

Lesson 05 Demo 05

Configuring Subnets, Route Table, and NAT

Objective: To create a Virtual Private Cloud (VPC) on AWS, set up subnets, configure route tables, and create a Network Address Translation (NAT) gateway for secure and efficient network management

Tools required: Amazon workspaces

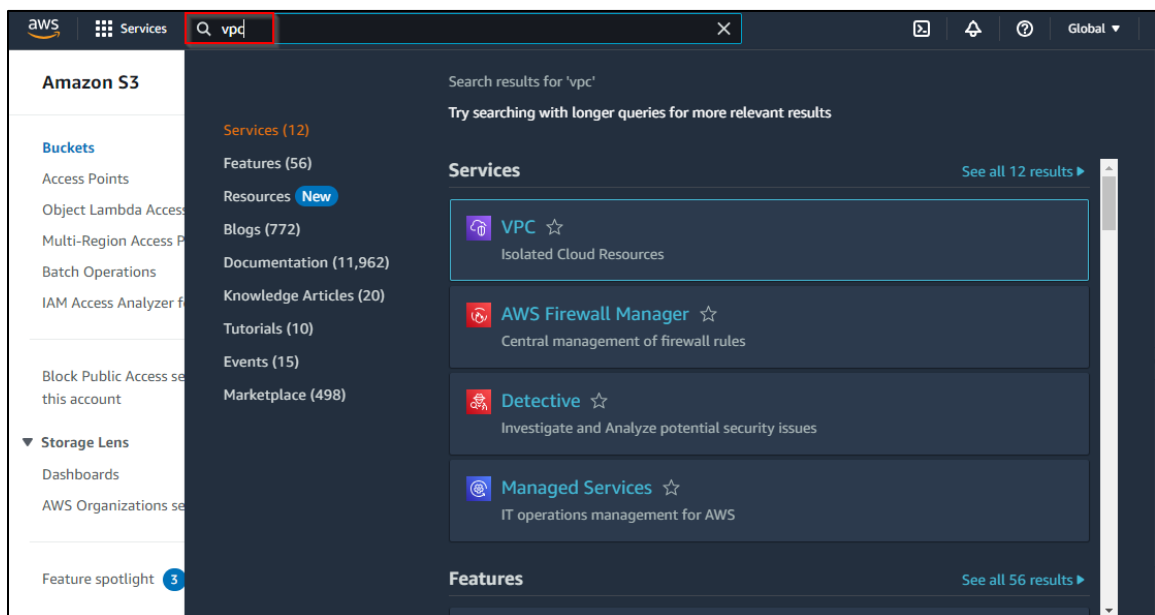
Prerequisites: Amazon account

Steps to be followed:

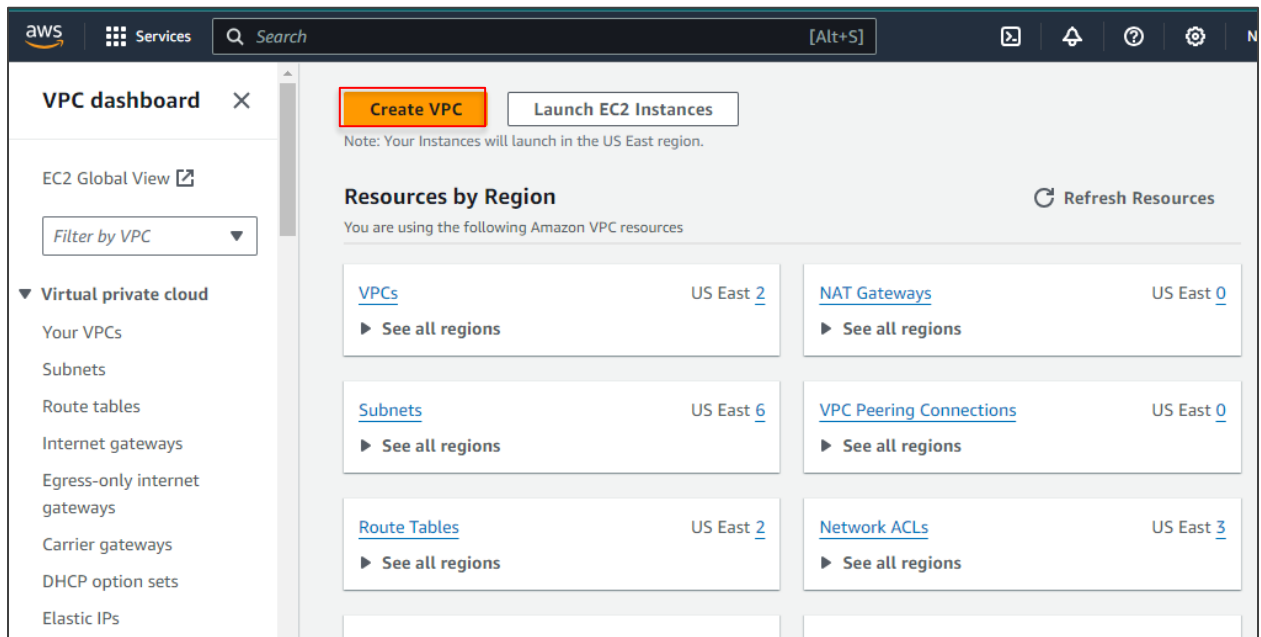
1. Create a VPC
2. Create Internet gateways
3. Create Subnets
4. Create a route table and NAT

