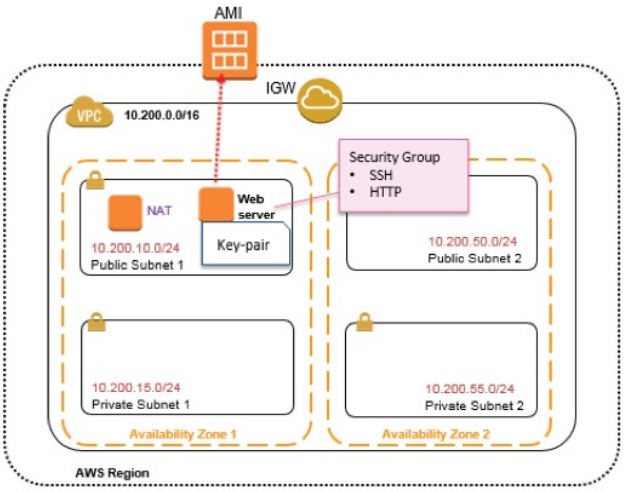
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Lab 3: Working with Amazon EC2

Lab Overview

Introduction

In this lab, you will launch and configure an Amazon EC2 instance based on an Amazon Linux AMI. After the instance starts successfully, you will connect to a Linux instance and then install an Apache web server and a sample application.



After verifying that the installation has been completed successfully, you will create an Amazon Machine Image (AMI) based on the running instance so that you can easily start an instance with the same settings.

Allotted time

The allotted time for this lab is listed as follows:

Component	Time
Overview	1 minute
Lab	40 minutes
Total:	**41 minutes**

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Lab Overview, Continued

Prerequisites

This lab requires:

- Access to a notebook computer with Wi-Fi on a Microsoft Windows, Mac OS X, or Linux (Ubuntu, SuSE, or Red Hat) system
  - The qwikLABS lab environment is not accessible on an iPad or tablet device, but you may use these devices to access the student guide (PDF)
- For Microsoft Windows users: Administrator access to the computer
- An Internet browser such as Chrome, Firefox, or IE9 (previous versions of Internet Explorer are not supported)
- An SSH client such as PuTTY

Objectives

After completing this lab, you will be able to:

- Create a key pair.
- Launch a new Amazon EC2 instance.
- Connect to a running instance and install the necessary software.
- Create your own Amazon Machine Image (AMI) from the running instance.

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Creating a Key Pair

Introduction

In this part of the lab, you will continue from the previous lab and create a key pair. Amazon EC2 uses public-key cryptography to encrypt and decrypt login information. Public-key cryptography uses a public key to encrypt a piece of data, such as a password, and then the recipient uses the private key to decrypt the data. The public and private keys are known as a *key pair*. To log in to your instance, you must create a key pair, specify the name of the key pair when you launch the instance, and provide the private key when you connect to the instance. Linux instances have no password, and you have to use a key pair to log in using SSH.

Task 3.1: Check the existing VPC and subnets

In the previous lab, you created a VPC and four subnets. In this lab, a similar VPC has been created for you so that you can continue to build your environment in the subnets that you created.

To check the properties of those existing subnets:

Step	Action
3.1.1	In the AWS Management Console, on the **Services** menu, click **VPC**.
3.1.2	In the navigation pane, click **Your VPCs**.
3.1.3	Select **Lab VPC**, and make a note of the **VPC ID** (starting with *vpc-*) and the **VPC CIDR** range (e.g., *10.200.0.0/16*).
3.1.4	In the navigation pane, click **Subnets**.
3.1.5	To view only the subnets that belong to the **Lab VPC**, enter the **VPC ID** in the search bar.
3.1.6	Make a note of those subnets' CIDR ranges.

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Creating a Key Pair, Continued

Task 3.2: Create a key pair

To create a key pair:

Step	Action
3.2.1	On the **Services** menu, click **EC2**.
3.2.2	In the navigation pane, click **Key Pairs**. Notice that there is a key pair already created for you by the qwikLABS environment (the name should be similar to *qwikLABS-L465-xxxx*).
3.2.3	Click **Create Key Pair**.
3.2.4	In the **Key pair name** box, type **LabKeyPair**
3.2.5	Click **Create**.
3.2.6	At the next prompt, save the **LabKeyPair.pem** file to your local computer.

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Launching a New Amazon EC2 Instance

Introduction

In this part of the lab, you will go through the steps to launch an Amazon EC2 instance based on an Amazon Linux AMI.

Amazon Elastic Compute Cloud (EC2) is a web service that provides resizable compute capacity in the cloud. It provides you with complete control over your computing resources and lets you run on Amazon's computing environment. Amazon EC2 provides developers with the tools to build failure-resilient applications and to isolate themselves from common failure scenarios.

Task 3.3: Create an instance

To create an Amazon EC2 instance:

Step	Action
3.3.1	In the navigation pane, click **Instances**.
3.3.2	Click **Launch Instance**.
3.3.3	On the **Choose an Amazon Machine Image (AMI)** page, click **Select** for **Amazon Linux AMI... (HVM)**.
3.3.4	On the **Choose an Instance Type** page, select **t2.medium**.
3.3.5	Click **Next: Configure Instance Details**.
3.3.6	On the **Configure Instance Details** page, specify the following settings: For **Network**, select **Lab VPC**. For **Subnet**, select **Public Subnet 1** (10.200.10.0/24). For **Auto-assign Public IP**, select **Enable**.
3.3.7	Click **Next: Add Storage**.
3.3.8	Accept the default and click **Next: Tag Instance**.
3.3.9	In the **Value** box, type **Lab Instance**
3.3.10	Click **Next: Configure Security Group**.
3.3.11	The **Create a new security group** option should be selected for **Assign a security group**.
3.3.12	Click **Add Rule**. For **Type**, select **HTTP**. Accept the **Source** value as **Anywhere**.
3.3.13	Click **Review and Launch**.
3.3.14	Review the settings, and then click **Launch**.
3.3.15	When prompted, be sure that **LabKeyPair** is selected in the **Select a key pair** field.
3.3.16	Select the acknowledgement check box, and then click **Launch Instances**.
3.3.17	Click **View Instances**. There are two instances. One is the instance you just created, and the other one is the NAT instance you created in the previous lab.
3.3.18	Select **Lab Instance**, and then make a note of the **Public IP** address on the **Description** tab of the instance.

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Connecting to Your Instance

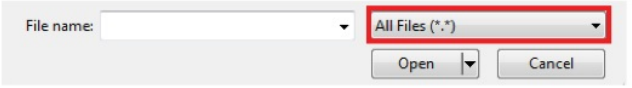
Introduction

In this part of the lab, you will connect to the Amazon EC2 instance that you just launched using the key pair that you created earlier.

Task 3.4: Connect to the EC2 instance (Windows)

Note: This section is for **Windows** users only. If you are running OSX or Linux, skip to task 3.5.

To connect to your Amazon EC2 instance using PuTTY:

Step	Action
3.4.1	Download **PuTTY** from http://the.earth.li/~sgtatham/putty/latest/x86/putty.exe Download **PuTTYgen** from http://the.earth.li/~sgtatham/putty/latest/x86/puttygen.exe **Note:** If those links do not work, download PuTTY and PuTTYgen from the following link: http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html
3.4.2	Run **PuTTYgen** by double-clicking the puttygen.exe that you downloaded.
3.4.3	In the **Parameters** section, for **Type of key to generate**, confirm that the option **SSH-2 RSA** is selected, and then click **Load**. 
3.4.4	Click **All Files (*.*)** and navigate to where you saved the **LabKeyPair.pem** file. 

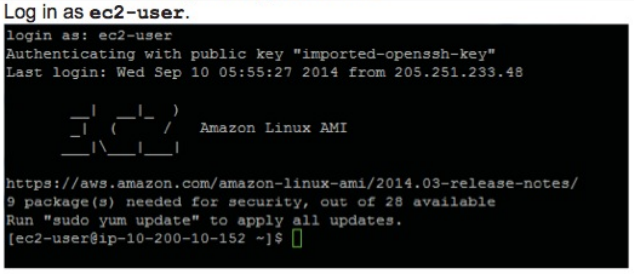
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Connecting to Your Instance, Continued

Task 3.4: Connect to the EC2 instance (Windows), continued

Step	Action
3.4.5	Click **Open**. When prompted, click **OK** to close.
3.4.6	Click **Save private key**. In the warning message, click **Yes** to close.
3.4.7	In the **File name** box, type **LabKeyPair** Click **Save**.
3.4.8	Close **PuTTY Key Generator.**
3.4.9	Launch **PuTTY**.
3.4.10	In the **Host Name** box, enter the Public IP address that you copied in step 3.3.18.
3.4.11	For **Connection type**, click **SSH**.
3.4.12	In the **Category** list, expand **SSH** and then click **Auth**.
3.4.13	In the **Private key file for authentication** box, browse to the **LabKeyPair.ppk** file that was generated by PuTTYgen, double-click it, and then click **Open**.
3.4.14	In the PuTTY security message, click **Yes**.
3.4.15	Log in as **ec2-user**. 
3.4.16	Continue to **Task 3.6: Installing Software on Your Instance**.

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Connecting to Your Instance, Continued

Task 3.5: Connect to the EC2 instance (Mac and Linux)

Note: This section is for **Mac** and **Linux** users only.

To connect to your Amazon EC2 instance:

Step	Action
3.5.1	Run the following commands in Terminal: **chmod 600** *<location-of-pem>* **ssh -i** *<location-of-pem>* **ec2-user@***<host-IP>* For *<location-of-pem>*, substitute the path/filename to the LabKeyPair.pem file. For *<host-IP>*, substitute the Public IP address you noted in step 3.3.18.
3.5.2	Continue to **Task 3.6: Installing Software on Your Instance**.

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Installing Software on Your Instance

Introduction

In this part of the lab, you will install:

- Available updates.
- An Apache web server.
- A sample PHP application.

Task 3.6: Install a web server on your instance

To install a web server on your Amazon EC2 instance:

Step	Action
3.6.1	To update your instance, execute the following command: `sudo yum -y update` This will run through a check of what updates are available for your instance, download the updates, and install them. **Note:** For your convenience, a Command reference text file that contains a text version of this script to simply copy and paste is available on the qwikLABS web page.
3.6.2	To install a package that creates a web server, execute the following command: `sudo yum -y install httpd php` This command installs an Apache web server and the PHP interpreter.
3.6.3	Execute the following command: `sudo chkconfig httpd on` This configures the Apache web server to automatically start when the instance starts.
3.6.4	Execute the following command (we highly recommend that you copy this text from the Command Reference text file): `wget https://us-west-2-aws-training.s3.amazonaws.com/architecting/v4.2/working-with-ec2/static/phpapp.zip` This downloads a sample PHP application into the current directory.
3.6.5	Execute the following command: `sudo unzip phpapp.zip -d /var/www/html` This extracts the PHP application into the default Apache web server directory.

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Installing Software on Your Instance, Continued

Task 3.6: Install a web server on your instance, continued

Step	Action
3.6.6	Execute the following command: `sudo service httpd start` This starts the Apache web server.
3.6.7	Open a new web browser window or tab, and enter the Public IP address for your instance in the address bar. The sample PHP application is run and the information specific to your Amazon EC2 instance is displayed.
3.6.8	Close the web browser window or tab that you opened in the previous step.
3.6.9	To end your SSH session, type: `Exit`

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