FUNDAMENTALS OF RED HAT ENTERPRISE LINUX:
LAB SET-UP INSTRUCTIONS FOR EXERCISES ON AMAZON EC2

INTRODUCTION

The course *Fundamentals of Red Hat Enterprise Linux* (RH066) includes a number of guided exercises and labs, which gives you an opportunity to practice the skills you are learning in the course presentations. To complete these exercises, you will need a practice system running Red Hat Enterprise Linux 8 that you completely control.

One way to get access to a supported Red Hat Enterprise Linux system is to use Amazon EC2 (Elastic Compute Cloud). Red Hat and Amazon Web Services collaborate to provide officially supported Red Hat Enterprise Linux images through Amazon's on-demand public cloud service at free or low cost.

The guided exercises and labs for this course were written assuming that you will set up an account with Amazon Web Services and use it to start a single, simple system running Red Hat Enterprise Linux 8. You will connect to that system securely over the internet and use it to practice commands.

Amazon Web Services provides an "AWS Free Tier" offering (https://aws.amazon.com/free) which gives new users free access to certain sizes of cloud instances and operating environments (including Red Hat Enterprise Linux 8) for up to 750 hours per month, for 12 months. To conserve compute time and any costs, make sure you shut down your cloud instance when you are not using it, and terminate (delete) it when you are completely finished with it.

This guide focuses on the steps needed to set up a new AWS Free Tier account and to use it to launch a simple Red Hat Enterprise Linux 8 instance for the purposes of this course.

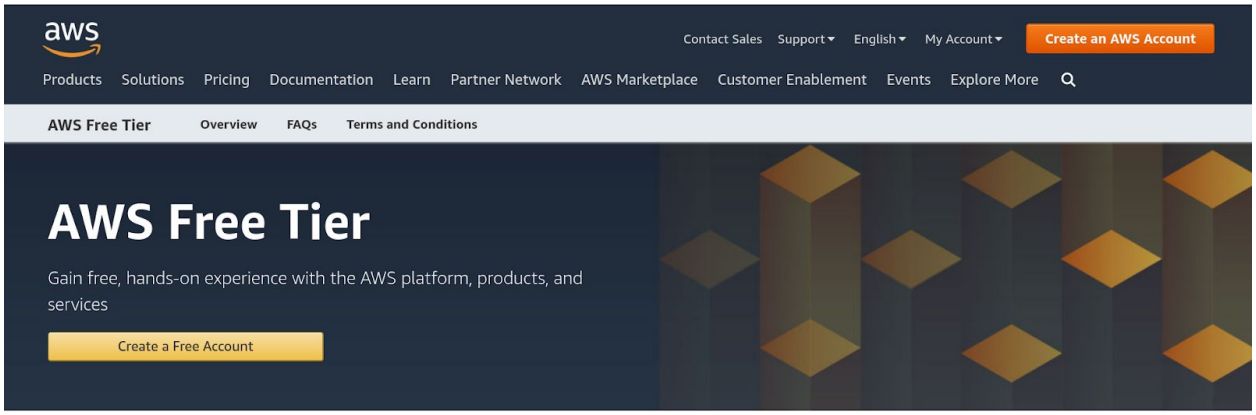
IMPORTANT NOTICE

Amazon EC2 is a convenient way to get access to a Red Hat Enterprise Linux system for the purposes of this course. This service is provided by a third party, Amazon Web Services, not by Red Hat itself (although Red Hat does provide the initial AMI image and support for the operating system provided through the service).

The security of your account, and of any cloud instances that you launch in Amazon EC2, is your responsibility. You are also responsible for charges you may incur, if any, by using this service. The instance that you are running is potentially visible to the public internet, and making changes to your default settings beyond those discussed in the course, such as running network services and opening ports in the firewall provided by AWS, or changing SSH server settings in the cloud instance, may have consequences for the security of the cloud instances you are operating.

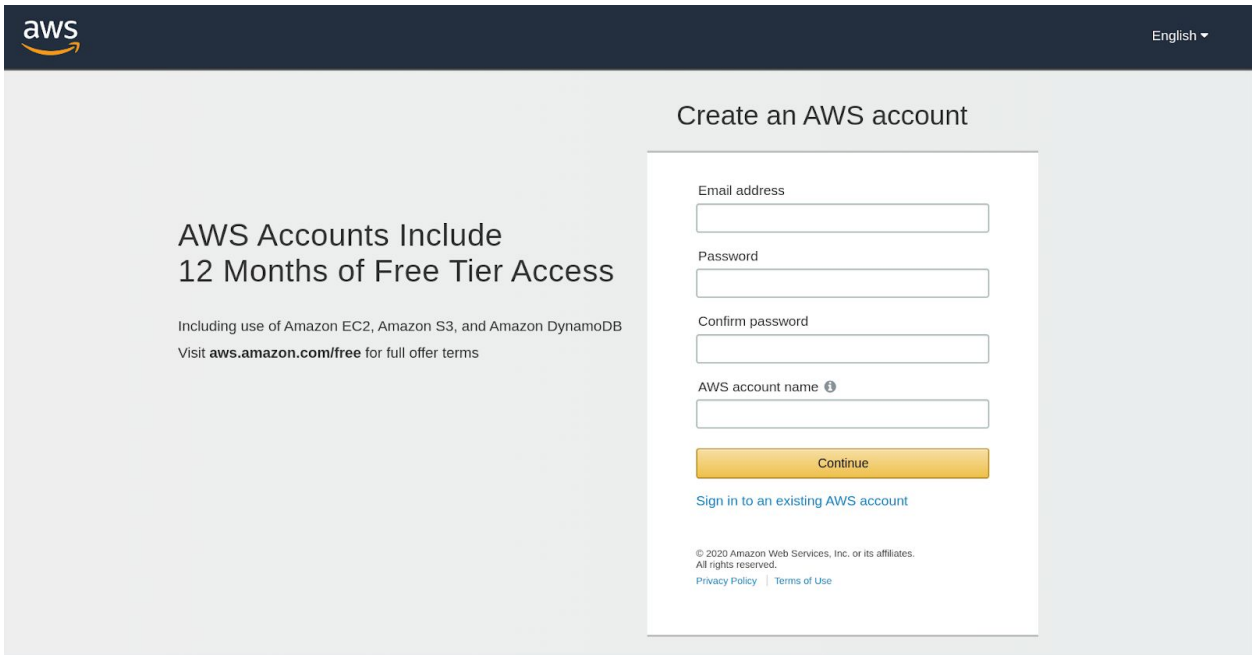
CREATING AN "AWS FREE TIER" ACCOUNT

Open a web browser and navigate to https://aws.amazon.com/free/.

