

Advance AWS

AWS Project- 2

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Teacher:

Mrs. Vinolin Jeremiah

Course:

Advance AWS Cloud Computing with DevOps
Fundamentals

Institute:

Lets Upgrade

Project 02:

Deploying nginx Web Server in Ubuntu Instance

Below are the 4 steps:

STEP A: Launch an Amazon EC2 Ubuntu Instance

STEP B: Connect EC2 Instance

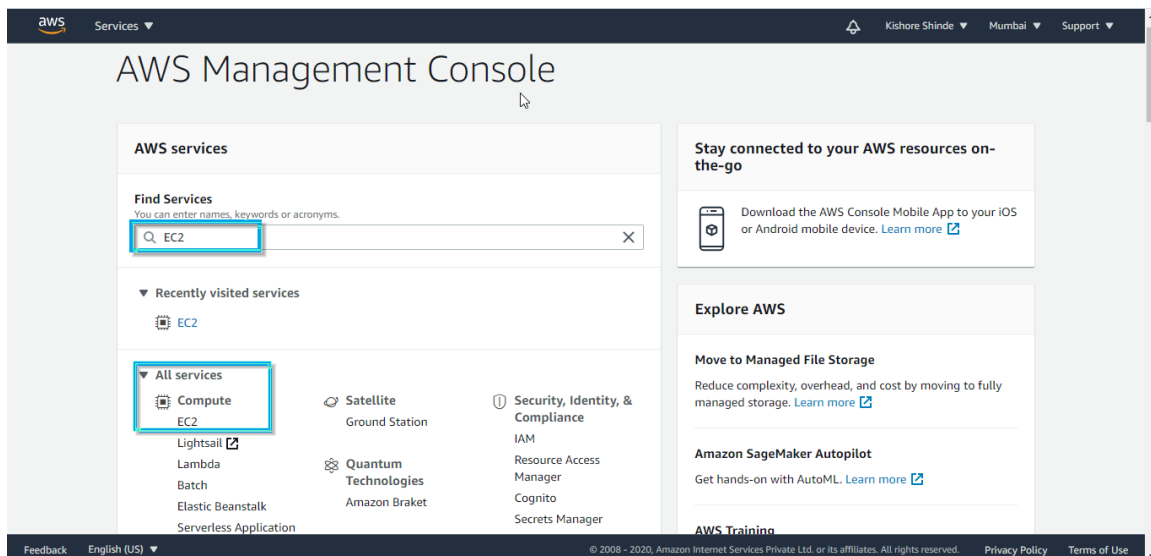
STEP C: Install nginx Web Server

STEP D: Terminate EC2 Instance

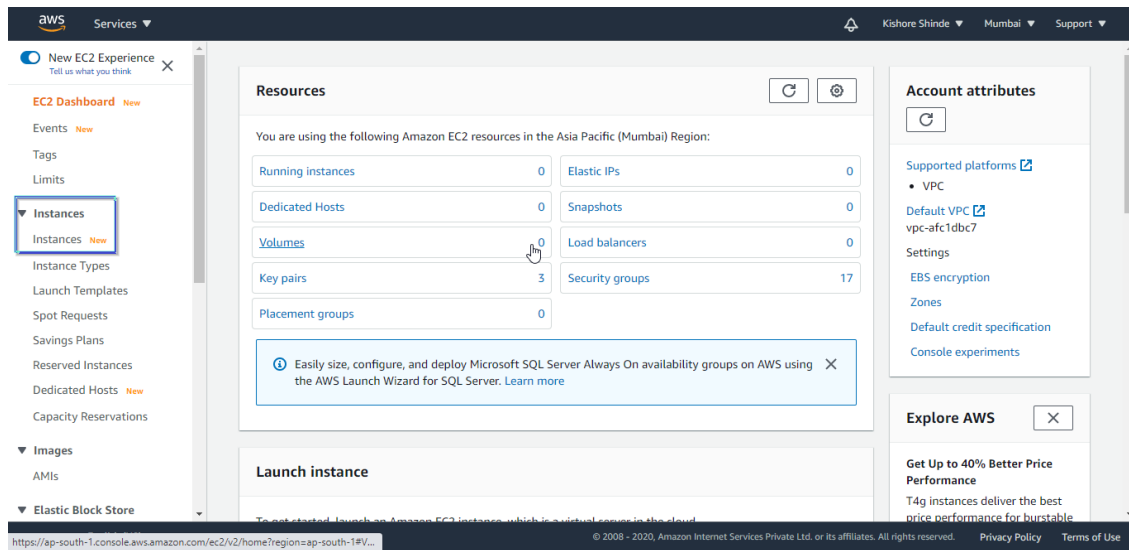
STEP A: Launch an Amazon EC2 Instance

Steps for launching a new ubuntu instance:

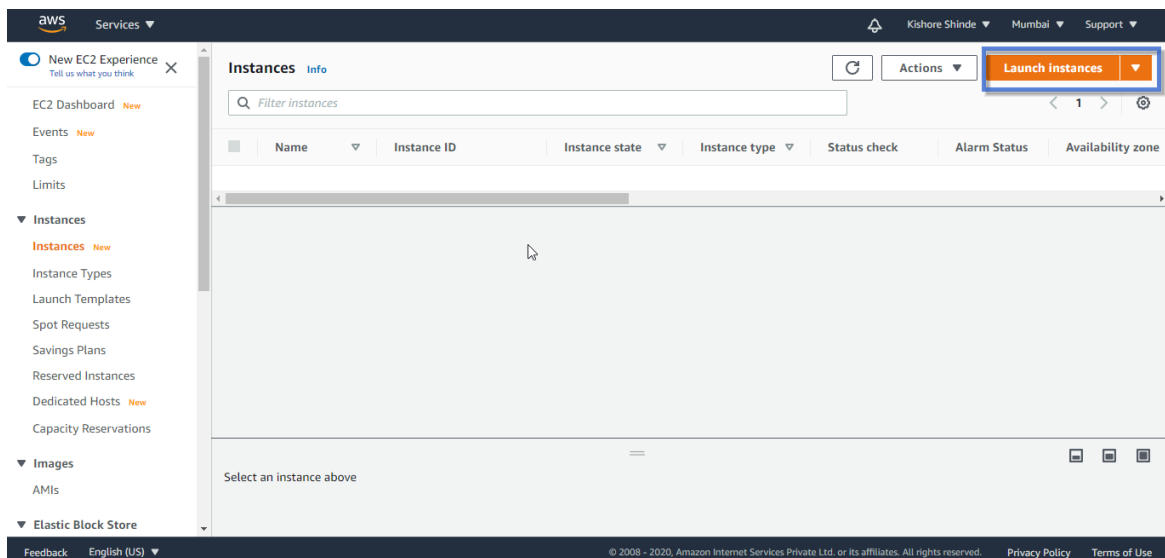
1. From the AWS Management Console, you can either find EC2 service or click on All services ->Compute->EC2



