Lesson 10 Demo 02

Creating a Container Registry Using AWS ECR

Objective: To create an AWS ECR container registry to configure Docker on your EC2 instance and push a Docker image into your ECR repository

Tools required: AWS Management Console

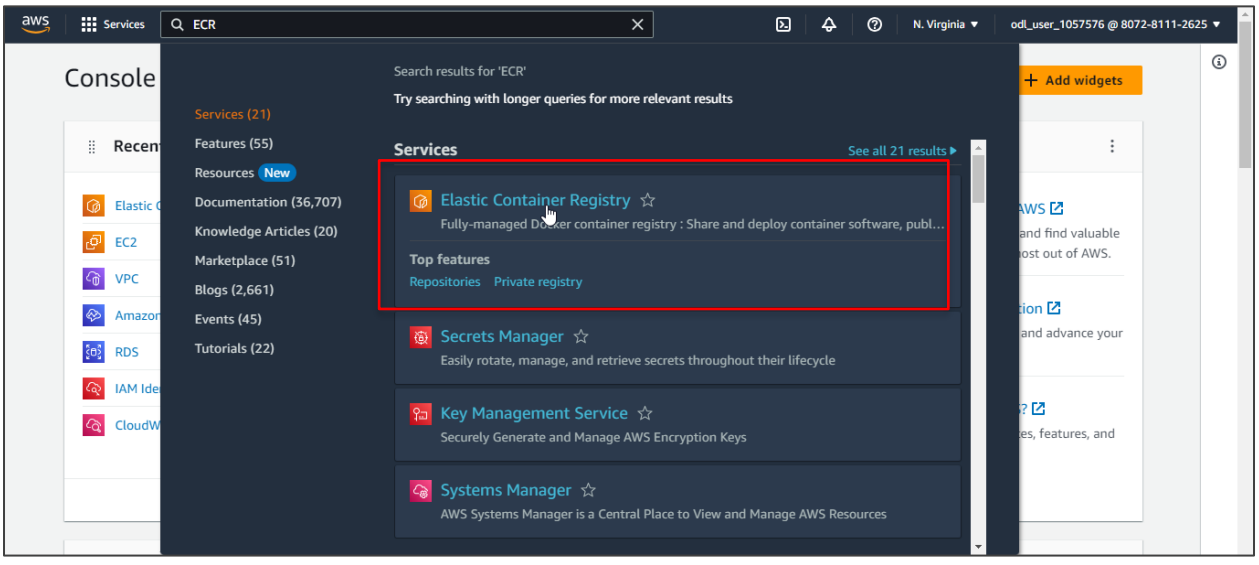
Prerequisites: None

Steps to be followed:

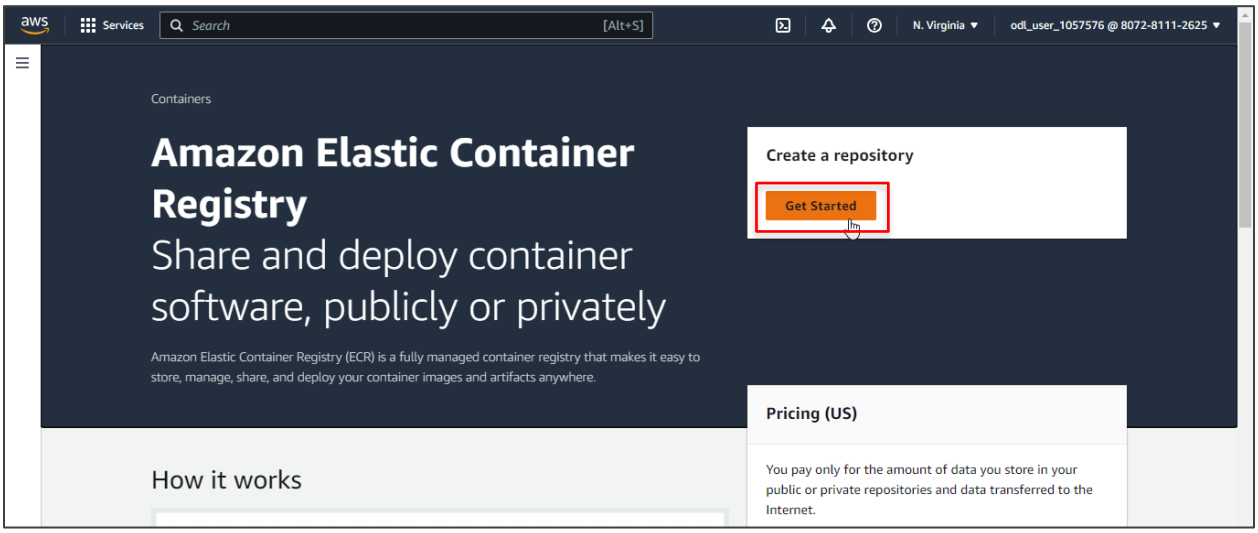
1. Create an ECR repository
2. Launch an EC2 instance
3. Install Docker on the EC2 instance
4. Create and push the Docker image to the repository

Step 1: Create an ECR repository

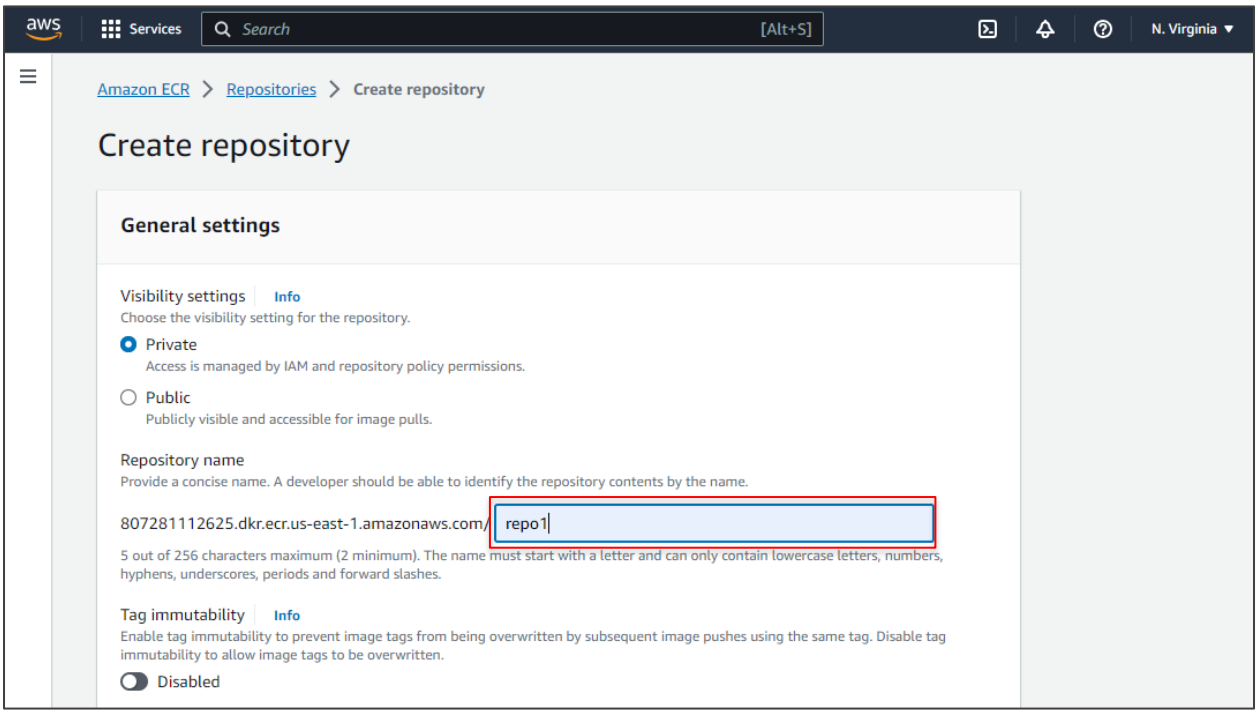
1.1 Navigate to the AWS Management Console, search for **ECR** and then click on **Elastic Container Registry**



