Amazon Web Services

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07.11.2023

Nginx Web Servers (Tasks)

INTRODUCTION

AWS provides cloud computing platforms and API's to individuals and companies on pay-as-you-go basis.

It offers reliable, scalable and inexpensive cloud services.

AMAZON EBS

It is an Amazon Elastic Block Store (Amazon EBS) is an easy-to-use, scalable, high-performance block-storage service designed for Amazon Elastic Compute Cloud (Amazon EC2).

TASK GIVEN

You work for XYZ Corporation. Your corporation wants to launch a new web-based application using AWS Virtual Machines. Configure the resources accordingly for the tasks.

Tasks To Be Performed:

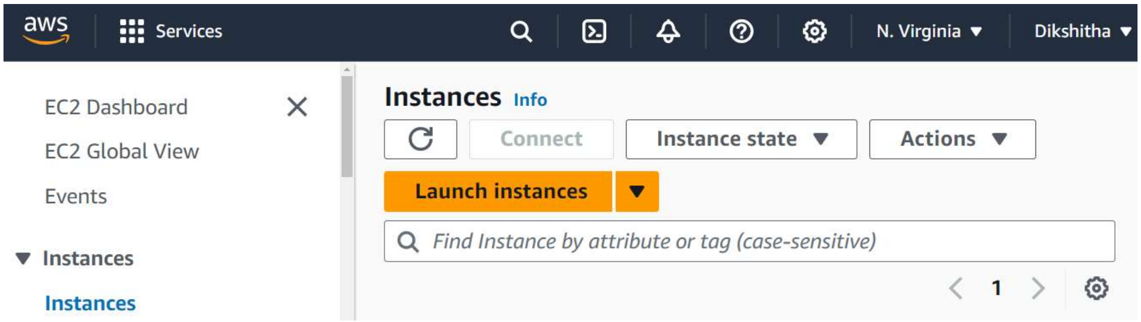
1. Create an instance in the US-East-1 (N. Virginia) region with an Ubuntu OS and install Nginx for making them web servers.

2. Change the default website with a page displaying the message: "Hello World"

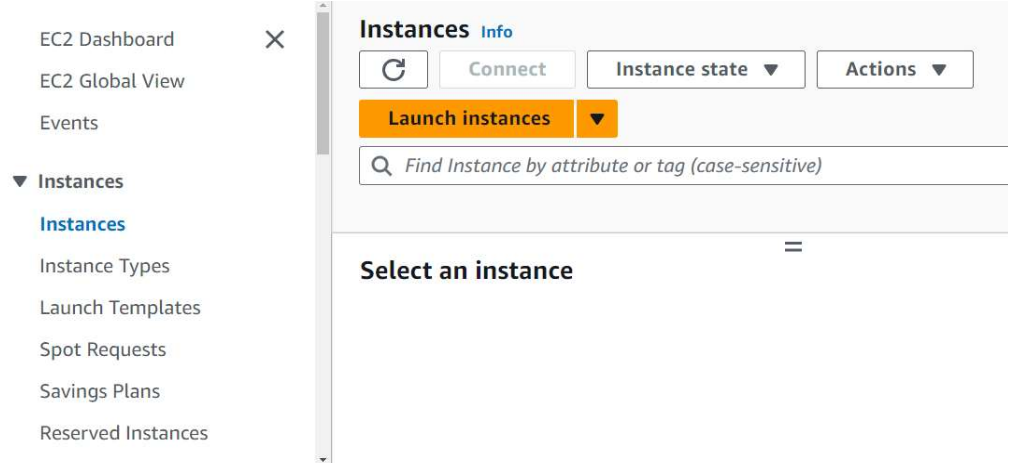
TASK 1:

Create an instance in the US-East-1 (N. Virginia) region with an Ubuntu OS and install Nginx for making them web servers.

