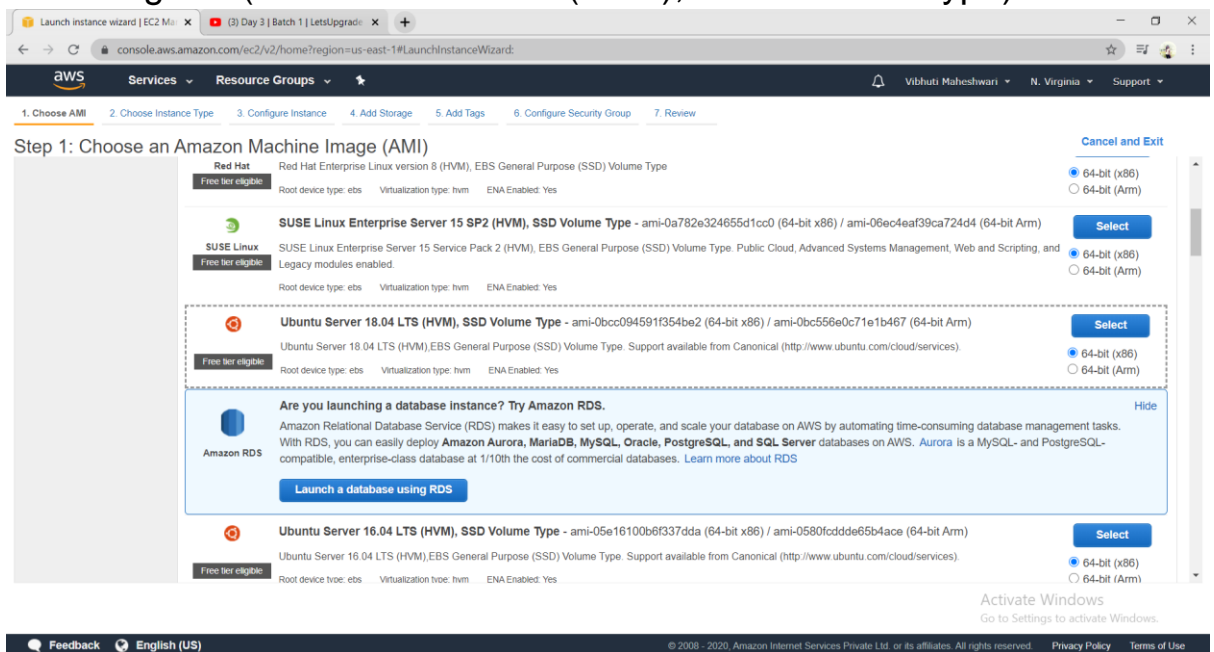


Project 2

Launching Ubuntu instance in EC2 and hosting a web server

1. Choosing AMI(Ubuntu 18.04 LTS (HVM), SSD Volume Type)



2. Choosing instance type(t2 micro)

The screenshot shows the AWS Launch Instance Wizard at Step 2: Choose an Instance Type. The breadcrumb trail at the top indicates the steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, and 7. Review. The current step is highlighted. Below the breadcrumb, a text block explains that Amazon EC2 provides a wide selection of instance types optimized for different use cases. A filter bar shows 'All instance types' selected, with 'Current generation' and 'Show/Hide Columns' options. The 'Currently selected' filter shows 't2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)'. A table lists various instance types with columns for Family, Type, vCPUs, Memory (GiB), Instance Storage (GB), EBS-Optimized Available, Network Performance, and IPv6 Support. The 't2.micro' instance type is highlighted with a blue background and a green 'Free tier eligible' badge. At the bottom, there are buttons for 'Cancel', 'Previous', 'Review and Launch', and 'Next: Configure Instance Details'.

	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	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
<input type="checkbox"/>	General purpose	t2.xlarge	4	16	EBS only	-	Moderate	Yes
<input type="checkbox"/>	General purpose	t2.xlarge	8	32	EBS only	-	Moderate	Yes
<input type="checkbox"/>	General purpose	t3a.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes

3. Configuring instance details

The screenshot shows the AWS Launch Instance Wizard at Step 3: Configure Instance Details. The breadcrumb trail at the top indicates the steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, and 7. Review. The current step is highlighted. Below the breadcrumb, a text block explains that 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. The configuration options are as follows: Number of instances: 1 (with a 'Launch into Auto Scaling Group' link); Purchasing option: ☐ Request Spot Instances; Network: vpc-41f8173c (default) (with a 'Create new VPC' link); Subnet: No preference (default subnet in any Availability Zone) (with a 'Create new subnet' link); Auto-assign Public IP: Use subnet setting (Enable); Placement group: ☐ Add instance to placement group; Capacity Reservation: Open; IAM role: None (with a 'Create new IAM role' link); Shutdown behavior: Stop; Stop - Hibernate behavior: ☐ Enable hibernation as an additional stop behavior; Enable termination protection: ☐ Protect against accidental termination; Monitoring: ☐ Enable CloudWatch detailed monitoring (with a link 'Additional charges apply'); Tenancy: Shared (with a link 'Run a shared hardware instance'). At the bottom, there are buttons for 'Cancel', 'Previous', 'Review and Launch', and 'Next: Add Storage'.

4. Adding Storage

Launch instance wizard | EC2 Ma x (3) Day 3 | Batch 1 | LetsUpgrade x +

console.aws.amazon.com/ec2/v2/home?region=us-east-1#LaunchInstanceWizard:

aws Services Resource Groups +

Vibhuti Maheshwari N. Virginia Support

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-091c9b89d2082ce92	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

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5. Configuring Security Group

Launch instance wizard | EC2 Ma x (3) Day 3 | Batch 1 | LetsUpgrade x +

console.aws.amazon.com/ec2/v2/home?region=us-east-1#LaunchInstanceWizard:

aws Services Resource Groups +

Vibhuti Maheshwari N. Virginia 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**

Go to Settings to activate Windows

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6. Reviewing and launching the instance

The screenshot shows the 'Launch instance wizard' in the AWS Management Console, specifically the 'Review' step. The breadcrumb trail at the top indicates the steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, and 7. Review (which is the current step).

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.

A yellow warning box states: **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](#)
Free tier eligible
Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0bcc094591f354be2
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 (GB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

Security Groups [Edit security groups](#)

Security group name	Description
launch-wizard-2	launch-wizard-2 created 2020-08-17T10:54:08.253+05:30

At the bottom right, there are buttons for 'Cancel', 'Previous', and 'Launch'. A small 'Activate Windows' watermark is visible.

7. Selecting Key pair

This screenshot shows the same 'Review Instance Launch' step as the previous image, but with a modal dialog box open in the center. The dialog is titled 'Select an existing key pair or create a new key pair'.

The dialog contains the following text: 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](#).

Inside the dialog, there are two dropdown menus: 'Choose an existing key pair' (which is currently empty) and 'Select a key pair' (which has 'Wind1' selected). Below these is a checked checkbox with the text: 'I acknowledge that I have access to the selected private key file (Wind1.pem), and that without this file, I won't be able to log into my instance.'

At the bottom of the dialog are 'Cancel' and 'Launch Instances' buttons.

The background of the console shows the same configuration details as in the previous screenshot, but they are partially obscured by the dialog box.

8. Status Checks done

The screenshot displays the AWS Management Console interface. The top navigation bar includes the AWS logo, 'Services', 'Resource Groups', and user information for 'Vibhuti Maheshwari' in 'N. Virginia'. The left sidebar shows the 'EC2 Dashboard' and various navigation links under 'Instances', 'Images', and 'Elastic Block Store'. The main content area shows a list of EC2 instances with columns for Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, Alarm Status, Public DNS (IPv4), IPv4 Public IP, and IPv6 Public IP. Two instances are listed: 'Windows' (stopped) and 'Ubuntu' (running). The 'Ubuntu' instance has 2/2 status checks passed. Below the list, the details for the 'Ubuntu' instance (ID: i-058d6d99c3bb07638) are shown, including its running state, t2.micro type, and public DNS information. A 'Status Checks' tab is active, showing the instance's health. An 'Activate Windows' watermark is visible in the bottom right corner of the console area.

