# PROJECT

Create below infra using terraform

1. Create two virtual machines in east us ( web servers)
2. Configure load balancer for above servers

# I use this code

```
# Configure the AWS provider
provider "aws" {
  region = "us-east-2"
}

# Create a VPC
resource "aws_vpc" "web_vpc" {
  cidr_block           = "10.0.0.0/16"
  enable_dns_hostnames = true

  tags = {
    Name = "web-vpc"
  }
}
```

```
# Create an Internet Gateway
resource "aws_internet_gateway" "web_igw" {
  vpc_id = aws_vpc.web_vpc.id

  tags = {
    Name = "web-igw"
  }
}

# Create a subnet in us-east-2a
resource "aws_subnet" "web_subnet_1" {
  vpc_id            = aws_vpc.web_vpc.id
  cidr_block        = "10.0.1.0/24"
  availability_zone = "us-east-1a"

  tags = {
    Name = "web-subnet-1"
  }
}
```

```
# Create a subnet in us-east-2b
resource "aws_subnet" "web_subnet_2" {
  vpc_id            = aws_vpc.web_vpc.id
  cidr_block        = "10.0.2.0/24"
  availability_zone = "us-east-1b"

  tags = {
    Name = "web-subnet-2"
  }
}

# Create a route table
resource "aws_route_table" "web_route_table" {
  vpc_id = aws_vpc.web_vpc.id

  route {
    cidr_block = "0.0.0.0/0"
    gateway_id = aws_internet_gateway.web_igw.id
  }

  tags = {
    Name = "web-route-table"
  }
}
```

```
# Associate the route table with subnet 1
resource "aws_route_table_association" "web_route_assoc_1" {
  subnet_id      = aws_subnet.web_subnet_1.id
  route_table_id = aws_route_table.web_route_table.id
}

# Associate the route table with subnet 2
resource "aws_route_table_association" "web_route_assoc_2" {
  subnet_id      = aws_subnet.web_subnet_2.id
  route_table_id = aws_route_table.web_route_table.id
}

# Create a security group for the web servers
resource "aws_security_group" "web_sg" {
  name        = "web-sg"
  description = "Security group for web servers"
  vpc_id      = aws_vpc.web_vpc.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"]  # Note: In production, restrict this to your IP
  }

  egress {
    from_port   = 0
    to_port     = 0
    protocol    = "-1"
    cidr_blocks = ["0.0.0.0/0"]
  }

  tags = {
    Name = "web-sg"
  }
}
```

```
# Create two EC2 instances (web servers)
resource "aws_instance" "web_server" {
  count                  = 2
  ami                    = ""
  instance_type          = "t2.micro"
  key_name               = "kumar-tf.pem"
  vpc_security_group_ids = [aws_security_group.web_sg.id]
  subnet_id              = count.index == 0 ? aws_subnet.web_subnet_1.id : aws_subnet.web_subnet_2.id

  user_data = <<-EOF
            #!/bin/bash
            yum update -y
            yum install -y httpd
            systemctl start httpd
            systemctl enable httpd
            echo "<h1>Hello from $(hostname -f)</h1>" > /var/www/html/index.html
            EOF

  tags = {
    Name = "web-server-${count.index + 1}"
  }
}
```

```
# Create an Application Load Balancer
resource "aws_lb" "web_alb" {
  name               = "web-alb"
  internal           = false
  load_balancer_type = "application"
  security_groups    = [aws_security_group.web_sg.id]
  subnets            = [aws_subnet.web_subnet_1.id, aws_subnet.web_subnet_2.id]

  tags = {
    Name = "web-alb"
  }
}

# Create a target group for the ALB
resource "aws_lb_target_group" "web_tg" {
  name     = "web-tg"
  port     = 80
  protocol = "HTTP"
  vpc_id   = aws_vpc.web_vpc.id

  health_check {
    path                = "/"
    healthy_threshold   = 2
    unhealthy_threshold = 10
  }
}
```

```
# Attach the EC2 instances to the target group
resource "aws_lb_target_group_attachment" "web_tg_attachment" {
  count            = 2
  target_group_arn = aws_lb_target_group.web_tg.arn
  target_id        = aws_instance.web_server[count.index].id
  port             = 80
}

# Create a listener for the ALB
resource "aws_lb_listener" "web_listener" {
  load_balancer_arn = aws_lb.web_alb.arn
  port              = "80"
  protocol          = "HTTP"

  default_action {
    type             = "forward"
    target_group_arn = aws_lb_target_group.web_tg.arn
  }
}
```

```
# Output the public IPs of the EC2 instances
output "web_server_public_ips" {
  value = aws_instance.web_server[*].public_ip
}

# Output the DNS name of the load balancer
output "alb_dns_name" {
  value       = aws_lb.web_alb.dns_name
  description = "The DNS name of the Application Load Balancer"
}
```