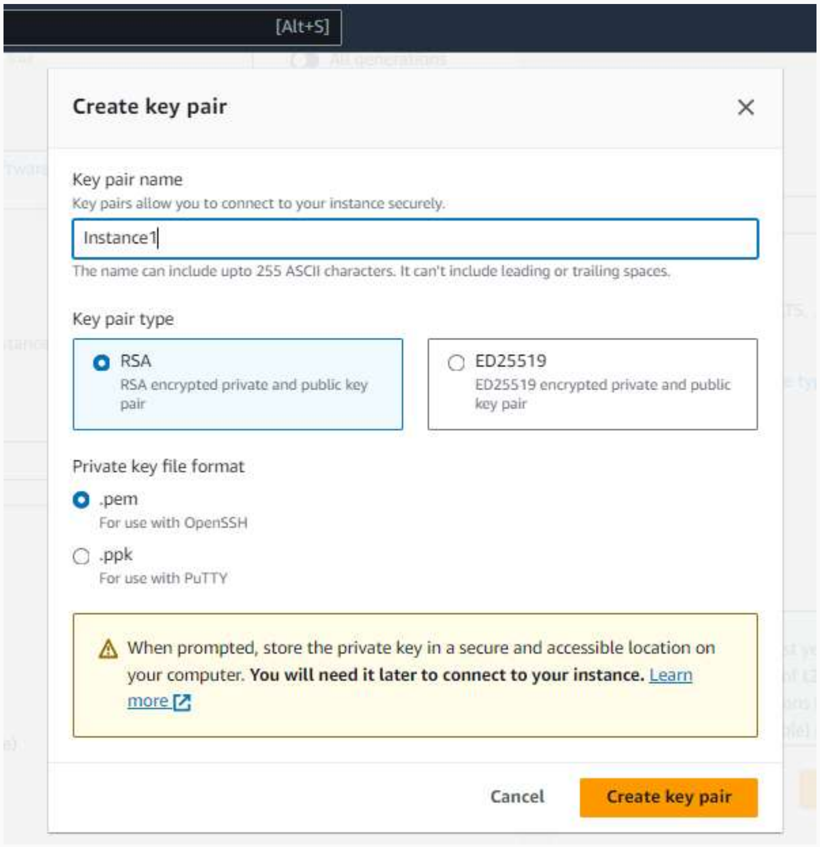
1. Login in the AWS account and then redirect to the EC2 dashboard.
2. Select the region in which we need to create the instance. Here I'm selecting the region US-East-1 (N. Virginia).



3. We can find the Instances tab on the left menu, tap on it and then tap on "Launch Instances".



4. Give a name to the instance, select the Application and OS Images (Amazon Machine Image) and instance type (I selected t2.micro).
5. Next comes the Key pair. If we have already created key pair values then we can select them if not we need to create the new key pair.



Create key pair

Key pair name

Key pairs allow you to connect to your instance securely.

Instance1

The name can include upto 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

● RSA
RSA encrypted private and public key pair

○ ED25519
ED25519 encrypted private and public key pair

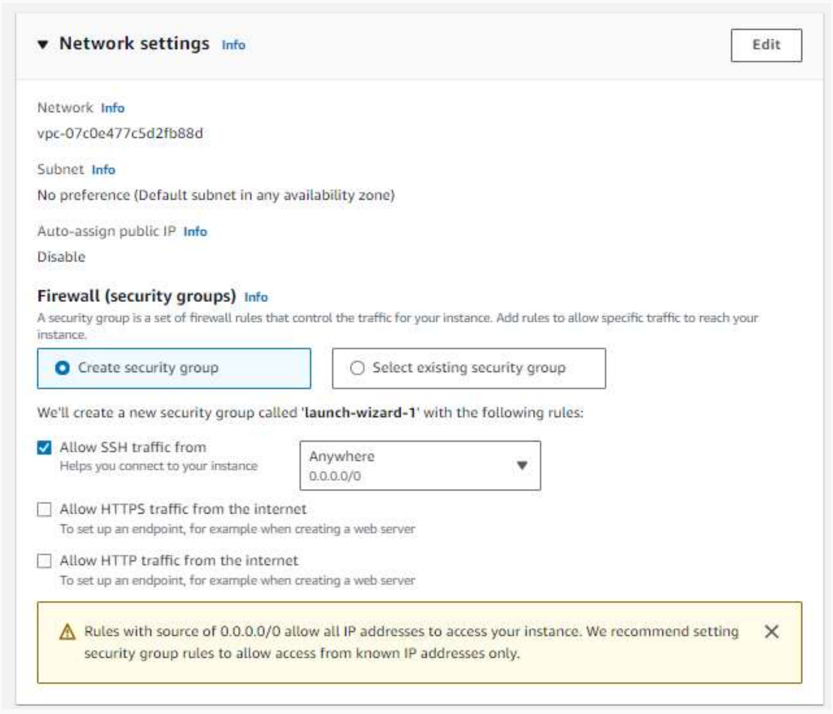
Private key file format

● .pem
For use with OpenSSH

○ .ppk
For use with PuTTY

⚠ When prompted, store the private key in a secure and accessible location on your computer. **You will need it later to connect to your instance.** Learn more

6. Next is about the network settings. If we allow SSH traffic then it means it is available at port 22 and also allow http protocol to work on web servers.



