

What IS EC2

- **EC2** stands for **Amazon Elastic Compute Cloud**
- Amazon EC2 is most well-known services, offers businesses the ability to run applications on the public cloud
- EC2 provides resizable computing capacity in the cloud so developers can enjoy great scalability for building applications
- Instead of purchasing your own hardware and connecting it to a network, Amazon gives you nearly unlimited virtual machines to run your applications while they take care of the hardware.
- AWS supports multiple operating systems from Windows to many flavors of Linux etc. As a customer, you are also able to bring your own custom OS and run it on their platform.

IN OTHER WORDS, A custom rubber band that can stretch for building applications.

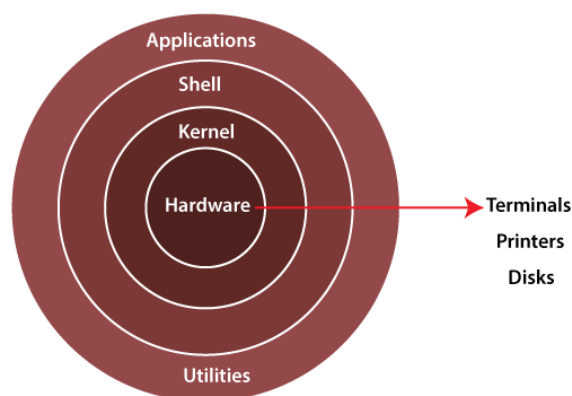
What is Linux?

- Linux is an open-source operating system like other operating systems such as Microsoft Windows, Apple Mac OS, iOS, Google android, etc.
- An operating system is a software that enables the communication between computer hardware and software.
- It conveys input to get processed by the processor and brings output to the hardware to display it. This is the basic function of an operating system.
- Linux is around us since the mid-90s. It can be used from wristwatches to supercomputers. It is everywhere in our phones, laptops, PCs, cars and even in refrigerators. It is very much famous among developers and normal computer users.

Evolution of Linux OS

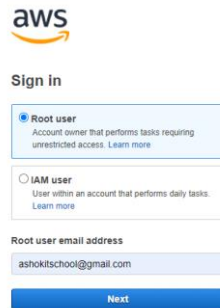
- The Linux OS was developed by Linus Torvalds in 1991, which sprouted as an idea to improve the UNIX OS. He suggested improvements but was rejected by UNIX designers. Therefore, he thought of launching an OS, designed in a way that could be modified by its users.

Linux Architecture

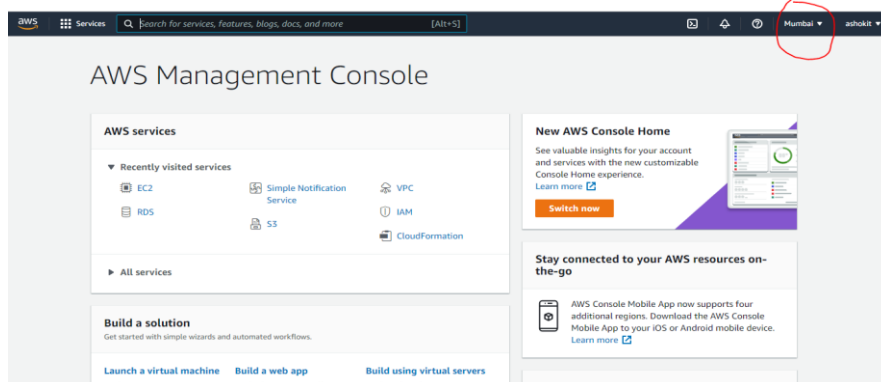


Launching LINUX VM Using AWS EC2 Service

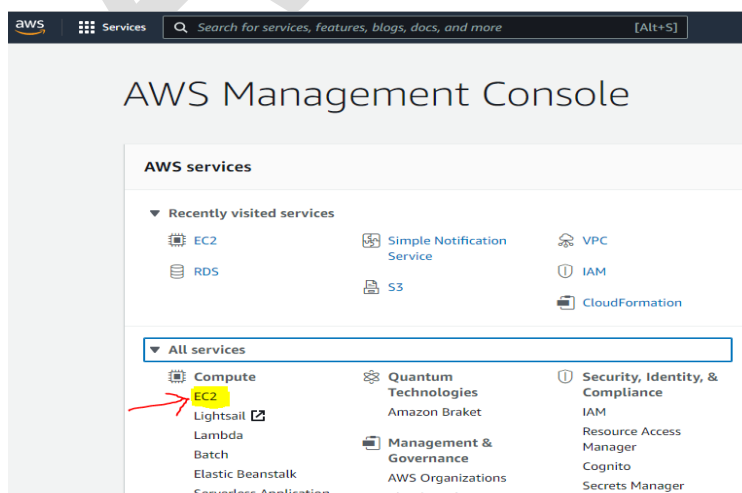
- 1) Create Account in AWS (URL: <https://portal.aws.amazon.com/billing/signup#/start>)
- 2) Login into AWS Account using your credentials



