Create a Basic Elastic Cloud Compute (EC2) Instance

Amazon Web Services (AWS) EC2 Instances are virtual computers that you create to perform processing operations in place of using your desktop or laptop computer, or other on-premises computing hardware. They are customizable based on your computing needs and consist of your choice of operating system, type of CPU, amount of memory, storage, and the security settings that determine how your instance can be accessed.

This recipe demonstrates how to create and configure a basic Linux EC2 instance using an AWS **Free Tier** option. AWS Free Tier provides new users an opportunity to gain experience using AWS products and services at no charge. For example, they offer 750 hours of Linux and Windows *t2.micro* EC2 instances each month for one year. Read more about this and other Free Tier computing services.

Once your Linux EC2 instance is created and launched, you can connect to it via **SSH**. Files can be transferred between your computer and your instance using **SCP** (Mac and Windows command line interface) or **WinSCP** (Windows graphical interface). Instructions for connecting to your instance are provided in separate recipes.

***Important to remember**:* Once you have completed your processing, the EC2 instance must be **STOPPED** or **TERMINATED** to prevent additional, unexpected charges.

Overview of the steps described in this recipe:

A. Prerequisites
B. Steps for creating a basic EC2 Instance
C. Stopping or terminating an EC2 instance

A) Prerequisites

a. You must have an AWS account. If you don't have an account, click HERE to create one.

Note: You will need to provide credit card information for your new account.

B) Steps for creating a basic EC2 Instance

1. SIGN IN to AWS. The AWS Management Console will open (Fig. 1).

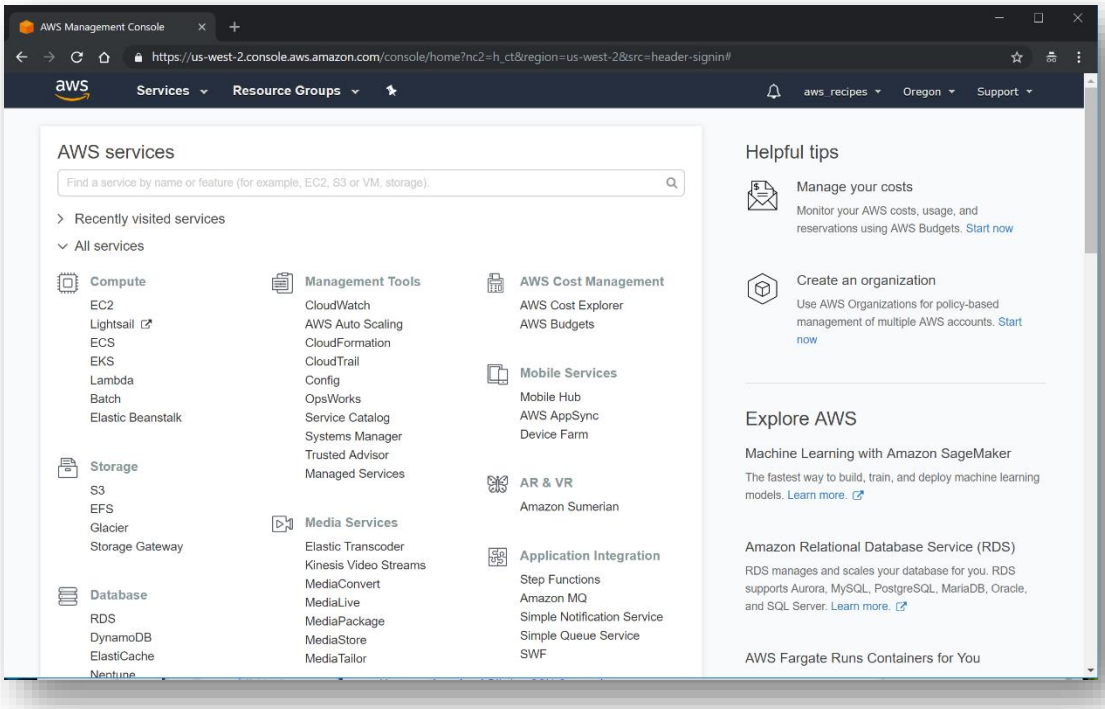

Figure 1

2. Select an AWS region to launch your Instance in.
    i. Select a region from the drop-down menu next to your account name in the upper right (Fig. 2).
        1. For this recipe, select **US East (N. Virginia)**

Note: There are many factors that can be considered when selecting a region. Read more about the factors that influence the cost of processing based on the region you select HERE.