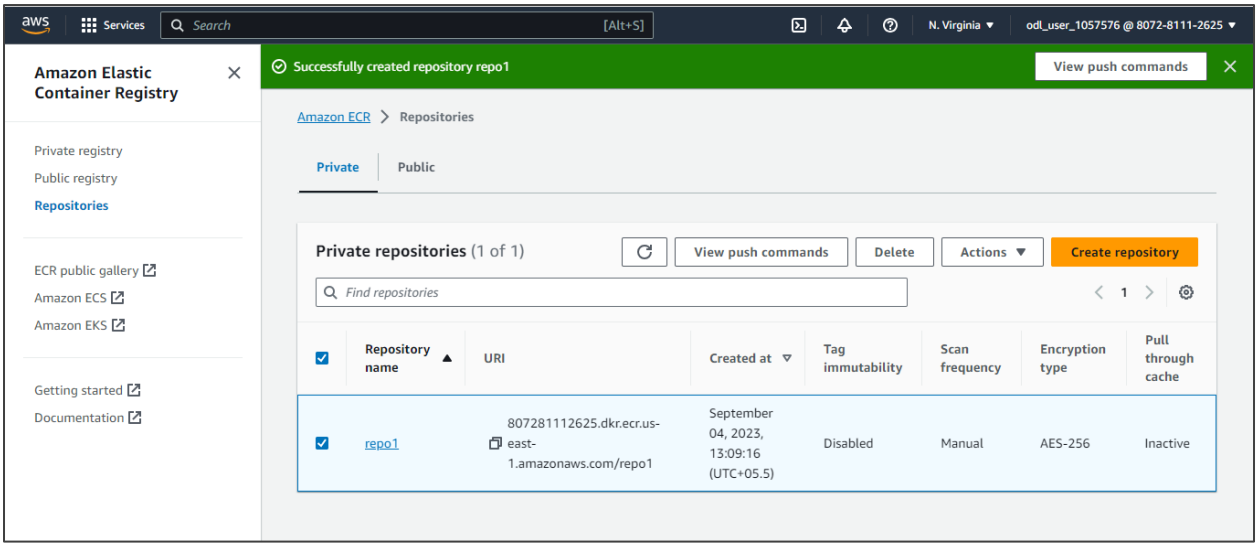
1.2 Click on **Get Started** in the ECR console



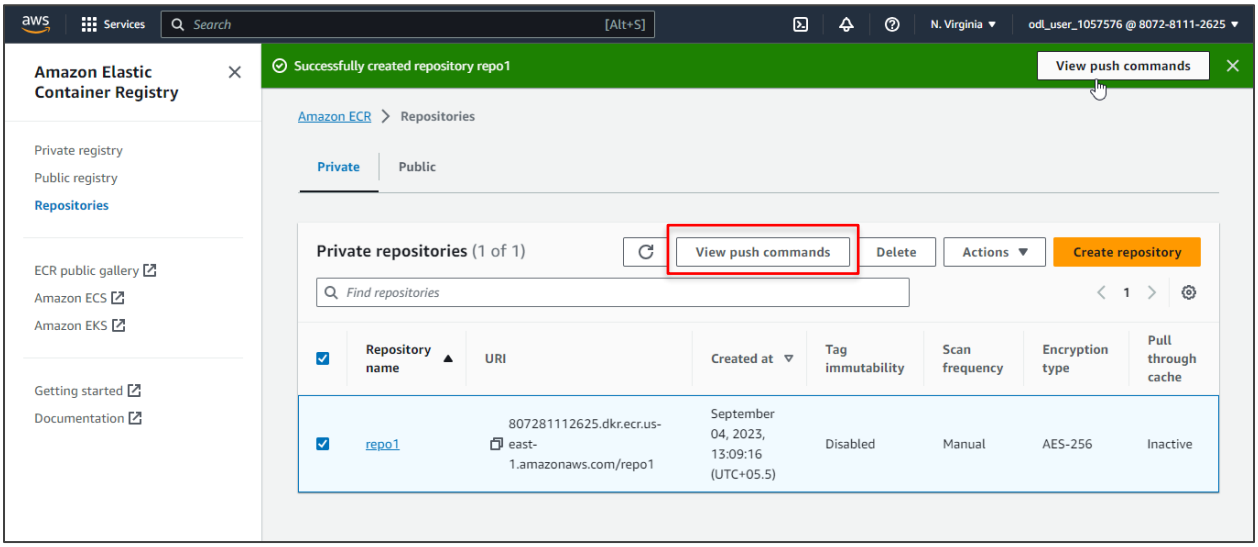
1.3 Provide an arbitrary name for your repository in the **Repository name** section and then click on **Create repository**

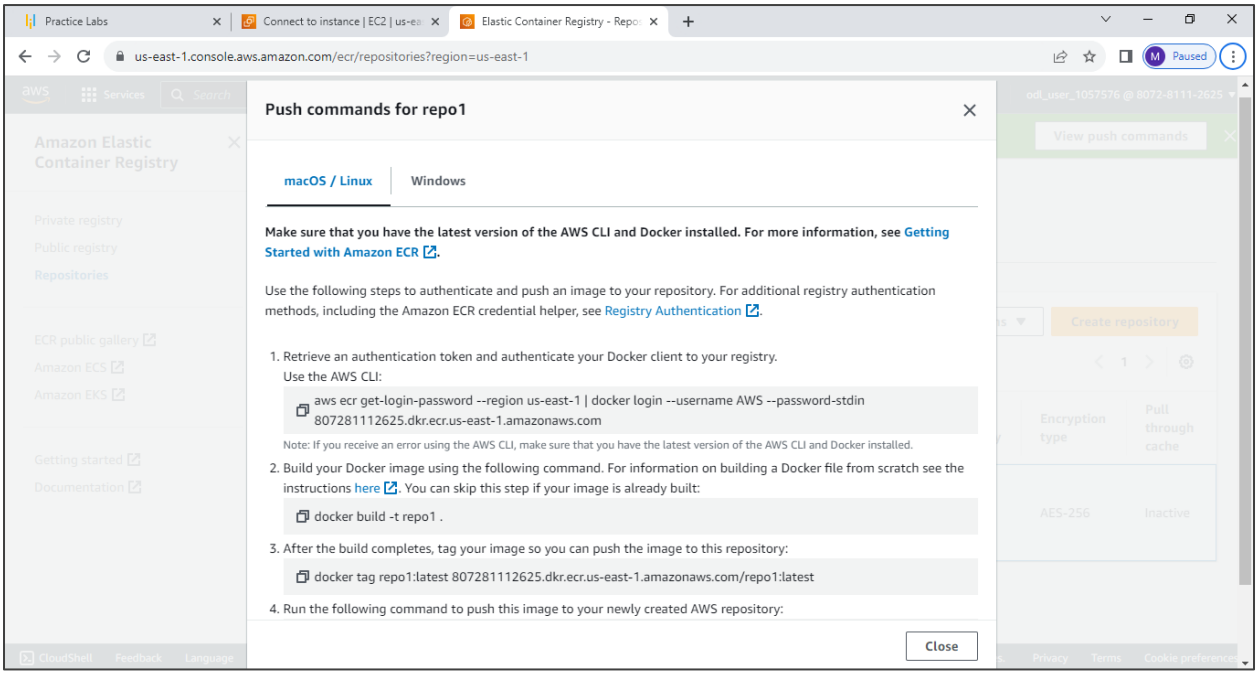


Once you successfully create the repository, it will appear on the Repositories dashboard.



