Set Up and Configure a Cloud Environment in Google Cloud: Challenge Lab

GSP321

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 completed the labs in the Set up and Configure a Cloud Environment in Google Cloud quest. Are you up for the challenge? Topics tested:

- Creating and using VPCs and subnets
- Creating a Kubernetes cluster
- Configuring and launching a Kubernetes deployment and service
- Setting up stackdriver monitoring
- Configuring an IAM role for an account

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.

Challenge scenario

As a cloud engineer in Jooli Inc. and recently trained with Google Cloud and Kubernetes you have been asked to help a new team (Griffin) set up their environment. The team has asked for your help and has done some work, but needs you to complete the work.

You are expected to have the skills and knowledge for these tasks so don't expect step-by-step guides.

You need to complete the following tasks:

- Create a development VPC with three subnets manually
- Create a production VPC with three subnets manually
- Create a bastion that is connected to both VPCs
- Create a development Cloud SQL Instance and connect and prepare the WordPress environment
- Create a Kubernetes cluster in the development VPC for WordPress
- Prepare the Kubernetes cluster for the WordPress environment
- Create a WordPress deployment using the supplied configuration
- Enable monitoring of the cluster via stackdriver
- Provide access for an additional engineer
  Some Jooli Inc. standards you should follow:

- Create all resources in the `us-east1` region and `us-east1-b` zone, unless otherwise directed.

- Use the project VPCs.

- Naming is normally *team-resource*, e.g. an instance could be named **kraken-webserver1**.

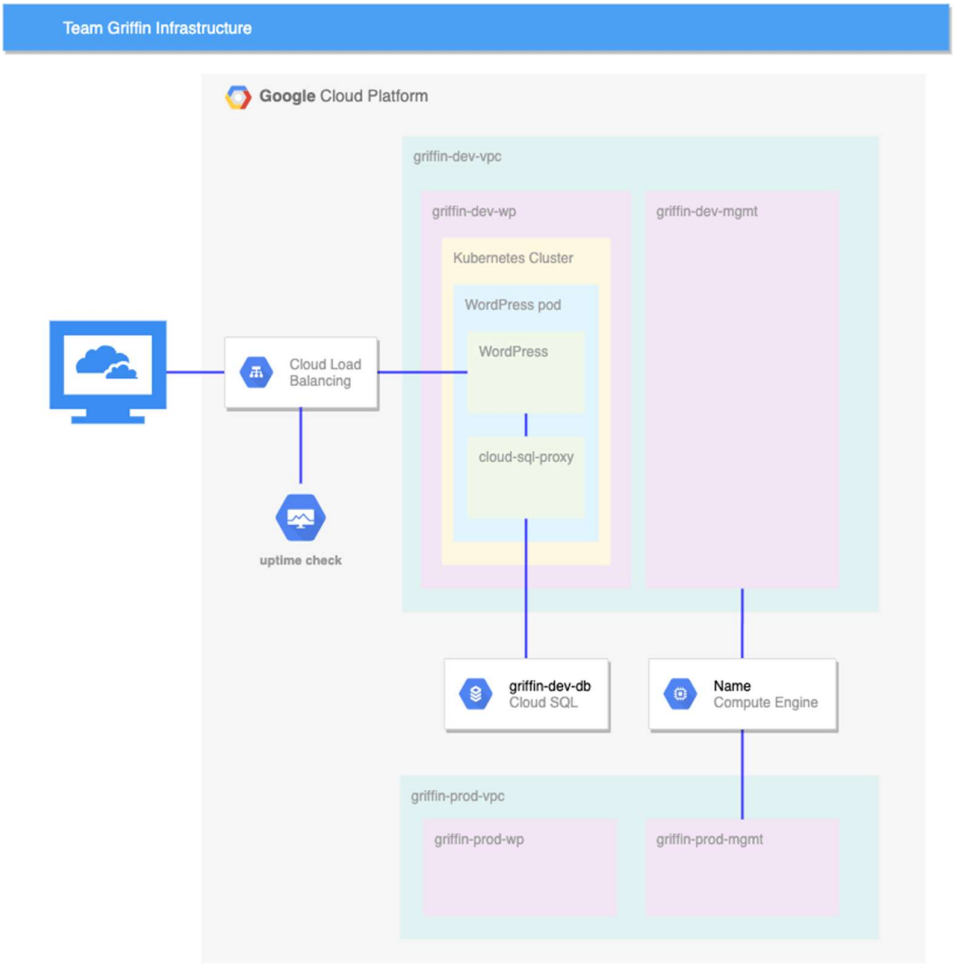
- Allocate cost effective resource sizes. Projects are monitored and excessive resource use will result in the containing project's termination (and possibly yours), so beware. This is the guidance the monitoring team is willing to share: unless directed, use `n1-standard-1`.

