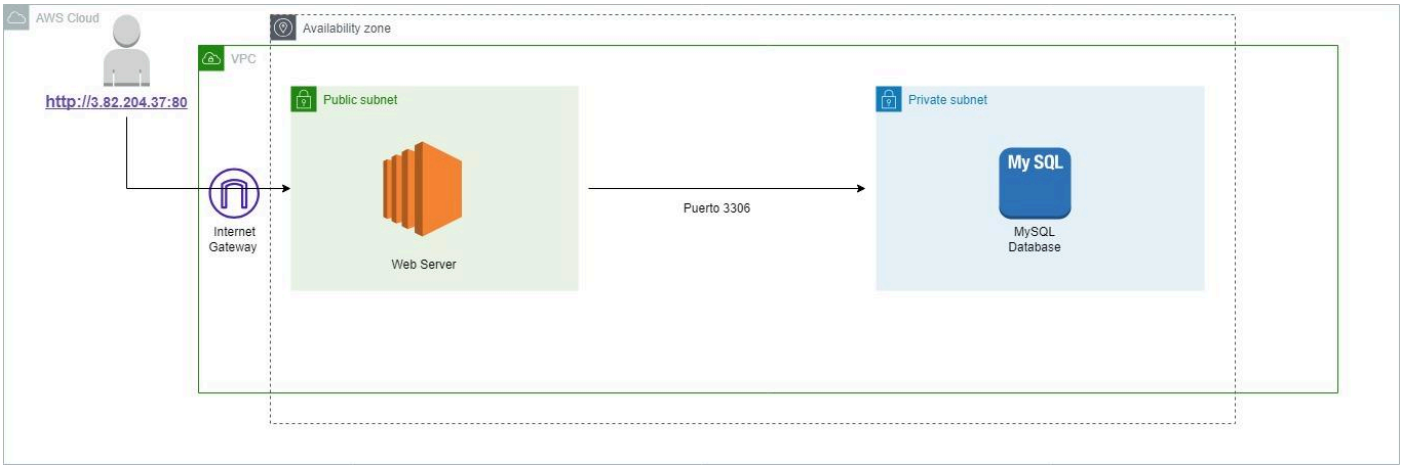
Instructivo Desafío 7

Diagrama del Desafío:

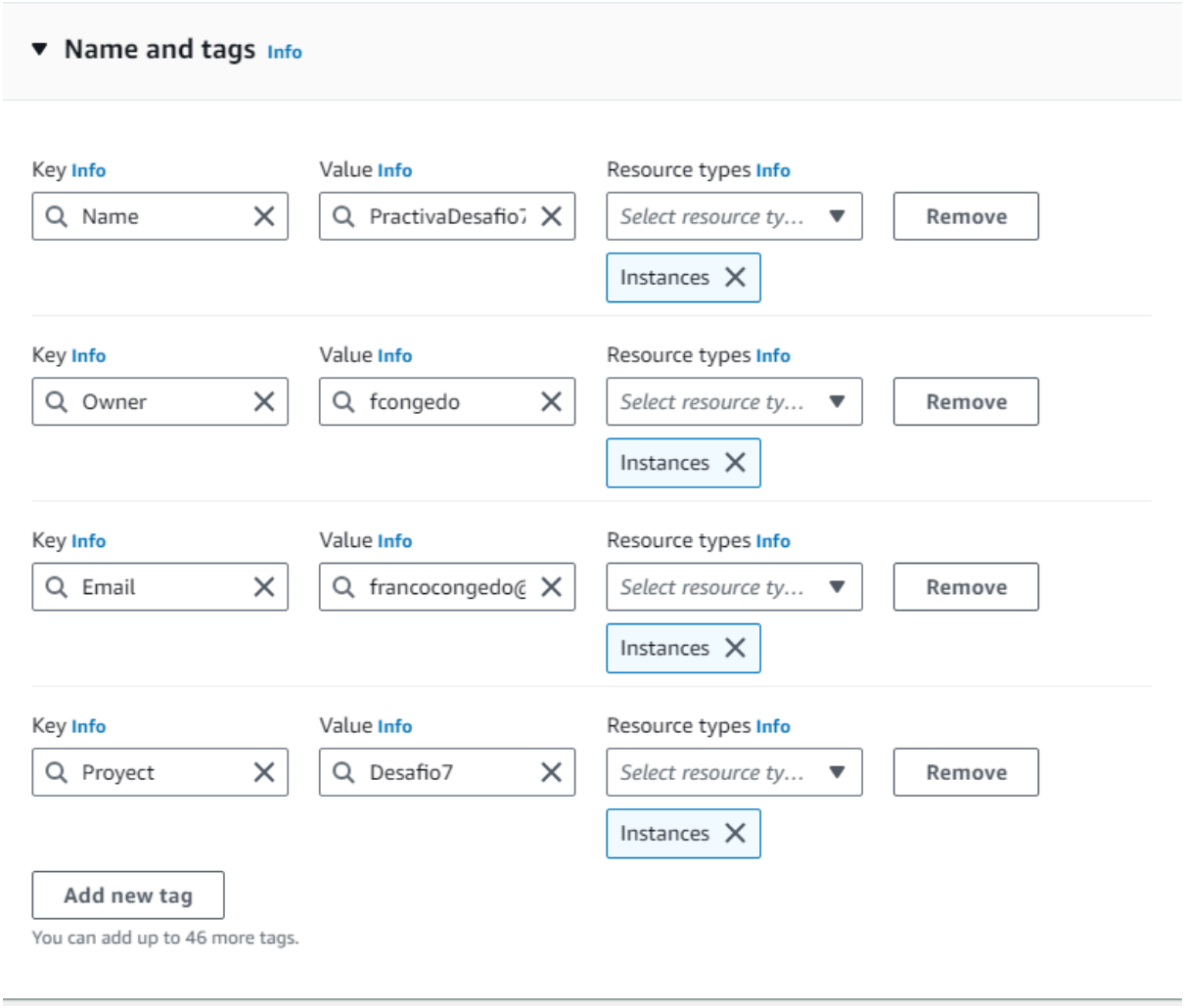


Servidor web

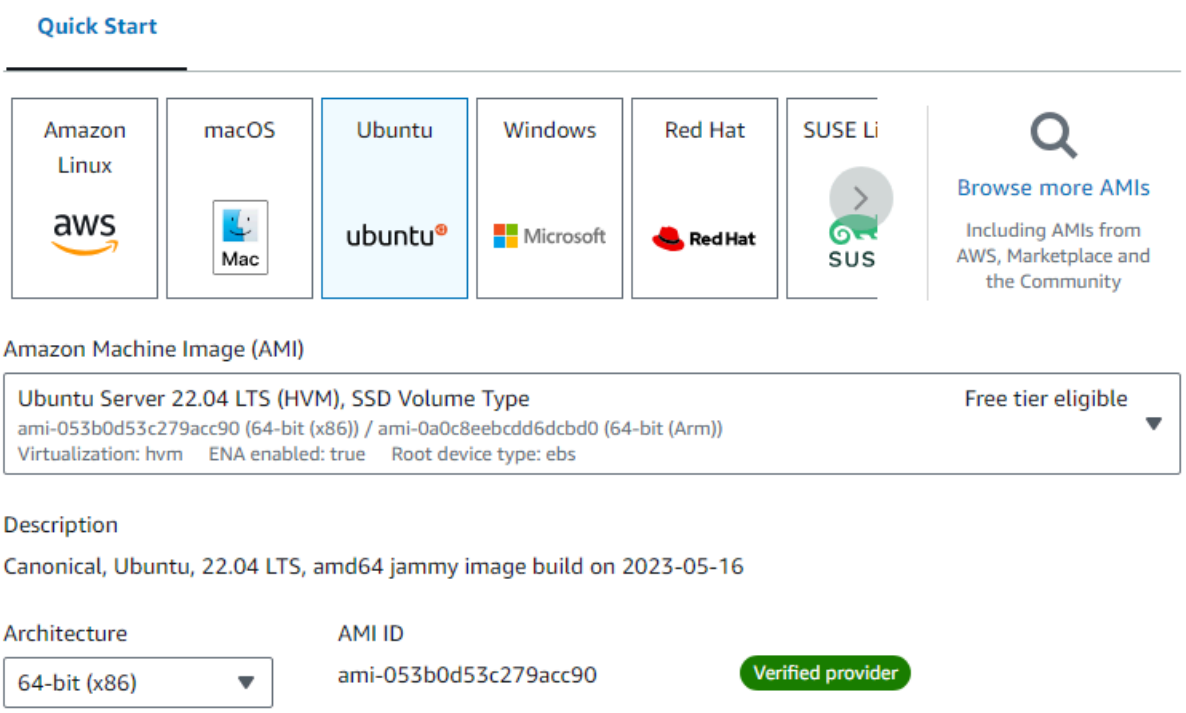
1) Crear una instancia EC2 dentro de los parámetros de free tier

Ingresamos a la cuenta, Luego buscamos EC2 e ingresamos
Siguiente paso buscamos en el menú izquierdo Instances e ingresamos
Luego hacemos click en el botón naranja Launch instances