1.4 Click on **View push commands** on the **Repositories** dashboard

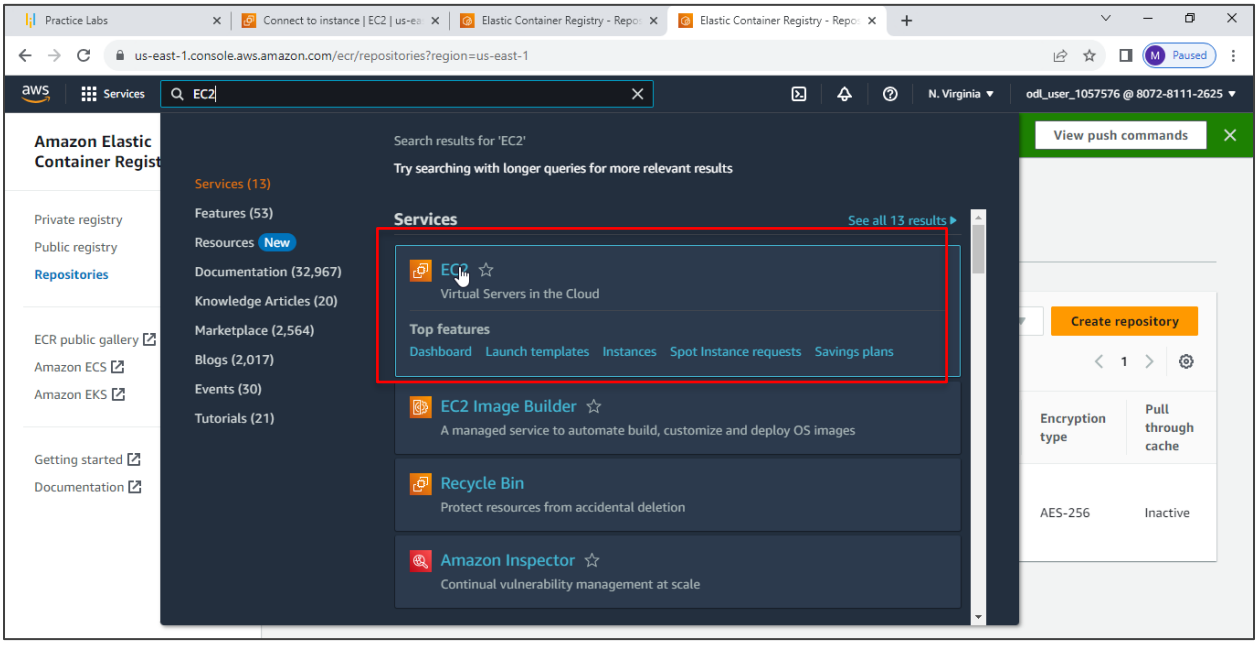




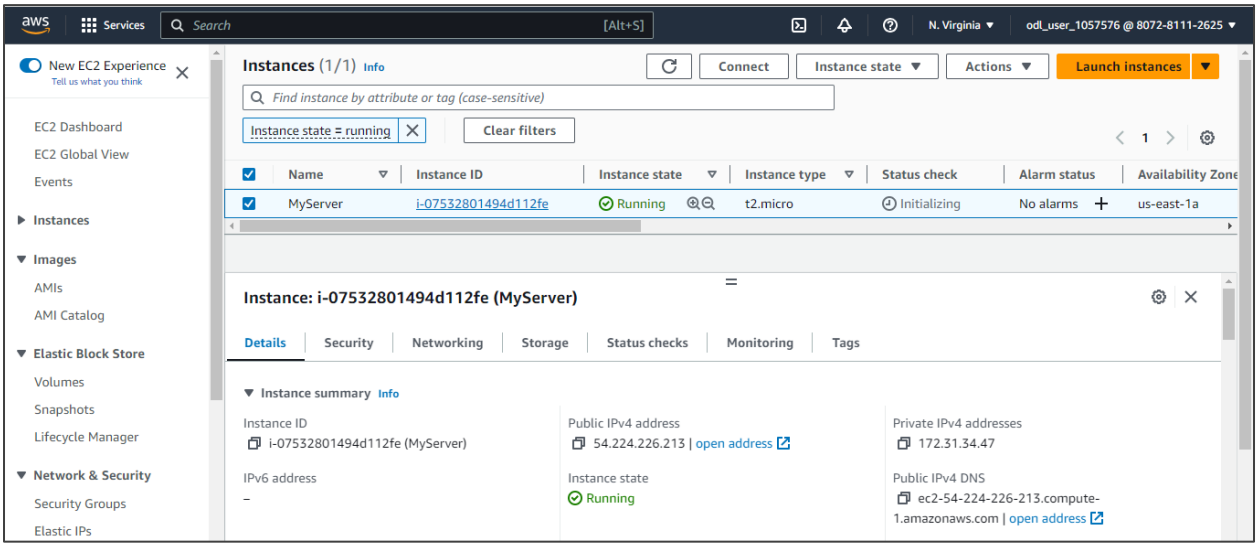
Keep this page open and duplicate it in a new tab, as you will use these commands in next steps

Step 2: Launch an EC2 instance

2.1 Navigate to the AWS Management Console, search for **EC2**, and then click on it

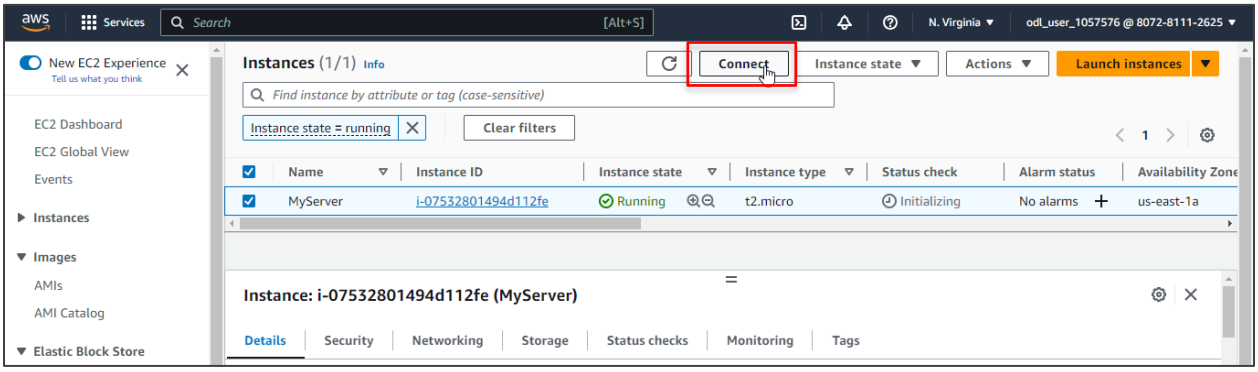


2.2 Launch a new EC2 instance using Amazon AMI 2 as the operating system and ensure the necessary security group rules are in place to allow SSH access

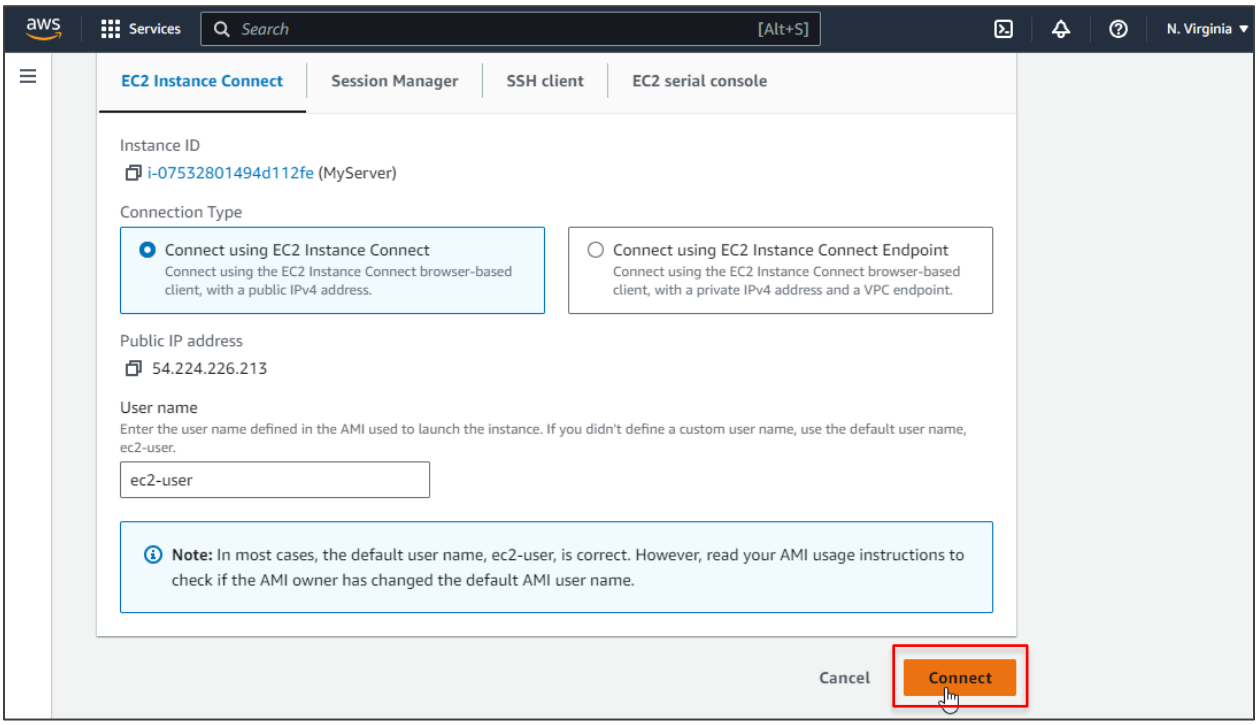


Note: Please refer to previous lesson demos on how to launch an EC2 instance.

