Lab 01 – Successfully Using a Free Amazon Instance

Prerequisites:

This lab assumes that you have already created an Amazon Web Services (AWS) account. You only need to have access to the Elastic Compute Cluster (EC2) service. This lab will **only** use the services that are free for the student for the first year of AWS enrollment. These are EC2 micro-instances that have a "star" in the AMI – This will be explained in more detail in the lab. However, if you don't follow this lab carefully and thus choose the non-free services, Amazon will charge you for those usages. The fees are usually reasonable. However, you accept responsibility of those fees. It's best to follow this lab exactly as written.

Objectives:

This course shows the power of Python programming for many uses. One of those uses will be a program to start and stop a Python instance. Before we write a program to do this, lets learn how to do this through the Amazon Web Service (AWS) Console.

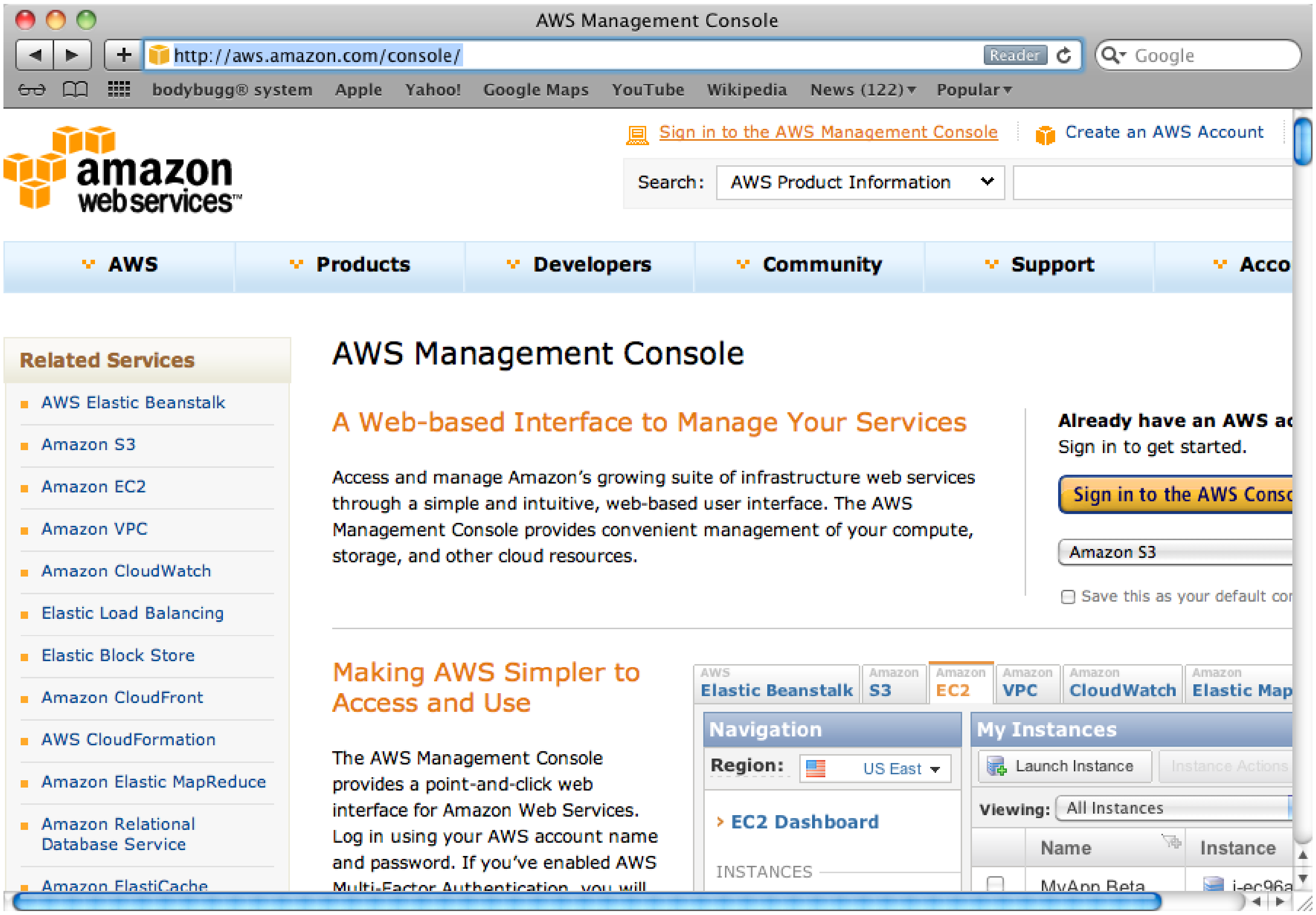
When this lab is over, you should:

- Understand the AWS Console
- Understand Amazon's Elastic Compute Cluster (EC2)
- Know how to configure and start a Linux instance
- Know how to stop a running Linux instance
- Be able to access (ssh to) the Linux instance as if it were any other machine

Part I – Configuring the Instance

Step 0 – (prerequisite) Sign up for Amazon Web Services

Sign up for Amazon Web Services at http://aws.amazon.com. When you are finished, you should be able to get to this link (http://aws.amazon.com/console/) and click the "Sign in to the AWS Management Console" link at the top of the page (as shown by Figure 1).



A Web-based Interface to Manage Your Services

Access and manage Amazon's growing suite of infrastructure web services through a simple and intuitive, web-based user interface. The AWS Management Console provides convenient management of your compute, storage, and other cloud resources.

Already have an AWS ac

Sign in to get started.

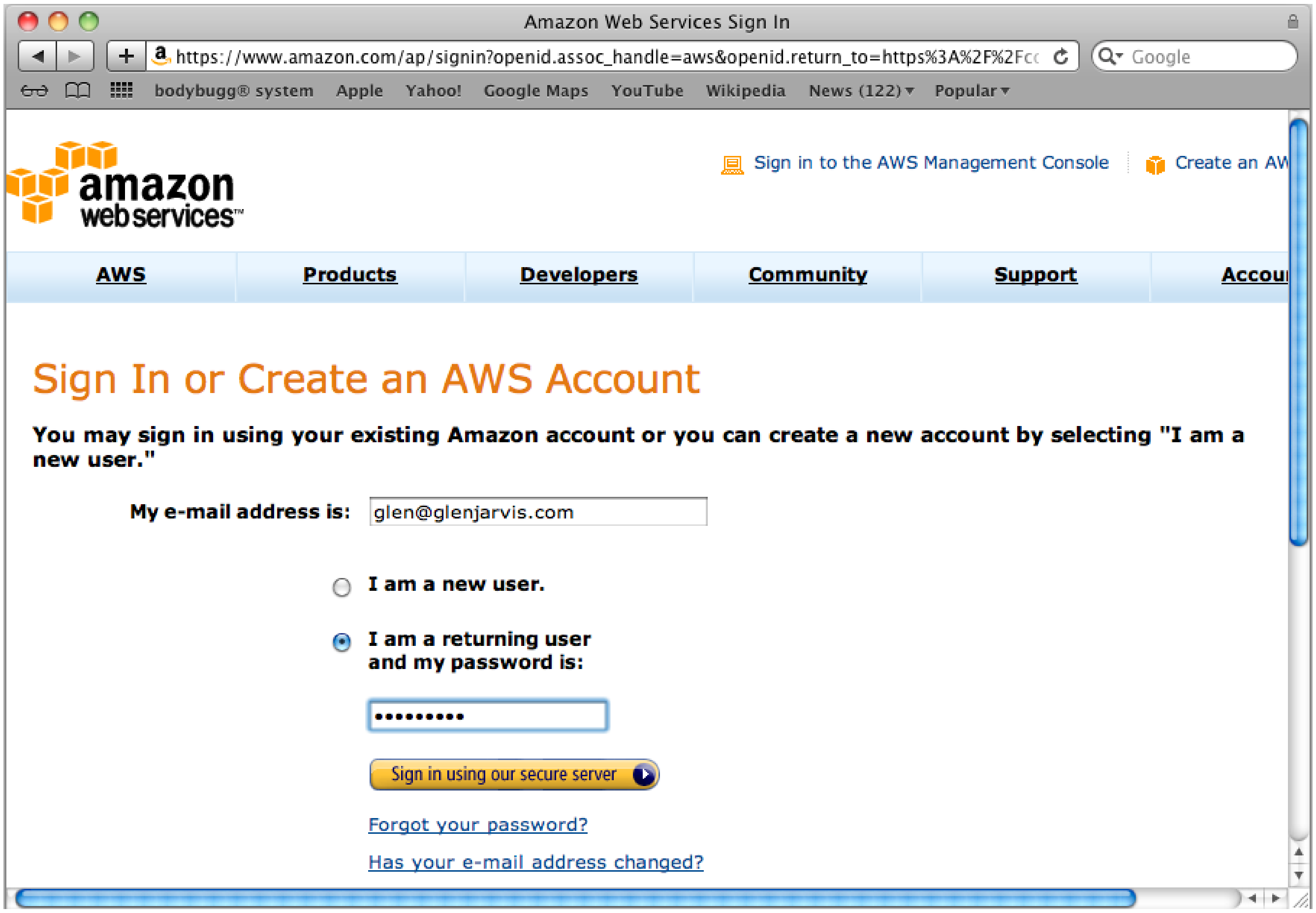
Making AWS Simpler to Access and Use

The AWS Management Console provides a point-and-click web interface for Amazon Web Services. Log in using your AWS account name and password. If you've enabled AWS Multi-Factor Authentication, you will

Figure 1: The Amazon Web Service Console

Step 1 – Logging In

a. After clicking the Sign in to the AWS Console link, you should (if not logged in) be prompted for your username and password that you have previously setup. I've entered my username and password in these fields and will click the Sign In Using Our Secure Server button (See Figure 2). If you aren't prompted for a username or password, you may already be signed-in (skip to part c below).


Amazon Web Services Sign In
https://www.amazon.com/ap/signin?openid.assoc_handle=aws&openid.return_to=https%3A%2F%2Fc
Google
bodybugg® system
Apple
Yahoo!
Google Maps
YouTube
Wikipedia
News (122)
Popular
amazon web services™
Sign in to the AWS Management Console
Create an AW
AWS
Products
Developers
Community
Support
Accou
Sign in using our secure server
Forgot your password?
Has your e-mail address changed?

Sign In or Create an AWS Account

You may sign in using your existing Amazon account or you can create a new account by selecting "I am a new user."

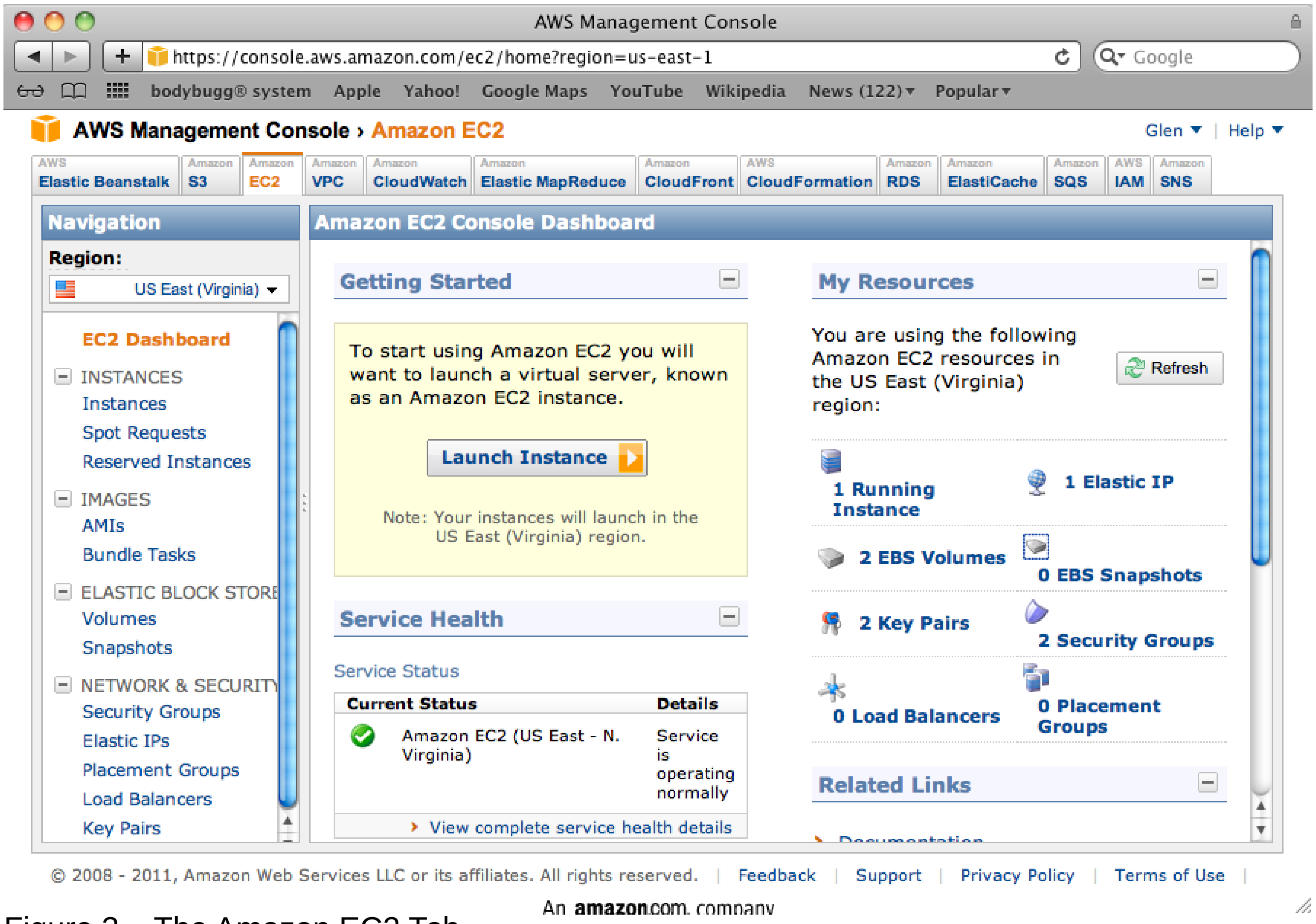
My e-mail address is: glen@glenjarvis.com

○ I am a new user.

● I am a returning user and my password is: ••••••••••

Figure 2 – Signing In

b. You should be at the AWS Management Console screen. There are several tabs across the top of this panel. Click the "Amazon EC2" tab (usually the third from the left). When finished, your screen should look similar to (but probably not exactly like) Figure 3.



To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.

Note: Your instances will launch in the US East (Virginia) region.

Current Status	Details
✓ Amazon EC2 (US East - N. Virginia)	Service is operating normally

You are using the following Amazon EC2 resources in the US East (Virginia) region:

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Figure 3 – The Amazon EC2 Tab

Step 2 – Launching Instance

Congratulations. You're past the part that has the most variability/differences than these instructions and therefore could be the most confusing. If you are still struggling, try just to find your way here. Once here, these instructions should be fairly consistent from this point on. You only need to use the EC2 portion of Amazon for this setup. EC2 stands for Elastic Compute Cluster (ECC is abbreviated more to EC2 because it sounds cooler).

Now, we need to start launching a new instance. There are two important steps here that will keep this free (the "star" and "micro-instance".) If you don't read these instructions carefully, and miss these steps, then you may end up being billed for something (although it should still be fairly cheap if you don't deviate too far from these instructions). If you follow these instructions, things should be free for you to use for up to 1 year. So, **GO SLOW**; and **FOLLOW CLOSELY** :)

Start by clicking the "Launch Instance" button [See Figure 3]

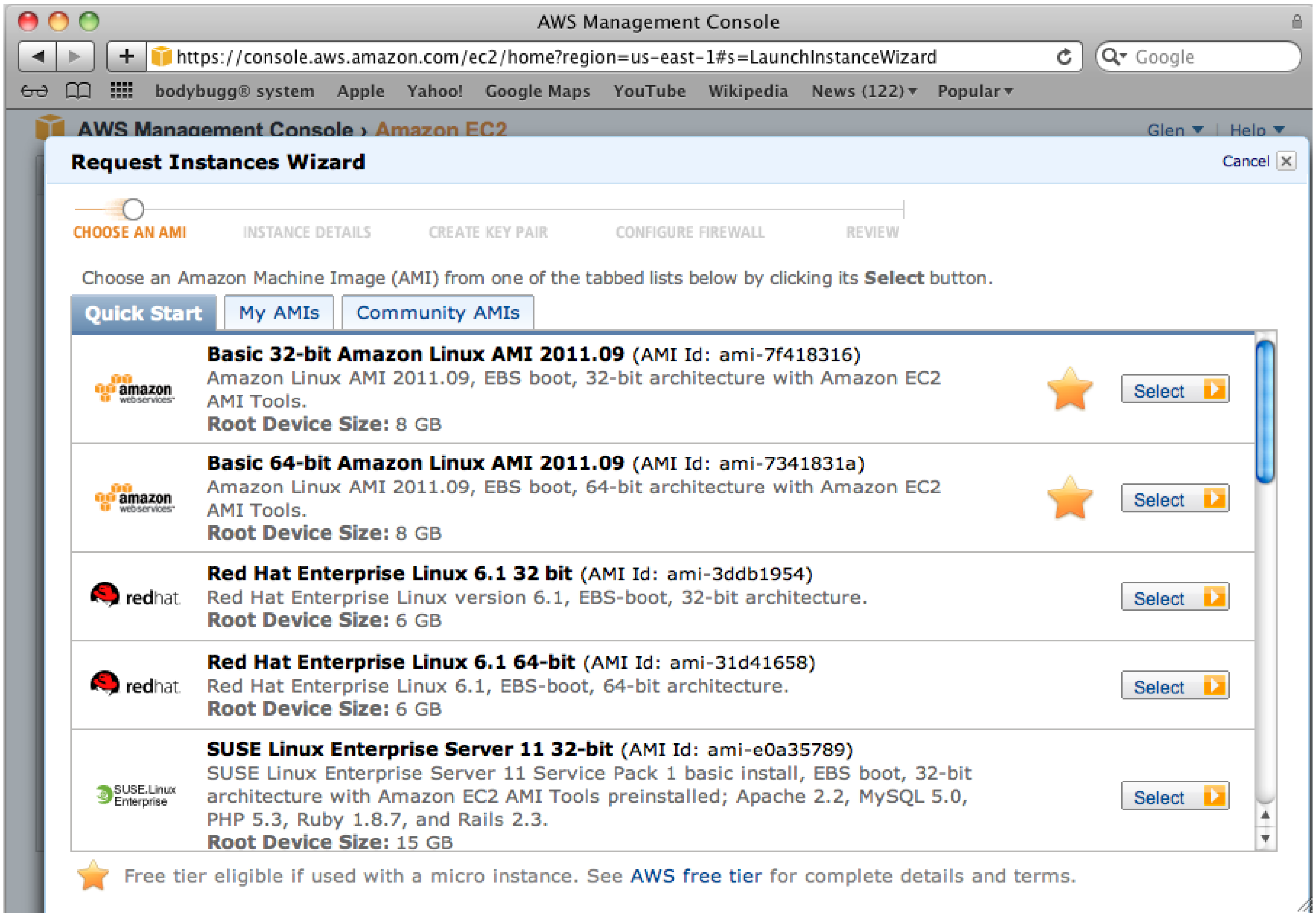
Step 3 – Choosing an Amazon Machine Instance (AMI)

When you click the "Launch Instance" button, you should see something similar to Figure 4. The first step in this process is to choose the right "Amazon Machine Instance" from which to build our company.

Think of this like picking a computer out of a catalog . You may want to get a blue one, a tall one, one that comes with Windows, or one that comes with Linux. Your choices will be the “blueprints” from which your instance will be built.

Once our instance is “delivered” to us, we can do what we want with it – changing it in many ways – including upgrading the operating system.

NOTE: It's very import that we pick an entry that has a gold star. Let me repeat. It's very important that we pick one with a **GOLD STAR.** I'll say it one more time. **IT'S VERY IMPORTANT THAT WE PICK ONE WITH A GOLD STAR** (but not immediately on this screen). The reason that this is important is explained by the note at the bottom of the screen in Figure 4: "Free tier eligible if used with a micro instance…"



Request Instances Wizard

Choose an Amazon Machine Image (AMI) from one of the tabbed lists below by clicking its **Select** button.

Basic 32-bit Amazon Linux AMI 2011.09 (AMI Id: ami-7f418316)
Amazon Linux AMI 2011.09, EBS boot, 32-bit architecture with Amazon EC2 AMI Tools.
Root Device Size: 8 GB ★

Basic 64-bit Amazon Linux AMI 2011.09 (AMI Id: ami-7341831a)
Amazon Linux AMI 2011.09, EBS boot, 64-bit architecture with Amazon EC2 AMI Tools.
Root Device Size: 8 GB ★

Red Hat Enterprise Linux 6.1 32 bit (AMI Id: ami-3ddb1954)
Red Hat Enterprise Linux version 6.1, EBS-boot, 32-bit architecture.
Root Device Size: 6 GB

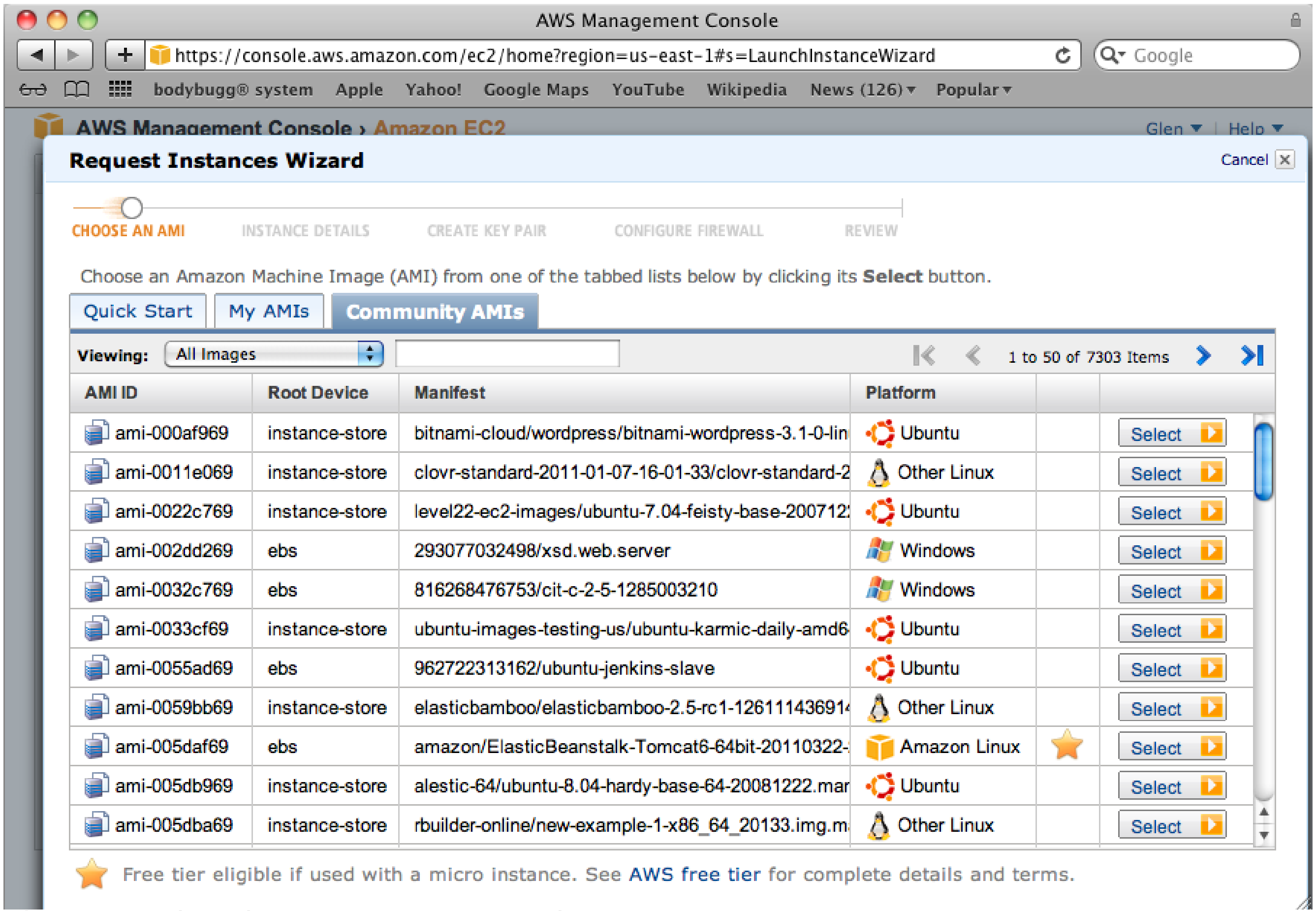
Red Hat Enterprise Linux 6.1 64-bit (AMI Id: ami-31d41658)
Red Hat Enterprise Linux 6.1, EBS-boot, 64-bit architecture.
Root Device Size: 6 GB

SUSE Linux Enterprise Server 11 32-bit (AMI Id: ami-e0a35789)
SUSE Linux Enterprise Server 11 Service Pack 1 basic install, EBS boot, 32-bit architecture with Amazon EC2 AMI Tools preinstalled; Apache 2.2, MySQL 5.0, PHP 5.3, Ruby 1.8.7, and Rails 2.3.
Root Device Size: 15 GB

★ Free tier eligible if used with a micro instance. See AWS free tier for complete details and terms.

Figure 4 – Choosing an AMI – Quick Start

b. We want to set up a SUSE Linux instance. However, notice that the SUSE entries shown in Figure 4 (and possibly the ones that you are viewing) don't have a gold star. The tab that we are given by default is the **Quick Start** tab. Let's go to the community to find something that works for us. We want to, instead, choose the **Community AMIs** tab. See Figure 5.



https://console.aws.amazon.com/ec2/home?region=us-east-1#s=LaunchInstanceWizard

Choose an Amazon Machine Image (AMI) from one of the tabbed lists below by clicking its **Select** button.

Viewing: All Images

1 to 50 of 7303 Items

AMI ID	Root Device	Manifest	Platform		
ami-000af969	instance-store	bitnami-cloud/wordpress/bitnami-wordpress-3.1-0-lin	Ubuntu		Select
ami-0011e069	instance-store	clovr-standard-2011-01-07-16-01-33/clovr-standard-2	Other Linux		Select
ami-0022c769	instance-store	level22-ec2-images/ubuntu-7.04-feisty-base-200712	Ubuntu		Select
ami-002dd269	ebs	293077032498/xsd.web.server	Windows		Select
ami-0032c769	ebs	816268476753/cit-c-2-5-1285003210	Windows		Select
ami-0033cf69	instance-store	ubuntu-images-testing-us/ubuntu-karmic-daily-amd6	Ubuntu		Select
ami-0055ad69	ebs	962722313162/ubuntu-jenkins-slave	Ubuntu		Select
ami-0059bb69	instance-store	elasticbamboo/elasticbamboo-2.5-rc1-12611143691	Other Linux		Select
ami-005daf69	ebs	amazon/ElasticBeanstalk-Tomcat6-64bit-20110322-	Amazon Linux	★	Select
ami-005db969	instance-store	alestic-64/ubuntu-8.04-hardy-base-64-20081222.mar	Ubuntu		Select
ami-005dba69	instance-store	rbuilder-online/new-example-1-x86_64_20133.img.m	Other Linux		Select

★ Free tier eligible if used with a micro instance. See AWS free tier for complete details and terms.

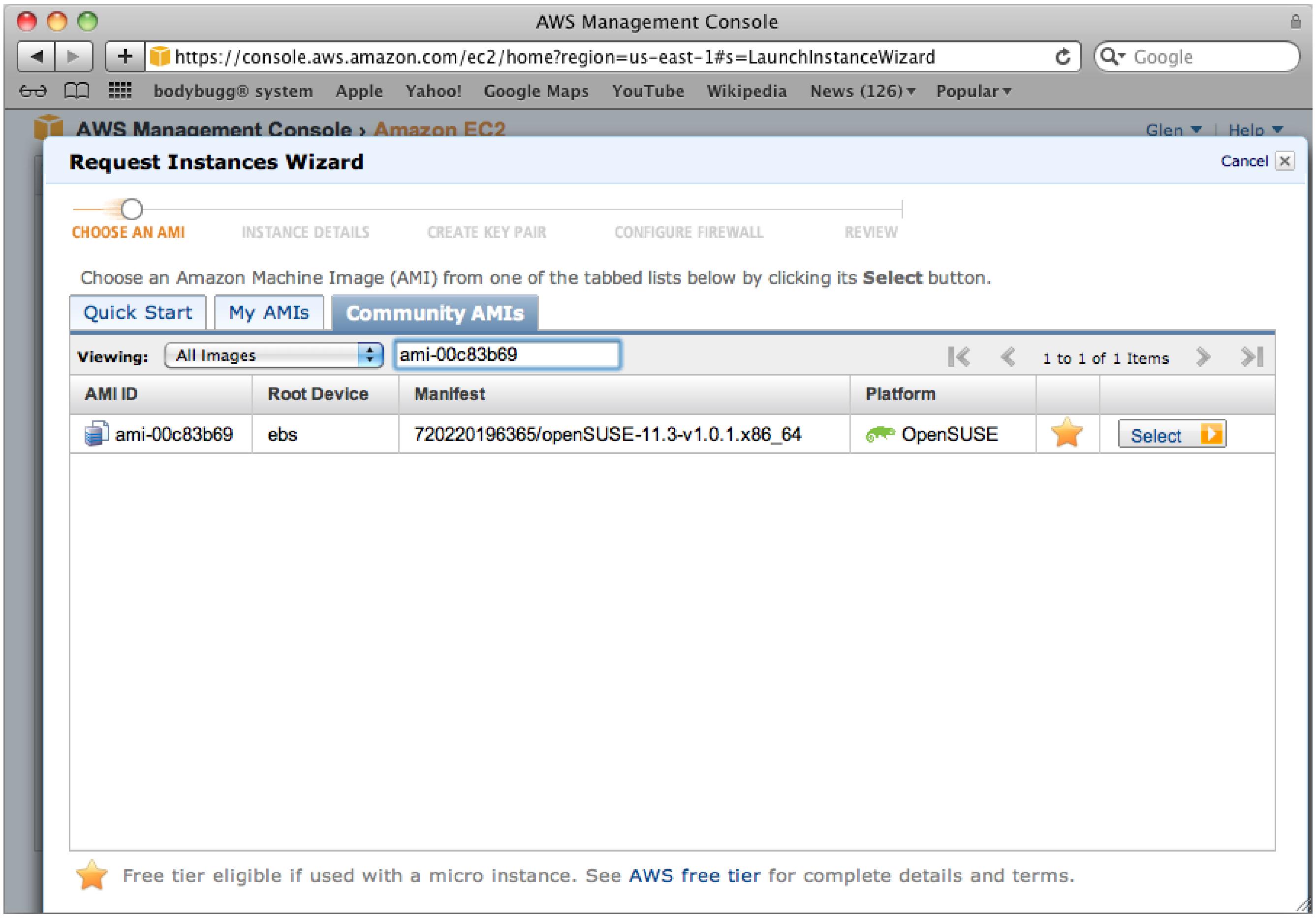
Figure 5 – Choosing an AMI – Community AMIs

c. Although this first screen doesn't look any better, we're on the right track. We want to find a SUSE Linux build that has a gold star. I've done the hard work for you and found one. It's name is "ami-00c83b69" (A name only a mother could love). Remember, the prefix "ami" means "Amazon Machine Instance." The rest is just a unique set of letters and numbers. Type this into the box at the top and begin searching (See Figure 6).

If this AMI still exists in the Community section of Amazon, your screen should look similar to Figure 6. This is the OpenSUSE version instead of the "SUSE Linux Enterprise Server." That's perfect. That's the instance that we will use in class.

If this AMI cannot be found, it no longer exists in the Community AMIs pool and these instructions are official out of date. This happens frequently, and I'd appreciate an email to glen@glenjarvis.com so that I can update the instructions.

Note from Figure 6 that we see a gold star (for the free version), so we're ready to click the **SELECT** button.



https://console.aws.amazon.com/ec2/home?region=us-east-1#s=LaunchInstanceWizard

Request Instances Wizard

Choose an Amazon Machine Image (AMI) from one of the tabbed lists below by clicking its **Select** button.

Viewing: All Images ami-00c83b69

AMI ID	Root Device	Manifest	Platform		
ami-00c83b69	ebs	720220196365/openSUSE-11.3-v1.0.1.x86_64	OpenSUSE	★	Select

★ Free tier eligible if used with a micro instance. See AWS free tier for complete details and terms.

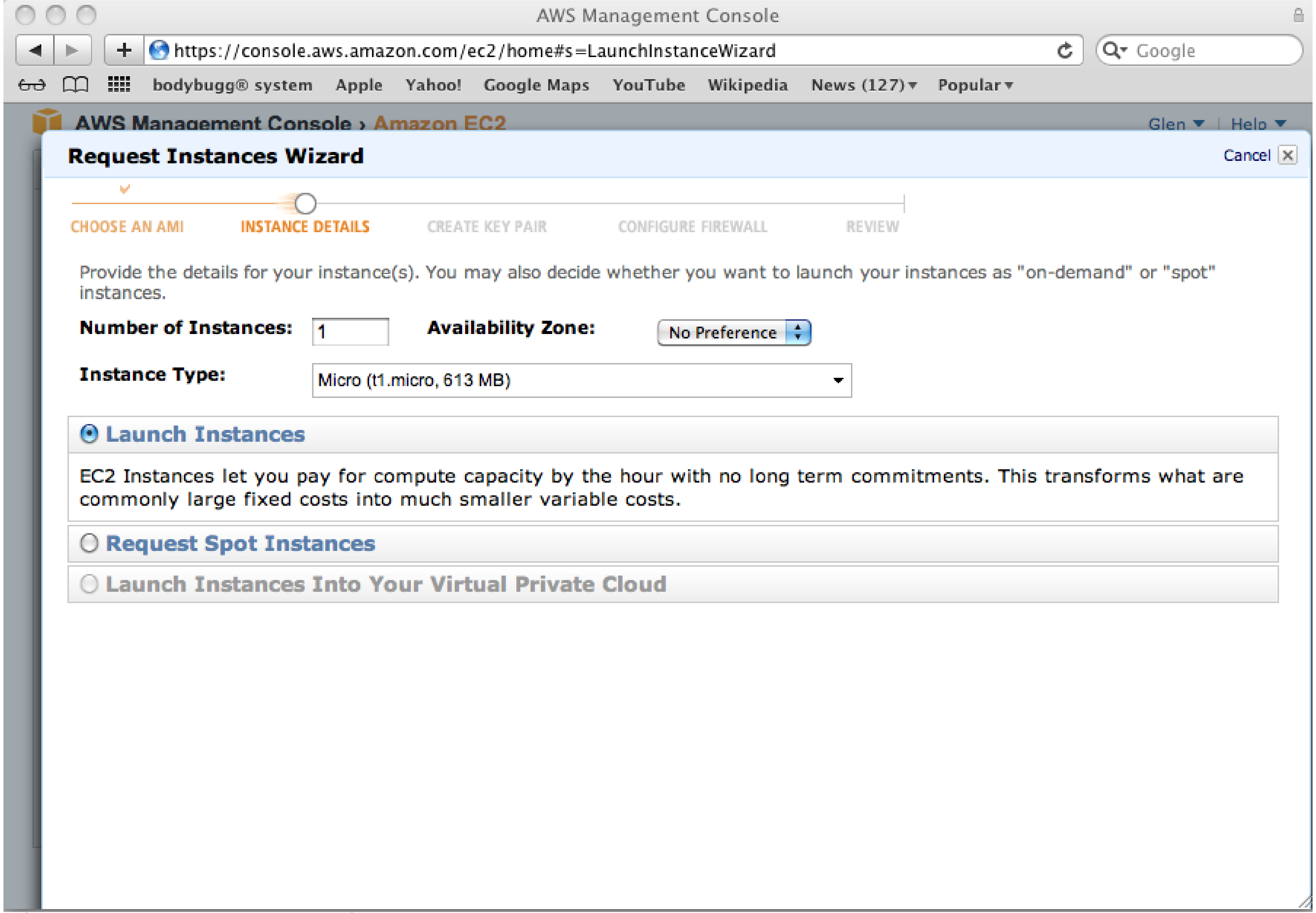
Figure 6 – Searching Community AMIs

Step 4 – Configuring Instance Details

There are a few details that can be configured for your instance (i.e., the computer that we're building from blueprints). They include the “number of instances”, “availability zone”, “instance type”, and “spot instances.” Let me explain each of these momentarily. ***PAY SPECIAL ATTENTION TO INSTANCE TYPE*** (as this is also another gotcha where you can accidentally pay more than you intend).

- Number of instances - you can build 3 computers as easily as 1. We only need 1, so we'll stick with 1.
- Availability Zones – Amazon has locations in different data centers in America and internationally. For example, there is a zone on the east coast and a zone on the west coast. You may think “Let me pick the zone that is closer to me.” Normally, that would be good logic. However, as distances make little difference, and some zones are cheaper than others, we can also pick the cheaper zones (The east coast is often cheaper than the west). Frankly, it doesn't matter for us as we're taking special care to pick the Free Tier machines (the ones with the gold stars) and micro-instances. Therefore, it's free and it doesn't matter which zones we pick. Leave this field “No Preference” and let Amazon decide for you.
- Instance Type – This is how many real computer resources get dedicated to your machine. Or, to use the “pick the computer from a catalog” analogy, this is the smallest computer that you can buy. You only get the Free Tier if you pick the micro-instance. ***WARNING: CHOOSING ANYTHING BUT MICRO-INSTANCE WILL MEAN THAT YOU WILL BE CHARGED***. Leave this configuration set to “Micro (t1.micro, 613 MB).
- Spot Instances – If you do a lot of batch job computing, you can let Amazon spin up your instance, run your job, and then spin it back down on times when Amazon isn't as busy. This is handy if you want a lot of extra computing resources once in a while, but you don't need it to be interactive at the time. It just needs to run a job and save the results for you. As we're using free tier micro-instances, this doesn't apply to us. Ignore anything related to Micro-instances.

By default, the settings that we mentioned above are already set. Confirm that this is set (especially that the instance is a micro-instance). See Figure 7. Then, click the **Continue** button.



AWS Management Console
https://console.aws.amazon.com/ec2/home#s=LaunchInstanceWizard
Google
bodybugg® system Apple Yahoo! Google Maps YouTube Wikipedia News (127) Popular
AWS Management Console › Amazon EC2
Glen | Help
Cancel
CHOOSE AN AMI
INSTANCE DETAILS
CREATE KEY PAIR
CONFIGURE FIREWALL
REVIEW

Request Instances Wizard

Provide the details for your instance(s). You may also decide whether you want to launch your instances as "on-demand" or "spot" instances.

Number of Instances: 1 Availability Zone: No Preference

Instance Type: Micro (t1.micro, 613 MB)

● Launch Instances

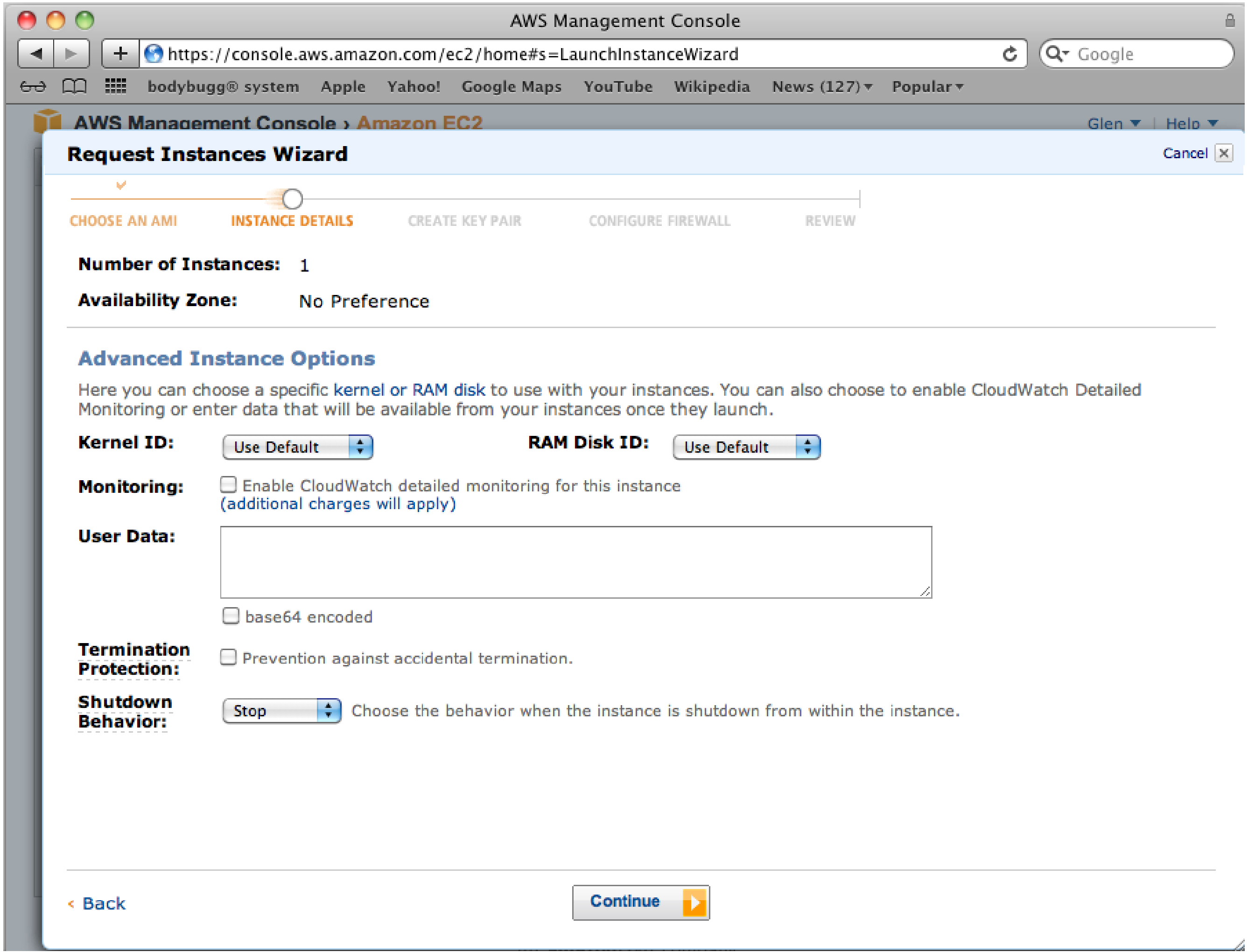
EC2 Instances let you pay for compute capacity by the hour with no long term commitments. This transforms what are commonly large fixed costs into much smaller variable costs.

○ Request Spot Instances

○ Launch Instances Into Your Virtual Private Cloud

Figure 7 – Instance Details

4b. There are also more advanced options (like Kernel ID, RAM Disk ID, Monitoring, etc.) Leave these at the default settings. Some options (like monitoring) may have hidden fees tied to them. The only parameter that will be meaningful in the scope of this class is the **Shutdown Behavior** parameter. This can be configured to completely remove your instance (i.e. when the computer shuts down, the store that gave you the catalog sends out people to remove the computer when its shutdown). We're going to leave the **Shutdown Behavior** parameter at its default (**Stop**) for now. See Figure 8. Click the **Continue** button.



Request Instances Wizard

Number of Instances: 1

Availability Zone: No Preference

Advanced Instance Options

Here you can choose a specific kernel or RAM disk to use with your instances. You can also choose to enable CloudWatch Detailed Monitoring or enter data that will be available from your instances once they launch.

Kernel ID: Use Default   RAM Disk ID: Use Default

Monitoring: □ Enable CloudWatch detailed monitoring for this instance (additional charges will apply)

User Data:

□ base64 encoded

Termination Protection: □ Prevention against accidental termination.

Shutdown Behavior: Stop   Choose the behavior when the instance is shutdown from within the instance.

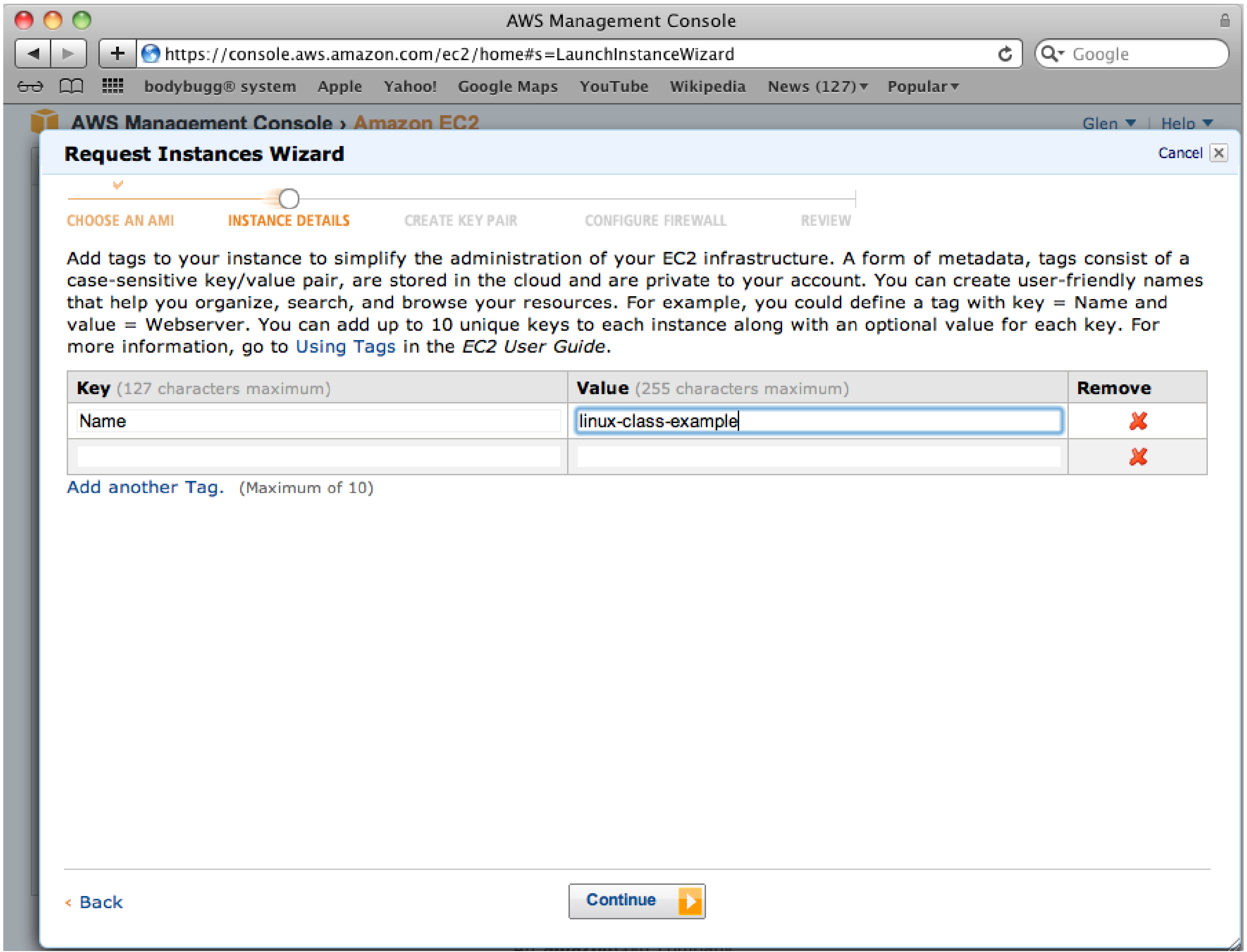
Figure 8 – Instance Advanced Options

4c – We're almost finished configuring the instance details. We want to give the instance a name. Amazon refers to instances like it did to its AMIs (with unique letters and numbers). My poor brain doesn't work that way. So, I like giving my instances names. This way, when I have 5 or 6, I can tell them apart.

We're going to name this instance “linux-class-example.” But, be careful. There's a fairly poor User Experience (UX) design on this page. Almost every person I've watched tries to put the name directly under the field “Name.”

These are key value pairs where the key is on the left and the value is on the right. You can have keys of all sorts. It so happens that the name of “Name” is how things get names. So, make certain you enter the name in the upper right box, as is shown in Figure 9.

When you have finished entering the name, click the **Continue** button.



Add tags to your instance to simplify the administration of your EC2 infrastructure. A form of metadata, tags consist of a case-sensitive key/value pair, are stored in the cloud and are private to your account. You can create user-friendly names that help you organize, search, and browse your resources. For example, you could define a tag with key = Name and value = Webserver. You can add up to 10 unique keys to each instance along with an optional value for each key. For more information, go to Using Tags in the *EC2 User Guide*.

Key (127 characters maximum)	**Value** (255 characters maximum)	**Remove**
Name	linux-class-example	✗
		✗

Add another Tag. (Maximum of 10)

Figure 9 – Instance Details/Naming the instance

Step 5 – Creating a new key pair

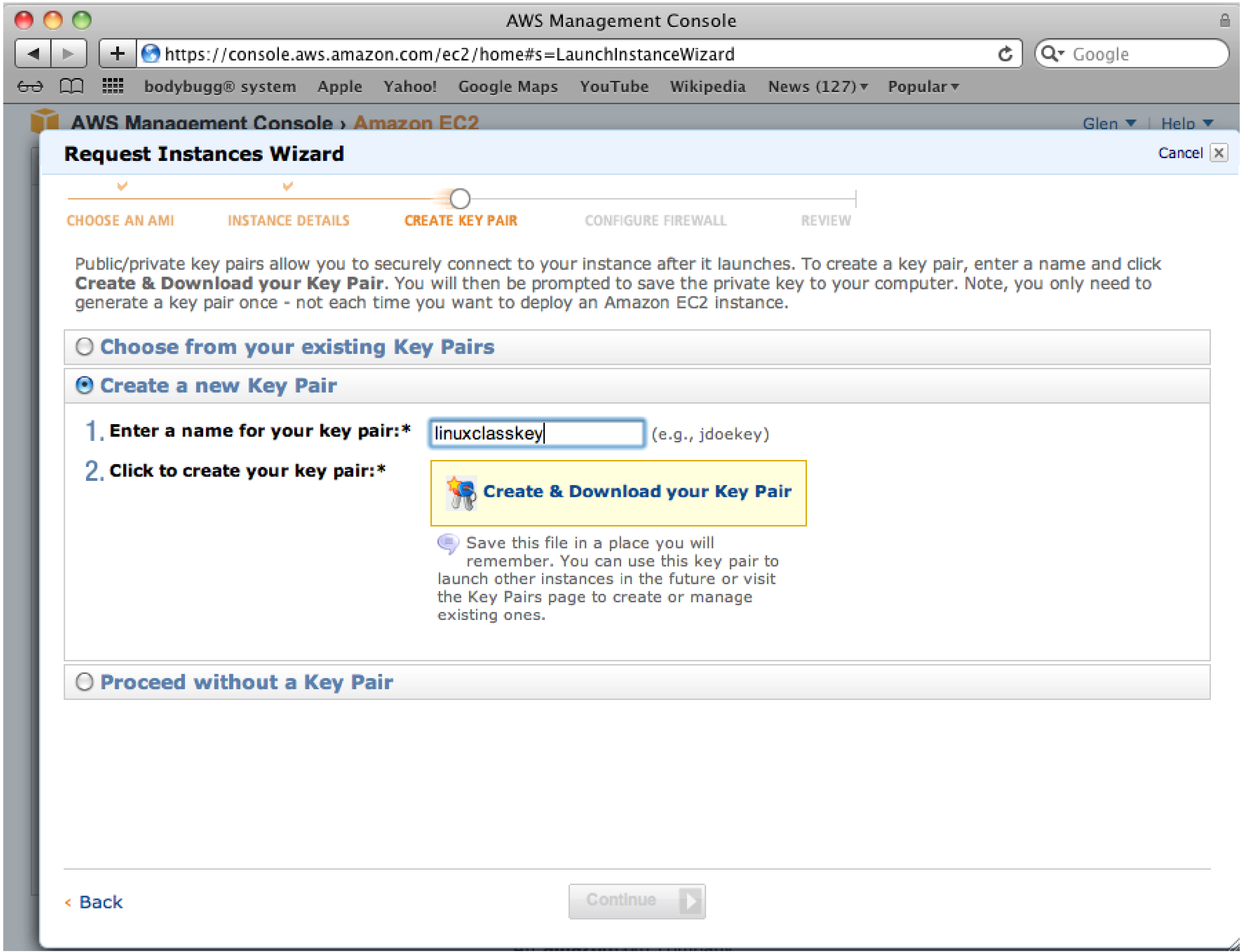
In the security class, you will learn more details about public key cryptography and how it works. If you are curious, there is a Wikipedia page that explains:

http://en.wikipedia.org/wiki/Public-key_cryptography

All we need to know for this lab is that Amazon will generate a special set of keys for your instance (one for you to download and one for your instance).

Then, when you want to connect to your instance, you will have to tell the ssh program where to find your special key so that it has permission to connect to your instance. Only you will be able to access your instance. This key is obviously important. Don't lose the file or let anyone else have access to it.

Create a name of the key. This way, Amazon can refer to it by the name that you use. And, the file that you download will be meaningful in some way (and help you remember what it's for). See Figure 10. After you enter a name for your key pair, click the **Create & Download your Key Pair** link.



Request Instances Wizard

Public/private key pairs allow you to securely connect to your instance after it launches. To create a key pair, enter a name and click **Create & Download your Key Pair**. You will then be prompted to save the private key to your computer. Note, you only need to generate a key pair once - not each time you want to deploy an Amazon EC2 instance.

○ Choose from your existing Key Pairs

● Create a new Key Pair

1. Enter a name for your key pair:* linuxclasskey (e.g., jdoekey)
2. Click to create your key pair:* Create & Download your Key Pair

Save this file in a place you will remember. You can use this key pair to launch other instances in the future or visit the Key Pairs page to create or manage existing ones.

○ Proceed without a Key Pair

Figure 10 – Creating Key Pair/Naming the key pair

Amazon will start generating the key and download it for you. You'll need to figure out where the key is downloaded to on your computer as you will need it later. I was using a Macintosh computer and the Safari browser, so I can see that mine went into my “Download” folder (see Figure 11). However, this will vary depending upon what operating system and what web browser that you are using.

It's important to note that the permissions on the key file should **only** allow the owner to read it. If the 'group' or 'other' read permission is set, the key may not work. You will get a severe warning regardless. We will cover this later in this lab.

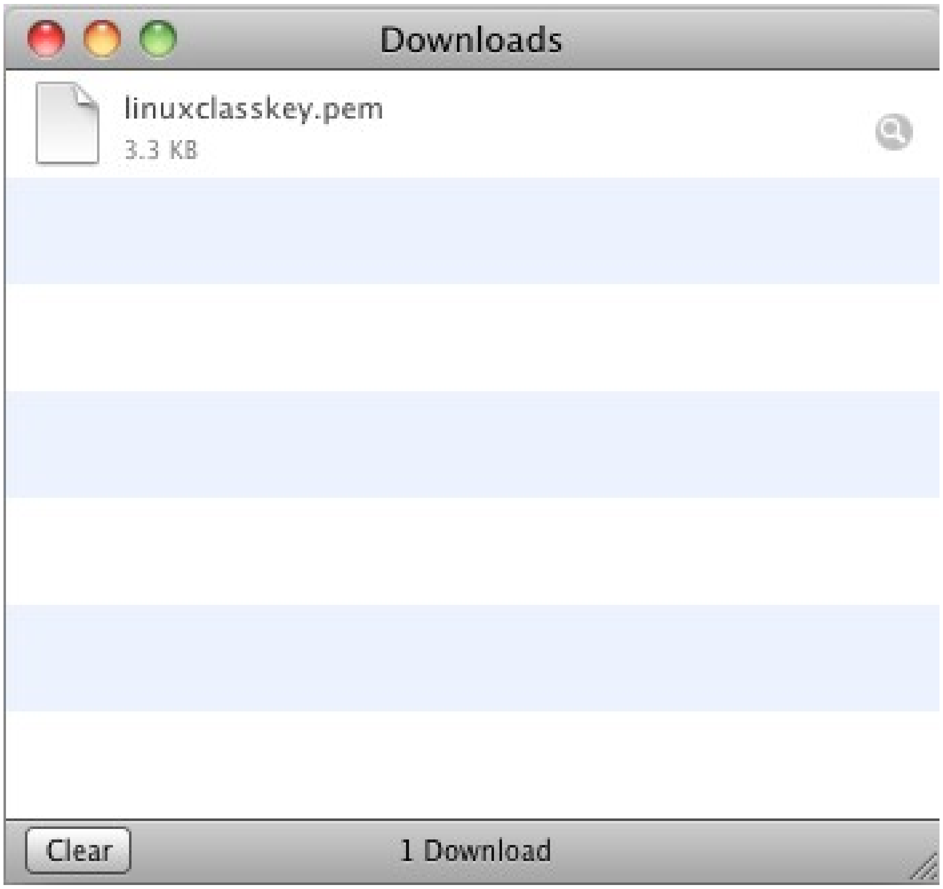


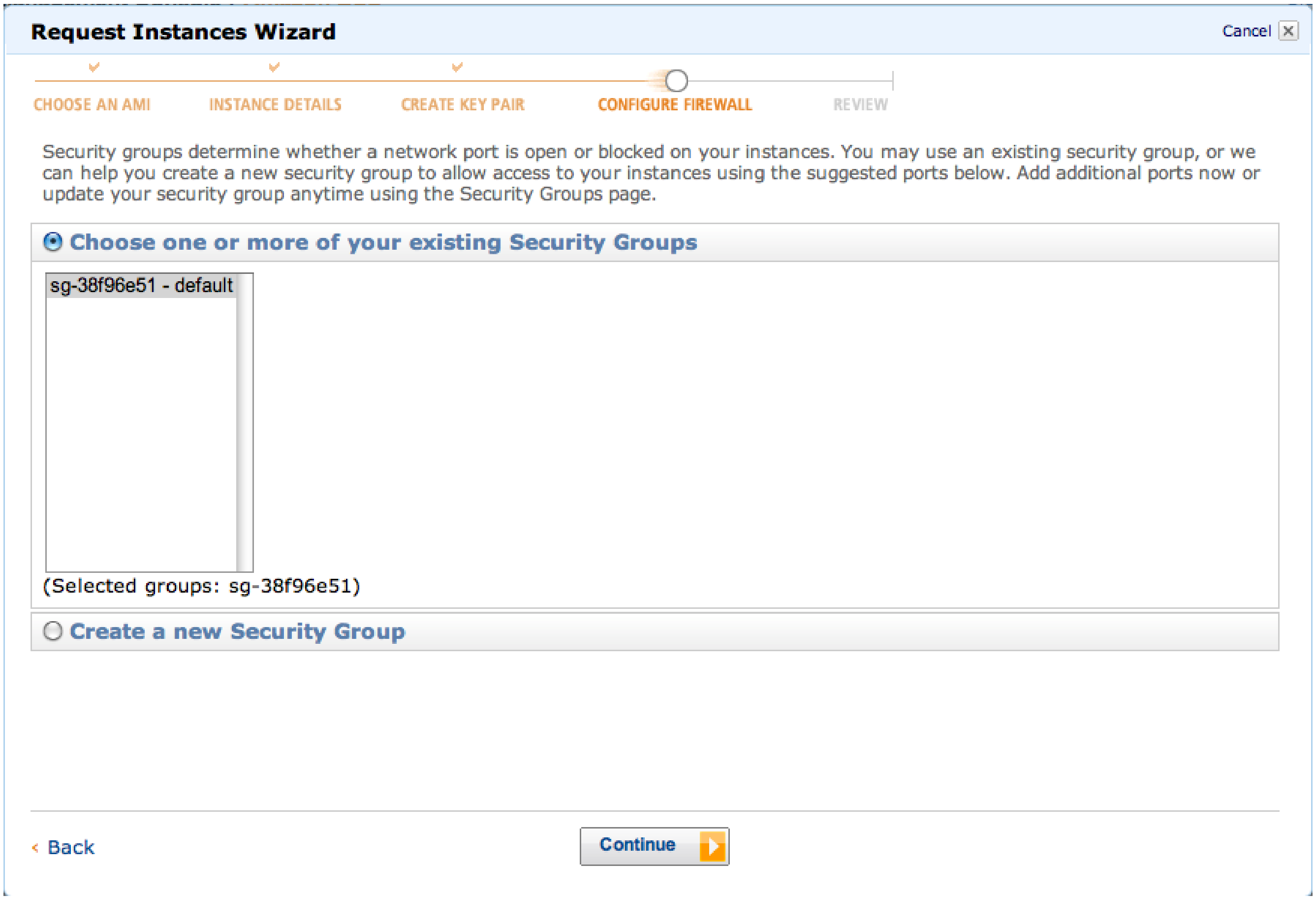
Figure 11 – Downloaded key file

Step 6 – Configuring the firewall

We are almost finished. We chose an Amazon Machine Instance (AMI) to work with, configured that instance with extra details and created a key to connect to the instance. However, by default, we are not able to use that key to access the instance. This is because the instance being created always sits behind a firewall. And, we have to either choose an existing firewall, or create a new one.

By default, you get a firewall called (not so originally) "***default***." It is not configured to allow an ssh connection into the machines that sit behind it. We have two choices: 1) Configure the default firewall to allow ssh connections, or 2) make a new firewall that allows ssh connections. We will do the latter in this lab.

Click the "Create a new Security Group" radio button (see Figure 12).



Security groups determine whether a network port is open or blocked on your instances. You may use an existing security group, or we can help you create a new security group to allow access to your instances using the suggested ports below. Add additional ports now or update your security group anytime using the Security Groups page.

● Choose one or more of your existing Security Groups

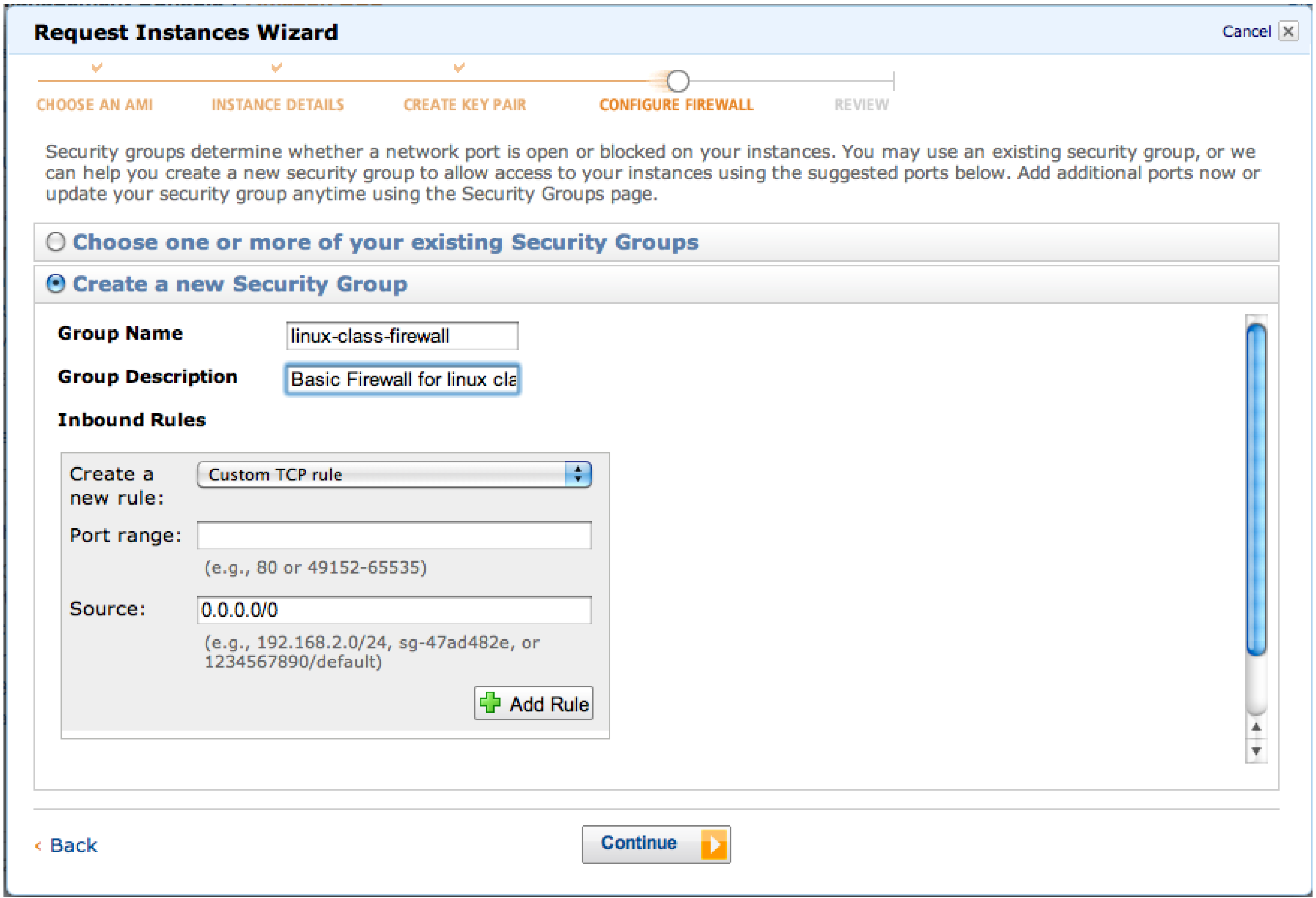
sg-38f96e51 - default

(Selected groups: sg-38f96e51)

○ Create a new Security Group

Figure 12 – Configuring Firewall/Choosing Security Group

b) Enter a Group Name of “linux-class-firewall.” Also, add the description “Basic Firewall for linux class instances.” (See Figure 13).



Security groups determine whether a network port is open or blocked on your instances. You may use an existing security group, or we can help you create a new security group to allow access to your instances using the suggested ports below. Add additional ports now or update your security group anytime using the Security Groups page.

○ Choose one or more of your existing Security Groups

● Create a new Security Group

Group Name: linux-class-firewall

Group Description: Basic Firewall for linux cla

Inbound Rules

Create a new rule: Custom TCP rule

Port range:

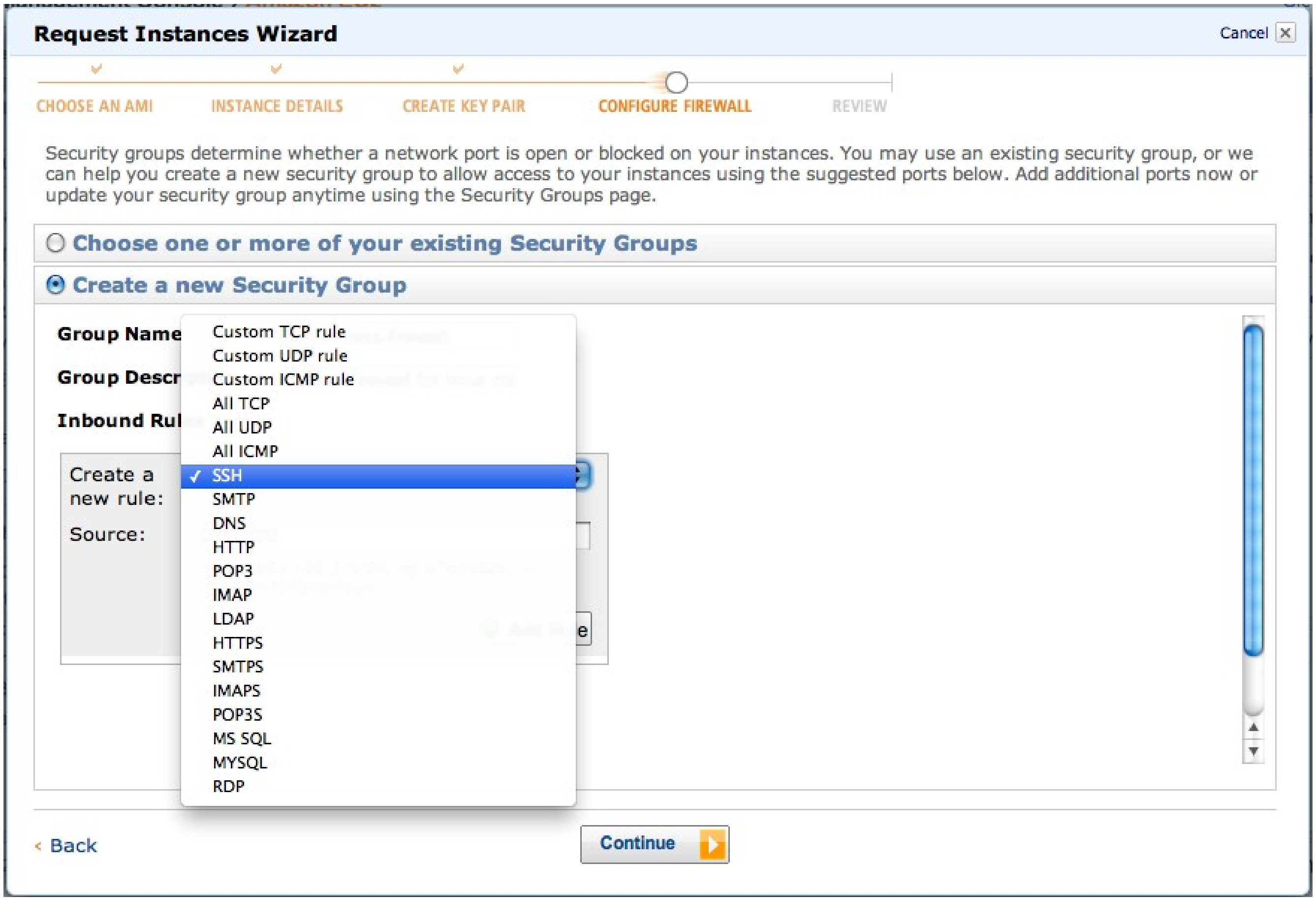
(e.g., 80 or 49152-65535)

Source: 0.0.0.0/0

(e.g., 192.168.2.0/24, sg-47ad482e, or 1234567890/default)

Figure 13 – Adding Group name and Group Description

We want to add a new rule to allow SSH (inbound to the instance we created). Select the "Create a new rule" dropdown box and choose SSH (see Figure 14).



Request Instances Wizard

Security groups determine whether a network port is open or blocked on your instances. You may use an existing security group, or we can help you create a new security group to allow access to your instances using the suggested ports below. Add additional ports now or update your security group anytime using the Security Groups page.

○ Choose one or more of your existing Security Groups

● Create a new Security Group

Group Name

Group Descr

Inbound Rul

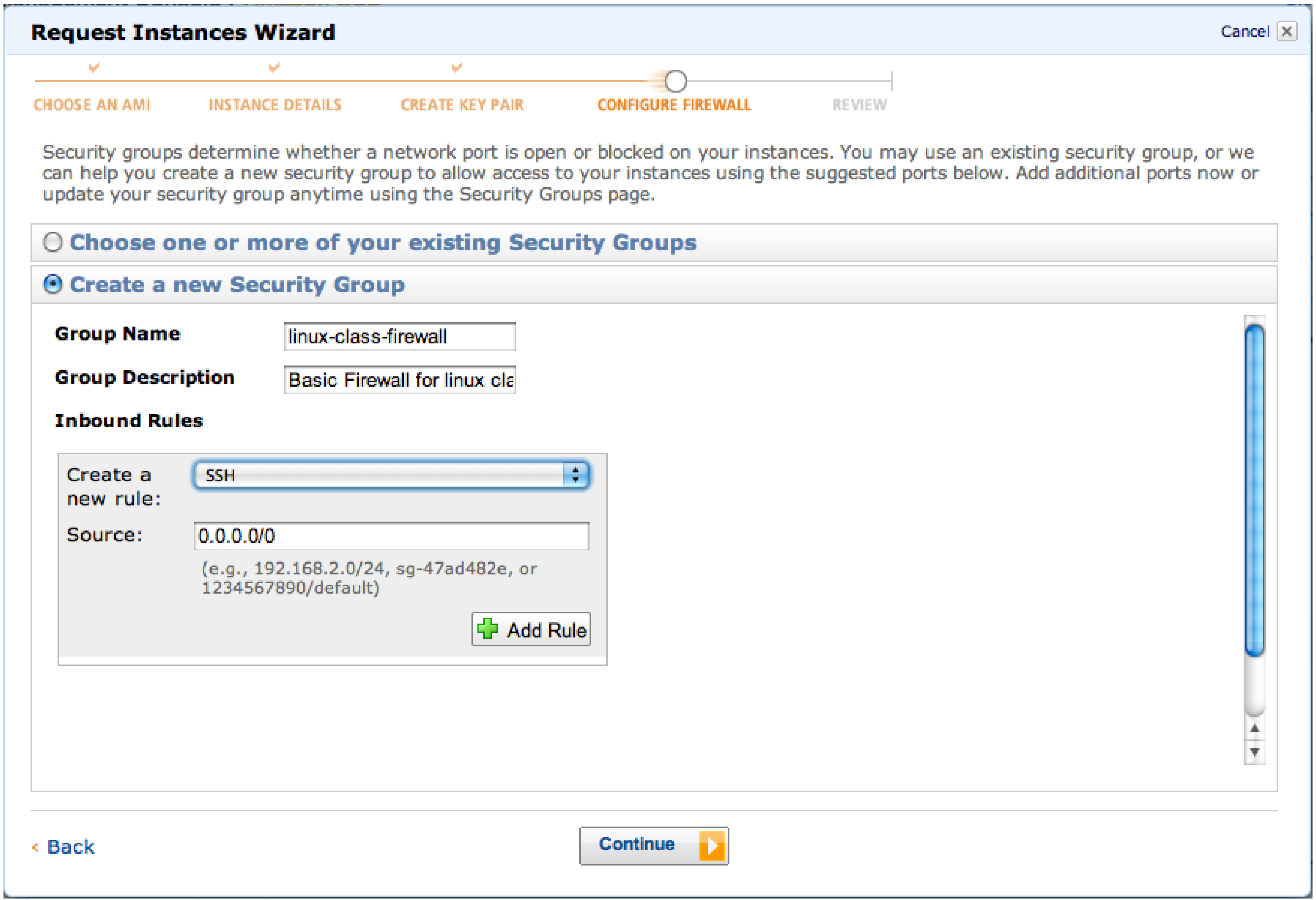
Create a new rule: ✓ SSH

Source:

Figure 14 – Adding SSH

By now, we've configured the "Group Name", "Group Description" and have selected the "SSH" rule. We haven't yet said which IP address should be allowed to ssh in. We have not yet added the SSH rule to the firewall (security group).

If we wanted to specify a range of IP addresses that could ssh into the instance, we would type those range of addresses in the '***Source***' field. However, the default "0.0.0.0/0" allows ssh from any IP address. For now, you can leave the "0.0.0.0/0" in the Source field and click "Add Rule" (see Figure 15).



Security groups determine whether a network port is open or blocked on your instances. You may use an existing security group, or we can help you create a new security group to allow access to your instances using the suggested ports below. Add additional ports now or update your security group anytime using the Security Groups page.

○ Choose one or more of your existing Security Groups

● Create a new Security Group

Group Name: linux-class-firewall

Group Description: Basic Firewall for linux cla

Inbound Rules

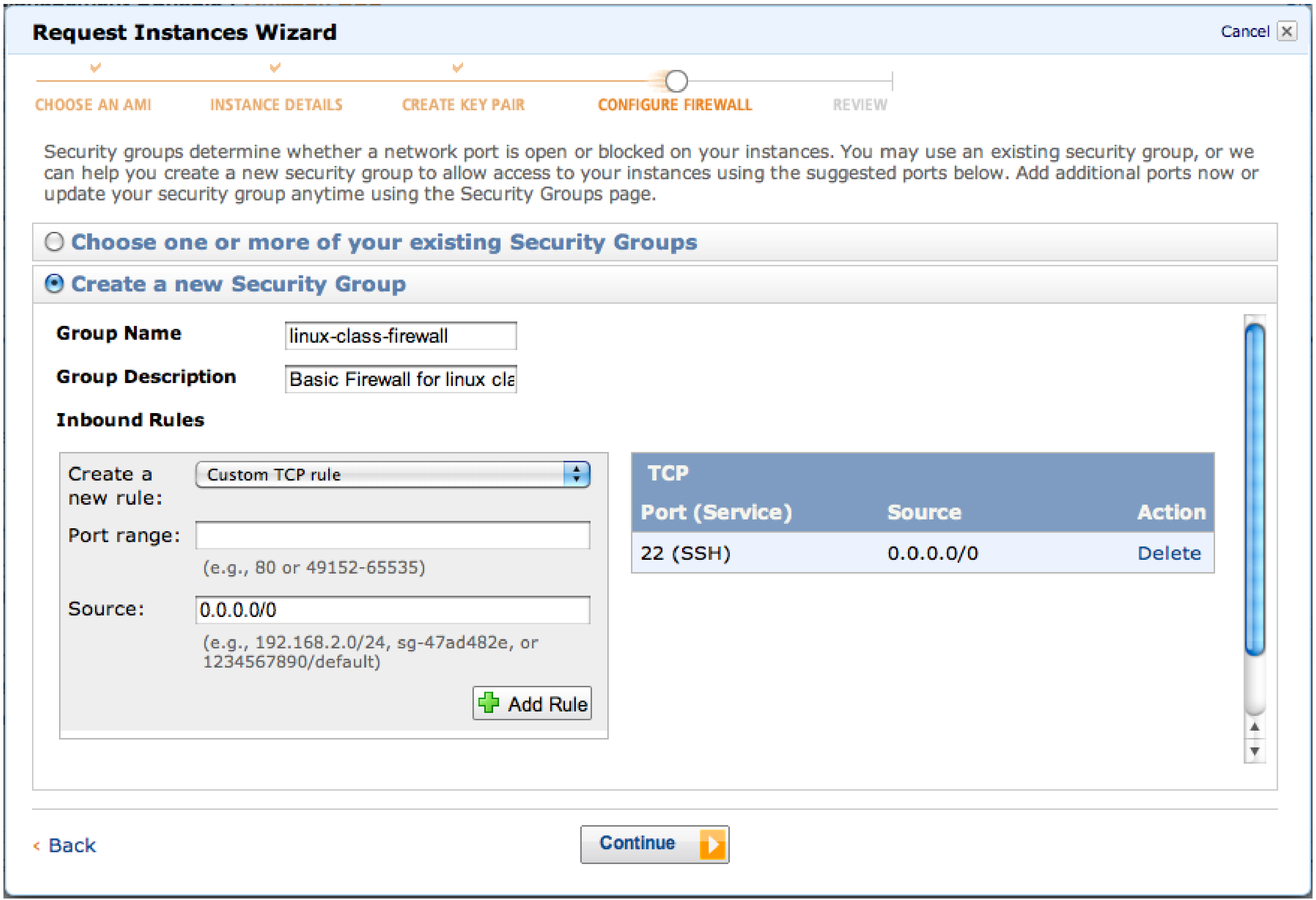
Create a new rule: SSH

Source: 0.0.0.0/0

(e.g., 192.168.2.0/24, sg-47ad482e, or 1234567890/default)

Figure 15 – Choosing source

After the rule has been saved, your screen should look similar to Figure 16. Click the Continue button.



Security groups determine whether a network port is open or blocked on your instances. You may use an existing security group, or we can help you create a new security group to allow access to your instances using the suggested ports below. Add additional ports now or update your security group anytime using the Security Groups page.

○ Choose one or more of your existing Security Groups

● Create a new Security Group

Group Name: linux-class-firewall

Group Description: Basic Firewall for linux cla

Inbound Rules

Create a new rule: Custom TCP rule

Port range:

(e.g., 80 or 49152-65535)

Source: 0.0.0.0/0

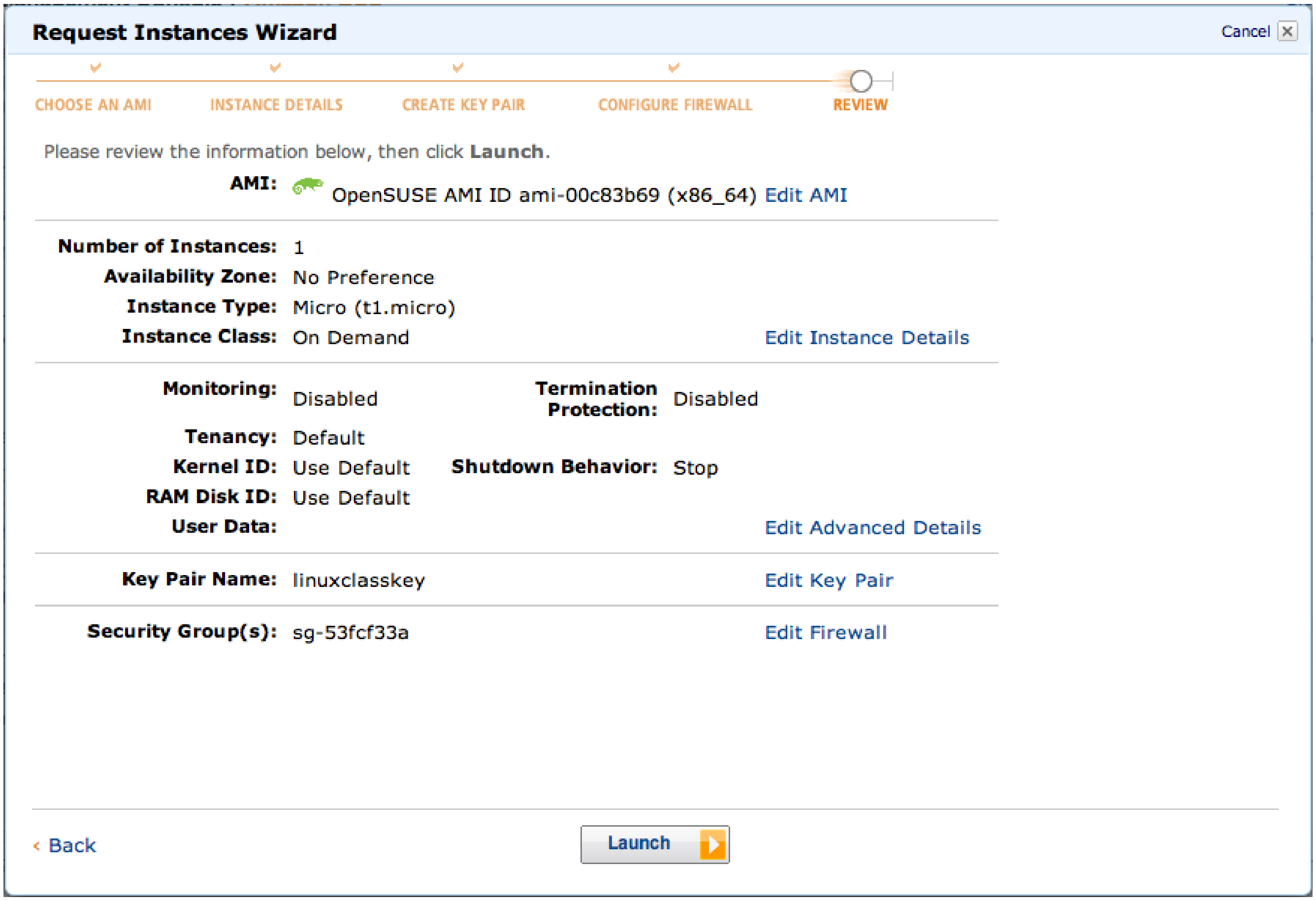
(e.g., 192.168.2.0/24, sg-47ad482e, or 1234567890/default)

TCP		
Port (Service)	Source	Action
22 (SSH)	0.0.0.0/0	Delete

Figure 16 – Configured firewall

Step 7 – Final Review and Launch

You now have the option to review all of your settings before launching your instance. Your screen should be similar to Figure 17. This is your final chance to verify that the AMI chosen was a Free Tier AMI and that the Instance Type is a Micro instance. If both of these things are true, and this is a new Amazon account, you should not be charged for the use of this instance. You should be able to use this instance for a full year without charge. When satisfied, click the ***Launch*** button.



Please review the information below, then click **Launch**.

AMI: OpenSUSE AMI ID ami-00c83b69 (x86_64)

Number of Instances: 1
Availability Zone: No Preference
Instance Type: Micro (t1.micro)
Instance Class: On Demand

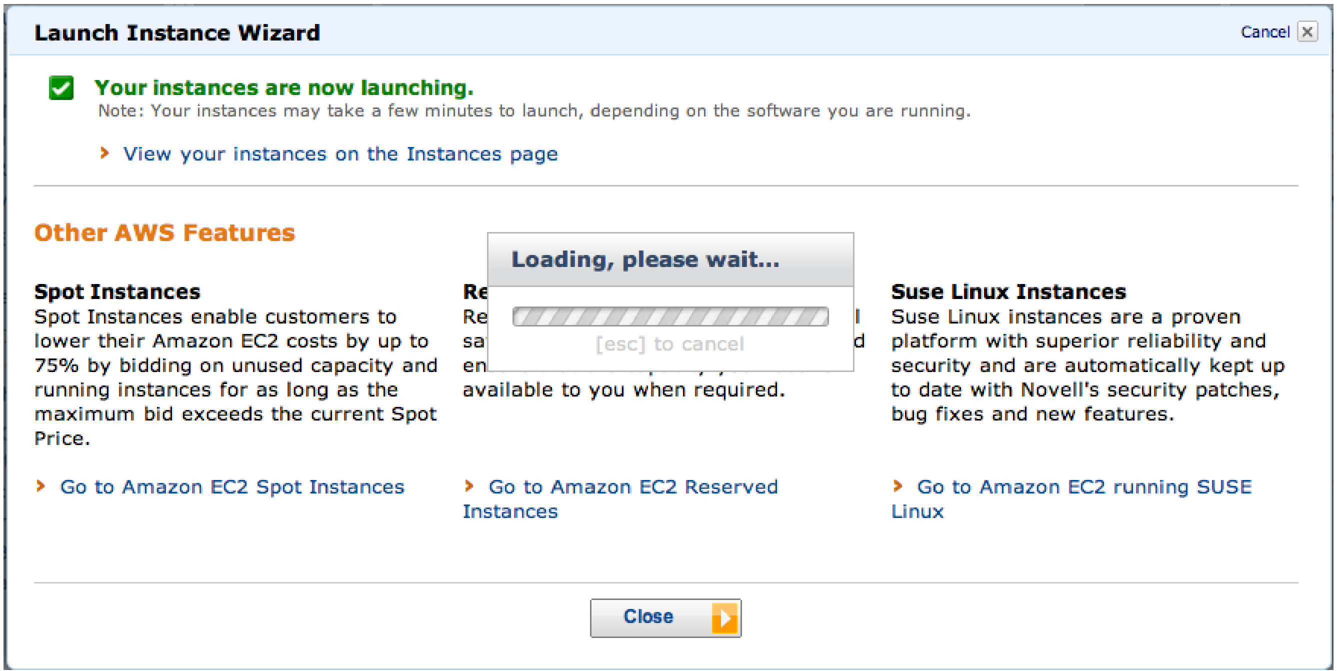
Monitoring: Disabled
Termination Protection: Disabled
Tenancy: Default
Kernel ID: Use Default
Shutdown Behavior: Stop
RAM Disk ID: Use Default
User Data:

Key Pair Name: linuxclasskey

Security Group(s): sg-53fcf33a

Figure 17 – Final Review

Your instance is now launching.



Launch Instance Wizard

☑ Your instances are now launching.

Note: Your instances may take a few minutes to launch, depending on the software you are running.

› View your instances on the Instances page

Other AWS Features

Spot Instances

Spot Instances enable customers to lower their Amazon EC2 costs by up to 75% by bidding on unused capacity and running instances for as long as the maximum bid exceeds the current Spot Price.

› Go to Amazon EC2 Spot Instances

Re

Re sa en available to you when required.

› Go to Amazon EC2 Reserved Instances

Suse Linux Instances

Suse Linux instances are a proven platform with superior reliability and security and are automatically kept up to date with Novell's security patches, bug fixes and new features.

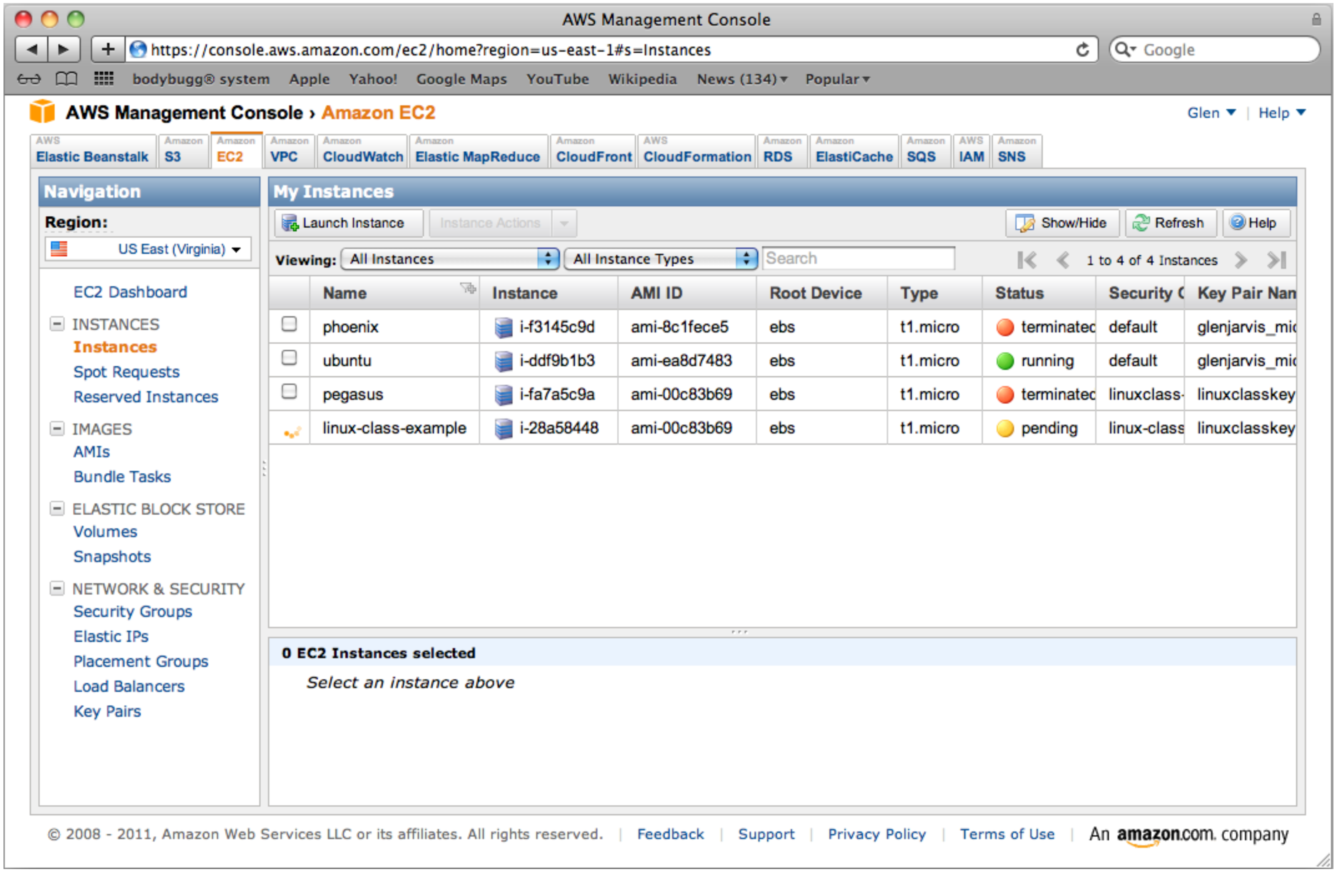
› Go to Amazon EC2 running SUSE Linux

Loading, please wait...

[esc] to cancel

Figure 18 – Launching instance

If you wish to monitor the status of your instance that is launching, you can review your instances in the “Instances” menu (see Figure 19). Notice that two of the instances in Figure 19 have terminated (are no longer machines I have access to), one is running, and the linux-class-example machine is pending.



	Name	Instance	AMI ID	Root Device	Type	Status	Security (	Key Pair Nan
☐	phoenix	i-f3145c9d	ami-8c1fece5	ebs	t1.micro	● terminatec	default	glenjarvis_mic
☐	ubuntu	i-ddf9b1b3	ami-ea8d7483	ebs	t1.micro	● running	default	glenjarvis_mic
☐	pegasus	i-fa7a5c9a	ami-00c83b69	ebs	t1.micro	● terminatec	linuxclass-	linuxclasskey
	linux-class-example	i-28a58448	ami-00c83b69	ebs	t1.micro	● pending	linux-class	linuxclasskey

0 EC2 Instances selected

Select an instance above

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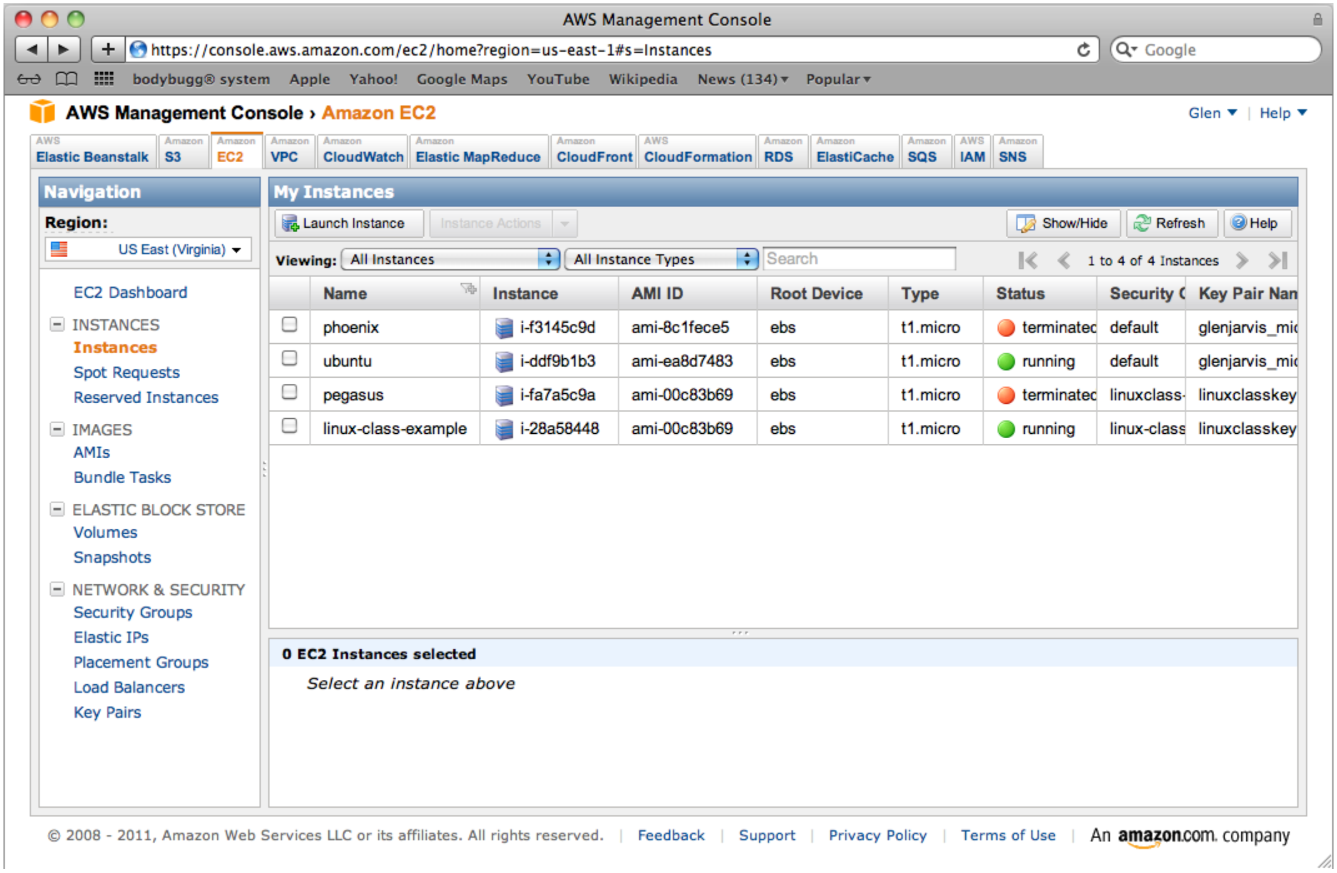
Figure 19 – Instances menu

When the instance has finished booting, the status will change to "running" (see Figure 20).



Viewing: All Instances | All Instance Types

	Name	Instance	AMI ID	Root Device	Type	Status	Security (	Key Pair Nan
□	phoenix	i-f3145c9d	ami-8c1fece5	ebs	t1.micro	● terminatec	default	glenjarvis_mic
□	ubuntu	i-ddf9b1b3	ami-ea8d7483	ebs	t1.micro	● running	default	glenjarvis_mic
□	pegasus	i-fa7a5c9a	ami-00c83b69	ebs	t1.micro	● terminatec	linuxclass-	linuxclasskey
□	linux-class-example	i-28a58448	ami-00c83b69	ebs	t1.micro	● running	linux-class	linuxclasskey

0 EC2 Instances selected

Select an instance above

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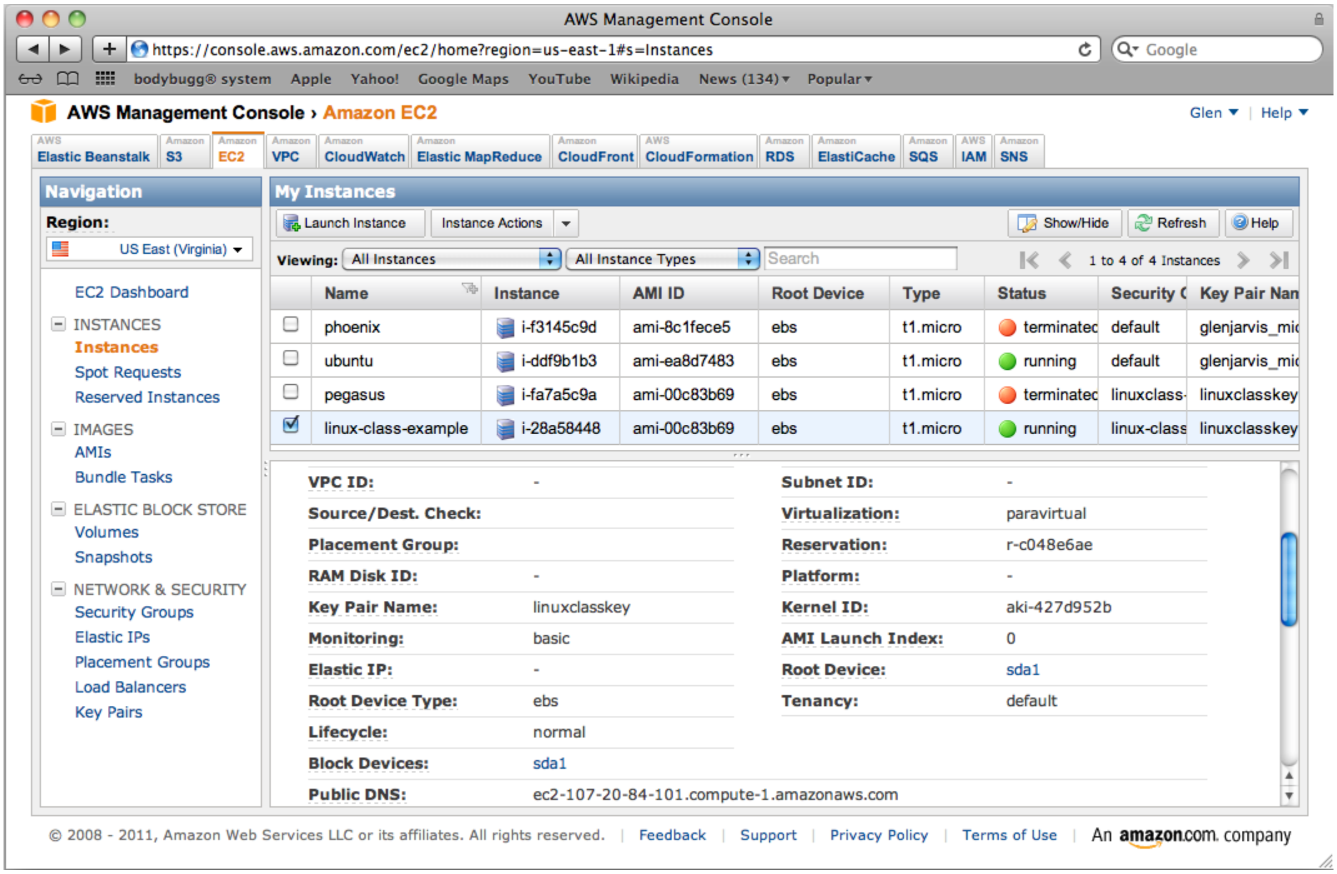
Figure 20 – Running instance

Part II – Accessing the Instance

Step 8 – Accessing the instance

Notice how that, when I select the instance in question in the top pane, I get additional details in the bottom pane? You will need the Public DNS entry that is here – as that's the entry that you'll use to ssh to your instance. In my case, it is ***ec2-107-20-84-101.compute-1.amazon.com.***

Note that this DNS name will change almost every time that you stop and restart your instance. There are ways to make a permanent address, but they aren't free. Thus, every time that you start your instance, you'll need to make note of the new name.



	Name	Instance	AMI ID	Root Device	Type	Status	Security (	Key Pair Nan
☐	phoenix	i-f3145c9d	ami-8c1fece5	ebs	t1.micro	🔴 terminatec	default	glenjarvis_mic
☐	ubuntu	i-ddf9b1b3	ami-ea8d7483	ebs	t1.micro	🟢 running	default	glenjarvis_mic
☐	pegasus	i-fa7a5c9a	ami-00c83b69	ebs	t1.micro	🔴 terminatec	linuxclass-	linuxclasskey
☑	linux-class-example	i-28a58448	ami-00c83b69	ebs	t1.micro	🟢 running	linux-class	linuxclasskey

VPC ID:	-	**Subnet ID:**	-
Source/Dest. Check:		**Virtualization:**	paravirtual
Placement Group:		**Reservation:**	r-c048e6ae
RAM Disk ID:	-	**Platform:**	-
Key Pair Name:	linuxclasskey	**Kernel ID:**	aki-427d952b
Monitoring:	basic	**AMI Launch Index:**	0
Elastic IP:	-	**Root Device:**	sda1
Root Device Type:	ebs	**Tenancy:**	default
Lifecycle:	normal		
Block Devices:	sda1		
Public DNS:	ec2-107-20-84-101.compute-1.amazonaws.com		

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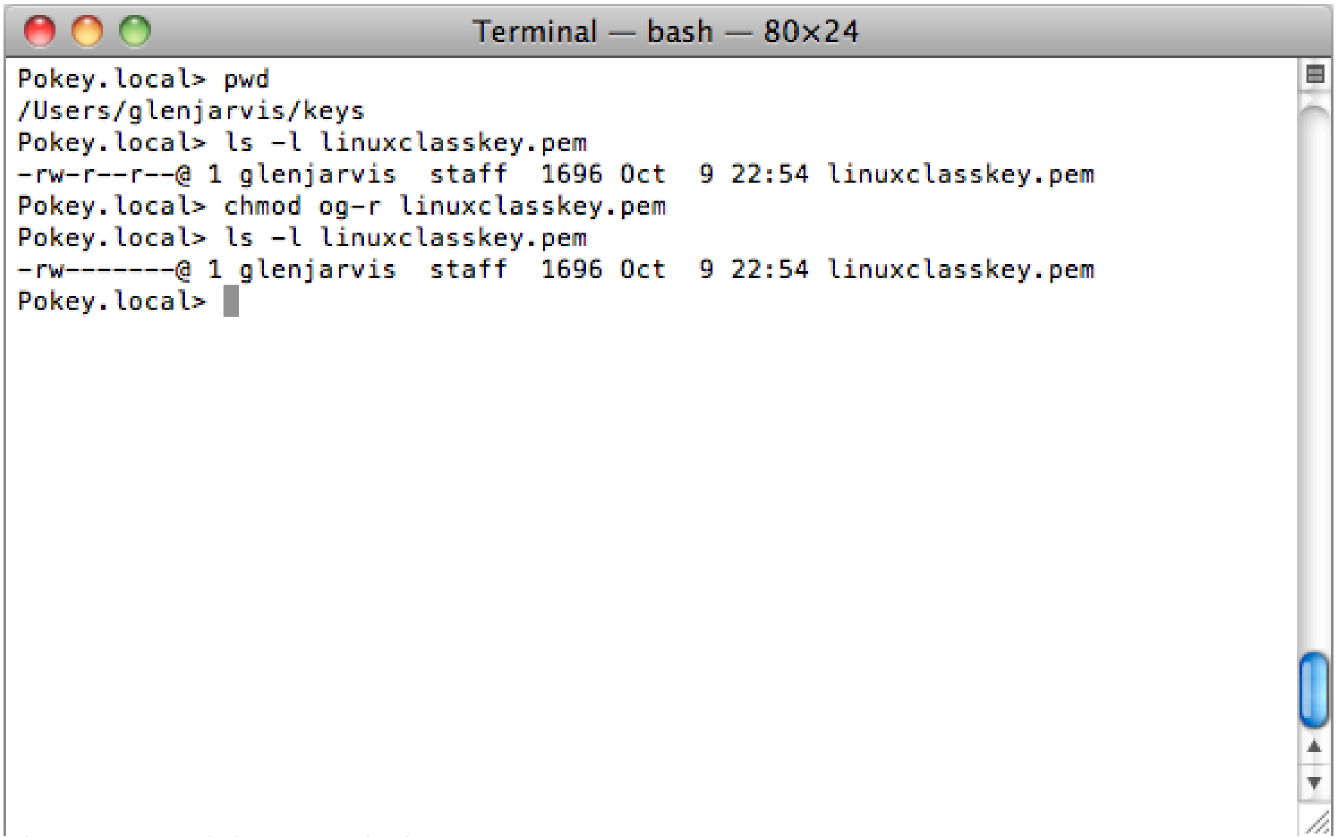
We are now ready to access our instance. Do you remember the key that we downloaded? We need to use that key to access the instance via ssh.

I moved my key from my Download folder to a folder I made called “keys.” Notice in Figure 22 that my file “linuxclasskey.pem” has read permission for both “group” and “others.”

I need to change that with the “chmod og-r” command (see Figure 22).



```
Pokey.local> pwd
/Users/glenjarvis/keys
Pokey.local> ls -l linuxclasskey.pem
-rw-r--r--@ 1 glenjarvis  staff  1696 Oct  9 22:54 linuxclasskey.pem
Pokey.local> chmod og-r linuxclasskey.pem
Pokey.local> ls -l linuxclasskey.pem
-rw-------@ 1 glenjarvis  staff  1696 Oct  9 22:54 linuxclasskey.pem
Pokey.local> 
```

Figure 22 – ssh key permissions

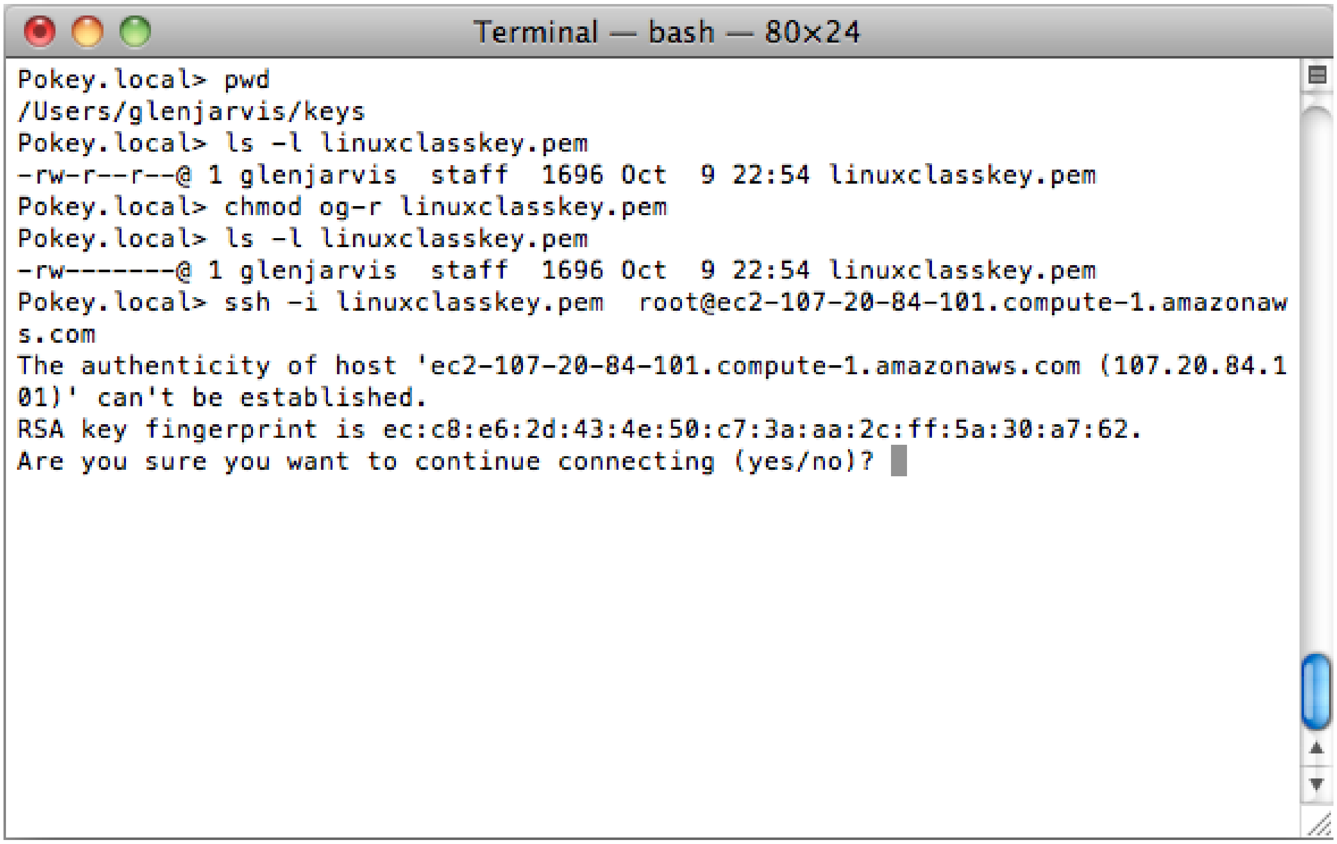
I'm ready to connect to the instance. I issue the command:

```
ssh -i linuxclasskey.pem root@ec2-107-20-84-101.compute-1.amazon.com
```

Your command will be identical except for the public DNS name of your compute cloud. Why did we have to access as root? Each AMI is set up differently. And, this AMI happens to have direct access to root. Sometimes it is “ubuntu@ec2...” or “ec-2@ec2...” I knew this was root from previous research with this AMI.

Don't forget that the linuxclasskey.pem argument in this command is the name of the key file that you downloaded.

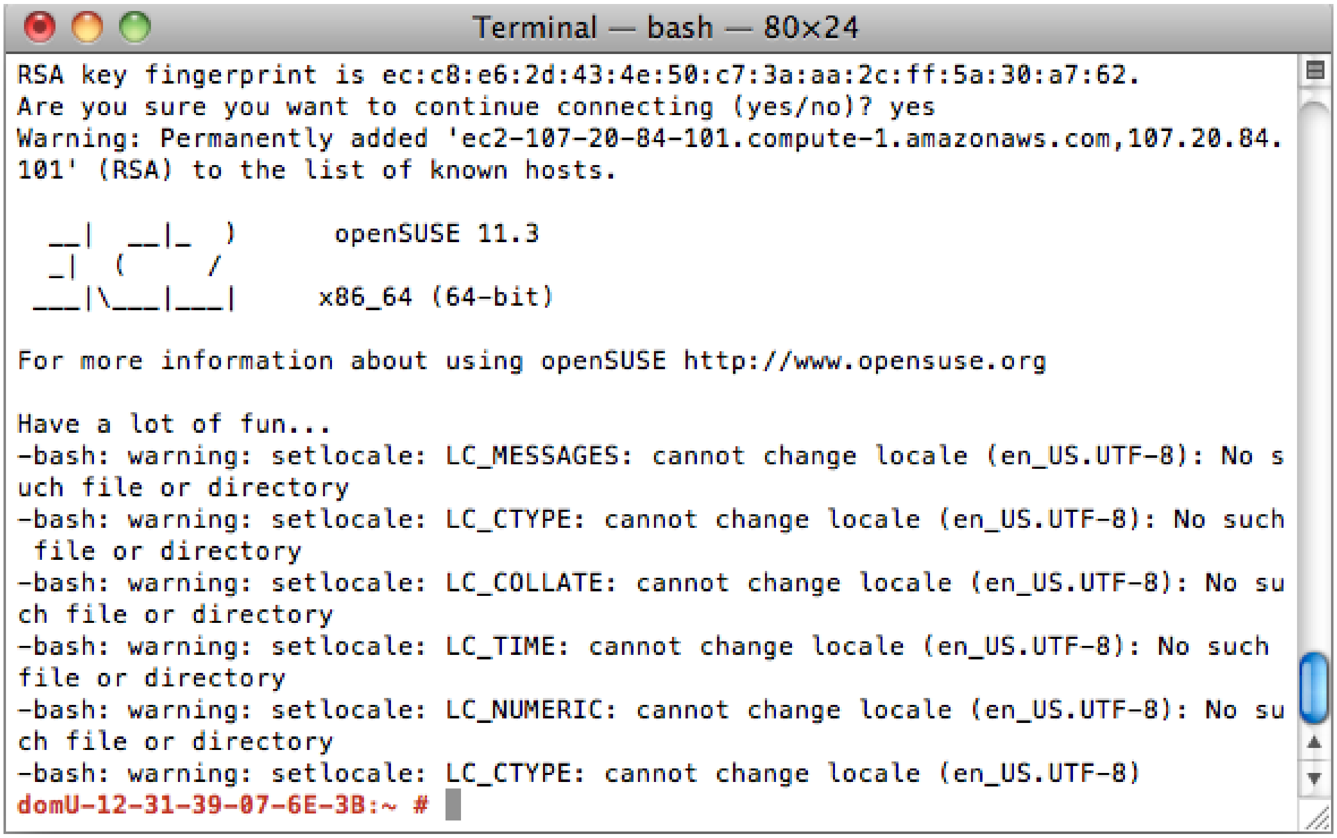
When you access a new machine for the first time, the machines have to share keys. They have no way of validating each other as this is the first time they are talking. So, you are warned that the authenticity of the host cannot be verified. We expect this the very first time that you connect to the instance, so it is okay this time. Choose yes and continue. See Figure 23.



```
Pokey.local> pwd
/Users/glenjarvis/keys
Pokey.local> ls -l linuxclasskey.pem
-rw-r--r--@ 1 glenjarvis  staff  1696 Oct  9 22:54 linuxclasskey.pem
Pokey.local> chmod og-r linuxclasskey.pem
Pokey.local> ls -l linuxclasskey.pem
-rw-------@ 1 glenjarvis  staff  1696 Oct  9 22:54 linuxclasskey.pem
Pokey.local> ssh -i linuxclasskey.pem  root@ec2-107-20-84-101.compute-1.amazonaw
s.com
The authenticity of host 'ec2-107-20-84-101.compute-1.amazonaws.com (107.20.84.1
01)' can't be established.
RSA key fingerprint is ec:c8:e6:2d:43:4e:50:c7:3a:aa:2c:ff:5a:30:a7:62.
Are you sure you want to continue connecting (yes/no)? 
```

After you choose 'yes' you will be logged into the instance. Notice that it's an EC2 instance of openSUSE 11.3 according to the splash screen.

Also note that there are LC_MESSAGE, LC_CTYPE and other warnings. These warning messages are from the AMI that we used – seeing these messages is not normal for other AMIs. You can ignore the messages for now, however, as they will not affect the results of this lab. See Figure 24.



```
RSA key fingerprint is ec:c8:e6:2d:43:4e:50:c7:3a:aa:2c:ff:5a:30:a7:62.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-107-20-84-101.compute-1.amazonaws.com,107.20.84.
101' (RSA) to the list of known hosts.

  __|  __|_  )      openSUSE 11.3
  _|  (     /
 ___|\___|___|     x86_64 (64-bit)

For more information about using openSUSE http://www.opensuse.org

Have a lot of fun...
-bash: warning: setlocale: LC_MESSAGES: cannot change locale (en_US.UTF-8): No s
uch file or directory
-bash: warning: setlocale: LC_CTYPE: cannot change locale (en_US.UTF-8): No such
 file or directory
-bash: warning: setlocale: LC_COLLATE: cannot change locale (en_US.UTF-8): No su
ch file or directory
-bash: warning: setlocale: LC_TIME: cannot change locale (en_US.UTF-8): No such
file or directory
-bash: warning: setlocale: LC_NUMERIC: cannot change locale (en_US.UTF-8): No su
ch file or directory
-bash: warning: setlocale: LC_CTYPE: cannot change locale (en_US.UTF-8)
domU-12-31-39-07-6E-3B:~ #
```

Congratulations! You've configured and connected to an Amazon web instance.

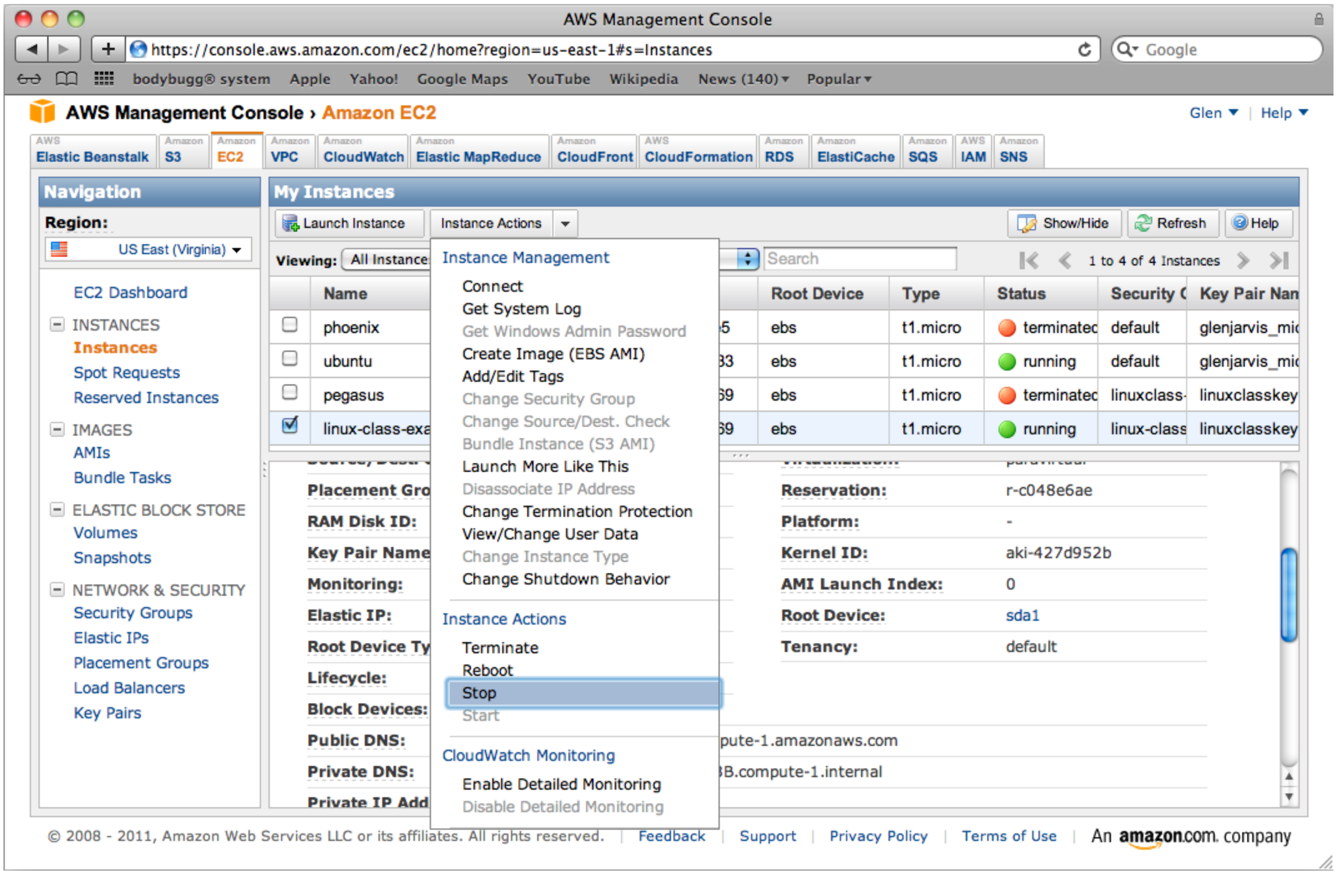
Part III – Shutting Down the Instance

Step 9 – Shutting Down

If you followed these instructions carefully, you should be using a free tier instance and not have to pay for the usage of this instance.

If there were any variations, micro-instances are still very cheap (a few dollars a day). If you have any concern at all, you can simply stop the instance when you are not using it. You only pay for the time the instances are running.

It's good practice to shut the machines down when not in use. Click the checkbox by your instance, and select the “instance actions” drop down menu. From there, choose the Stop menu action.



	Name		Root Device	Type	Status	Security (	Key Pair Nan
☐	phoenix	5	ebs	t1.micro	● terminatec	default	glenjarvis_mic
☐	ubuntu	33	ebs	t1.micro	● running	default	glenjarvis_mic
☐	pegasus	59	ebs	t1.micro	● terminatec	linuxclass-	linuxclasskey
☑	linux-class-exa	59	ebs	t1.micro	● running	linux-class	linuxclasskey

Placement Gro

RAM Disk ID:

Key Pair Name

Monitoring:

Elastic IP:

Root Device Ty

Lifecycle:

Block Devices:

Public DNS: pute-1.amazonaws.com

Private DNS: 3B.compute-1.internal

Private IP Add

Reservation: r-c048e6ae

Platform: -

Kernel ID: aki-427d952b

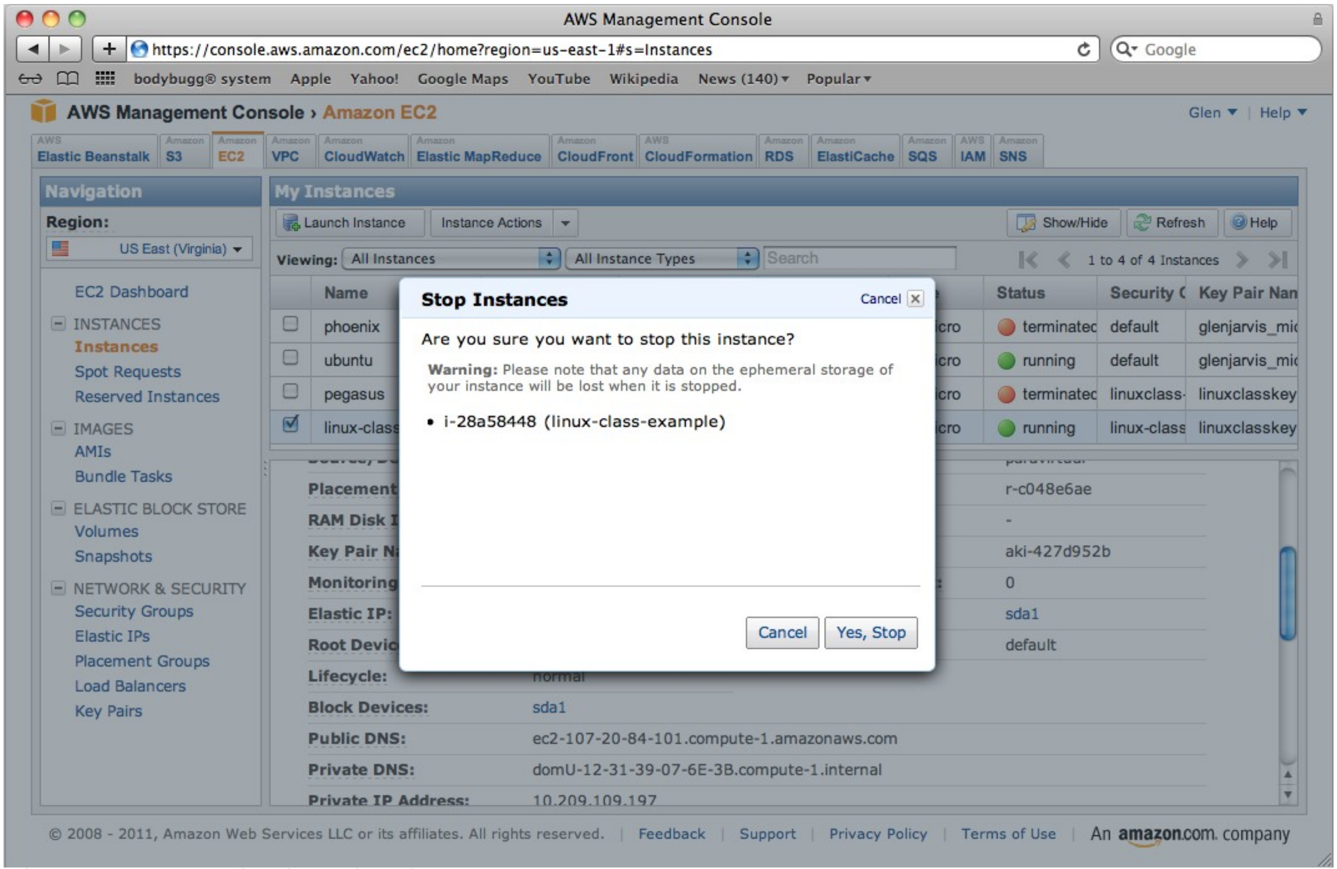
AMI Launch Index: 0

Root Device: sda1

Tenancy: default

Figure 25 – Stopping instance

You will be prompted to be certain that you do want to shut down the instance.



	Name		Status	Security G	Key Pair Nan
□	phoenix	cro	● terminated	default	glenjarvis_mic
□	ubuntu	cro	● running	default	glenjarvis_mic
□	pegasus	cro	● terminated	linuxclass-	linuxclasskey
☑	linux-class	cro	● running	linux-class	linuxclasskey

Stop Instances

Are you sure you want to stop this instance?

Warning: Please note that any data on the ephemeral storage of your instance will be lost when it is stopped.

- i-28a58448 (linux-class-example)

Placement — r-c048e6ae
RAM Disk I — -
Key Pair N — aki-427d952b
Monitoring — 0
Elastic IP: — sda1
Root Devic — default
Lifecycle: normal
Block Devices: sda1
Public DNS: ec2-107-20-84-101.compute-1.amazonaws.com
Private DNS: domU-12-31-39-07-6E-3B.compute-1.internal
Private IP Address: 10.209.109.197

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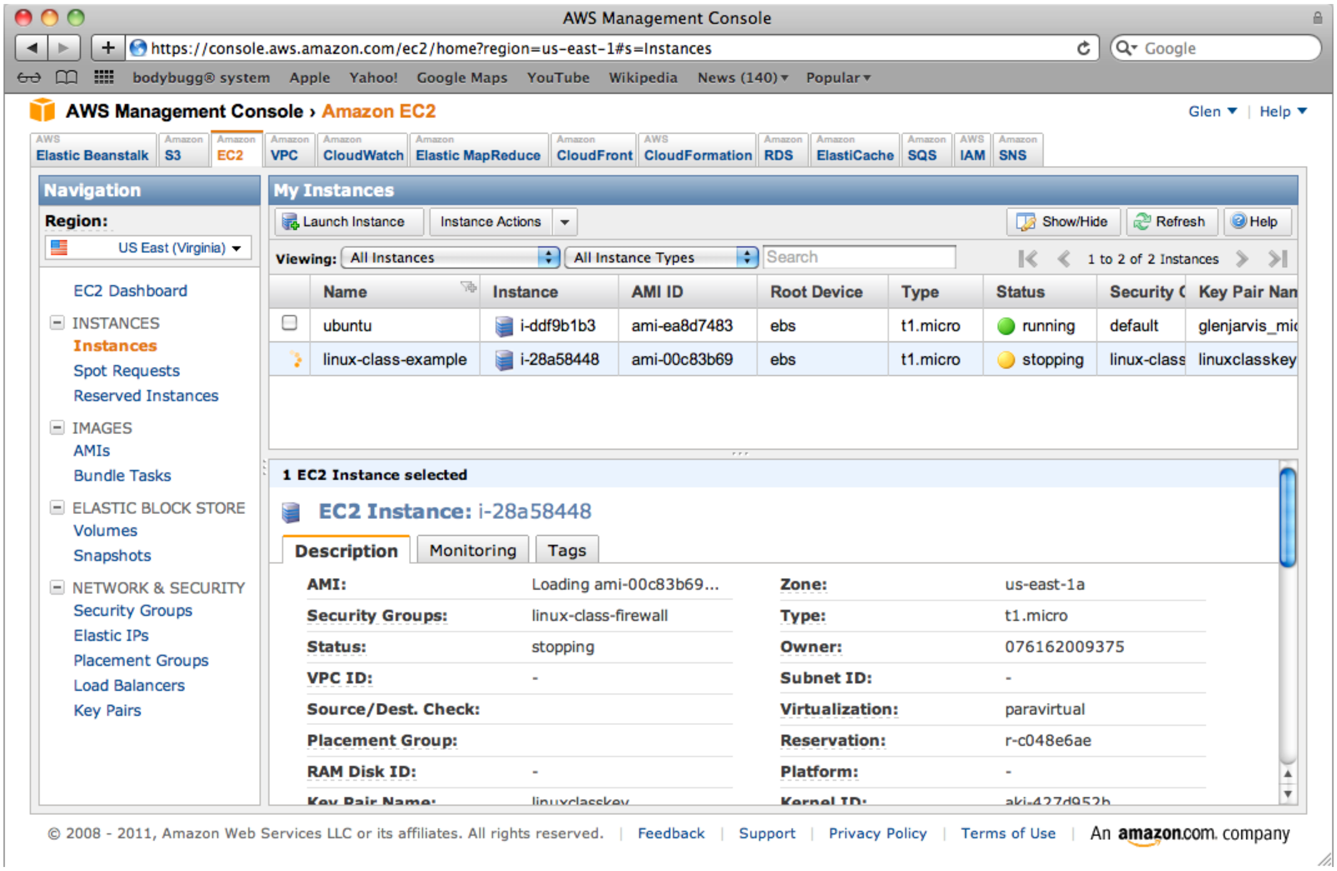
Figure 26 – Confirming shutdown

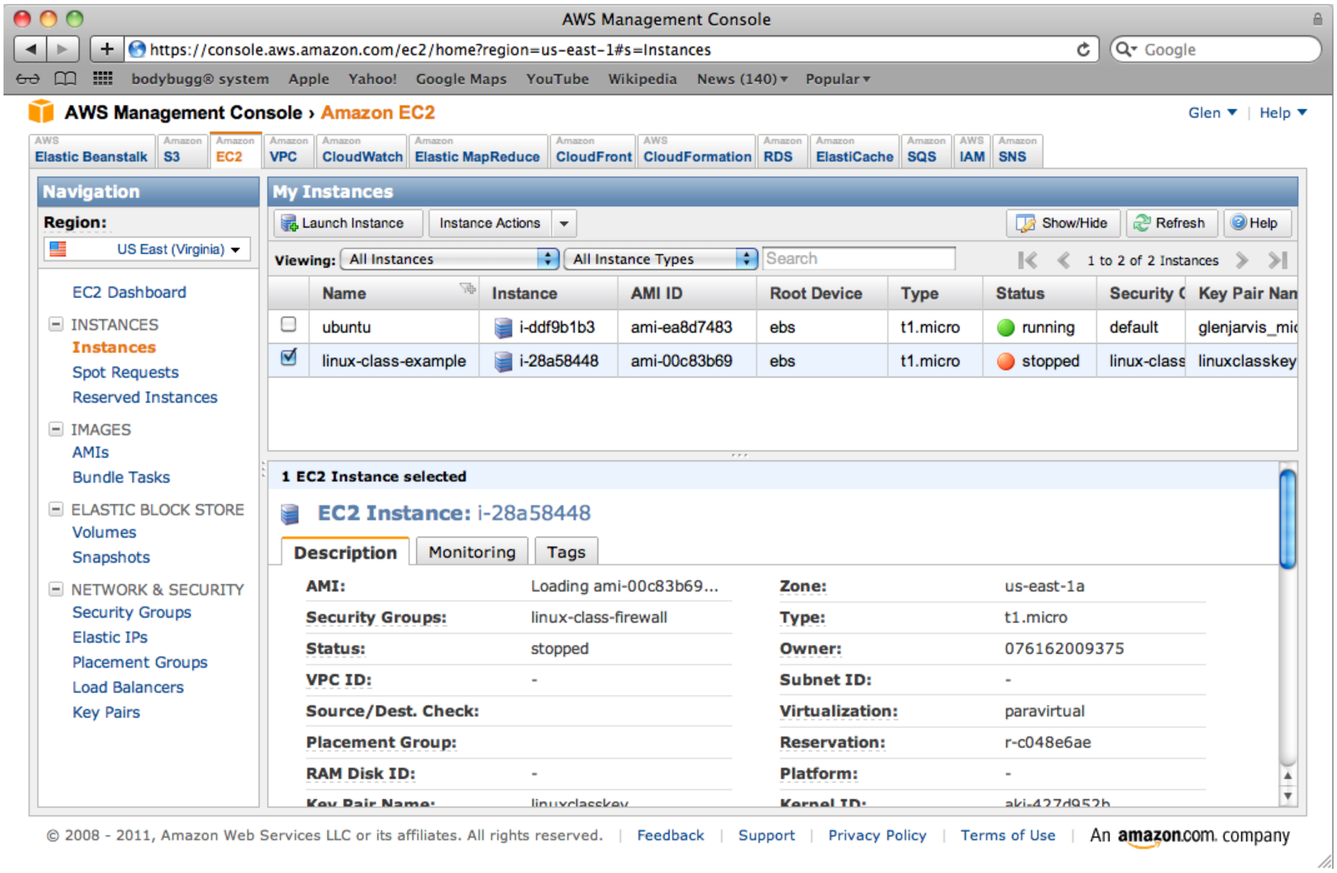
While shutting down, the instance is in **stopping** status.



	Name	Instance	AMI ID	Root Device	Type	Status	Security (	Key Pair Nan
☐	ubuntu	i-ddf9b1b3	ami-ea8d7483	ebs	t1.micro	● running	default	glenjarvis_mic
	linux-class-example	i-28a58448	ami-00c83b69	ebs	t1.micro	● stopping	linux-class	linuxclasskey

AMI:	Loading ami-00c83b69...	**Zone:**	us-east-1a
Security Groups:	linux-class-firewall	**Type:**	t1.micro
Status:	stopping	**Owner:**	076162009375
VPC ID:	-	**Subnet ID:**	-
Source/Dest. Check:		**Virtualization:**	paravirtual
Placement Group:		**Reservation:**	r-c048e6ae
RAM Disk ID:	-	**Platform:**	-
Key Pair Name:	linuxclasskey	**Kernel ID:**	aki-427d952b

Finally, the instance is stopped and the lab is over.



	Name	Instance	AMI ID	Root Device	Type	Status	Security (	Key Pair Nan
□	ubuntu	i-ddf9b1b3	ami-ea8d7483	ebs	t1.micro	● running	default	glenjarvis_mic
☑	linux-class-example	i-28a58448	ami-00c83b69	ebs	t1.micro	● stopped	linux-class	linuxclasskey

1 EC2 Instance selected

EC2 Instance: i-28a58448

AMI:	Loading ami-00c83b69...	Zone:	us-east-1a
Security Groups:	linux-class-firewall	Type:	t1.micro
Status:	stopped	Owner:	076162009375
VPC ID:	-	Subnet ID:	-
Source/Dest. Check:		Virtualization:	paravirtual
Placement Group:		Reservation:	r-c048e6ae
RAM Disk ID:	-	Platform:	-
Key Pair Name:	linuxclasskey	Kernel ID:	aki-427d952b