

Project - 1: Deploying a Multi-Tier Website Using AWS EC2

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Course Offered: -Advanced Cloud Computing and Devops

Assignment By: -Intellipaat

Trainer: -Puneet Gavri

Date Of Submission: -04/12/2024

Description:

Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) cloud. Using Amazon EC2 eliminates your need to invest in hardware up front so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. Amazon EC2 enables you to scale up or down to handle changes in requirements or spikes in popularity, reducing your need to forecast traffic.

Problem Statement:

Company ABC wants to move their product to AWS. They have the following things set up right now:

1. MySQL DB
2. Website (PHP)

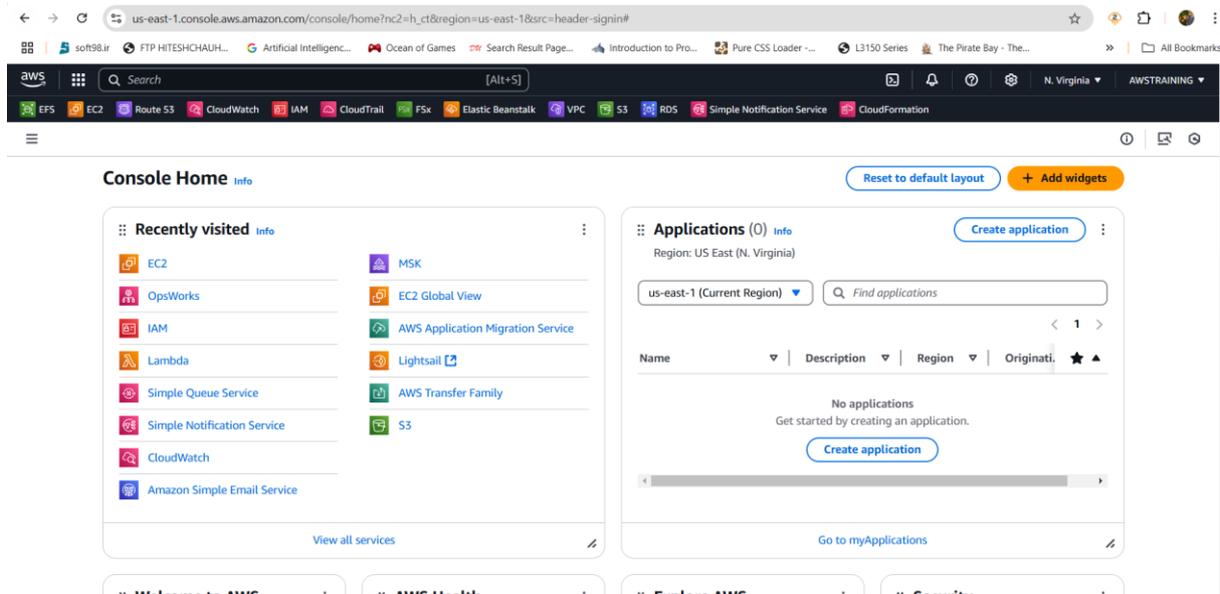
The company wants high availability on this product, therefore wants Auto Scaling to be enabled on this website.

Steps To Solve:

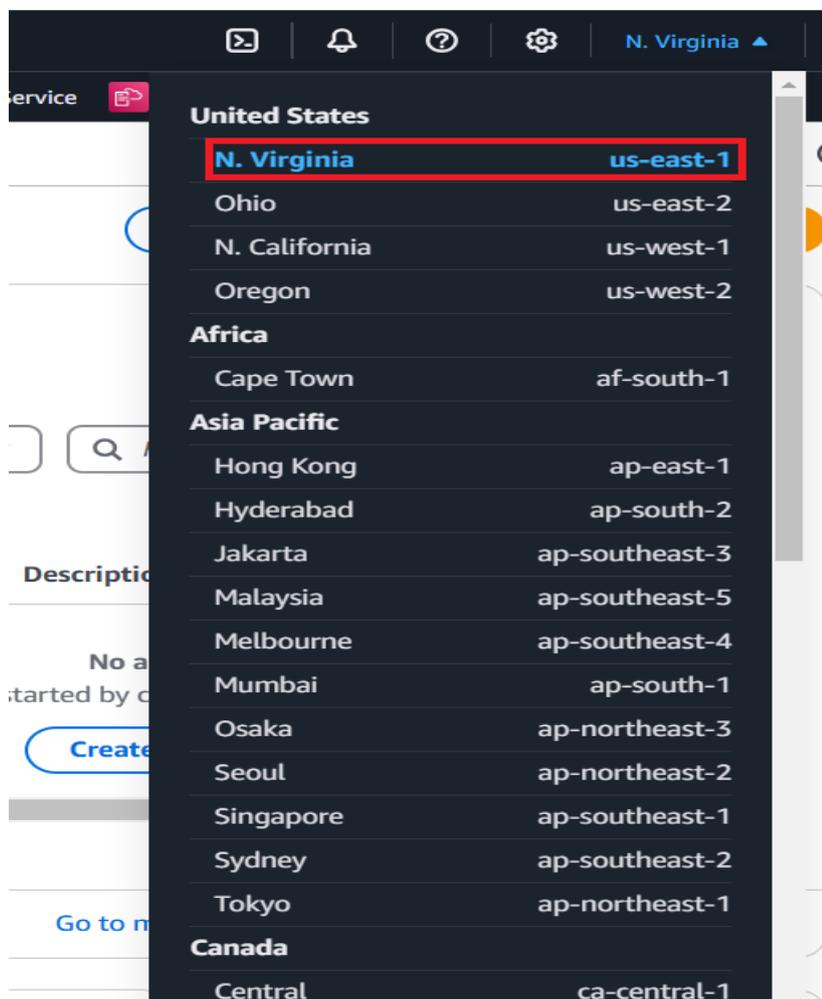
1. Launch an EC2 Instance
2. Enable Auto Scaling on these instances (minimum 2)
3. Create an RDS Instance
4. Create Database & Table in RDS instance:
 - a. Database name: intel
 - b. Table name: data
 - c. Database password: intel123
5. Change hostname in website
6. Allow traffic from EC2 to RDS instance
7. Allow all-traffic to EC2 instance

Project- 1: Solution

1. Login to the AWS Console providing your credentials.



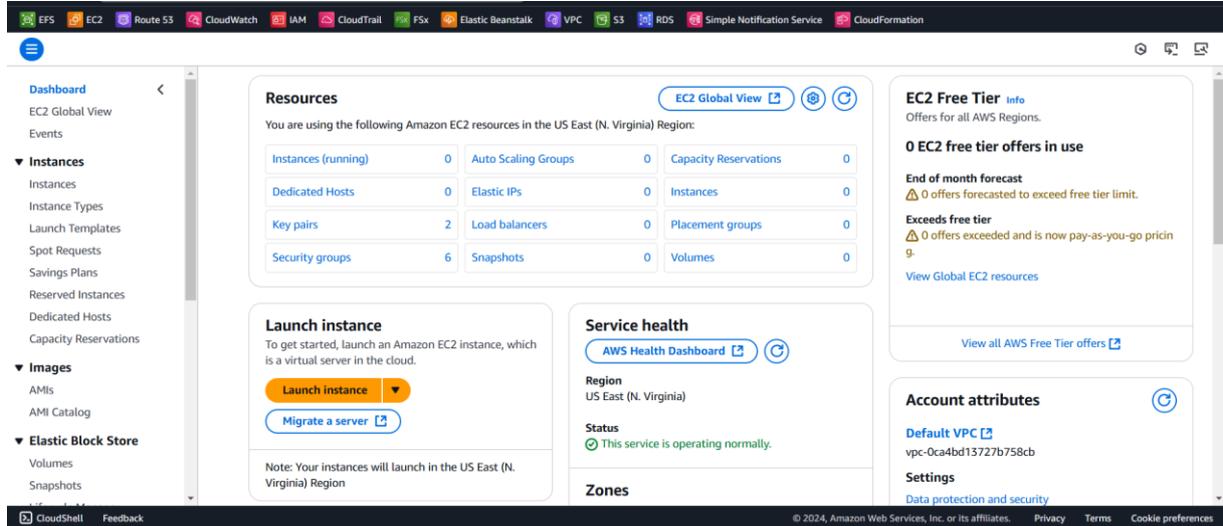
2. Select any region you want. We've selected N.Virginia here