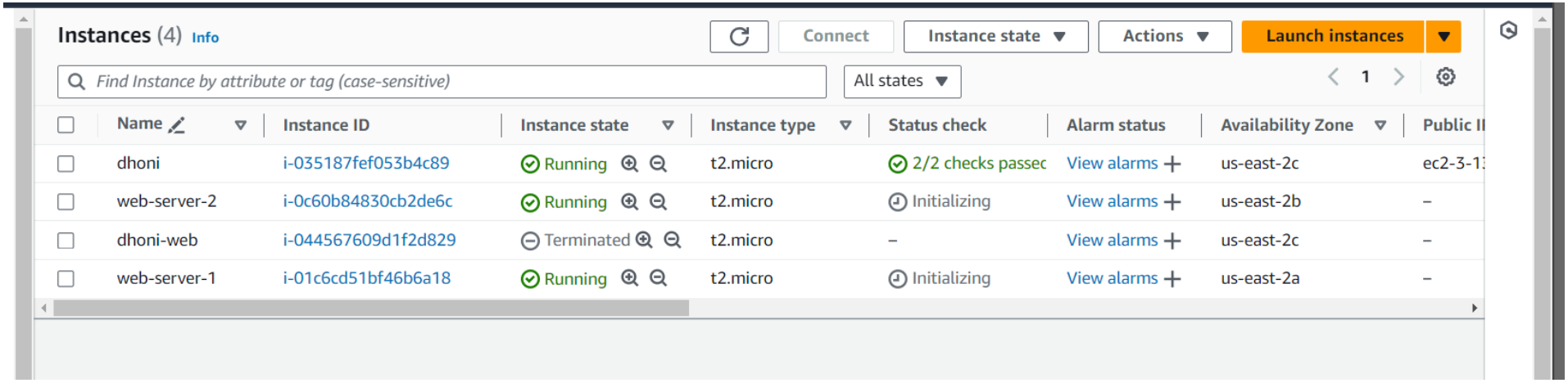
- I have facing some errors at the terraform apply
- For creating the EC2 Instances
- The error was shone like this
- Error: creating EC2 Instance: operation error EC2: RunInstances, https response error StatusCode: 400, RequestID: 15a6f75e-575b-4561-9766-a80f6eb5b4ff, api error InvalidKeyPair.NotFound: The key pair 'dhoni.pem' does not exist

```
aws_lb.web_alb: Still creating... [1m30s elapsed]
aws_lb.web_alb: Still creating... [1m40s elapsed]
aws_lb.web_alb: Still creating... [1m50s elapsed]
aws_lb.web_alb: Still creating... [2m0s elapsed]
aws_lb.web_alb: Still creating... [2m10s elapsed]
aws_lb.web_alb: Still creating... [2m20s elapsed]
aws_lb.web_alb: Still creating... [2m30s elapsed]
aws_lb.web_alb: Still creating... [2m40s elapsed]
aws_lb.web_alb: Creation complete after 2m41s [id=arn:aws:elasticloadbalancing:us-east-2:891376934605:loadbalancer/app/web-alb/a1e6935c0e3aa2b8]
aws_lb_listener.web_listener: Creating...
aws_lb_listener.web_listener: Creation complete after 0s [id=arn:aws:elasticloadbalancing:us-east-2:891376934605:listener/app/web-alb/a1e6935c0e3
aa2b8/563add27e549056c]

│ Error: creating EC2 Instance: operation error EC2: RunInstances, https response error StatusCode: 400, RequestID: ac462f93-efd0-4f26-ae83-ccd55
ac21567, api error InvalidKeyPair.NotFound: The key pair 'dhoni.pem' does not exist

    with aws_instance.web_server[1],
    on main.tf line 106, in resource "aws_instance" "web_server":
   106: resource "aws_instance" "web_server" {


│ Error: creating EC2 Instance: operation error EC2: RunInstances, https response error StatusCode: 400, RequestID: 1dbbc39b-0758-4bd0-896c-efa84
d2e7e52, api error InvalidKeyPair.NotFound: The key pair 'dhoni.pem' does not exist

    with aws_instance.web_server[0],
    on main.tf line 106, in resource "aws_instance" "web_server":
   106: resource "aws_instance" "web_server" {


root@ip-172-31-46-78:~/terraform# ^C
root@ip-172-31-46-78:~/terraform# vi main.tf
root@ip-172-31-46-78:~/terraform# terraform init
Initializing the backend...
Initializing provider plugins...
- Reusing previous version of hashicorp/aws from the dependency lock file
```