2. Once you are in EC2 console from the EC2 Dashboard on the left, select Instances

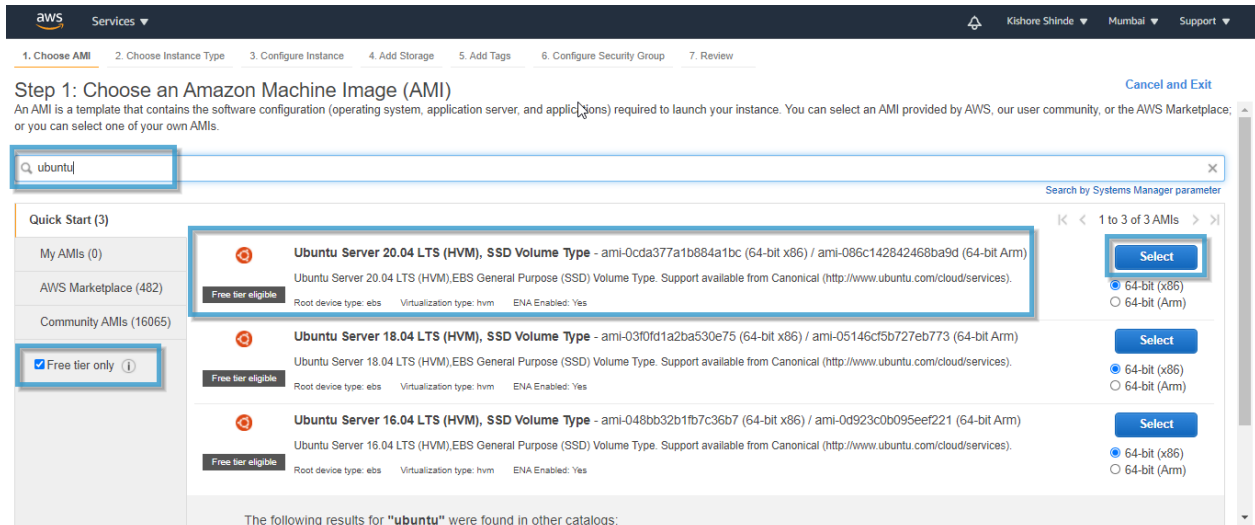


3. From the Instances Dashboard, Select Launch Instance at the right



Once you click on Launch Instance, a wizard will start which has 7 steps for creating the instance.

Step 1: Choose an Amazon Machine Image (AMI)



You can search the AMI e.g. ubuntu.... or can select the AMI from the list of the AMI's.

Note: Make sure you select the Free Tier only option so only free AMI's will be shown and you will not be charged.

Click on "Select" on the Ubuntu AMI e.g. Ubuntu Server 20.04 LTS(HVM)....

Step 2: Choose an Instance Type

Here you can select the Instance type. These are varying combinations of CPU, Memory, Storage and Networking capacity. The default instance type selected is "t2.micro" which is Free tier eligible. Let it be selected otherwise you will be charged for other instance type. You can even see the details of the selected instance type in **Currently Selected** e.g. : t2.micro (Variable ECUs,1 vCPUs,2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

aws Services

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance types Current generation Show/Hide Columns

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes

Cancel Previous Review and Launch Next: Configure Instance Details

Step 3: Configure Instance Details

Here you can configure the instance that suits your requirement. You can launch multiple instances from the same AMI you can mention it in Number of instances.

In Network you can select the VPC or create new VPC, we will continue with default VPC, select or create new Subnet, we will continue with default subnet. We can select IAM role, we will continue with "None".

aws Services

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances: 1 Launch into Auto Scaling Group

Purchasing option: ☐ Request Spot instances

Network: vpc-afc1dbc7 (default) Create new VPC

Subnet: No preference (default subnet in any Availability Zone) Create new subnet

Auto-assign Public IP: Use subnet setting (Enable)

Placement group: ☐ Add instance to placement group

Capacity Reservation: Open

Domain join directory: No directory Create new directory

IAM role: None Create new IAM role

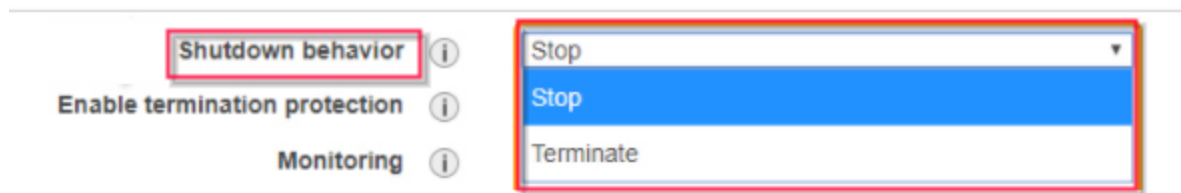
Shutdown behavior: Stop

Stop - Hibernate behavior: ☐ Enable hibernation as an additional stop behavior

Enable termination protection: ☐ Protect against accidental termination

Cancel Previous Review and Launch Next: Add Storage

In the Shutdown behavior you can select Stop or Terminate. It is an important option If you select Stop when the instance shuts down it will not be deleted but stopped.



Enable termination protection: If you check it will protect your instance from accidental termination.



