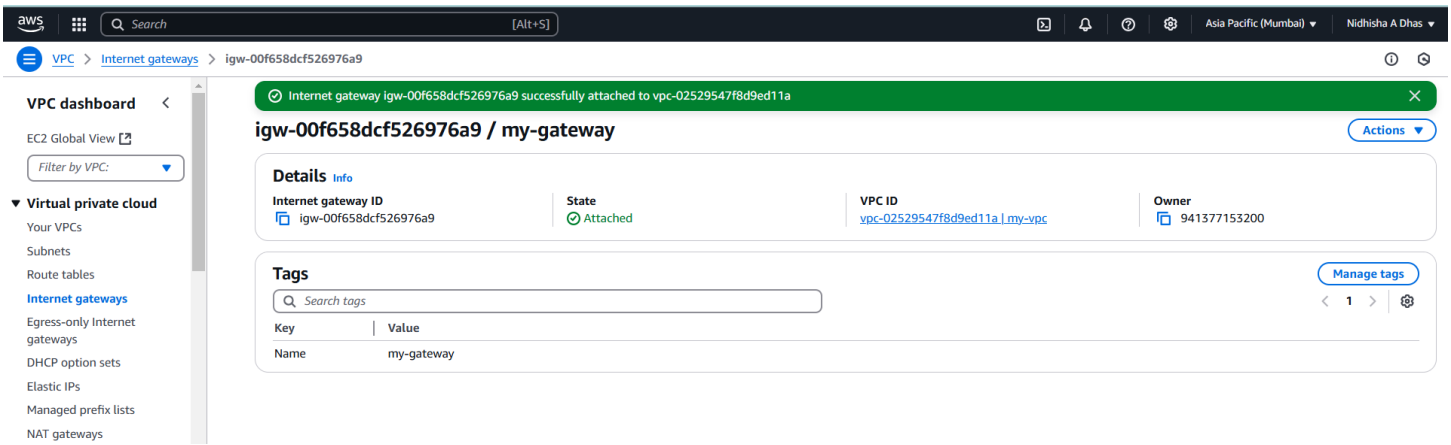


Step 4: CREATE THE INTERNET GATEWAY

- Go to the Internet Gateways and click on Internet gateway.
- Name it and attack it to the VPC that we have created.

