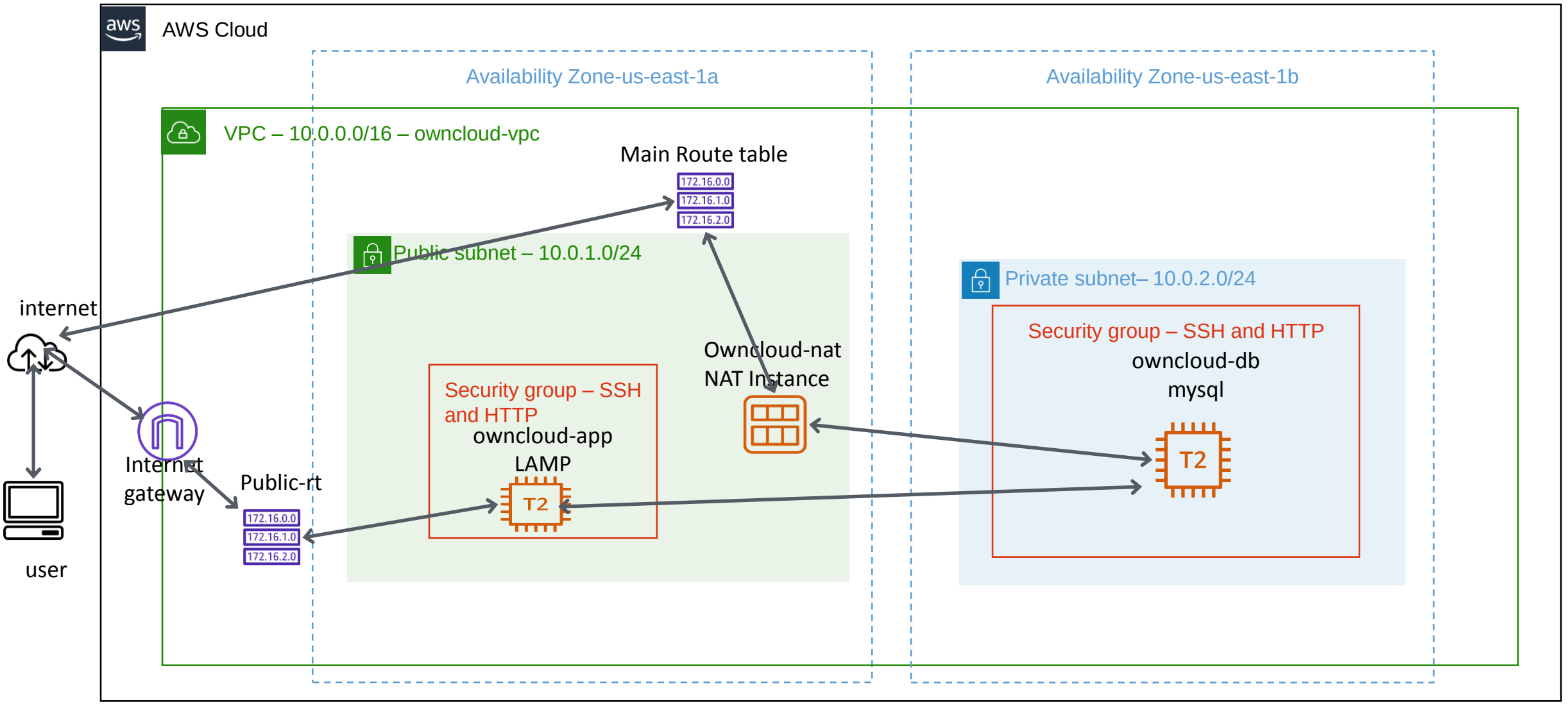
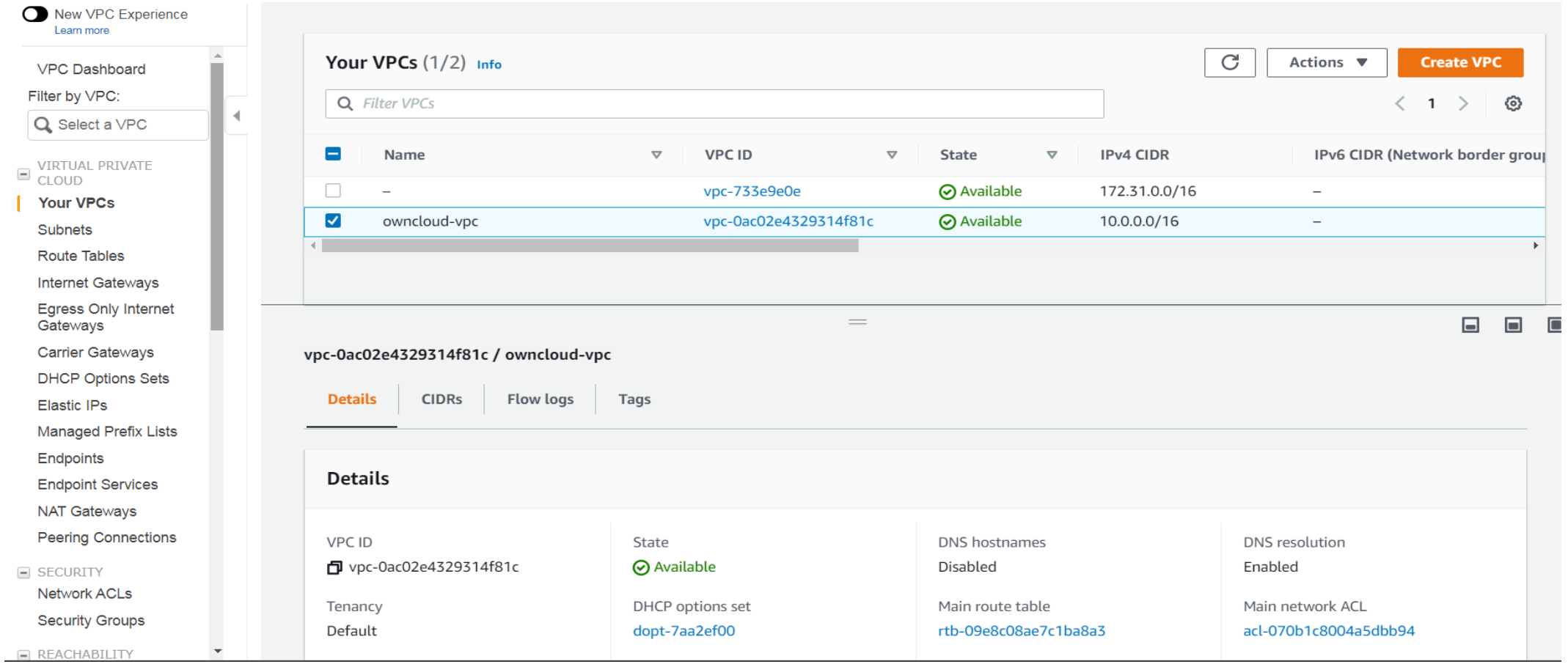
Owncloud APP on AWS

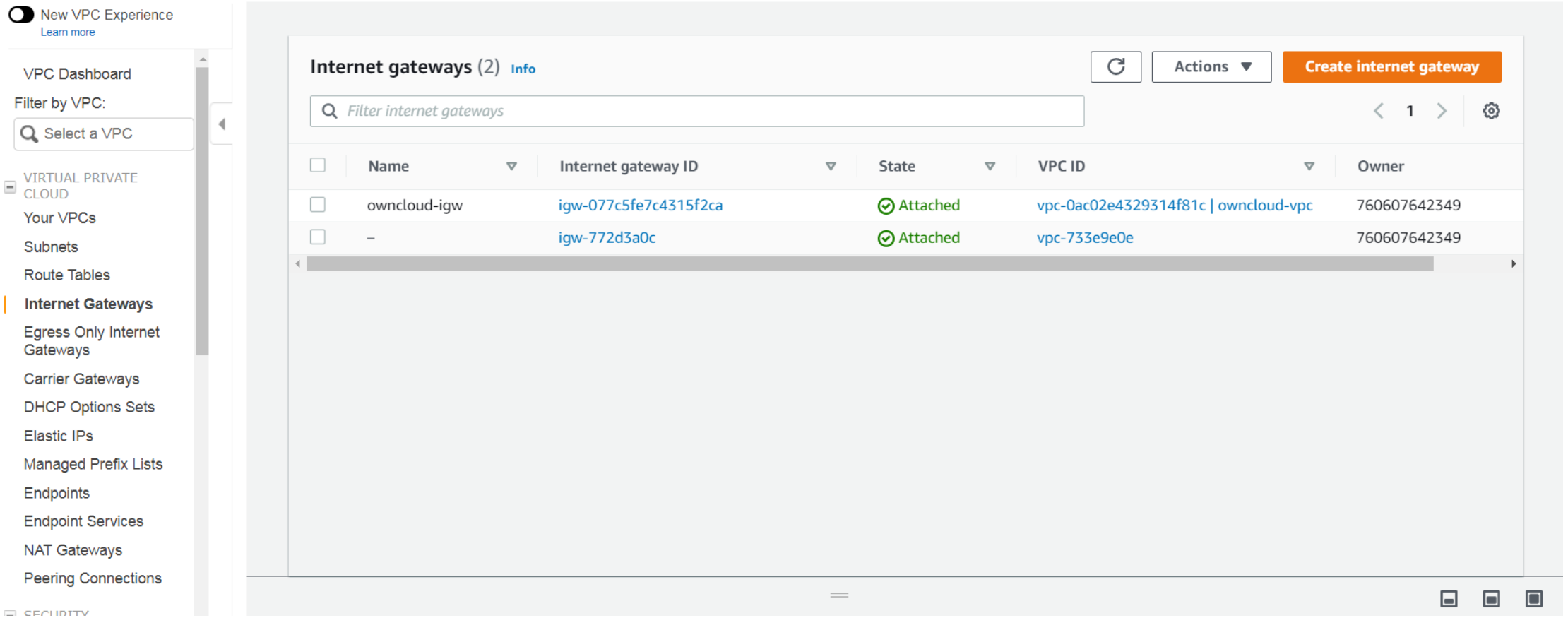
Architecture Diagram



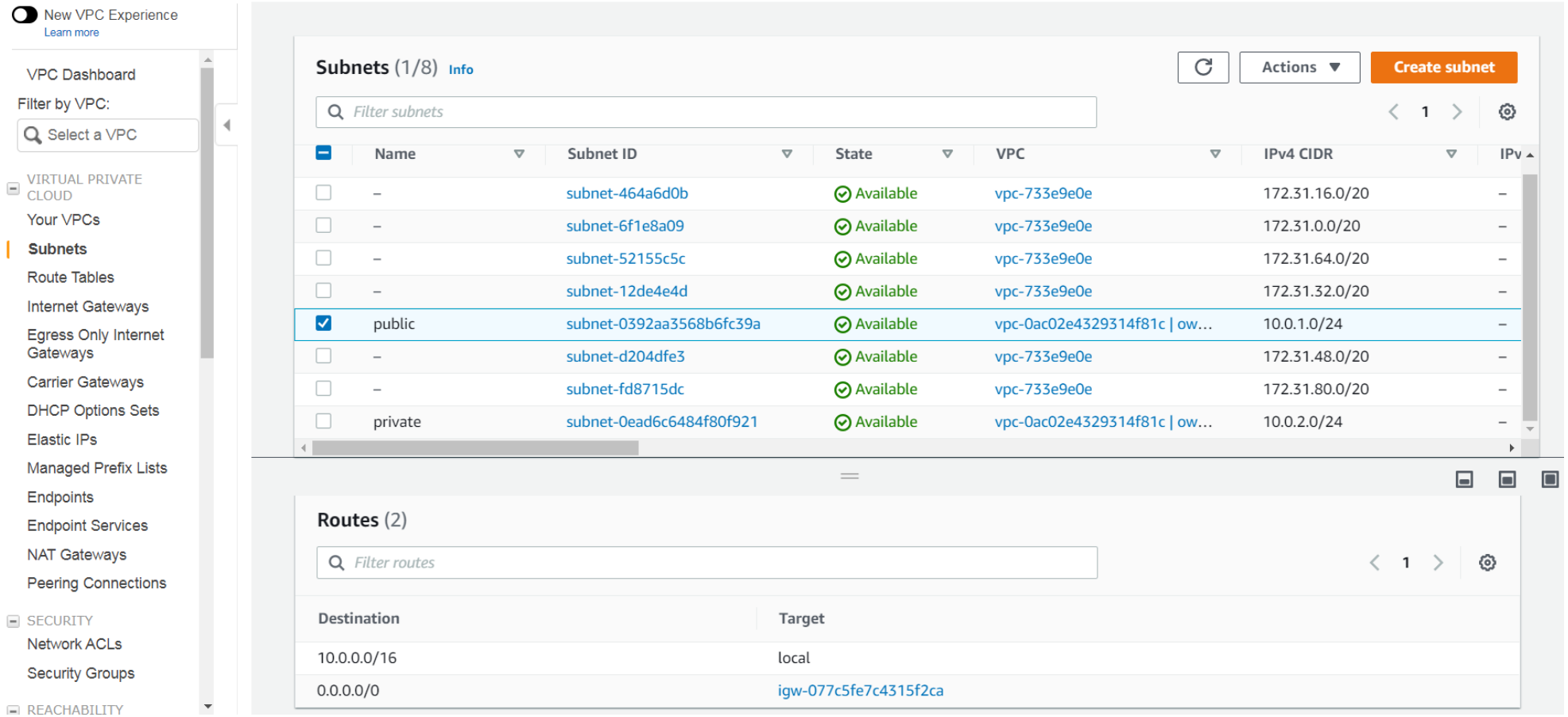
Create a custom VPC owncloud-vpc in N.virgina region



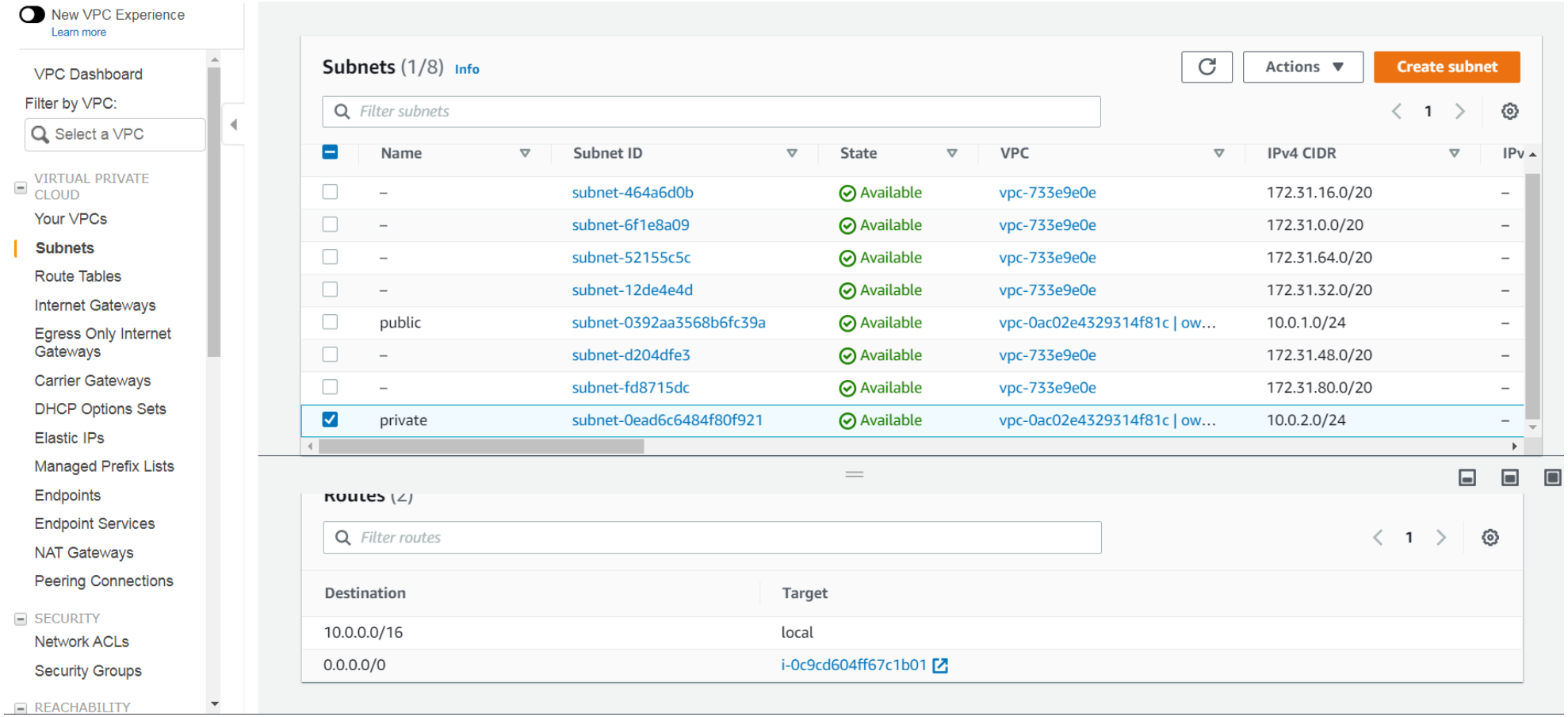
Create an internet gate way and attach it to owncloud-vpc



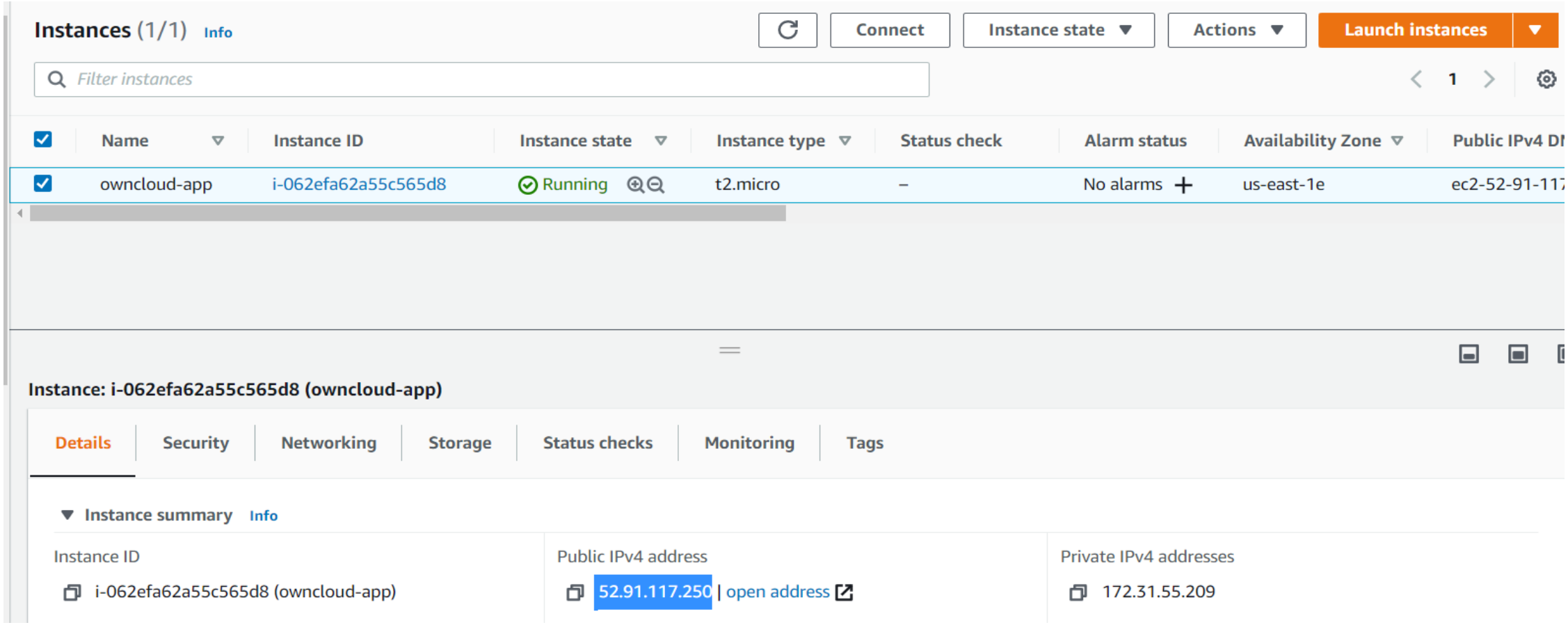
Launch public subnet in us-east-1a and edit the route tables to point the internet gateway and associate the public subnet



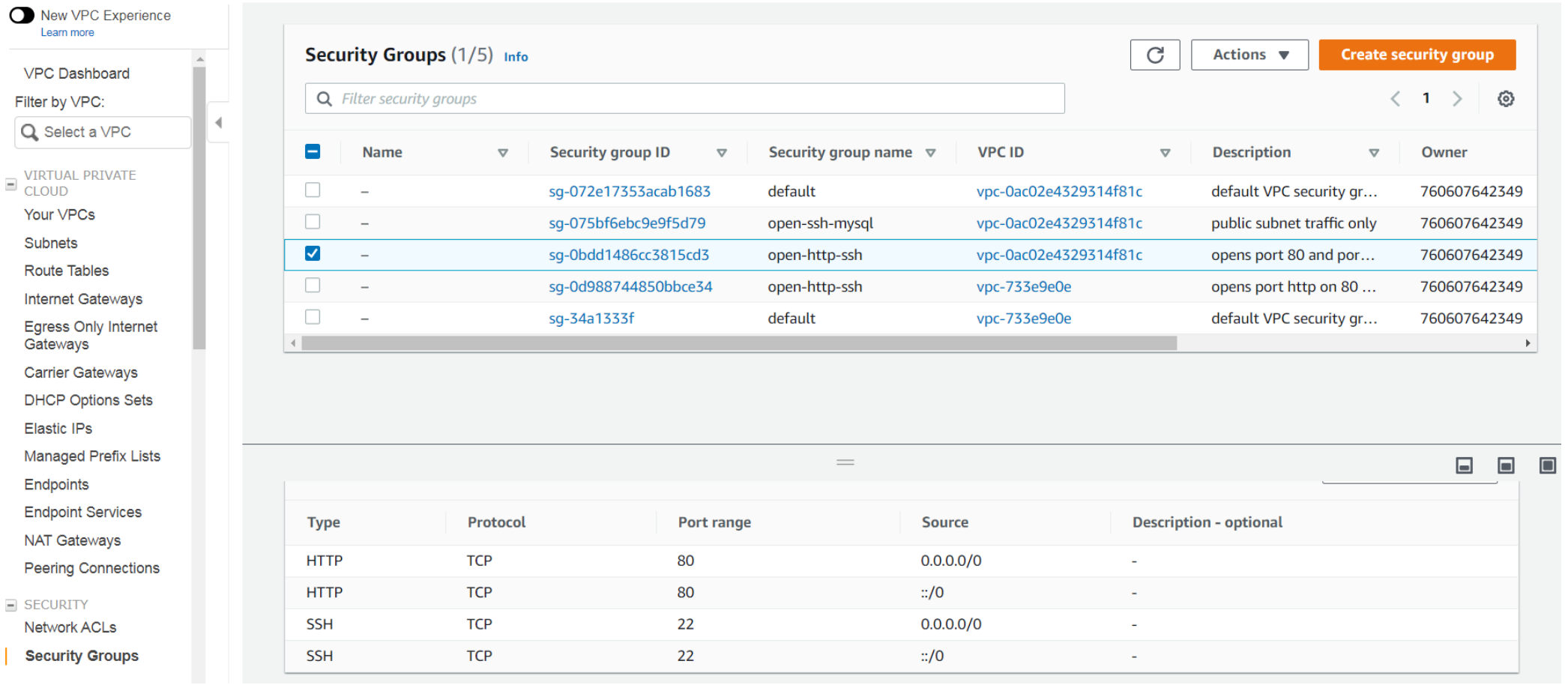
Launch private subnet to host the EC2 ubuntu instance hosting mysql DB



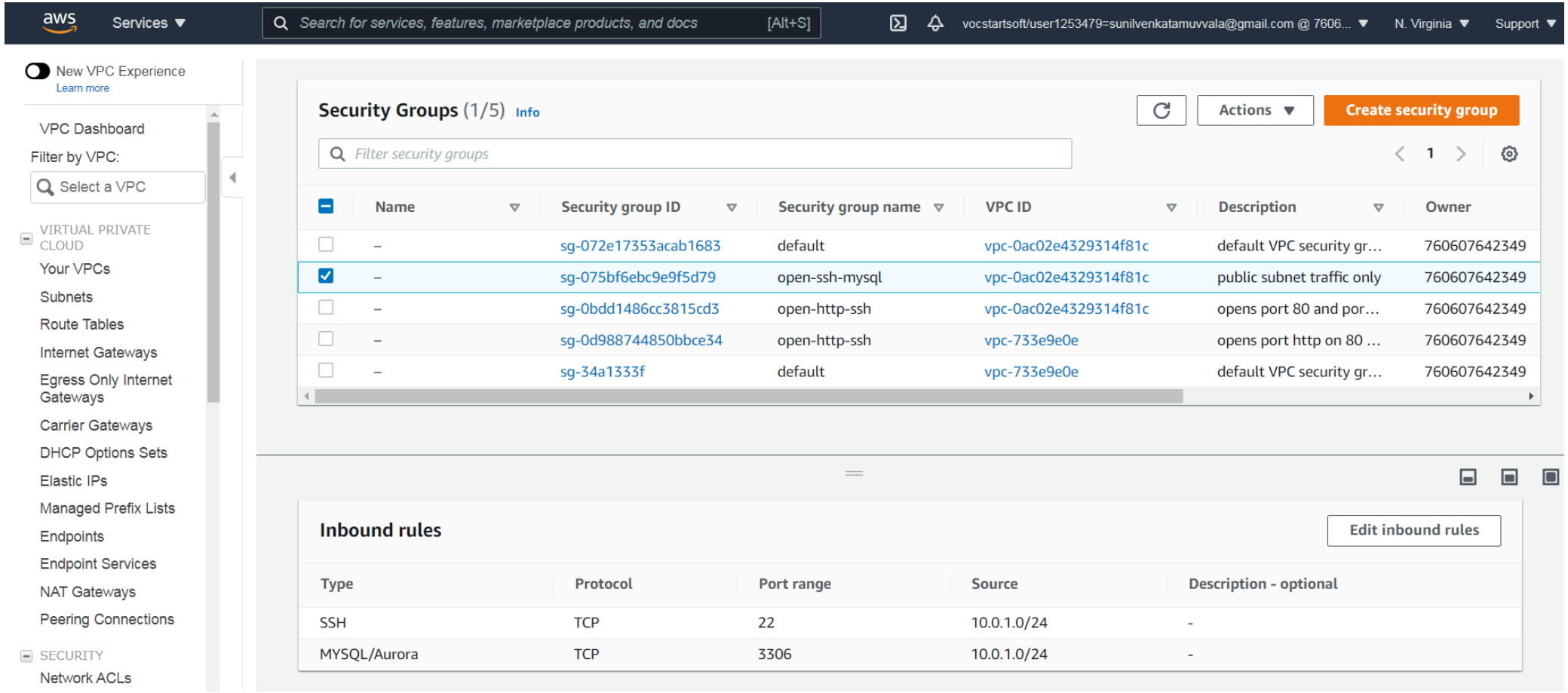
Launch an ubuntu t2 micro instance in public subnet of owncloud-vpc and name the instance as owncloud-app with security groups configured to SSH and HTTP ports



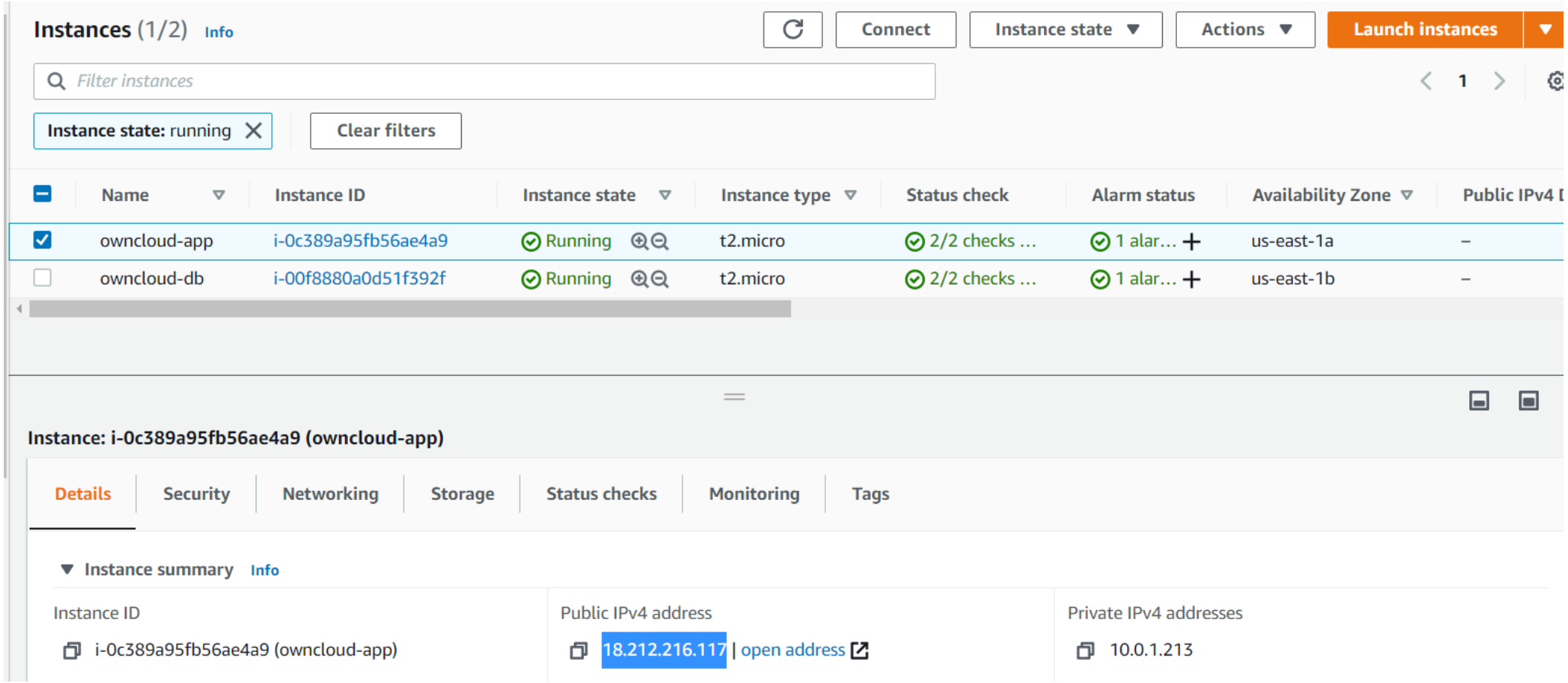
Security group configured to SSH and HTTP on to public EC2 owncloud-app instance



Security configured to SSH from owncloud-app EC2 instance to owncloud-db Ec2 instance and install my sql db on to owncloud-db ec2 instance



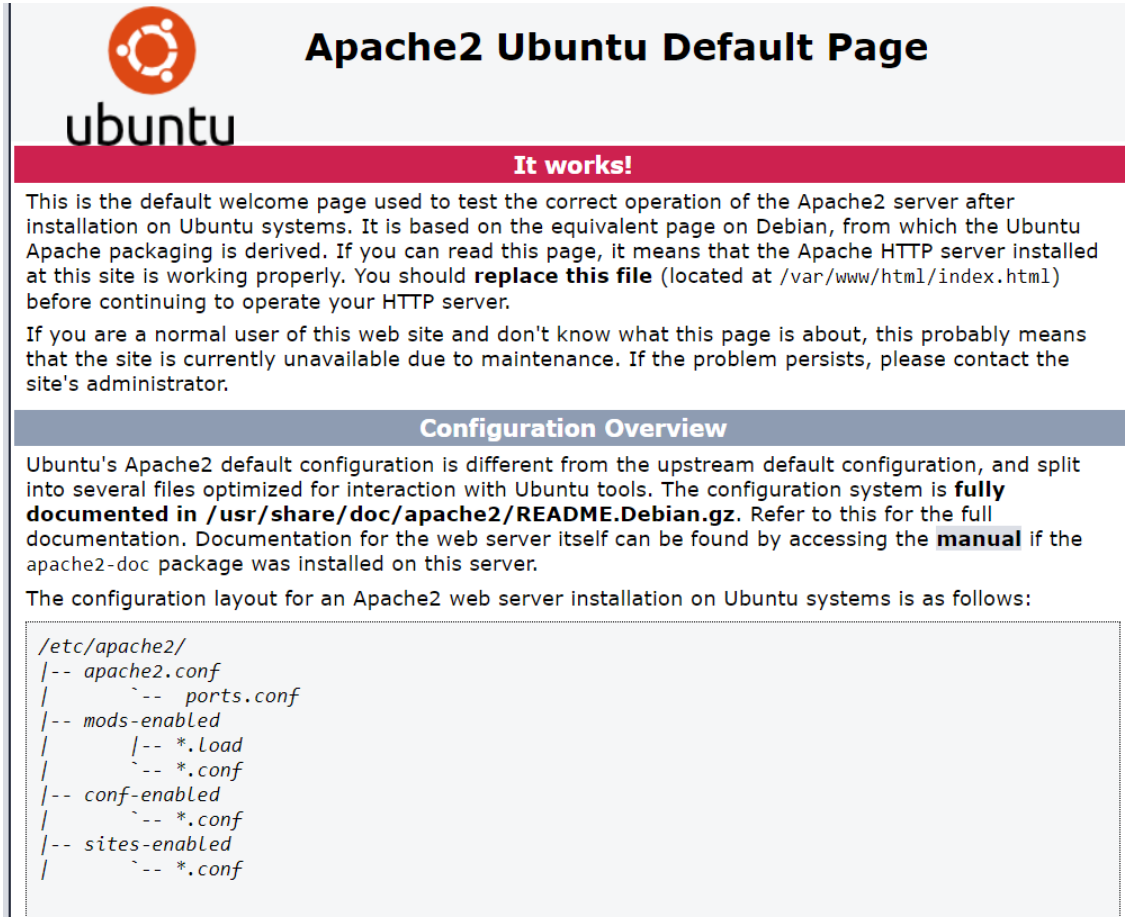
owncloud-app public IP
ubuntu 18.04 instance



Install LAMP – linux apache2 mysql and PHP on to EC2 owncloud-app instance

- Ssh to created owncloud-app instance using owncloud.pem file using putty if using windows machine
- run the following commands to install apache web server and validate installation by using public ip of owncloud-app instance.
  - Sudo apt-get update
  - Sudo apt-get install apache2

Default web page – owncloud-app



Apache2 Ubuntu Default Page

ubuntu

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in /usr/share/doc/apache2/README.Debian.gz**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```
/etc/apache2/
|-- apache2.conf
|       `--  ports.conf
|-- mods-enabled
|       |-- *.load
|       `-- *.conf
|-- conf-enabled
|       `-- *.conf
|-- sites-enabled
|       `-- *.conf
```

Install PHP and my sql.

- Run the command to install php on owncloud-app instance
- Sudo apt install php libapache2-mod-php php-mysql
- Edit /etc/apache2/mods-enabled/dir.conf file and make index.php as first access page using vi editor and save the dir.conf file
- Restart the web server – sudo systemctl restart apache2

Install owncloud on to EC2 owncloud-app

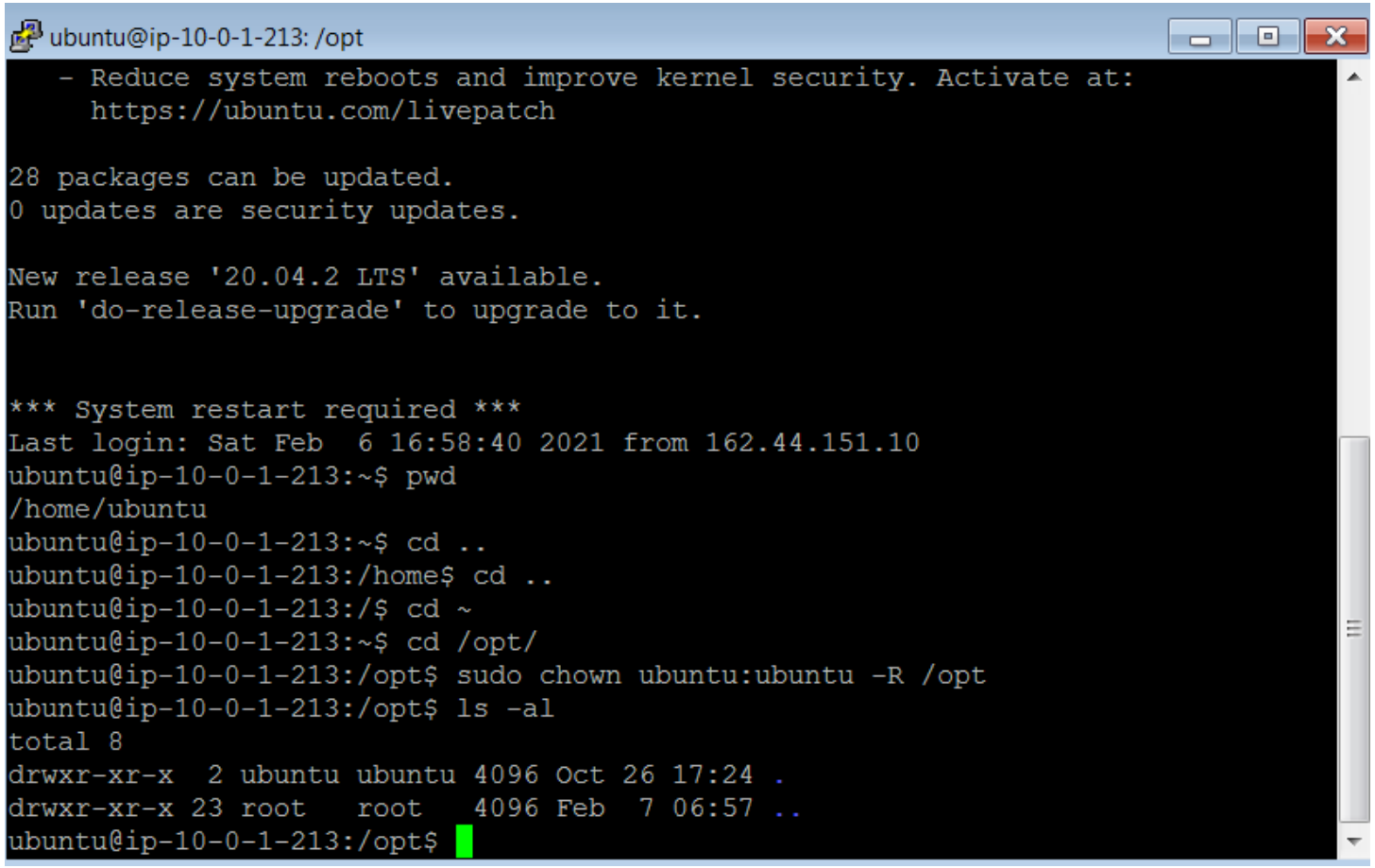
1. Run commands to install owncloud on ubuntu 18.04 owncloud-app instance

- curl https://attic.owncloud.org/download/repositories/10.0/Ubuntu_18.04/Release.key |sudo apt-key add -
- echo 'deb http://attic.owncloud.org/download/repositories/10.0/Ubuntu_18.04/ /' |
- sudo tee /etc/apt/sources.list.d/owncloud.list
- sudo apt update
- sudo apt install php-bz2 php-curl php-gd php-imagick php-intl php-mbstring php-xml php-zip owncloud-files

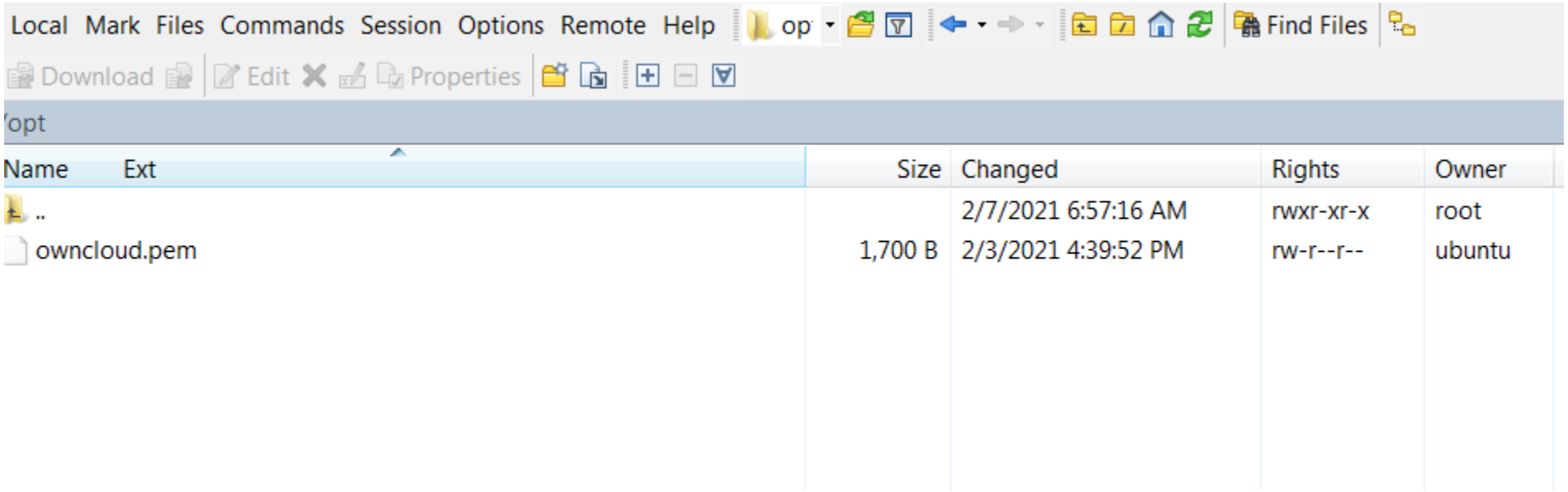
2. Change default site directory to owncloud files directory using sudo user

- edit /etc/apache2/sites-enabled/000-default.conf using vi editor and update directory root path to /var/www/owncloud
- restart the server - sudo systemctl reload apache2
- Access the owncloud application using public ip of EC2 instance in browser

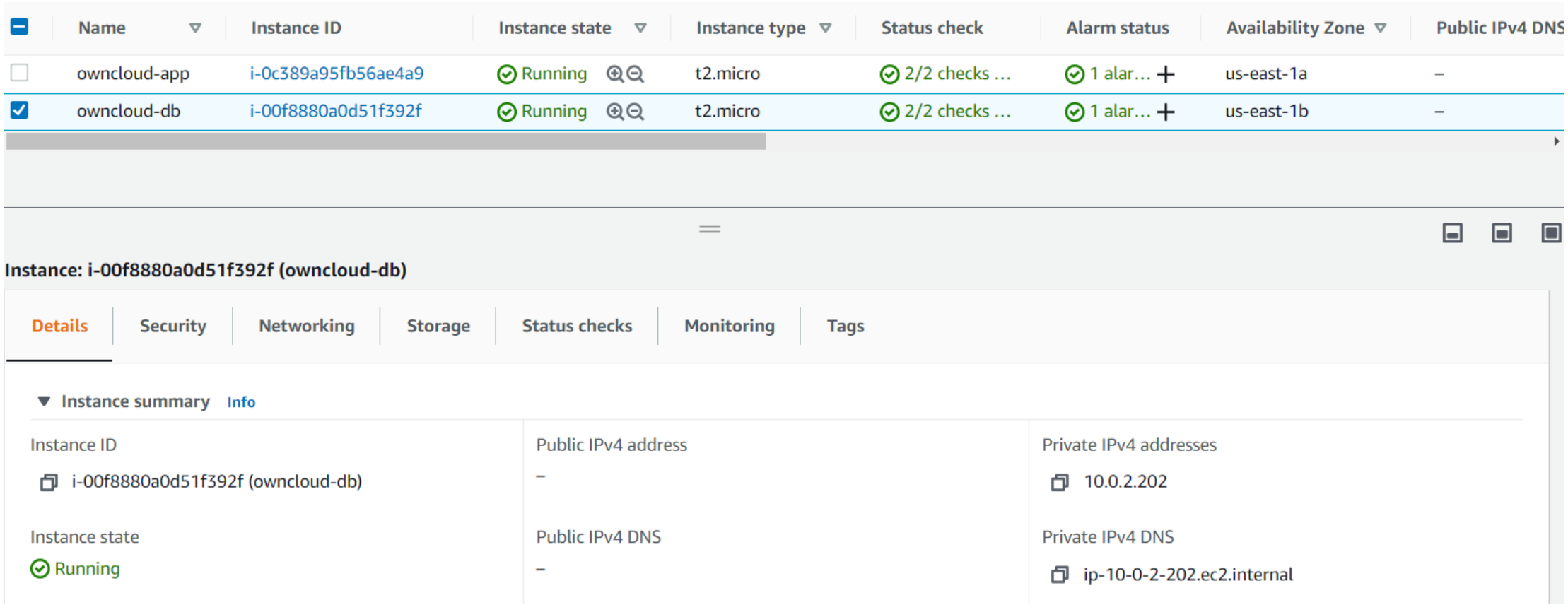
SSH in to owncloud-app instance
change the owner of /opt folder to ubuntu with root user rights



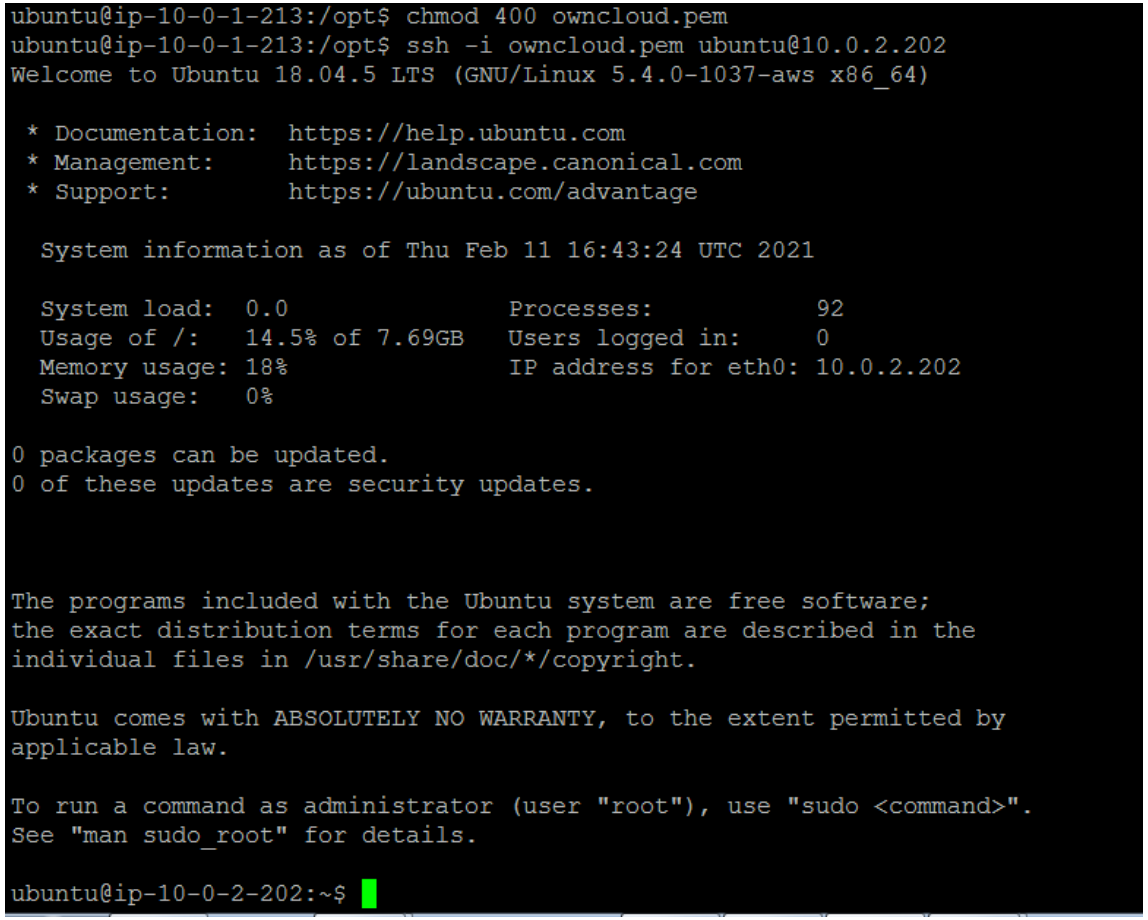
copy the owncloud.pem file to owncloud-app instance using winscp



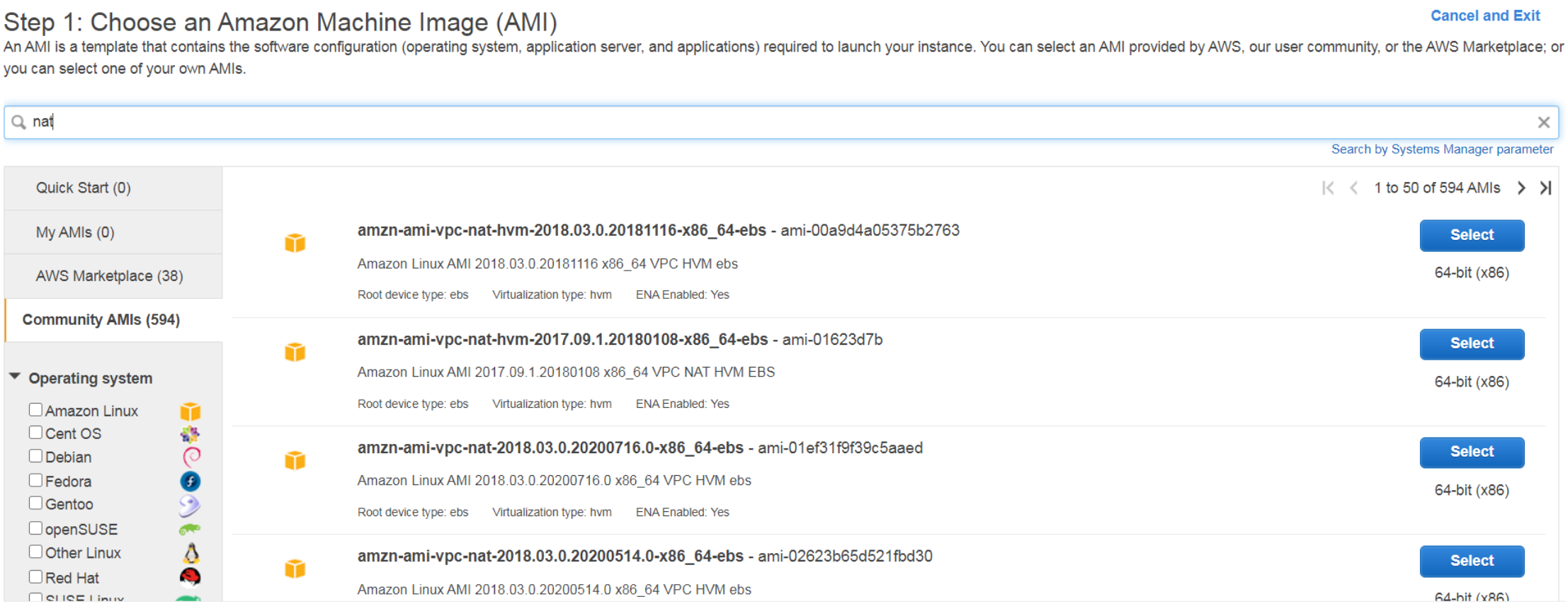
Create a t2 micro instance in private subnet us-east-1b region to install my sql DB



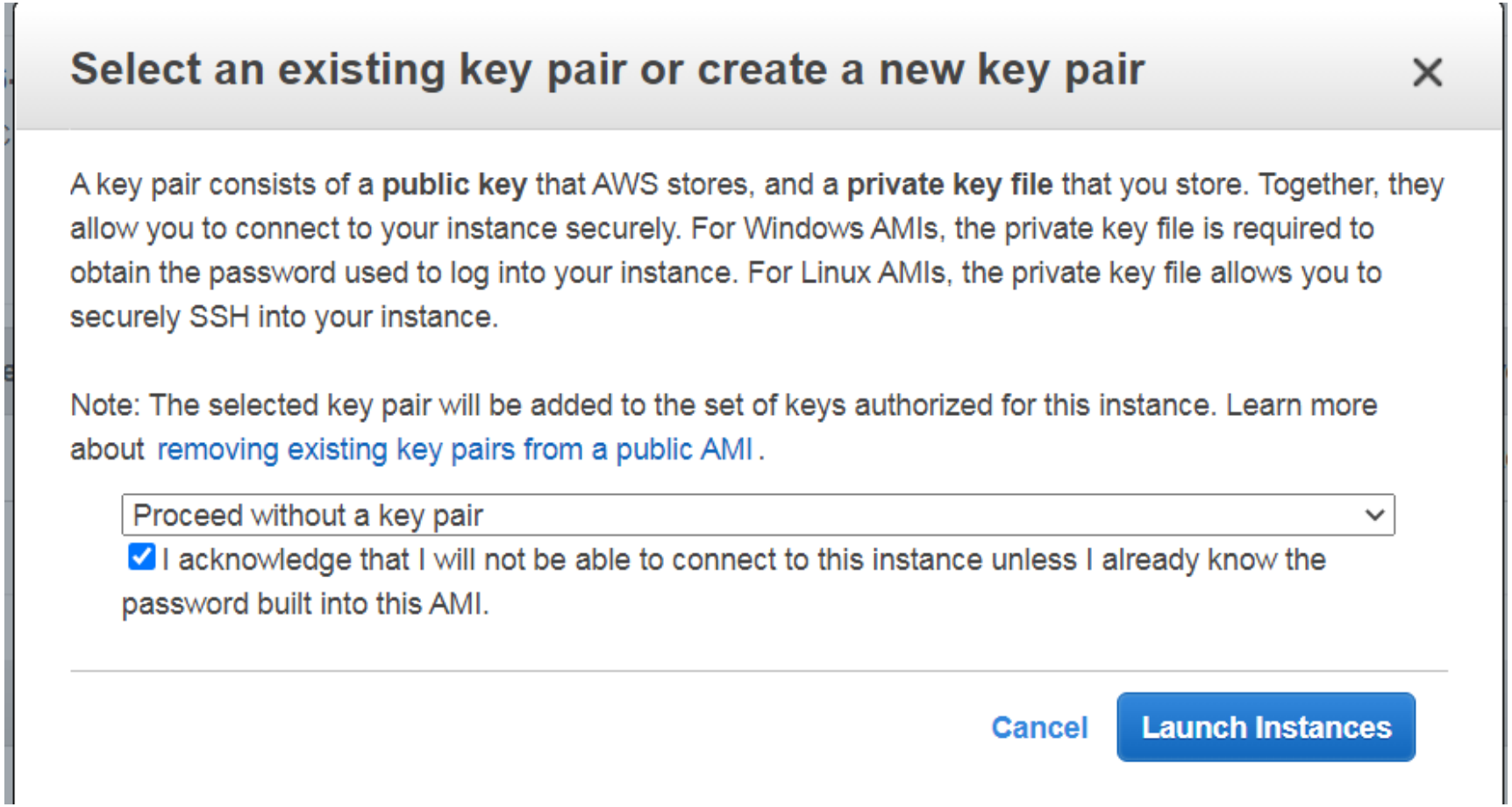
SSH from owncloud-app to owncloud-db



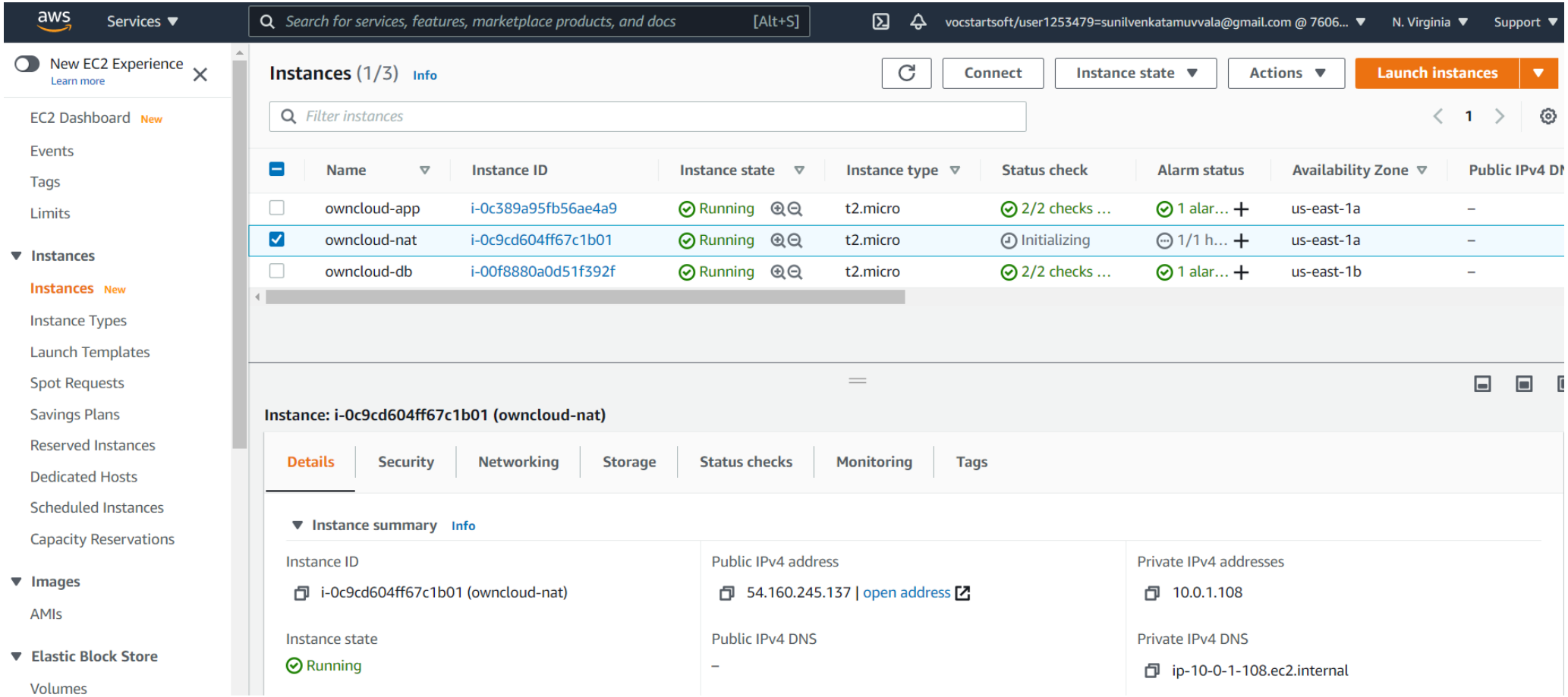
Select an AMI for creating NAT instance



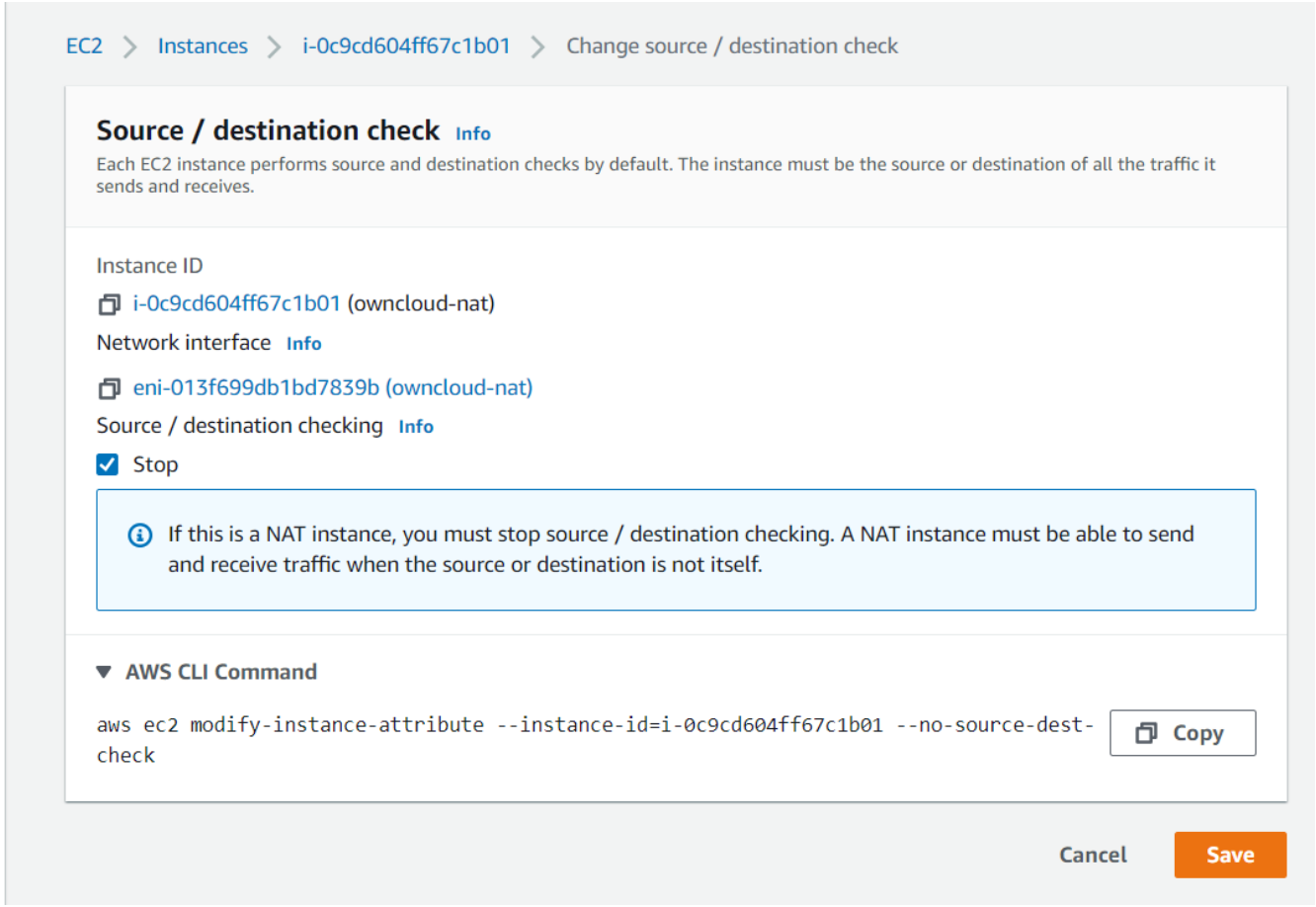
Follow the seven steps for creating NAT instance and proceed with out key pair.



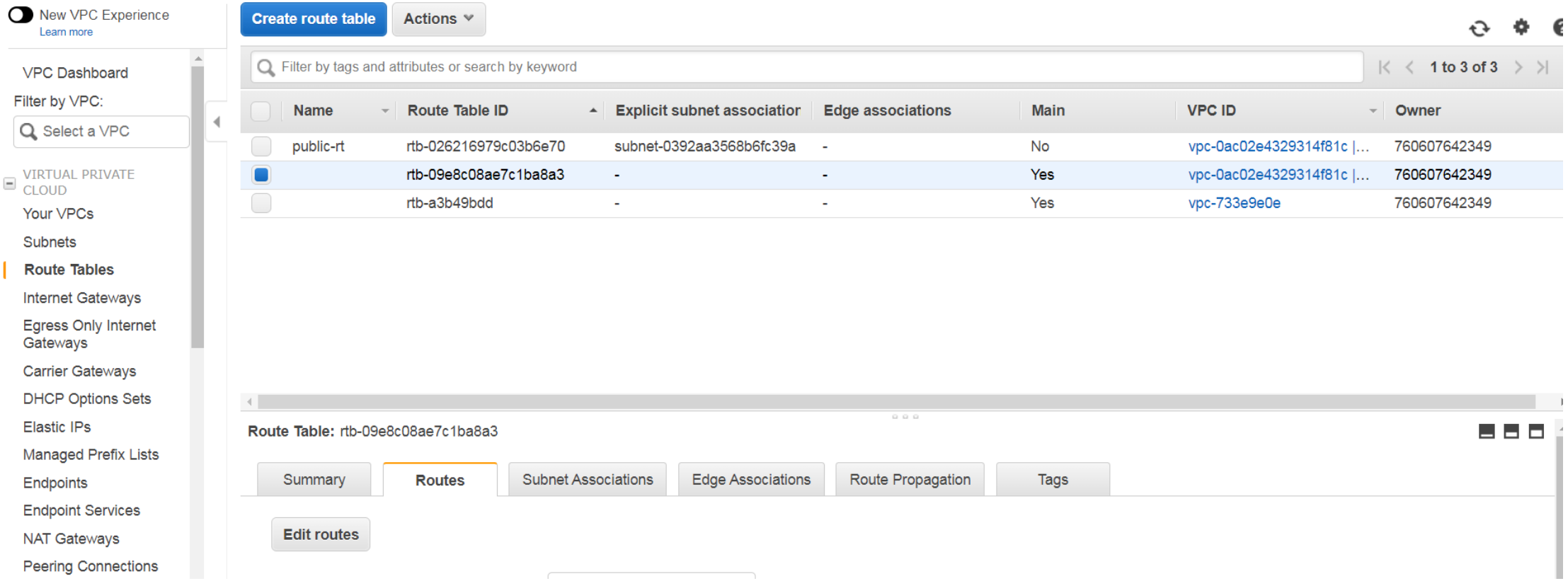
Owncloud-nat NAT instance



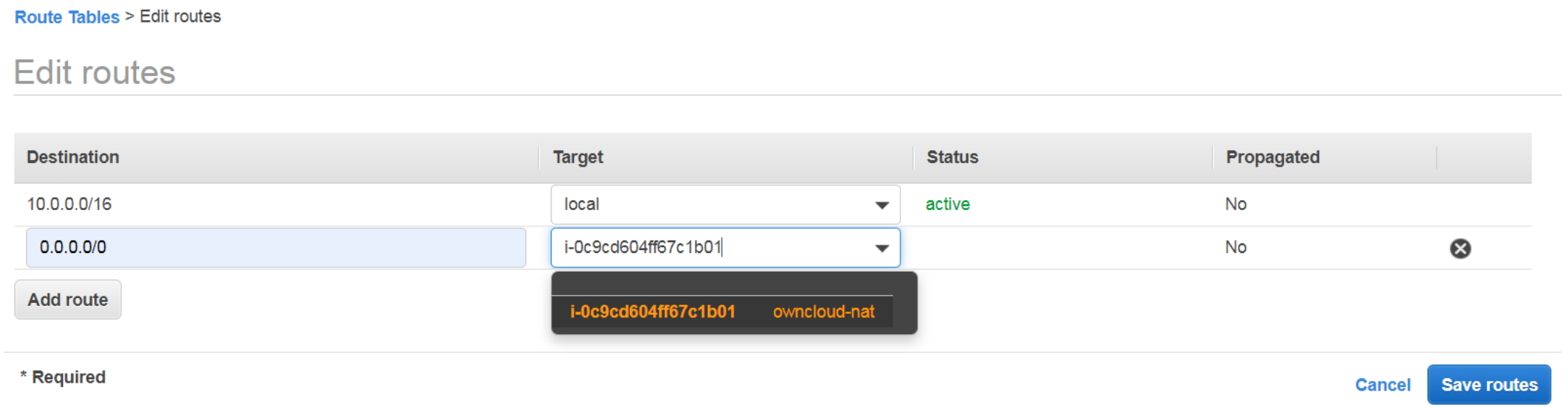
Ensure that for NAT instance source/destination checking is disabled



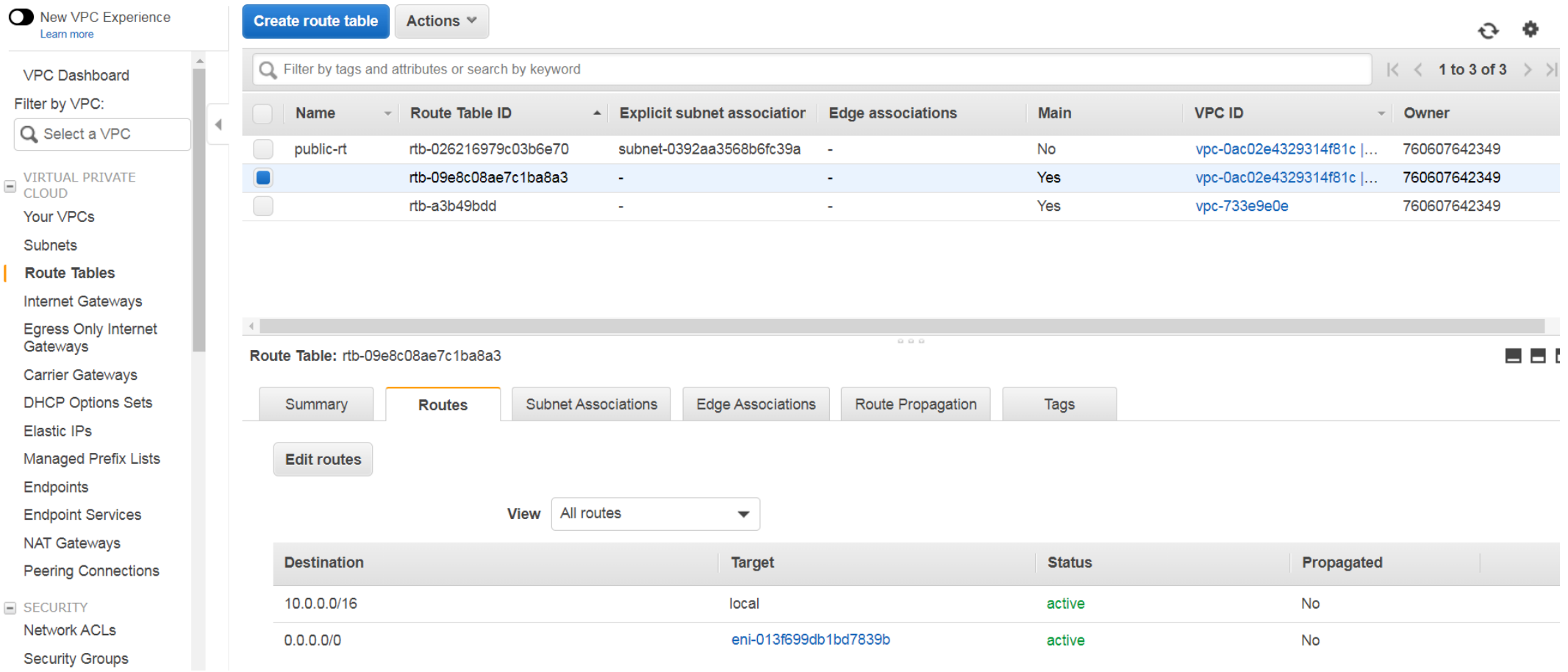
Edit the main route table of owncloud-vpc custom vpc to point to owncloud-nat NAT instance



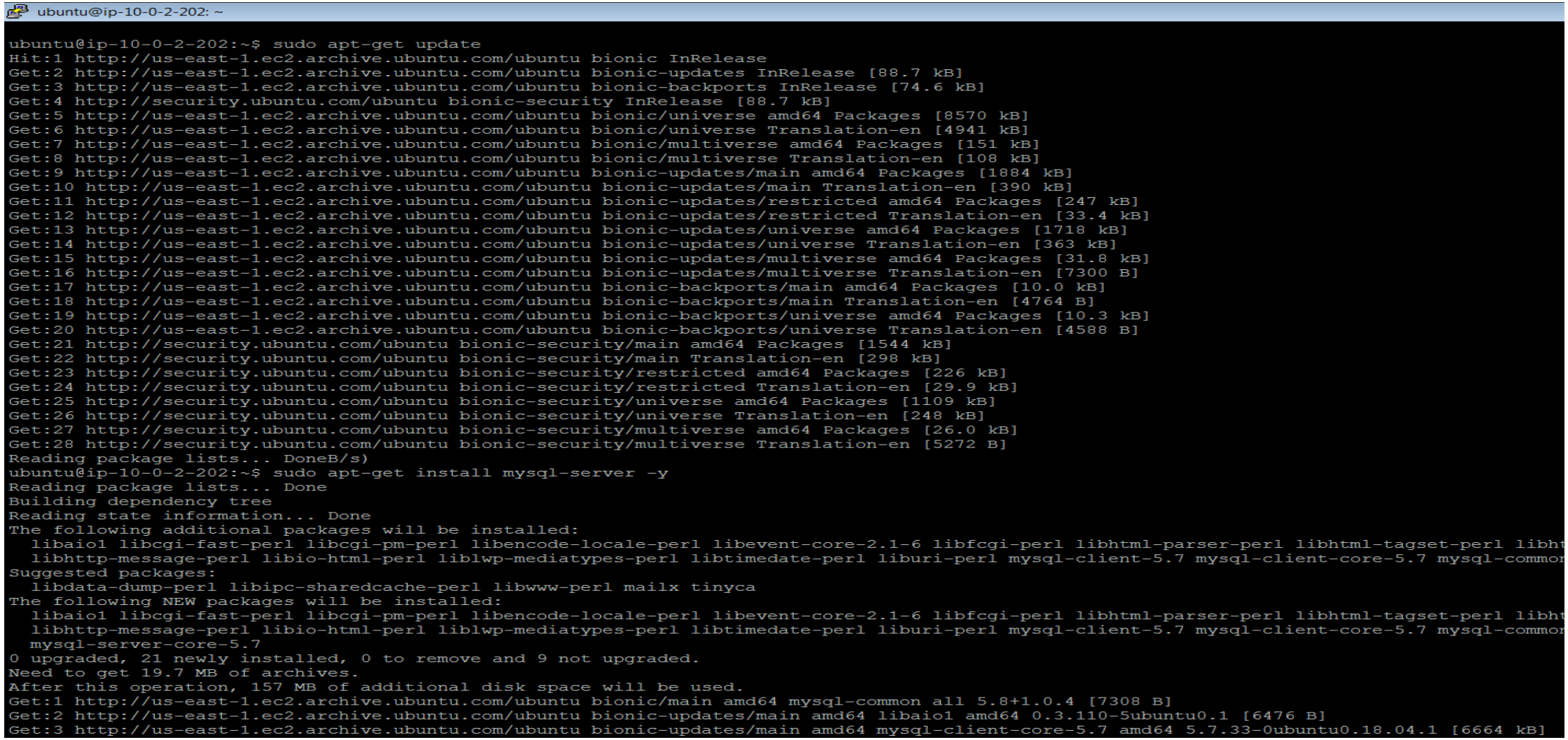
Edit the route so that the destination for owncloud-nat NAT instance is all traffic i.e. internet



Main route table has been edited to include owncloud-nat NAT instance



Once connected to owncloud-db from owncloud-app install the mysql DB



Create an owncloud DB in mysql on owncloud-db instance

```
mysql> CREATE DATABASE owncloud;
Query OK, 1 row affected (0.00 sec)

mysql> GRANT ALL ON owncloud.* to 'owncloud'@'localhost' IDENTIFIED BY 'owncloud'
    -> ;
Query OK, 0 rows affected, 1 warning (0.02 sec)

mysql> flush priveleges;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'priveleges' at line 1
mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)

mysql> exit
Bye
ubuntu@ip-10-0-2-202:~$
```

Restarting mysql and root priveleges

```
Last login: Fri Feb 12 15:23:55 2021 from 10.0.1.213
ubuntu@ip-10-0-2-202:~$ mysql -u root -p
Enter password:
ERROR 1698 (28000): Access denied for user 'root'@'localhost'
ubuntu@ip-10-0-2-202:~$ mysql -u root -p
Enter password:
ERROR 1698 (28000): Access denied for user 'root'@'localhost'
ubuntu@ip-10-0-2-202:~$ mysql -u root
ERROR 1698 (28000): Access denied for user 'root'@'localhost'
ubuntu@ip-10-0-2-202:~$ mysql -u root
ERROR 1698 (28000): Access denied for user 'root'@'localhost'
ubuntu@ip-10-0-2-202:~$ sudo service mysql stop
ubuntu@ip-10-0-2-202:~$ sudo mkdir -p /var/run/mysqld
ubuntu@ip-10-0-2-202:~$ sudo chown mysql:mysql /var/run/mysqld
ubuntu@ip-10-0-2-202:~$ sudo /usr/sbin/mysqld --skip-grant-tables --skip-networking &
[1] 25227
ubuntu@ip-10-0-2-202:~$ jobs
[1]+  Running                 sudo /usr/sbin/mysqld --skip-grant-tables --skip-networking &
ubuntu@ip-10-0-2-202:~$ mysql -u root
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.7.33-0ubuntu0.18.04.1 (Ubuntu)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> flush privileges
    -> ;
Query OK, 0 rows affected (0.01 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| owncloud           |
| performance_schema |
| sys                |
+--------------------+
5 rows in set (0.00 sec)

mysql> exit
Bye
ubuntu@ip-10-0-2-202:~$
```
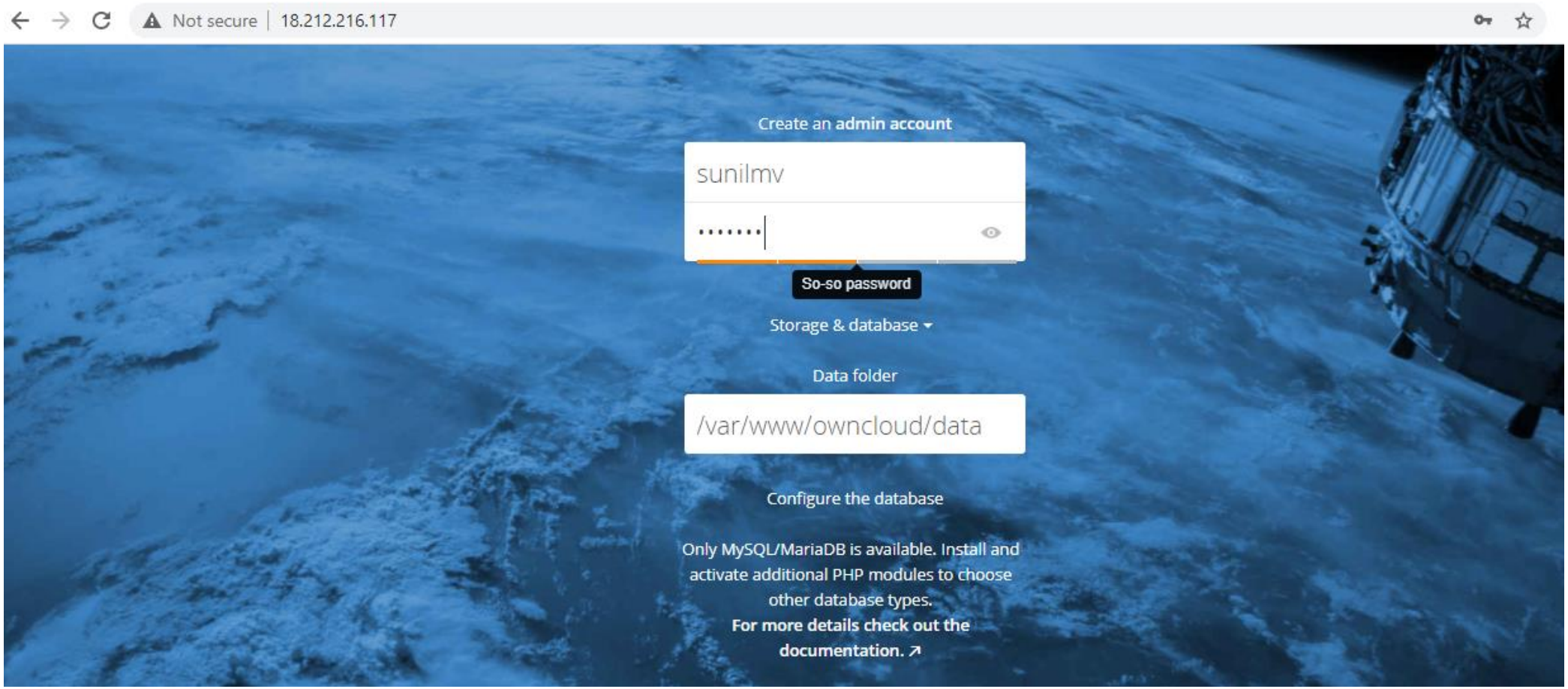
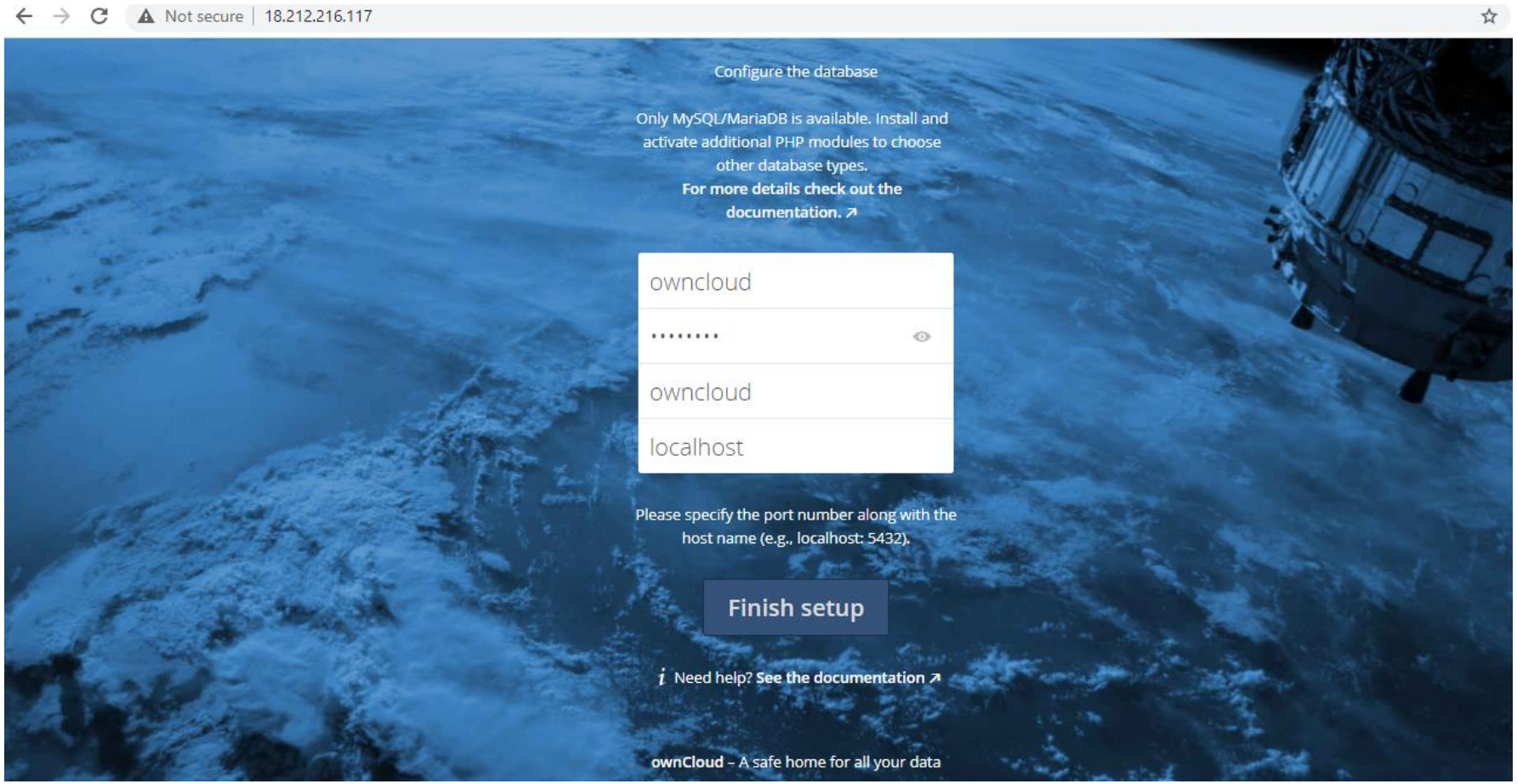

owncloud index.php with login credentials showing up



owncloud index.php page with database login showing up



Learnings & observations

- owncloud is a kind of personal cloud where you can store or upload files where you can control with out a third party
- owncloud is implemented using two ec2 ubuntu instances where owncloud is installed on publicly accessible ec2 instance and the DB is installed on a private EC2 ubuntu instance.
- owncloud-app is publicly accessible instance with public ip address and owncloud-db can be accessible from owncloud-app and not publicly accessible.
- owncloud-app instance is launched on public subnet and owncloud-db is launched on private subnet.
- Public subnet is achieved by connecting to custom vpc owncloud-vpc via a internet gateway and public-rt table with routes showing up traffic destined to internet gateway and traffic from public-subnet associated to the public-rt table.
- owncloud-db is launched in private subnet and security group configured to be accessible from public subnet instance owncloud-app
- NAT instance is launched in public subnet which acts as gate way to internet for EC2 instance launched in private subnet though EC2 instance owncloud-db is not accessible via public ip address but can access the internet via NAT instance with an address translation of private ip to public ip at NAT instance and thus can install required software.
- Default main route table of owncloud-vpc is configured to accept all traffic to NAT instance which includes traffic from private subnet instance.
- owncloud is installed on publicly accessible ec2 instance owncloud-app and mysql DB is installed on private EC2 instance via NAT instance.
- Installation instructions are run on private EC2 instance owncloud-db via SSH from public EC2 instance.