

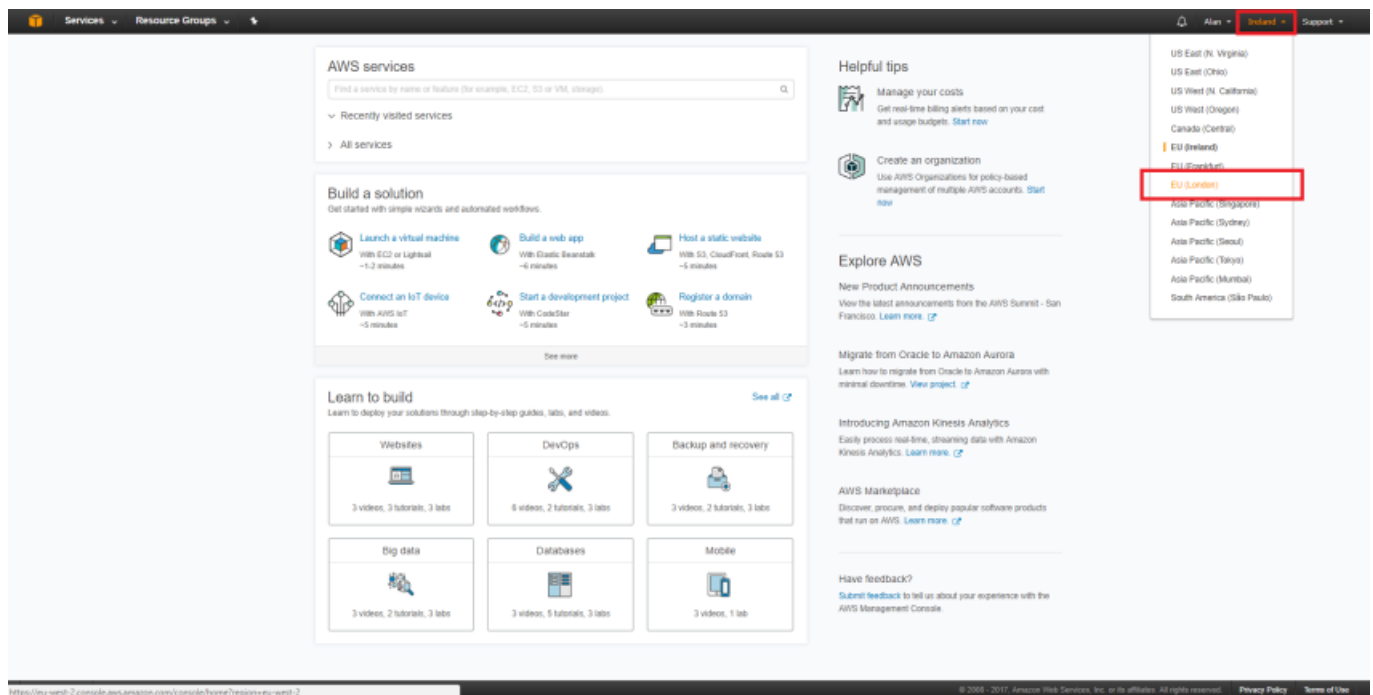
# Creating an Amazon AWS EC2 Instance

May 2017

## Introduction

This guide assumes that you have created an Amazon account to be able to access the Amazon Web Services (AWS) pages, and that you have successfully logged in.

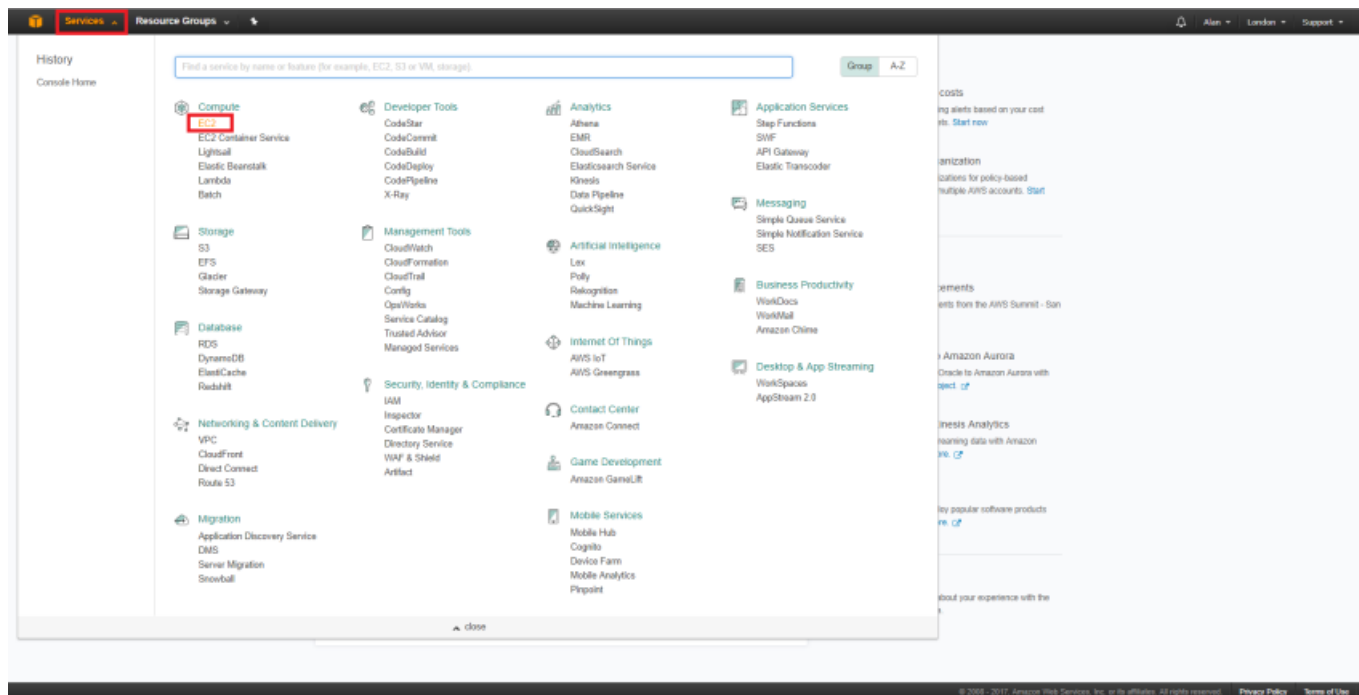
Once logged in you will see the following page (be warned, the site layout changes quite frequently, so you might have to do some digging).



