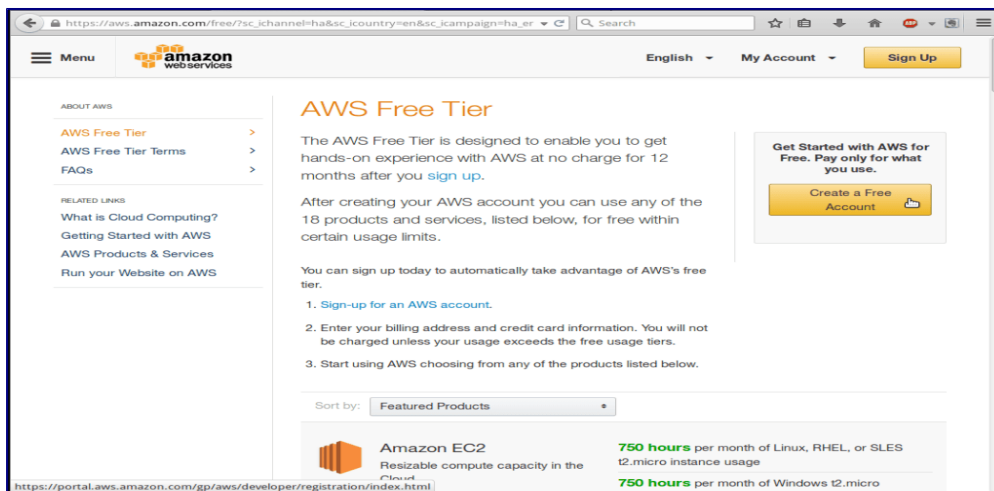




Create a Free VPS On Amazon Web Services

As an incentive to use their service, Amazon Web Services offers new users a “free tier” of service that provides a VPS “micro-instance” at no cost for one year.



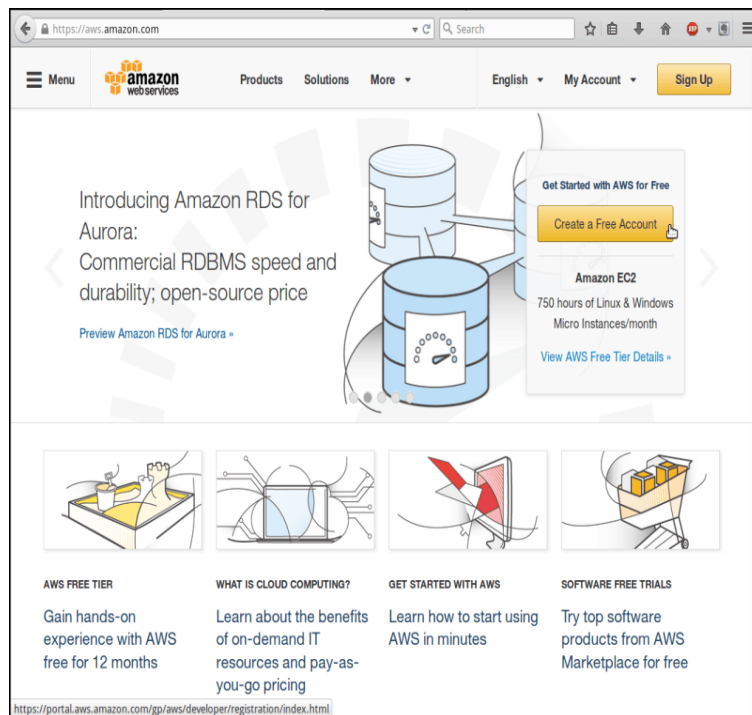
The free tier of service is fairly flexible. Amazon AWS provides enough free hours to run the micro-instance twenty-four hours a day for a year but, if a user needs more services, he or she may create multiple micro instances and run them concurrently, which multiplies the rate the user consumes hours. For example, one could run two micro-instances concurrently every day for six months; or twelve for one month.

In this guide, we'll show how to set up the free server, and how to connect to it using SSH.

Create an AWS account

The first step is to create a user account on AWS. Go to the [AWS Free Tier web page](#) and click on "Sign up for AWS Account"

Then, click on "Create a free Account".



Click on the "Free Account" button

Follow the directions provided on the AWS web site to set up a user account. You need to have a mobile phone for identity verification.

If you already have an account on *amazon.com*, you can use your already existing account to log into AWS services.

