# DSA Course Instance Guide

## DS201 - DataStax Enterprise Foundations of Apache Cassandra™

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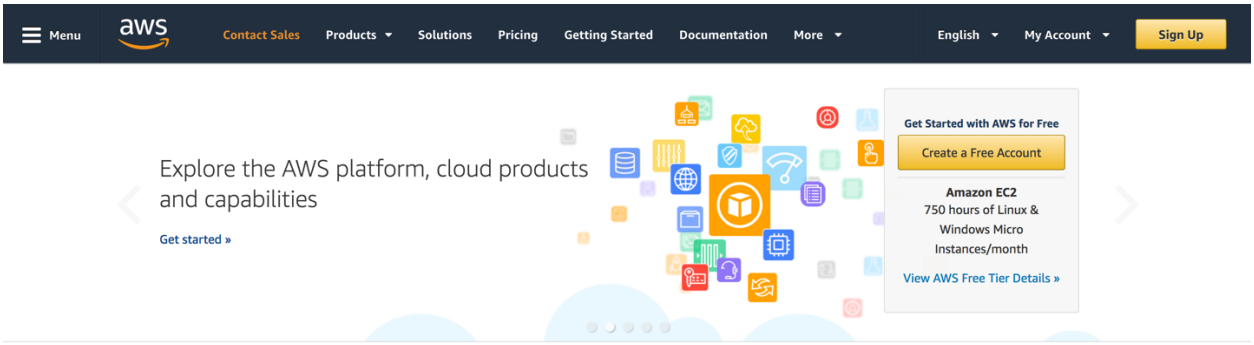
# Obtaining an AWS Account

You will need your own AWS account, or have one provided from your company or organization in order start up an instance.

To sign up for an AWS account, go to https://aws.amazon.com and click on **Create a Free Account** and follow the instructions there. Although some usage of AWS may be free, DataStax Academy instances do not run on the AWS Free Tier and will cost money to run.




You may find additional documentation about AWS here: https://aws.amazon.com/documentation/