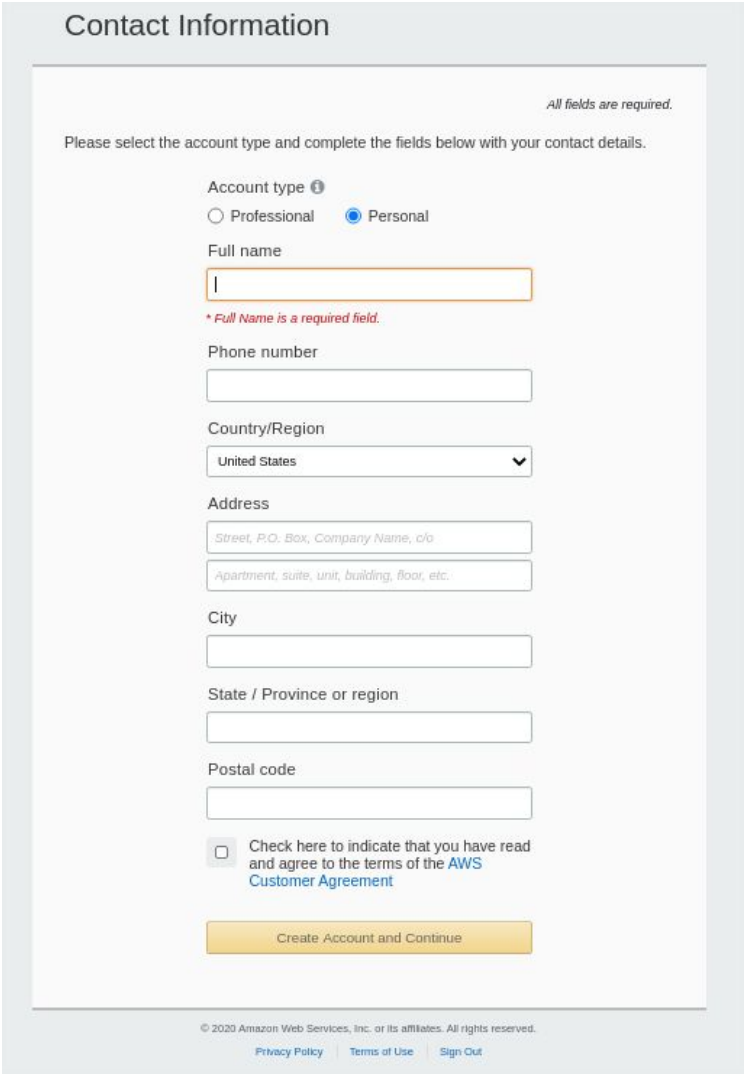


Choose **Create a Free Account**.

On the subsequent page, provide an email address, password, and AWS account name. You can change the account name after you sign up. Click **Continue**.



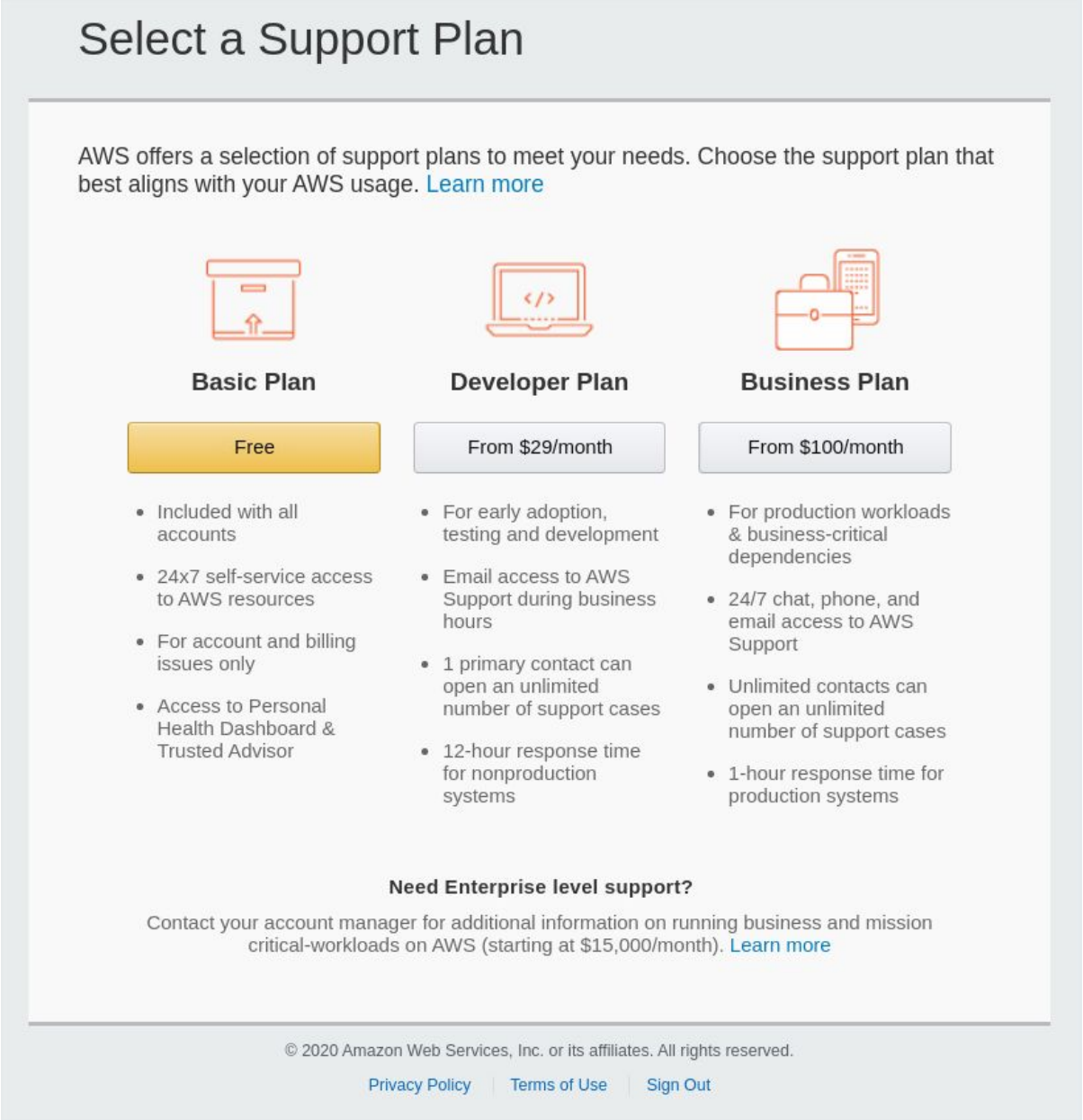
On the next page, provide appropriate contact information, and indicate whether this account is a company or personal account. Then click **Create Account and Continue**.



Amazon Web Services requires that you have payment information on record with your account, even if you only plan to use the AWS Free Tier. This is in case you want to use more cloud resources than are provided by the AWS Free Tier, or to charge you when your eligibility for AWS Free Tier expires. Enter appropriate payment information.

