



Desafío No. 6

Bootcamp DevOps 63703

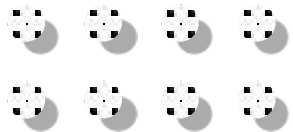
Presentado por:
Marco Vanegas
2023

Objetivos:

1. Crear una VPC con dos subredes privadas y dos subredes públicas.
2. Es necesario crear dos instancias EC2, dichas instancias deben estar en dos zonas de disponibilidad distintas.
3. Cada instancia debe poseer instalado un servidor web que muestre el nombre de la instancia y la región en la que se encuentra.
4. Agregar estas instancias a un target group.
5. Crear el balanceador de carga y agregar el target group al balanceador.



Illustrations by [Pixeltrue](#) on [icons8](#)



1. Se genera el plan de ejecución de Terraform.

```
dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps/Desafios/Solución Desafios/Solucion_Desafio_6
dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps/Desafios/Solución Desafi... x dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps x v

}

# module.vpc.aws_vpc.this[0] will be created
+ resource "aws_vpc" "this" {
  + arn                               = (known after apply)
  + cidr_block                       = "10.0.0.0/16"
  + default_network_acl_id          = (known after apply)
  + default_route_table_id          = (known after apply)
  + default_security_group_id       = (known after apply)
  + dhcp_options_id                 = (known after apply)
  + enable_dns_hostnames             = true
  + enable_dns_support              = true
  + enable_network_address_usage_metrics = (known after apply)
  + id                               = (known after apply)
  + instance_tenancy                 = "default"
  + ipv6_association_id              = (known after apply)
  + ipv6_cidr_block                  = (known after apply)
  + ipv6_cidr_block_network_border_group = (known after apply)
  + main_route_table_id              = (known after apply)
  + owner_id                         = (known after apply)
  + tags                             = {
    + "Name" = ""
    + "mail" = "orpimel@gmail.com"
  }
  + tags_all                         = (known after apply)
}

Plan: 25 to add, 0 to change, 0 to destroy.

Saved the plan to: terraform.plan

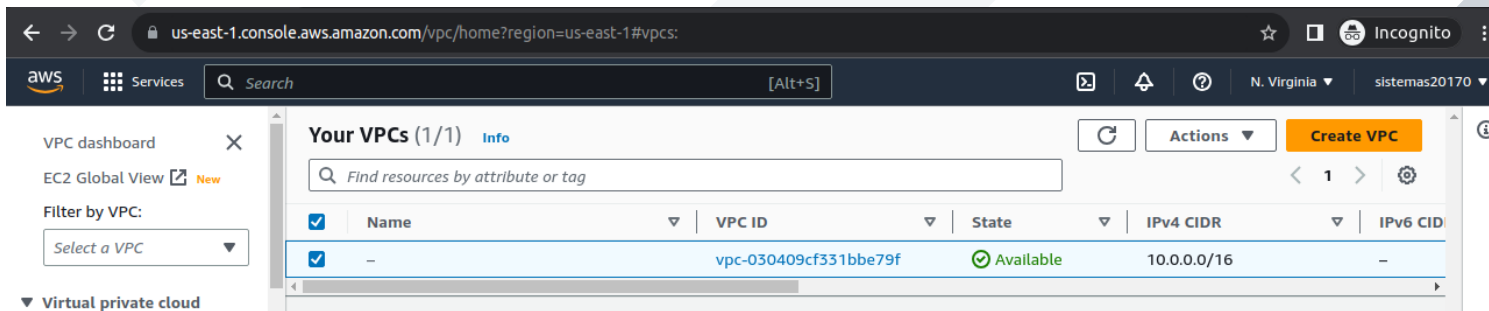
To perform exactly these actions, run the following command to apply:
  terraform apply "terraform.plan"
dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solución Desafios/Solucion_Desafio_6$
```