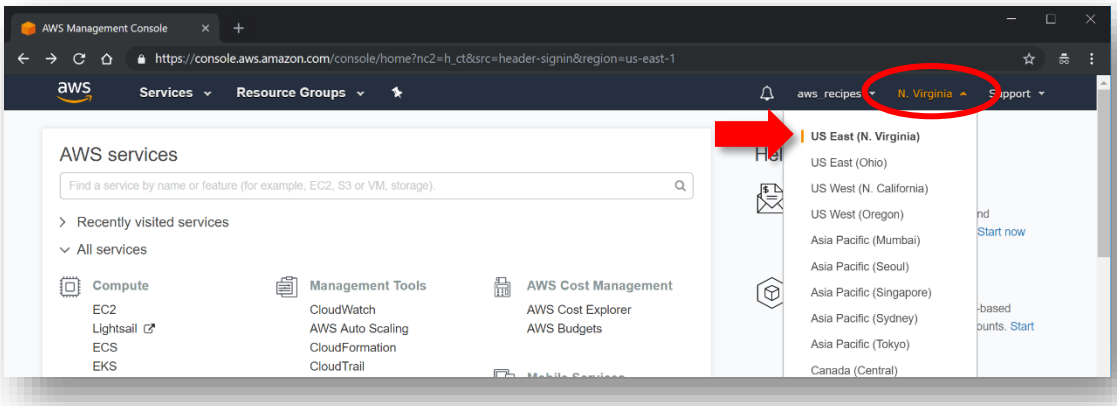

Figure 2

3. Under *Compute* click on **EC2** (Fig. 3). Or type *EC2* in the search box and then <Enter>.

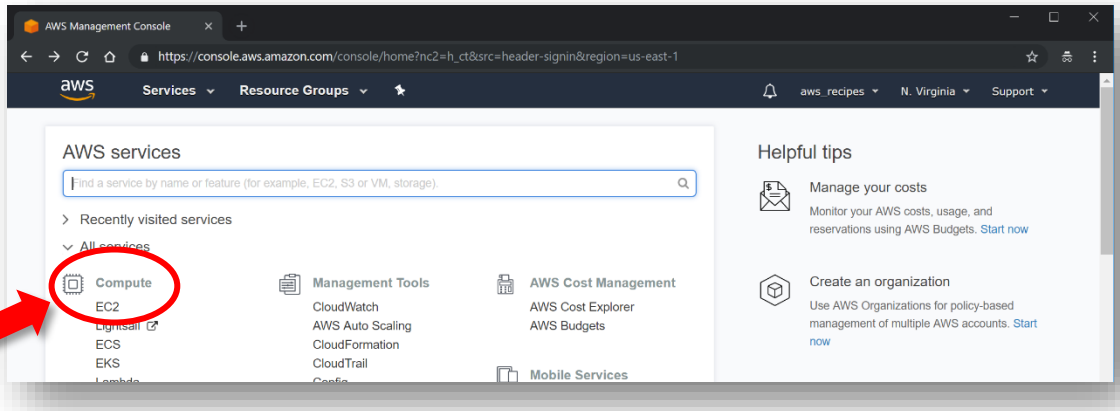

Figure 3

4. In the *EC2 Dashboard*, click on the **Launch Instance** button (Fig.4).

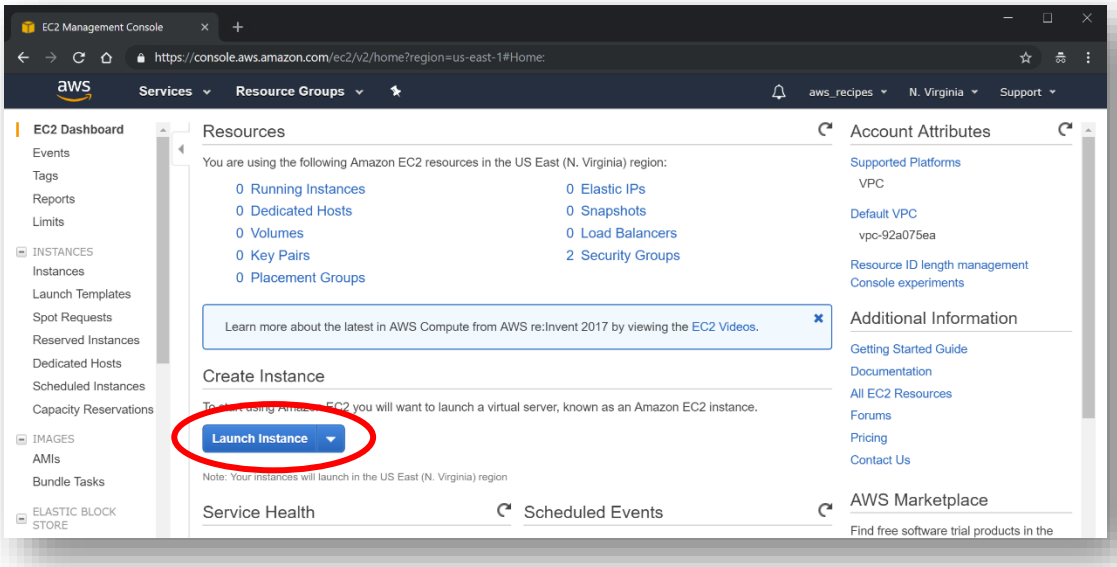

Figure 4

5. **Step 1**: **Choose an Amazon Machine Image (AMI)**
    i. Scroll down to the "*Ubuntu Server 18.04 LTS (HVM), SSD Volume Type*" [64-bit (x86)] and click **Select** (Fig. 5).