Amazon Web Services will then verify your contact information and ability to set up this account. You will be asked to provide (or confirm) a phone number. An automated system will immediately call you and provide information so that you can enter a PIN to confirm you received the message.

On the final page, choose a support plan. The Basic plan is free.

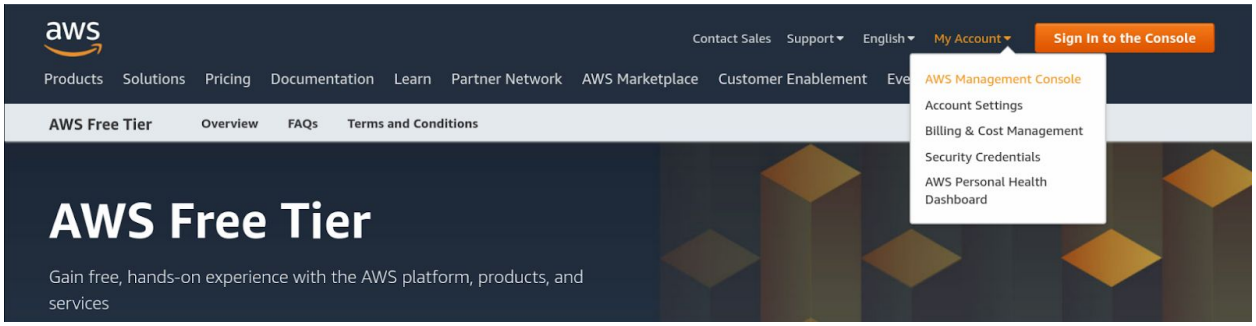


You are now registered with Amazon Web Services. Feel free to explore the various tutorials to get oriented to the environment. It may take Amazon up to 24 hours to fully activate your account. Check your email regularly in case any information needs to be clarified.

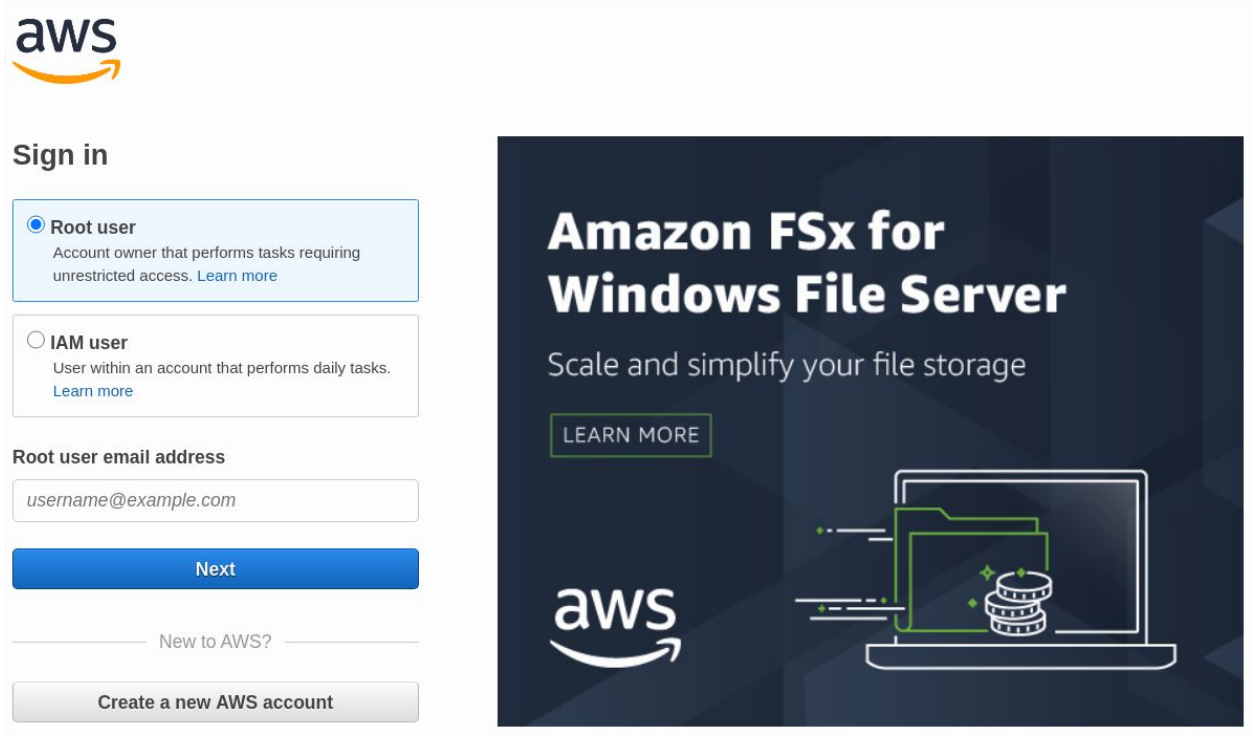
LAUNCH A NEW AMAZON EC2 INSTANCE

In this section, we will briefly outline the process to create and launch a Red Hat Enterprise Linux 8 cloud instance for use as your machine for hands-on exercises.

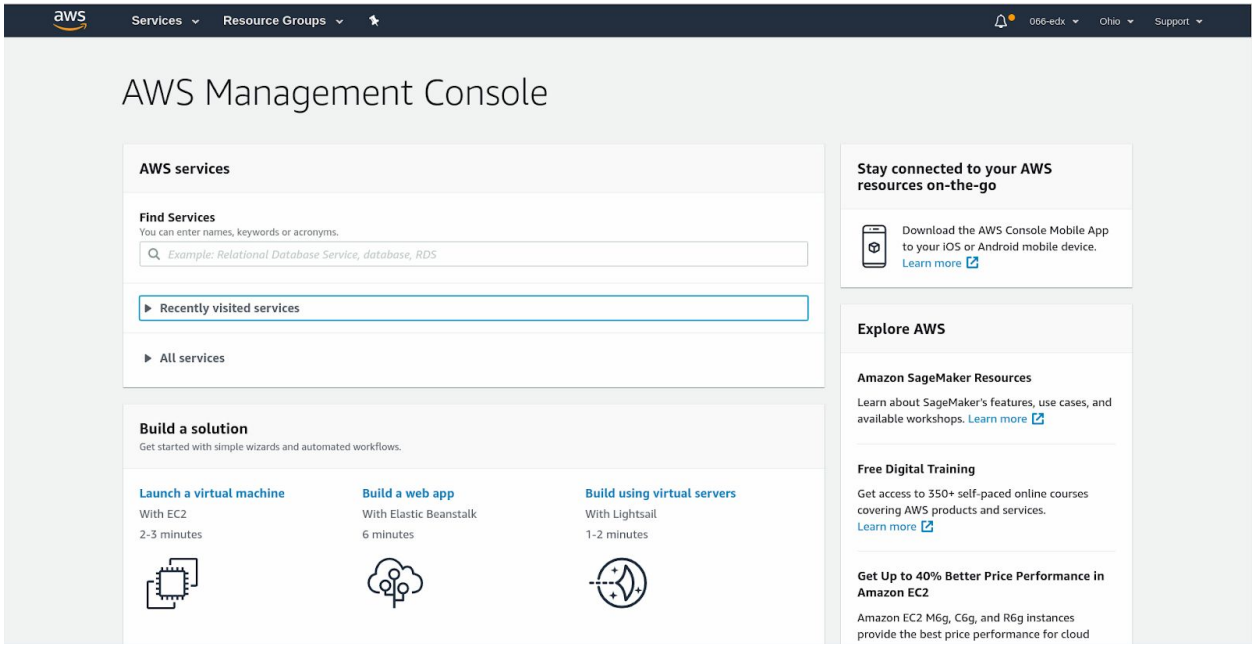
Open a web browser, navigate to https://aws.amazon.com/free/, and use the **My Account** menu to select **AWS Management Console**.



