

Name : Yash Uttam Semrani
Email id : yashsemlani672@gmail.com

PROJECT 2 :

Deploying a web server in Ubuntu Instance

1. login to your AWS console -> go to services -> go to EC2 -> go to instances -> go to launch instances -> select Ubuntu Server 18.04 LTS (HVM), SSD Volume Type

The screenshot shows the AWS Management Console's 'Launch instance wizard' for EC2. The first step, 'Choose an Amazon Machine Image (AMI)', is active. It displays a list of AMIs. The 'Ubuntu Server 18.04 LTS (HVM), SSD Volume Type' AMI is selected, indicated by a blue radio button and a 'Select' button. The AMI details show it is a 64-bit x86 AMI with an EBS root device type and HVM virtualization type. The wizard progress bar at the top shows steps 1 through 7, with step 1 being the current step.

2. After selecting AMI -> Choose an instance type -> select t2 type micro which should be free tier eligible -> and click on Next : configure instance details

The screenshot shows the AWS Management Console's 'Launch instance wizard' for EC2, specifically the 'Step 2: Choose an Instance Type' screen. The 't2.micro' instance type is selected, which is marked as 'Free tier eligible'. The screen provides details about the instance type, including its family, type, vCPUs, memory, and storage. The 't2.micro' instance has 1 vCPU, 1 GiB of memory, and EBS-only storage. The 'Next: Configure Instance Details' button is visible at the bottom right.

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

3. Configure Instance Details -> Select no of instances = 1 and auto assign ip address as enable -> and click on Next : Add Storage

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-f86fcc93 (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

IAM role: None [Create new IAM role](#)

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Storage](#)

4. Add Storage -> In add storage let everything be default and Delete on Termination must be selected and click on Next : Add Tags

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-0cd98f931a8ffac8 | 8 | General Purpose SSD (gp2) | 100 / 3000 | N/A | <input checked="" type="checkbox"/> | Not Encrypted |

[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.

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Tags](#)

Add Tags -> In Add Tags enter any you want to give to your instance and click on Next: Configure Security Group

The screenshot shows the 'Add Tags' step of the AWS Launch Wizard. The breadcrumb trail at the top indicates the sequence: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags (current step), 6. Configure Security Group, and 7. Review. The page title is 'Step 5: Add Tags'. A descriptive text explains that a tag is a case-sensitive key-value pair and provides a link to learn more about tagging EC2 resources. Below this, there is a table with columns for 'Key', 'Value', 'Instances', and 'Volumes'. A single tag is added with the key 'Name' and the value 'Ubuntu'. At the bottom, there are buttons for 'Cancel', 'Previous', 'Review and Launch', and 'Next: Configure Security Group'.

us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:

aws Services Resource Groups

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 (1) | Volumes (1) |
|------------------------------|--------------------------------|-------------------------------------|-------------------------------------|
| Name | Ubuntu | <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](#)

Feedback English (US) © 2008 - 2020, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use

ec2-13-58-188-16...rdp Windows.pem Show all

Type here to search

6.Configure Security Groups -> In Configure Security Group -> Create a new security group -> Select Type = All Traffic and Source = Custom. -> Click Next: Review and launch.

The screenshot shows the 'Configure Security Group' step of the AWS Launch Wizard. The breadcrumb trail at the top indicates the sequence: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group (current step), and 7. Review. The page title is 'Step 6: Configure Security Group'. A descriptive text explains that a security group is a set of firewall rules and provides a link to learn more about Amazon EC2 security groups. Below this, there are radio buttons to 'Assign a security group', with 'Create a new security group' selected. The 'Security group name' is 'launch-wizard-2' and the 'Description' is 'launch-wizard-2 created 2020-08-18T17:21:05.519+05:30'. A table lists the security group rules, with one rule added: 'All traffic' (Type), 'All' (Protocol), '0 - 65535' (Port Range), 'Custom' (Source), and '0.0.0.0/0' (Destination). A warning message states that rules with source 0.0.0.0/0 allow all IP addresses to access the instance. At the bottom, there are buttons for 'Cancel', 'Previous', 'Review and Launch', and 'Next: Review and launch'.

us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:

aws Services Resource Groups

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: launch-wizard-2

Description: launch-wizard-2 created 2020-08-18T17:21:05.519+05:30

| Type (1) | Protocol (1) | Port Range (1) | Source (1) | Description (1) |
|-------------|--------------|----------------|------------|-----------------|
| All traffic | All | 0 - 65535 | Custom | 0.0.0.0/0 |