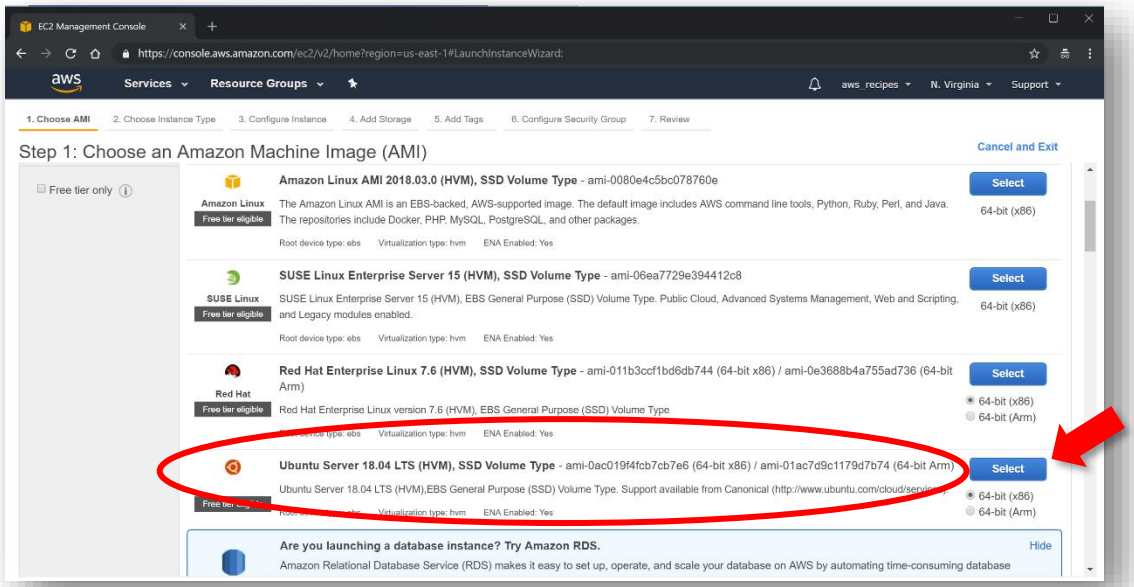

Figure 5

6. **Step 2: Choose an Instance Type** (Fig. 6)
    i. If it isn't preselected, select the "*t2.micro* [Free tier eligible]" instance type. This is a small instance type and suitable to the needs of this recipe. The type of instance you select should be configured to your particular computing needs. AWS has a wide selection of preconfigured instance types. A description of these can be found HERE.

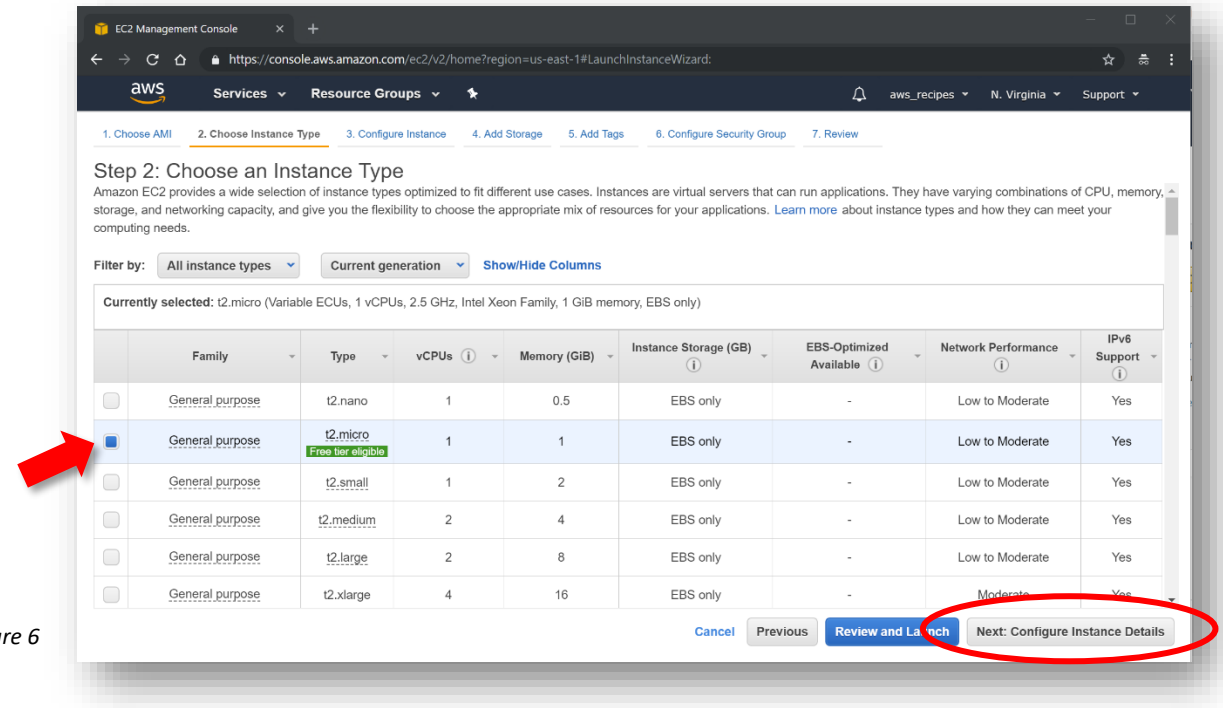

Figure 6

    ii. After selecting the instance type, click on **Next: Configure Instance Details** at the bottom.
7. **Step 3: Configure Instance Details**
    i. Since we are only configuring one instance, the defaults on this page do not need to be changed. Click on **Next: Add Storage** at the bottom.
8. **Step 4: Add Storage**
    i. The AWS General Purpose SSD (gp2) storage offers a good balance of price and performance for running a wide variety of applications. The amount of storage you set will depend on the needs of the application you run. For this recipe, leave the default 8 GB unchanged and click on **Next: Add Tags**.