The first mistake I made was not checking the region in which I was creating my AWS instance. So I created mine in the USA. Not that this really matters for serving a few webpages, but if speed is important, ensure you select a region closest to you.

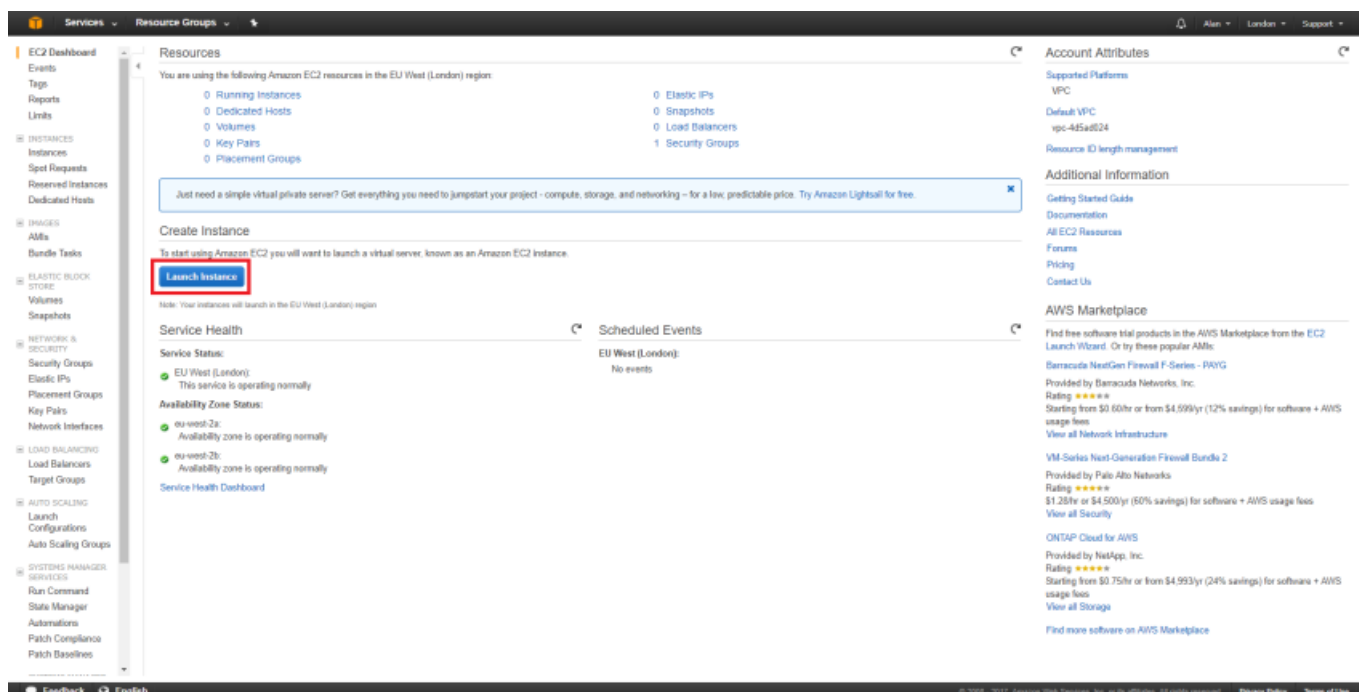
You can do this by clicking the current region in the top right hand corner (highlighted in Orange) and select a suitable local region.

We have to chose what we are going to create.



From the top left of the page, select Services, then select **EC2** from the Compute section.

Now we can select some options and launch our virtual server.



Click on the **Launch Instance** button.

A page with different Operating Systems will open.

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 1: Choose an Amazon Machine Image (AMI)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace, or you can select one of your own AMIs.

Quick Start

My AMIs  
AWS Marketplace  
Community AMIs

Free tier only (1)

**Amazon Linux AMI 2017.03.1 (HVM), SSD Volume Type - ami-e0100699**  
The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.  
Root device type: ebs Virtualization type: hvm **Select** 64-bit

**SUSE Linux Enterprise Server 12 SP2 (HVM), SSD Volume Type - ami-a3ca0c0d**  
SUSE Linux Enterprise Server 12 Service Pack 2 (HVM), EBS General Purpose (SSD) Volume Type. Public Cloud, Advanced Systems Management, Web and Scripting, and Legacy modules enabled.  
Root device type: ebs Virtualization type: hvm **Select** 64-bit

**Red Hat Enterprise Linux 7.3 (HVM), SSD Volume Type - ami-4c0a0f24**  
Red Hat Enterprise Linux version 7.3 (HVM), EBS General Purpose (SSD) Volume Type  
Root device type: ebs Virtualization type: hvm **Select** 64-bit

**Ubuntu Server 16.04 LTS (HVM), SSD Volume Type - ami-cc7066a8**  
Ubuntu Server 16.04 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 **Select** 64-bit

**Microsoft Windows Server 2016 Base - ami-5a0963ce**  
Microsoft Windows 2016 Datacenter edition. [English]  
Root device type: ebs Virtualization type: hvm **Select** 64-bit

**Are you launching a database instance? Try Amazon RDS.**  
Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale your database on AWS by automating time-consuming database management tasks. With RDS, you can easily deploy Amazon Aurora, MariaDB, MySQL, Oracle, PostgreSQL, and SQL Server databases on AWS. Aurora is a MySQL-compatible, enterprise-class database at 1/10th the cost of commercial databases. [Learn more about RDS](#)  
**Launch a database using RDS**

**Microsoft Windows Server 2016 Base with Containers - ami-5c0e9038**  
Microsoft Windows 2016 Datacenter edition with Containers. [English]  
Root device type: ebs Virtualization type: hvm **Select** 64-bit

**Microsoft Windows Server 2016 Base Nano - ami-5a51409e**  
Microsoft Windows 2016 Datacenter Edition Nano. [English]  
Root device type: ebs Virtualization type: hvm **Select** 64-bit

Feedback English

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I am going to use the top option of **Amazon Linux AMI**. It's a Linux system similar to CentOS. There are many choices of OS here, and I have not tried many of them. My intention is to use this server for a bit of testing, and I don't want it to cost me anything, so I am unsure if picking say Windows will incur any costs (I would guess it does). As long as it has a 'Free tier Available' label you should be good to go.