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4 Public IP	IPv6 Public IP
Windows	i-01728e23bfe0471da	t2.micro	us-east-1c	stopped		None		-	-
Ubuntu	i-058d6d99c3bb07638	t2.micro	us-east-1e	running	2/2 checks ...	None	ec2-54-90-9-177.comp...	54.90.9.177	-

Instance: i-058d6d99c3bb07638 (Ubuntu) Public DNS: ec2-54-90-9-177.compute-1.amazonaws.com

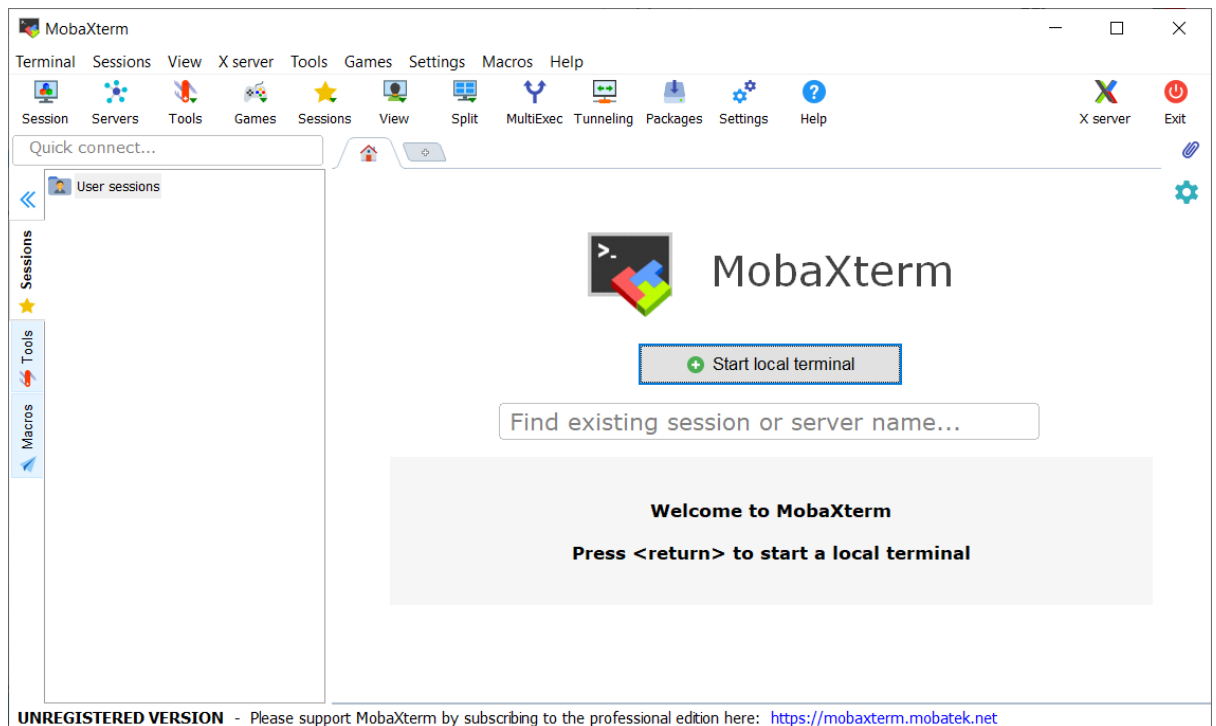
Description	Status Checks	Monitoring	Tags
Instance ID	i-058d6d99c3bb07638		
Instance state	running		
Instance type	t2.micro		
Finding	Opt-in to AWS Compute Optimizer for recommendations.		

Public DNS (IPv4) ec2-54-90-9-177.compute-1.amazonaws.com
IPv4 Public IP 54.90.9.177
IPv6 IPs -
Elastic IPs -