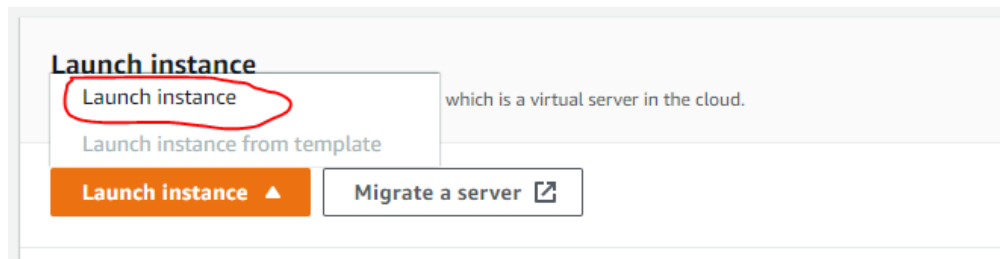
- 3) Choose region which is near to you (For Me Asia Pacific - Mumbai)



- 4) Go to services and Select EC2 and Click on Launch Instance

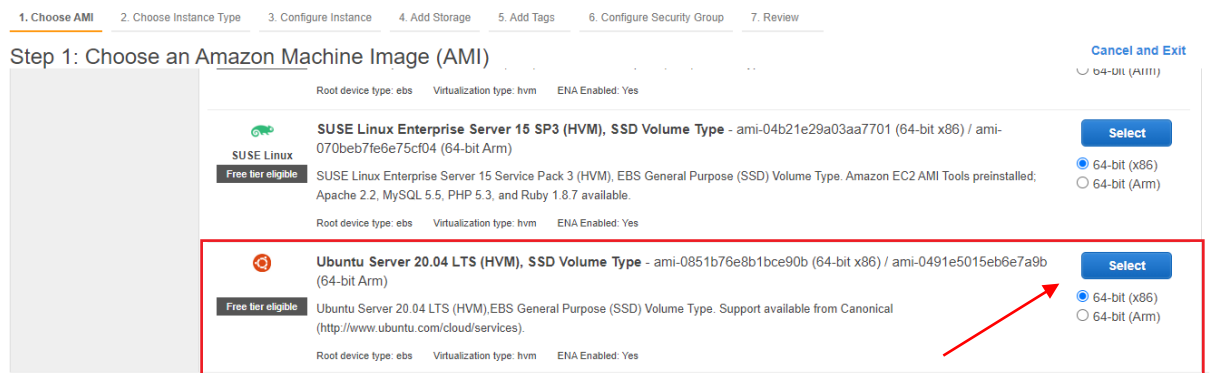


5) Click on Launch Instance

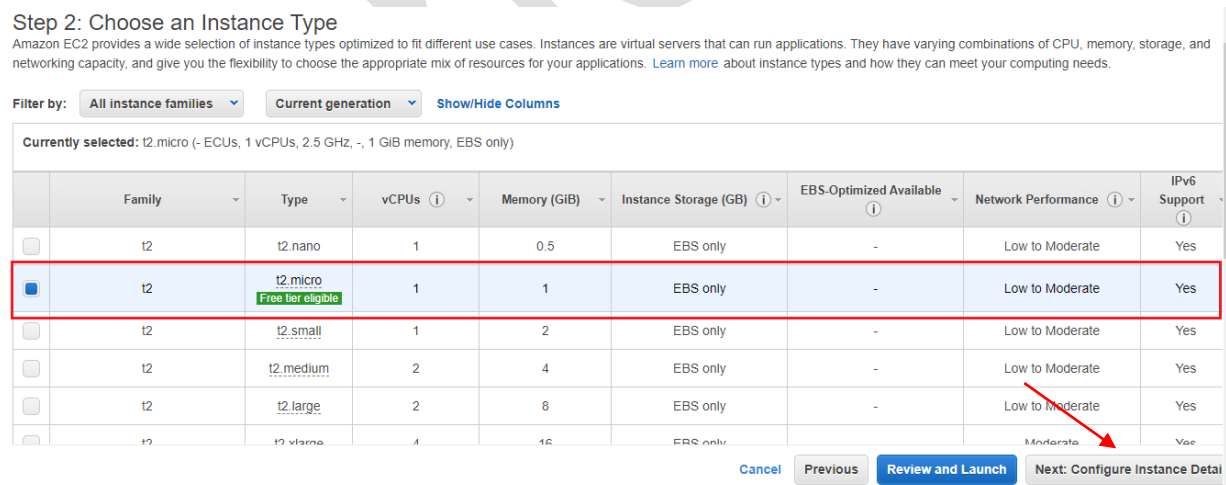


6) Choose an Amazon Machine Image (AMI) (Note: select free tier eligible)

Ex: Select Ubuntu Server



7) Select Instance Type (t2.micro and click on Next)



8) Configure Instance Details and Click on Next (Default value 1 instance)

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-0ba4de135353a387d (default)  Create new VPC


Subnet ⓘ

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

Auto-assign Public IP ⓘ

Use subnet setting (Enable) 