2. Se aplica el plan.

```
dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps/Desafios/Solución Desafios/Solucion_Desafio_6
module.vpc.aws_route_table_association.public[0]: Creation complete after 0s [id=rtbassoc-0cca4d5de4c41dbd3]
module.vpc.aws_route.public_internet_gateway[0]: Creation complete after 1s [id=r-rtb-088a4418281d221f71080289494]
aws_instance.linux_server_ins[1]: Still creating... [10s elapsed]
aws_lb.server_linux_rdp_lb: Still creating... [10s elapsed]
aws_instance.linux_server_ins[0]: Still creating... [10s elapsed]
aws_instance.linux_server_ins[1]: Still creating... [20s elapsed]
aws_lb.server_linux_rdp_lb: Still creating... [20s elapsed]
aws_instance.linux_server_ins[0]: Still creating... [20s elapsed]
aws_instance.linux_server_ins[1]: Creation complete after 23s [id=i-06c5e56915773e769]
aws_lb.server_linux_rdp_lb: Still creating... [30s elapsed]
aws_instance.linux_server_ins[0]: Still creating... [30s elapsed]
aws_instance.linux_server_ins[0]: Creation complete after 33s [id=i-07346f2257c5ca526]
aws_lb_target_group_attachment.server_linux_rdp_tg_attachment[0]: Creating...
aws_lb_target_group_attachment.server_linux_rdp_tg_attachment[1]: Creating...
aws_lb_target_group_attachment.server_linux_rdp_tg_attachment[0]: Creation complete after 1s [id=arn:aws:elasticloadbalancing:us-east-1:318539273132:targetgroup/tf-20230827032255664400000001/5b78e7a5024e5350-20230827032331505400000006]
aws_lb_target_group_attachment.server_linux_rdp_tg_attachment[1]: Creation complete after 1s [id=arn:aws:elasticloadbalancing:us-east-1:318539273132:targetgroup/tf-20230827032255664400000001/5b78e7a5024e5350-20230827032331778700000007]
aws_lb.server_linux_rdp_lb: Still creating... [40s elapsed]
aws_lb.server_linux_rdp_lb: Still creating... [50s elapsed]
aws_lb.server_linux_rdp_lb: Still creating... [1m0s elapsed]
aws_lb.server_linux_rdp_lb: Still creating... [1m10s elapsed]
aws_lb.server_linux_rdp_lb: Still creating... [1m20s elapsed]
aws_lb.server_linux_rdp_lb: Still creating... [1m30s elapsed]
aws_lb.server_linux_rdp_lb: Still creating... [1m40s elapsed]
aws_lb.server_linux_rdp_lb: Still creating... [1m50s elapsed]
aws_lb.server_linux_rdp_lb: Still creating... [2m0s elapsed]
aws_lb.server_linux_rdp_lb: Still creating... [2m10s elapsed]
aws_lb.server_linux_rdp_lb: Creation complete after 2m14s [id=arn:aws:elasticloadbalancing:us-east-1:318539273132:loadbalancer/app/tf-lb-20230827032258398500000004/116ac8ad00221145]
aws_lb_listener.server_linux_rdp_lb_listener: Creating...
aws_lb_listener.server_linux_rdp_lb_listener: Creation complete after 0s [id=arn:aws:elasticloadbalancing:us-east-1:318539273132:listener/app/tf-lb-20230827032258398500000004/116ac8ad00221145/24538bef239a35b5]

Apply complete! Resources: 25 added, 0 changed, 0 destroyed.
dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solución Desafios/Solucion_Desafio_6$
```