▼ Network settings Info

Edit

Network Info
vpc-07c0e477c5d2fb88d

Subnet Info
No preference (Default subnet in any availability zone)

Auto-assign public IP Info
Disable

Firewall (security groups) Info
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

● Create security group ○ Select existing security group

We'll create a new security group called '**launch-wizard-1**' with the following rules:

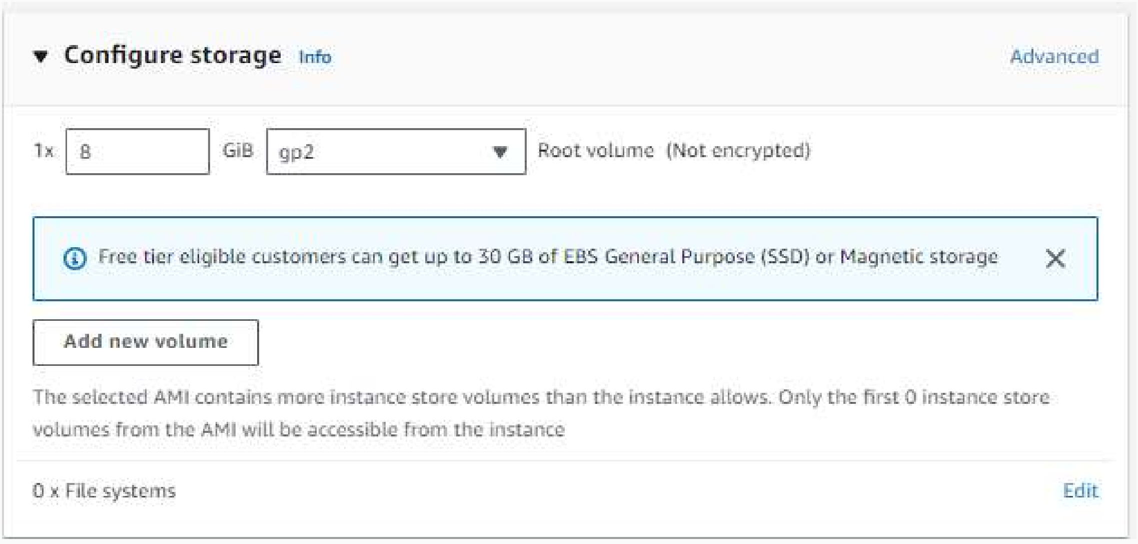
☑ Allow SSH traffic from
Helps you connect to your instance
Anywhere
0.0.0.0/0

□ Allow HTTPS traffic from the internet
To set up an endpoint, for example when creating a web server

□ Allow HTTP traffic from the internet
To set up an endpoint, for example when creating a web server

⚠ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

7. The further step is about the storage configuration. We can select it according to our needs.



▼ Configure storage Info

Advanced

1x 8 GiB gp2 Root volume (Not encrypted)

ⓘ Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

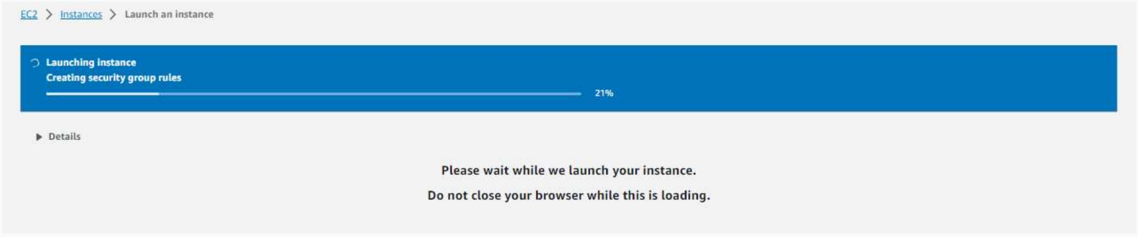
Add new volume

The selected AMI contains more instance store volumes than the instance allows. Only the first 0 instance store volumes from the AMI will be accessible from the instance