9. **Step 5: Add Tags**
    i. A tag is a label that identifies an AWS resource, and consists of a *Key* and *Value*. Tags can be used to organize, search for, and filter multiple resources.
    ii. In the **Step 5: Add Tags** window, click on the **Add Tag** button (Fig. 7).

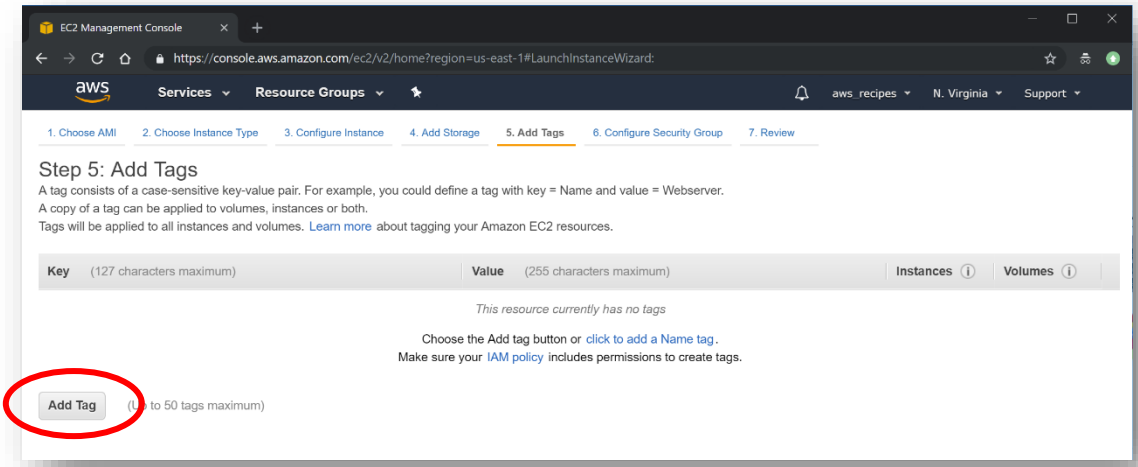

Figure 7

    iii. Under **Key**, type *Name*. Under **Value**, type something that identifies the resource; say, your last name and a short descriptor. For example, *Jones_EC2recipe* (Fig. 8).
    iv. After you have tagged your EC2 Instance, click on **Next: Configure a Security Group**.

