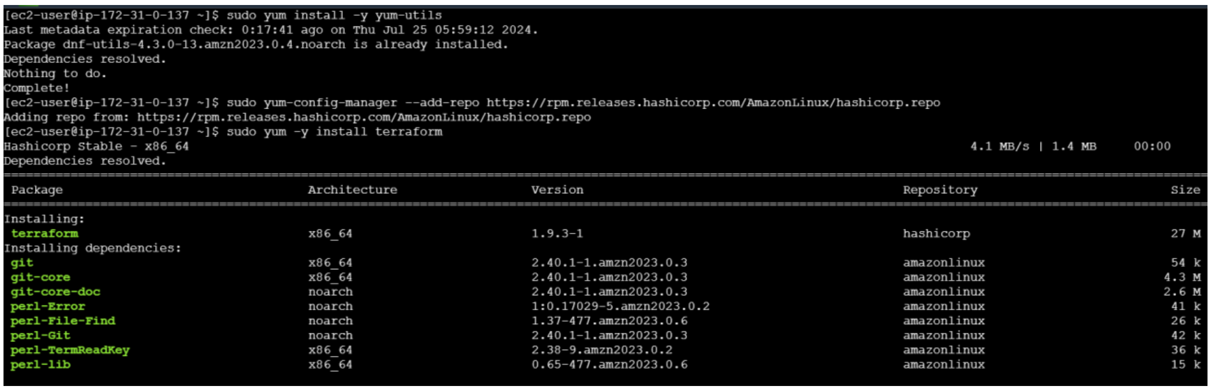
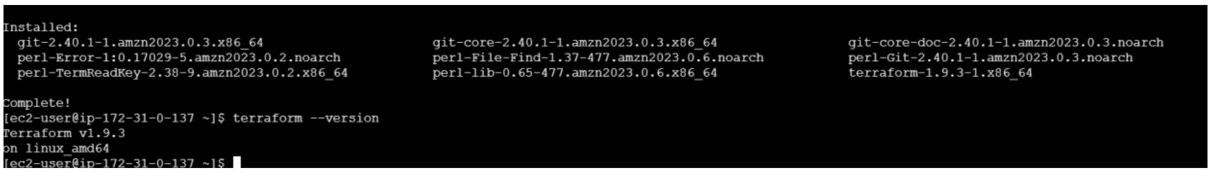
Task 18: create 2 EC2 instance on 2 different regions and install nginx using terraform script

1. Installed terraform:

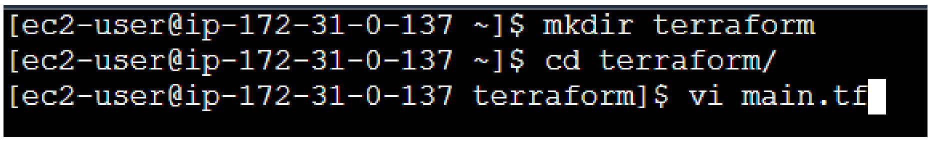


```
[ec2-user@ip-172-31-0-137 ~]$ sudo yum install -y yum-utils
Last metadata expiration check: 0:17:41 ago on Thu Jul 25 05:59:12 2024.
Package dnf-utils-4.3.0-13.amzn2023.0.4.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-0-137 ~]$ sudo yum-config-manager --add-repo https://rpm.releases.hashicorp.com/AmazonLinux/hashicorp.repo
Adding repo from: https://rpm.releases.hashicorp.com/AmazonLinux/hashicorp.repo
[ec2-user@ip-172-31-0-137 ~]$ sudo yum -y install terraform
Hashicorp Stable - x86_64                                                              4.1 MB/s | 1.4 MB     00:00
Dependencies resolved.
========================================================================================================================
 Package                  Architecture         Version                              Repository                    Size
========================================================================================================================
Installing:
 terraform                x86_64               1.9.3-1                              hashicorp                     27 M
Installing dependencies:
 git                      x86_64               2.40.1-1.amzn2023.0.3                amazonlinux                   54 k
 git-core                 x86_64               2.40.1-1.amzn2023.0.3                amazonlinux                  4.3 M
 git-core-doc             noarch               2.40.1-1.amzn2023.0.3                amazonlinux                  2.6 M
 perl-Error               noarch               1:0.17029-5.amzn2023.0.2             amazonlinux                   41 k
 perl-File-Find           noarch               1.37-477.amzn2023.0.6                amazonlinux                   26 k
 perl-Git                 noarch               2.40.1-1.amzn2023.0.3                amazonlinux                   42 k
 perl-TermReadKey         x86_64               2.38-9.amzn2023.0.2                  amazonlinux                   36 k
 perl-lib                 x86_64               0.65-477.amzn2023.0.6                amazonlinux                   15 k
```



