

Basic Labs

VPC Configuration Lab

Objective:

To understand the fundamentals of AWS networking through the configuration of a Virtual Private Cloud (VPC).

Approach:

Students will create a new VPC, add subnets, set up an Internet Gateway, and configure route tables. The lab might also include setting up a simple EC2 instance within this VPC to demonstrate how resources are deployed in a custom network environment.

Goal:

By the end of this lab, students should be able to create and configure a VPC, understand subnetting, and the role of route tables and internet gateways in AWS.

1. Creating a VPC

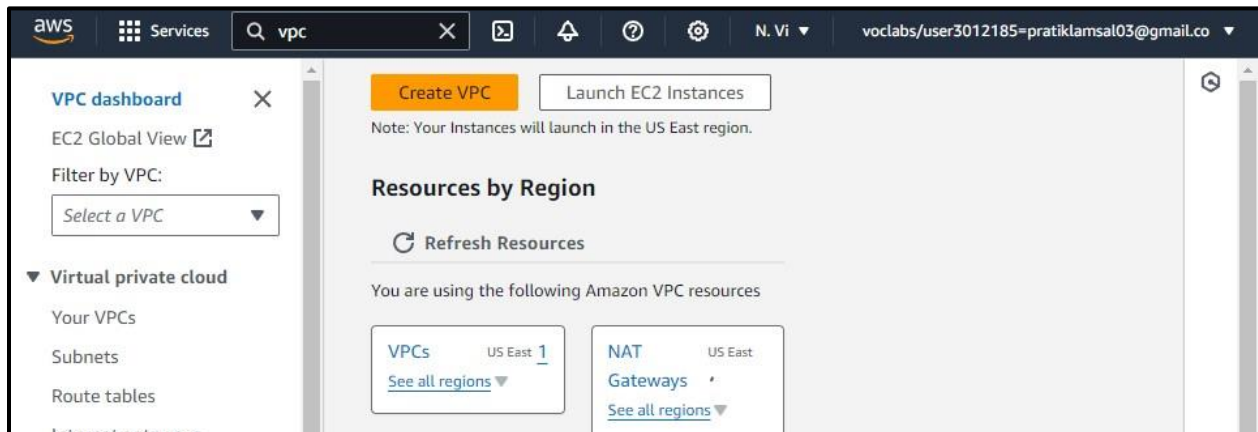


Figure 1 VPC Creation

2. Configuring the VPC

Name is given along with an IPv4 CIDR block.

The screenshot shows the 'Create VPC' configuration page. The breadcrumb trail is 'VPC > Your VPCs > Create VPC'. The title is 'Create VPC' with an 'Info' link. A description states: 'A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as subnets, route tables, and security groups. This page highlights the related resources.' The 'VPC settings' section includes: 'Resources to create' with 'VPC and more' selected; 'Name tag auto-generation' with 'Auto-generate' checked and the tag 'lab' entered; and 'IPv4 CIDR block' with '10.0.0.0/16' entered, showing '65,536 IPs' available. A note at the bottom states: 'CIDR block size must be between /16 and /28.'

Figure 2 VPC Configuration

3. VPC Configuration2

Number of Availability Zones, Public and Private Subnets selected.

Number of Availability Zones (AZs) [Info](#)

Choose the number of AZs in which to provision subnets. We recommend at least two AZs for high availability.

1

2

3

► Customize AZs

Number of public subnets [Info](#)

The number of public subnets to add to your VPC. Use public subnets for web applications that need to be publicly accessible over the internet.

0

1

Number of private subnets [Info](#)

The number of private subnets to add to your VPC. Use private subnets to secure backend resources that don't need public access.

0

1

2

Figure 3 VPC Configuration2

4. VPC Configuration3

CIDR blocks, NAT Gateways and VPC Endpoints Configured and VPC is created.

▼ Customize subnets CIDR blocks

Public subnet CIDR block in us-east-1a
 256 IPs

Private subnet CIDR block in us-east-1a
 256 IPs

NAT gateways (\$) [Info](#)
Choose the number of Availability Zones (AZs) in which to create NAT gateways.
Note that there is a charge for each NAT gateway

None

In 1 AZ

1 per AZ

VPC endpoints [Info](#)
Endpoints can help reduce NAT gateway charges and improve security by
accessing S3 directly from the VPC. By default, full access policy is used. You can
customize this policy at any time.

