Provisioning an Oracle Linux Server on Amazon AWS

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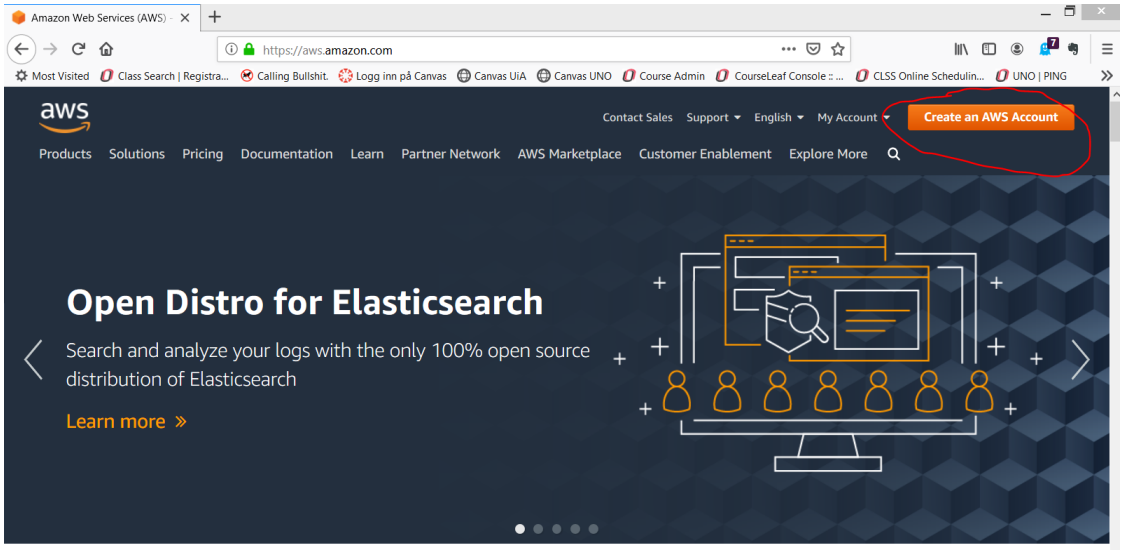
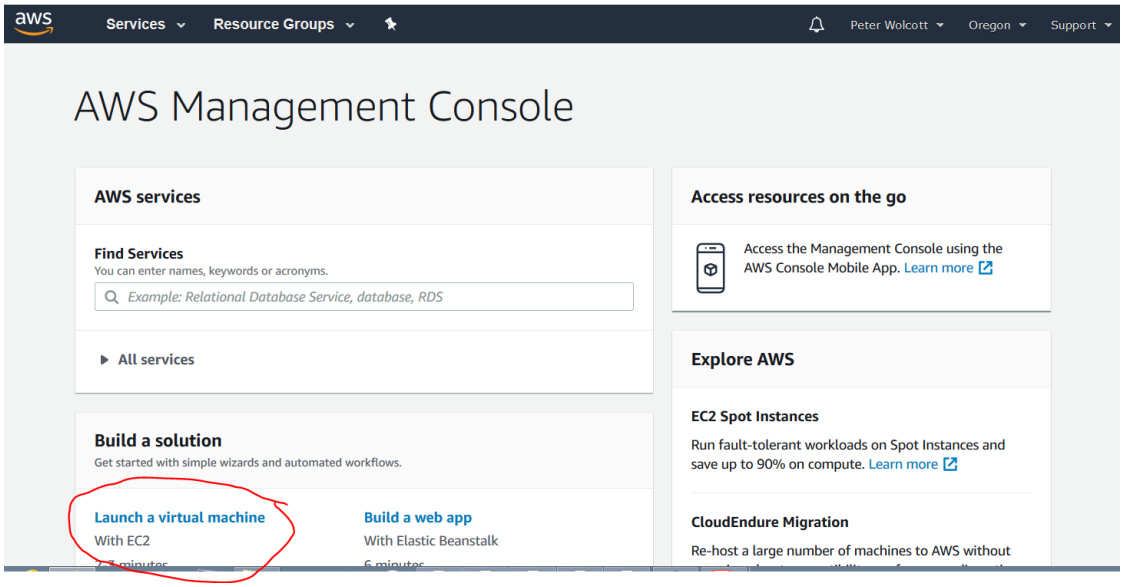
Acknowledgments: Thanks to Arthur Dayton for providing the instructions to carry out these tasks.

Preliminary: Create an Amazon AWS account.

Go to https://aws.amazon.com/ and create a free account (See https://aws.amazon.com/free for details). You will need to provide a credit card, however. The server we are going to provision is not going to be available on the free tier, but you will have to work hard to spend a lot of money on it.



Once you have created an account and logged in, you can go to the console and see all of the services that Amazon AWS offers. There are a boatload.

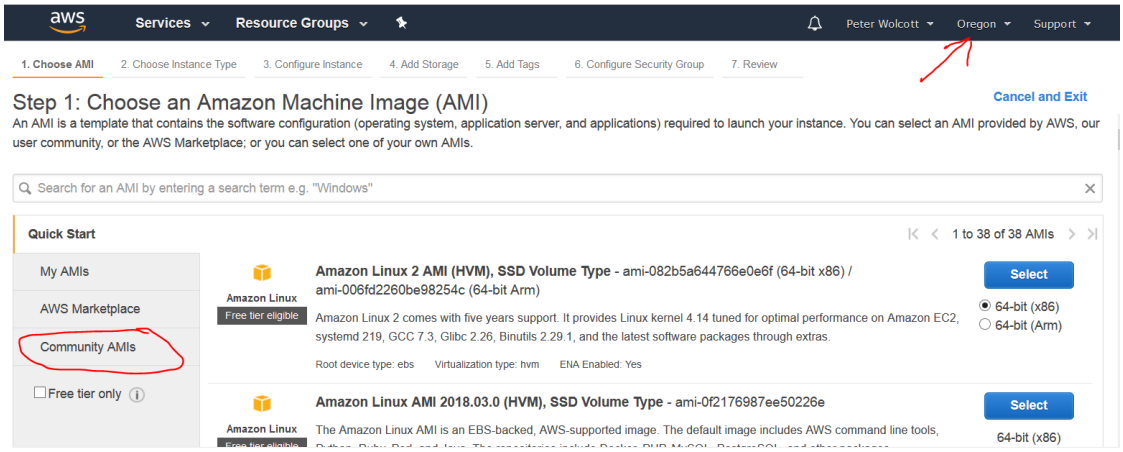


Click on 'Launch a virtual machine with EC2'. EC2 stands for "elastic compute cloud". It is a compute utility that allows developers to provision servers quickly and easily. This service allows an organization to add or remove capacity quickly, paying only for what is used. Read more about it at https://aws.amazon.com/ec2/.

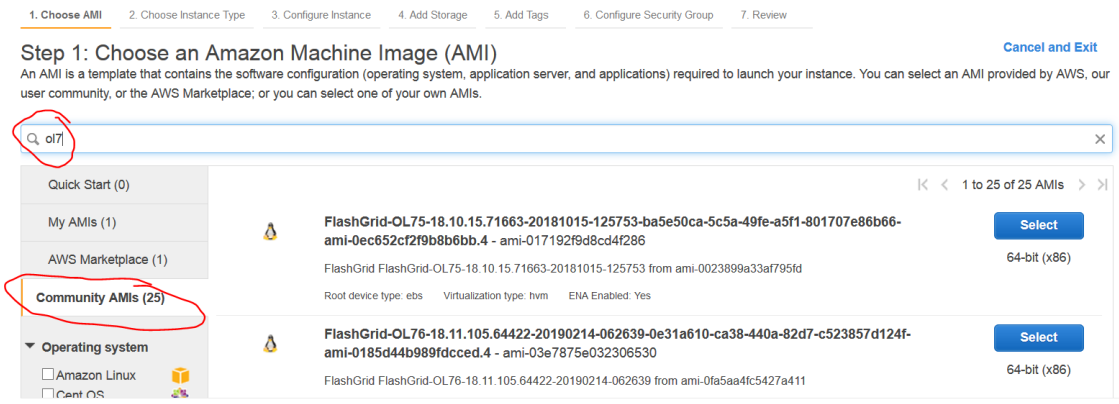
Step 1: Choose an Amazon Machine Image (AMI)

The first step is to choose an image to be used for your server. See the description below of what an Amazon Machine Image (AMI) is.

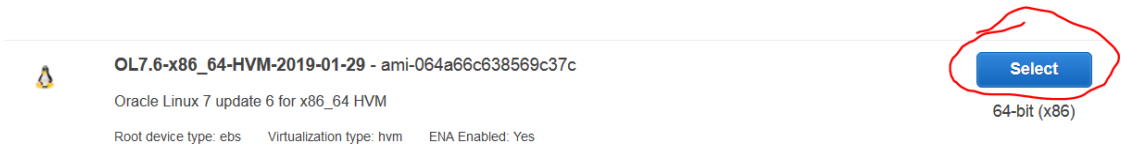
Pay attention to the Region (here shown as 'Oregon'). If you are in a different region (e.g. 'Ohio') the Community AMIs below may not be the same. In Omaha, the West region seems to work pretty well. You should keep your instances in the same region, or you will pay for inter-region communication. (But that's not as redundant).