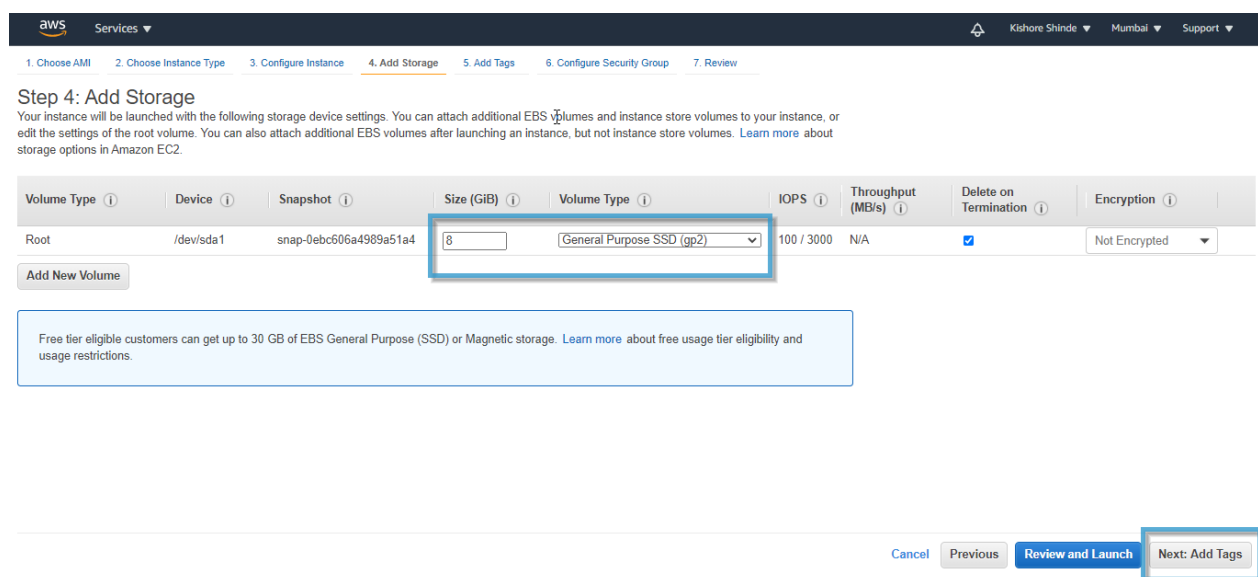
Now keep whatever is default don't change anything and click on Next: Add Storage

Step 4: Add Storage

Your Instance will be launched with the following storage device settings. You can attach additional EBS volumes. For now, keep the default Volume Type: Root and size: 8 GiB

Note: The default root partition in AWS for windows is 30 GB and for Ubuntu is 8 GB you can change it.

Let the General-Purpose SSD (gp2) selection as it is. Delete on Termination checkbox will make sure the volume gets deleted as soon as the Instance is terminated. You can even add new EBS volume.



Click on Next: Add Tags

Step 5: Add Tags

Tags enable you to categorize your AWS resources in different ways. Each tag is a simple label consisting of customer-defined key and an optional value that can make it easier to manage, search for, and filter resources. For E.g. Key can be Name and Value can be Web Server(nginx).

The screenshot shows the AWS Management Console interface for Step 5: Add Tags. The top navigation bar includes the AWS logo, 'Services', and user information (Kishore Shinde, Mumbai, Support). Below the navigation bar, a progress bar shows steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags (active), 6. Configure Security Group, and 7. Review.

The main content area is titled 'Step 5: Add Tags' and includes a description: 'A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.' Below this is a table with columns: Key (128 characters maximum), Value (256 characters maximum), Instances (1), and Volumes (1). A single tag is added with Key 'Name' and Value 'nginx'. The 'Instances' and 'Volumes' columns have checkboxes. Below the table is a button 'Add another tag' with the text '(Up to 50 tags maximum)'. At the bottom right, there are buttons: 'Cancel', 'Previous', 'Review and Launch', and 'Next: Configure Security Group'.

You can add the tag or can continue to next step “Configure Security Group”

Step 6: Configure Security Group

A security group is similar to firewall. Here you can set the rules that can control traffic for your instance. For the current instance in the Type select “All Traffic” and in Source select “Anywhere”. It will show you a warning that the source anywhere will allow all IP addresses to access your instance you must select IP Addresses only. Ignore it for now and click on “Review and Launch”.

aws Services

Kishore Shinde Mumbai Support

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☒ Create a new security group
☐ Select an existing security group

Security group name:

Description:

Type	Protocol	Port Range	Source	Description
All traffic	All	0 - 65535	Anywhere 0.0.0.0/0 ::/0	e.g. SSH for Admin Desktop

Add Rule

Warning

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.

Cancel Previous **Review and Launch**

Step 7: Review

Here you can review all the selection you have done in previous steps and if required can go back and change them. You are able to review the AMI details, Instance Type/Details, Security Groups, Storage & Tags.

aws Services

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 7: Review Instance Launch

AMI Details [Edit AMI](#)

Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-0cda377a1b884a1bc
 Ubuntu Server 20.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).
 Root Device Type: ebs Virtualization type: hvm

Instance Type [Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

Security Groups [Edit security groups](#)

Security group name: launch-wizard-18
 Description: launch-wizard-18 created 2020-10-08T12:11:24.251+05:30

Type	Protocol	Port Range	Source	Description
All traffic	All	All	0.0.0.0/0	
All traffic	All	All	::/0	

Instance Details [Edit instance details](#)

Storage [Edit storage](#)

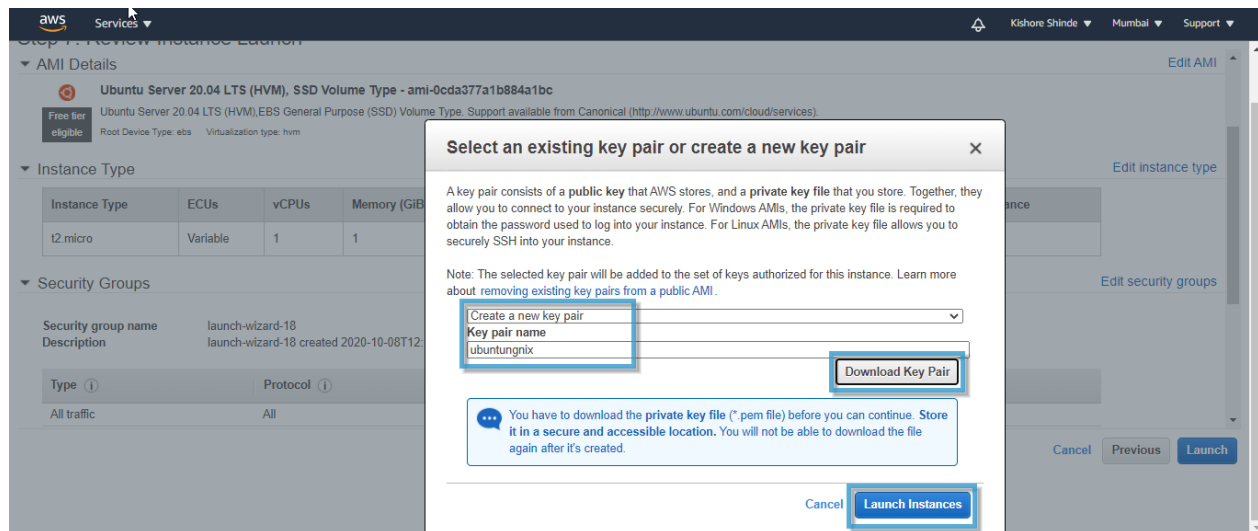
Cancel Previous **Launch**

Feedback English (US)

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Click on Launch once you have reviewed all the details.

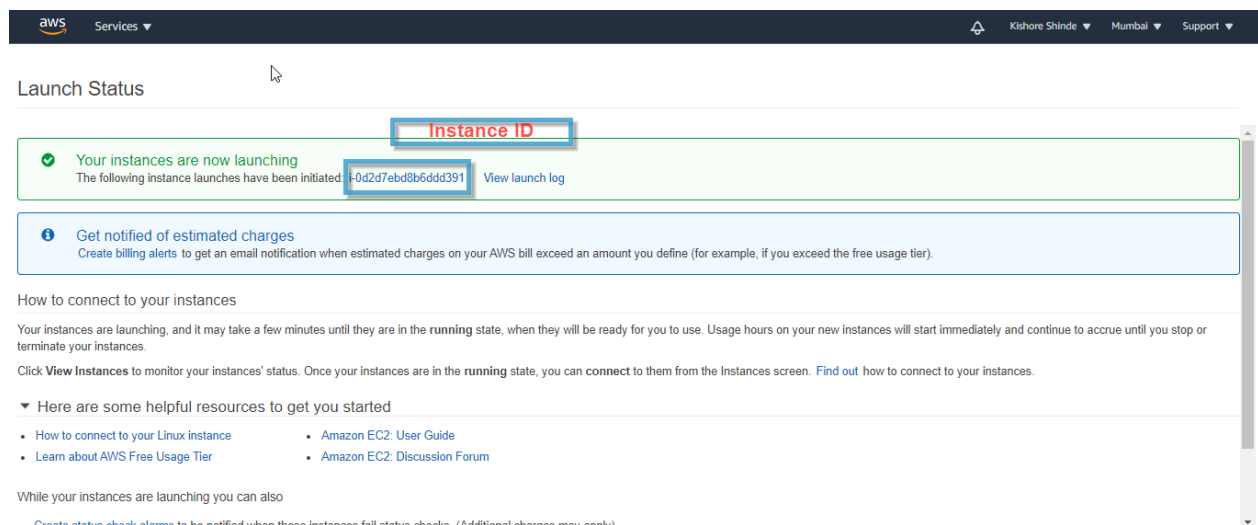
Next it will ask you to Select an existing key pair or create a new key pair.



You can select existing key pair if you have one. For now, select “Create new pair” give key pair a name and download the keypair.

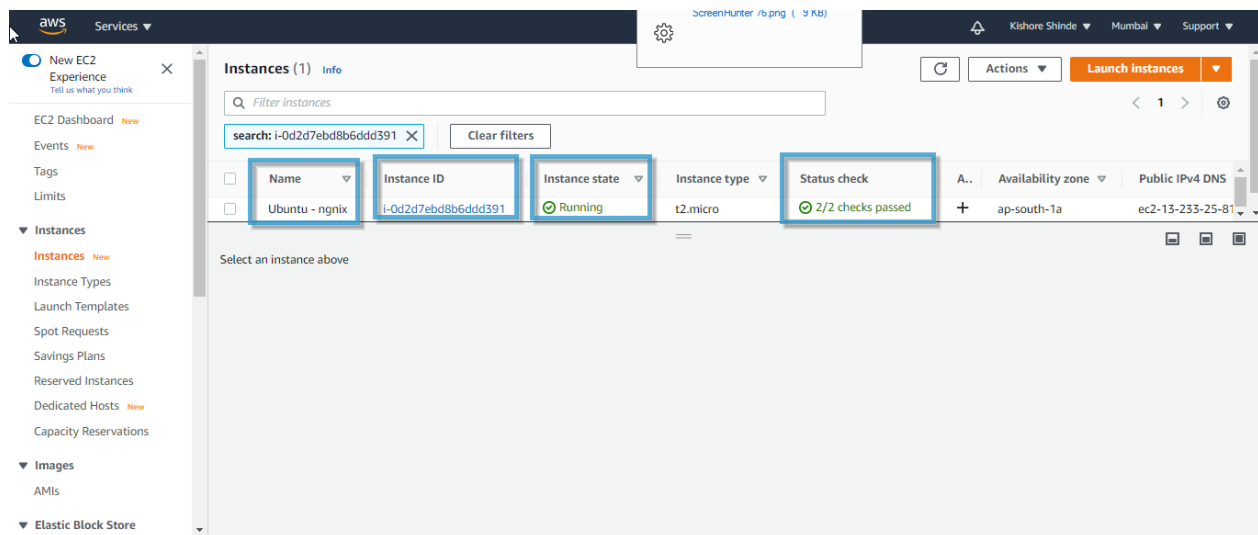
Note: Please keep it safe, it will be required to connect to the instance otherwise you can't. Click on Launch Instance.

In the next screen you will be able to see “Your instance is launching”. You will be able to see the instance id that is initiated for launch.

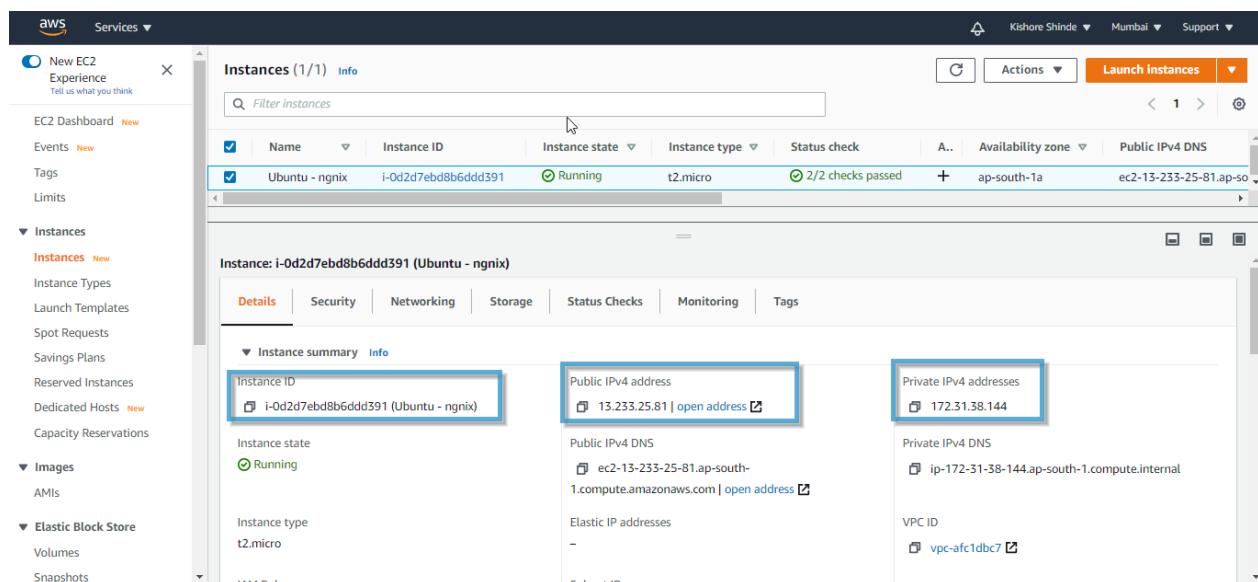


You can click on the instance id which will take you to Instances Dashboard.

Here you will see the Ubuntu instance is created which will be initially showing Instance State as “Pending”. Wait till the Status check shows 2/2 checks and Instance State becomes “Running”.



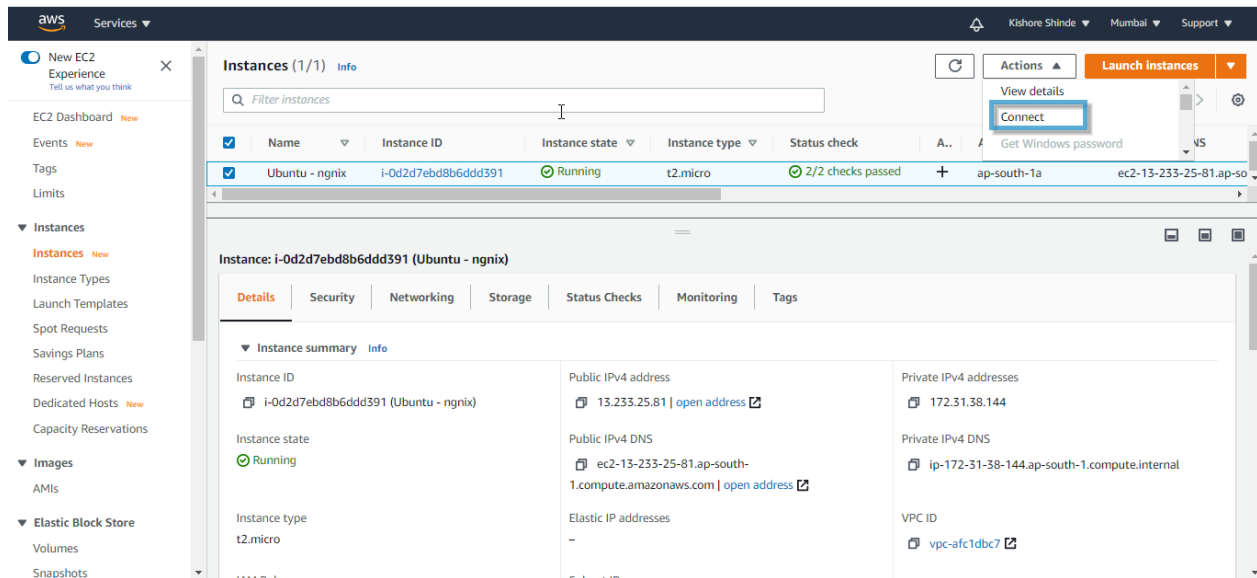
Now select the instance you will be able to see the additional details of the instance like Public IPv4 address, Private IPv4 address, Public IPv4 DNS, Private IPv4 DNS etc. You can also check the Security, Networking, Storage details etc.



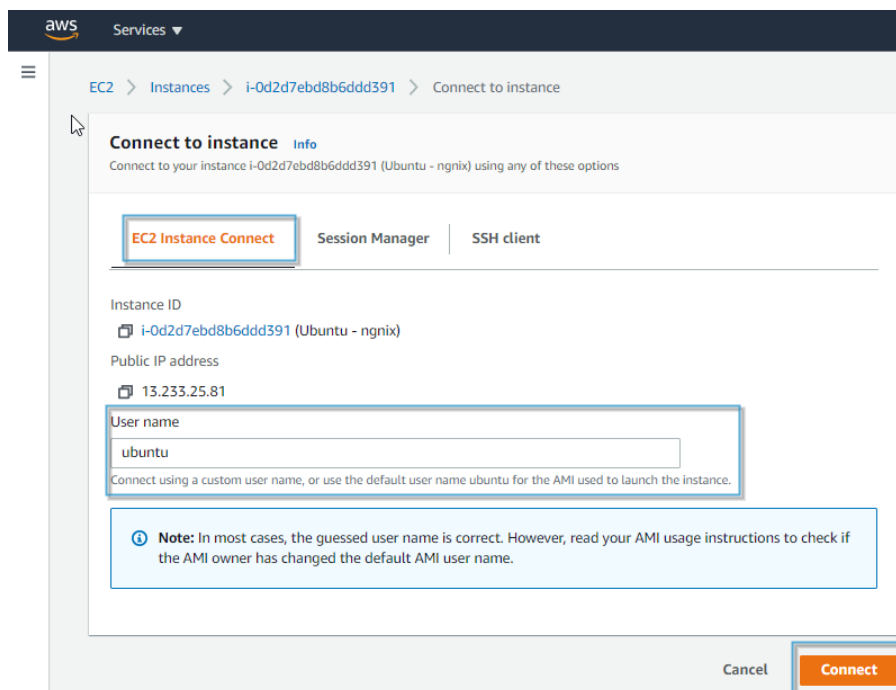
So now your instance is up and running.

Step B: Connecting to Ubuntu Instance

Following are the steps to connect to the instance. Select the instance, Click on Action menu at the top, from the list select Connect.

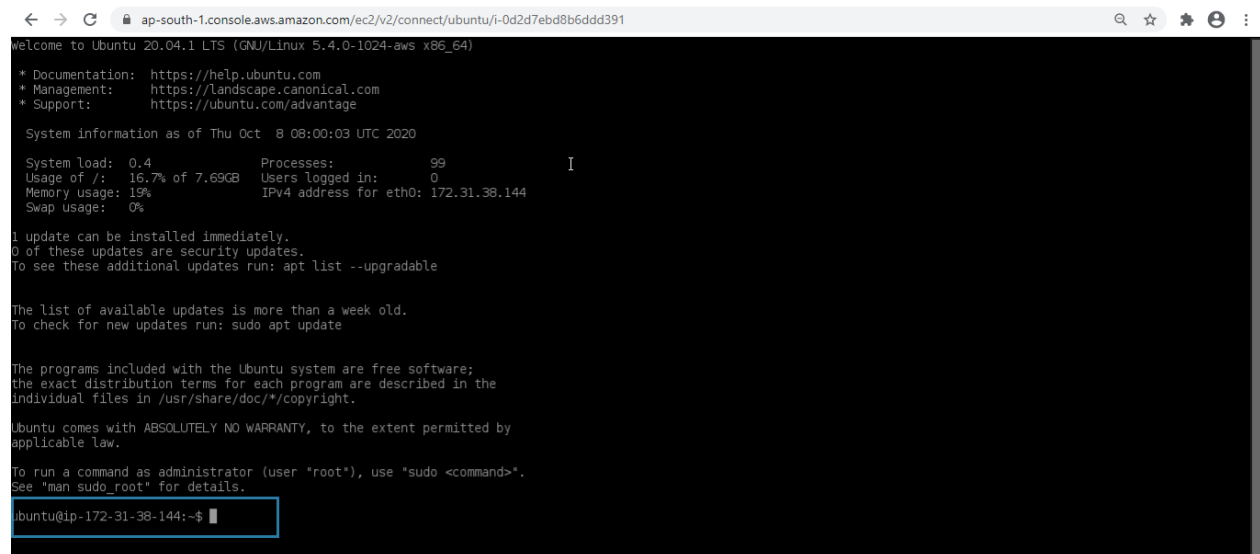


On the next screen you will see EC2 Instance Connect (default selected), Session Manager, SSH client Tabs. We will connect by EC2 Instance Connect



Let the default User Name “ubuntu” as it is and click on Connect.”

The ubuntu instance will be connected. Once the instance is started you will be able to see the \$ prompt.



```
ap-south-1.console.aws.amazon.com/ec2/v2/connect/ubuntu/i-0d2d7ebd8b6ddd391
Welcome to Ubuntu 20.04.1 LTS (GNU/Linux 5.4.0-1024-aws x86_64)
* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:       https://ubuntu.com/advantage

System information as of Thu Oct  8 08:00:03 UTC 2020

System load:  0.4               Processes:           99
Usage of /:   16.7% of 7.69GB    Users logged in:    0
Memory usage: 19%              IPv4 address for eth0: 172.31.38.144
Swap usage:   0%

1 update can be installed immediately.
0 of these updates are security updates.
To see these additional updates run: apt list --upgradable

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.

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

ubuntu@ip-172-31-38-144:~$
```

i-0d2d7ebd8b6ddd391 (Ubuntu - nginx)
Public IPs: 13.233.25.81 Private IPs: 172.31.38.144

Note: In Windows Server Instance we required to download the RDP client, select key pair (.pem) file, decrypt the password, copy it and paste in Windows Security (password for Administrator) & then connect. Here all the steps are not required you can directly connect, internally AWS will take care of all the steps.

STEP C: Installing nginx Web Server

Below are the commands you need to execute on the Ubuntu server \$ prompt for installing nginx web server.

1. `sudo apt-get -y update`

- this command will get the latest packages for the server
- `sudo` – Will give super user rights
- `y` is for Automatic Yes (so it will not prompt you for confirmation)

```
ubuntu@ip-172-31-38-144:~$ sudo apt-get -y update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease [111 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease [99.3 kB]
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 Packages [8628 kB]
Get:6 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [324 kB]
Get:7 http://security.ubuntu.com/ubuntu focal-security/main Translation-en [75.5 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/main amd64 c-n-f Metadata [5000 B]
Get:9 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [59.2 kB]
Get:10 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]
Get:11 http://security.ubuntu.com/ubuntu focal-security/restricted Translation-en [6896 B]
Get:12 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [506 kB]
Get:13 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]
Get:14 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [144 kB]
Get:15 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse Translation-en [104 kB]
Get:16 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse amd64 c-n-f Metadata [9136 B]
Get:17 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [588 kB]
Get:18 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [150 kB]
Get:19 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [10.3 kB]
Get:20 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [67.1 kB]
Get:21 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/restricted Translation-en [10.8 kB]
Get:22 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 c-n-f Metadata [352 B]
Get:23 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [666 kB]
Get:24 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [124 kB]
Get:25 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [12.0 kB]
Get:26 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [15.1 kB]
Get:27 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/multiverse Translation-en [3892 B]
Get:28 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 c-n-f Metadata [480 B]
Get:29 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-backports/main amd64 c-n-f Metadata [112 B]
Get:30 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-backports/restricted amd64 c-n-f Metadata [116 B]
Get:31 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [4912 B]
Get:32 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-backports/universe Translation-en [1448 B]
Get:33 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-backports/universe amd64 c-n-f Metadata [224 B]
Get:34 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-backports/multiverse amd64 c-n-f Metadata [116 B]
Get:35 http://security.ubuntu.com/ubuntu focal-security/universe Translation-en [62.8 kB]
```

i-0d2d7ebd8b6ddd391 (Ubuntu - nginx)

Public IPs: 13.233.25.81 Private IPs: 172.31.38.144

Once the package is installed, execute the command below for installing nginx.

2. `sudo apt-get -y install nginx`

- this command will install nginx server

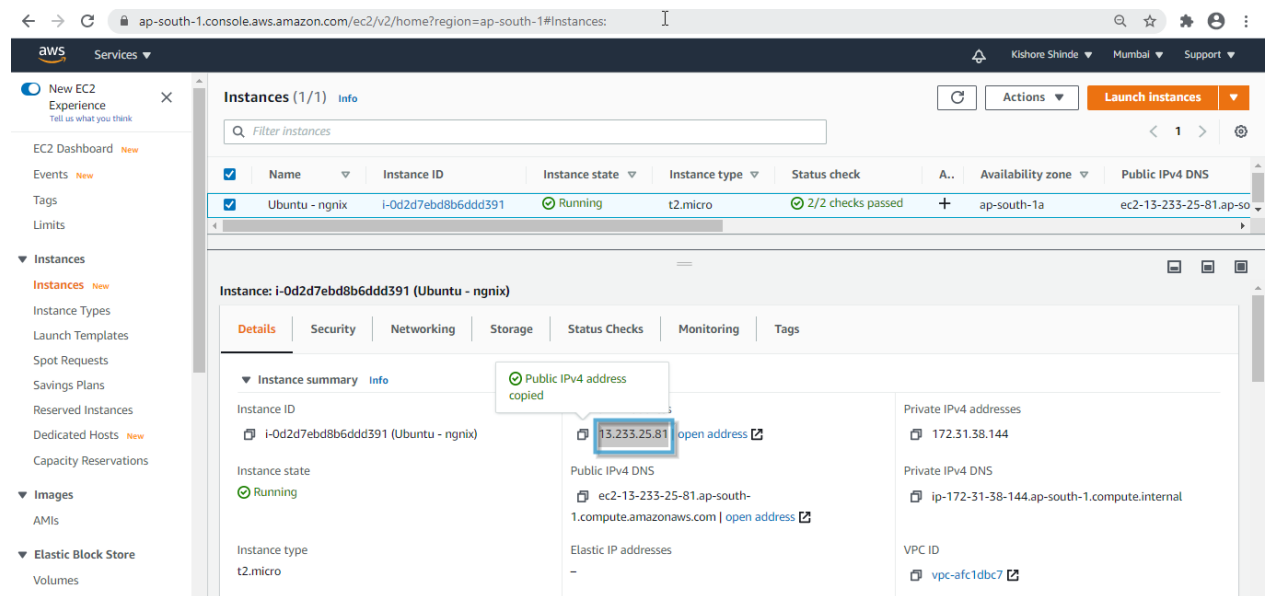
```
ubuntu@ip-172-31-38-144:~$ sudo apt-get -y install nginx
Building dependency tree
Reading state information... Done
E: Unable to locate package nginx
ubuntu@ip-172-31-38-144:~$ sudo apt-get -y install nginx
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  fontconfig-config fonts-dejavu-core libfontconfig1 libgd3 libjpeg0 libjpeg-turbo8 libjpeg8 libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter
  libnginx-mod-mail libnginx-mod-stream librtfss libwebp6 libxpm4 nginx-common nginx-core
Suggested packages:
  libgd-tools fcgiwrap nginx-doc ssl-cert
The following NEW packages will be installed:
  fontconfig-config fontconfig libfontconfig1 libgd3 libjpeg0 libjpeg-turbo8 libjpeg8 libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter
  libnginx-mod-mail libnginx-mod-stream librtfss libwebp6 libxpm4 nginx-common nginx-core
0 upgraded, 17 newly installed, 0 to remove and 64 not upgraded.
Need to get 2431 kB of archives.
After this operation, 7891 kB of additional disk space will be used.
Get:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 fonts-dejavu-core all 2.37-1 [1041 kB]
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 fontconfig-config all 2.13.1-2ubuntu3 [28.8 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 libfontconfig1 amd64 2.13.1-2ubuntu3 [114 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 libjpeg-turbo8 amd64 2.0.3-0ubuntu1.20.04.1 [117 kB]
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 libjpeg8 amd64 8c-2ubuntu8 [2194 B]
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 libjpeg0 amd64 2.1-3-1build1 [26.7 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 libwebp6 amd64 0.6.1-2 [105 kB]
Get:8 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 librtfss amd64 4.1.0-gt191117-2build1 [161 kB]
Get:9 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 libxpm4 amd64 1:3.5.12-1 [34.0 kB]
Get:10 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 libgd3 amd64 2.2.35-5ubuntu2 [118 kB]
Get:11 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 nginx-common all 1.18.0-0ubuntu1 [37.3 kB]
Get:12 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod-http-image-filter amd64 1.18.0-0ubuntu1 [14.3 kB]
Get:13 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod-http-xslt-filter amd64 1.18.0-0ubuntu1 [12.6 kB]
Get:14 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod-mail amd64 1.18.0-0ubuntu1 [42.3 kB]
Get:15 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod-stream amd64 1.18.0-0ubuntu1 [66.9 kB]
Get:16 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 nginx-core amd64 1.18.0-0ubuntu1 [425 kB]
Get:17 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 nginx all 1.18.0-0ubuntu1 [3624 B]
Fetched 2431 kB in 10s (244 kB/s)
```

i-0d2d7ebd8b6ddd391 (Ubuntu - nginx)

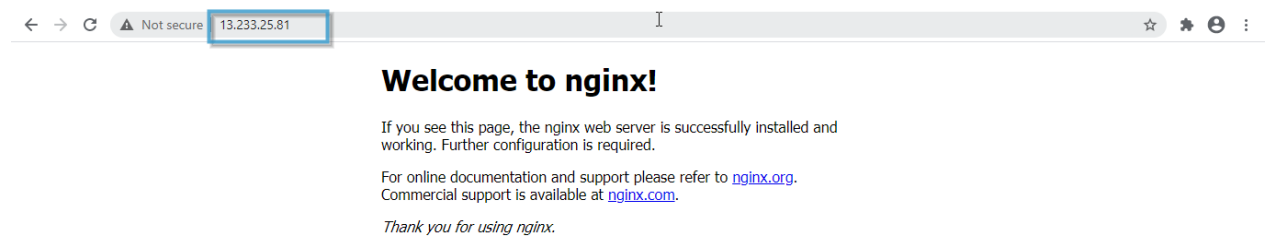
Public IPs: 13.233.25.81 Private IPs: 172.31.38.144

So now nginx is installed. Disconnect the server.

Now to check the nginx installation. Copy the public address from the Instance details & paste it in your Internet browser (e.g. Chrome/Internet Explorer/Firefox) or click on open. In our current scenario our ubuntu server public IP is: 13.233.25.81

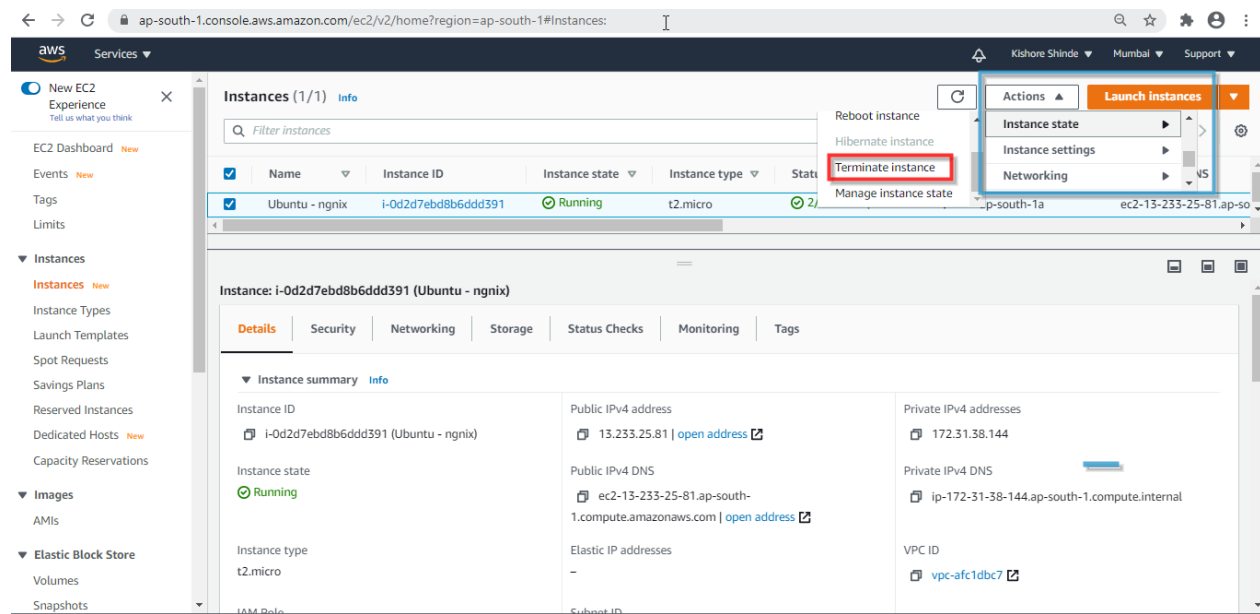


You should be able to see the nginx web server installed on ubuntu.

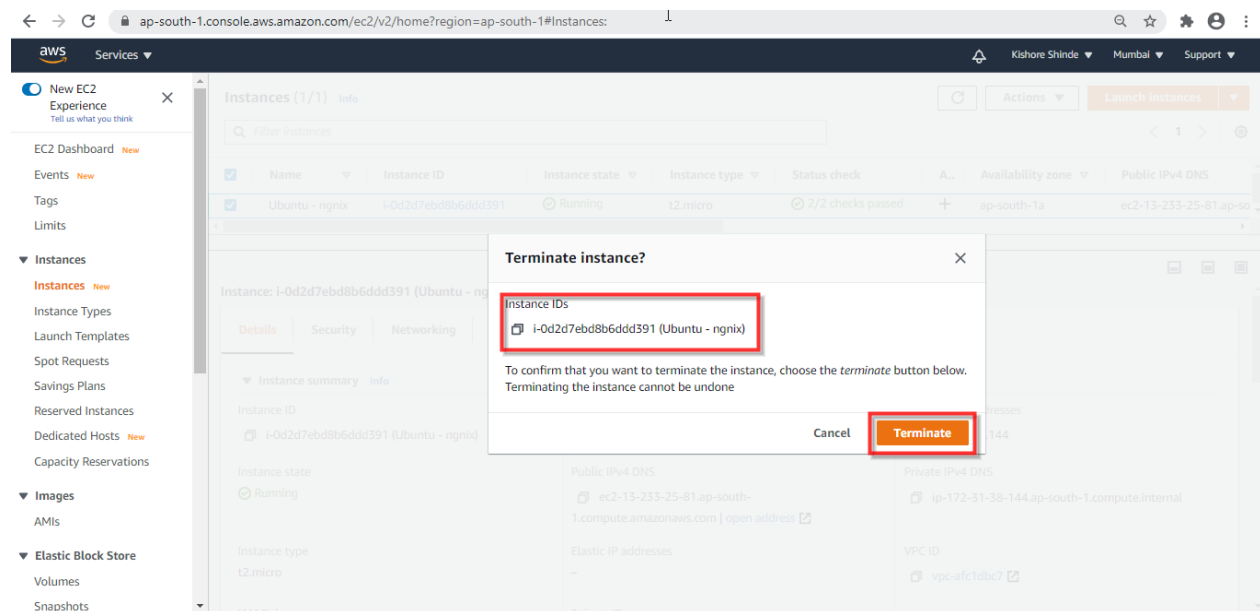


STEP D: Terminating Instance

Click on Actions->Select Instance State->Click on Terminate instance.



It will ask you for Termination permission click on Terminate.



The instance will be terminated and, in the instance, details you will see the public & private IP are released, which will go back to shared pool and the instance status will show terminated.

← → ↻ ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#Instances: I

aws Services Kishore Shinde Mumbai Support

New EC2 Experience Tell us what you think

EC2 Dashboard New

Events New

Tags

Limits

▼ Instances

Instances New

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts New

Capacity Reservations

▼ Images

AMIs

▼ Elastic Block Store

Volumes

Snapshots

Successfully terminated i-Od2d7ebd8b6ddd391

Instances (1/1) Info

Filter instances

<input checked="" type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	A..	Availability zone	Public IPv4 DNS
<input checked="" type="checkbox"/>	Ubuntu - nginx	i-Od2d7ebd8b6ddd391	Terminated	t2.micro	-	+	ap-south-1a	-

Instance: i-Od2d7ebd8b6ddd391 (Ubuntu - nginx)

Details Security Networking Storage Status Checks Monitoring Tags

▼ Instance summary Info

Instance ID	Public IPv4 address	Private IPv4 addresses
i-Od2d7ebd8b6ddd391 (Ubuntu - nginx)	-	-
Instance state	Public IPv4 DNS	Private IPv4 DNS
Terminated	-	-
Instance type	Elastic IP addresses	VPC ID
t2.micro	-	-
IAM Role	Subnet ID	

Project 2 is completed.