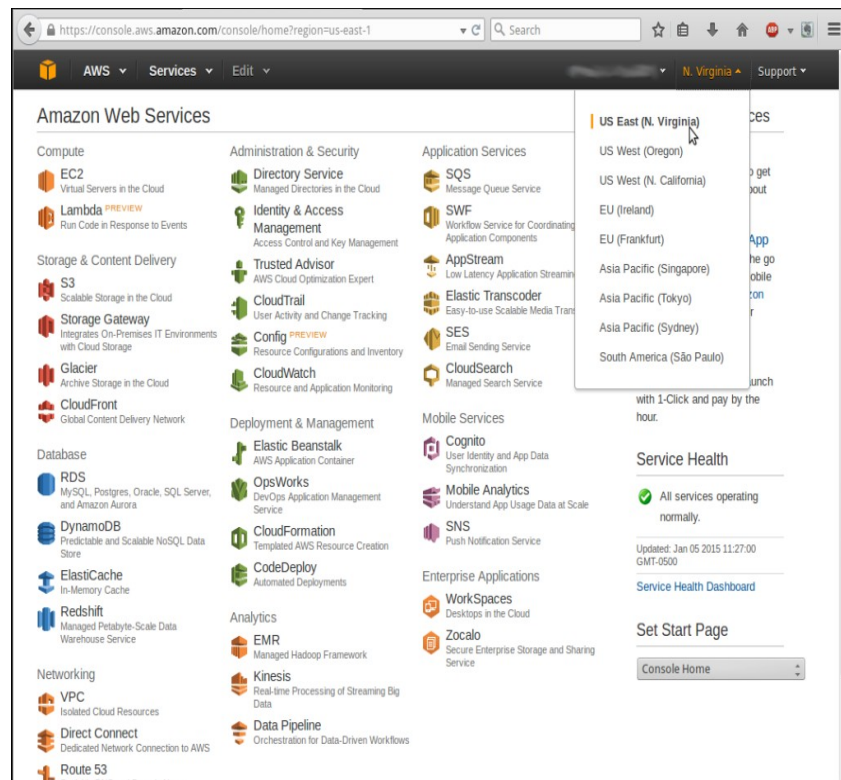
Create a free instance

Amazon AWS provides excellent documentation and video tutorials. You can follow the Amazon documentation or you can follow the procedure we describe below.

Log into the [AWS Console web page](https://console.aws.amazon.com/console/home?region=us-east-1), login using your Amazon userid and password.

Select datacenter location

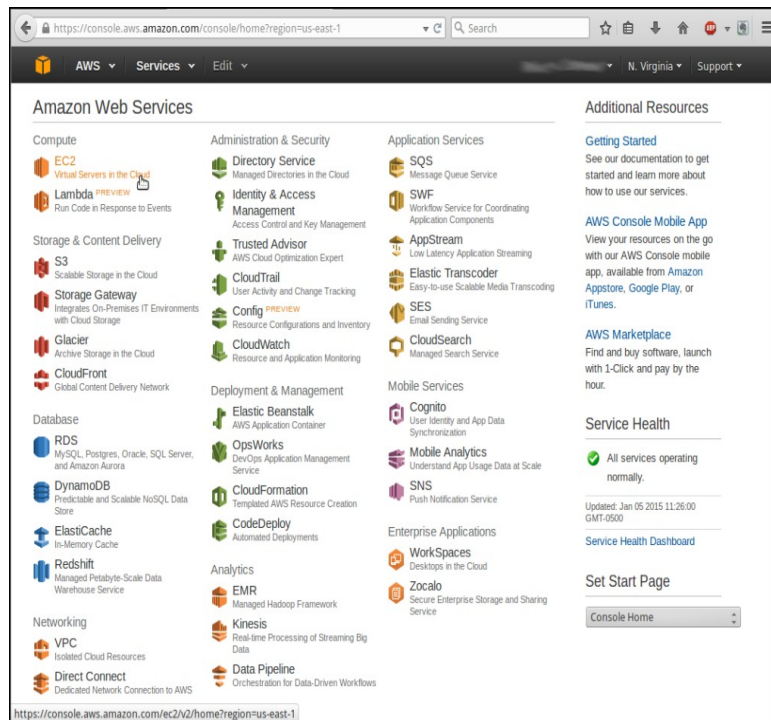
Select the datacenter where your instance will be created. When you are experimenting with a free VPS, you should choose the datacenter closer to your location.



Select the closest datacenter

Use the Elastic Compute (EC2) service

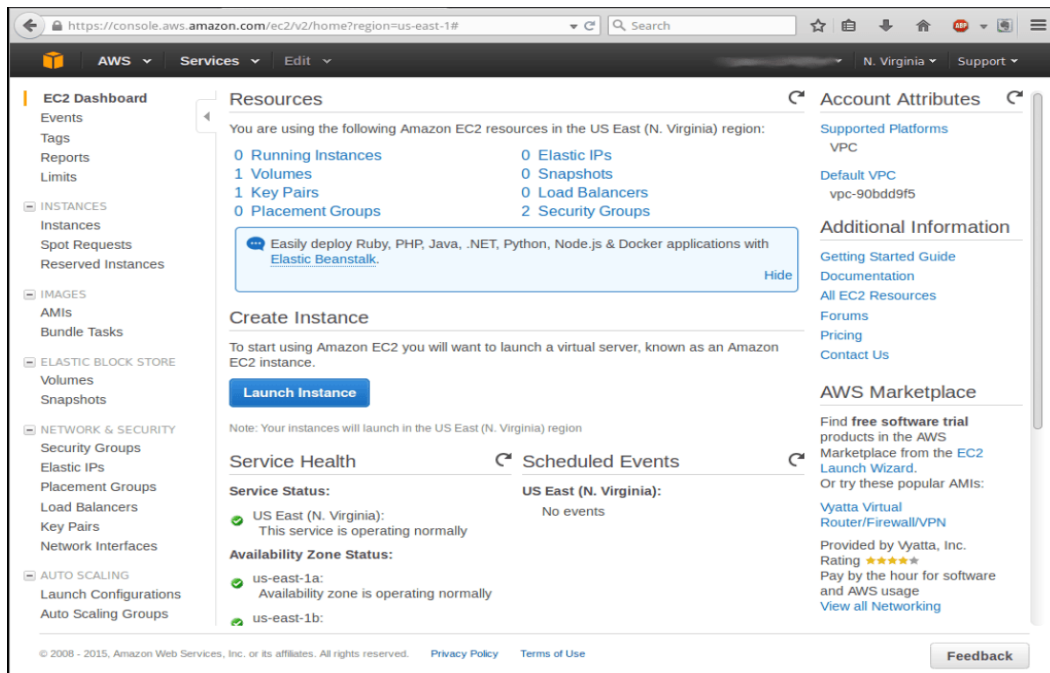
Access the *Elastic Compute* service. Click on "EC2" in the upper-left corner of the AWS portal page.