0 x File systems

Edit

8. Once everything is done, click on launch instance.



EC2 > Instances > Launch an instance

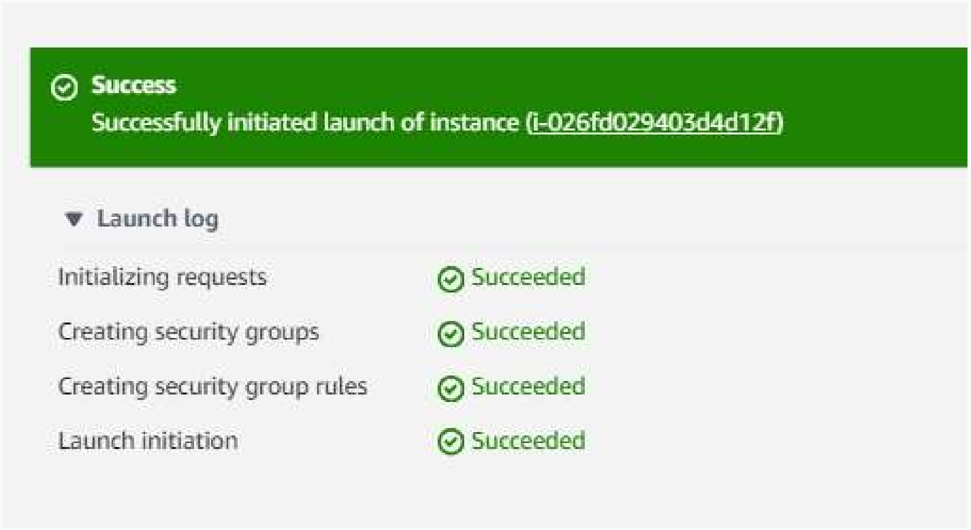
Launching instance
Creating security group rules

21%

▶ Details

Please wait while we launch your instance.

Do not close your browser while this is loading.

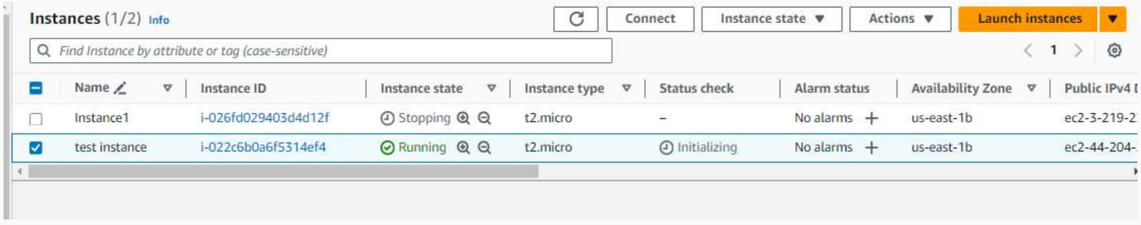


Success
Successfully initiated launch of instance (i-026fd029403d4d12f)

▼ Launch log

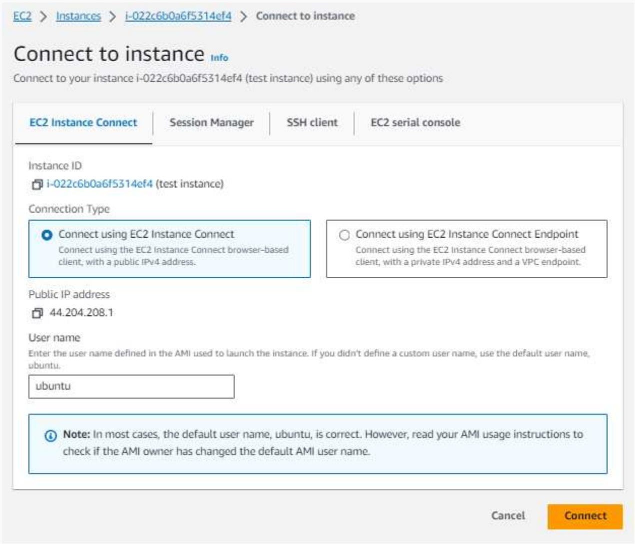
Initializing requests	✓ Succeeded
Creating security groups	✓ Succeeded
Creating security group rules	✓ Succeeded
Launch initiation	✓ Succeeded

9. Now select the instance & tap on connect



Instances (1/2) Info

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 I
□	Instance1	i-026fd029403d4d12f	Stopping	t2.micro	–	No alarms +	us-east-1b	ec2-3-219-2
☑	test instance	i-022c6b0a6f5314ef4	✓ Running	t2.micro	Initializing	No alarms +	us-east-1b	ec2-44-204-



EC2 > Instances > i-022c6b0a6f5314ef4 > Connect to instance

Connect to instance Info

Connect to your instance i-022c6b0a6f5314ef4 (test instance) using any of these options

Instance ID
i-022c6b0a6f5314ef4 (test instance)

Connection Type

● Connect using EC2 Instance Connect
Connect using the EC2 Instance Connect browser-based client, with a public IPv4 address.