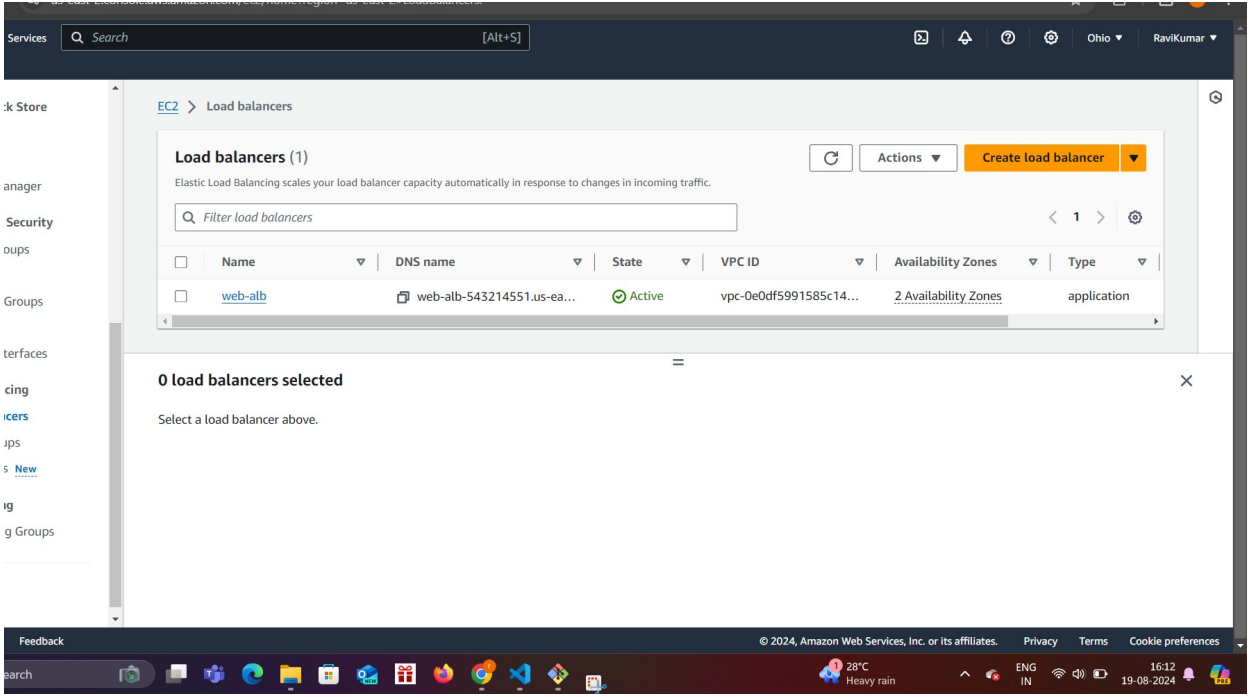
Search
27°C Rain
ENG IN
16:15 19-08-2024