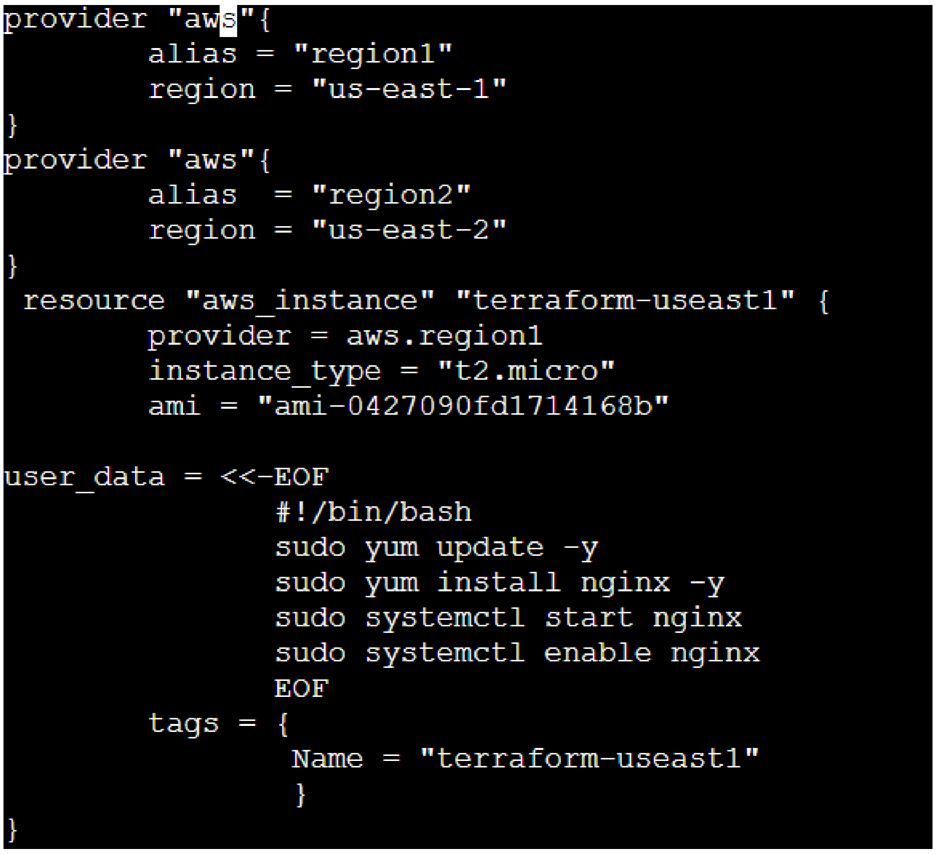
```
Installed:
  git-2.40.1-1.amzn2023.0.3.x86_64                  git-core-2.40.1-1.amzn2023.0.3.x86_64             git-core-doc-2.40.1-1.amzn2023.0.3.noarch
  perl-Error-1:0.17029-5.amzn2023.0.2.noarch        perl-File-Find-1.37-477.amzn2023.0.6.noarch       perl-Git-2.40.1-1.amzn2023.0.3.noarch
  perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64       perl-lib-0.65-477.amzn2023.0.6.x86_64             terraform-1.9.3-1.x86_64

Complete!
[ec2-user@ip-172-31-0-137 ~]$ terraform --version
Terraform v1.9.3
on linux_amd64
[ec2-user@ip-172-31-0-137 ~]$
```

2. Create a directory for write terraform file:

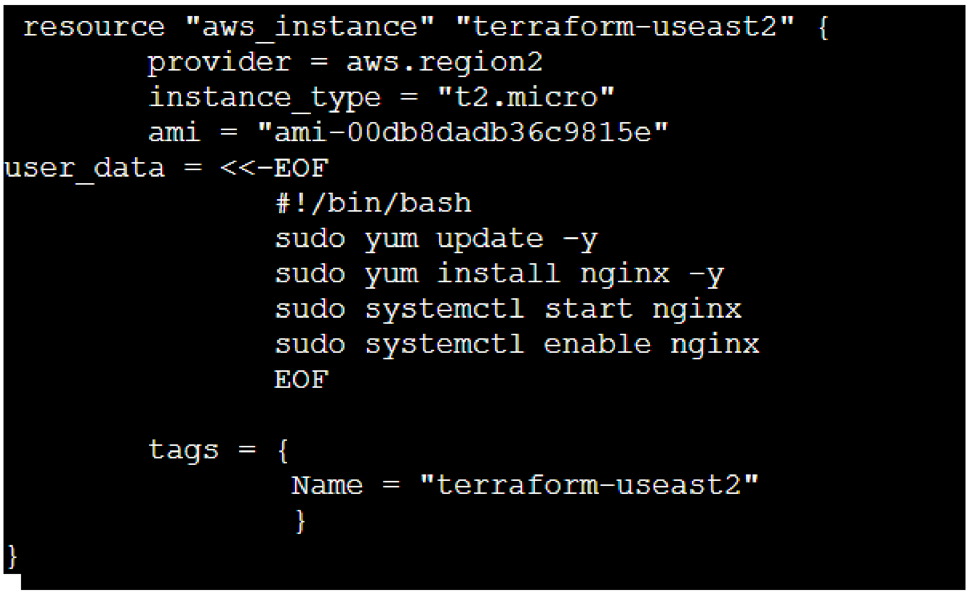


```
[ec2-user@ip-172-31-0-137 ~]$ mkdir terraform
[ec2-user@ip-172-31-0-137 ~]$ cd terraform/
[ec2-user@ip-172-31-0-137 terraform]$ vi main.tf
```