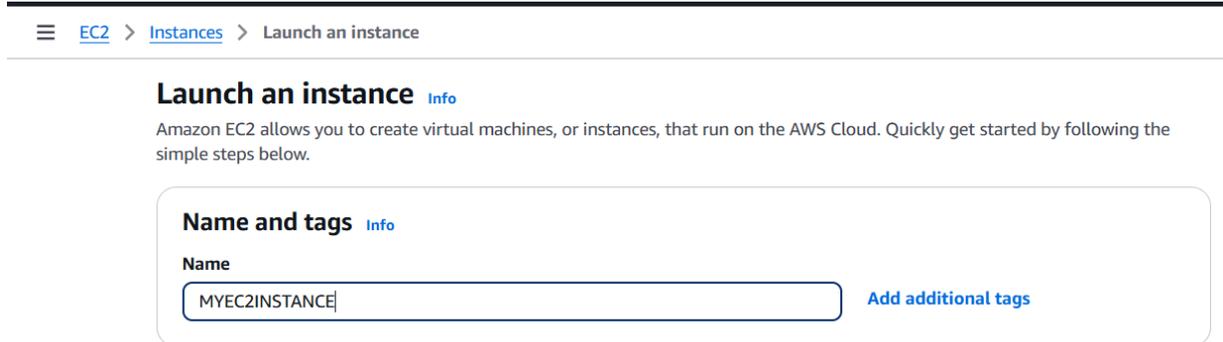
Then Click EC2 and after click the ec2 you will open this page.

3. In the **Services** section, you'll see **Compute** where you need to choose **EC2**.

4. Then in the Create Instance section, select the **Launch Instance** option



Assign ec2 instance name



5. Then Select an **AMI** or **Amazon Machine Image**



6. Choose your instance type. We're choosing Free tier for demo purposes

▼ **Instance type** [Info](#) | [Get advice](#)

Instance type

t2.micro Free tier eligible

Family: t2 1 vCPU 1 GiB Memory Current generation: true

On-Demand Windows base pricing: 0.0162 USD per Hour

On-Demand Ubuntu Pro base pricing: 0.0134 USD per Hour

On-Demand SUSE base pricing: 0.0116 USD per Hour

On-Demand RHEL base pricing: 0.026 USD per Hour

On-Demand Linux base pricing: 0.0116 USD per Hour

All generations

[Compare instance types](#)

[Additional costs apply for AMIs with pre-installed software](#)

7. Choose Your Key pair for connect to the instance.

▼ **Key pair (login)** [Info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required

cloudwatch logs

[Create new key pair](#)

8. Choose Network Setting And Security Group Setting.

▼ **Network settings** [Info](#)

VPC - required [Info](#)

vpc-0ca4bd13727b758cb (default) [Refresh](#)

172.31.0.0/16

Subnet [Info](#)

subnet-0d828a638aec31575 [Refresh](#)

VPC: vpc-0ca4bd13727b758cb Owner: 207567757353

Availability Zone: us-east-1d Zone type: Availability Zone [Create new subnet](#)

IP addresses available: 4091 CIDR: 172.31.0.0/20

Auto-assign public IP [Info](#)

Enable

[Additional charges apply when outside of free tier allowance](#)

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

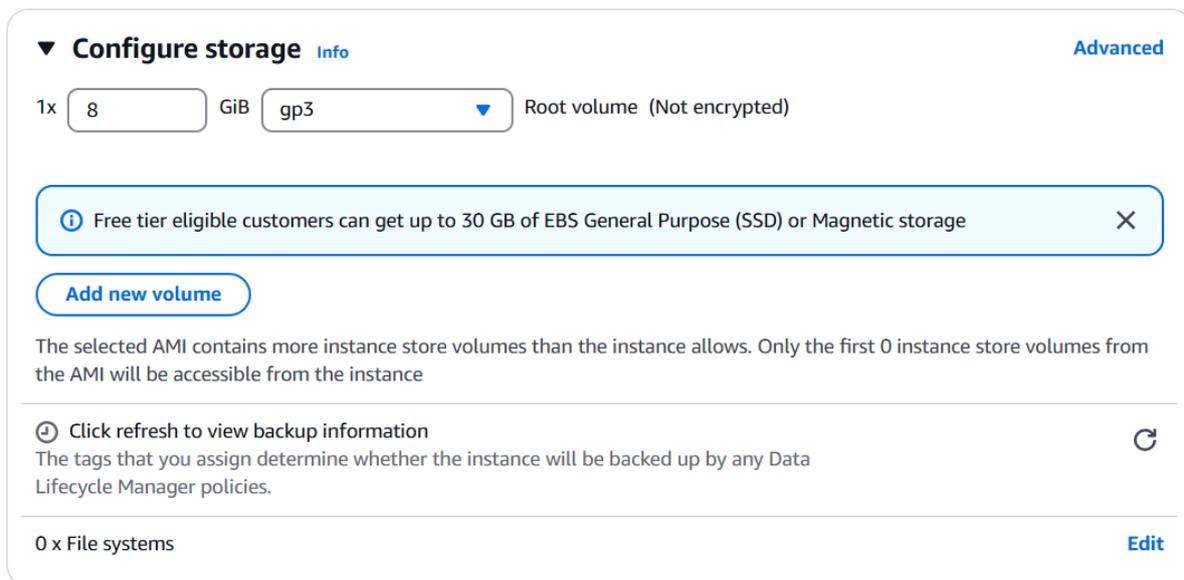
Common security groups [Info](#)

Select security groups

cloudwatch agent sg-0513f7b0108994883 [Close](#) [Refresh](#) [Compare security group rules](#)

VPC: vpc-0ca4bd13727b758cb

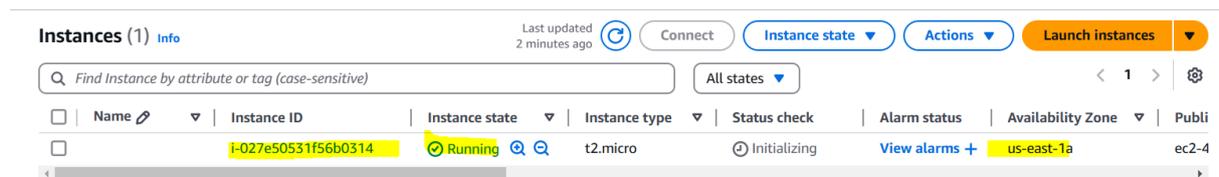
9. Configure your instance details and then select the **Add storage** option



The screenshot shows the 'Configure storage' panel in the AWS console. At the top, it displays '1x 8 GiB gp3 Root volume (Not encrypted)'. Below this is a blue information box stating: 'Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage'. A blue button labeled 'Add new volume' is visible. A warning message reads: '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'. There is a refresh icon and text: 'Click refresh to view backup information. The tags that you assign determine whether the instance will be backed up by any Data Lifecycle Manager policies.' At the bottom, it shows '0 x File systems' and an 'Edit' link.

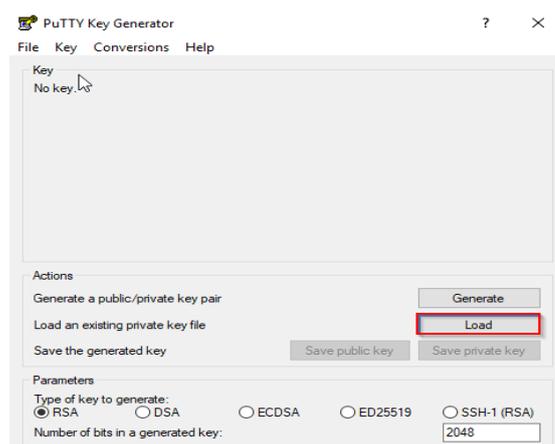
10. Then Click Launch Instance

You will be able to see your status that your Instance is on **Initializing** stage.