Step 1: Create a VPC

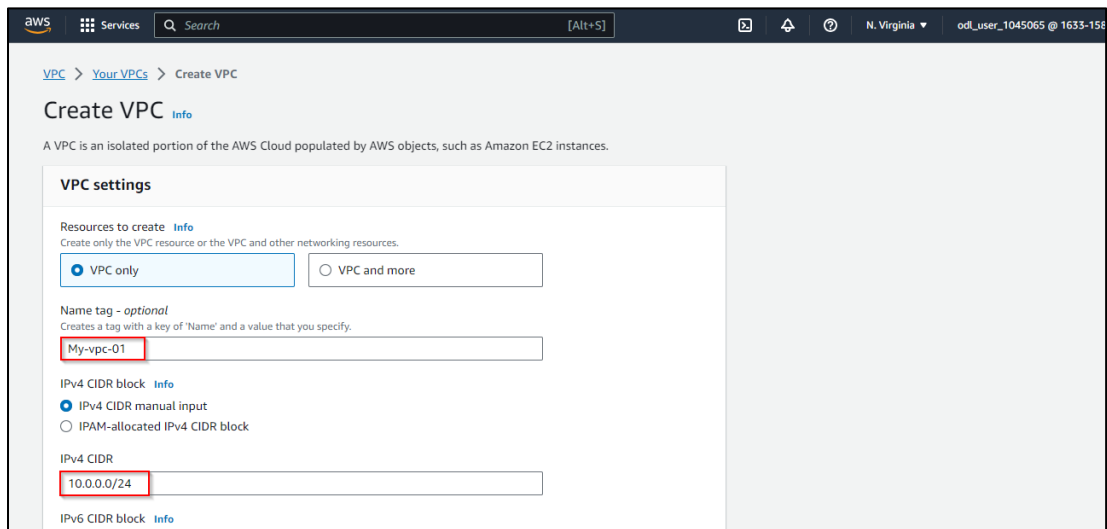
1.1 Navigate to the AWS Console home, search for and select **VPC**



1.2 Click on **Create VPC**



1.3 Enter the VPC Name as **My-vpc-01** and IPv4 CIDR as **10.0.0.0/24**



1.4 Click on Create VPC

10.0.0.0/24

IPv6 CIDR block [Info](#)

- ☒ No IPv6 CIDR block
- ☐ IPAM-allocated IPv6 CIDR block
- ☐ Amazon-provided IPv6 CIDR block
- ☐ IPv6 CIDR owned by me

Tenancy [Info](#)

Default

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	My-vpc-01	Remove tag

[Add tag](#)

You can add 49 more tags

Cancel [Create VPC](#)

You successfully created vpc-06d214d1fa50580f5 / My-vpc-01

VPC > Your VPCs > vpc-06d214d1fa50580f5

vpc-06d214d1fa50580f5 / My-vpc-01

[Actions](#)

Details [Info](#)

VPC ID vpc-06d214d1fa50580f5	State Available	DNS hostnames Disabled	DNS resolution Enabled
Tenancy Default	DHCP option set dopt-044902c05bd125840	Main route table rtb-08dc22a852ff406d8	Main network ACL acl-0612ab9edfc3bfa2f
Default VPC No	IPv4 CIDR 10.0.0.0/24	IPv6 pool -	IPv6 CIDR (Network border group) -
Network Address Usage metrics Disabled	Route 53 Resolver DNS Firewall rule groups -	Owner ID 163315823433	

[Resource map](#) [New](#) [CIDRs](#) [Flow logs](#) [Tags](#)

The VPC is successfully created.