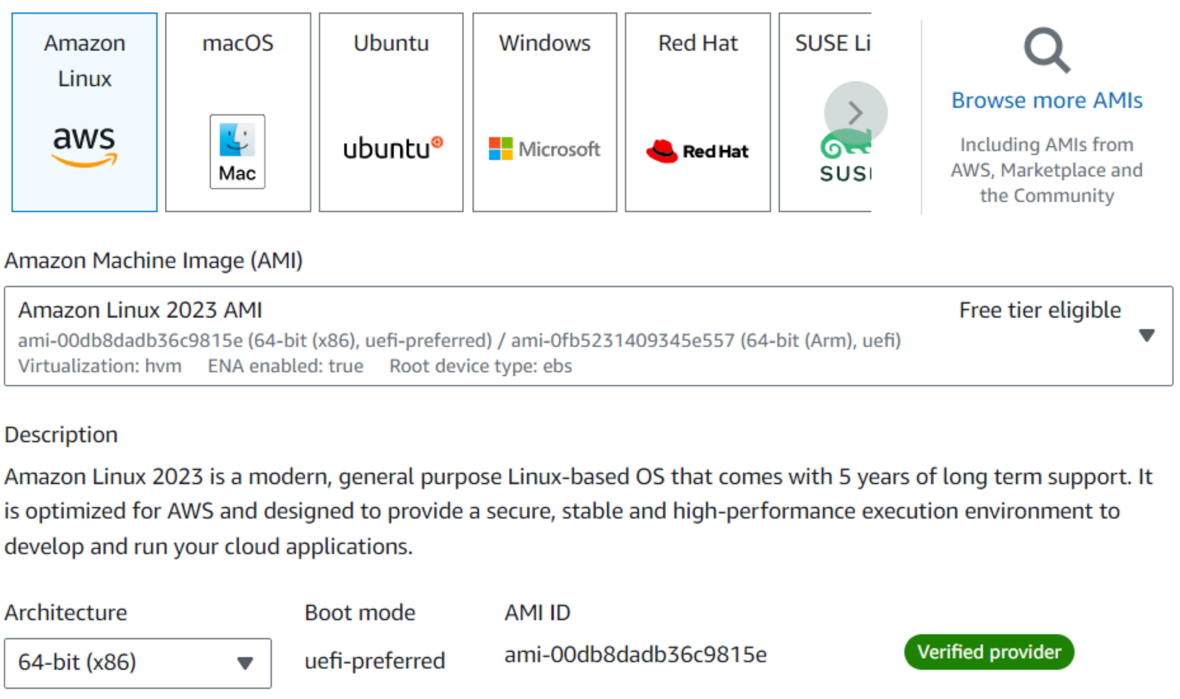
3. Main.tf: [terraform file for created 2 instances in diff region and installed nginx]



```
provider "aws"{
        alias = "region1"
        region = "us-east-1"
}
provider "aws"{
        alias  = "region2"
        region = "us-east-2"
}
 resource "aws_instance" "terraform-useast1" {
        provider = aws.region1
        instance_type = "t2.micro"
        ami = "ami-0427090fd1714168b"

user_data = <<-EOF
               #!/bin/bash
               sudo yum update -y
               sudo yum install nginx -y
               sudo systemctl start nginx
               sudo systemctl enable nginx
               EOF
        tags = {
                Name = "terraform-useast1"
                }
}
```



```
 resource "aws_instance" "terraform-useast2" {
        provider = aws.region2
        instance_type = "t2.micro"
        ami = "ami-00db8dadb36c9815e"
user_data = <<-EOF
               #!/bin/bash
               sudo yum update -y
               sudo yum install nginx -y
               sudo systemctl start nginx
               sudo systemctl enable nginx
               EOF

        tags = {
                Name = "terraform-useast2"
                }
}
```



