UNIVERSIDAD RAFAEL LANDÍVAR

FACULTAD DE INGENIERÍA

ANÁLISIS Y DISEÑO II

SECCIÓN 1 VESPERTINA

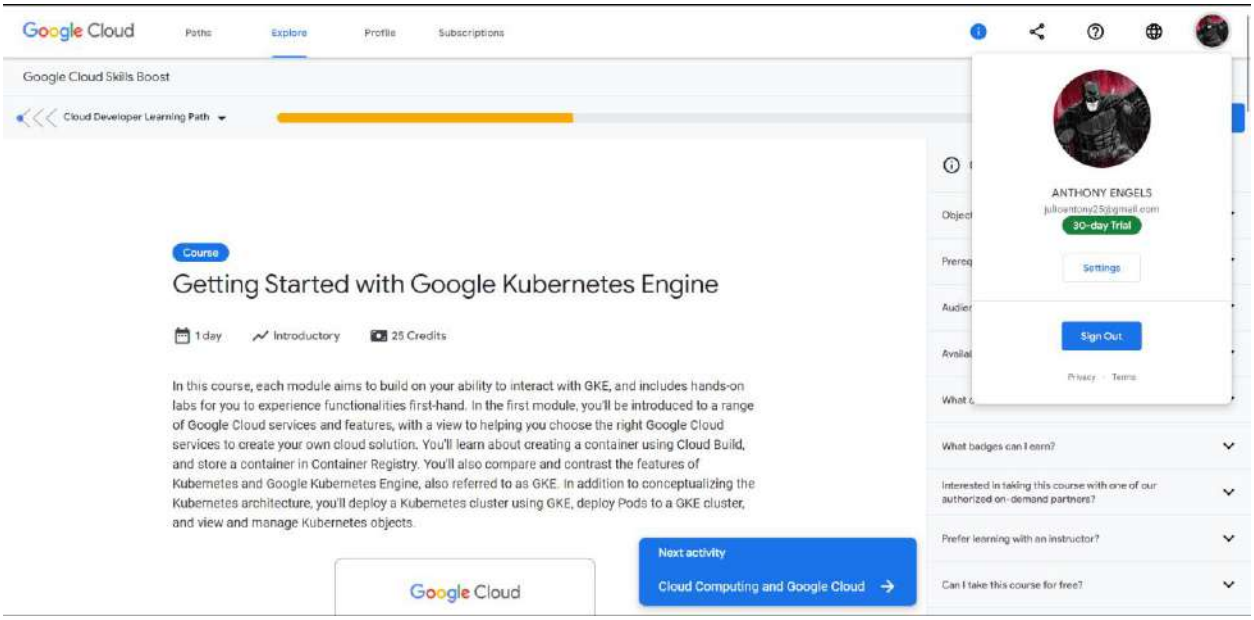
DR. HILDA

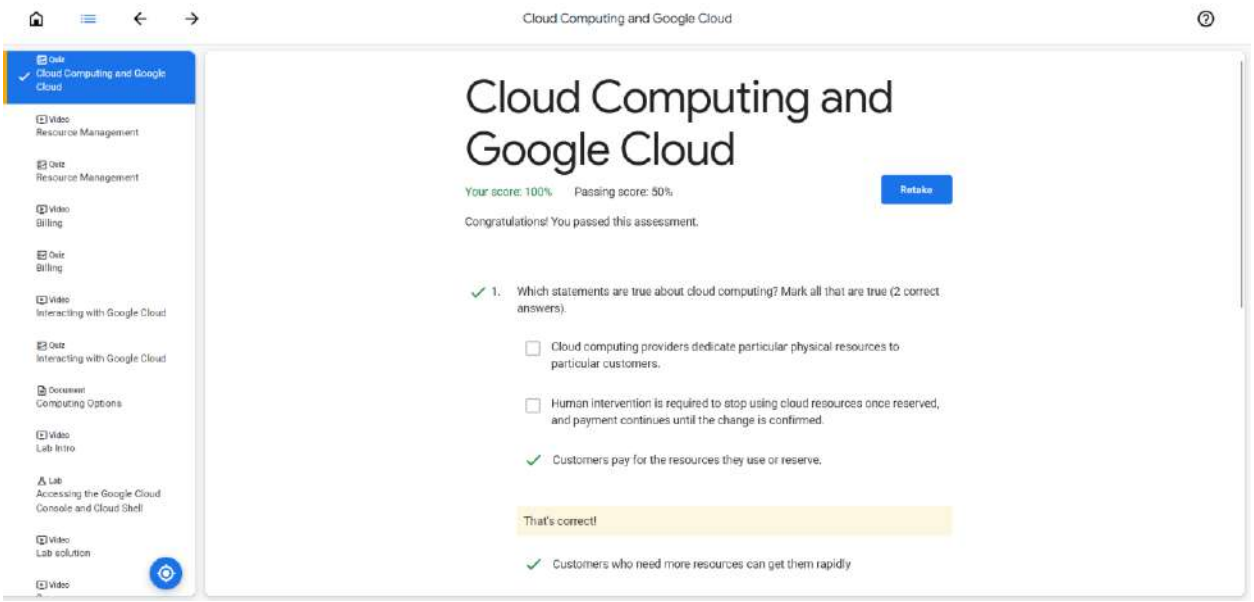
GETTING STARTED WITH GOOGLE KUBERNETES ENGINE LAB 5

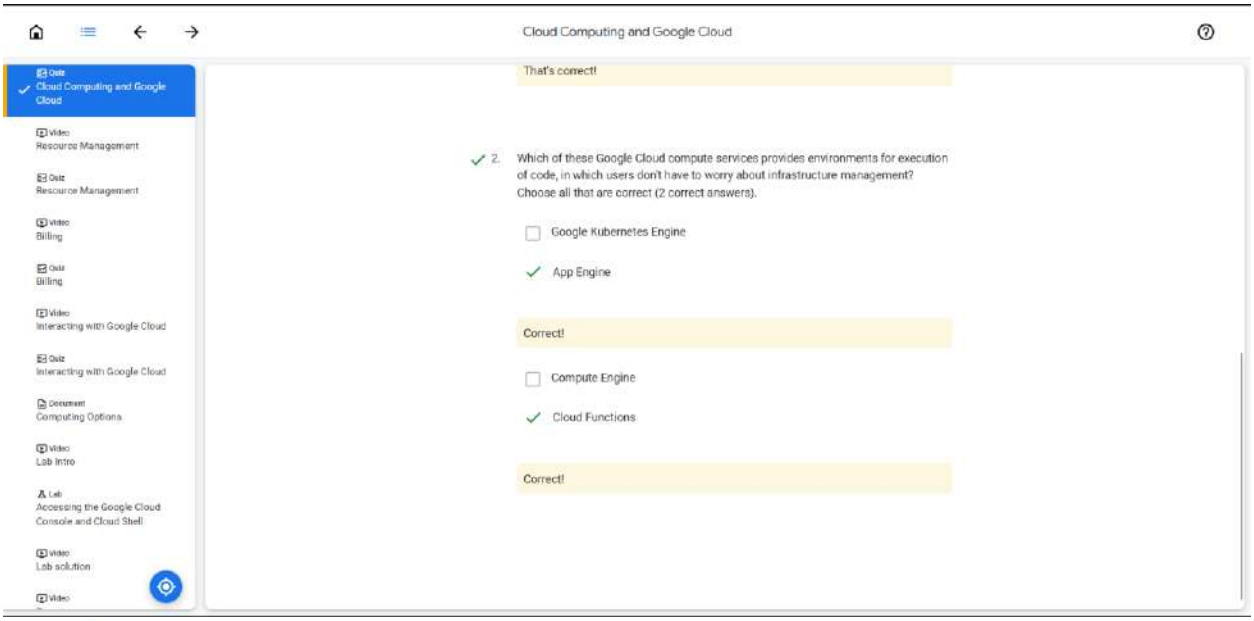
Julio Anthony Engels Ruiz Coto 1284719

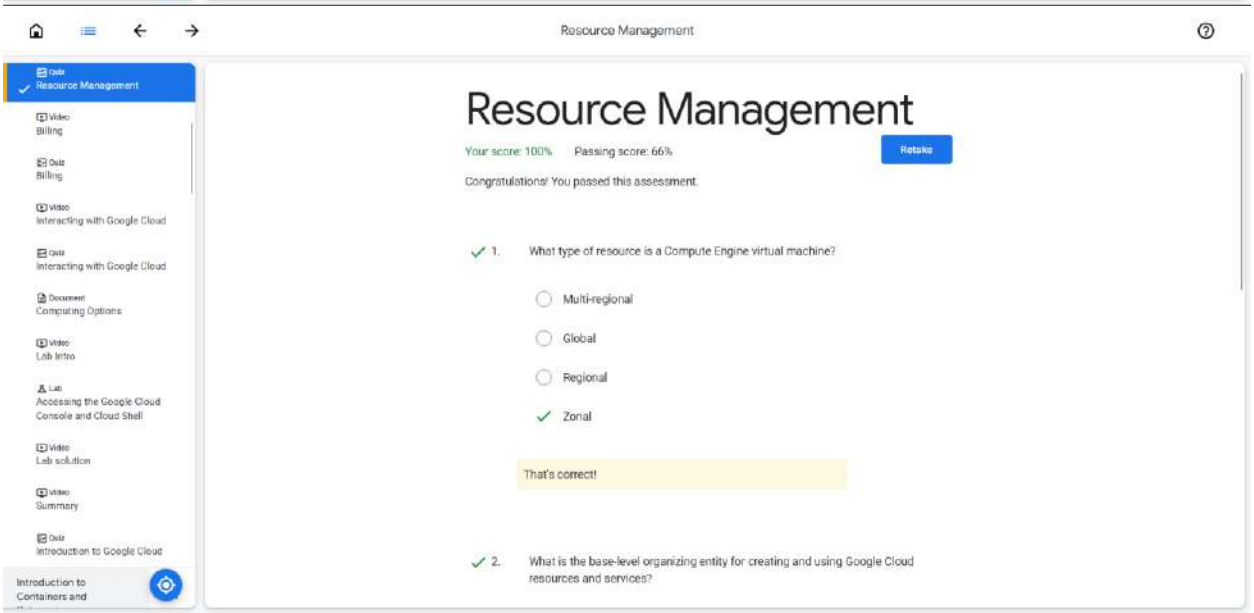
GUATEMALA DE LA ASUNCIÓN, JUNIO 23 DE 2023