None

S3 Gateway

DNS options [Info](#)
☒ Enable DNS hostnames
☒ Enable DNS resolution

► Additional tags

Cancel

Create VPC

Figure 4 VPC Configuration3

5. VPC Created Successfully

VPC is created Successfully. It will take some time to complete. Now subnets are to be added.

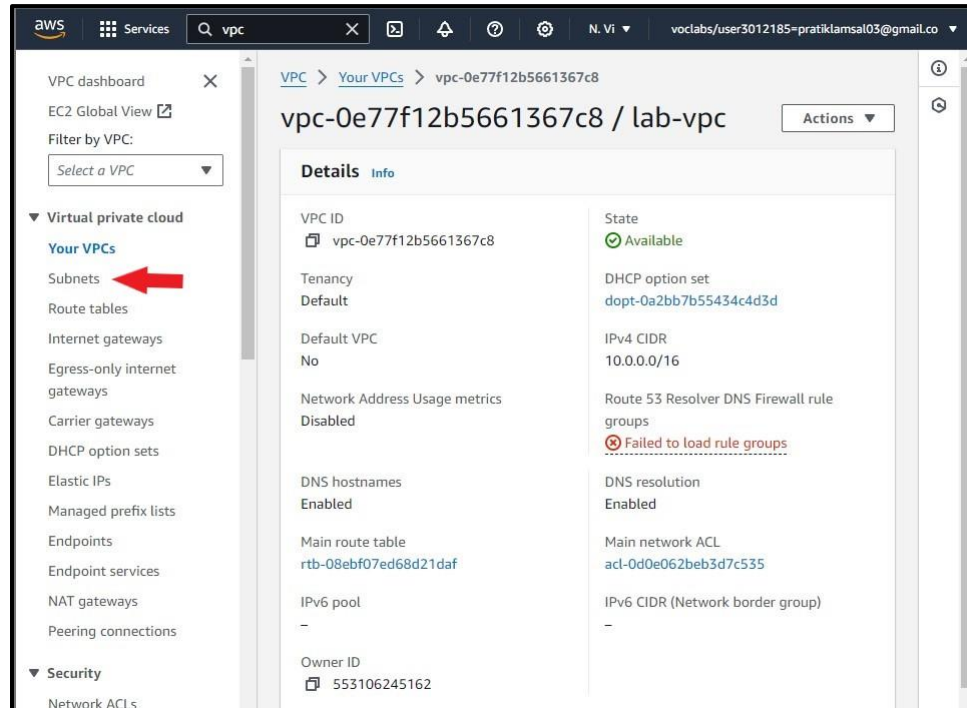


Figure 5 VPC Creation

6. Creating a Subnet

VPC ID is selected.

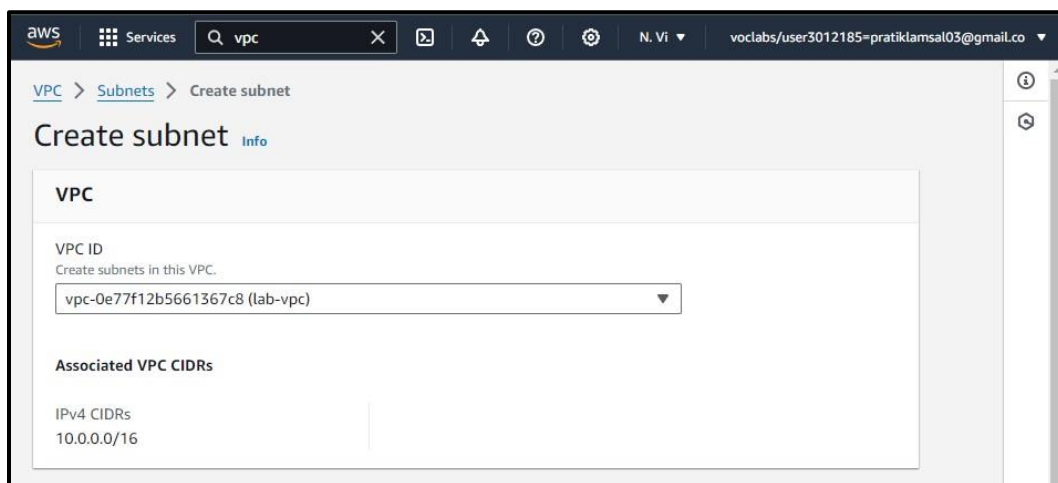


Figure 6 VPC ID selection

7. Creating Subnets

Two Subnets are created.