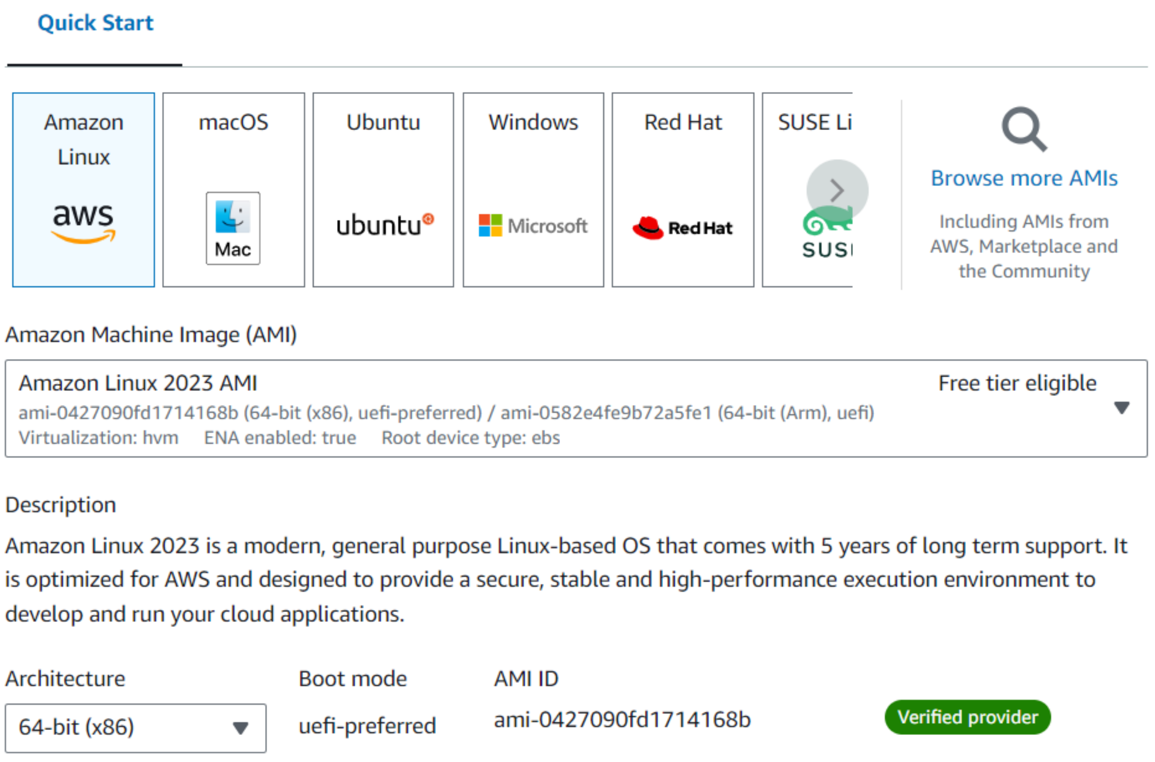
Amazon Machine Image (AMI)

Amazon Linux 2023 AMI — Free tier eligible
ami-00db8dadb36c9815e (64-bit (x86), uefi-preferred) / ami-0fb5231409345e557 (64-bit (Arm), uefi)
Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Amazon Linux 2023 is a modern, general purpose Linux-based OS that comes with 5 years of long term support. It is optimized for AWS and designed to provide a secure, stable and high-performance execution environment to develop and run your cloud applications.

Architecture	Boot mode	AMI ID	
64-bit (x86)	uefi-preferred	ami-00db8dadb36c9815e	Verified provider



Amazon Machine Image (AMI)

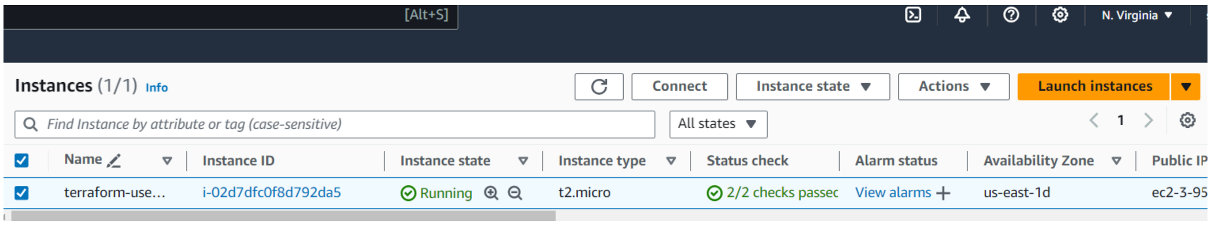
Amazon Linux 2023 AMI — Free tier eligible
ami-0427090fd1714168b (64-bit (x86), uefi-preferred) / ami-0582e4fe9b72a5fe1 (64-bit (Arm), uefi)
Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Amazon Linux 2023 is a modern, general purpose Linux-based OS that comes with 5 years of long term support. It is optimized for AWS and designed to provide a secure, stable and high-performance execution environment to develop and run your cloud applications.