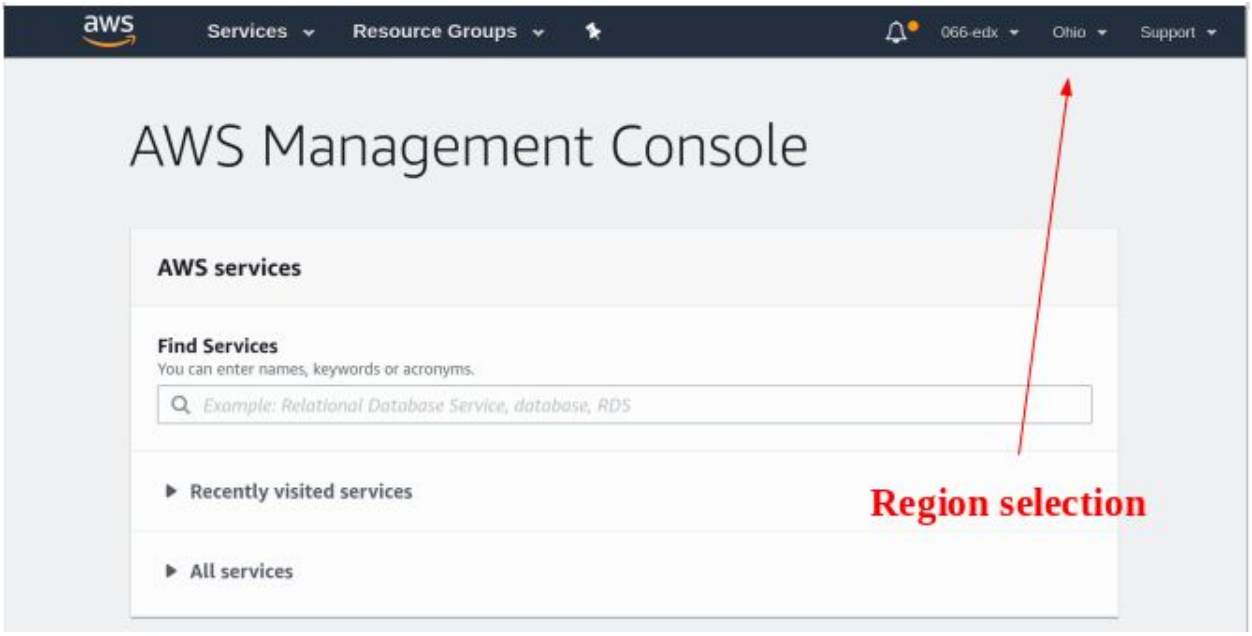
This should load the AWS Sign in screen. Click **Learn more** to access instructions for how to create a more restrictive **IAM user** account for everyday use. To get started, new account owners should sign in as **Root user** to gain full access to your account:



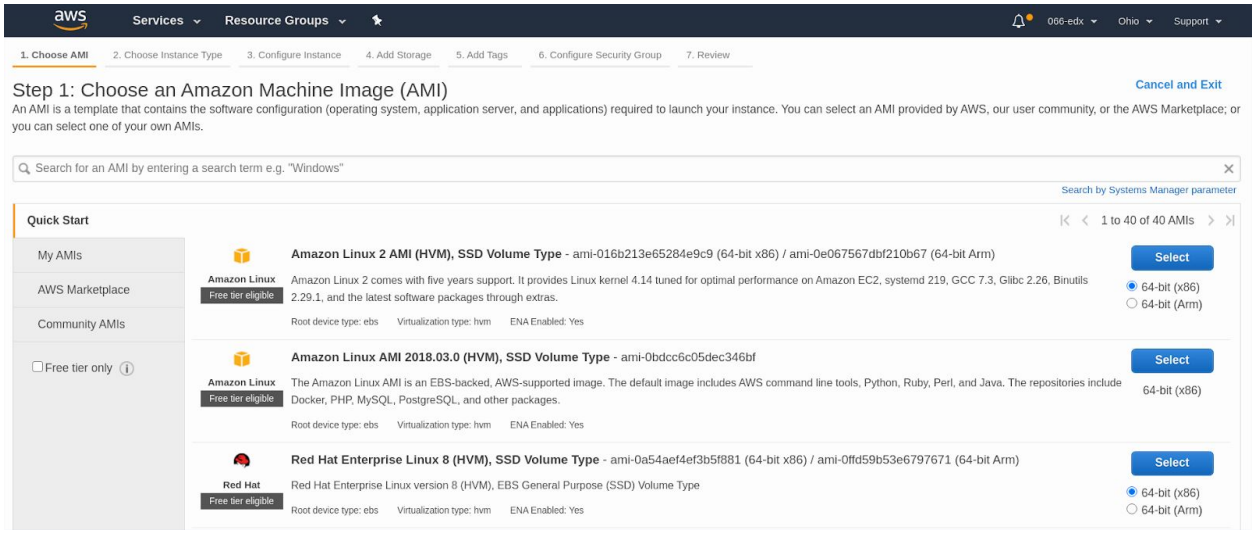
On the subsequent page, provide the password created earlier for your account. This should load the AWS Management Console screen:



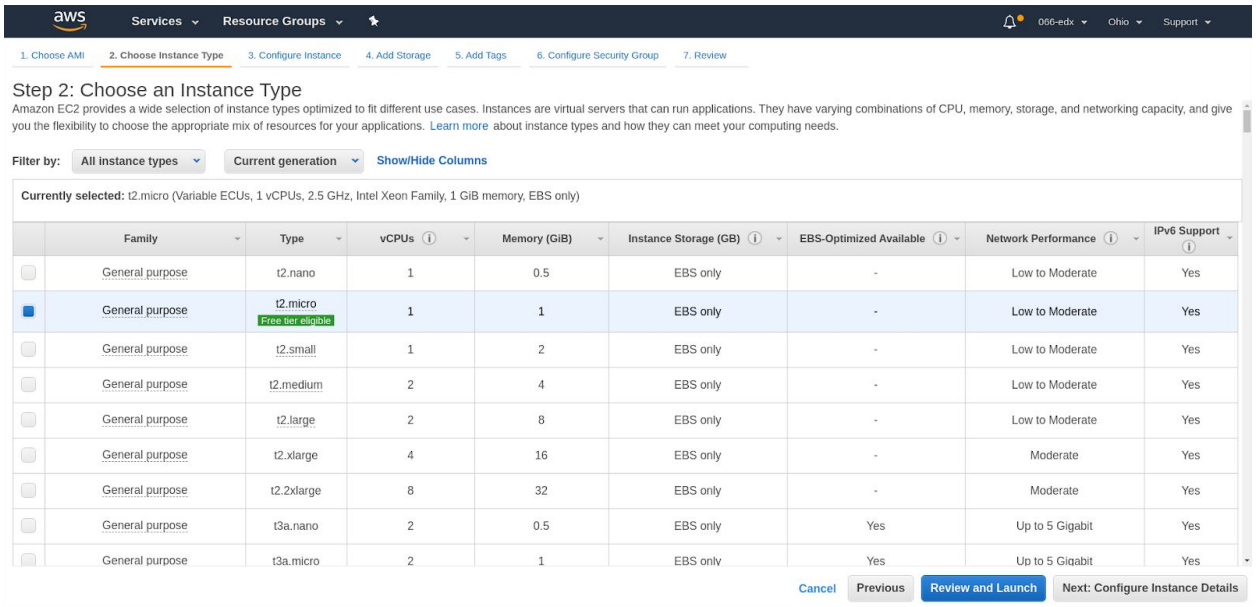
Amazon appears to set up new accounts to start new virtual machines in a data center close to your network location. This may be too far from your network location and result in higher latency for your connection. In the upper right-hand corner of the Console, there is a menu which allows you to set which data center you want to use before you launch your virtual machine as shown in the screenshot below. Select an appropriate location from the menu.



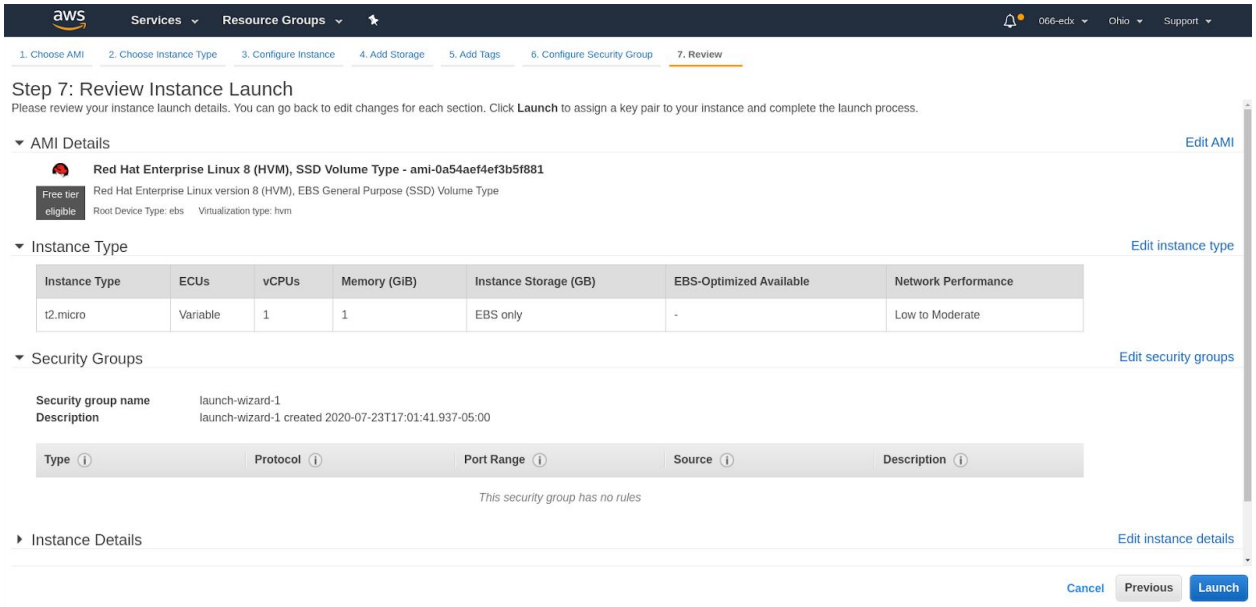
Click the **Launch a virtual machine** link. This should load the Choose an Amazon Machine Image (AMI) screen:



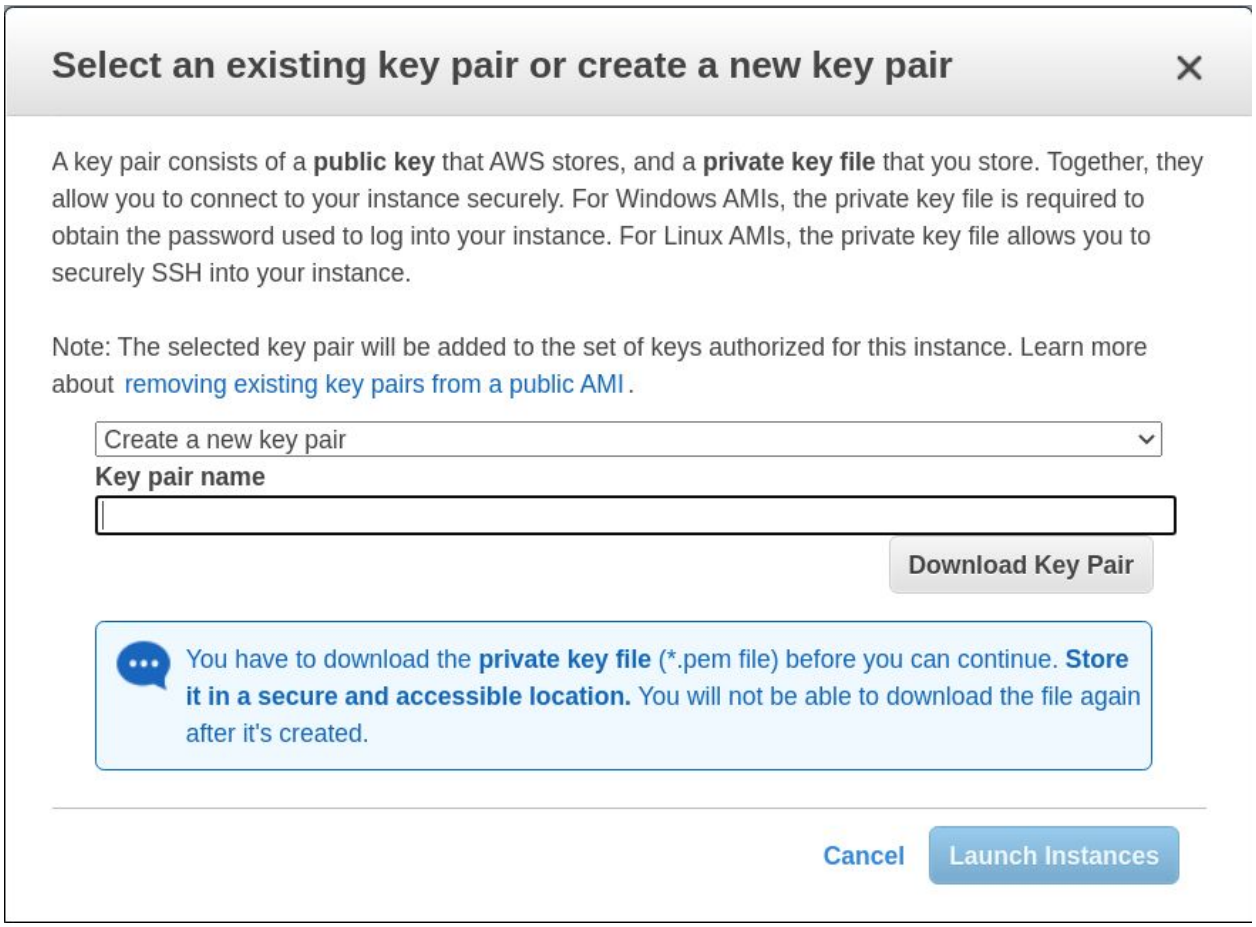
For this course, click **Select** for the **Red Hat Enterprise Linux 8 (HVM)** option. This should load the Step 2: Choose an Instance Type screen:



Choose **t2.micro** as your instance type (note that it is labeled **FREE TIER ELIGIBLE**) and then click **Review and Launch**: This should load the Step 7: Review Instance Launch screen:

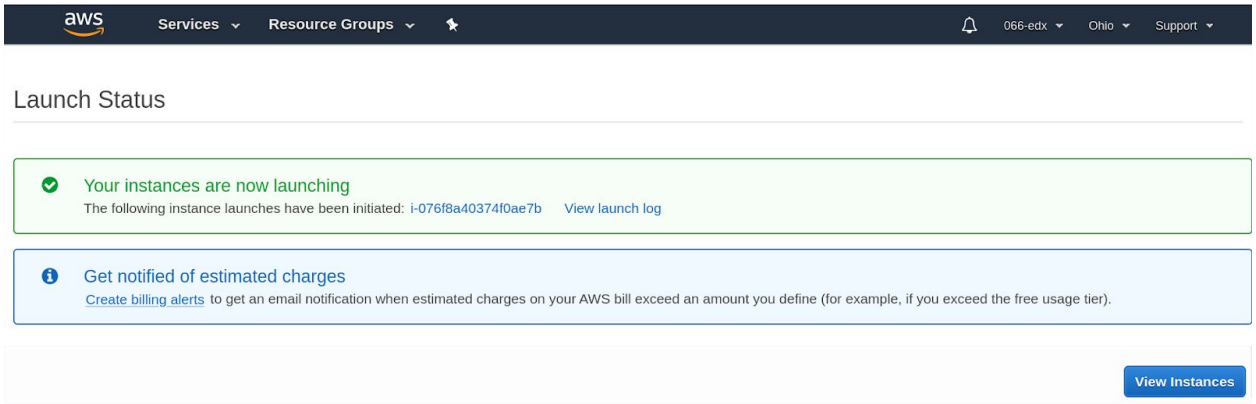


Review the instance information and click **Launch**. You will be prompted to create or select a key pair for authenticating your remote login:

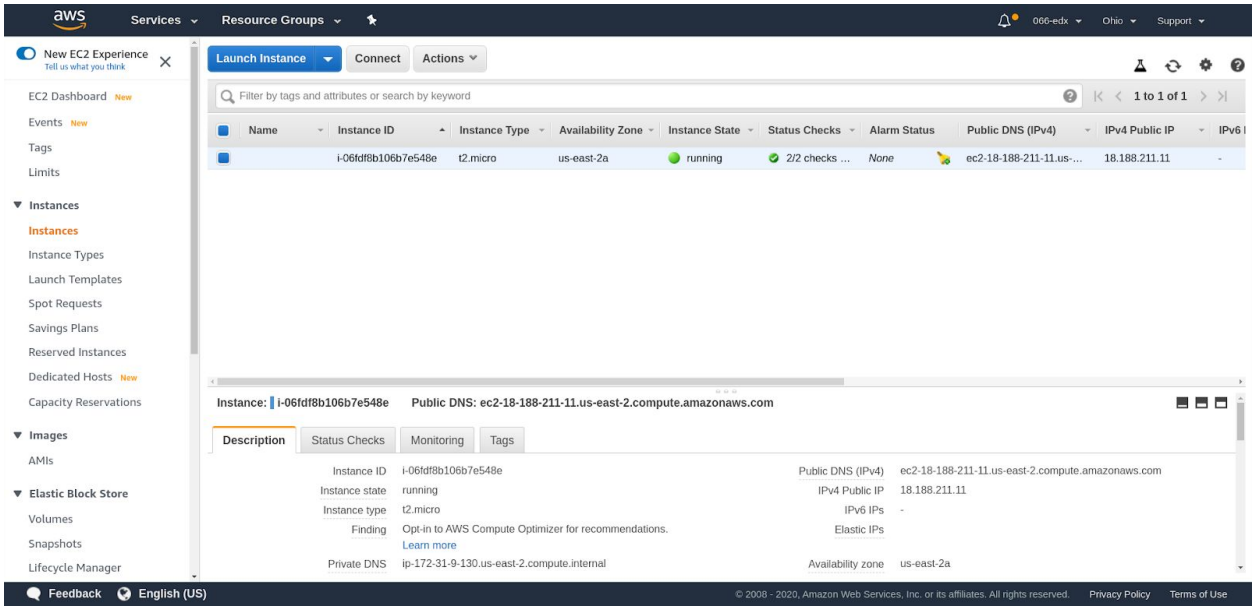


Select an existing key pair or provide a name for a new key pair. Note the warning that AWS does not keep a copy of your private key; if you lose this file after download, you will not be able to recover it. Keep this file safe; if anyone else obtains a copy of it, they can use it to log in to

your cloud instance. Click **Download Key Pair**. **Save** the key pair to your local system. Click **Launch Instances**. This should load the Launch Status screen:



Click **View Instances**. This should load a screen that lists your instances:



When the **Instance State** for your instance is **running**, you can connect to your Red Hat Enterprise Linux 8 instance.