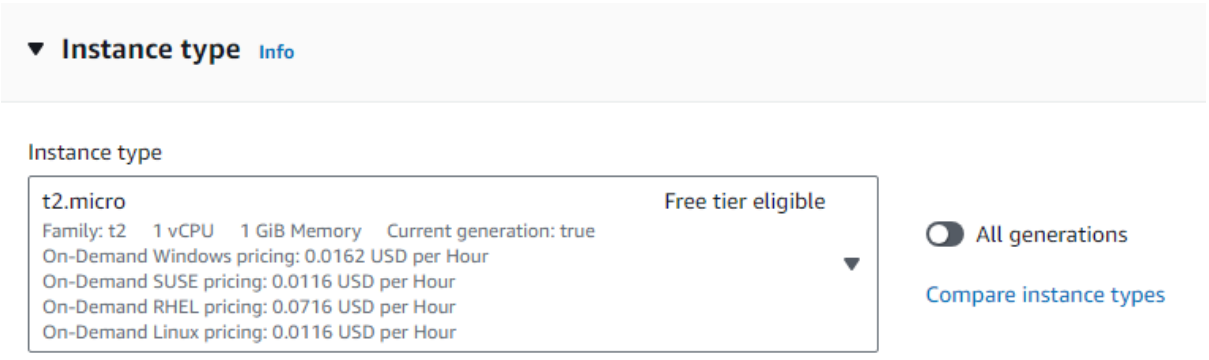
- ***Name and tags***



- ***Application and OS Images (Amazon Machine image)***



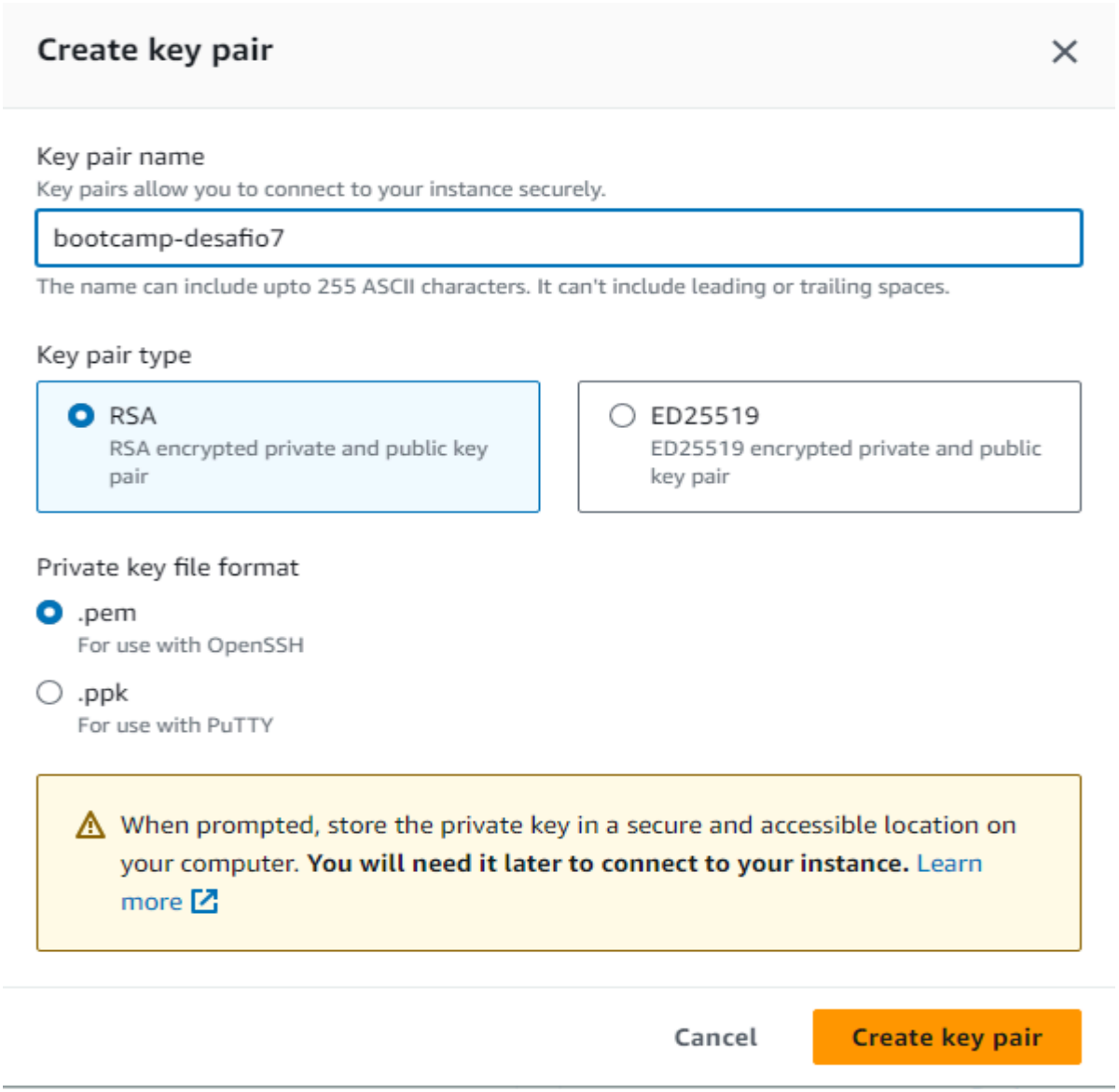
- ***Instance Type***



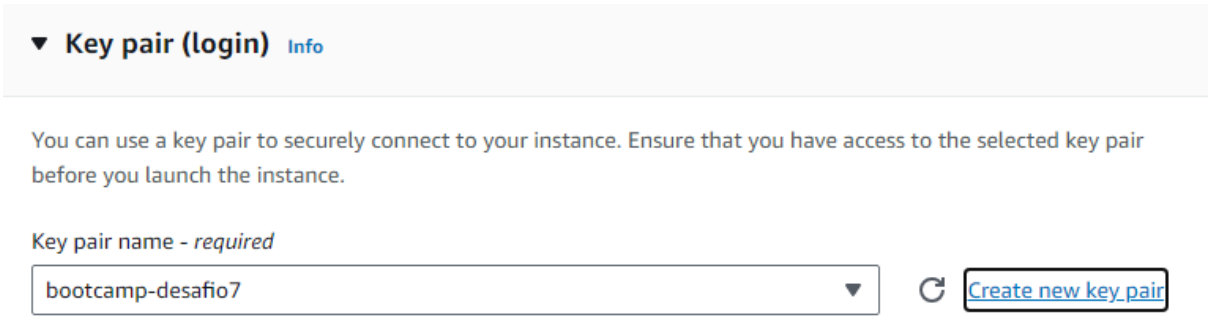
- ***Key pair (login)***

Primero hacemos click en la opción Create new key pair

Se nos abre el siguiente menú (y lo configuramos de la siguiente manera)



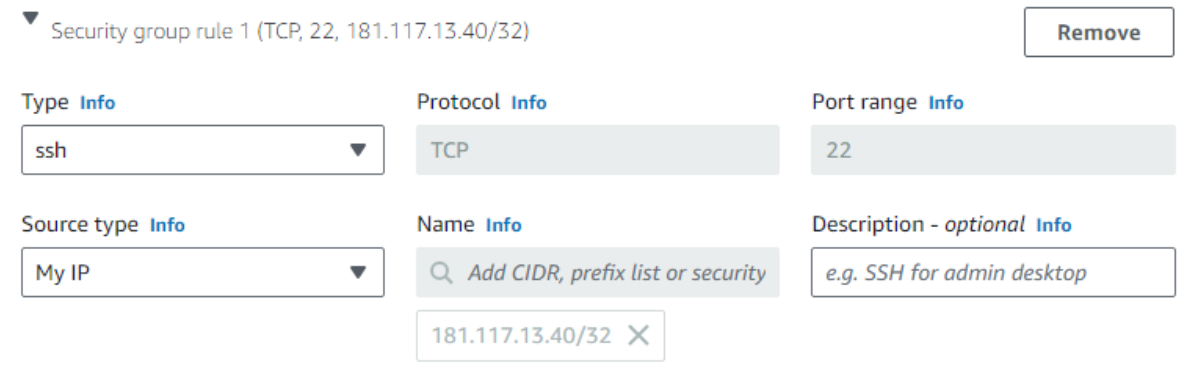
Luego seleccionamos la key que creamos en el paso anterior.



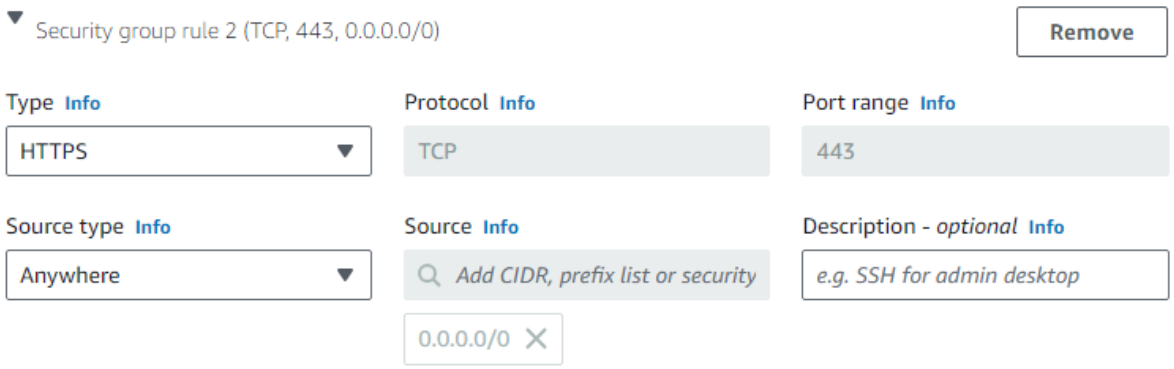
- ***Network Settings***

Vamos a activar el SSH, HTTP y HTTPS (SSH configurado para acceder solamente desde mi ip publica, Luego HTTP y HTTPS, el cual lo configuramos público AnyWhere)