Subnet 1 of 2

Subnet name
Create a tag with a key of 'Name' and a value that you specify.

The name can be up to 256 characters long.

Availability Zone [Info](#)
Choose the zone in which your subnet will reside, or let Amazon choose one for you.

IPv4 VPC CIDR block [Info](#)
Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.

IPv4 subnet CIDR block
 256 IPs
< > ^ v

Figure 7 Subnet 1

Subnet 2 of 2

Subnet name
Create a tag with a key of 'Name' and a value that you specify.

The name can be up to 256 characters long.

Availability Zone [Info](#)
Choose the zone in which your subnet will reside, or let Amazon choose one for you.

IPv4 VPC CIDR block [Info](#)
Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.

IPv4 subnet CIDR block
 256 IPs
< > ^ v

Tags - optional

Key	Value - optional	
<input type="text" value="Name"/>	<input type="text" value="lab_subnet-priv2"/>	<input type="button" value="Remove"/>
<input type="button" value="Add new tag"/>		

You can add 49 more tags.

Figure 8 Subnet 2

8. Subnets Successfully Created

Subnets are created successfully. Now, to configure Internet Gateways.

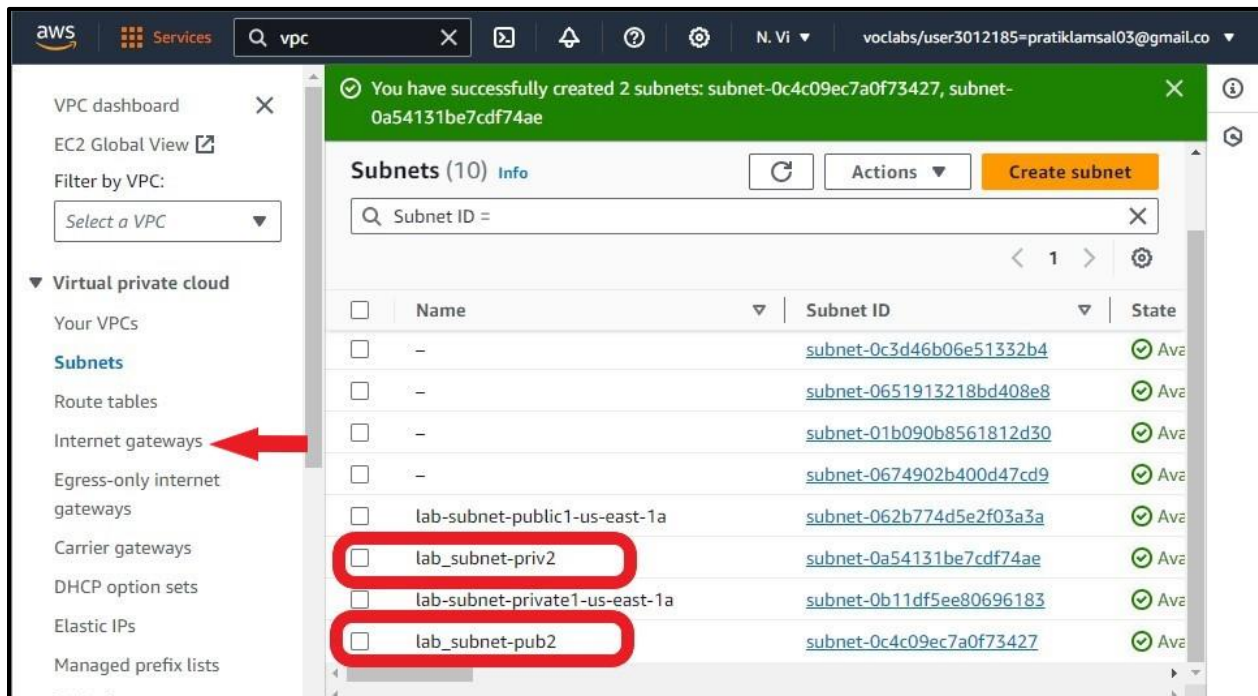


Figure 9 Subnets Created Successfully

9. Internet Gateway Created

An internet Gateways for the VPC is created. Now, configuring Route Tables.