Click on 'Community AMIs' and search for 'ol7' ("Oracle Linux 7").

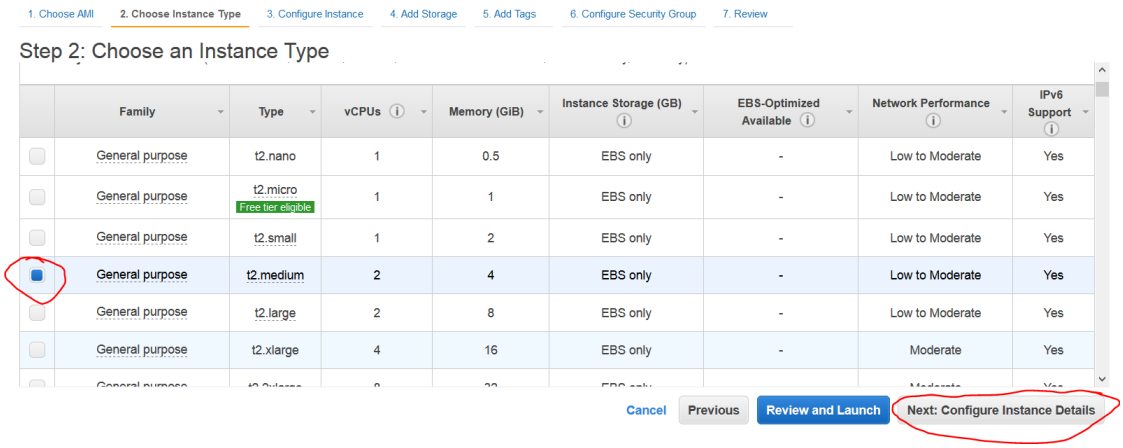


We will be using Oracle's version of Linux, so Oracle will provide support. Choose the most recent version, in this case, Oracle Linux 7 update 6 for x86_64 HVM. This is the one Amazon recommends in most situations. If you don't find it, check the region you are in (see above : 'Oregon') If you are not in 'Oregon', choose this region and search again for ol7



Click 'Select'.

Step 2: Choose an Instance Type

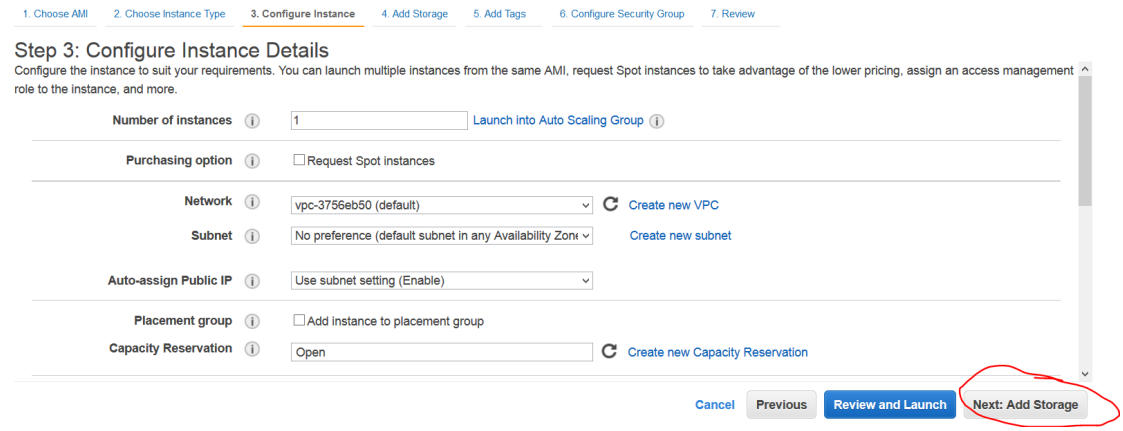


We won't be able to use the free tier, since it's a little under-powered for what we need, but the t2 medium works pretty well. Recommended for low to moderate usage.

Click on 'Next: Configure Instance Details'

Step 3: Configure Instance Details

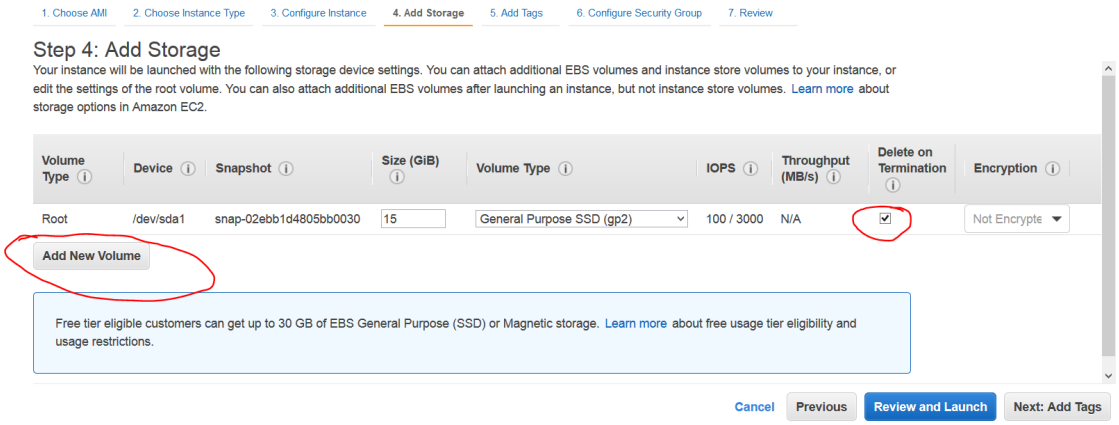
We are going to allow the system to give us an IP address (which will be dynamic, since a static IP address costs more). We'll also run a shared hardware instance, because that is cheaper as well. We'll accept the default values.



Click on 'Next: Add Storage'

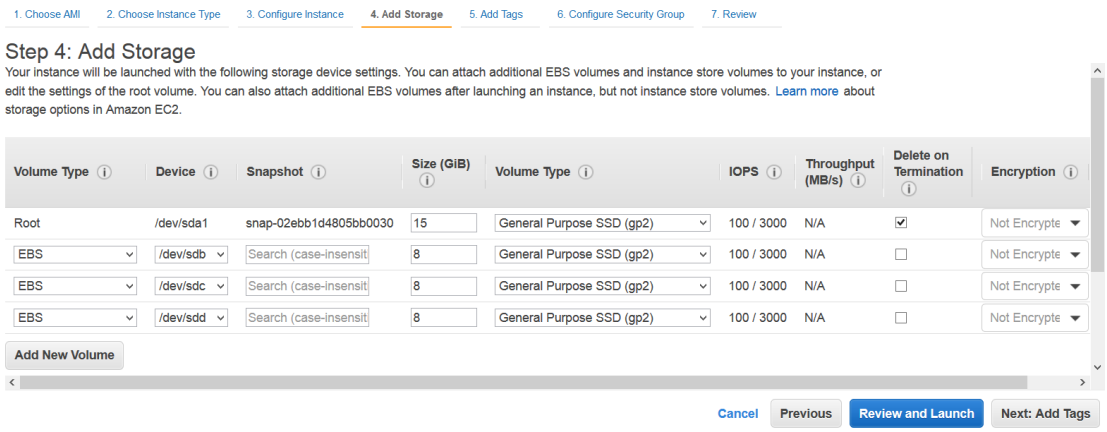
Step 4: Add Storage

The server comes with a 15 GB root volume, which holds the operating system, but will not be nearly enough for our needs. It is also a good idea to chop the storage up into volumes so that you can move it around (detach and reattach to another machine.)



The 'Delete on Termination' checkbox may be good for a sandbox system that you want to be able to delete quickly, but should be unchecked for a system that is going to contain data you don't want to loose. Unchecking it will prevent you from losing data if you delete an instance, since the storage volume exists independently of the instance and can be reattached to another instance.

Click on 'Add New Volume' three (3) times.



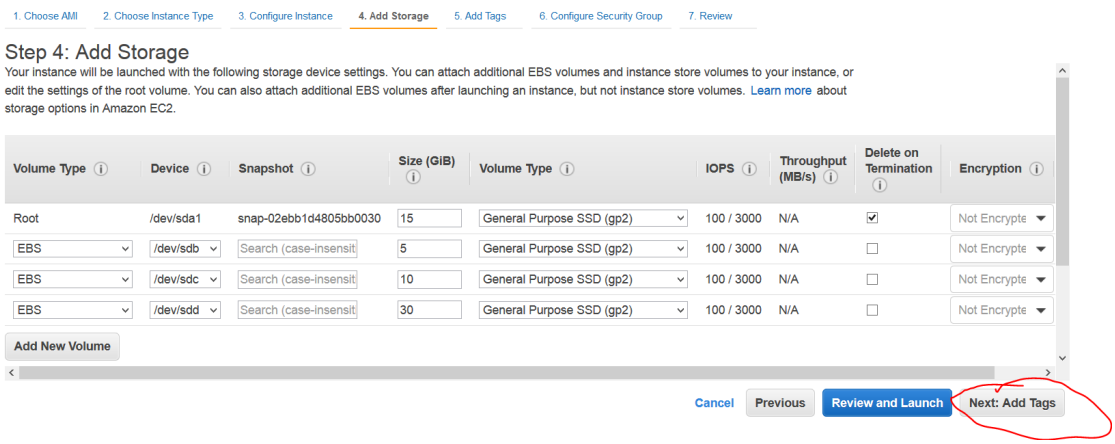
Change the size of the first one to 5. This will be used for swap space. This is used when there's a shortage of RAM.
Change the size of the second one to 10 GB. This will be used for the software
Change the size of the third one to 30 GB. The database will be stored here.