- I solved the errors
- I got out put but

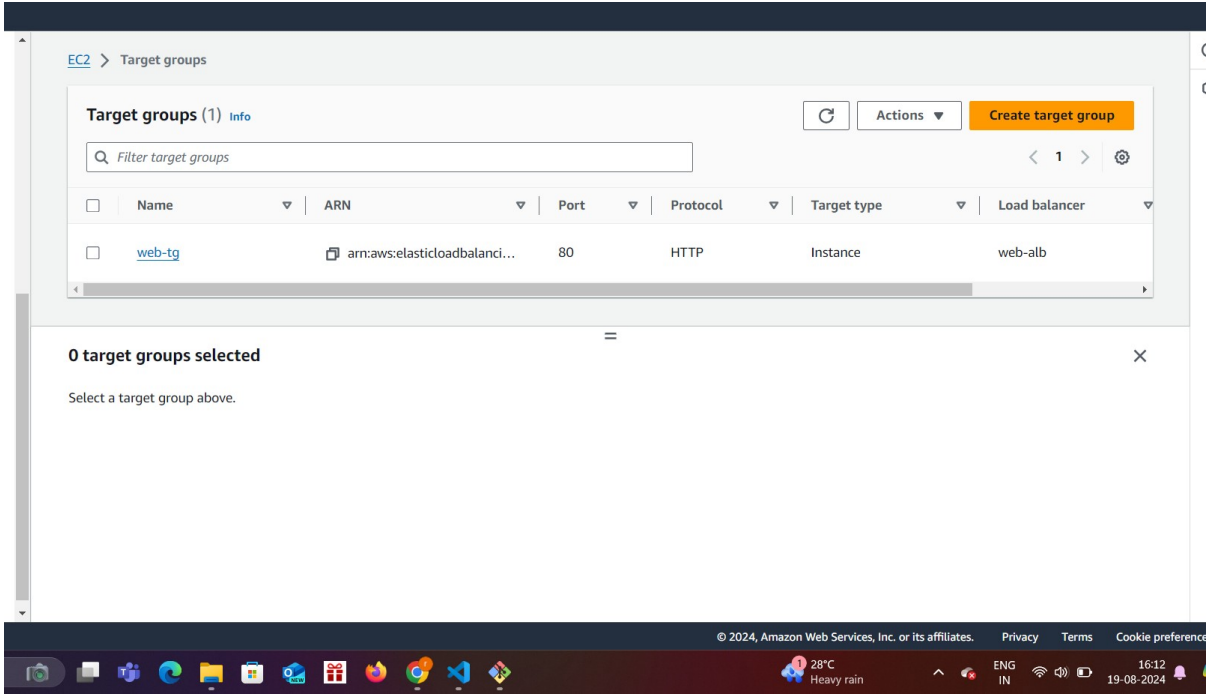
# I get the instances



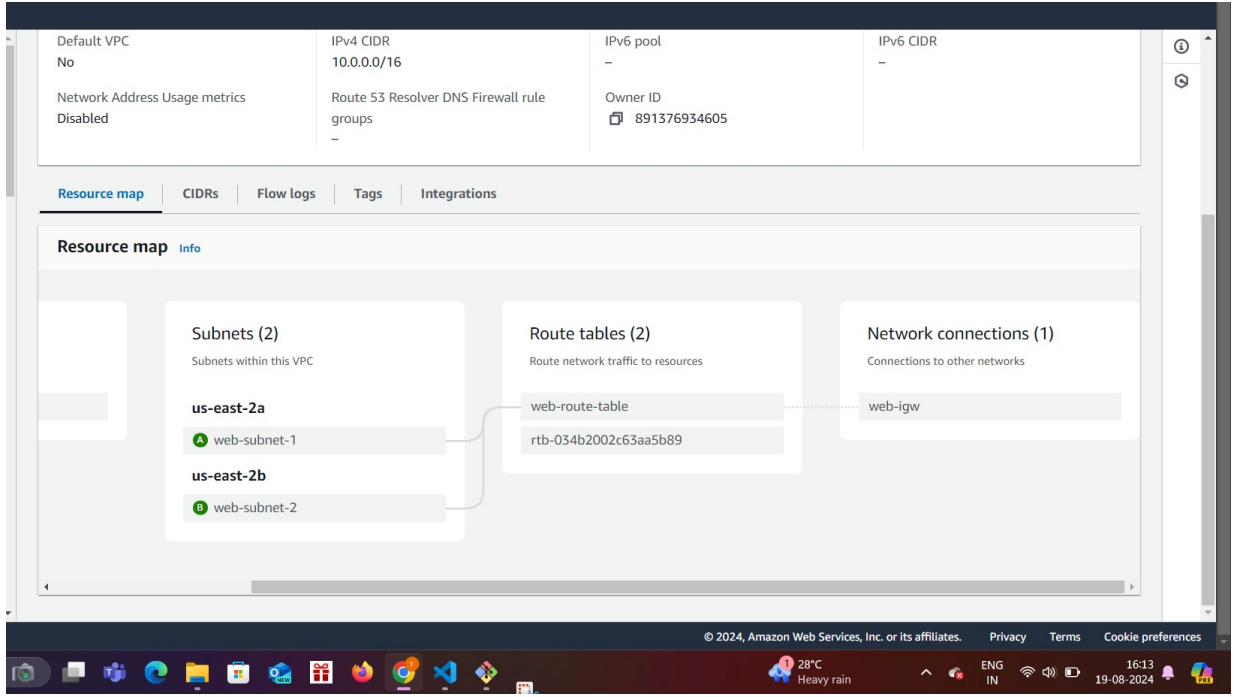
# Load balancer



# Target group



# VPC


Default VPC
No
IPv4 CIDR
10.0.0.0/16
IPv6 pool
–
IPv6 CIDR
–
Network Address Usage metrics
Disabled
Route 53 Resolver DNS Firewall rule groups
–
Owner ID
891376934605
Resource map
CIDRs
Flow logs
Tags
Integrations
Resource map
Info
Subnets (2)
Subnets within this VPC
us-east-2a
web-subnet-1
us-east-2b
web-subnet-2
Route tables (2)
Route network traffic to resources
web-route-table
rtb-034b2002c63aa5b89
Network connections (1)
Connections to other networks
web-igw
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
28°C
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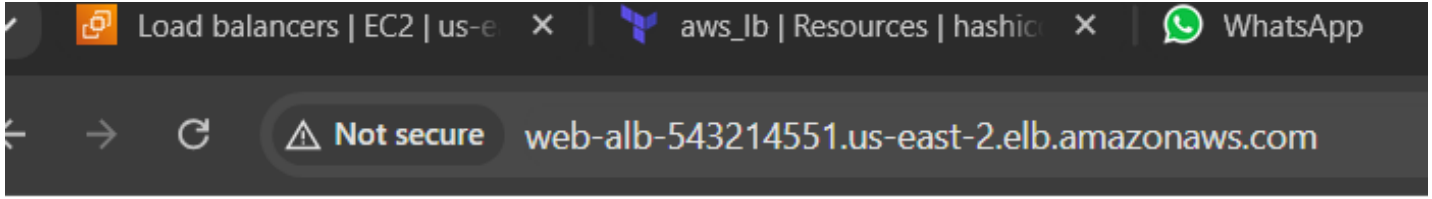
ENG
IN
16:13
19-08-2024

# Success to do terraform apply

```
Saved the plan to: myplan.tfplan

To perform exactly these actions, run the following command to apply:
    terraform apply "myplan.tfplan"
root@ip-172-31-46-78:~/terraform# terraform apply myplan.tfplan
aws_instance.web_server[1]: Creating...
aws_instance.web_server[0]: Creating...
aws_instance.web_server[1]: Still creating... [10s elapsed]
aws_instance.web_server[0]: Still creating... [10s elapsed]
aws_instance.web_server[1]: Still creating... [20s elapsed]
aws_instance.web_server[0]: Still creating... [20s elapsed]
aws_instance.web_server[1]: Still creating... [30s elapsed]
aws_instance.web_server[0]: Still creating... [30s elapsed]