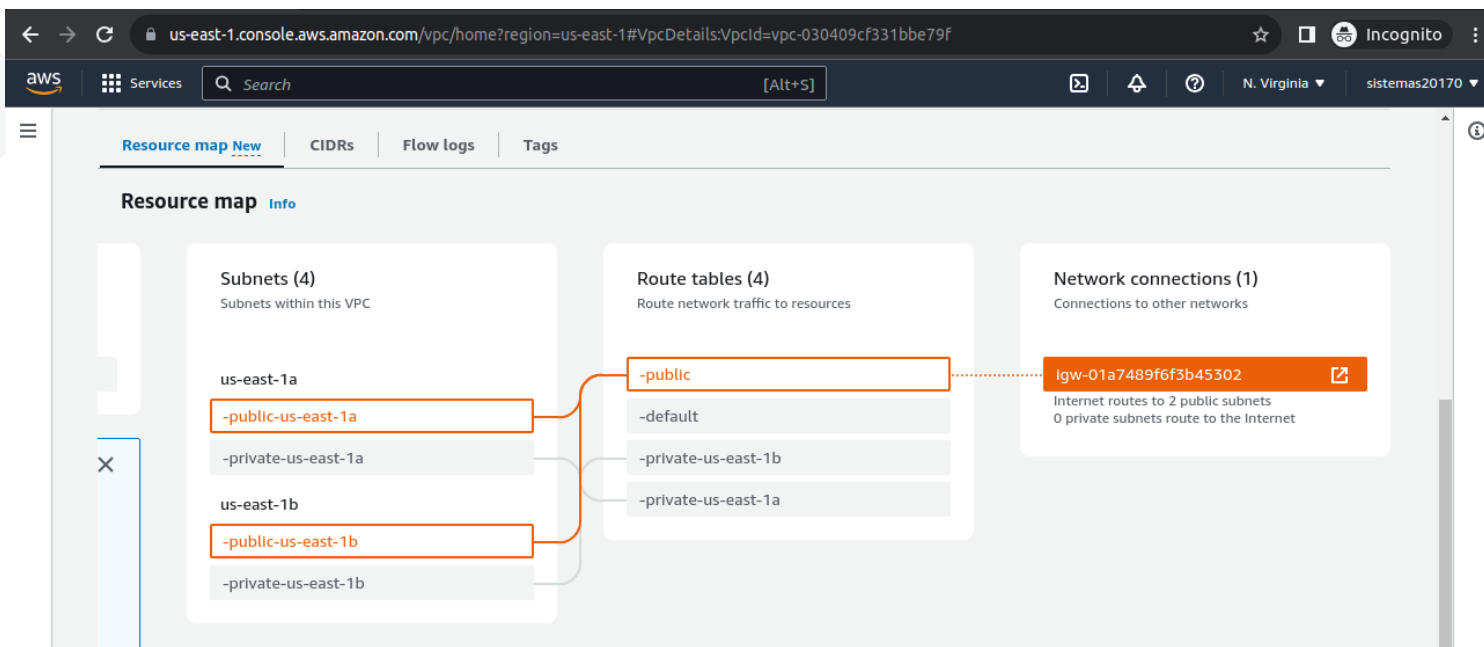
3. Se valida la creación de una VPC con dos subredes privadas y dos subredes públicas.



The screenshot shows the AWS VPC console in the us-east-1 region. The 'Your VPCs (1/1)' section displays a table with one VPC:

Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR
-	vpc-030409cf331bbe79f	Available	10.0.0.0/16	-

The left sidebar shows the 'VPC dashboard' and 'EC2 Global View' options. The 'Filter by VPC' dropdown is set to 'Select a VPC'.



The screenshot shows the 'Resource map' for the VPC vpc-030409cf331bbe79f. The map displays the following components:

- Subnets (4):** Subnets within this VPC.
 - us-east-1a
 - public-us-east-1a
 - private-us-east-1a
 - us-east-1b
 - public-us-east-1b
 - private-us-east-1b
- Route tables (4):** Route network traffic to resources.
 - public
 - default
 - private-us-east-1b
 - private-us-east-1a
- Network connections (1):** Connections to other networks.
 - igw-01a7489f6f3b45302
 - Internet routes to 2 public subnets
 - 0 private subnets route to the Internet

The diagram shows connections between the public subnets and the public route table, and between the private subnets and the private route tables. The Internet Gateway (igw-01a7489f6f3b45302) is connected to the public subnets.

Antes de continuar con el siguiente punto, también se valida en el VPC dashboard, la creación de otros recursos creados por defecto por el código de Terraform. Lo anterior, teniendo en cuenta que se eliminaron todos los recursos de AWS para este desafío.

The screenshot shows the AWS VPC console for the us-east-1 region. The 'Route tables (4)' page is displayed, showing a list of route tables. The table has columns: Name, Route table ID, Explicit subnet associations, Edge associations, and Main. The route tables listed are:

Name	Route table ID	Explicit subnet associations	Edge associations	Main
-public	rtb-06f970437be160165	2 subnets	-	No
-default	rtb-098b787eb7c05d633	-	-	Yes
-private-us-east-1b	rtb-0dfbaa5dc58b9a434	subnet-0ae30cd00e36cea...	-	No
-private-us-east-1a	rtb-027e09933980b1d23	subnet-027f59a78853c4...	-	No

Este Security Group se visualiza en VPC dashboard pero corresponde al creado en el EC2 dashboard mediante Terraform.