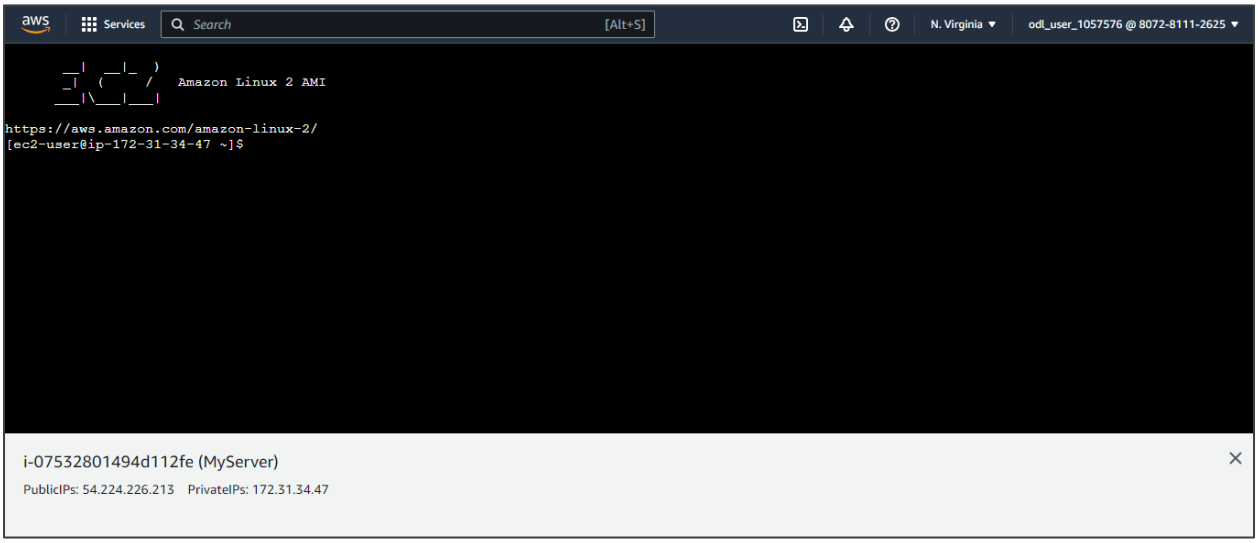
2.3 Select the instance and click **Connect**



2.4 Click **Connect**



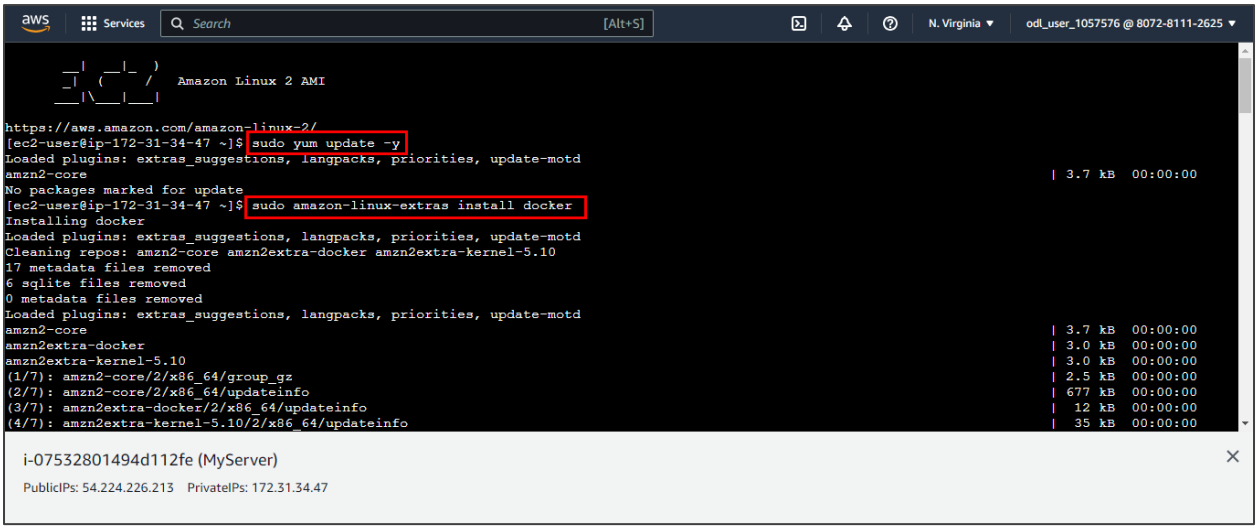
You will see the following interface:

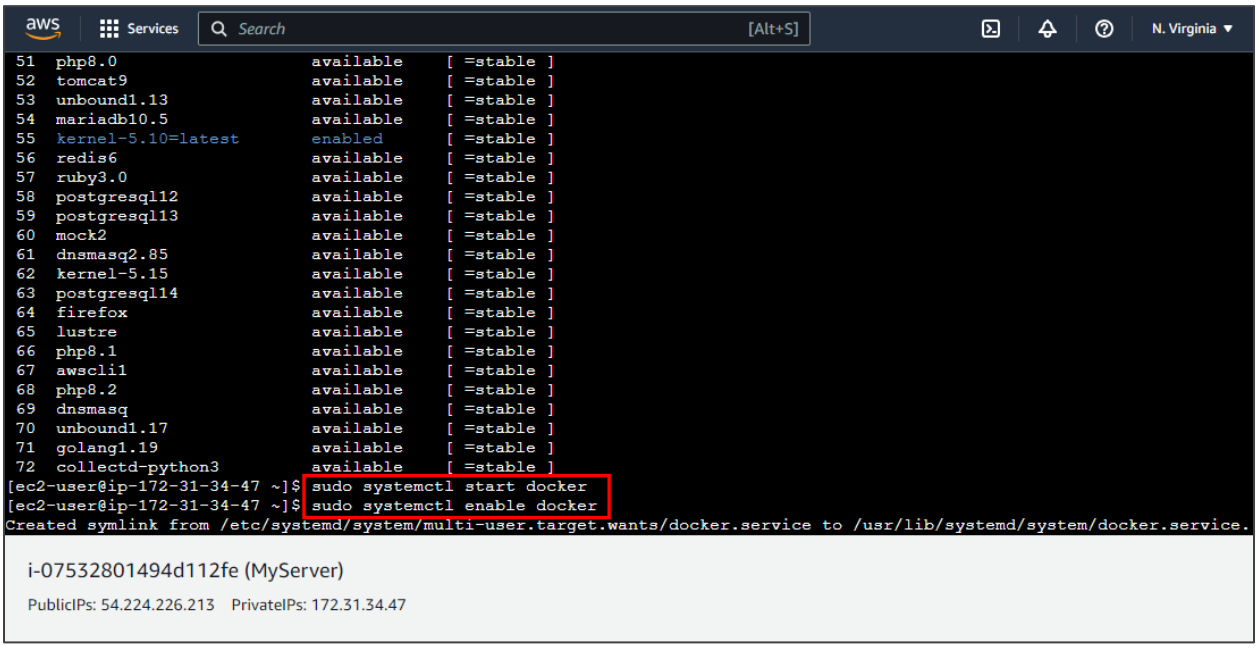


Step 3: Install Docker on the EC2 instance

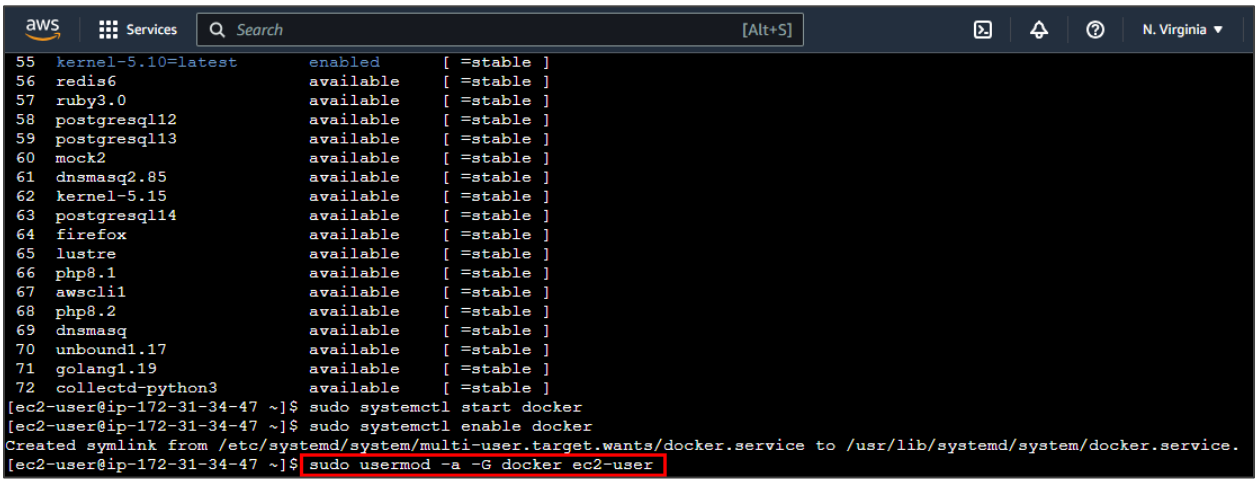
3.1 Execute the following commands on your EC2 instance to install Docker:

sudo yum update -y
sudo amazon-linux-extras install docker
sudo systemctl start docker
sudo systemctl enable docker