○ Connect using EC2 Instance Connect Endpoint
Connect using the EC2 Instance Connect browser-based client, with a private IPv4 address and a VPC endpoint.

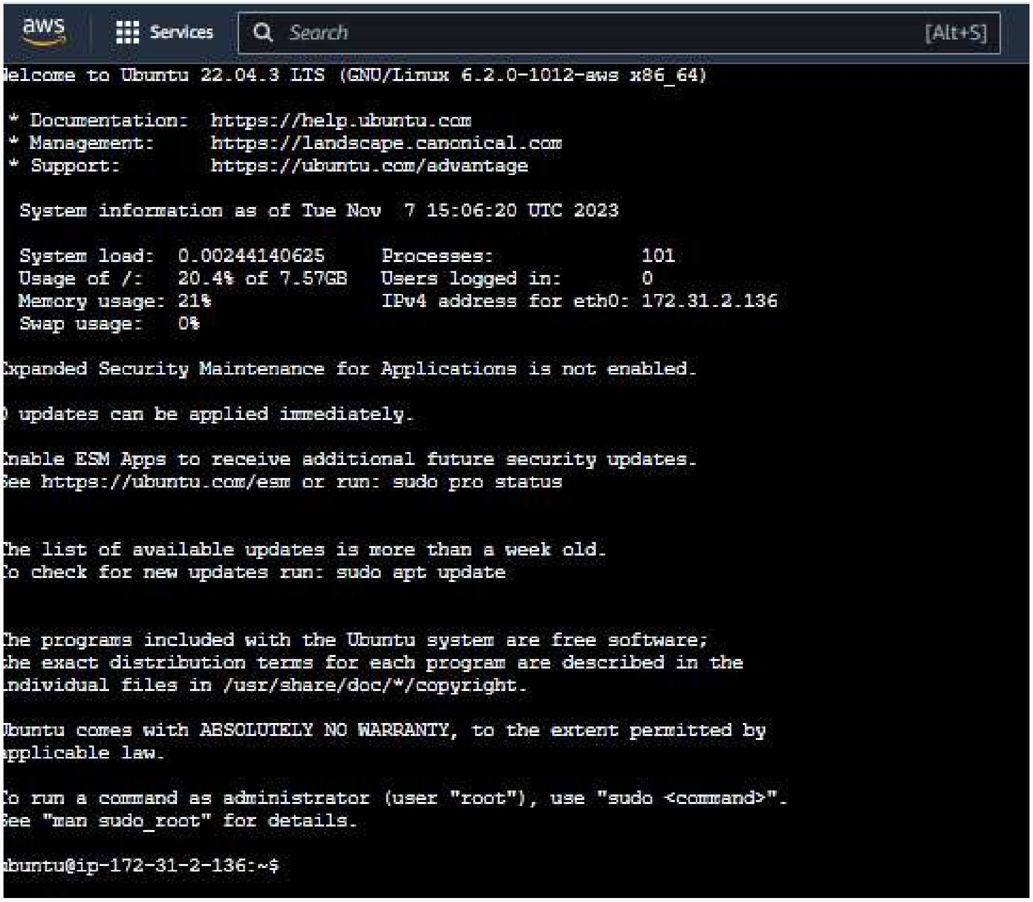
Public IP address
44.204.208.1

User name
Enter the user name defined in the AMI used to launch the instance. If you didn't define a custom user name, use the default user name, ubuntu.

ubuntu

Note: In most cases, the default user name, ubuntu, is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.

The next screen opened is the Ubuntu command prompt.



```
elcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.2.0-1012-aws x86_64)

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

  System information as of Tue Nov  7 15:06:20 UTC 2023

  System load:  0.00244140625     Processes:             101
  Usage of /:   20.4% of 7.57GB   Users logged in:       0
  Memory usage: 21%               IPv4 address for eth0: 172.31.2.136
  Swap usage:   0%

xpanded Security Maintenance for Applications is not enabled.

) updates can be applied immediately.

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


he list of available updates is more than a week old.
o check for new updates run: sudo apt update


he programs included with the Ubuntu system are free software;
he exact distribution terms for each program are described in the
ndividual files in /usr/share/doc/*/copyright.

buntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
pplicable law.

o run a command as administrator (user "root"), use "sudo <command>".
ee "man sudo_root" for details.

buntu@ip-172-31-2-136:~$
```