[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](#)

Feedback English (US) © 2008 - 2020, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use

ec2-13-58-188-16...rdp Windows.pem Show all

Type here to search

7. Review All Steps 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-2, 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 18.04 LTS (HVM), SSD Volume Type - ami-0bbe28eb2173f6167
Free tier eligible
Ubuntu Server 18.04 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 (GiB) | EBS-Optimized Available | Network Performance |
|---------------|----------|-------|--------------|------------------------|-------------------------|---------------------|
| t2.micro | Variable | 1 | 1 | EBS only | - | Low to Moderate |

Security Groups [Edit security groups](#)

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

8. After launching create a new key pair which will allow us to get connect to instance, and then click on download key pair and click on launch instances

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-2, 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 18.04 LTS (HVM), SSD Volume Type - ami-0bbe28eb2173f6167
Free tier eligible
Ubuntu Server 18.04 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 (GiB) | EBS-Optimized Available | Network Performance |
|---------------|----------|-------|--------------|------------------------|-------------------------|---------------------|
| t2.micro | Variable | 1 | 1 | EBS only | - | Low to Moderate |

Security Groups [Edit security groups](#)

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

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.

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

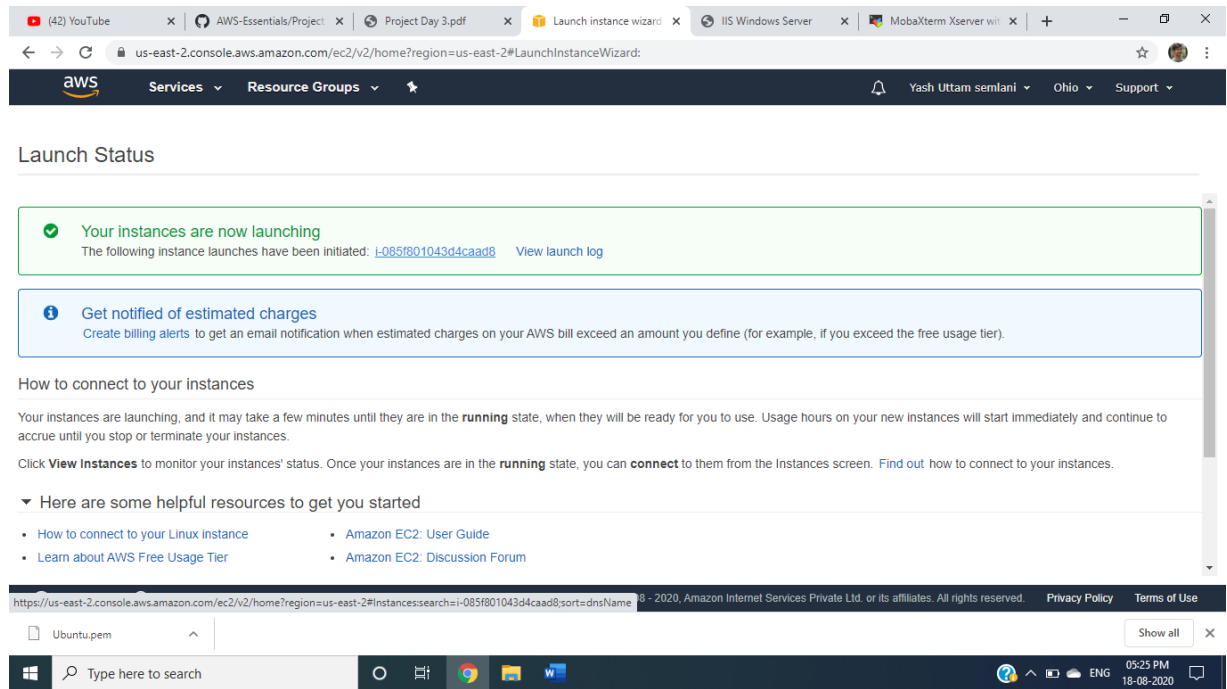
Key pair name
Ubuntu

[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](#)

9. Instance is created and click on instance id which will take you directly to the instance list



Launch Status

✓ **Your instances are now launching**
The following instance launches have been initiated: [i-085f801043d4caad8](#) [View launch log](#)

ℹ **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).

How to connect to your instances

Your instances are launching, and it may take a few minutes until they are in the **running** state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances.