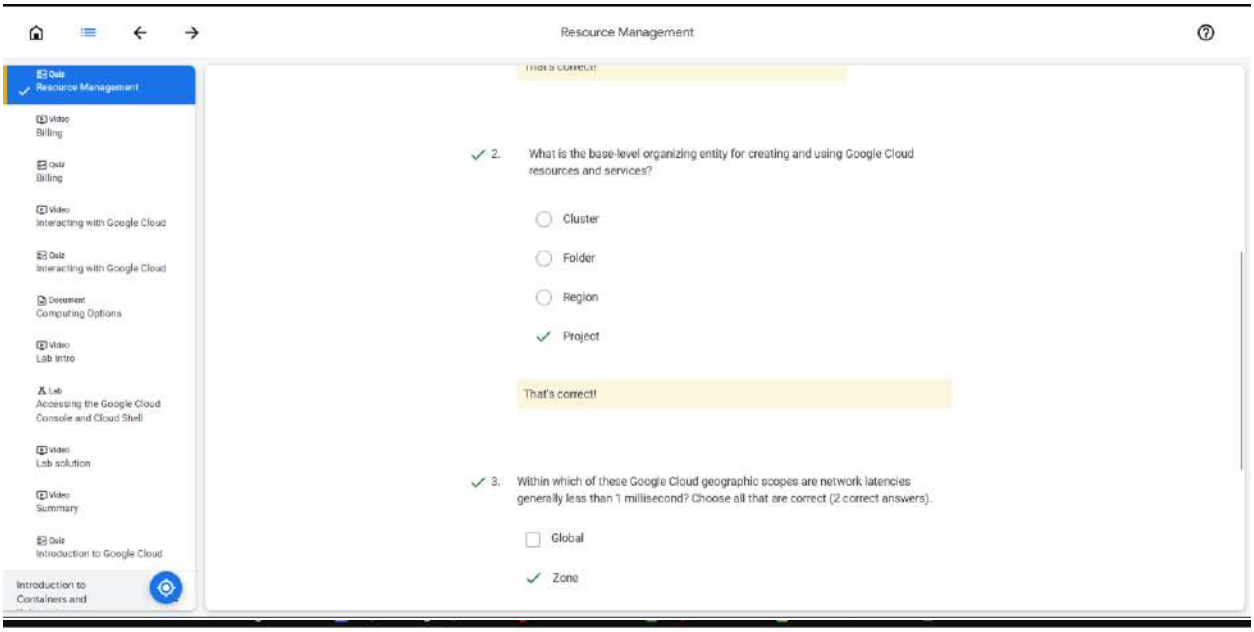
CAMPUS CENTRAL

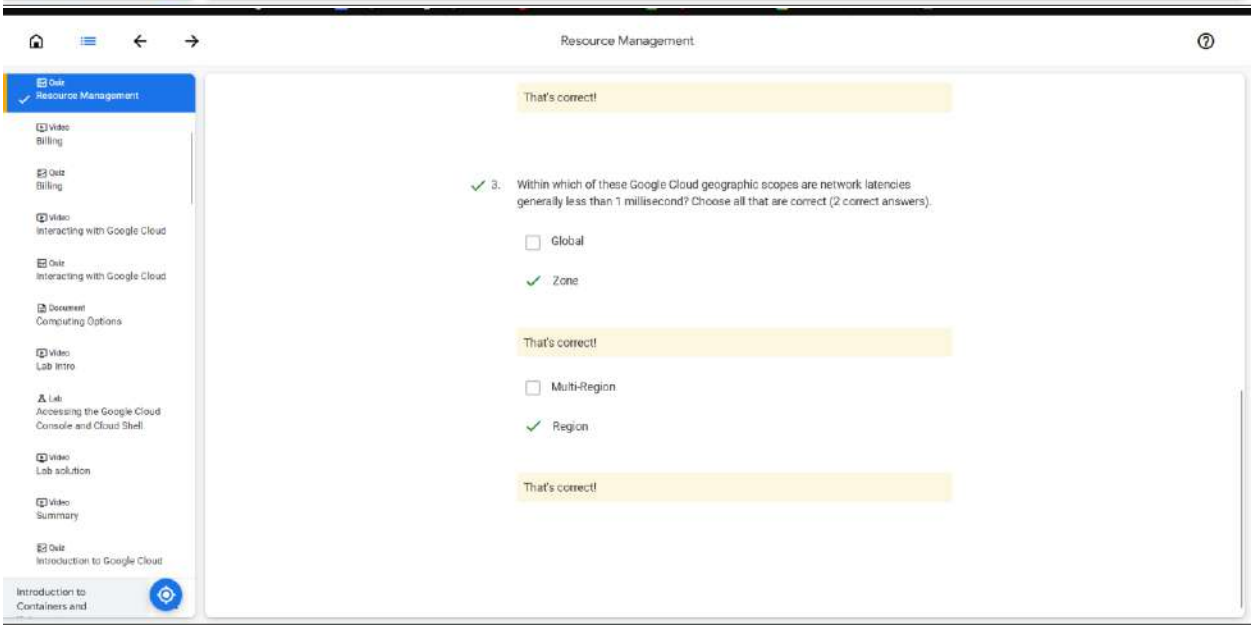

Google Cloud
Paths
Explore
Profile
Subscriptions
Google Cloud Skills Boost
Cloud Developer Learning Path
ANTHONY ENGELS
30-day Trial
Settings
Sign Out
Course
Getting Started with Google Kubernetes Engine
1 day
Introductory
25 Credits
In this course, each module aims to build on your ability to interact with GKE, and includes hands-on labs for you to experience functionalities first-hand. In the first module, you'll be introduced to a range of Google Cloud services and features, with a view to helping you choose the right Google Cloud services to create your own cloud solution. You'll learn about creating a container using Cloud Build, and store a container in Container Registry. You'll also compare and contrast the features of Kubernetes and Google Kubernetes Engine, also referred to as GKE. In addition to conceptualizing the Kubernetes architecture, you'll deploy a Kubernetes cluster using GKE, deploy Pods to a GKE cluster, and view and manage Kubernetes objects.
Google Cloud
Next activity
Cloud Computing and Google Cloud
What badges can I earn?
Interested in taking this course with one of our authorized on-demand partners?
Prefer learning with an instructor?
Can I take this course for free?

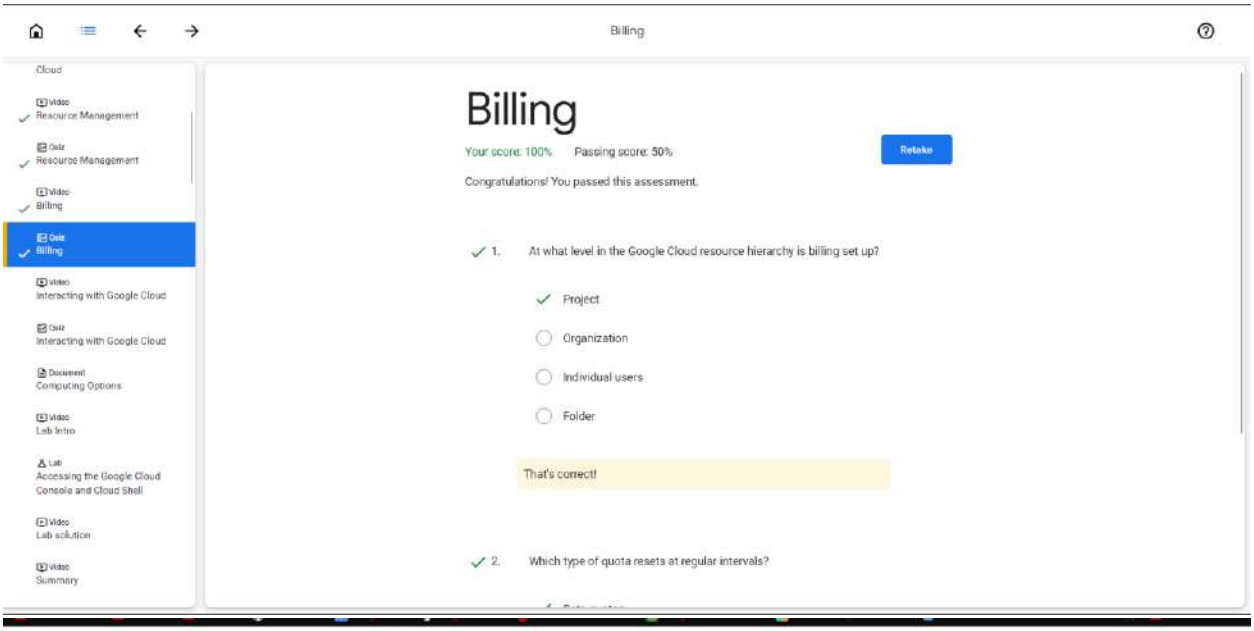

Cloud Computing and Google Cloud
Cloud Computing and Google Cloud
Resource Management