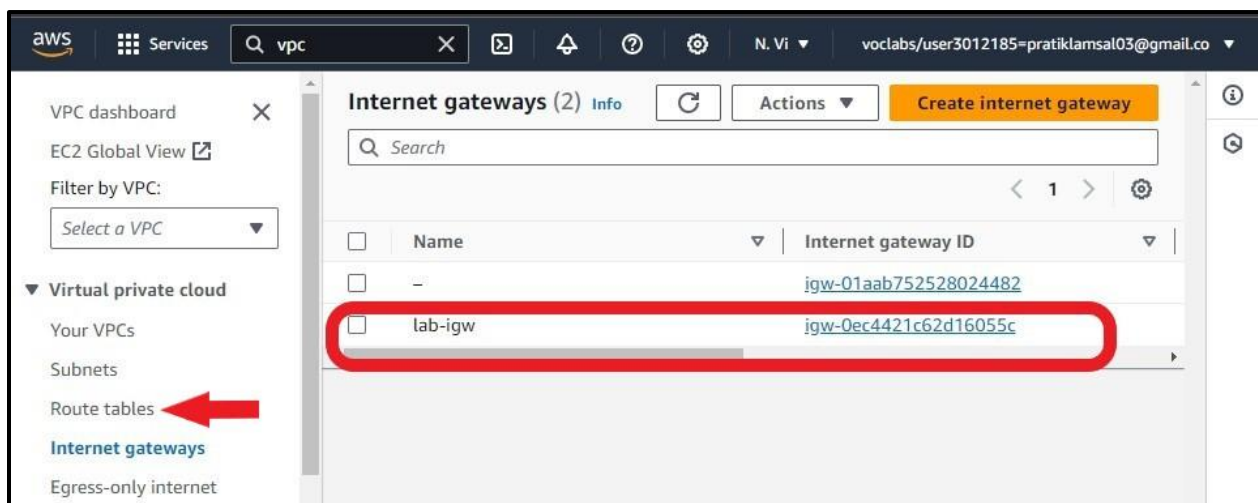


Figure 10 Internet Gateway

10. Configuring Route Tables

Lab-rtb-private1-us-east-1a is selected. Then, in the lower panel, Subnet Association is selected, and Edit Subnet Association is pressed for Explicit Subnet Association.

The screenshot displays the AWS Management Console interface for configuring route tables. The top navigation bar shows the AWS logo, 'Services', a search bar with 'vpc', and the user profile 'voclabs/user3012185=pratiklamsal03@gmail.co'. The main content area is titled 'Route tables (1/4) Info' and includes a search bar and a table of route tables. The table has columns for Name, Route table ID, Explicit subnet associations, and Edge associations. The row for 'lab-rtb-private1-us-east-1a' is selected, showing its ID as 'rtb-0779a566daf7afca9' and its explicit subnet association as 'subnet-0b11df5ee80696...'. Below the table, the configuration details for 'rtb-0779a566daf7afca9 / lab-rtb-private1-us-east-1a' are shown, with tabs for Details, Routes, Subnet associations, Edge associations, Route propagation, and Tags. The 'Subnet associations' tab is active, displaying 'Explicit subnet associations (1)' and 'Subnets without explicit associations (2)'. A red arrow points to the 'Edit subnet associations' button in the 'Explicit subnet associations' section.

Name	Route table ID	Explicit subnet associ...	Edge assoc
-	rtb-0c5a0fcf99aafe00e	-	-
lab-rtb-public	rtb-051d6c225c9247264	subnet-062b774d5e2f03...	-
lab-rtb-private1-us-east-1a	rtb-0779a566daf7afca9	subnet-0b11df5ee80696...	-
-	rtb-08ebf07ed68d21daf	-	-

rtb-0779a566daf7afca9 / lab-rtb-private1-us-east-1a

Details | Routes | **Subnet associations** | Edge associations | Route propagation | Tags

Explicit subnet associations (1) [Edit subnet associations](#)

[Find subnet association](#) < 1 > ⚙️

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
lab-subnet-private1-us-...	subnet-0b11df5ee80696...	10.0.1.0/24	-

Subnets without explicit associations (2) [Edit subnet associations](#)

The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table:

[Find subnet association](#) < 1 > ⚙️

Figure 11 Route Table Configuration

11. Subnet Associations

Lab_subnet-priv2 and lab-subnet-private1-us-east-1a are selected and saved.