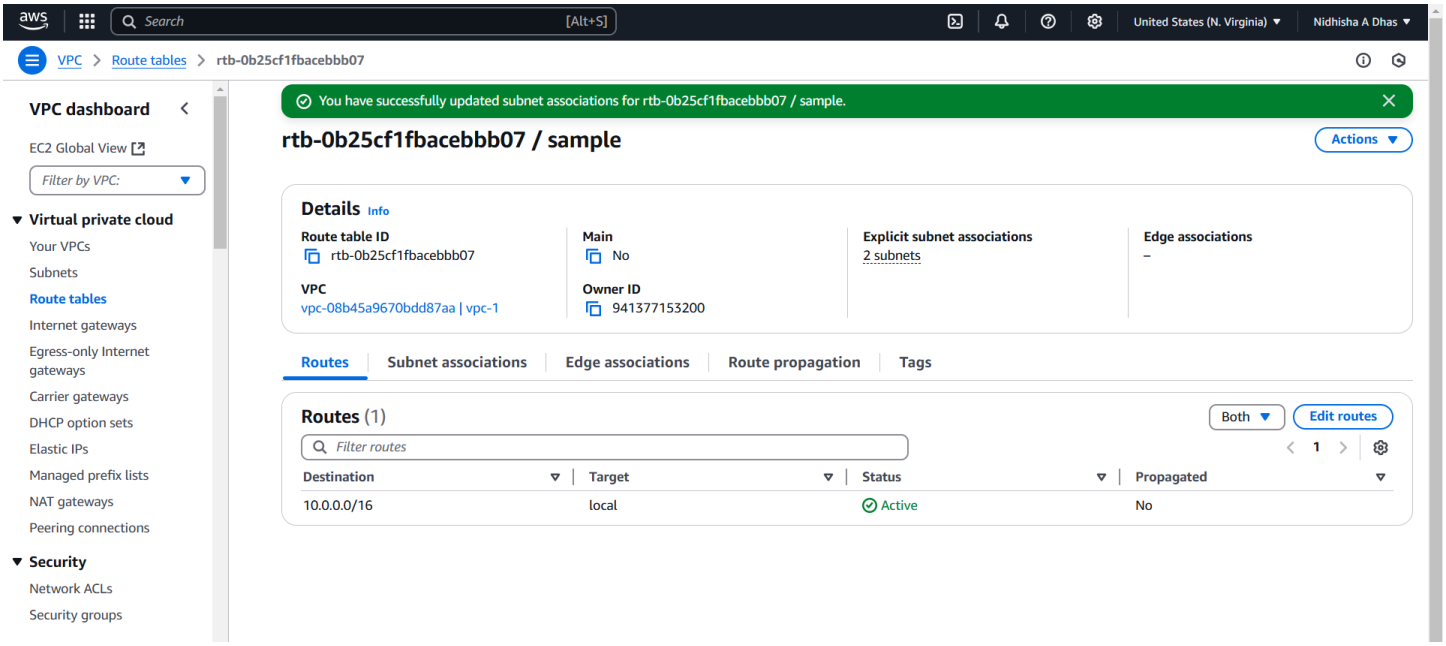






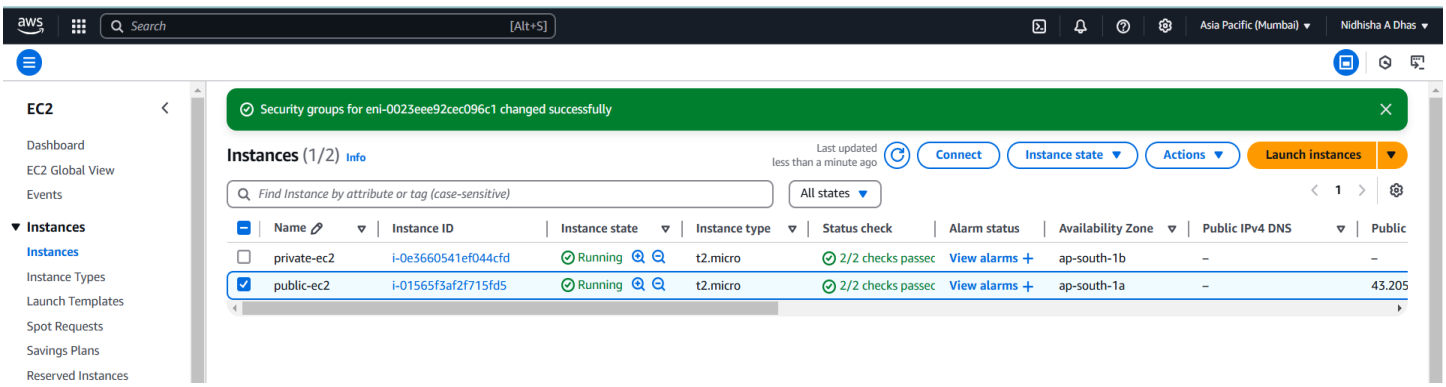
Step 5: CREATE PUBLIC ROUTE TABLE

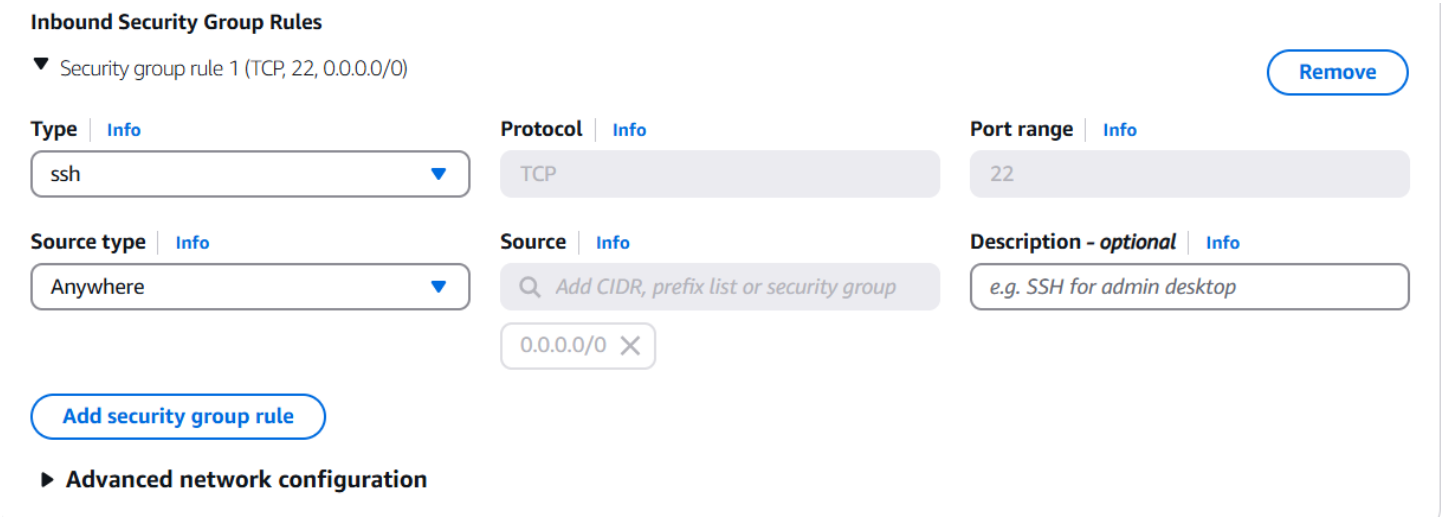
- Go to route table- click on ‘create route table’.
- Specify the name and associate it with the public subnet.
- Add destination and target to the route table.
- Click create.



Step 4: LAUNCH BASTION HOST

- Go to the EC2 dashboard and launch two EC2 instances by specifying the instance name, AMI and Instance Type.
- Under the ‘network settings’, select your VPC and select the public subnet and the private subnet respectively for both the instances.
