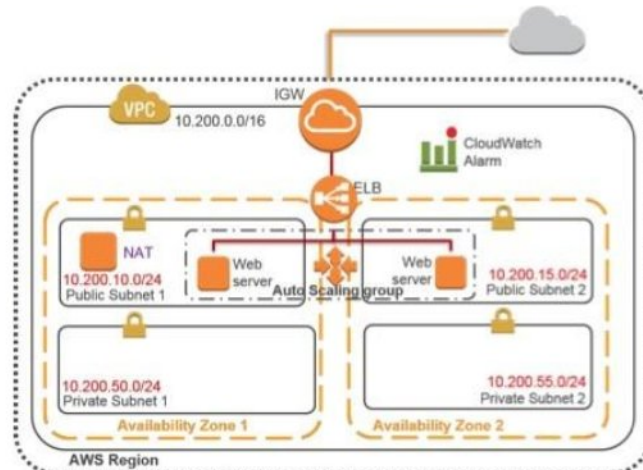


Lab 5: Exploring AWS CloudFormation

Overview

In this lab, you will use AWS CloudFormation to automate the creation of all AWS resources that you manually created in the previous labs, such as a VPC, subnets, a NAT server, and an Auto Scaling group. Using an AWS CloudFormation template, you can manage and configure your AWS cloud more quickly.



Objectives

After completing this lab, you will be able to:

- Navigate through the AWS CloudFormation Dashboard and inspect the AWS resources that were created.
- Select a region and create an AWS CloudFormation stack.
- Examine the execution of the AWS CloudFormation template.

Pre-requisites

This lab requires:

- Access to a notebook computer with Wi-Fi running Microsoft Windows, Mac OS X, or Linux (Ubuntu, SuSE, or Red Hat).
 - **Note** The qwikLABS lab environment is not accessible using an iPad or tablet device, but you can use these devices to access the student guide.
- For Microsoft Windows users: Administrator access to the computer.
- An Internet browser such as Chrome, Firefox, or Internet Explorer 9 (previous versions of Internet Explorer are not supported).
- An SSH client, such as PuTTY.

Duration

This lab will require around **30 minutes** to complete.

Task 1: Check the existing VPC and subnets

Overview

AWS CloudFormation gives developers and systems administrators an easy way to create and manage a collection of related AWS resources, provisioning and updating them in an orderly and predictable fashion.

Task 1-1: Inspect the existing stack

| | |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Overview | Your lab environment contains a pre-defined Amazon VPC. It contains four subnets, and is nearly identical to the VPC that you created in the previous lab. To check the properties of those subnets: |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Step | Instruction |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1.1 | <p>In the AWS Management Console, click CloudFormation.</p> <p>You should see a stack with <i>CREATE_IN_PROGRESS</i> status. Wait until the status changes to <i>CREATE_COMPLETE</i>.</p> |
| 1.1.2 | <p>Select the check box for the existing stack (the stack name starts with <i>q/stack2-labinstance-</i>).</p> <p>Information about this stack is displayed on the Overview tab in the lower pane. Notice that the Description field provides a brief explanation about this stack.</p> |
| 1.1.3 | <p>Click the Resources tab.</p> <p>Review each of the resources created for you by the template. Notice that the resource Type and its ID, such as AWS::EC2::VPC, has a Physical ID that starts with <i>vpc-</i>, which you observed in previous labs.</p> |
| 1.1.4 | <p>Click the Events tab.</p> <p>The Events tab provides point-in-time event information, starting at template initialization and ending with the completed template. This information can help you debug your AWS CloudFormation template.</p> |
| 1.1.5 | <p>Click the Parameters tab.</p> <p>The Parameters tab displays parameter values that were set by the AWS CloudFormation template.</p> |