Select the **EC2** service

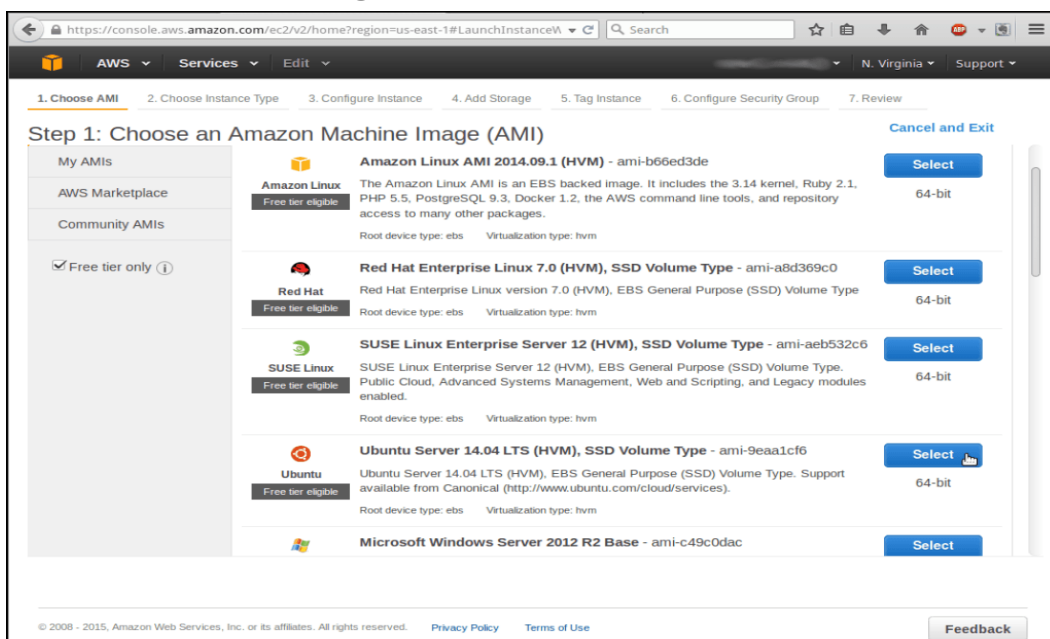
Choose base image

Click on big "Launch instance" button. You will see the available instance types. Note: you can upload your own if you need to, but that is another topic.



Click on big "Launch instance" button

Click on the "Free-tier only" check box to show the images available for the free micro-instance option we are using.



Select instance type

HVM or PV?

When selecting an instance, pay attention to whether it is an *HVM* instance or a *PV* instance. This is usually indicated in parenthesis at the end of the instance name. To understand the difference between HVM instances and PV instances, see the [Amazon AWS virtualization types section](#) of the AWS documentation.

The summary is that HVM is probably the best instance type for most users. Choose HVM.

Select instance type

Choose the default instance type, *t2.micro*, which is eligible for the free tier of service. Then, click on the "Next: Configure Instance Details" button at the bottom left of the page.

Step 2: Choose an Instance Type

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

Filter by: All instance types Current generation [Show/Hide Columns](#)

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

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
<input checked="" type="checkbox"/>	General purpose	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	m3.medium	1	3.75	1 x 4 (SSD)	-	Moderate
<input type="checkbox"/>	General purpose	m3.large	2	7.5	1 x 32 (SSD)	-	Moderate
<input type="checkbox"/>	General purpose	m3.xlarge	4	15	2 x 40 (SSD)	Yes	High
<input type="checkbox"/>	General purpose	m3.2xlarge	8	30	2 x 80 (SSD)	Yes	High

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Configure Instance Details](#)

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[Feedback](#)

Select micro instance



Use all the default settings. Click on the “Review and Launch” button.