You can add additional volumes as necessary.

In our case, we are choosing SSD (solid state device) storage for each of our volumes. Choosing Magnetic (standard) disk devices is slower, but also cheaper. Follow the link in the information bubble to learn more about the different device options.

The device labels are going to be are going to be important.

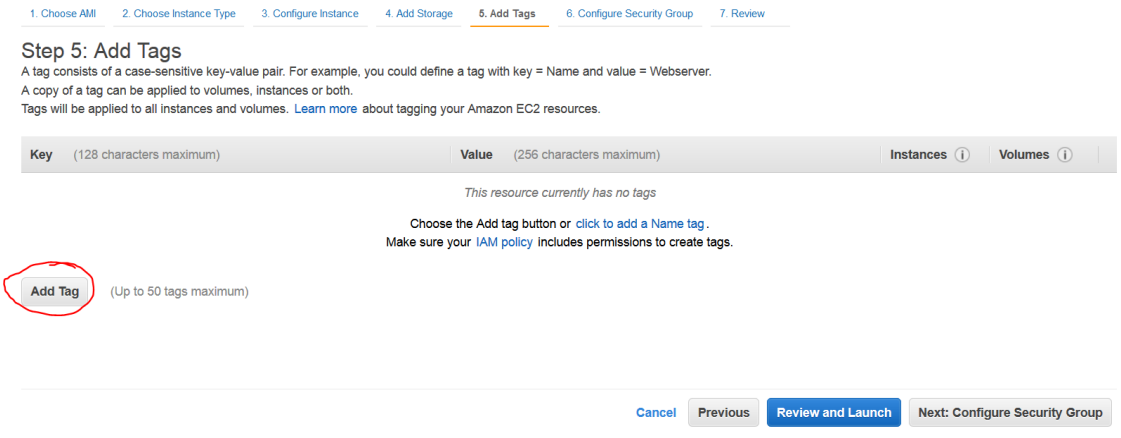
Note: Once you have created your instance, you can see all of your volumes for this and any other instances by choosing 'Volumes' under the ELASTIC BLOCK STORE section in the navigation menu on the left of your window.



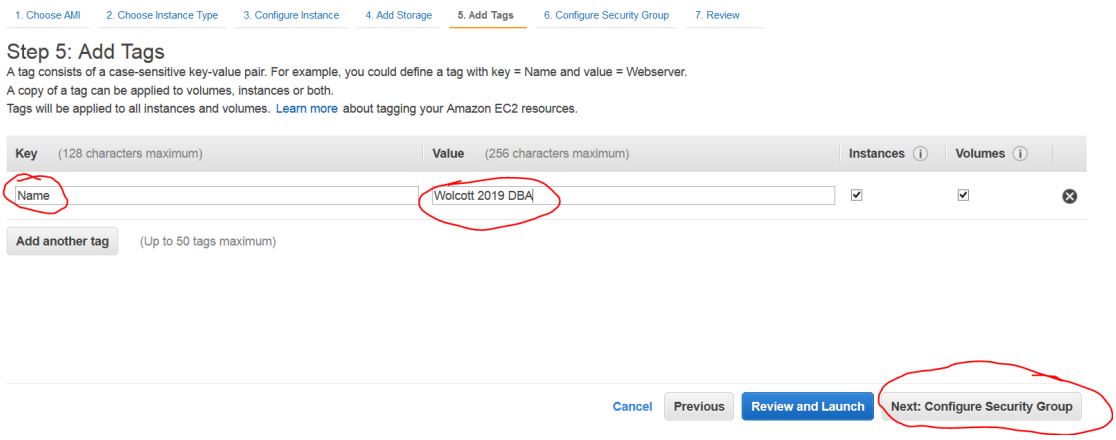
Click on 'Next: Add Tags'

Step 5: Add Tags

It is a good idea to tag your instance so that you can easily distinguish it from others.



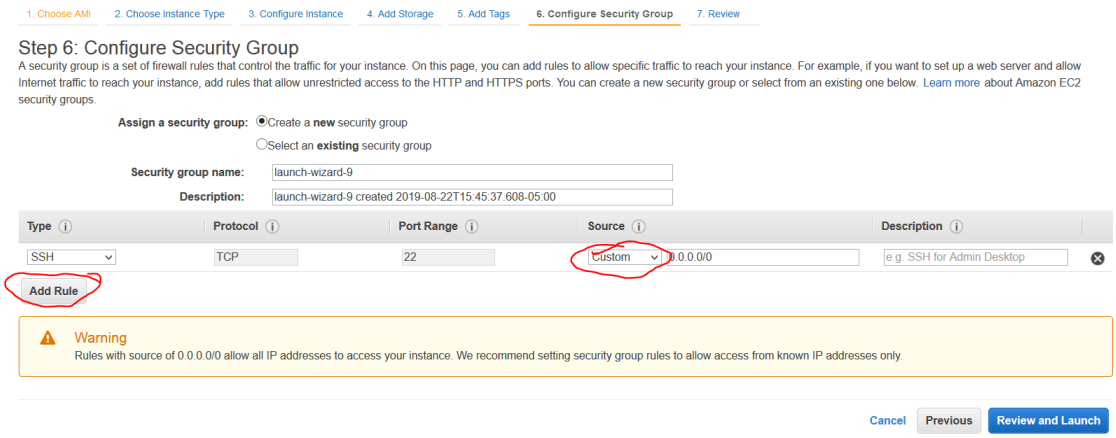
Click on 'Add Tag'. Type in 'Name' for the Key, and a name of your choice for the Value. **It would be helpful to your instructor if you choose a name value that includes your name (Like what I've done here).**



Click on 'Next: Configure Security Group'

Step 6: Configure Security Group

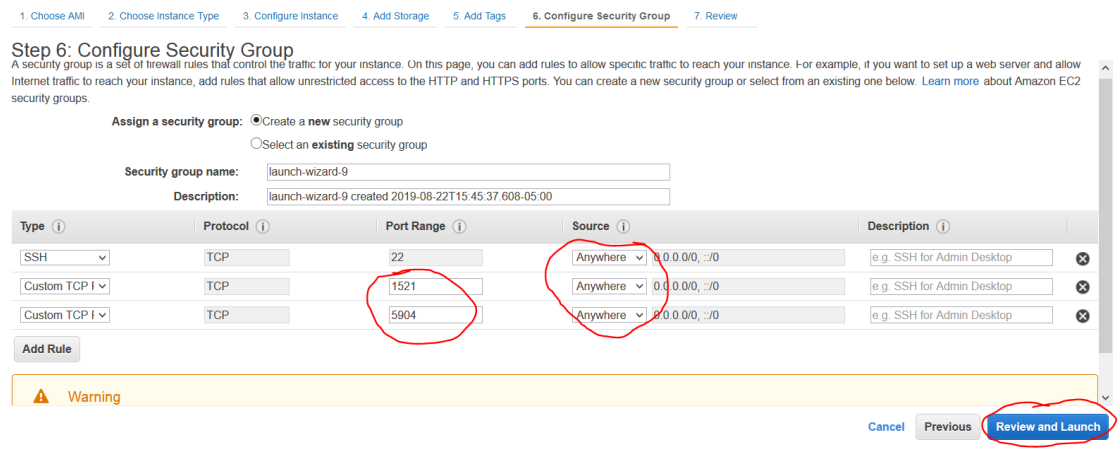
This now gets us to networking.



Although there are more secure ways to tighten down the network, choosing 'Anywhere' for the Source provides the most flexibility in accessing the server. If you were doing this inside of an organization, this would be a bad idea. For our development work, we aren't very worried about someone doing harm in our database.