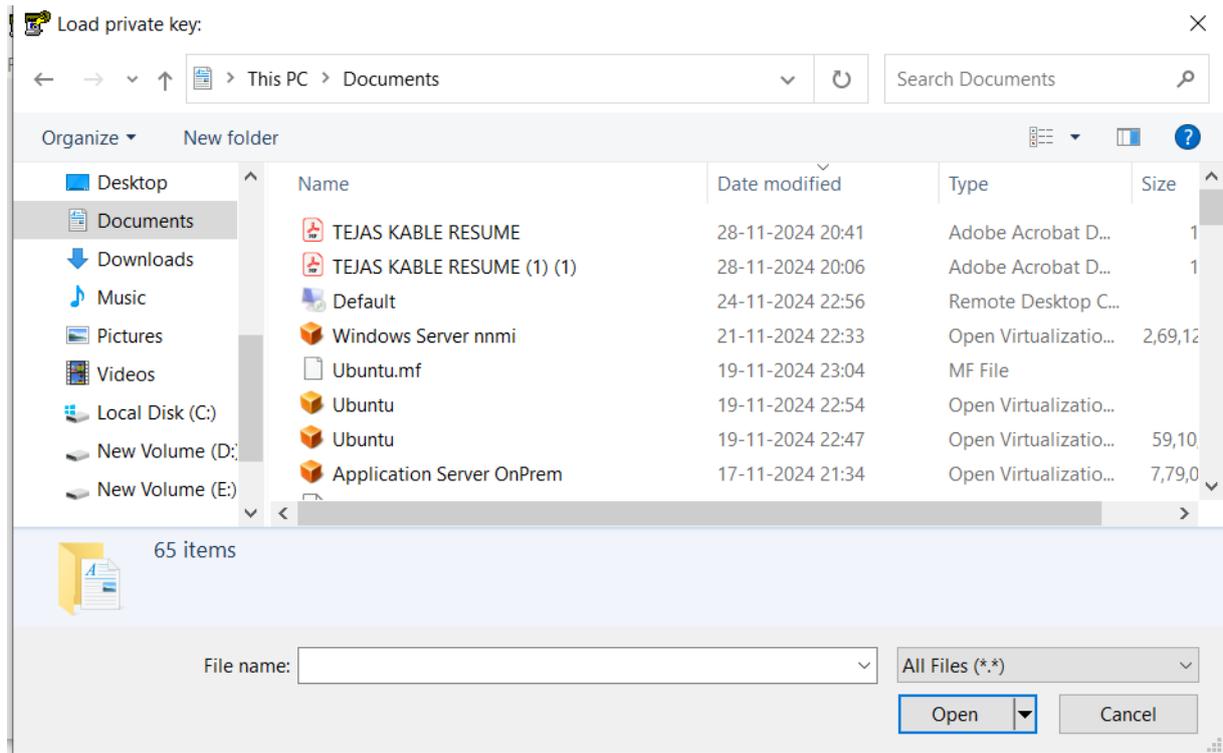
The screenshot shows the AWS 'Instances' console. The top bar includes 'Instances (1) Info', 'Last updated 2 minutes ago', 'Connect', 'Instance state', 'Actions', and 'Launch instances'. A search bar contains 'Find Instance by attribute or tag (case-sensitive)'. Below the search bar is a table with columns: Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, and Public IP. The table contains one entry with Instance ID 'i-027e50531f56b0314', Instance state 'Running', Instance type 't2.micro', Status check 'Initializing', Alarm status 'View alarms +', Availability Zone 'us-east-1a', and Public IP 'ec2-4'.

MobaXterm won't be able to support this **.pem** file, so you'd require a PuTTY gen tool which can convert your **.pem** file into **.ppk** format, because you need a **.ppk** file in order to connect it with your instance.



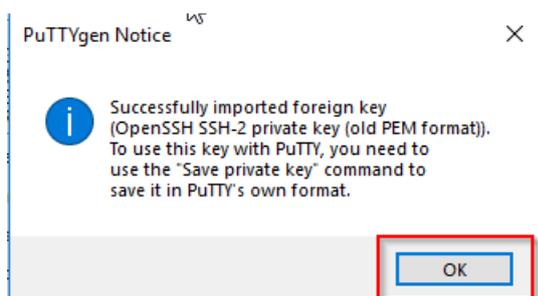
The screenshot shows the PuTTY Key Generator window. The 'Key' section displays 'No key'. The 'Actions' section has a 'Load' button highlighted with a red box. The 'Parameters' section shows 'Type of key to generate' with 'RSA' selected, and 'Number of bits in a generated key' set to '2048'.

11. PuTTYgen key always shows the .ppk format file, so go to the right bottom bar and select the All files option as shown below

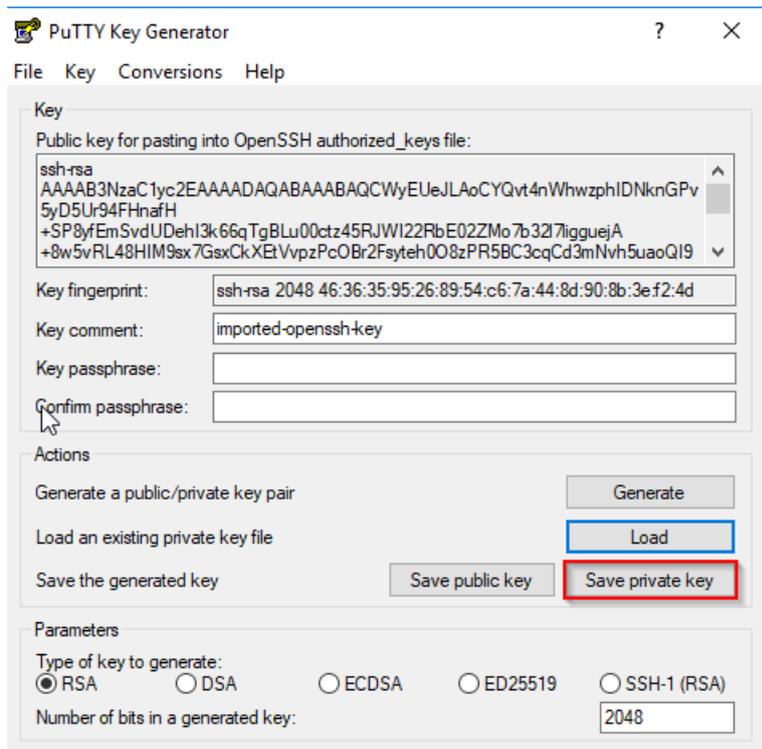


12. Then select the folder where you downloaded this keypair and load it there

13. You will see this option then click OK



14. Then click on Save the Private key, PuTTY gen will give a warning about saving the key without Key passphrase, click Yes and specify the same name for your file that you gave it in the key pair.



15. Then click on Save the Private key, PuTTY gen will give a warning about saving the key without Key passphrase, click Yes and specify the same name for your file that you gave it in the key pair.

16. Now you will see that in your folder, the .ppk file is already added with that name you had given (in our case, it's ec2)

Connecting to your EC2 Instance using SSH & MobaXterm:

First open MobaXterm then in the Host Name box, add the Public IP of your Instance.