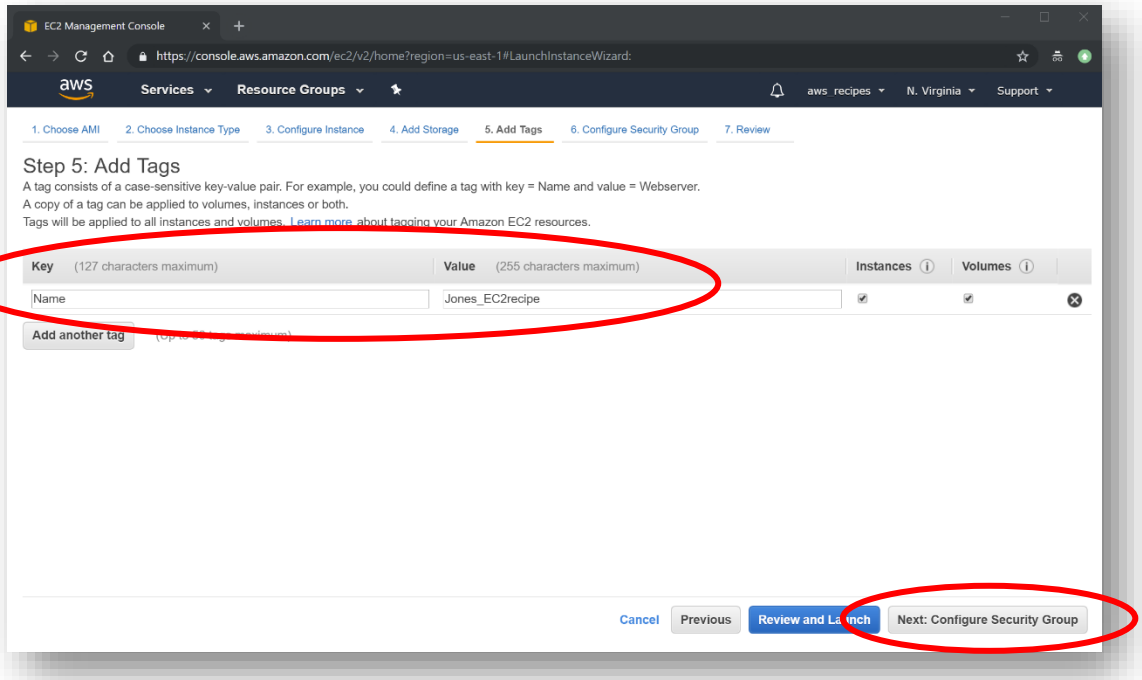

Figure 8

10. **Step 6: Configure Security Group** (Fig. 9)
    i. A Security Group determines how your instance can be accessed. For this recipe, you want to limit access to only the computer you are working from.
        1. Make sure "Create a **new** security group" is selected (**1**).
        2. Identify the new security by assigning a label next to **Security group name** (**2**). For example, name it *Jones_EC2recipe_securityGroup*.
        3. Under **Source**, select "My IP" from the dropdown menu (**3**). The public IP address of the computer you are working from will automatically be listed. This means that only the computer that has this IP address can connect to the instance.

           Note: This is a very basic Linux instance security configuration. More complicated security group rules can be configured; for example, allowing access by a range of IP addresses. More information on security group settings can be viewed HERE.
        4. Leave the other settings at their default values.
        5. Click on **Review and Launch** at the bottom of the screen.

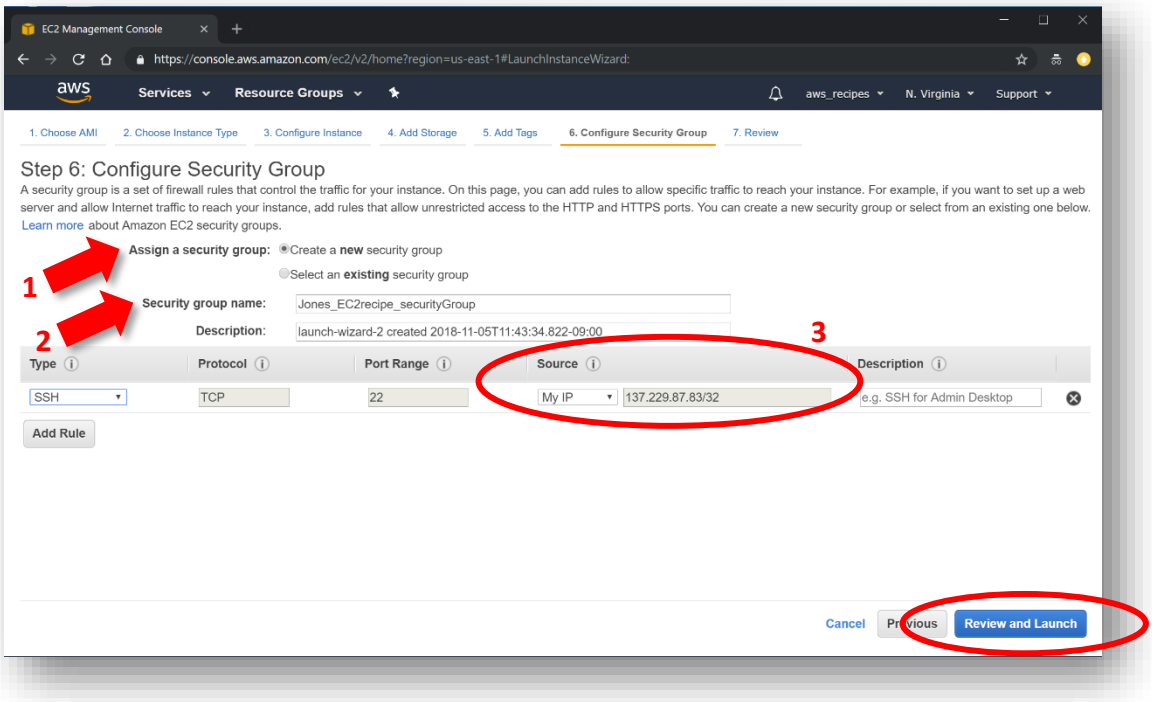

Figure 9

11. **Step 7: Review Instance Launch**
    i. This page displays your instance configuration details to review before the instance is deployed.
    ii. Click on the **Launch** button in the lower right (Fig. 10).