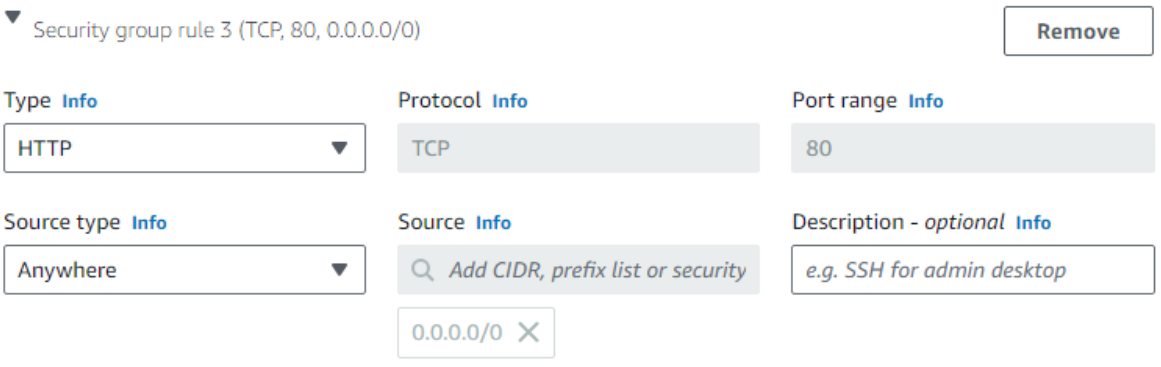
- ***ssh***



- ***HTTPS***

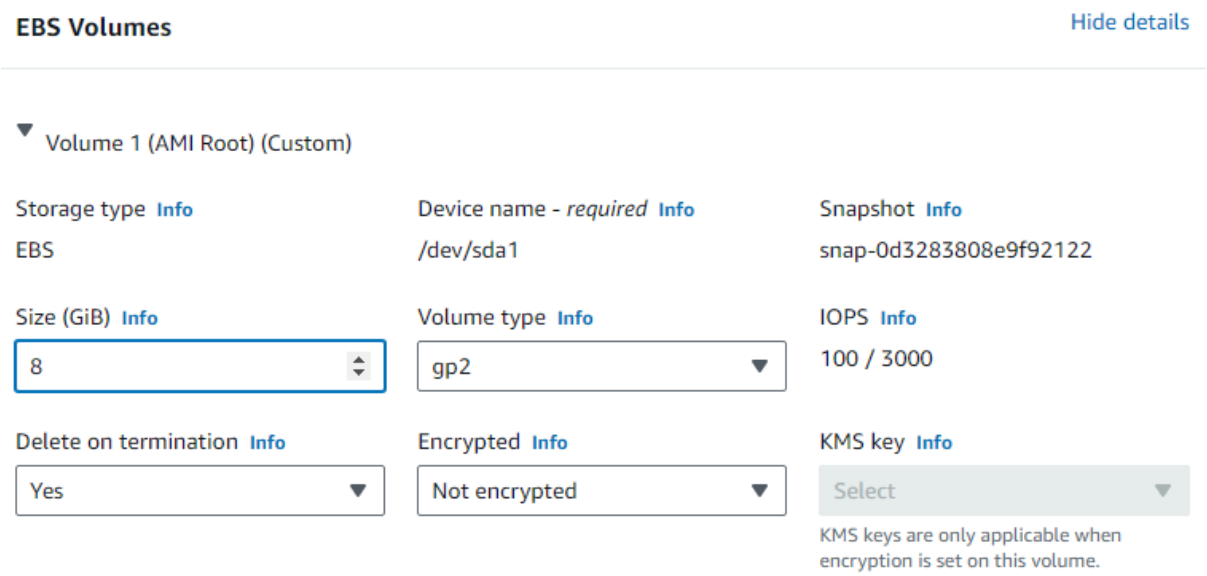


- ***HTTP***



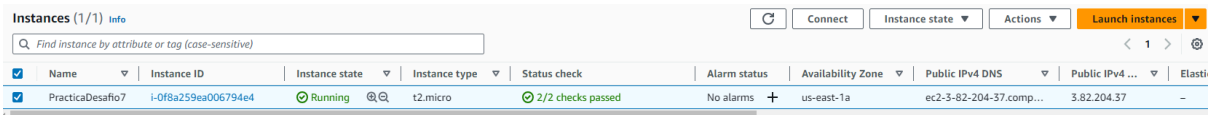
- ***Storage***

Seleccionamos el mínimo (8gb) y gp2 free tier. Y activamos la opción para que elimine al terminar.



Por último hacemos click en Launch Instance

Adjunto captura de instancia corriendo:



2) Configurar la conexión remota, la misma podrá ser a través de SSM, utilizando la llave de SSH y conectarnos desde nuestra VM con linux, etc. A elección de ustedes. Una vez configurado, verifiquen la conexión.

La configuración la realicé en la parte del punto 1) al crear y configurar la máquina virtual (genere la clave de SSH, habilité el SSH y filtré que solo funcione con mi dirección IP pública.

Lo único que debemos hacer cuando nos conectamos por primera vez es configurar los permisos de la clave.

Nos situamos donde tenemos la clave (en el directorio **'Downloads'** en mi caso)
Ejecutamos un **'ls -l bootcamp-desafio7.pem'** (para ver los permisos)
Luego ejecutamos un **'chmod 400 bootcamp-desafio7.pem'**
Volvemos a ejecutar un **'ls -l'** (para verificar los cambios)
Por último probamos la conexión

Adjunto captura de configuración y testeo de conexión por ssh:

```
desafio5@desafio5:~/Downloads$ ls -l bootcamp-desafio7.pem
-rw-rw-r-- 1 desafio5 desafio5 1674 ago 11 14:17 bootcamp-desafio7.pem
desafio5@desafio5:~/Downloads$ chmod 400 bootcamp-desafio7.pem
desafio5@desafio5:~/Downloads$ ls -l
total 4
-r-------- 1 desafio5 desafio5 1674 ago 11 14:17 bootcamp-desafio7.pem
desafio5@desafio5:~/Downloads$ ssh -i "bootcamp-desafio7.pem" ubuntu@ec2-52-91-28-180.compute-1.amazonaws.com
The authenticity of host 'ec2-52-91-28-180.compute-1.amazonaws.com (52.91.28.180)' can't be established.
ECDSA key fingerprint is SHA256:mMRVFqoDjIWog13wDVY4baR/Mwh05aXrz/u9rljeKmg.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-52-91-28-180.compute-1.amazonaws.com,52.91.28.180' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.19.0-1025-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Fri Aug 11 19:56:02 UTC 2023

  System load:  0.26025390625     Processes:             100
  Usage of /:   20.8% of 7.57GB   Users logged in:       0
  Memory usage: 24%               IPv4 address for eth0: 172.31.82.43
  Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
```

3) Instalar un webserver (utilizando userdata o conectandose a la instancia), habilitar el servicio y verificar que el webserver funciona de forma local (utilizando curl por ejemplo) y de forma remota (accediendo desde el navegador de nuestra pc o celular). Es importante verificar security groups y firewalls para asegurarse de poder acceder de forma remota al puerto que expone el webserver

Instalamos usando userdata (adjunto captura)

```
#!/bin/bash

apt-get install apache2 -y

systemctl enable apache2
systemctl start apache2

echo "funcione" >> /prueba.txt
```

Verifico si el servicio está funcionando Ejecutando **'sudo systemctl status apache2'**