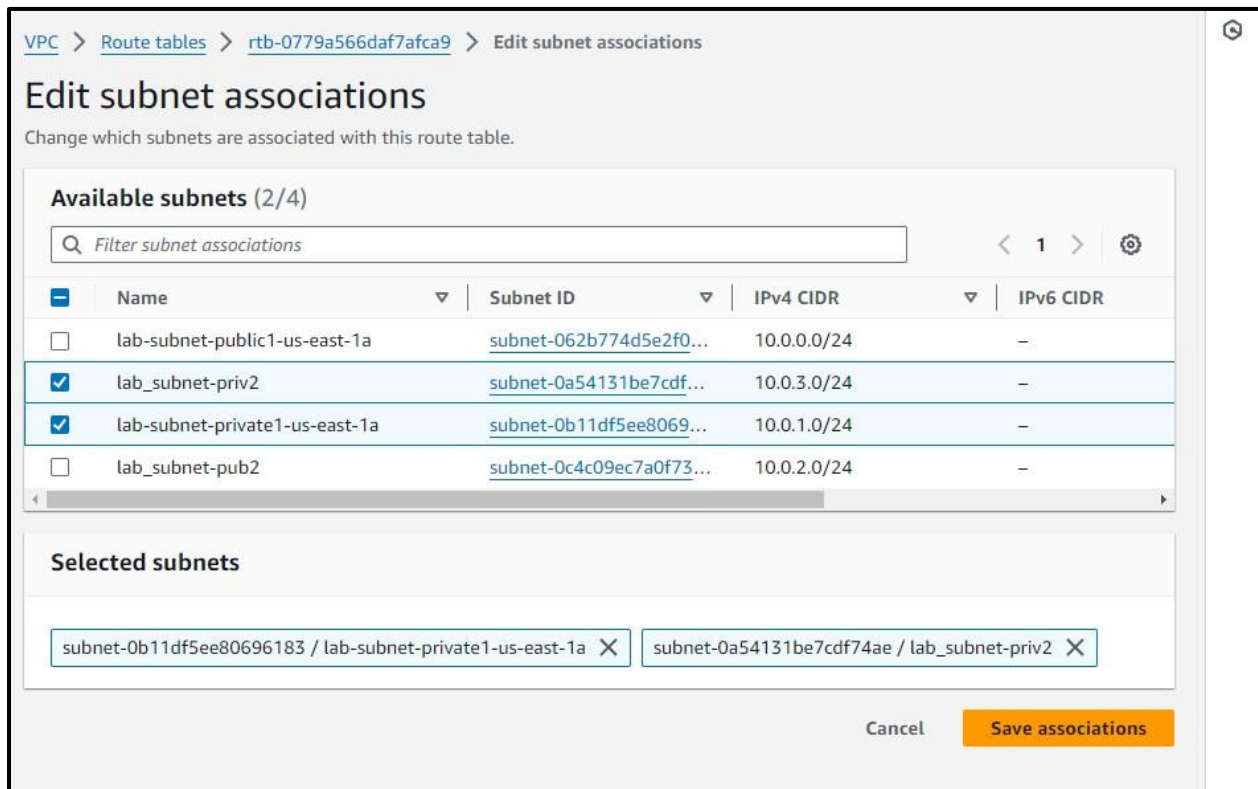


Figure 12 Editing Subnet Associations

12. Security Group Creation

A security Group with necessary rules for the VPC is created.