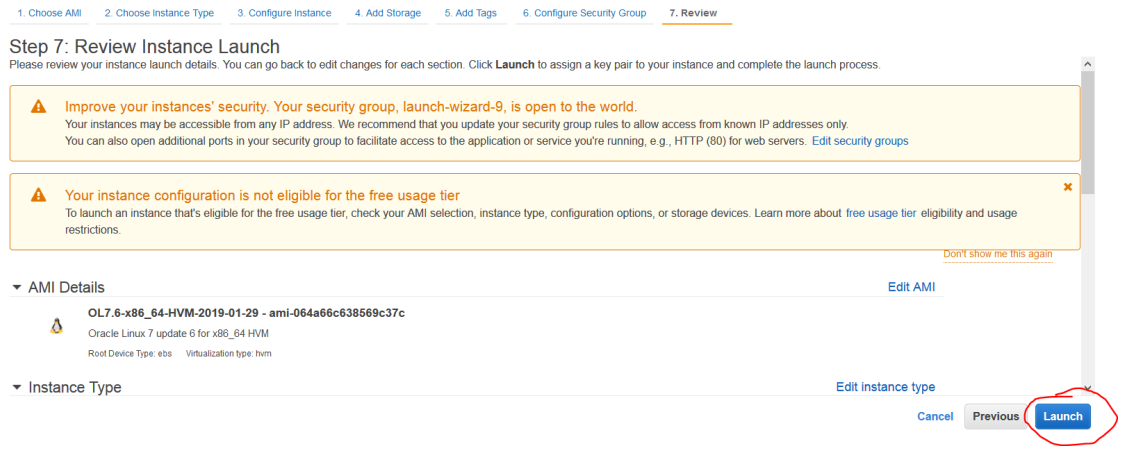
We'll need to add a rule for the security configuration. Click on 'Add Rule' two (2) times. We are going to need to allow other communications to our machine. The most important one is 1521. This is the default port that our database communicates on.

We will also open up port 5904, which is the port that the virtual private network will connect on.



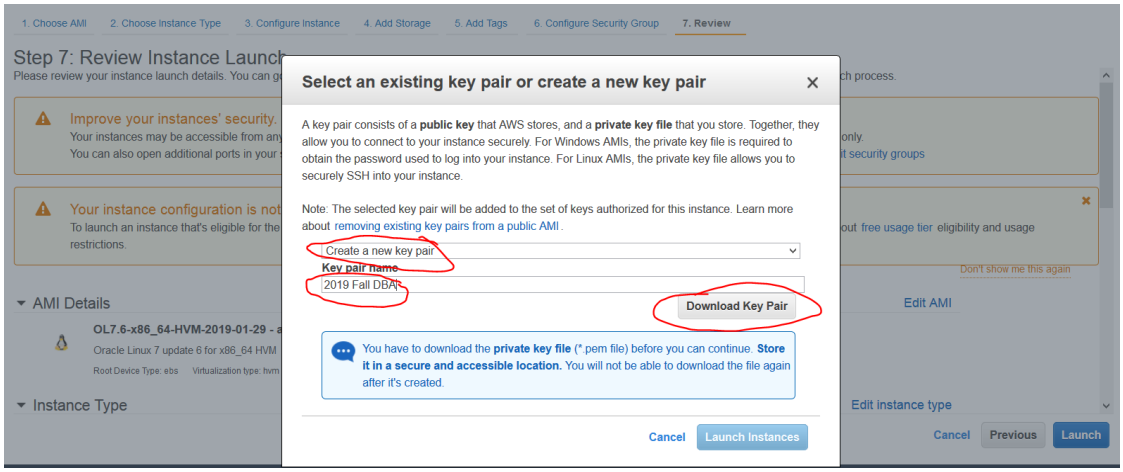
After making the changes circled above, Click on 'Review and Launch'

Step 7: Review and Launch



Look over the instance details, then click 'Launch'.

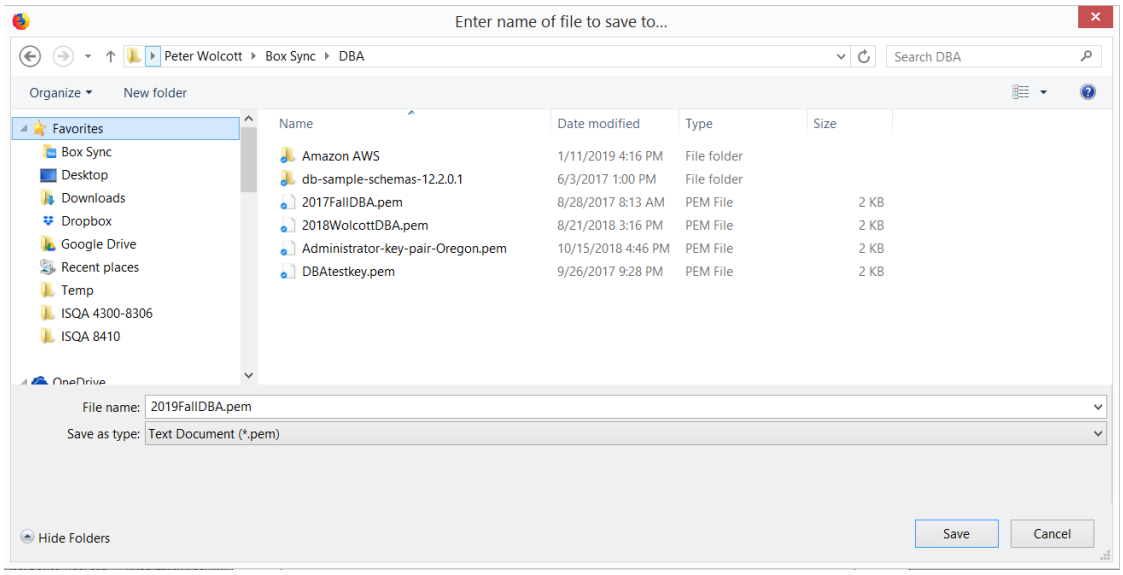
You are then asked to create a key pair, or use an existing key. We'll create a new key pair, since we don't already have one. This public key encryption will allow us to securely connect to the server using an SSH client.



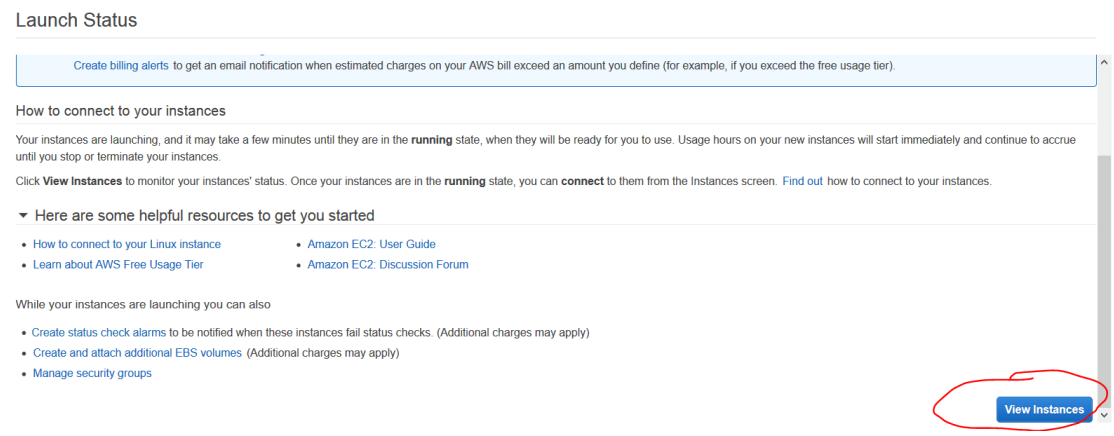
From the first drop-down box, select 'Create a new key pair'. Provide a name.

Then click 'Download Key Pair'. You will then be given a .PEM file. Save that somewhere where you won't lose it. You'll need it later.

If you already have a key pair defined, you can us that. If you created a new one, you can us it again on any other instance you might create. Just keep track of your .PEM file.

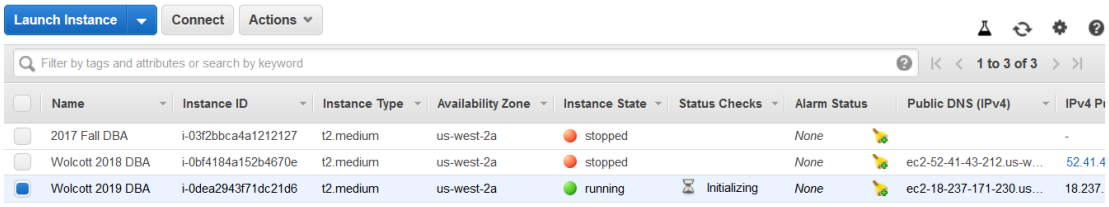


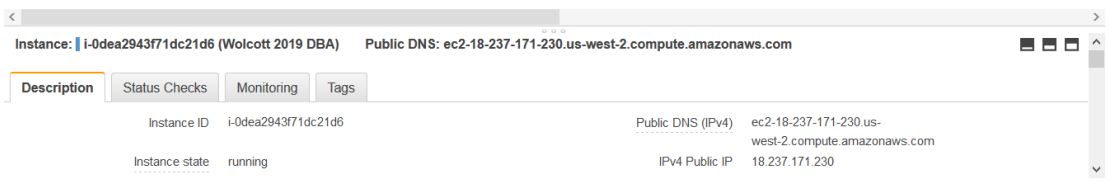
Now click 'Launch Instances'.



You can see it in the Instances by clicking on 'View Instances'.

