CASE STUDY -CREATING AN ARCHITECTURE USING TERRAFORM ON AWS

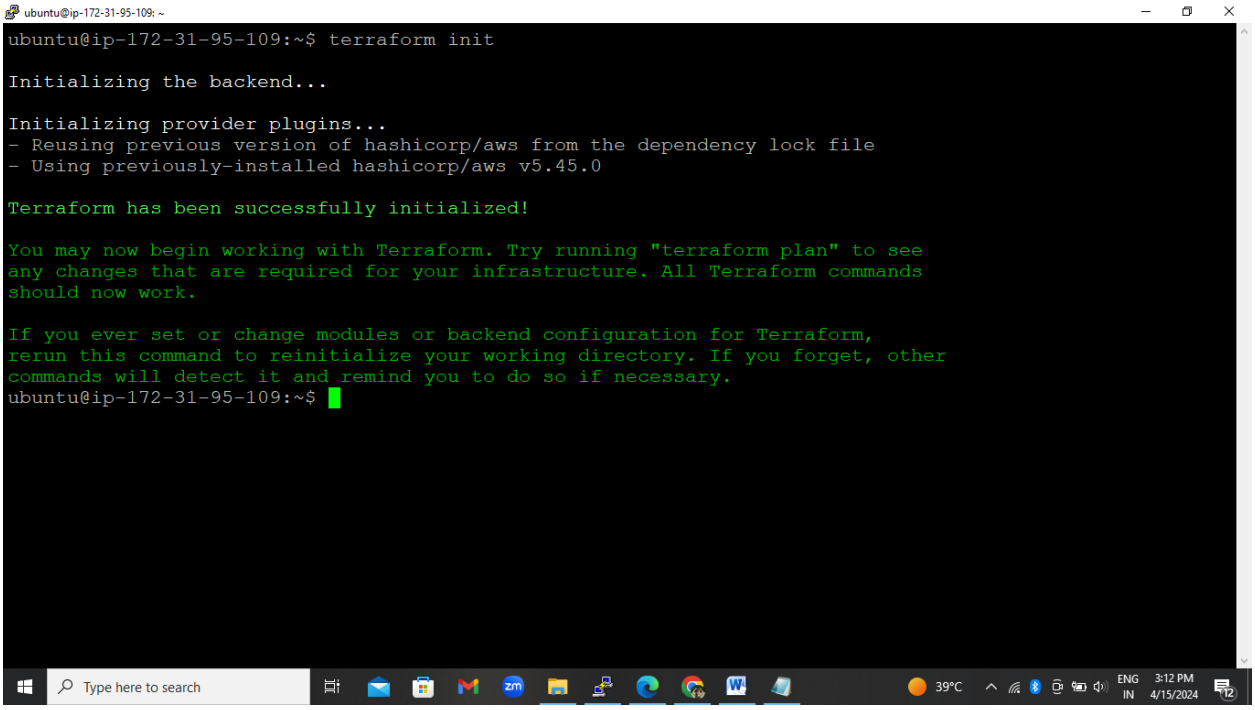
You work as a DevOps Engineer in leading Software Company. You have been asked to build an infrastructure safely and efficiently.

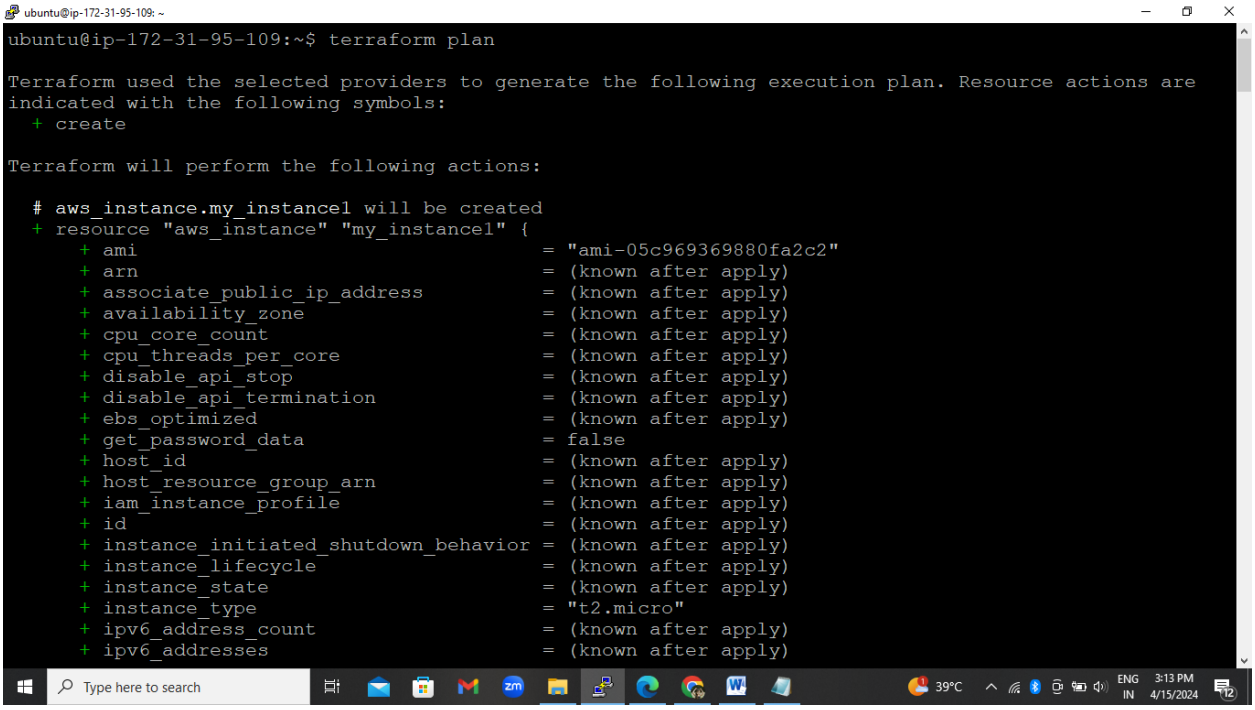
The company Requirements:

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




ubuntu@ip-172-31-95-109: ~
ubuntu@ip-172-31-95-109:~$ terraform plan
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create
Terraform will perform the following actions:
# aws_instance.my_instance1 will be created
+ resource "aws_instance" "my_instance1" {
+ ami = "ami-05c969369880fa2c2"
+ arn = (known after apply)
+ associate_public_ip_address = (known after apply)
+ availability_zone = (known after apply)
+ cpu_core_count = (known after apply)
+ cpu_threads_per_core = (known after apply)
+ disable_api_stop = (known after apply)
+ disable_api_termination = (known after apply)
+ ebs_optimized = (known after apply)
+ get_password_data = false
+ host_id = (known after apply)
+ host_resource_group_arn = (known after apply)
+ iam_instance_profile = (known after apply)
+ id = (known after apply)
+ instance_initiated_shutdown_behavior = (known after apply)
+ instance_lifecycle = (known after apply)
+ instance_state = (known after apply)
+ instance_type = "t2.micro"
+ ipv6_address_count = (known after apply)
+ ipv6_addresses = (known after apply)
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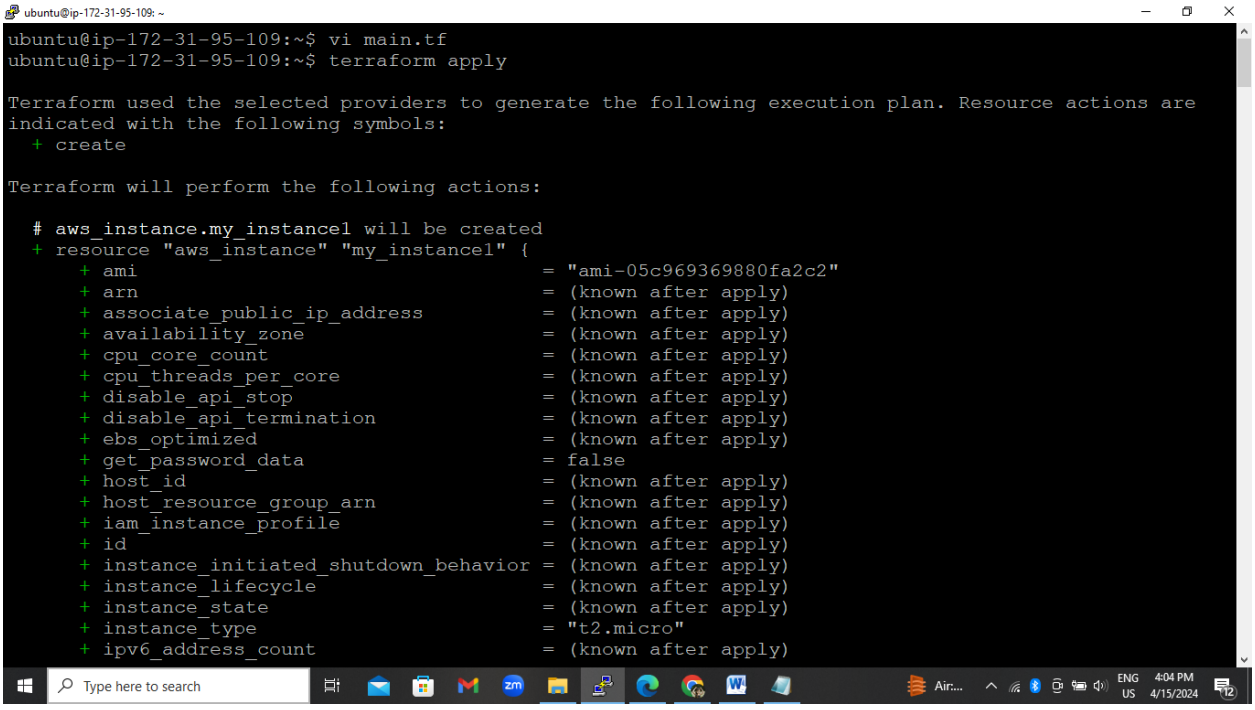
ubuntu@ip-172-31-95-109: ~
ubuntu@ip-172-31-95-109:~$ vi main.tf
ubuntu@ip-172-31-95-109:~$ terraform apply