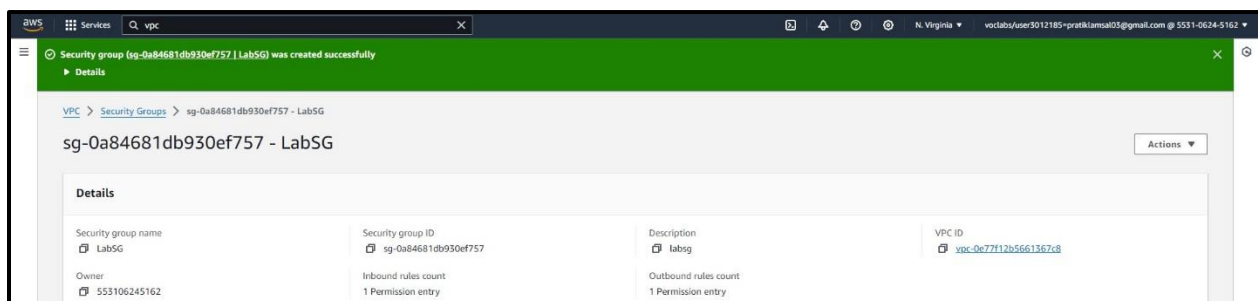


Figure 13 Security Group Creation

13. Launching an EC2 Instance

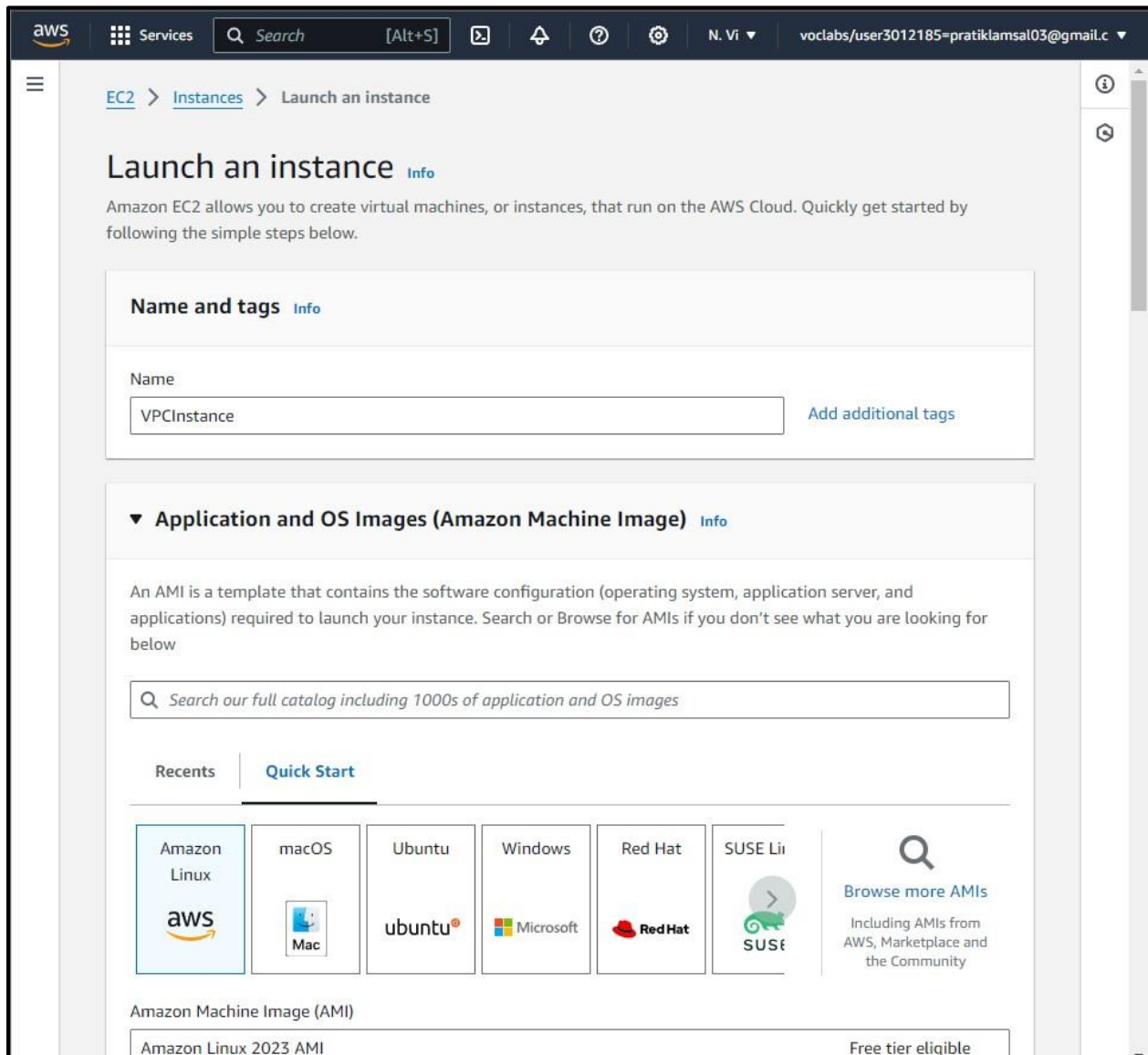


Figure 14 Launching an EC2 Instance

14. Network Setting of EC2 Instance

Key Pair is selected, and Network Settings are changed as per the VPC Created earlier.