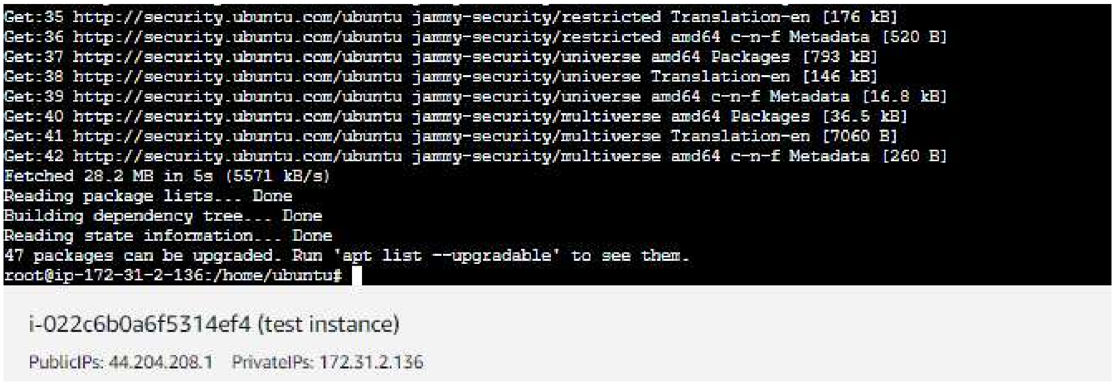
10. Let us install nginx.

The command used to go to root directory is

sudo su

The next command is used to download package information from all configured sources.

sudo apt update



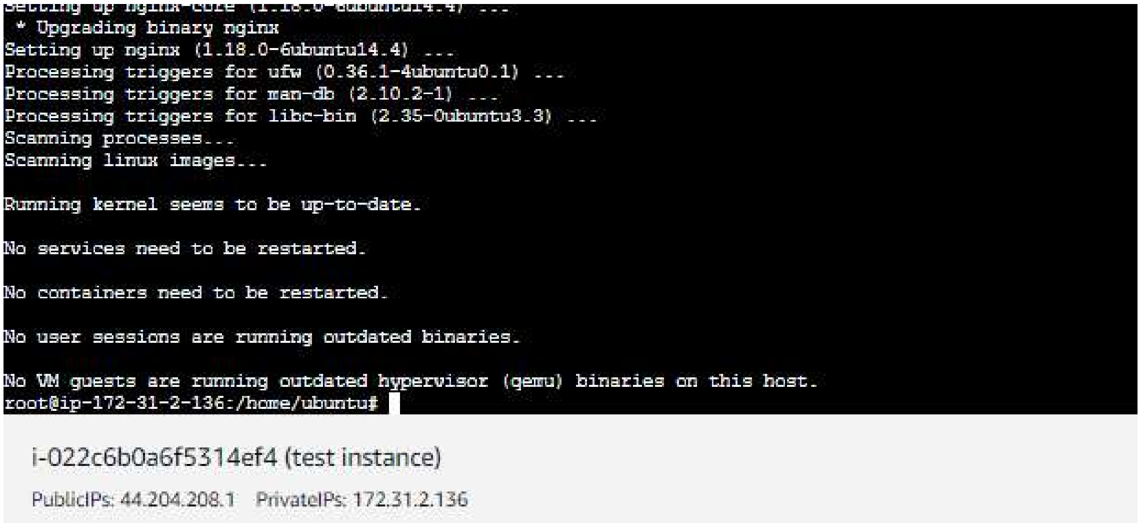
```
Get:35 http://security.ubuntu.com/ubuntu jammy-security/restricted Translation-en [176 kB]
Get:36 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 c-n-f Metadata [520 B]
Get:37 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [793 kB]
Get:38 http://security.ubuntu.com/ubuntu jammy-security/universe Translation-en [146 kB]
Get:39 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 c-n-f Metadata [16.8 kB]
Get:40 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 Packages [36.5 kB]
Get:41 http://security.ubuntu.com/ubuntu jammy-security/multiverse Translation-en [7060 B]
Get:42 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 c-n-f Metadata [260 B]
Fetched 28.2 MB in 5s (5571 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
47 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@ip-172-31-2-136:/home/ubuntu#
```

i-022c6b0a6f5314ef4 (test instance)

PublicIPs: 44.204.208.1   PrivateIPs: 172.31.2.136

To install nginx, we use following command

sudo apt install nginx



```
Setting up nginx-core (1.18.0-6ubuntu14.4) ...
 * Upgrading binary nginx
Setting up nginx (1.18.0-6ubuntu14.4) ...
Processing triggers for ufw (0.36.1-4ubuntu0.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.3) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@ip-172-31-2-136:/home/ubuntu#
```

i-022c6b0a6f5314ef4 (test instance)