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create
Terraform will perform the following actions:
# aws_instance.my_instance1 will be created
+ resource "aws_instance" "my_instance1" {
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+ instance_lifecycle = (known after apply)
+ instance_state = (known after apply)
+ instance_type = "t2.micro"
+ ipv6_address_count = (known after apply)
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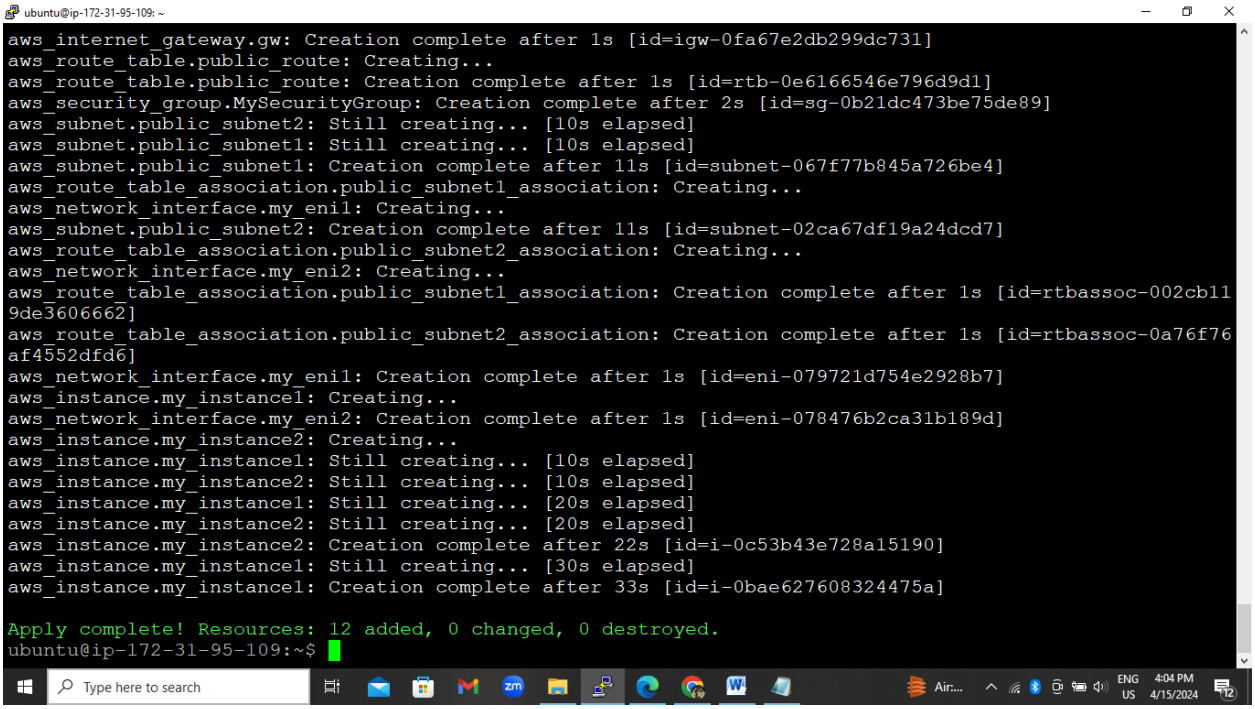
ubuntu@ip-172-31-95-109: ~
aws_internet_gateway.gw: Creation complete after 1s [id=igw-0fa67e2db299dc731]
aws_route_table.public_route: Creating...
aws_route_table.public_route: Creation complete after 1s [id=rtb-0e6166546e796d9d1]
aws_security_group.MySecurityGroup: Creation complete after 2s [id=sg-0b21dc473be75de89]
aws_subnet.public_subnet2: Still creating... [10s elapsed]
aws_subnet.public_subnet1: Still creating... [10s elapsed]
aws_subnet.public_subnet1: Creation complete after 11s [id=subnet-067f77b845a726be4]
aws_route_table_association.public_subnet1_association: Creating...
aws_network_interface.my_eni1: Creating...
aws_subnet.public_subnet2: Creation complete after 11s [id=subnet-02ca67df19a24dcd7]
aws_route_table_association.public_subnet2_association: Creating...
aws_network_interface.my_eni2: Creating...
aws_route_table_association.public_subnet1_association: Creation complete after 1s [id=rtbassoc-002cb119de3606662]
aws_route_table_association.public_subnet2_association: Creation complete after 1s [id=rtbassoc-0a76f76af4552dfd6]
aws_network_interface.my_eni1: Creation complete after 1s [id=eni-079721d754e2928b7]
aws_instance.my_instance1: Creating...
