Deploy a Compute Instance with a Remote Startup Script

GSP301

Overview

In a challenge lab you're given a scenario and a set of tasks. Instead of following step-by-step instructions, you will use the skills learned from the labs in the quest to figure out how to complete the tasks on your own! An automated scoring system (shown on this page) will provide feedback on whether you have completed your tasks correctly.

When you take a challenge lab, you will not be taught new Google Cloud concepts. You are expected to extend your learned skills, like changing default values and reading and researching error messages to fix your own mistakes.

To score 100% you must successfully complete all tasks within the time period!

This lab is only recommended for students who have Compute Engine skills. Are you up for the challenge?

Topics tested

- Create a storage bucket for startup scripts.
- Create a virtual machine that runs a startup script from Cloud Storage.
- Configure HTTP access for the virtual machine.
- Deploy an application on an instance.

Setup

Before you click the Start Lab button

Read these instructions. Labs are timed and you cannot pause them. The timer, which starts when you click **Start Lab**, shows how long Google Cloud resources will be made available to you.

This Qwiklabs hands-on lab lets you do the lab activities yourself in a real cloud environment, not in a simulation or demo environment. It does so by giving you new, temporary credentials that you use to sign in and access Google Cloud for the duration of the lab.

What you need

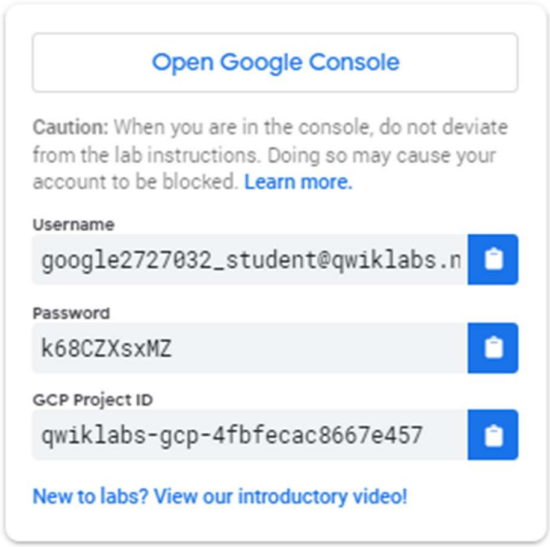
To complete this lab, you need:

- Access to a standard internet browser (Chrome browser recommended).
- Time to complete the lab.
  Note: If you already have your own personal Google Cloud account or project, do not use it for this lab.

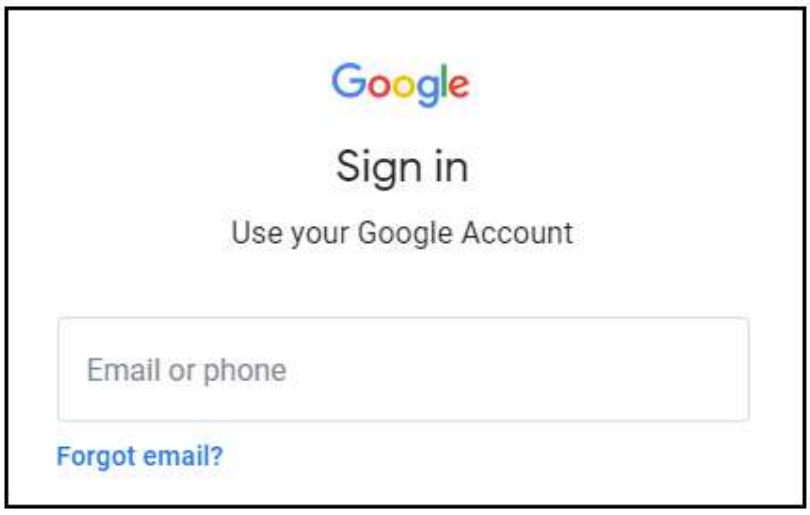
Note: If you are using a Pixelbook, open an Incognito window to run this lab.

How to start your lab and sign in to the Google Cloud Console

1. Click the **Start Lab** button. If you need to pay for the lab, a pop-up opens for you to select your payment method. On the left is a panel populated with the temporary credentials that you must use for this lab.