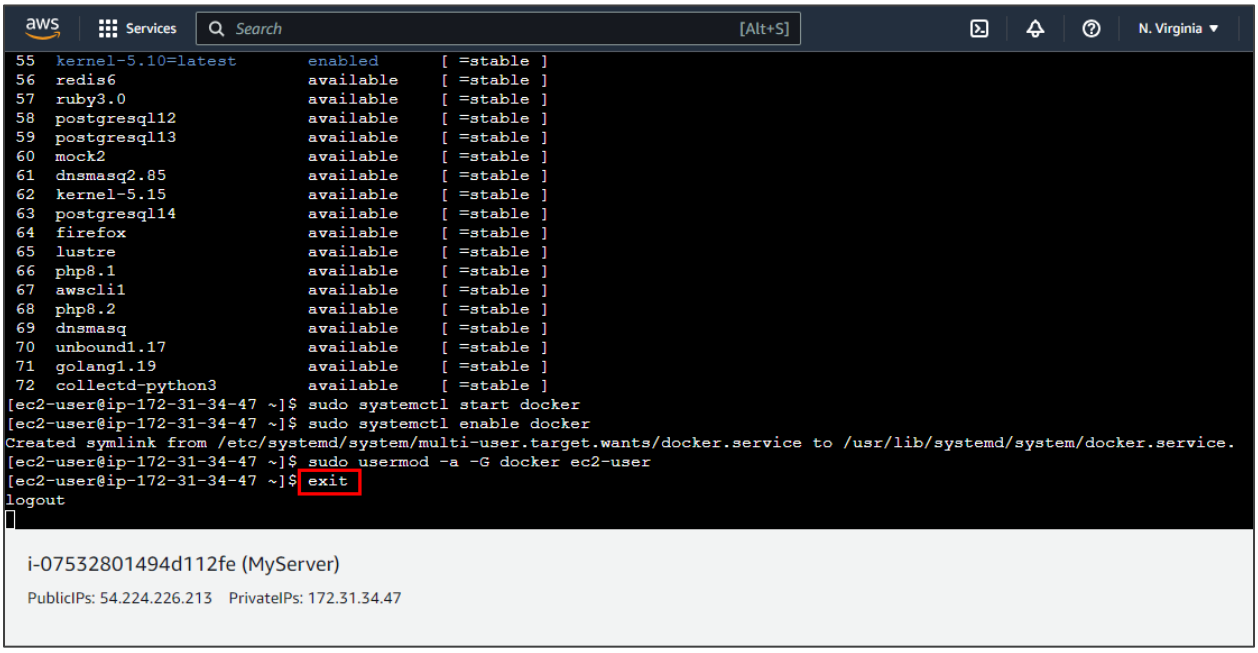


3.2 Add the **ec2-user** to the docker group to enable running Docker commands without using sudo by executing the following command:
sudo usermod -a -G docker ec2-user

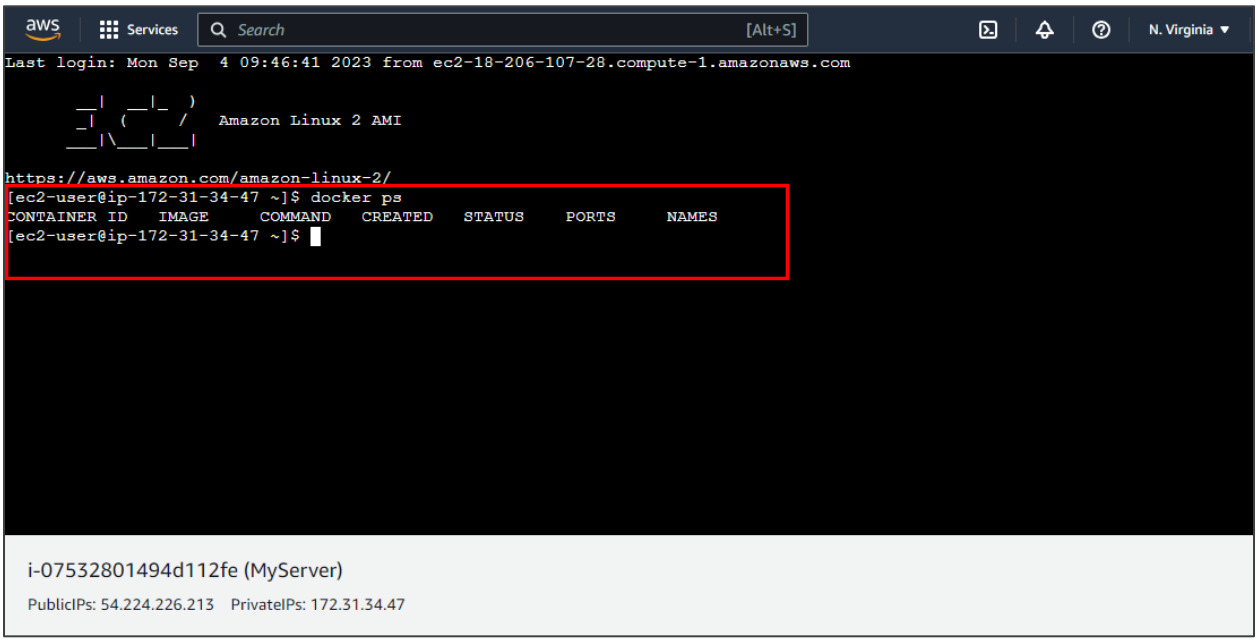


After running this command, log out and then log back in to the EC2 instance to apply the group changes.

3.3 Execute exit command to log out:
exit



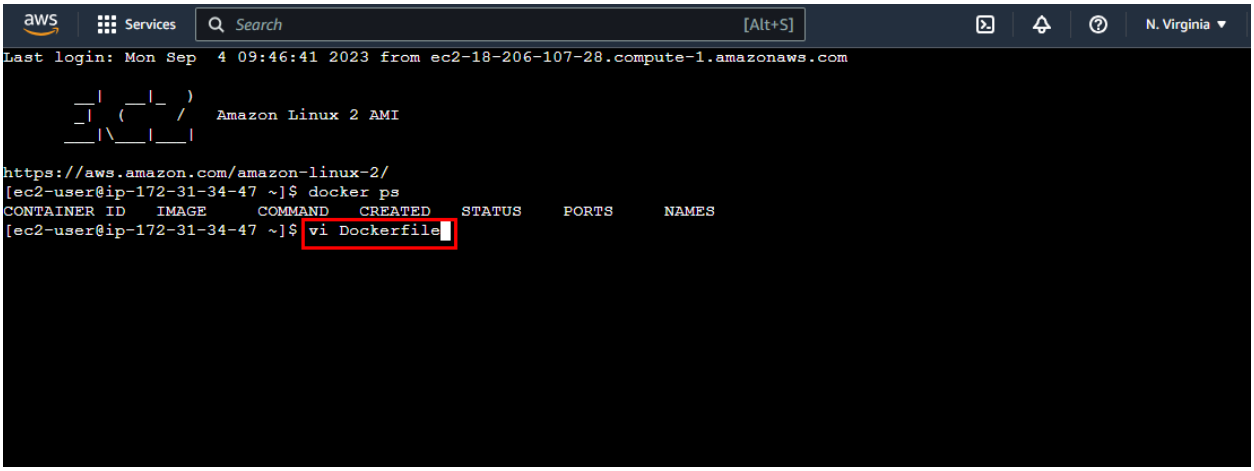
3.4 Reconnect to your EC2 instance and verify that the ec2-user can run Docker commands without using sudo by executing the following command:
docker ps



You will see that the command does not result in a permission error.

