**Creating an Architecture using Terraform on AWS**

**You work as a DevOps Engineer in a leading software company. You have been asked to build an infrastructure safely and efficiently.**

**The company’s requirements:**

**1. Use AWS Cloud Provider and the software to be installed is Apache2**

**2. Use Ubuntu AMI**

**The company wants the architecture to have the following services:**

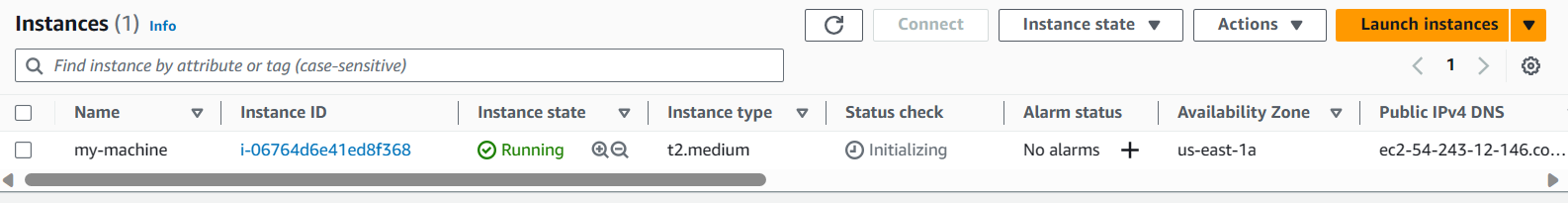
**1. Create a template with a VPC, 2 subnets and 1 instance in each subnet**

**2. Attach security groups, internet gateway and network interface to the instance**

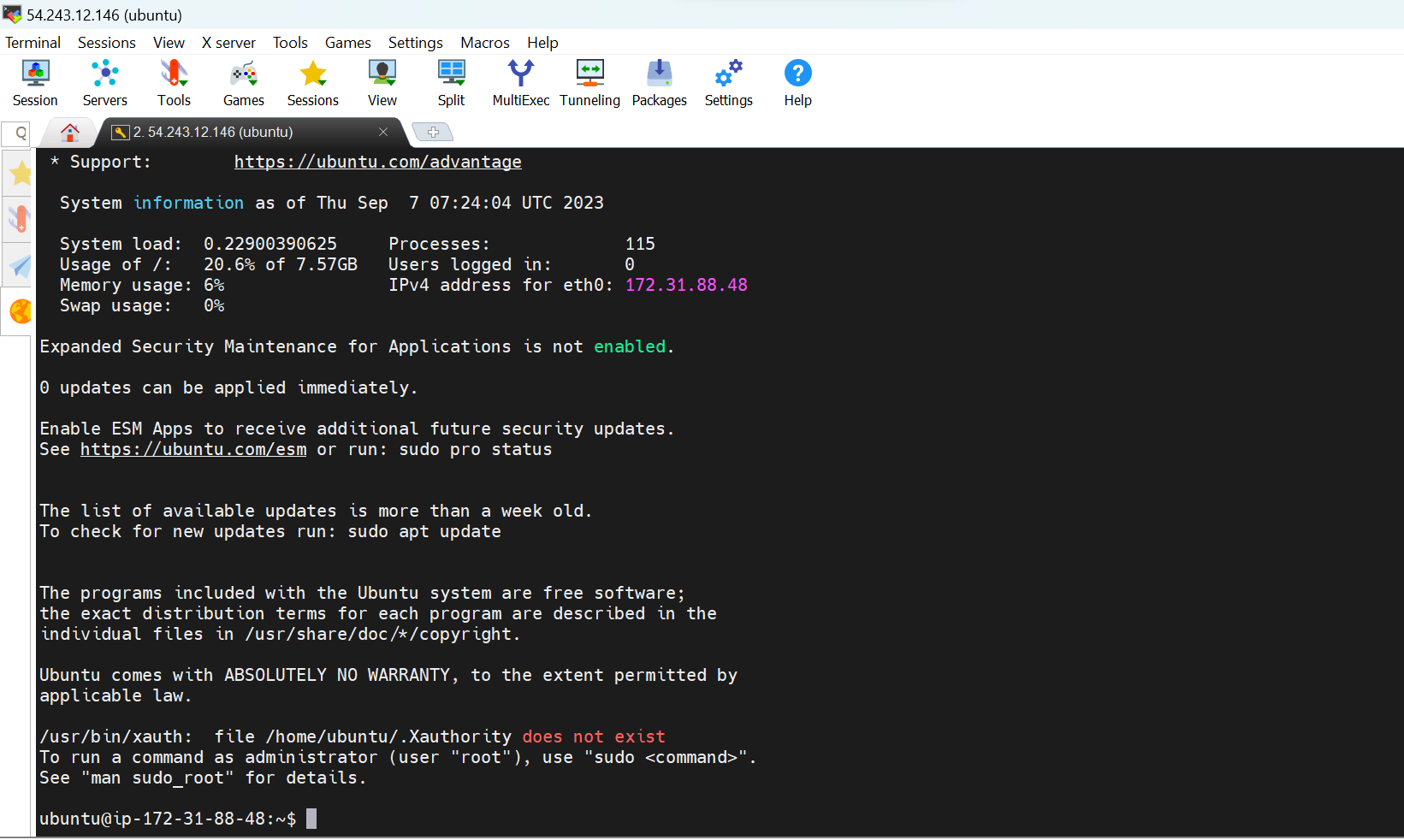
**Step:1 Create an EC2 Instances my-machine manually**