For a period of time, the Status Checks field will read "Initializing". Just wait.

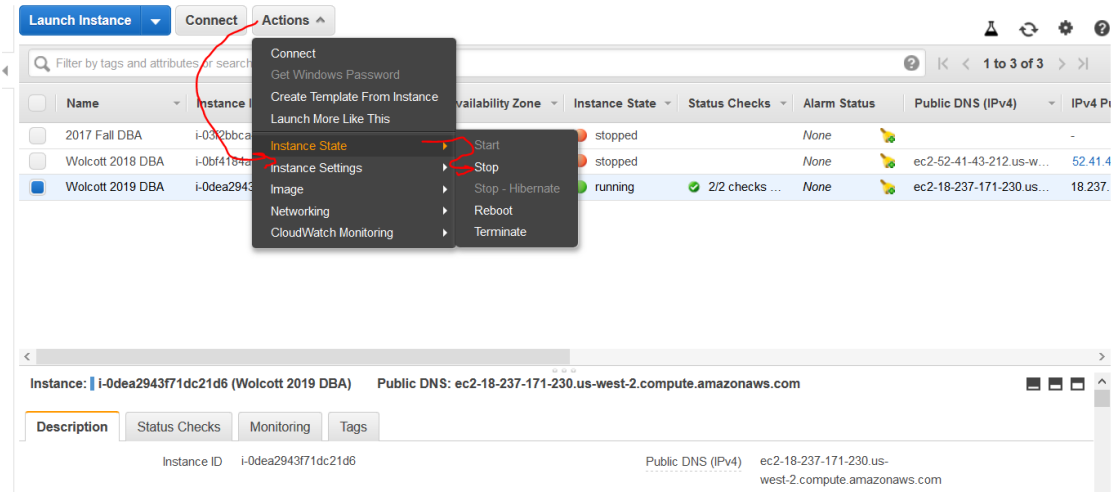




Starting and stopping your instance.

This is important to prevent you from spending more money than necessary.

From the Instances view, under 'Actions', choose 'Instance State' and then 'Stop' or 'Start'



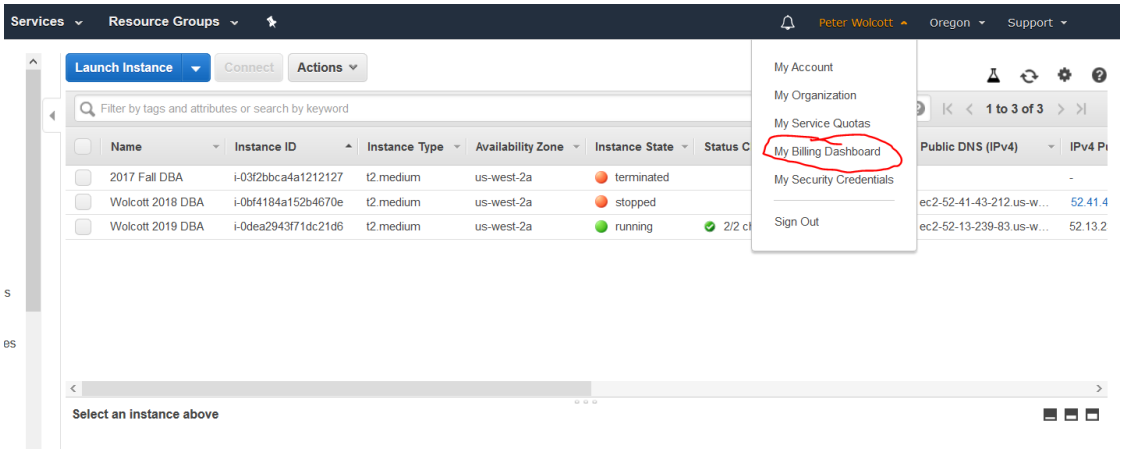
Practice Stopping, then Starting your instance.

Notice also that your instance has a public DNS, which you can use to connect from other tools, like Oracle SQL Developer.

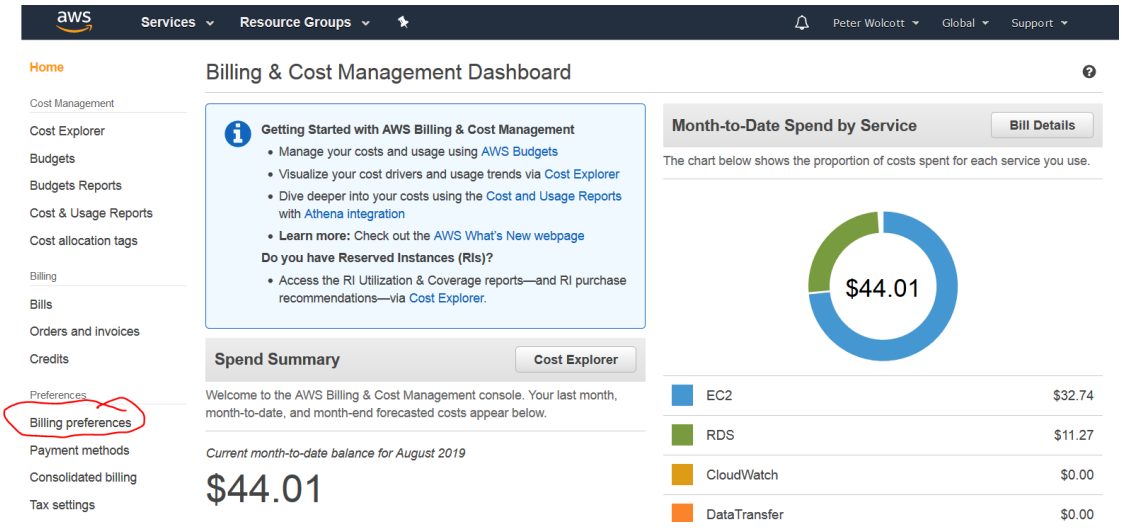
Step 8: Setting up a billing alert.

The other thing you want to do is set up a billing alert rule to remind you in cases where, for example, you forgot to stop your instance and are incurring on-going costs unnecessarily.

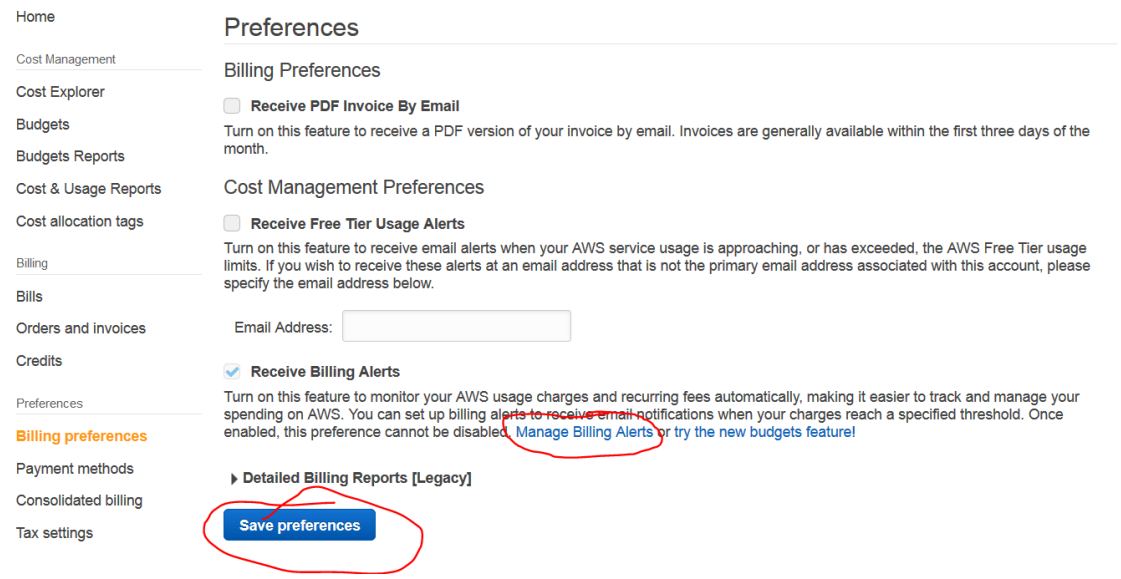
Under your username, choose 'My Billing Dashboard' to set up a billing alert.



I have some costs already, because I have other servers on Amazon AWS. Your costs at this point should be $0.00.