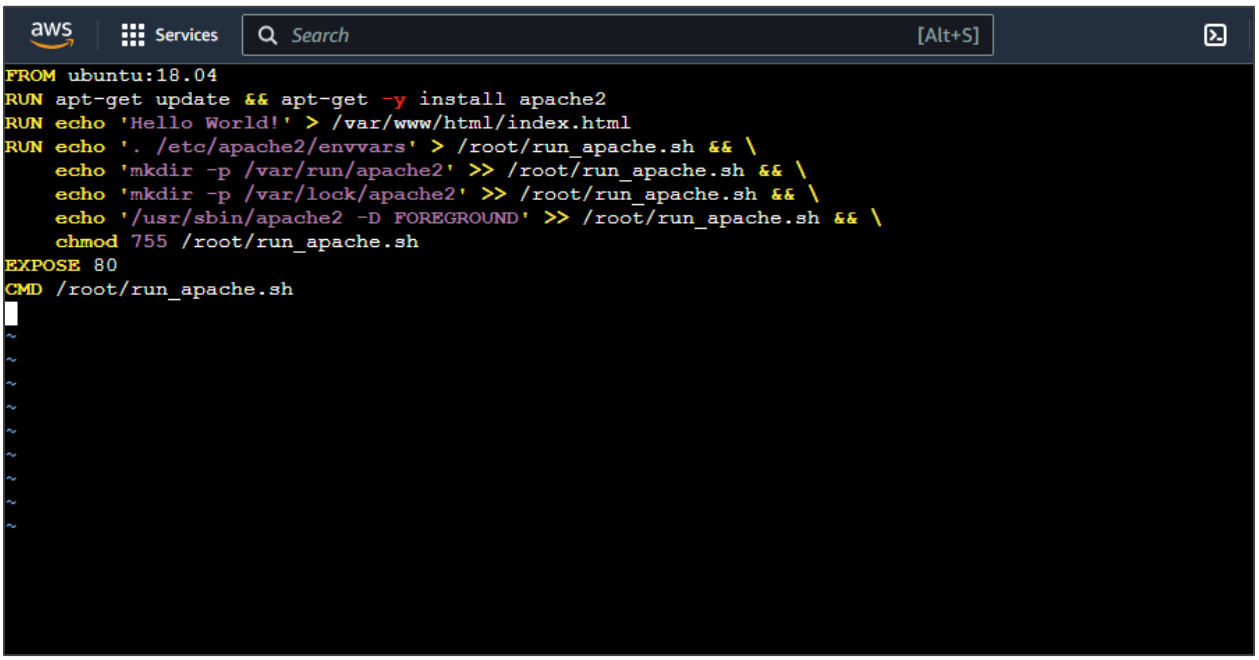
Step 4: Create and push the Docker image to the repository

4.1 Run the following command to open the Docker file:
vi Dockerfile

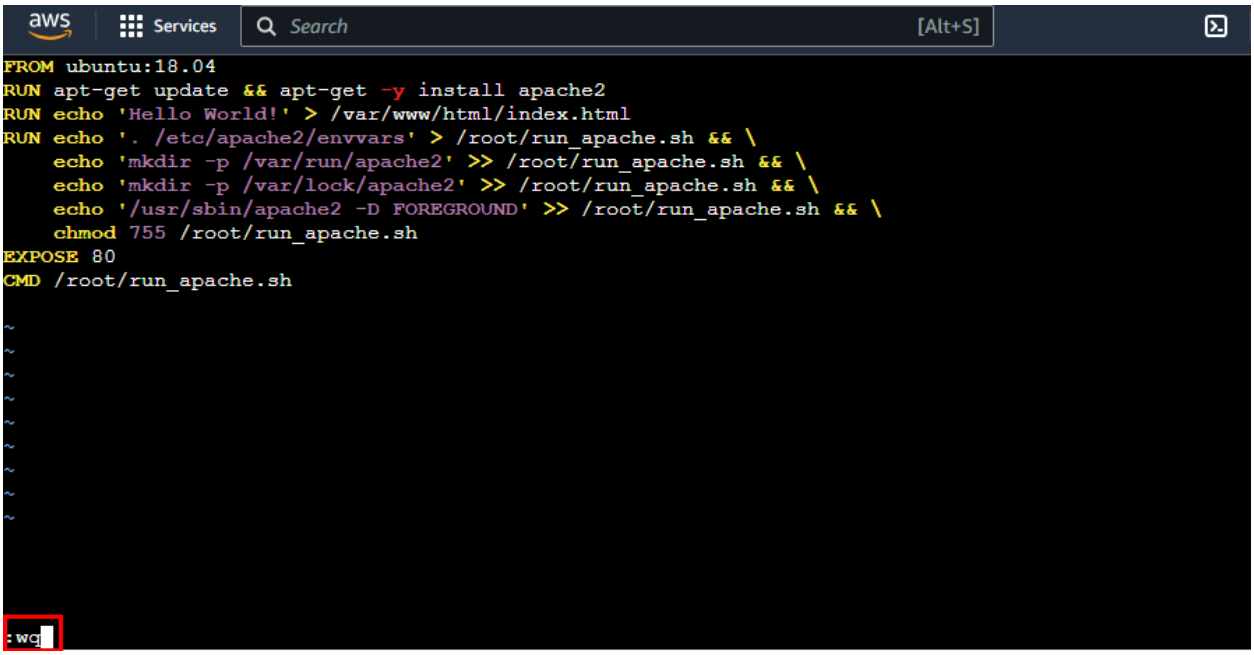


4.2 Paste the following code:

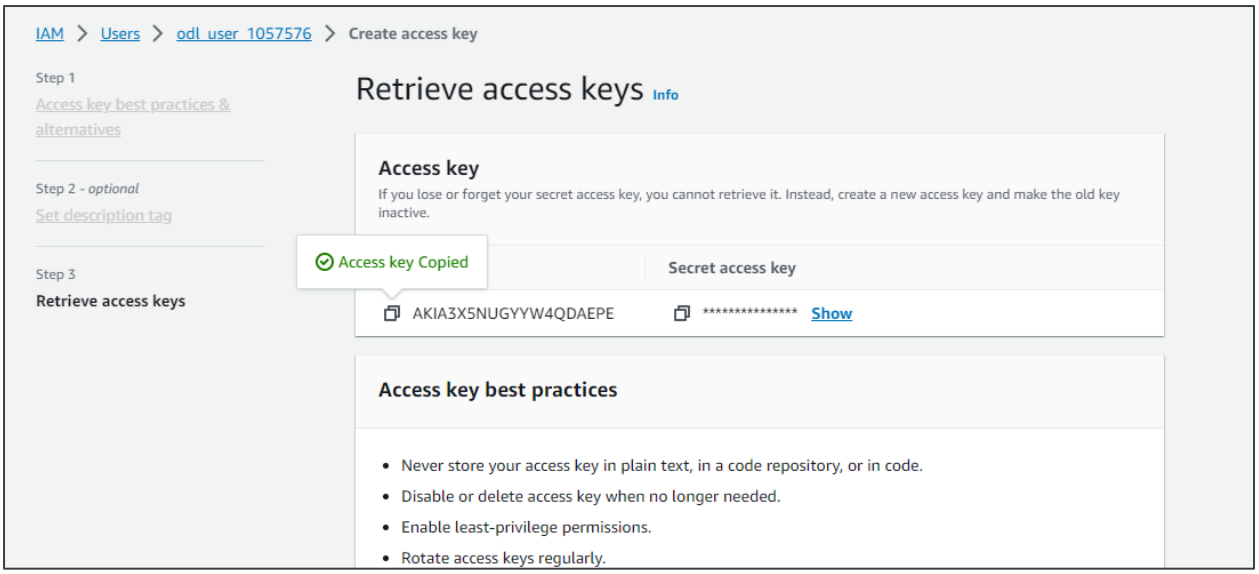
```
FROM ubuntu:18.04
RUN apt-get update && apt-get -y install apache2
RUN echo 'Hello World!' > /var/www/html/index.html
RUN echo '. /etc/apache2/envvars' > /root/run_apache.sh && \
   echo 'mkdir -p /var/run/apache2' >> /root/run_apache.sh && \
   echo 'mkdir -p /var/lock/apache2' >> /root/run_apache.sh && \
   echo '/usr/sbin/apache2 -D FOREGROUND' >> /root/run_apache.sh && \
   chmod 755 /root/run_apache.sh
EXPOSE 80
CMD /root/run_apache.sh
```