Your challenge

You need to help the team with some of their initial work on a new project. They plan to use WordPress and need you to set up a development environment. Some of the work was already done for you, but other parts require your expert skills.

As soon as you sit down at your desk and open your new laptop you receive the following request to complete these tasks. Good luck!

Environment



Task 1: Create development VPC manually

Create a VPC called `griffin-dev-vpc` with the following subnets only:

- `griffin-dev-wp`
  - IP address block: `192.168.16.0/20`
- `griffin-dev-mgmt`
  - IP address block: `192.168.32.0/20`

Click *Check my progress* to verify the objective.

If you don't get a green check mark, click on the **Score** fly-out on the top right and click **Run Step** on the relevant step. A hint pop up opens to give you advice.

Task 2: Create production VPC manually

Create a VPC called `griffin-prod-vpc` with the following subnets only:

- `griffin-prod-wp`
  - IP address block: `192.168.48.0/20`
- `griffin-prod-mgmt`
  - IP address block: `192.168.64.0/20`

Click *Check my progress* to verify the objective.

If you don't get a green check mark, click on the **Score** fly-out on the top right and click **Run Step** on the relevant step. A hint pop up opens to give you advice.

Task 3: Create bastion host

Create a bastion host with two network interfaces, one connected to `griffin-dev-mgmt` and the other connected to `griffin-prod-mgmt`. Make sure you can SSH to the host.

Click *Check my progress* to verify the objective.

If you don't get a green check mark, click on the **Score** fly-out on the top right and click **Run Step** on the relevant step. A hint pop up opens to give you advice.

Task 4: Create and configure Cloud SQL Instance

Create a **MySQL Cloud SQL Instance** called `griffin-dev-db` in us-east1. Connect to the instance and run the following SQL commands to prepare the **WordPress** environment:

```
CREATE DATABASE wordpress;
GRANT ALL PRIVILEGES ON wordpress.* TO "wp_user"@"%" IDENTIFIED BY "stormwind_rules";
FLUSH PRIVILEGES;
```

These SQL statements create the worpdress database and create a user with access to the wordpress dataase.

You will use the username and password in task 6.

Click *Check my progress* to verify the objective.

If you don't get a green check mark, click on the **Score** fly-out on the top right and click **Run Step** on the relevant step. A hint pop up opens to give you advice.

Task 5: Create Kubernetes cluster

Create a 2 node cluster (n1-standard-4) called `griffin-dev`, in the `griffin-dev-wp` subnet, and in zone `us-east1-b`.

Click *Check my progress* to verify the objective.

If you don't get a green check mark, click on the **Score** fly-out on the top right and click **Run Step** on the relevant step. A hint pop up opens to give you advice.

Task 6: Prepare the Kubernetes cluster

Use Cloud Shell and copy all files from `gs://cloud-training/gsp321/wp-k8s`.

The **WordPress** server needs to access the MySQL database using the *username* and *password* you created in task 4. You do this by setting the values as secrets. **WordPress** also needs to store its working files outside the container, so you need to create a volume.

Add the following secrets and volume to the cluster using `wp-env.yaml`. Make sure you configure the *username* to `wp_user` and *password* to `stormwind_rules` before creating the configuration.

You also need to provide a key for a service account that was already set up. This service account provides access to the database for a sidecar container. Use the command below to create the key, and then add the key to the Kubernetes environment.

```
gcloud iam service-accounts keys create key.json \
    --iam-account=cloud-sql-proxy@$GOOGLE_CLOUD_PROJECT.iam.gserviceaccount.com
kubectl create secret generic cloudsql-instance-credentials \
    --from-file key.json
```

Click *Check my progress* to verify the objective.

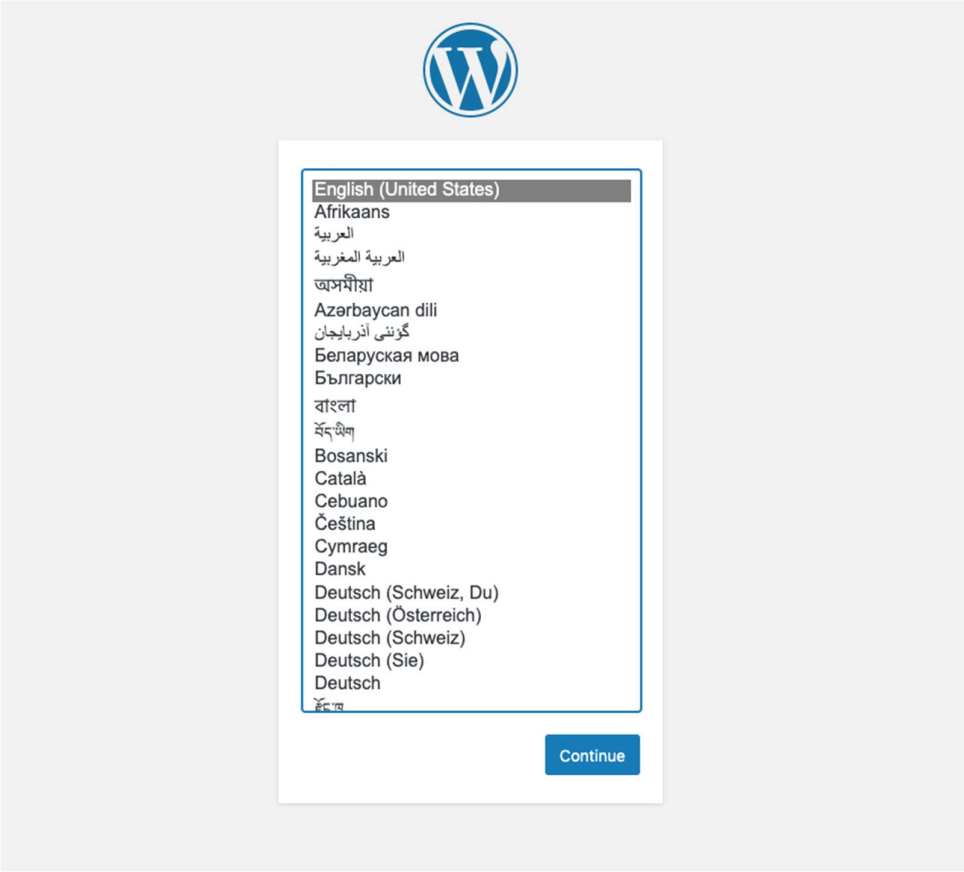
If you don't get a green check mark, click on the **Score** fly-out on the top right and click **Run Step** on the relevant step. A hint pop up opens to give you advice.

Task 7: Create a WordPress deployment

Now you have provisioned the MySQL database, and set up the secrets and volume, you can create the deployment using `wp-deployment.yaml`. Before you create the deployment you need to edit `wp-deployment.yaml` and replace **YOUR_SQL_INSTANCE** with griffin-dev-db's **Instance connection name**. Get the **Instance connection name** from your Cloud SQL instance.

After you create your WordPress deployment, create the service with `wp-service.yaml`.

Once the Load Balancer is created, you can visit the site and ensure you see the **WordPress** site installer. At this point the dev team will take over and complete the install and you move on to the next task.



Click *Check my progress* to verify the objective.

If you don't get a green check mark, click on the **Score** fly-out on the top right and click **Run Step** on the relevant step. A hint pop up opens to give you advice.

Task 8: Enable monitoring

Create an uptime check for your WordPress development site.

Click *Check my progress* to verify the objective.

If you don't get a green check mark, click on the **Score** fly-out on the top right and click **Run Step** on the relevant step. A hint pop up opens to give you advice.

Task 9: Provide access for an additional engineer

You have an additional engineer starting and you want to ensure they have access to the project, so please go ahead and grant them the editor role to the project.

The second user account for the lab represents the additional engineer.

Click *Check my progress* to verify the objective.

If you don't get a green check mark, click on the **Score** fly-out on the top right and click **Run Step** on the relevant step. A hint pop up opens to give you advice.

Congratulations!

Finish Your Quest

This self-paced lab is part of the Set Up and Configure a Cloud Environment in Google Cloud quest. Completing this skill badge quest earns you the badge above, to recognize your achievement. Share your badge with your network and on your resume and social platforms, and announce your accomplishment using #GoogleCloudBadge.
This skill badge quest is part of Google's Cloud Engineer learning path. If you have already completed the other skill badge quests in this learning path, search the catalog for 20+ other skill badge quests that you can enroll in. See other available Qwiklabs Quests available in the catalog.

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Manual Last Updated February 23, 2021
Lab Last Tested April 06, 2020

Solution:

https://www.youtube.com/watch?v=1YJE518W8do

https://github.com/GirishSharma5956/set-up-and-configure/blob/master/set%20up%20and%20configure.txt