**Login to AWS Console using your credentials**

**My-machine: OS-> ubuntu, Instance type-> t2.medium**

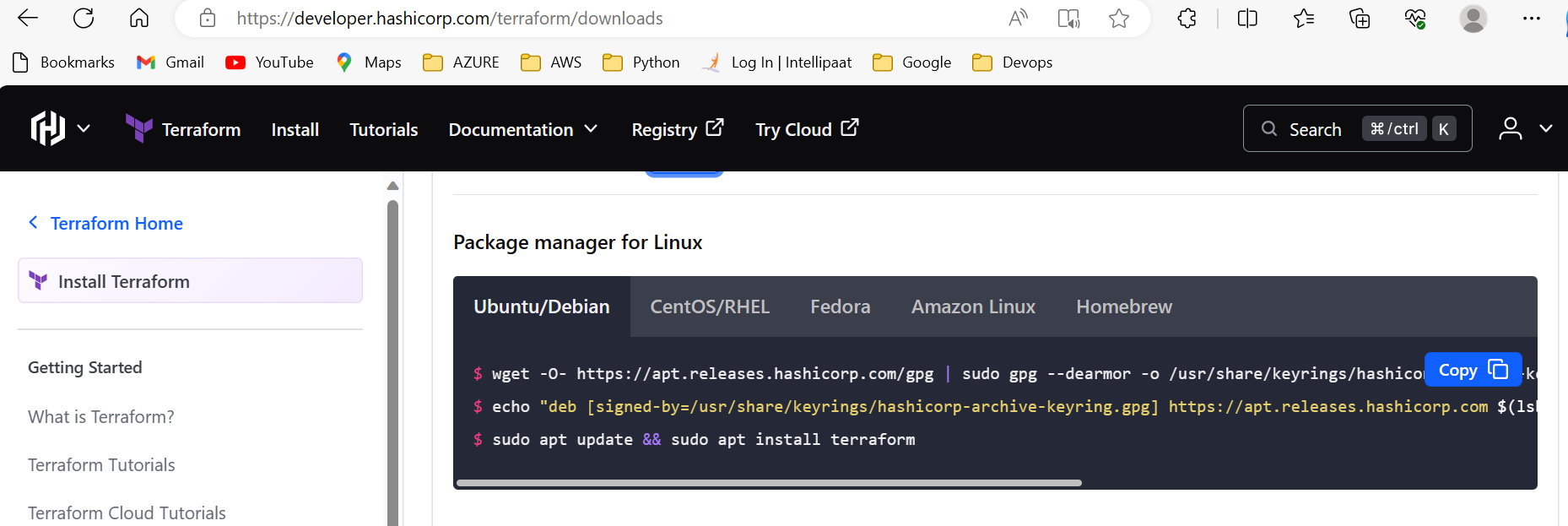


**Connect to the instance via mobaxterm**



**Step:2 Intsall Terrform in Machine-1**

**Open the link ->** [Install | Terraform | HashiCorp Developer](https://developer.hashicorp.com/terraform/downloads)



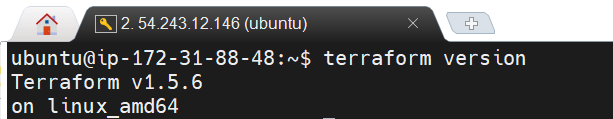
**Copy and Run the commands**

wget -O- https://apt.releases.hashicorp.com/gpg | sudo gpg --dearmor -o /usr/share/keyrings/hashicorp-archive-keyring.gpg

echo "deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] https://apt.releases.hashicorp.com $(lsb\_release -cs) main" | sudo tee /etc/apt/sources.list.d/hashicorp.list