4.3 Save the changes and exit the vi editor by pressing the **escape** key and entering **:wq**

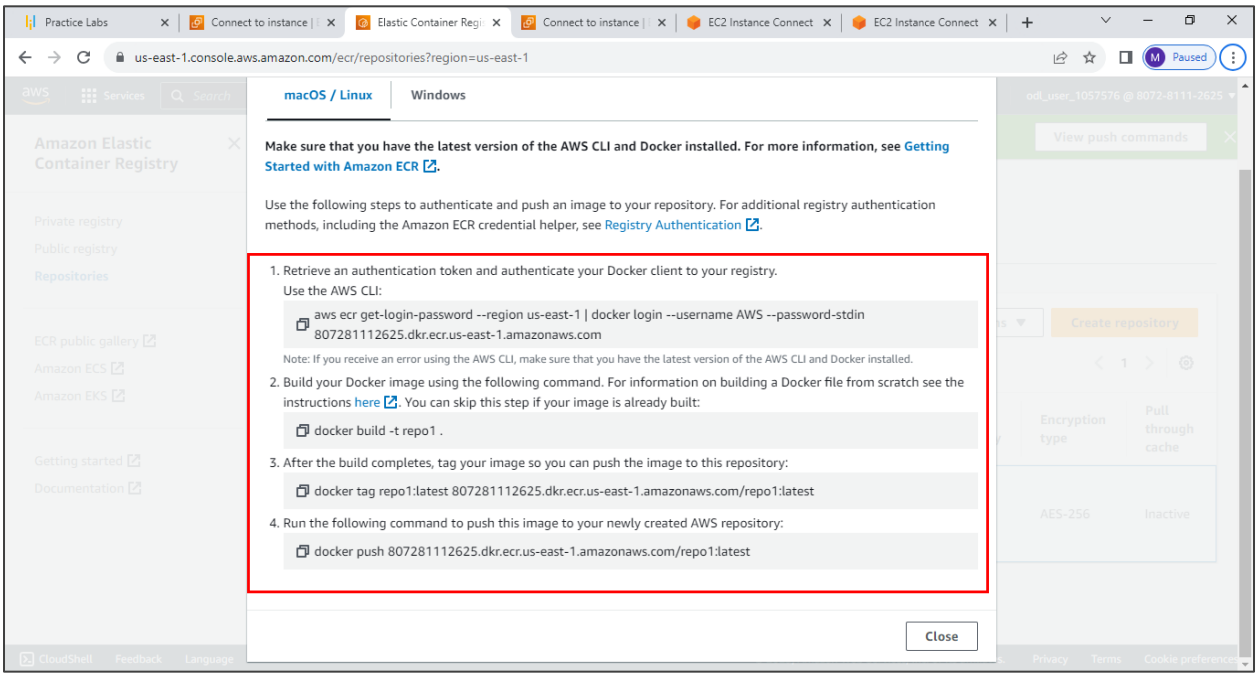


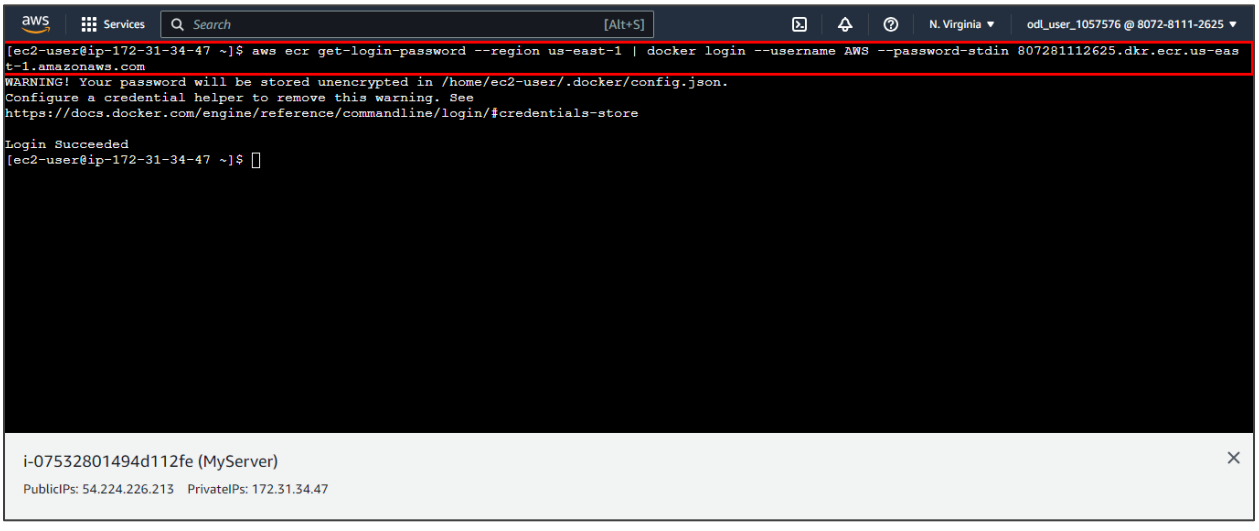
Note: Before pushing the Docker image to your ECR repository, ensure the AWS CLI on your EC2 instance is configured with the necessary credentials.

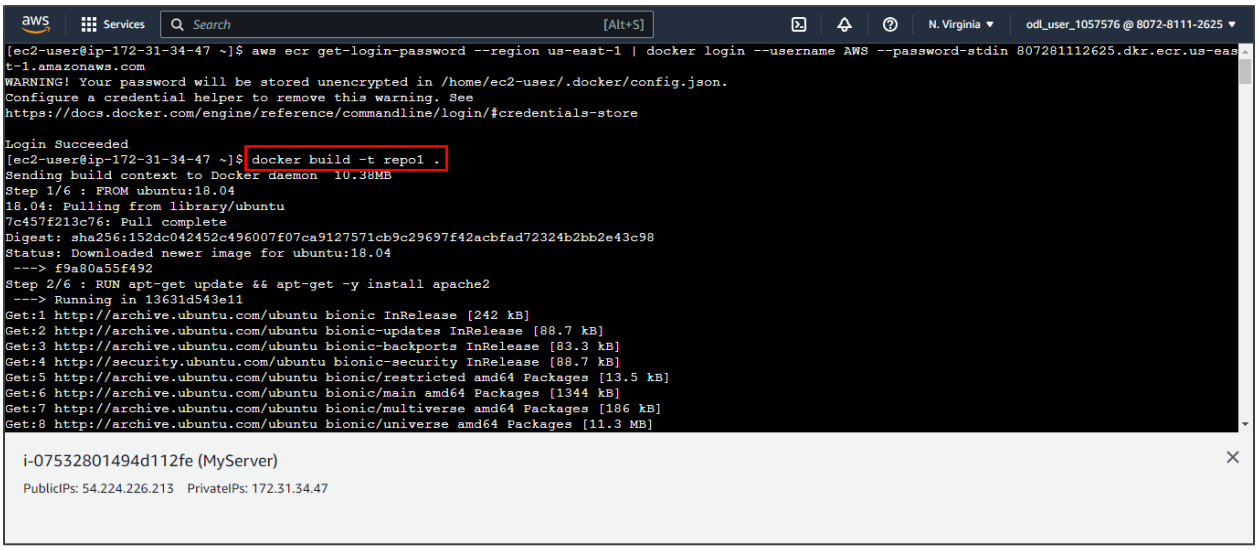


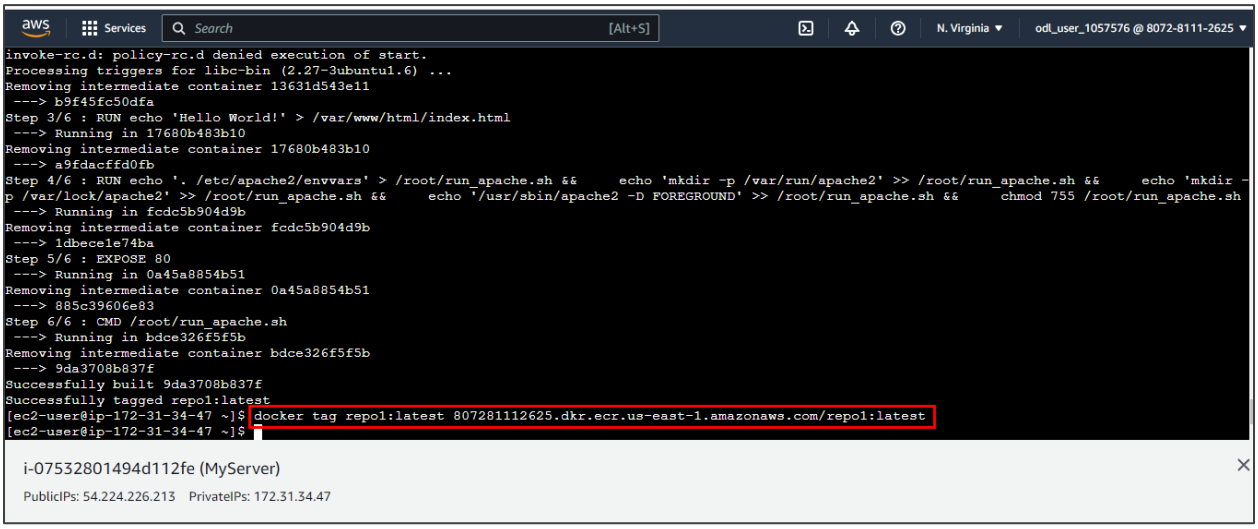
```
[ec2-user@ip-172-31-34-47 ~]$ aws configure
AWS Access Key ID [None]: AKIA3X5NUGYY747RS34V
AWS Secret Access Key [None]: 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
Default region name [None]: us-east-1
Default output format [None]:
```