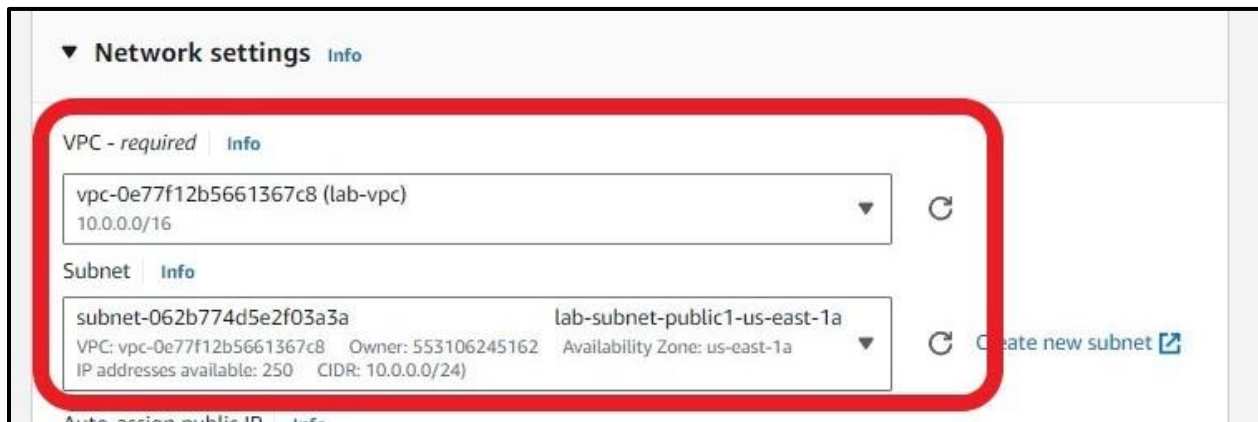


Figure 15 Instance Network Settings

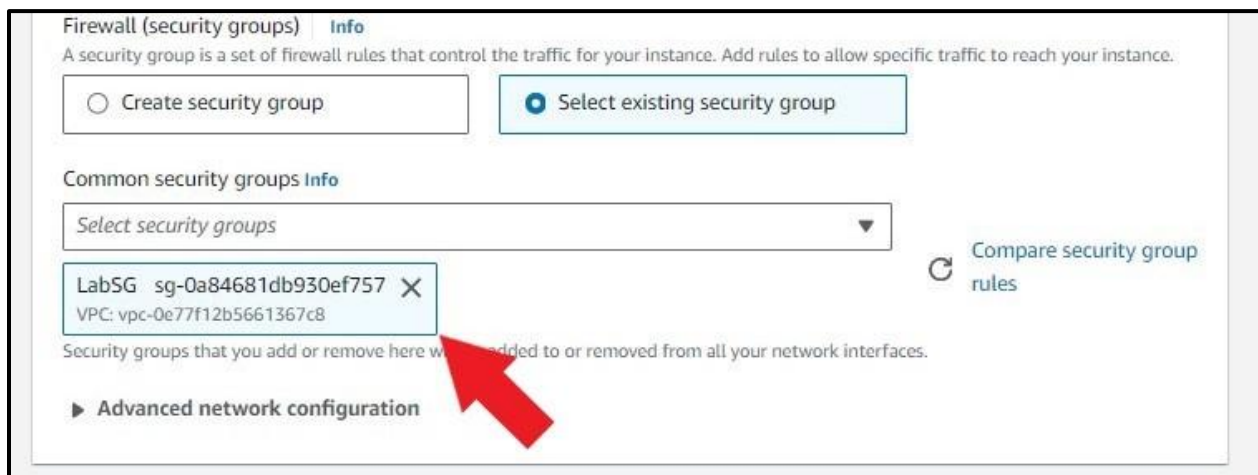


Figure 16 Instance Security Group

15. Launching the EC2 Instance

Some code was entered in user data box and Instance is Launched.