aws_network_interface.my_eni2: Creation complete after 1s [id=eni-078476b2ca31b189d]
aws_instance.my_instance2: Creating...
aws_instance.my_instance1: Still creating... [10s elapsed]
aws_instance.my_instance2: Still creating... [10s elapsed]
aws_instance.my_instance1: Still creating... [20s elapsed]
aws_instance.my_instance2: Still creating... [20s elapsed]
aws_instance.my_instance2: Creation complete after 22s [id=i-0c53b43e728a15190]
aws_instance.my_instance1: Still creating... [30s elapsed]
aws_instance.my_instance1: Creation complete after 33s [id=i-0bae627608324475a]
Apply complete! Resources: 12 added, 0 changed, 0 destroyed.
ubuntu@ip-172-31-95-109:~$
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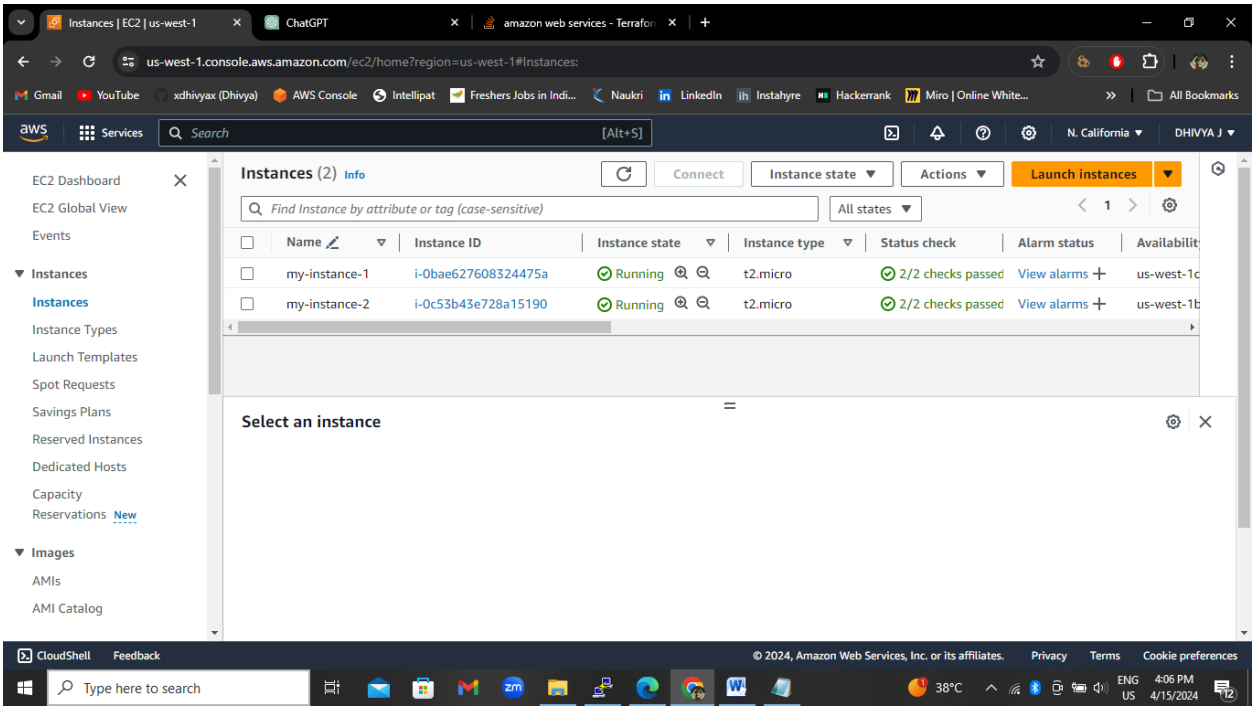
Instances | EC2 | us-west-1
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us-west-1.console.aws.amazon.com/ec2/home?region=us-west-1#Instances:
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Instance state
Instance type
Status check
Alarm status
my-instance-1 i-0bae627608324475a Running t2.micro 2/2 checks passed View alarms us-west-1c
my-instance-2 i-0c53b43e728a15190 Running t2.micro 2/2 checks passed View alarms us-west-1b
Select an instance
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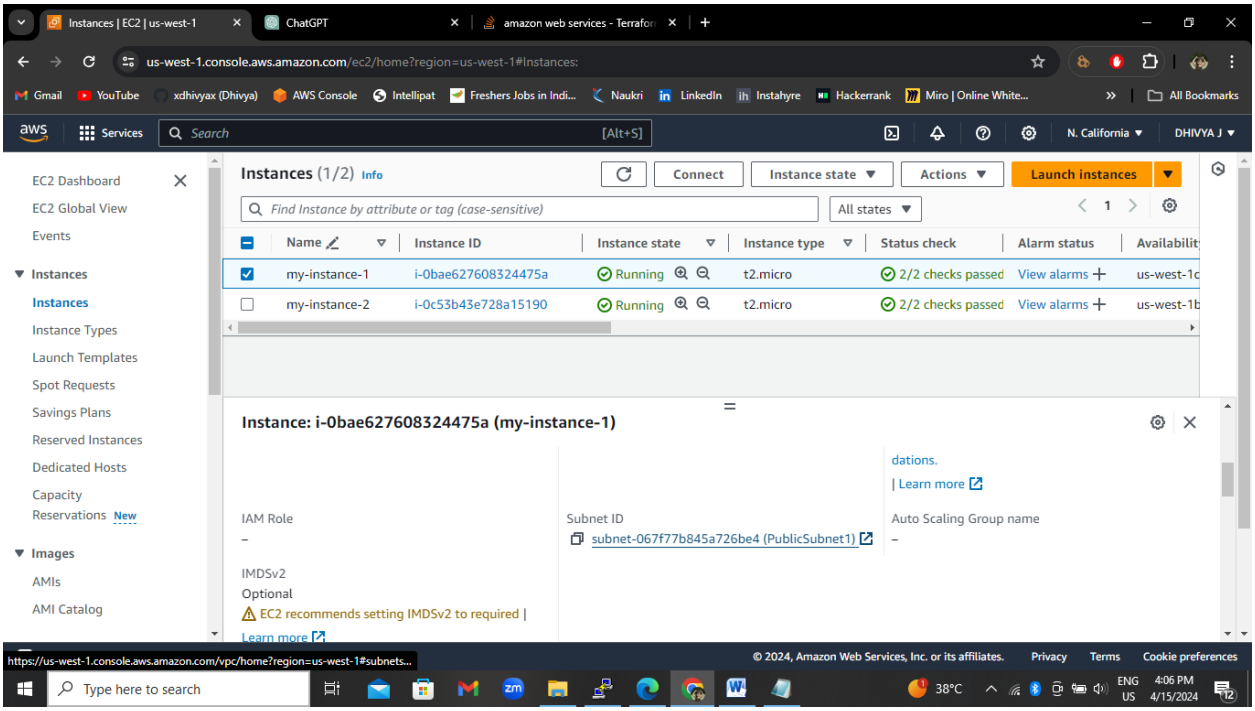
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my-instance-2 i-0c53b43e728a15190 Running t2.micro 2/2 checks passed View alarms us-west-1b
Instance: i-0bae627608324475a (my-instance-1)
dations.