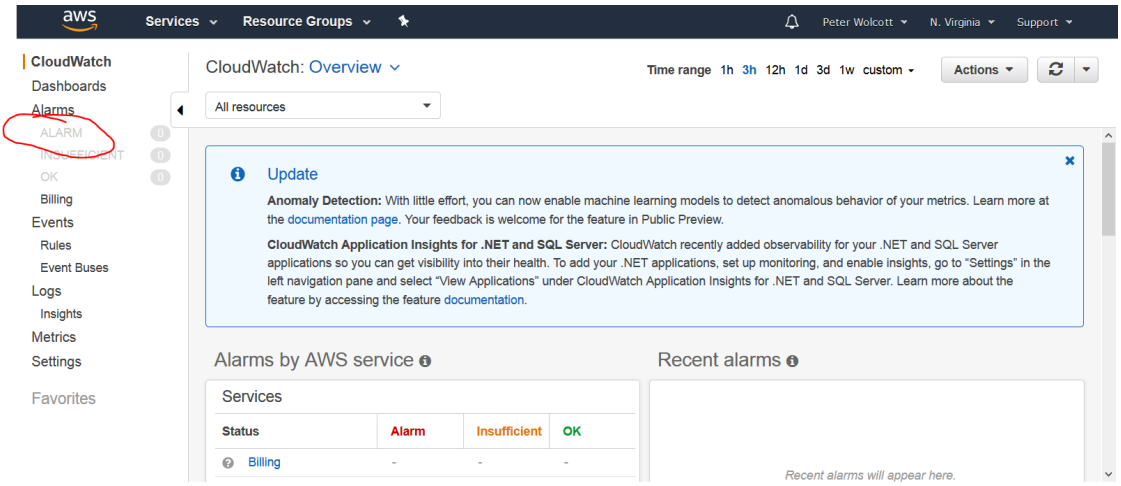


Click on 'Billing preferences' from the navigation menu.

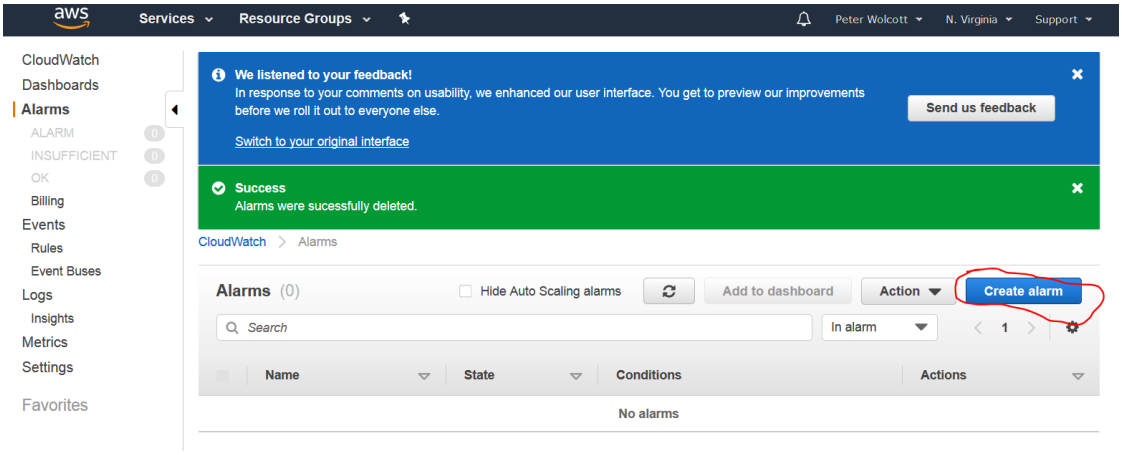


Click on 'Save preferences'.

Click on the 'Manage Billing Alerts' link (https://console.aws.amazon.com/cloudwatch/home?region=us-east-1)

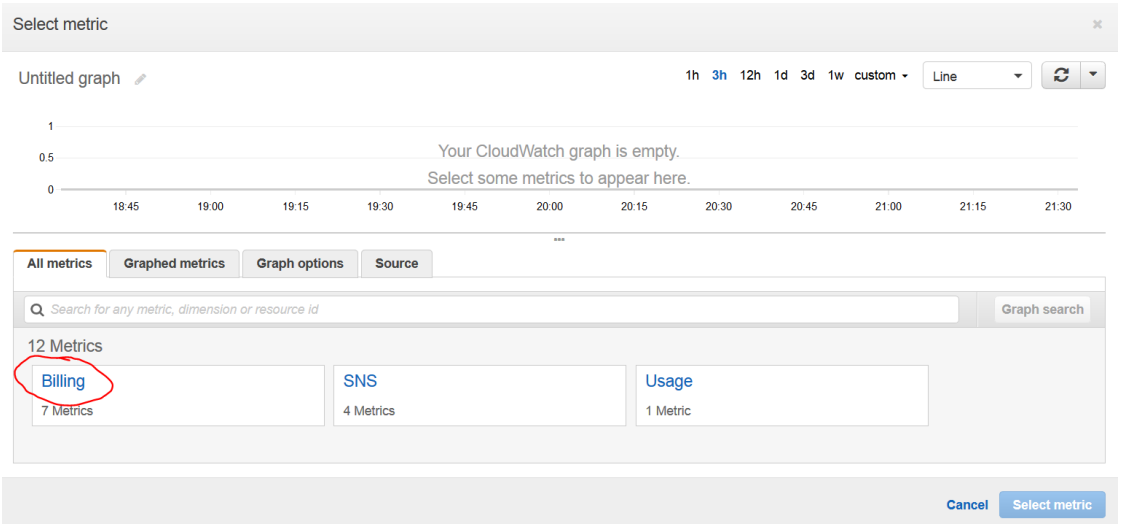


Click on 'ALARM'.

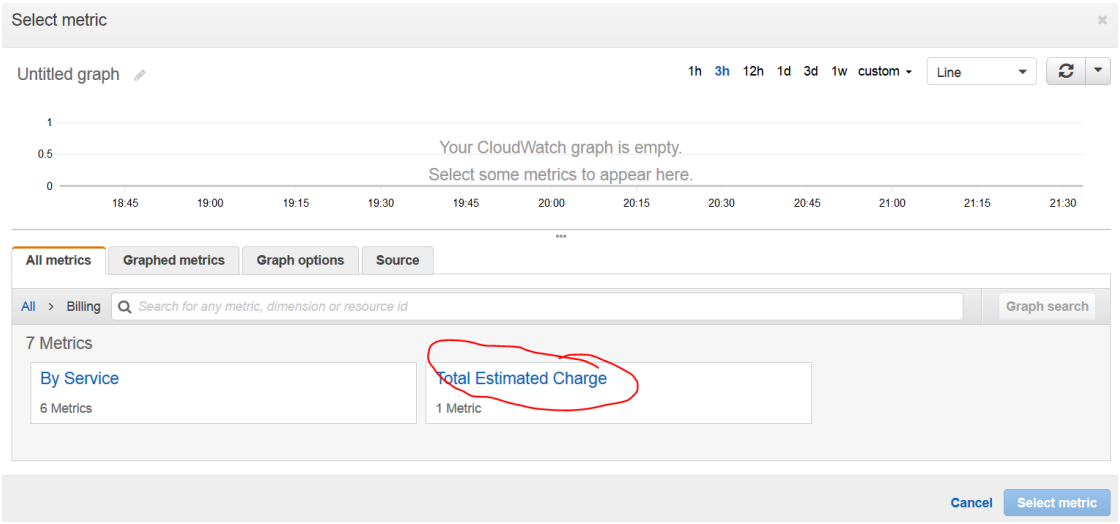


Click on 'Create Alarm' (on the right)

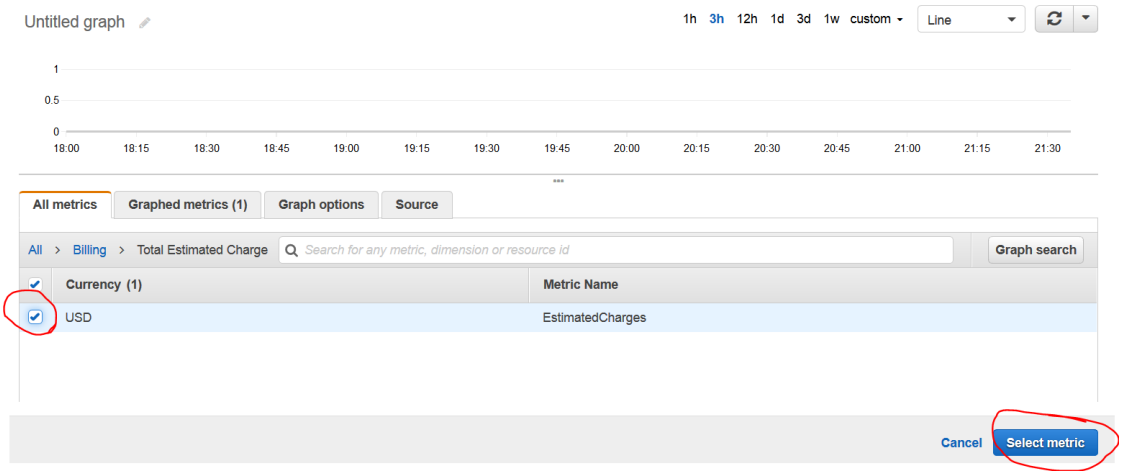
Click on 'Select metric'