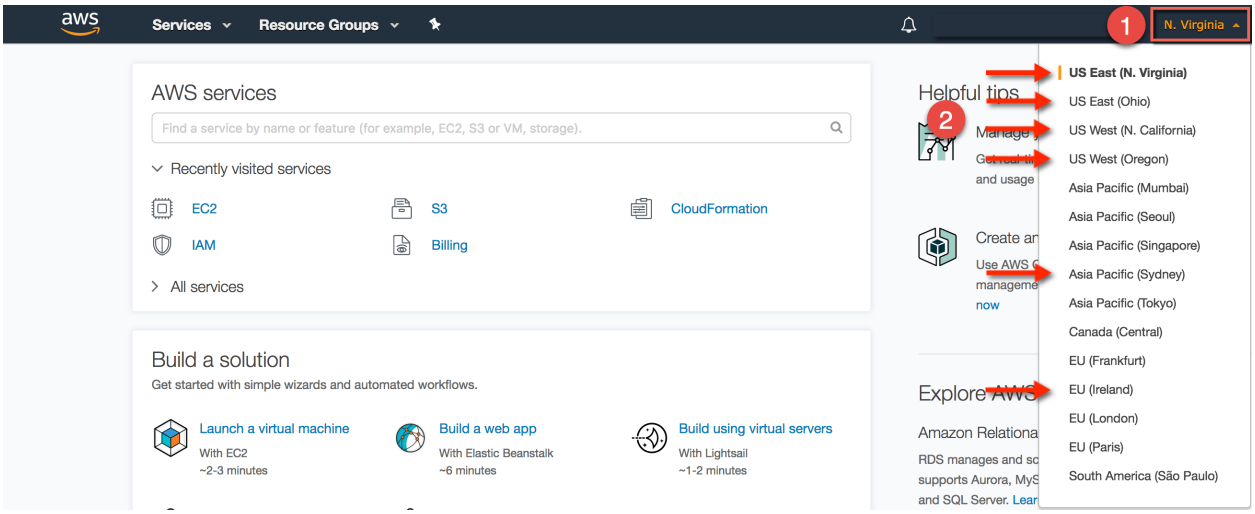
# Starting an Instance

## AWS Management Console

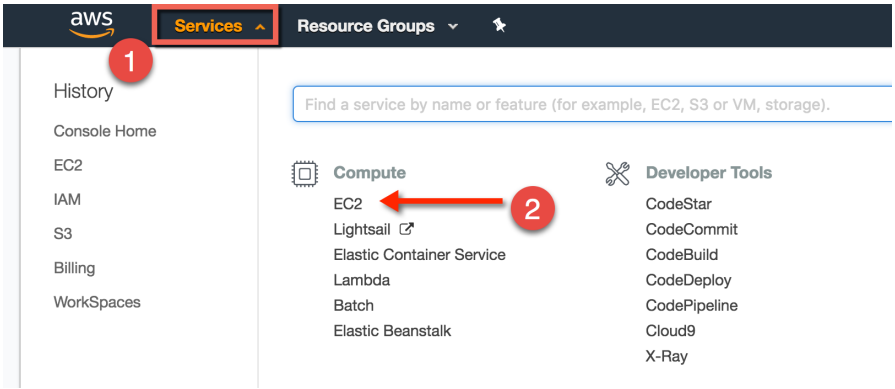
To start an instance, you will first need to sign into the AWS Management Console at https://aws.amazon.com/console.

After you sign in, make sure to select one of the supported regions, whichever region is closest to you:

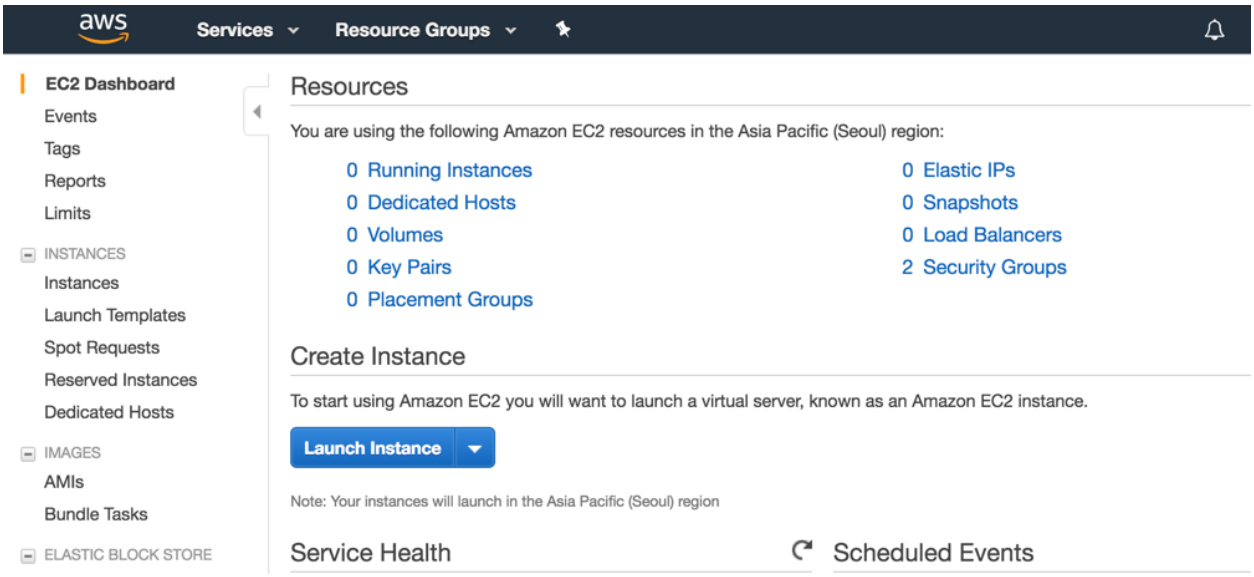
**US East (N. Virginia) – us-east-1**
**US East (Ohio) – us-east-2**
**US West (N. California) – us-west-1**
**US West (Oregon) – us-west-2**
**Asia Pacific (Sydney) – ap-southeast-2**
**EU (Ireland) – eu-west-1**




Afterwards click on **Services > EC2**.