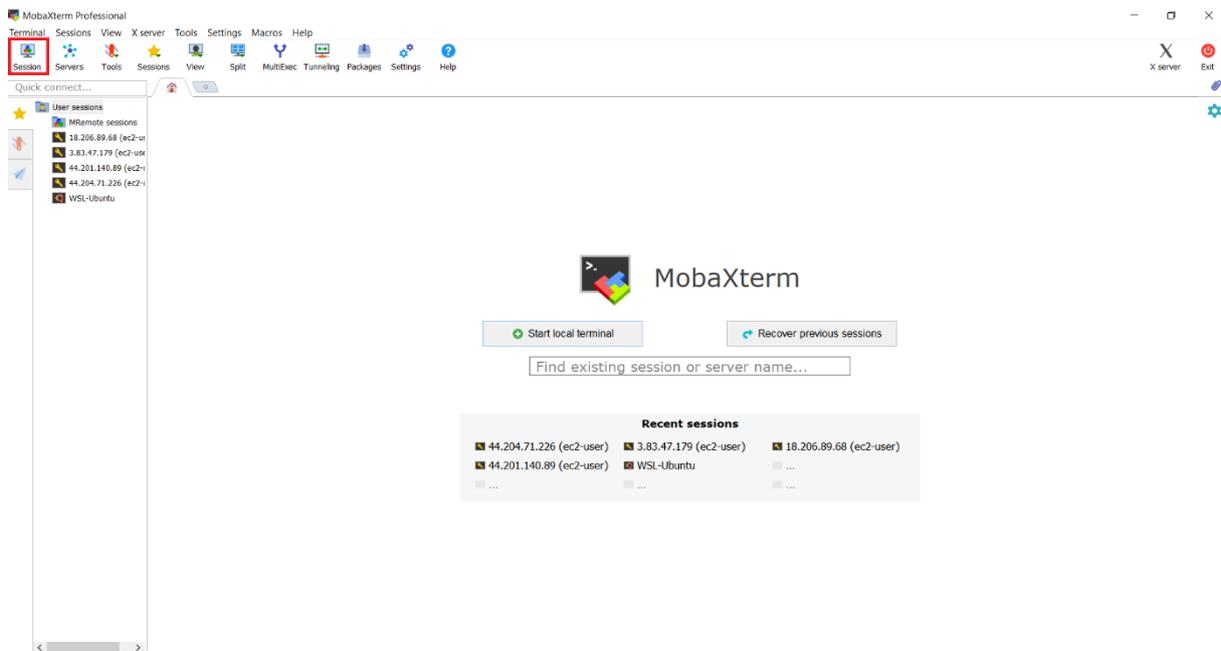
Instance summary for i-027e50531f56b0314 [info](#)

Updated less than a minute ago

[Connect](#) [Instance state](#) [Actions](#)

<p>Instance ID</p> <p>i-027e50531f56b0314</p> <p>IPv6 address</p> <p>-</p> <p>Hostname type</p> <p>IP name: ip-172-31-82-41.ec2.internal</p> <p>Answer private resource DNS name</p> <p>IPv4 (A)</p> <p>Auto-assigned IP address</p> <p>44.204.46.79 [Public IP]</p>	<p>Public IPv4 address</p> <p>44.204.46.79 open address</p> <p>Instance state</p> <p>✔ Running</p> <p>Private IP DNS name (IPv4 only)</p> <p>ip-172-31-82-41.ec2.internal</p> <p>Instance type</p> <p>t2.micro</p> <p>VPC ID</p> <p>vpc-0ca4bd13727b758cb</p>	<p>Private IPv4 addresses</p> <p>172.31.82.41</p> <p>Public IPv4 DNS</p> <p>ec2-44-204-46-79.compute-1.amazonaws.com open address</p> <p>Elastic IP addresses</p> <p>-</p> <p>AWS Compute Optimizer finding</p> <p>Opt-in to AWS Compute Optimizer for recommendations.</p> <p>Learn more</p>
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Open MobaXterm And Click Sessions



After Click the Session.now we choose ssh in this case.

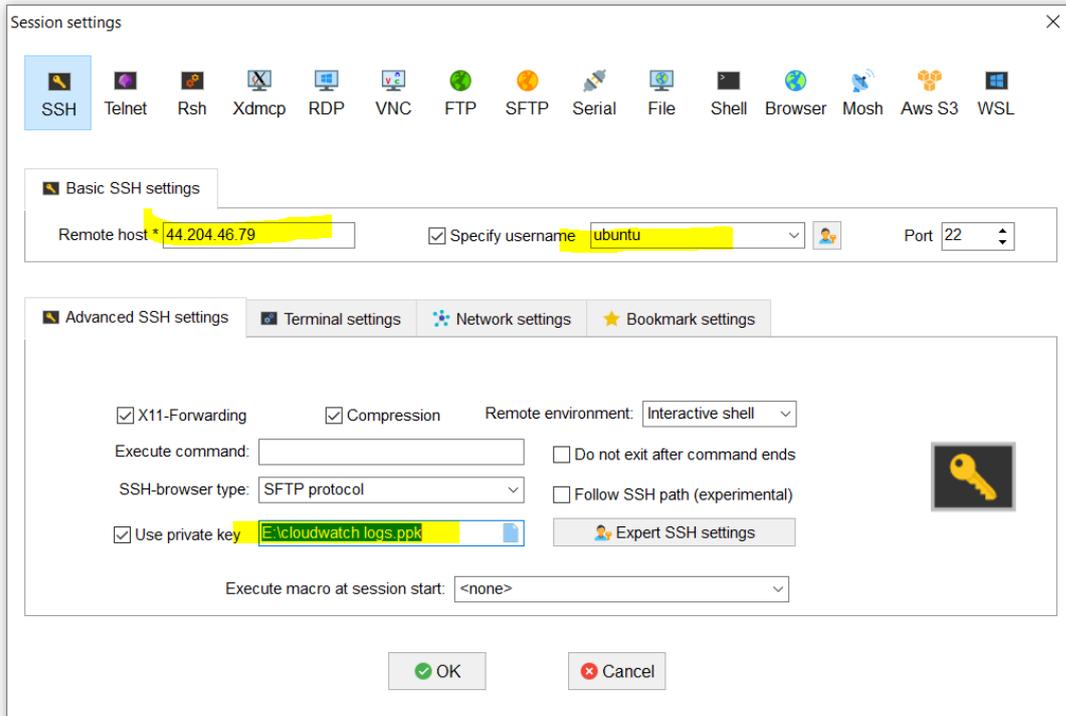


After Click the SSH,you will fill the details like

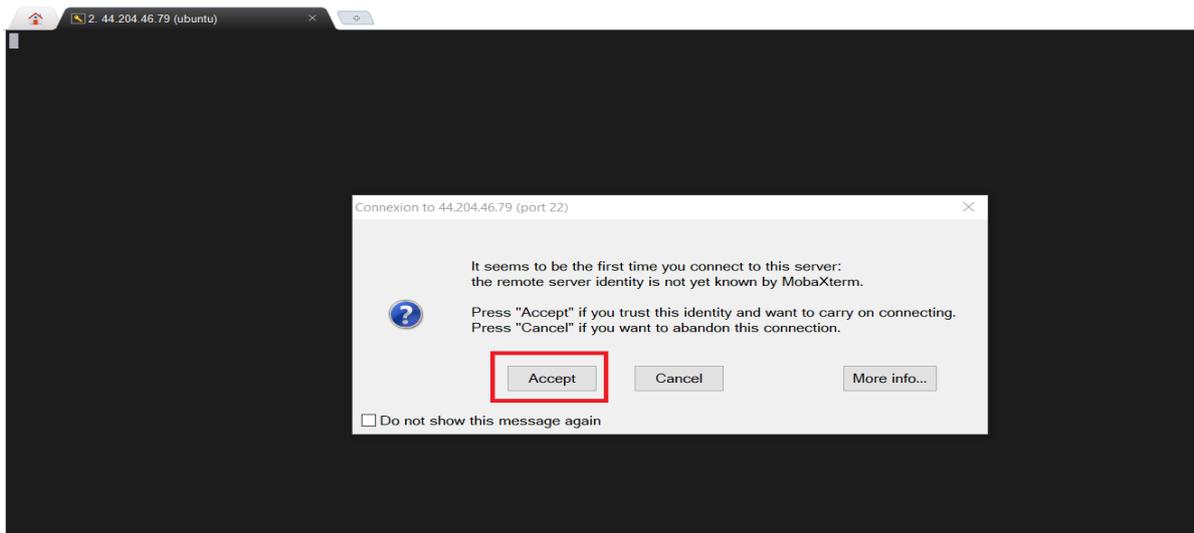
Remote Host:-44.204.46.79

Specify Username:-Ubuntu

Then We need to upload the private key .ppk file format.we got converted through puttygen.then click ok.