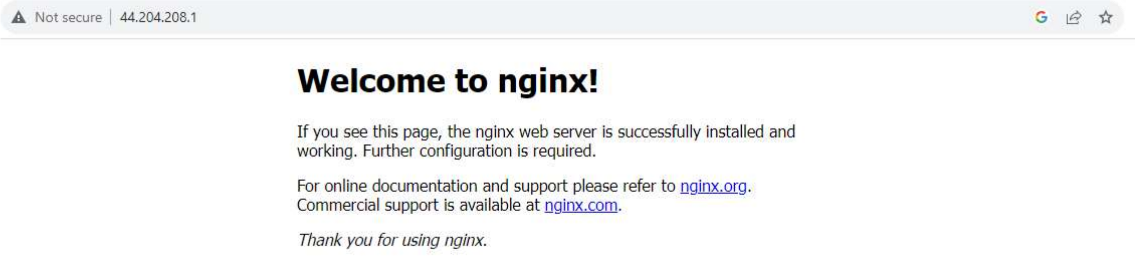
PublicIPs: 44.204.208.1 PrivateIPs: 172.31.2.136

Nginx installed.

11. As we installed nginx, we can check it on the web server.

    To do this, copy the IP address of that instance and paste it in the url.

    We can see the welcome page of nginx as it is installed.



Not secure | 44.204.208.1

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

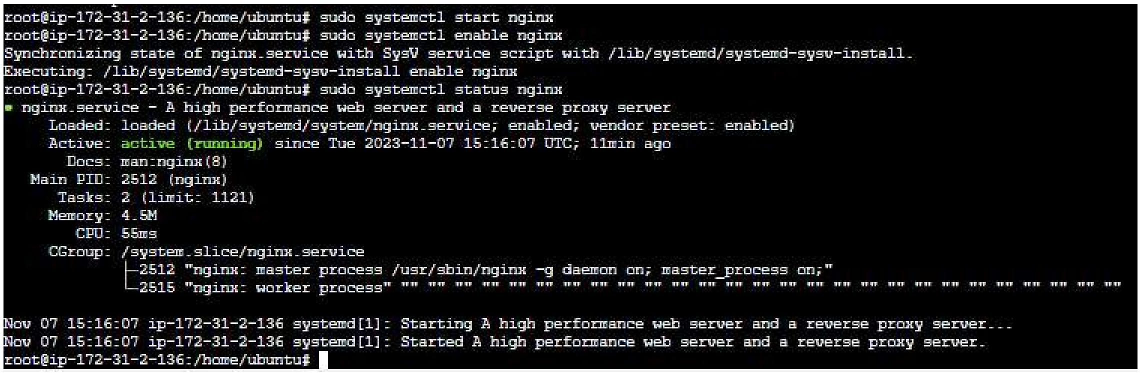
12. Next we have to start and enable this nginx. Let’s go to the command prompt and type in the following command.

    sudo systemctl start ngnix

    sudo systemctl enable ngnix

    To check if it is running or not, we use

    sudo systemctl status ngnix



```
root@ip-172-31-2-136:/home/ubuntu# sudo systemctl start nginx
root@ip-172-31-2-136:/home/ubuntu# sudo systemctl enable nginx
Synchronizing state of nginx.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable nginx
root@ip-172-31-2-136:/home/ubuntu# sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
     Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
     Active: active (running) since Tue 2023-11-07 15:16:07 UTC; 11min ago
       Docs: man:nginx(8)
   Main PID: 2512 (nginx)
      Tasks: 2 (limit: 1121)
     Memory: 4.5M
        CPU: 55ms
     CGroup: /system.slice/nginx.service
             ├─2512 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
             └─2515 "nginx: worker process" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" "" ""

Nov 07 15:16:07 ip-172-31-2-136 systemd[1]: Starting A high performance web server and a reverse proxy server...
Nov 07 15:16:07 ip-172-31-2-136 systemd[1]: Started A high performance web server and a reverse proxy server.
root@ip-172-31-2-136:/home/ubuntu#
```

TASK 2:

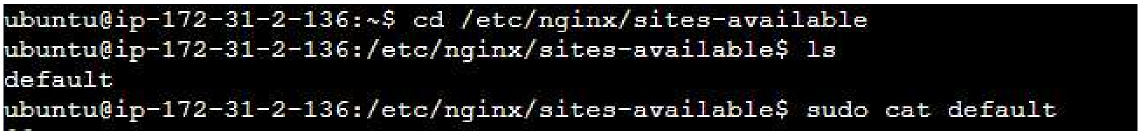
Change the default website with a page displaying the message: “Hello World”