1.5 Select the VPC, click on **Edit VPC settings** under **Actions**

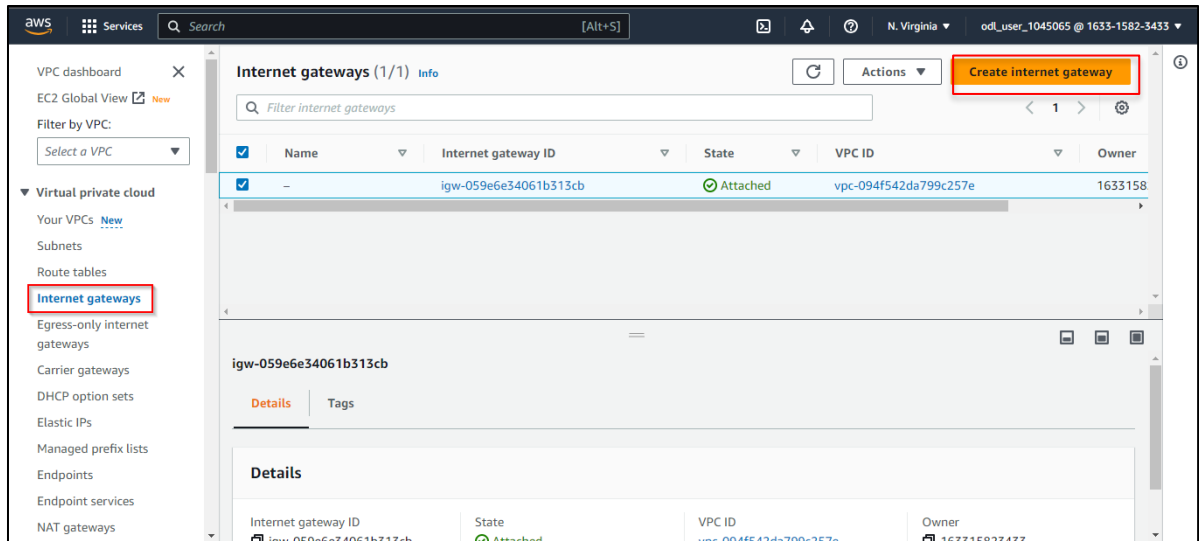
The screenshot shows the AWS VPC console interface. On the left, there's a navigation pane with 'Virtual private cloud' expanded. The main area shows 'Your VPCs (1/2)' with a table listing VPCs. The first VPC, 'My-vpc-01' (vpc-06d214d1fa50580f5), is selected. An 'Actions' dropdown menu is open, and 'Edit VPC settings' is highlighted. Below the table, the details for 'vpc-06d214d1fa50580f5 / My-vpc-01' are visible, including tabs for Details, Resource map, CIDRs, Flow logs, and Tags. The 'Details' tab shows VPC ID, State (Available), DNS hostnames (Disabled), DNS resolution (Enabled), Tenancy (Default), DHCP option set (dopt-044902c05bd125840), Main route table, and Main network ACL.

1.6 Select **Enable DNS hostnames** and then click on **Save**

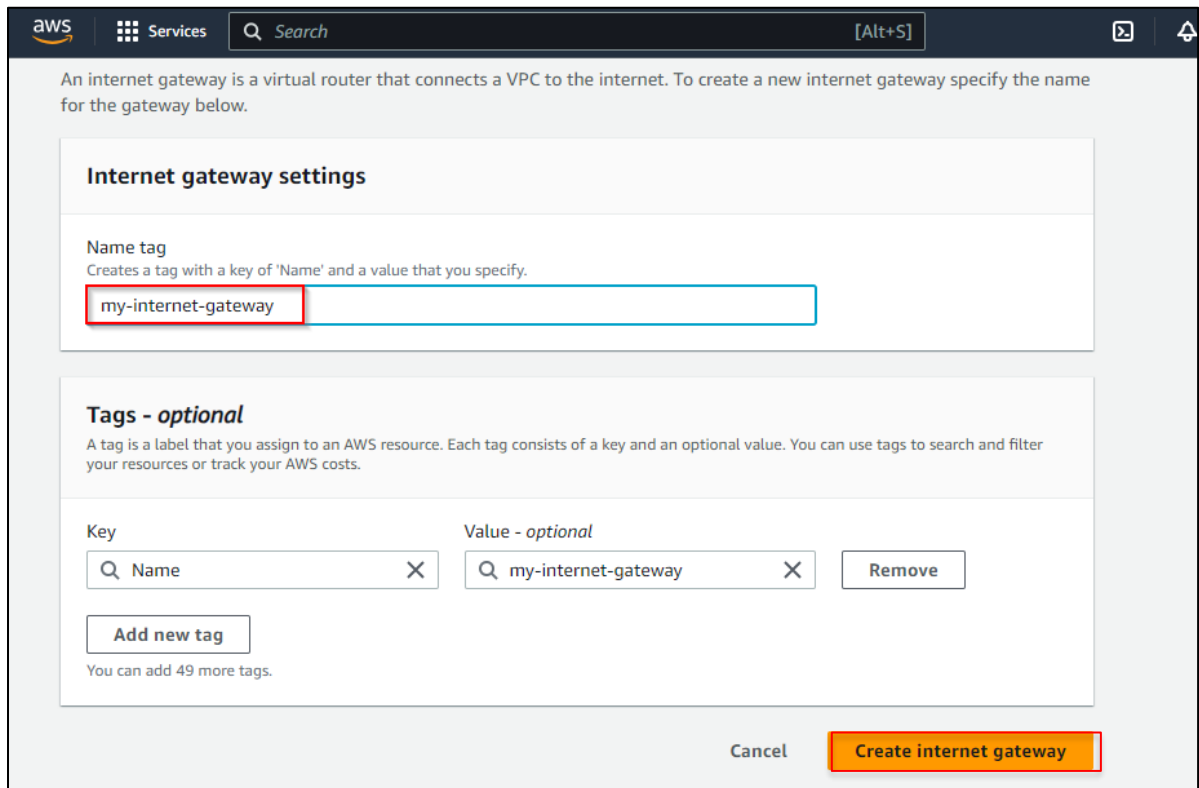
The screenshot shows the 'Edit VPC settings' page for VPC 'vpc-06d214d1fa50580f5' (My-vpc-01). The page has sections for 'DHCP settings' (showing DHCP option set 'dopt-044902c05bd125840'), 'DNS settings' (with 'Enable DNS resolution' and 'Enable DNS hostnames' both checked), and 'Network Address Usage metrics settings' (with 'Enable Network Address Usage metrics' unchecked). The 'Save' button is highlighted in orange at the bottom right.

