AWS Infrastructure Project Walkthrough

1. VPC Setup

- **Region**: Choose any AWS region (e.g., *us-east-1*).
- **Create VPC**:
  - CIDR block: 10.0.0.0/16
  - Enable DNS hostnames and DNS resolution.
- **Attach Internet Gateway (IGW)**:
  - Create IGW and attach it to the VPC.

2. Subnet Configuration

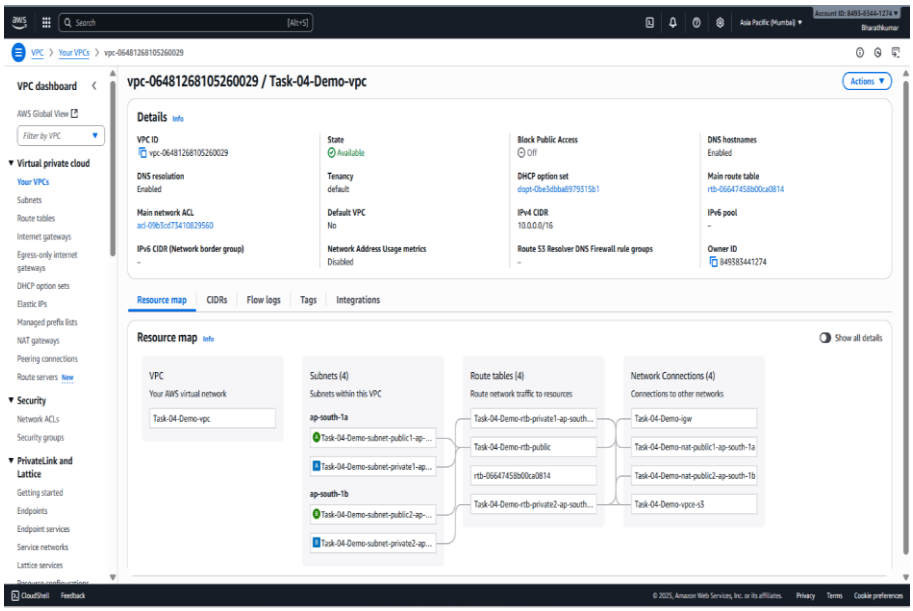
- **Public Subnets**:
  - 10.0.1.0/24 (e.g., *us-east-1a*)
  - 10.0.2.0/24 (e.g., *us-east-1b*)
  - Enable auto-assign public IP.
- **Private Subnets**:
  - 10.0.3.0/24 (e.g., *us-east-1a*)
  - 10.0.4.0/24 (e.g., *us-east-1b*)

3. Routing Setup

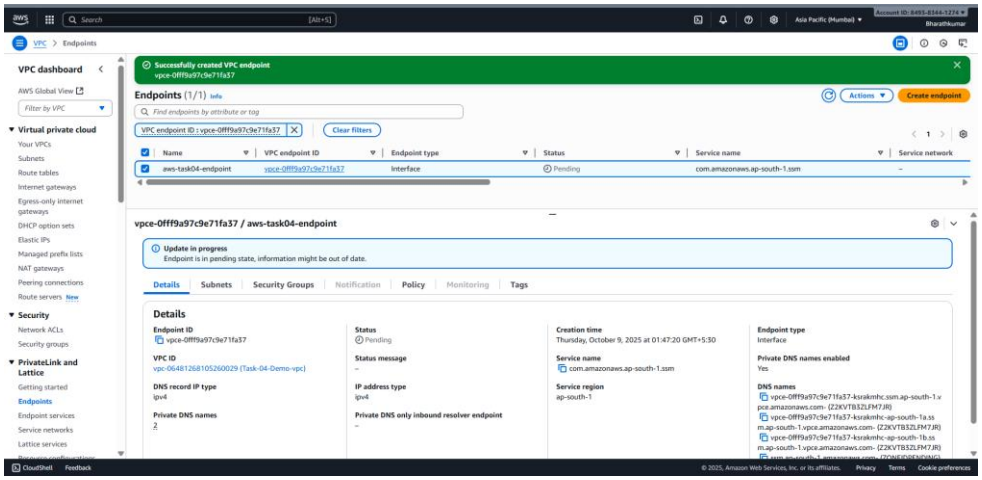
- **Public Route Table**:
  - Destination: 0.0.0.0/0 → Target: IGW
  - Associate with public subnets.
- **Private Route Table**:
  - Destination: 0.0.0.0/0 → Target: NAT Gateway
  - Associate with private subnets.