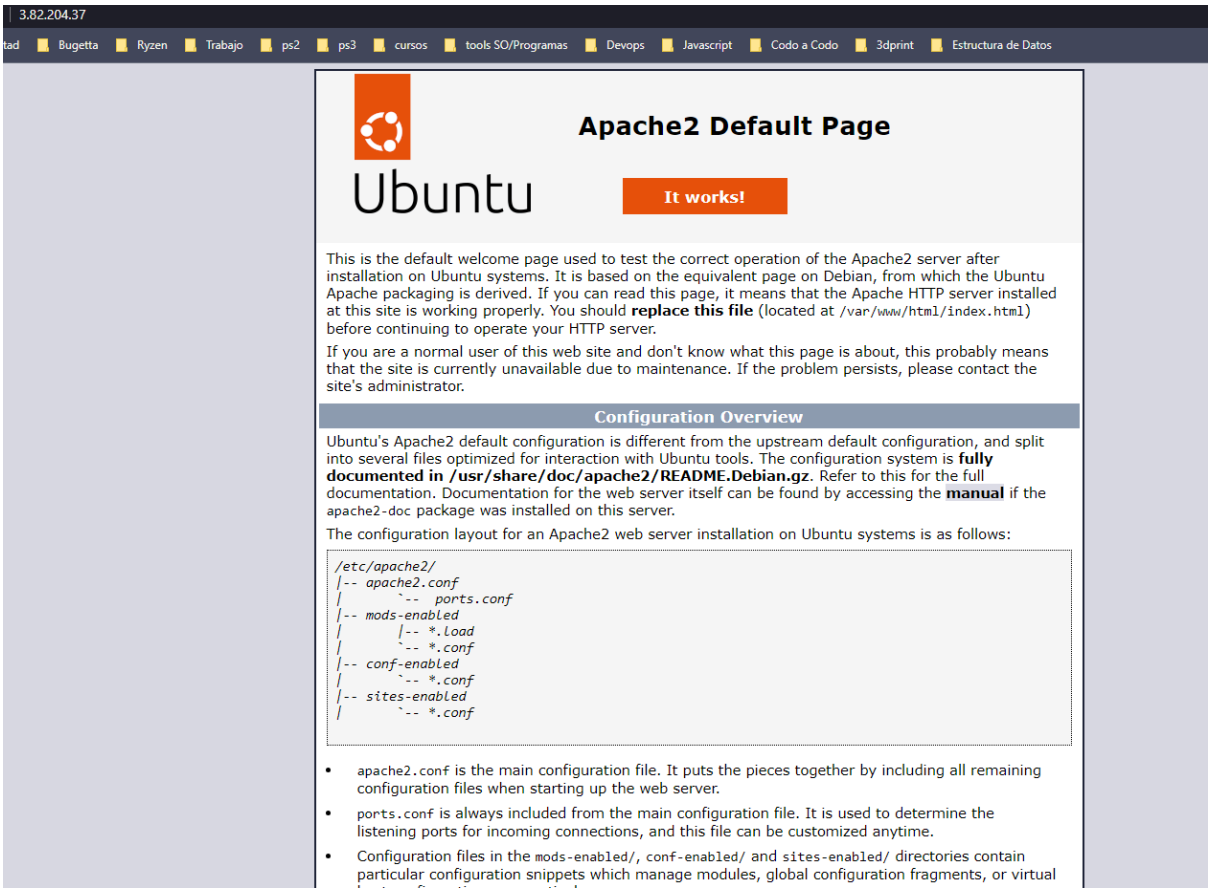
Adjunto captura:

```
ubuntu@ip-172-31-88-127:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
     Active: active (running) since Fri 2023-08-11 20:30:57 UTC; 13s ago
       Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 2330 (apache2)
      Tasks: 55 (limit: 1141)
     Memory: 4.9M
        CPU: 29ms
     CGroup: /system.slice/apache2.service
             ├─2330 /usr/sbin/apache2 -k start
             ├─2332 /usr/sbin/apache2 -k start
             └─2333 /usr/sbin/apache2 -k start
```

Ejecutamos un **'curl http://localhost'** :

```
ubuntu@ip-172-31-88-127:~$ curl http://localhost
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <!--
    Modified from the Debian original for Ubuntu
    Last updated: 2022-03-22
    See: https://launchpad.net/bugs/1966004
  -->
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
    <title>Apache2 Ubuntu Default Page: It works</title>
    <style type="text/css" media="screen">
  * {
    margin: 0px 0px 0px 0px;
    padding: 0px 0px 0px 0px;
  }

  body, html {
    padding: 3px 3px 3px 3px;

    background-color: #D8DBE2;

    font-family: Ubuntu, Verdana, sans-serif;
    font-size: 11pt;
    text-align: center;
  }

  div.main_page {
    position: relative;
    display: table;

    width: 800px;

    margin-bottom: 3px;
    margin-left: auto;
```

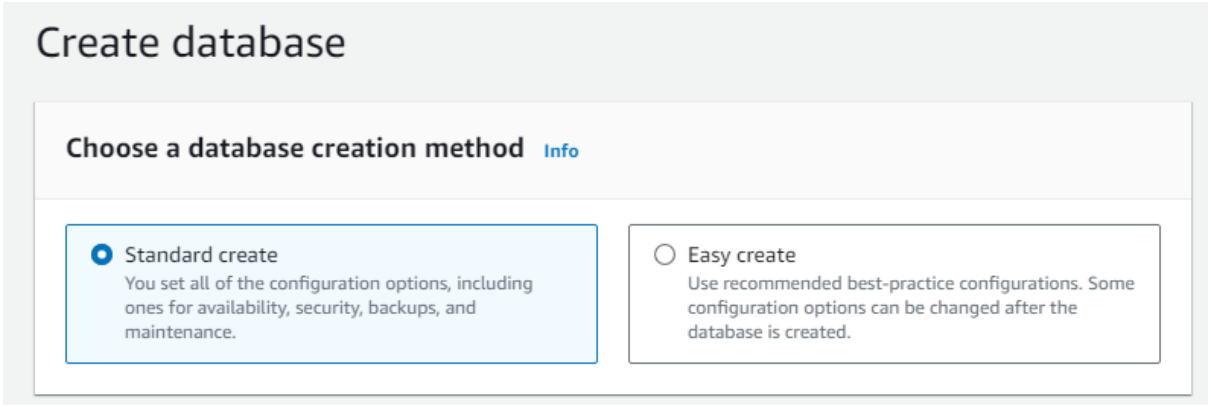
Probando desde el navegador ‘http://3.82.204.37:80’