The screenshot shows the AWS VPC console for the us-east-1 region. The 'Internet gateways (1/1)' page is displayed, showing a list of internet gateways. The table has columns: Name, Internet gateway ID, State, and VPC ID. The internet gateway listed is:

Name	Internet gateway ID	State	VPC ID
-	igw-01a7489f6f3b45302	Attached	vpc-030409cf331bbe79f

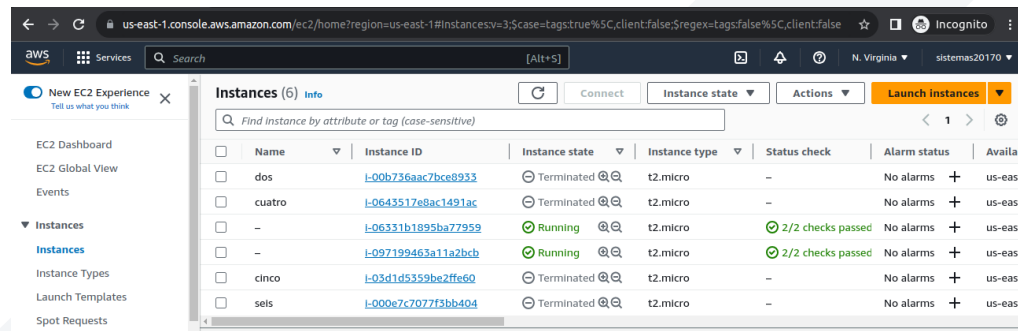
The screenshot shows the AWS VPC console for the us-east-1 region. The 'Security Groups (2)' page is displayed, showing a list of security groups. The table has columns: Name, Security group ID, Security group name, VPC ID, and Description. The security groups listed are:

Name	Security group ID	Security group name	VPC ID	Description
-	sg-063454e77bec47ccf	terraform-202308280...	vpc-030409cf331bbe79f	Managed by Ter
-default	sg-00b947aad486f1fa8	default	vpc-030409cf331bbe79f	default VPC sec

The screenshot shows the AWS VPC console for the us-east-1 region. The 'Network ACLs (1/1)' page is displayed, showing a list of network ACLs. The table has columns: Name, Network ACL ID, Associated with, Default, and VPC ID. The network ACL listed is:

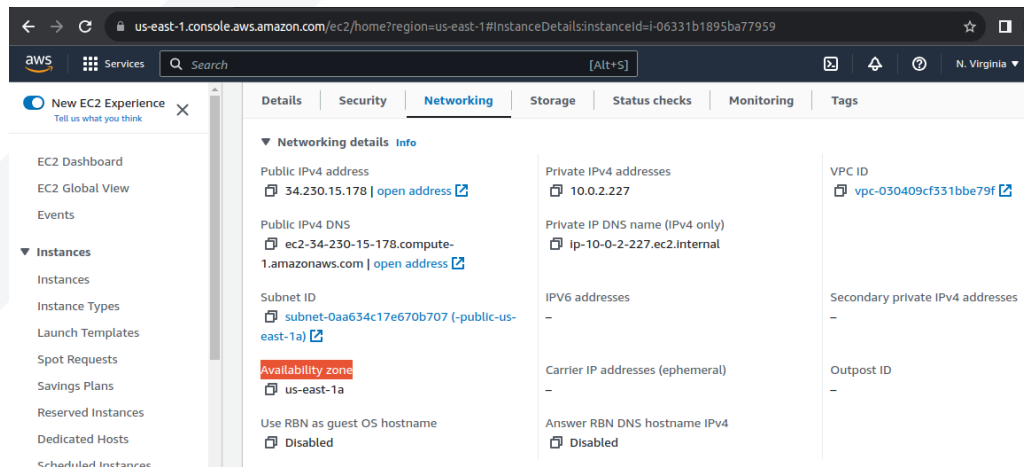
Name	Network ACL ID	Associated with	Default	VPC ID
-default	acl-04db4f0b2068ad3a1	4 Subnets	Yes	vpc-030409cf331bbe79f

4. Ahora se valida la creación de dos instancias EC2, cada una con una zona de disponibilidad distinta.



	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Available
<input type="checkbox"/>	dos	i-00b736aac7bce8933	Terminated	t2.micro	-	No alarms	us-east-1a
<input type="checkbox"/>	cuatro	i-0643517e8ac1491ac	Terminated	t2.micro	-	No alarms	us-east-1a
<input type="checkbox"/>	-	i-06331b1895ba77959	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a
<input type="checkbox"/>	-	i-097199463a11a2bcb	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b
<input type="checkbox"/>	cinco	i-03d1d5359be2ffe60	Terminated	t2.micro	-	No alarms	us-east-1a
<input type="checkbox"/>	seis	i-00067c7077f3bb404	Terminated	t2.micro	-	No alarms	us-east-1a

Las instancias que se observan como Terminated corresponden a un ejercicio de depuración previo.