Learn more
IAM Role
Subnet ID
subnet-067f77b845a726be4 (PublicSubnet1)
Auto Scaling Group name
IMDSv2
Optional
EC2 recommends setting IMDSv2 to required
Learn more
https://us-west-1.console.aws.amazon.com/vpc/home?region=us-west-1#subnets...
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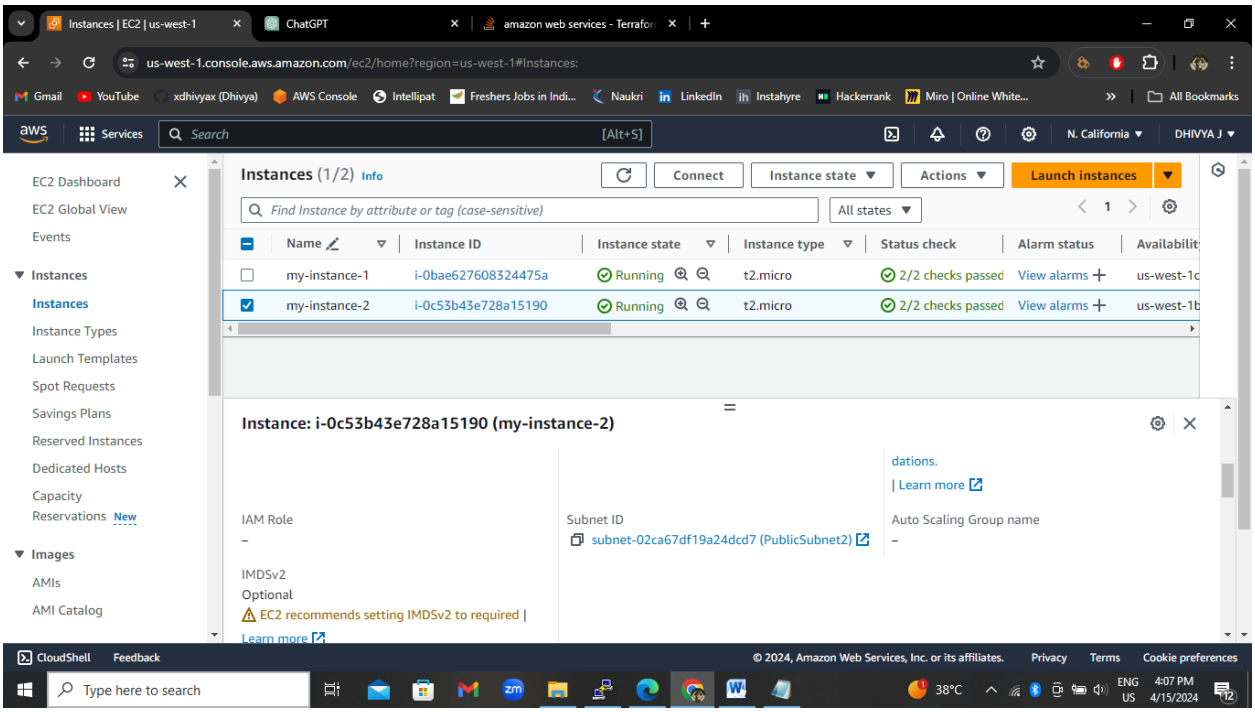
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Instance: i-0c53b43e728a15190 (my-instance-2)
dations.
Learn more
IAM Role
Subnet ID
subnet-02ca67df19a24dcd7 (PublicSubnet2)
Auto Scaling Group name
IMDSv2
Optional
EC2 recommends setting IMDSv2 to required
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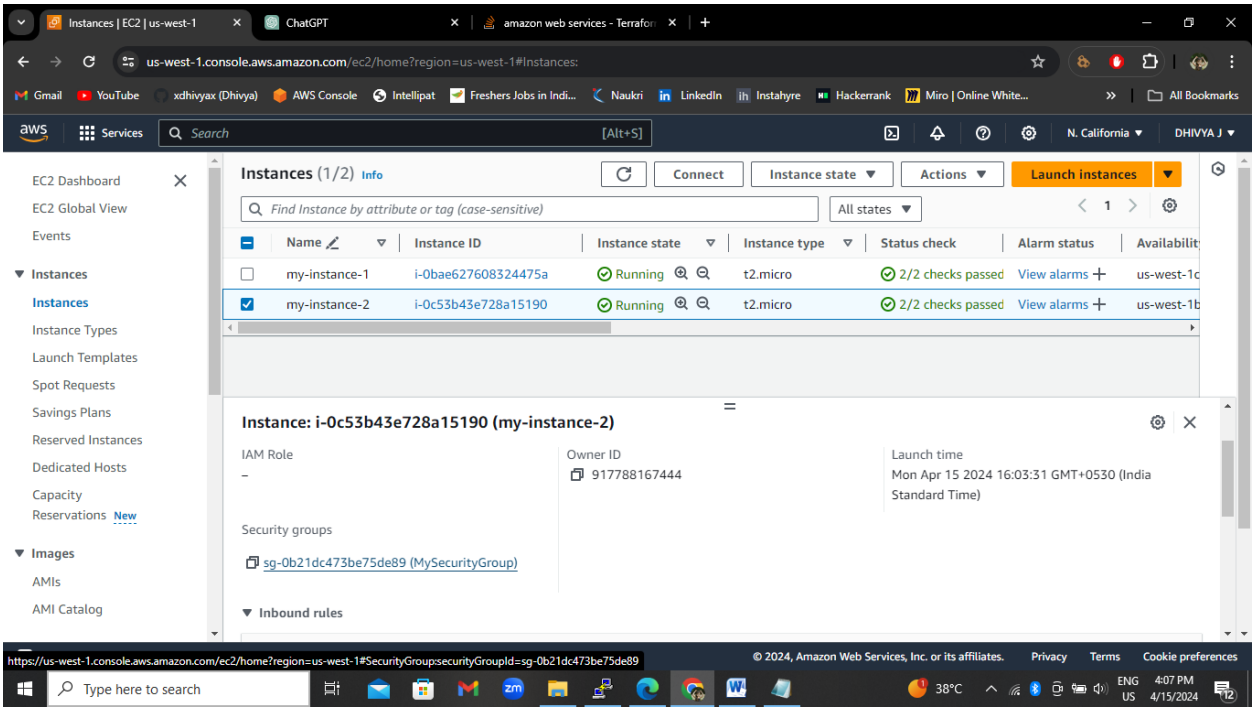
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my-instance-2 i-0c53b43e728a15190 Running t2.micro 2/2 checks passed View alarms us-west-1b
Instance: i-0c53b43e728a15190 (my-instance-2)
IAM Role
-
Owner ID
917788167444
Launch time
Mon Apr 15 2024 16:03:31 GMT+0530 (India Standard Time)
Security groups
sg-0b21dc473be75de89 (MySecurityGroup)
Inbound rules
https://us-west-1.console.aws.amazon.com/ec2/home?region=us-west-1#SecurityGroup:securityGroupId=sg-0b21dc473be75de89
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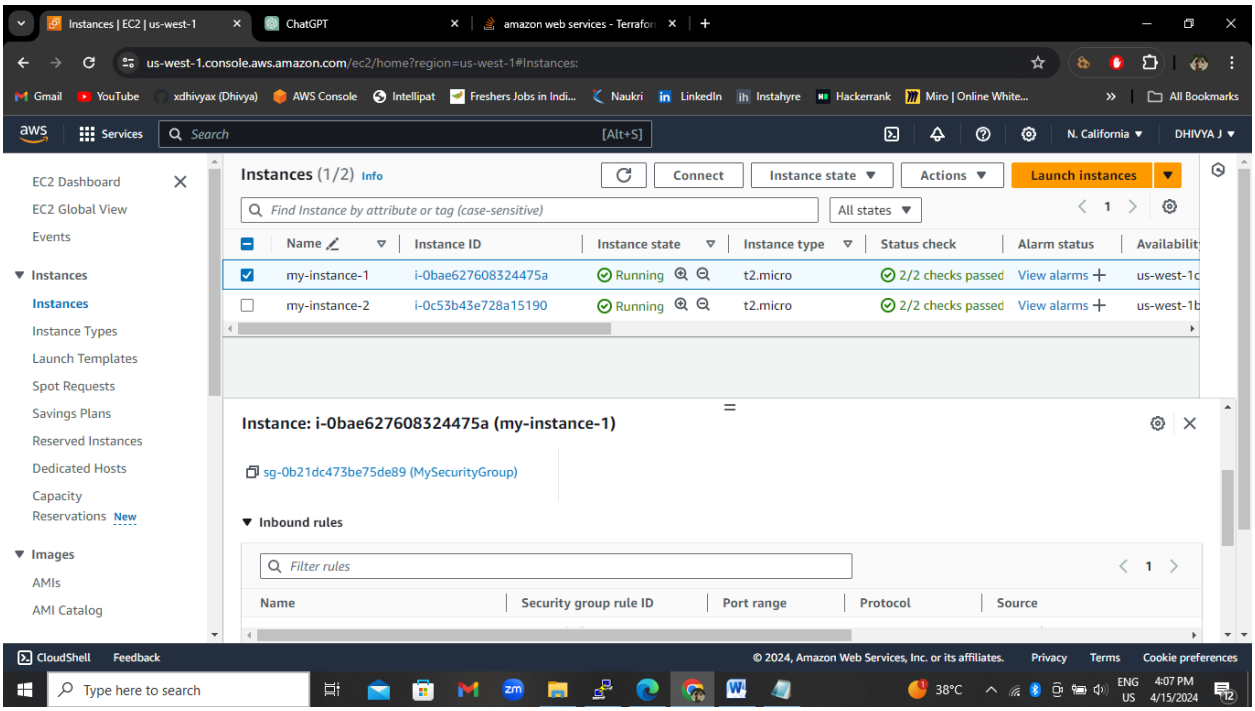
Instances | EC2 | us-west-1
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us-west-1.console.aws.amazon.com/ec2/home?region=us-west-1#Instances:
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my-instance-2 i-0c53b43e728a15190 Running t2.micro 2/2 checks passed View alarms us-west-1b
Instance: i-0bae627608324475a (my-instance-1)
sg-0b21dc473be75de89 (MySecurityGroup)
Inbound rules
Filter rules
Name
Security group rule ID
Port range
Protocol
Source
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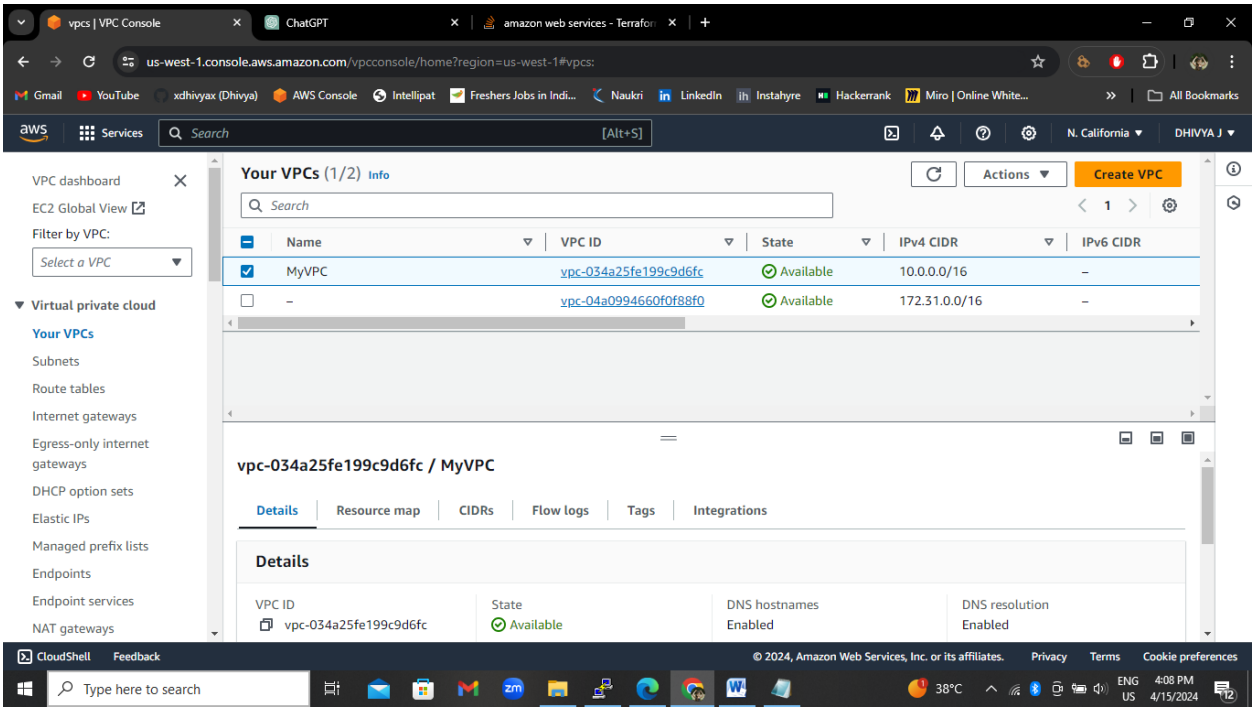
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us-west-1.console.aws.amazon.com/vpcconsole/home?region=us-west-1#vpcs:
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Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
Endpoints
Endpoint services
NAT gateways
Your VPCs (1/2) Info
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Create VPC
Name
VPC ID
State
IPv4 CIDR
IPv6 CIDR
MyVPC
vpc-034a25fe199c9d6fc
Available
10.0.0.0/16
vpc-04a0994660f0f88f0
Available
172.31.0.0/16
vpc-034a25fe199c9d6fc / MyVPC
Details
Resource map
CIDRs
Flow logs
Tags
Integrations
Details
VPC ID
vpc-034a25fe199c9d6fc
State
Available
DNS hostnames
Enabled
DNS resolution
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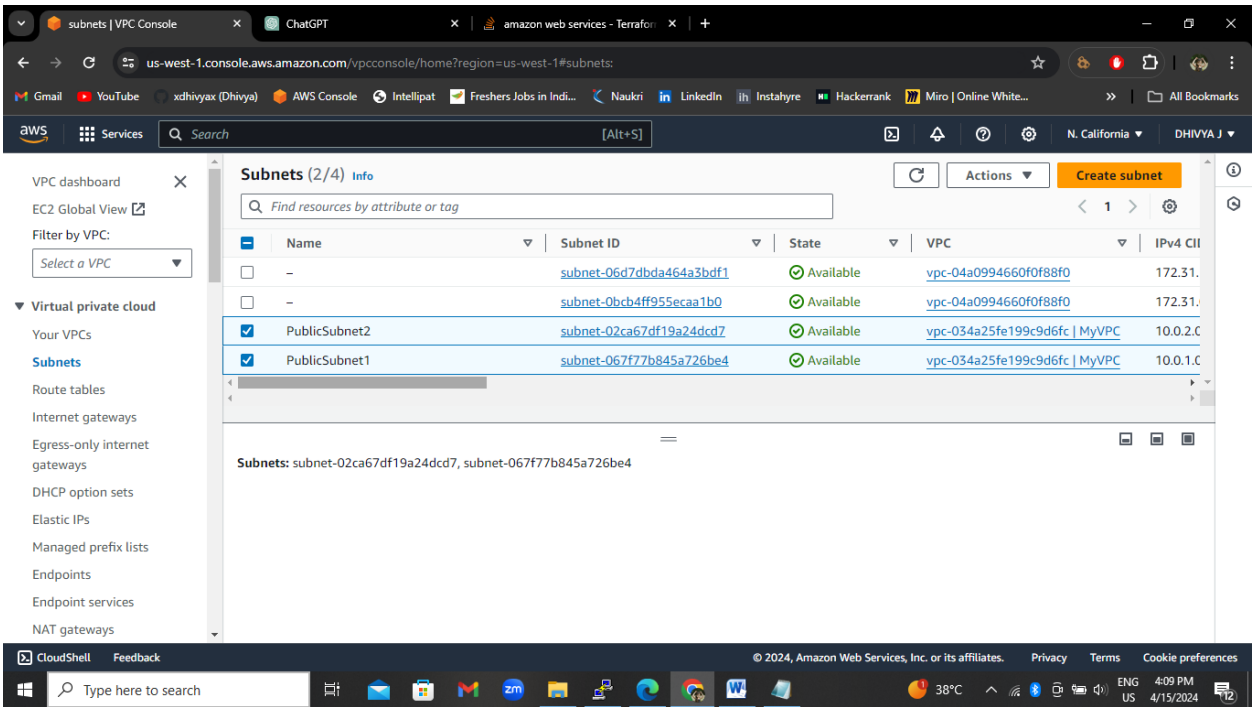
subnets | VPC Console
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Subnets (2/4) Info
Find resources by attribute or tag
Actions
Create subnet