Architecture	Boot mode	AMI ID	
64-bit (x86)	uefi-preferred	ami-0427090fd1714168b	Verified provider

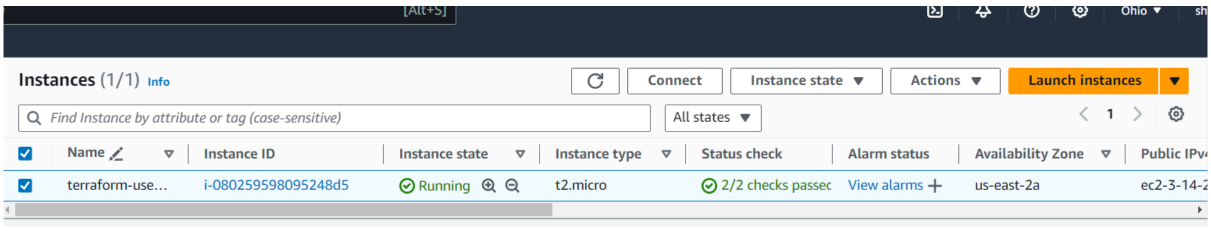
4. Instance created in us-east-1:



Instances (1/1) Info

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
✓	terraform-use...	i-02d7dfc0f8d792da5	Running	t2.micro	2/2 checks passec	View alarms	us-east-1d	ec2-3-95

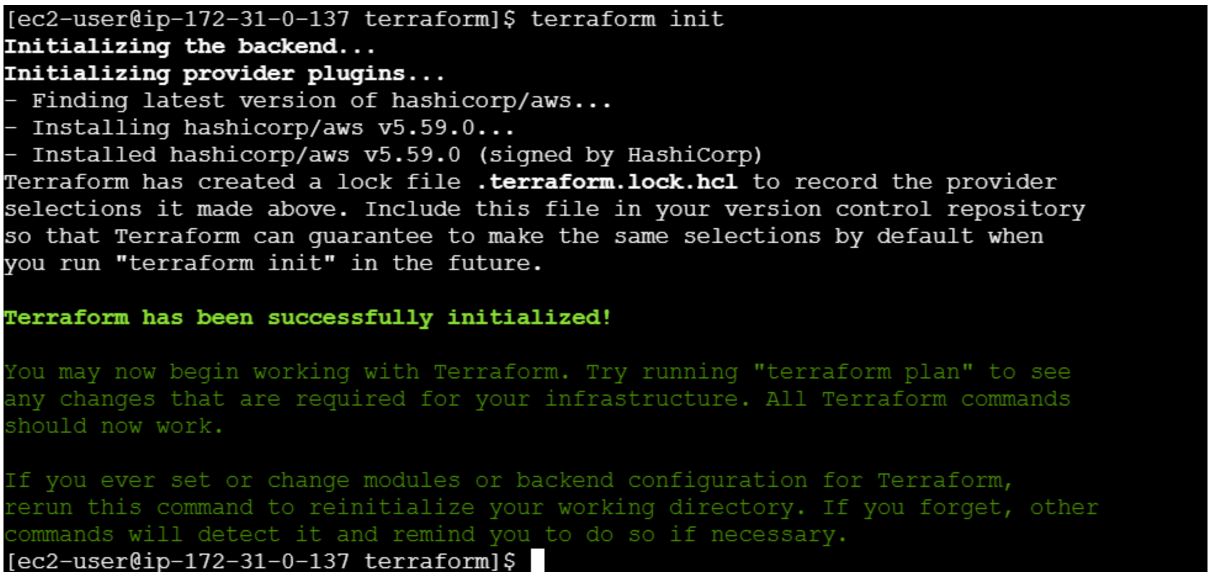
5. Instance created in us-east-2:



Instances (1/1) Info

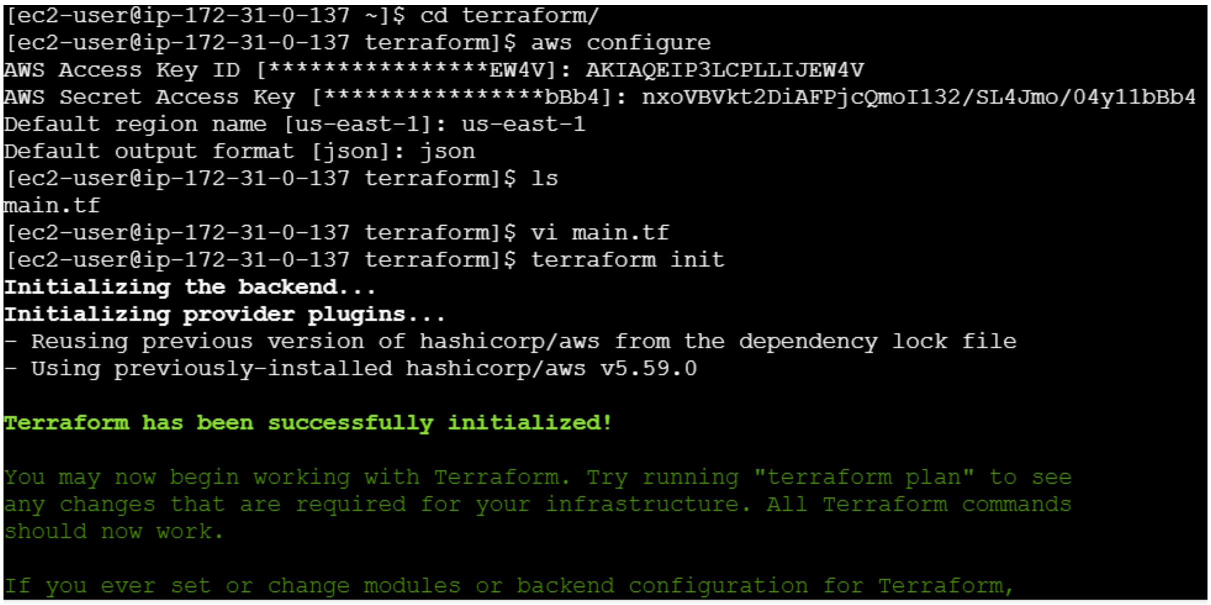
	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv
✓	terraform-use...	i-080259598095248d5	Running	t2.micro	2/2 checks passec	View alarms	us-east-2a	ec2-3-14-2

6. Terraform init:



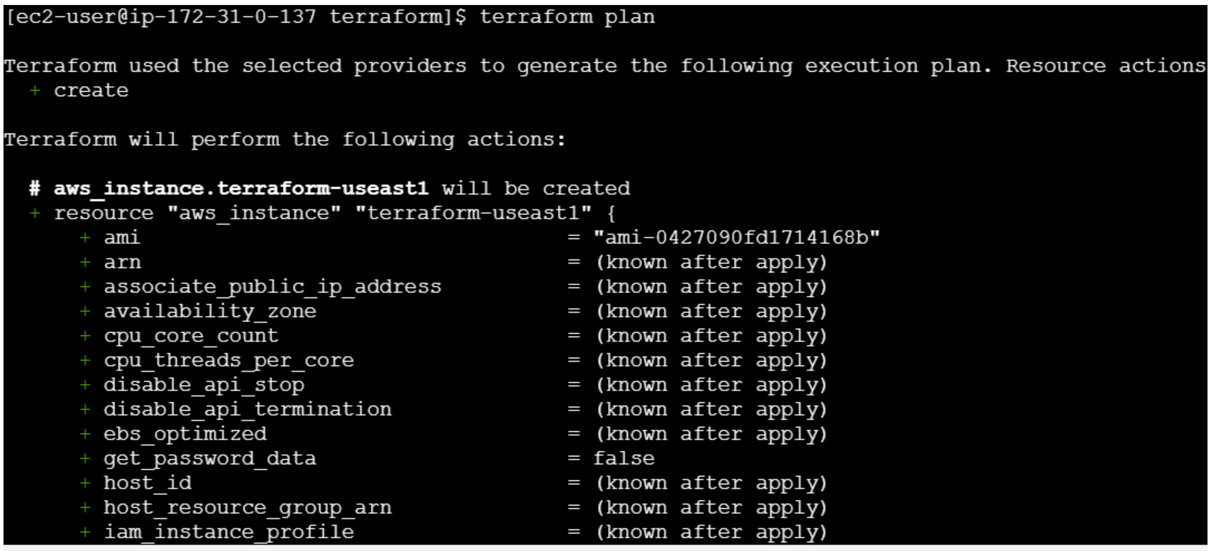
```
[ec2-user@ip-172-31-0-137 terraform]$ terraform init
Initializing the backend...
Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v5.59.0...
- Installed hashicorp/aws v5.59.0 (signed by HashiCorp)
Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
[ec2-user@ip-172-31-0-137 terraform]$
```