The screenshot shows the AWS Management Console interface for configuring an EC2 instance. The breadcrumb trail at the top indicates the steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance (current step), 4. Add Storage, 5. Tag Instance, 6. Configure Security Group, and 7. Review. The main heading is 'Step 3: Configure Instance Details', followed by a sub-header explaining that the instance can be configured to suit requirements, such as launching multiple instances from the same AMI or requesting Spot Instances for lower pricing. The configuration options are as follows:

- Number of instances:** 1
- Purchasing option:** ☐ Request Spot Instances
- Network:** vpc-90bdd9f5 (172.31.0.0/16) (default) [Create new VPC](#)
- Subnet:** No preference (default subnet in any Availability Zone) [Create new subnet](#)
- Auto-assign Public IP:** Use subnet setting (Enable)
- IAM role:** None
- Shutdown behavior:** Stop
- Enable termination protection:** ☐ Protect against accidental termination
- Monitoring:** ☐ Enable CloudWatch detailed monitoring [Additional charges apply.](#)
- Tenancy:** Shared tenancy (multi-tenant hardware) [Additional charges will apply for dedicated tenancy.](#)

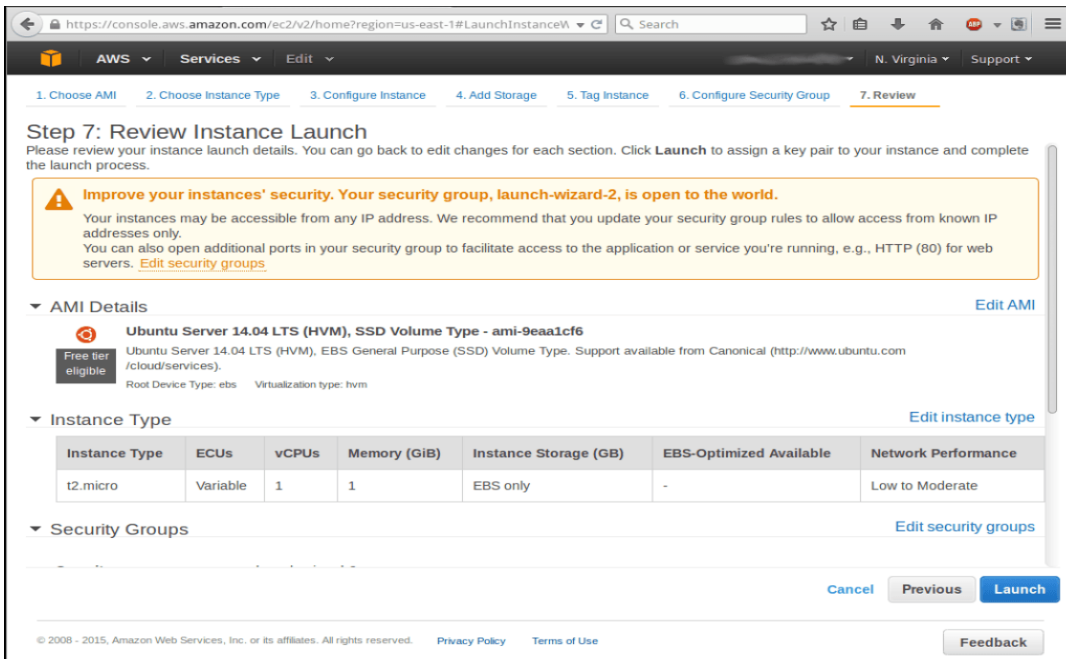
At the bottom of the configuration section, there are four buttons: 'Cancel', 'Previous', 'Review and Launch' (which is highlighted with a mouse cursor), and 'Next: Add Storage'. The footer of the console shows the copyright notice '© 2008 - 2015, Amazon Web Services, Inc. or its affiliates. All rights reserved.', links for 'Privacy Policy' and 'Terms of Use', and a 'Feedback' button.

Click on the “Review and Launch” button

Launch the instance

Review settings and launch the instance. For now, ignore the security warning. Depending on how you plan to use your instance you may wish to set stronger security setting.

Click on the "Launch" button.



Click on the "Launch" button

Download private key

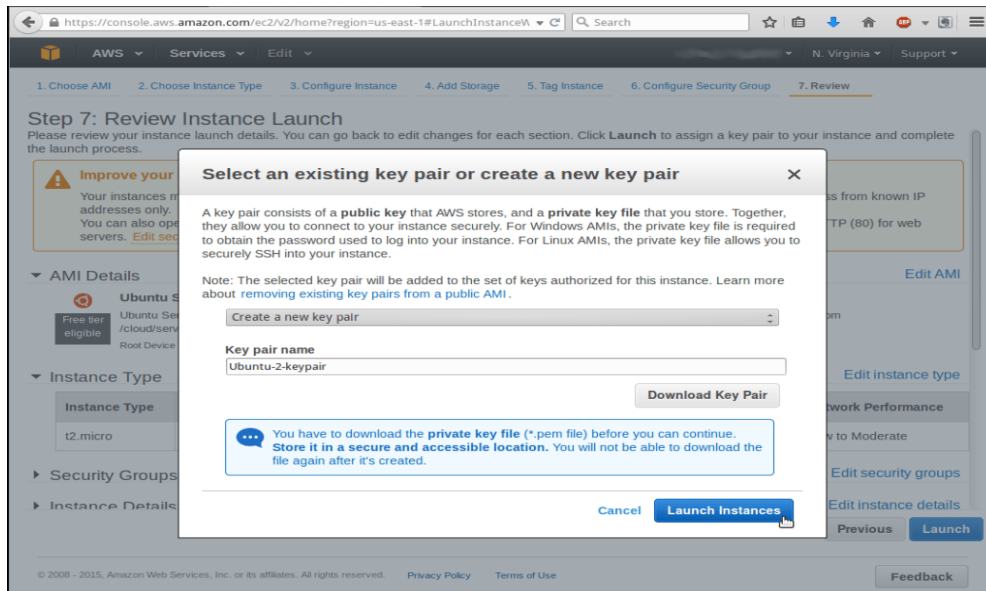
You will be asked to select a key pair that the instance will use to identify the legitimate user who connects to it via SSH when it is running.