Click **View Instances** to monitor your instances' status. Once your instances are in the **running** state, you can **connect** to them from the Instances screen. [Find out](#) how to connect to your instances.

▼ Here are some helpful resources to get you started

- [How to connect to your Linux instance](#)
- [Amazon EC2: User Guide](#)
- [Learn about AWS Free Usage Tier](#)
- [Amazon EC2: Discussion Forum](#)

https://us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#Instances:search=i-085f801043d4caad8;sort=dnsName

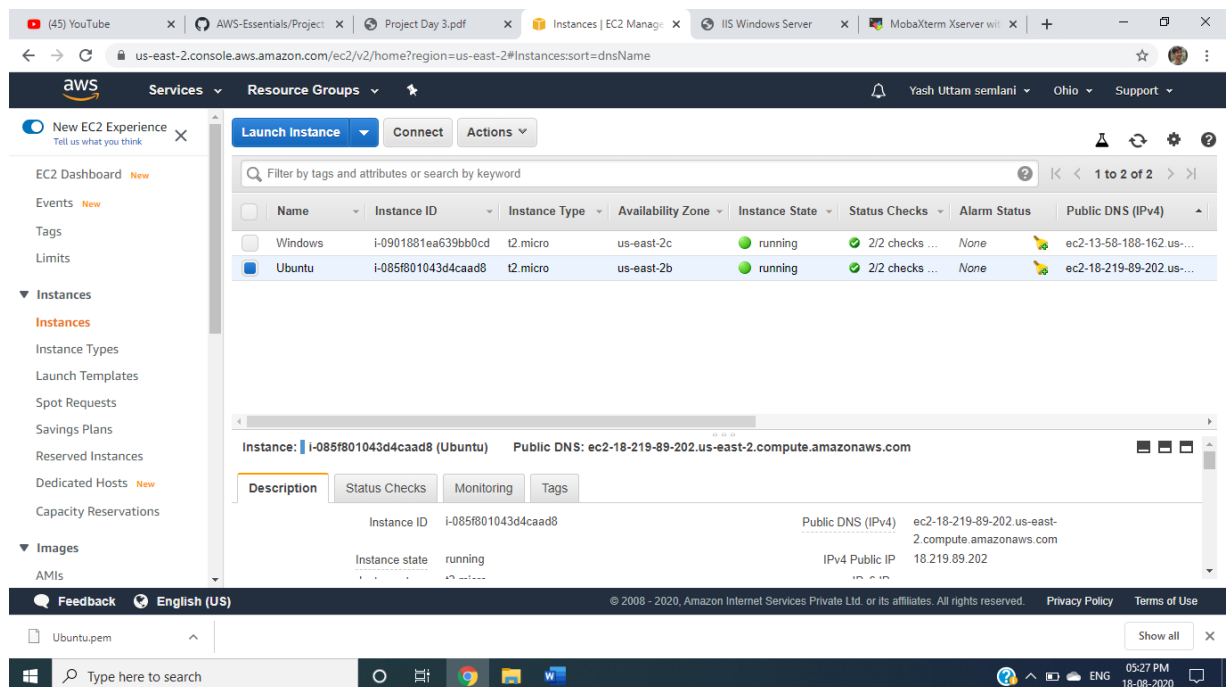
Ubuntu.pem

Type here to search

05:25 PM 18-08-2020

10. Wait till the status check is done and copy the Public IP Address of the Ubuntu instance

i.e. 18.219.89.202



Instances | EC2 Management Console

Launch Instance Connect Actions

Filter by tags and attributes or search by keyword

| Name | Instance ID | Instance Type | Availability Zone | Instance State | Status Checks | Alarm Status | Public DNS (IPv4) |
|---------|---------------------|---------------|-------------------|----------------|----------------|--------------|---|
| Windows | i-0901881ea639bb0cd | t2.micro | us-east-2c | running | 2/2 checks ... | None | ec2-13-58-188-162.us-east-2.compute.amazonaws.com |
| Ubuntu | i-085f801043d4caad8 | t2.micro | us-east-2b | running | 2/2 checks ... | None | ec2-18-219-89-202.us-east-2.compute.amazonaws.com |

Instance: i-085f801043d4caad8 (Ubuntu) Public DNS: ec2-18-219-89-202.us-east-2.compute.amazonaws.com