After Click ok You will prompt Connection to public ip.now click accept.



After Click the accept you will; connect the instance through mobaxterm.

```
2. 44.204.46.79 (ubuntu)
• SSH-browser      : ✓
• X11-forwarding   : ✓ (remote display is forwarded through SSH)
▶ For more info, ctrl+click on help or visit our website.

Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1016-aws x86_64)

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

System information as of Thu Dec  5 15:10:02 UTC 2024

System load:  0.16          Processes:      106
Usage of /:   22.9% of 6.71GB Users logged in:  0
Memory usage: 20%          IPv4 address for enX0: 172.31.82.41
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

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

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

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

/usr/bin/xaauth: file /home/ubuntu/.Xauthority does not exist
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-82-41:~$
```

After Connection the Instance we need to perform the below task from server.

First Update your system using the command

sudo apt-get update

```
root@ip-172-31-82-41:/home/ubuntu# sudo apt-get update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [498 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [102 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [7220 B]
Get:11 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [5892 B]
Get:12 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [563 kB]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [675 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [158 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [132 kB]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [10.4 kB]
Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [722 kB]
Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [215 kB]
Get:24 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [310 kB]
Get:25 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [10.9 kB]
Get:26 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [498 kB]
Get:27 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [95.7 kB]
Get:28 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:29 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 c-n-f Metadata [424 B]
Get:30 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [16.0 kB]
Get:31 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [3844 B]
Get:32 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:33 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata [552 B]
Get:34 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]
Get:35 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 c-n-f Metadata [112 B]
Get:36 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [10.7 kB]
Get:37 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [10.8 kB]
Get:38 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [11.7 kB]
Get:39 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 c-n-f Metadata [1104 B]
```

Then use this command in MobaXterm to install Apache2

sudo apt-get install apache2

```
root@ip-172-31-82-41:/home/ubuntu# sudo apt-get install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblua5.4-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblua5.4-0 ssl-cert
0 upgraded, 10 newly installed, 0 to remove and 60 not upgraded.
Need to get 2084 kB of archives.
After this operation, 8094 kB of additional disk space will be used.
Do you want to continue? [Y/n]
```

```
Enabling module mpm_event.
Enabling module authz_core.
Enabling module authz_host.
Enabling module authn_core.
Enabling module auth_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /usr/lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /usr/lib/systemd/system/apache-htcacheclean.service.
Processing triggers for ufw (0.36.2-6) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.3) ...
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-172-31-82-41:/home/ubuntu#
```

Then install php-mysql using the following command

sudo add-apt-repository -y ppa:ondrej/php

```
root@ip-172-31-82-41:/home/ubuntu# sudo add-apt-repository -y ppa:ondrej/php
PPA publishes dbgsym, you may need to include 'main/debug' component
Repository: 'Types: deb
URI: https://ppa.launchpadcontent.net/ondrej/php/ubuntu/
Suites: noble
Components: main'
Description:
Go-installable PHP versions: PHP 5.6, PHP 7.x, PHP 8.x and most requested extensions are included. Only Supported Ubuntu Releases (https://wiki.ubuntu.com/Releases) are provided.
Debian oldstable and stable packages are provided as well: https://deb.sury.org/#debian-dpa
You can get more information about the packages at https://deb.sury.org
BUGS&FEATURES: This PPA now has a issue tracker:
https://deb.sury.org/#bug-reporting
CAVEATS:
1. If you are using php-gearman, you need to add ppa:ondrej/pkg-gearman
2. If you are using apache2, you are advised to add ppa:ondrej/apache2
3. If you are using nginx, you are advised to add ppa:ondrej/nginx-mainline or ppa:ondrej/nginx
PLEASE READ: If you like my work and want to give me a little motivation, please consider donating regularly: https://donate.sury.org/
WARNING: add-apt-repository is broken with non-UTF-8 locales, see
https://github.com/canonical/deb.sury.org/issues/59 for workaround:
# [E] ALL ac UTF-8 add-apt-repository ppa:ondrej/php
More info: https://launchpad.net/ondrej/archive/ubuntu/php
Adding repository.
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 https://security.ubuntu.com/ubuntu noble-security InRelease
Get:5 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble InRelease [24.4 kB]
Get:6 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main amd64 Packages [126 kB]
Get:7 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main Translation-en [39.0 kB]
Fetched 189 kB in 3s (63.4 kB/s)
Reading package lists... Done
root@ip-172-31-82-41:/home/ubuntu#
```