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. The private key file allows you to securely SSH into your instance.



Choose the “Create a new key pair” option from the menu options, then give the key pair a name.

Then click on “Download Key Pair”. Save the file to your hard drive.



Click on “Download Key Pair”

Make a note of the directory in which you chose to store the key pair file because you will need it later. In my case, I put it in my *Documents* folder so the full path of the file is:

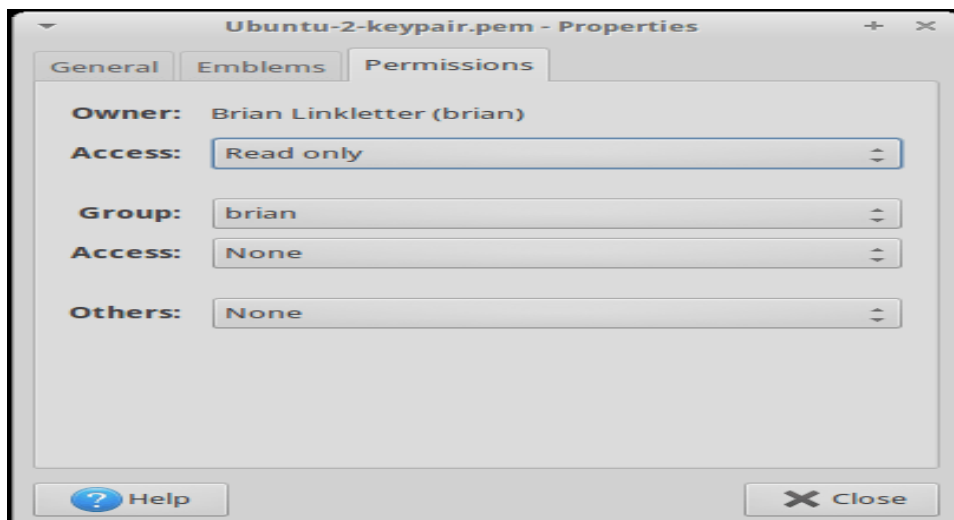
~/Documents/Ubuntu-2-keypair.pem.

Finally, click on the “Launch Instances” button.

Secure key pair file permissions

Set permissions for the key. SSH will not allow you to the key pair file unless the file permissions are secure.

Navigate to the file in the File Manager, right-click on the file and select *Properties* from the drop-down menu. In the *properties* dialogue box, click on the *Permissions* tab. Change the user permissions to "Read Only". Change group access permissions to "None" and Others access to "None". Then click the "Close" button.



Click the "Close" button

Alternatively, use the terminal and enter the command:

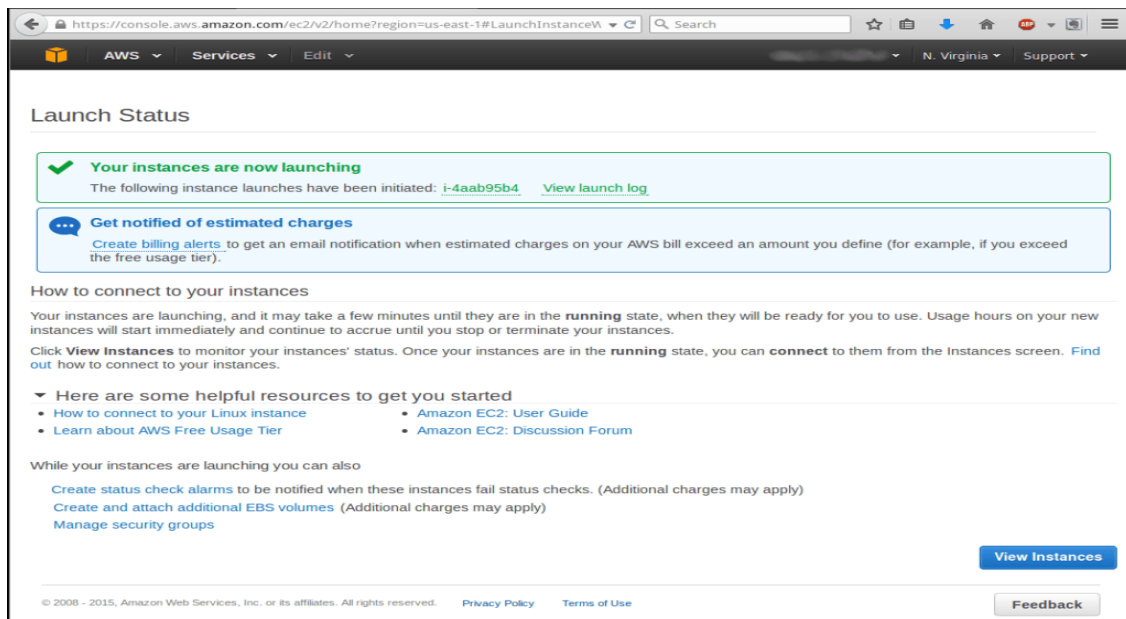
```
$ cd ~/Documents
```

```
$ sudo chmod 400 Ubuntu-2-keypair.pem
```