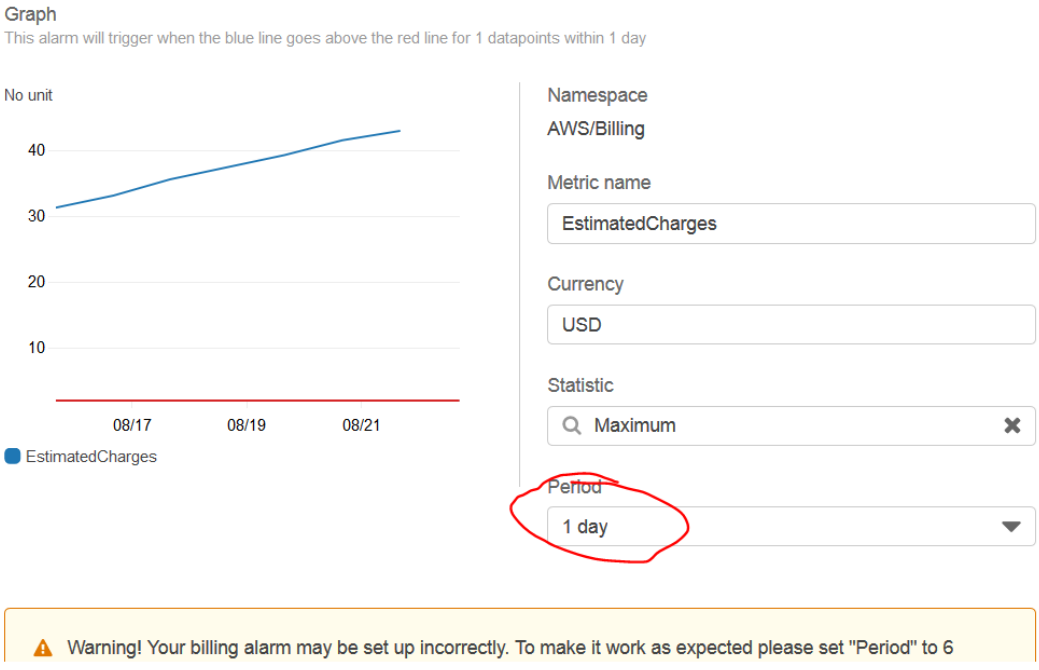
Click on 'Billing'



Click on 'Total Estimated Charge'

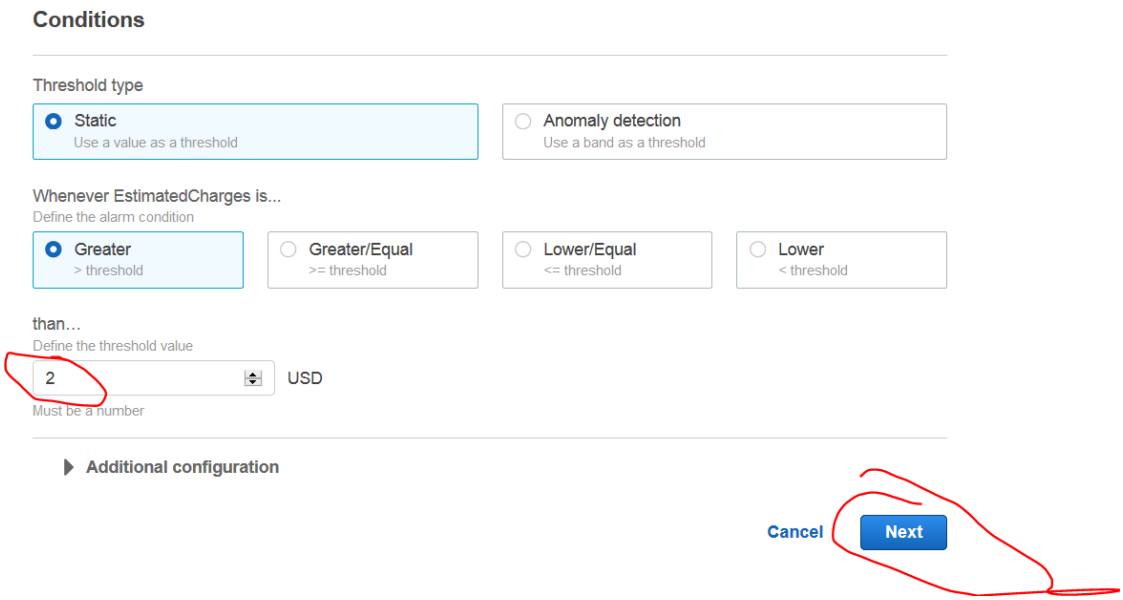


Check the box by 'USD'. Then click on 'Select metric'

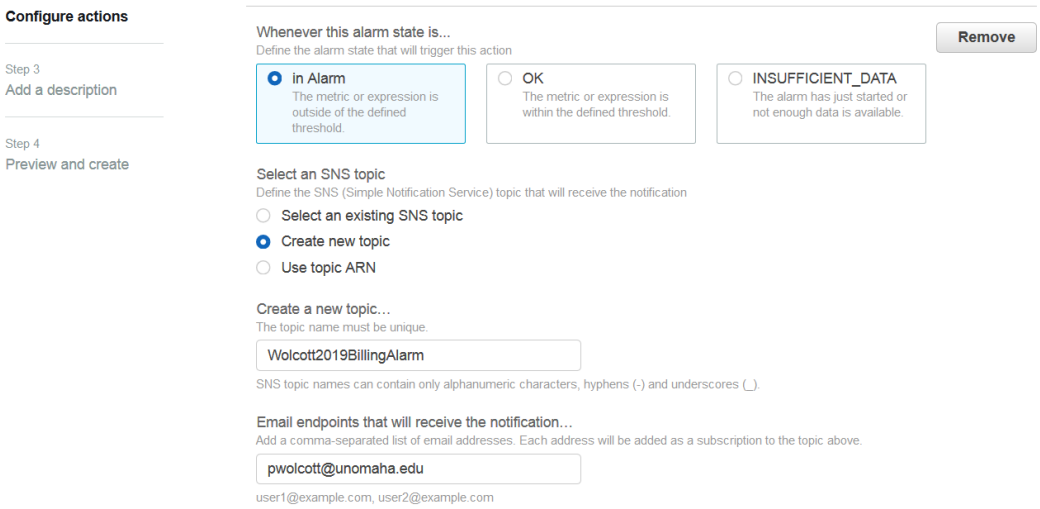


Change the period to 1 day.

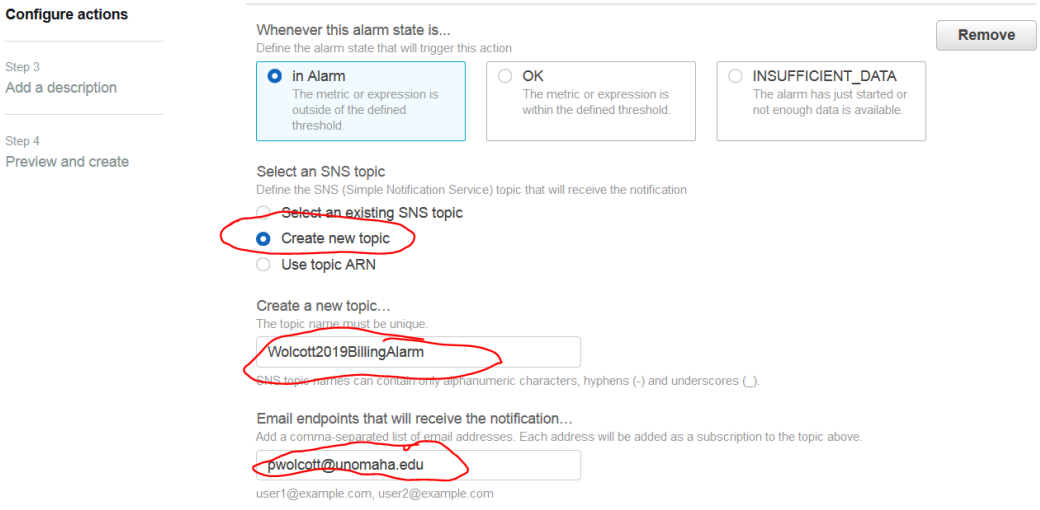
Scroll down in this window to see the parameters that can be used to create an alarm. You can put in a different threshold value if you wish.