sudo apt install php5.6 mysql-client php5.6-mysqli

```
root@ip-172-31-82-41:/home/ubuntu# sudo apt install php5.6 mysql-client php5.6-mysqli
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'php5.6-mysqli' instead of 'php5.6-mysqli'
The following additional packages will be installed:
  debsuryorg-archiver-keyring libapache2-mod-php5.6 libpcre3 mysql-client-8.0 mysql-client-core-8.0 mysql-common php-common php5.6-cli php5.6-common php5.6-json
  php5.6-opcache php5.6-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  debsuryorg-archiver-keyring libapache2-mod-php5.6 libpcre3 mysql-client mysql-client-8.0 mysql-client-core-8.0 mysql-common php-common php5.6 php5.6-cli
  php5.6-common php5.6-json php5.6-mysqli php5.6-opcache php5.6-readline
0 upgraded, 15 newly installed, 0 to remove and 60 not upgraded.
Need to get 6928 kB of archives.
After this operation, 76.9 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 libpcre3 amd64 2:8.39-15build1 [248 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 mysql-client-core-8.0 amd64 8.0.40-0ubuntu0.24.04.1 [2765 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 mysql-common all 5.0+1.1.0build1 [6746 B]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 mysql-client-8.0 amd64 8.0.40-0ubuntu0.24.04.1 [22.5 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 mysql-client all 8.0.40-0ubuntu0.24.04.1 [9416 B]
Get:6 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main amd64 debsuryorg-archiver-keyring all 2024.02.05+ubuntu24.04.1+deb.sury.org+1 [4332 B]
Get:7 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main amd64 php-common all 2:95+ubuntu24.04.1+deb.sury.org+1 [13.2 kB]
Get:8 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main amd64 php5.6-common amd64 5.6.40-79+ubuntu24.04.1+deb.sury.org+1 [686 kB]
Get:9 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main amd64 php5.6-json amd64 5.6.40-79+ubuntu24.04.1+deb.sury.org+1 [19.0 kB]
Get:10 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main amd64 php5.6-opcache amd64 5.6.40-79+ubuntu24.04.1+deb.sury.org+1 [68.0 kB]
Get:11 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main amd64 php5.6-readline amd64 5.6.40-79+ubuntu24.04.1+deb.sury.org+1 [13.9 kB]
Get:12 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main amd64 php5.6-cli amd64 5.6.40-79+ubuntu24.04.1+deb.sury.org+1 [1386 kB]
Get:13 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main amd64 libapache2-mod-php5.6 amd64 5.6.40-79+ubuntu24.04.1+deb.sury.org+1 [1340 kB]
Get:14 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main amd64 php5.6 all 5.6.40-79+ubuntu24.04.1+deb.sury.org+1 [191 kB]
Get:15 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main amd64 php5.6-mysqli amd64 5.6.40-79+ubuntu24.04.1+deb.sury.org+1 [154 kB]
Fetched 6928 kB in 42s (589 kB/s)
Selecting previously unselected package debsuryorg-archiver-keyring.
(Reading database ... 68559 files and directories currently installed.)
Preparing to unpack .../00-debsuryorg-archiver-keyring_2024.02.05+ubuntu24.04.1+deb.sury.org+1_all.deb ...
Unpacking debsuryorg-archiver-keyring (2024.02.05+ubuntu24.04.1+deb.sury.org+1) ...
Selecting previously unselected package libpcre3:amd64.
Preparing to unpack .../01-libpcre3_2%3a8.39-15build1_amd64.deb ...
Unpacking libpcre3:amd64 (2:8.39-15build1) ...
Selecting previously unselected package php-common.
Creating config file /etc/php/5.6/mods-available/mysqli.ini with new version
Creating config file /etc/php/5.6/mods-available/pdo_mysql.ini with new version
Creating config file /etc/php/5.6/mods-available/mysqldb.ini with new version
Setting up php5.6-opcache (5.6.40-79+ubuntu24.04.1+deb.sury.org+1) ...
Creating config file /etc/php/5.6/mods-available/opcache.ini with new version
Setting up php5.6-readline (5.6.40-79+ubuntu24.04.1+deb.sury.org+1) ...
Creating config file /etc/php/5.6/mods-available/readline.ini with new version
Setting up php5.6-cli (5.6.40-79+ubuntu24.04.1+deb.sury.org+1) ...
update-alternatives: using /usr/bin/php5.6 to provide /usr/bin/php (php) in auto mode
update-alternatives: using /usr/bin/phar5.6 to provide /usr/bin/phar (phar) in auto mode
update-alternatives: using /usr/bin/phar.phar5.6 to provide /usr/bin/phar.phar (phar.phar) in auto mode
Creating config file /etc/php/5.6/cli/php.ini with new version
Setting up libapache2-mod-php5.6 (5.6.40-79+ubuntu24.04.1+deb.sury.org+1) ...
Creating config file /etc/php/5.6/apache2/php.ini with new version
Module mpm_event disabled.
Enabling module mpm_prefork.
apache2_switch_mpm Switch to prefork
apache2_invoke: Enable module php5.6
Setting up php5.6 (5.6.40-79+ubuntu24.04.1+deb.sury.org+1) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.3) ...
Processing triggers for php5.6-cli (5.6.40-79+ubuntu24.04.1+deb.sury.org+1) ...
Processing triggers for libapache2-mod-php5.6 (5.6.40-79+ubuntu24.04.1+deb.sury.org+1) ...
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.

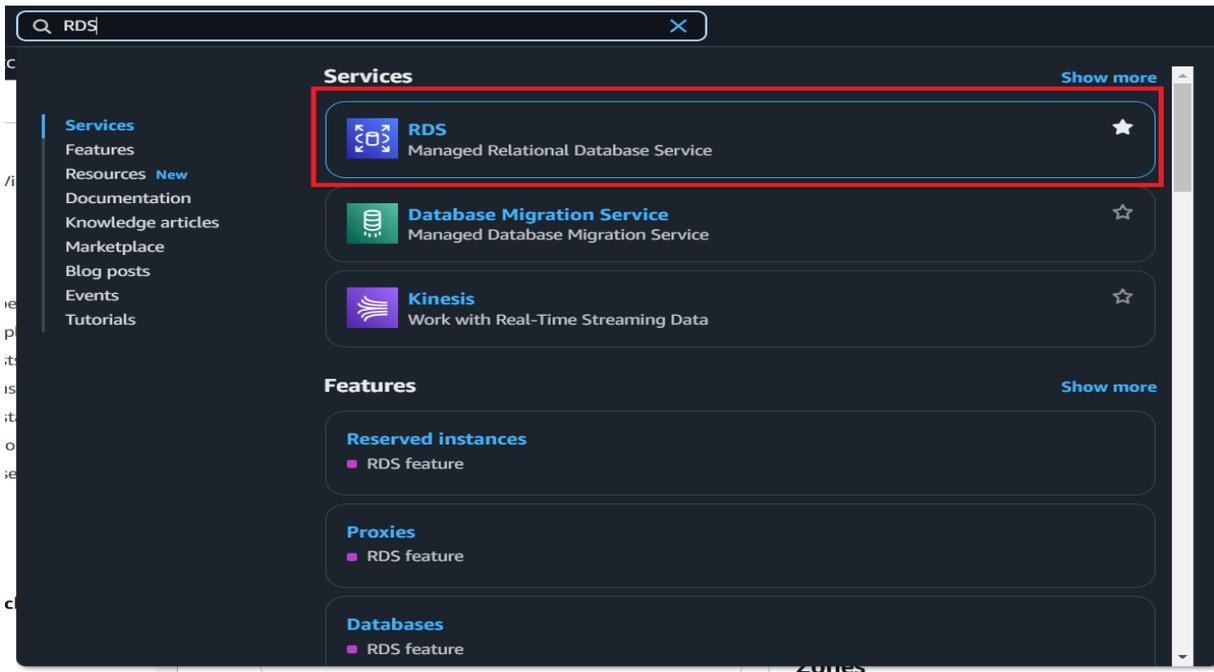
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@ip-172-31-82-41:/home/ubuntu#
```

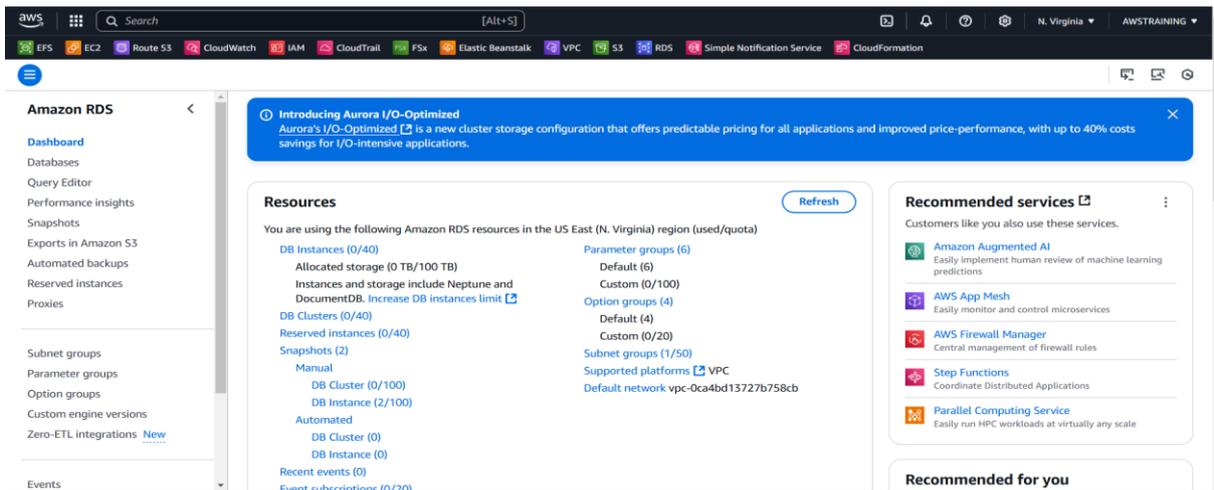
Now we connect mysql with the RDS:

1.Go To AWS Management Console.

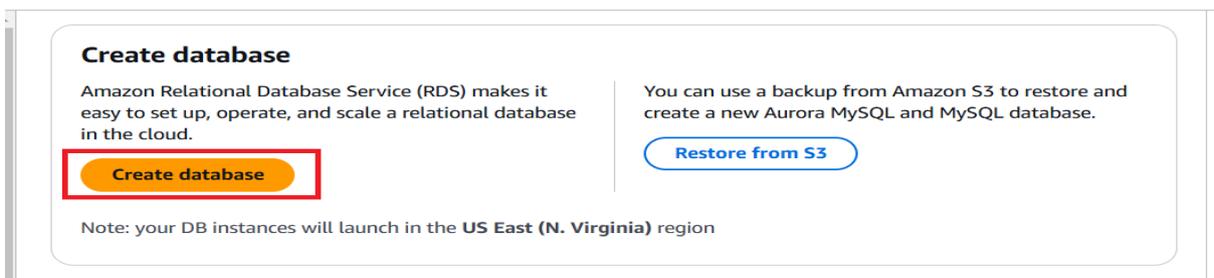
Search RDS



Click the database and create database.



Choose create database.



Select the MySQL Engine and click Next

Engine options

Engine type [Info](#)

<input type="radio"/> Aurora (MySQL Compatible) 	<input type="radio"/> Aurora (PostgreSQL Compatible) 
<input checked="" type="radio"/> MySQL 	<input type="radio"/> PostgreSQL 
<input type="radio"/> MariaDB 	<input type="radio"/> Oracle 
<input type="radio"/> Microsoft SQL Server	<input type="radio"/> IBM Db2

Select The Templates Dev/Test

Templates

Choose a sample template to meet your use case.

<input type="radio"/> Production Use defaults for high availability and fast, consistent performance.	<input checked="" type="radio"/> Dev/Test This instance is intended for development use outside of a production environment.	<input type="radio"/> Free tier Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. Info
---	--	--

Then Availability And Durability Will be Multi-AZ DB Cluster.

Availability and durability

Deployment options [Info](#)
The deployment options below are limited to those supported by the engine you selected above.

- Multi-AZ DB Cluster**
Creates a DB cluster with a primary DB instance and two readable standby DB instances, with each DB instance in a different Availability Zone (AZ). Provides high availability, data redundancy and increases capacity to serve read workloads.
- Multi-AZ DB instance**
Creates a primary DB instance and a standby DB instance in a different AZ. Provides high availability and data redundancy, but the standby DB instance doesn't support connections for read workloads.
- Single DB instance**
Creates a single DB instance with no standby DB instances.

Then we need to set credential of db.

▼ Credentials Settings

Master username [Info](#)
Type a login ID for the master user of your DB cluster.

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

Credentials management
You can use AWS Secrets Manager or manage your master user credentials.

<input type="radio"/> Managed in AWS Secrets Manager - most secure RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.	<input checked="" type="radio"/> Self managed Create your own password or have RDS create a password that you manage.
--	---

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

Master password [Info](#)

Password strength Weak

Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / ' " @

Confirm master password [Info](#)

Specify DB Details, make sure to choose in DB

Instance Class

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

DB instance class [Info](#)

▼ **Hide filters**

Show instance classes that support Amazon RDS Optimized Writes [Info](#)
Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

Standard classes (includes m classes)
 Memory optimized classes (includes r classes)
 Compute optimized classes (includes c classes)

db.m5d.large (supports Amazon RDS Optimized Writes)
2 vCPUs 8 GiB RAM Network: Up to 4,750 Mbps Instance storage: 75 GiB NVMe SSD

Specify DB Details, make sure to choose only db.m5d.large in DB Instance Class. Enter these credentials (Note: Make sure you remember these credentials, as they will be required for connecting the RDS with your MobaXterm)

Connectivity [Info](#)

Compute resource
Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

Don't connect to an EC2 compute resource
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

Connect to an EC2 compute resource
Set up a connection to an EC2 compute resource for this database.

Virtual private cloud (VPC) [Info](#)
Choose the VPC. The VPC defines the virtual networking environment for this DB cluster.

Default VPC (vpc-0ca4bd13727b758cb)
6 Subnets, 6 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

ⓘ After a database is created, you can't change its VPC.

DB subnet group [Info](#)
Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB cluster can use in the VPC that you selected.

default-vpc-0ca4bd13727b758cb
6 Subnets, 6 Availability Zones

Public access [Info](#)

Yes
RDS assigns a public IP address to the cluster. Amazon EC2 instances and other resources outside of the VPC can connect to your cluster. Resources inside the VPC can also connect to the cluster. Choose one or more VPC security groups that specify which resources can connect to the cluster.

Select VPC Security group

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 X

Database Authentication will be default as password authentication.

Database authentication

Database authentication options [Info](#)

- Password authentication
Authenticates using database passwords.
- Password and IAM database authentication
Authenticates using the database password and user credentials through AWS IAM users and roles.
- Password and Kerberos authentication (not available for Multi-AZ DB cluster)
Choose a directory in which you want to allow authorized users to authenticate with this DB instance using Kerberos Authentication.

Monitoring

Performance Insights [Info](#)

Enable Performance Insights for all instances in the cluster

► **Additional configuration**
Enhanced Monitoring

► **Additional configuration**
Database options, encryption turned on, backup turned on, backtrack turned off, maintenance, CloudWatch Logs, delete protection turned off.

ⓘ You are responsible for ensuring that you have all of the necessary rights for any third-party products or services that you use with AWS services.

[Cancel](#) [Create database](#)

Then click on Create database.

✔ **Successfully created database hiteshdb** [View connection details](#) ✕

You can use settings from hiteshdb to simplify configuration of suggested database add-ons while we finish creating your DB for you.

It may take few minutes for RDS to go from Initial to Running stage, you will observe that Endpoint and Port are not yet available (wait for few minutes)

✔ **Successfully created database hiteshdb** [View connection details](#) ✕

You can use settings from hiteshdb to simplify configuration of suggested database add-ons while we finish creating your DB for you.

ⓘ **Consider creating...**
You may want to create a staging environment for change testing.

ⓘ **Easy path homogeneous...**
With integrated homogeneous migration, you can migrate your existing on-premise database to an equivalent RDS database on a supported engine type.

Databases (4)
[Filter by databases](#)

Connection details to your database hiteshdb ✕

This is the only time you can view this password. Copy and save the password for your reference. If you lose the password, you must modify your database to change it. You can use a SQL client application or utility to connect to your database.

[Learn about connecting to your database](#)

Master username
admin

Master password
admin123

Endpoint
hiteshdb.cluster-cjo22w4eqmmj.us-east-1.rds.amazonaws.com

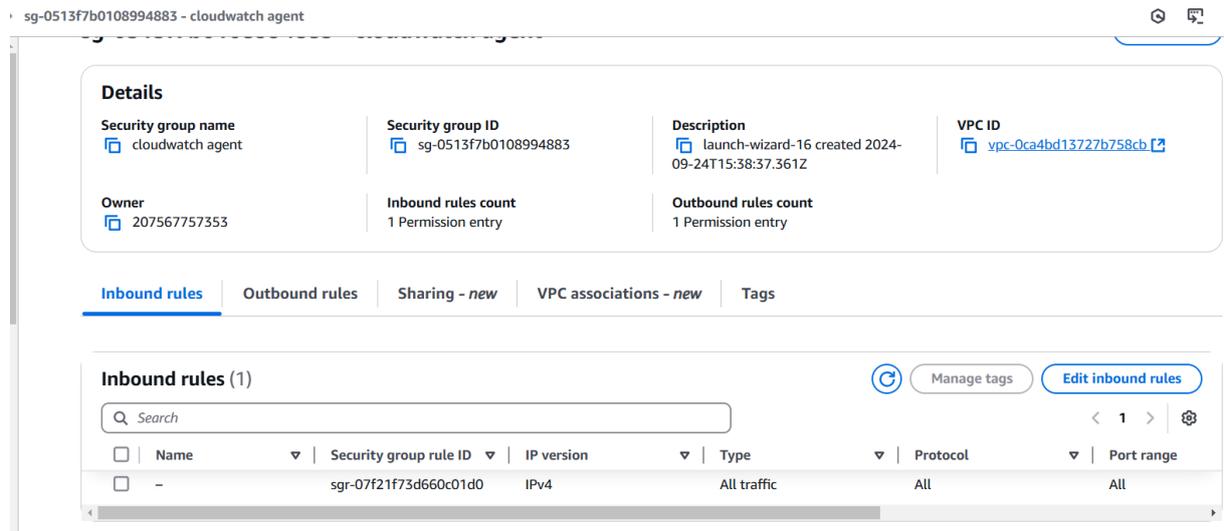
[Close](#)

[Restore from S3](#) [Create database](#)