4. NAT Gateway

- Create Elastic IP.
- Launch NAT Gateway in one public subnet.
- Attach it to the private route table.



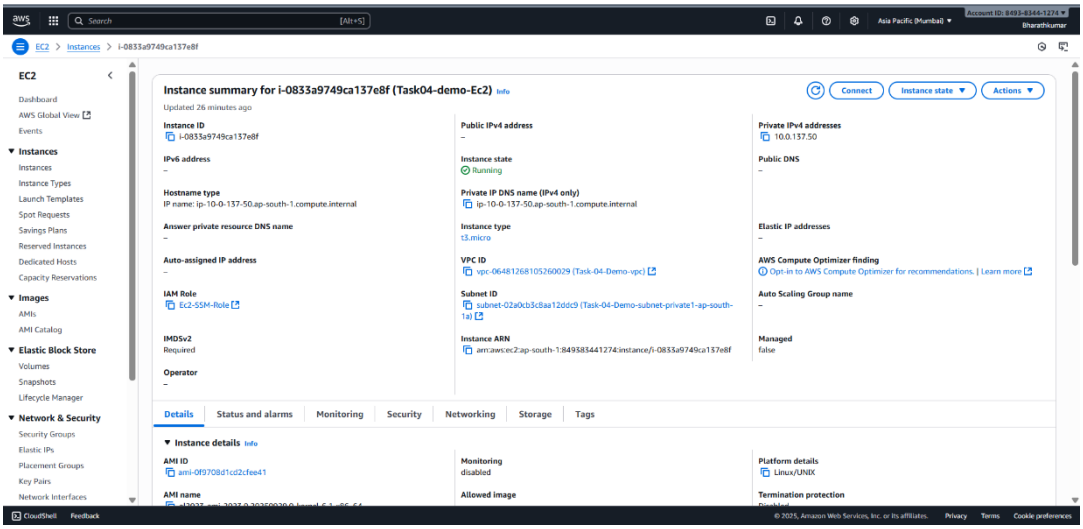
❖ **Creating VPC Endpoint**



EC2 Instance Setup (Private Subnet)