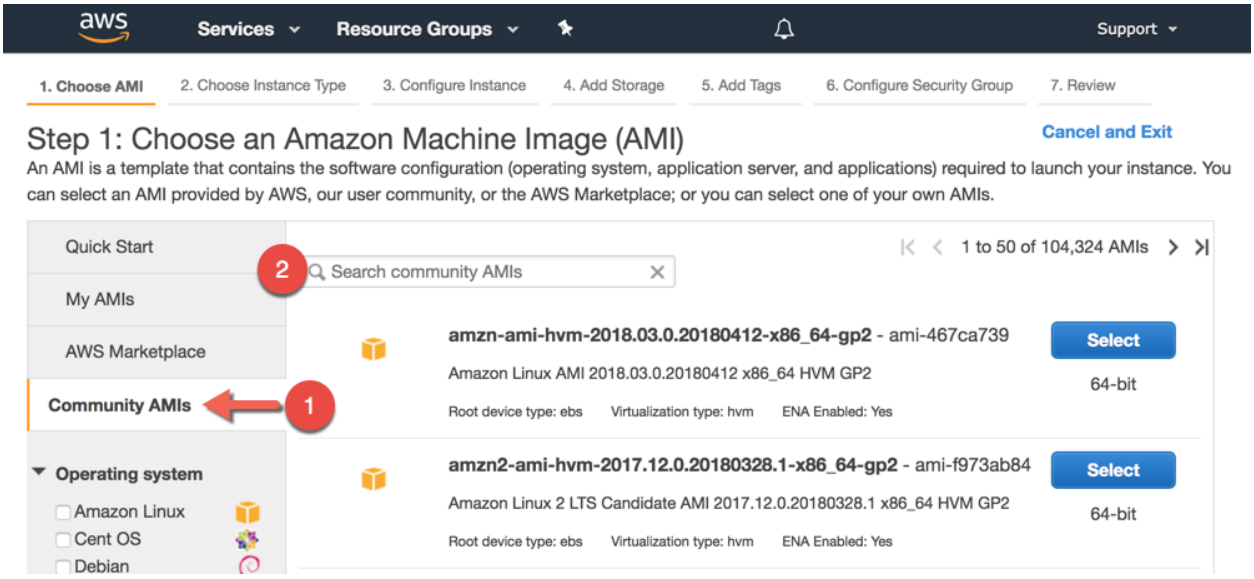


You should now be in the *EC2 Dashboard*.



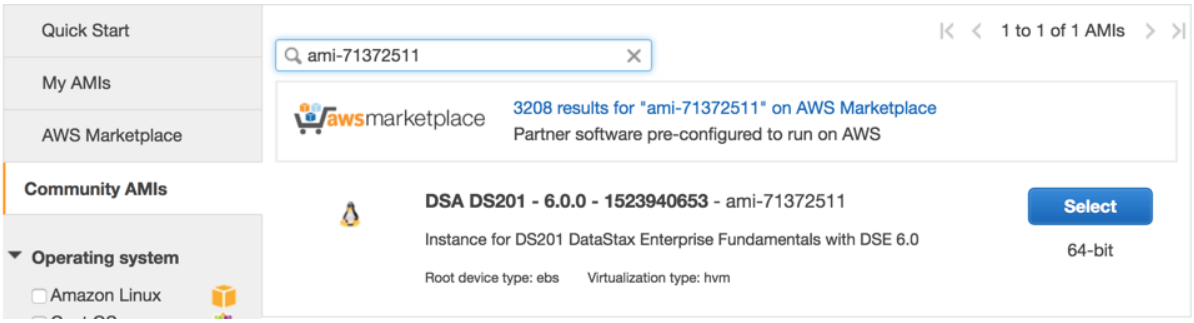
## Launching an Instance

From the *EC2 Dashboard*, click on the button to **Launch Instance**. Click on the link **Community AMIs**. Using the table below, get the AMI ID for region you are starting the instance in and search for that.




| Region | AMI ID |
|---|---|
| **N. Virginia (us-east-1)** | ami-f160c08e |
| **Ohio (us-east-2)** | ami-c10635a4 |
| **N. California (us-west-1)** | ami-71372511 |
| **Oregon (us-west-2)** | ami-73ddb00b |
| **Ireland (eu-west-1)** | ami-5bfadc22 |
| **Sydney (ap-southeast-2)** | ami-a18942c3 |

The search should display only one AMI, which you can then choose with the **Select** button.




## Choose an Instance Type

In Step 2, select an appropriate instance type to launch. The instance will need at least 4 GB of RAM, with the recommended instance type being **t2.medium**. Once the instance type is selected, click on the button **Next: Configure Instance Details**.

**Note**: You will be charged to start up an instance and to keep it running. Each instance type has a different cost. Please make sure you choose an instance type appropriate for the amount you are willing to spend. The same instance types in different regions may also be priced differently. A list of instance types and their costs can be found here: https://aws.amazon.com/ec2/pricing/on-demand

## Configure Instance Details

In Step 3, you should not need to make any changes here. The course DS201 will need only 1 instance in order to do all of the exercises. After setting the number of instances, click on **Next: Add Storage**.