- Enable the auto assign Public IP for the public EC2 and disable it for the private EC2 instance.
- Also, create the Security groups for the instances.
- Now, click on launch instance.

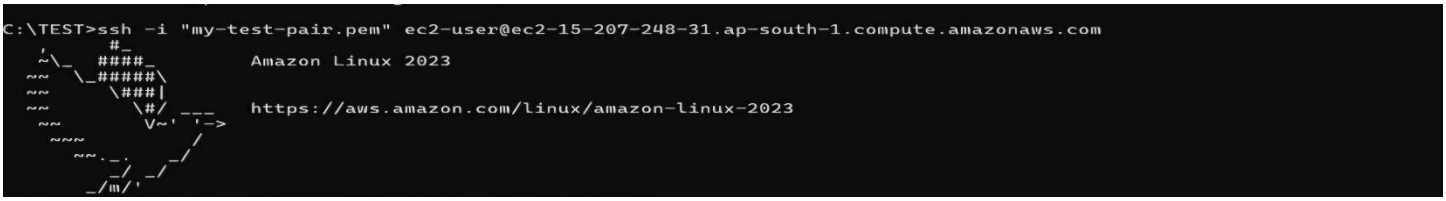




Step 5: CONNECT THE PRIVATE INSTANCE TO THE BASTION HOST

- Open the PowerShell and give the following command to change the directory.

- To connect the private instance copy the ssh command from the private instance and paste it in the PowerShell.



CONCLUSION:

By completing this PoC, you will be able to:

- Create a Bastion host that enhances the security to access resources in a private network from an external network, like the internet.