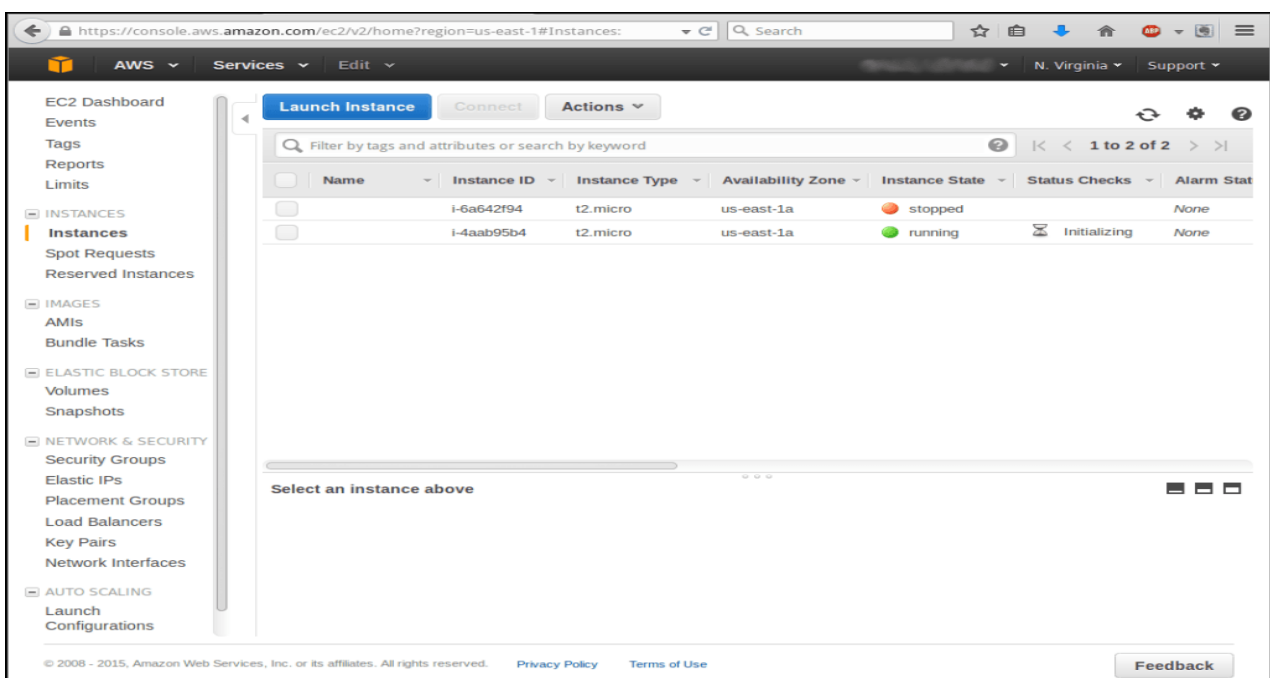
Manage instances

After you clicked on the “Launch Instances” button, the instance started launching. To manage instances, click the “view Instance” button.



Click the “view Instance” button

See the instances you have created in the AWS Console. In my case I have two instances: one I created earlier and the one I created just now, which is initializing.