Hostname type ⓘ

Use subnet setting (IP name) 

DNS Hostname ⓘ

☐ Enable IP name IPv4 (A record) DNS requests
☒ Enable resource-based IPv4 (A record) DNS requests
☐ Enable resource-based IPv6 (AAAA record) DNS requests

Placement group ⓘ

☐ Add instance to placement group

Cancel

Previous

Review and Launch

Next: Add Storage

9) Add Storage and click on Next (Default 8)

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

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Volume Type ⓘ	Device ⓘ	Snapshot ⓘ	Size (GiB) ⓘ	Volume Type ⓘ	IOPS ⓘ	Throughput (MB/s) ⓘ	Delete on Termination ⓘ	Encryption ⓘ
Root	/dev/sda1	snap-0ed7eb835e8501dfa	8	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypt

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

Shared file systems ⓘ

Cancel

Previous

Review and Launch

Next: Add Tags

10) Add Tag and click on Next

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

Step 5: Add Tags

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.

Key (128 characters maximum)	Value (256 characters maximum)	Instances	Volumes	Network Interfaces
Name	MyFirstLinuxVM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

[Add another tag](#) (Up to 50 tags maximum)

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Configure Security Group](#)

11) Configure Security Group and Click on 'Review and Launch'

(For Linux We are opening SSH port)

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
SSH	TCP	22	Custom 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](#)

12) Review Instance Launch and click on Launch

Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.



Improve your instances' security. Your security group, launch-wizard-4, is open to the world.

Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only.

You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. [Edit security groups](#)

AMI Details

[Edit AMI](#)

Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-0851b76e8b1bce90b
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	-	1	1	EBS only	-	Low to Moderate

Security Groups

[Edit security groups](#)

[Cancel](#) [Previous](#) [Launch](#)

13) Select New Key Pair --> Choose Name --> Download Key Pair**(Store that key-pair file because we need that file to connect to VM)**

Select an existing key pair or create a new key pair ×

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance. Amazon EC2 supports ED25519 and RSA key pair types.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Create a new key pair

Key pair type
☒ RSA ☐ ED25519

Key pair name
MyLinuxVMKeyPair

Download Key Pair


... You have to download the **private key file** (*.pem file) before you can continue. **Store it in a secure and accessible location.** You will not be able to download the file again after it's created.


Cancel

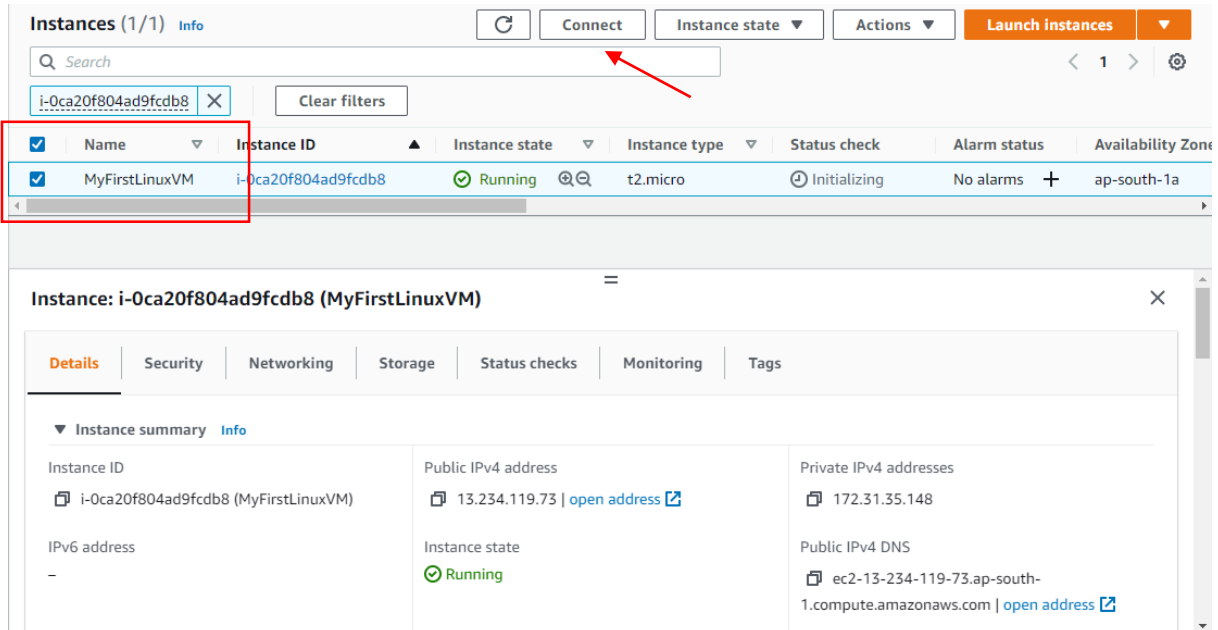
Launch Instances

14) Once Instance launched you can see below message

Launch Status

 **Your instances are now launching**
The following instance launches have been initiated: i-0ca20f804ad9fcd88 [View launch log](#)

 **Get notified of estimated charges**
[Create billing alerts](#) to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

15) Go to EC2 Dashboard and see Instance Status -> Select Instance Name and Click on 'Connect'

The screenshot shows the AWS Management Console 'Instances' page. At the top, there are buttons for 'Connect', 'Instance state', 'Actions', and 'Launch instances'. A red arrow points to the 'Connect' button. Below the buttons is a table of instances. The first instance, 'MyFirstLinuxVM' with ID 'i-0ca20f804ad9fdb8', is selected. Below the table, the details for this instance are shown, including its state as 'Running'.

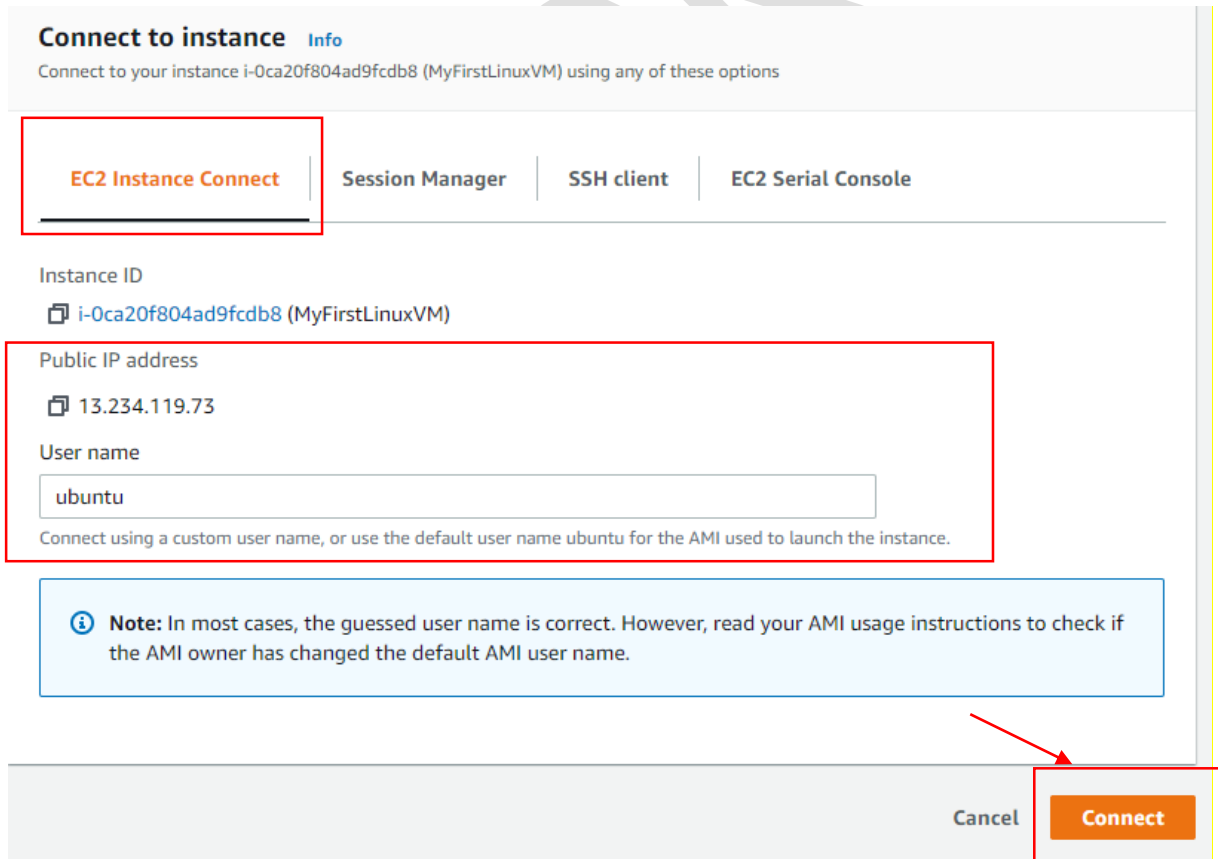
Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
MyFirstLinuxVM	i-0ca20f804ad9fdb8	Running	t2.micro	Initializing	No alarms	ap-south-1a

Instance: i-0ca20f804ad9fdb8 (MyFirstLinuxVM)

Details | Security | Networking | Storage | Status checks | Monitoring | Tags

Instance summary Info

Instance ID i-0ca20f804ad9fdb8 (MyFirstLinuxVM)	Public IPv4 address 13.234.119.73 open address	Private IPv4 addresses 172.31.35.148
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-13-234-119-73.ap-south-1.compute.amazonaws.com open address

16) Connect to EC2 instance by clicking on Connect button displaying in below window

The screenshot shows the 'Connect to instance' dialog box. It has tabs for 'EC2 Instance Connect', 'Session Manager', 'SSH client', and 'EC2 Serial Console'. The 'EC2 Instance Connect' tab is selected. Below the tabs, the instance ID 'i-0ca20f804ad9fdb8 (MyFirstLinuxVM)' is shown. The 'Public IP address' is '13.234.119.73'. The 'User name' is 'ubuntu'. A note at the bottom states: 'Note: In most cases, the guessed user name is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.' At the bottom right, there are 'Cancel' and 'Connect' buttons. A red arrow points to the 'Connect' button.

Connect to instance Info

Connect to your instance i-0ca20f804ad9fdb8 (MyFirstLinuxVM) using any of these options

EC2 Instance Connect | Session Manager | SSH client | EC2 Serial Console

Instance ID
i-0ca20f804ad9fdb8 (MyFirstLinuxVM)

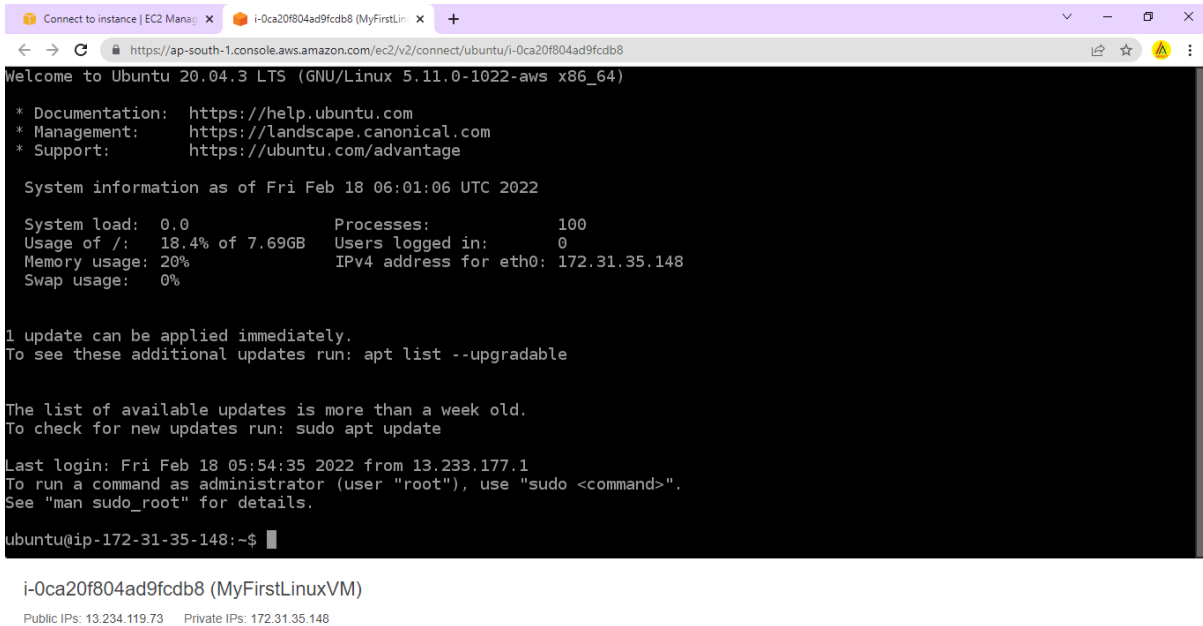
Public IP address
13.234.119.73

User name
ubuntu

Connect using a custom user name, or use the default user name ubuntu for the AMI used to launch the instance.

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

Cancel | Connect

17) Once you connected to VM, you can see below terminal

The screenshot shows the AWS Management Console interface. The top navigation bar includes 'Connect to instance | EC2 Manag...' and 'i-0ca20f804ad9fdb8 (MyFirstLinuxVM)'. The browser address bar shows the URL: <https://ap-south-1.console.aws.amazon.com/ec2/v2/connect/ubuntu/i-0ca20f804ad9fdb8>. The terminal window displays the following output:

```
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.11.0-1022-aws x86_64)

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

System information as of Fri Feb 18 06:01:06 UTC 2022

System load:  0.0          Processes:            100
Usage of /:   18.4% of 7.69GB Users logged in:      0
Memory usage: 20%          IPv4 address for eth0: 172.31.35.148
Swap usage:   0%

1 update can be applied immediately.
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

Last login: Fri Feb 18 05:54:35 2022 from 13.233.177.1
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

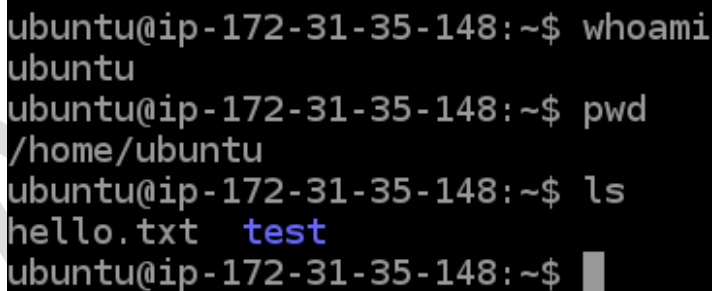
ubuntu@ip-172-31-35-148:~$
```

Below the terminal window, the instance details are shown:

```
i-0ca20f804ad9fdb8 (MyFirstLinuxVM)
Public IPs: 13.234.119.73  Private IPs: 172.31.35.148
```

18) You can execute below linux commands in terminal

- **whoami**
- **pwd**
- **ls**

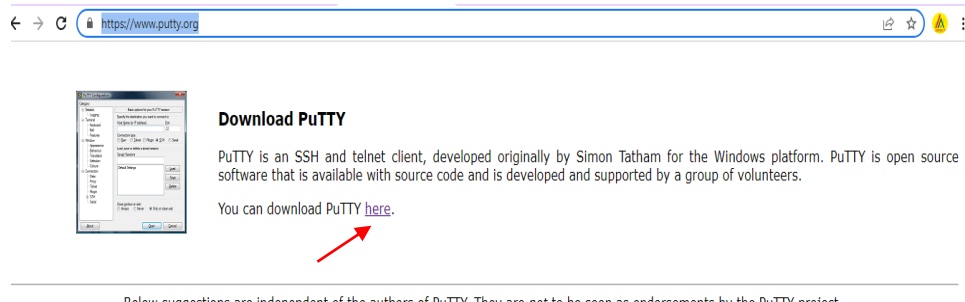


```
ubuntu@ip-172-31-35-148:~$ whoami
ubuntu
ubuntu@ip-172-31-35-148:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-35-148:~$ ls
hello.txt  test
ubuntu@ip-172-31-35-148:~$
```

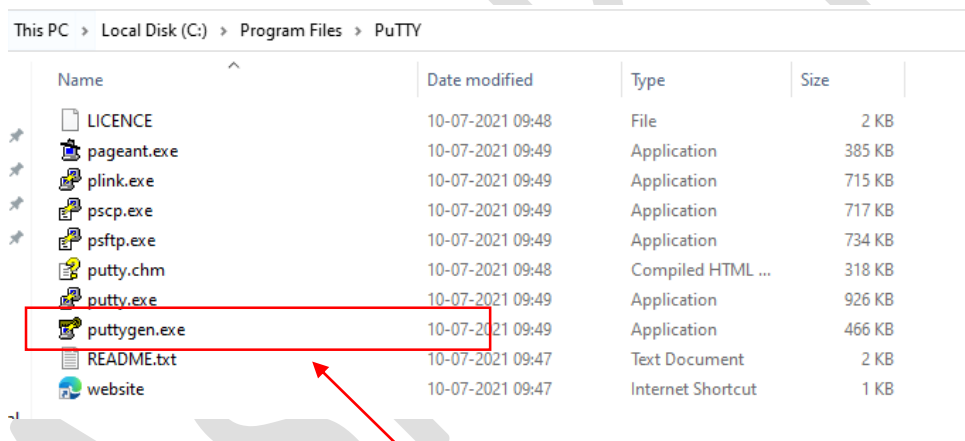
Congratulations, you launched Linux VM using AWS – EC2

Connecting to Linux VM using Putty

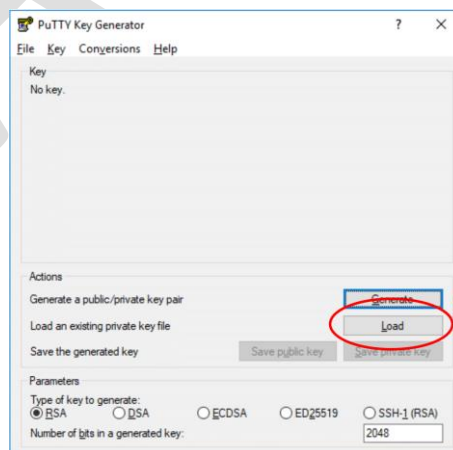
1) Download Putty software (<https://www.putty.org/>) & install it

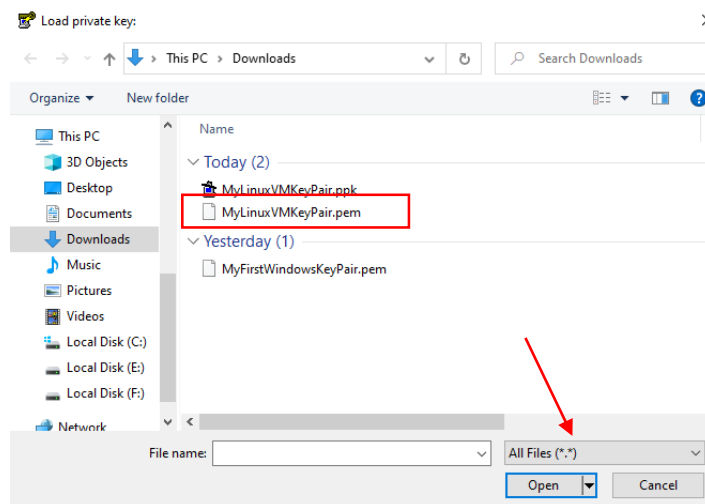


2) Open the folder that PuTTY was installed to (default path is C: > Program Files > PuTTY) and double click on "puttygen.exe"

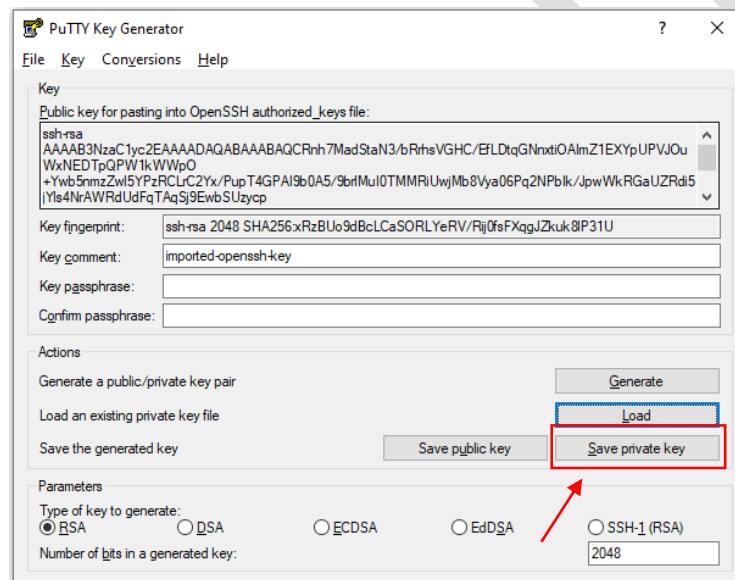


3) Click on Load button and select .pem file which we have downloaded from EC2

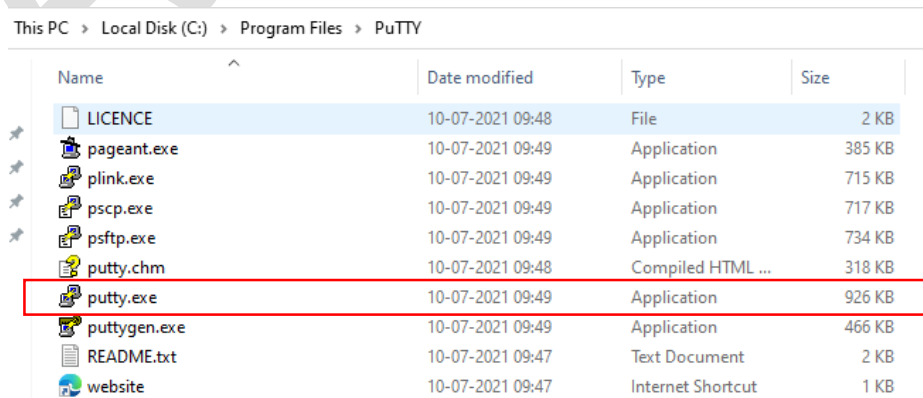




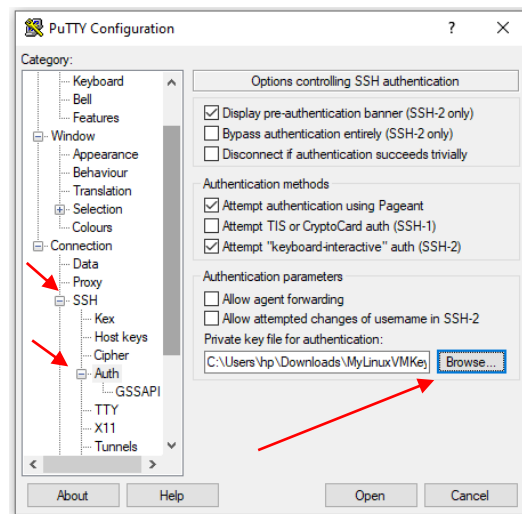
Once PEM file loaded, click on 'Save private key' button (it will give ppk file)



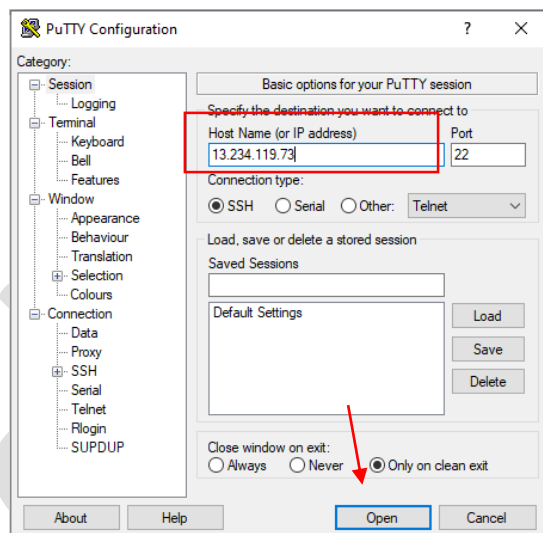
4) Go to putty installed folder and double click on putty.exe file



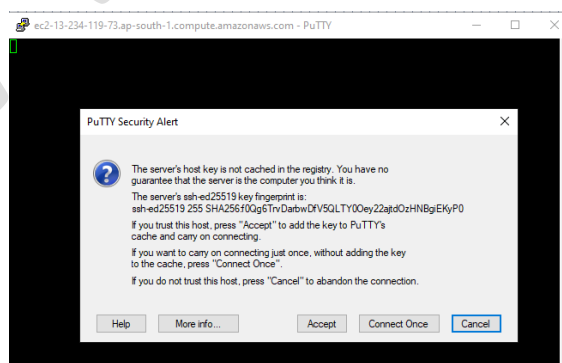
5) In Putty window, Go to SSH -> Auth -> Click Browse -> Select PPK file which we have saved



6) Enter EC2 Linux VM Public IP in below window and click on Open

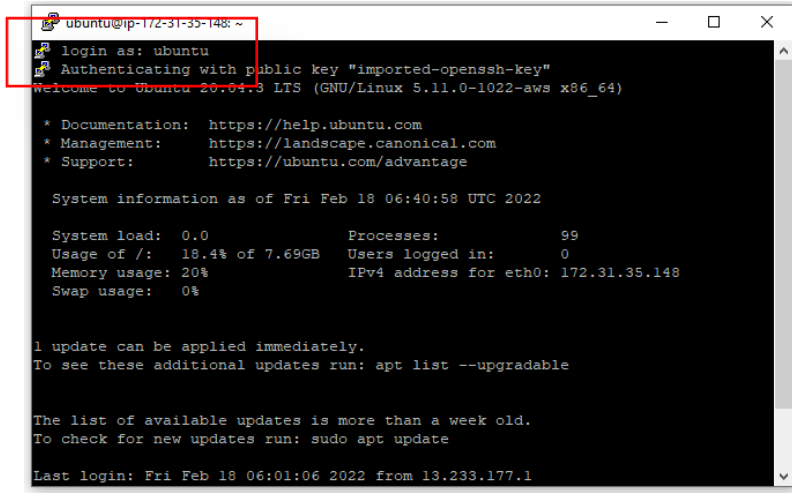


Click on 'Accept' in below window



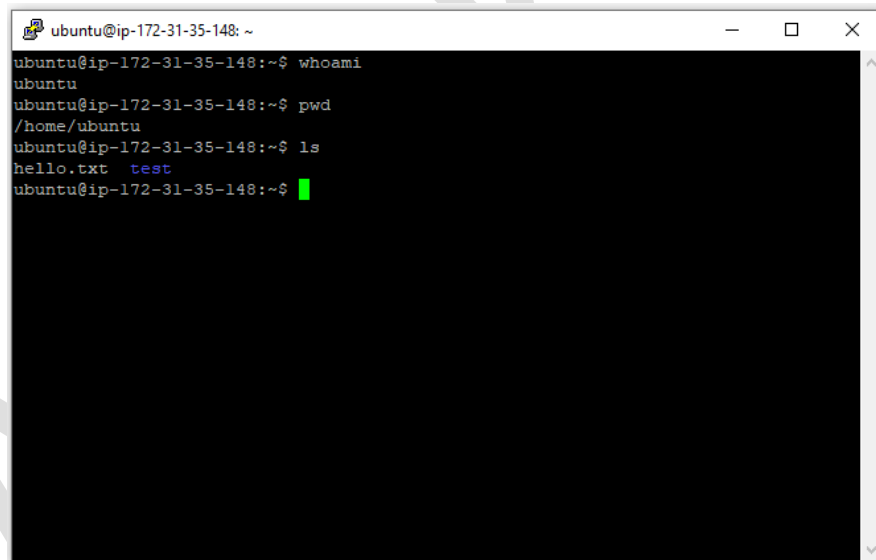
- 7) It will ask login as, Enter VM Username (you can find username in EC2 Instance
(My VM Username is ubuntu)

Once login successful you can see below terminal



```
ubuntu@ip-172-31-35-148: ~  
login as: ubuntu  
Authenticating with public key "imported-openssh-key"  
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.11.0-1022-aws x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/advantage  
  
System information as of Fri Feb 18 06:40:58 UTC 2022  
  
System load:  0.0          Processes:      99  
Usage of /:   18.4% of 7.69GB   Users logged in:  0  
Memory usage: 20%          IPv4 address for eth0: 172.31.35.148  
Swap usage:   0%  
  
1 update can be applied immediately.  
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  
  
Last login: Fri Feb 18 06:01:06 2022 from 13.233.177.1
```

- 8) Execute below commands in terminal



```
ubuntu@ip-172-31-35-148: ~  
ubuntu@ip-172-31-35-148:~$ whoami  
ubuntu  
ubuntu@ip-172-31-35-148:~$ pwd  
/home/ubuntu  
ubuntu@ip-172-31-35-148:~$ ls  
hello.txt  test  
ubuntu@ip-172-31-35-148:~$
```

- 9) **Congratulations**, you are able to connect to Linux VM using Putty

==== Learn Here.. Lead Anywhere..!! ====