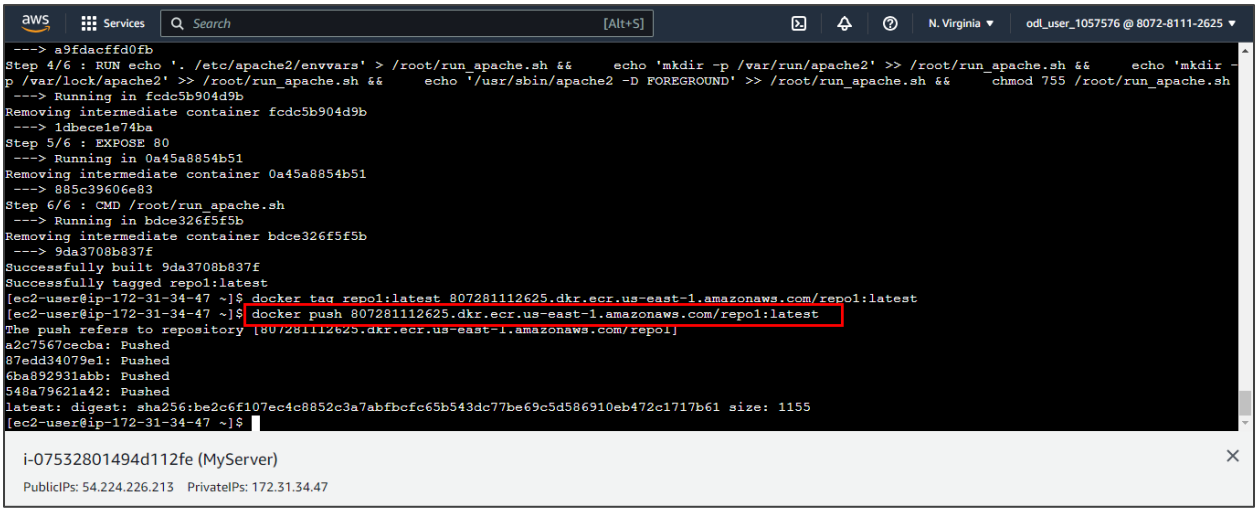
4.4 Build and push the Docker image to your ECR repository by following the push commands from the ECR page. Copy and execute the commands.



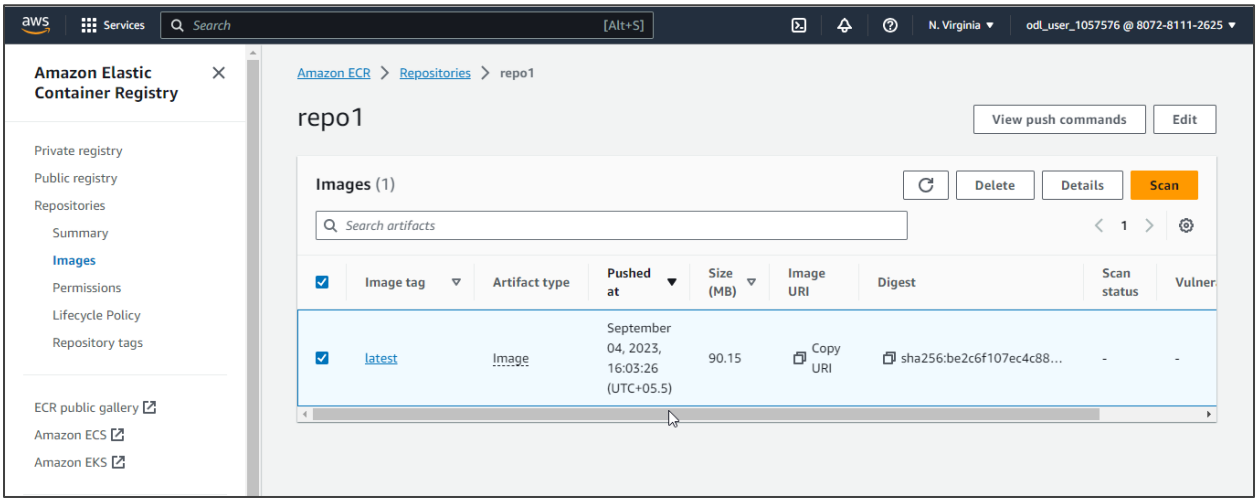



aws
Services
Search
[Alt+S]
N. Virginia
odl_user_1057576 @ 8072-8111-2625
[ec2-user@ip-172-31-34-47 ~]$ aws ecr get-login-password --region us-east-1 | docker login --username AWS --password-stdin 807281112625.dkr.ecr.us-east-1.amazonaws.com
WARNING! Your password will be stored unencrypted in /home/ec2-user/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store
Login Succeeded
[ec2-user@ip-172-31-34-47 ~]$ docker build -t repo1 .
Sending build context to Docker daemon 10.38MB
Step 1/6 : FROM ubuntu:18.04
18.04: Pulling from library/ubuntu
7c457f213c76: Pull complete
Digest: sha256:152dc042452c496007f07ca9127571cb9c29697f42acbfad72324b2bb2e43c98
Status: Downloaded newer image for ubuntu:18.04
---> f9a80a55f492
Step 2/6 : RUN apt-get update && apt-get -y install apache2
---> Running in 13631d543e11
Get:1 http://archive.ubuntu.com/ubuntu bionic InRelease [242 kB]
Get:2 http://archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://archive.ubuntu.com/ubuntu bionic-backports InRelease [83.3 kB]
Get:4 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:5 http://archive.ubuntu.com/ubuntu bionic/restricted amd64 Packages [13.5 kB]
Get:6 http://archive.ubuntu.com/ubuntu bionic/main amd64 Packages [1344 kB]
Get:7 http://archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [186 kB]
Get:8 http://archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [11.3 MB]
i-07532801494d112fe (MyServer)
PublicIPs: 54.224.226.213 PrivateIPs: 172.31.34.47


aws
Services
Search
[Alt+S]
N. Virginia
odl_user_1057576 @ 8072-8111-2625
invoke-rc.d: policy-rc.d denied execution of start.
Processing triggers for libc-bin (2.27-3ubuntu1.6) ...
Removing intermediate container 13631d543e11
---> b9f45fc50dfa
Step 3/6 : RUN echo 'Hello World!' > /var/www/html/index.html
---> Running in 17680b483b10
Removing intermediate container 17680b483b10
---> a9fdacffd0fb
Step 4/6 : RUN echo '. /etc/apache2/envvars' > /root/run_apache.sh && echo 'mkdir -p /var/run/apache2' >> /root/run_apache.sh && echo 'mkdir -p /var/lock/apache2' >> /root/run_apache.sh && echo '/usr/sbin/apache2 -D FOREGROUND' >> /root/run_apache.sh && chmod 755 /root/run_apache.sh
---> Running in fcdc5b904d9b
Removing intermediate container fcdc5b904d9b
---> 1dbece1e74ba
Step 5/6 : EXPOSE 80
---> Running in 0a45a8854b51
Removing intermediate container 0a45a8854b51
---> 885c39606e83
Step 6/6 : CMD /root/run_apache.sh
---> Running in bdce326f5f5b
Removing intermediate container bdce326f5f5b
---> 9da3708b837f
Successfully built 9da3708b837f
Successfully tagged repo1:latest
[ec2-user@ip-172-31-34-47 ~]$ docker tag repo1:latest 807281112625.dkr.ecr.us-east-1.amazonaws.com/repo1:latest
[ec2-user@ip-172-31-34-47 ~]$
i-07532801494d112fe (MyServer)
PublicIPs: 54.224.226.213 PrivateIPs: 172.31.34.47



4.5 Locate the image you pushed in step 4.3 within your ECR repository console



You will see that the Docker image has been successfully pushed to your ECR repository.

By following these steps, you have successfully created an AWS ECR container registry, configured Docker on your EC2 instance, and pushed a Docker image into your ECR repository.