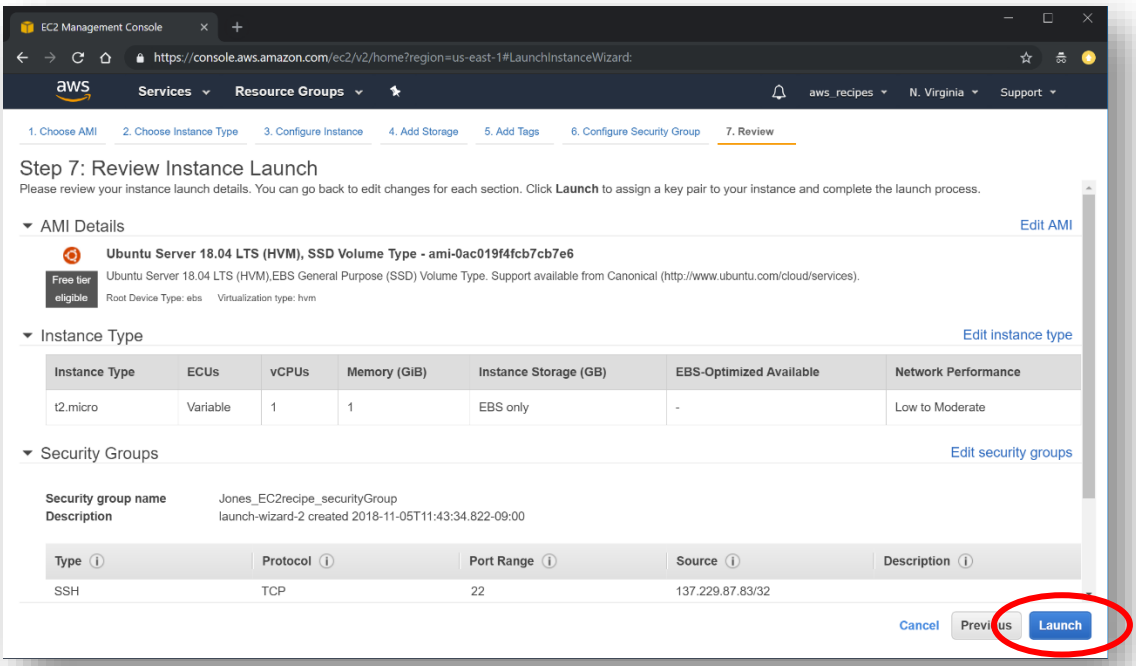

Figure 10

12. The pop-up window that appears next (Fig. 11) allows you to create a key pair – "public" and "private" keys – that will be used for securely connecting to your instance from your computer. The *public key* will be a *part of your EC2 instance* configuration and the *private key* will be kept on *your local PC or Mac*.
    i. Select "Create a new key pair" from the drop-down menu

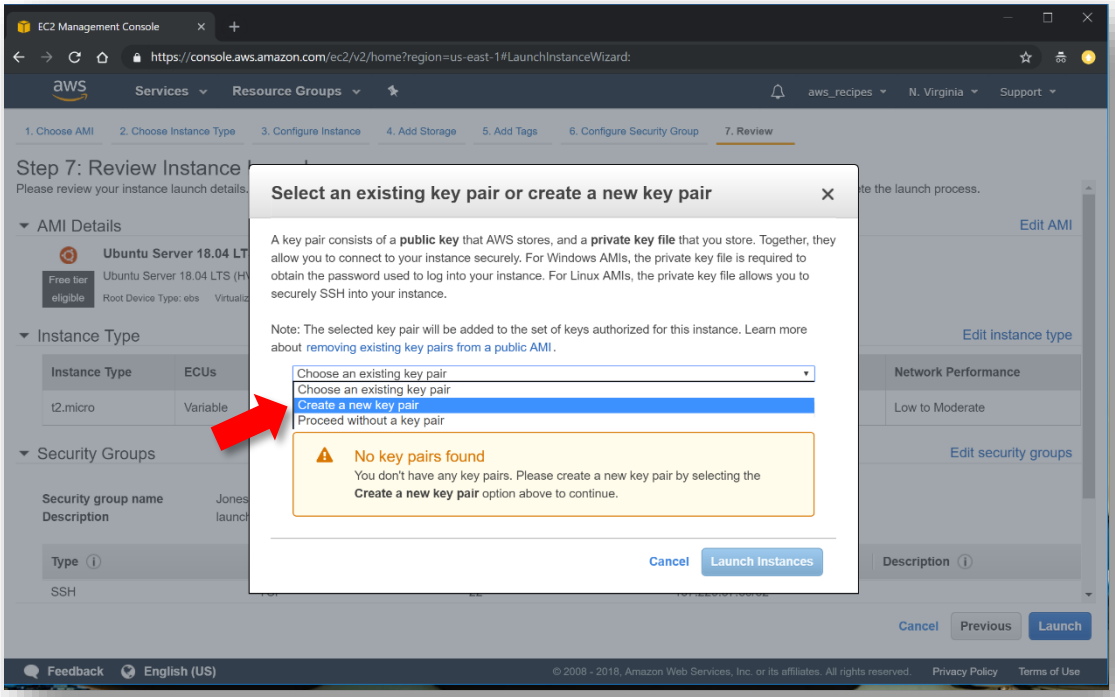

Figure 11

    ii. Next, name the new key pair; for example, *Jones_EC2recipe* (Fig. 12).

iii. Click on the **Download Key Pair** button. The private key file (.pem) will download to your default downloads folder. You can move the file to any folder.