CONNECTING TO YOUR RED HAT ENTERPRISE LINUX INSTANCE ON AMAZON EC2

The recommended way to access your Red Hat Enterprise Linux cloud instance for this course is to use Secure Shell (**ssh**) to get an interactive shell on the system.

Step 1: Getting SSH

If you are using macOS or Linux: The OpenSSH command (**ssh**) should already be installed on your computer. Start a terminal program to get a shell, and proceed to the next step.

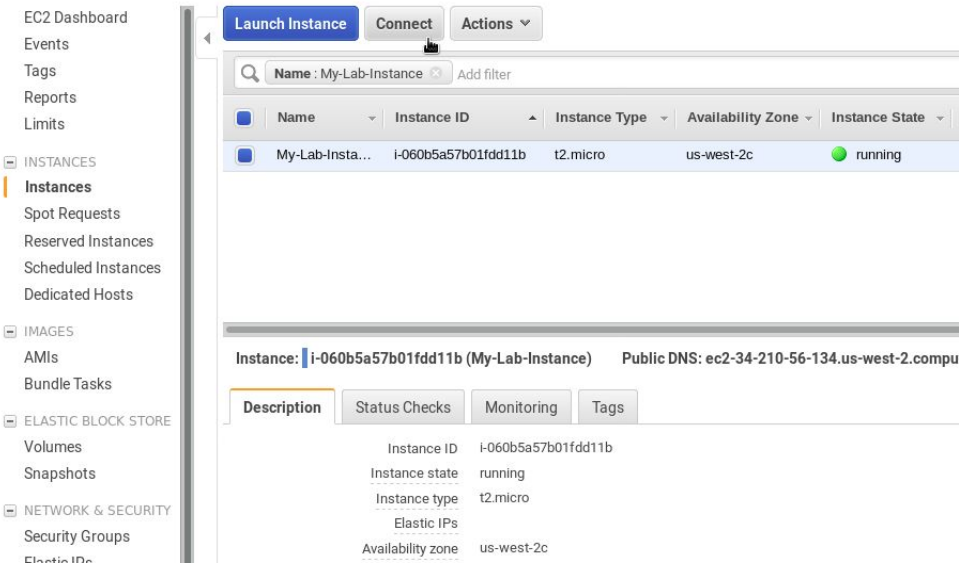
If you are using Microsoft Windows, you will need to get an SSH client as follows:

- Option 1: Download **Git for Windows** from https://git-scm.com/download/win and install it using the default settings. When it is installed, right-click on your desktop (not an icon or a file) and select **Git Bash Here** to open a **Git Bash** command prompt. An SSH client is provided with **Git Bash** and you can continue with Step 2.

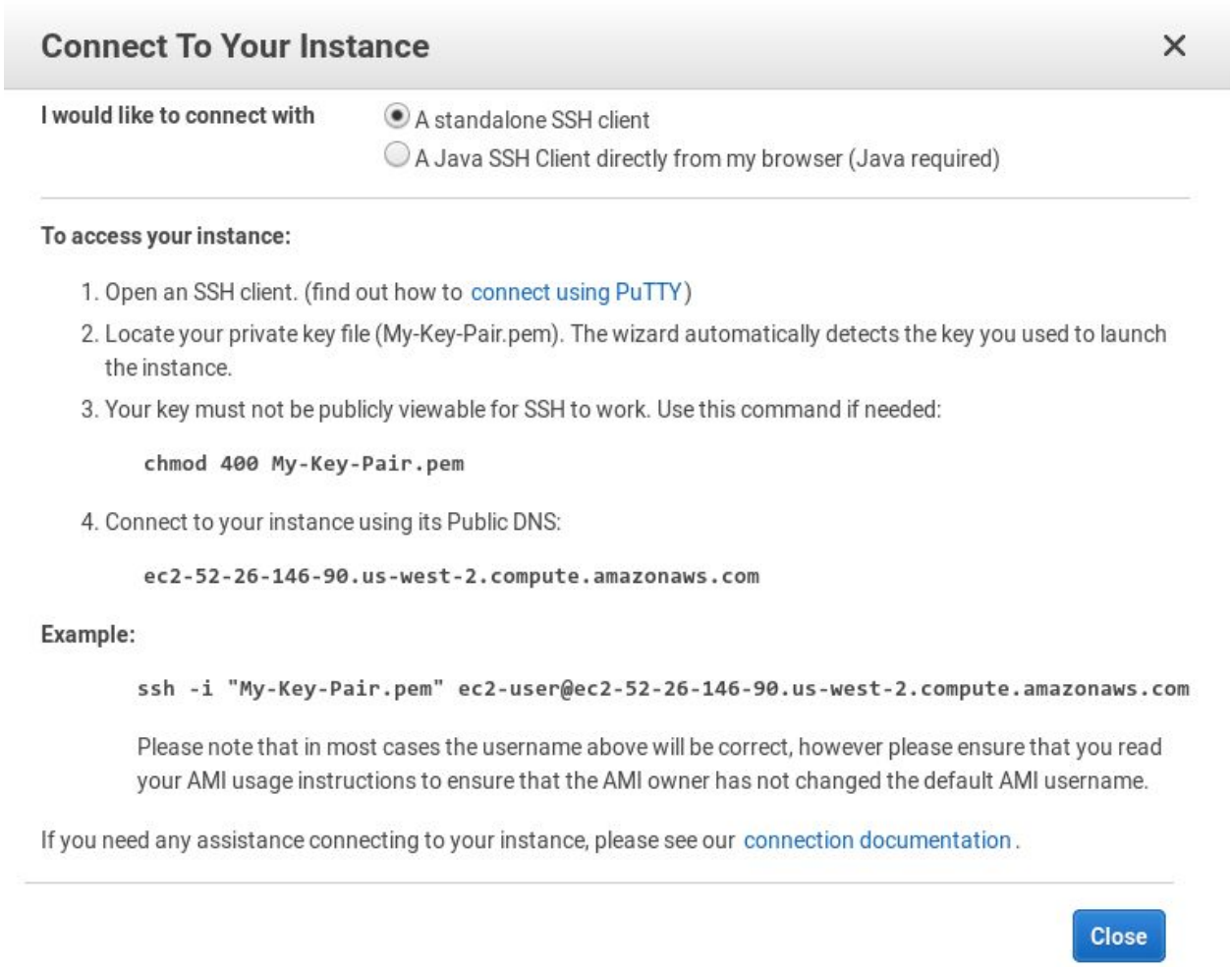
- Option 2: If you have the PuTTY client, which can be downloaded from http://www.chiark.greenend.org.uk/~sgtatham/putty/, and you are familiar with that tool, you can use that to connect to your instance. AWS provides a tutorial on this at https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/putty.html.