Select **Amazon Linux AMI 64bit** (Blue button on the right hand side of the page.)

Next we have to choose our instance type. This is setting up how many processors (vCPUs) memory, hard disk space etc that we want.

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 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 (GiB) | 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 <b>Free tier eligible</b> | 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 | t2.2xlarge                         | 8     | 32           | EBS only               | -                       | Moderate            | Yes          |
| <input type="checkbox"/>            | General purpose | m4.large                           | 2     | 8            | EBS only               | Yes                     | Moderate            | Yes          |
| <input type="checkbox"/>            | General purpose | m4.xlarge                          | 4     | 16           | EBS only               | Yes                     | High                | Yes          |
| <input type="checkbox"/>            | General purpose | m4.2xlarge                         | 8     | 32           | EBS only               | Yes                     | High                | Yes          |
| <input type="checkbox"/>            | General purpose | m4.4xlarge                         | 16    | 64           | EBS only               | Yes                     | High                | Yes          |
| <input type="checkbox"/>            | General purpose | m4.10xlarge                        | 40    | 160          | EBS only               | Yes                     | 10 Gbps             | Yes          |
| <input type="checkbox"/>            | General purpose | m4.16xlarge                        | 64    | 256          | EBS only               | Yes                     | 20 Gbps             | Yes          |

Cancel Previous **Review and Launch** **Next: Configure Instance Details**

Feedback English

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**\* DO NOT CLICK Configure and Launch \*** There are a lot of options here, but for those of use wanting a free server, there is only one, the **t2micro (Fee tier eligible)** so that makes our decision process pretty simple.

Select **Configure Instance Details** from the bottom right of the page.

Before we launch our instance, we can make some changes. Click the **Add Storage** tab.

The screenshot shows the 'Step 4: Add Storage' configuration page in the AWS Management Console. The navigation bar at the top includes 'Services', 'Resource Groups', and a progress indicator with steps 1 through 7. Step 4, 'Add Storage', is highlighted with a red box. Below the navigation bar, the page title 'Step 4: Add Storage' is followed by a descriptive paragraph. A table lists storage configurations for the 'Root' volume. The table has columns for Volume Type, Device, Snapshot, Size (GiB), Volume Type, IOPS, Throughput (MB/s), Delete on Termination, and Encrypted. The 'Size (GiB)' column for the 'Root' volume is highlighted with a red box and contains the value '8'. Below the table is an 'Add New Volume' button. A blue information box states: '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.' At the bottom right, there are buttons for 'Cancel', 'Previous', 'Review and Launch', and 'Next: Add Tags'.

| Volume Type | Device    | Snapshot              | Size (GiB) | Volume Type               | IOPS       | Throughput (MB/s) | Delete on Termination               | Encrypted     |
|-------------|-----------|-----------------------|------------|---------------------------|------------|-------------------|-------------------------------------|---------------|
| Root        | /dev/xvda | snap-0190f070962758e1 | 8          | General Purpose SSD (GP2) | 100 / 3000 | N/A               | <input checked="" type="checkbox"/> | Not Encrypted |

By default you get a storage area of 8GB, if this is not enough then you can increase it. There is an information box that states (at the time of writing) you can have up to 30GB free. Remember, if you plan to have more than one EC2, you have to split that across them.

I left my configuration at 8GB.

Click the [Add Tags](#) tab.

The screenshot shows the 'Step 5: Add Tags' configuration page in the AWS Management Console. The navigation bar at the top includes 'Services', 'Resource Groups', and a progress indicator with steps 1 through 7. Step 5, 'Add Tags', is highlighted with a red box. Below the navigation bar, the page title 'Step 5: Add Tags' is followed by a descriptive paragraph. A table lists tags for 'Instances' and 'Volumes'. The table has columns for Key, Value, Instances, and Volumes. The 'Key' column is highlighted with a red box and contains the value 'Test Webserver'. The 'Value' column is highlighted with a red box and contains the value 'Test Webserver'. Below the table is an 'Add another tag' button. At the bottom right, there are buttons for 'Cancel', 'Previous', 'Review and Launch', and 'Next: Configure Security Group'.

| Key            | Value          | Instances                           | Volumes                             |
|----------------|----------------|-------------------------------------|-------------------------------------|
| Test Webserver | Test Webserver | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

You don't have to do this, but if you are going to have a lot of instances, it does become necessary. Just add a name for this instance (I used Test Webserver.)

Click the [Configure Security Group](#) tab.

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:

Description:

| Type | Protocol | Port Range | Source           |
|------|----------|------------|------------------|
| SSH  | TCP      | 22         | Custom 0.0.0.0/0 |
| HTTP | TCP      | 80         | 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](#)

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You can look at security groups as a firewall. All ports are closed unless you open them. By default port 22 (SSH) is open, or you would have no access to your OS. As this is going to be a web server, I will also open Port 80.

Click **Add Rule** and select **HTTP** as the type. **0.0.0.0/0, ::0** means accept traffic from any IP Address. For the SSH I would limit that to your own IP (say your work or home IP).

Now you can select **Review and Launch**.

You will be shown a review screen of your selected settings.

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 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-1**, 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](#)

**Amazon Linux AMI 2017.03.1 (HVM), SSD Volume Type - ami-ed100689**

The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.