Resource Management
Billing
Billing
Interacting with Google Cloud
Interacting with Google Cloud
Computing Options
Lab Intro
Accessing the Google Cloud Console and Cloud Shell
Lab solution
Cloud Computing and Google Cloud
Your score: 100%
Passing score: 50%
Retake
Congratulations! You passed this assessment.
1. Which statements are true about cloud computing? Mark all that are true (2 correct answers).
Cloud computing providers dedicate particular physical resources to particular customers.
Human intervention is required to stop using cloud resources once reserved, and payment continues until the change is confirmed.
Customers pay for the resources they use or reserve.
That's correct!
Customers who need more resources can get them rapidly

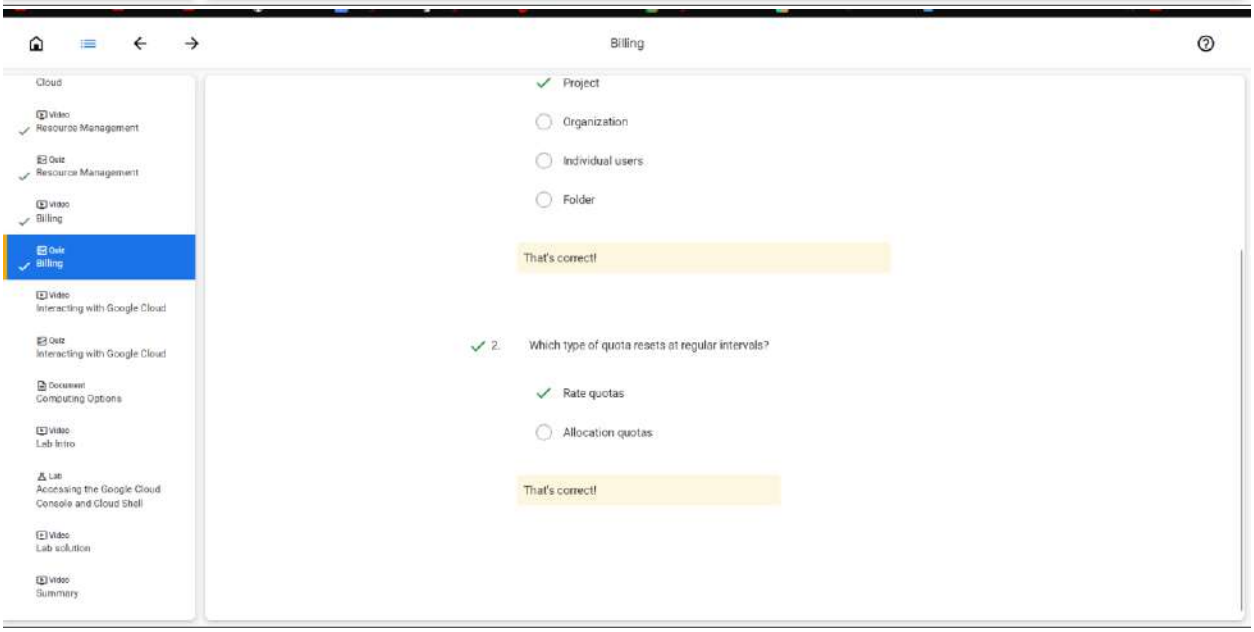

Cloud Computing and Google Cloud
Quiz
Cloud Computing and Google Cloud
Video
Resource Management
Quiz
Resource Management
Video
Billing
Quiz
Billing
Video
Interacting with Google Cloud
Quiz
Interacting with Google Cloud
Document
Computing Options
Video
Lab Intro
Lab
Accessing the Google Cloud Console and Cloud Shell
Video
Lab solution
Video
That's correct!
2. Which of these Google Cloud compute services provides environments for execution of code, in which users don't have to worry about infrastructure management? Choose all that are correct (2 correct answers).
Google Kubernetes Engine
App Engine
Correct!
Compute Engine
Cloud Functions
Correct!