Name
Subnet ID
State
VPC
IPv4 CI
subnet-06d7dbda464a3bdf1
Available
vpc-04a0994660f0f88f0
172.31.
subnet-0bcb4ff955ecaa1b0
Available
vpc-04a0994660f0f88f0
172.31.
PublicSubnet2
subnet-02ca67df19a24dcd7
Available
vpc-034a25fe199c9d6fc | MyVPC
10.0.2.0
PublicSubnet1
subnet-067f77b845a726be4
Available
vpc-034a25fe199c9d6fc | MyVPC
10.0.1.0
Subnets: subnet-02ca67df19a24dcd7, subnet-067f77b845a726be4
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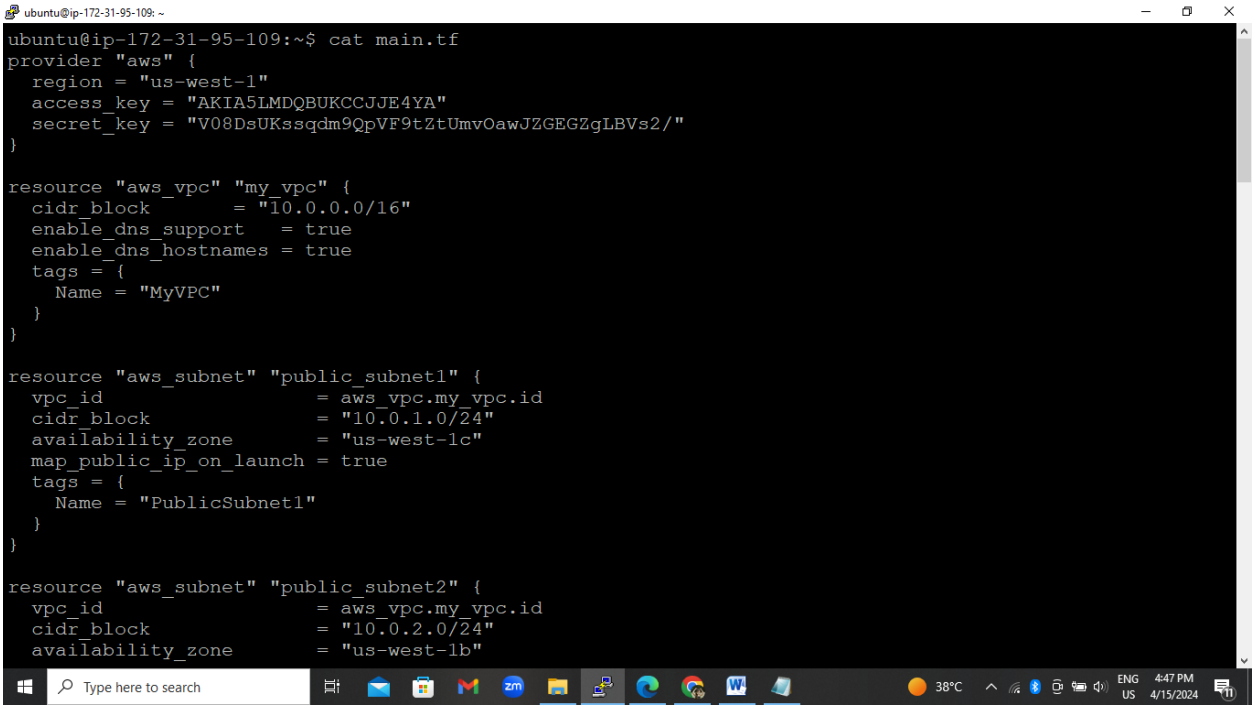
ubuntu@ip-172-31-95-109: ~
ubuntu@ip-172-31-95-109:~$ cat main.tf
provider "aws" {
region = "us-west-1"
access_key = "AKIA5LMDQBUKCCJJE4YA"
secret_key = "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"
}
resource "aws_vpc" "my_vpc" {
cidr_block = "10.0.0.0/16"
enable_dns_support = true
enable_dns_hostnames = true
tags = {
Name = "MyVPC"
}
}
resource "aws_subnet" "public_subnet1" {
vpc_id = aws_vpc.my_vpc.id
cidr_block = "10.0.1.0/24"
availability_zone = "us-west-1c"
map_public_ip_on_launch = true
tags = {
Name = "PublicSubnet1"
}
}
resource "aws_subnet" "public_subnet2" {
vpc_id = aws_vpc.my_vpc.id
cidr_block = "10.0.2.0/24"
availability_zone = "us-west-1b"
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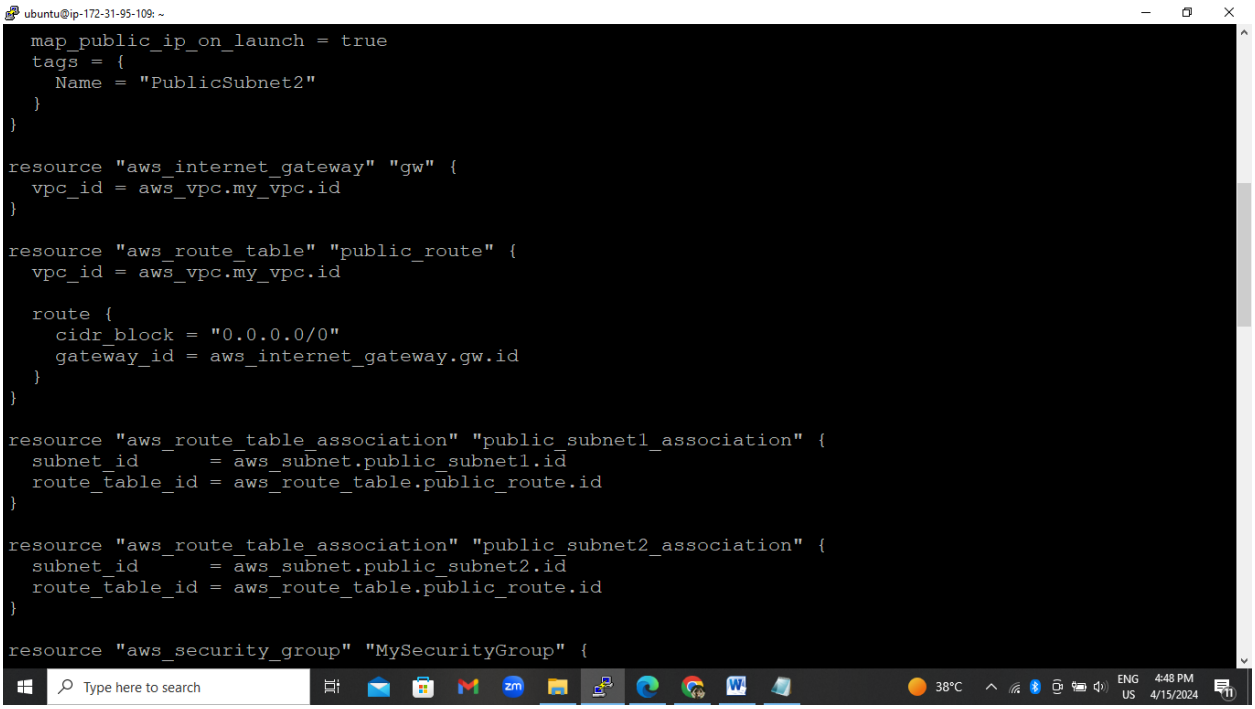
ubuntu@ip-172-31-95-109: ~
map_public_ip_on_launch = true
tags = {
Name = "PublicSubnet2"
}
}