sudo apt update && sudo apt install terraform

Terraform Installed successfully

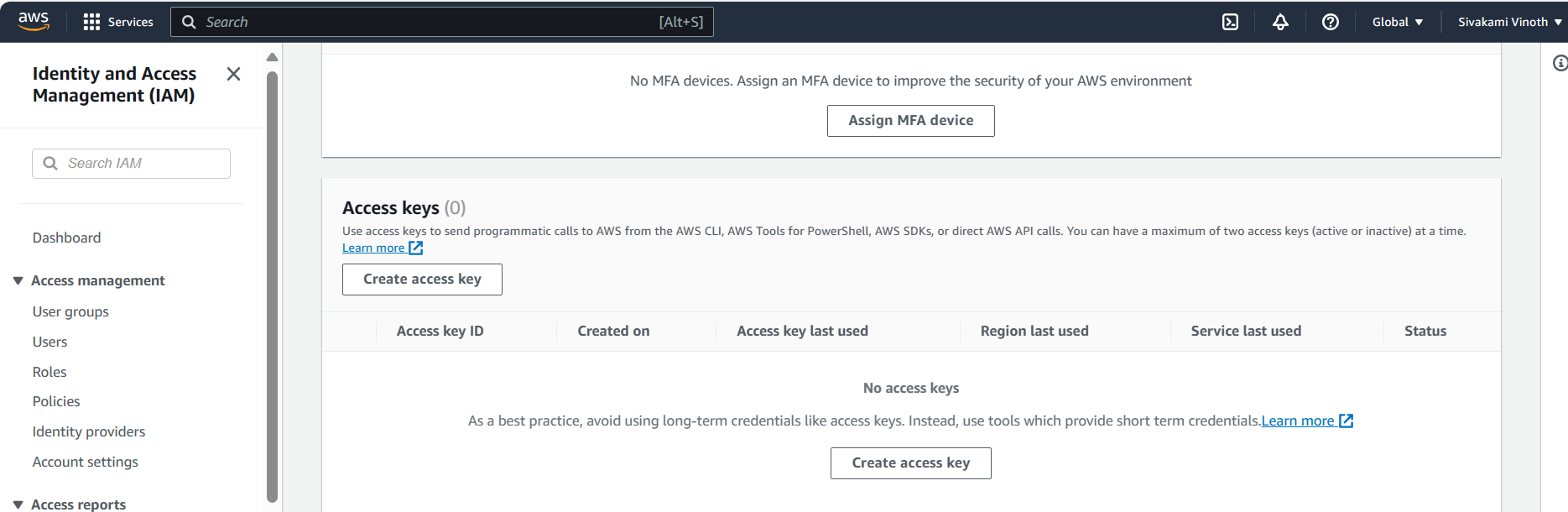


**Step:3 Create main.tf file (To create a VPC, subnets and EC2 instance.**

**Attach security groups, internet gateway and network interface to the instance)**

**Create the access keys -> open AWS console-> IAM**

**(Copy the access key and secret key)**

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**Create main.tf file**

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**provider "aws" {**

**region = "us-east-1"**

**access\_key = "AKIAUYIFYE3AKXDS3CF5"**

**secret\_key = "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"**

**}**

**resource "aws\_instance" "firstec2" {**

**ami = "ami-053b0d53c279acc90"**

**instance\_type = "t2.micro"**

**user\_data = <<-EOL**

**#!/bin/bash -xe**

**sudo apt-get update**

**sudo apt-get install apache2**

**EOL**

**subnet\_id = "${aws\_subnet.first.id}"**

**tags = {**

**Name = "Terraform-casestudy"**

**}**

**}**

**resource "aws\_vpc" "main" {**

**cidr\_block = "172.31.0.0/16"**

**enable\_dns\_support = "1"**

**enable\_dns\_hostnames = "1"**

**tags = {**

**Name = "myfirstvpc"**

**}**

**}**

**resource "aws\_subnet" "first" {**

**availability\_zone = "us-east-1a"**

**cidr\_block = "172.31.1.0/24"**

**map\_public\_ip\_on\_launch = "1"**

**vpc\_id = "${aws\_vpc.main.id}"**

**tags = {**

**Name = "myfirstsubnet"**

**}**

**}**

**resource "aws\_default\_security\_group" "default\_myfirst" {**

**ingress {**

**from\_port = 0**

**to\_port = 0**

**protocol = "-1"**

**cidr\_blocks = ["0.0.0.0/0"]**

**}**

**egress {**

**from\_port = 0**

**to\_port = 0**

**protocol = "-1"**

**cidr\_blocks = ["0.0.0.0/0"]**

**}**

**vpc\_id = "${aws\_vpc.main.id}"**

**tags = {**

**Name = "myfirstsecuritygroup"**

**}**

**}**

**resource "aws\_internet\_gateway" "internet" {**

**vpc\_id = "${aws\_vpc.main.id}"**

**tags = {**

**Name = "myinternetgateway"**

**}**

**}**

**resource "aws\_route" "internet" {**

**route\_table\_id = "${aws\_vpc.main.default\_route\_table\_id}"**

**destination\_cidr\_block = "0.0.0.0/0"**

**gateway\_id = "${aws\_internet\_gateway.internet.id}"**

**}**

**resource "aws\_route\_table\_association" "a" {**

**subnet\_id = "${aws\_subnet.first.id}"**

**route\_table\_id = "${aws\_vpc.main.default\_route\_table\_id}"**

**}**

**resource "aws\_network\_interface" "first" {**

**subnet\_id = "${aws\_subnet.first.id}"**

**tags = {**

**Name = "mynetworkinterface"**

**}**

**}**

**resource "aws\_network\_interface\_attachment" "connection" {**

**instance\_id = "${aws\_instance.firstec2.id}"**

**network\_interface\_id = "${aws\_network\_interface.first.id}"**

**device\_index = 1**

**}**

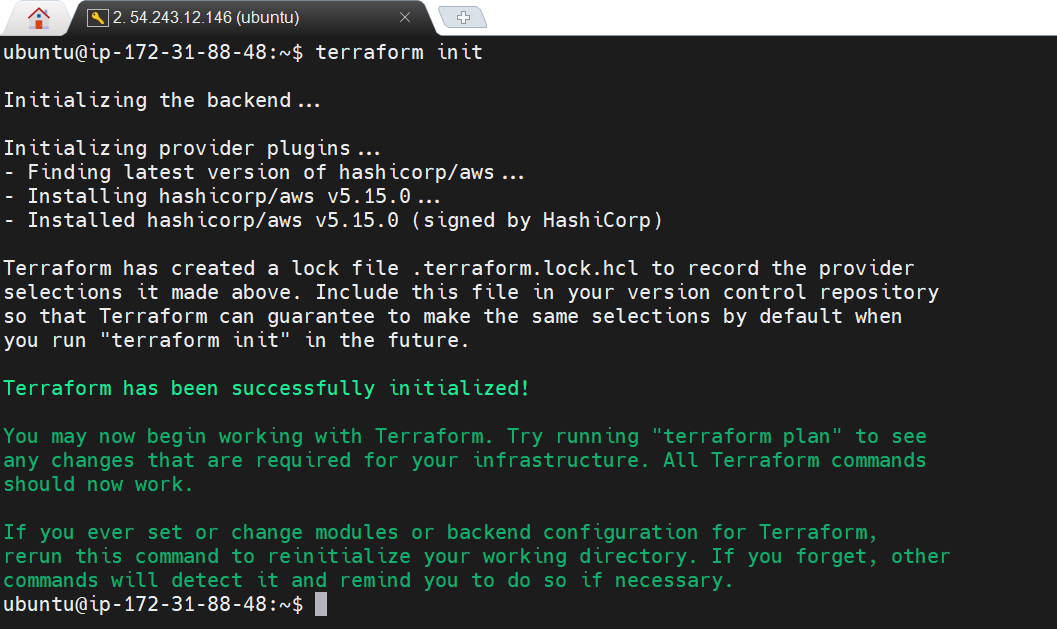
**output "IPs" {**

**value = "Terraform-casestudy - ${aws\_instance.firstec2.public\_ip}"**

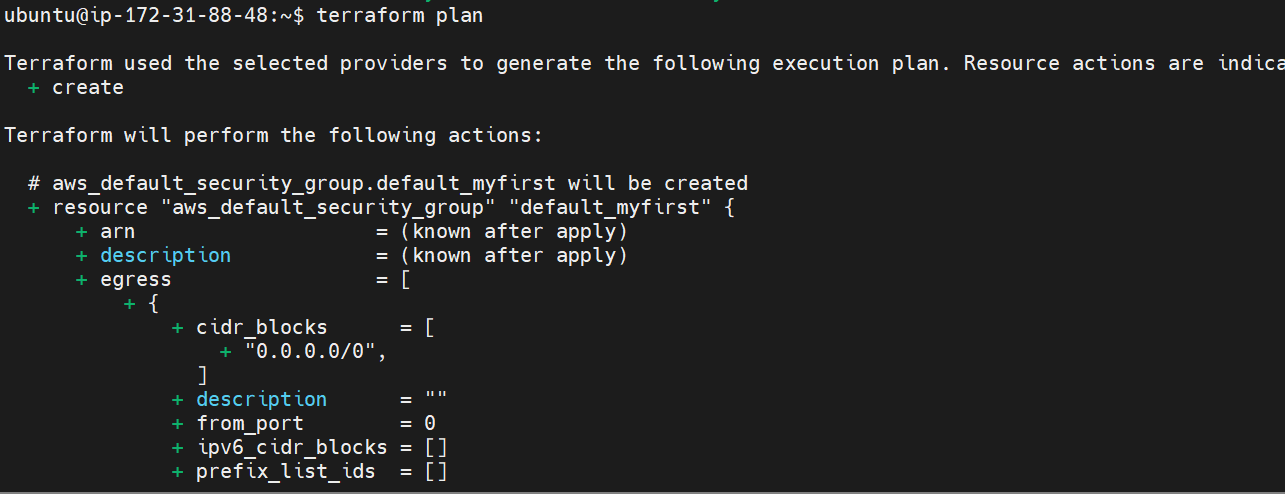
**}**

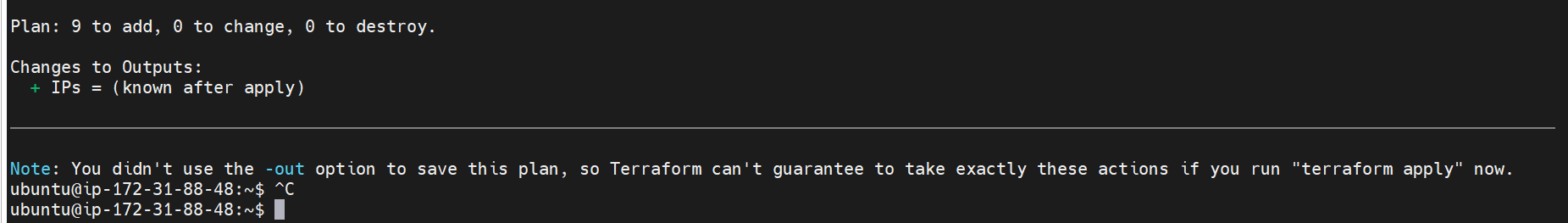
**Run the following commands**

**Run command -> terraform init**

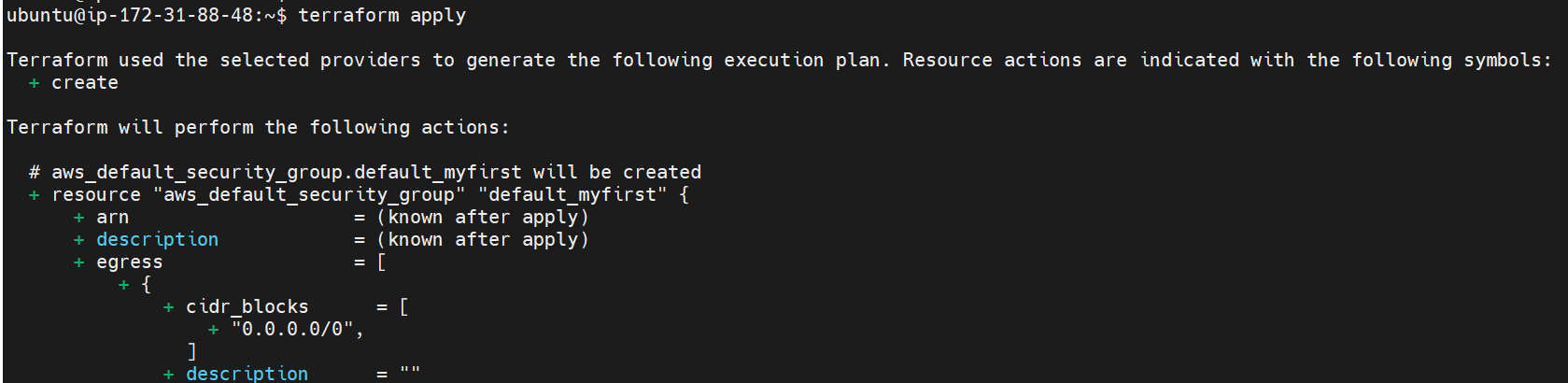
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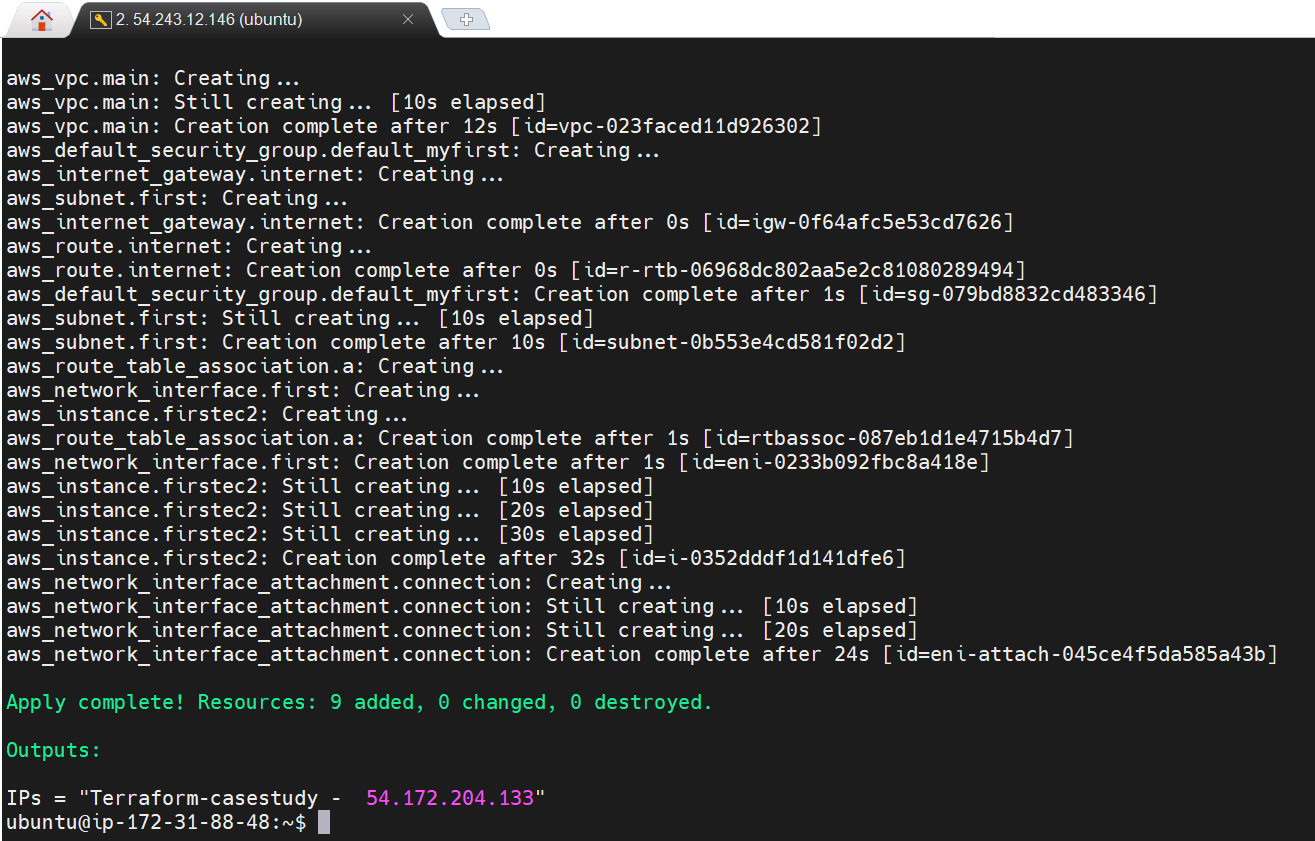
**Run ->terraform plan**