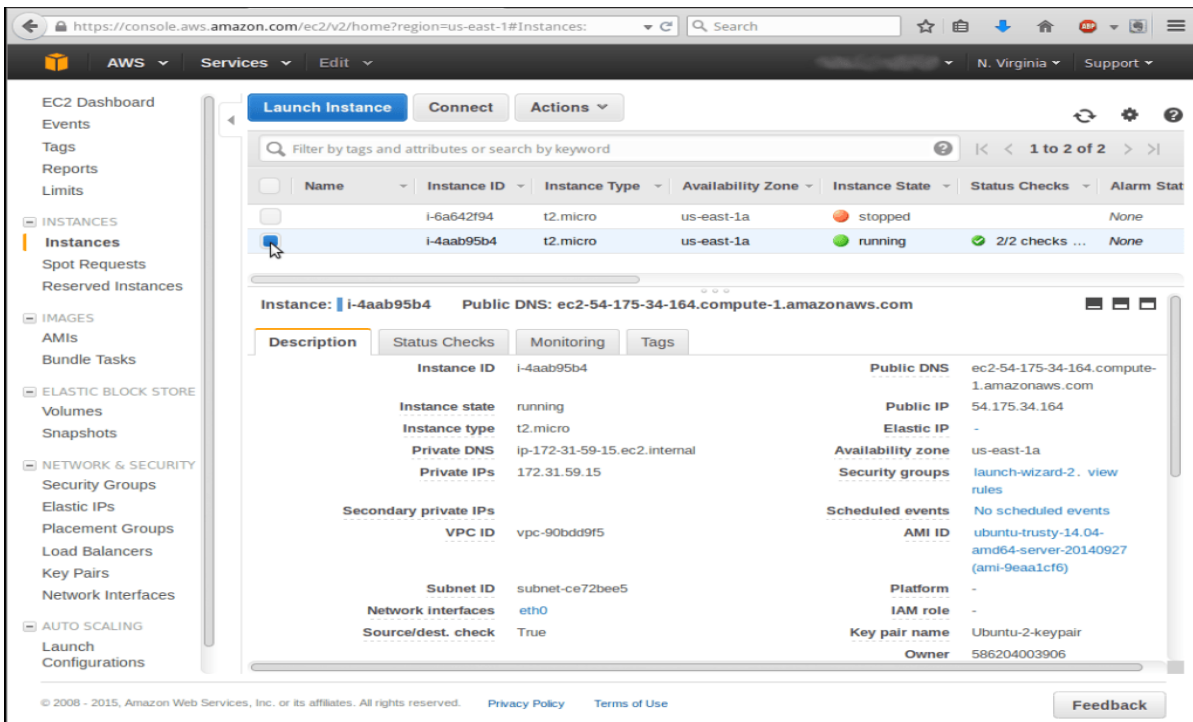
Instance is initializing

Wait until the status of the instance changes to "running", then log into it.

Log in to the VPS

we can log into a running instance using the SSH protocol. SSH comes built-in on Linux and Mac OS X. To access the instance from a Windows PC, install the free [Putty](#) program.

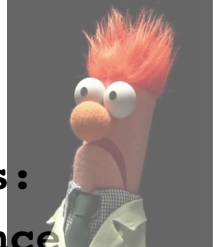
To log into the VPS, we need to know the IP address assigned to the instance. Click on the check box next to the instance to view information about it.



The screenshot shows the AWS Management Console interface. On the left is a navigation menu with categories like INSTANCES, IMAGES, ELASTIC BLOCK STORE, NETWORK & SECURITY, and AUTO SCALING. The 'INSTANCES' section is selected, showing a list of two instances. The instance 'i-4aab95b4' is highlighted, and its details are shown on the right. The instance is in the 'running' state. The details are organized into two columns: 'Description' and 'Monitoring'. The 'Description' column lists various attributes like Instance ID, Instance state, Instance type, Private DNS, Private IPs, Secondary private IPs, VPC ID, Subnet ID, Network interfaces, and Source/dest. check. The 'Monitoring' column lists Public DNS, Public IP, Elastic IP, Availability zone, Security groups, Scheduled events, AMI ID, Platform, IAM role, Key pair name, and Owner.

Description		Monitoring	
Instance ID	i-4aab95b4	Public DNS	ec2-54-175-34-164.compute-1.amazonaws.com
Instance state	running	Public IP	54.175.34.164
Instance type	t2.micro	Elastic IP	-
Private DNS	ip-172-31-59-15.ec2.internal	Availability zone	us-east-1a
Private IPs	172.31.59.15	Security groups	launch-wizard-2. view rules
Secondary private IPs	-	Scheduled events	No scheduled events
VPC ID	vpc-90bdd9f5	AMI ID	ubuntu-trusty-14.04-amd64-server-20140927 (ami-9eaa1cf6)
Subnet ID	subnet-ce72bee5	Platform	-
Network interfaces	eth0	IAM role	-
Source/dest. check	True	Key pair name	Ubuntu-2-keypair
		Owner	586204003906

View information about the instance



In this example, we see the public IP address is: 54.175.34.164. Note that, if we stop this instance and start it again, it will be assigned a different IP address (and DNS name).

See the Amazon AWS documentation for [accessing AWS Linux instances](#) to see more details

Use SSH

Login to instance using the key pair file we generated and downloaded. As you recall, in this case we named the file *Ubuntu-2-keypair.pem* and saved it in the *Documents* folder.

In the terminal, enter the following command:

```
$ ssh -i ~/Documents/Ubuntu-2-keypair.pem  
ubuntu@54.175.34.164
```

Note that the userid configured on the instance by default is *ubuntu*. You will see a security warning. Ignore it and respond "yes".

```
The authenticity of host '54.175.34.164  
(54.175.34.164)' can't be established.  
ECDSA key fingerprint is  
cc:94:f4:d6:95:4e:75:aa:f2:86:c6:94:9e:0f:c9:0f.  
Are you sure you want to continue connecting  
(yes/no)?
```

Now we have access to the Ubuntu Linux Bash shell running on the VPS in Amazon's datacenter. In future posts we will explore using this VPS to run open-source network simulation software.

