How to set up a WordPress Website on Amazon Web Services (AWS)

SCREENSHOT GUIDE

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1 Abstract

This end-to-end procedure is intended for anyone that is setting up a WordPress website on Amazon Web Services (AWS). It provides information on how to create an account on Amazon Web Services, select and purchase a domain name, configure DNS through Route 53, launch an instance through Elastic Cloud Compute (EC2), update and secure the instance, install all the required software, and set up a WordPress website.

The guide is targeted at system administrators, web developers, and those who are interested in learning something new. It is beneficial to have prior Linux experience, but it's certainly not required.

The guide includes images as well as explicit instructions for those using the text-only version. Amazon and WordPress constantly add new features and update existing components so the information in the guide may have changed since publication.

At the time of this release, AWS is running the following versions:

- Elastic Computer Cloud: July 30, 2014 5:00 PM GMT
- Route 53: July 31, 2014 7:00 PM GMT

2 Overview

WordPress is one of the most popular content management systems (CMS) on the market. It's used in industries around the world and provides a stable platform for companies and individuals to build their web presence. There are many different domain registrars, DNS providers, and hosting providers from which to choose, but for this guide, you'll see how to utilize AWS for all your web needs. AWS is an industry leading, highly scalable collection of services in the cloud.

3 Pricing

WordPress is free. It is open-source software which means all the code is available for you to view. The benefit to open source software is developers everywhere can add new features, fix bugs, and improve security. Even you can contribute to the code that everyone uses. The downside is hackers can find vulnerabilities much quicker when they can view the code in open source software than they can with proprietary software. WordPress has been around for a long time so you can rest assured that there are very few vulnerabilities. If there are any, they will be fixed ASAP since WordPress is one of the most popular content management systems in the world. There are themes and plugins for WordPress that cost money, but you are not required to use any of them since there are plenty of free themes and plugins.

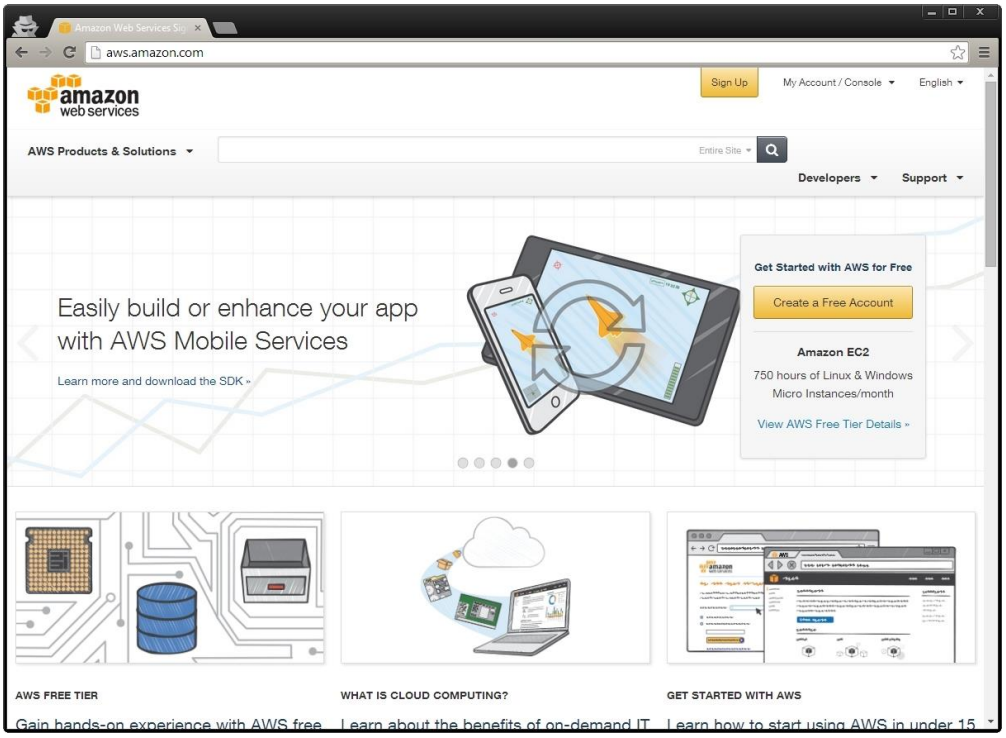
The Amazon account is free, but many of the services pricing is based on usage. If you don't use any of the services, then it won't cost any money. If you do use a service for only a few minutes, you'll only be charged for that usage. Amazon is very transparent with the costs. Pricing is available for each of the services on their website. A quick Google search for *EC2 Pricing* will bring up the information you need.

If you've never used AWS before, you are eligible for the **AWS Free Tier** which is explained at http://aws.amazon.com/free/. You are able to use a few of the AWS services like EC2 and S3 for free for a year which is perfect when evaluating whether the services fit your needs.

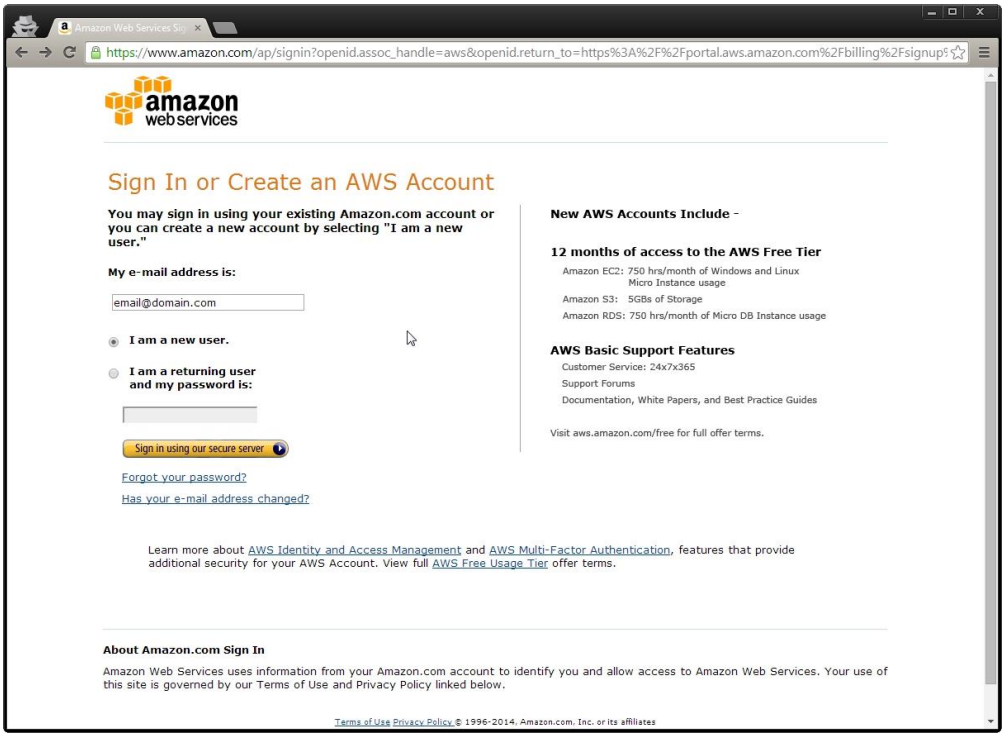
4 Create an Amazon Web Services (AWS) Account

In order to use AWS, you need an Amazon account. If you never purchased from Amazon.com, you'll have to create an account. If you have purchased from Amazon.com, you can use your existing account to access AWS.

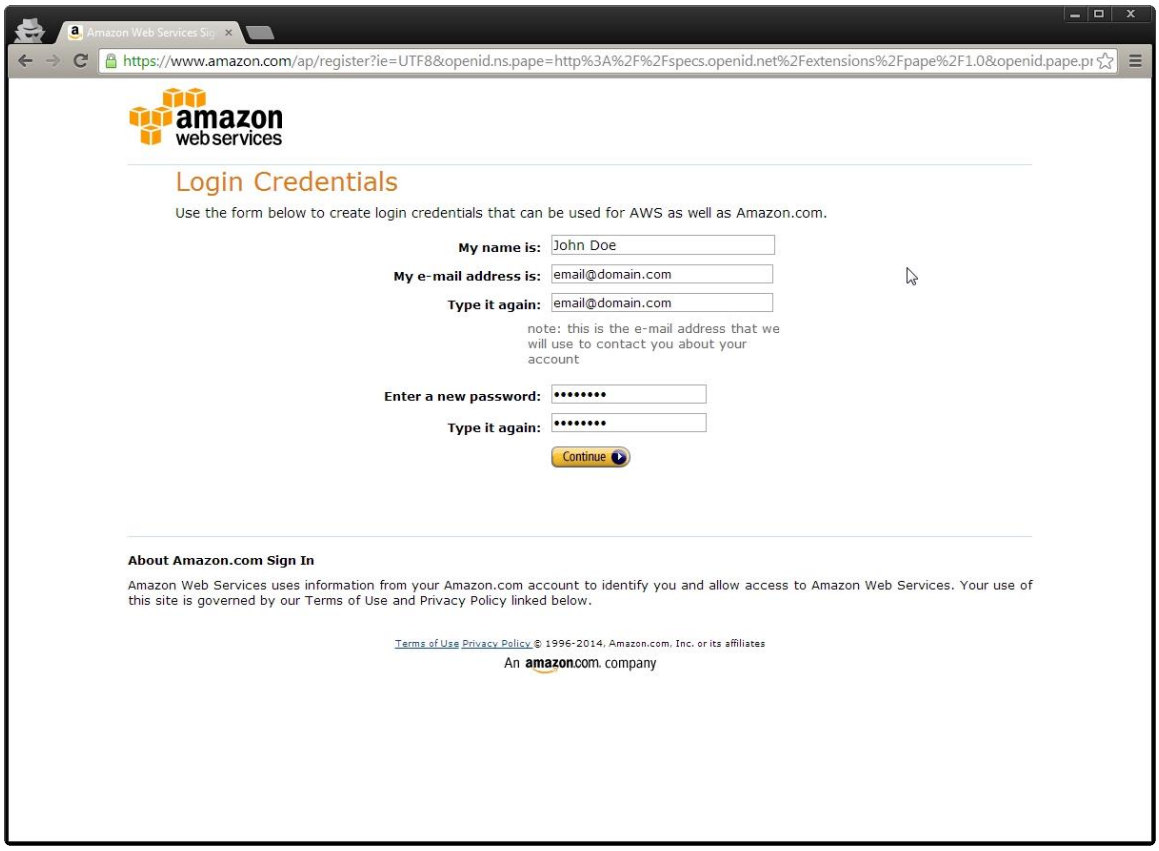
Open your web browser to http://aws.amazon.com and click on **Sign Up**.



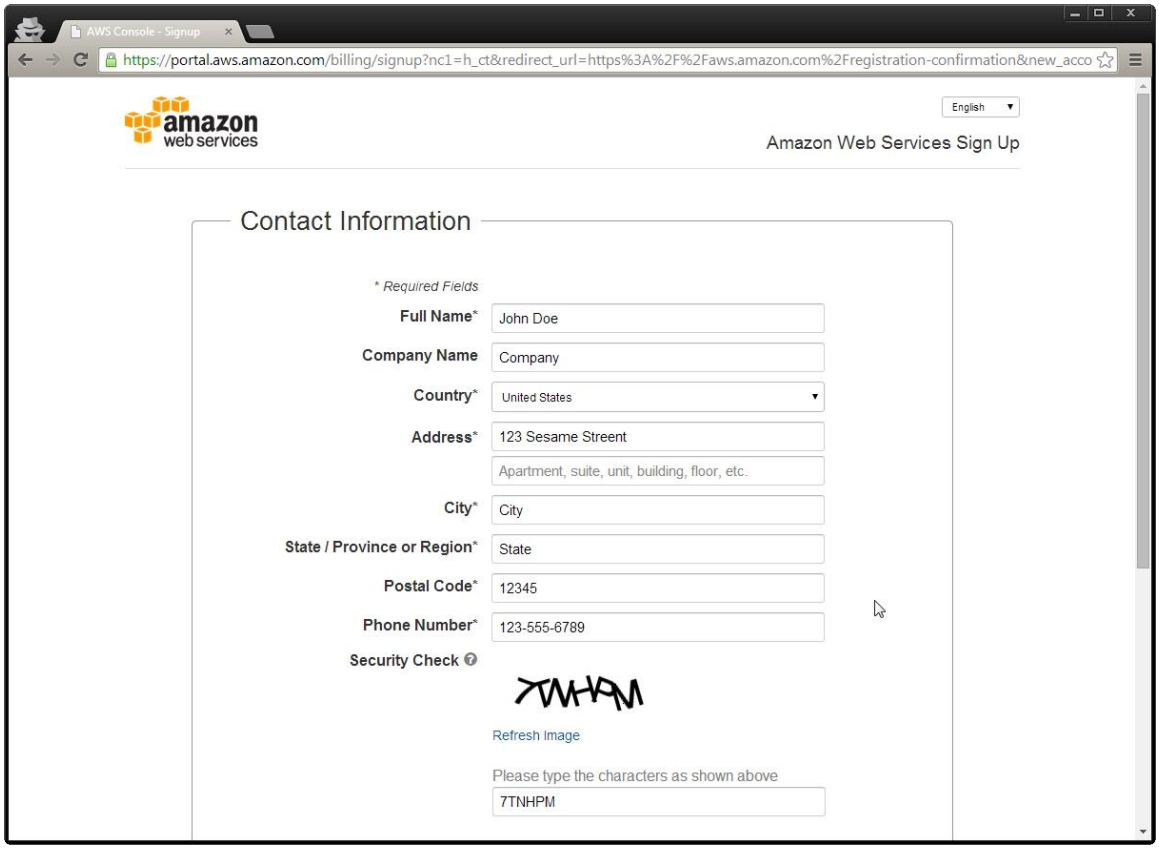
If you already have an Amazon account, you can type in your email address and password to log in. If you don't have an Amazon account, type in your email address, select **I am a new user** and click **Sign in using our secure server**.



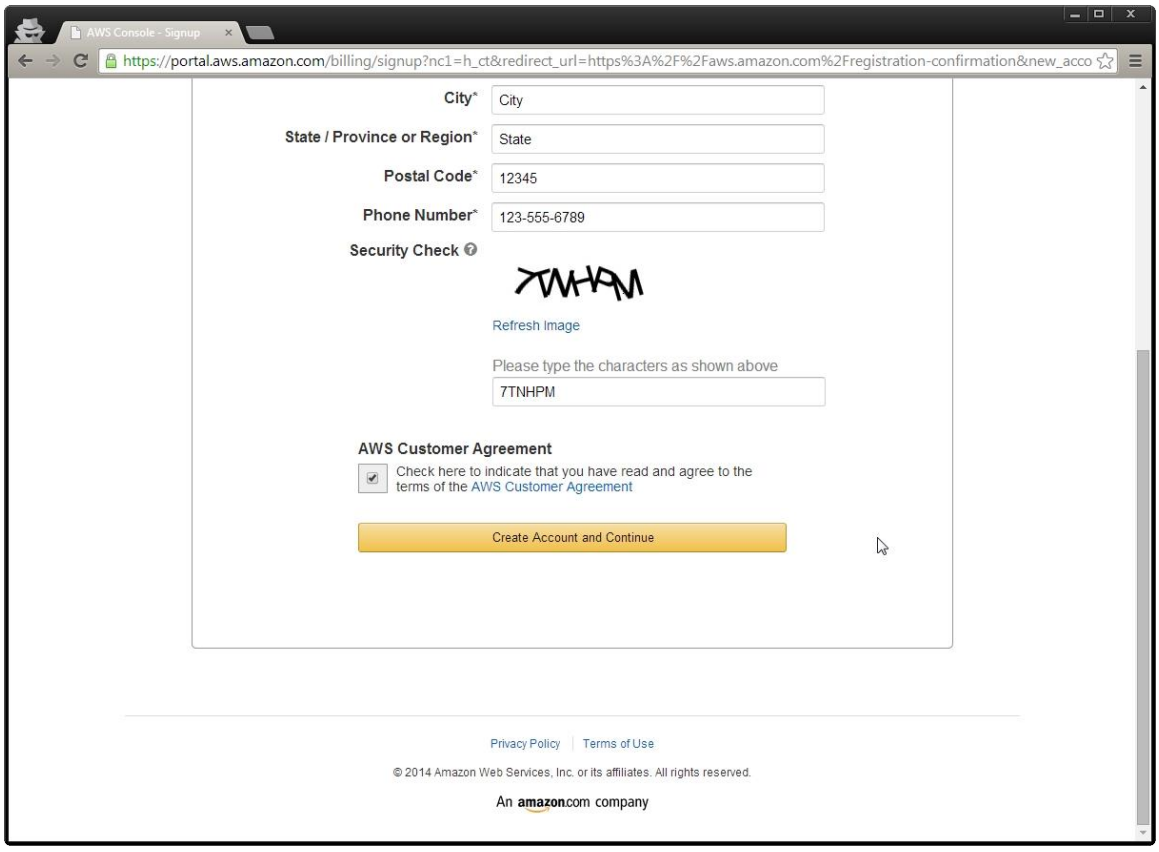
On the **Login Credentials** page, fill in all the name, email, and password textboxes and click **Continue**.



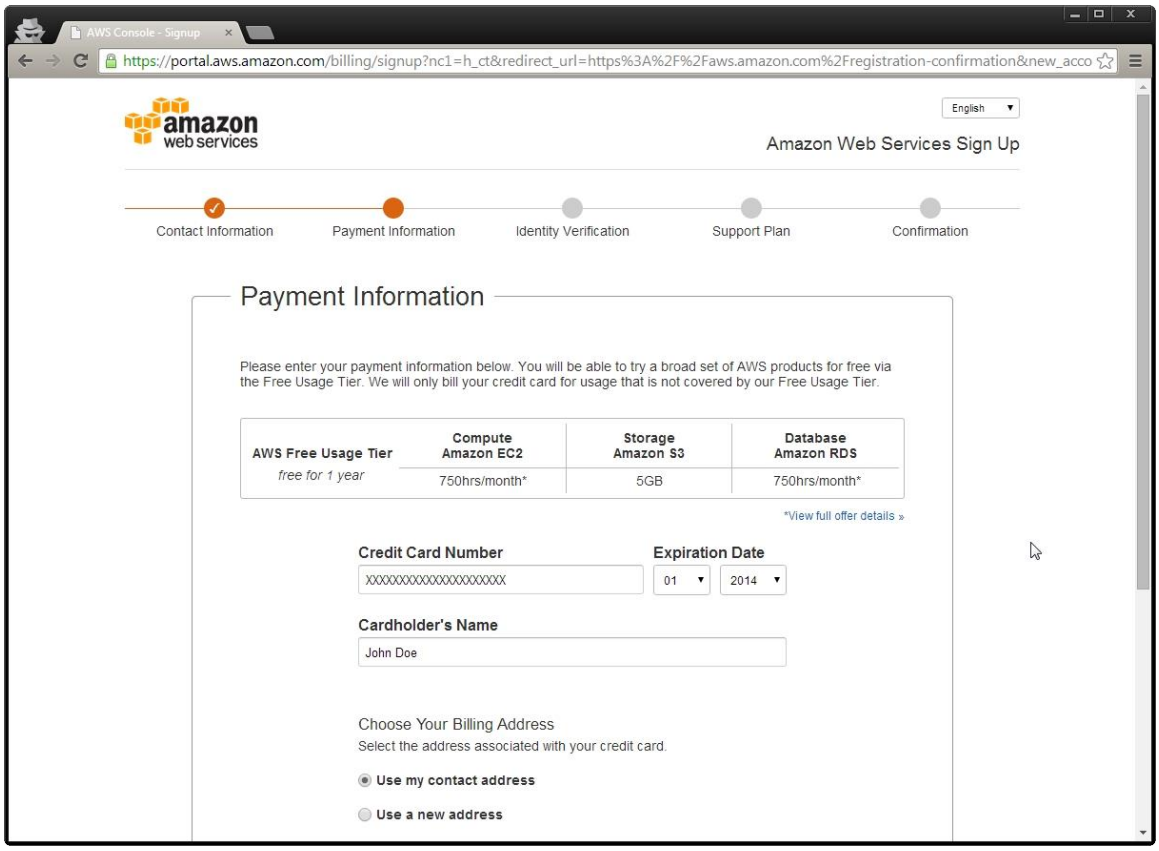
On the **Contact Information** page, fill in your name, address, phone number, and security check textboxes.



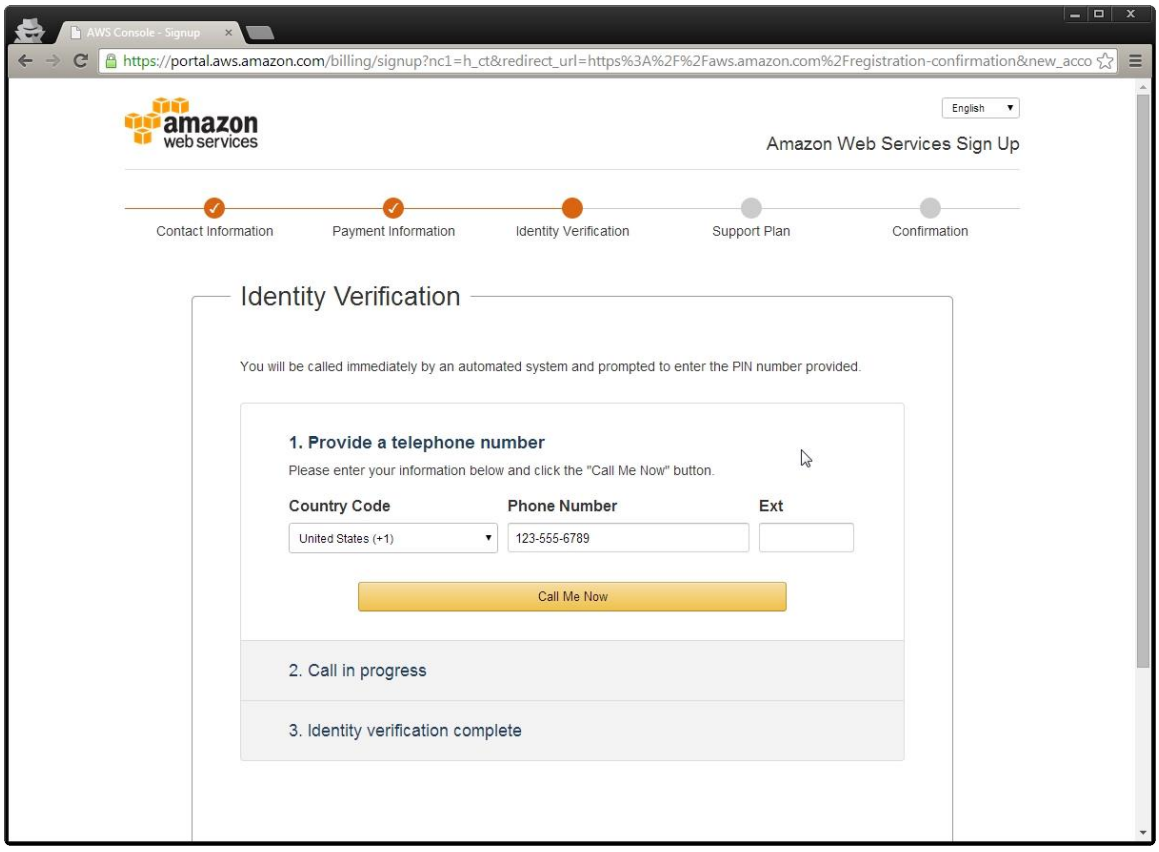
Scroll to the bottom of the page and read the **AWS Customer Agreement**. Click **Create Account and Continue** when you are ready to proceed.



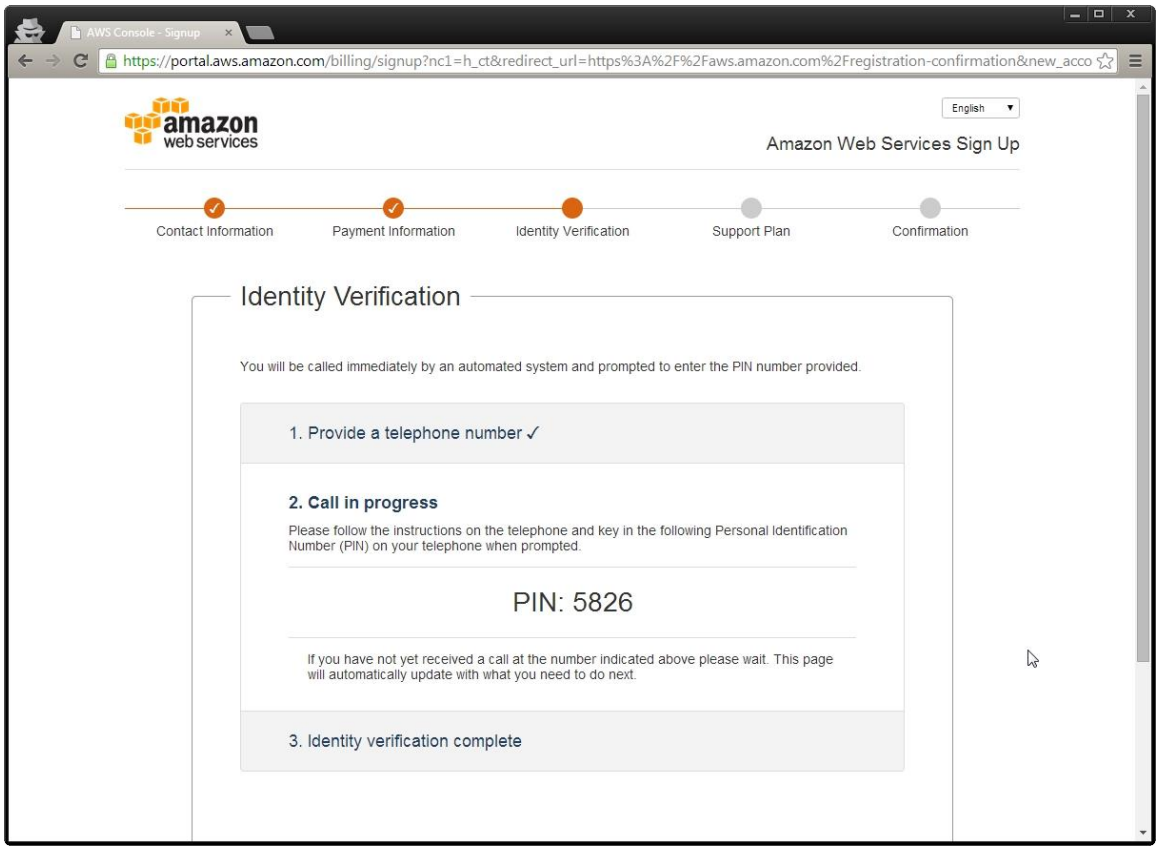
On the **Payment Information** page, fill in your credit card information and billing address. Click **Continue**.



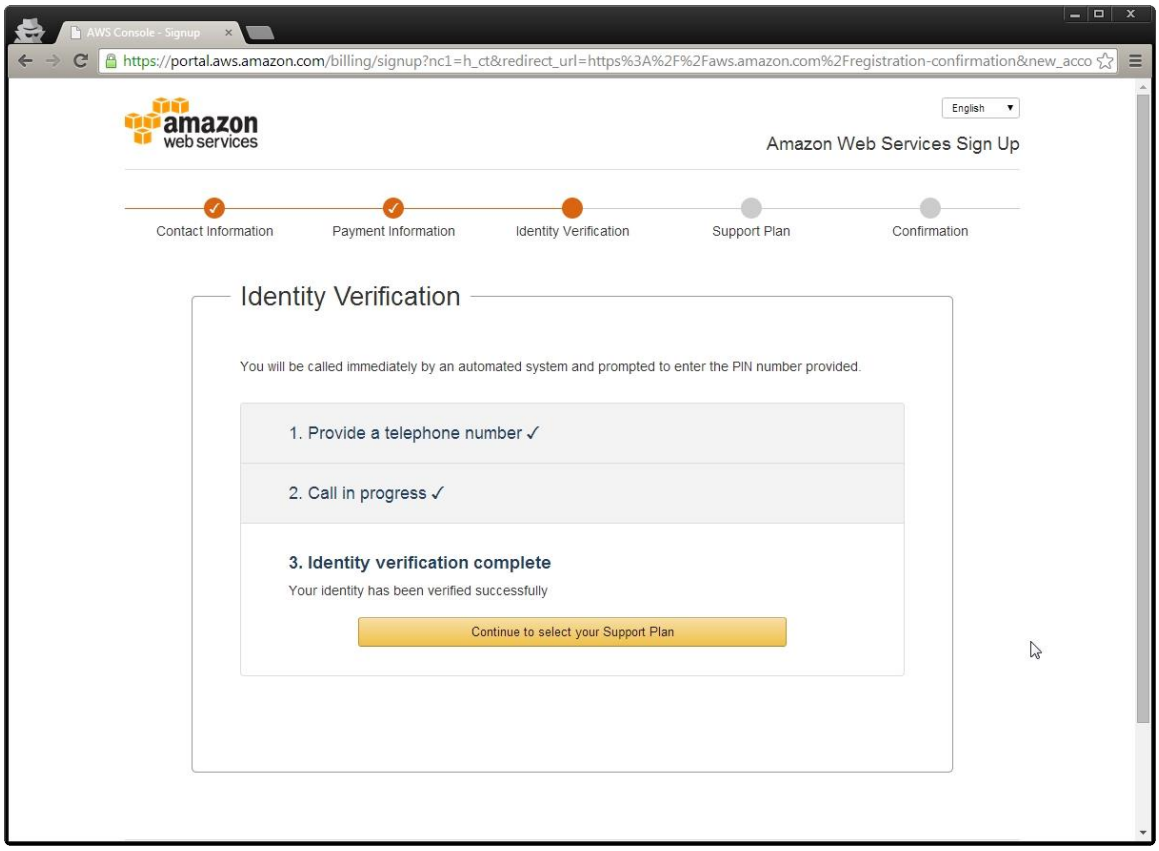
On the **Identify Verification** page, fill in your telephone number and click **Call Me Now**. You will receive an automated telephone call.



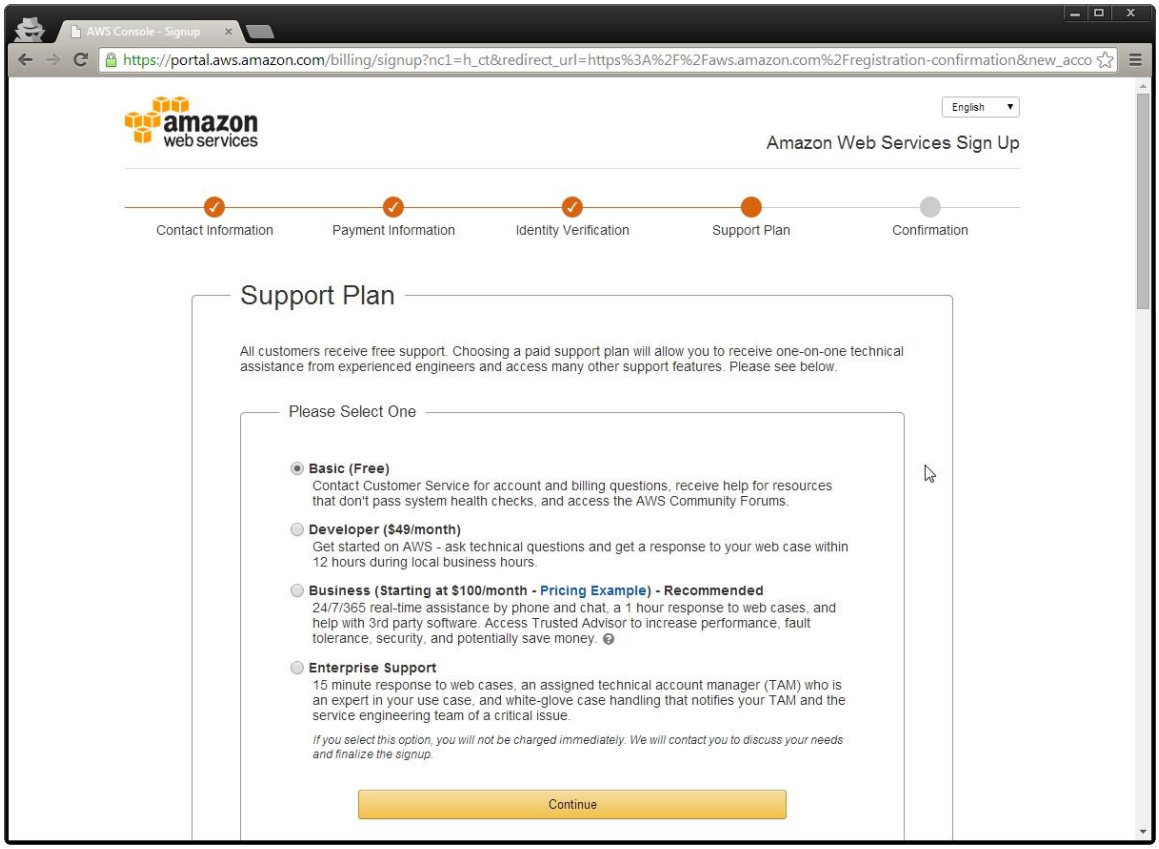
Once you answer the call, the automated voice will tell you to enter in your pin.



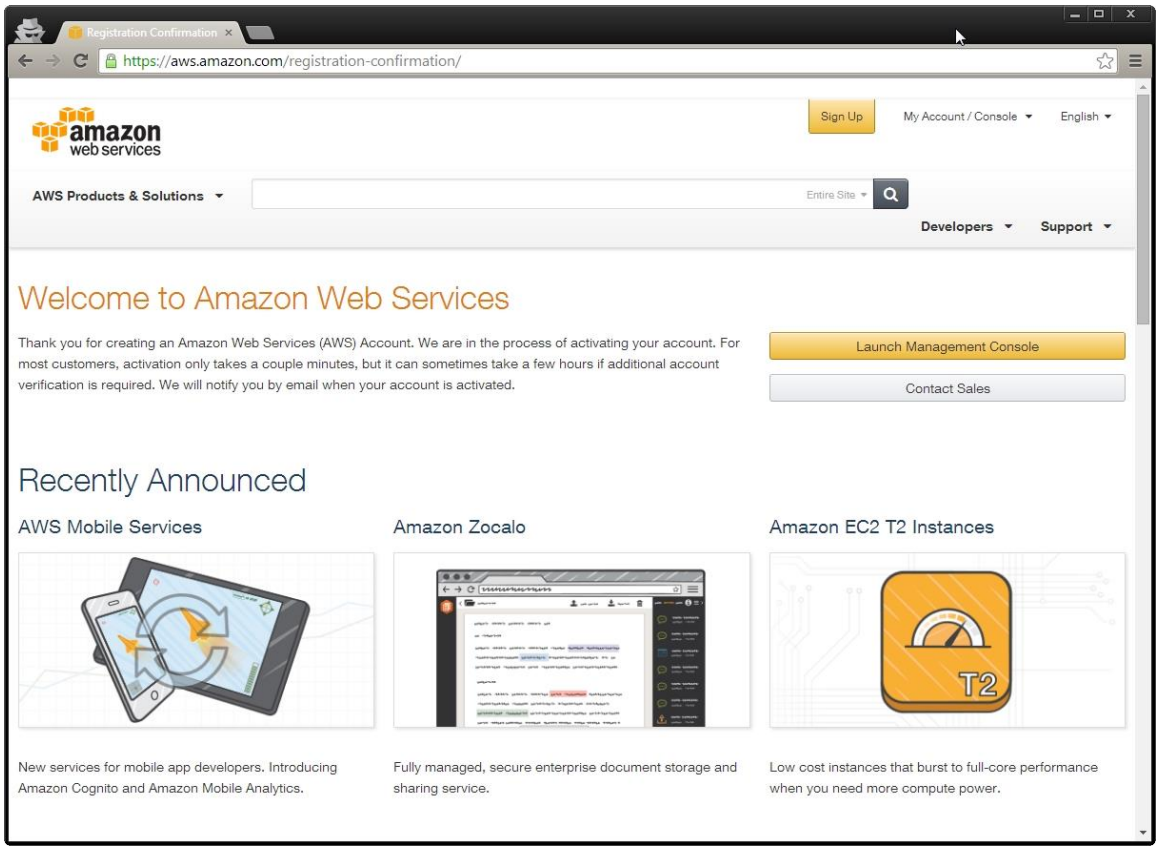
Once you finish with the call, click **Continue to select your Support Plan**.



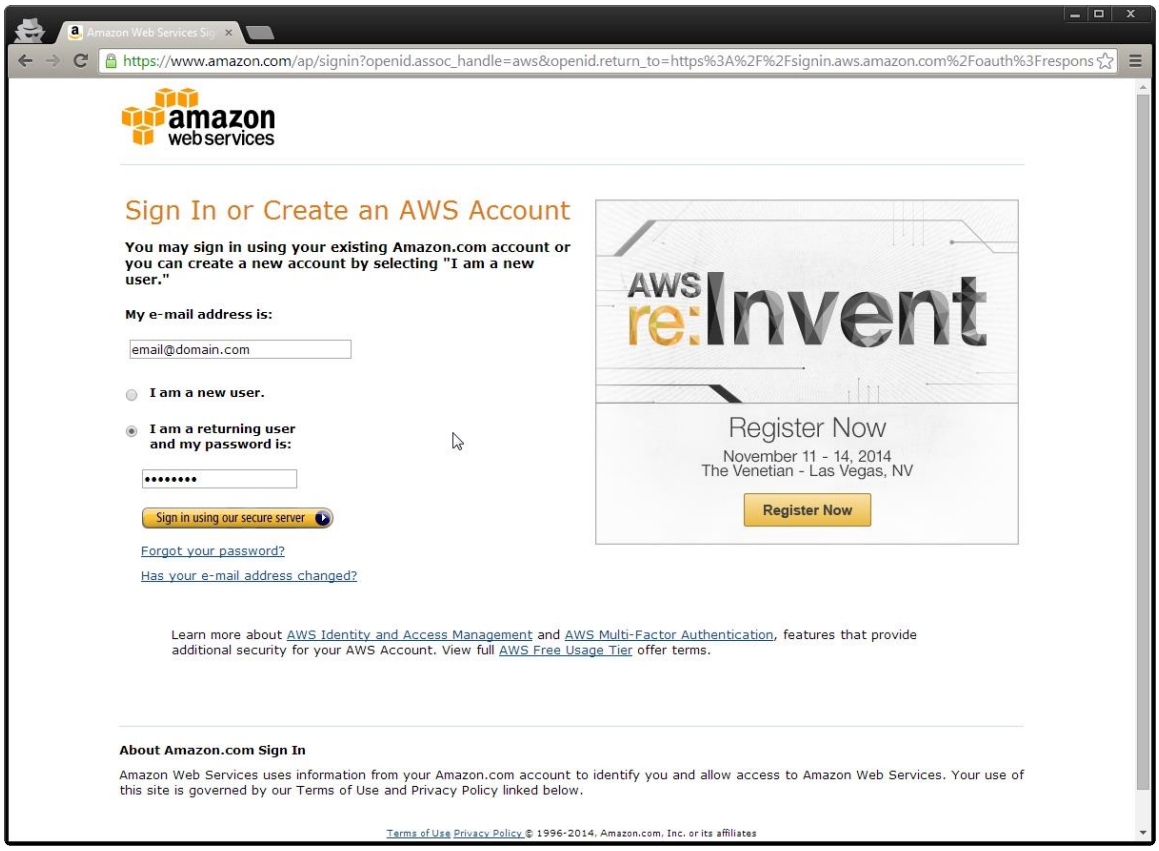
On the **Support Plan** page, select the type of support you would like to use. Click **Continue**.



You should see the **Welcome to Amazon Web Services** page once you finish registration. Click **Launch Management Console**.

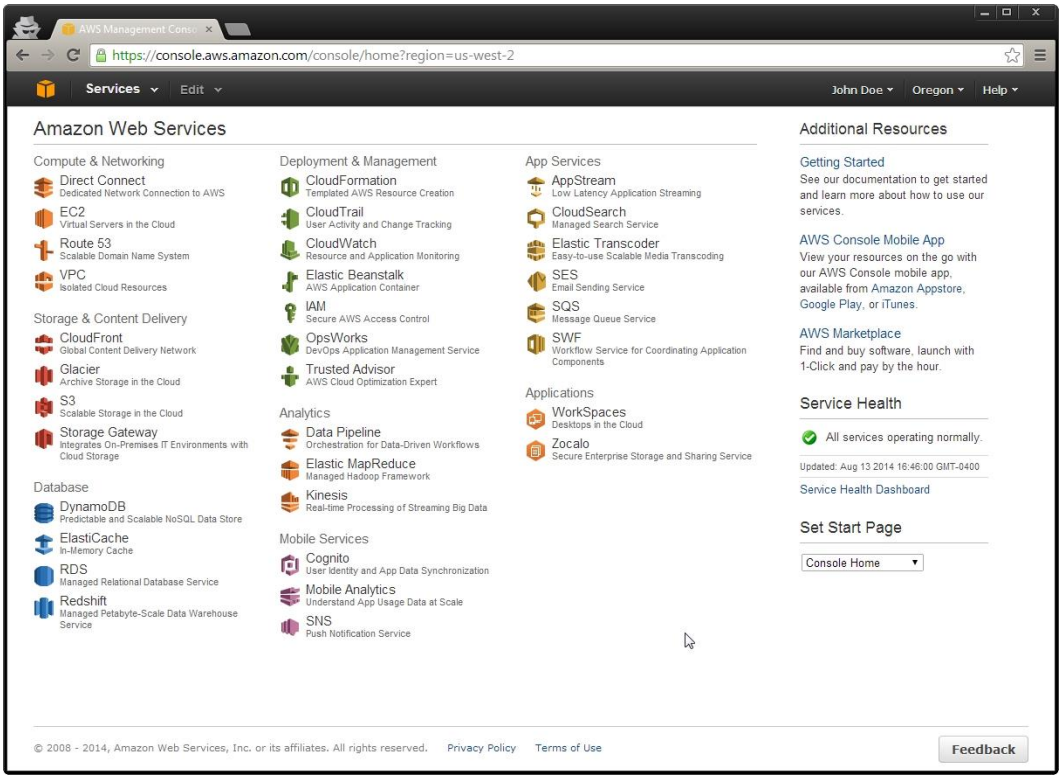


On the **Sign In** page, fill in your email and password. Click **Sign in using our secure server**.



5 Overview of AWS Management Console

You should now see the **AWS Management Console** page with the title **Amazon Web Services.** The page lists all of the available AWS services. To access the AWS Management Console directly, open your web browser to https://console.aws.amazon.com.



5.1 Shortcut Bar

At the top of the page, you'll see the shortcut bar. You can add the services you use most often to the shortcut bar for quicker navigation. To customize the shortcut bar, click **Edit** and then drag the services of your choice to the bar. On the top right of the shortcut bar, you'll see your name menu, a region menu, and the Help menu. The name menu provides access to your **Account** page, **Billing & Cost Management** page, and **Security Credentials** page. It also allows you to sign out. Amazon set the login sessions to expire after 12 hours so you'll have to log in again to continue using the services.

5.2 Categories and Services

Below the shortcut bar, you'll see all the Amazon services divided into categories. At the time of this publication, the categories are:

- Compute & Networking
- Storage & Content Delivery
- Database
- Deployment & Management
- Analytics
- Mobile Services
- App Services
- Application

5.3 Sidebar

On the right side of the page, you'll see the **Additional Resources**, **Service Health**, and **Set Start Page.** All of these sections provide you with additional tools to enhance your usage of AWS.

6 Launch an Instance using Amazon EC2

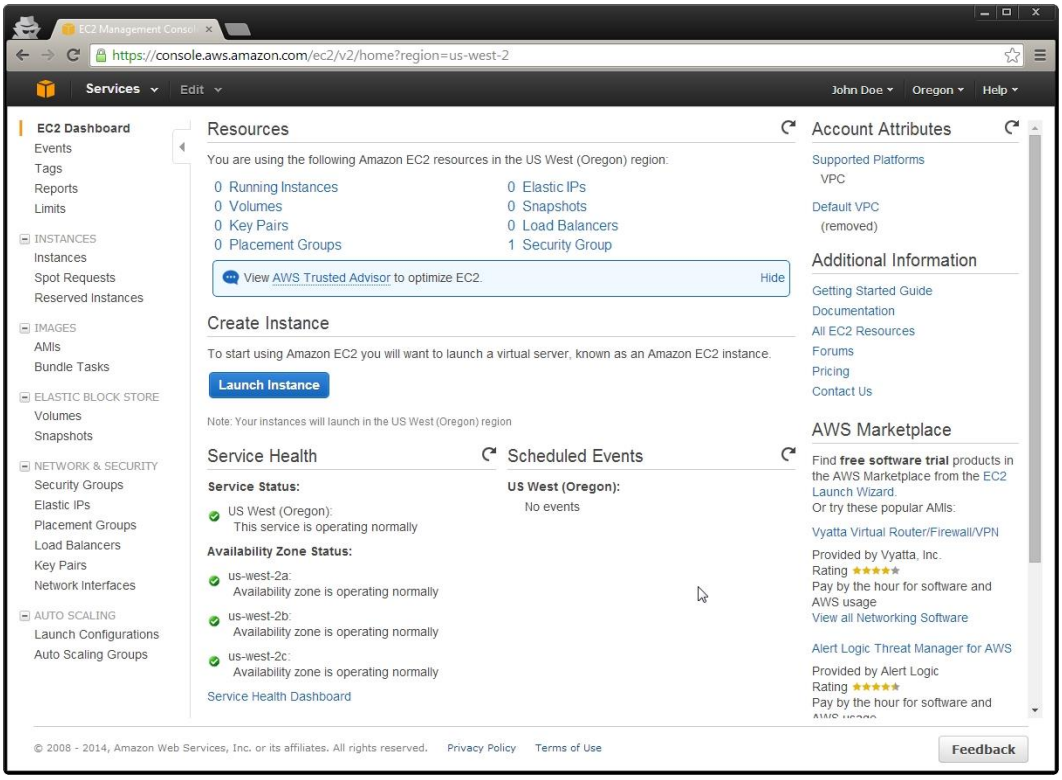
An instance in Amazon Elastic Compute Cloud (EC2) is a virtual server. It will boot up and behavior just like a physical server, but it shares resources like CPU and RAM with other virtual servers. There are different instance size and each one costs a different amount per hour. You can launch either a Linux instance or a Windows instance. Windows instances typically cost twice the amount of a Linux instance because there are additional licensing fees associated with Windows. All licensing costs are included in the price per hour. Along with the price per hour which is charged when an instance is running, there are additional costs for each GB of data in and out as well as storage used. Be sure to look at the pricing model before continuing. For a micro instance running a typical WordPress website, it will cost around $15 a month.

6.1 Linux Distributions vs Windows

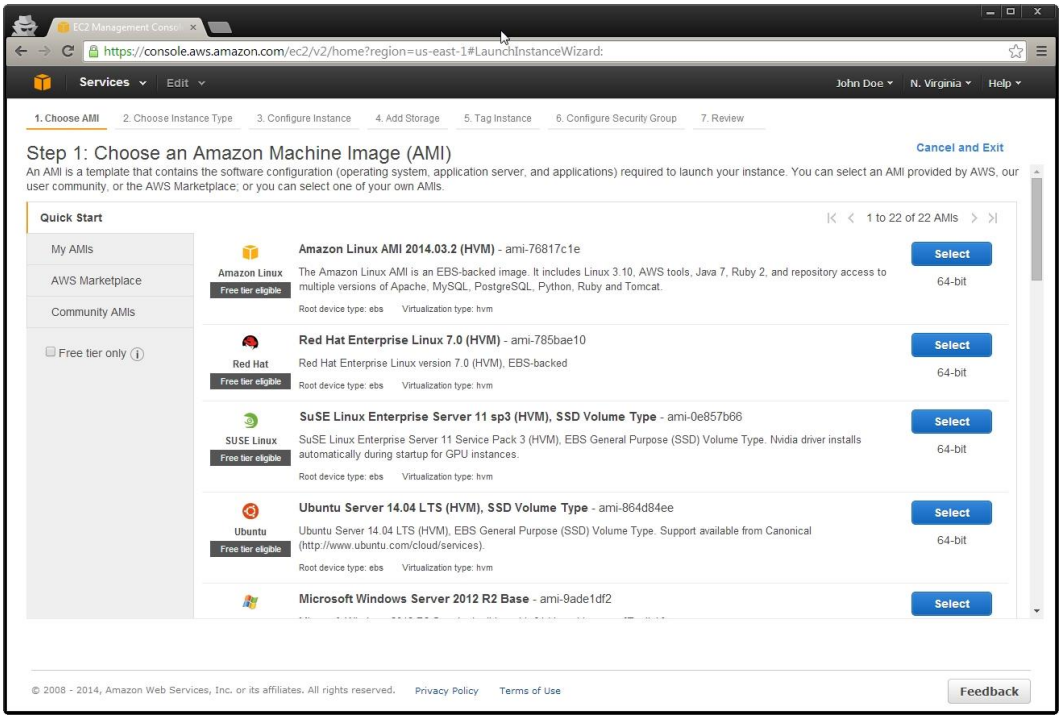
Linux is much different from Windows. Windows is created by Microsoft and every few years, a new major version is released like Windows 7 and Windows 8. For the most part, if a piece of software is created for Windows 7, it will also run on Windows 8. Linux distributions are created by many different companies. A few of the available Linux version on Amazon are Amazon Linux, Red Hat Linux, SuSE Linux, and Ubuntu Server Linux. If a piece of software is developed for Red Hat Linux, it must be recompiled before use on any other version of Linux. This sounds complicated, but it's actually a process that developers have already done for you. Linux uses software called **package managers** to automate the compilation and installation of software. In Windows, you usually go to a website, download software, and then click through the installation process. In Linux, you type in a single command and then it installs the software. One of the other big differences to note is Linux is designed to run without a clickable graphical user interface (GUI). There are desktop versions of Linux with GUIs, but they will not be used in this tutorial because they require more resources and in the cloud, higher resource usage means more money.

6.2 Launch an Instance

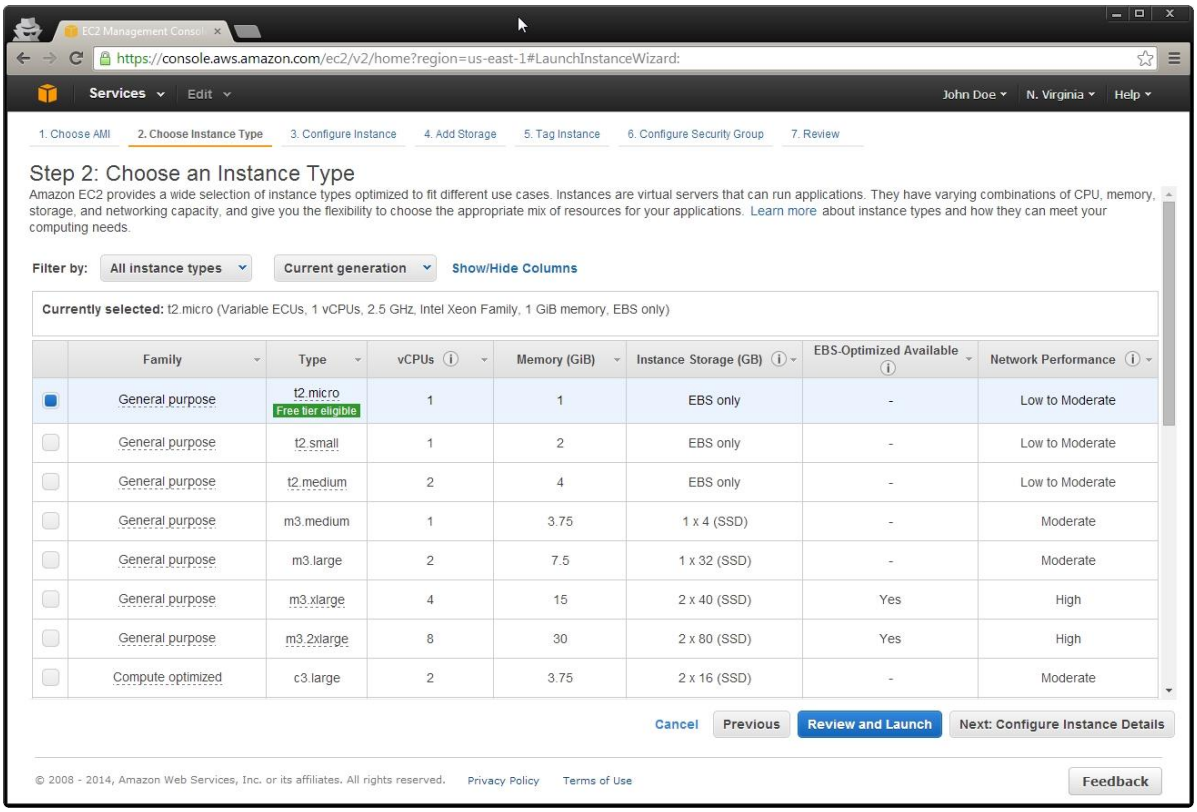
Navigate to the **AWS Management Console**. Click on **EC2**. To access the EC2 service directly, open your web browser to https://console.aws.amazon.com/ec2. Click **Launch Instance**.



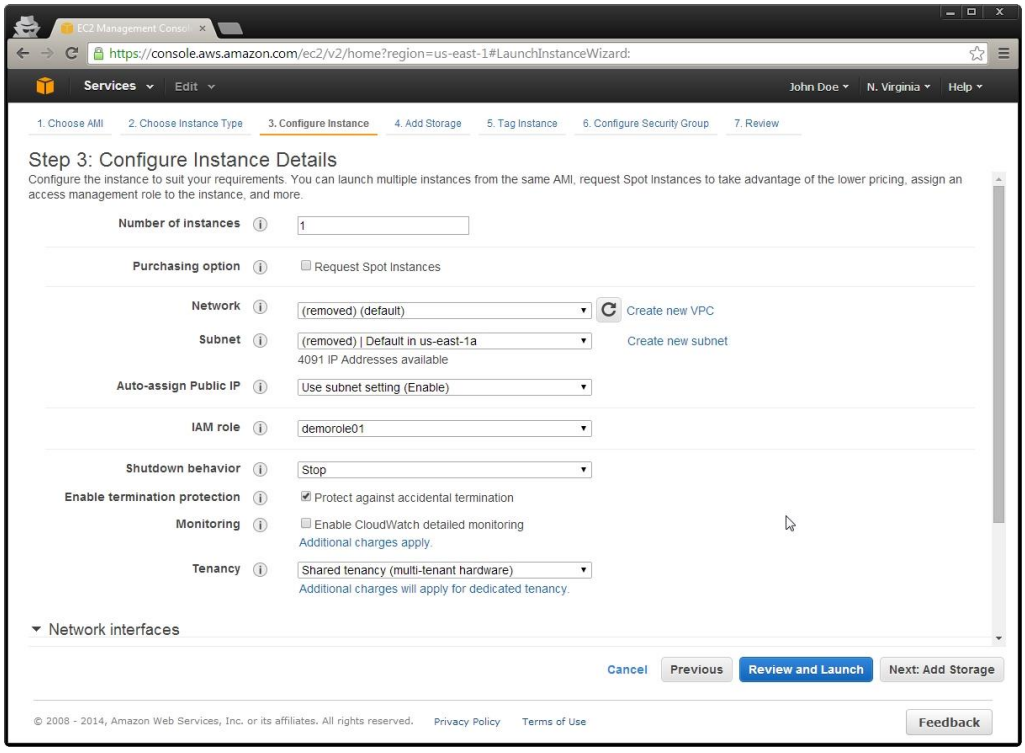
On the **Step 1: Choose an Amazon Machine Image** page, locate **Ubuntu Server 14.04 LTS (HVM)** and click **Select**. If you are more comfortable with a different version of Linux, you may select it, but it will make pieces of the guide difficult to follow.



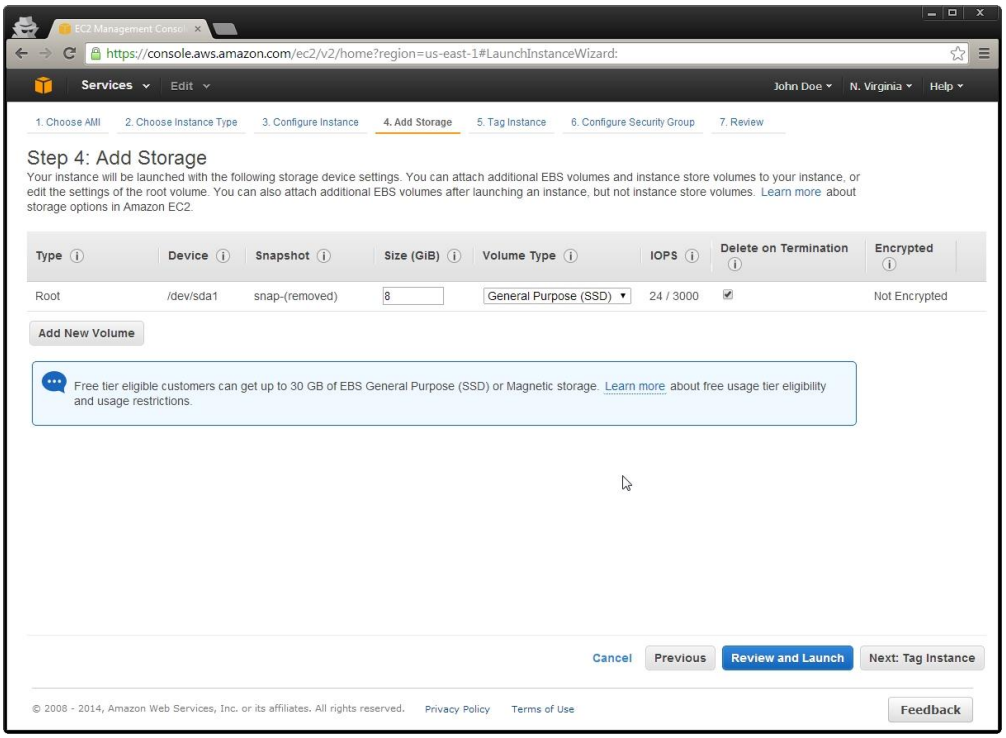
On the **Step 2: Choose and Instance Type** page, select the **t2.micro** instance. Click **Next: Configure Instance Details**.



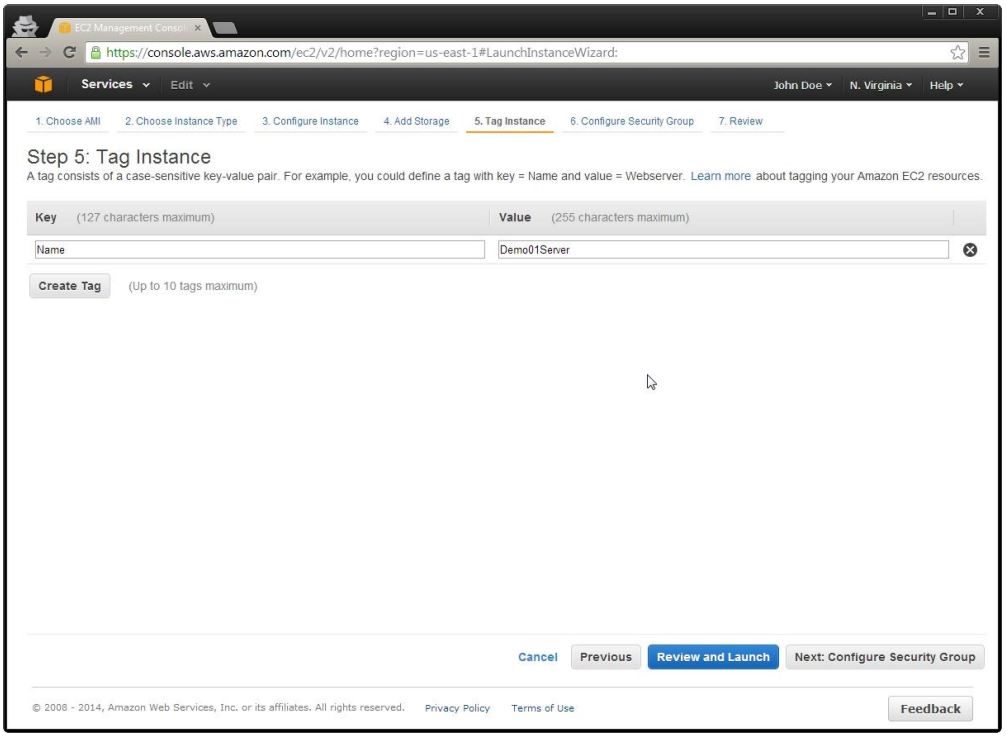
On the **Step 3: Configure Instance Details** page, select Stop from the **Shutdown behavior** dropdown. Check the box, **Enable termination protection**. If you would like the ability to make requests to the AWS API easily, you'll need to create an IAM Role and then select it the **IAM role** dropdown. This piece is not necessary to setup WordPress. Click **Next: Add Storage**.



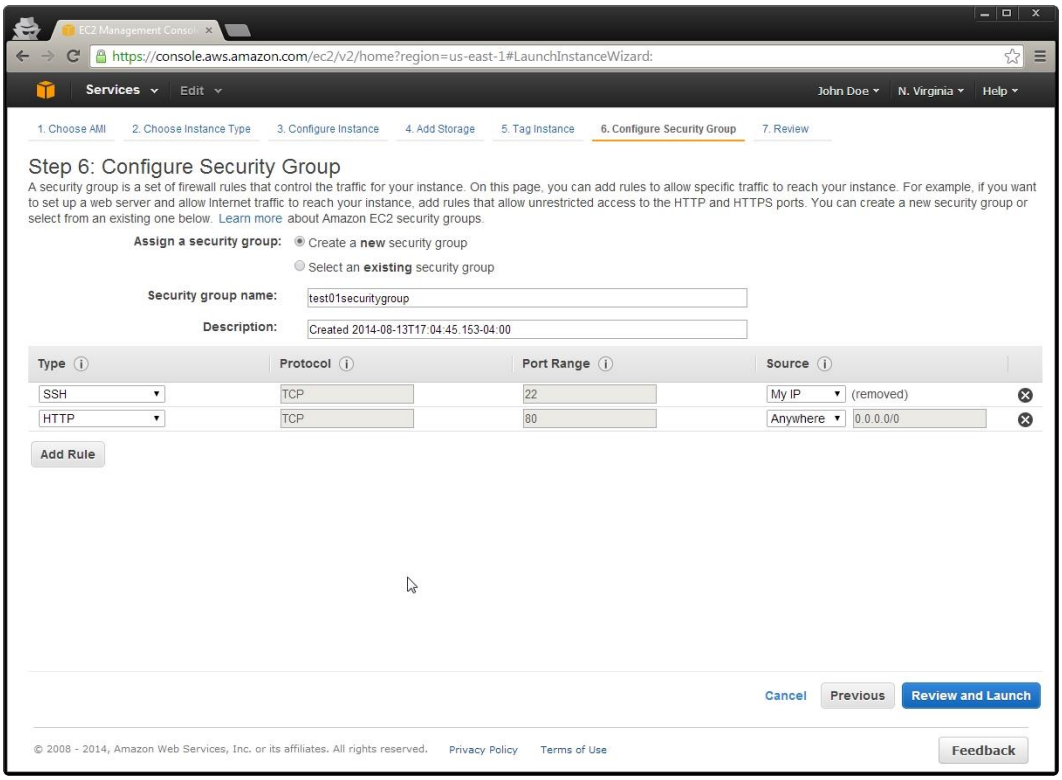
On the **Step 4: Add Storage** page, you can see the volume that will be created for the instance. The volume will essentially be the hard drive for your instance. All the files will be stored on the volume. No changes need to be made to this page unless you know you're going to have a very large amount of rich content like videos on your website. You can also change the size of the volume later, but it will require a few steps documented on http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ebs-expand-volume.html. To take maximum advantage of the **Free Tier**, you can change the size to 30 (GB). Click **Next: Tag instance**.



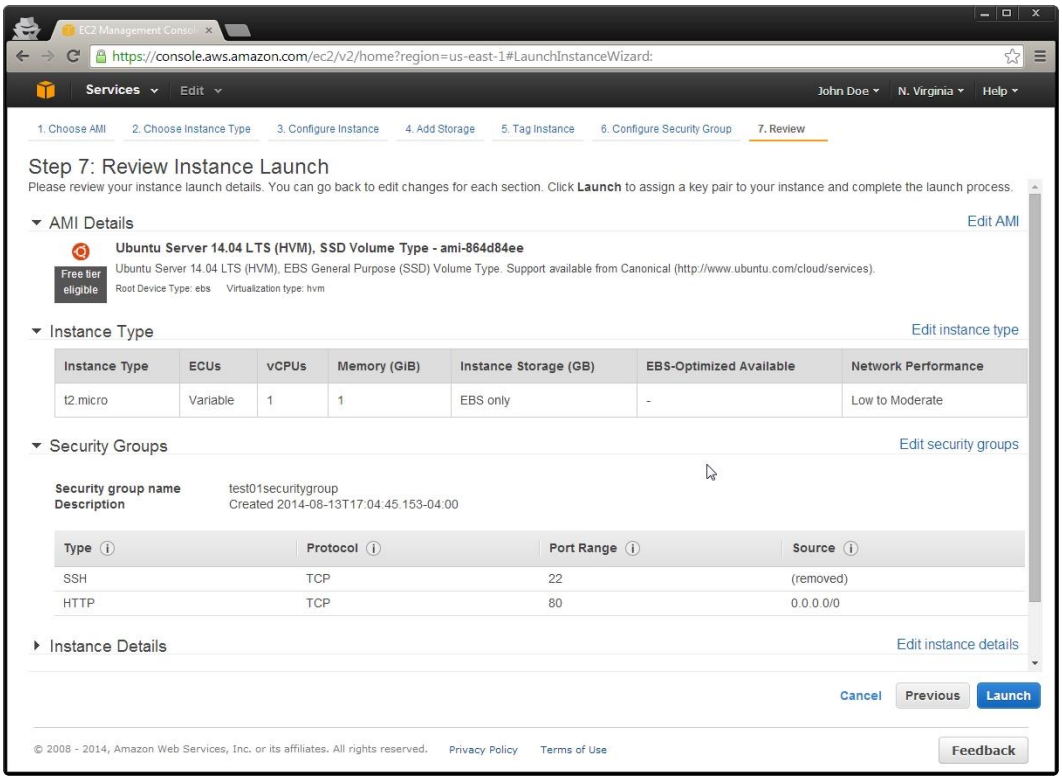
On the **Step 5: Tag instance** page, create a **Key** called Name with a **Value** of the name you would like to give to your instance. Click **Next: Configure Security Group**.



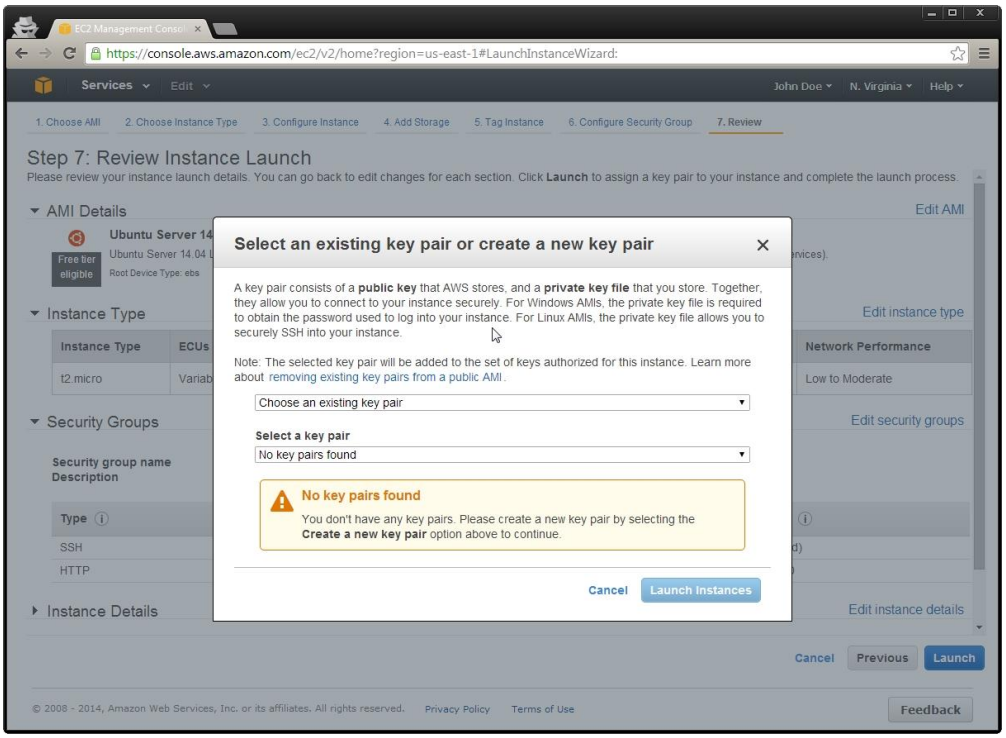
On the **Step 6: Configure Security Group** page, give the security group a name and a description. Click **Add Rule**, select **HTTP** from the **Type** dropdown, and select A**nywhere** from the **Source** dropdown. The security group controls the firewall for the instance. In order to access a website, you must connect to port 80 to retrieve the website. By default, Amazon disables access to all ports so you must explicitly define a rule that allows traffic to access port 80 (HTTP). Click **Review and Launch**.



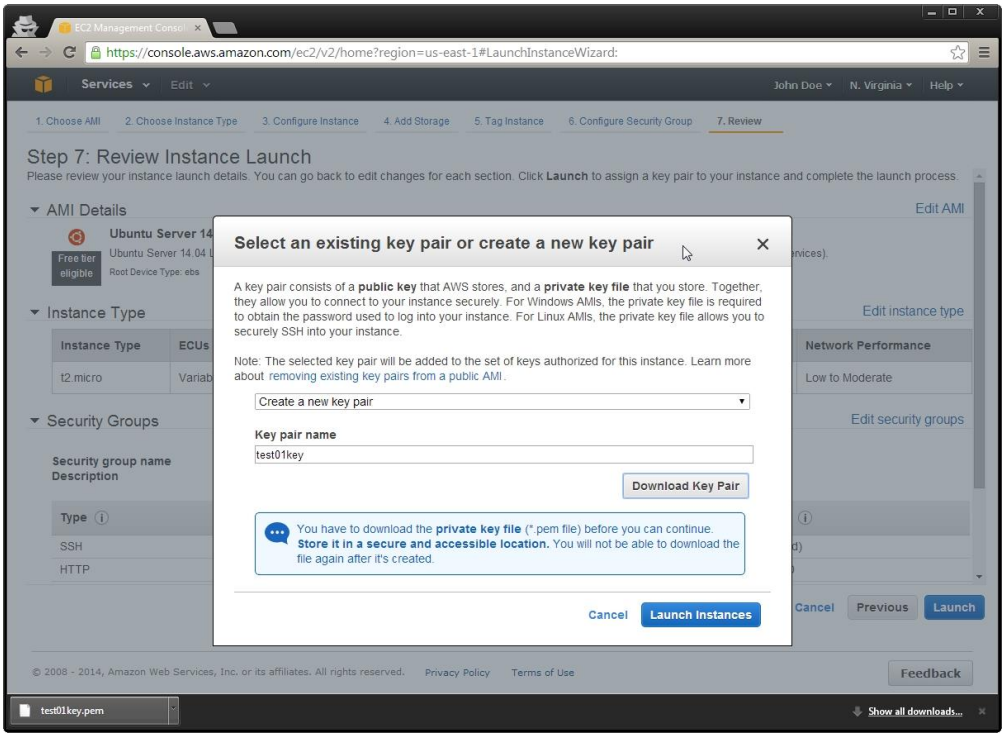
On the **Step 7: Review Instance Launch** page, verify all the information and click **Launch**.



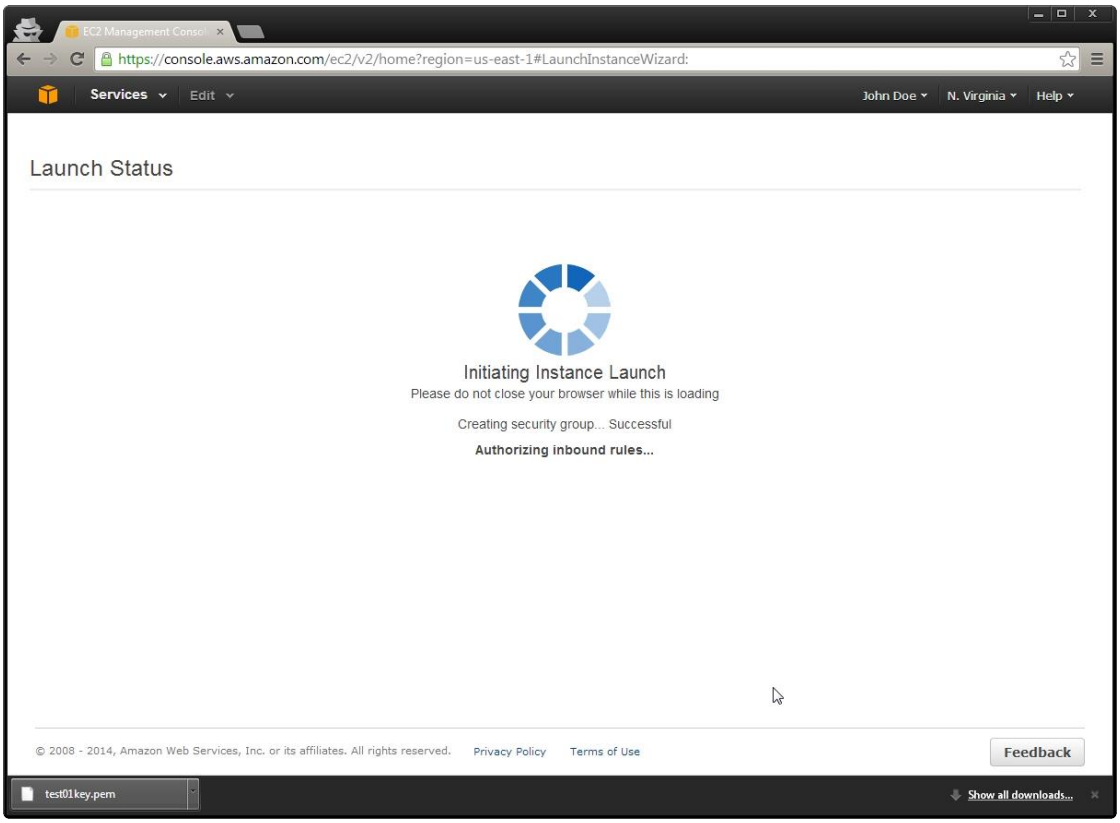
You should see a popup called **Select an existing key pair or create a new key pair**. A key pair is a public and private key that allows you to connect and log in to your instance. The private key should NEVER be shared with anyone else because it's the equivalent of a password. The public key can be given to anyone and will actually be stored on the instance in the /home/ubuntu/.ssh/authorized_keys file. If someone adds your public key to this file on their server, you will be able to log in to their server.



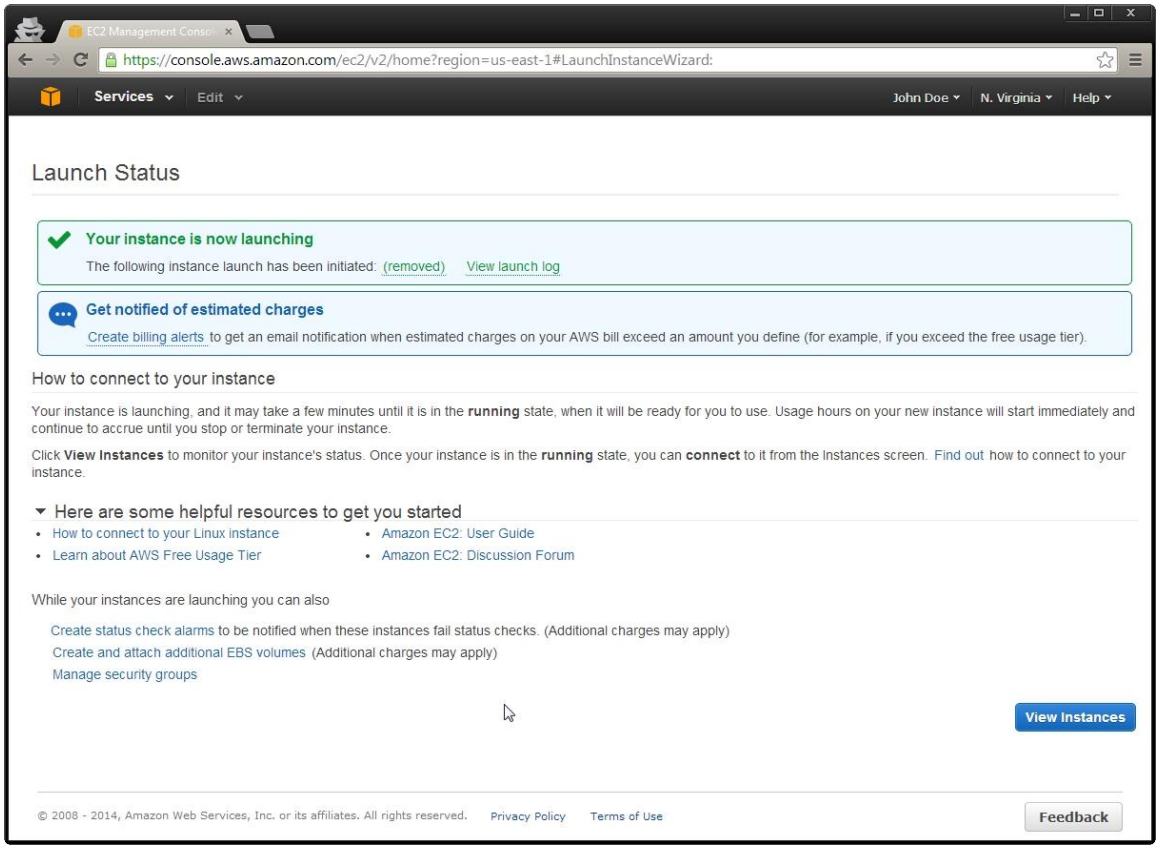
Select **Create a new key pair** from the first dropdown. Fill in the **Key pair name** textbox. Click **Download Key Pair**. Save the downloaded .pem file somewhere safe. If you've already created a key pair, you can select it from the first dropdown and use the same key pair for multiple instances. Click **Launch Instances**.



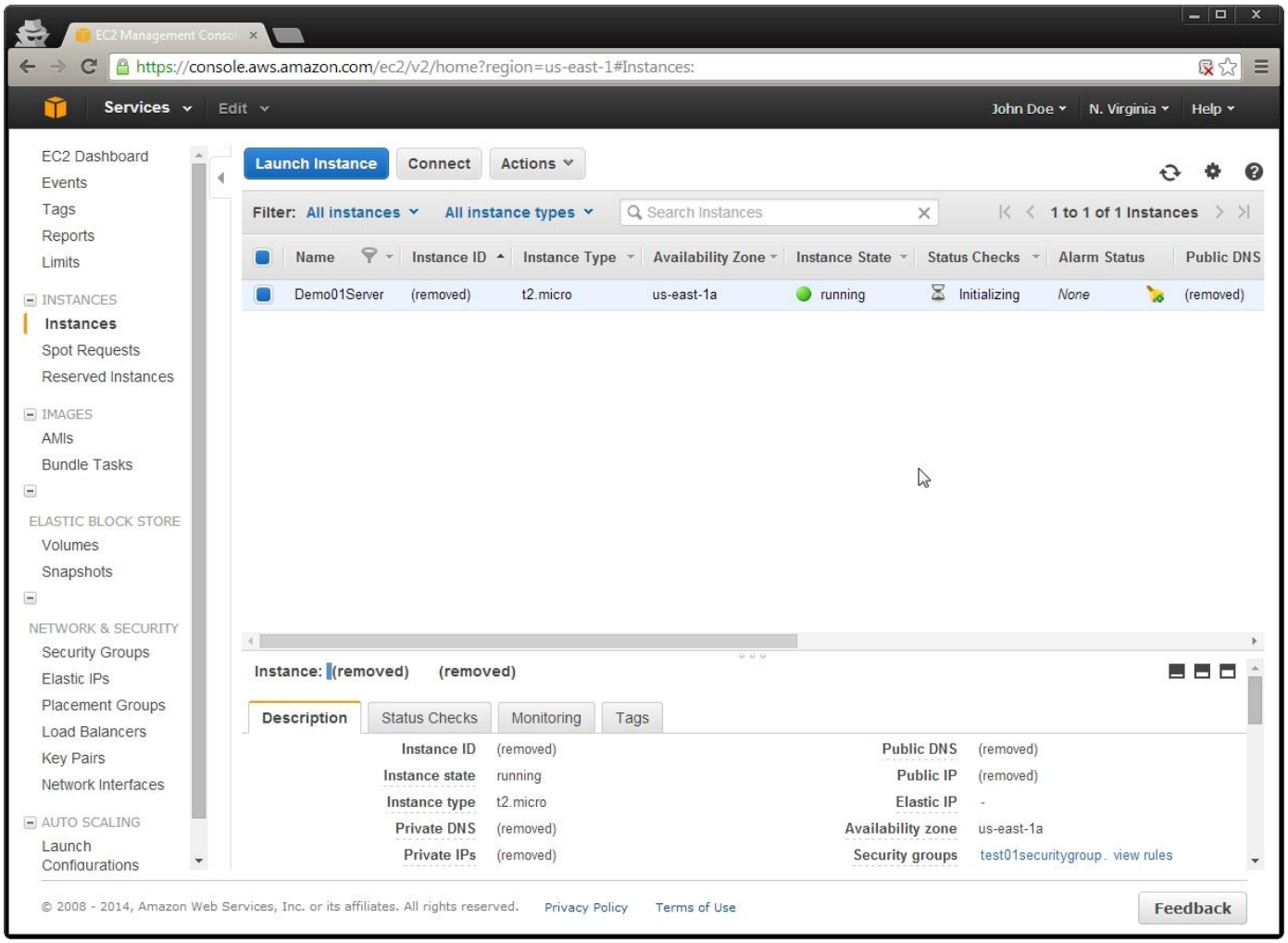
On the **Launch Status** page, you should see Amazon setting up the instance.



Once the instance is ready, you should see the message, **Your instance is now launching**. Click **View Instances**.



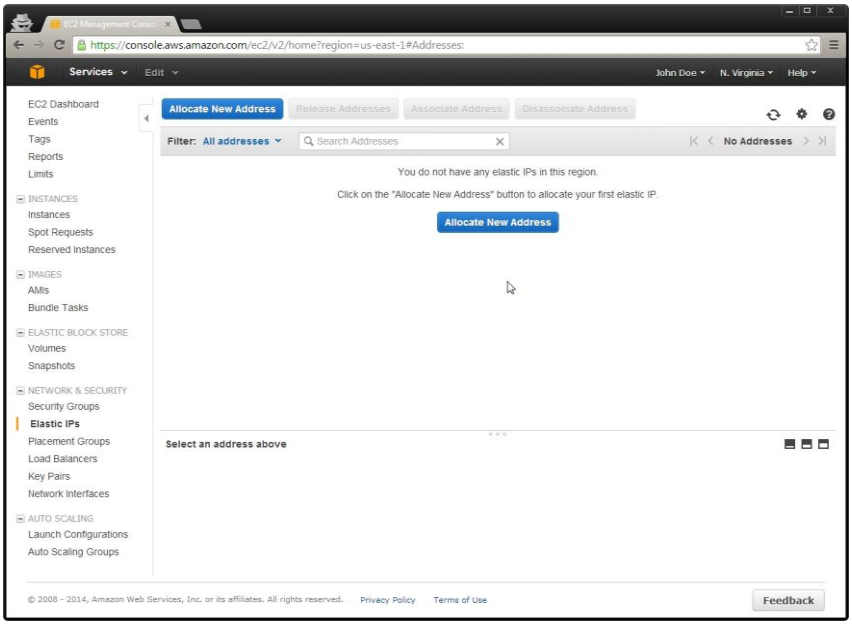
On the Instances page, you should see **Initializing** in the **Status Checks** column. Once the instance is fully started, it will change to **2/2 checks passed.**



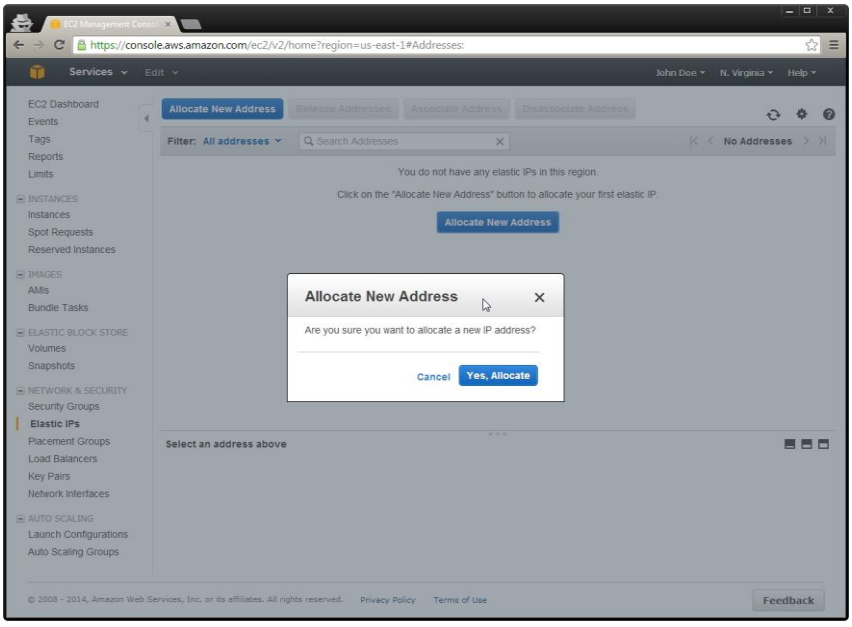
6.3 Assign an Elastic IP

IP stands for Internet Protocol. An IP address is the equivalent of a home address for a person. If I want to visit a friend, I'll use the home address to find out where he or she lives. An IP address is the location for a server on the internet. Every device on the internet has a public IP. The EC2 instance has two IPs: a private IP and a public IP. The private IP is used by other instances on the same network. The public IP is used by everything else on the internet. Amazon assigns a public IP to every instance, but if you restart your instance, the public IP will change. The domain name needs to be pointed at a public IP that does not change so Amazon a solution called Elastic IPs. Elastic IPs are public IPs that do not change. Every instance can have one Elastic IP free of charge.

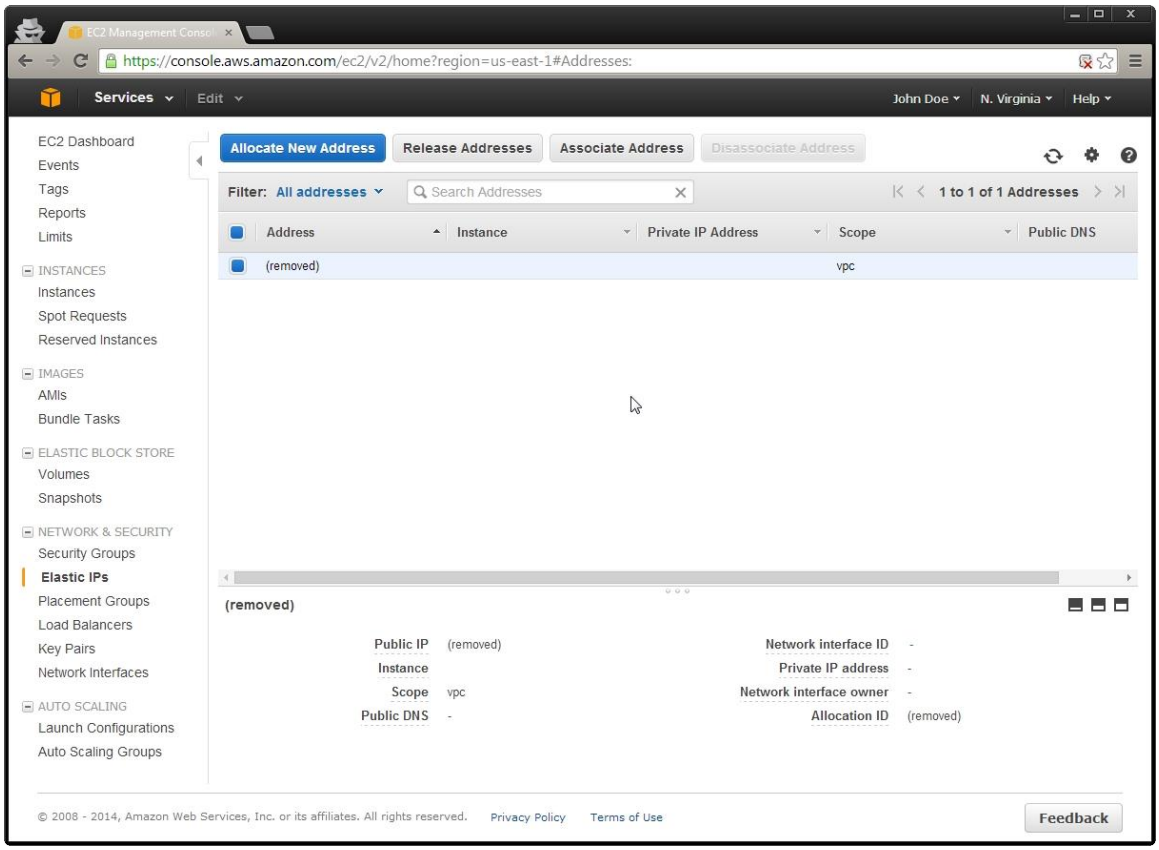
Navigate to the **AWS Management Console.** Click on **EC2**. To access the Ec2 service directly, open your web browser to https://console.aws.amazon.com/ec2. Click **Elastic IPs** on the left menu under the **Network & Security** menu. Click click **Allocate New Address**.



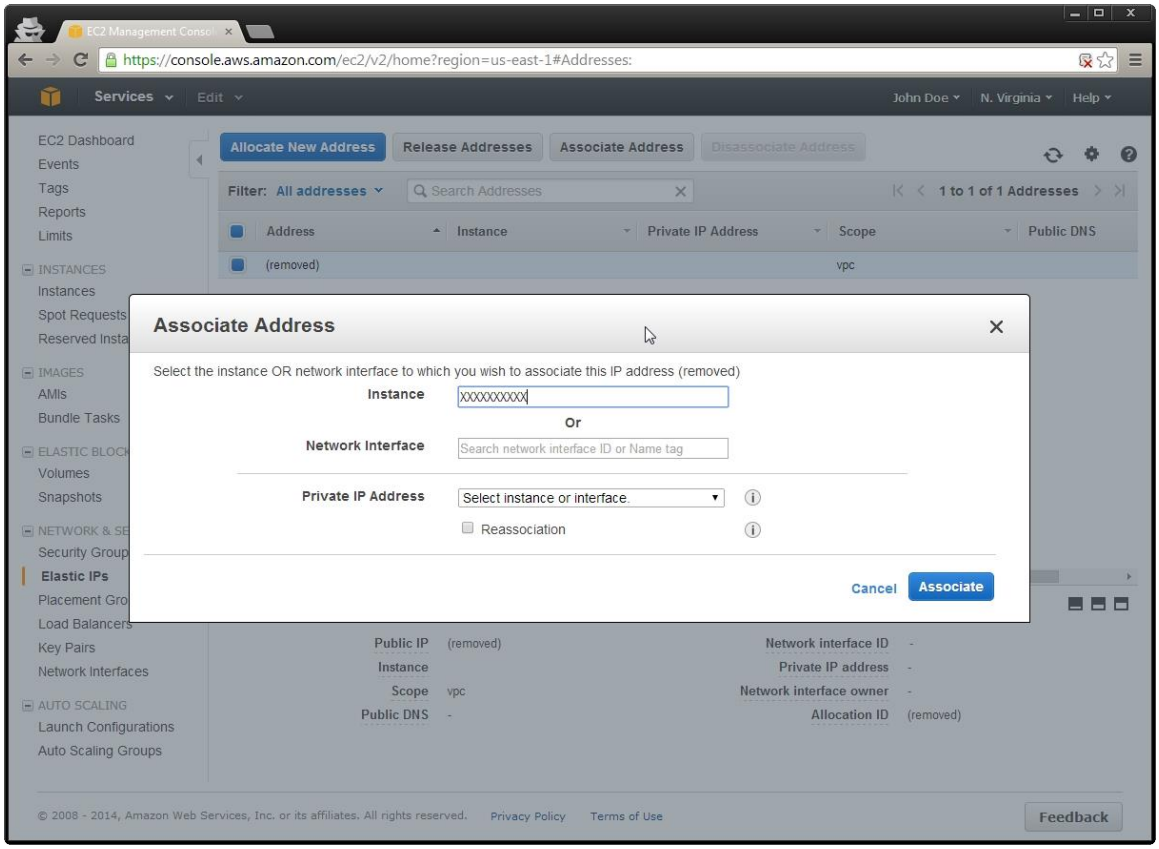
On the **Allocate New Address** dialog, click **Yes, Allocate.**



Click on the new IP address and click **Associate Address**. Save the IP so you can reference it later.



On the **Associate Address** dialog, select the instance to receive the Elastic IP and then click **Associate**.

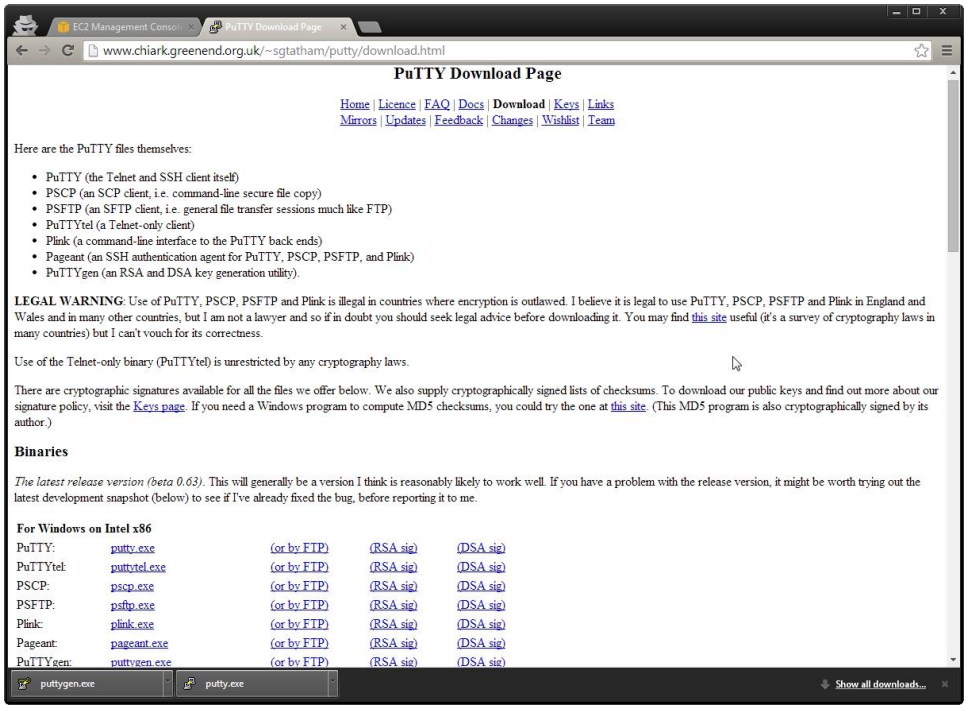


7 Access an Instance

To connect to an AWS instance, you will need an SSH client. SSH stands for Secure Shell and allows you to send commands to a server through an encrypted connection. PuTTY, a free SSH client, will be used for this tutorial. You'll also need PuTTYgen to convert the .pem file into a PuTTY compatible private key.

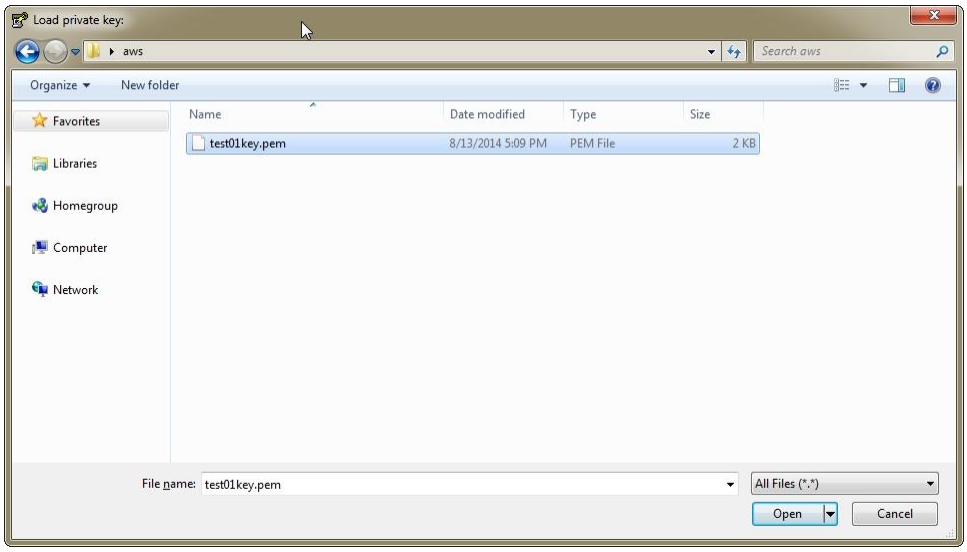
7.1 Convert .PEM Key to .PPK PuTTY Key using PUTTYgen

Open your web browser to http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html and click on putty.exe and puttygen.exe to download both applications.



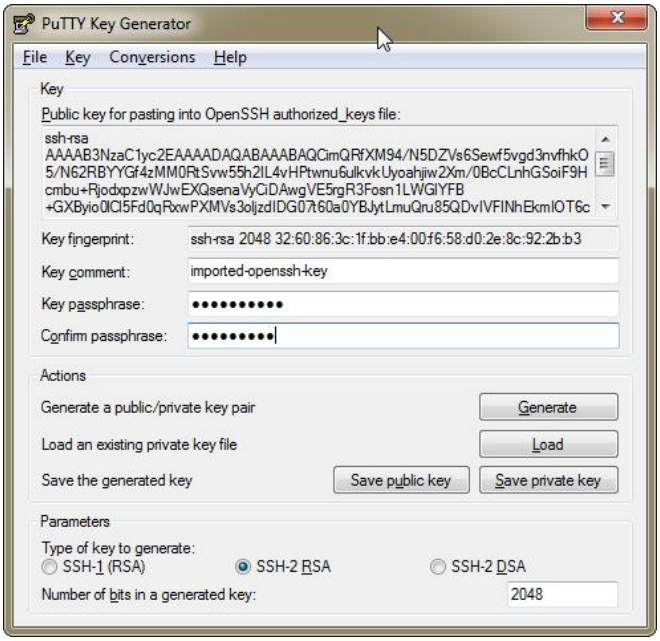
Run **puttygen.exe**. Click **Load** to load a private key.

On the **Load private key** screen, navigate to the .pem file you downloaded from Amazon and click **Open**.

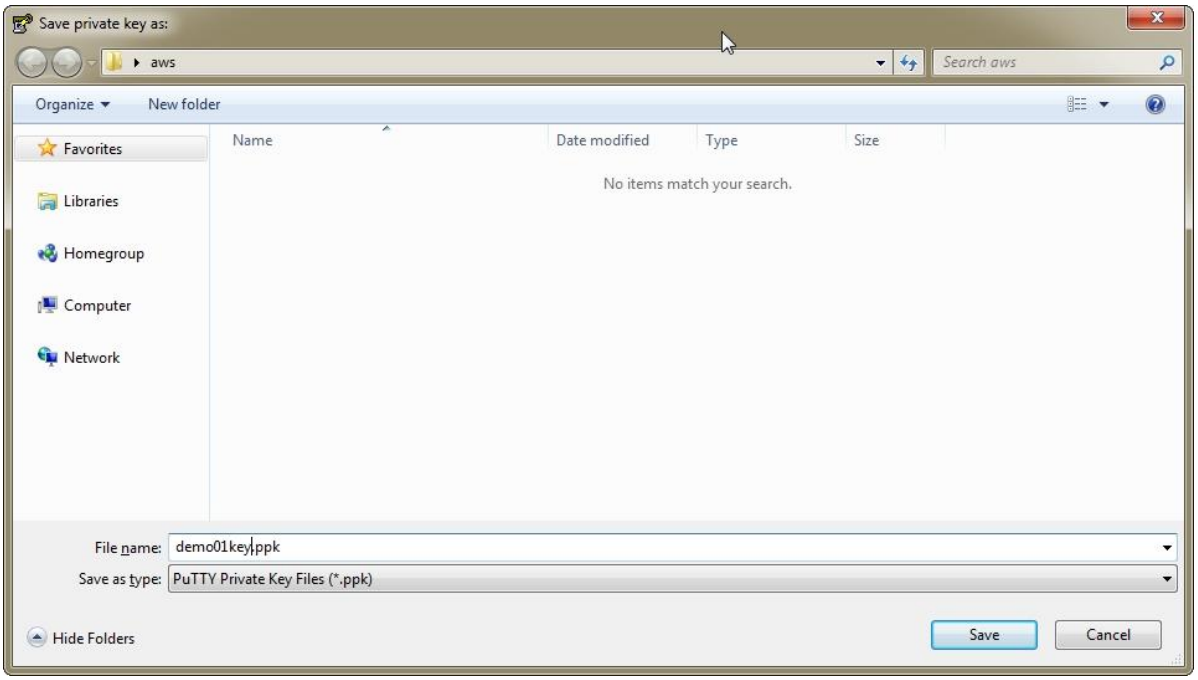


You should receive a notice that says, **Successfully imported foreign key**. Click **OK**.

On the **Putty Key Generator** form, you should see the public key at the top. This is the public key that is already stored in the /home/ubuntu/.ssh/authorized_keys file on the EC2 instance. Fill in the **Key passphrase** and **Confirm Passphrase** textboxes with a new password that you will type in every time you connect to your EC2 instance. Click **Save private key**.



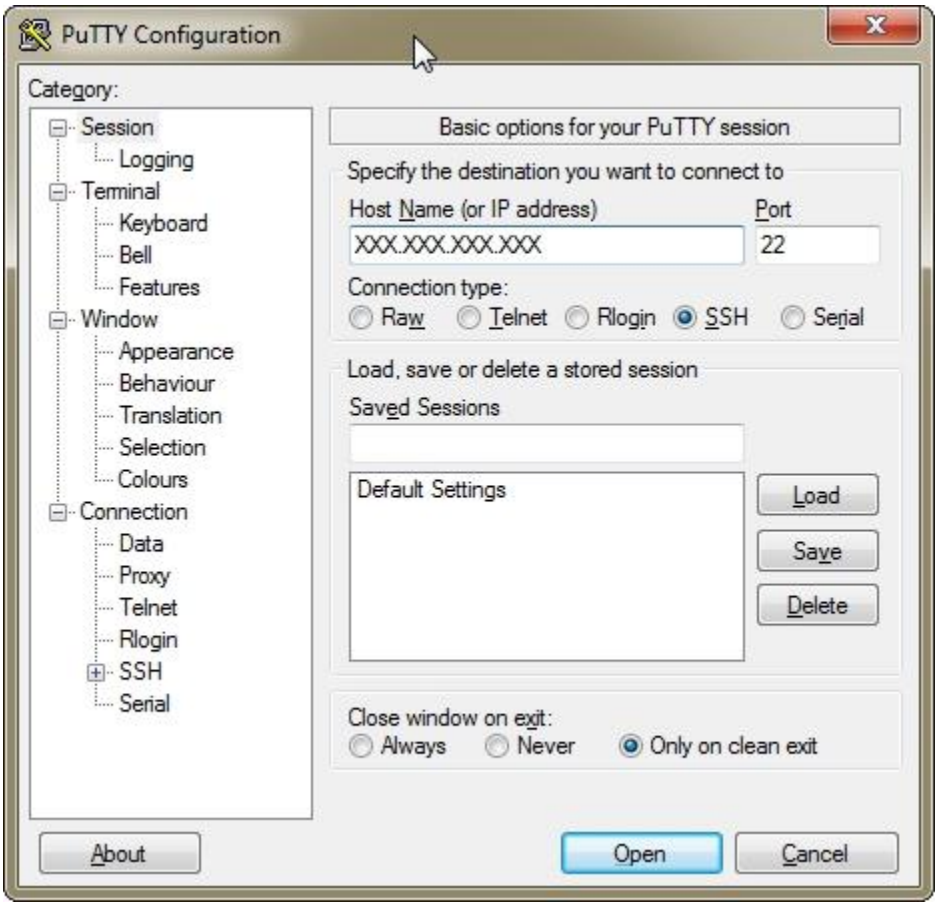
On the **Save private key as** dialog, navigate to a secure location for the key and type in a name. Click **Save**.



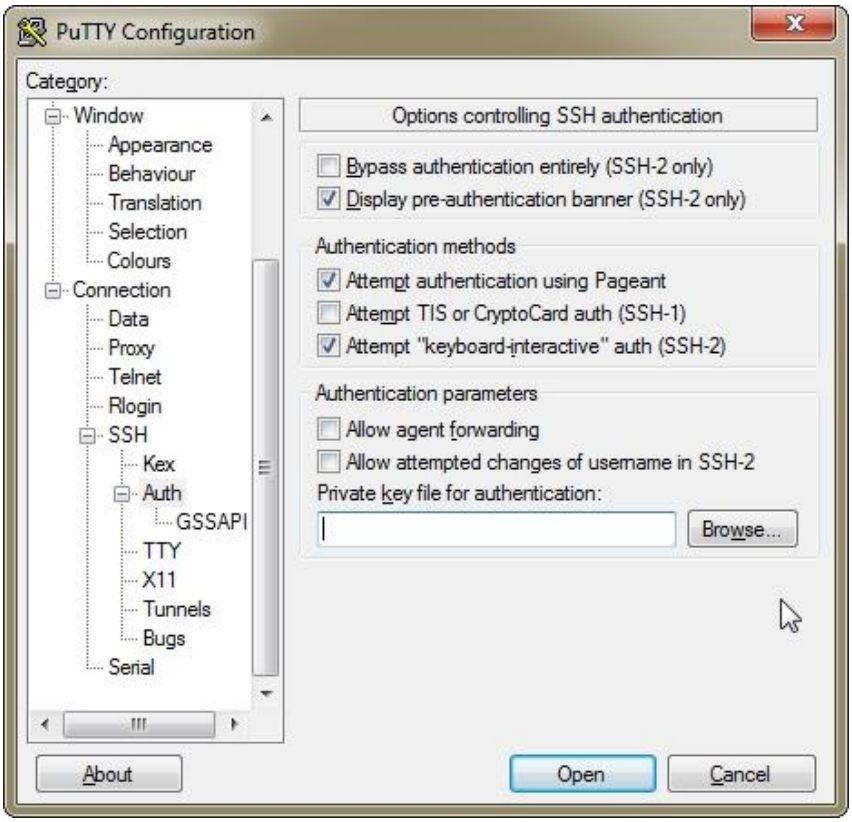
You can exit out of PuTTYgen.

7.2 Connect to an Instance using PuTTY

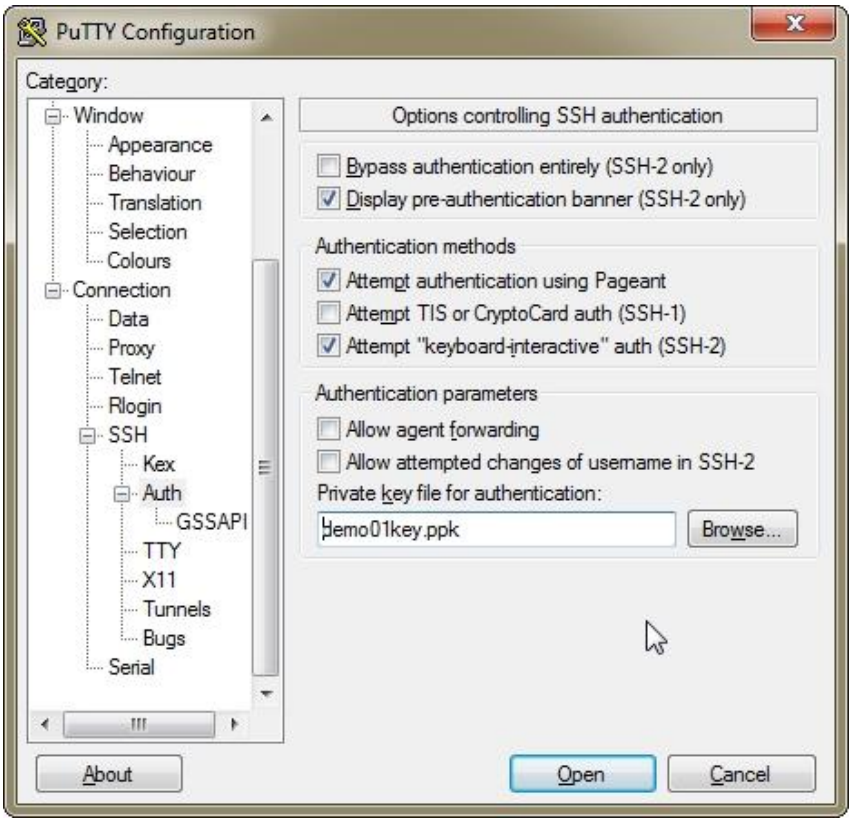
Run putty.exe. Type in the Elastic IP (public IP) or domain name for the instance into the **Host Name** textbox.



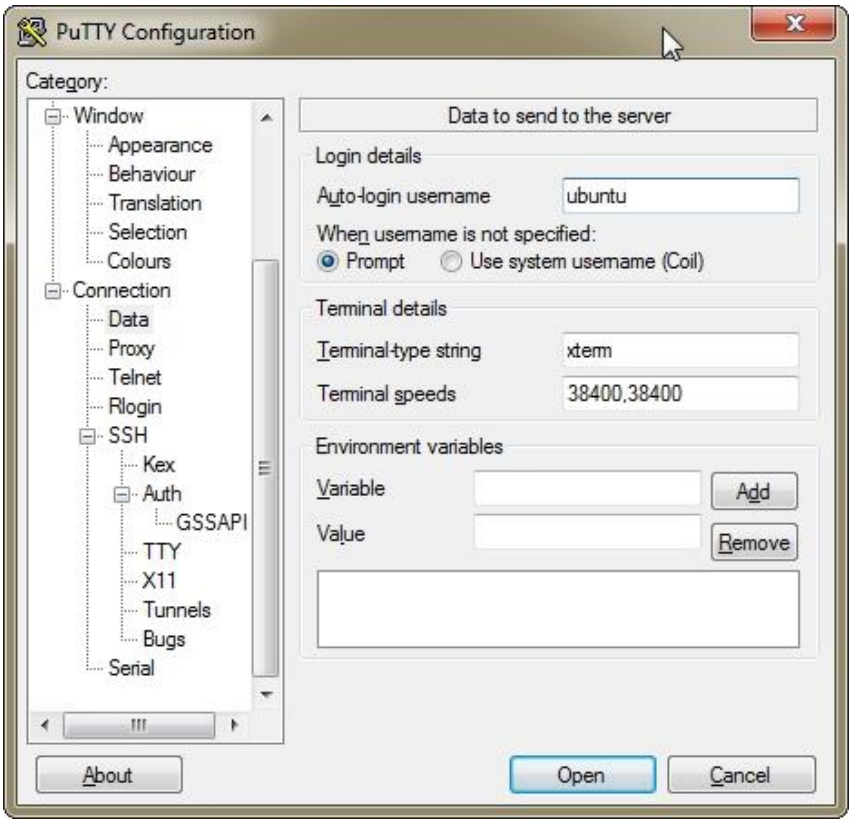
Using the left menus, navigate to **Connection** -> **SSH** -> **Auth**. Click the **Browse** button to the right of the **Private key file for authentication** textbox.



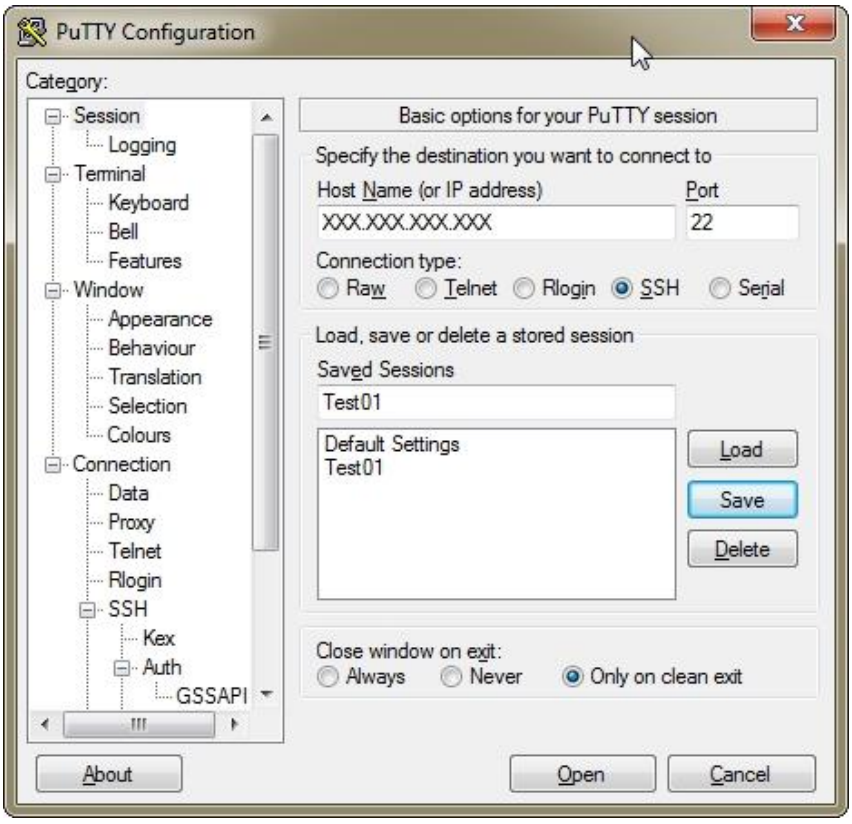
On the **Select private key file** dialog, select the .PPK private key and click **Open** so it shows up in the **PuTTY Configuration** form.



Using the left menus, navigate to **Connection** -> **Data**. Fill in the **Auto-login username** textbox with **ubuntu**.

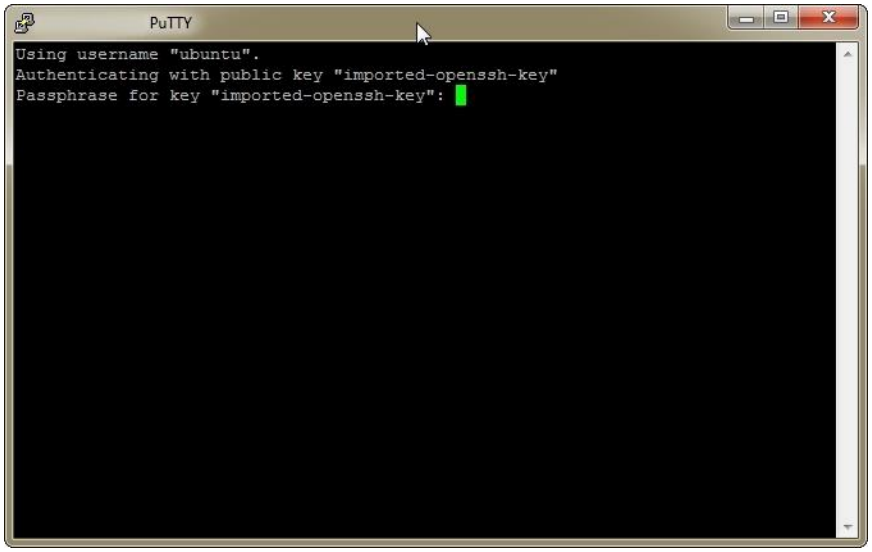


Using the left menus, navigate to **Session**. Fill in the **Saved Sessions** textbox with the name of the server so you can recognize it. Click **Save**. The next time you open PuTTY, you can easily click on the session name and it will reload all the settings. Click **Open** to connect to the server.

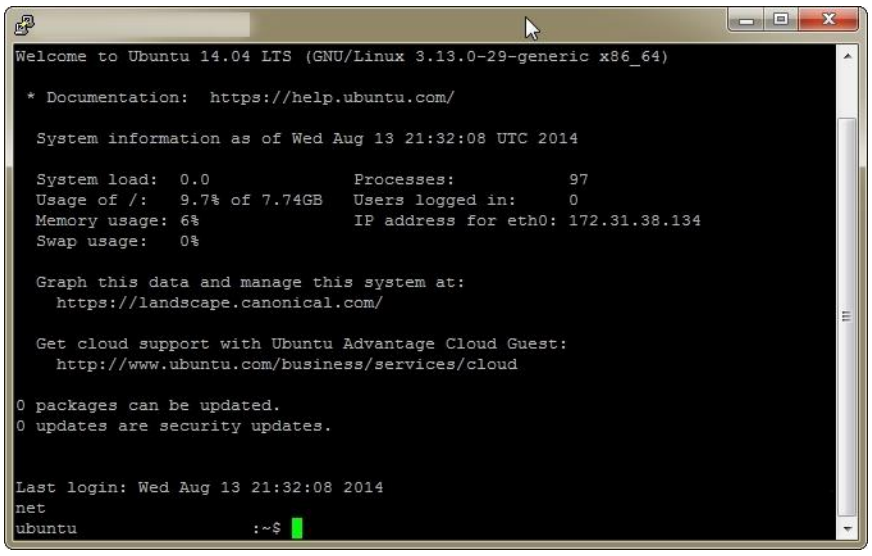


If you are prompted with a PuTTY Security Alert, just click **Yes**. You will see this alert the first to you connect to every server. If this prompt appears more than one, it may mean you're not connecting to the correct instance.

You should get a terminal window that asks for the passphrase you created in PuTTYgen. Type in the passphrase and press **Enter**.



You should see a terminal window that says **Welcome to Ubuntu** at the top. You've successfully connected to the Amazon EC2 instance.



8 Buy a Domain Name using Amazon Route 53

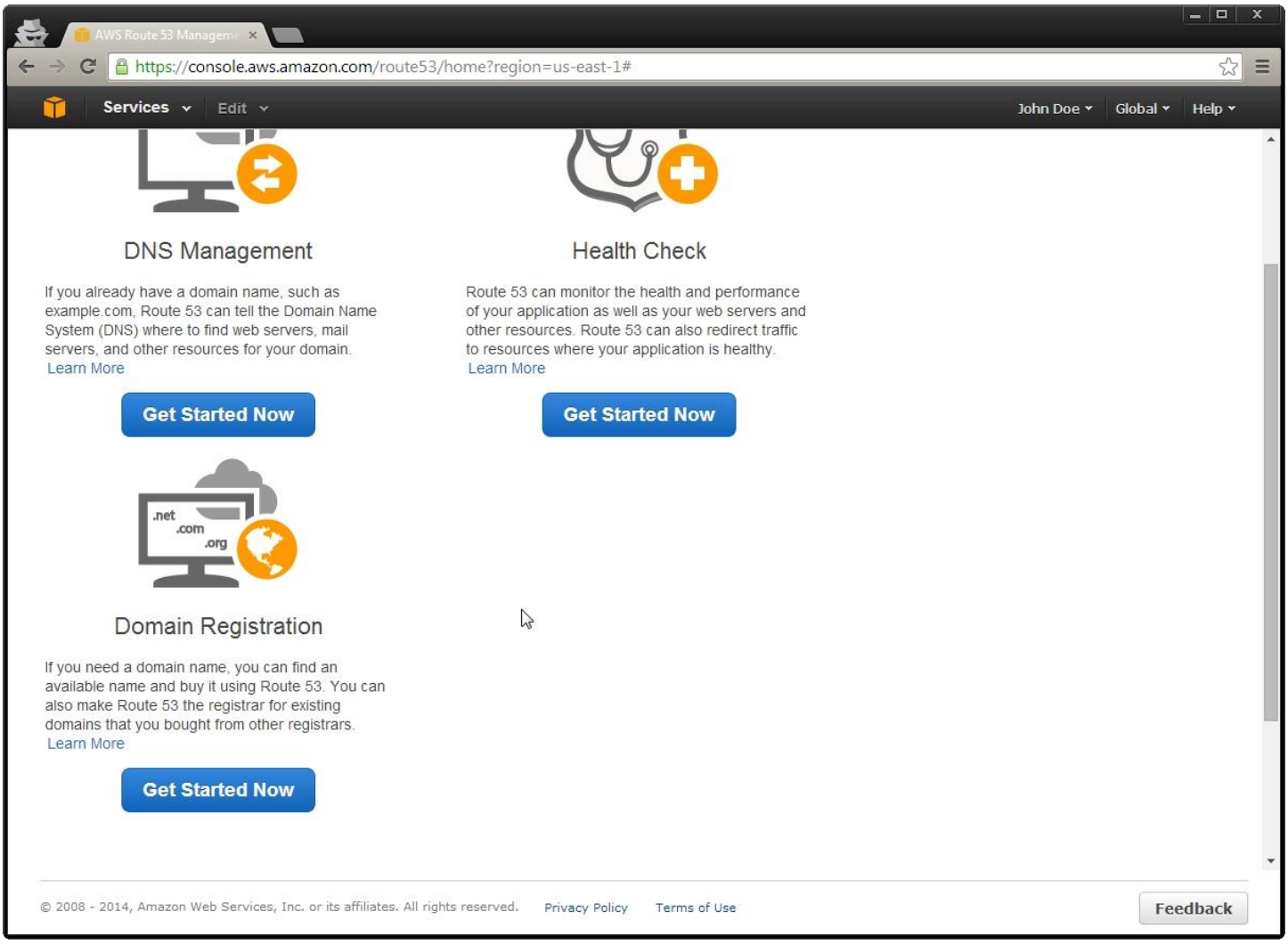
You don't actually need a .com or .net domain name to setup WordPress. You can run it directly from an IP address if you would like. Domain names just make it much easier for you and other people to access your website. The .com domains are $12 a year, .net domains are $10 a year, and .org domains are $12 a year. There are also many other top-level domains (TLDs) (.me, .name, etc) available for purchase and range in price. The DNS will cost about $0.90 per month for a typical website.

8.1 Domain WHOIS Record Privacy Protection

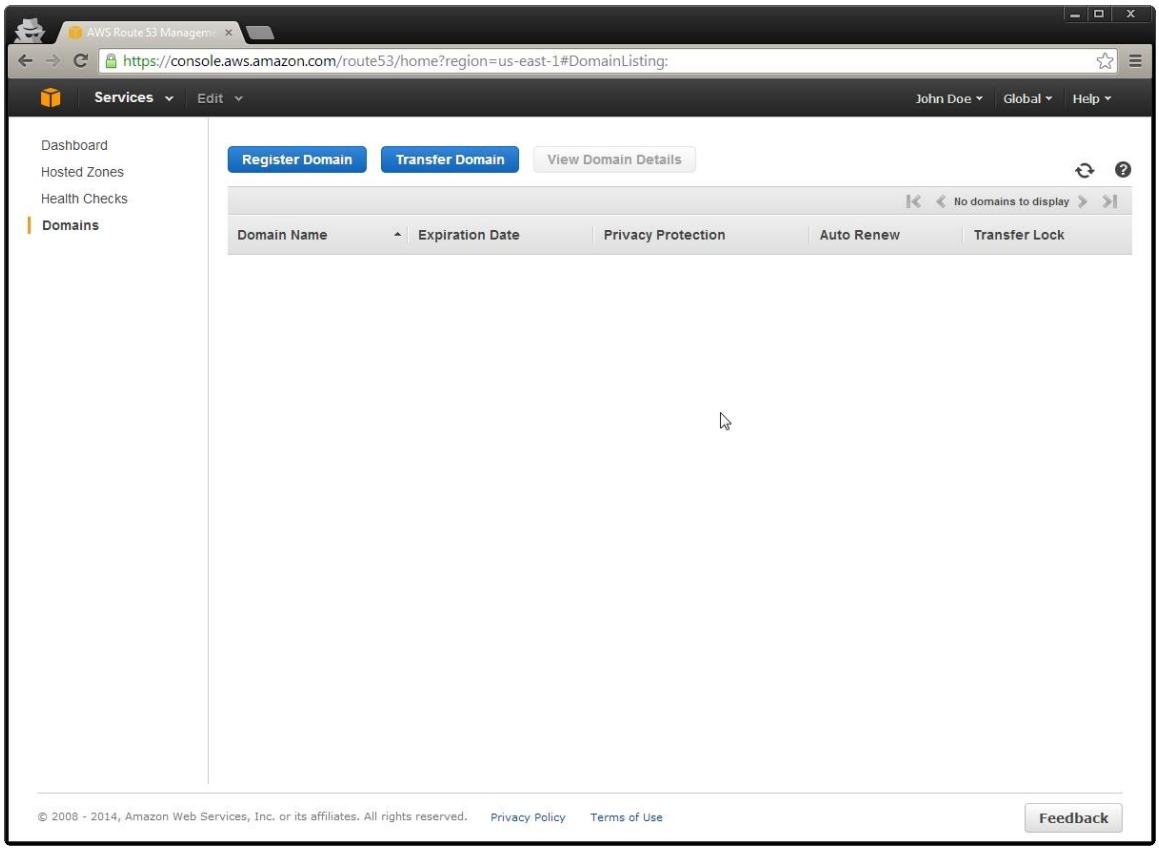
Amazon also offers privacy protection for your WHOIS record at no additional cost. When you buy a domain name, you have to provide information like a name, address, email, and phone number that is publically available. If you use your home address when you register for your domain and you don't want other people to see that information, you can enable privacy protection. Many other domain registrars charge an additional fee for privacy protection.

8.2 Register a Domain

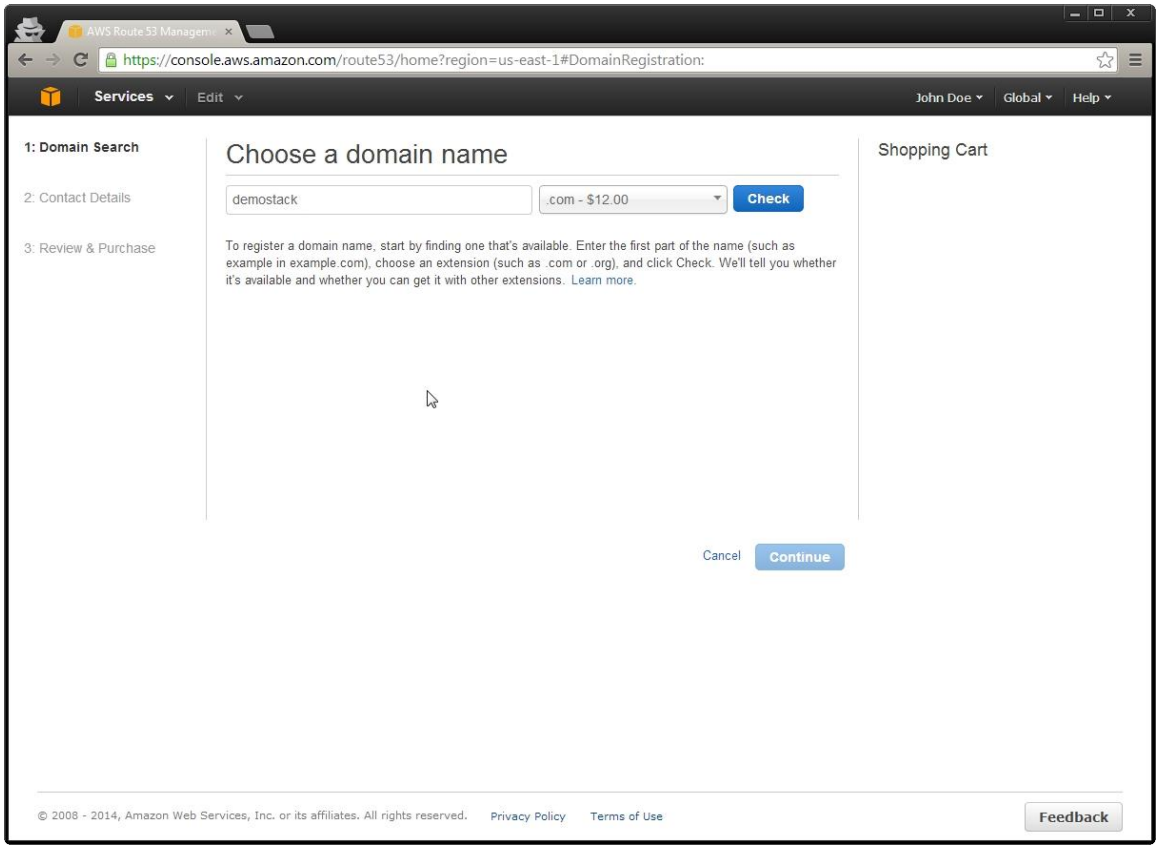
Navigate to the **AWS Management Console.** Click on **Route 53**. To access the Route 53 service directly, open your web browser to https://console.aws.amazon.com/route53. Scroll to the bottom of the f so you can see the **Domain Registration** section. Click **Get Started Now**.



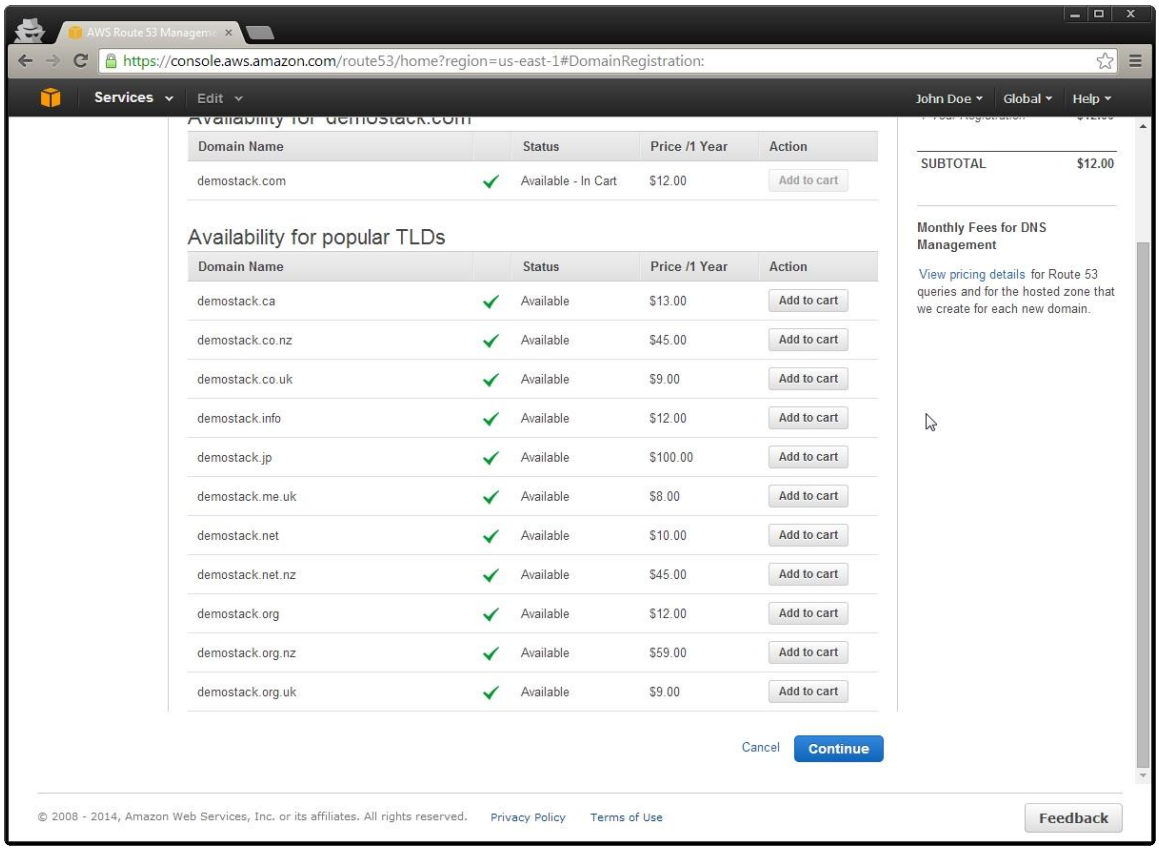
On the **Domains** page, click **Register Domain**. You also have the ability to transfer a domain to Amazon if you own one.



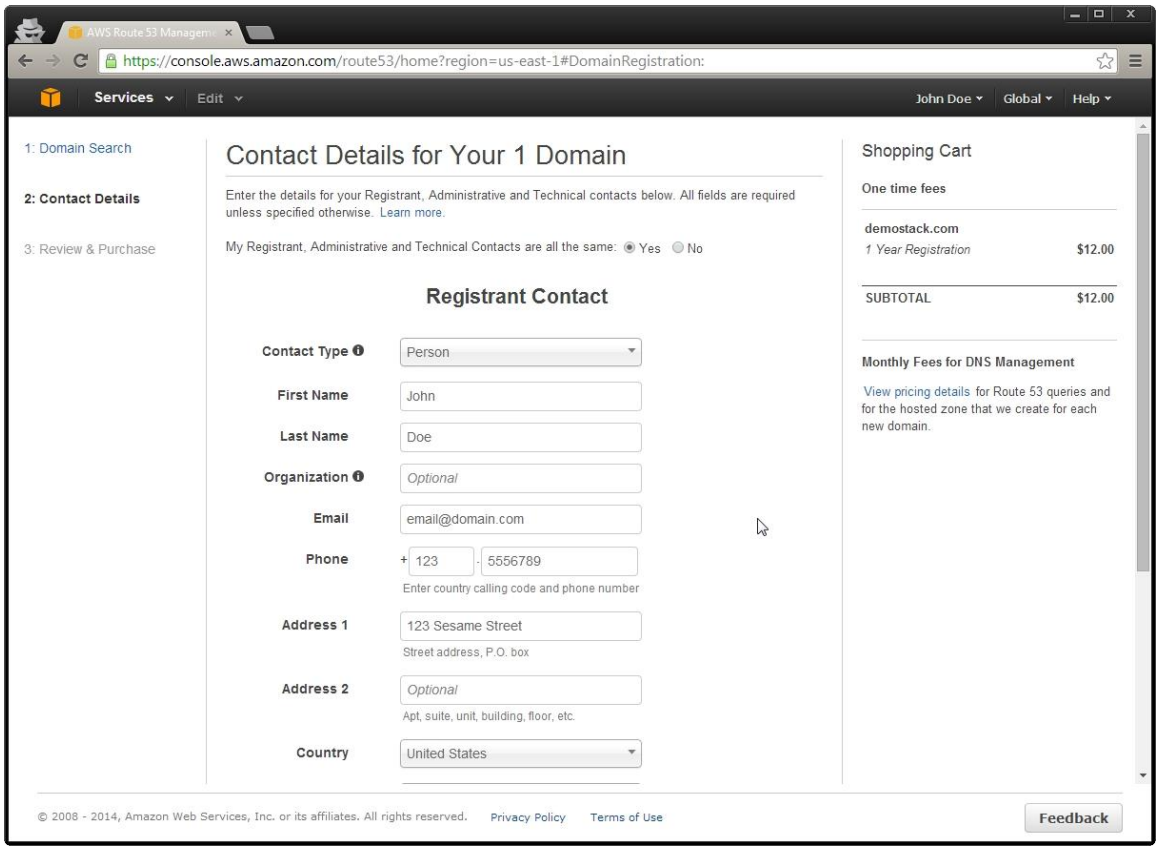
On the **Choose a domain name** page, fill in the textbox with the domain name you would like to purchase. Choose the TLD from the dropdown. Click **Check**.



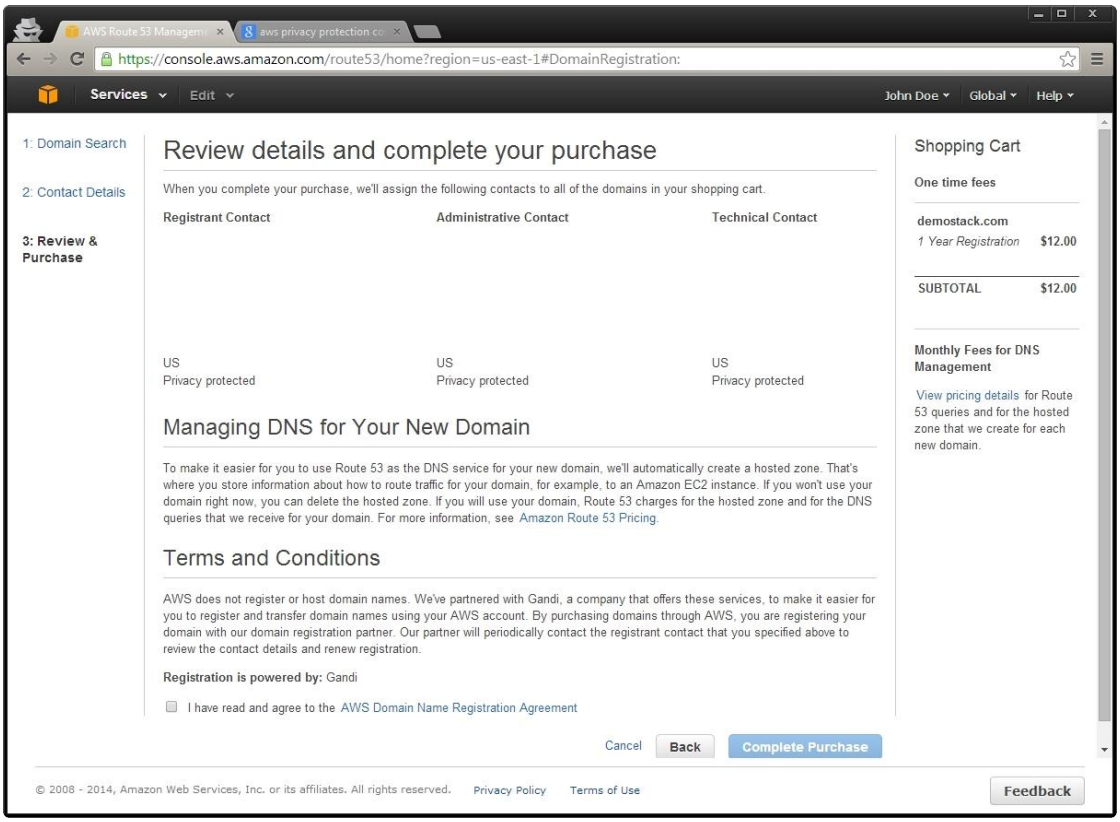
If the domain name you want is available, click **Add to cart**. Scroll to the bottom of the page and click **Continue**.



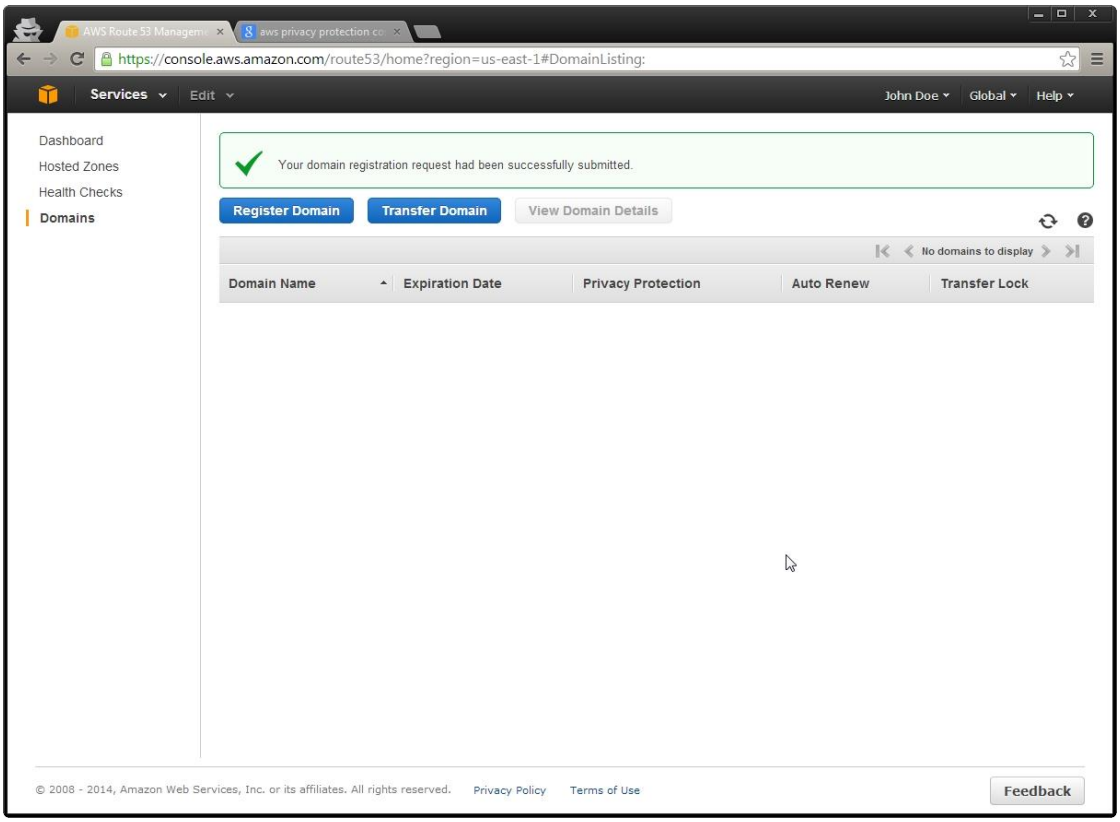
On the **Contact Details** page, fill in the contact information. You have the option to enable **Privacy Protection** on this page. Click **Continue**.



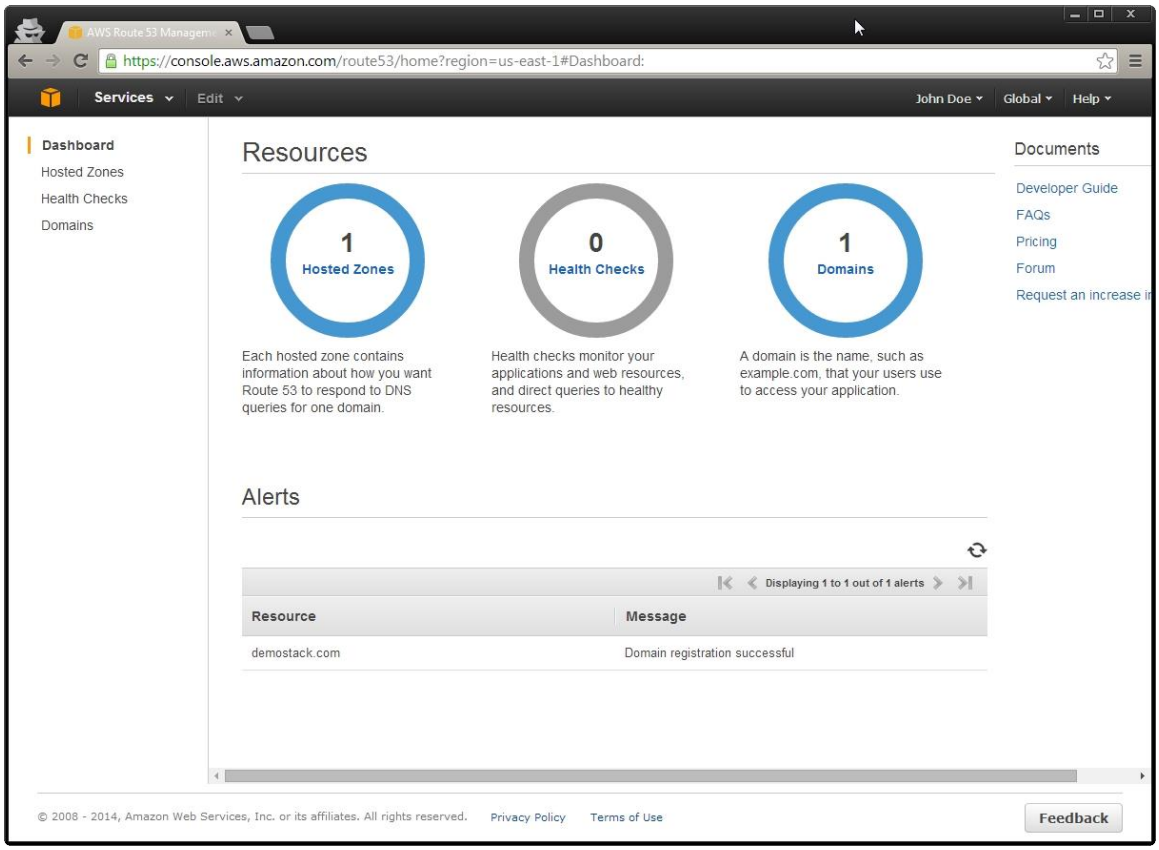
On the Review details and complete your purchase page, verify all your information and read the **AWS Domain Name Registration Agreement**. Once you are ready, click **Complete Purchase**.



On the **Domains** page, you should see a notice at the top that says **Your domain registration request has been successfully submitted**.



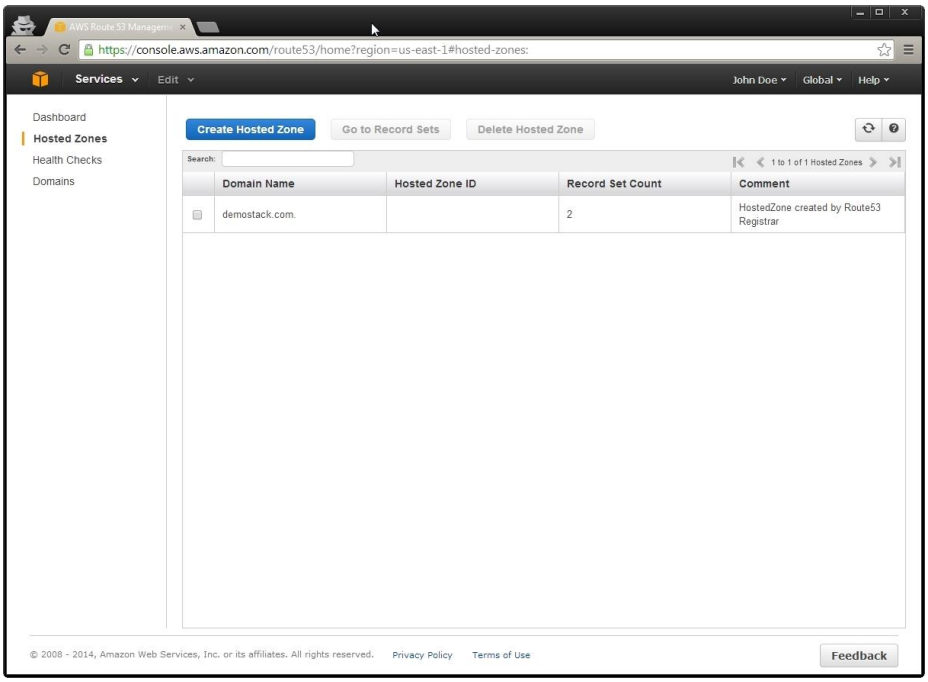
It may take a few minutes for the domain to appear in Route 53, but once it does, you should see the message, **Domain registration successful.**



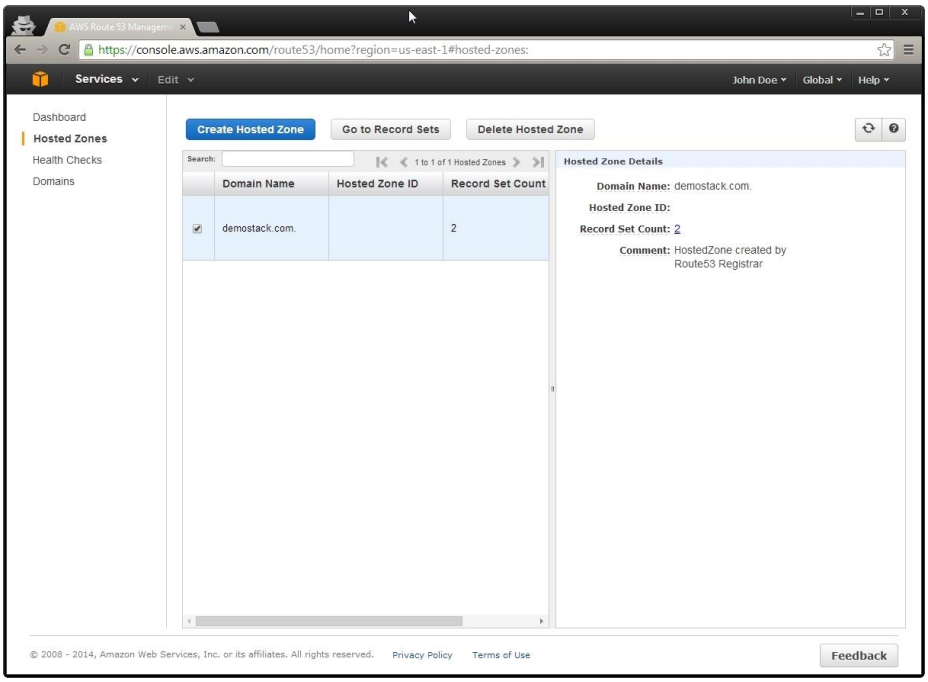
9 Set up DNS using Amazon Route 53

Once the domain name is available in Route 53, you can add different types of records. The most common records are name server (NS), address (A), and mail exchanger (MX) records. The NS records point to the server that holds all the other records. When you register a domain, the NS records are usually automatically set. The A records point a domain or subdomain to an IP address. The MX records point to your email server so services like Gmail and Hotmail know where to deliver your email.

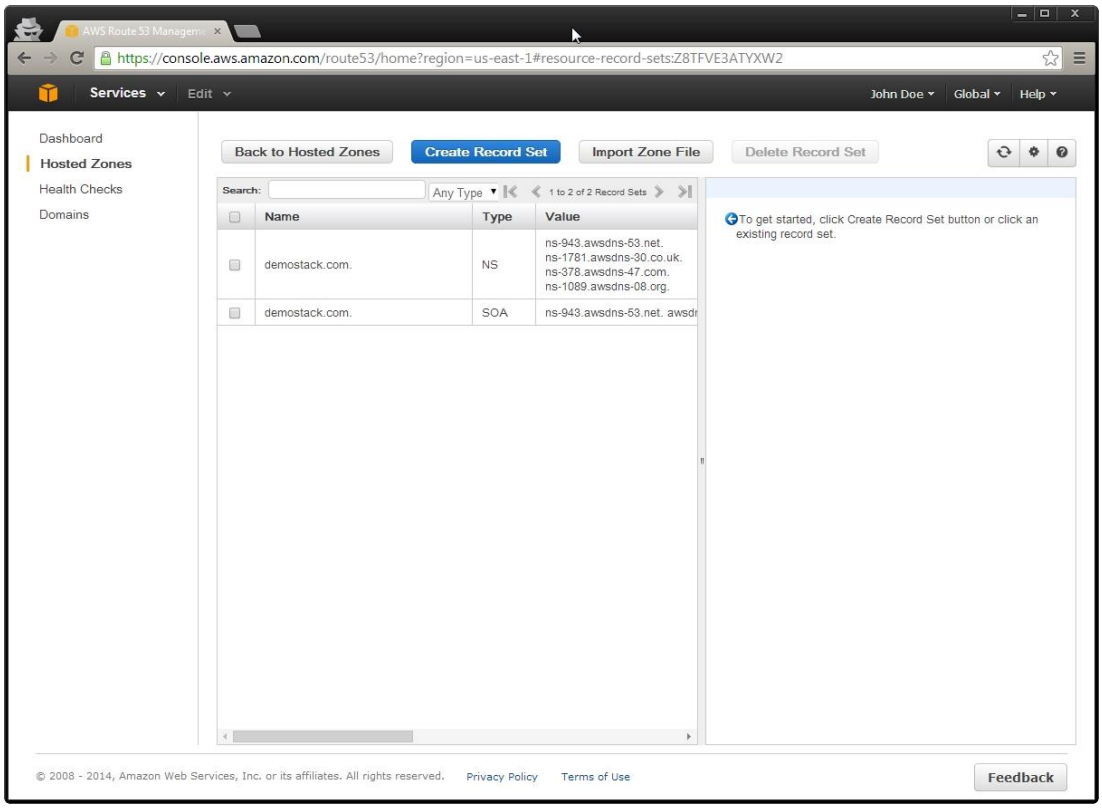
Navigate to the **AWS Management Console.** Click on **Route 53**. To access the Route 53 service directly, open your web browser to https://console.aws.amazon.com/route53. Click **Hosted Zones** which is in left menu.



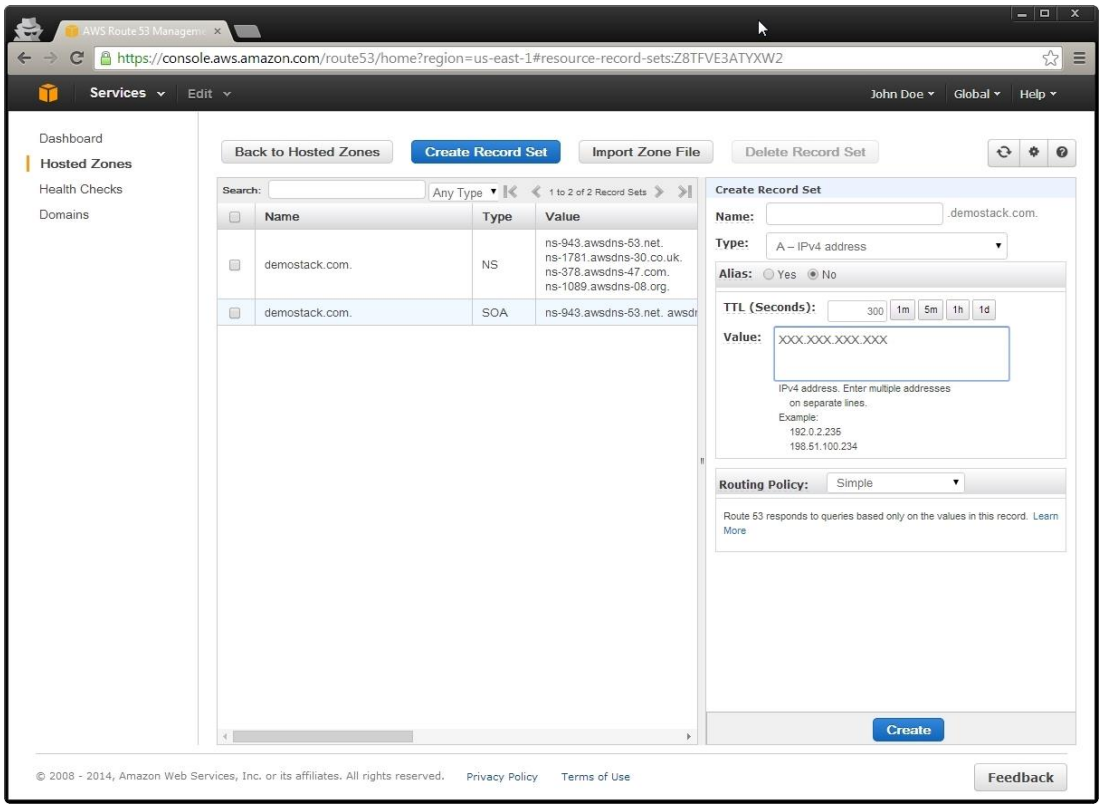
Click on your domain. Click **Go To Record Sets**.



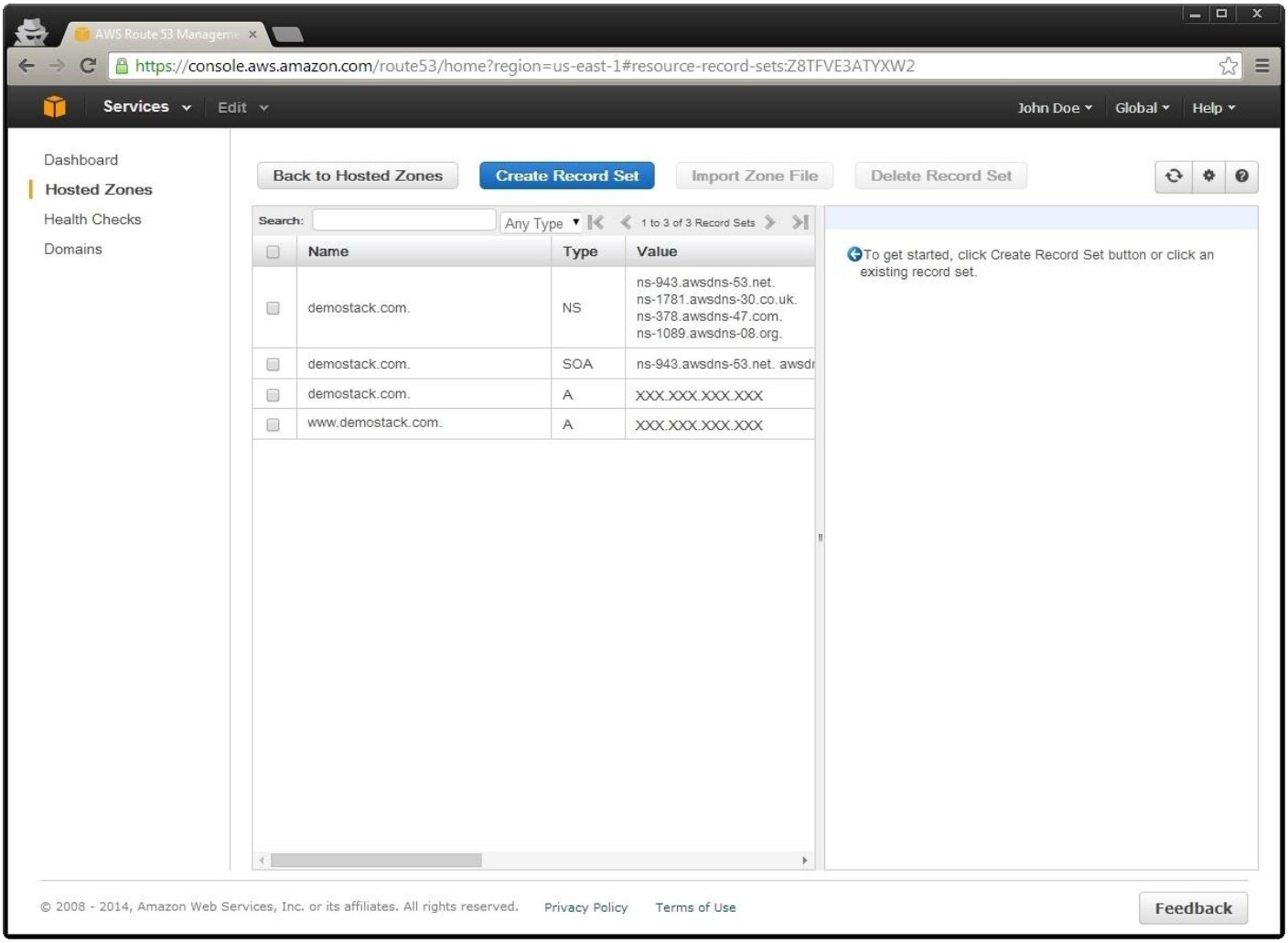
By default, your name server (NS) record points to Amazon which. Click **Create Record Set**.



Leave the **Name** textbox empty. Select **A – Ipv4 addresses** in the **Type** dropdown. Fill in your server IP address into the **Value** text area. The IP address should be the Elastic IP assigned to the EC2 instance. Leave all the other settings at the defaults. Click **Create**.



You should see your new record. Repeat the same process again, but instead of leaving the name textbox empty, enter in **www**. That way, if someone goes to example.com or www.example.com, the same page will display. WordPress will take care of the redirection. In a few minutes, you should be able to type the domain name in your web browser and your website will appear.



10 Configure an Instance

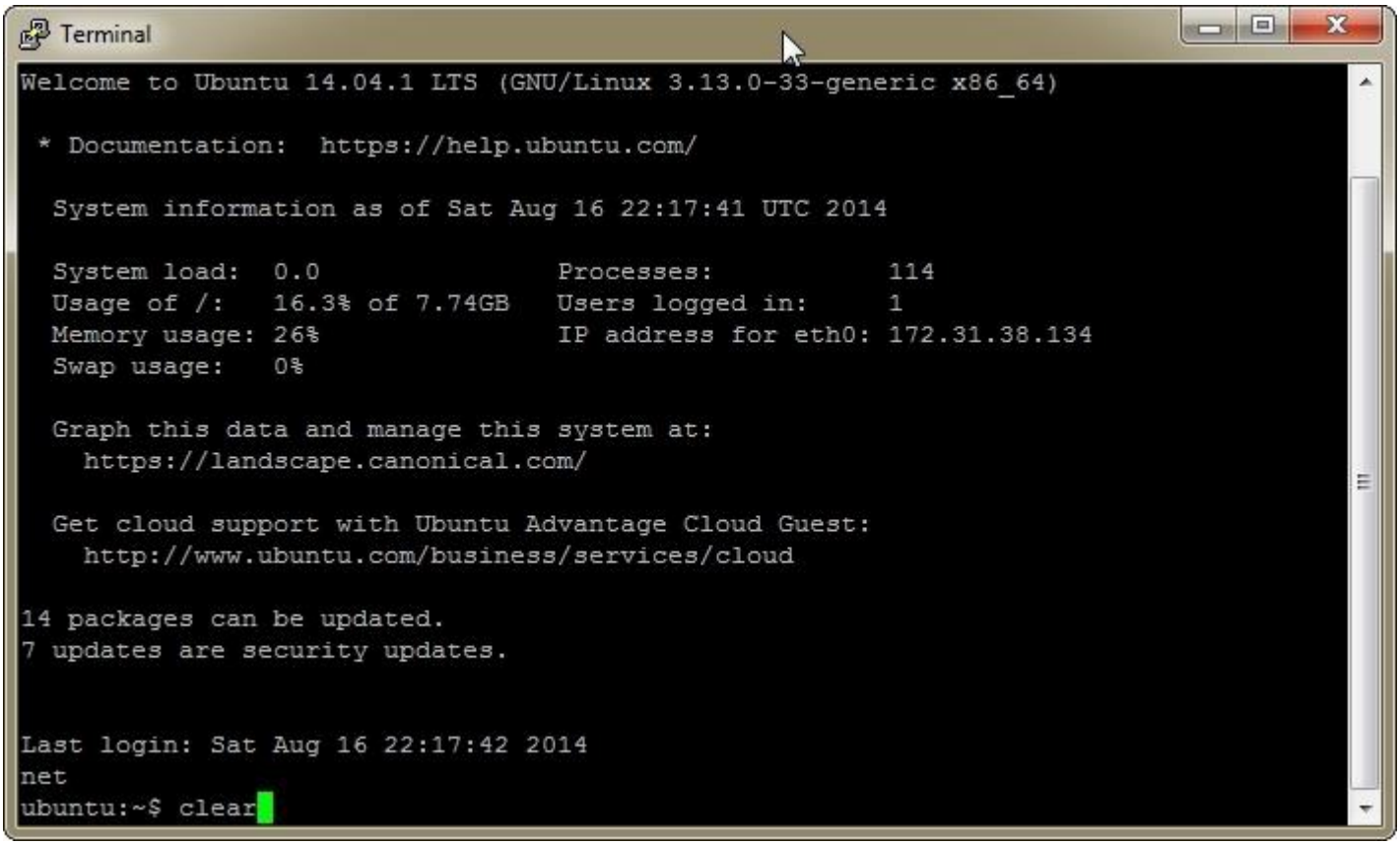
Log in to the instance using PuTTY. You should see a shell prompt that allows you to type in commands. Your terminal will look a little different. The default shell for Ubuntu and many other Linux distributions is **Bash**.

Since this section consists of commands to type in, the guide will use this format:

Description of command:
Command to type in or paste
[Key to press]
<Screenshot of command before execution>
<Screenshot of command after execution>

10.1 Update the Software on an Instance

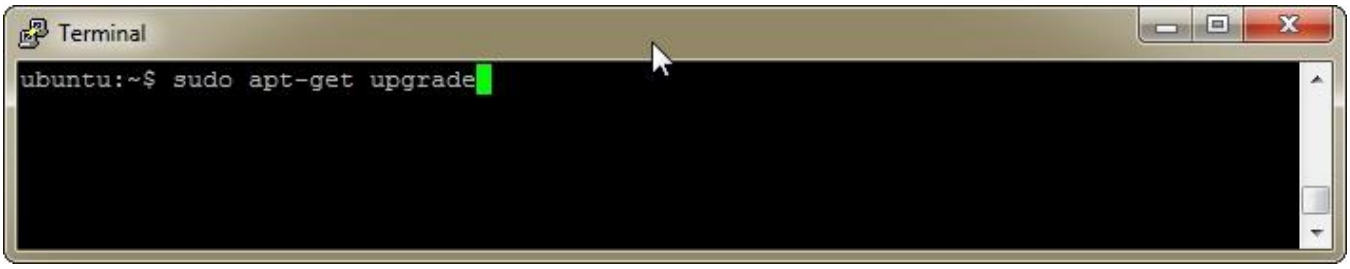
Let's clear the screen so it's easy to read:
clear
[Enter]



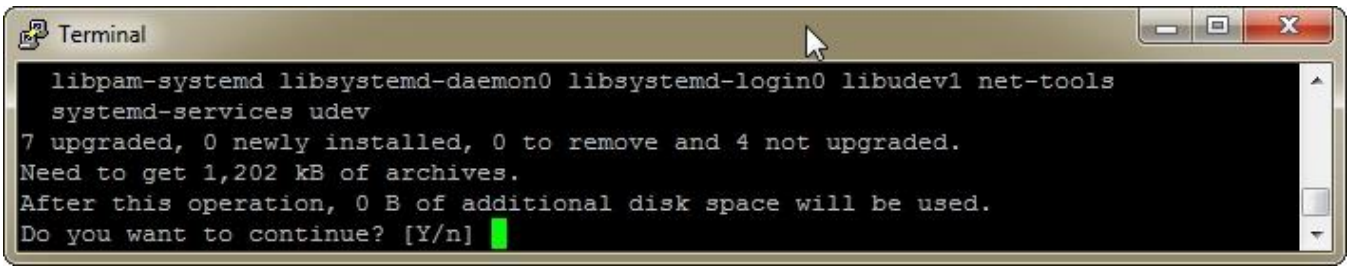
Next, we'll update the package lists from the repositories so the package manager has access to the latest software. The *sudo* command tells the shell to run the command as a superuser or a user with administrative privileges. The *apt-get* command is a command line interface for downloading and installing packages.

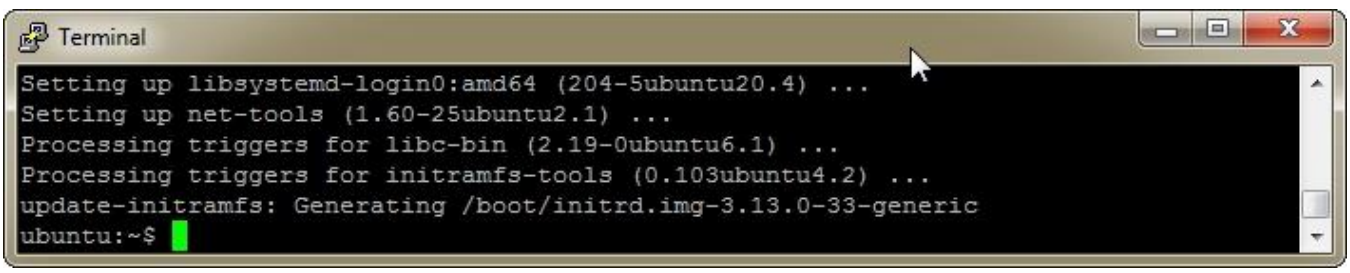
Update the package lists from the repositories:
sudo apt-get update
[Enter]

Update all the installed packages (applications):
sudo apt-get upgrade
[Enter]



Press **Y** to upgrade.





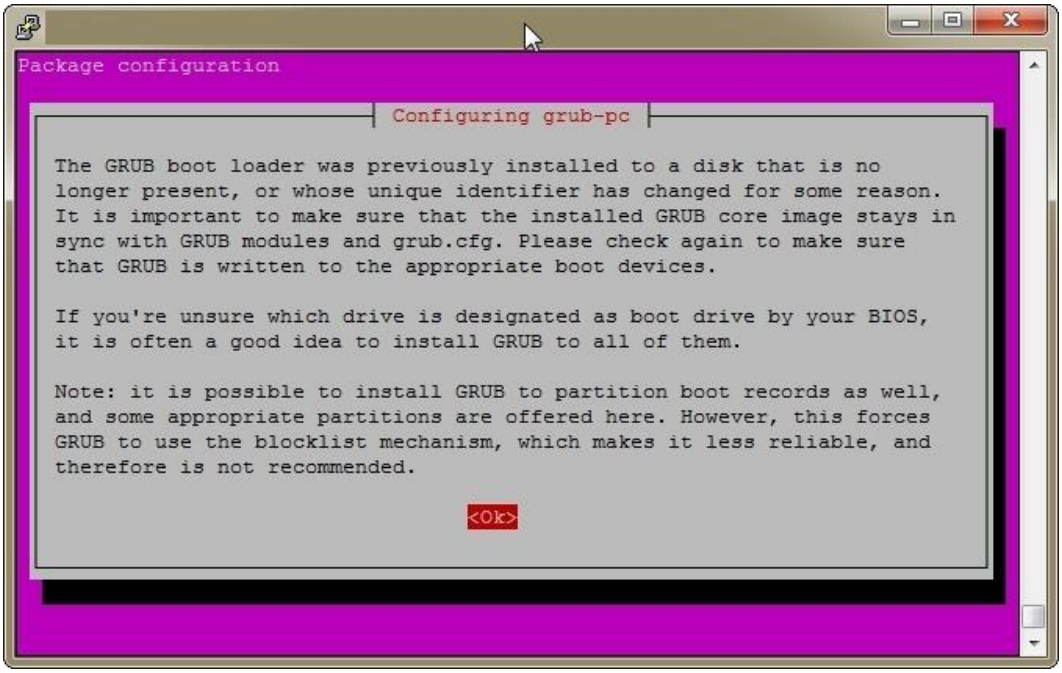
10.2 Updating GRUB on an Instance

If GRUB is updated when you run *sudo apt-get upgrade* and the **Configuring grub-pc** screen appears, follow the steps below to update it correctly. If you don't not see the screen, you can skip this section.

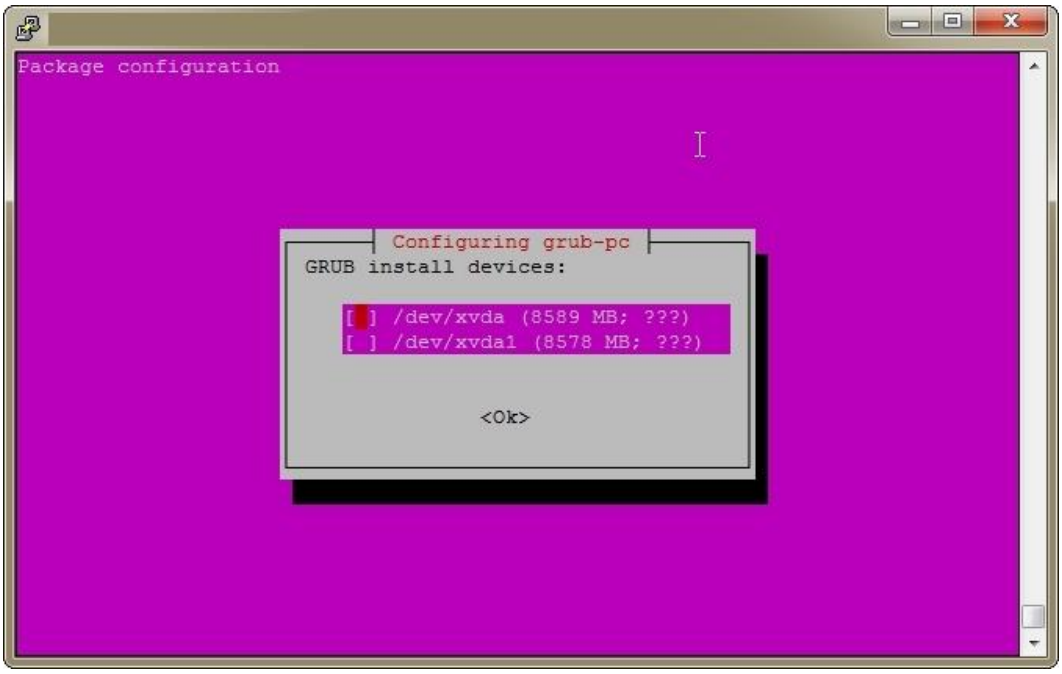
GRUB stands for GRand Unified Bootloader. It is the piece of software that tells the computer to load an operating systems. In this case, it tells the instance to load Ubuntu Linux. If GRUB is not configured correctly, the instance will not boot correctly and you will not be able to access the instance.

Use **Space** to select options. Use **Tab** to move between controls. Use **Enter** to execute controls.

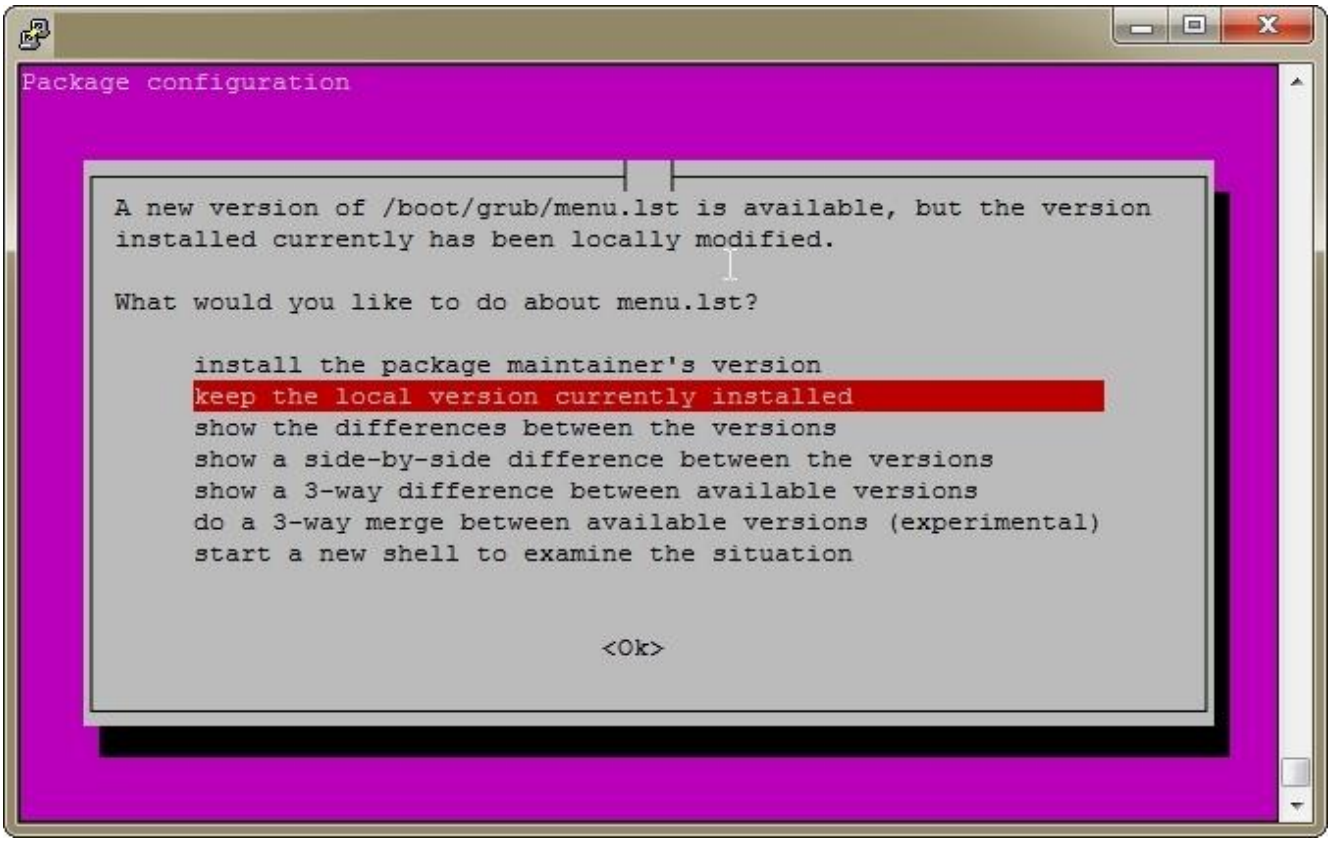
On the **Configuring grub-pc screen**, press **Tab** and then press **Enter**.



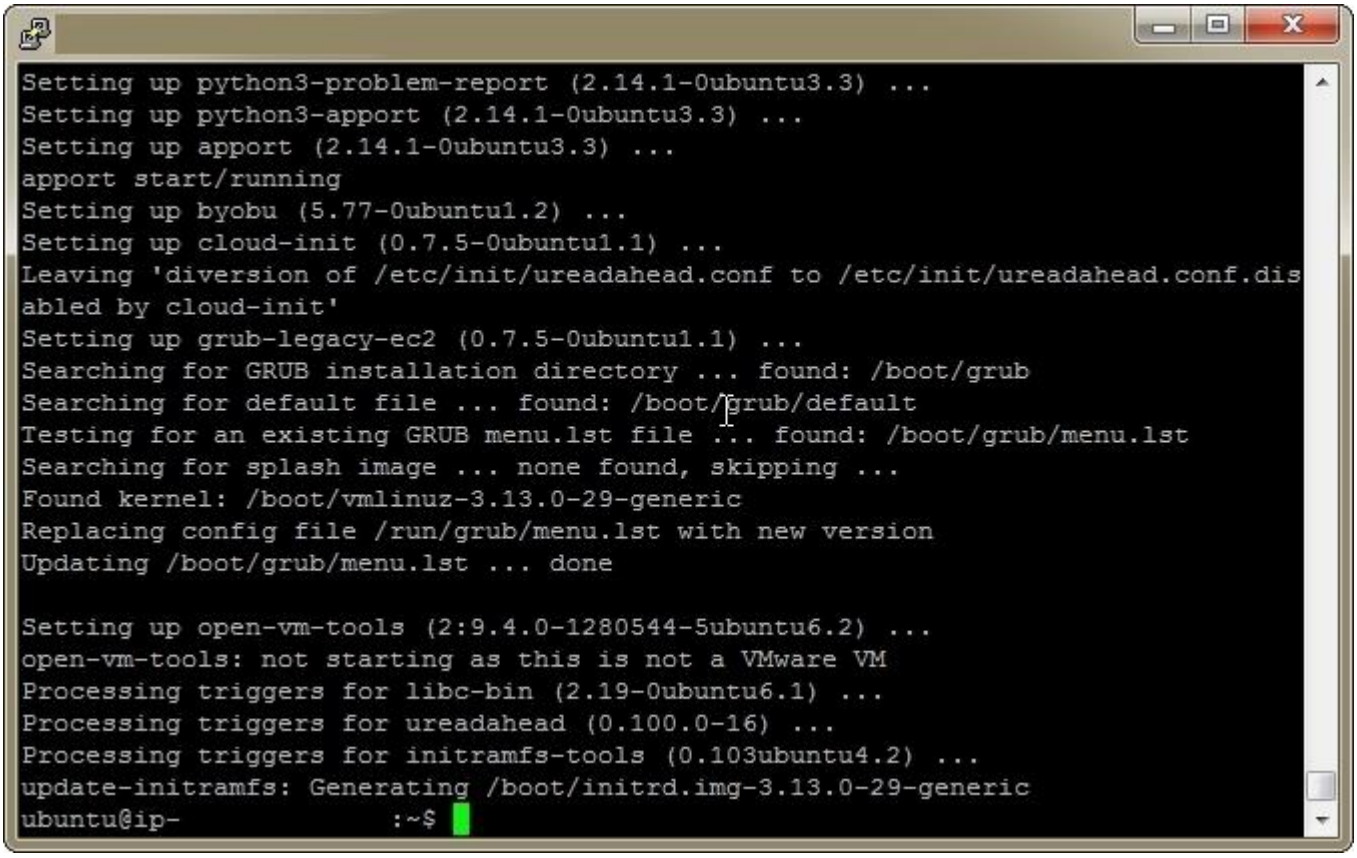
On the GRUB install devices screen, press **Space** to select the top option. Press **Tab** and then press **Enter**.



On the **Menu Selection** screen, press **Arrow Up** to select **install the package maintainer's version**. Press **Tab** and then press **Enter**.



Once installation completes, you should see the **update-initramfs** command at the bottom of the screen.



10.3 Reboot an Instance

One of the nice features of Linux is the ability to run for long periods of time without requiring a restart. There are Linux servers that have run over a year without a single reboot. It is a good practice to ensure the instance reboots successfully before installing additional software.

Let's reboot the instance:
sudo reboot
[Enter]

You will see the message, **The system is going down for reboot NOW!**

You will then see the **PuTTY Fatal Error** dialog that says, **Server unexpectedly closed network connection**. The message is completely normal and expected. Click **OK** and then close the inactive PuTTY terminal.

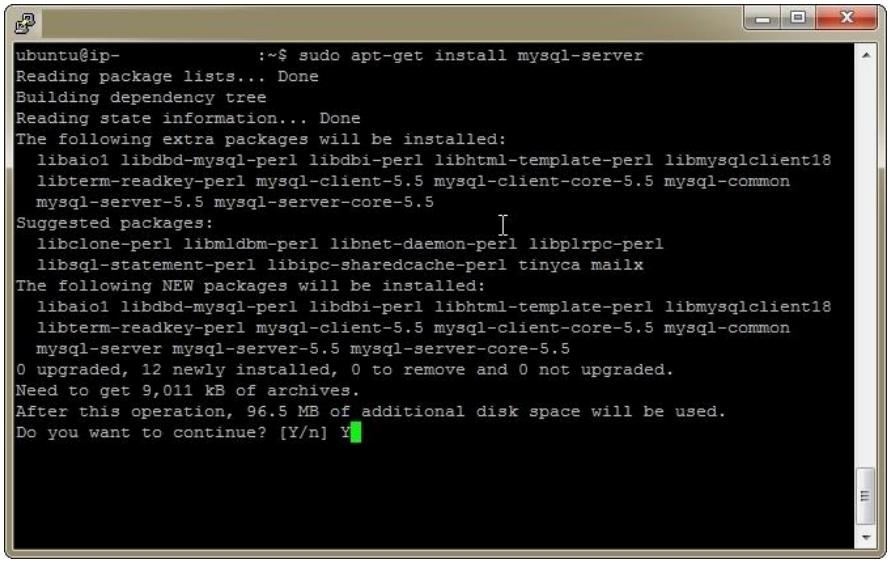
After 30 seconds, run PuTTY.exe again and log in to verify the machine rebooted successfully.

10.4 Install MySQL Database

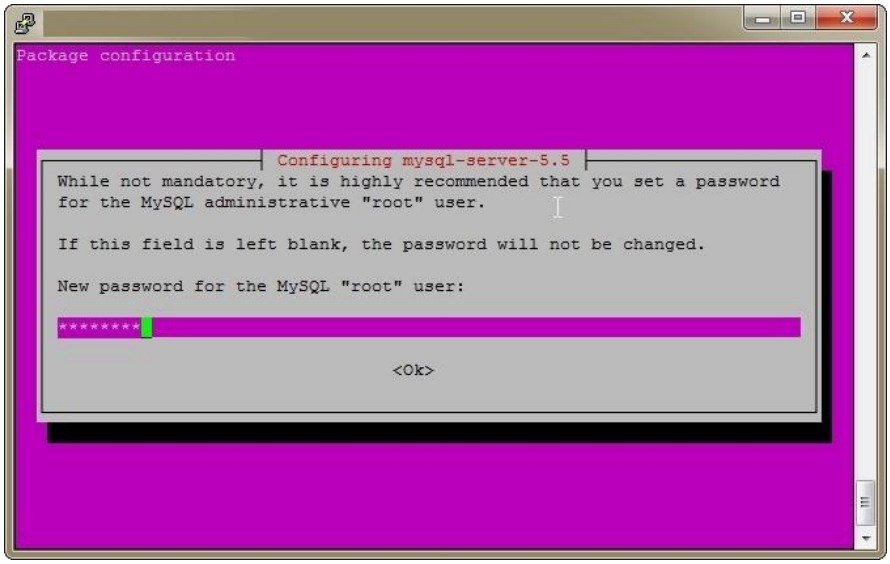
MySQL is one of the most popular relational database management systems. MySQL is free, open-source software and is extremely fast. WordPress requires and only supports MySQL.

Install MySQL:
sudo apt-get install mysql-server
[Enter]

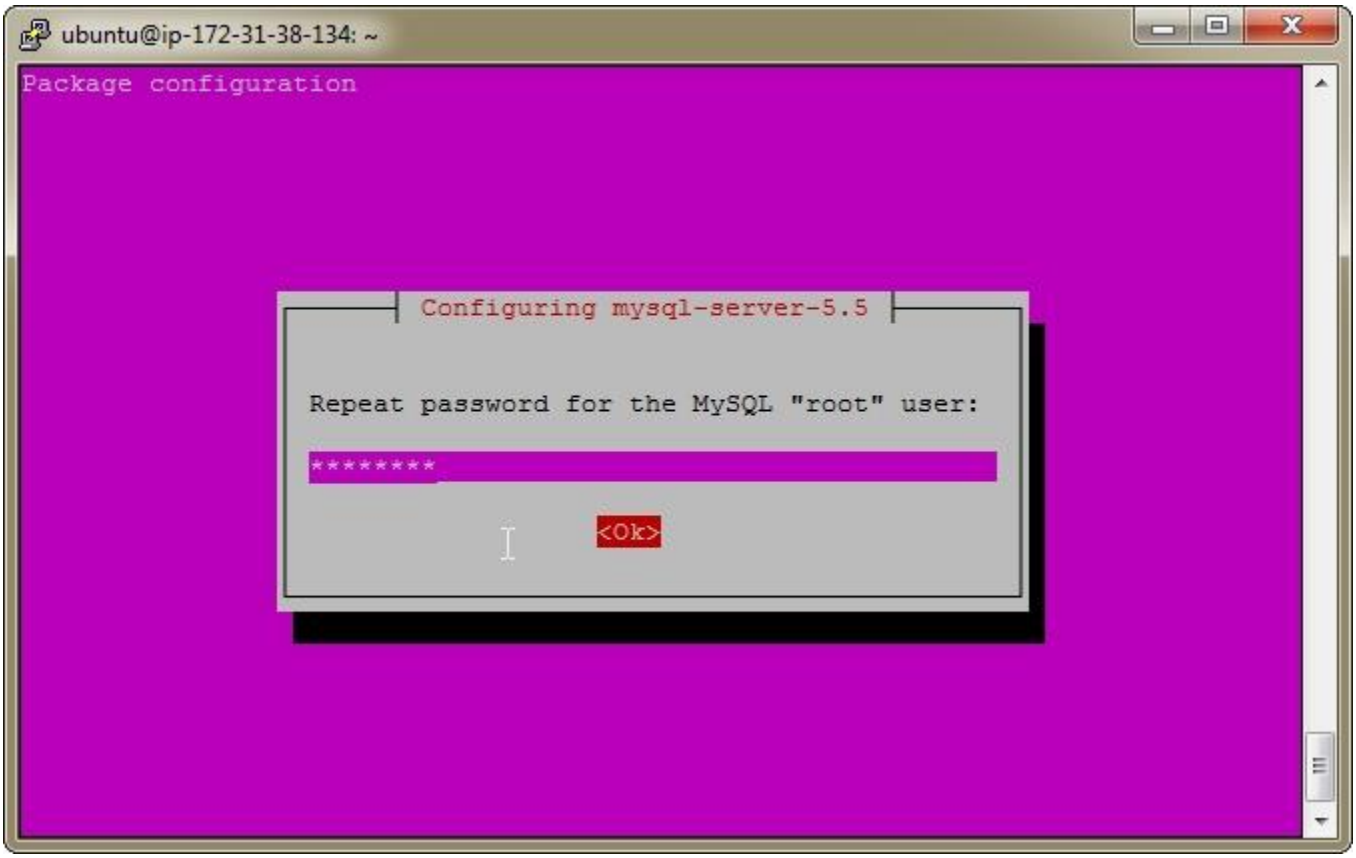
Press **Y** to install.



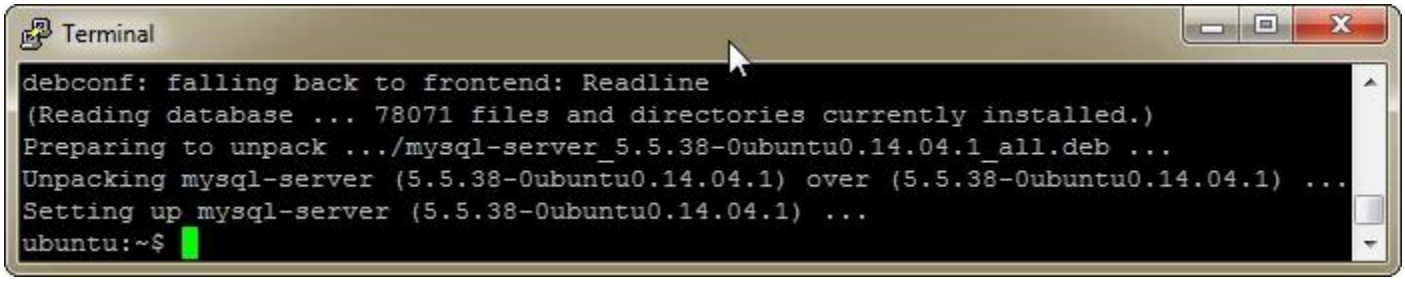
On the **Configuring mysql-server-5.5** screen, type in a password for the root account. Press **Tab** and then press **Enter**.



On the next screen, type in the same password again for the root account. Press **Tab** and then press **Enter**.



MySQL installation should finish successfully.



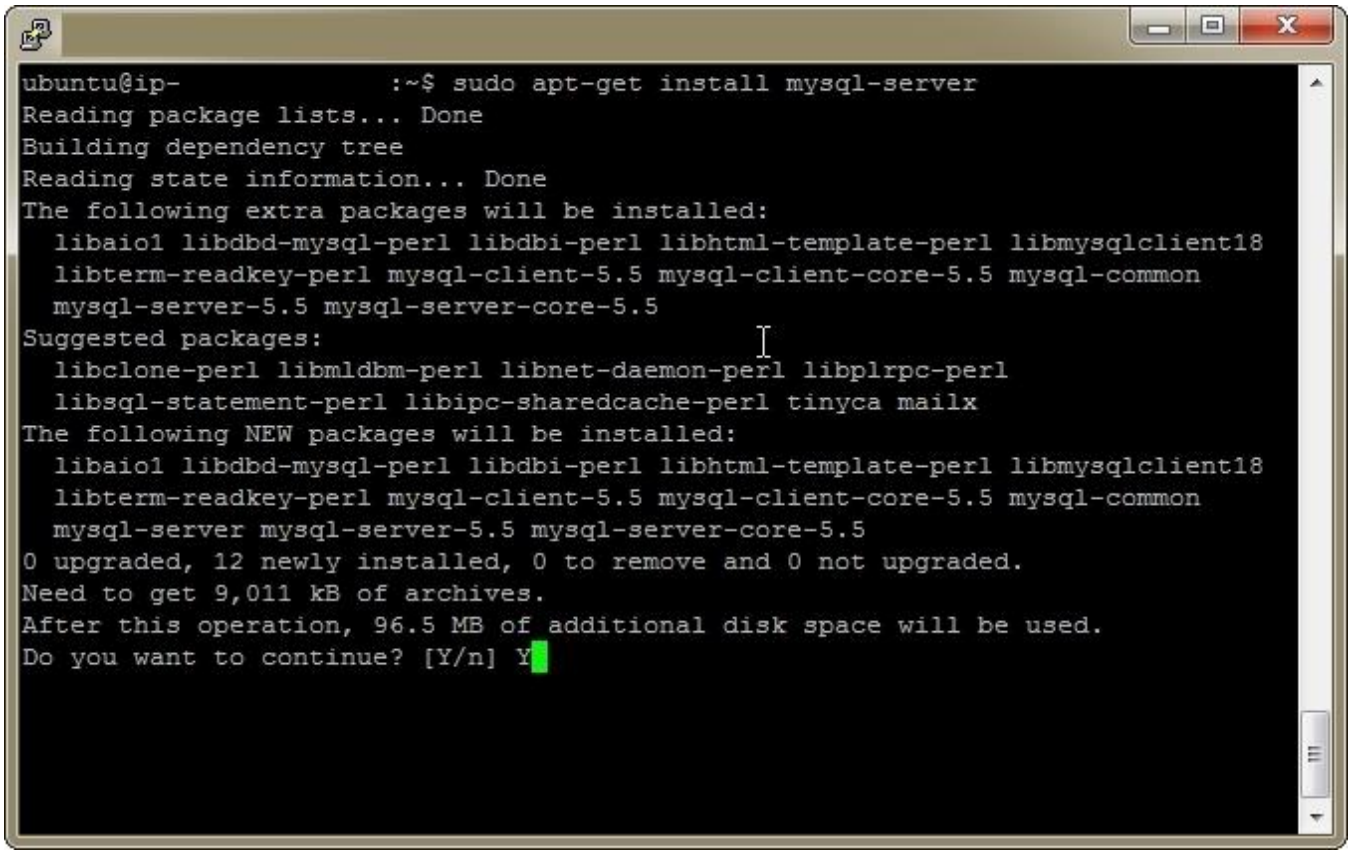
10.5 Install PHP and Apache HTTP Server

PHP is a server-side scripting language that functions as both a web language and a scripting language. WordPress is written primarily in PHP along with HTML, CSS, and JavaScript.

Apache HTTP Server is one of the most widely used web servers.

Install PHP 5 and it should install Apache:
sudo apt-get install php5
[Enter]

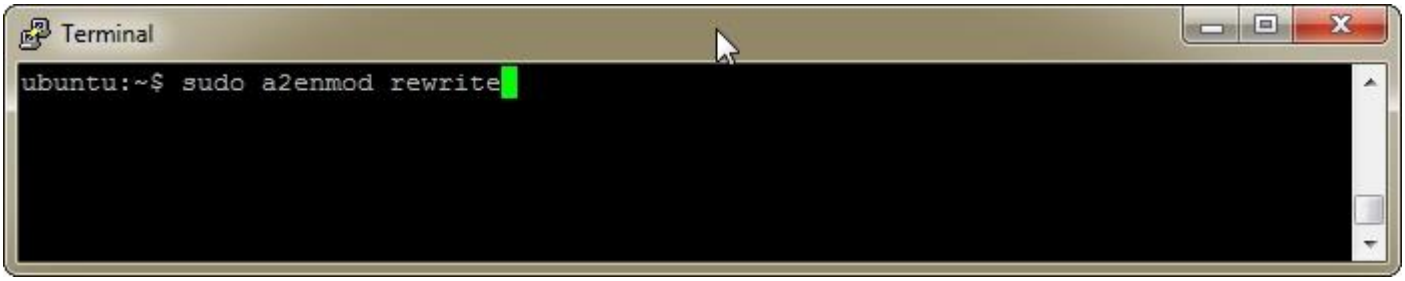
Press ***Y*** to install.



Enable the mod_rewrite module in Apache. WordPress requires the module so it can use pretty premalinks. You can see more information in the WordPress Codex: http://codex.wordpress.org/Using_Permalinks

sudo a2enmod rewrite

[Enter]

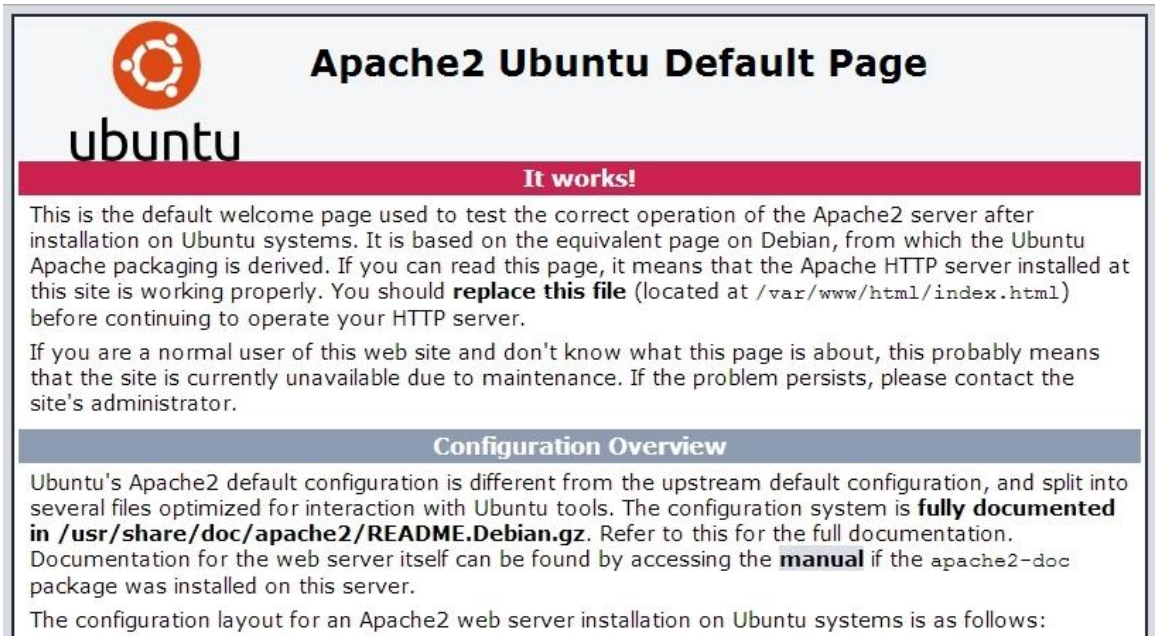


Restart Apache to activate the new configuration:

sudo service apache2 restart

[Enter]

Open your web browser to the Elastic IP (public IP) of the instance and you should see the **Apache 2 Ubuntu Default Page**.

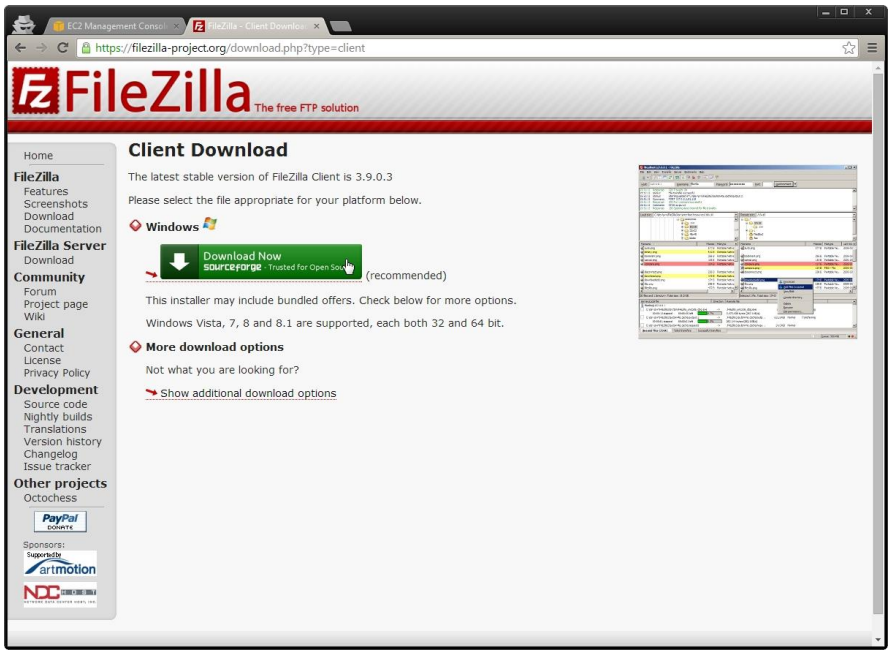


11 Transfer Files to an Instance

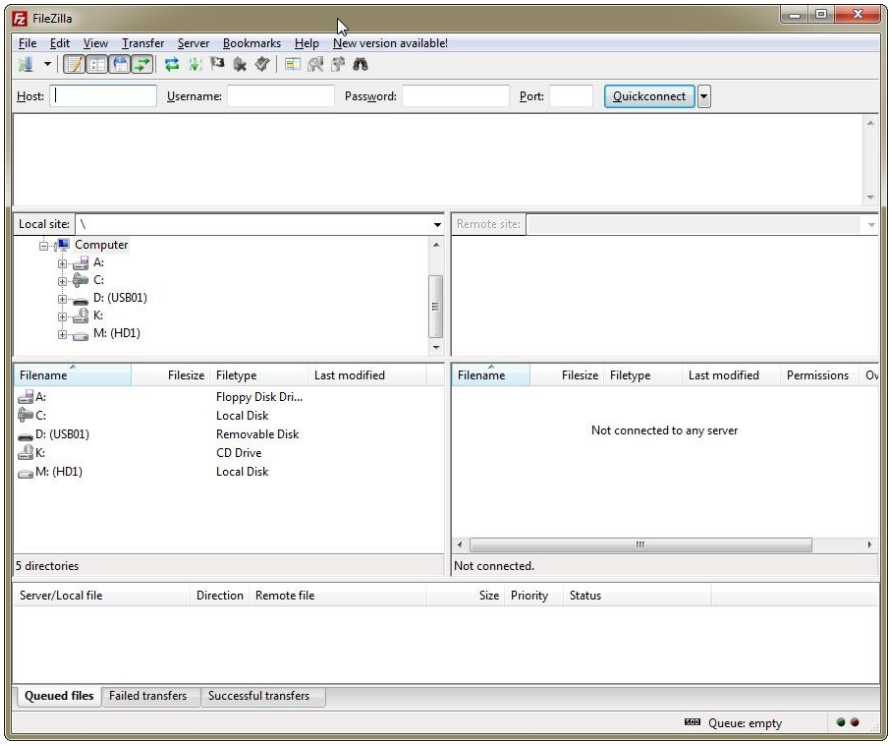
SFTP stands for Secure File Transfer Protocol. It is a secure method to transfer and manage files. It's an alternative to FTP which is unsecure since it transfers data in plaintext that is not encrypted. FileZilla, a free SFTP client, will be used for this tutorial.

11.1 Connect to Instance using FileZilla

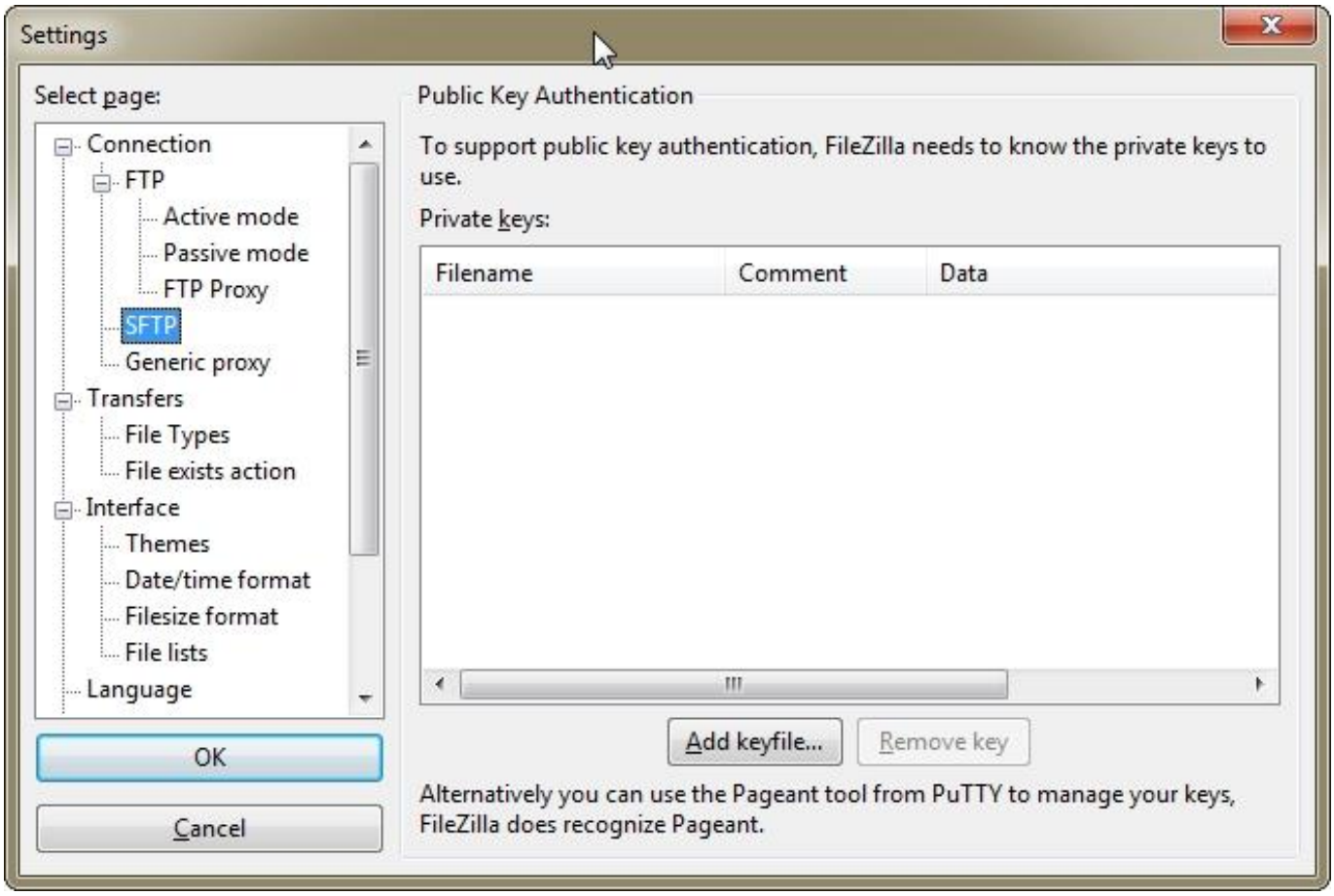
Open your web browser to https://filezilla-project.org/download.php?type=client and click **Download Now**.



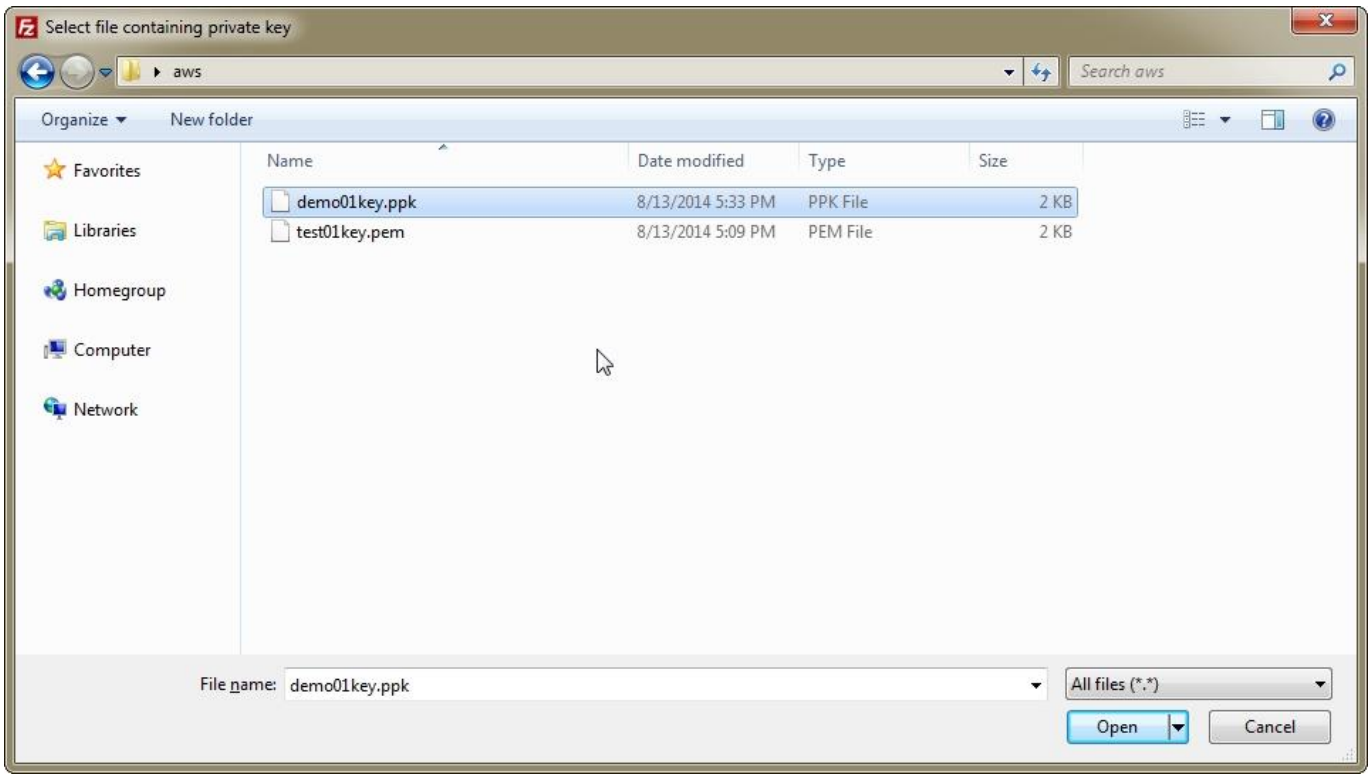
Install FileZilla and then run filezilla.exe. You should see the FileZilla application appear. Click **File** -> **Settings**. Navigate to **Connection** -> **SFTP**.



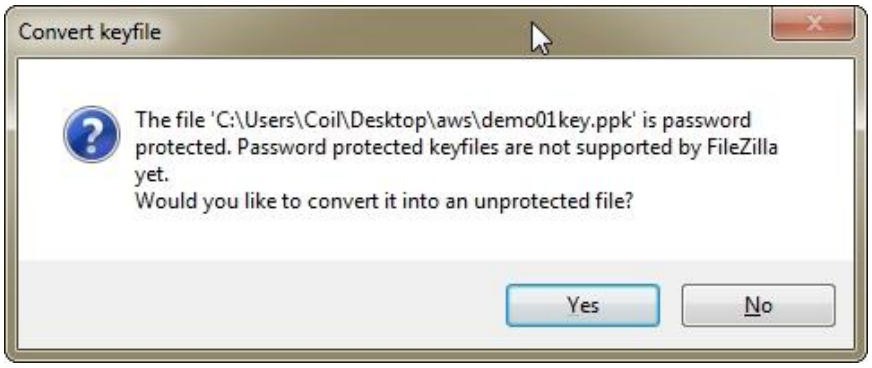
Click **Add keyfile**.



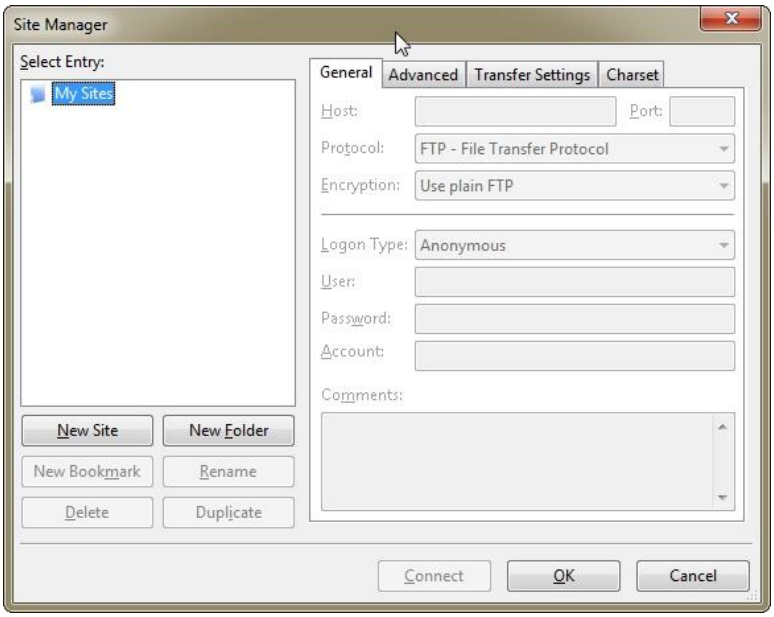
On the **Select file containing private key** dialog, select the .PPK private key and click **Open.**



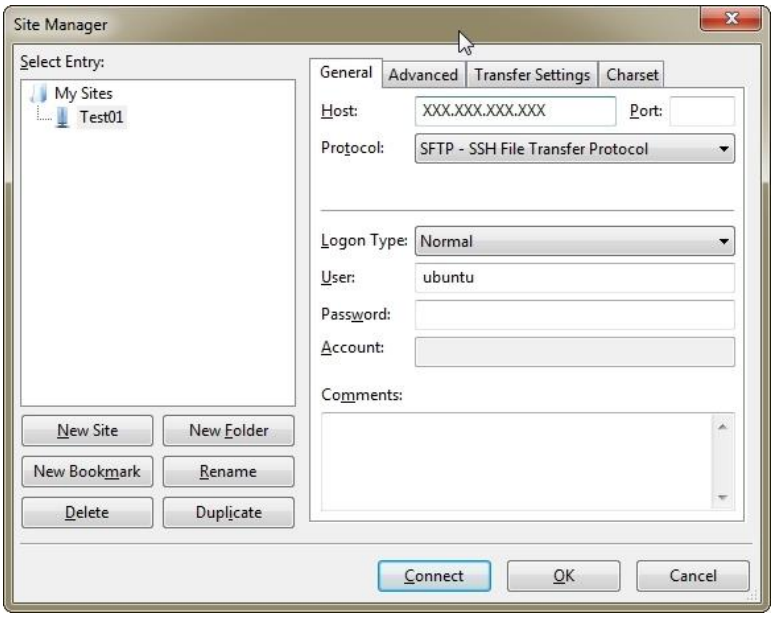
If you receive a **Convert keyfile** dialog, click **Yes** to convert the key into an file without a password.



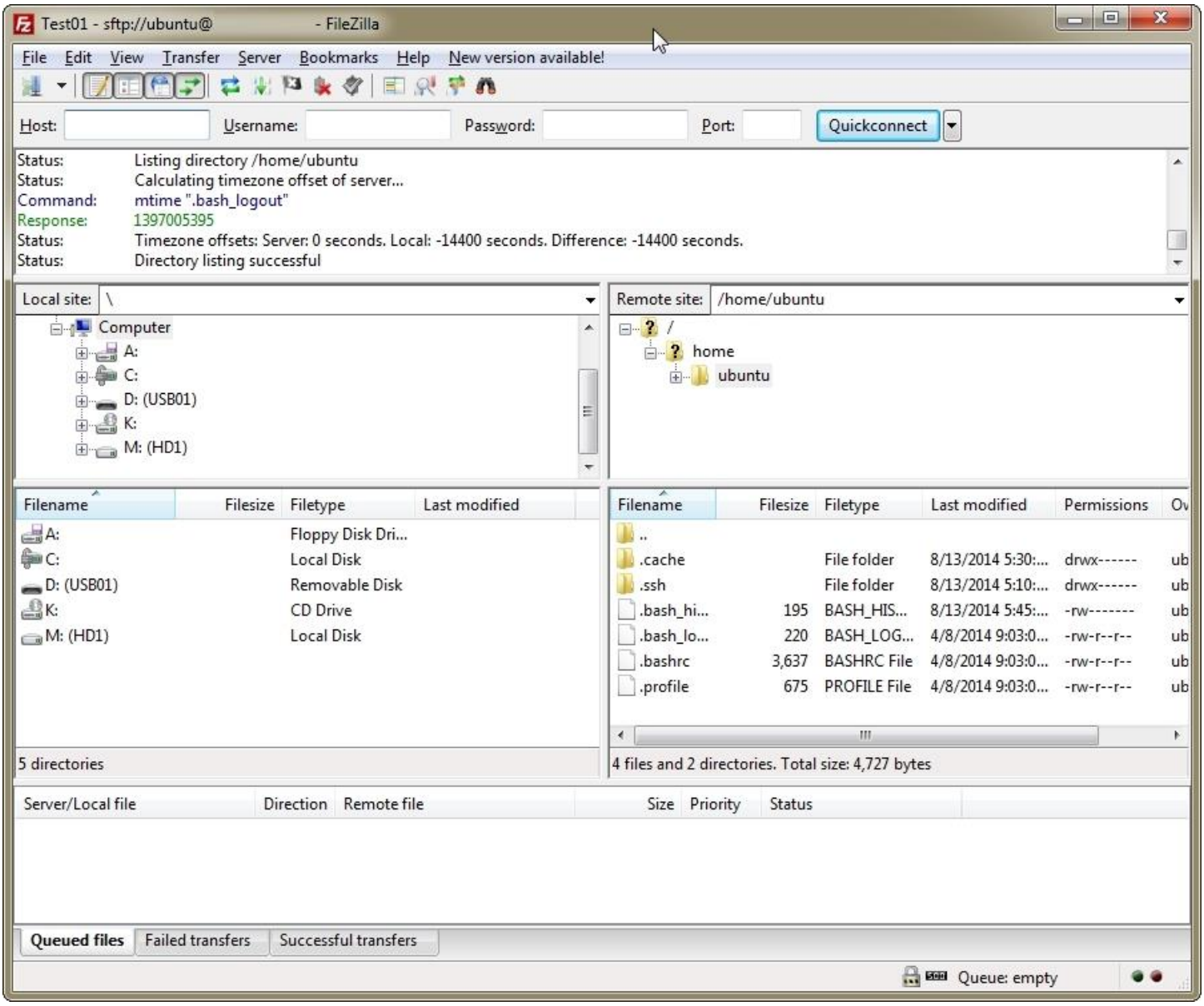
Click **OK** to close the **Setting** dialog. Click **File**- > **Site Manager**. On the **Site Manager** form, click **New Site**.



In the **Host** textbox, fill in your Elastic IP (public IP). Select **SFTP – SSH File Transfer Protocol** from the **Protocol** dropdown. Select **Normal** from the **Logon Type** dropdown. Type **ubuntu** in the **User** textbox. Click **Connect**.



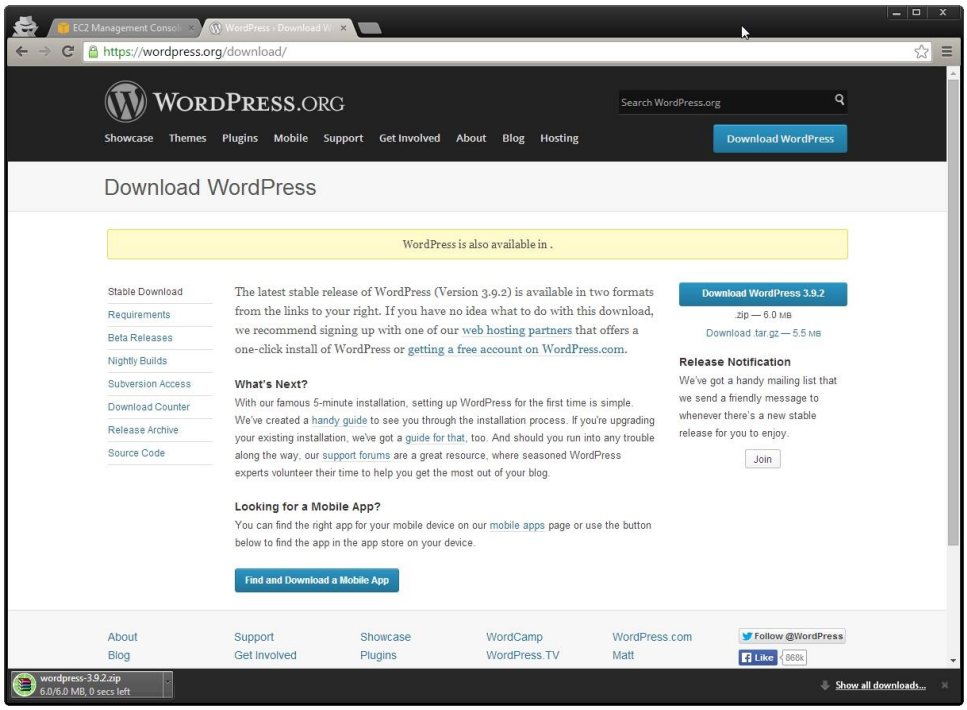
You should see the **Remote Site** panel on the right side with the server folders at **/home/Ubuntu**.



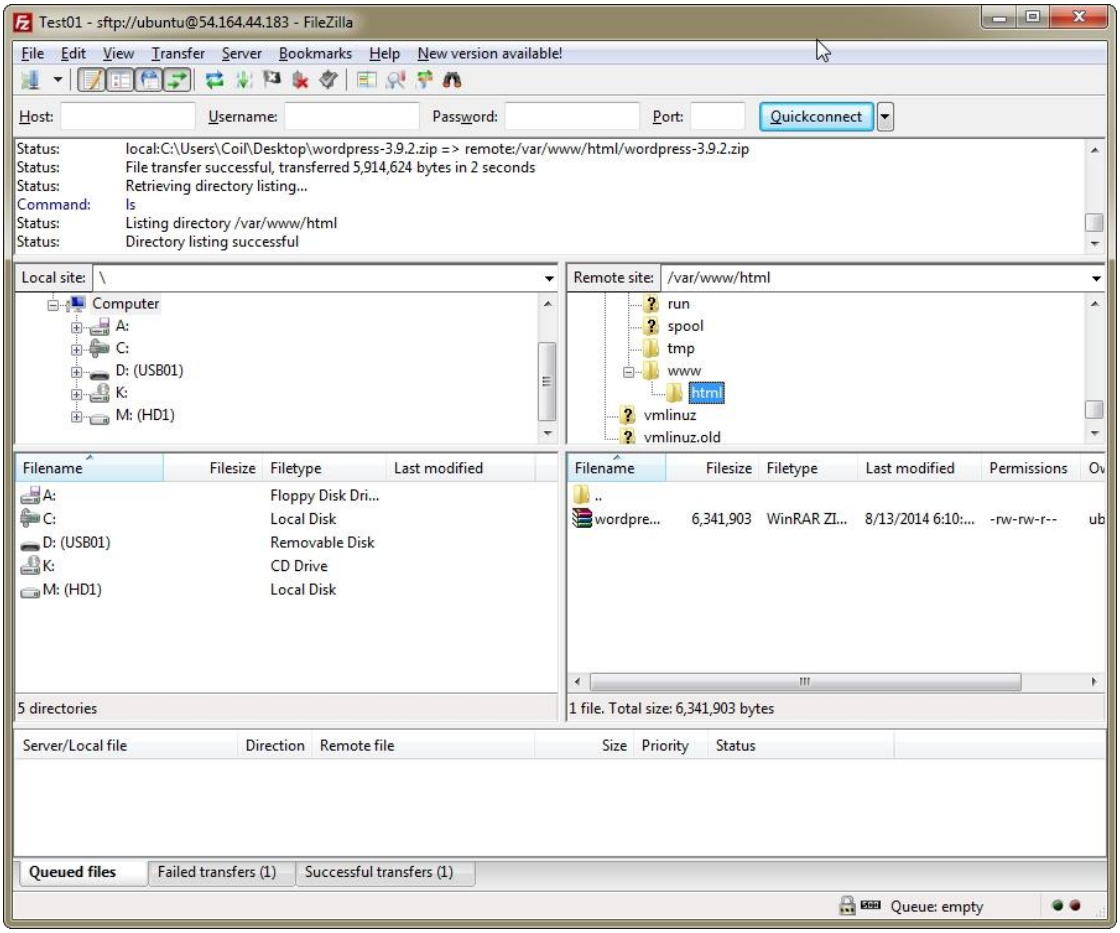
You can now transfer files between your computer (left panel) and the instance (right panel).

11.2 Transfer WordPress Files to an Instance

Open your web browser to https://wordpress.org/download/ and click **Download WordPress**.

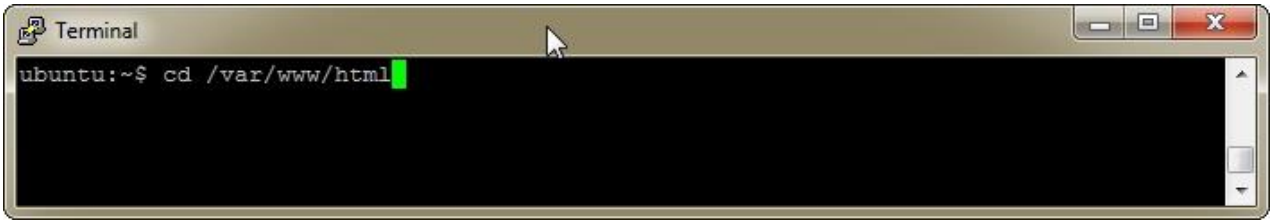


In FileZilla, navigate to **/var/ww/html** in the **Remote Site** panel on the right side. Locate the WordPress zip file you downloaded and drag it into the **Remote Site** panel to transfer the file to the instance.

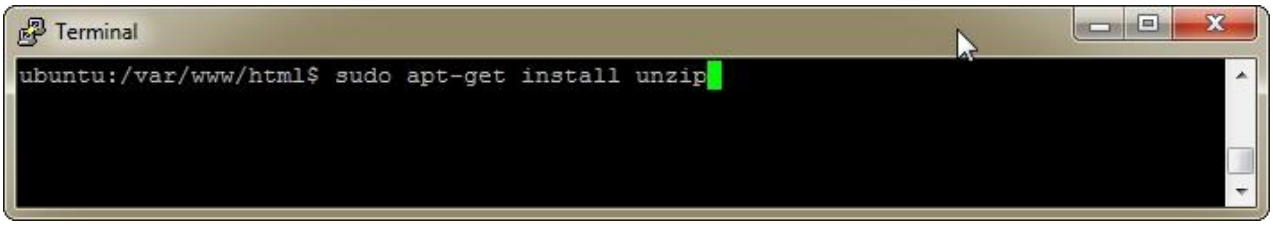


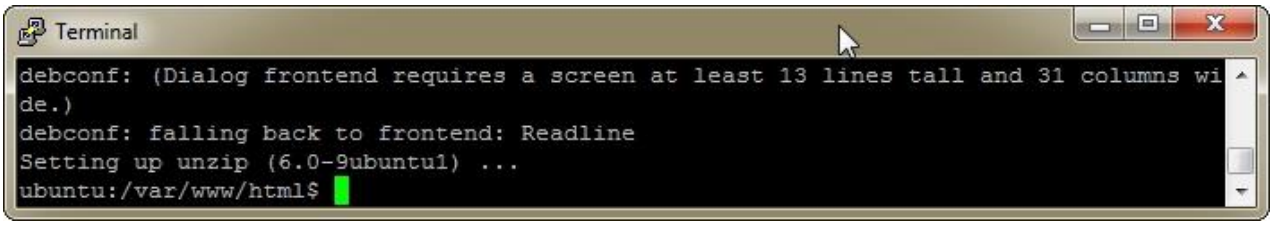
11.3 Extract WordPress Files to an Instance

Change to the Apache html directory:
cd /var/www/html
[Enter]

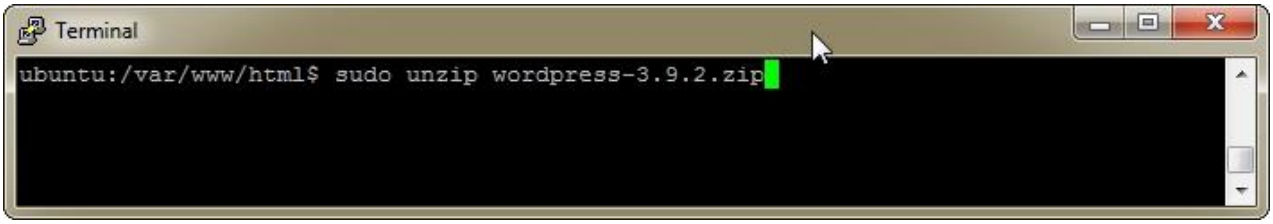


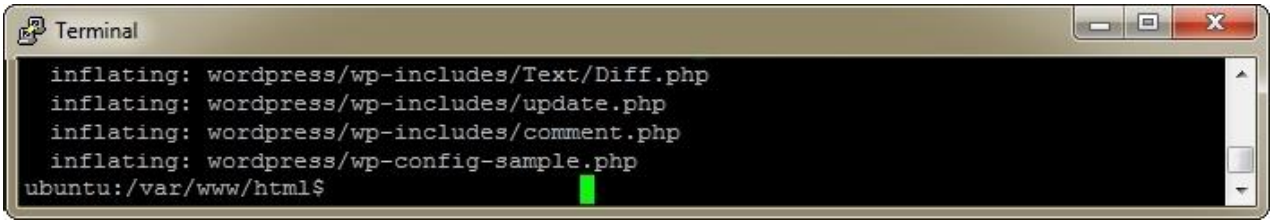
Install Unzip:
sudo apt-get install unzip
[Enter]



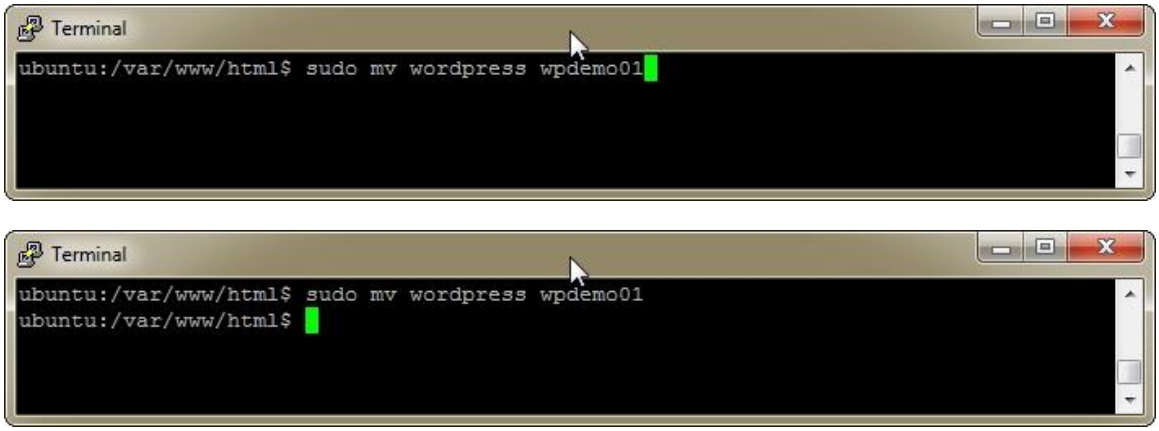


Extract the Wordpress files:
sudo unzip wordpress-3.9.2.zip
[Enter]

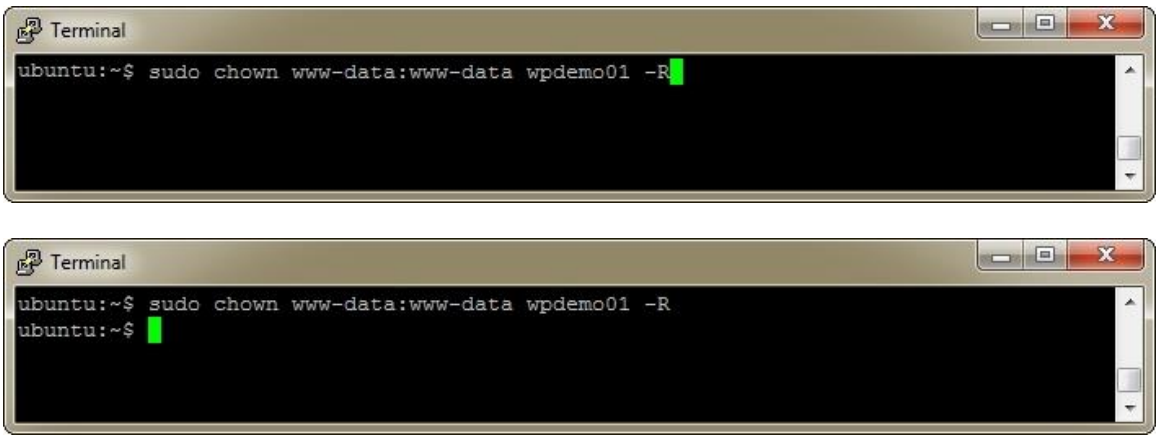




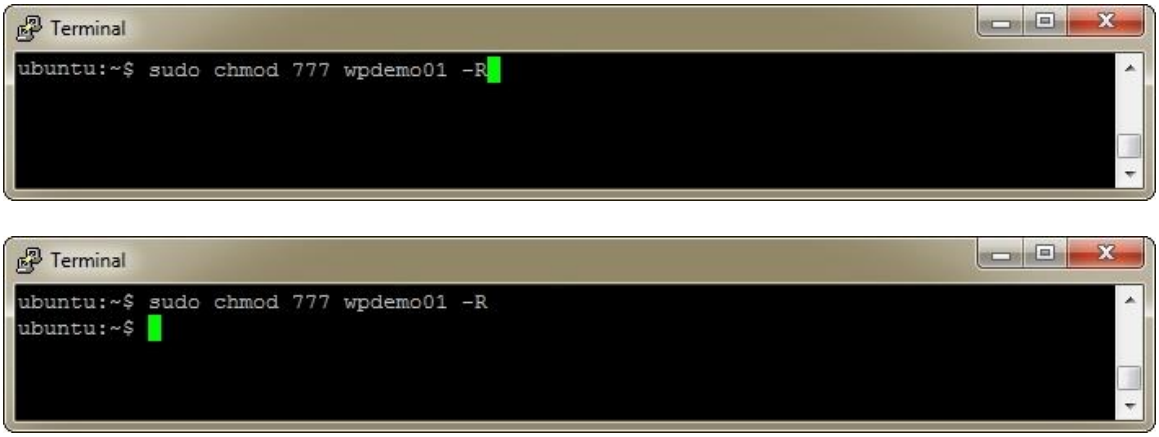
Rename the Wordpress folder to a name of your choice:
sudo mv wordpress wpdemo01
[Enter]



Change the ownership of the files so Apache can access them:
sudo chown www-data:www-data wpdemo01 -R
[Enter]



Change permissions of the files temporarily. Be sure to update the permissions noted in the **Final Notes** section once WordPress is configured:
sudo chmod 777 wpdemo01 -R
[Enter]



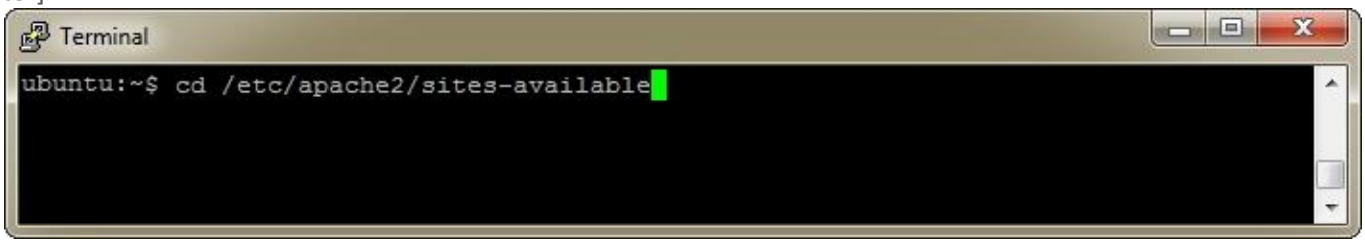
The WordPress files are now located at **/var/www/html/wpdemo01**.

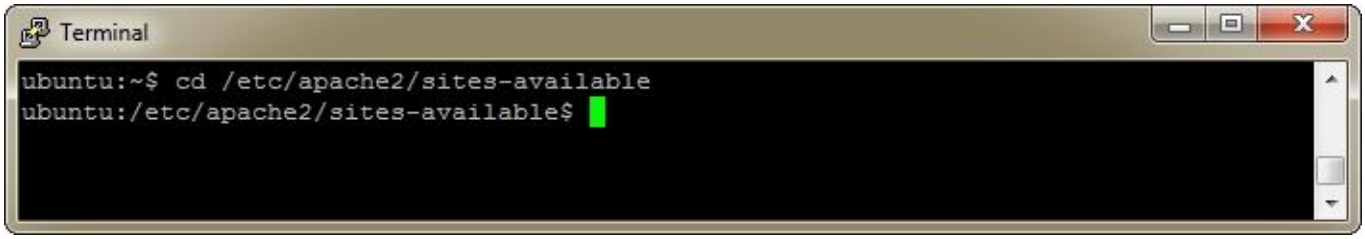
12 Configure Apache Web Server

By default, Apache serves files that are located in the /var/www/html directory to any request whether it be for the public IP address of the server (ex. 172.16.0.0) or by the A record in DNS (www.example.com) that points to the public IP address. Apache has a feature called virtual hosts which allows running multiple websites from Apache at the same time. There are name-based virtual hosts and IP-based virtual hosts. Name-based virtual hosts allow for more than one website per IP address which is very common and utilized by many of the shared hosting companies since IPv4 addresses are so scarce. IP-based virtual hosts provides an IP address for a single website. In this guide, you'll disable the default website and create a new default configuration file. This will enable you to add more websites in the future.

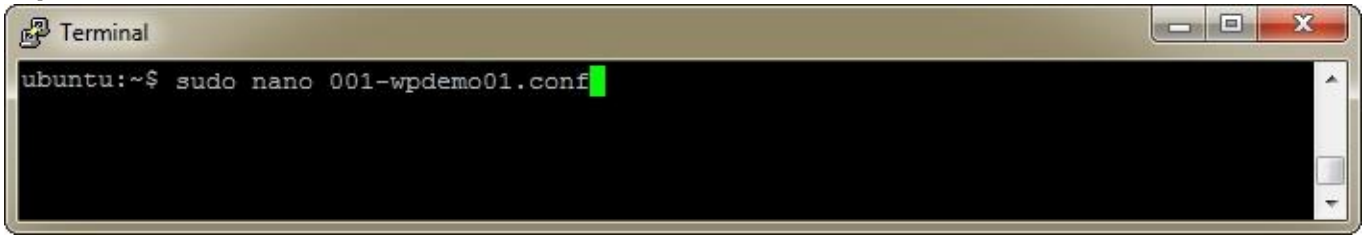
Apache stores all of the **available** website configuration files in the /etc/apache2/sites-available directory and all the enabled website configuration files in the /etc/apache2/sites-enabled directory. The files in the sites-enabled directory are actually symlinks or pointers to the files in the /etc/apache2/sites-available directory. You can enable any site using ***sudo a2ensite site-name*** or disable any site using **sudo *a2dissite site-name*** (ignore the .conf file extension). For instance, to disable the default site specified in configuration file, 000-default.conf, type **sudo *a2dissite 000-default***.

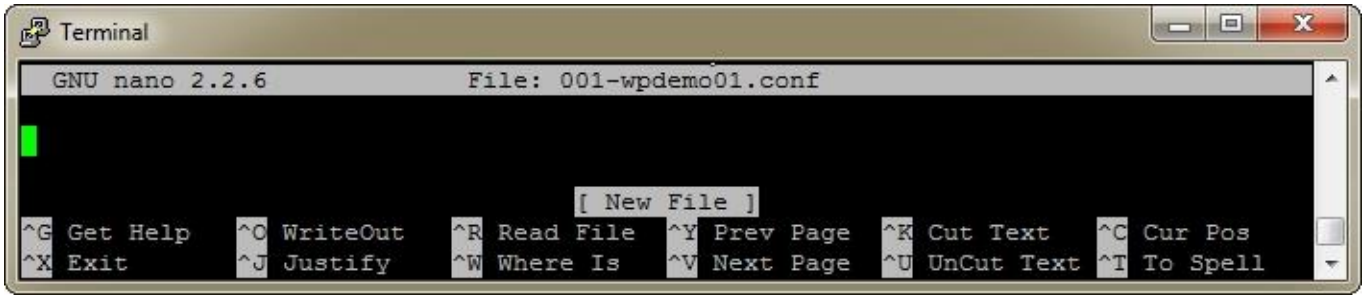
Navigate to the Apache configuration directory:
cd /etc/apache2/sites-available
[Enter]





Open the Nano editor to a new configuration file:
sudo nano 001-wpdemo01.conf
[Enter]





Below is a secure configuration file that follows many of the best practices when hardening or securing Apache. The only Apache directives you need change when setting up a new site are below:

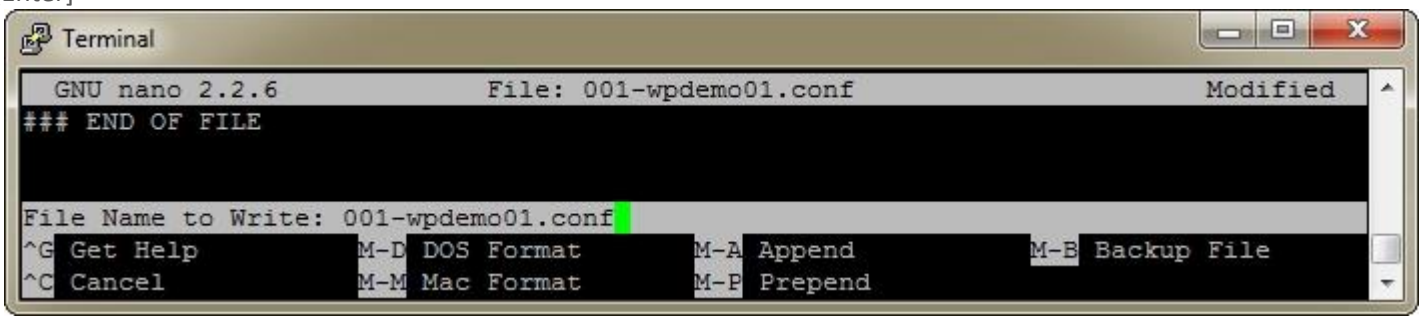
- ServerName www.example.com
- ServerAlias example.com
- DocumentRoot /var/www/html/wpdemo01
- <Directory "/var/www/html/wpdemo01">

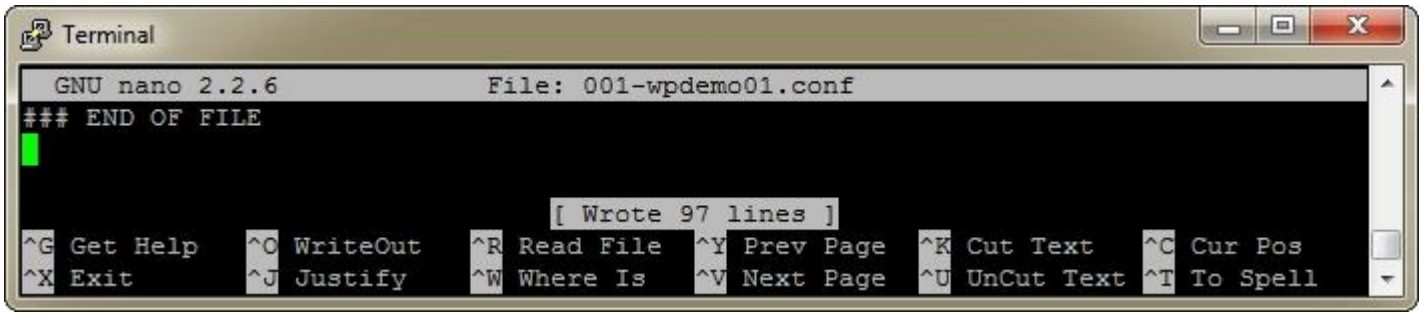
Update the bolded fields so they match the domain name and folder containing the WordPress files. Paste in the following code by simply right clicking in the PuTTY window:

```
### START OF FILE

#
# Remove Apache version from response to mitigate
#
ServerSignature Off
ServerTokens Prod

#
# Use the ServerName directive to set the name of the server
#
UseCanonicalName On

#
# Disable the ability for clients to send an HTTP TRACE
#
TraceEnable Off

<VirtualHost *:80>
        # The ServerName directive sets the request scheme, hostname and port that
        # the server uses to identify itself. This is used when creating
        # redirection URLs. In the context of virtual hosts, the ServerName
        # specifies what hostname must appear in the request's Host: header to
        # match this virtual host. For the default virtual host (this file) this
        # value is not decisive as it is used as a last resort host regardless.
        # However, you must set it for any further virtual host explicitly.
        ServerName www.example.com
        ServerAlias example.com

        ServerAdmin webmaster@localhost
        DocumentRoot /var/www/html/wpdemo01

        # Available loglevels: trace8, ..., trace1, debug, info, notice, warn,
        # error, crit, alert, emerg.
        # It is also possible to configure the loglevel for particular
        # modules, e.g.
        #LogLevel info ssl:warn

        ErrorLog ${APACHE_LOG_DIR}/error.log
        CustomLog ${APACHE_LOG_DIR}/access.log combined

        # For most configuration files from conf-available/, which are
        # enabled or disabled at a global level, it is possible to
```

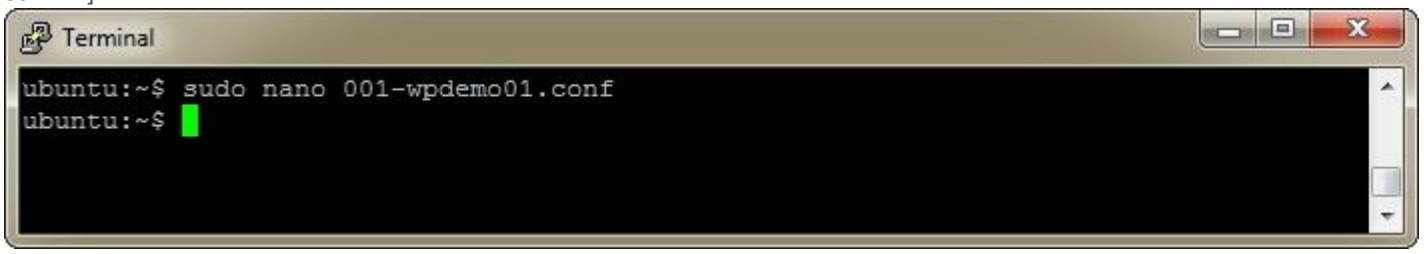
```
        # include a line for only one particular virtual host. For example the
        # following line enables the CGI configuration for this host only
        # after it has been globally disabled with "a2disconf".
        #Include conf-available/serve-cgi-bin.conf
</VirtualHost>

<Directory />
  Order Deny,Allow
  Deny from all
  Options None
  AllowOverride None
  Require all denied
</Directory>

<Directory "/var/www/html/wpdemo01">
    #
    # Possible values for the Options directive are "None", "All",
    # or any combination of:
    #   Indexes Includes FollowSymLinks SymLinksifOwnerMatch ExecCGI MultiViews
    #
    # Note that "MultiViews" must be named *explicitly* --- "Options All"
    # doesn't give it to you.
    #
    # The Options directive is both complicated and important.  Please see
    # http://httpd.apache.org/docs/2.2/mod/core.html#options
    # for more information.
    #
    Options None

    #
    # AllowOverride controls what directives may be placed in .htaccess files.
    # It can be "All", "None", or any combination of the keywords:
    #   Options FileInfo AuthConfig Limit
    #
    AllowOverride All

    #
    # Controls who can get stuff from this server.
    #
    Order allow,deny
    Allow from all

    #
    # Limit the number of bytes that are allowed in a request body
    # 1048576 is 1 MB. 10485760 is 10 MB.
    #
    LimitRequestBody 10485760

</Directory>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
### END OF FILE
```

Save the configuration file:
[Ctrl + O]
[Enter]

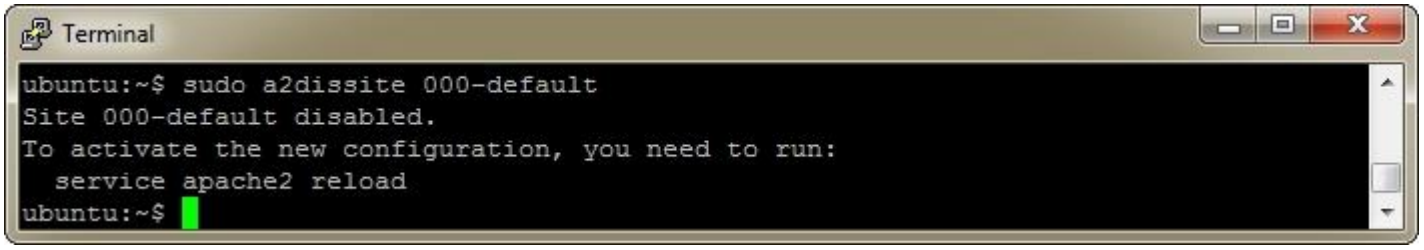




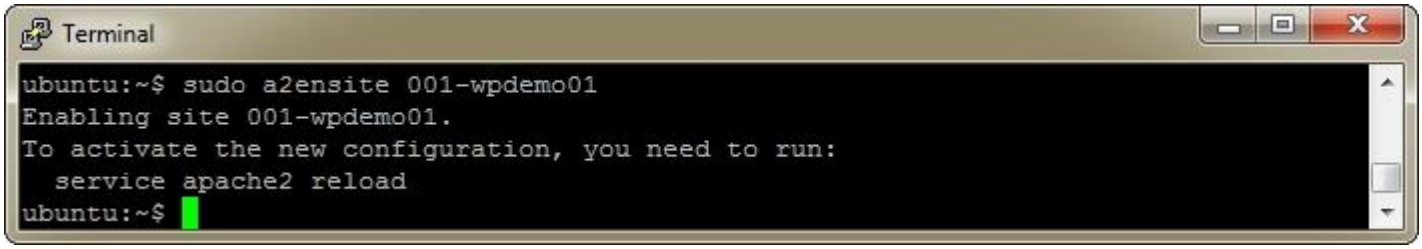
Exit Nano:
[Ctrl + X]



Disable the default Apache website:
sudo a2dissite 000-default
[Enter]

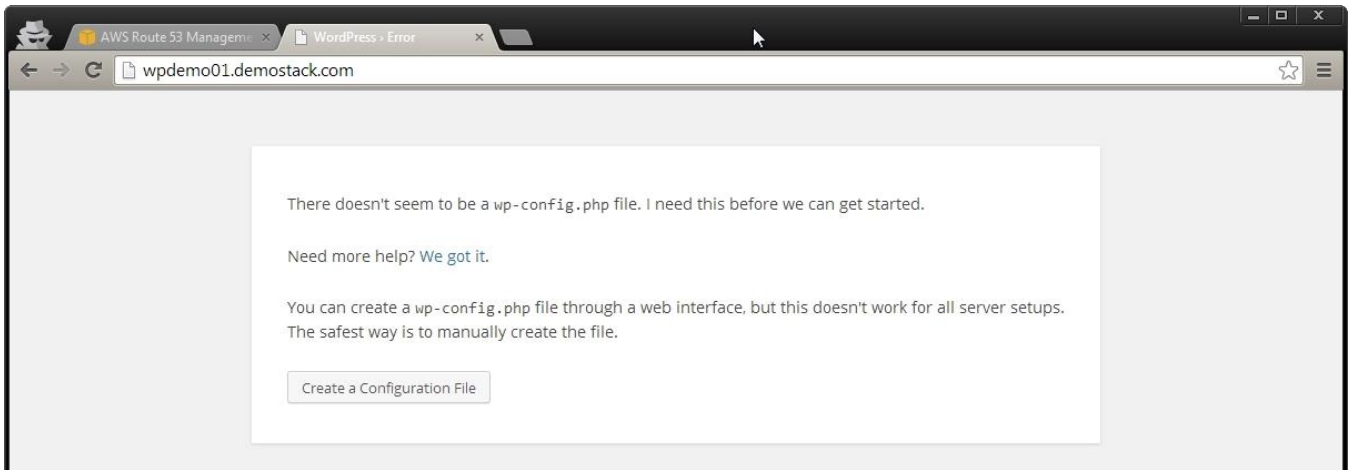


Enable the new Apache website created above:
sudo a2ensite 001-wpdemo01
[Enter]



Restart Apache:
sudo service apache2 restart
[Enter]

Apache is now setup. Open your web browser to your domain (ex. http://www.example.com) and you should see the **WordPress > Error** page with the **Create a Configuration File** button.



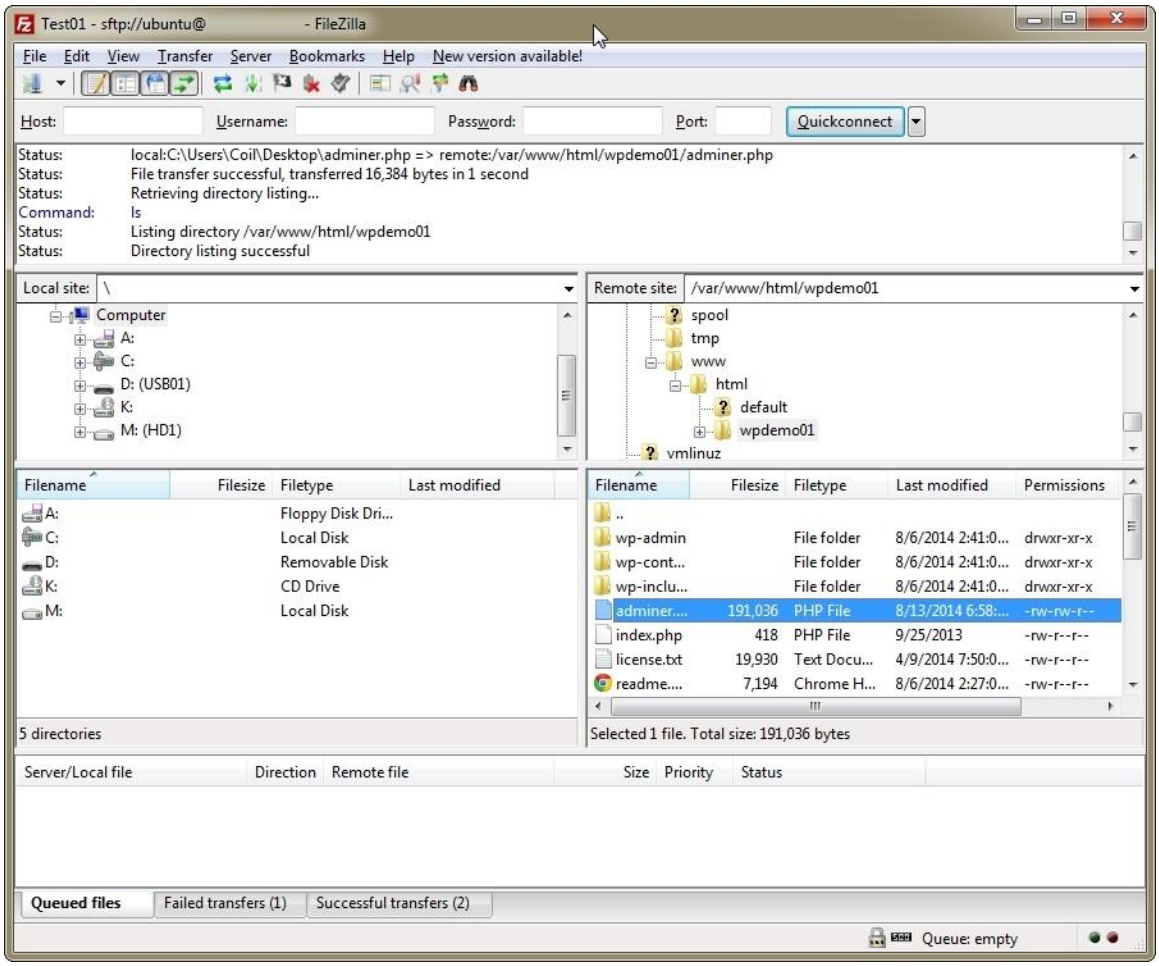
13 Set up MySQL Database using Adminer

There are multiple ways to set up the MySQL database, but this guide will use Adminer to create a database, create a user, and then assign the user permissions to the database. *Delete the **adminer.php** file once the database is setup.*

13.1 Download and Set up Adminer

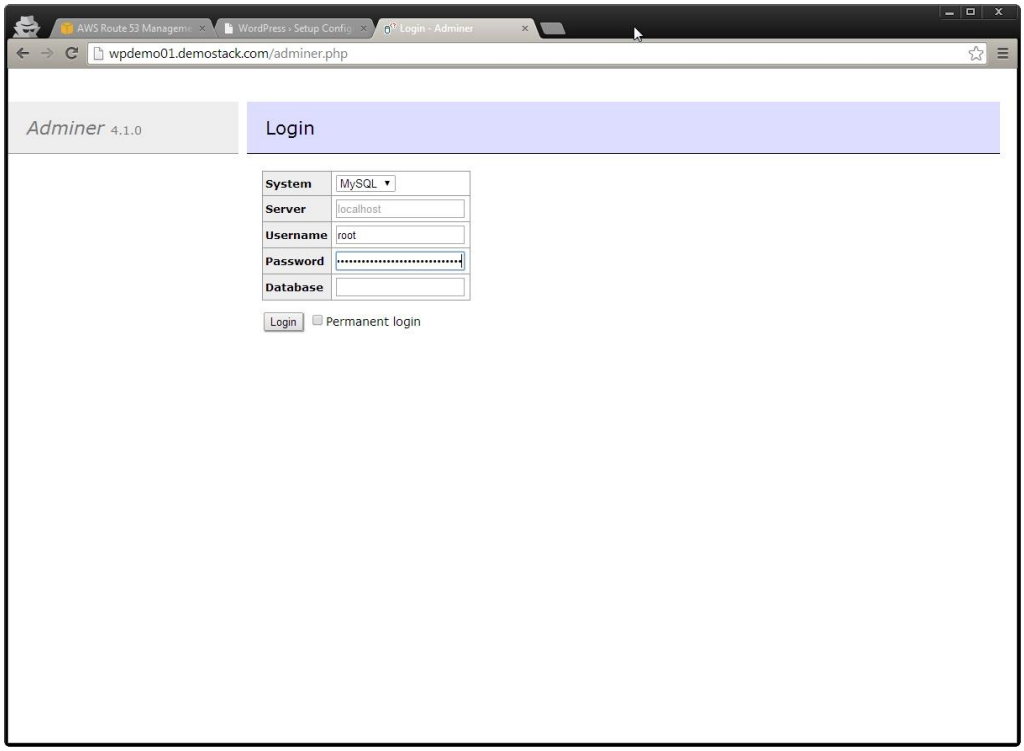
To download Adminer, open your web browser to http://www.adminer.org/#download. Click **Adminer 4.1.0 for MySQL** to download the application.

Rename the downloaded file to **adminer.php**. Open up FileZilla and copy adminer.php to /var/ww/html/wpdemo01.

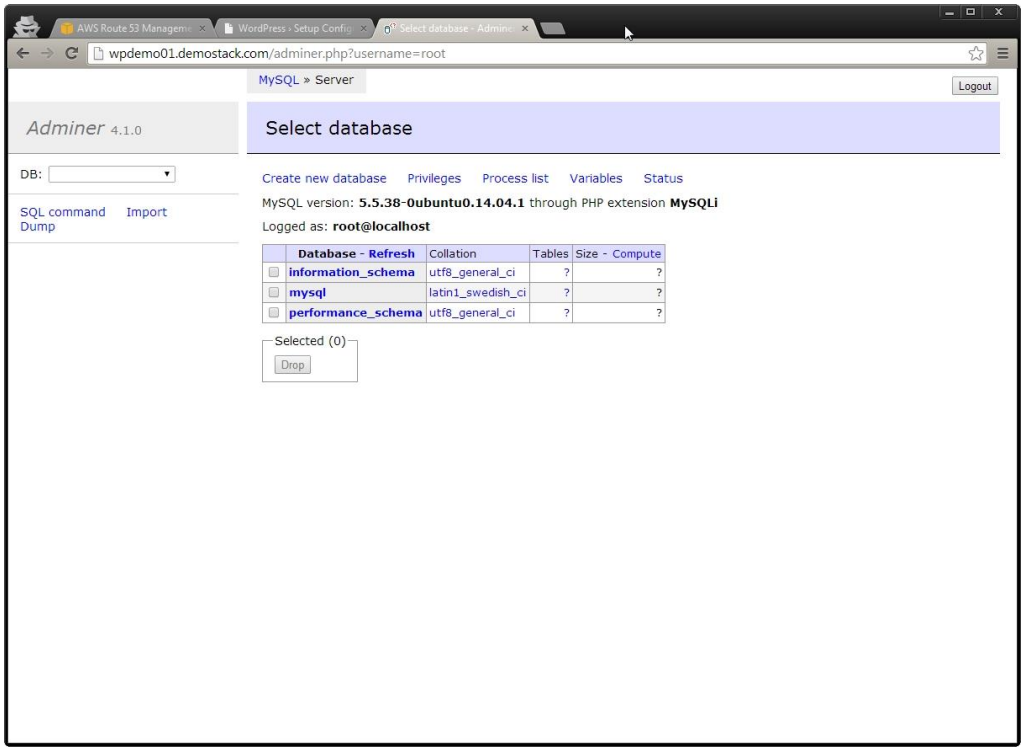


13.2 Create Database and Database User for WordPress

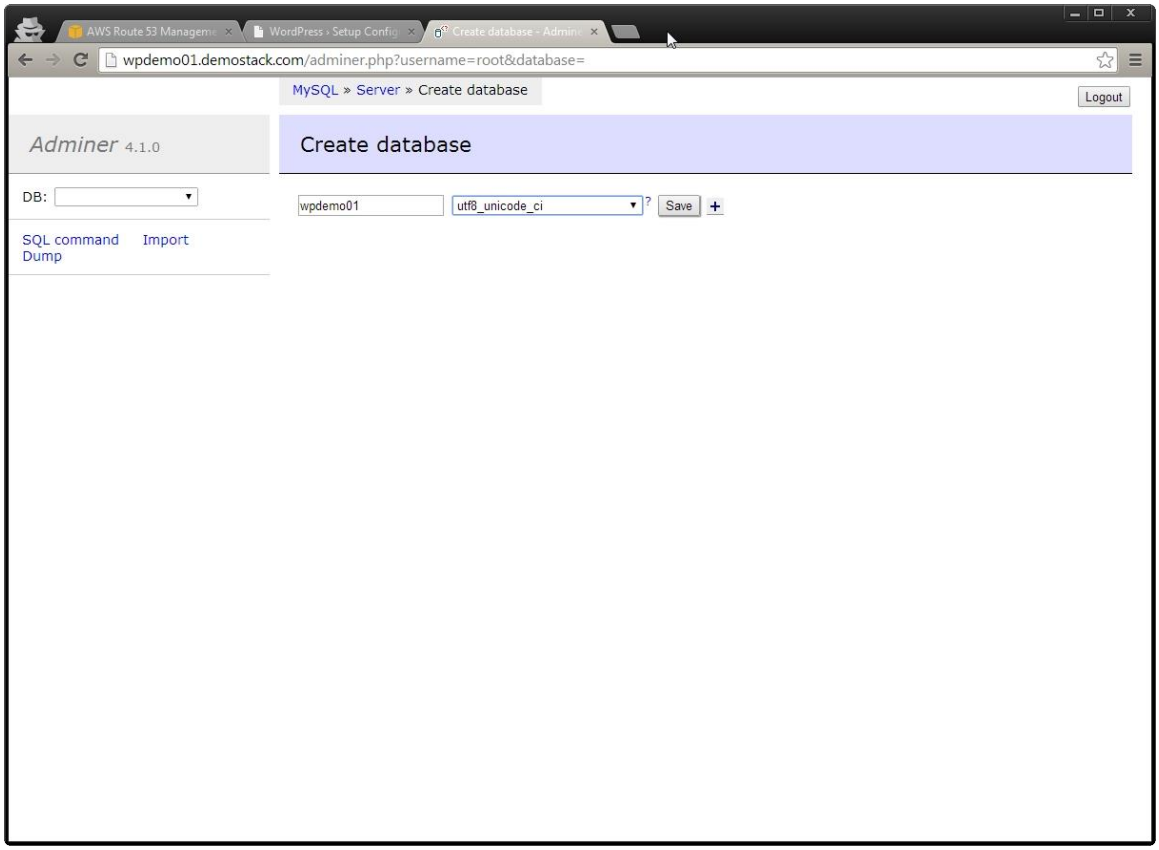
In the web browser, navigate to: http://example.com/adminer.php. You should see the Adminer **Login** screen. Type **root** in the **Username** textbox. Type the root password in the **Password** textbox (password set in the **Install MySQL Database** section of this guide). Click **Login**.



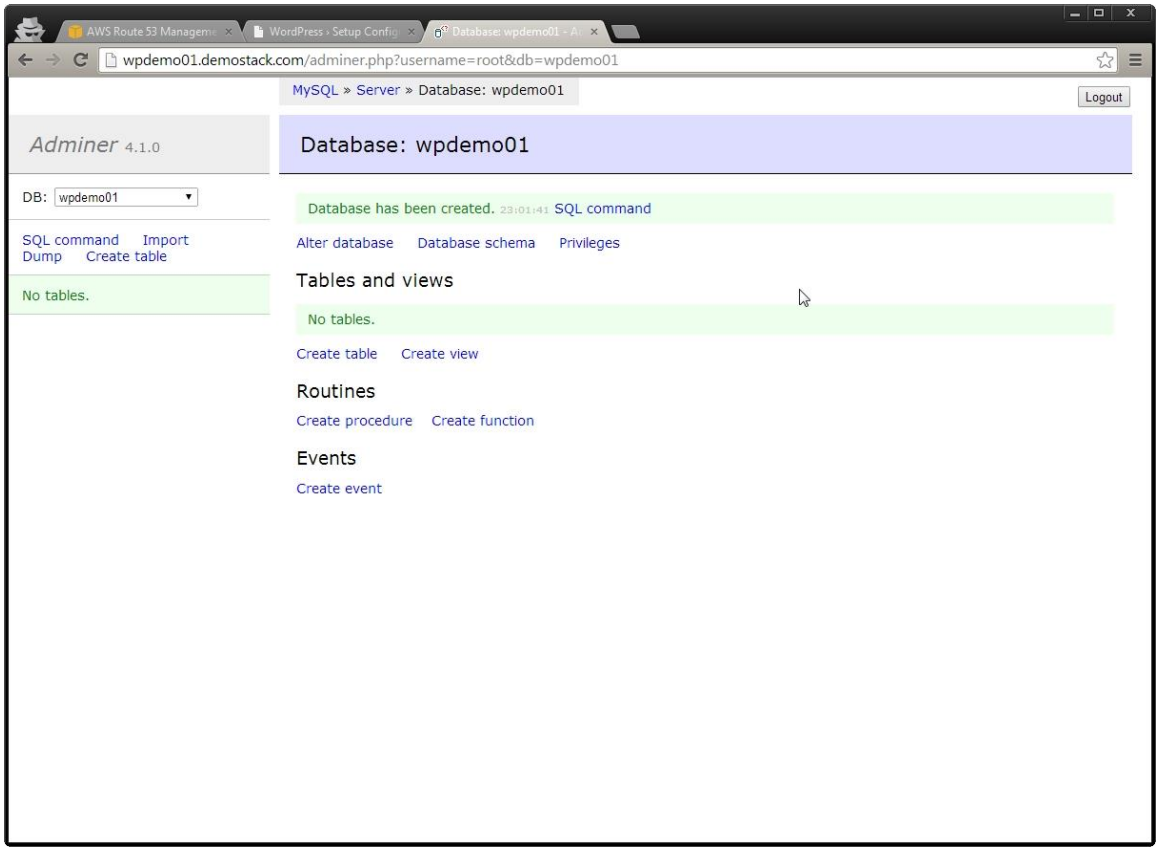
On the **Select database** screen, click **Create new database**.



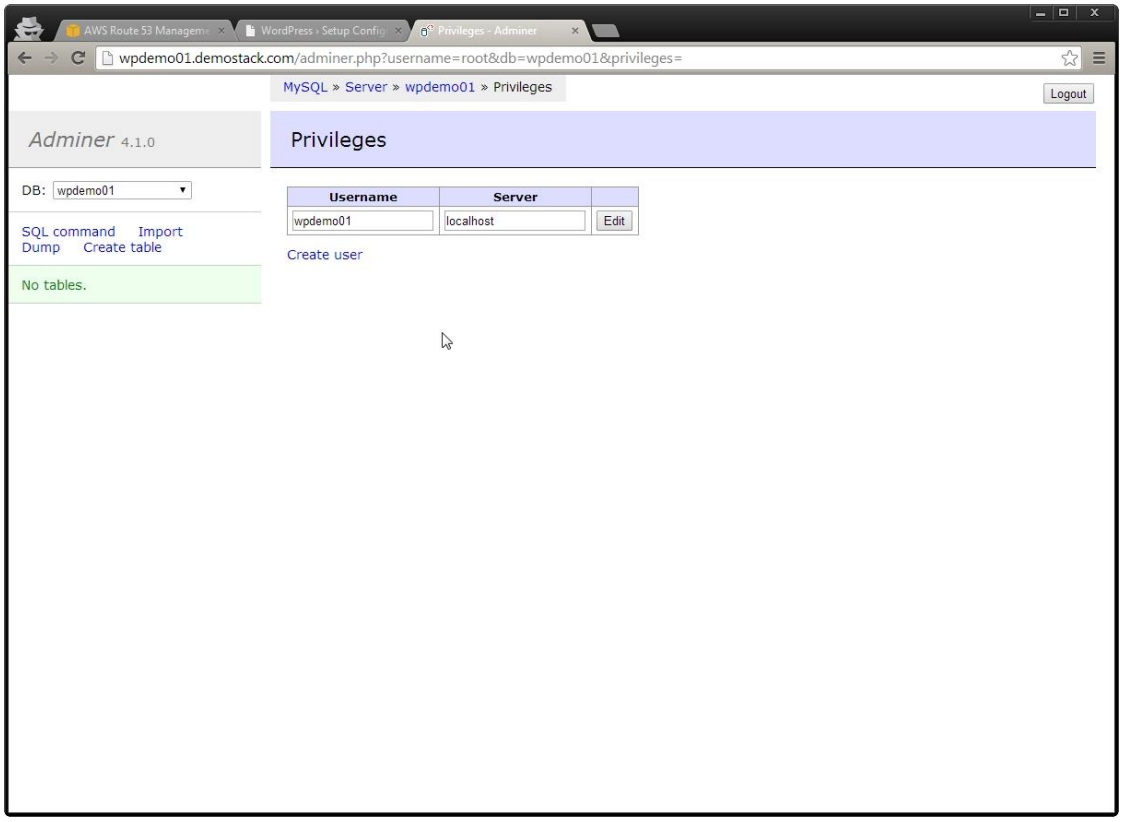
On the **Create database** screen, type in **wpdemo01** or a database name of your choice. Select **utf8_unicode_ci** from the dropdown. Click **Save**.



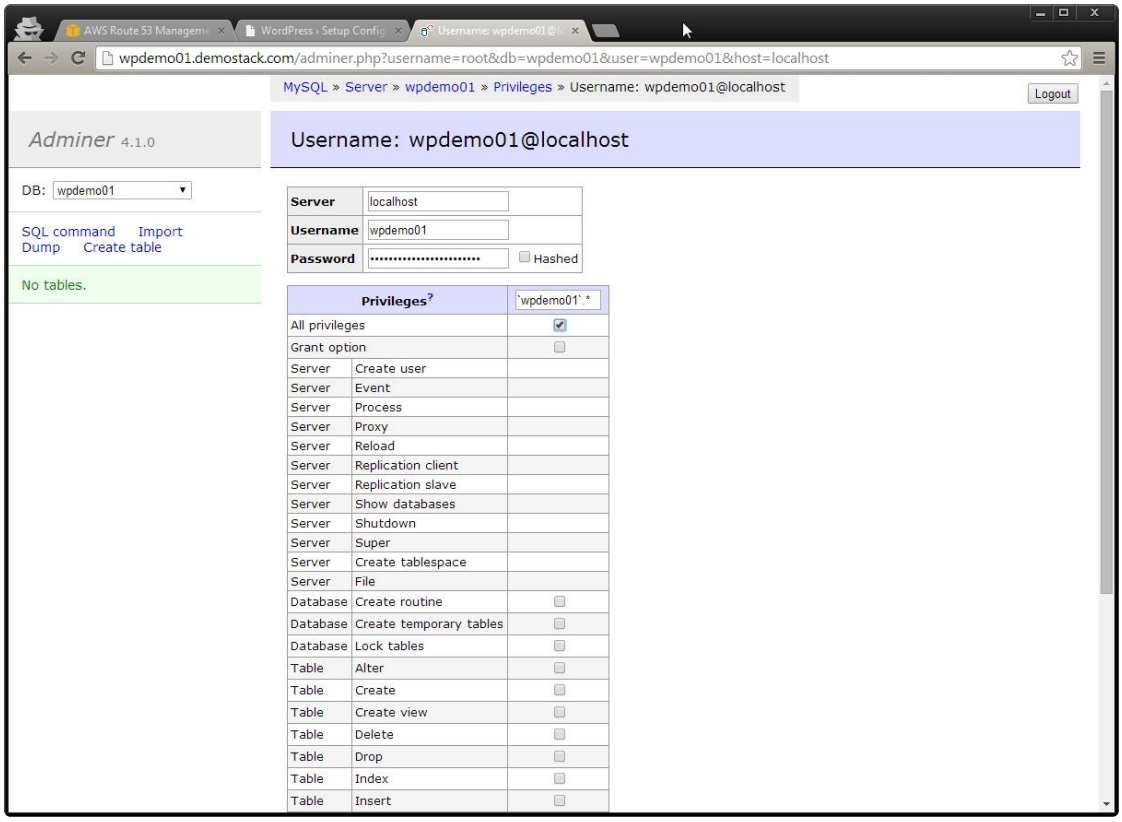
You should a message at the top of the screen in green that says, **Database has been created**. Click **Privileges**.



On the **Privileges** screen, type **wpdemo01** into the **Username** textbox and **localhost** into the **Server** textbox. Click **Create user**.

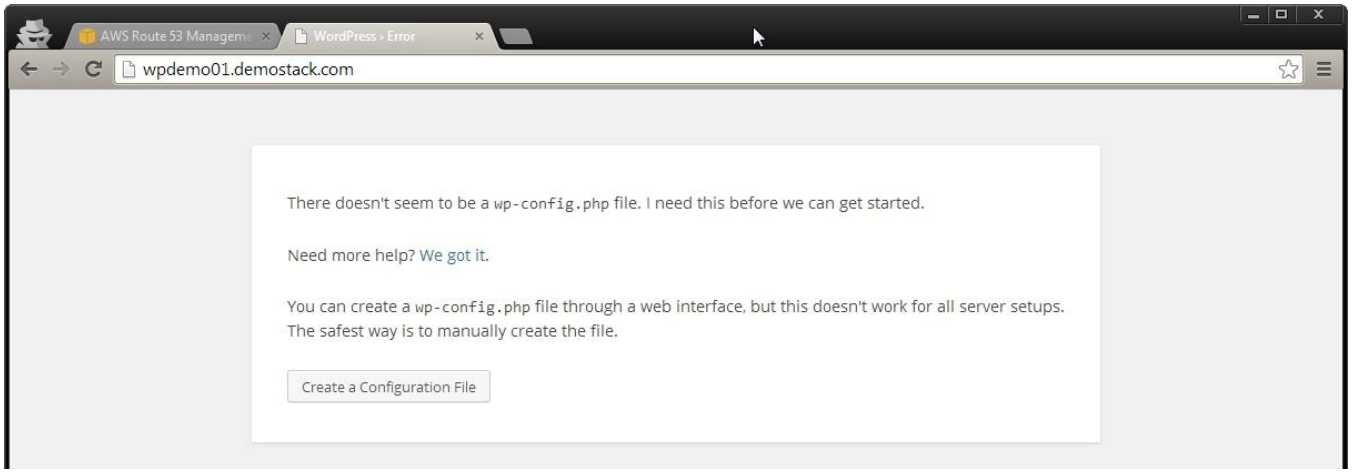


In the **Username** screen, enter in a new password into the **Password** textbox. Make sure the checkbox next to **All privileges** is checked. Click **Save** at the bottom of the page.

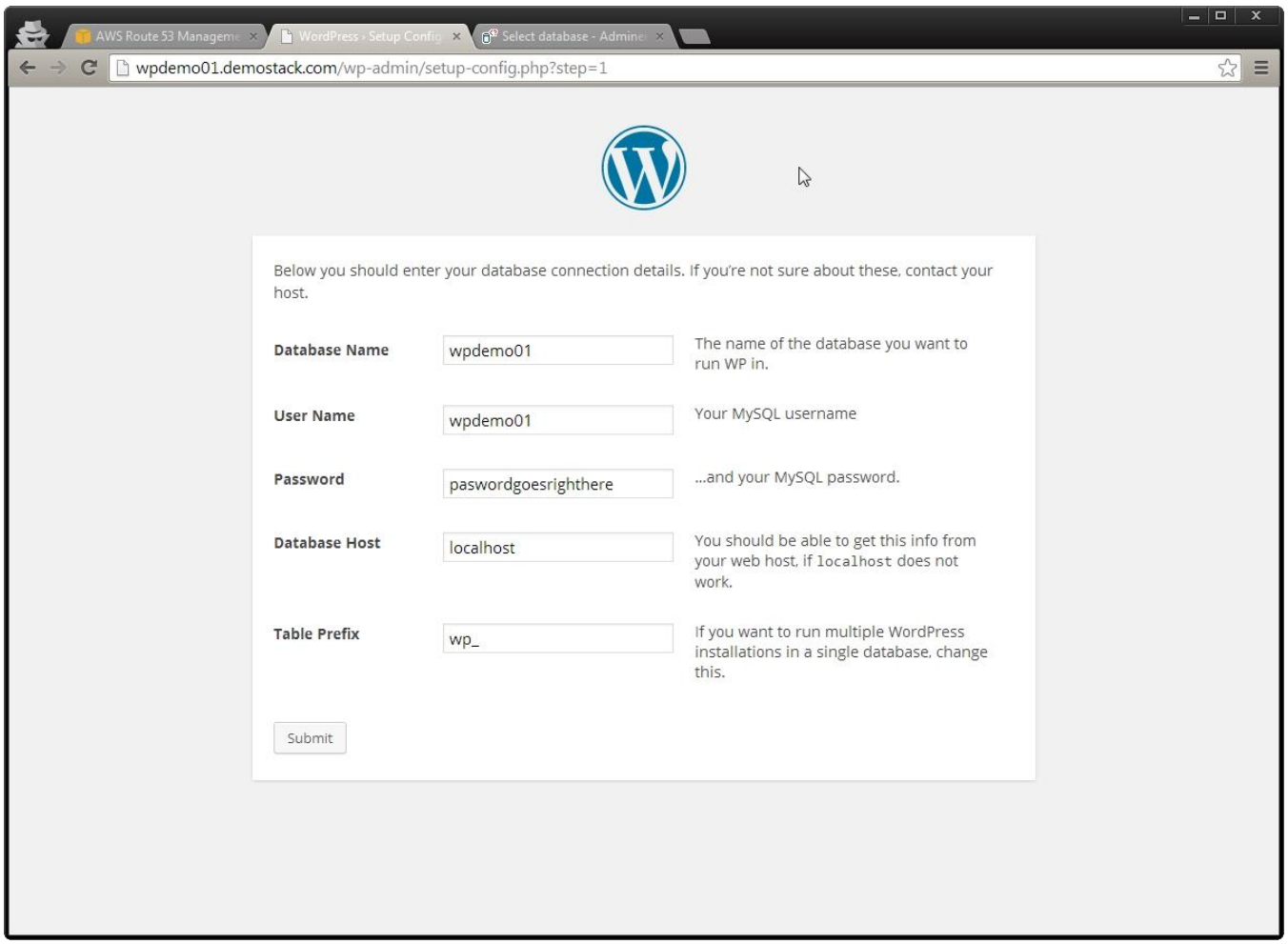


14 Configure WordPress

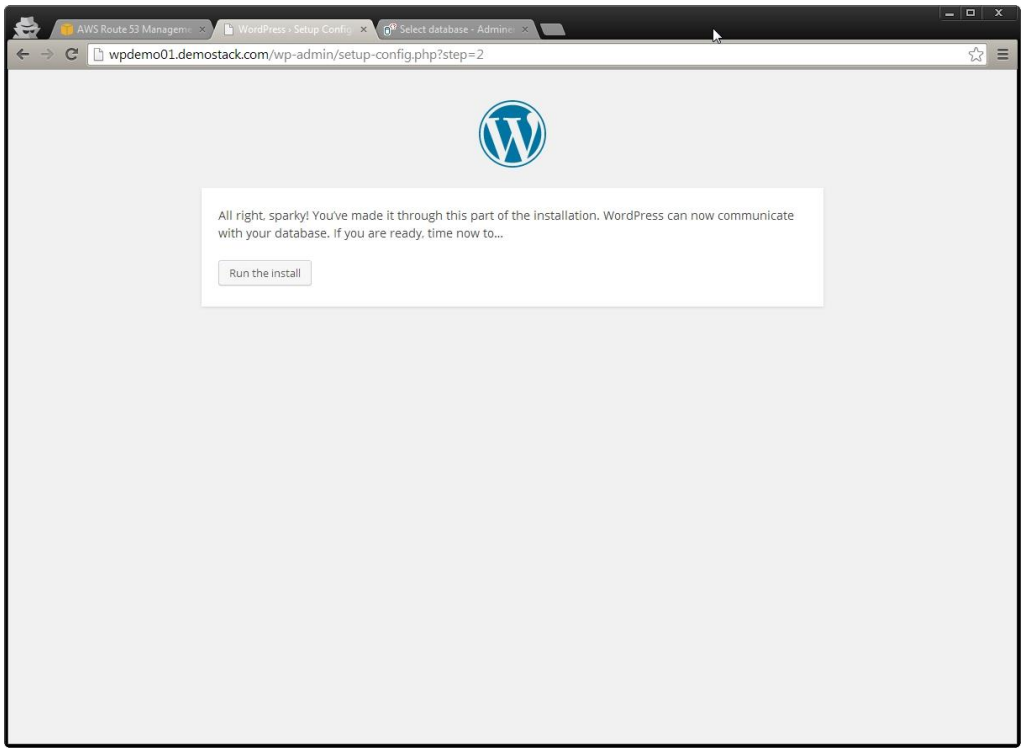
Open your web browser to your domain (ex. http://www.example.com) and you should see the **WordPress > Error** page with the **Create a Configuration File** button. Click **Create a Configuration File**.



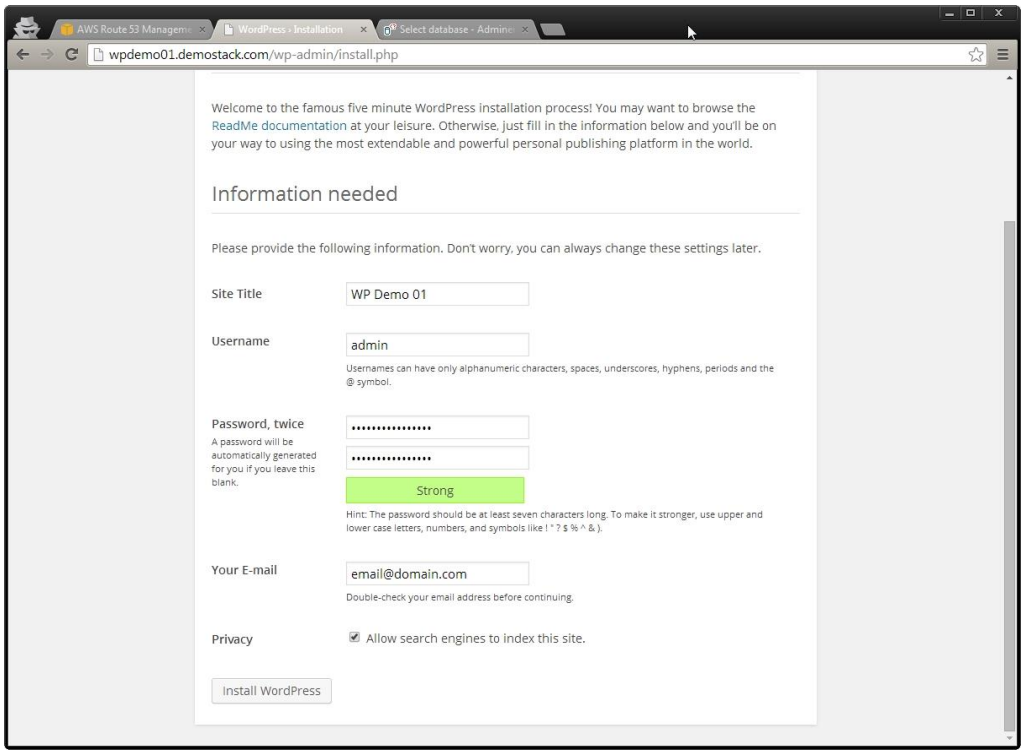
On next screen, you will be prompted for the database information. If you followed the previous section of this guide, enter **wpdemo01** in the **Database Name** textbox, enter **wpdemo01** in the **User Name** textbox, enter in the password you created in the **Password** texbox, enter **localhost** in the **Database Host** textbox, and enter **wp_** in the **Table Prefix** textbox. Click **Submit**.



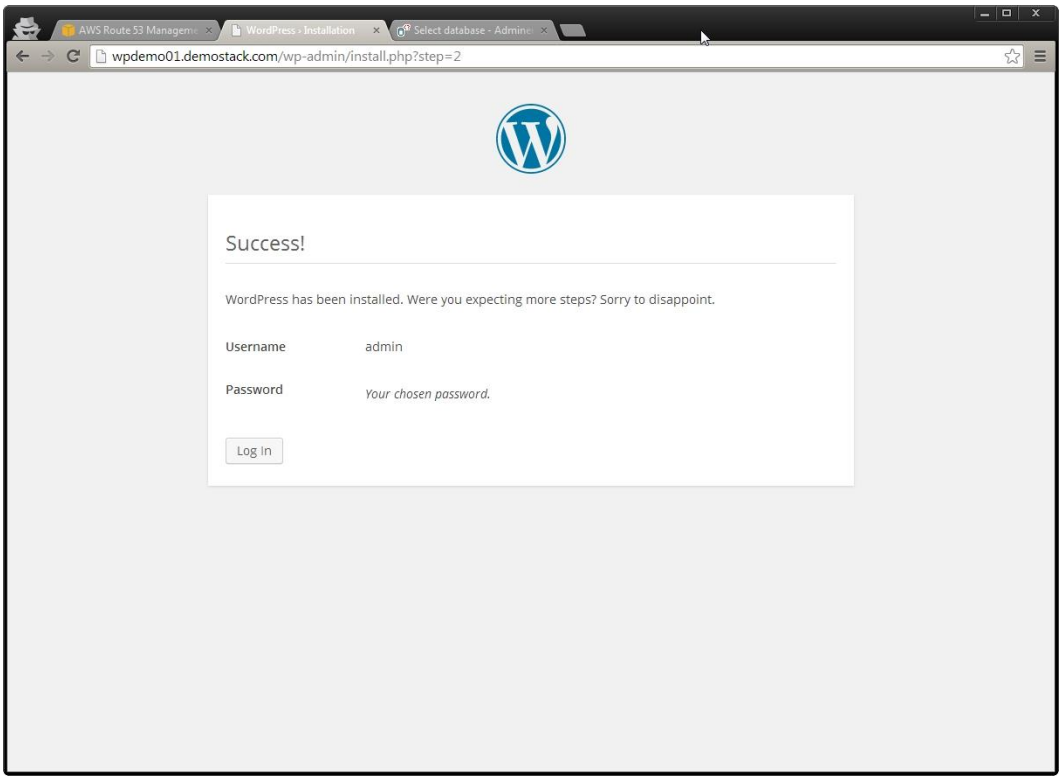
On the last configuration screen, you show see the message, **All right, sparky! You've made it through this part of the installation**. This means WordPress can communicate properly with the database. Click **Run the install**.



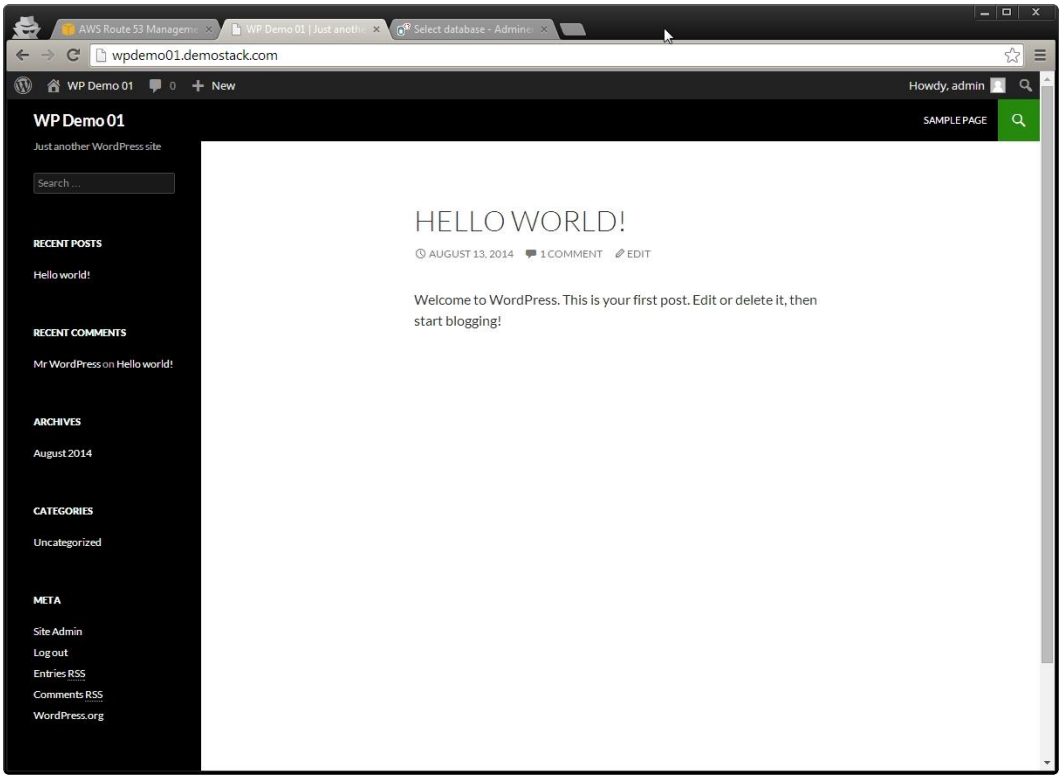
On the **Welcome** screen, enter in the name of your website in the **Site Title** textbox. Enter in a new username into the **Username** textbox. Enter in a new password in both of the **Password** textboxes. This username and password will be used to log in to the WordPress Admin Dashboard. Enter your email in the **Your E-mail** textbox. Check the box next to **Allow search engines to index this site** if you want your website to show up in Google and Bing search results. Click **Install WordPress**.



If you see the **Success** screen, you've successfully configured WordPress.

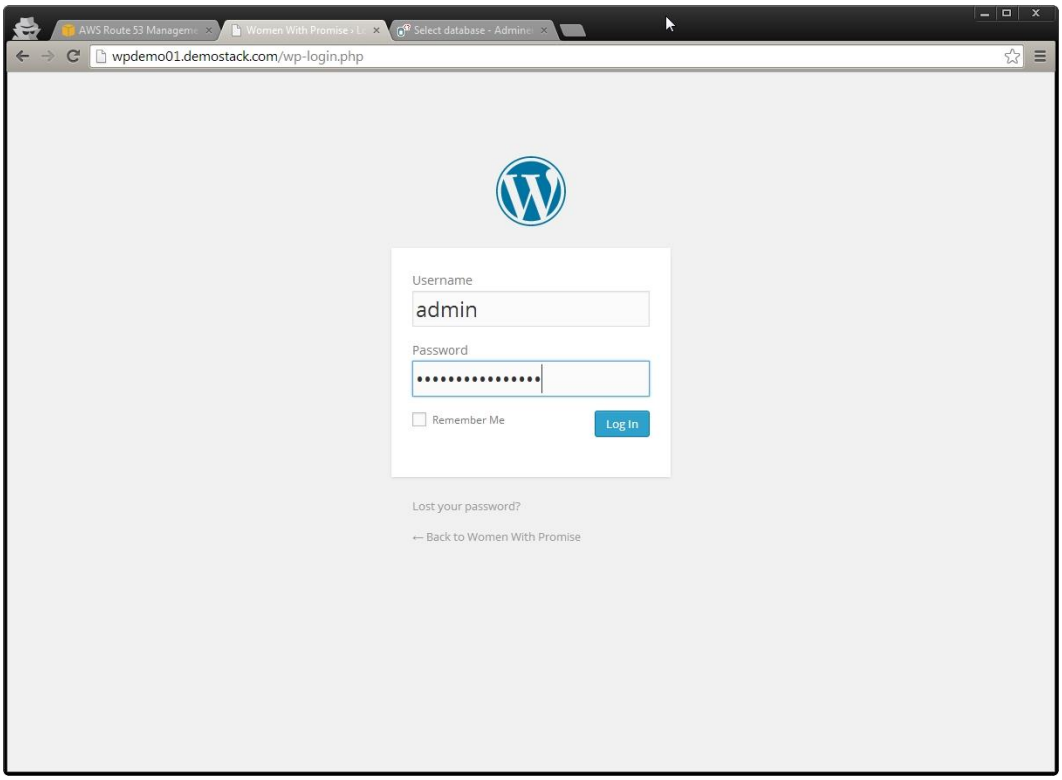


Navigate your web browser to http://wpdemo01.demostack.com. You should see the homepage of your new WordPress website! On the page, you'll see the default **Hello World** article.

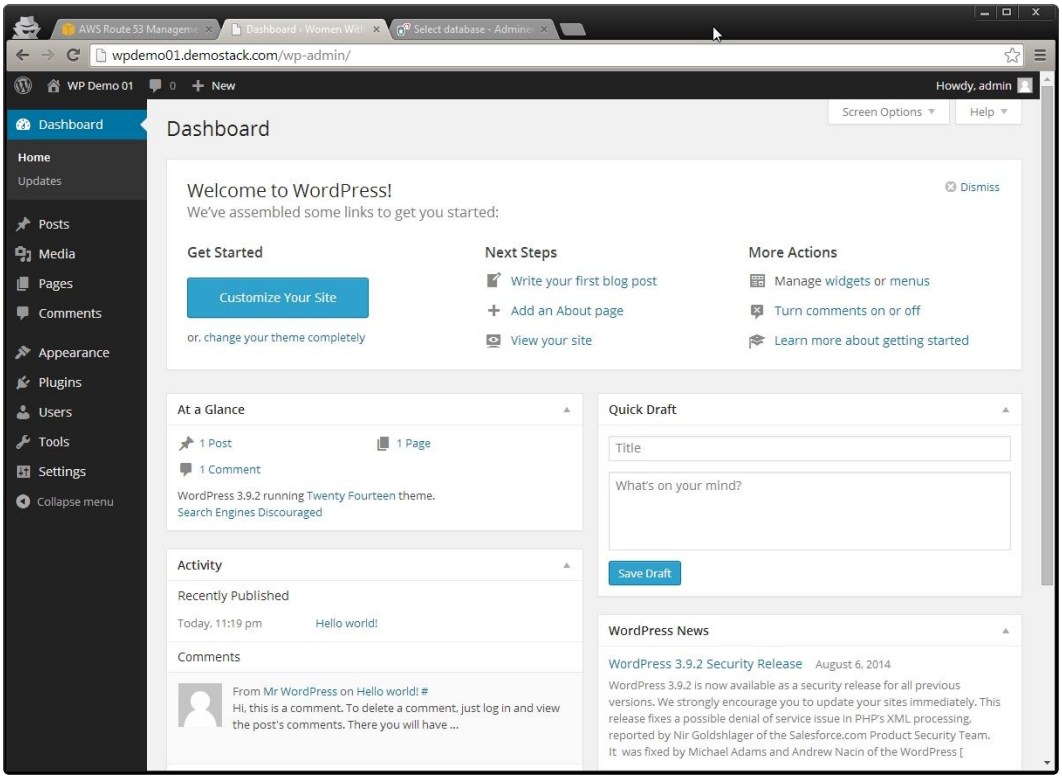


14.1 Log in and Configure WordPress using the Admin Dashboard

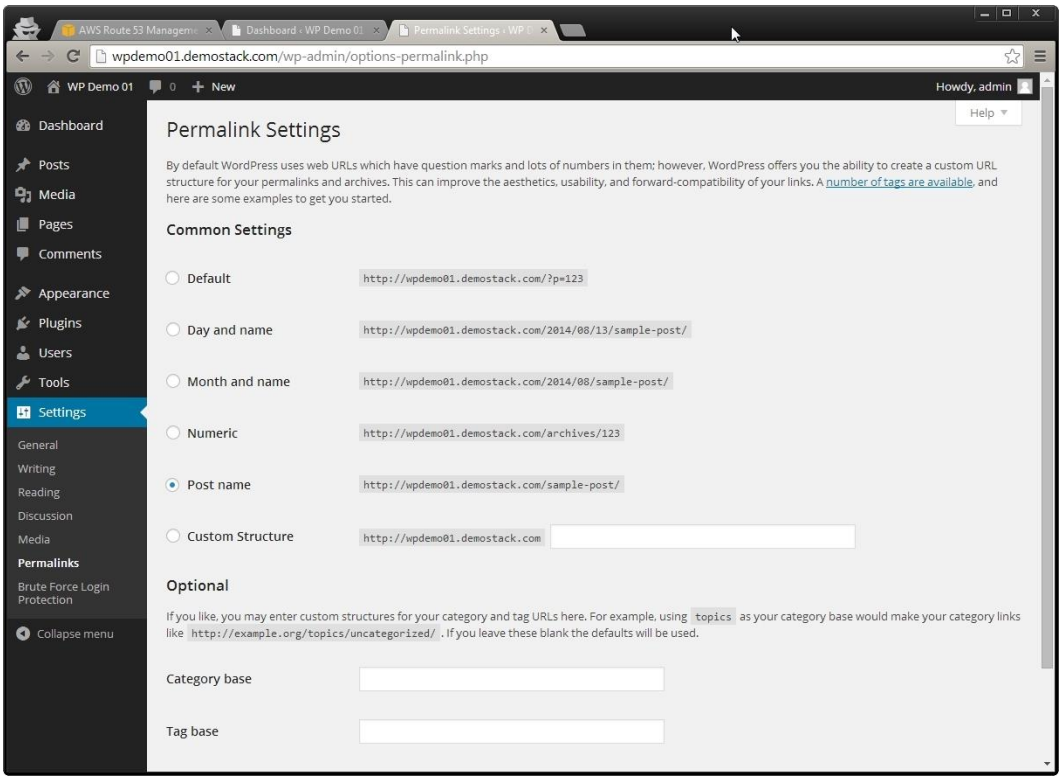
Navigate your web browser to http://wpdemo01.demostack.com/wp-login.php. You should see the W**ordPress Dashboard Login** screen with a **Username** and **Password** textbox. Enter in the username and password and click **Log In**.



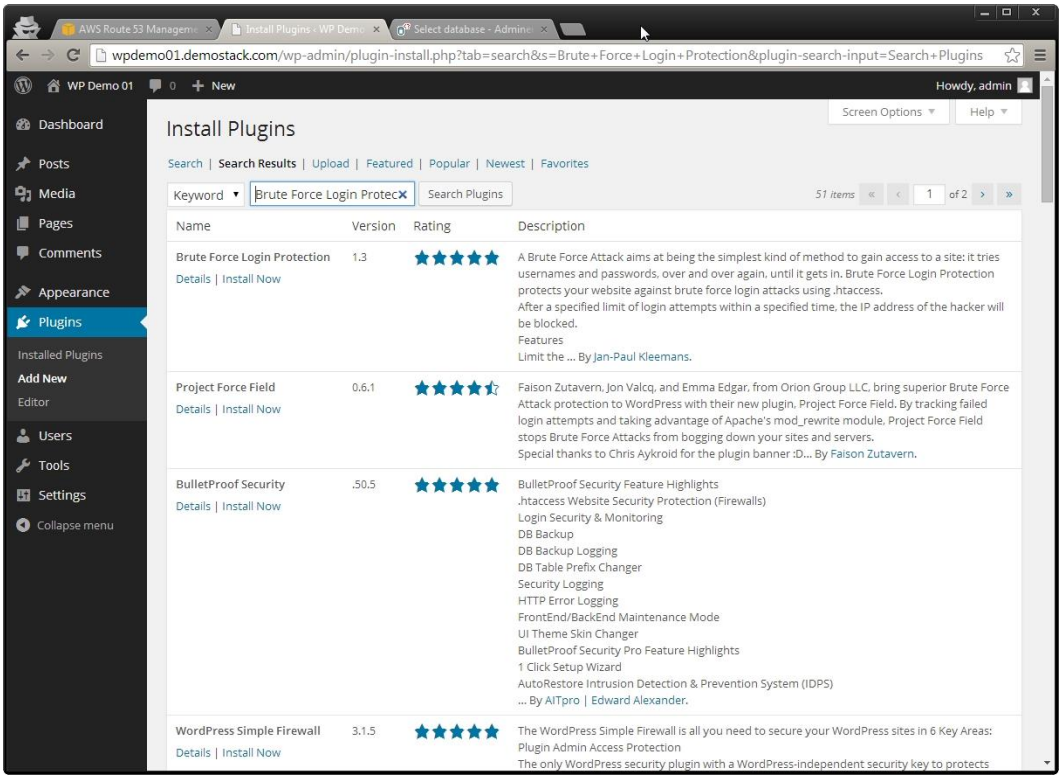
You should see the **Dashboard** screen.



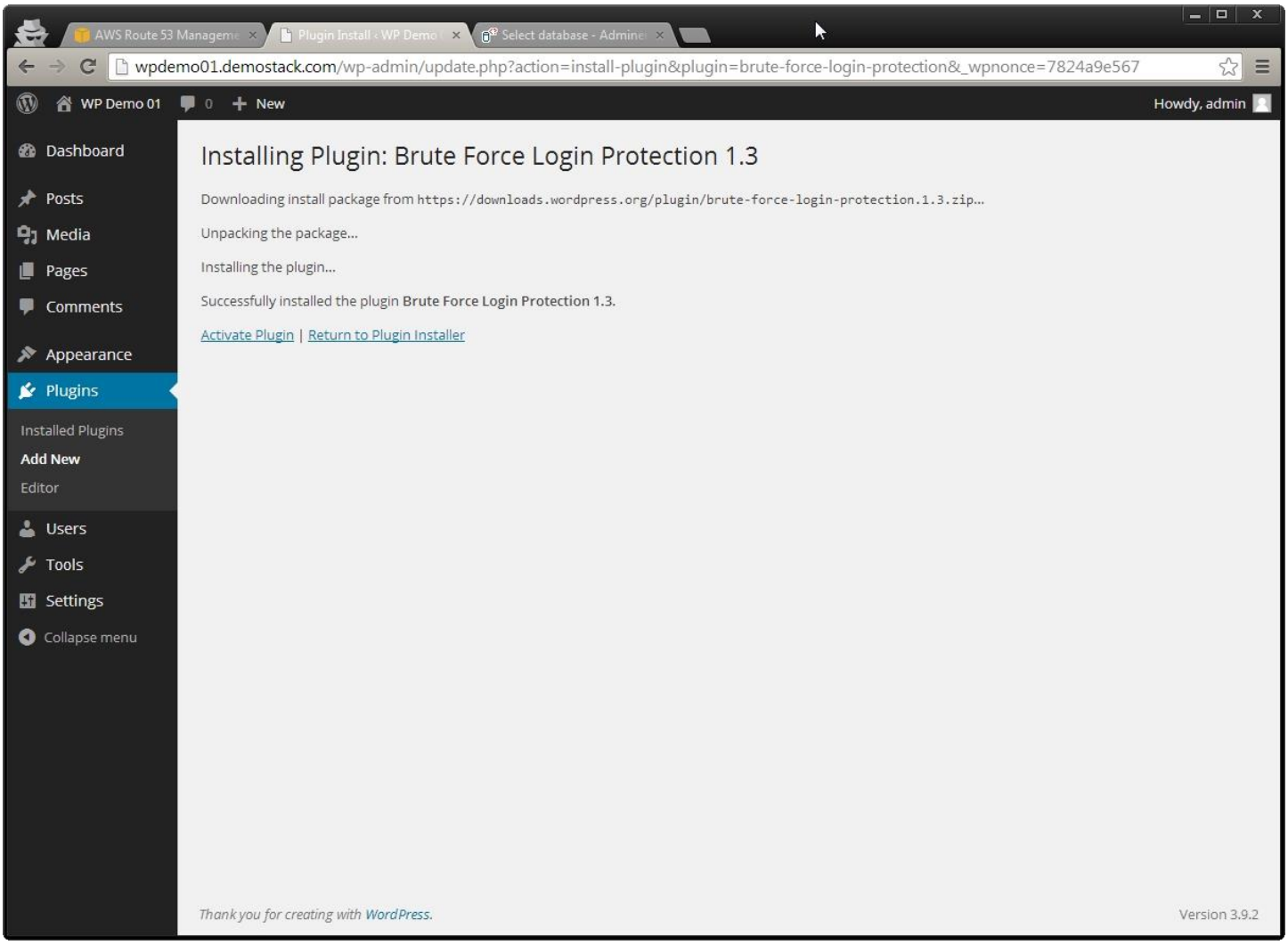
Let’s change the way WordPress handles URLs so it is clean and search engine friendly. On the left menu, hover over **Settings** and then click **Permalinks**. Select the radio button next to **Post name**. Click **Save Changes** at the bottom of the page.



Let’s also add a plugin that protects the login page from too many invalid attempts. On the left menu, hover over **Plugins** and click **Add New**. Type in **Brute Force Login Protection** and click **Search Plugins**. Under the first result, click **Install Now**.



On the **Installing Plugin** page, click **Activate Plugin**.



Congratulations! You've successfully set up a WordPress website on Amazon Web Services.

15 Final Notes

WordPress is a fantastic tool for maintaining your website. It's easy to use and has a very large library of plugins and themes to aid in customizing your website. To keep the website secure, continue to update WordPress and the plugins to ensure you have the latest versions.

To further increase security on the WordPress website:

- delete the **adminer.php** file so no one can access the database
- copy the values from https://api.wordpress.org/secret-key/1.1/salt/ to your **wp-config.php** file to make your website harder to hack

15.1 Final Permissions

Once WordPress is setup, run the commands below in PuTTY to apply the proper permissions to the WordPress files:

Set Apache as the owner of the WordPress files:
sudo chown www-data:www-data /var/www/html/wpdemo01 -R
[Enter]

Set the recommended permissions for the WordPress folders:
sudo find /var/www/html/wpdemo01 -type d -exec chmod 755 {} \;
[Enter]

Set the recommended permissions for the WordPress files:
sudo find /var/www/html/wpdemo01 -type f -exec chmod 644 {} \;
[Enter]