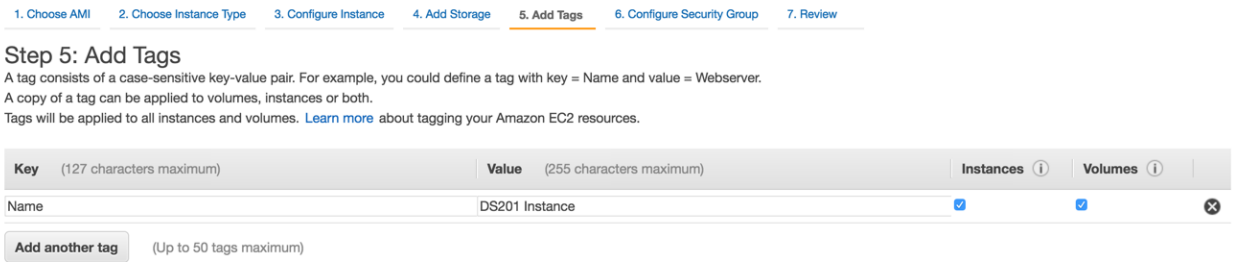
## Add Storage

There is nothing that you are required to do in Step 4, so click on **Next: Add Tags** to proceed if you do not need to add any additional storage.

## Add Tags

In Step 5, tags are not required but can be useful to keep track of the instances that you launch. It is recommended to add at least one tag to name your instance.

Click on the button **Add Tag**. Set the **Key** as *Name* and the **Value** to something descriptive, like *DS201 Instance*. You can add additional tags if desired, but once you're done click on the button **Next: Configure Security Group**.



## Configure Security Group

The security group sets the firewall rules for the instance you are launching. The rules need to be configured to allow you to interact with the instance, whether it is through SSH, DataStax Studio, OpsCenter, or some other application. You can also set additional firewall rules if you want to interact with the instance in a way outside the scope of the exercises.

### Required ports

The following table lists all of the possible ports used throughout all of the different DSA course exercises.

| **Port** | **Description** |
|---|---|
| 22 | SSH |
| 80 | HTTP |
| 443 | HTTPS |
| 4040 | Spark Application Web UI |
| 7000 | DSE Inter-node Cluster Communication Port |
| 7001 | DSE Inter-node Cluster Communication Port (SSL) |
| 7080 | Spark Master Web UI |
| 7081 | Spark Worker Web UI |
| 7199 | JMX |
| 8888 | DataStax OpsCenter |
| 8983 | Solr Admin Web UI |
| 9042 | Native Transport Protocol |
| 9142 | Native Transport Protocol (SSL) |
| 9091 | DataStax Studio |

## Example security group setting

| Type | Protocol | Port Range | Source |
|---|---|---|---|
| SSH | TCP | 22 | 0.0.0.0/0 |
| HTTP | TCP | 80 | 0.0.0.0/0 |
| HTTPS | TCP | 443 | 0.0.0.0/0 |
| All ICMP – IPV4 | ICMP | 0 - 65535 | *Restrict to security group* |
| Custom TCP Rule | TCP | 4040 | 0.0.0.0/0 |
| Custom TCP Rule | TCP | 7000 | *Restrict to security group* |
| Custom TCP Rule | TCP | 7001 | *Restrict to security group* |
| Custom TCP Rule | TCP | 7080 | 0.0.0.0/0 |
| Custom TCP Rule | TCP | 7081 | 0.0.0.0/0 |
| Custom TCP Rule | TCP | 7199 | 0.0.0.0/0 |
| Custom TCP Rule | TCP | 8888 | 0.0.0.0/0 |
| Custom TCP Rule | TCP | 8983 | 0.0.0.0/0 |
| Custom TCP Rule | TCP | 9042 | 0.0.0.0/0 |
| Custom TCP Rule | TCP | 9142 | 0.0.0.0/0 |
| Custom TCP Rule | TCP | 9091 | 0.0.0.0/0 |

Once a security group is selected or created, click on the button **Review and Launch**.