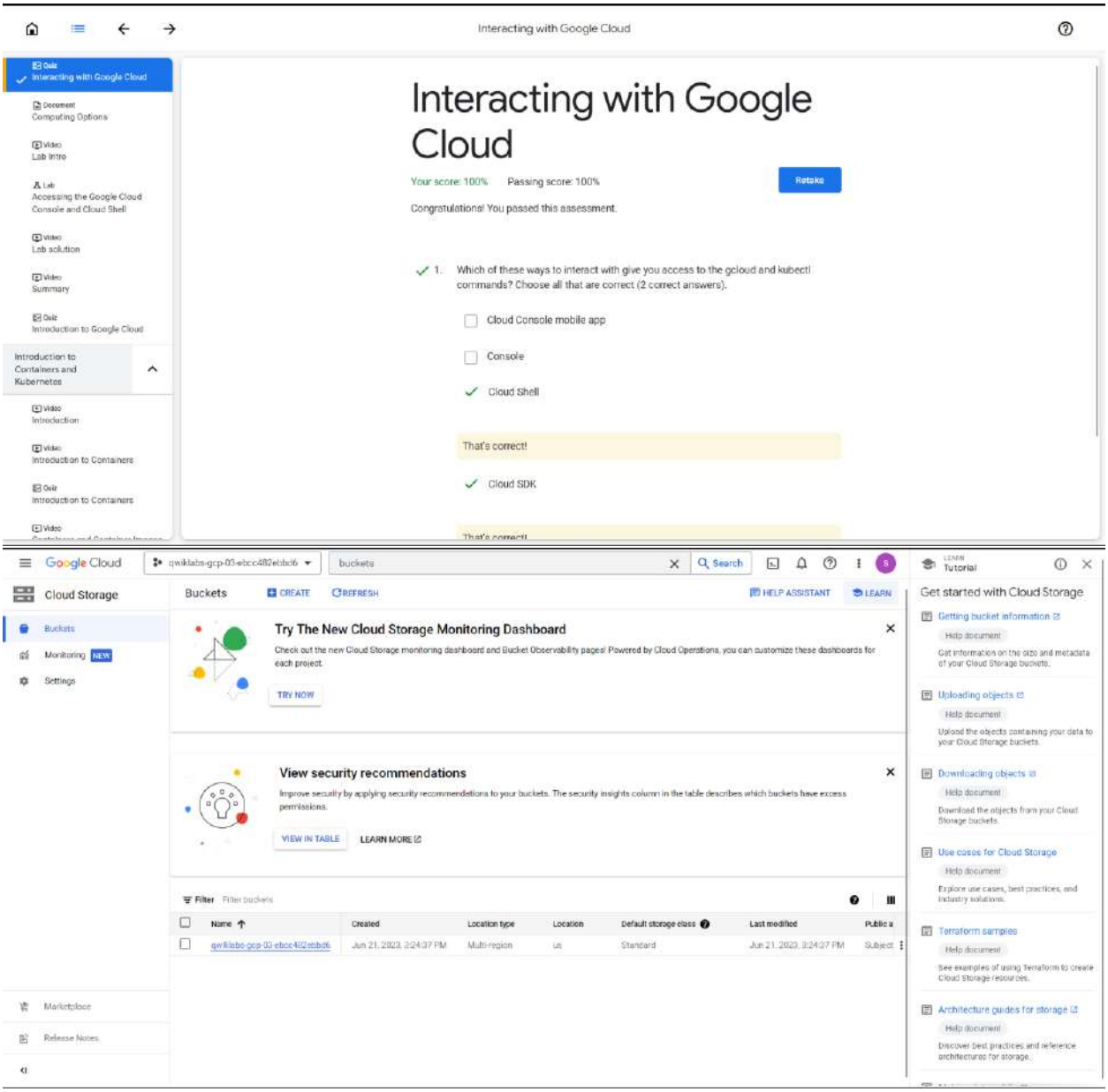

Resource Management
Quiz
Resource Management
Video
Billing
Quiz
Billing
Video
Interacting with Google Cloud
Quiz
Interacting with Google Cloud
Document
Computing Options
Video
Lab Intro
Lab
Accessing the Google Cloud Console and Cloud Shell
Video
Lab solution
Video
Summary
Quiz
Introduction to Google Cloud
Introduction to Containers and
Resource Management
Your score: 100%
Passing score: 66%
Retake
Congratulations! You passed this assessment.
1. What type of resource is a Compute Engine virtual machine?
Multi-regional
Global
Regional
Zonal
That's correct!
2. What is the base-level organizing entity for creating and using Google Cloud resources and services?

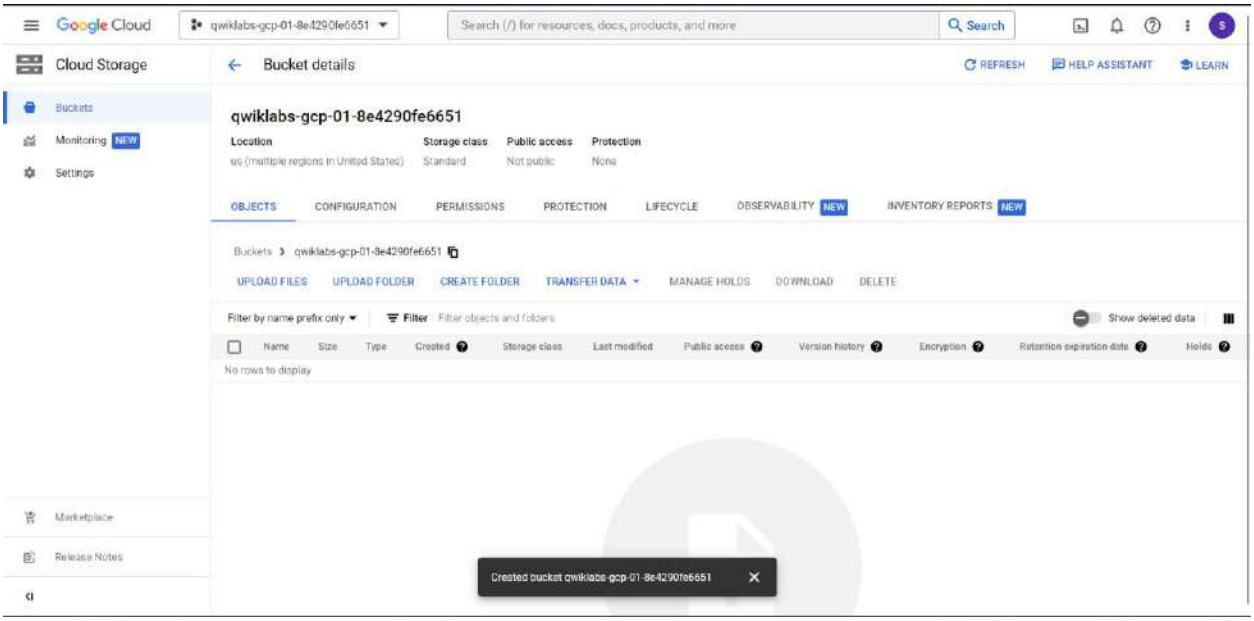

Resource Management
Quiz
Resource Management
Video
Billing
Quiz
Billing
Video
Interacting with Google Cloud
Quiz
Interacting with Google Cloud
Document
Computing Options
Video
Lab Intro
Lab
Accessing the Google Cloud Console and Cloud Shell
Video
Lab solution
Video
Summary
Quiz
Introduction to Google Cloud
Introduction to Containers and
That's correct!
2. What is the base-level organizing entity for creating and using Google Cloud resources and services?
Cluster
Folder
Region
Project
That's correct!
3. Within which of these Google Cloud geographic scopes are network latencies generally less than 1 millisecond? Choose all that are correct (2 correct answers).
Global
Zone