aws_instance.web_server[0]: Creation complete after 32s [id=i-01c6cd51bf46b6a18]
aws_instance.web_server[1]: Creation complete after 32s [id=i-0c60b84830cb2de6c]
aws_lb_target_group_attachment.web_tg_attachment[0]: Creating...
aws_lb_target_group_attachment.web_tg_attachment[1]: Creating...
aws_lb_target_group_attachment.web_tg_attachment[0]: Creation complete after 0s [id=arn:aws:elasticloadbalancing:us-east-2:891376934605:targetgro
up/web-tg/5b07fcc070fc99e7-20240819103759875400000003]
aws_lb_target_group_attachment.web_tg_attachment[1]: Creation complete after 0s [id=arn:aws:elasticloadbalancing:us-east-2:891376934605:targetgro
up/web-tg/5b07fcc070fc99e7-20240819103759951400000004]

Apply complete! Resources: 4 added, 0 changed, 0 destroyed.

Outputs:

alb_dns_name = "web-alb-543214551.us-east-2.elb.amazonaws.com"
web_server_public_ips = [
  "",
  "",
]
root@ip-172-31-46-78:~/terraform# top
top - 10:44:18 up 41 min,  1 user,  load average: 0.00, 0.02, 0.03
Tasks: 105 total,   1 running, 104 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.3 us,  0.0 sy,  0.0 ni, 99.7 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :    957.4 total,    339.4 free,    329.9 used,    445.3 buff/cache
MiB Swap:      0.0 total,      0.0 free,      0.0 used.    627.5 avail Mem
```

# Success


Load balancers | EC2 | us-e
aws_lb | Resources | hashic
WhatsApp
Not secure
web-alb-543214551.us-east-2.elb.amazonaws.com

- I have successfully created two instancer and load balancer by using terraform