resource "aws_internet_gateway" "gw" {
vpc_id = aws_vpc.my_vpc.id
}
resource "aws_route_table" "public_route" {
vpc_id = aws_vpc.my_vpc.id
route {
cidr_block = "0.0.0.0/0"
gateway_id = aws_internet_gateway.gw.id
}
}
resource "aws_route_table_association" "public_subnet1_association" {
subnet_id = aws_subnet.public_subnet1.id
route_table_id = aws_route_table.public_route.id
}
resource "aws_route_table_association" "public_subnet2_association" {
subnet_id = aws_subnet.public_subnet2.id
route_table_id = aws_route_table.public_route.id
}
resource "aws_security_group" "MySecurityGroup" {
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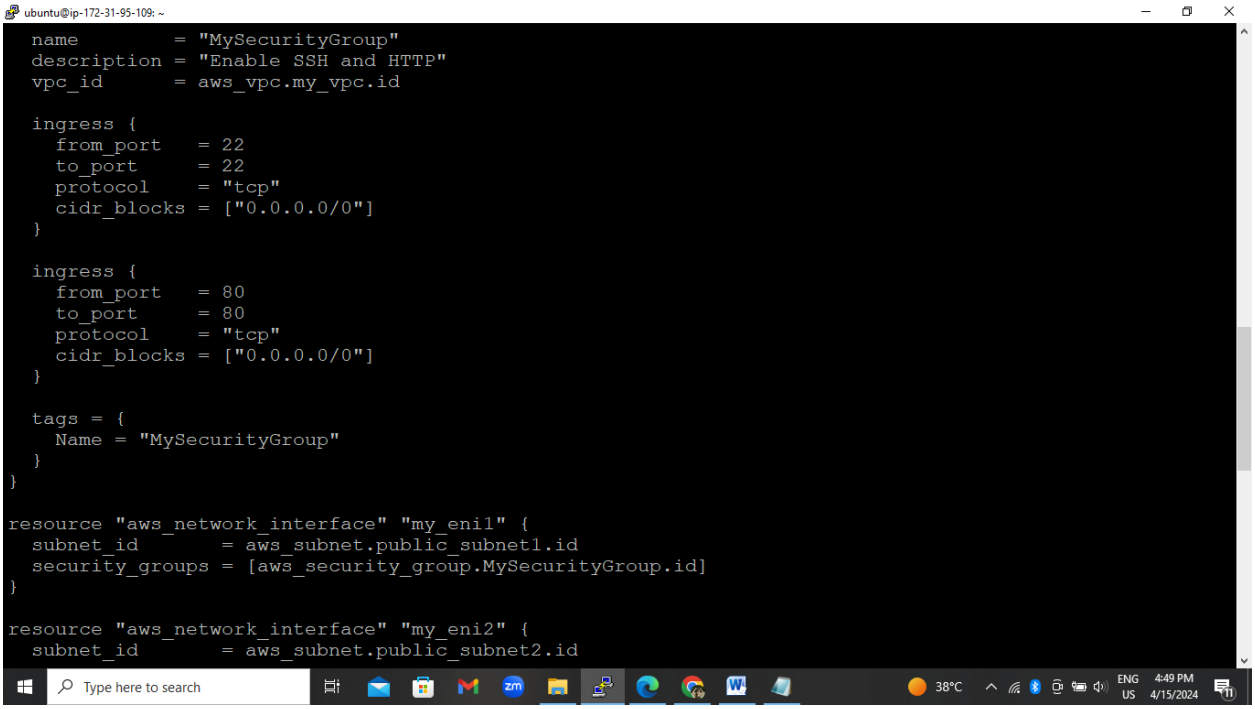
ubuntu@ip-172-31-95-109: ~
name = "MySecurityGroup"
description = "Enable SSH and HTTP"
vpc_id = aws_vpc.my_vpc.id
ingress {
from_port = 22
to_port = 22
protocol = "tcp"
cidr_blocks = ["0.0.0.0/0"]
}
ingress {
from_port = 80
to_port = 80
protocol = "tcp"
cidr_blocks = ["0.0.0.0/0"]
}
tags = {
Name = "MySecurityGroup"
}
}
resource "aws_network_interface" "my_eni1" {
subnet_id = aws_subnet.public_subnet1.id
security_groups = [aws_security_group.MySecurityGroup.id]
}
resource "aws_network_interface" "my_eni2" {
subnet_id = aws_subnet.public_subnet2.id
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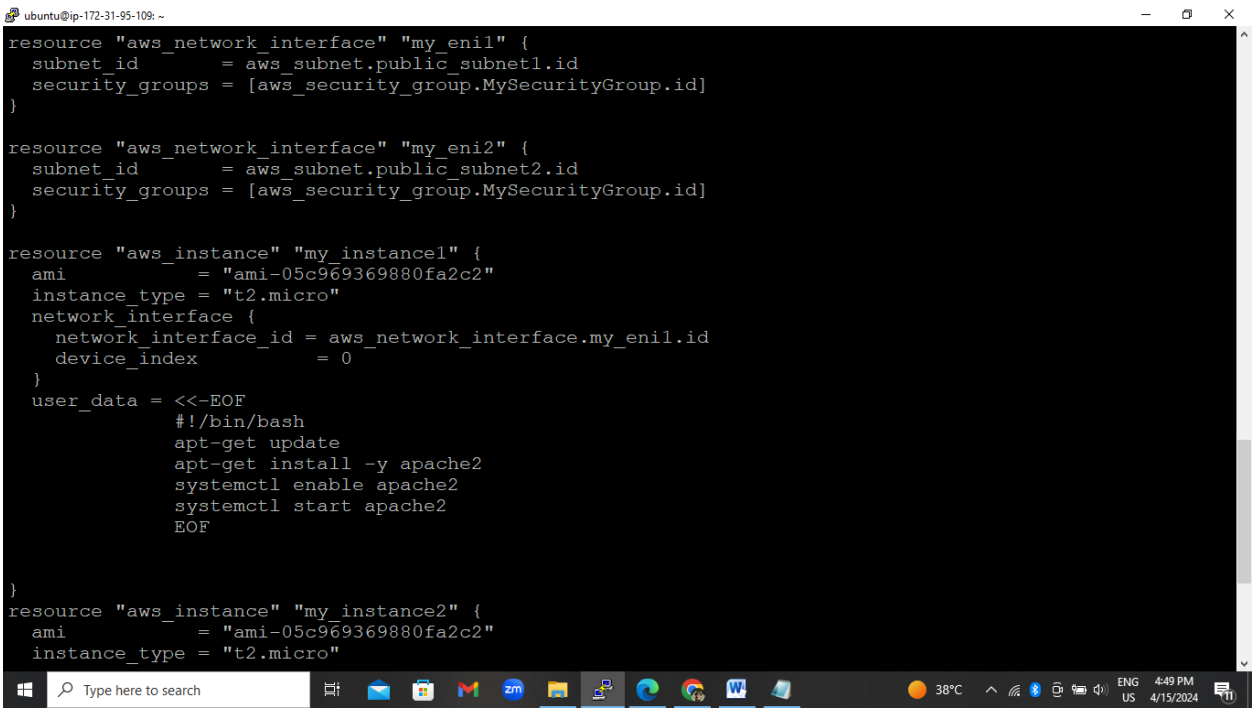
ubuntu@ip-172-31-95-109: ~