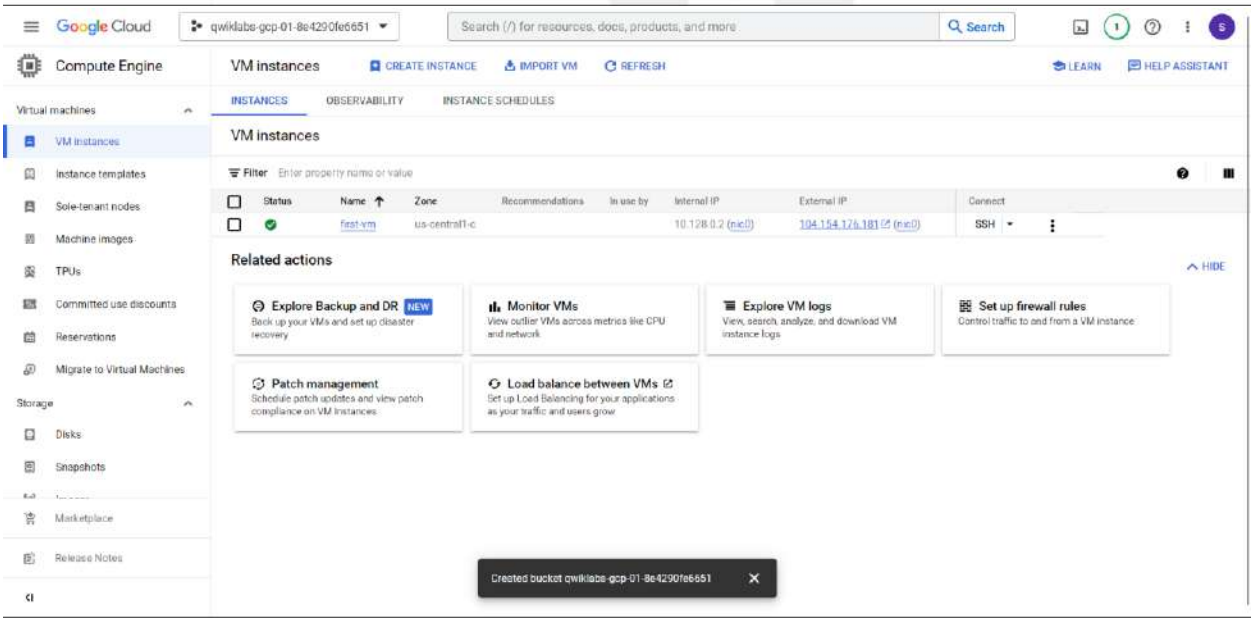

Resource Management
Quiz
Resource Management
Video
Billing
Quiz
Billing
Video
Interacting with Google Cloud
Quiz
Interacting with Google Cloud
Document
Computing Options
Video
Lab Intro
Lab
Accessing the Google Cloud Console and Cloud Shell
Video
Lab solution
Video
Summary
Quiz
Introduction to Google Cloud
Introduction to Containers and
That's correct!
3. Within which of these Google Cloud geographic scopes are network latencies generally less than 1 millisecond? Choose all that are correct (2 correct answers).
Global
Zone
That's correct!
Multi-Region
Region
That's correct!

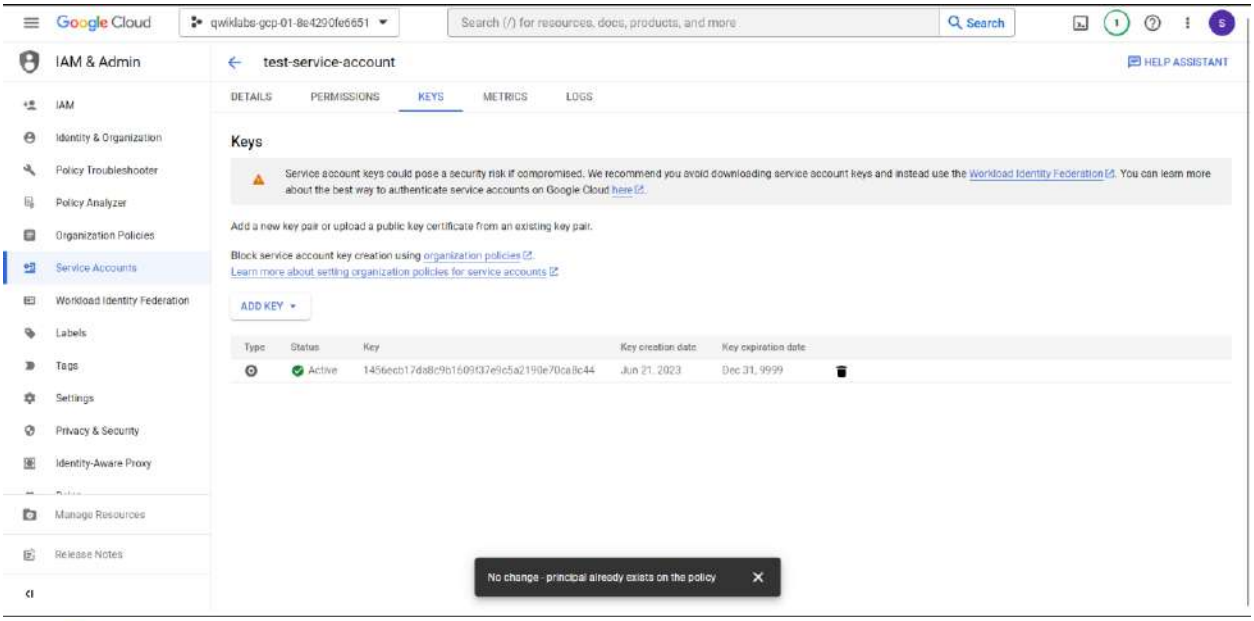

Billing
Cloud
Video
Resource Management
Quiz
Resource Management
Video
Billing
Quiz
Billing
Video
Interacting with Google Cloud
Quiz
Interacting with Google Cloud
Document
Computing Options
Video
Lab Intro
Lab
Accessing the Google Cloud Console and Cloud Shell
Video
Lab solution
Video
Summary
Billing
Your score: 100%
Passing score: 50%
Retake
Congratulations! You passed this assessment.
1. At what level in the Google Cloud resource hierarchy is billing set up?
Project
Organization
Individual users
Folder
That's correct!
2. Which type of quota resets at regular intervals?