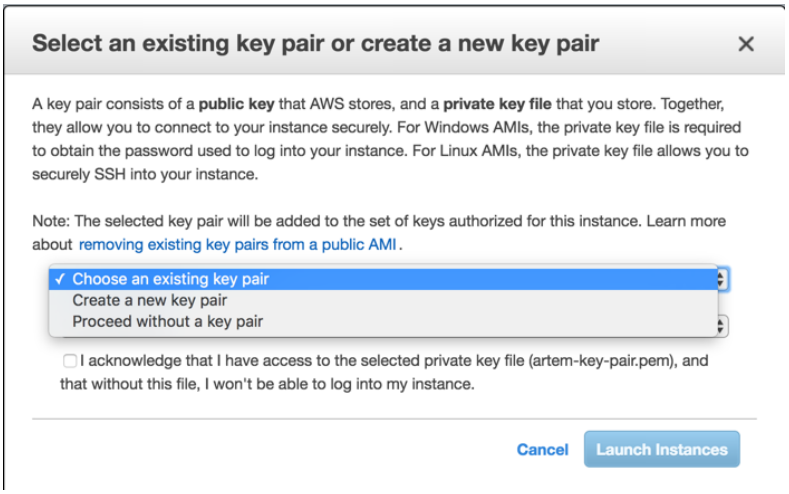
## SSH Key Pair

In Step 7, you can review the instance settings to check if it is configured properly. If everything looks ok, click on the button **Launch**. A window will pop up to have you select an existing key pair or to create a new key pair.

If you already have an existing key pair set up, and have access to the private key file, then you use that key pair for your instance(s).

If you do not have an existing key pair, select the option **Create a new key pair** and then enter a name for the new key pair. Click on the button **Download Key Pair** and save the private key file to a location that you can remember; you will need that file to SSH into the instance later.

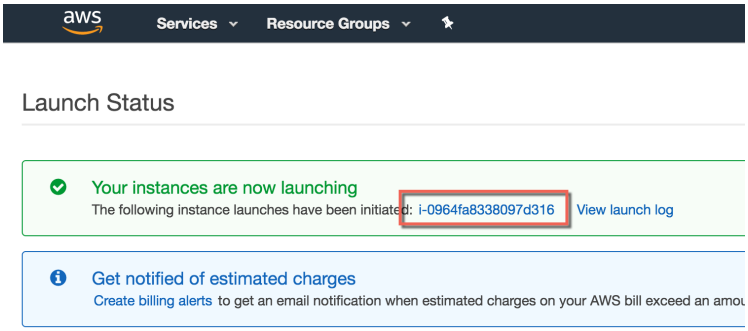
***Warning:*** You should never select the option **Proceed without a key pair**, as this will prevent you from being able to access your instance.




Once the key pair is selected or created, click on the button **Launch Instances**.

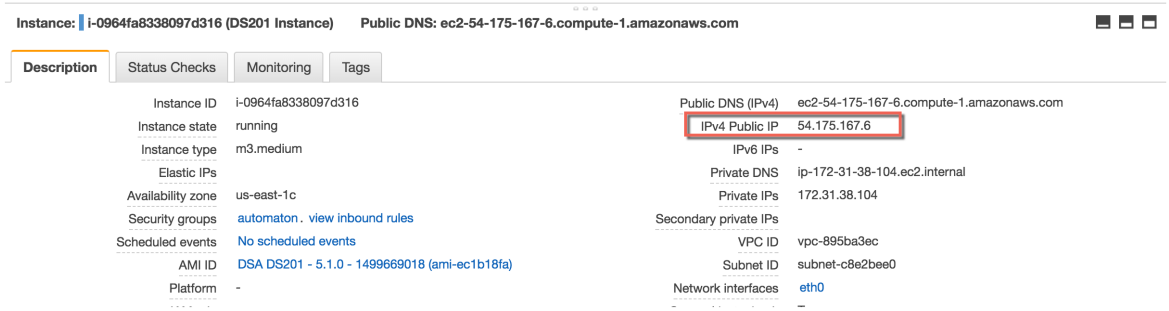
## Finding the IP address of the instance

When your instance(s) launches, you will be transferred to the **Launch Status** page. Click on the link with the instance ID to check out the instance details.



Find the value for **IPv4 Public IP**, which is the IP address of the instance that you will use to SSH, or access files or applications from the web browser.

If the instance is still starting up, the IP address may not be available yet. Wait a few minutes, and then refresh the instance details to see if the IP is available.