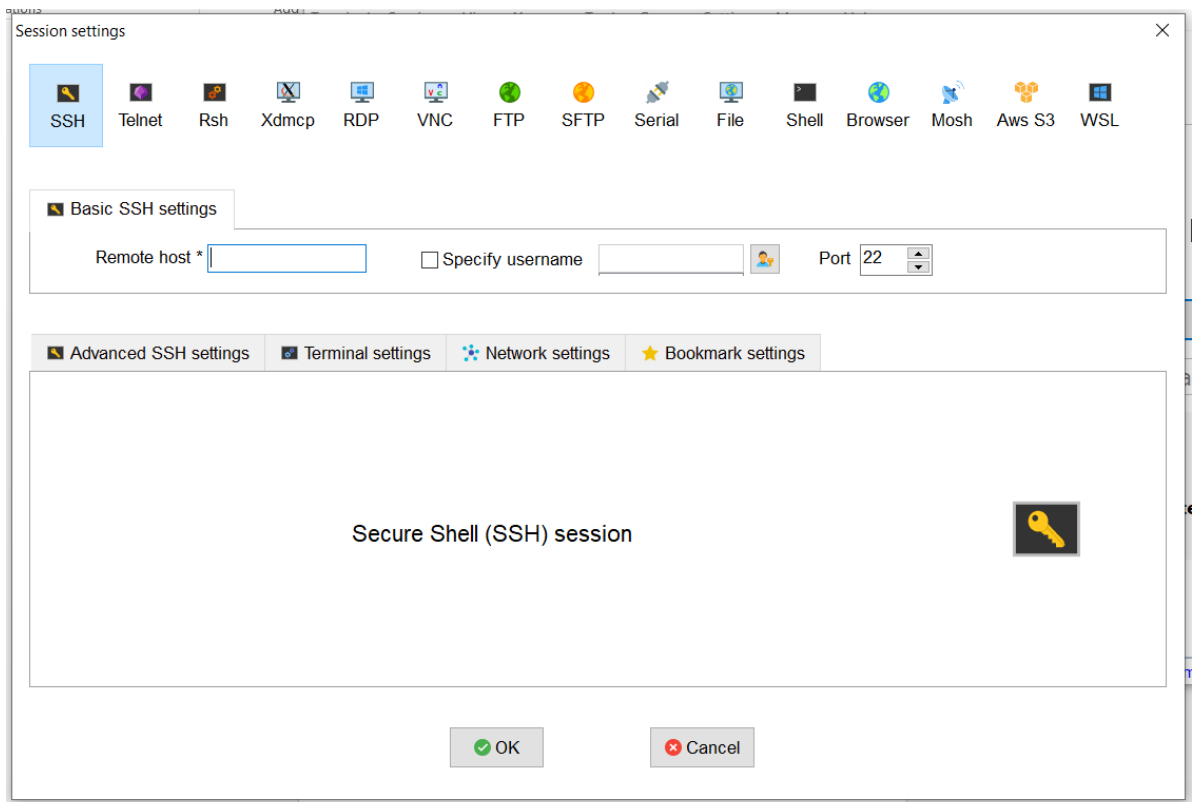
Activate Windows
Go to Settings to activate Windows.