Description Status Checks Monitoring Tags

| Instance ID | Instance state | Public DNS (IPv4) | IPV4 Public IP |
|---------------------|----------------|---|----------------|
| i-085f801043d4caad8 | running | ec2-18-219-89-202.us-east-2.compute.amazonaws.com | 18.219.89.202 |

Feedback English (US)

© 2008 - 2020, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use

Ubuntu.pem

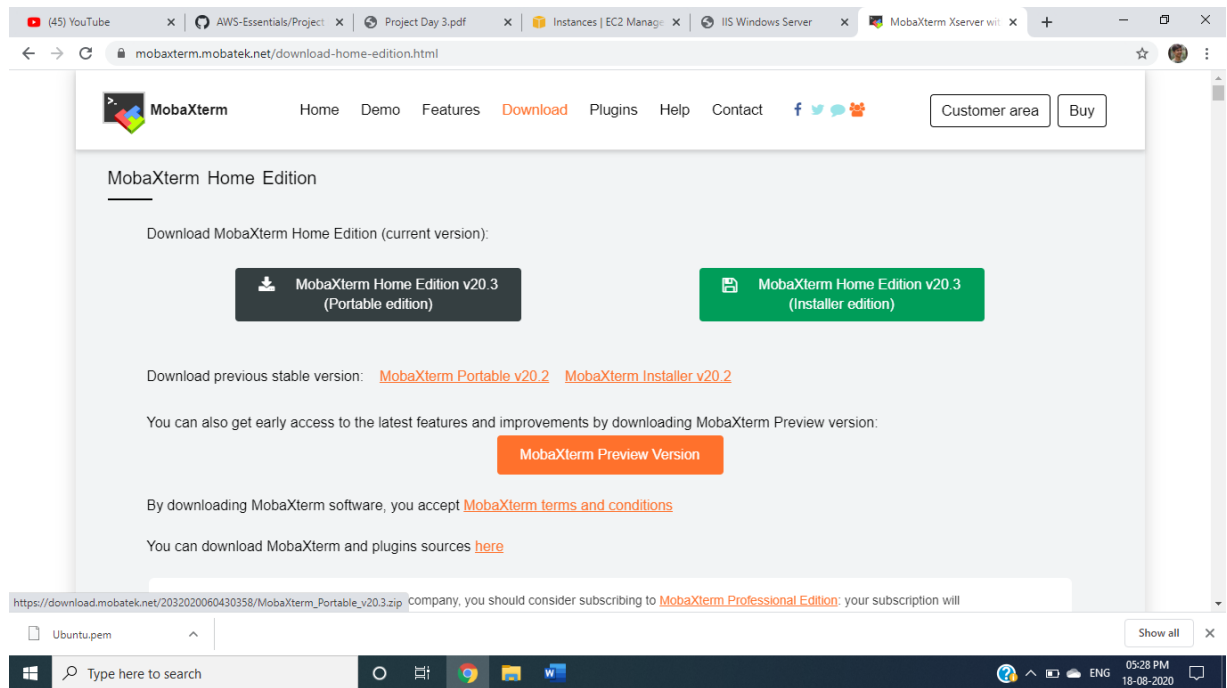