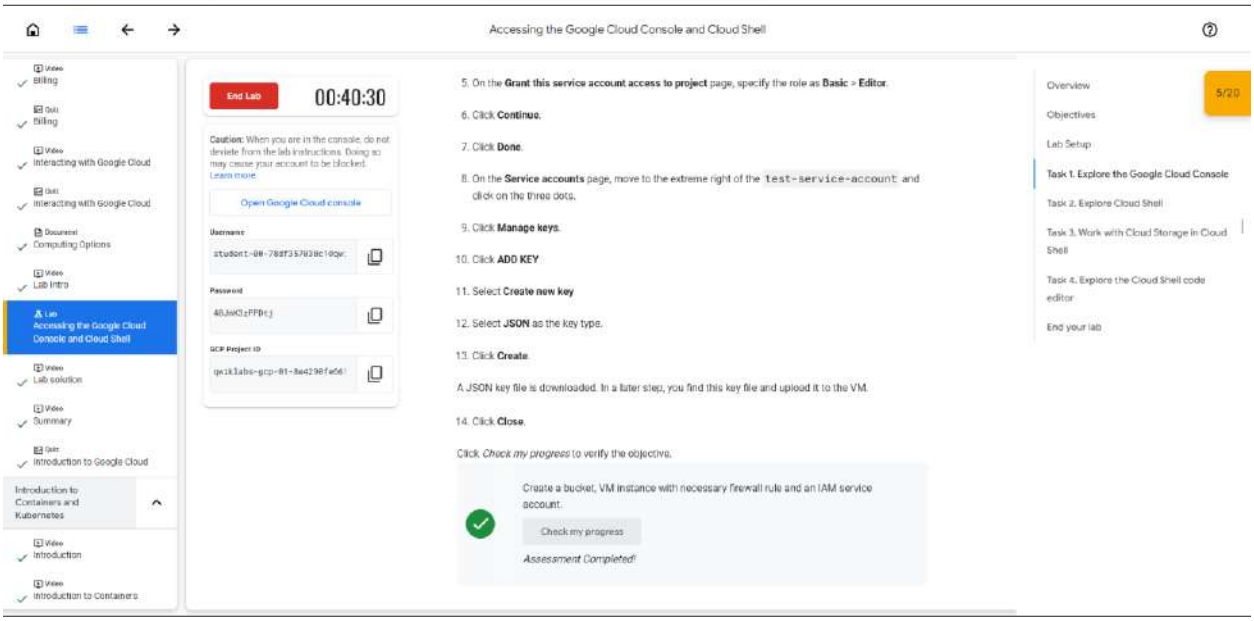

Billing
Cloud
Video
Resource Management
Quiz
Resource Management
Video
Billing
Quiz
Billing
Video
Interacting with Google Cloud
Quiz
Interacting with Google Cloud
Document
Computing Options
Video
Lab Intro
Lab
Accessing the Google Cloud Console and Cloud Shell
Video
Lab solution
Video
Summary
Project
Organization
Individual users
Folder
That's correct!
2. Which type of quota resets at regular intervals?
Rate quotas
Allocation quotas
That's correct!

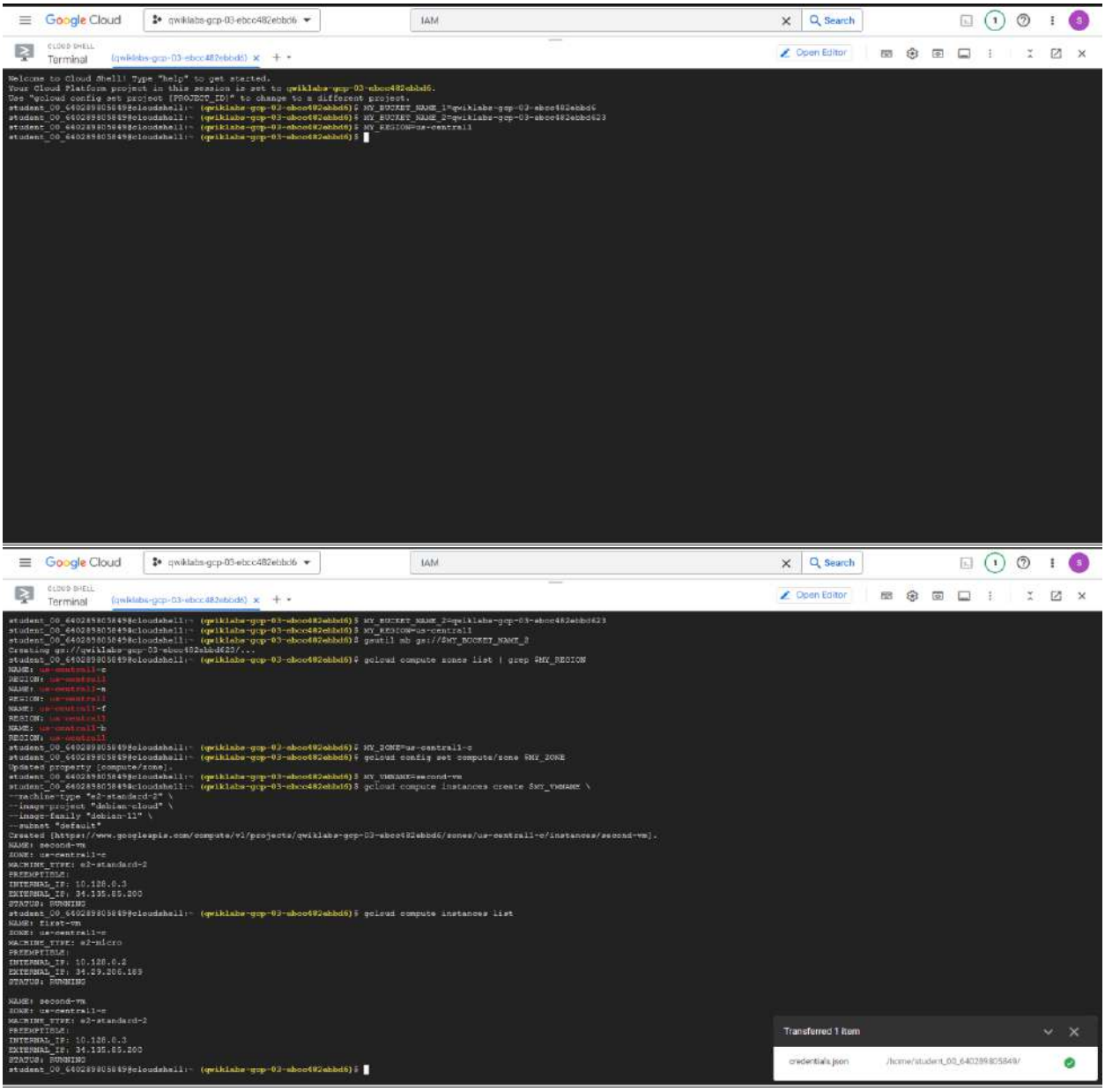

Interacting with Google Cloud
Interacting with Google Cloud
Computing Options
Lab Intro
Accessing the Google Cloud Console and Cloud Shell
Lab solution
Summary
Introduction to Google Cloud
Introduction to Containers and Kubernetes
Introduction
Introduction to Containers
Introduction to Containers
Interacting with Google Cloud
Your score: 100%
Passing score: 100%
Retake
Congratulations! You passed this assessment.
1. Which of these ways to interact with give you access to the gcloud and kubectl commands? Choose all that are correct (2 correct answers).
Cloud Console mobile app
Console
Cloud Shell
That's correct!
Cloud SDK
Google Cloud
buckets
Search
Cloud Storage
Buckets
CREATE
REFRESH
HELP ASSISTANT
LEARN
Buckets
Monitoring
NEW
Settings
Try The New Cloud Storage Monitoring Dashboard
Check out the new Cloud Storage monitoring dashboard and Bucket Observability pages! Powered by Cloud Operations, you can customize these dashboards for each project.
TRY NOW
View security recommendations
Improve security by applying security recommendations to your buckets. The security insights column in the table describes which buckets have excess permissions.
VIEW IN TABLE
LEARN MORE
Filter
Filter buckets
Name
Created
Location type
Location
Default storage class
Last modified
Public a
Jun 21, 2023, 3:24:37 PM
Multi-region
us
Standard
Jun 21, 2023, 3:24:37 PM
Subject
Marketplace
Release Notes
Tutorial
Get started with Cloud Storage
Getting bucket information
Help document
Get information on the size and metadata of your Cloud Storage buckets.
Uploading objects
Help document
Upload the objects containing your data to your Cloud Storage buckets.
Downloading objects
Help document
Download the objects from your Cloud Storage buckets.
Use cases for Cloud Storage
Help document
Explore use cases, best practices, and industry solutions.
Terraform samples
Help document
See examples of using Terraform to create Cloud Storage resources.
Architecture guides for storage
Help document
Discover best practices and reference architectures for storage.