5. Launch Linux EC2

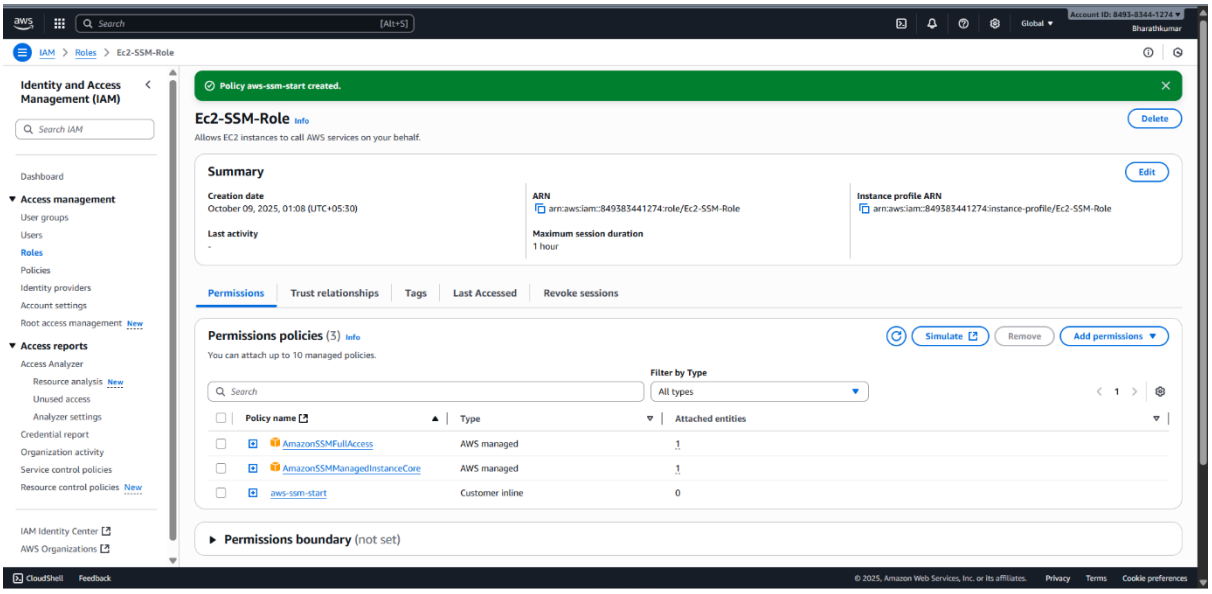
- AMI: Amazon Linux 2
- Subnet: Private (e.g., 10.0.3.0/24)
- IAM Role: Attach **SSM-enabled role** (e.g., Ec2-SSM-Role)
    - Policies: AmazonSSMManagedInstanceCore, AmazonEC2ReadOnlyAccess
- Security Group:
    - Inbound: Allow **HTTP (port 80)** and **ICMP (ping)** from anywhere
    - Outbound: Allow all