7. Aws cli configure:



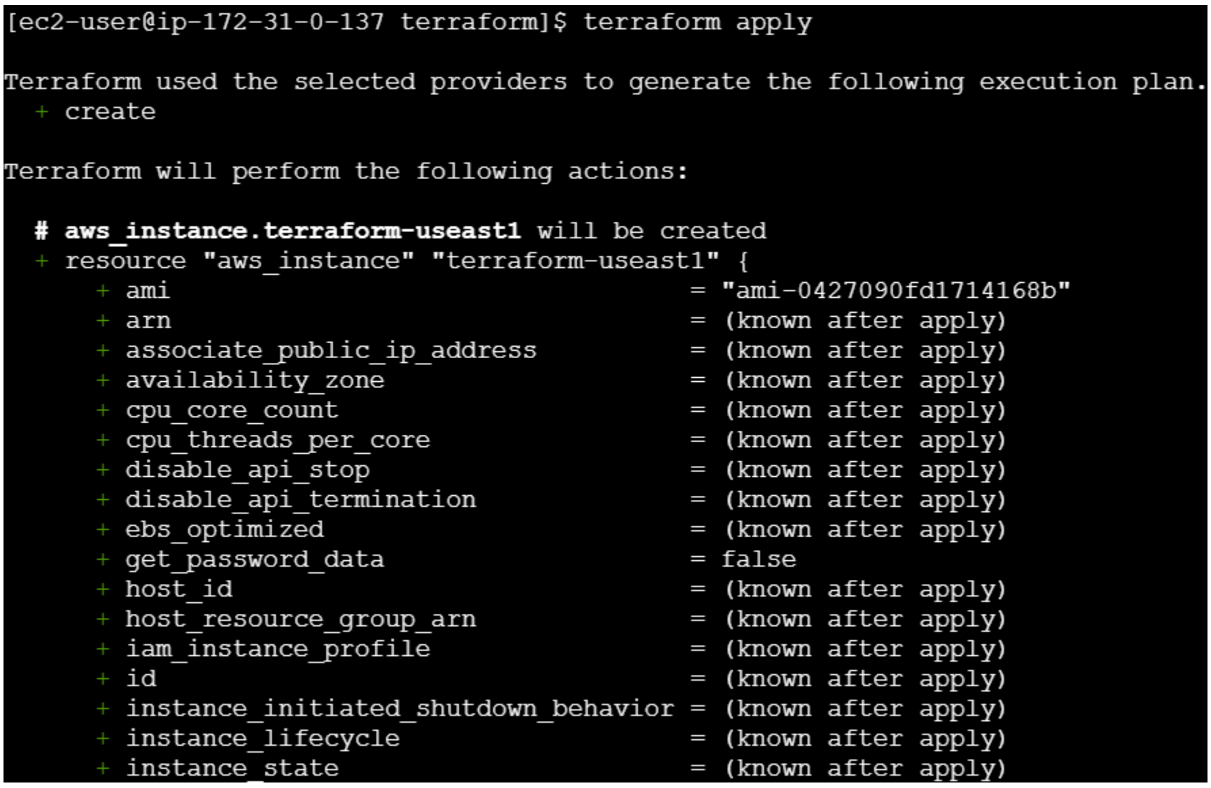
```
[ec2-user@ip-172-31-0-137 ~]$ cd terraform/
[ec2-user@ip-172-31-0-137 terraform]$ aws configure
AWS Access Key ID [****************EW4V]: AKIAQEIP3LCPLLIJEW4V
AWS Secret Access Key [****************bBb4]: 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
Default region name [us-east-1]: us-east-1
Default output format [json]: json
[ec2-user@ip-172-31-0-137 terraform]$ ls
main.tf
[ec2-user@ip-172-31-0-137 terraform]$ vi main.tf
[ec2-user@ip-172-31-0-137 terraform]$ terraform init
Initializing the backend...
Initializing provider plugins...
- Reusing previous version of hashicorp/aws from the dependency lock file
- Using previously-installed hashicorp/aws v5.59.0

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
```

8. Terraform plan:

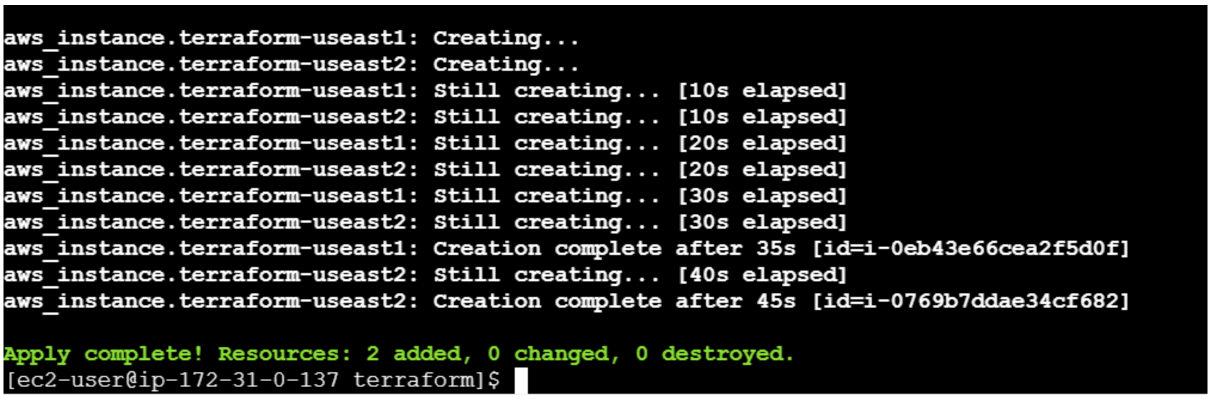


```
[ec2-user@ip-172-31-0-137 terraform]$ terraform plan

Terraform used the selected providers to generate the following execution plan. Resource actions
  + create

Terraform will perform the following actions:

  # aws_instance.terraform-useast1 will be created
  + resource "aws_instance" "terraform-useast1" {
      + ami                                  = "ami-0427090fd1714168b"
      + 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)
```