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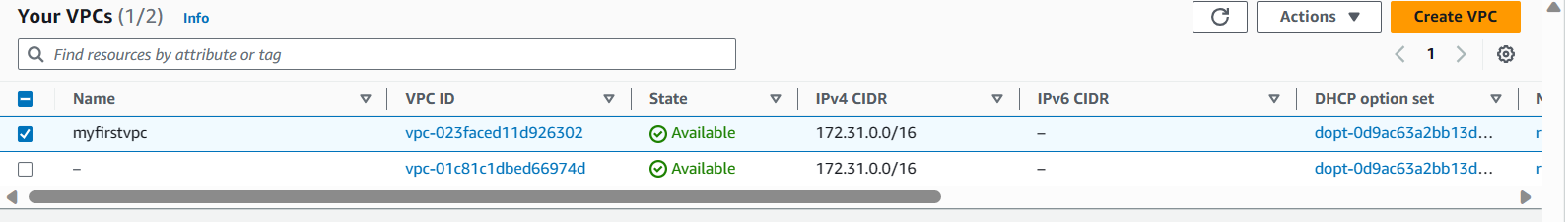
**Run ->terraform apply**

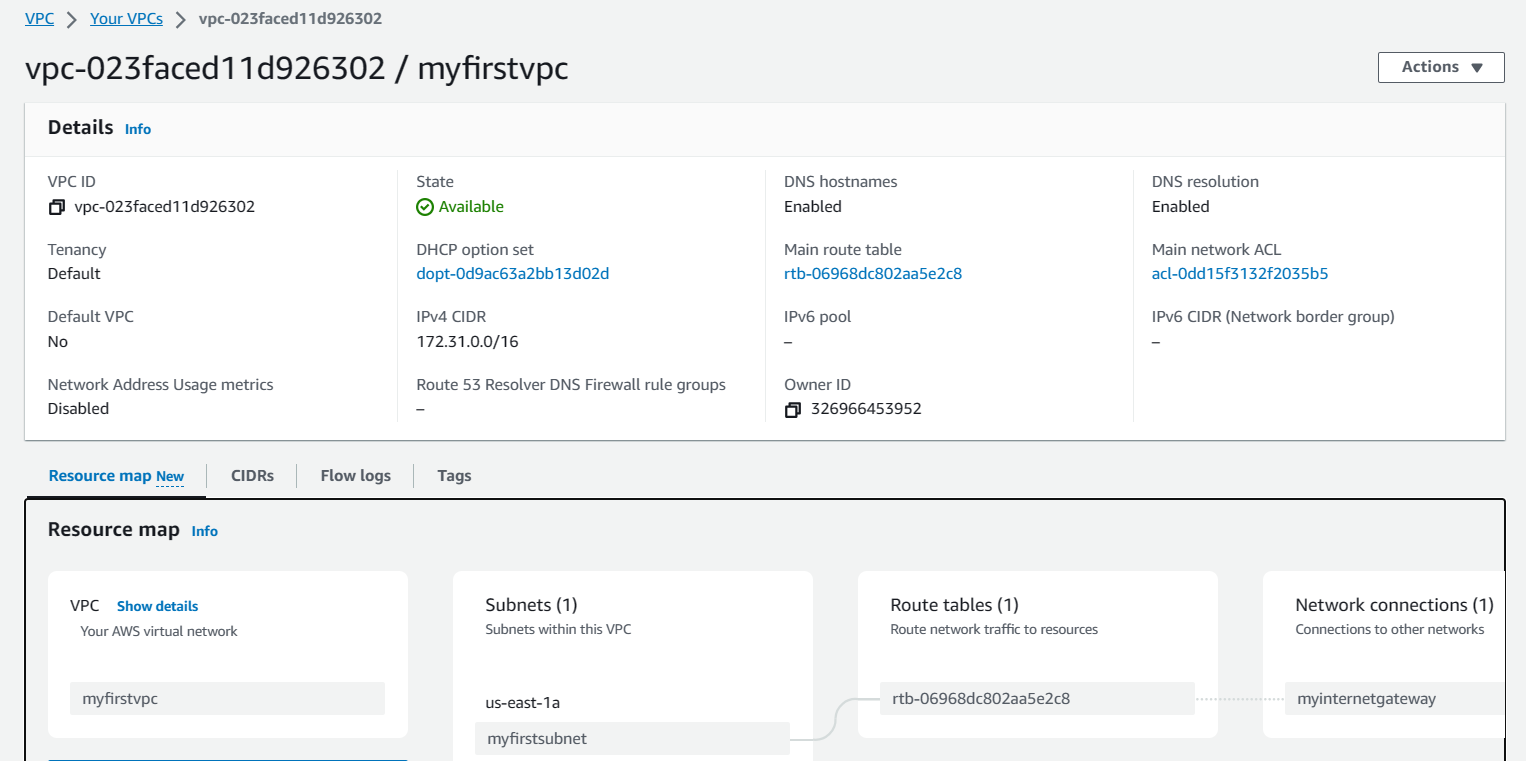
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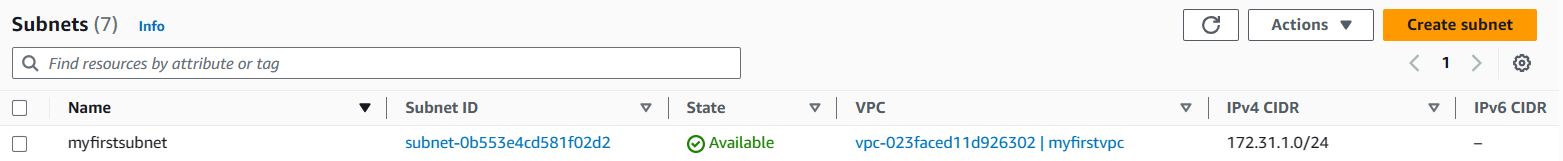
**Successfully created the VPC, Subnet ,Security groups,Internet gateway and network interface**