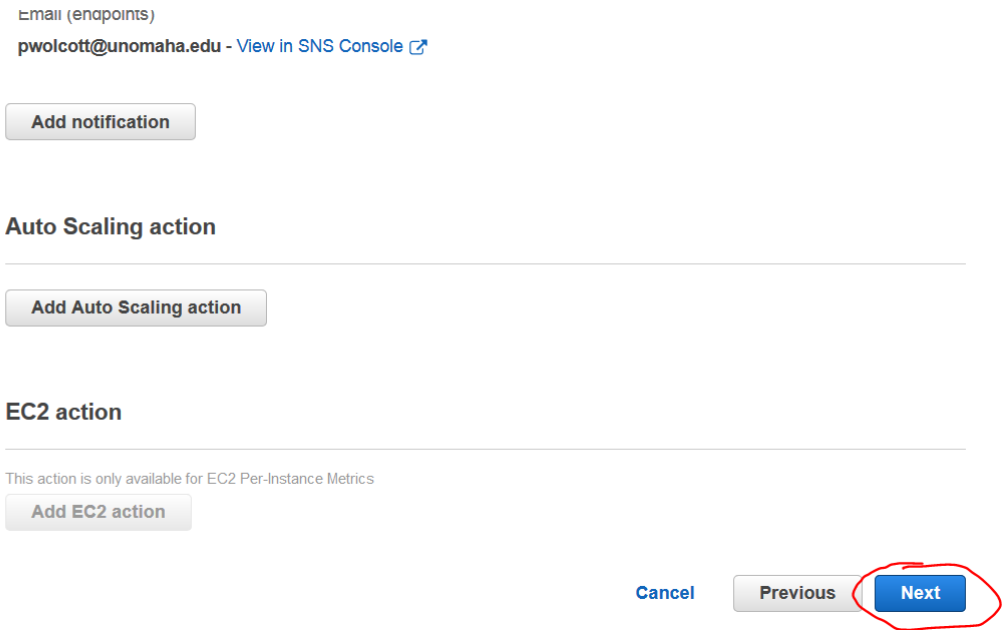
Now, click on 'Next'



Provide configuration details as shown below.

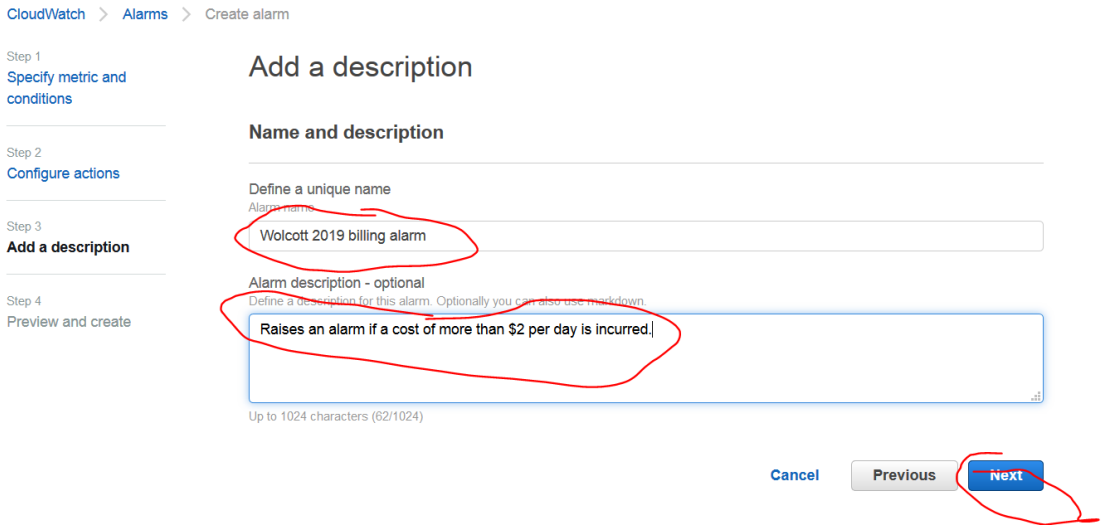


Scroll down slightly and click on 'Create Topic'.



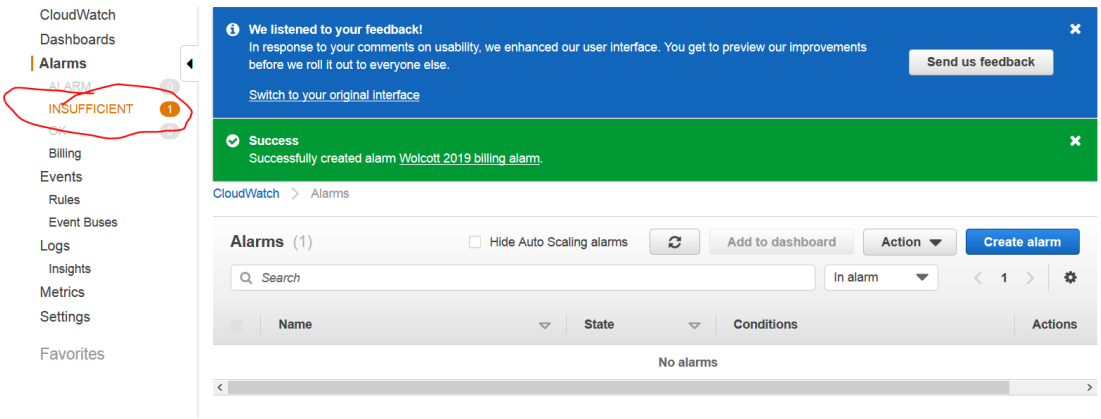
Click on 'Next' at the bottom of the window.

Next, provide a name for the alarm and, optionally, a description.

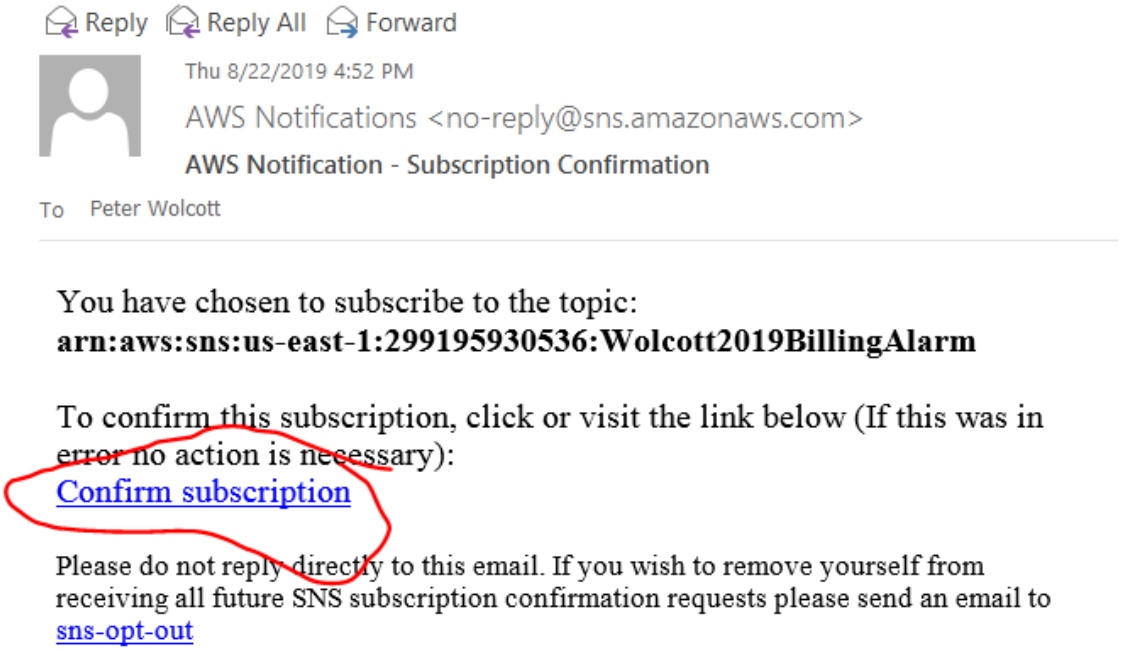


Click on 'Next'

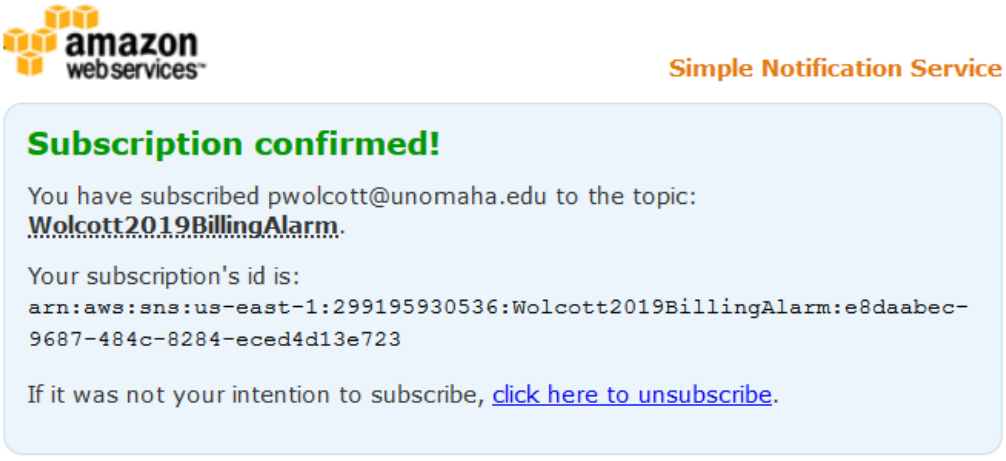
Scroll down to the bottom of your screen and click on 'Create alarm'.



If you see the alarm in the INSUFFICIENT category, this means that Amazon AWS is trying to confirm the email address you specified. Check your email for a message and follow the instructions to confirm your email address.



You will then see a confirmation message that the alarm has been created.



Next: Connecting to the Server via MobaXterm and preparing the server for the Oracle installation