< 1 > ⚙

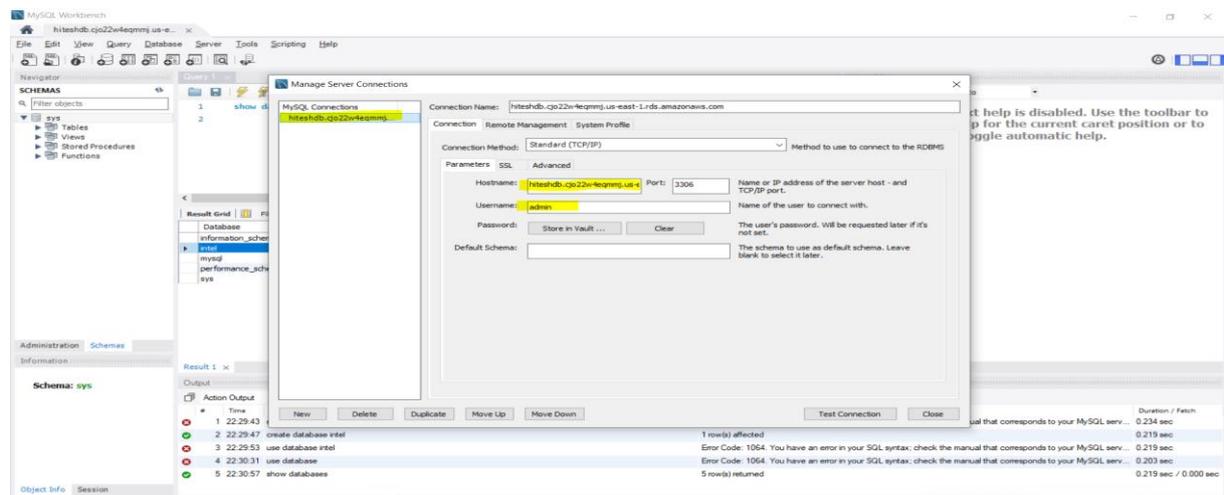
In few minutes, you will be able to see the Endpoint and Port.

Also, make sure to change some security configuration in the RDS
Go to your EC2 Instance Security Groups and select your group ID



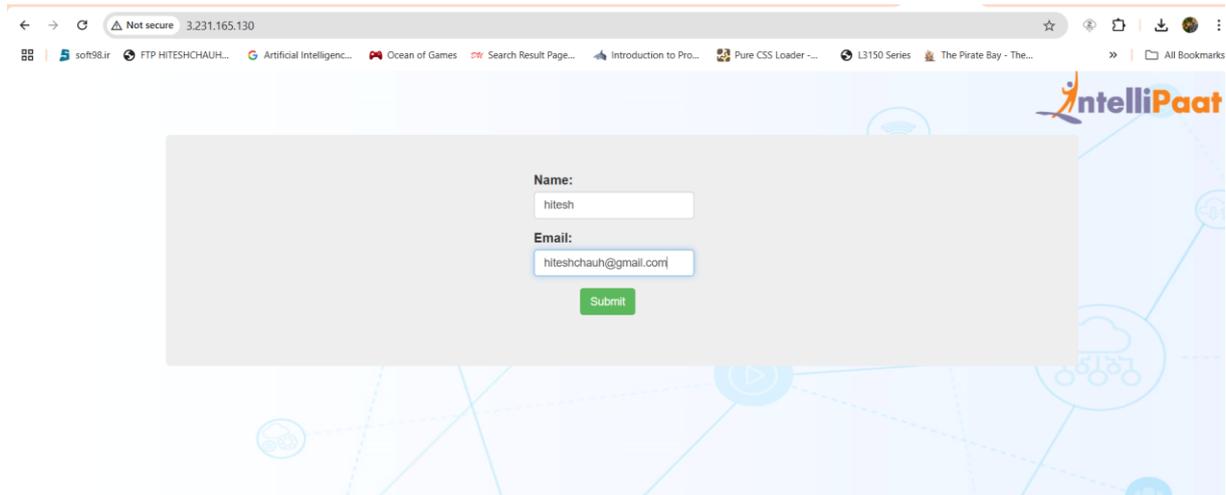
Now go back to your mobaXterm and use this command as shown below
NOTE: In place of hostname, make sure to use your Endpoint from RDS
Username which you created Here, we're using our own Endpoint and
username and password used

I used third party software is mysql workbench.



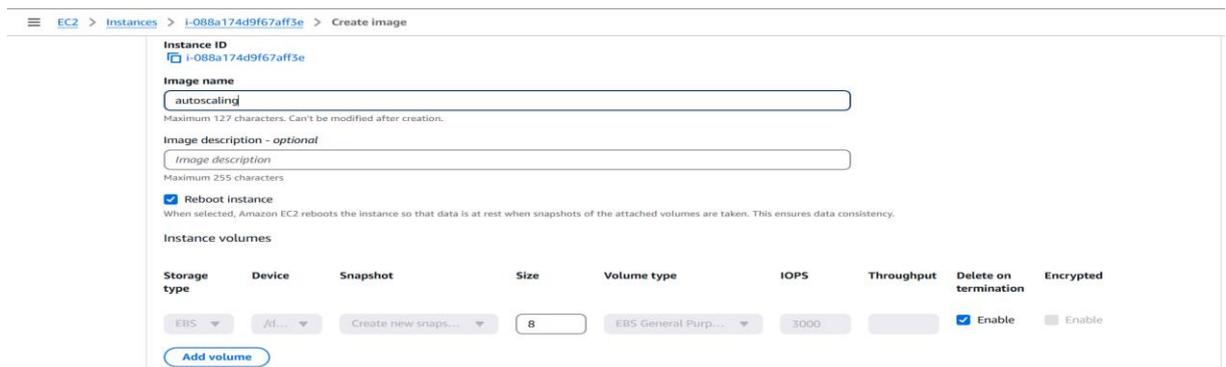
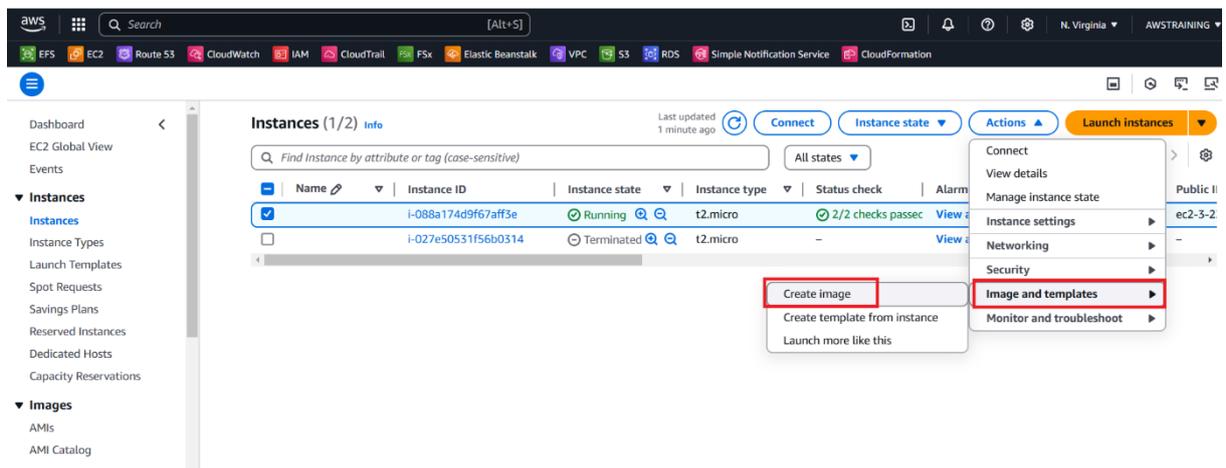
Now go to the path where website files are kept and run the index.php
file by using `sudo nano index.php`.

Now when you enter these details in this website, you will see the following result.



Auto Scaling:

Now, we'll do the autoscaling of our website by going to our EC2 Instance and then click on Actions and Create Image.



During the image creation process, Amazon EC2 creates a snapshot of each of the above volumes.

Tags - optional
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Tag image and snapshots together
Tag the image and the snapshots with the same tag.

Tag image and snapshots separately
Tag the image and the snapshots with different tags.

No tags associated with the resource.

[Add new tag](#)
You can add up to 50 more tags.

[Cancel](#) [Create image](#)

Then further, activate its autoscaling and then its application load balancer which directs the traffic to your website directly.

Snapshots (1) [Info](#) [Refresh](#) [Recycle Bin](#) [Actions](#) [Create snapshot](#)

Owned by me < 1 > [Settings](#)

Snapshot ID	Volume size	Description	Storage tier	Snapshot status	Started	Progress
snap-01452d5ba3260721d	8 GiB	Created by CreateImage(i-...	Standard	Completed	2024/12/05 23:02 GMT+5:...	Available (100%)

That's IT.