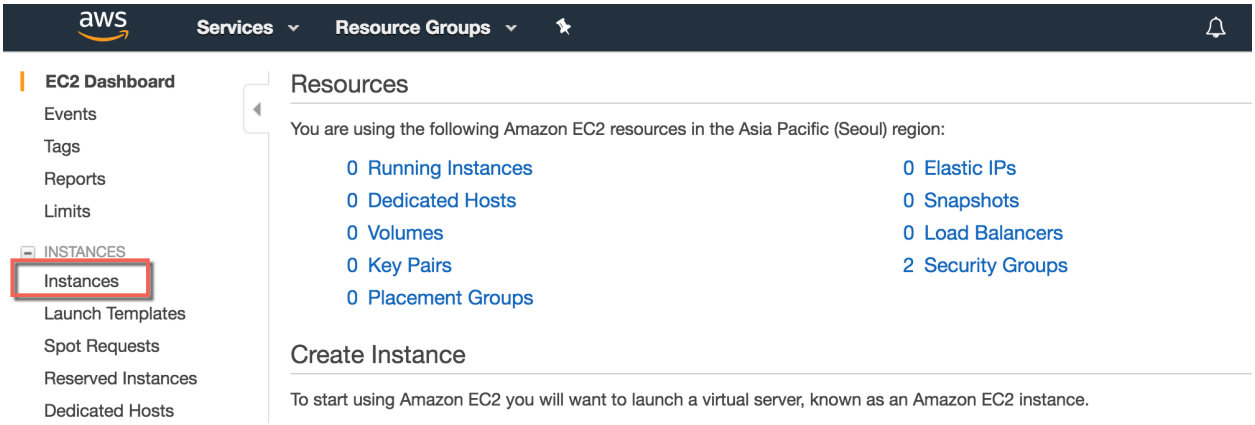




With the IP address, you can SSH to the instance once the instance has reached the **running** state.

## Terminating an Instance

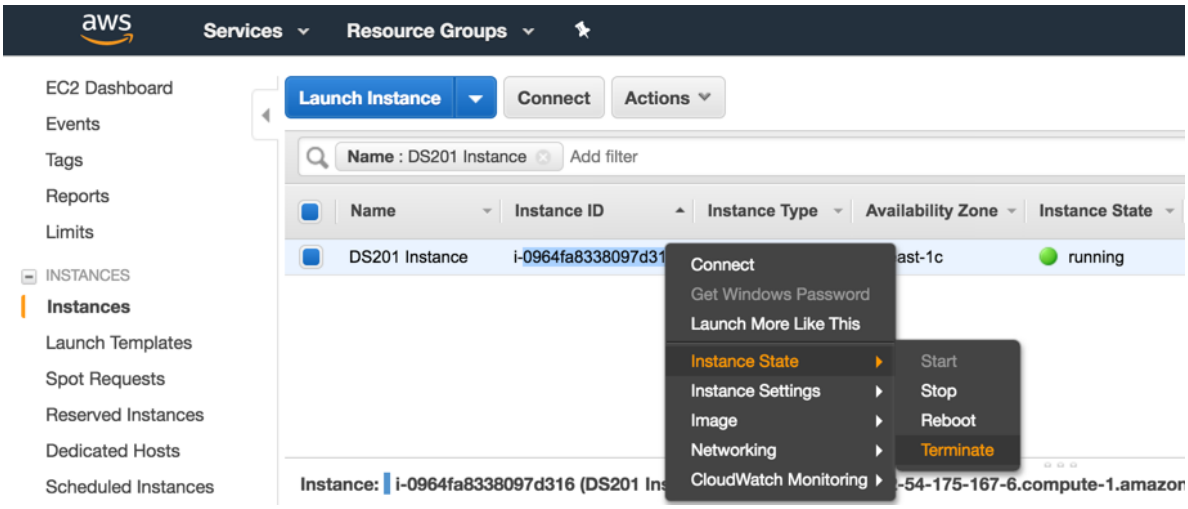
Instances incur a cost while running. When you are done with the exercises, or wish to stop for a period of time, we recommend that you terminate the instance.

In the EC2 page, click on the link **Instances** to go to the list of instances.



From the list of instances, find the instance you want to terminate. Right-click on that instance, and select **Instance State > Terminate**. The instance will change to the state *shutting-down* and will be completely terminated once the state is *terminated*.

Alternatively, you can also select the instance(s) and then click on the button **Actions > Instance State > Terminate**.




Note that terminating the instance will delete all data on the instance. If there is anything that you wish to save, please transfer that data from the instance before terminating.

There is another action called *Stop* that will also shut down the instance but save the EBS disk and allows the instance to start again with the same disk. In general, we do not recommend using this action for the following reasons:

- You are still charged for storage of the EBS disk, although not for the instance itself
- The ephemeral disk is not saved, which is usually where DSE data is stored
- The stopped instance may be assigned a different IP address when you start it again, and will potentially break your DSE configuration