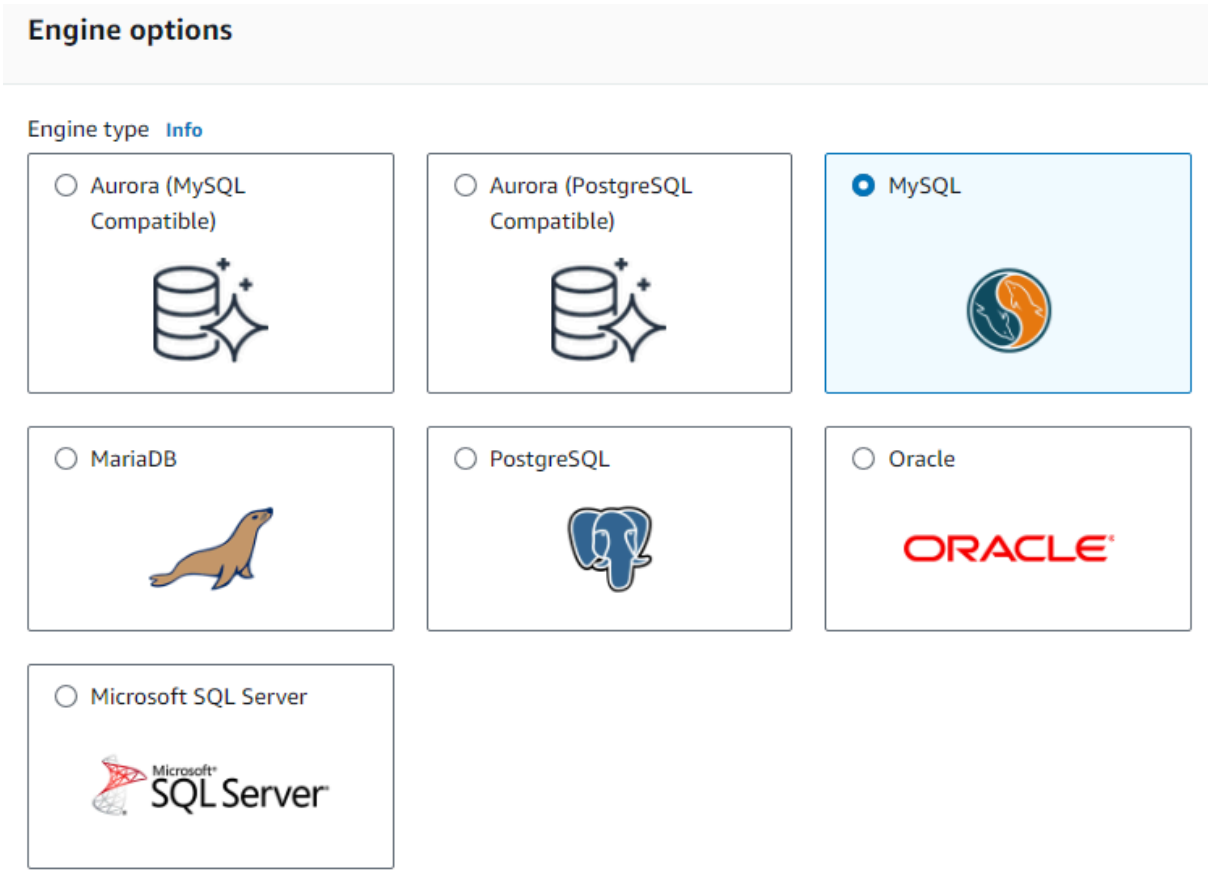


Base de datos

1) Crear una instancia de RDS (free tier)

Adjunto configuración:





Edition

MySQL Community

Known issues/limitations
Review the Known issues/limitations to learn about potential compatibility issues with specific database versions.

▼ Hide filters

Show versions that support the Multi-AZ DB cluster Info
Create a A Multi-AZ DB cluster with one primary DB instance and two readable standby DB instances. Multi-AZ DB clusters provide up to 2x faster transaction commit latency and automatic failover in typically under 35 seconds.

Show versions that support the Amazon RDS Optimized Writes Info
Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

Engine Version

MySQL 8.0.34

Templates

Choose a sample template to meet your use case.

Production
Use defaults for high availability and fast, consistent performance.

Dev/Test
This instance is intended for development use outside of a production environment.

Free tier
Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. Info

Settings

DB instance identifier Info

Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

db-desafio7

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

▼ Credentials Settings

Master username Info

Type a login ID for the master user of your DB instance.

admin

1 to 16 alphanumeric characters. The first character must be a letter.

☐ Manage master credentials in AWS Secrets Manager

Manage master user credentials in Secrets Manager. RDS can generate a password for you and manage it throughout its lifecycle.

ⓘ If you manage the master user credentials in Secrets Manager, some RDS features aren't supported.
Learn more

☐ Auto generate a password

Amazon RDS can generate a password for you, or you can specify your own password.

Master password Info

••••••••

Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), '(single quote), "(double quote) and @ (at sign).

Confirm master password Info

••••••••

Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

Amazon RDS Optimized Writes - *new* Info

Show instance classes that support Amazon RDS Optimized Writes

DB instance class Info

- Standard classes (includes m classes)
- Memory optimized classes (includes r and x classes)
- Burstable classes (includes t classes)

db.t3.micro
2 vCPUs 1 GiB RAM Network: 2085 Mbps

Include previous generation classes

Storage

Storage type Info

General Purpose SSD (gp2)
Baseline performance determined by volume size

Allocated storage Info

20 GiB

The minimum value is 20 GiB and the maximum value is 6144 GiB

After you modify the storage for a DB instance, the status of the DB instance will be in storage-optimization. Your instance will remain available as the storage-optimization operation completes.
Learn more