Type here to search

05:27 PM 18-08-2020

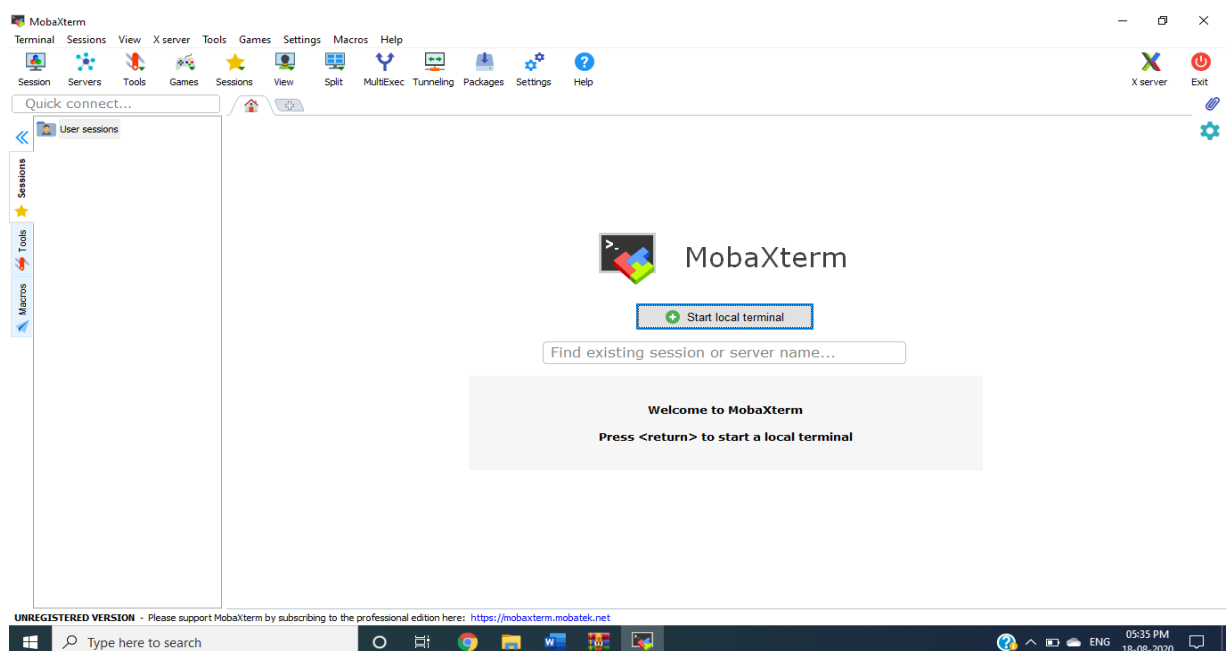
11. Now to connect and launch your web server, Download MobaXterm Portable Edition from the link below:

<https://mobaxterm.mobatek.net/download-home-edition.html>

After downloading extract the zip file to get the MobaXterm.exe file.



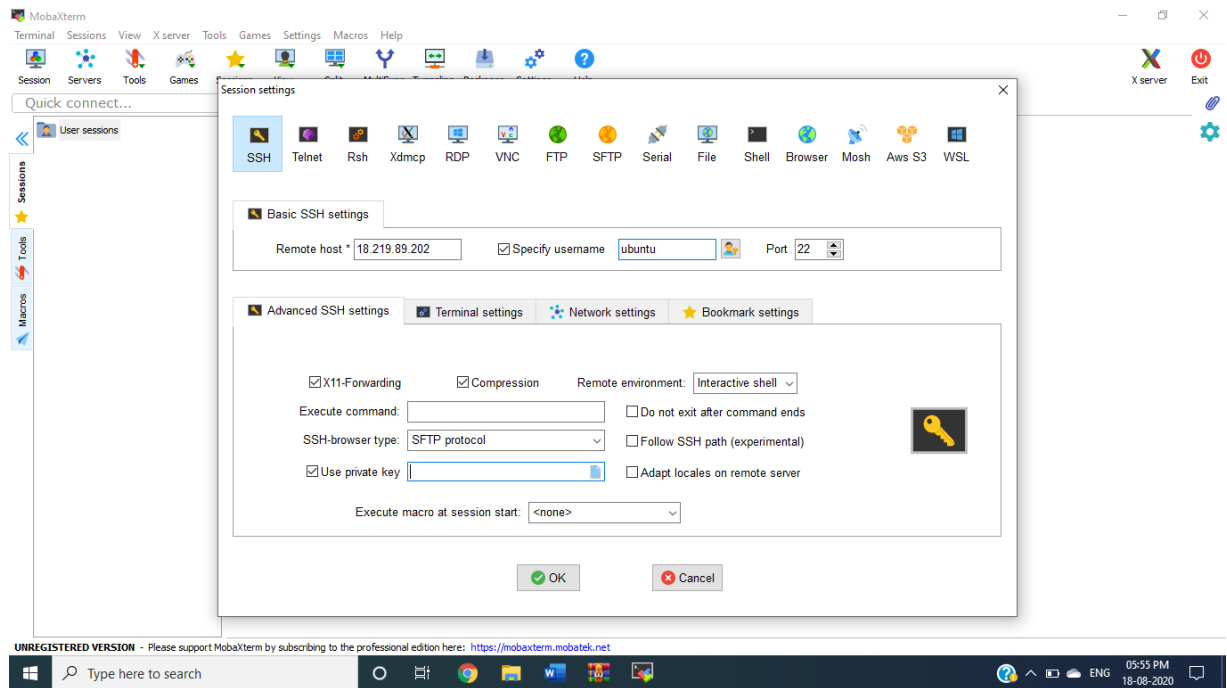
12. Open MobaXterm.exe -> click on New Session



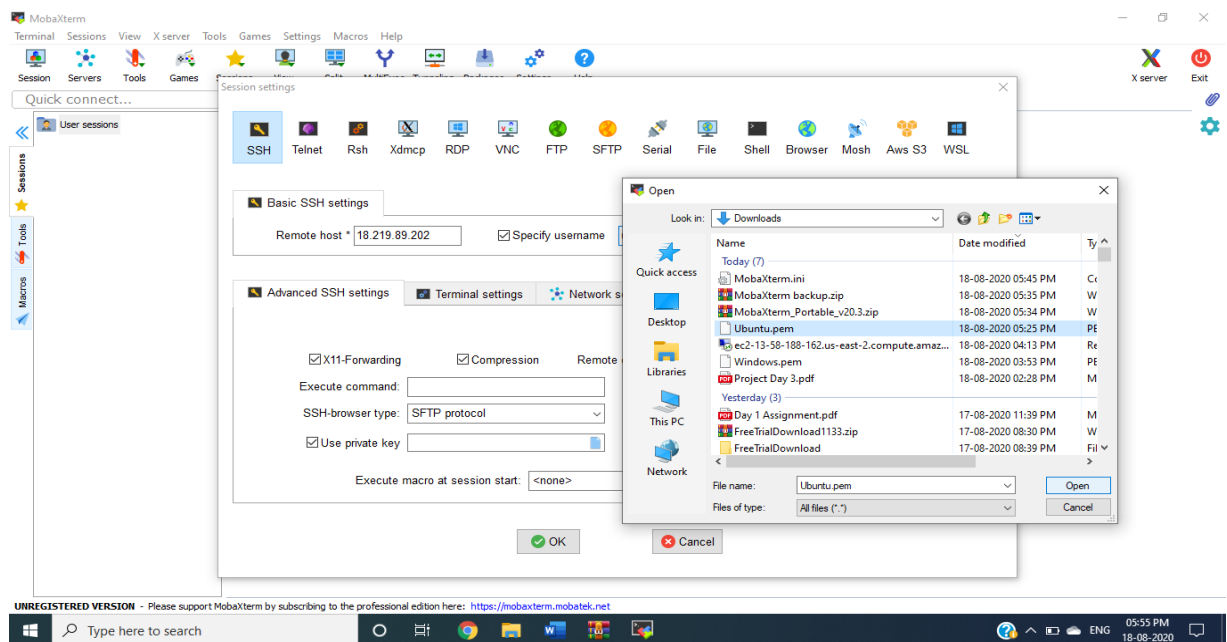
13. Select SSH and enter the Remote host and enter the username