Step 2: Create Internet gateways

2.1 Navigate to **Internet gateways** under Virtual private cloud in the VPC dashboard, then click on **Create internet gateway**



2.2 Name it as **my-internet-gateway**, and click on **Create internet gateway**



An internet gateway is a virtual router that connects a VPC to the internet. To create a new internet gateway specify the name for the gateway below.

Internet gateway settings

Name tag
Creates a tag with a key of 'Name' and a value that you specify.

my-internet-gateway

Tags - optional

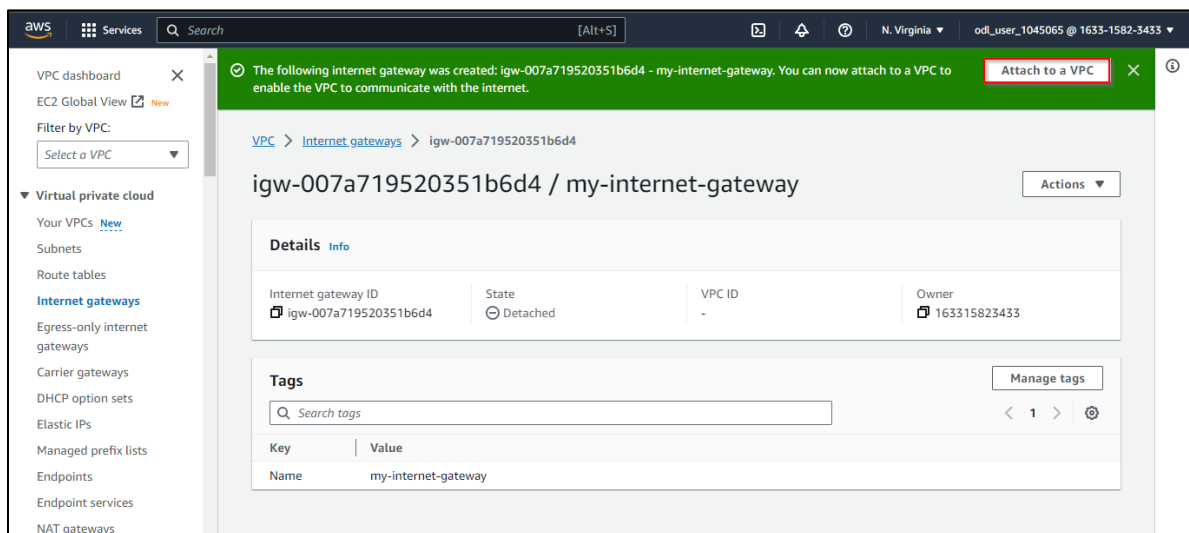
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - optional	
Name	my-internet-gateway	Remove

Add new tag
You can add 49 more tags.

Cancel **Create internet gateway**

2.3 Click on **Attach to a VPC**



The following internet gateway was created: igw-007a719520351b6d4 - my-internet-gateway. You can now attach to a VPC to enable the VPC to communicate with the internet. **Attach to a VPC**

VPC > Internet gateways > igw-007a719520351b6d4

igw-007a719520351b6d4 / my-internet-gateway

Details Info

Internet gateway ID	State	VPC ID	Owner
igw-007a719520351b6d4	Detached	-	163315823433