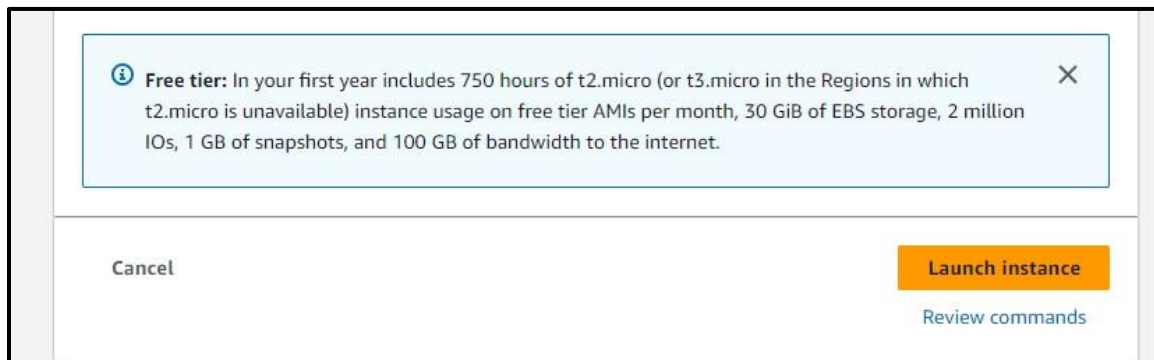


Figure 17 Launching the EC2 Instance

16. EC2 Instance Launched Successfully

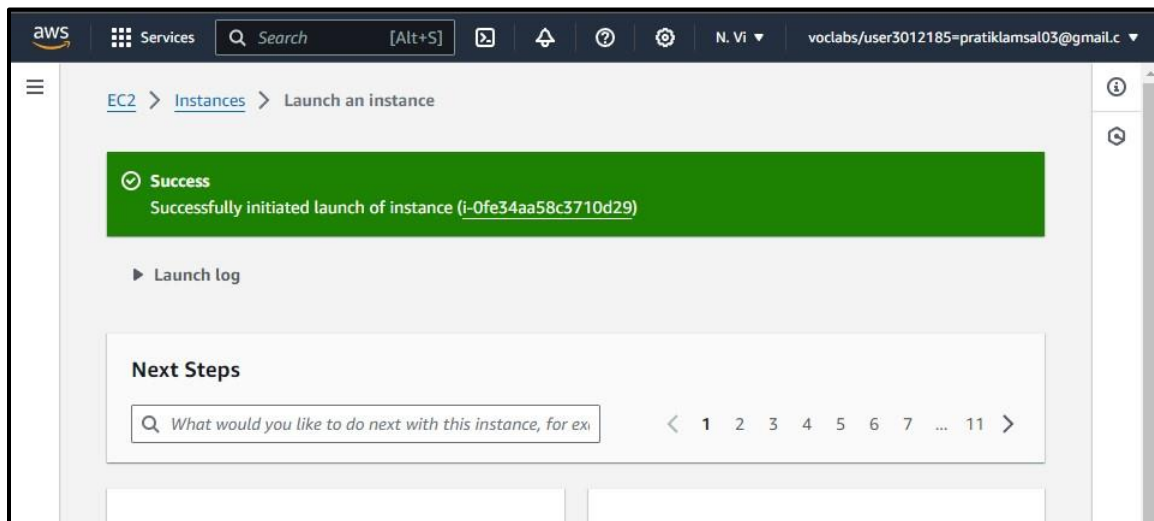


Figure 18 Launching the EC2 Instance

17. Instance Running Successfully

2 checks passed and the instance is getting the public IP.