Google Cloud
qwiklabs-gcp-01-8e4290fe6651
Search (/) for resources, docs, products, and more
Search
Cloud Storage
Bucket details
REFRESH
HELP ASSISTANT
LEARN
Buckets
Monitoring NEW
Settings
qwiklabs-gcp-01-8e4290fe6651
Location
us (multiple regions in United States)
Storage class
Standard
Public access
Not public
Protection
None
OBJECTS
CONFIGURATION
PERMISSIONS
PROTECTION
LIFECYCLE
OBSERVABILITY NEW
INVENTORY REPORTS NEW
Buckets > qwiklabs-gcp-01-8e4290fe6651
UPLOAD FILES
UPLOAD FOLDER
CREATE FOLDER
TRANSFER DATA
MANAGE HOLDS
DOWNLOAD
DELETE
Filter by name prefix only
Filter
Filter objects and folders
Show deleted data
Name
Size
Type
Created
Storage class
Last modified
Public access
Version history
Encryption
Retention expiration date
Holds
No rows to display
Marketplace
Release Notes
Created bucket qwiklabs-gcp-01-8e4290fe6651

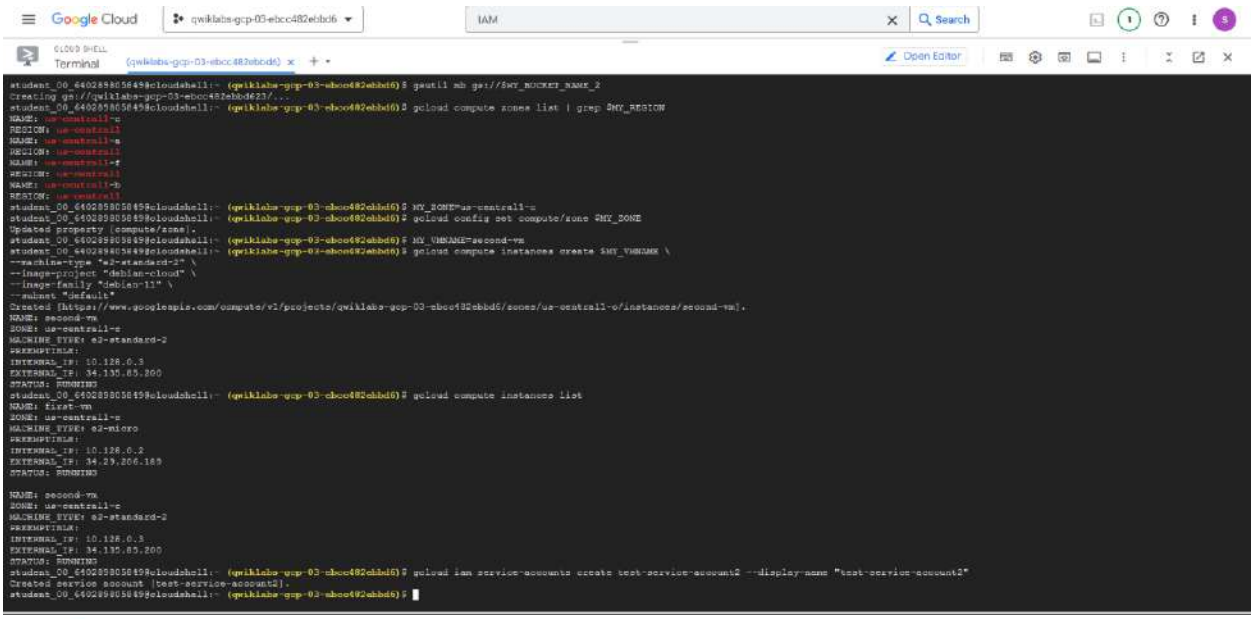

Google Cloud
qwiklabs-gcp-01-8e4290fe6651
Search (/) for resources, docs, products, and more
Search
Compute Engine
VM instances
CREATE INSTANCE
IMPORT VM
REFRESH
LEARN
HELP ASSISTANT
Virtual machines
INSTANCES
OBSERVABILITY
INSTANCE SCHEDULES
VM instances
VM instances
Instance templates
Sole-tenant nodes
Machine images
TPUs
Committed use discounts
Reservations
Migrate to Virtual Machines
Storage
Disks
Snapshots
Marketplace
Release Notes
Filter
Enter property name or value
Status
Name
Zone
Recommendations
In use by
Internal IP
External IP
Connect
first-vm
us-central1-c
10.128.0.2 (nic0)
104.154.176.181 (nic0)
SSH
Related actions
HIDE
Explore Backup and DR NEW
Back up your VMs and set up disaster recovery
Monitor VMs
View outlier VMs across metrics like CPU and network
Explore VM logs
View, search, analyze, and download VM instance logs
Set up firewall rules
Control traffic to and from a VM instance
Patch management
Schedule patch updates and view patch compliance on VM instances
Load balance between VMs
Set up Load Balancing for your applications as your traffic and users grow
Created bucket qwiklabs-gcp-01-8e4290fe6651

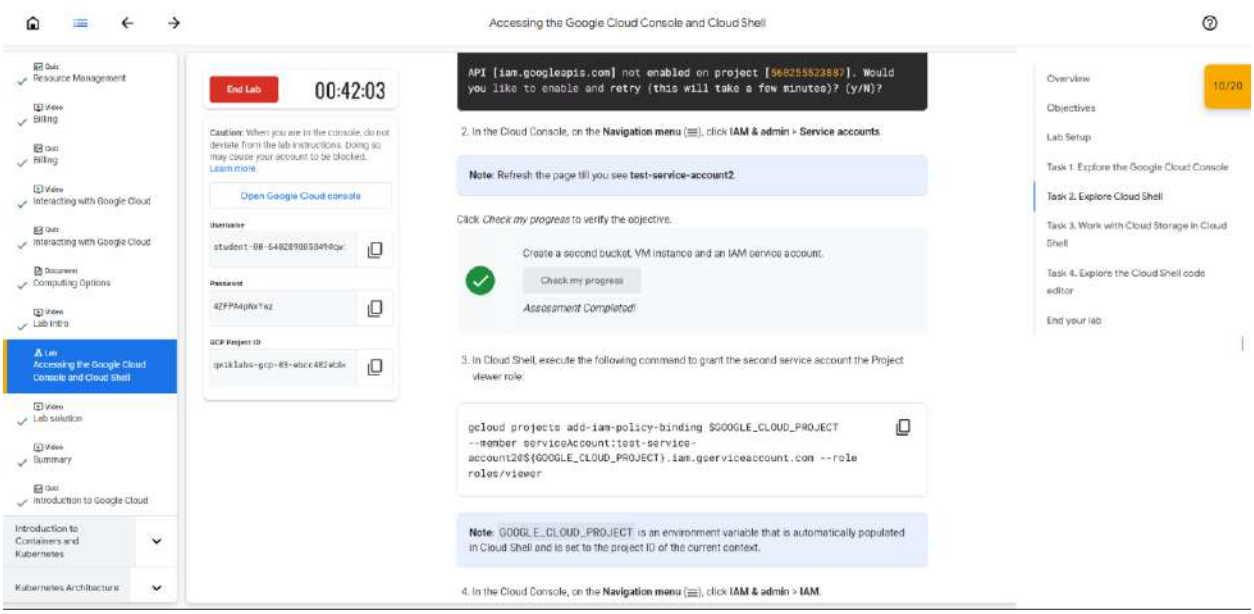

Google Cloud
qwiklabs-gcp-01-8e4290fe6651
Search (/) for resources, docs, products, and more
Search
IAM & Admin
test-service-account
HELP ASSISTANT
IAM
Identity & Organization
Policy Troubleshooter
Policy Analyzer
Organization Policies
Service Accounts
Workload Identity Federation
Labels
Tags
Settings
Privacy & Security
Identity-Aware Proxy
Manage Resources
Release Notes
DETAILS
PERMISSIONS
KEYS
METRICS
LOGS
Keys
Service account keys could pose a security risk if compromised. We recommend you avoid downloading service account keys and instead use the Workload Identity Federation. You can learn more about the best way to authenticate service accounts on Google Cloud here.
Add a new key pair or upload a public key certificate from an existing key pair.
Block service account key creation using organization policies.
Learn more about setting organization policies for service accounts
ADD KEY
Type
Status
Key
Key creation date
Key expiration date
Active
1456ecb17da8c9b1609f37e9c5a2190e70ca8c44
Jun 21, 2023
Dec 31, 9999
No change - principal already exists on the policy