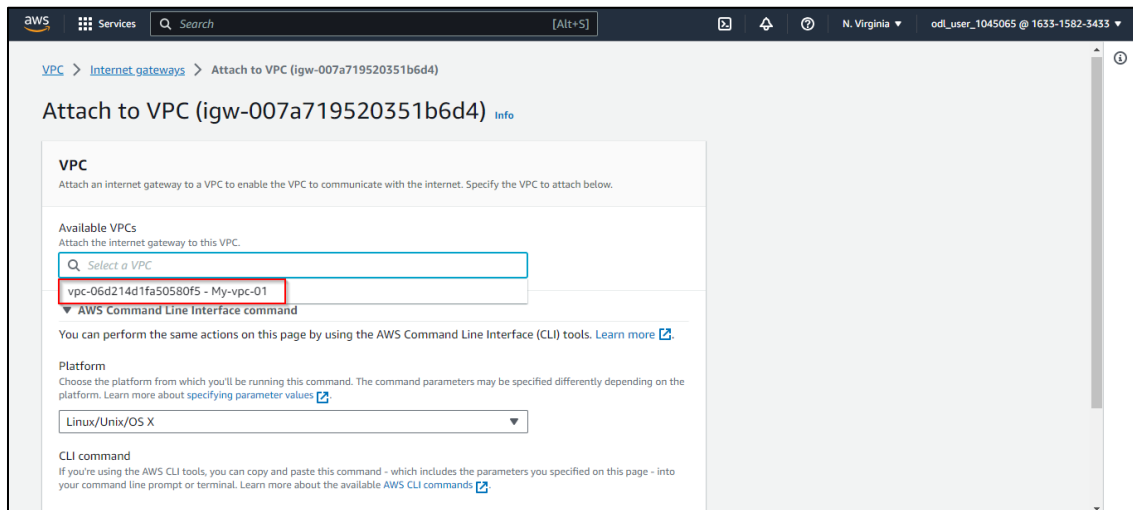
Tags

Search tags

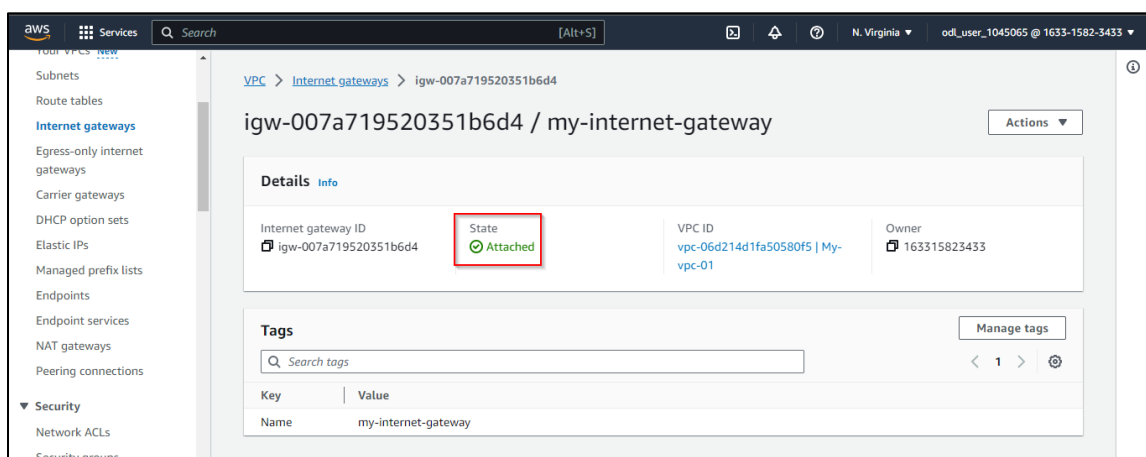
Key	Value
Name	my-internet-gateway

Manage tags

2.4 Select Available VPCs



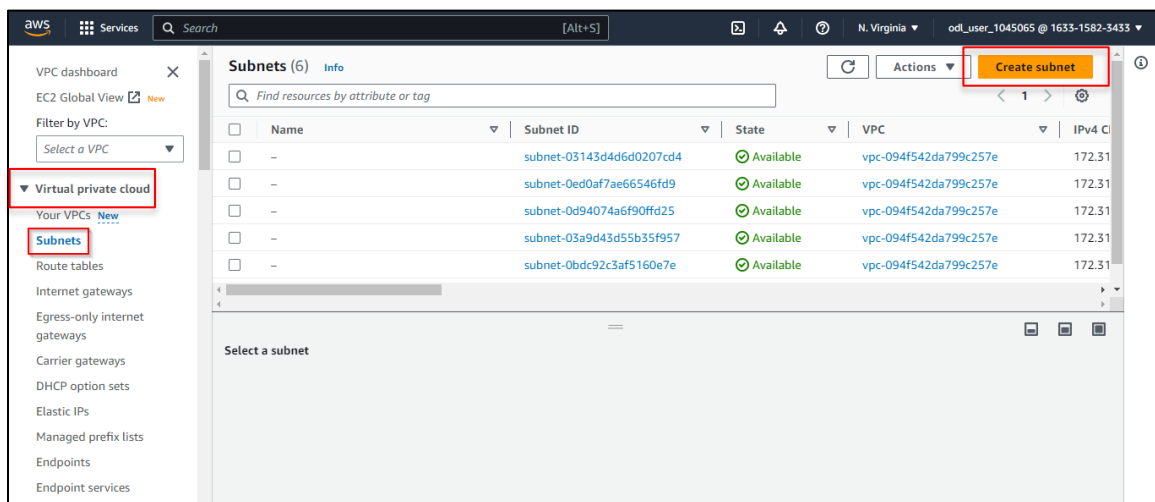
2.5 Click on Attach internet gateway



The VPC is successfully attached.

Step 3: Create Subnets

3.1 Navigate to **Subnets** under **Virtual private cloud** in the VPC dashboard, then click on **Create subnet**

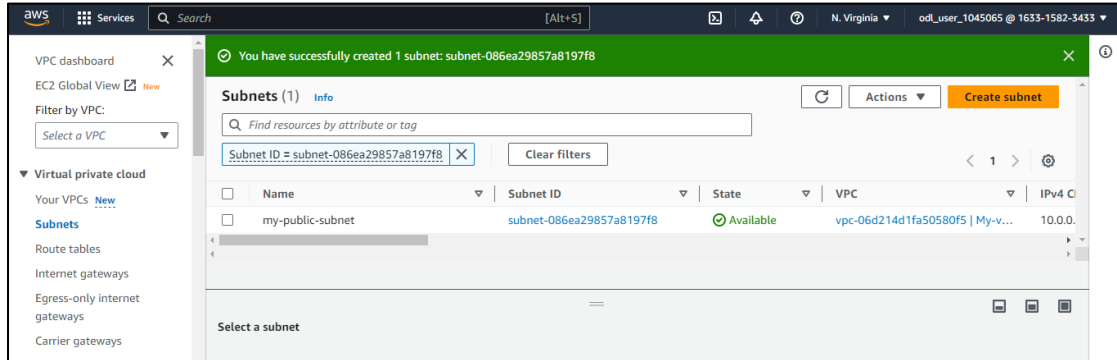


3.2 Select **My-vpc-01** in the VPC ID

The screenshot shows the AWS Management Console 'Create subnet' page. The breadcrumb navigation is 'VPC > Subnets > Create subnet'. The main heading is 'Create subnet' with an 'Info' link. Under the 'VPC' section, the 'VPC ID' field is expanded, showing a search bar and a list of VPCs. The VPC 'vpc-06d214d1fa50580f5 (My-vpc-01)' with CIDR '10.0.0.0/24' is highlighted with a red box. Below the list, a message says 'Select a VPC first to create new subnets.' and there is an 'Add new subnet' button. At the bottom right, there are 'Cancel' and 'Create subnet' buttons.

