Terraform documentation for spinning Nginx Server

Kiran Reddy Bokkala:

1. Created the EC2 virtual machine and installed the Terraform in it as shown below.

```
[root@ip-172-31-89-216 Terraformfortest]# history
    1  yum update -y
    2  curl -O https://releases.hashicorp.com/terraform/1.5.0/terraform_1.5.0_linux_amd64.zip
    3  ls
    4  sudo unzip terraform_1.5.0_linux_amd64.zip
    5  ls
    6  mv terraform /usr/local/bin/
    7  ls
    8  terraform --version
```

2. Created a directory VPC and EC2

In the VPC directory created a main.tf file where it has all the code related to creating VPC, subnets, internet gateways, routes, security groups

```
[root@ip-172-31-89-216 ~]# cat vpc/main.tf
provider "aws" {
  region = "us-east-1"
  access_key = "AKIA6ODU3AVWRAICEGGM"
  secret_key = "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"
}

resource "aws_vpc" "main" {
  cidr_block = "10.0.0.0/16"
  enable_dns_support = true
  enable_dns_hostnames = true
  tags = {
    Name = "MyVPCforTerraform"
  }
}


resource "aws_subnet" "public_subnet_1" {
  vpc_id            = aws_vpc.main.id
  cidr_block        = "10.0.1.0/24"
  availability_zone = "us-east-1a"
  map_public_ip_on_launch = true
  tags = {
    Name = "public_subnet1"
  }
}


resource "aws_subnet" "public_subnet_2" {
  vpc_id            = aws_vpc.main.id
  cidr_block        = "10.0.2.0/24"
  availability_zone = "us-east-1b"
  map_public_ip_on_launch = true
  tags = {
    Name = "public_subnet2"
  }
}

resource "aws_subnet" "public_subnet_3" {
  vpc_id            = aws_vpc.main.id
  cidr_block        = "10.0.3.0/24"
  availability_zone = "us-east-1c"
  map_public_ip_on_launch = true
  tags = {
    Name = "public_subnet3"
  }
}

resource "aws_subnet" "private_subnet_1" {
  vpc_id            = aws_vpc.main.id
  cidr_block        = "10.0.4.0/24"
  availability_zone = "us-east-1a"
  tags = {
```

```
resource "aws_subnet" "public_subnet_1" {
  vpc_id            = aws_vpc.main.id
  cidr_block        = "10.0.1.0/24"
  availability_zone = "us-east-1a"
  map_public_ip_on_launch = true
  tags = {
    Name = "public_subnet1"
  }
}


resource "aws_subnet" "public_subnet_2" {
  vpc_id            = aws_vpc.main.id
  cidr_block        = "10.0.2.0/24"
  availability_zone = "us-east-1b"
  map_public_ip_on_launch = true
  tags = {
    Name = "public_subnet2"
  }
}

resource "aws_subnet" "public_subnet_3" {
  vpc_id            = aws_vpc.main.id
  cidr_block        = "10.0.3.0/24"
  availability_zone = "us-east-1c"
  map_public_ip_on_launch = true
  tags = {
    Name = "public_subnet3"
  }
}

resource "aws_subnet" "private_subnet_1" {
  vpc_id            = aws_vpc.main.id
  cidr_block        = "10.0.4.0/24"
  availability_zone = "us-east-1a"
  tags = {
    Name = "private_subnet1"
  }
}

resource "aws_subnet" "private_subnet_2" {
  vpc_id            = aws_vpc.main.id
  cidr_block        = "10.0.5.0/24"
  availability_zone = "us-east-1b"
  tags = {
    Name = "private_subnet2"
  }
}

resource "aws_subnet" "private_subnet_3" {
  vpc_id            = aws_vpc.main.id
  cidr_block        = "10.0.6.0/24"
  availability_zone = "us-east-1c"
  tags = {
```

```
resource "aws_internet_gateway" "main" {
  vpc_id = aws_vpc.main.id
  tags = {
    Name = "Terraform_IG"
  }
}
resource "aws_route_table" "public_route_table" {
  vpc_id = aws_vpc.main.id
  tags = {
    Name = "RouteTable_terraform"
  }
}

resource "aws_route" "internet_access" {
  route_table_id         = aws_route_table.public_route_table.id
  destination_cidr_block = "0.0.0.0/0"
  gateway_id             = aws_internet_gateway.main.id
}
resource "aws_route_table_association" "public_association_1" {
  subnet_id      = aws_subnet.public_subnet_1.id
  route_table_id = aws_route_table.public_route_table.id
}

resource "aws_route_table_association" "public_association_2" {
  subnet_id      = aws_subnet.public_subnet_2.id
  route_table_id = aws_route_table.public_route_table.id
}

resource "aws_route_table_association" "public_association_3" {
  subnet_id      = aws_subnet.public_subnet_3.id
  route_table_id = aws_route_table.public_route_table.id
}
resource "aws_security_group" "http_sg" {
  vpc_id = aws_vpc.main.id

  ingress {
    from_port   = 80
    to_port     = 80
    protocol    = "tcp"
    cidr_blocks = ["0.0.0.0/0"]
  }
  ingress {
    from_port   = 22
    to_port     = 22
    protocol    = "tcp"
    cidr_blocks = ["0.0.0.0/0"]
  }
    egress {
    from_port   = 0
    to_port     = 0
    protocol    = "-1"
    cidr_blocks = ["0.0.0.0/0"]
  }
  tags = {
    Name = "SG Terraform"
```