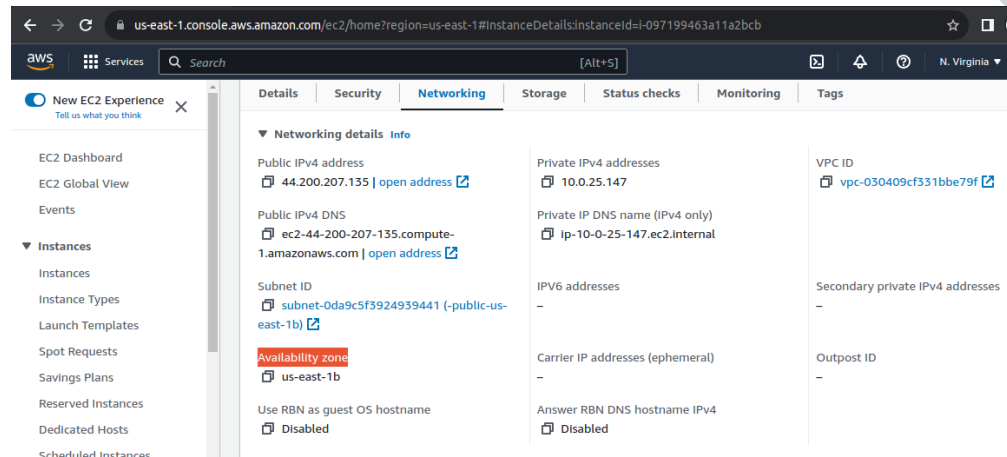


us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#InstanceDetails:instanceId=i-06331b1895ba77959

Details | Security | **Networking** | Storage | Status checks | Monitoring | Tags

▼ Networking details Info

Public IPv4 address 34.230.15.178 open address	Private IPv4 addresses 10.0.2.227	VPC ID vpc-030409cf331bbe79f
Public IPv4 DNS ec2-34-230-15-178.compute-1.amazonaws.com open address	Private IP DNS name (IPv4 only) ip-10-0-2-227.ec2.internal	
Subnet ID subnet-0aa634c17e670b707 (-public-us-east-1a)	IPv6 addresses -	Secondary private IPv4 addresses -
Availability zone us-east-1a	Carrier IP addresses (ephemeral) -	Outpost ID -
Use RBN as guest OS hostname Disabled	Answer RBN DNS hostname IPv4 Disabled	



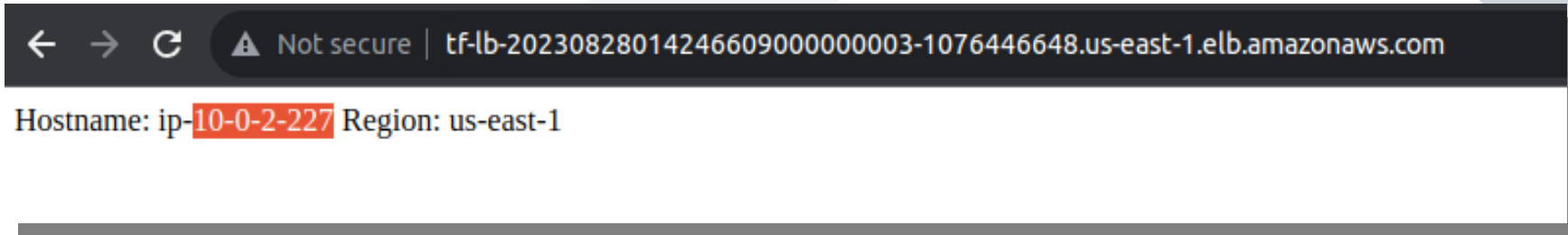
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#InstanceDetails:instanceId=i-097199463a11a2bcb

Details | Security | **Networking** | Storage | Status checks | Monitoring | Tags