Remote host : 18.219.89.202

Username : ubuntu

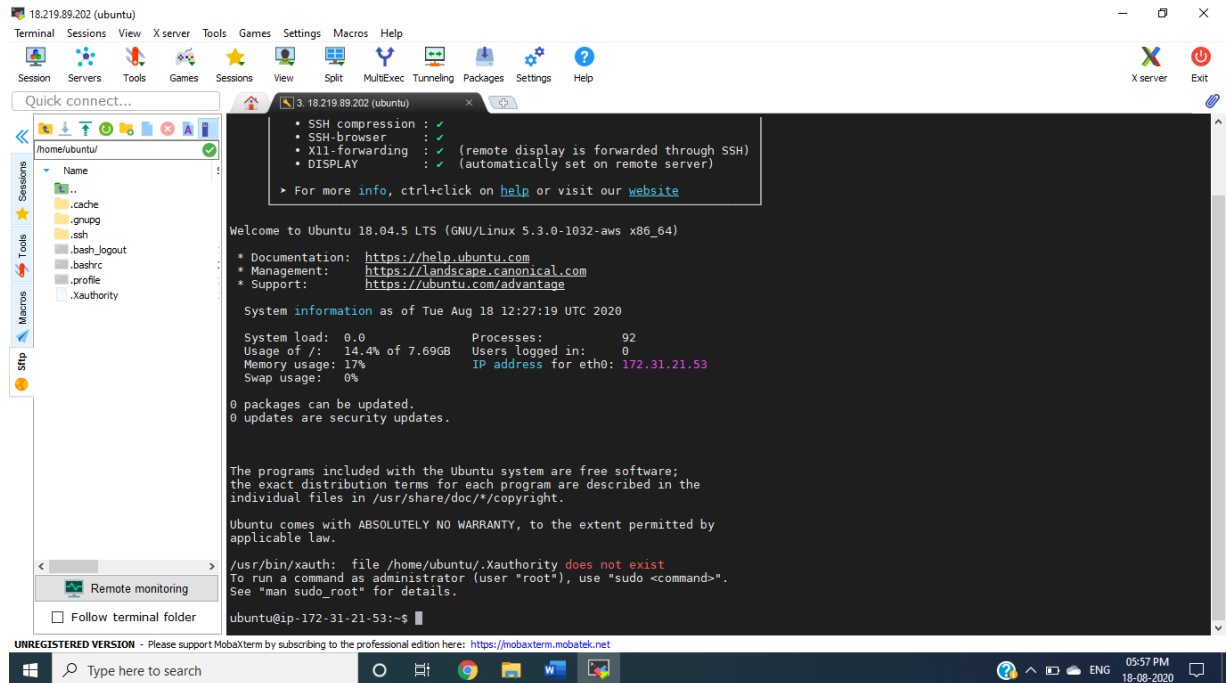


14. And upload your keypair .pem in private key block which we downloaded i.e Ubuntu.pem and press OK



15. After clicking OK an Ubuntu Bash will appear in that run the following two commands given below one at a time:

sudo apt-get -y update



```
18.219.89.202 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
/home/ubuntu/
Name
.cache
.gnupg
.ssh
.bash_logout
.bashrc
.profile
.xauthority
Remote monitoring
Follow terminal folder

Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 5.3.0-1032-aws x86_64)

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

System information as of Tue Aug 18 12:27:19 UTC 2020

System load:  0.0          Processes:           92
Usage of /:   14.4% of 7.69GB    Users logged in:    0
Memory usage: 17%            IP address for eth0: 172.31.21.53
Swap usage:   0%

0 packages can be updated.
0 updates are security updates.

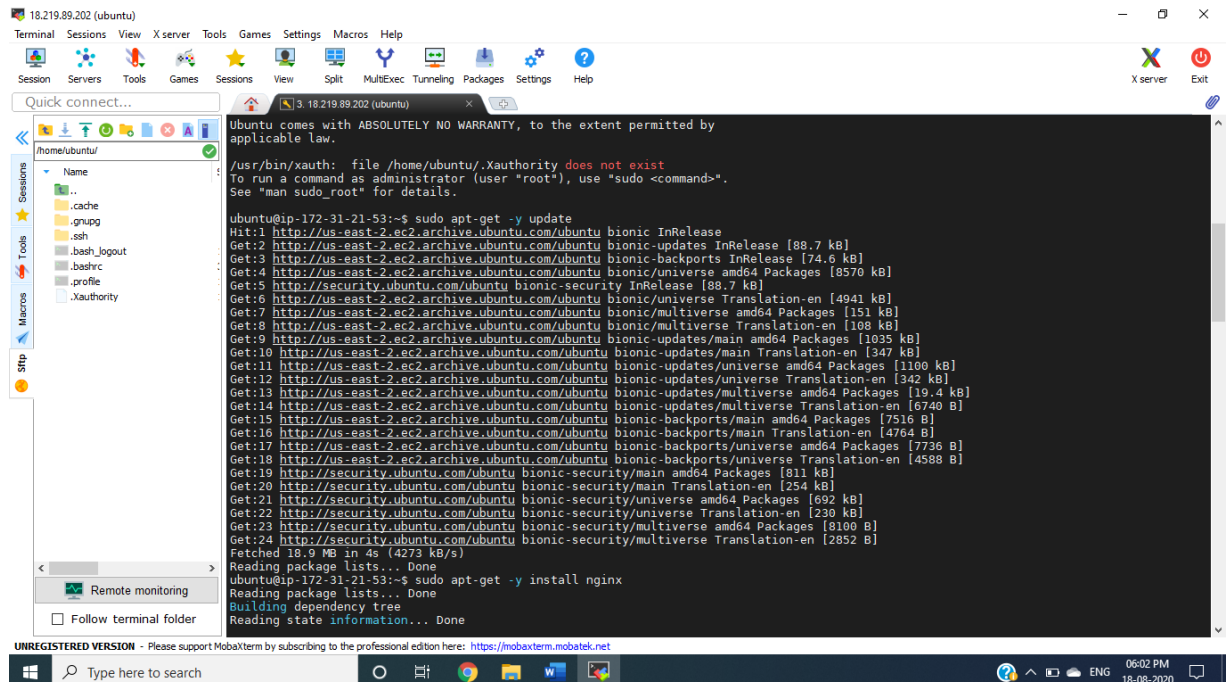
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

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

/usr/bin/xauth: 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-172-31-21-53:~$
```