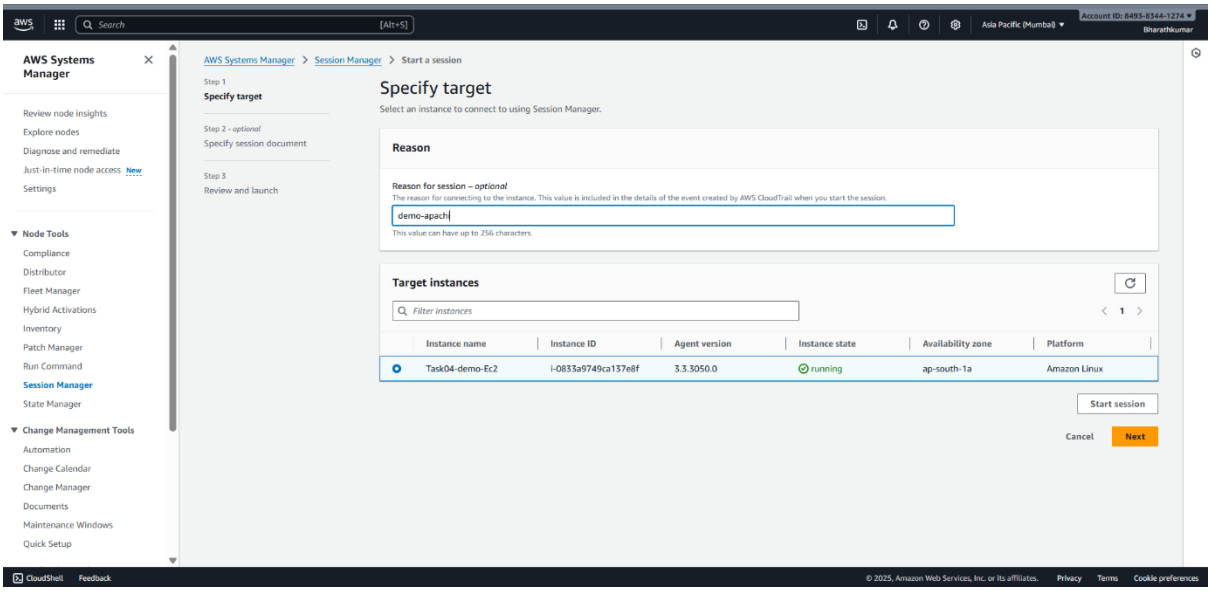


6. Login via

Systems Manager

- Use **Session Manager** in AWS Systems Manager to connect to EC2 without SSH





- Start the session

7. Install Apache Web Server

bash

sudo yum update -y

sudo yum install httpd -y

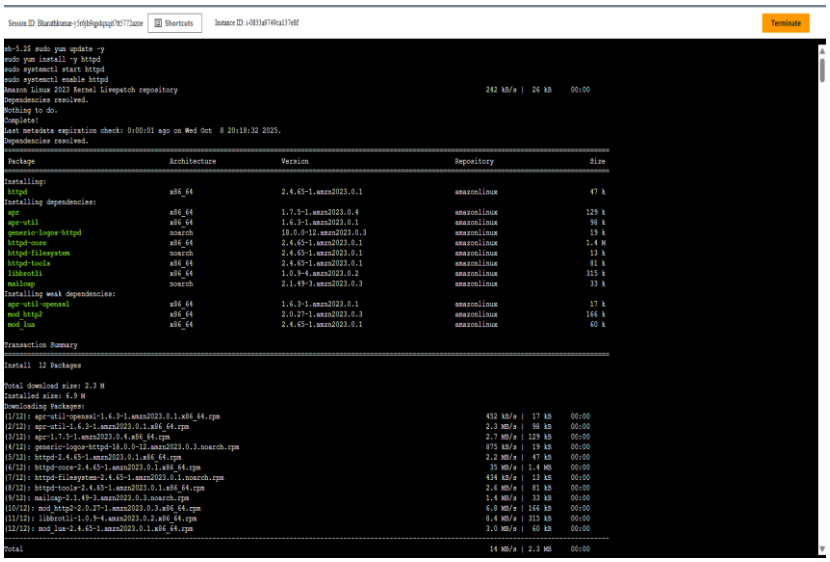
sudo systemctl start httpd

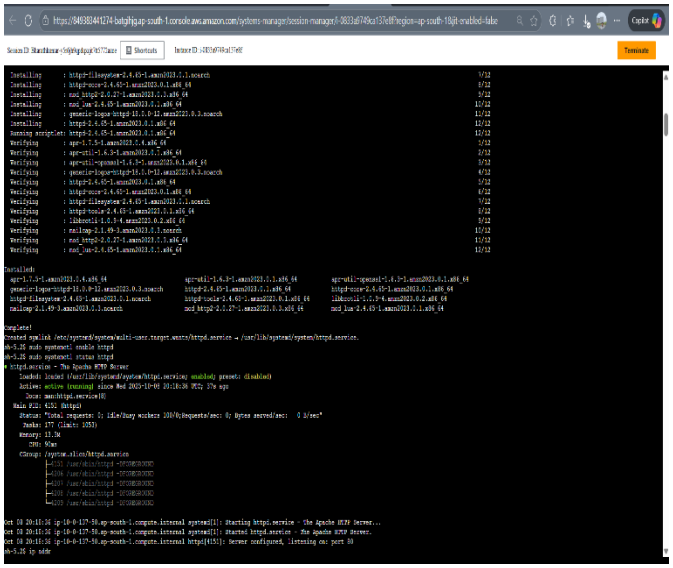
sudo systemctl enable httpd

- ✓ Verify Apache is running:

bash

sudo systemctl status httpd





Backup & Restore

8. Create AMI Backup

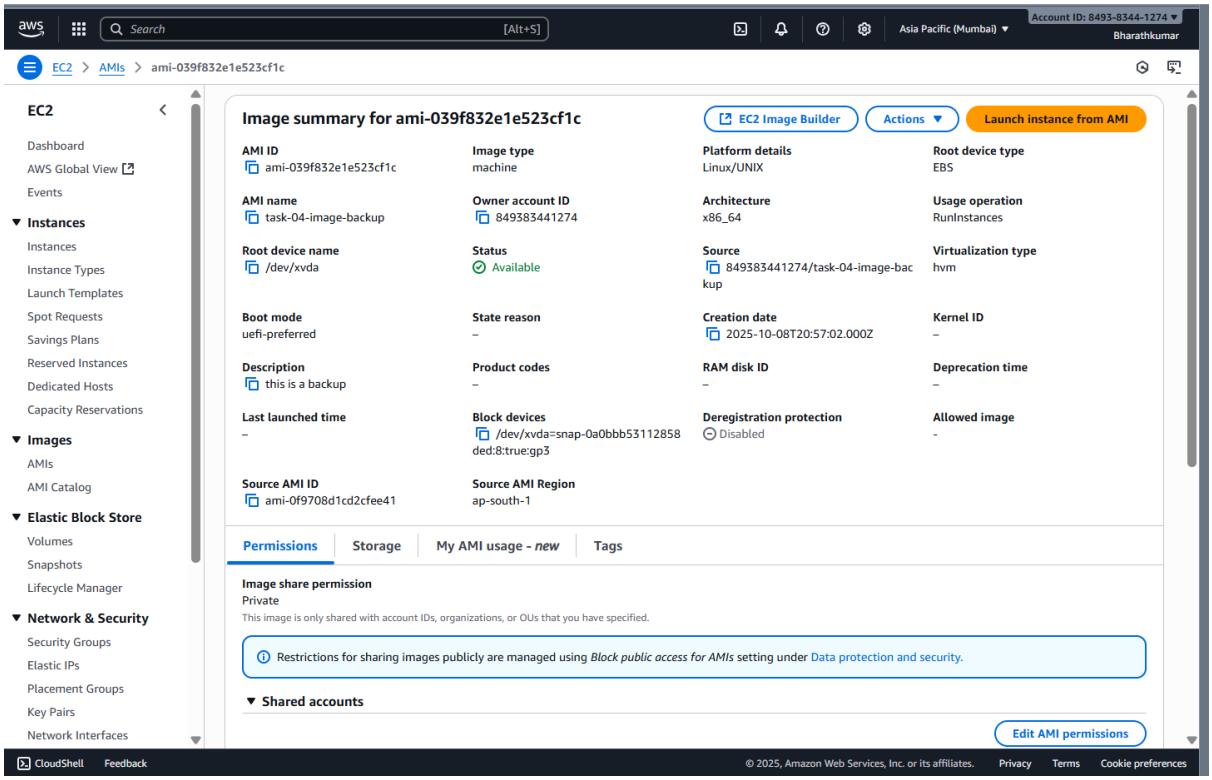
- Go to EC2 → Actions → Create Image
- Name: tdk-ami-image-backup
- Wait for AMI to be available.

9. Terminate EC2

- Terminate the original EC2 instance.