Stop the instance

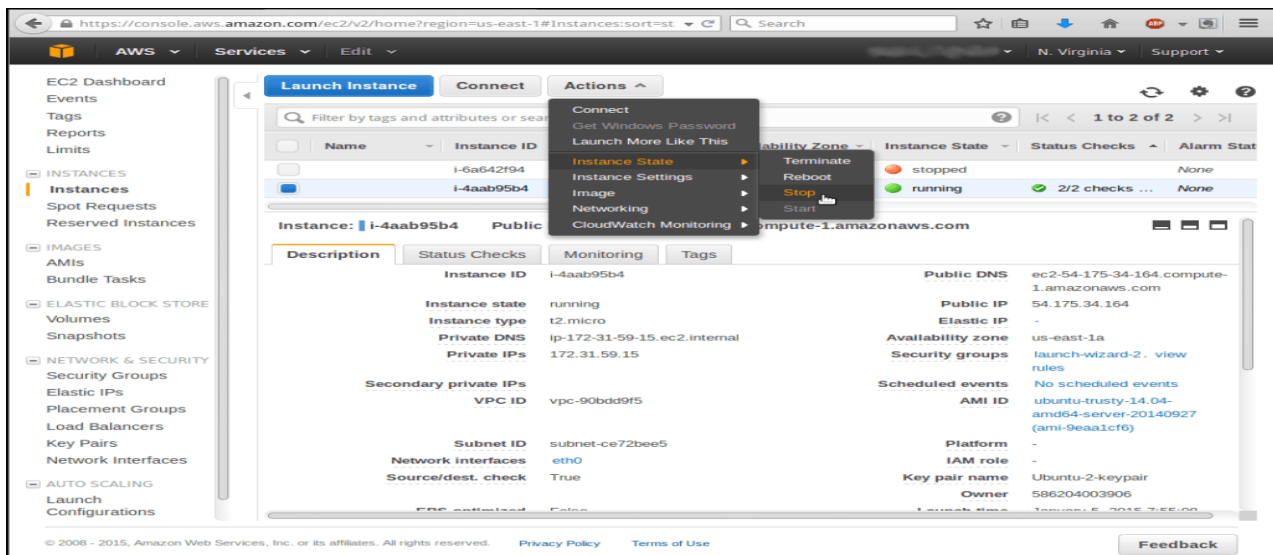
If you want to stop the instance so that you do not consume the free hours provided as part of the Free Tier option, follow the procedure shown below.

First, exit the instance

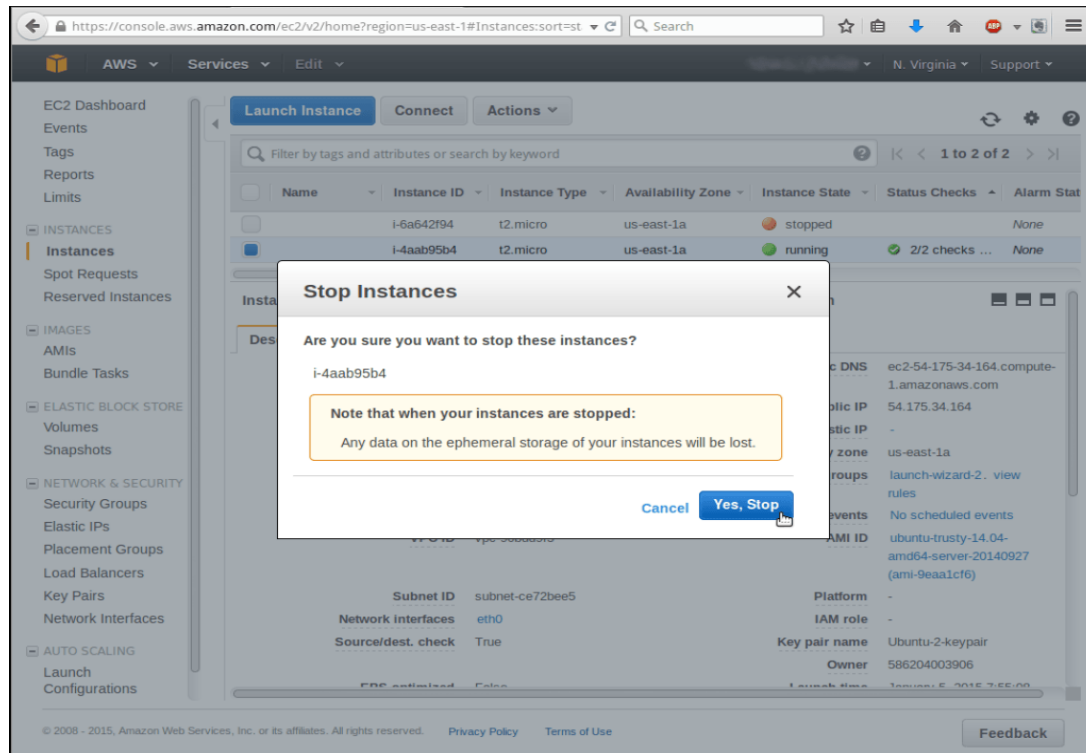
```
$ exit
```

Now, stop the instance in a way that saves the changes we have made so we can use them when we start it again.

On the Console web page, select the instance we are running and then click on the "Actions" button. Select "Instance State" from the drop-down window and select "Stop".



Stop the instance



Confirm in the pop-up window. Do not worry about losing storage because we did not set up any storage volumes.

Confirm stopping the instance

Remember, when we start this instance again, we will have to use a new IP address when logging into the instance.

AWS Console

To access the management console for your VPS on Amazon AWS, log in using the AWS Console at the following [URL](#)