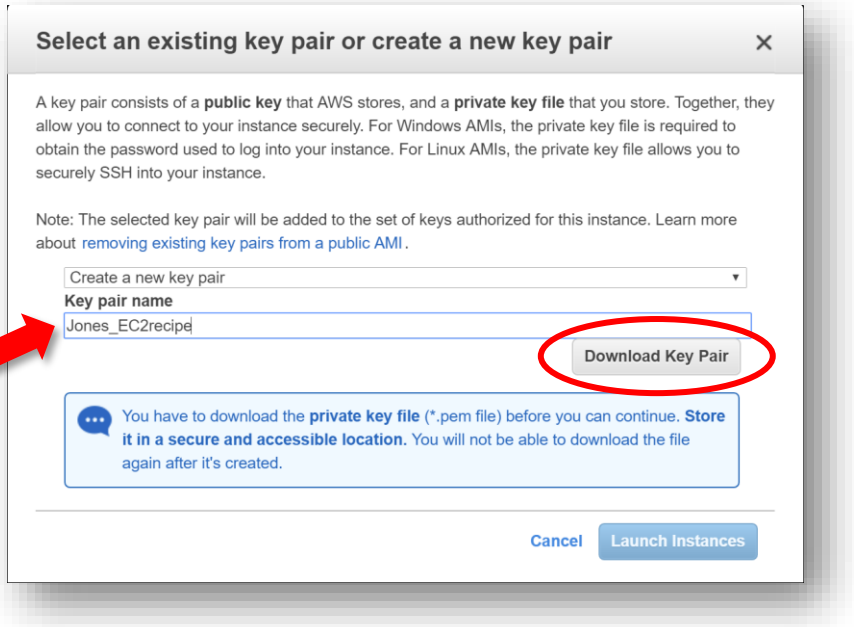

Figure 12

iv. If necessary, after the private key file has been downloaded, check the box in front of "I acknowledge that I have access to the selected private key file…" and then click **Launch Instances** (Fig. 13).

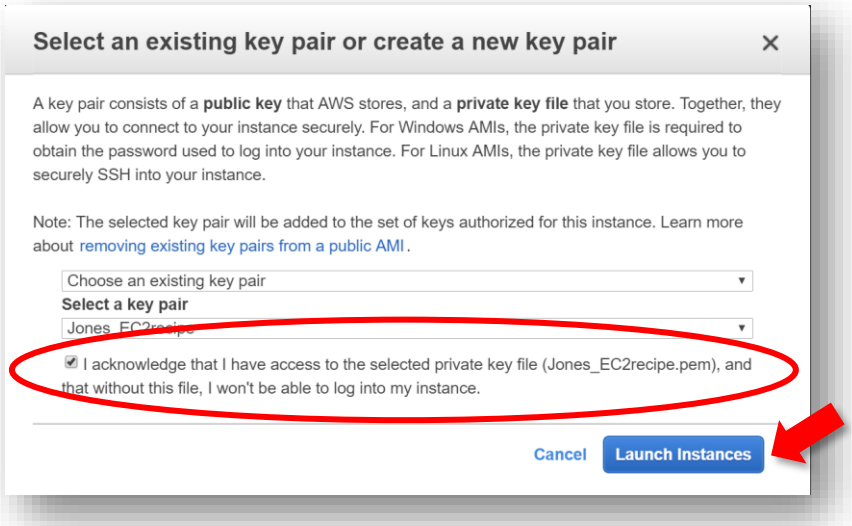

Figure 13

13. A *Launch Status* window opens displaying a notice that "**Your instances are now launching**". Click on the instance ID (Fig. 14, circled) inside the green box to open the **EC2 Dashboard** and view details of your running instance.