resource "aws_network_interface" "my_eni1" {
subnet_id = aws_subnet.public_subnet1.id
security_groups = [aws_security_group.MySecurityGroup.id]
}
resource "aws_network_interface" "my_eni2" {
subnet_id = aws_subnet.public_subnet2.id
security_groups = [aws_security_group.MySecurityGroup.id]
}
resource "aws_instance" "my_instance1" {
ami = "ami-05c969369880fa2c2"
instance_type = "t2.micro"
network_interface {
network_interface_id = aws_network_interface.my_eni1.id
device_index = 0
}
user_data = <<-EOF
#!/bin/bash
apt-get update
apt-get install -y apache2
systemctl enable apache2
systemctl start apache2
EOF
}
resource "aws_instance" "my_instance2" {
ami = "ami-05c969369880fa2c2"
instance_type = "t2.micro"
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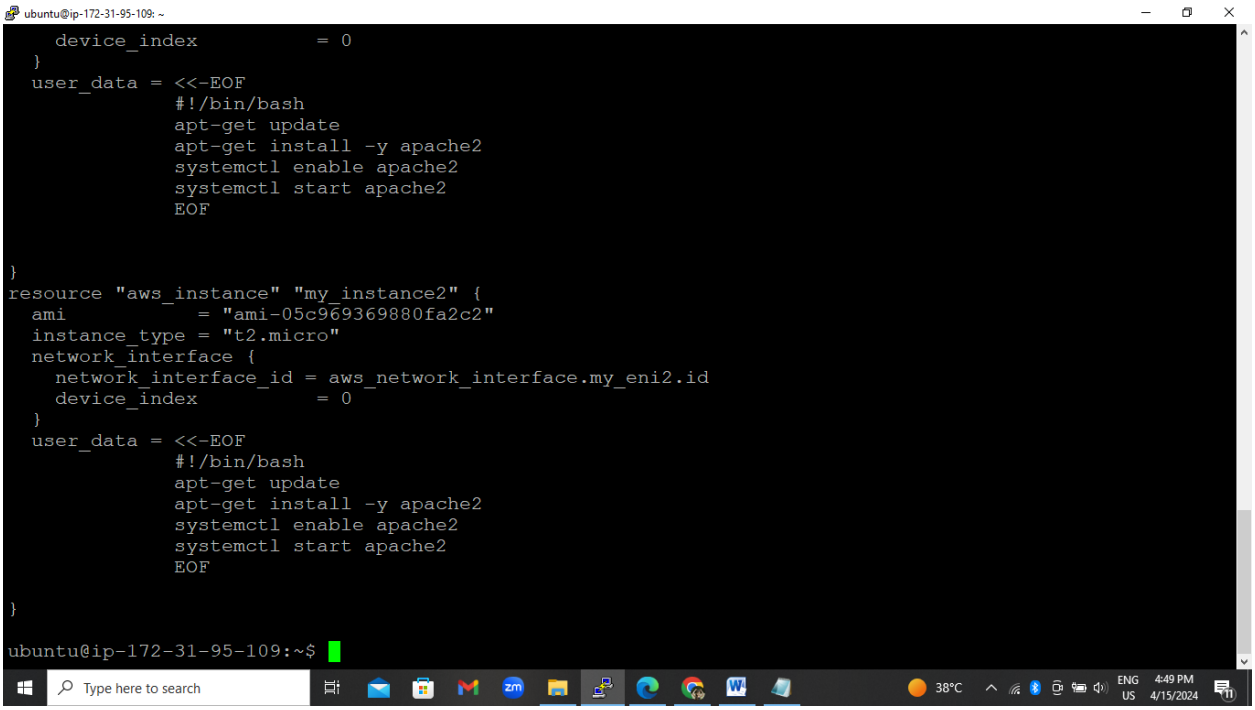
ubuntu@ip-172-31-95-109: ~
device_index = 0
}
user_data = <<-EOF
#!/bin/bash
apt-get update
apt-get install -y apache2
systemctl enable apache2
systemctl start apache2
EOF
}
resource "aws_instance" "my_instance2" {
ami = "ami-05c969369880fa2c2"
instance_type = "t2.micro"
network_interface {
network_interface_id = aws_network_interface.my_eni2.id
device_index = 0
}
user_data = <<-EOF
#!/bin/bash
apt-get update
apt-get install -y apache2
systemctl enable apache2
systemctl start apache2
EOF
}
ubuntu@ip-172-31-95-109:~$
Type here to search
38°C
ENG
US
4:49 PM
4/15/2024