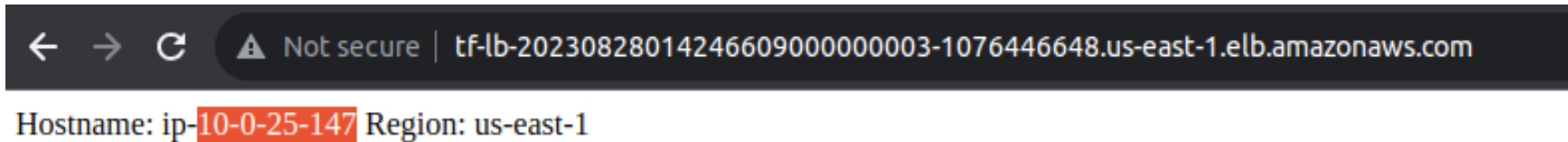
▼ Networking details Info

Public IPv4 address 44.200.207.135 open address	Private IPv4 addresses 10.0.25.147	VPC ID vpc-030409cf331bbe79f
Public IPv4 DNS ec2-44-200-207-135.compute-1.amazonaws.com open address	Private IP DNS name (IPv4 only) ip-10-0-25-147.ec2.internal	
Subnet ID subnet-0da9c5f3924939441 (-public-us-east-1b)	IPv6 addresses -	Secondary private IPv4 addresses -
Availability zone us-east-1b	Carrier IP addresses (ephemeral) -	Outpost ID -
Use RBN as guest OS hostname Disabled	Answer RBN DNS hostname IPv4 Disabled	

5. Luego se valida que cada instancia tenga instalado un servidor web que muestre el nombre de la instancia y la región en la que se encuentra.



Se presiona F5 para ver el cambio que hace el ALB (Application Load Balancer).



Target Group creado con las dos instancias.

The screenshot shows the AWS Management Console for the us-east-1 region. The left sidebar contains navigation links for AMIs, Elastic Block Store, Network & Security, Load Balancing, and Auto Scaling. The main content area displays the details for a Target Group with ID tf-20230828014245259300000002. The details section includes the ARN, Target type (Instance), Protocol (HTTP), Port (80), Protocol version (HTTP1), and VPC (vpc-030409cf331bbe79f). A summary table shows 2 total targets, all of which are healthy. Below the table, there is a section for 'Distribution of targets by Availability Zone (AZ)' with instructions to select values to see corresponding filters.

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#TargetGroup:targetGroupArn=arn:aws:elasticloadbalancing:us-east-1:318539273...

Services Search [Alt+S]

AMIs
AMI Catalog

▼ Elastic Block Store
Volumes
Snapshots
Lifecycle Manager

▼ Network & Security
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces

▼ Load Balancing
Load Balancers
Target Groups

▼ Auto Scaling
Auto Scaling Groups

EC2 > Target groups > tf-20230828014245259300000002

tf-20230828014245259300000002

Actions ▼

Details

arn:aws:elasticloadbalancing:us-east-1:318539273132:targetgroup/tf-20230828014245259300000002/229eb72621b26aac

Target type Instance	Protocol : Port HTTP: 80	Protocol version HTTP1	VPC vpc-030409cf331bbe79f
IP address type IPv4	Load balancer tf-lb-20230828014246609000000003		

Total targets	Healthy	Unhealthy	Unused	Initial	Draining
2	✓ 2	✗ 0	⋮ 0	⌚ 0	⌚ 0

► Distribution of targets by Availability Zone (AZ)

Select values in this table to see corresponding filters applied to the Registered targets table below.

ALB (Application Load Balancer) creado.

The screenshot shows the AWS Management Console for an Application Load Balancer (ALB) in the us-east-1 region. The left sidebar contains navigation links for various AWS services, including AMIs, Elastic Block Store, Network & Security, Load Balancing, and Auto Scaling. The main content area displays the 'Listeners and rules' tab for the ALB.

Load balancer details:

- Load balancer ARN: `arn:aws:elasticloadbalancing:us-east-1:318539273132:loadbalancer/app/tf-lb-20230828014246609000000003/91003c0808c29574`
- DNS name: `tf-lb-20230828014246609000000003-1076446648.us-east-1.elb.amazonaws.com (A Record)`

Listeners and rules (1)

A listener checks for connection requests on its configured protocol and port. Traffic received by the listener is routed according to the default action and any additional rules.

Buttons: [Manage rules](#), [Manage listener](#), [Add listener](#)

Search:

<input type="checkbox"/>	Protocol:Port	Default action	Rules	ARN	Security policy
<input type="checkbox"/>	HTTP:80	Forward to target group <ul style="list-style-type: none">tf-202308280142452593000000002: 1 (100%)Group-level stickiness: Off	1 rule	ARN	Not applicable

Repositorio de Github donde se encuentra el código:

https://github.com/BambooThink/BootcampDevOps2023/tree/main/Solucion_Desafio_6