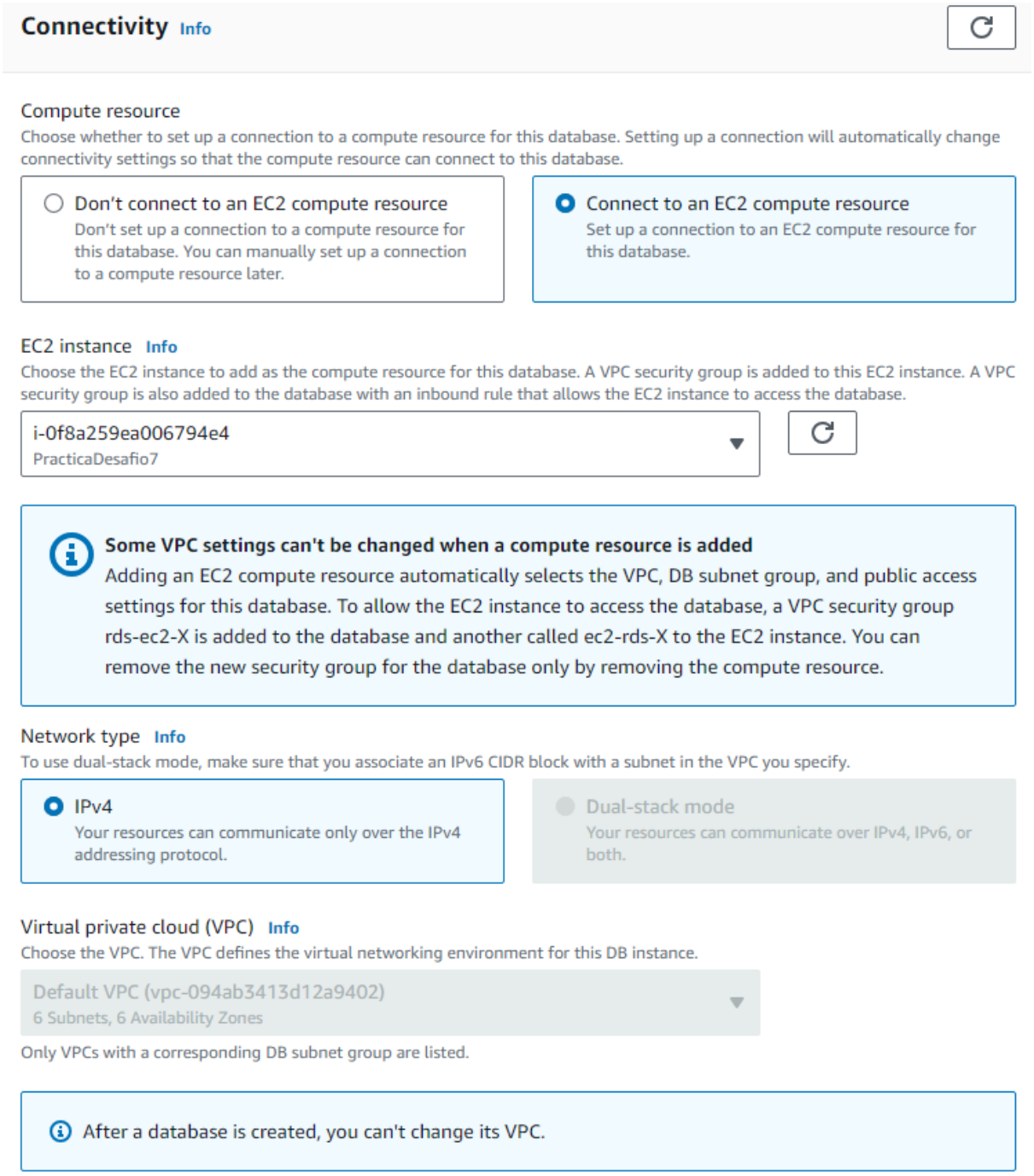
Storage autoscaling Info

Provides dynamic scaling support for your database's storage based on your application's needs.

Enable storage autoscaling
Enabling this feature will allow the storage to increase after the specified threshold is exceeded.

2) Configurarla de forma tal que sólo tengamos acceso desde la instancia de webserver, que no esté abierta al público

(conectamos la instancia de ECS Práctica Desafío 7 y luego Public Access : NO)



DB subnet group Info

Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.

default

Public access Info

- Yes
  RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.
- No
  RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.

VPC security group (firewall) Info

Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the appropriate incoming traffic.

- Choose existing
  Choose existing VPC security groups
- Create new
  Create new VPC security group

Existing VPC security groups

Choose one or more options

default

Availability Zone Info

No preference

RDS Proxy

RDS Proxy is a fully managed, highly available database proxy that improves application scalability, resiliency, and security.

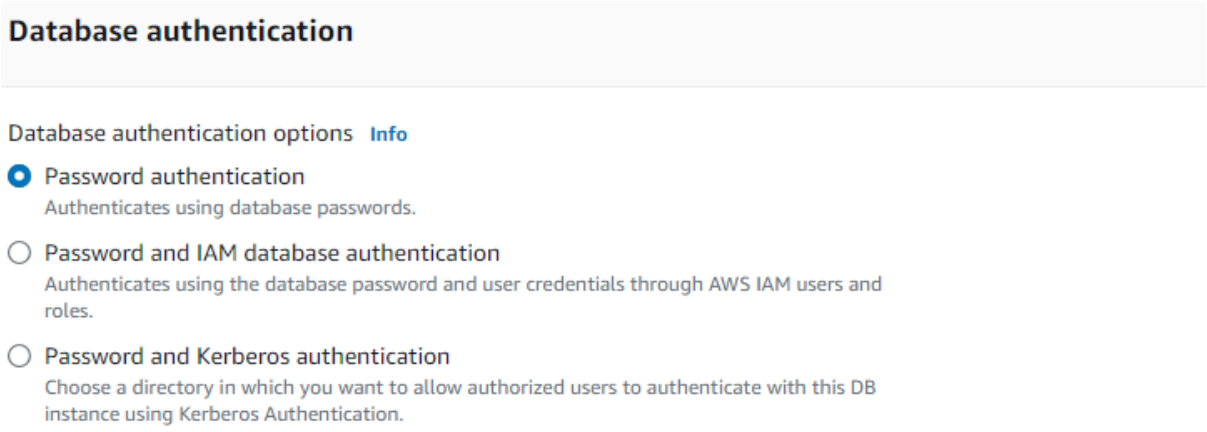
- Create an RDS Proxy Info
  RDS automatically creates an IAM role and a Secrets Manager secret for the proxy. RDS Proxy has additional costs. For more information, see Amazon RDS Proxy pricing.

Certificate authority - *optional* Info

Using a server certificate provides an extra layer of security by validating that the connection is being made to an Amazon database. It does so by checking the server certificate that is automatically installed on all databases that you provision.

rds-ca-2019 (default)

If you don't select a certificate authority, RDS chooses one for you.



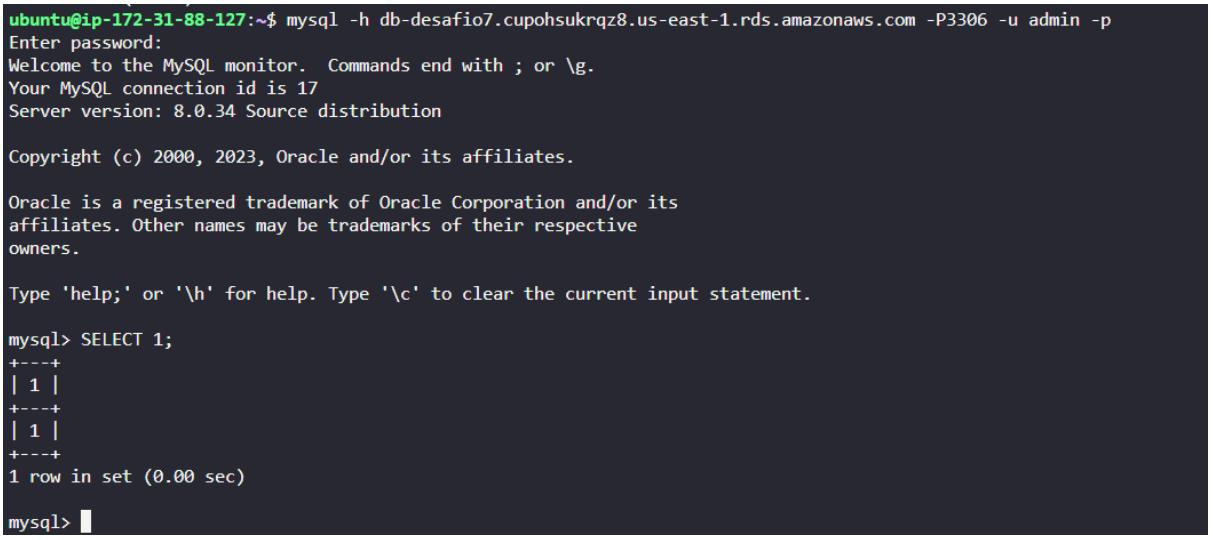
3) En este caso, nuestra aplicación no accedera a la base de datos pero simularemos el mismo ejecutando un comando para conectarnos a la base de datos. Por ejemplo, en caso de utilizar MySQL como motor de la instancia de RDS, usaremos el comando mysql -h -P 3306 -u -p

Primero instalamos MySQL en la instancia de EC2 (conectándonos por ssh)
Ejecutamos **'sudo apt-get install mysql-server'**

Adjunto captura:

```
ubuntu@ip-172-31-88-127:~$ sudo apt-get install mysql-server
Reading package lists... Done
Building dependency tree... Done
```