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](#)

Security group name: launch-wizard-1  
Description: launch-wizard-1 created 2017-07-23T15:53:28.995+01:00

| Type | Protocol | Port Range | Source    |
|------|----------|------------|-----------|
| SSH  | TCP      | 22         | 0.0.0.0/0 |
| HTTP | TCP      | 80         | 0.0.0.0/0 |
| HTTP | TCP      | 80         | ::0       |

Instance Details [Edit instance details](#)

Storage [Edit storage](#)

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

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If you are happy, select **Launch** in the bottom right hand corner of the page.

You will be presented with a pop up that is asking about **Key Pairs**. When using SSH, **key pairs** are used rather than a simple username and password as **key pairs** are much more secure.

## 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](#).

Choose an existing key pair

Select a key pair

No key pairs found



### No key pairs found

You don't have any key pairs. Please create a new key pair by selecting the **Create a new key pair** option above to continue.

Cancel

Launch Instances

Where you see [Choose an existing key pair](#), you need to change this to [Create a new key pair](#).

## 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](#).

Choose an existing key pair

Choose an existing key pair

Create a new key pair

Proceed without a key pair



### No key pairs found

You don't have any key pairs. Please create a new key pair by selecting the **Create a new key pair** option above to continue.

Cancel

Launch Instances

Select a new for the new key pair, and click the [Download Key Pair](#) button.

You will see the [.pem](#) file download (this is browser specific).

Click the [Launch Instances](#) button.

Services Resource Groups

Launch Status

Your instances are now launching  
The following instance launches have been initiated: i-0228b1b647ec82a93 [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).

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

While your instances are launching you can also

- Create status check alarms to be notified when these instances fail status checks. (Additional charges may apply)
- Create and attach additional EBS volumes (Additional charges may apply)
- Manage security groups

[View instances](#)

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The next page confirms that your instance is launching.

Click the [View Instances](#) button.

Services Resource Groups

EC2 Dashboard

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)        | IPv4 Public IP | IPv6 IPs | Key Name   | Monitoring | Launch Time   |
|------|---------------------|---------------|-------------------|----------------|---------------|--------------|--------------------------|----------------|----------|------------|------------|---------------|
|      | i-0228b1b647ec82a93 | t2.micro      | eu-west-2a        | running        | Initializing  | None         | ec2-35-176-205-194.eu... | 35.176.205.194 | -        | TestWebSvr | disabled   | July 23, 2017 |

Instance: i-0945a01641bcta807 Public DNS: -

Description Status Checks Monitoring Tags

Instance ID: i-0945a01641bcta807  
Instance state: terminated  
Instance type: t2.micro  
Elastic IPs: -  
Availability zone: eu-west-2a  
Security groups: -  
Scheduled events: -

Public DNS (IPv4): -  
IPv4 Public IP: -  
IPv6 IPs: -  
Private DNS: -  
Private IPs: -  
Secondary private IPs: -  
VPC ID: -

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On this page we can see the information about our instance. The part we will need initially is the IP Address.

## Connecting to the EC2 Instance

To connect to the EC2 instance you will need your **IP Address** (obtained from the EC2 Status Page) and you will need the .pem **key pair** file you downloaded.

Services Resource Groups

EC2 Dashboard

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)        | IPv4 Public IP | IPv6 IPs | Key Name   | Monitoring | Launch Time   |
|------|---------------------|---------------|-------------------|----------------|---------------|--------------|--------------------------|----------------|----------|------------|------------|---------------|
|      | i-0228b1b647ec82a93 | t2.micro      | eu-west-2a        | running        | Initializing  | None         | ec2-35-176-205-194.eu... | 35.176.205.194 | -        | TestWebSvr | disabled   | July 23, 2017 |

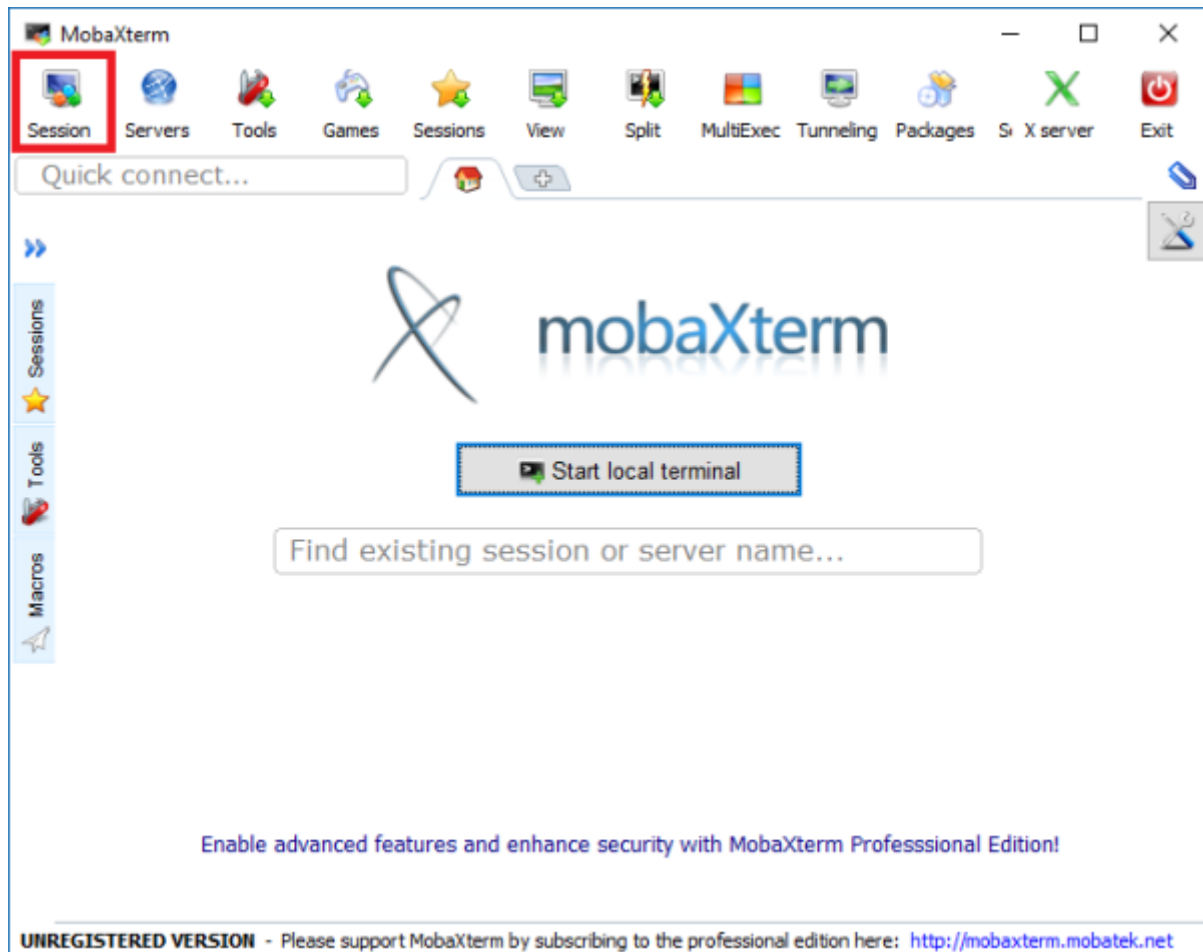
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If you have neither of these, please read the entire guide.