MobaXterm

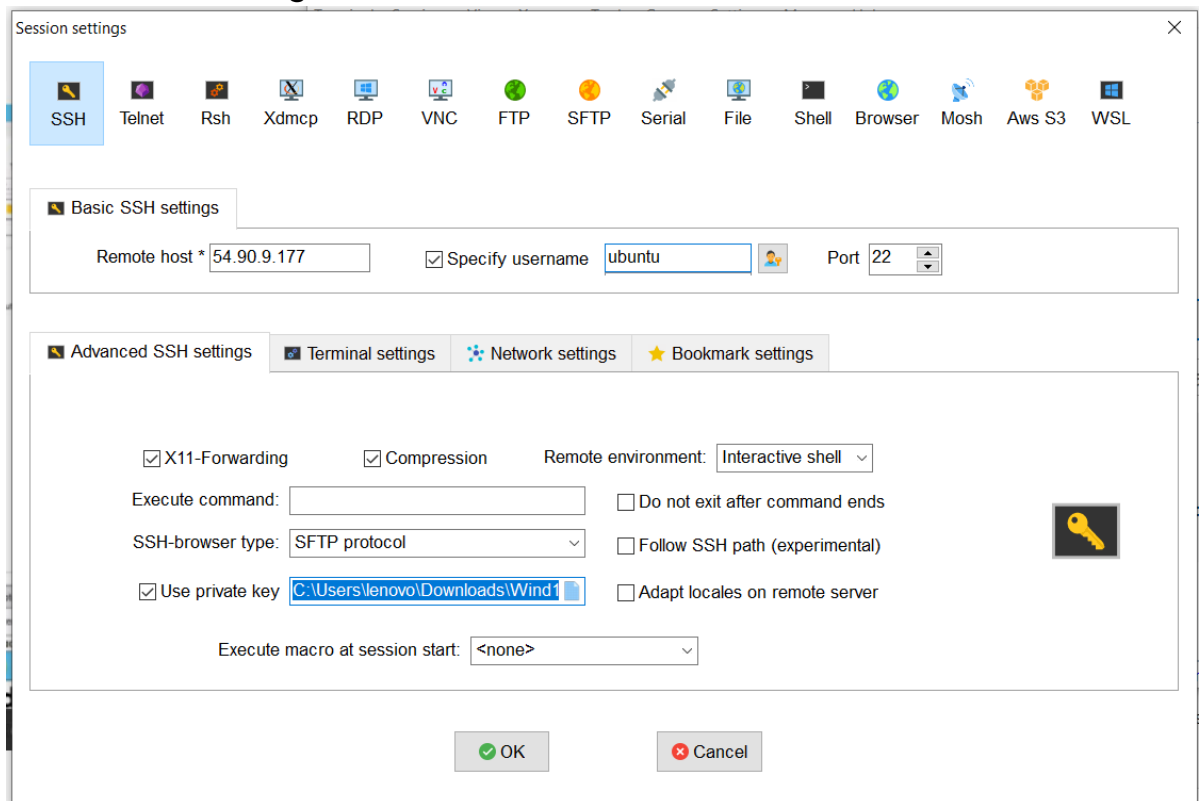
9. Home Screen



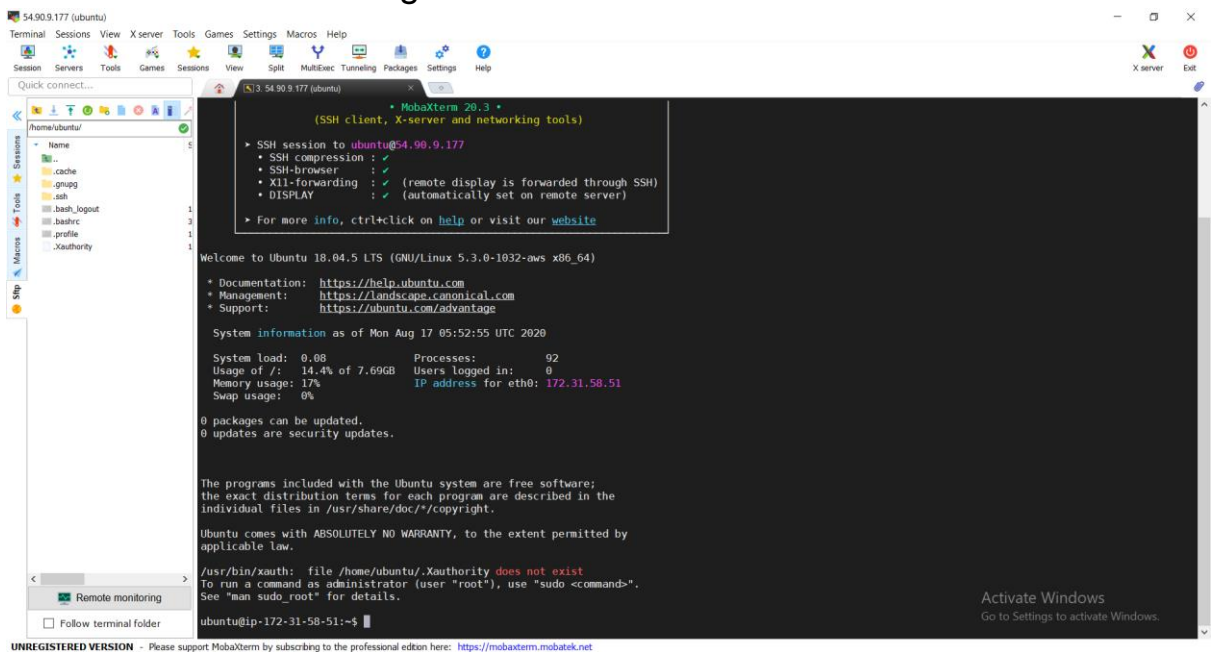
10. Select Session and click on SSH



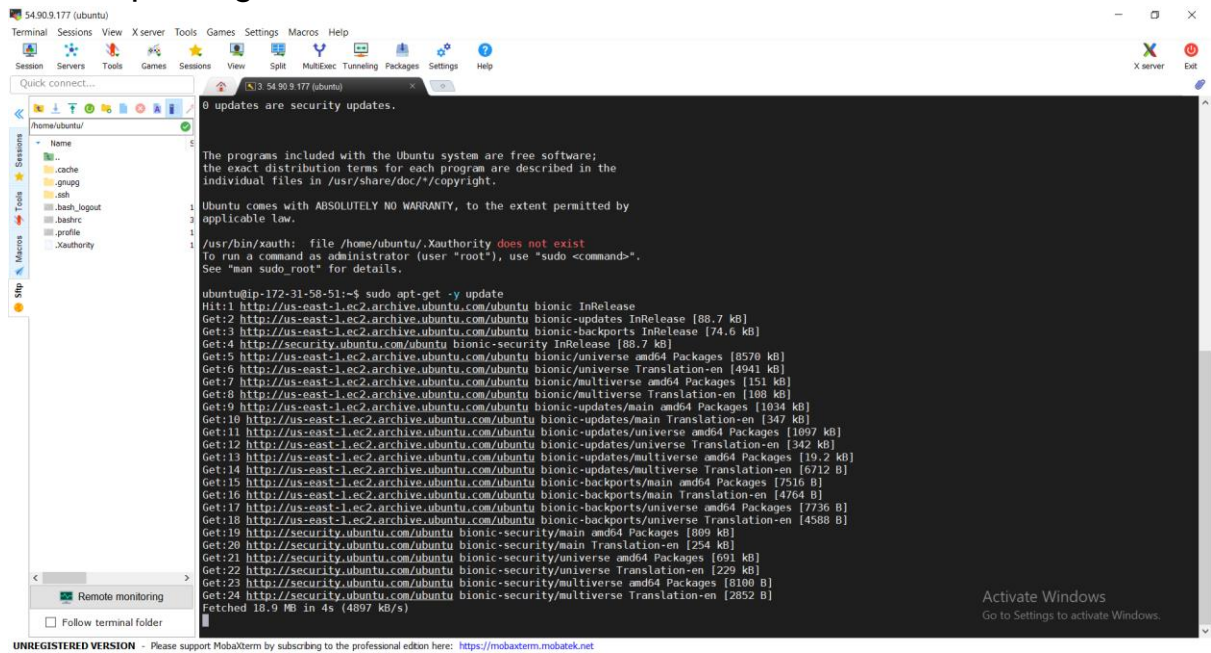
11. SSH Settings



12. Instance in running state



13. Updating current instance



```
0 updates are security updates.

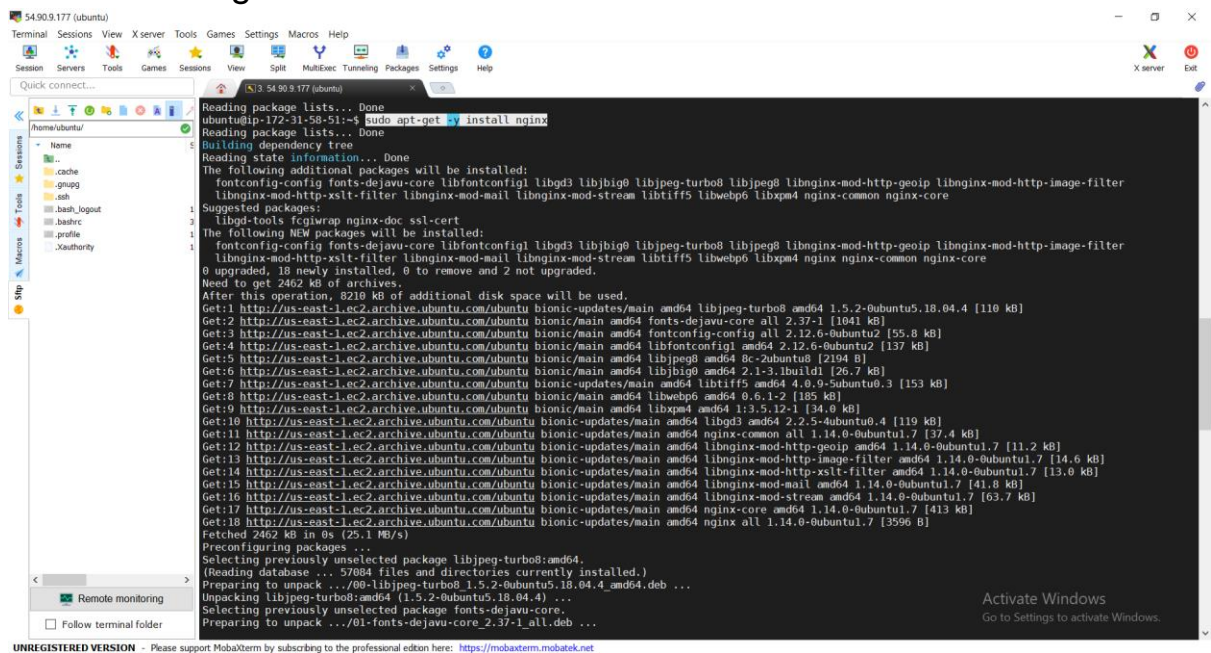
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

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.

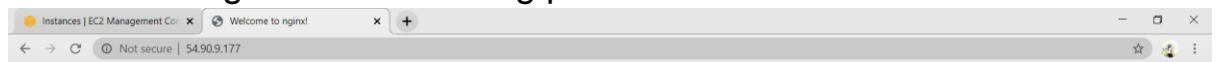
ubuntu@ip-172-31-58-51:~$ sudo apt-get -y update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:4 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [8570 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/universe Translation-en [4941 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [151 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/multiverse Translation-en [108 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [1034 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main Translation-en [347 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [1097 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/universe Translation-en [342 kB]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [19.2 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/multiverse Translation-en [6712 B]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-backports/main amd64 Packages [7516 B]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-backports/main Translation-en [4764 B]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [7736 B]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-backports/universe Translation-en [4588 B]
Get:19 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [809 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 [691 kB]
Get:22 http://security.ubuntu.com/ubuntu bionic-security/universe Translation-en [229 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 (4897 kB/s)
```