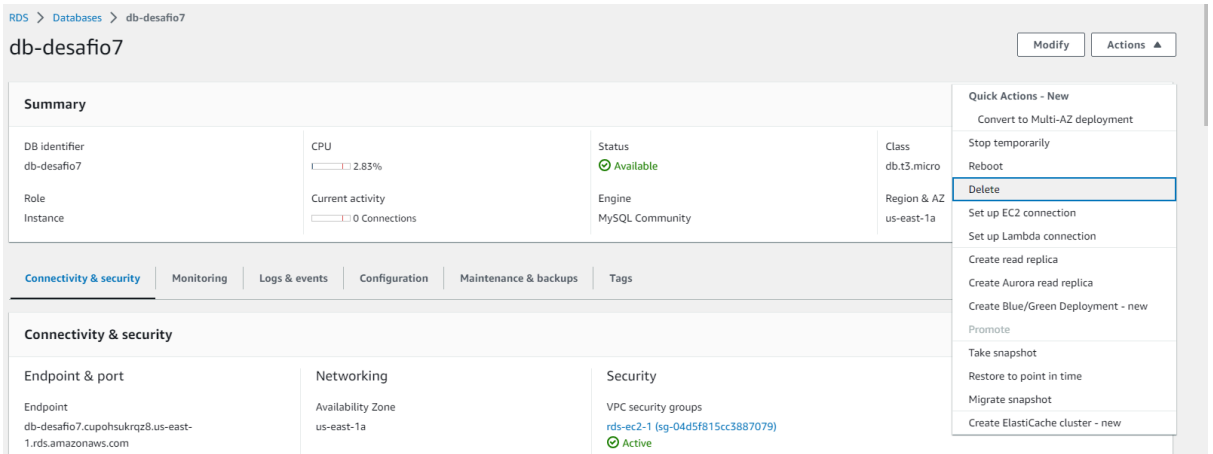
Luego nos conectamos a la base de datos desde la instancia de EC2:



En esta captura nos conectamos a través del endpoint, el puerto -P3306, u- admin
Luego ingresamos contraseña
Por último, hacemos una consulta para verificar funcionamiento **'SELECT 1;'**

Eliminación recursos

Eliminamos RDS:



Delete db-desafio7 instance?

Are you sure you want to Delete the **db-desafio7** DB Instance?

- [ ] Create final snapshot
  Determines whether a final DB Snapshot is created before the DB instance is deleted.
- [ ] Retain automated backups
  Determines whether retaining automated backups for 1 day after deletion
- [x] I acknowledge that upon instance deletion, automated backups, including system snapshots and point-in-time recovery, will no longer be available.

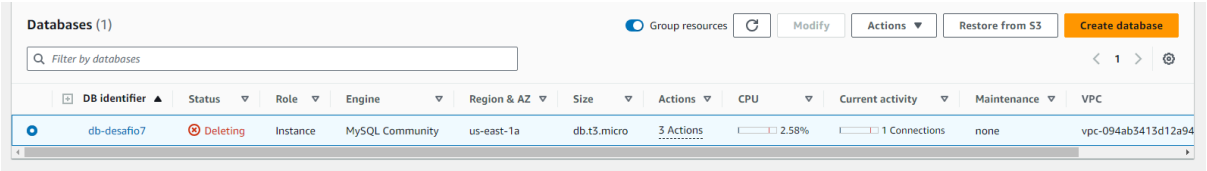
To confirm deletion, type *delete me* into the field

delete me

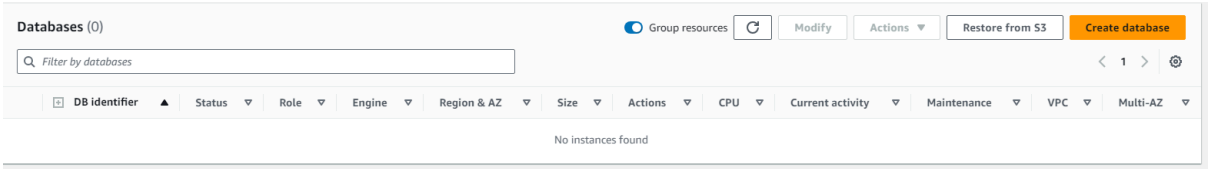
⚠ We strongly recommend taking a final snapshot before instance deletion since after your instance is deleted, automated backups will no longer be available.

Cancel **Delete**

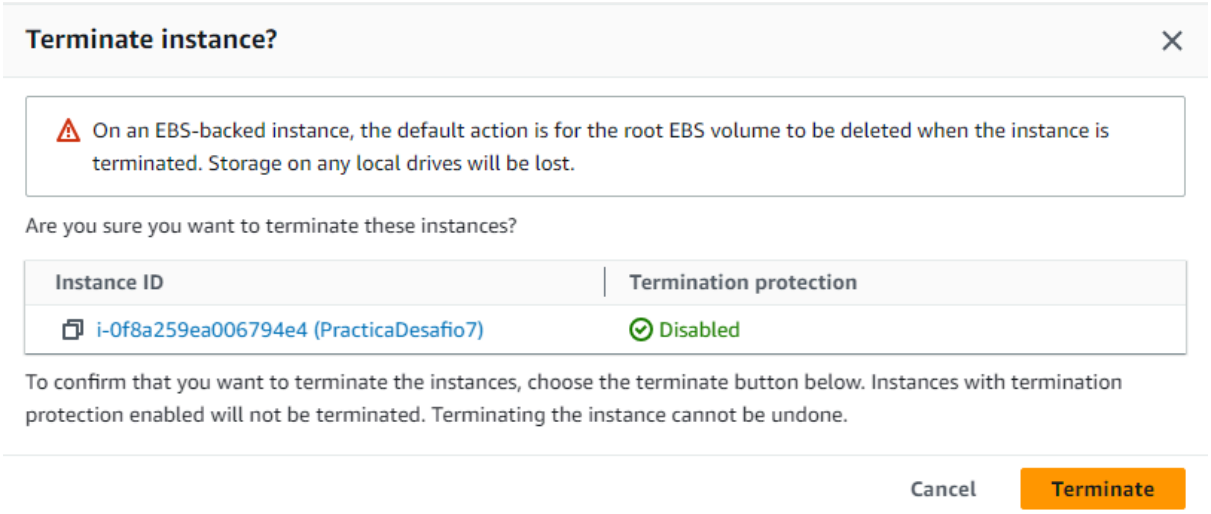
Instancia RDS eliminandose:



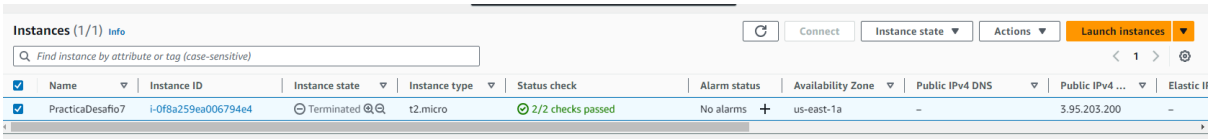
Sin Instancias de RDS:



Eliminando la instancia de EC2:



Instancia Terminada:



Sin instancias de EC2: