NWEN243 Project 3 Lab Report Part B

Raashna Chand

This lab report documents how I followed the steps laid out in part B of the instructions of the project. Note that the answers to the last two questions are on page 11.

1.

New instance from part 3A image created.

```
[ec2-user@ip-172-31-94-67 ~]$ sudo crontab -r
[ec2-user@ip-172-31-94-67 ~]$
```

Crontab removed. Instance rebooted.

2.

a.

```
[ec2-user@ip-172-31-94-67 ~]$ sudo yum update
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
No packages marked for update
```

sudo yum update ran. No updates.

b.

```
[ec2-user@ip-172-31-94-67 ~]$ sudo amazon-linux-extras install docker
Installing docker
```

Docker installed.

c.

```
[ec2-user@ip-172-31-94-67 ~]$ sudo service docker start
Redirecting to /bin/systemctl start docker.service
```

Docker started.

d.

```
[ec2-user@ip-172-31-94-67 ~]$ sudo usermod -a -G docker ec2-user
```

Default user added.

e.

```
[ec2-user@ip-172-31-94-67 ~]$ exit
logout
Connection to 44.203.47.204 closed.
raashna@raashna-IdeaPad-Flex-5-14ARE05:~/Desktop/uni/NWEN243/project 3$
```

Logged out of instance.

f.

```
raashna@raashna-IdeaPad-Flex-5-14ARE05:~/Desktop/uni/NWEN243/project 3$ ssh -i n
wenproj3b.pem ec2-user@44.203.47.204
Last login: Tue Oct  3 01:35:42 2023 from 151.210.163.252
   ,     #_
   ~\_  ####_        Amazon Linux 2
  ~~  \_#####\
  ~~     \###|       AL2 End of Life is 2025-06-30.
  ~~       \#/ ___
   ~~       V~' '->
    ~~~         /    A newer version of Amazon Linux is available!
      ~~._.   _/
         _/ _/       Amazon Linux 2023, GA and supported until 2028-03-15.
       _/m/'           https://aws.amazon.com/linux/amazon-linux-2023/

[ec2-user@ip-172-31-94-67 ~]$
```

SSH-ed back in.
g.

```
[ec2-user@ip-172-31-94-67 ~]$ docker info
Client:
 Context:    default
 Debug Mode: false
 Plugins:
  buildx: Docker Buildx (Docker Inc., 0.0.0+unknown)

Server:
 Containers: 0
  Running: 0
  Paused: 0
  Stopped: 0
```

No containers.
3.

```
[ec2-user@ip-172-31-94-67 ~]$ ls
Dockerfile              MusicGuruHealthCheck.class  run.sh
helloworld.class        MusicGuruHealthCheck.java   SongEntry.class
musicdata.txt           MusicGuruServer.class
MusicGuruClient.class   MusicGuruServer.java
```

Source files added.
4.

File created on local machine.
5.

```
FROM openjdk:8
COPY *.java /usr/src/MGS/
COPY musicdata.txt /usr/src/MGS/
WORKDIR /usr/src/MGS
RUN javac MusicGuruServer.java
EXPOSE 5000
CMD ["java", "MusicGuruServer", "5000"]
```

Contents of Dockerfile.
6-7.

```
[ec2-user@ip-172-31-80-74 ~]$ docker build mgs -t .
invalid argument "." for "-t, --tag" flag: invalid reference format
See 'docker build --help'.
[ec2-user@ip-172-31-80-74 ~]$ docker build -t mgs .
Sending build context to Docker daemon  10.41MB
Step 1/7 : FROM openjdk:8
8: Pulling from library/openjdk
001c52e26ad5: Pull complete
d9d4b9b6e964: Pull complete
2068746827ec: Pull complete
9daef329d350: Pull complete
d85151f15b66: Pull complete
52a8c426d30b: Pull complete
8754a66e0050: Pull complete
Digest: sha256:86e863cc57215cfb181bd319736d0baf625fe8f150577f9eb58bd937f5452cb8
Status: Downloaded newer image for openjdk:8
 ---> b273004037cc
Step 2/7 : COPY *.java /usr/src/MGS/
 ---> e34c2b2fa49c
Step 3/7 : COPY musicdata.txt /usr/src/MGS/
 ---> 8e0e375258d2
Step 4/7 : WORKDIR /usr/src/MGS
 ---> Running in eb6129352c99
Removing intermediate container eb6129352c99
 ---> e351c59f22b4
Step 5/7 : RUN javac MusicGuruServer.java
 ---> Running in 8e935fe689a7
Removing intermediate container 8e935fe689a7
 ---> f69df5b4f954
Step 6/7 : EXPOSE 5000
 ---> Running in b8a3cb5dcf33
Removing intermediate container b8a3cb5dcf33
 ---> e4705b17ab86
Step 7/7 : CMD ["java", "MusicGuruServer", "5000"]
 ---> Running in 194eddb5a737
Removing intermediate container 194eddb5a737
 ---> b69f7f98bceb
Successfully built b69f7f98bceb
Successfully tagged mgs:latest
```

Image built.

8.

```
[ec2-user@ip-172-31-80-74 ~]$ docker images --filter reference=mgs
REPOSITORY   TAG       IMAGE ID       CREATED          SIZE
mgs          latest    b69f7f98bceb   30 seconds ago   526MB
```

Seems like image was built properly.

9.

```
[ec2-user@ip-172-31-80-74 ~]$ docker run -t -i -p 5000:5000 mgs &
[1] 6660
```

Mapped exposed port on container to port on machine. Process ID is 6660.

10.

```
[ec2-user@ip-172-31-80-74 ~]$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED         STATUS         PORTS                                       NAMES
119dd2d0f855   mgs       "java MusicGuruServe…"   36 seconds ago   Up 35 seconds   0.0.0.0:5000->5000/tcp, :::5000->5000/tcp   modest_goldstin
e
```

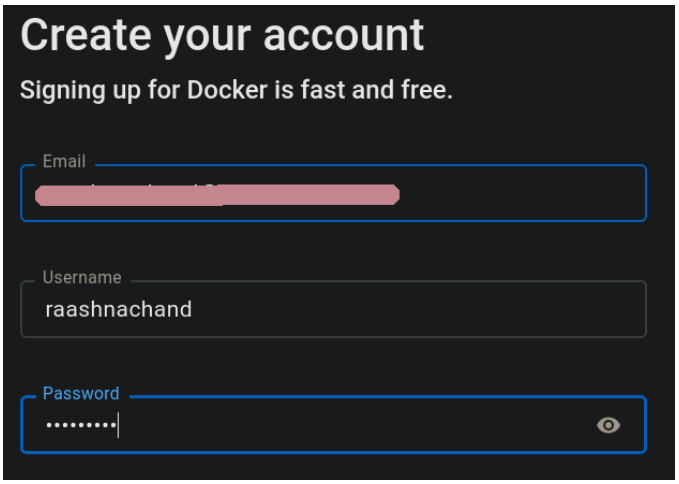
Everything is running fine.

13.

```
[ec2-user@ip-172-31-80-74 ~]$ docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED          STATUS          PORTS                                       NAMES
119dd2d0f855   mgs       "java MusicGuruServe…"   10 minutes ago   Up 10 minutes   0.0.0.0:5000->5000/tcp, :::5000->5000/tcp   modest_goldstin
e
```

Prior docker executions.

15-17.



Account signed up for. Email also validated.

18-19

```
[ec2-user@ip-172-31-80-74 ~]$ docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't
have a Docker ID, head over to https://hub.docker.com to create one.
Username: raashnachand
Password:
WARNING! Your password will be stored unencrypted in /home/ec2-user/.docker/conf
ig.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
```

Logged in.

20.

```
[ec2-user@ip-172-31-80-74 ~]$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED          STATUS
   PORTS                                       NAMES
119dd2d0f855   mgs       "java MusicGuruServe…"   23 minutes ago   Up 23 minutes
   0.0.0.0:5000->5000/tcp, :::5000->5000/tcp   modest_goldstine
[ec2-user@ip-172-31-80-74 ~]$
```

Server still running.

21.

```
[ec2-user@ip-172-31-80-74 ~]$ docker image ls
REPOSITORY   TAG       IMAGE ID       CREATED          SIZE
mgs          latest    b69f7f98bceb   28 minutes ago   526MB
openjdk      8         b273004037cc   14 months ago    526MB
```

Checking the name of my docker image's repository.

```
[ec2-user@ip-172-31-80-74 ~]$ docker tag mgs raashnachand/mgs
```

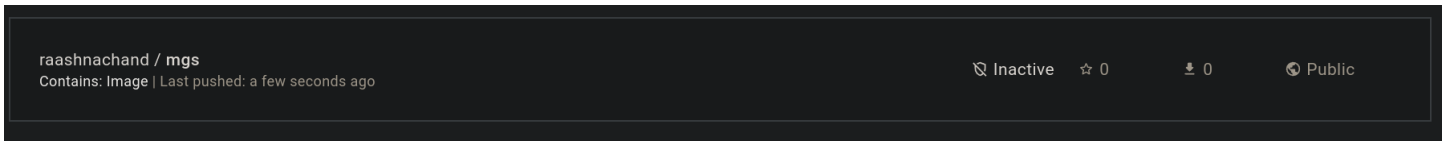
Added image tag that references the repository.

22.

```
[ec2-user@ip-172-31-80-74 ~]$ docker push raashnachand/mgs:latest
The push refers to repository [docker.io/raashnachand/mgs]
c07481fa8159: Pushed
1fe5284d65b3: Pushed
246df53f8f27: Pushed
6b5aaff44254: Pushing  131.4MB/209.2MB
53a0b163e995: Pushed
b626401ef603: Pushed
9b55156abf26: Pushing  73.96MB/152MB
293d5db30c9f: Pushed
03127cdb479b: Pushed
9c742cd6c7a5: Pushing  29.28MB/124MB
```

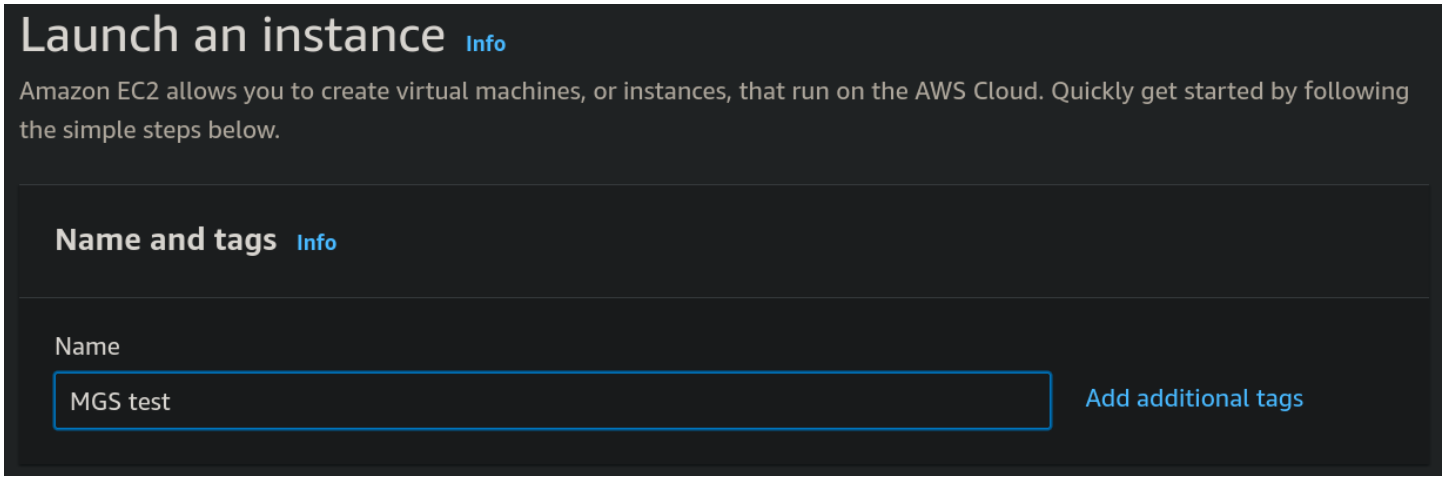
In the process of being pushed.

23.



Repository made.

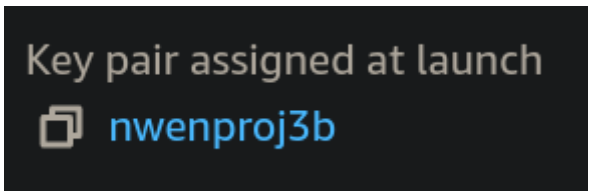
24.



Creating new vanilla instance with Amazon Linux 2 AMI HVM.

25.

Same keys used.



26.

```
[ec2-user@ip-172-31-95-145 ~]$ sudo yum update
Last metadata expiration check: 0:04:10 ago on Wed Oct  4 08:07:56 2023.
Dependencies resolved.
Nothing to do.
Complete!
```

SSH-ing into new instance, doing all the updates and installations which won’t be documented.

27.

```
[ec2-user@ip-172-31-85-225 ~]$ docker pull docker.io/raashnachand/mgs:latest
latest: Pulling from raashnachand/mgs
001c52e26ad5: Pull complete
d9d4b9b6e964: Pull complete
2068746827ec: Pull complete
9daef329d350: Pull complete
d85151f15b66: Pull complete
52a8c426d30b: Pull complete
8754a66e0050: Pull complete
9d574abf8b28: Pull complete
ab0c5a2e2736: Pull complete
6e35ef1c934f: Pull complete
Digest: sha256:85685fe0d056978fd6b712d409fb8cbce16c12e925a8b8610f83f55762450019
Status: Downloaded newer image for raashnachand/mgs:latest
docker.io/raashnachand/mgs:latest
[ec2-user@ip-172-31-85-225 ~]$
```

Docker image pulled from my repository.

28.

```
[ec2-user@ip-172-31-85-225 ~]$ docker run -t -i -p 5000:5000 raashnachand/mgs:la
test &
[1] 3775
```

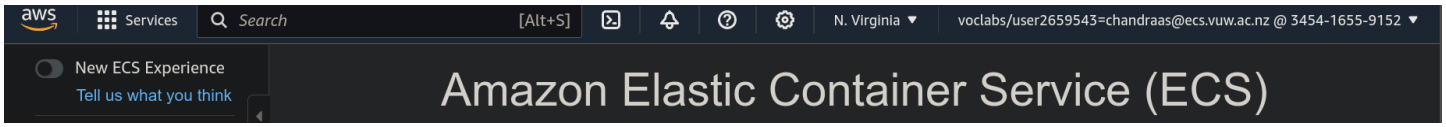
Running the container. PID of 3775.

29.

```
raashna@raashna-IdeaPad-Flex-5-14ARE05:~/Desktop/uni/NWEN243/project 3/proj 3b$
java MusicGuruClient 52.87.159.216 5000 1976
Range: 1950-2009
Sending year 1976
In 1976 the number 3 song was More Than a Feeling by Boston
(172.17.0.2)
```

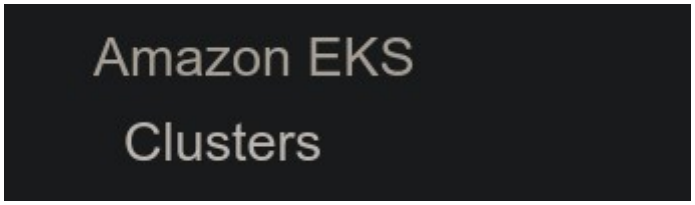
Runs perfectly.

30-31.

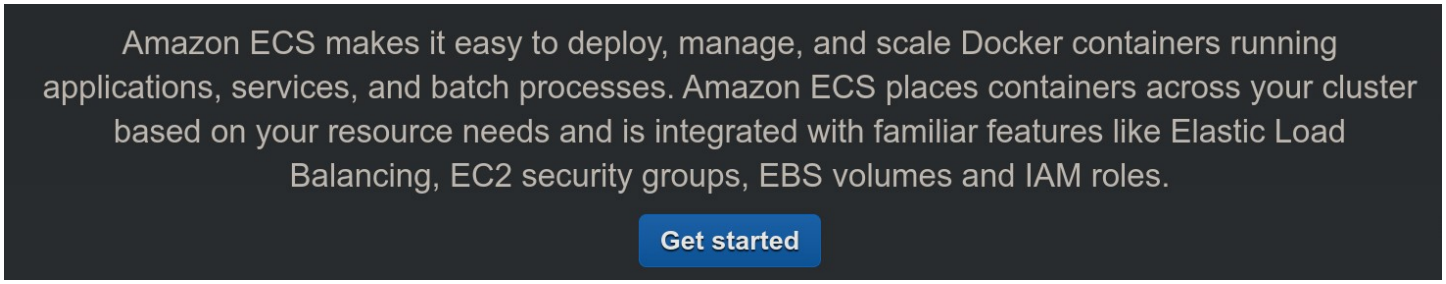


ECS dashboard. New ECS experience turned off.

32.

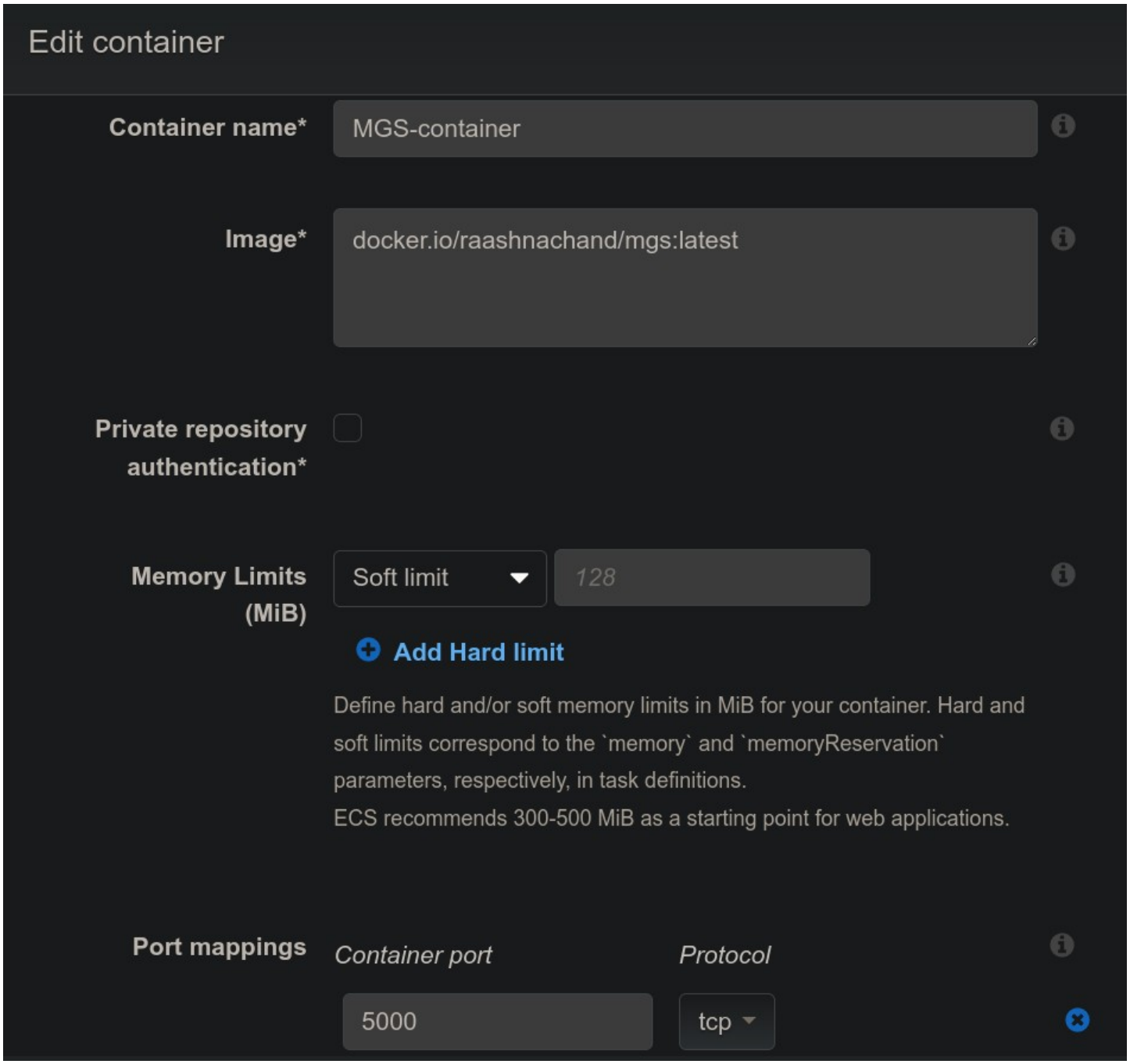


Clusters.



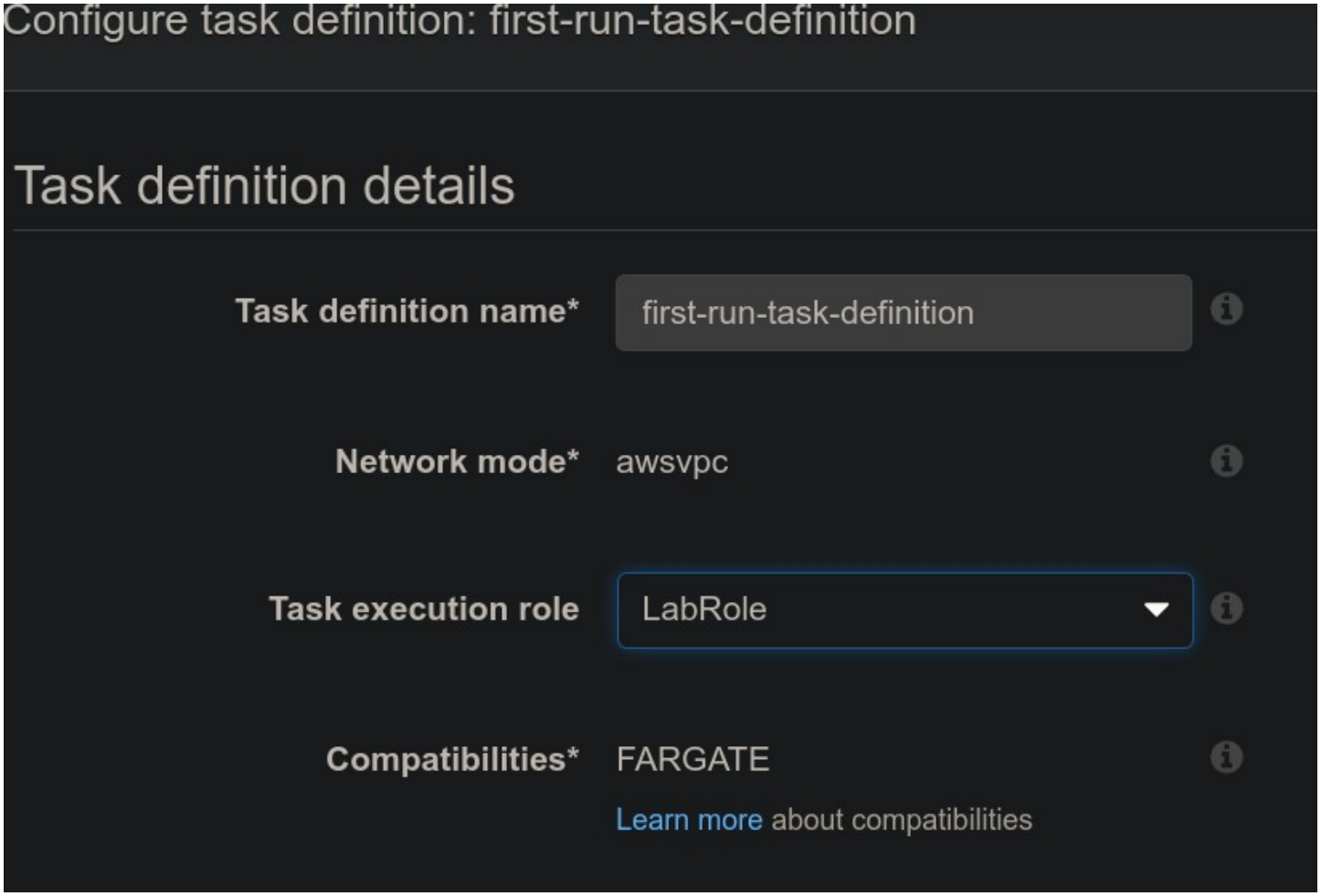
Get started.

33-34.



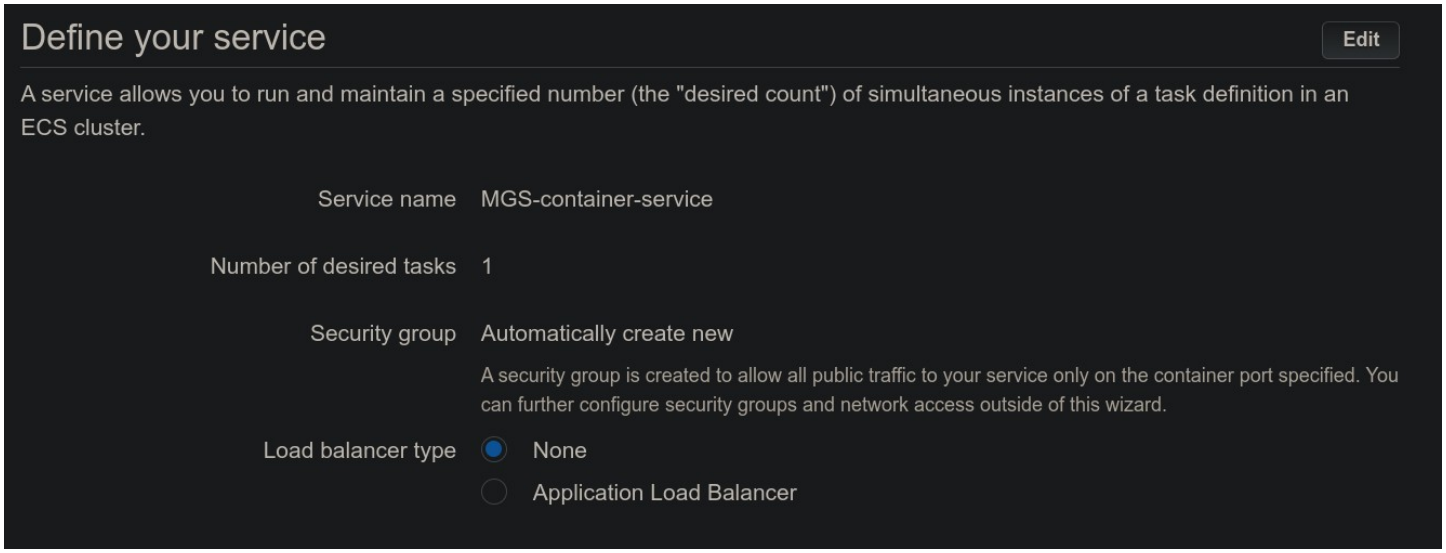
Configuration settings.

35.



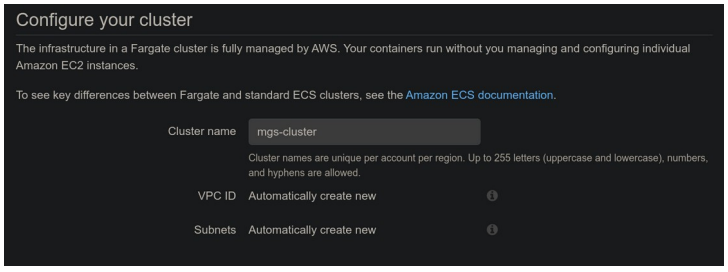
Task definition configured.

36.



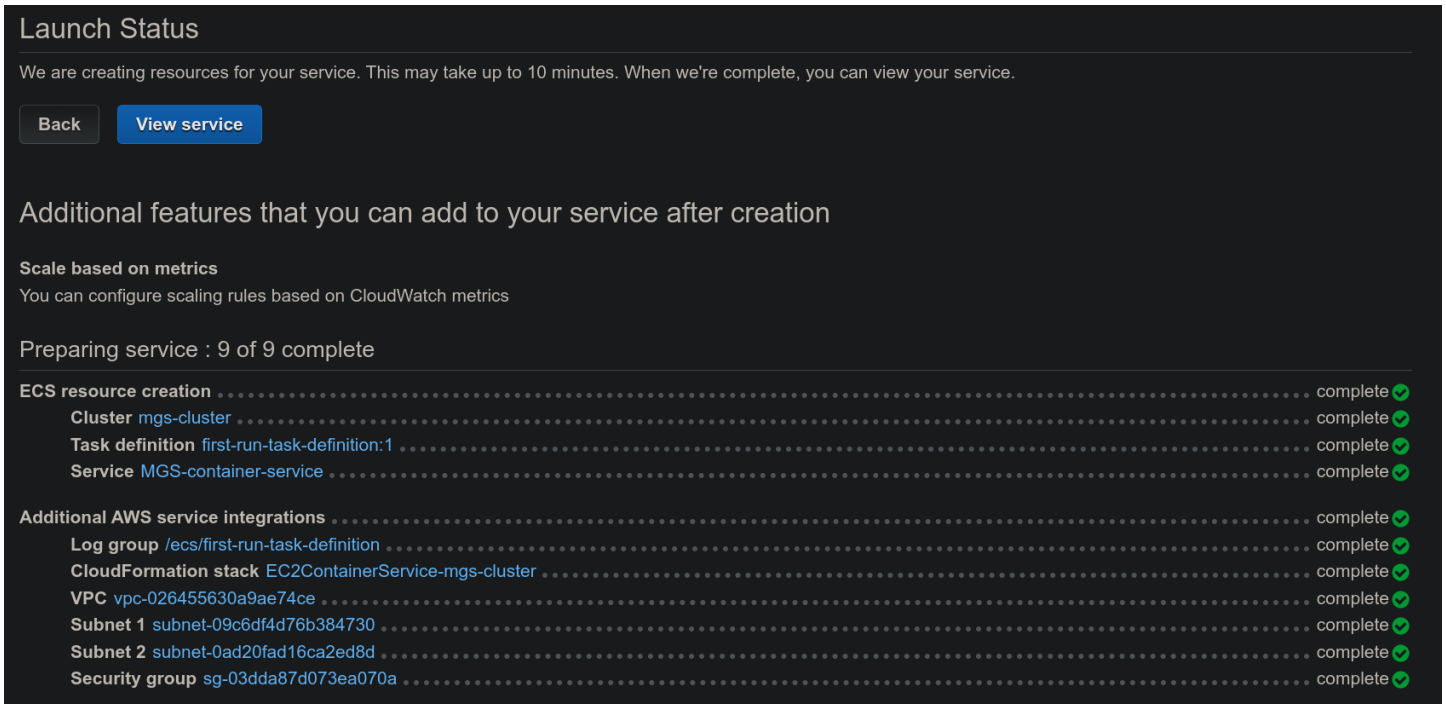
Service definition unchanged.

37.



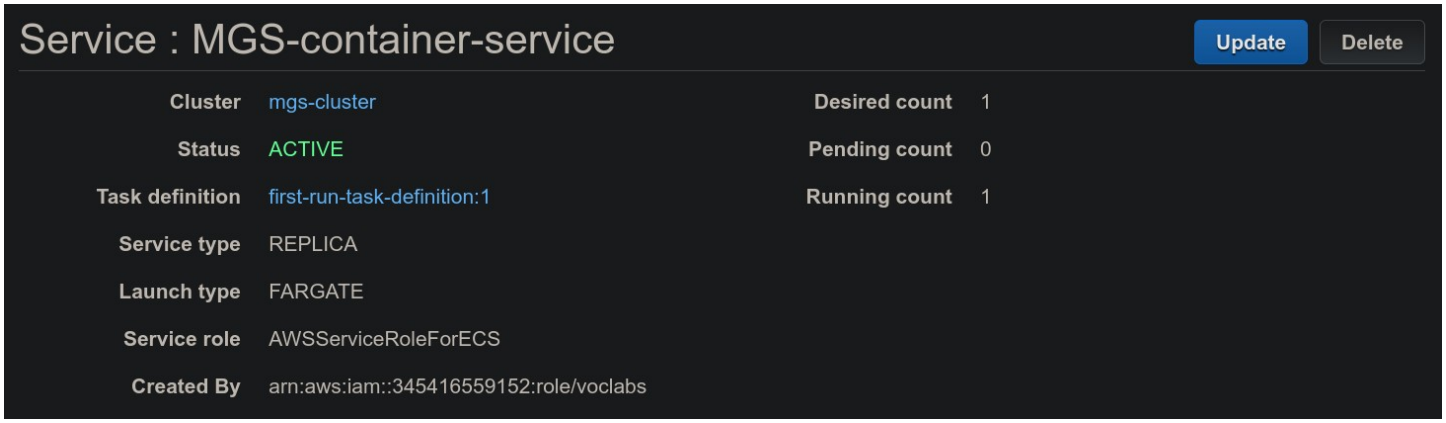
Name changed, defaults left as is.

38-40.



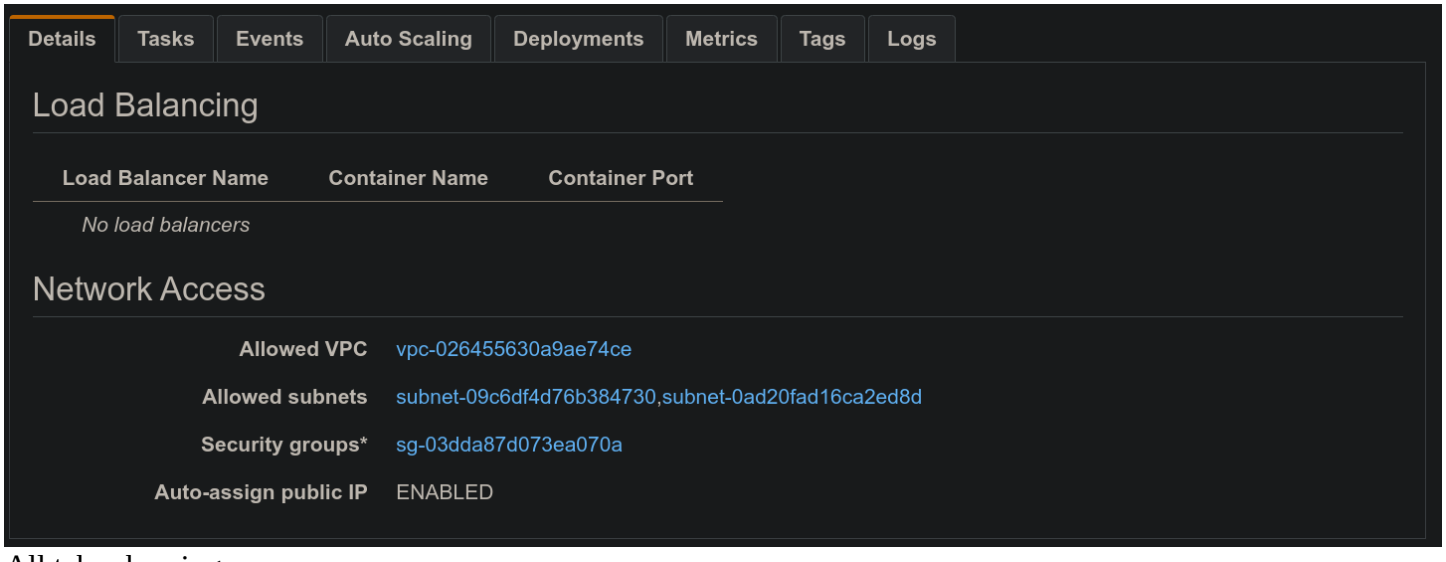
All complete.

41-42.



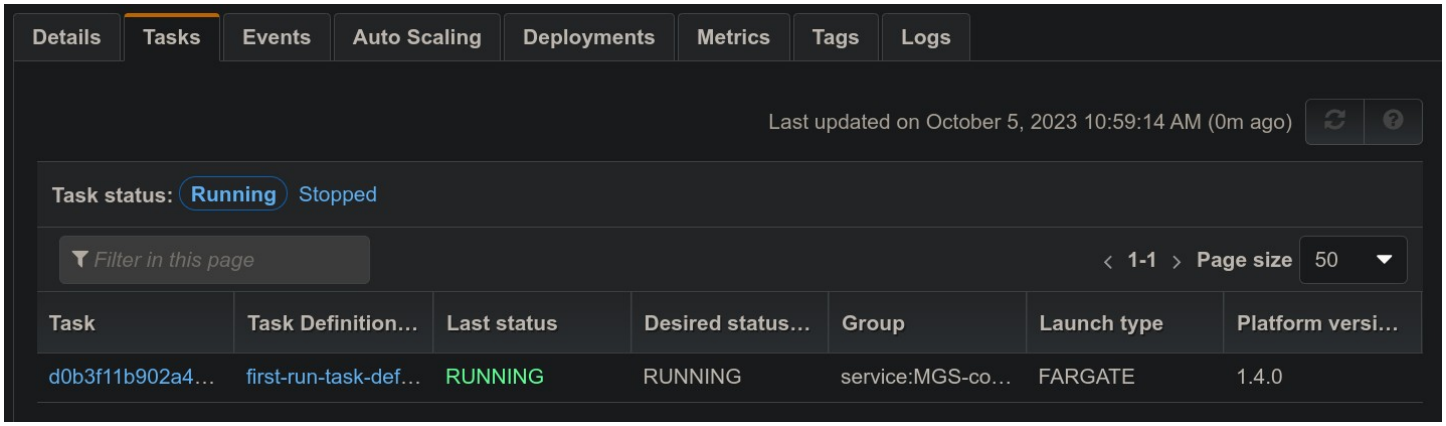
Task is being provisioned.

43.



