Task 1

Objective: Design and configure a basic AWS network with the following requirements:

1. Create **1 VPC**
2. Create **2 Public Subnets**
3. Create **2 Private Subnets**
4. Attach an **Internet Gateway (IGW)**
5. Configure **NAT Gateway** for private subnet outbound access

Solution:

VPC Design

VPC CIDR: 10.0.0.0/16

Reason: A /16 network offers 65,536 IP addresses, making it ideal for scalable beginner AWS setups. It allow easy subdivision into multiple /24 subnets while avoiding IP exhaustion.

Subnet

According to the task I divided the VPC into 2 public and 2 private subnets = 4 Total Subnets

Each subnet uses /24 CIDR, giving 256 IPs which is common choice

Public subnets

Public 1 10.0.1.0/24 Hosts public-facing EC2/ Load Balancer

Public 2 10.0.2.0/24 Redundancy in another availability Zone

Why /24?

- Allow enough IPs for EC2, load balancers, and NAT gateways.
- Easy to understand and commonly used in real deployments.

Private subnets

Private 1 10.0.3.0/24 Backend EC2, app servers, RDS

Private 2 10.0.4.0/24 Redundancy for backend services

Why private?

- Protect internal resources
- Prevent direct exposure from the internet

Routing Design

Public Route Table

Default: 0.0.0.0/0 (Internet Gateway IGW) for both public subnets.

Private Route Table

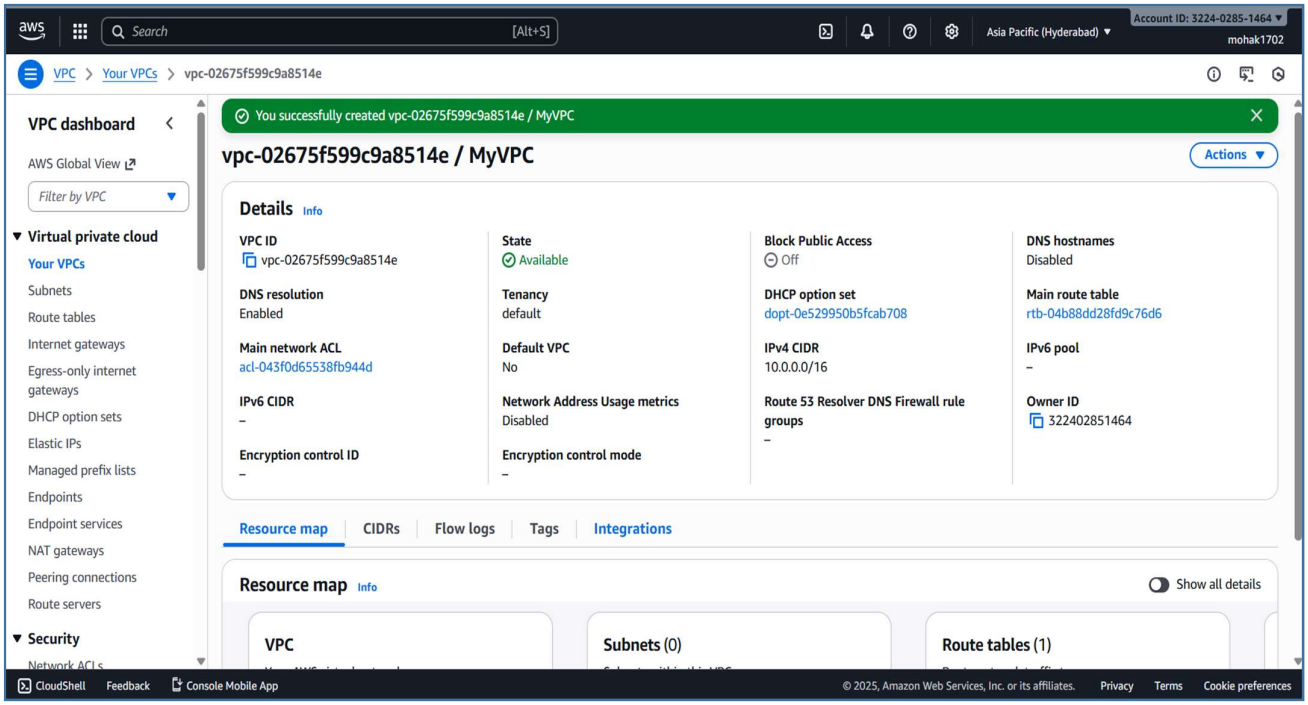
Default: 0.0.0.0/0 (NAT Gateway) for both private subnets.

Note: Public subnets are host internet facing, while private subnets are get outbound internet

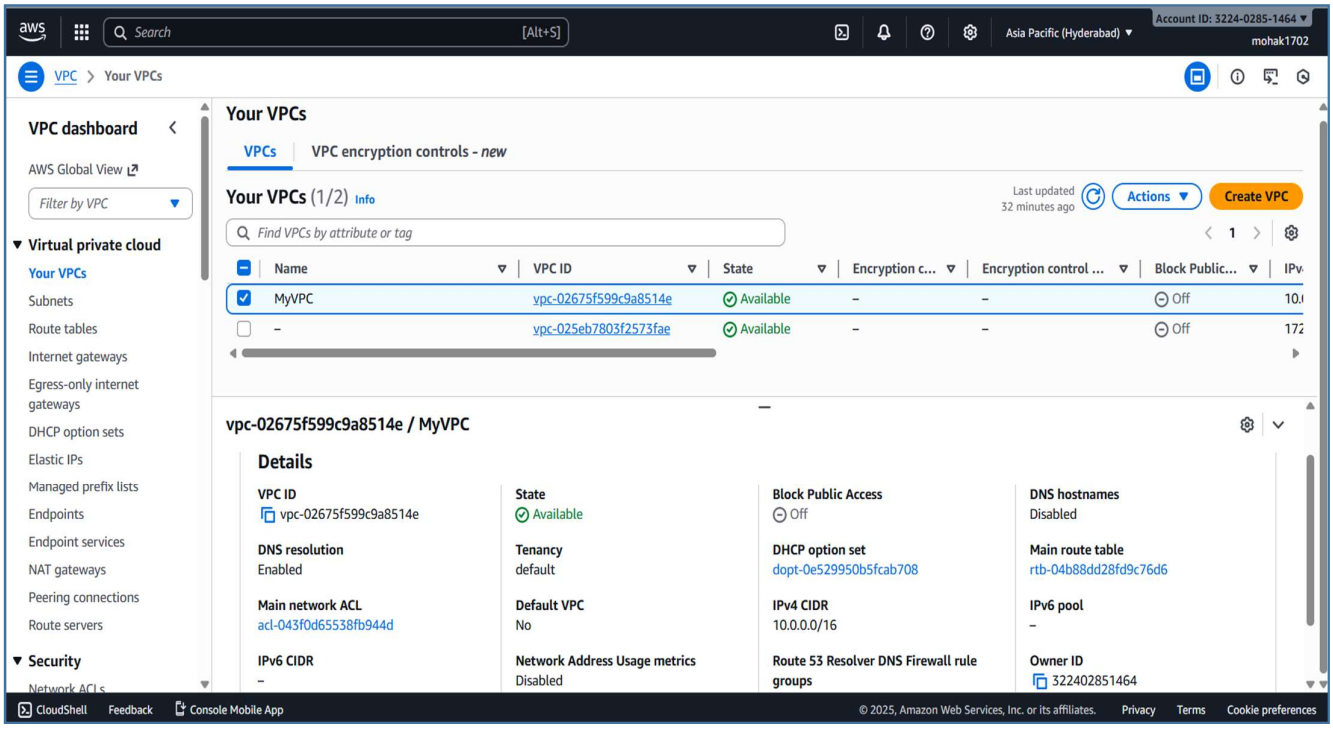
ScreenShots

a) VPC Creation

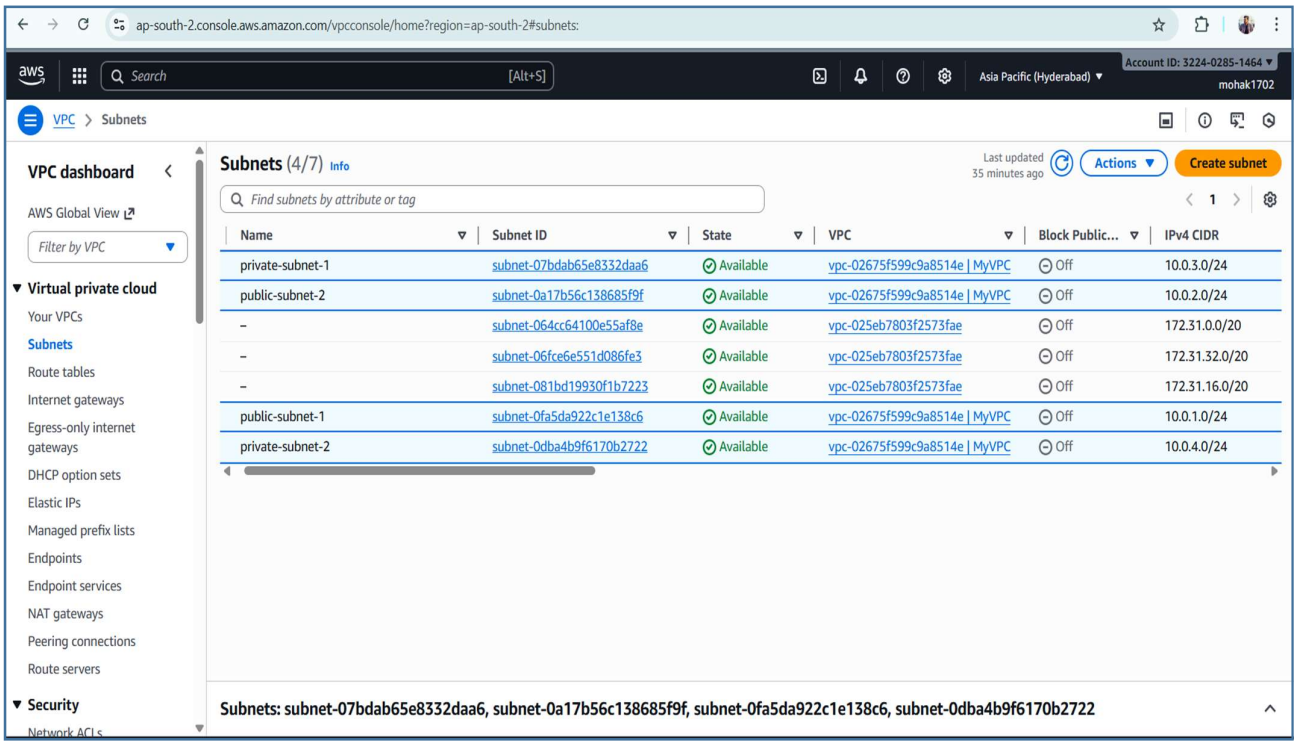