**VPC created**

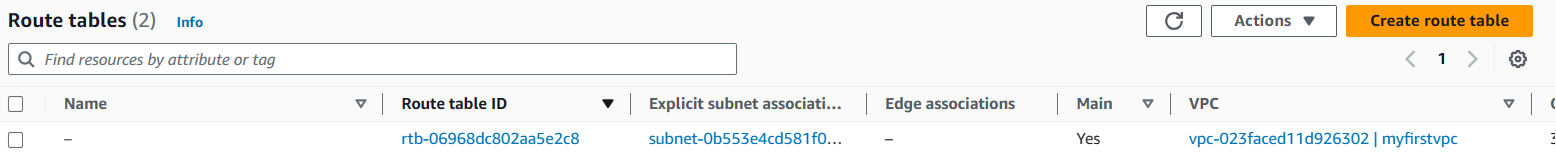
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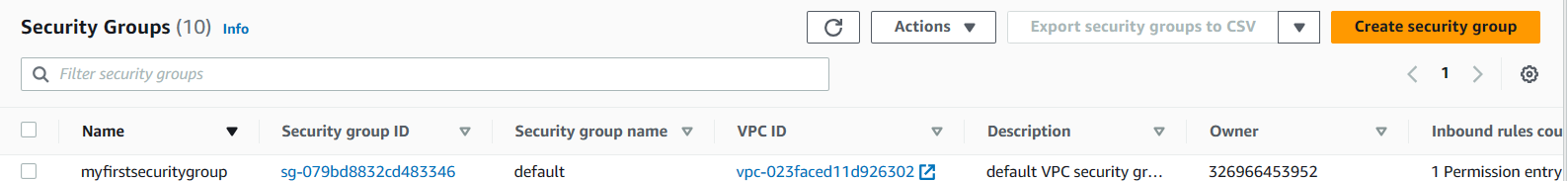
**Subnet created**

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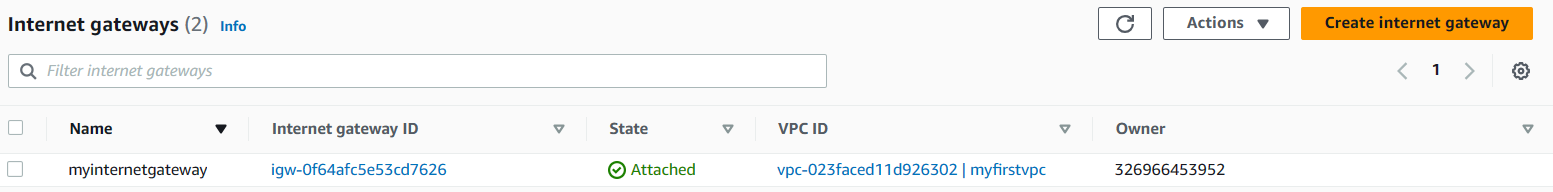
**Route table created**

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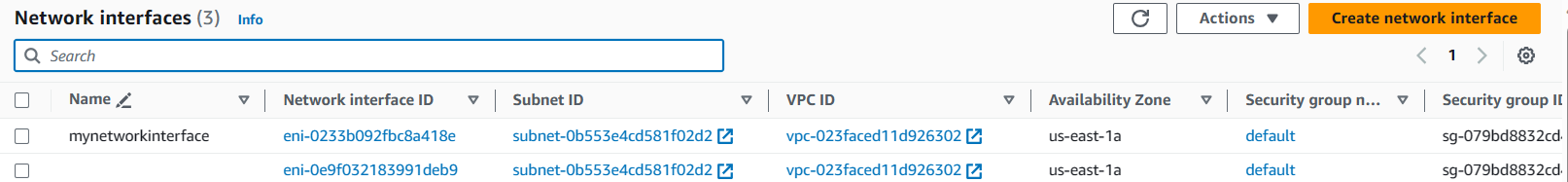
**Security group created**