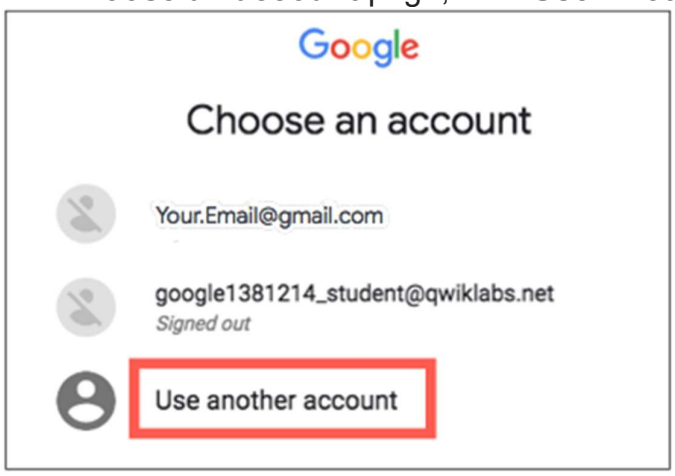


2. Copy the username, and then click **Open Google Console**. The lab spins up resources, and then opens another tab that shows the **Sign in** page.



Tip: Open the tabs in separate windows, side-by-side.

If you see the **Choose an account** page, click **Use Another Account**.



3. In the **Sign in** page, paste the username that you copied from the Connection Details panel. Then copy and paste the password.

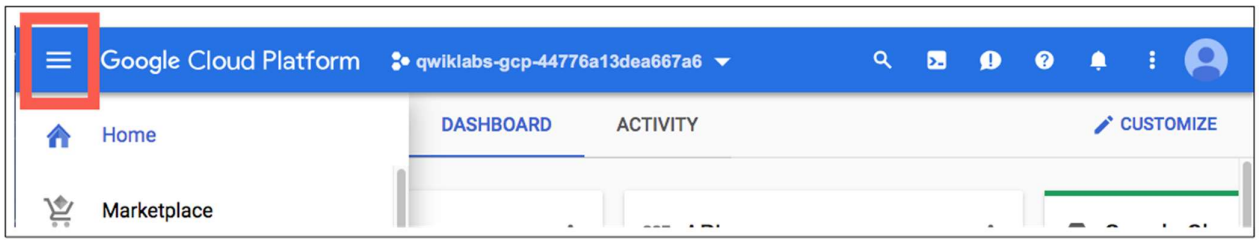
   Important: You must use the credentials from the Connection Details panel. Do not use your Qwiklabs credentials. If you have your own Google Cloud account, do not use it for this lab (avoids incurring charges).

4. Click through the subsequent pages:

   - Accept the terms and conditions.
   - Do not add recovery options or two-factor authentication (because this is a temporary account).
   - Do not sign up for free trials.

After a few moments, the Cloud Console opens in this tab.

Note: You can view the menu with a list of Google Cloud Products and Services by clicking the **Navigation menu** at the top-left.



Challenge scenario

You have been given the responsibility of managing the configuration of your organization's Google Cloud virtual machines. You have decided to make some changes to the framework used for managing the deployment and configuration machines - you want to make it easier to modify the startup scripts used to initialize a number of the compute instances. Instead of storing startup scripts directly in the instances' metadata, you have decided to store the scripts in a Cloud Storage bucket and then configure the virtual machines to point to the relevant script file in the bucket.

A basic bash script that installs the Apache web server software called `install-web.sh` has been provided for you as a sample startup script. You can download this from the Student Resources links on the left side of the page.

Your challenge

Configure a Linux Compute Engine instance that installs the Apache web server software using a remote startup script. In order to confirm that a compute instance Apache has successfully installed, the Compute Engine instance must be accessible via HTTP from the internet.

Note: In order to ensure accurate activity tracking you should not modify or change any of the pre-created lab resources, in particular the lab-monitor Compute Engine instance.

Tips and Tricks

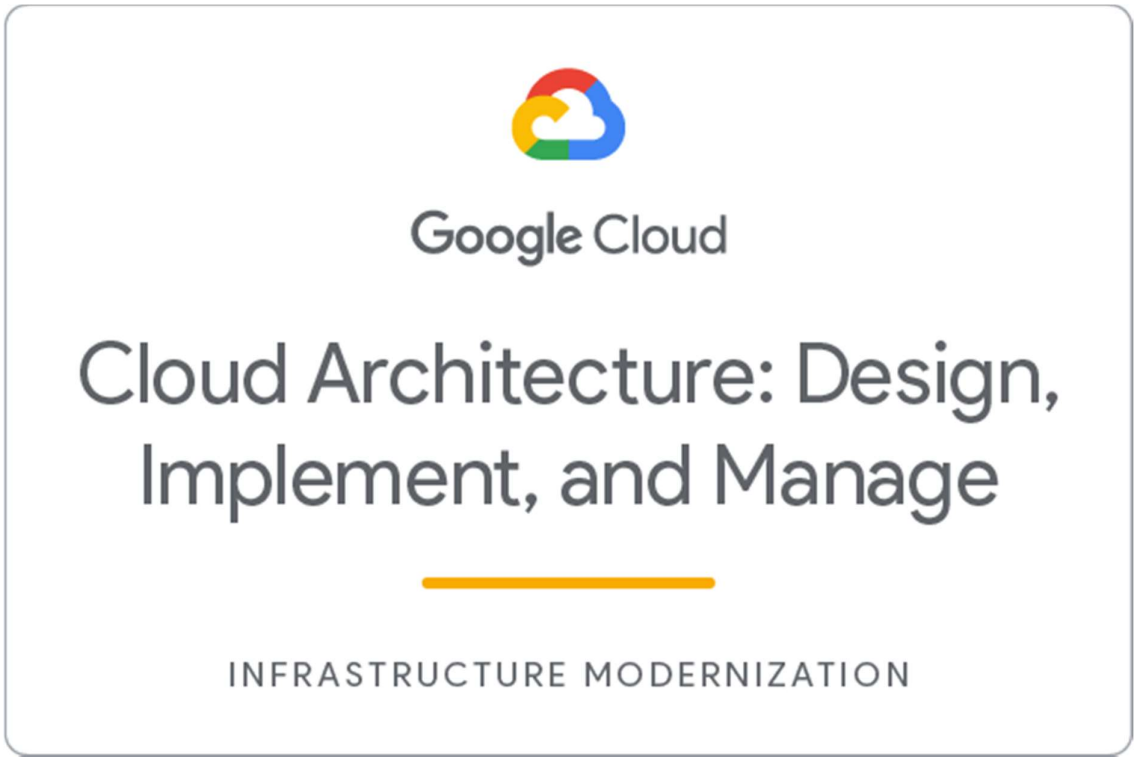
- **Configure Instance Metadata.** The Running Startup Scripts documentation page explains how Compute Engine instance metadata can be used to configure startup scripts.
- **Check if your Compute Engine instance is executing the startup script**. Use the Serial Console for the running virtual machine to look at the startup events to make sure that the startup script is being executed.

- **Check permissions.** Your Compute Engine instance might not have the correct permissions required to read the startup script from the storage bucket. The virtual machine needs to be given permissions that align with the storage permissions.

- **Check firewalls.** If the startup script has installed the software you may be unable to connect if a firewall has not been correctly configured.

- **Check the URL and address.** You will be unable to connect to the Apache web server if you are trying to access the Compute Engine instance using an HTTPS address rather than HTTP; or you are using the incorrect IP address. Check that your URL is `http://[EXTERNAL_IP]` rather than `https://[EXTERNAL_IP]` or `http://[INTERNAL_IP]`

Congratulations!



Finish Your Quest

This self-paced lab is part of the Qwiklabs Cloud Architecture: Design, Implement, and Manage Quest. A Quest is a series of related labs that form a learning path. Completing this Quest earns you the badge above, to recognize your achievement. You can make your badge (or badges) public and link to them in your online resume or social media account. Enroll in this Quest and get immediate completion credit if you've taken this lab. See other available Qwiklabs Quests.

Take Your Next Lab

Continue your Quest with Configure a Firewall and a Startup Script with Deployment Manager, or check out these suggestions:

- Configure Secure RDP Using a Windows Bastion Host
- Build and Deploy a Docker Image to a Kubernetes Cluster

Next Steps / Learn More

Have you checked out the Data Science on the Google Cloud Platform Quest? Students are given the opportunity to practice all aspects of ingestion, preparation, processing, querying, exploring and visualizing data sets using Google Cloud tools and services. The exercises in the quest are taken from book **Data Science on the Google Cloud Platform** by Valliappa Lakshmanan, published by O'Reilly Media, Inc.

Google Cloud Training & Certification

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Solution:

1. In the web console, navigate to ***Storage***.
2. Create a bucket with a unique bucket name.
3. Upload the `install-web.sh` file to the bucket.
4. Make the file publicly accessible (This ensures the file can be accessed by the VM instance deployed soon).
5. Click the three dots () icon at the right end of the filename. Choose ***Edit permissions*** in the dropdown menu.
6. Add a new **User**, type `allUsers` to the name field, and choose **Reader**.
7. Click the filename and copy the URL, i.e. `gs://.../install-web.sh` for later use.

Check Progress

8. Go to ***Compute Engine***, create a new VM instance.
9. Select `Allow HTTP traffic` under the Firewall section.
10. Expand **Management, security, disks, networking, sole tenancy**.
11. In the Metadata section, add `startup-script-url` and paste the URL of the script file as the key value.
12. Click **Create** to create the instance.

Check Progress

13. Wait for the new VM instance startup.
14. Click the instance name to open its Details tab. Then, expand the Logs and click **Serial port 1 (console)**.
15. The startup script automatically installs the Apache web server software while creating the VM instance. You should able to find the log events about downloading the startup script and installing the apache packages.
16. Open the external IP in your web browser. You should view the Apache default page if the startup script has been successfully executed.

Check Proress