3. Then executed the main.tf code as shown below for provisioning the Network.

```
10  mkdir vpc
11  cd vpc/
12  vi main.tf
13  terraform init
14  terraform plan
15  terraform validate
16  terraform apply
```

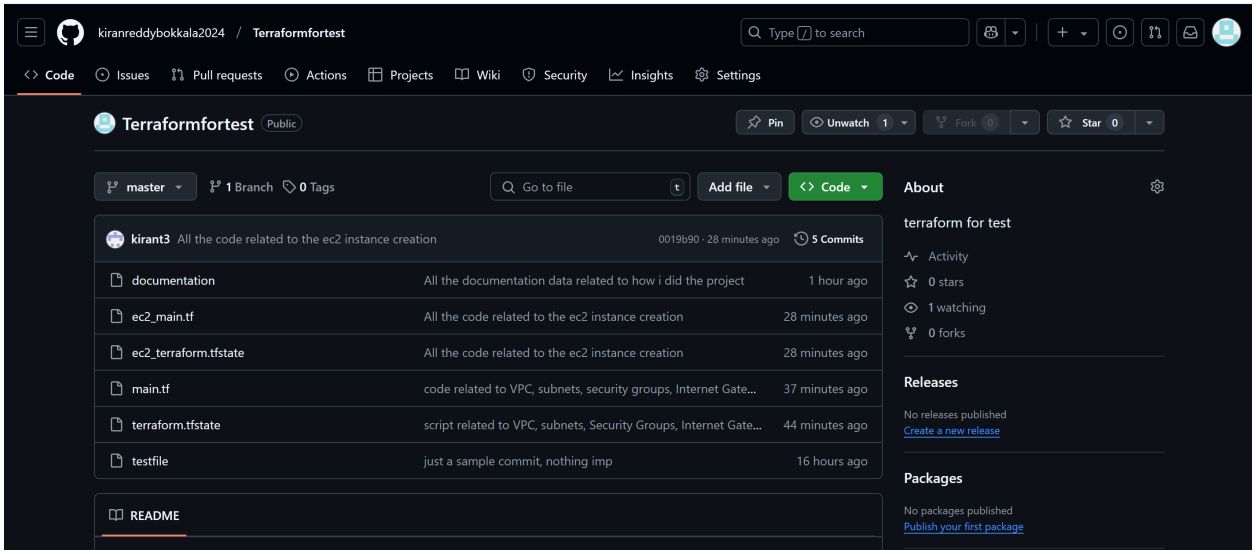
4. Now created the terraform code for provisioning Nginx EC2 server in ec2 folder.

```
[root@ip-172-31-89-216 ~]# cat ec2/ec2_main.tf
provider "aws" {
  region = "us-east-1"
  access_key = "AKIA6ODU3AVWRAICEGGM"
  secret_key = "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"
}

resource "aws_instance" "nginx_instance" {
  ami           = "ami-0ac4dfaf1c5c0cce9"
  instance_type = "t2.micro"
  subnet_id     = "subnet-0275bf6852fb6996f"
  vpc_security_group_ids = ["sg-06219e258f3aeec4b"]
  key_name = "terraform_key"
  tags = {
    Name = "NginxInstance"
  }
}

[root@ip-172-31-89-216 ~]#
```