9. Terraform apply:

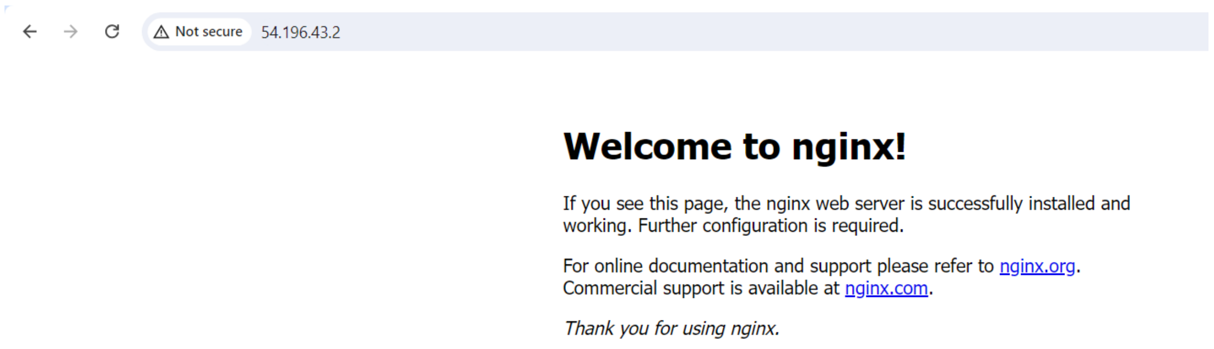


```
[ec2-user@ip-172-31-0-137 terraform]$ terraform apply

Terraform used the selected providers to generate the following execution plan.
  + create

Terraform will perform the following actions:

  # aws_instance.terraform-useast1 will be created
  + resource "aws_instance" "terraform-useast1" {
      + ami                                  = "ami-0427090fd1714168b"
      + 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)
```



```
aws_instance.terraform-useast1: Creating...
aws_instance.terraform-useast2: Creating...
aws_instance.terraform-useast1: Still creating... [10s elapsed]
aws_instance.terraform-useast2: Still creating... [10s elapsed]
aws_instance.terraform-useast1: Still creating... [20s elapsed]
aws_instance.terraform-useast2: Still creating... [20s elapsed]
aws_instance.terraform-useast1: Still creating... [30s elapsed]
aws_instance.terraform-useast2: Still creating... [30s elapsed]
aws_instance.terraform-useast1: Creation complete after 35s [id=i-0eb43e66cea2f5d0f]
aws_instance.terraform-useast2: Still creating... [40s elapsed]
aws_instance.terraform-useast2: Creation complete after 45s [id=i-0769b7ddae34cf682]

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.
[ec2-user@ip-172-31-0-137 terraform]$
```

10. Nginx installed:

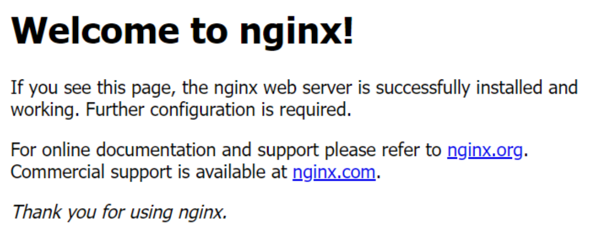

Not secure 54.196.43.2

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.


Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

Main.tf file:

```
provider "aws"{
    alias = "region1"
    region = "us-east-1"
}
provider "aws"{
    alias  = "region2"
    region = "us-east-2"
}
 resource "aws_instance" "terraform-useast1" {
    provider = aws.region1
    instance_type = "t2.micro"
    ami = "ami-0427090fd1714168b"

user_data = <<-EOF
```

```
            #!/bin/bash
            sudo yum update -y
            sudo yum install nginx -y
            sudo systemctl start nginx
            sudo systemctl enable nginx
            EOF
      tags = {
             Name = "terraform-useast1"
             }
}
resource "aws_instance" "terraform-useast2" {
      provider = aws.region2
      instance_type = "t2.micro"
      ami = "ami-00db8dadb36c9815e"
user_data = <<-EOF
            #!/bin/bash
            sudo yum update -y
            sudo yum install nginx -y
            sudo systemctl start nginx
            sudo systemctl enable nginx
            EOF

      tags = {
             Name = "terraform-useast2"
             }
}
```