Step 2: Connecting to your instance with SSH

From the Amazon EC2 console, in the left-side menu under **INSTANCES**, click **Instances** to display a list of the instances you have running. This is probably just the one you set up for this course. Select its checkbox and click **Connect:**



This should display a box with instructions on how to use your SSH client to connect to the selected instance, similar to the following:



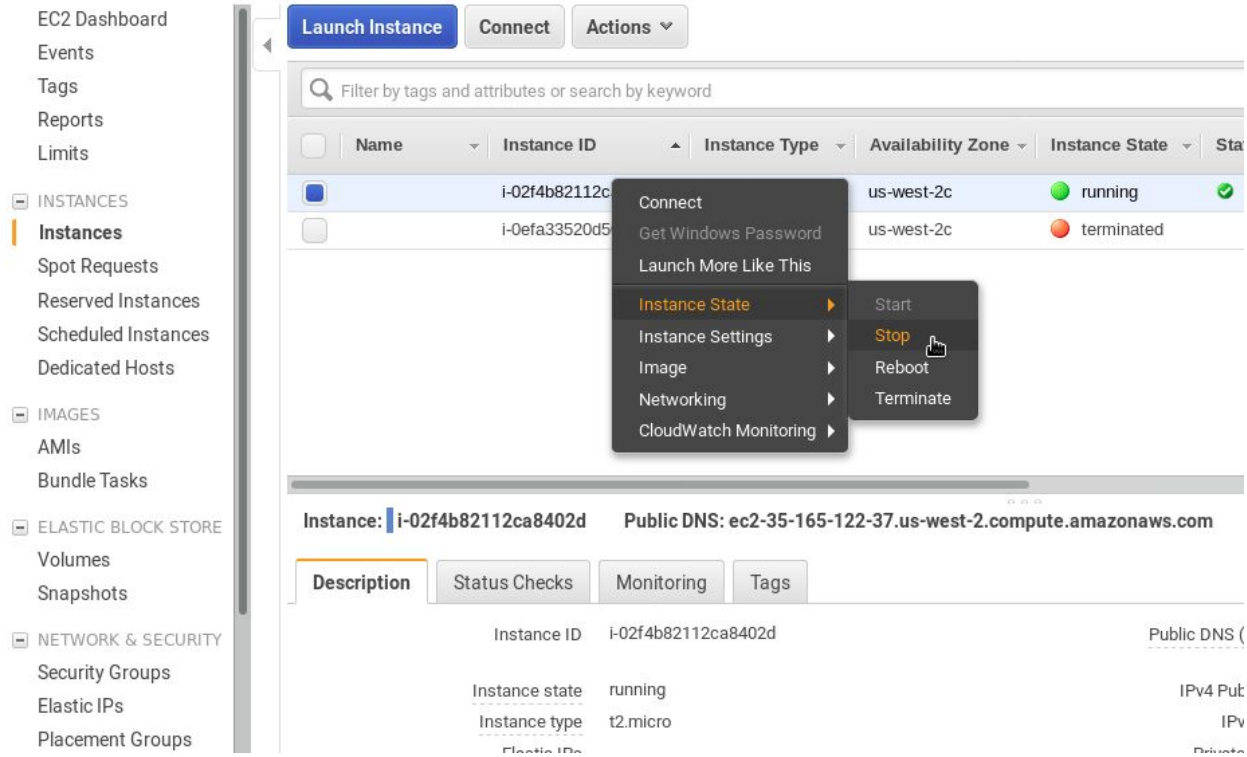
Note that the **-i** option to the **ssh** command expects the appropriate relative or absolute path to the file in which your private key is stored.

In your shell prompt (using **Terminal** on macOS or Linux, or **Git Bash** on Windows or other program), use these instructions to connect to your Red Hat Enterprise Linux instance on Amazon EC2.

STOPPING YOUR RED HAT ENTERPRISE LINUX INSTANCE ON AMAZON EC2

When you are not using your Red Hat Enterprise Linux instance for lab exercises, you should stop it in order to conserve your compute time (or to control costs if you are not using AWS Free Tier).

To do this, log in to your AWS account and go to the EC2 Console, and select the **Instances** view as discussed above. Right-click on the instance you want to stop to display the following menu:



Under **Instance State**, click **Stop**. Click **Yes, Stop** to confirm that you want to stop the instance. We do not use the ephemeral storage in this course.

Watch the status of the instance in the EC2 Console to ensure that it actually stops. It should transition to the state **stopping** and then **stopped**.

Stopping your instance temporarily shuts it down, but does not remove the machine from Amazon EC2. You can still restart it later.

RESTARTING YOUR RED HAT ENTERPRISE LINUX INSTANCE IN AMAZON EC2

Restarting a stopped instance is very similar to stopping one. Log in to your AWS account and go to the EC2 Console, and select the **Instances** view as discussed above. Right-click the instance you want to start to display the submenu, and under **Instance State**, click **Start**. Click **Yes, Start** to confirm you want to start the instance.

Watch the status of the instance in the EC2 Console to ensure that it starts. It should transition to the state **pending** and then **running**.

Your Red Hat Enterprise Linux instance will have a different public host name and IP address than it did before it was stopped, so you will need to select it and click **Connect** to confirm the new SSH command to use.

TERMINATING YOUR RED HAT ENTERPRISE LINUX INSTANCE IN AMAZON EC2

At the end of the course, you should stop and completely terminate your instance to remove it from Amazon EC2 permanently. This avoids such things as any risk of charges for long term storage (beyond the term of your AWS Free Tier initial year, for example).

To terminate an instance, log in to your AWS account and go to the EC2 Console, and select the **Instances** view as discussed above. Right-click the instance you want to terminate to display the submenu, and under **Instance State**, click **Terminate**. You will be warned that this will remove all local storage.

Warning: The next step is permanent and irreversible. Click **Yes, Terminate** to confirm you want to destroy the instance.

Watch the status of the instance in the EC2 Console to ensure that it is terminated. It should transition to the state **terminated**.

LOGGING OUT OF AMAZON EC2

You are responsible for the security of your Amazon EC2 account. You should ensure that you log out of Amazon Web Services when you are finished using it. Click your username at the top of the web dashboard, and click **Sign Out** in the menu.

Warning: Signing out of the web console DOES NOT automatically stop or terminate any running Amazon EC2 instances. They will continue to run until you stop or terminate them.

ADDITIONAL REFERENCES

How to Launch a Linux Virtual Machine on the Cloud:
https://aws.amazon.com/getting-started/tutorials/launch-a-virtual-machine/

Amazon Elastic Compute Cloud User Guide for Linux Instances:
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/concepts.html

You might want to look into taking additional steps to secure your AWS account with two-factor authentication, or to limit which hosts can contact your instances by using Security Groups. See the AWS documentation for details.

The AMI providing the Red Hat Enterprise Linux 8.2 operating system tested for this course was **ami-0a54aef4ef3b5f881** (RHEL-8.2.0_HVM-20200423-x86_64-0-Hourly2-GP2). It is expected that this course will function with other official Red Hat Enterprise Linux 8 AMIs as well.