To be able to connect you will need a suitable SSH program, of which there are many. The most popular is probably Putty, however to use putty you need to use Puttygen to convert the .pem key first. So I am using another free application called **MobaXterm** which you can download from [HERE](#):

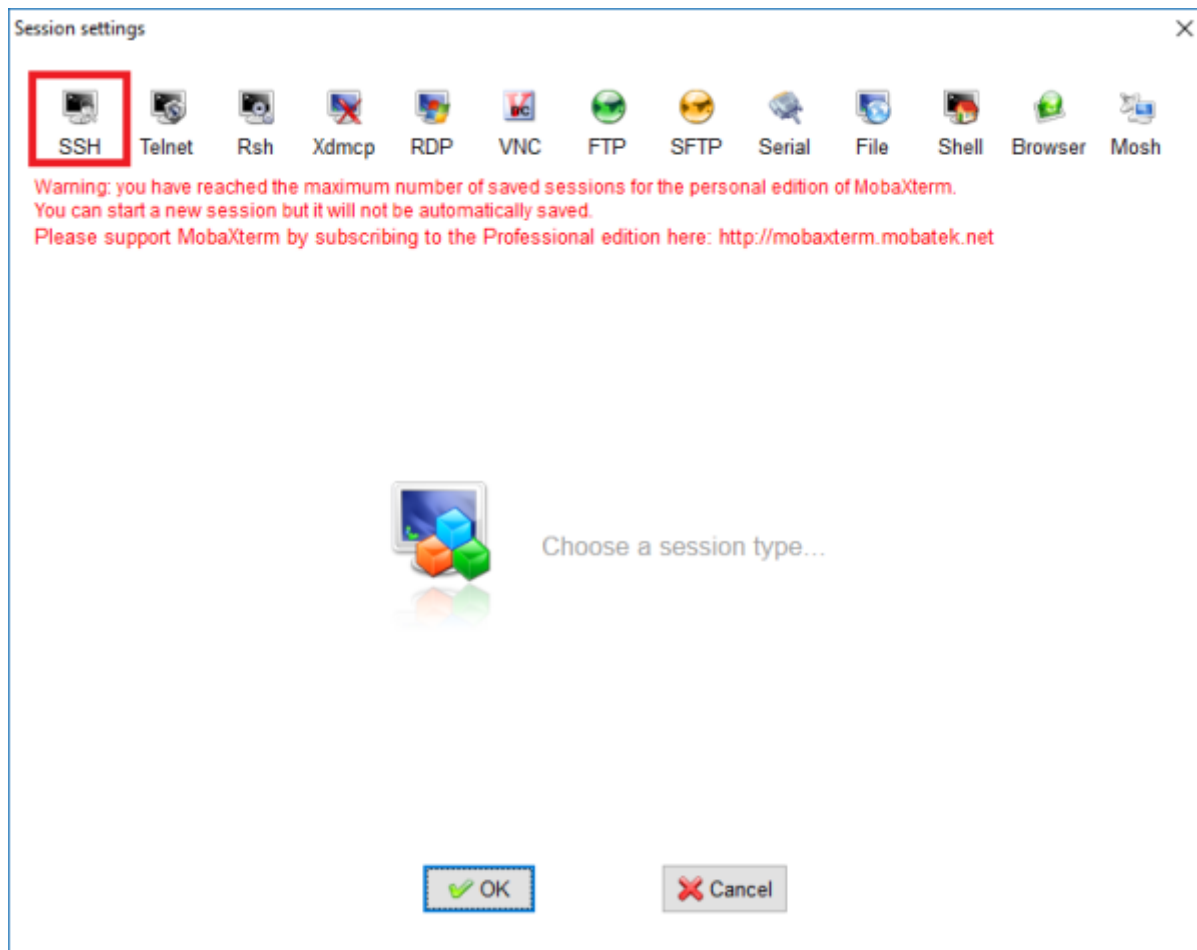
Once installed, run MobaXterm.