sudo apt-get -y install nginx



```
18.219.89.202 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
/home/ubuntu/
Name
.cache
.gnupg
.ssh
.bash_logout
.bashrc
.profile
.xauthority
Remote monitoring
Follow terminal folder

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

/usr/bin/xauth: 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-172-31-21-53:~$ sudo apt-get -y update
Hit:1 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:4 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [8570 kB]
Get:5 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:6 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic/universe Translation-en [4941 kB]
Get:7 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [151 kB]
Get:8 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic/multiverse Translation-en [108 kB]
Get:9 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [1035 kB]
Get:10 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/main Translation-en [347 kB]
Get:11 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [1100 kB]
Get:12 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/universe Translation-en [342 kB]
Get:13 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [19.4 kB]
Get:14 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/multiverse Translation-en [6740 B]
Get:15 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-backports/main amd64 Packages [7516 B]
Get:16 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-backports/main Translation-en [4764 B]
Get:17 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [7736 B]
Get:18 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-backports/universe Translation-en [4588 B]
Get:19 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [811 kB]
Get:20 http://security.ubuntu.com/ubuntu bionic-security/main Translation-en [254 kB]
Get:21 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [692 kB]
Get:22 http://security.ubuntu.com/ubuntu bionic-security/universe Translation-en [230 kB]
Get:23 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 Packages [8100 B]
Get:24 http://security.ubuntu.com/ubuntu bionic-security/multiverse Translation-en [2852 B]
Fetched 18.9 MB in 4s (4273 kB/s)
Reading package lists... Done
ubuntu@ip-172-31-21-53:~$ sudo apt-get -y install nginx
Reading package lists... Done
Building dependency tree
Reading state information... Done
```


16. After all the nginx packages are installed. Copy the Public IP Address of the Ubuntu instance.

The screenshot shows the AWS Management Console interface. On the left, there is a navigation menu with options like 'EC2 Dashboard', 'Events', 'Tags', 'Limits', 'Instances', 'Instance Types', 'Launch Templates', 'Spot Requests', 'Savings Plans', 'Reserved Instances', 'Dedicated Hosts', 'Capacity Reservations', 'Images', and 'AMIs'. The main area displays a table of EC2 instances. The 'Ubuntu' instance is selected, and its details are shown below the table. The instance ID is 'i-085f801043d4caad8', the state is 'running', and the public DNS (IPv4) is 'ec2-18-219-89-202.us-east-2.compute.amazonaws.com'. The public IP address '18.219.89.202' is highlighted in blue.

| Name | Instance ID | Instance Type | Availability Zone | Instance State | Status Checks | Alarm Status | Public DNS (IPv4) |
|---------|---------------------|---------------|-------------------|----------------|----------------|--------------|--------------------------|
| Windows | i-0901881ea639bb0cd | t2.micro | us-east-2c | running | 2/2 checks ... | None | ec2-13-58-188-162.us-... |
| Ubuntu | i-085f801043d4caad8 | t2.micro | us-east-2b | running | 2/2 checks ... | None | ec2-18-219-89-202 us-... |

Instance ID: i-085f801043d4caad8
Instance state: running
Instance type: t2.micro
Finding: Opt-in to AWS Compute Optimizer for recommendations. [Learn more](#)
Private DNS: ip-172-31-21-53.us-east-2.compute.internal
Public DNS (IPv4): ec2-18-219-89-202.us-east-2.compute.amazonaws.com
IPv4 Public IP: 18.219.89.202
IPv6 IPs: -
Elastic IPs: -
Availability zone: us-east-2b

17. Paste the copied ip address into the browser and nginx web server is deployed and viewed

The screenshot shows a web browser window with the address bar displaying '18.219.89.202'. The page content includes the heading 'Welcome to nginx!' and a message stating: 'If you see this page, the nginx web server is successfully installed and working. Further configuration is required.' It also provides links for online documentation and support at [nginx.org](\"http://nginx.org\") and commercial support at [nginx.com](\"http://nginx.com\"). The footer of the page says 'Thank you for using nginx.'

Not secure | 18.219.89.202

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](\"http://nginx.org\").
Commercial support is available at [nginx.com](\"http://nginx.com\").

Thank you for using nginx.