And executed the code as shown below.

```
 20  cd ec2/
 21  vi main.tf
 22  cat ../vpc/main.tf
 23  vi main.tf
 24  terraform init
 25  terraform plan
 26  vi main.tf
 27  terraform plan
 28  vi main.tf
 29  terraform plan
 30  terraform validate
 31  terraform apply
```

5. Now created a GitHub account with a public repository named Terraformfortest as shown below.



6. Installed Git in the terraform server and cloned the data first.

```
42  yum install git
43  git config --global user.name "kiranReddyBokkala";
44  git config --global user.email "kiran@gmail.com";
45  git config -l
46  git remote add origin https://github.com/kiranreddybokkala2024/Terraformfortest.git
47  cd vpc/
```

7. Now just created a documentation file for steps and pushed it to the GitHub account.

```
93  git clone https://github.com/kiranreddybokkala2024/Terraformfortest.git
94  ls
95  touch documentation
96  ls
97  git add documentation
98  cd Terraformfortest/
99  ls
100 touch documentation
101 git add documentation
102 git commit -m "All the documentation data related to how i did the project"
103 git branch
104 git push
```

8. Now pushed the data related to VPC into GitHub.

```
126 git add main.tf terraform.tfstate
127 git commit -m "script related to VPC, subnets, Security Groups, Internet Gateways, Routes"
128 git status
129 git push
```

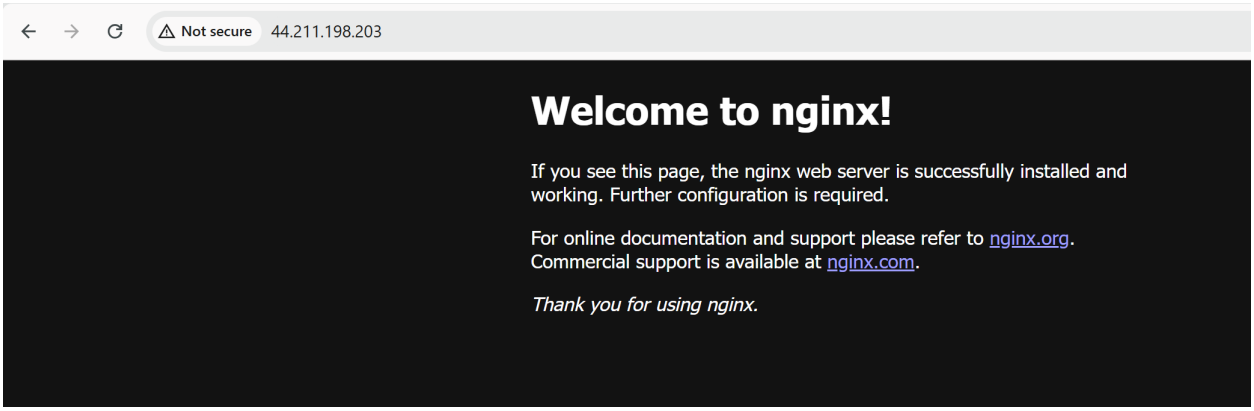
9. Now pushed the data related to EC2 Nginx instance into GitHub account.

```
186  git add ec2_terraform.tfstate ec2_main.tf
187  cat ec2_main.tf
188  git commit -m "All the code related to the ec2 instance creation"
189  git push
```

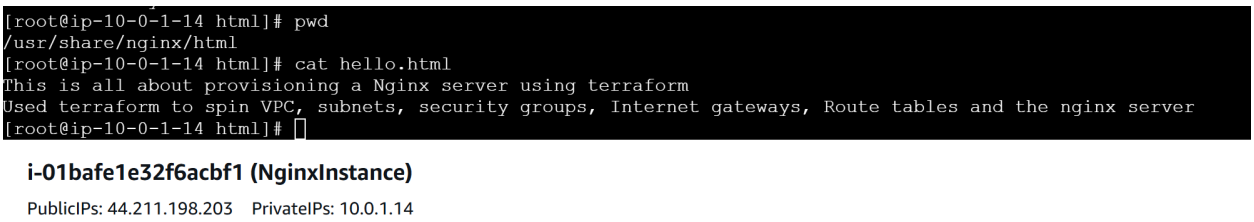
10. As mentioned, Later after deploying the Nginx server using Terraform ,Logged into the Nginx server and executed below commands to install Nginx server.

```
[root@ip-10-0-1-14 html]# history
    1  yum update -y
    2  yum install nginx
    3  yum install nginx -y
    4  service httpd start
    5  systemctl httpd start
    6  service nginx start
    7  service nginx status
```