3.3 Enter the name as **my-public-subnet** and IPv4 CIDR block as **10.0.0.0/24**, then click on **Create subnet**

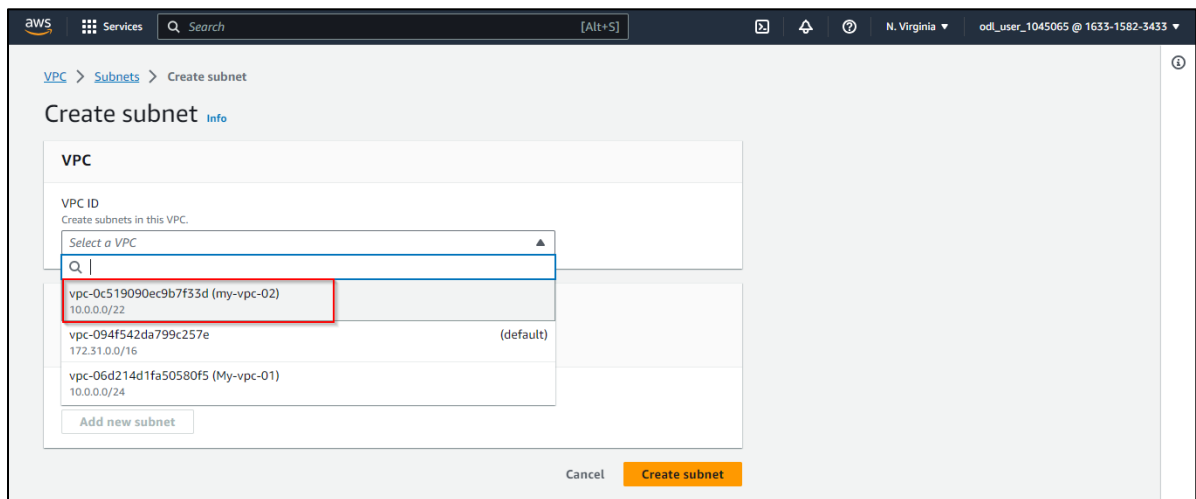
The screenshot shows the 'Create subnet' page with the 'Tags' section expanded. The 'Name' tag key has the value 'my-public-subnet' entered. The 'Availability Zone' is set to 'No preference'. The 'IPv4 CIDR block' is set to '10.0.0.0/24'. Below the tags, there is an 'Add new tag' button and a 'Remove' button. At the bottom right, the 'Create subnet' button is highlighted with a red box.



The subnet is created successfully.

Now, create a **VPC** named **my-vpc-02** for the private subnet by following the previous steps (1.2 to 1.6). Enter the **IPv4 CIDR** as **10.0.0.0/22** during VPC creation.

3.4 Click on **my-vpc-02**



3.5 Enter subnet name as **my-private-subnet** and IPv4 subnet CIDR block as **10.0.0.0/22**, then click on **Create subnet**

Subnet 1 of 1

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

my-public-subnet

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.

No preference

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.

10.0.0.0/24

IPv4 subnet CIDR block

10.0.0.0/24 256 IPs

▼ **Tags - optional**

Key	Value - optional	
Q Name	Q my-public-subnet	Remove

Add new tag

IPv4 subnet CIDR block

10.0.0.0/24 256 IPs

▼ **Tags - optional**

Key	Value - optional	
Q Name	Q my-public-subnet	Remove

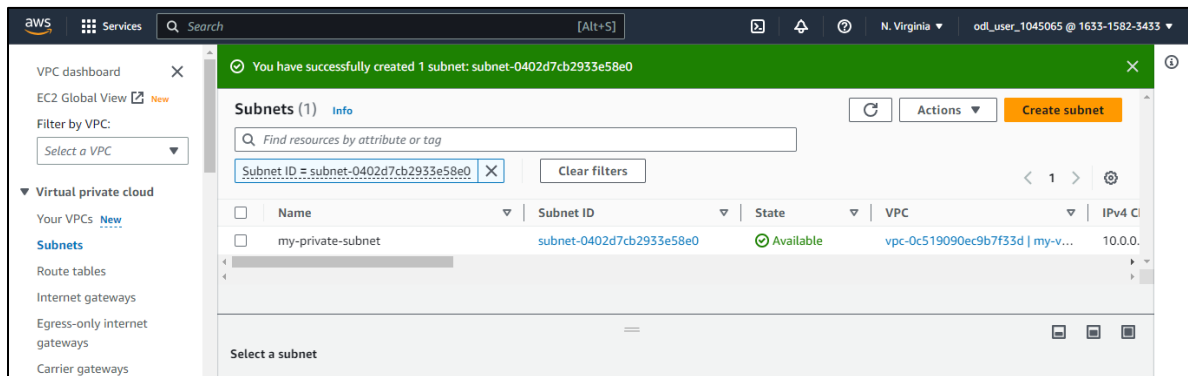
Add new tag

You can add 49 more tags.