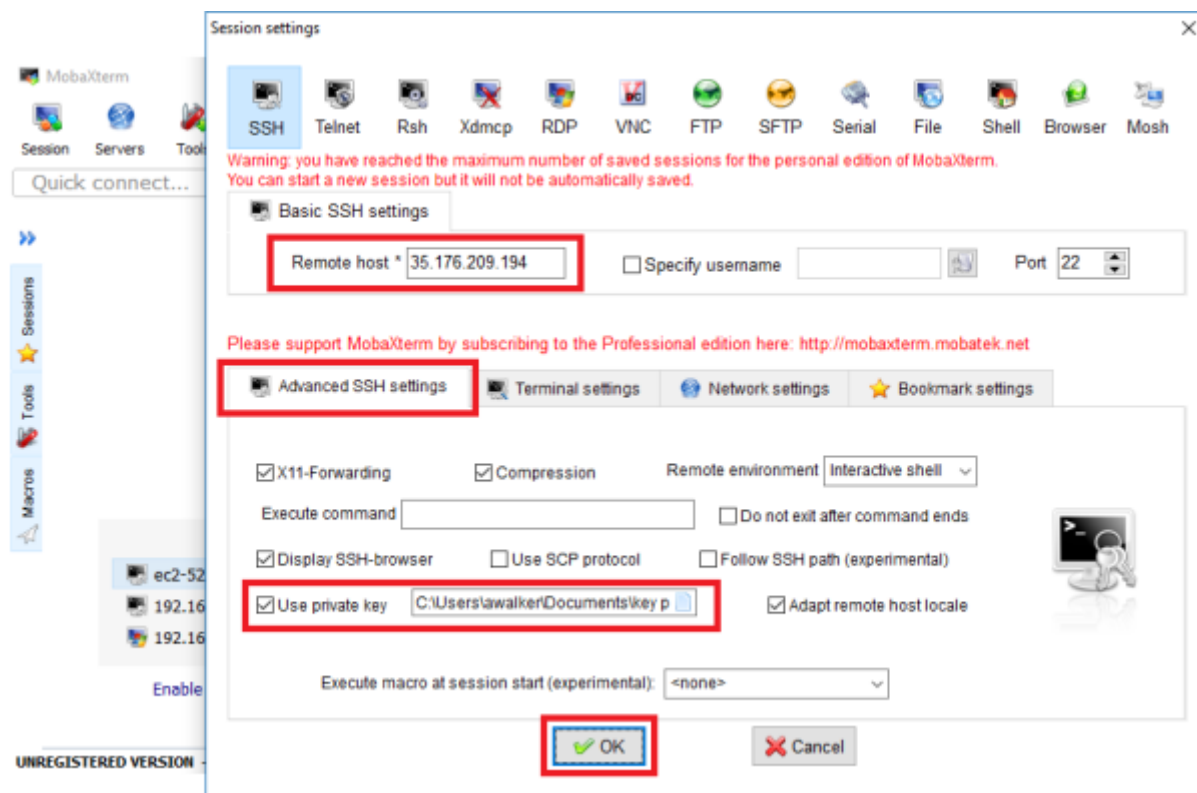
At the top of the page, select **Session**.

Then select **SSH**.





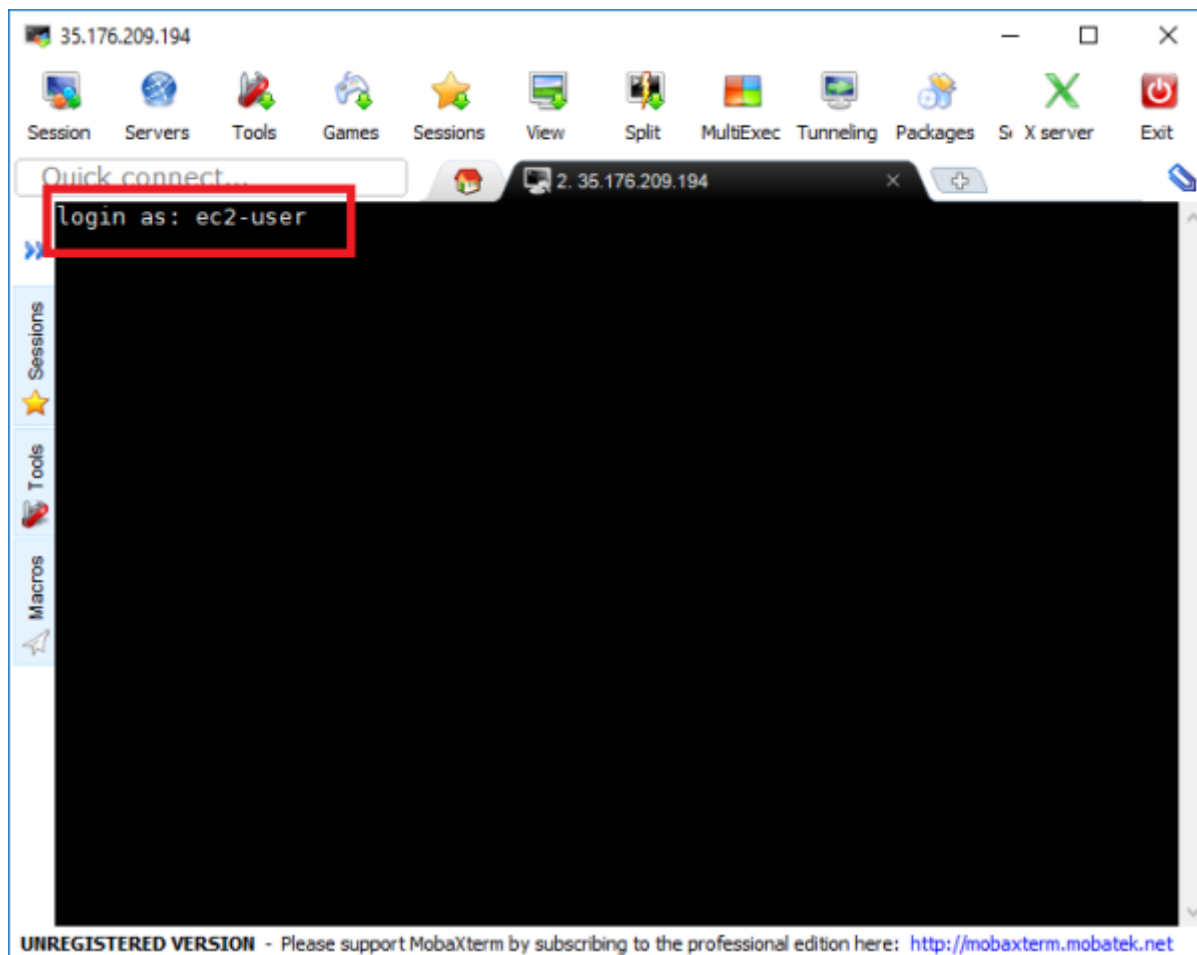
The SSH Page will open and we have to enter the following information.