Default page:



Custom page

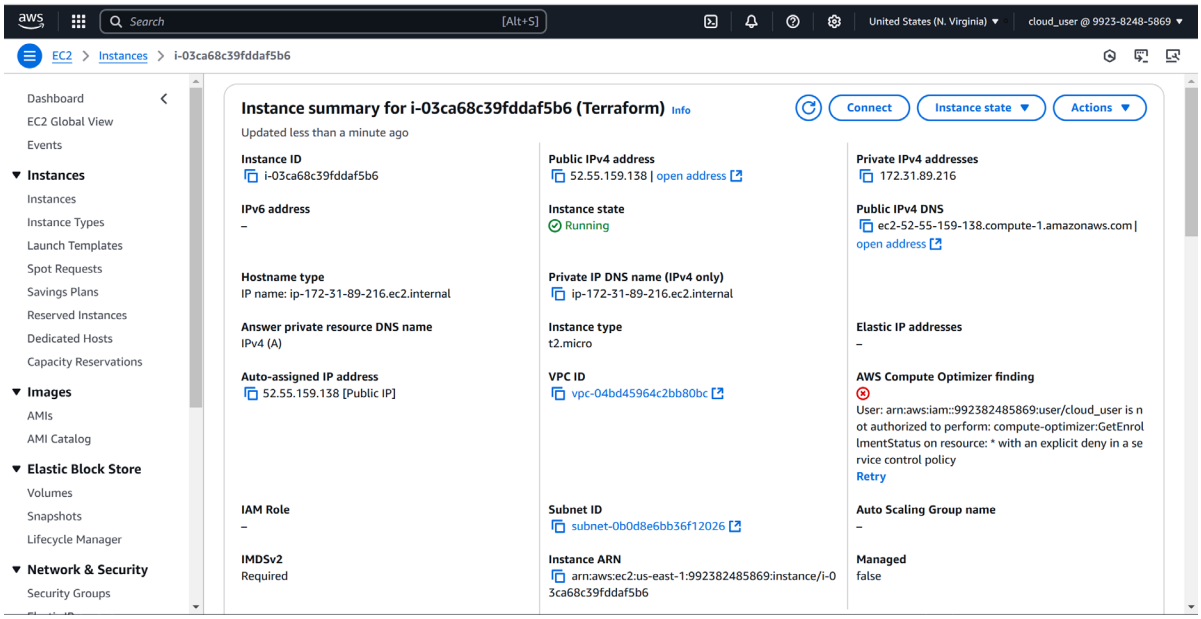


i-01bafe1e32f6acbf1 (NginxInstance)

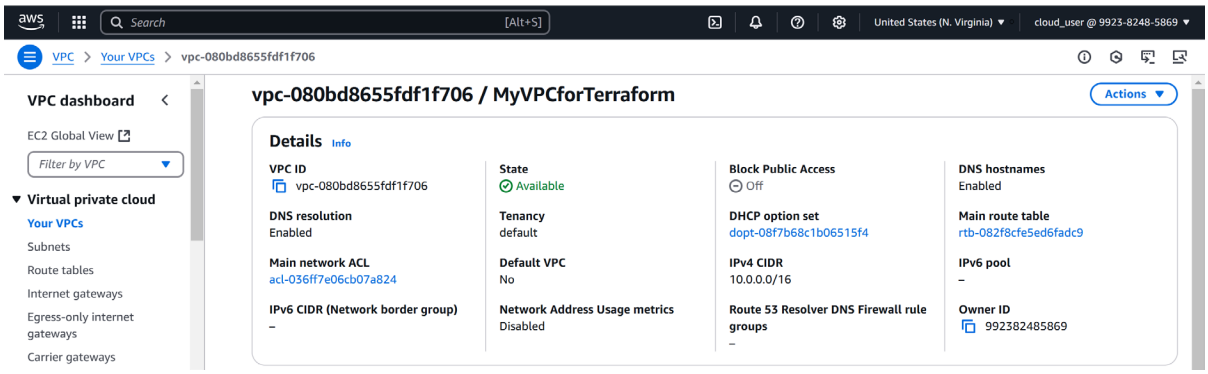
PublicIPs: 44.211.198.203 PrivateIPs: 10.0.1.14