Remove

Add new subnet

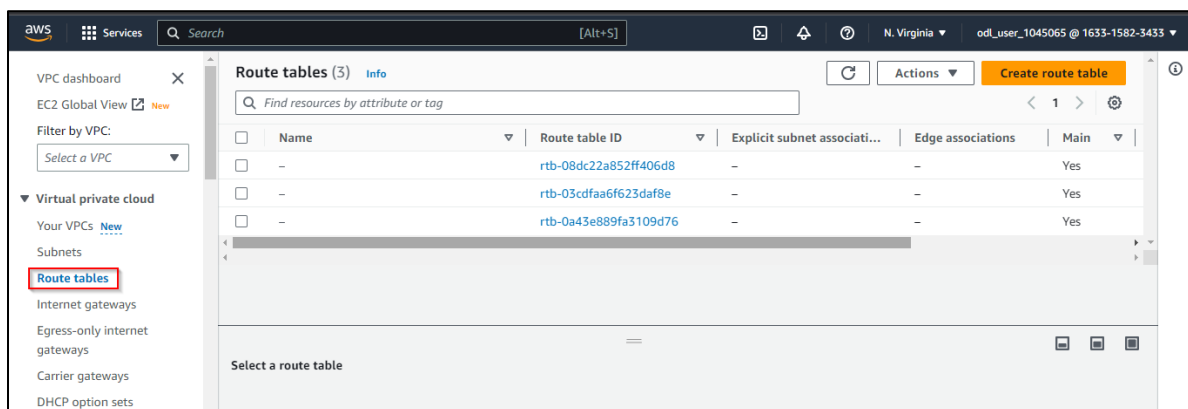
Cancel **Create subnet**



The private subnet is created successfully.

Step 4: Create a Route table and NAT

4.1 Navigate to **Route tables** under **Virtual private cloud** in the VPC dashboard, then click on **Create route table**



4.2 Enter the **Name** as **my-sample-route** and select **VPC** as **My-vpc-01**, then click on **Create route table**

connection.

Route table settings

Name - optional
Create a tag with a key of 'Name' and a value that you specify.

my-sample-route

VPC
The VPC to use for this route table.

vpc-06d214d1fa50580f5 (My-vpc-01)

vpc-0c519090ec9b7f33d (my-vpc-02)

vpc-094f542da799c257e (default)

vpc-06d214d1fa50580f5 (My-vpc-01)

Key Value - optional

Name my-sample-route

Add new tag

You can add 49 more tags.

Cancel Create route table

Route table rtb-097a764465bd560fd | my-sample-route was created successfully.

VPC > Route tables > rtb-097a764465bd560fd

rtb-097a764465bd560fd / my-sample-route

You can now check network connectivity with Reachability Analyzer

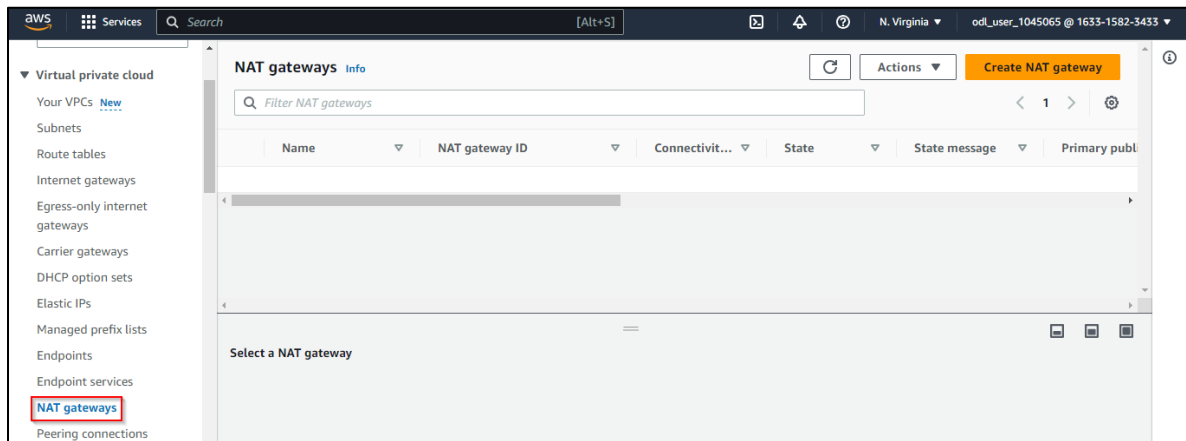
Run Reachability Analyzer

Details Info

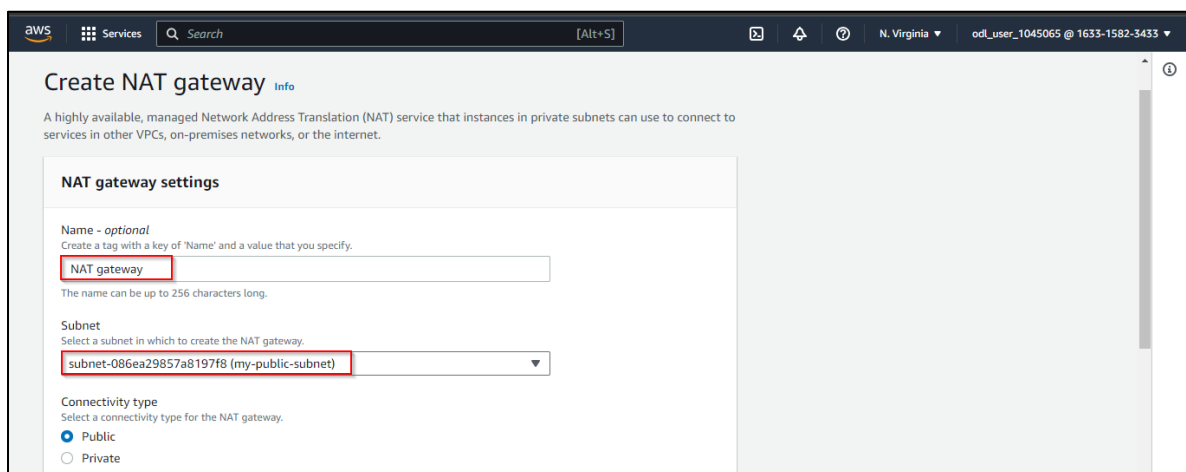
Route table ID rtb-097a764465bd560fd	Main No	Explicit subnet associations -	Edge associations -
VPC vpc-06d214d1fa50580f5 My-vpc-01	Owner ID 163315823433		

The route table is created successfully.

4.3 Navigate to **NAT gateways**, then click on **Create NAT gateway**



4.4 Enter the NAT name as **NAT gateway**, select the subnet as **my-public-subnet**, and choose **Public** from the Connectivity type



4.5 Click on **Allocate Elastic IP**

aws Services Search [Alt+S]

✓ Elastic IP address 44.214.168.110 (eipalloc-09013f412b9069c0a) allocated.

NAT gateway settings

Name - optional
Create a tag with a key of 'Name' and a value that you specify.

NAT gateway

The name can be up to 256 characters long.

Subnet
Select a subnet in which to create the NAT gateway.

subnet-086ea29857a8197f8 (my-public-subnet)

Connectivity type
Select a connectivity type for the NAT gateway.

☒ Public
☐ Private

Elastic IP allocation ID [Info](#)
Assign an Elastic IP address to the NAT gateway.

eipalloc-09013f412b9069c0a

Allocate Elastic IP

▶ Additional settings [Info](#)

4.6 Click on **Create NAT gateway**

▶ Additional settings [Info](#)

Tags

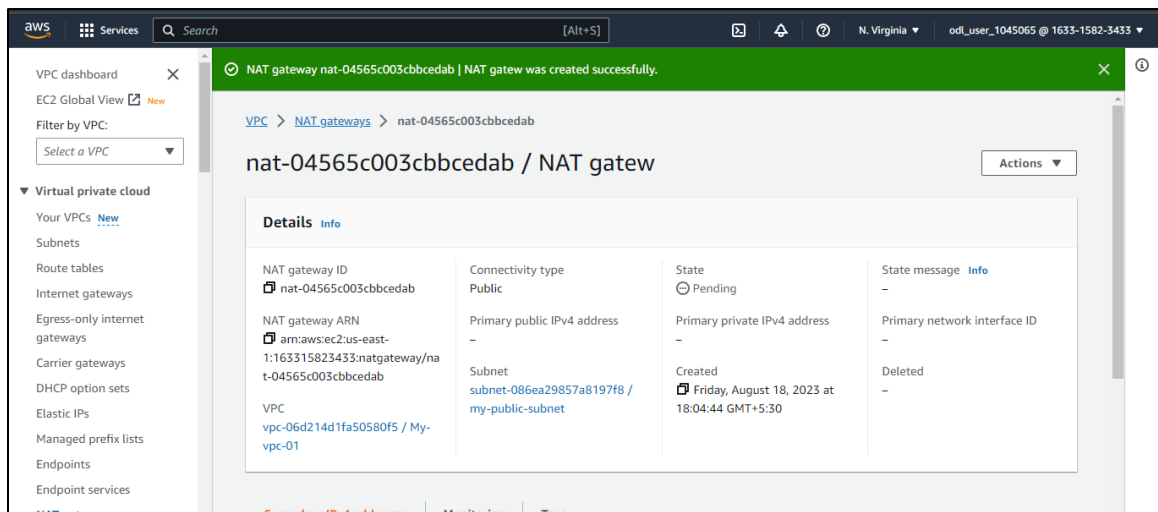
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - optional	
Name	NAT gatewa	Remove

Add new tag

You can add 49 more tags.

Cancel **Create NAT gateway**



NAT gateway is created successfully.

By following these steps, you have successfully demonstrated the process of setting up a robust network infrastructure within your AWS Virtual Private Cloud (VPC). You have established a well-organized and secure network by creating subnets, configuring route tables, and implementing a Network Address Translation (NAT) gateway.