**Remote Host:** This is the IP Address of your EC2 Instance. **Advanced Settings:** Click this tab, select **Use Private Key** and navigate to where you saved your **key pair**.

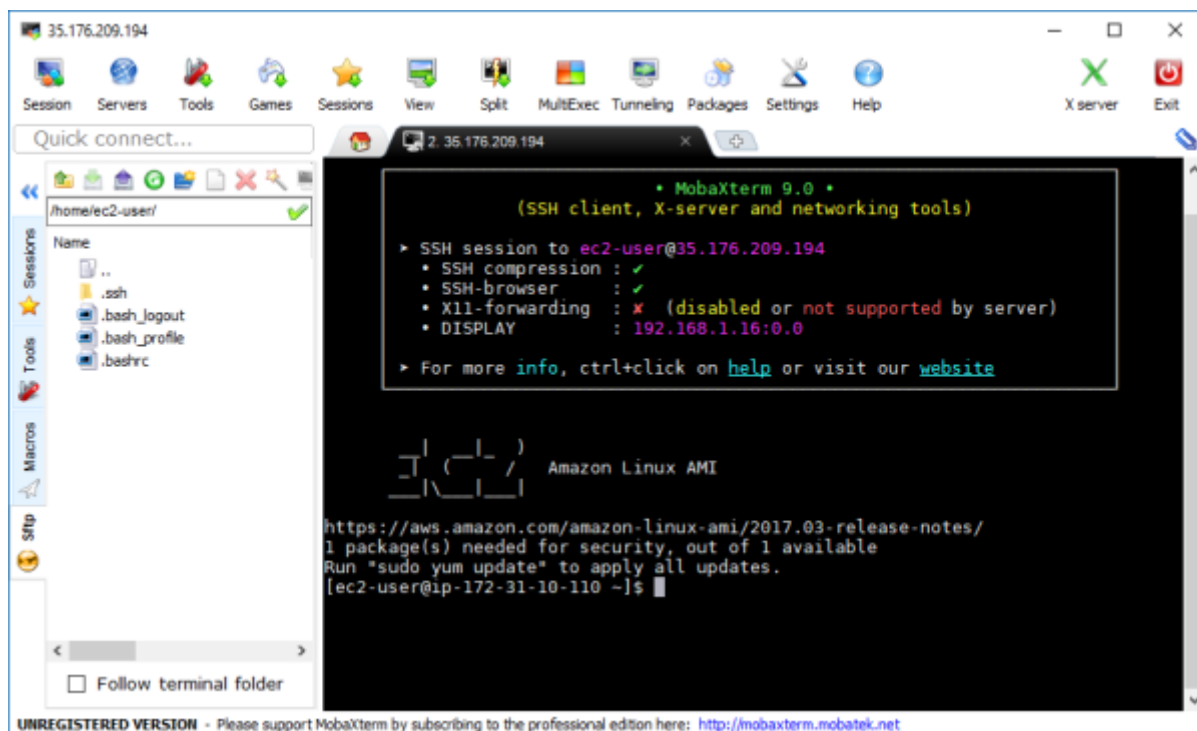
Click **OK**.

MobaXterm will now connect to your EC2 instance, using your key pair to authenticate.



You will have to enter a password. The default password is `ec2-user` (case sensitive)

Once you enter the password you should be at the console.