14. Installing the web server



```
Reading package lists... Done
ubuntu@ip-172-31-58-51:~$ sudo apt-get 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 libjpeg-turbo8 libjpeg8 libnginx-mod-http-geoip libnginx-mod-http-image-filter
  libnginx-mod-http-xslt-filter libnginx-mod-mail libnginx-mod-stream libtiff5 libwebp6 libxpm4 nginx-common nginx-core
Suggested packages:
  libgd-tools fcgiwrap nginx-doc ssl-cert
The following NEW packages will be installed:
  fontconfig-config fonts-dejavu-core libfontconfig1 libgd3 libjpeg-turbo8 libjpeg8 libnginx-mod-http-geoip libnginx-mod-http-image-filter
  libnginx-mod-http-xslt-filter libnginx-mod-mail libnginx-mod-stream libtiff5 libwebp6 libxpm4 nginx nginx-common nginx-core
0 upgraded, 18 newly installed, 0 to remove and 2 not upgraded.
Need to get 2462 kB of archives.
After this operation, 8210 kB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libjpeg-turbo8 amd64 1.5.2-0ubuntu5.18.04.4 [110 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 fonts-dejavu-core all 2.37-1 [1041 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 fontconfig-config all 2.12.6-0ubuntu2 [55.8 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 libfontconfig1 amd64 2.12.6-0ubuntu2 [137 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 libjpeg8 amd64 8c-2ubuntu8 [2194 B]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 libgd3 amd64 2.1.3-1build1 [26.7 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libtiff5 amd64 4.0.9-Substun0.3 [153 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 libwebp6 amd64 0.6.1-2 [185 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 libxpm4 amd64 1:3.5.12-1 [34.0 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libgd3 amd64 2.2.5-4ubuntu0.4 [119 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 nginx-common all 1.14.0-0ubuntu1.7 [37.4 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libnginx-mod-http-geoip amd64 1.14.0-0ubuntu1.7 [11.2 kB]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libnginx-mod-http-image-filter amd64 1.14.0-0ubuntu1.7 [14.6 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libnginx-mod-http-xslt-filter amd64 1.14.0-0ubuntu1.7 [13.0 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libnginx-mod-mail amd64 1.14.0-0ubuntu1.7 [41.8 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libnginx-mod-stream amd64 1.14.0-0ubuntu1.7 [63.7 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 nginx-core amd64 1.14.0-0ubuntu1.7 [413 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 nginx all 1.14.0-0ubuntu1.7 [3596 B]
Fetched 2462 kB in 0s (25.1 MB/s)
Preconfiguring packages ...
Selecting previously unselected package libjpeg-turbo8:amd64.
(Reading database ... 57084 files and directories currently installed.)
Preparing to unpack .../00-libjpeg-turbo8_1.5.2-0ubuntu5.18.04.4_amd64.deb ...
Unpacking libjpeg-turbo8:amd64 (1.5.2-0ubuntu5.18.04.4) ...
Selecting previously unselected package fonts-dejavu-core.
Preparing to unpack .../01-fonts-dejavu-core_2.37-1_all.deb ...
```


15. Running web server using public IP



Welcome to nginx!

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

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

Thank you for using nginx.

Activate Windows
Go to Settings to activate Windows.