To change the text on the default page of nginx web server, we need to find the path of the index file. The command we use is

cd /etc/nginx/sites-available

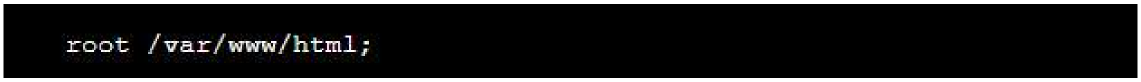
ls   #to list the files present

Sudo cat default   #to check the file path



```
ubuntu@ip-172-31-2-136:~$ cd /etc/nginx/sites-available
ubuntu@ip-172-31-2-136:/etc/nginx/sites-available$ ls
default
ubuntu@ip-172-31-2-136:/etc/nginx/sites-available$ sudo cat default
```

The path -



```
    root /var/www/html;
```

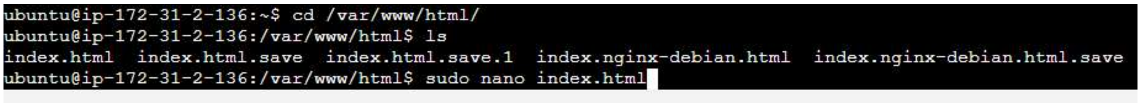
Then follow the next commands to change the text on the page to Hello World

cd /var/www/html/

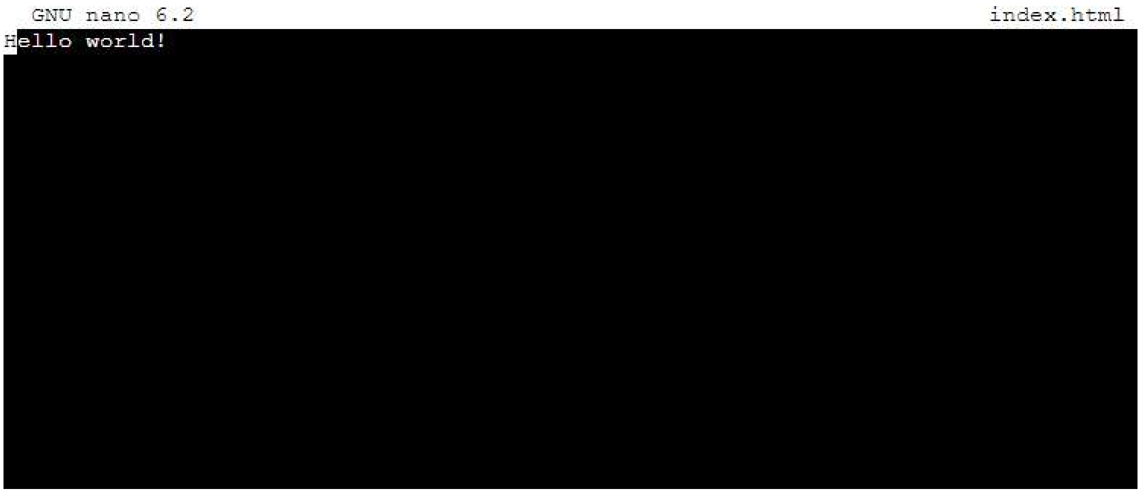
ls

sudo nano index.html   #redirects to the empty html file

#write Hello world and save it

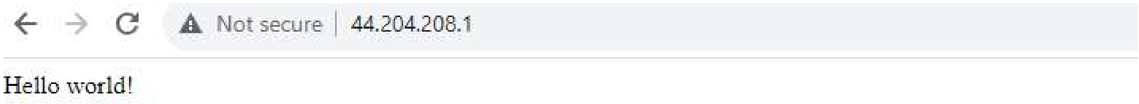


```
ubuntu@ip-172-31-2-136:~$ cd /var/www/html/
ubuntu@ip-172-31-2-136:/var/www/html$ ls
index.html  index.html.save  index.html.save.1  index.nginx-debian.html  index.nginx-debian.html.save
ubuntu@ip-172-31-2-136:/var/www/html$ sudo nano index.html
```



```
  GNU nano 6.2                                                              index.html
Hello world!
```

Reload the IP address , the text should be changed



Hello world!

CONCLUSION:

The tasks given to launch an instance in a particular region and connecting to a webserver with a different text on the default page has completed.