AWS Platform screenshots:

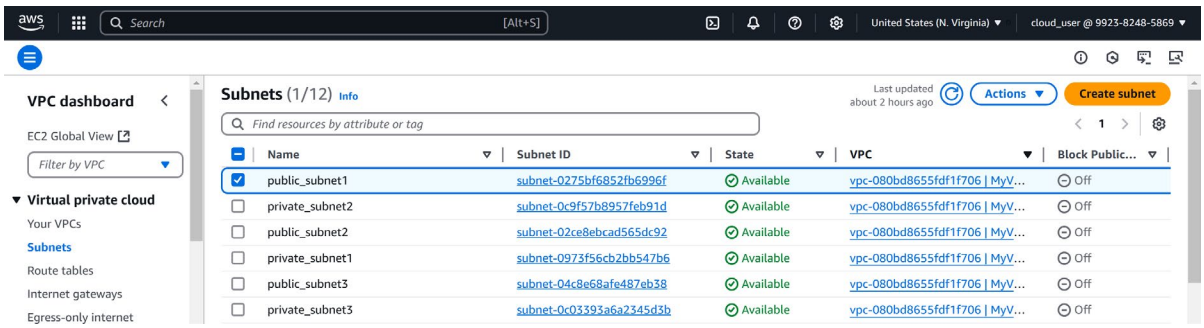
1. Created Terraform EC2 server.



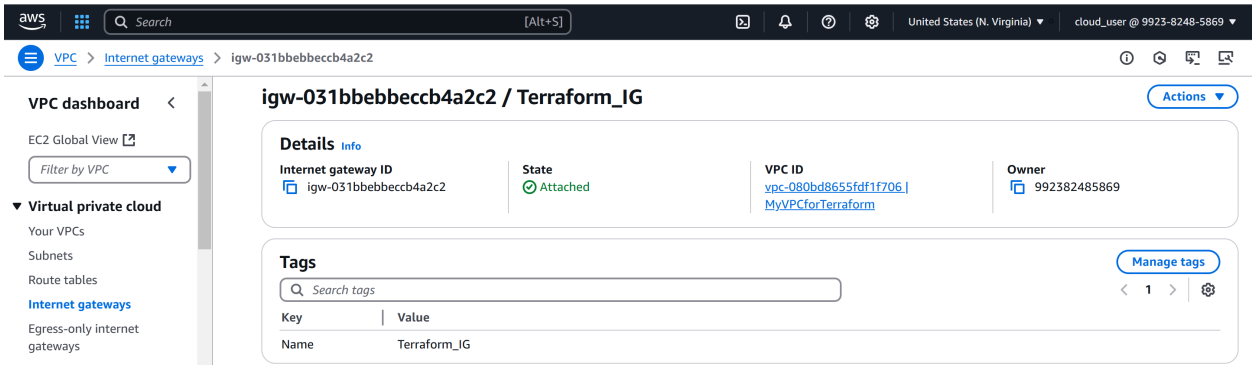
2. VPC got deployed.