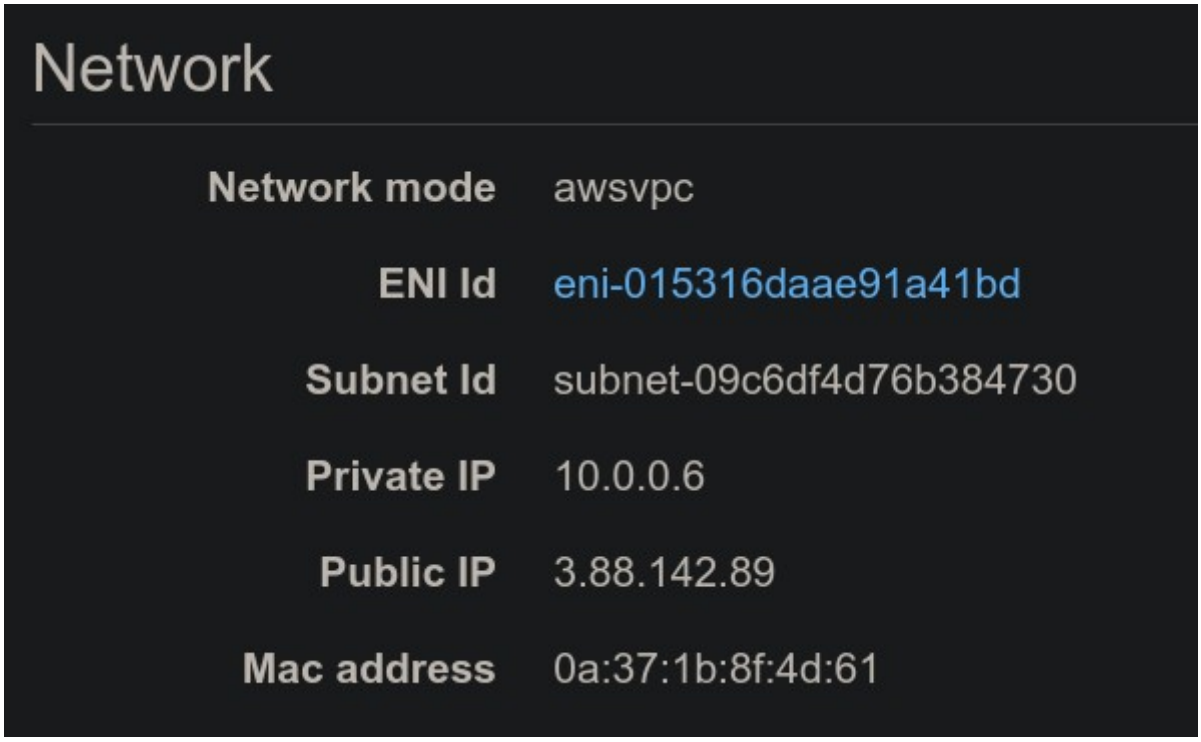
All tabs showing.

46.



Selecting “tasks”.

47.



Public IP address there.

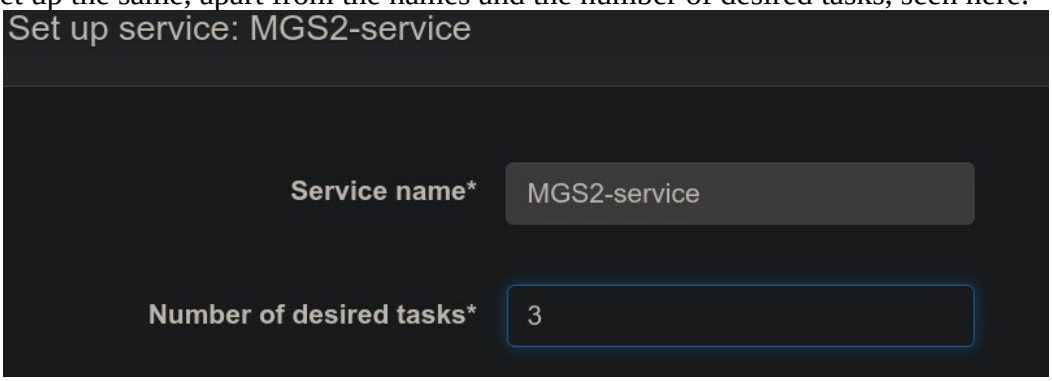
48.

```
raashna@raashna-IdeaPad-Flex-5-14ARE05:~/Desktop/uni/NWEN243/project 3/proj 3b$
java MusicGuruClient 3.88.142.89 5000 1976
Range: 1950-2009
Sending year 1976
In 1976 the number 10 song was Play That Funky Music by Wild Cherry
(10.0.0.6)
```

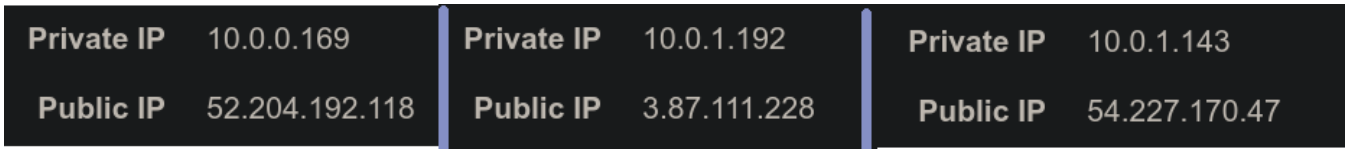
Works!!!

50.

Everything is set up the same, apart from the names and the number of desired tasks, seen here:



51.
Q1: The IP addresses for each replica are unique.



Along with their MAC addresses too.

52.
Q2: We might implement a load balancer so that the client can use one domain name instead of having to remember three IP addresses.