Name: MyVPC



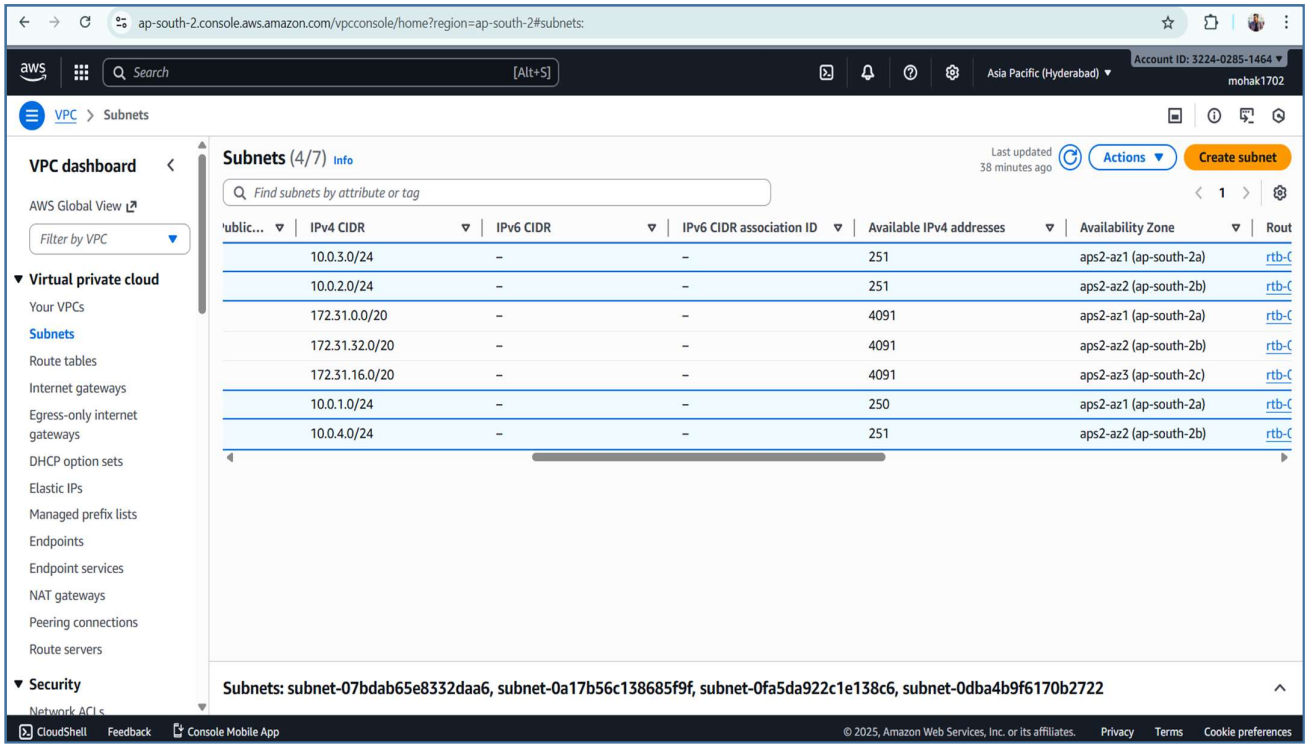
VPC Details



Subnets with CIDR

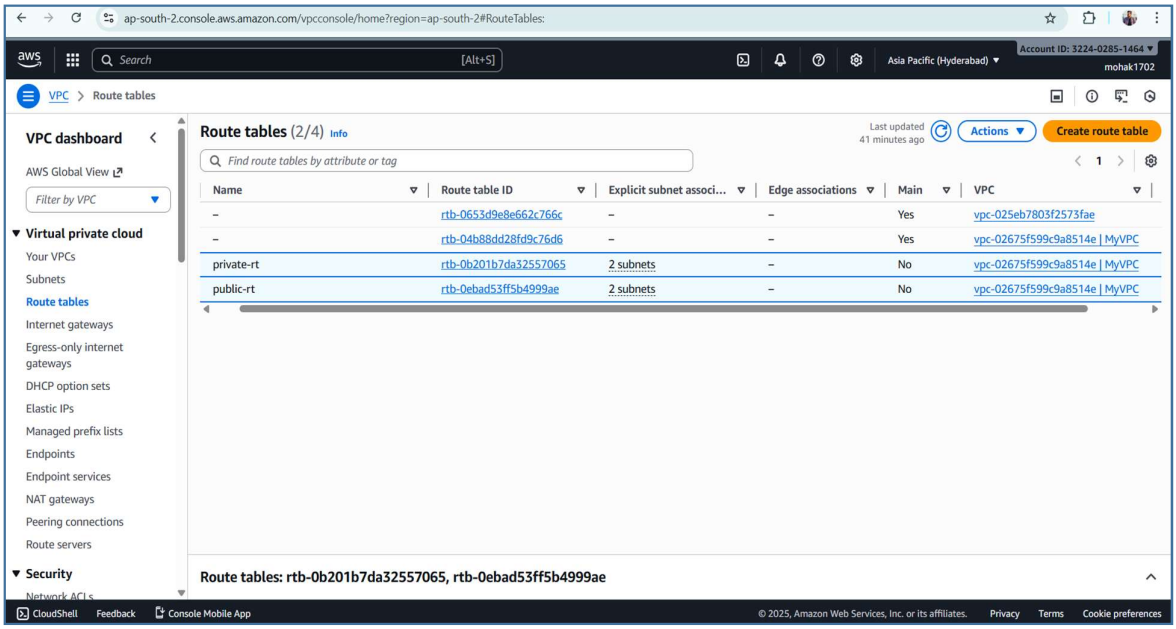


Subnet with Availability Zone



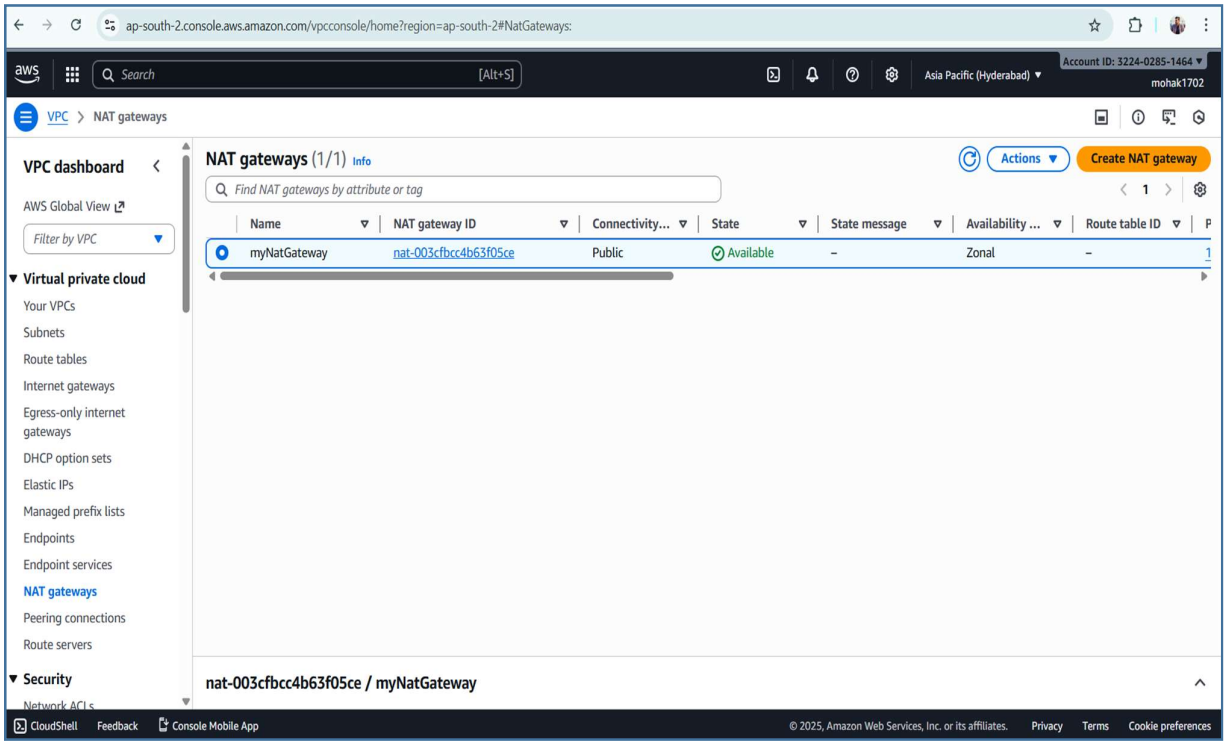
(c) Route tables

- One with IGW route(public subnets)
- One with NAT Gateway route(private subnets)

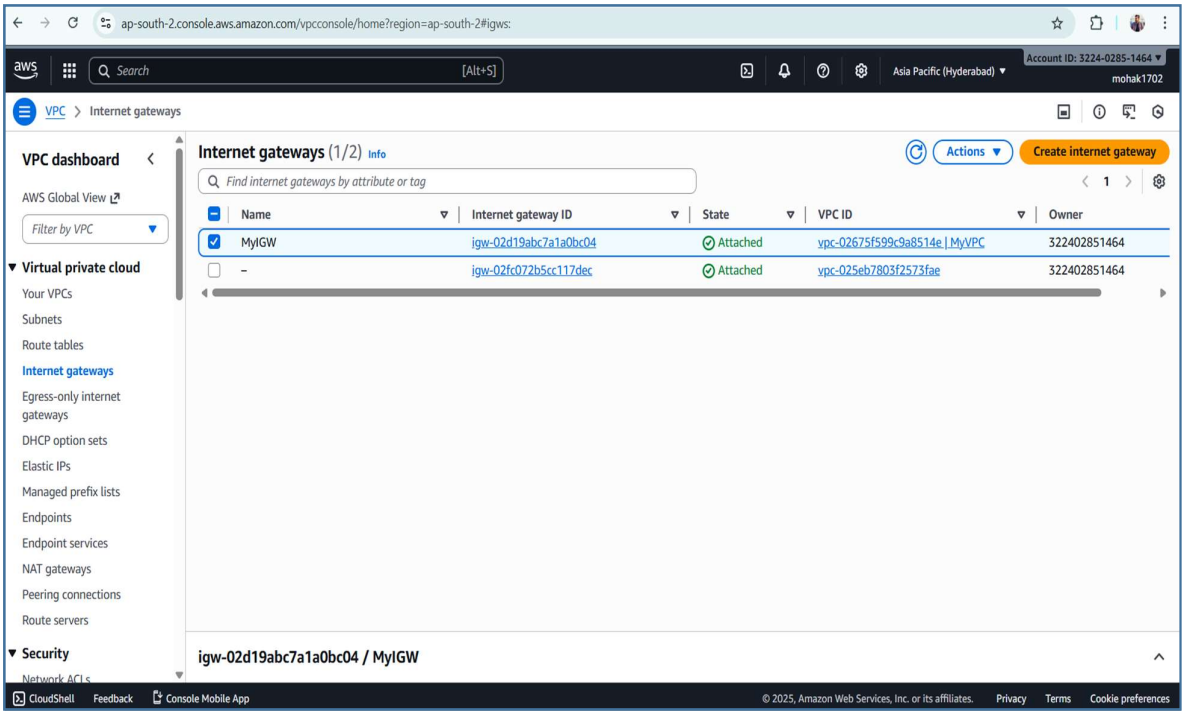


(d) NAT Gateway

- NAT Gateway page



- Internet Gateway page (attached to VPC) (**MyIGW)**



CIDR Summary

Component	CIDR
VPC	10.0.0.0/16
Public Subnet 1	10.0.1.0/24
Public Subnet 2	10.0.2.0/24
Private Subnet 1	10.0.3.0/24
Private Subnet 2	10.0.4.0/24