10. Restore EC2 from AMI

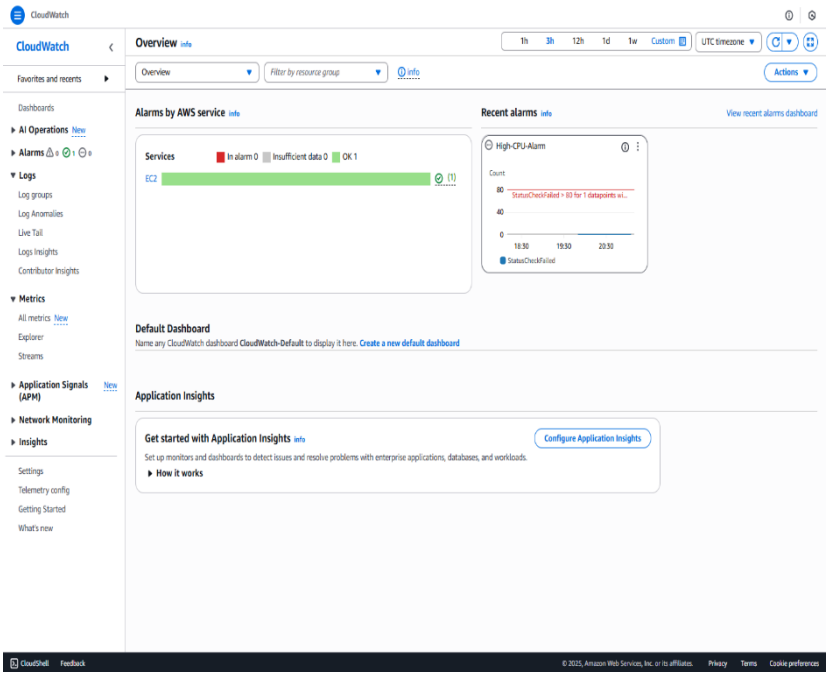
- Launch new EC2 using the created AMI.
- Use same VPC, subnet, security group, and IAM role.
- Confirm Apache is running after restore.



Monitoring Setup

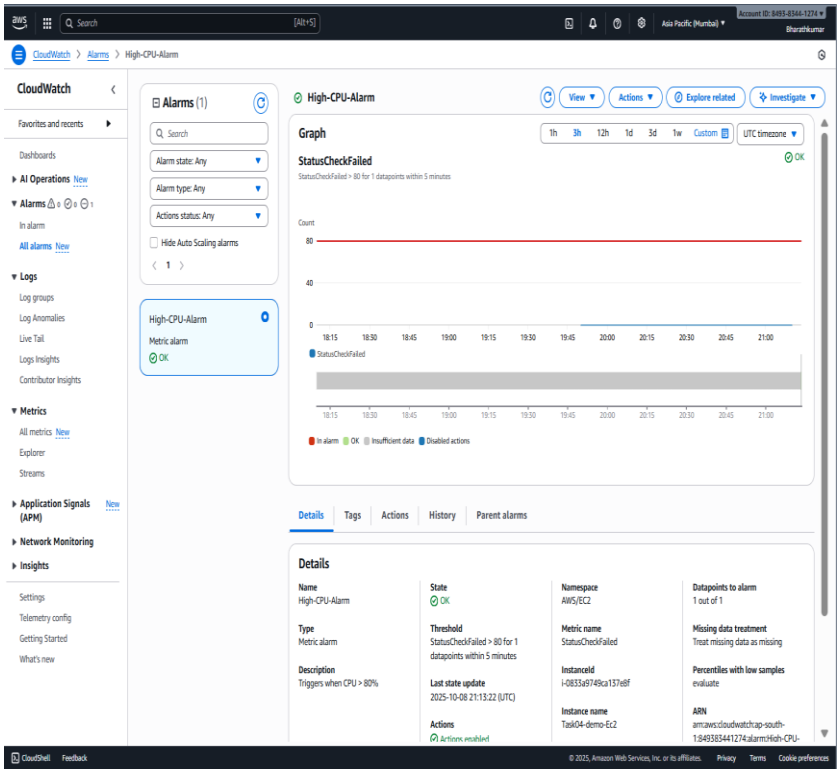
11. Create CloudWatch Alarm

- **Metric**: CPUUtilization for EC2
- **Threshold**: > 80% for 5 minutes
- **Alarm Name**: High-CPU-Alarm
- **Actions**:
    - Create SNS topic (e.g., High-CPU-SNS)
    - Subscribe your email to the topic
    - Attach SNS topic to alarm



12. Verify Alarm

- Go to CloudWatch → Alarms
- Confirm alarm is in **OK** state
-
- Simulate high CPU to test alarm trigger



Final Notes

- This project demonstrates secure, scalable, and monitored infrastructure.
- No SSH keys or bastion hosts required—SSM ensures secure access.
- Backup and restore via AMI ensures resilience.
- CloudWatch + SNS provides proactive alerting.