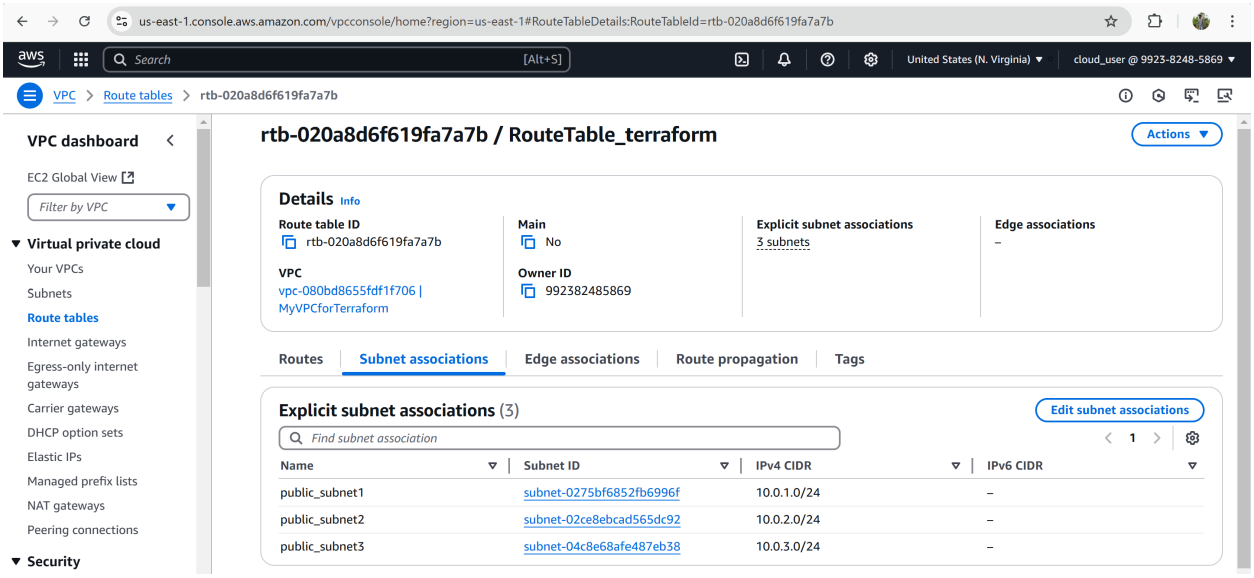
3. Subnets got deployed.



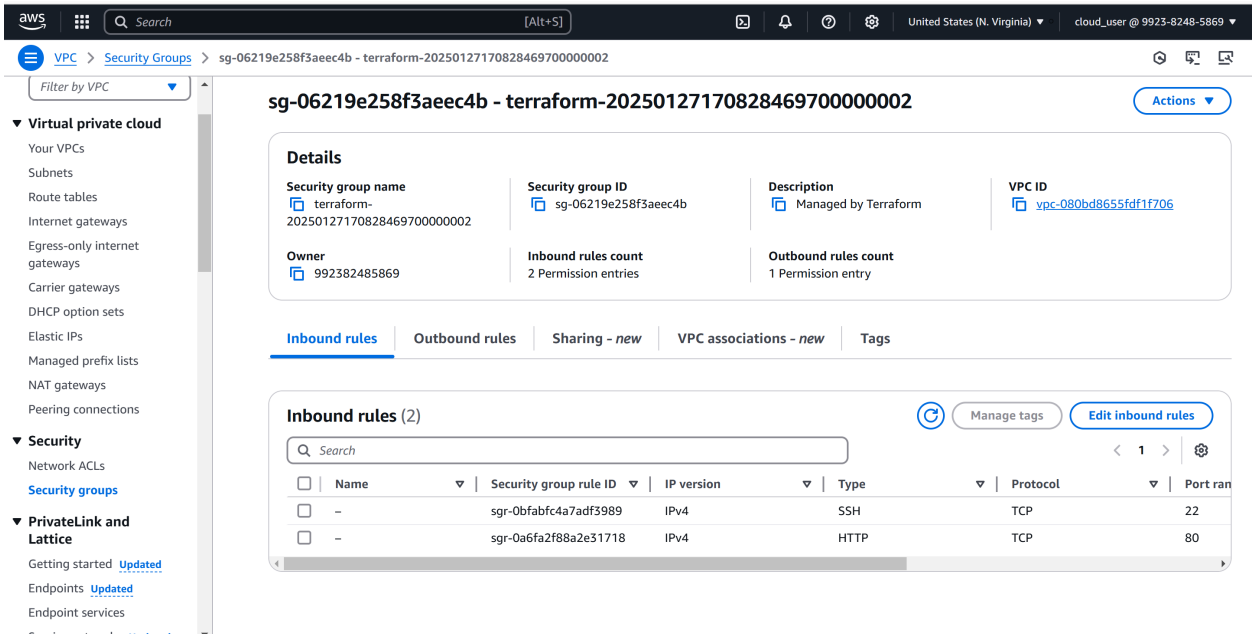
4. Internet gateway deployed and attached to VPC



5. Route table created and associated with public subnets.



6. Security group got created with 22 and 80 ports open.



7. Nginx server got deployed with terraform code.