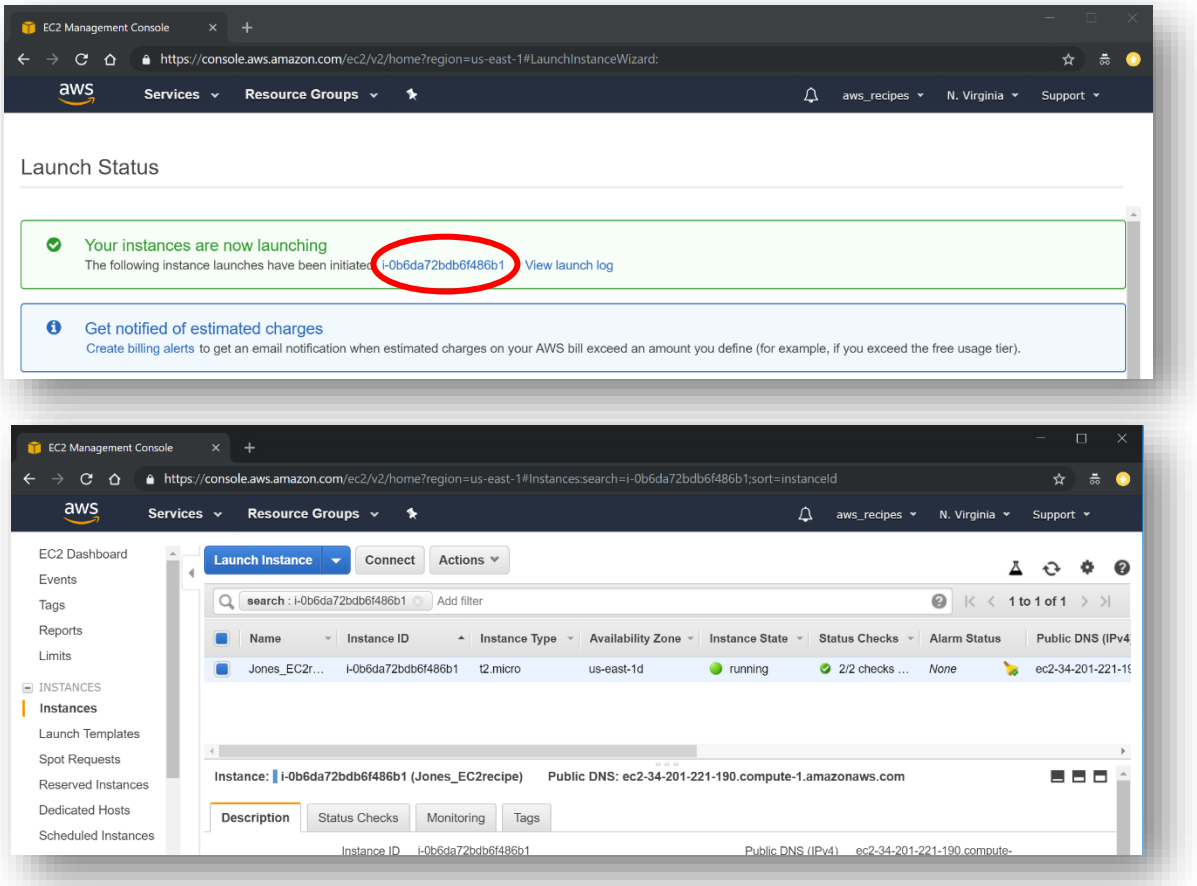

Figure 14

Your new EC2 Instance is now running!

C) Stopping or Terminating an EC2 Instance

1. After you are finished processing with your EC2 instance and no longer need it running, make sure to **Stop** or **Terminate** it. If you do not do this, *you will continue to incur charges on your account*!
2. Open the AWS Management Console by clicking on the AWS logo aws in the upper left.
   i. To open the *EC2 Dashboard,* type *EC2* in the **Find services** search box and <Enter>. Or click on **EC2** under **Recently visited services**.
   ii. In the *EC2 Dashbord*, under **Resources**, click on **Running Instances** to open the *Instances status console* (Fig. 15).
   iii. Select your instance by clicking on the box in front of the **Instance ID**.

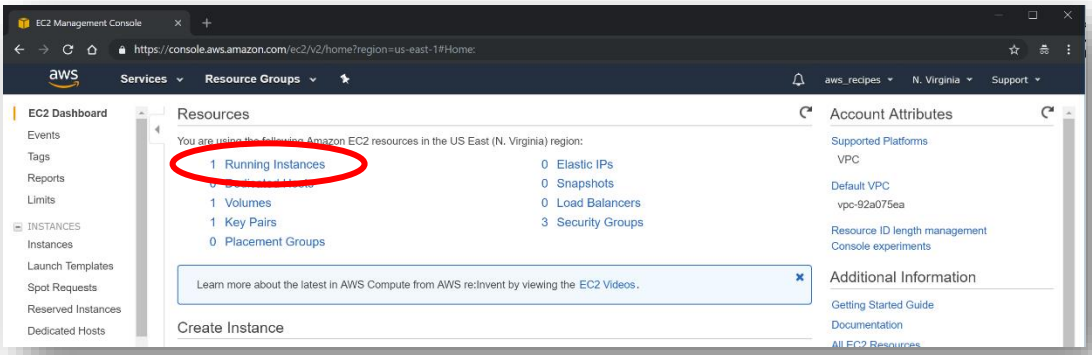

Figure 15

   iv. Click on **Actions** (**1**) then **Instance State** (**2**), then select **Stop** (if you want to restart your instance later) or **Terminate** (**3**) (Fig. 16).

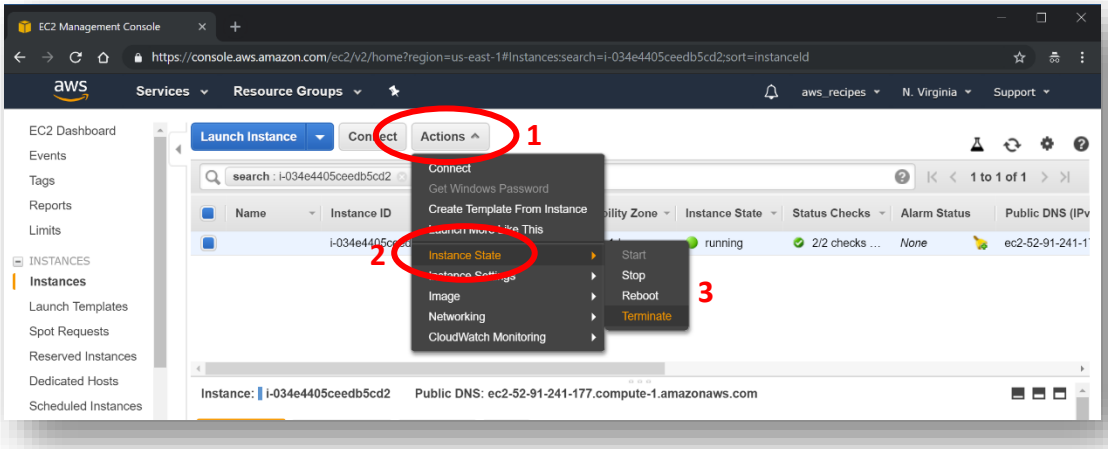

Figure 16