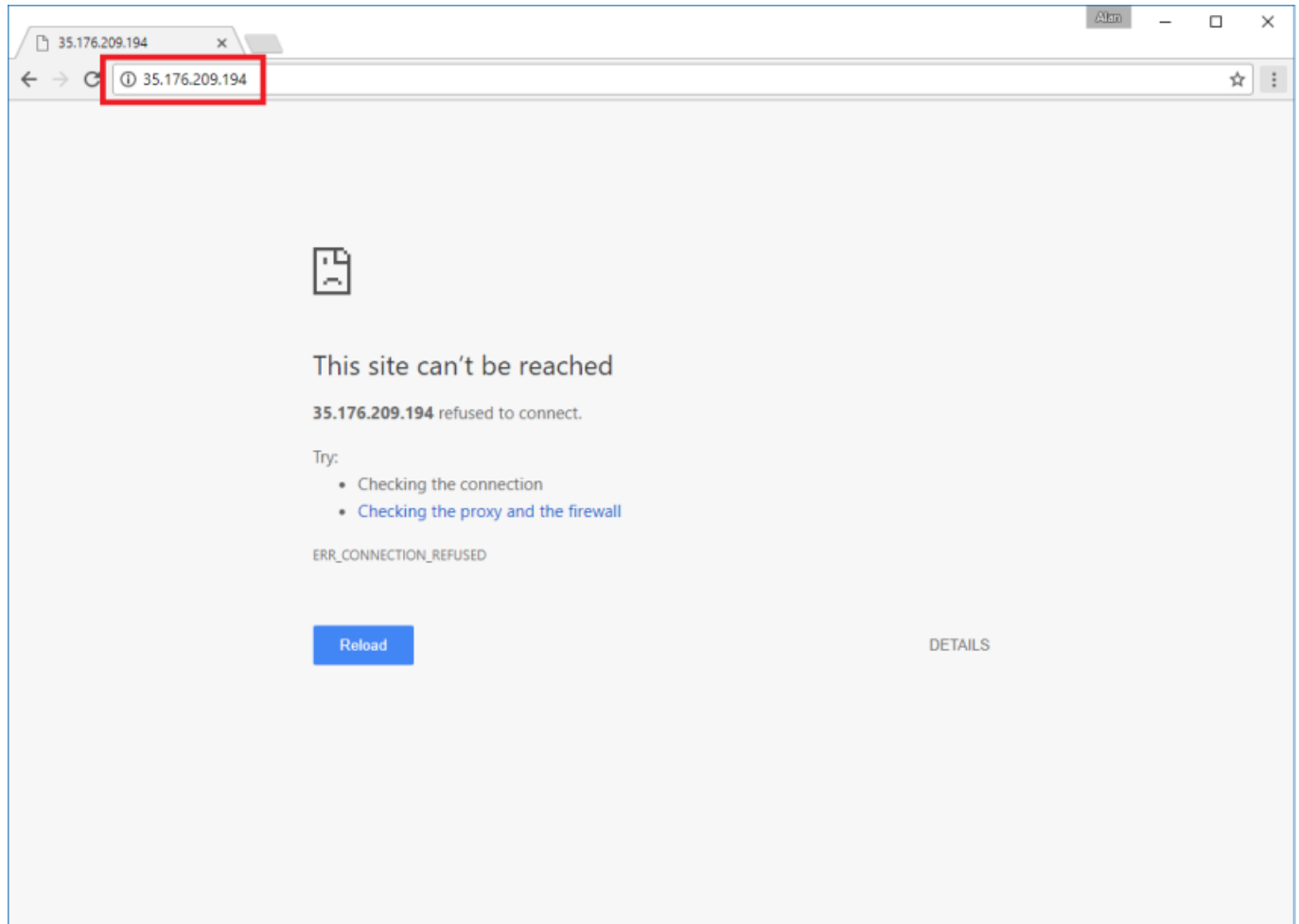


You can now enter standard Linux commands, that's it, you are now connected to your EC2 instance.

## Install the Web Server

As this example is a simple web server, lets install a web server and give it a little test.

First thing to do is to navigate to the IP Address of you EC2 instance, to ensure there is nothing already running.



You should see that there is nothing on this IP Address.

So we can install a web server. Open MobaXterm and from the command line enter:

```
sudo yum install httpd -y
```

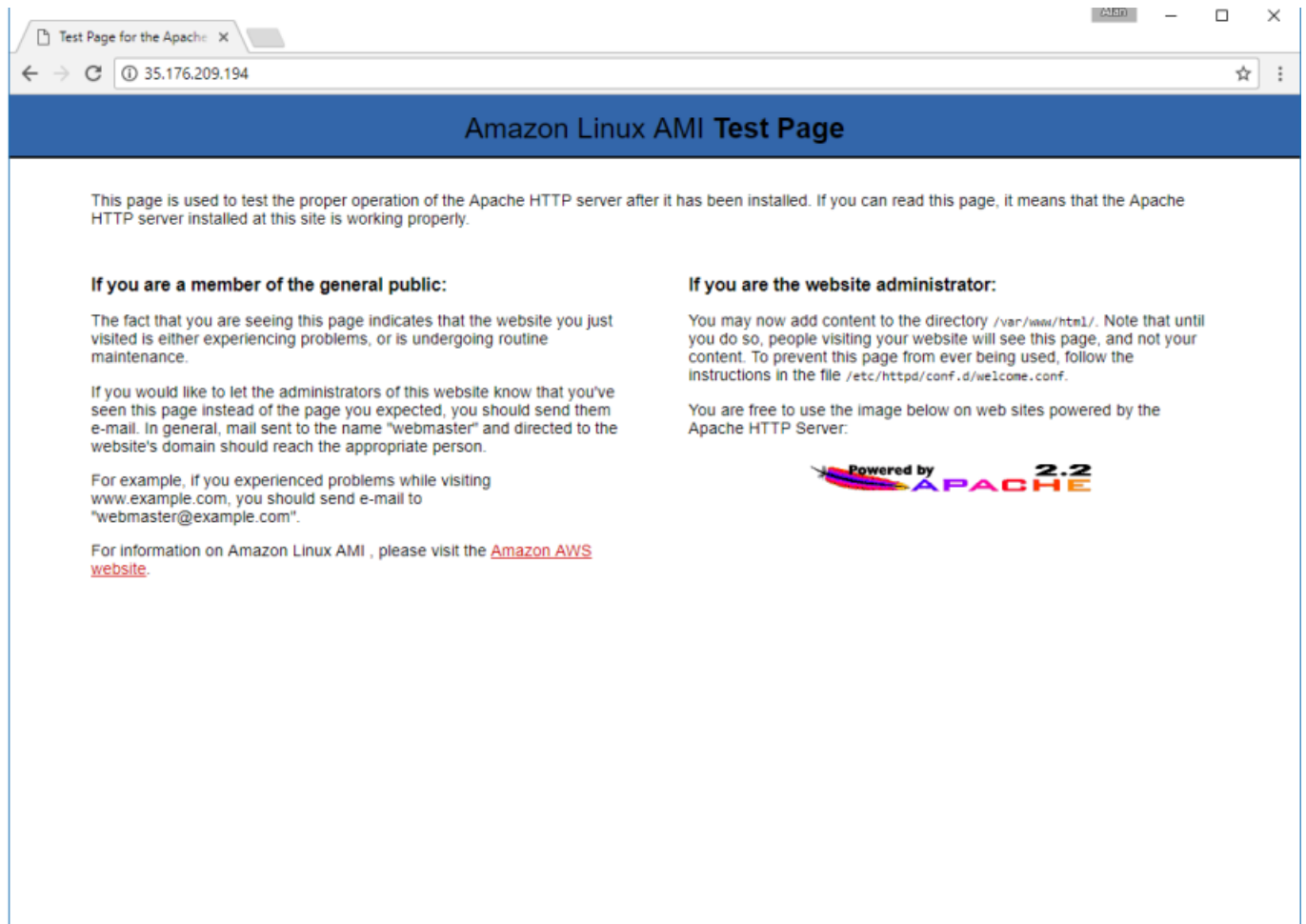
This will install Apache web server, and configure the basic system files required for it to run.

Once installed, you will have to start the Apache service. You can do this with:

```
sudo service httpd start
```

You should see a confirmation that looks like: Starting httpd: [ OK ]

Now you can retest your connection from a web browser.



You should see an Apache test web page, this means your server is running and you can start to build and upload your test website.

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