Task 1-2: Create security groups

| | |
|-----------------|-----------------------------------------------------------------------------------|
| Overview | In this section of the lab, you will create security groups for your environment. |
|-----------------|-----------------------------------------------------------------------------------|

| Step | Instruction |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.2.1 | On the Services menu, click EC2 . |
| 1.2.2 | In the navigation pane, click Instances . Notice that there are three instances: two WebApplicationServer instances and one NAT instance. |
| 1.2.3 | In the EC2 Dashboard pane, click Launch Configurations . |
| 1.2.4 | Select the existing launch configuration. The Details tab displays the settings for the launch configuration, such as AMI ID and Instance Type . |
| 1.2.5 | Click the View User data link to see the bootstrapping script. Note In the previous lab, you configured these properties manually from the AWS Management Console. |
| 1.2.6 | Click the X to close the User data dialog. |
| 1.2.7 | In the EC2 Dashboard pane, click Auto Scaling Groups . |
| 1.2.8 | If it is not already selected, select the check box for the existing Auto Scaling group. In the lower pane, the Details tab displays the configuration for this Auto Scaling group. |
| 1.2.9 | Click the Activity History tab to see that two instances were launched by this Auto Scaling group because the policy is set to run at least two instances (min). |

Task 2: Creating a Stack


Overview

In this part of the lab, you will deploy a template and its associated collection of resources (called a stack) by using the AWS CloudFormation Dashboard.

Task 2-1: Create a load balancer

Overview

In this section of the lab you will launch a CloudFormation stack in a different region.

| Step | Instruction |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.1.1 | On the Services menu, click CloudFormation . |
| 2.1.2 | In the navigation bar, select a different region from the drop-down list.  |
| 2.1.3 | Click Create Stack . |
| 2.1.4 | For Choose a template , select Specify an Amazon S3 template URL . |
| 2.1.5 | Copy and paste this URL from the Cloudformation Template for Lab Instructions tab of the qwikLABS web page. <code>https://us-west-2-aws-training.s3.amazonaws.com/awsu-ilt/architecting/v4.6/lab-5-exploring-cloudformation/static/lab-5-exploring-cloudformation-student.template</code> |
| 2.1.6 | Click Next . |
| 2.1.7 | Specify a Stack name of MyLabTemplate and click Next . You don't need to change any of the parameter values. |
| 2.1.8 | In the Tags section, enter the following values: <ul style="list-style-type: none"> • Key: Environment • Value: Lab |
| 2.1.9 | Click Next . |

| | |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.1.10 | <p>On the Review page, click the Template URL link to open the provided AWS CloudFormation template in another tab. You can examine the template to see what it creates.</p> <p>Notice that Mappings specifies the AMI ID to be used for each region.</p> <p>Locate WebApplicationLC to see that user data is also defined within the block. You launched an Amazon EC2 instance and installed available updates and an Apache server manually in Lab 3. The same steps can be automated using an AWS CloudFormation template.</p> <p>Take your time to review the Cloud Formation template before proceeding.</p> |
| 2.1.11 | <p>Click Create.</p> <p>The status should be <i>CREATE_IN_PROGRESS</i>. Click the Events tab in the lower pane to track the progress. As the resources are created, you can see them in their respective sections of your AWS Management Console, such as in the EC2 Dashboard and VPC Dashboard.</p> <p>When all the resources are created, the status changes to <i>CREATE_COMPLETE</i>.</p> |

Ending your lab

Overview

When you are finished with your lab, terminate the lab environment using the following steps.

| Step | Instruction |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | To log out of the AWS Management Console, from the menu, click awsstudent @ [YourAccountNumber] and choose Sign out (where [YourAccountNumber] is the AWS account generated by qwikLABS). |
| 2 | Close any active SSH client sessions or remote desktop sessions. |
| 3 | Click the End Lab button on the qwikLABS lab details page in your browser. |
| 4 | When prompted for confirmation, click OK . |
| 5 | <p>For My Rating, rate the lab (using the applicable number of stars), optionally type a Comment, and click Submit.</p> <p>Note: The number of stars indicates the following: 1 star = very dissatisfied, 2 stars = dissatisfied, 3 stars = neutral, 4 stars = satisfied, and 5 stars = very satisfied. Also, you may close the dialog if you do not wish to provide feedback.</p> |