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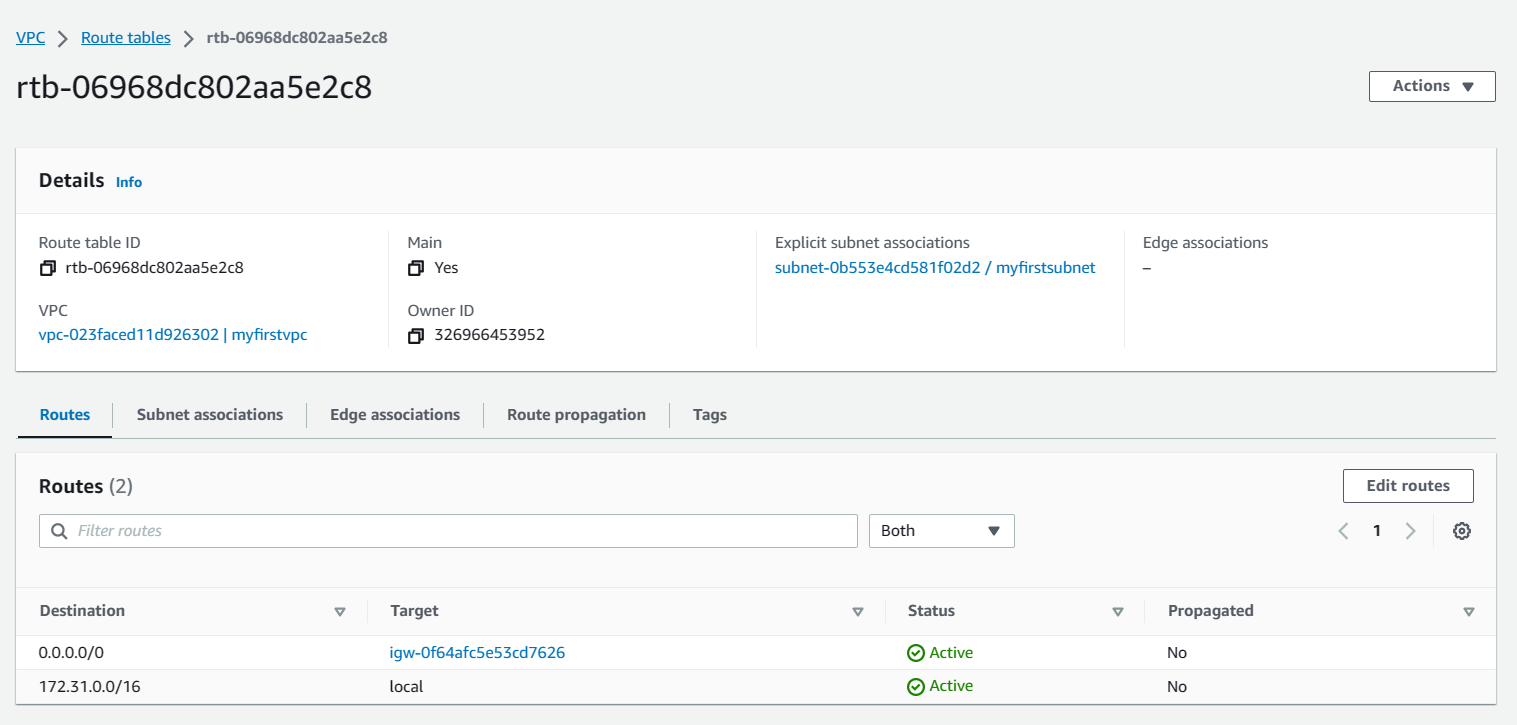
**Internet gateway created**

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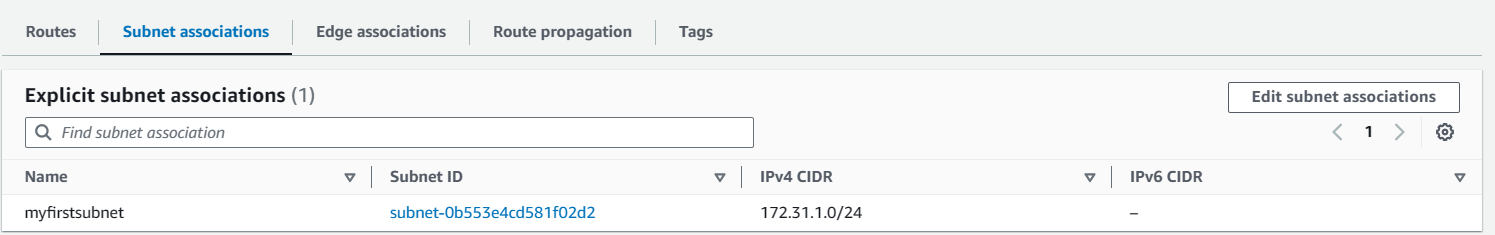
**Network interface created**

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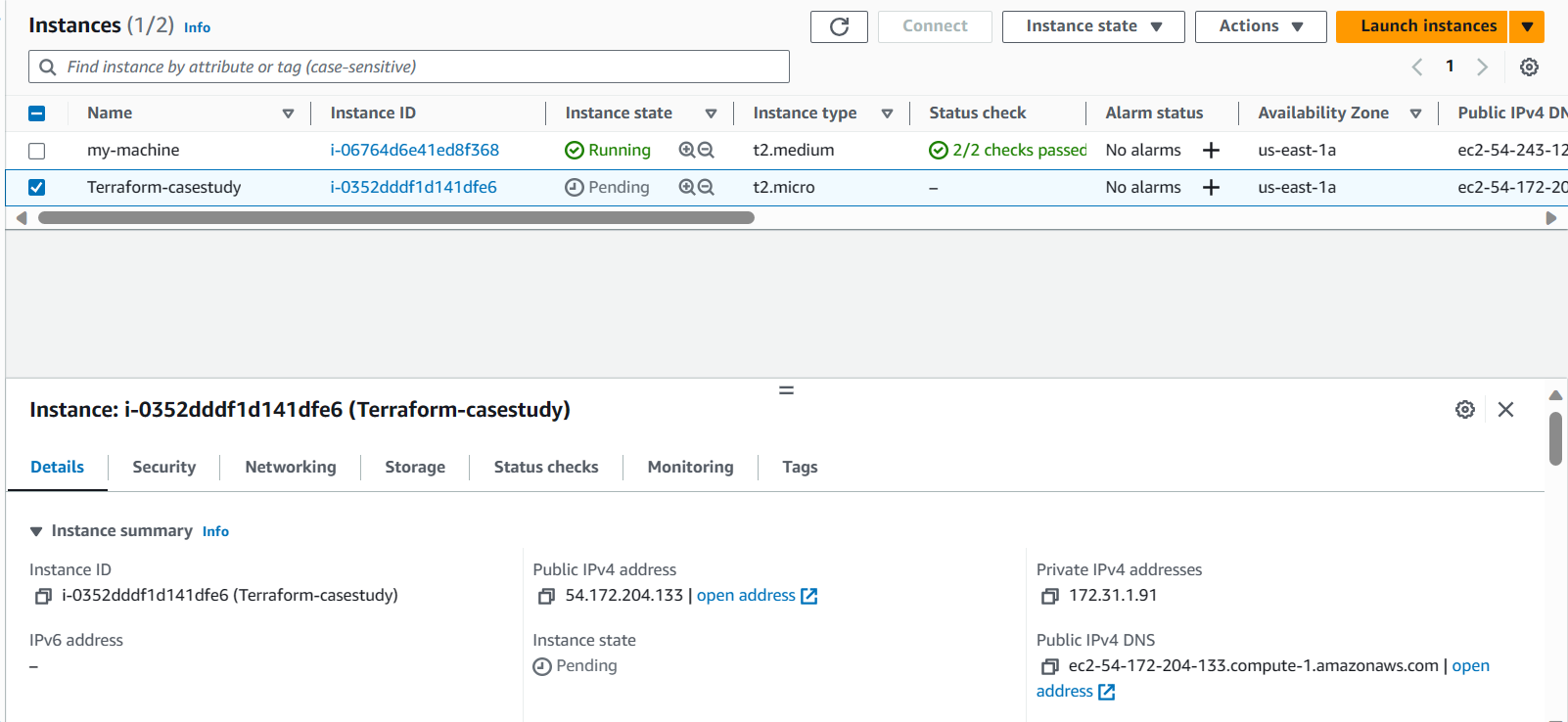
**Internet gateway attached to the route table**

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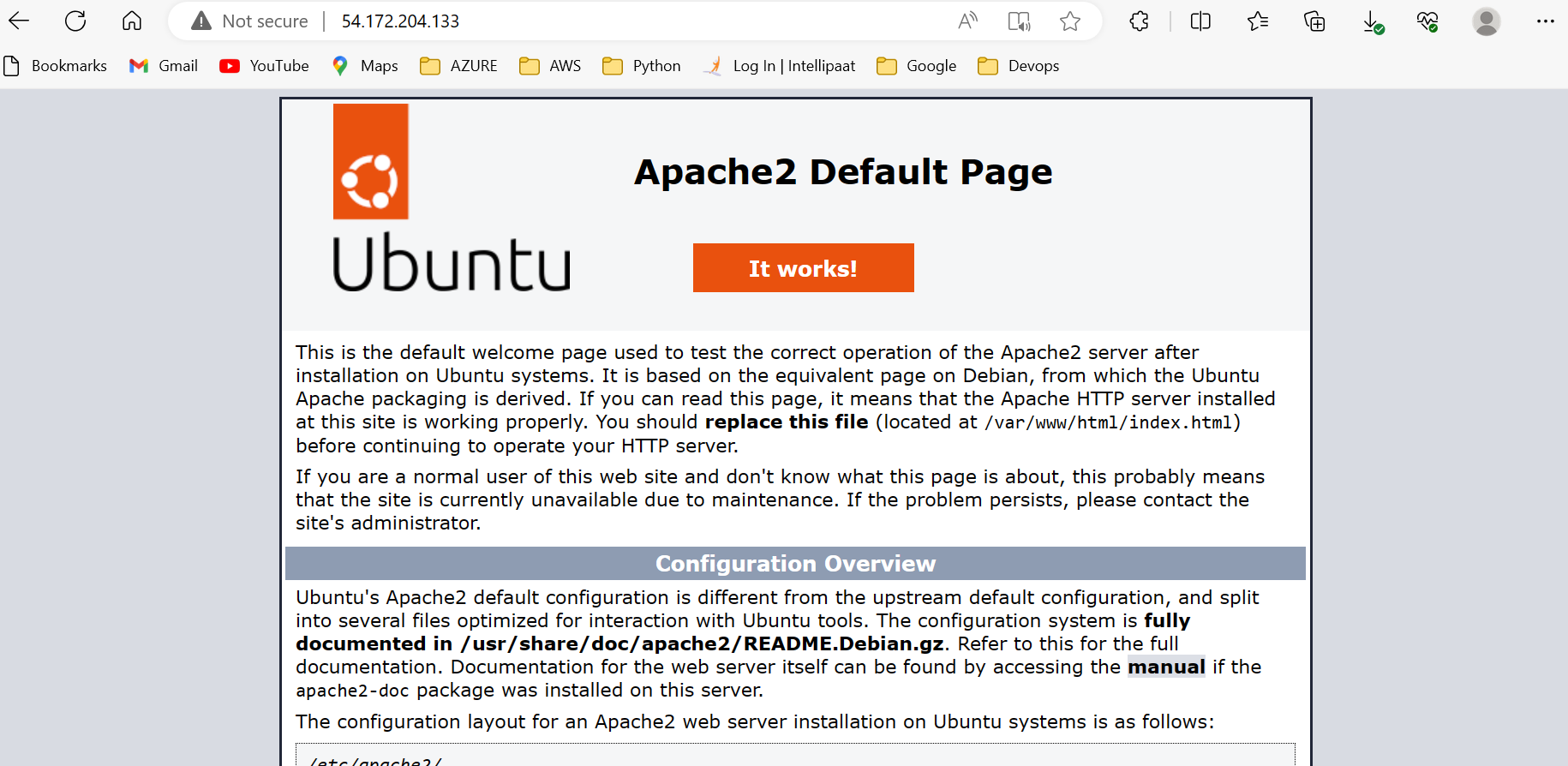
**Subnet association done**

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**Instance created successfully**

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**Web server installed successfully**

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