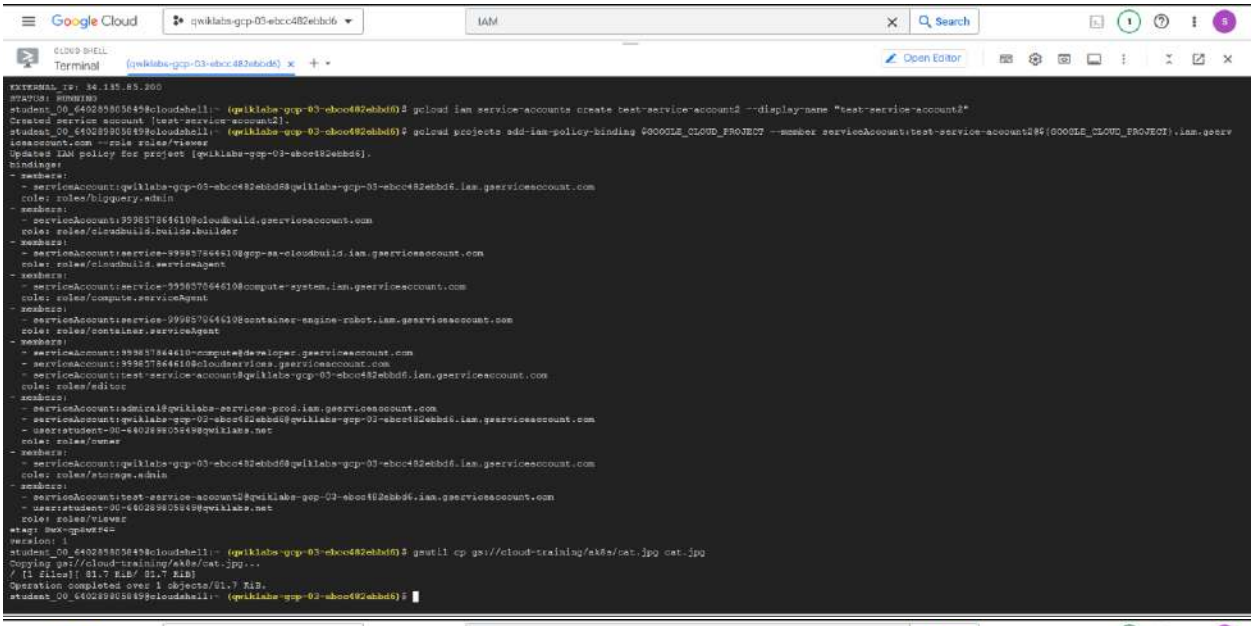

Accessing the Google Cloud Console and Cloud Shell
End Lab
00:40:30
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked.
Learn more
Open Google Cloud console
Username
Password
GCP Project ID
Billing
Interacting with Google Cloud
Computing Options
Lab Intro
Accessing the Google Cloud Console and Cloud Shell
Lab solution
Summary
Introduction to Google Cloud
Introduction to Containers and Kubernetes
Introduction
Introduction to Containers
5. On the Grant this service account access to project page, specify the role as Basic > Editor.
6. Click Continue.
7. Click Done.
8. On the Service accounts page, move to the extreme right of the test-service-account and click on the three dots.
9. Click Manage keys.
10. Click ADD KEY.
11. Select Create new key.
12. Select JSON as the key type.
13. Click Create.
A JSON key file is downloaded. In a later step, you find this key file and upload it to the VM.
14. Click Close.
Click Check my progress to verify the objective.
Create a bucket, VM instance with necessary firewall rule and an IAM service account.
Check my progress
Assessment Completed!
Overview
5/20
Objectives
Lab Setup
Task 1. Explore the Google Cloud Console
Task 2. Explore Cloud Shell
Task 3. Work with Cloud Storage in Cloud Shell
Task 4. Explore the Cloud Shell code editor
End your lab

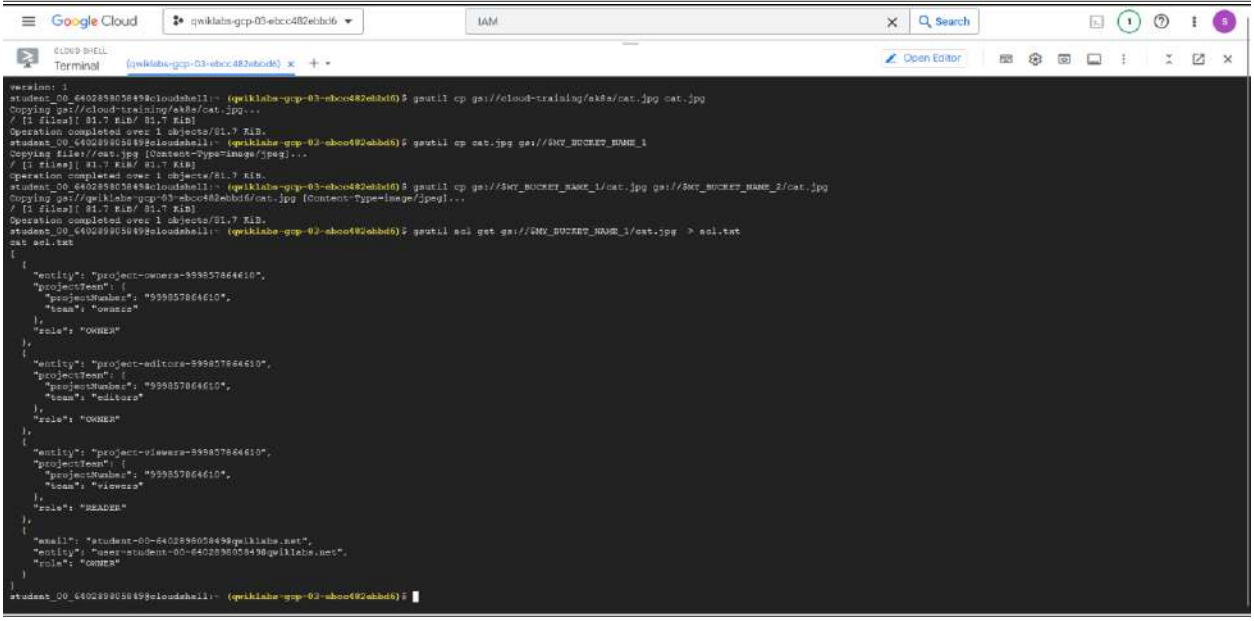

Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
IAM
Search
CLOUD SHELL
Terminal
Open Editor
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to qwiklabs-gcp-03-ebcc482ebbd6.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ MY_BUCKET_NAME_1=qwiklabs-gcp-03-ebcc482ebbd6
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ MY_BUCKET_NAME_2=qwiklabs-gcp-03-ebcc482ebbd623
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ MY_REGION=us-central1
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$

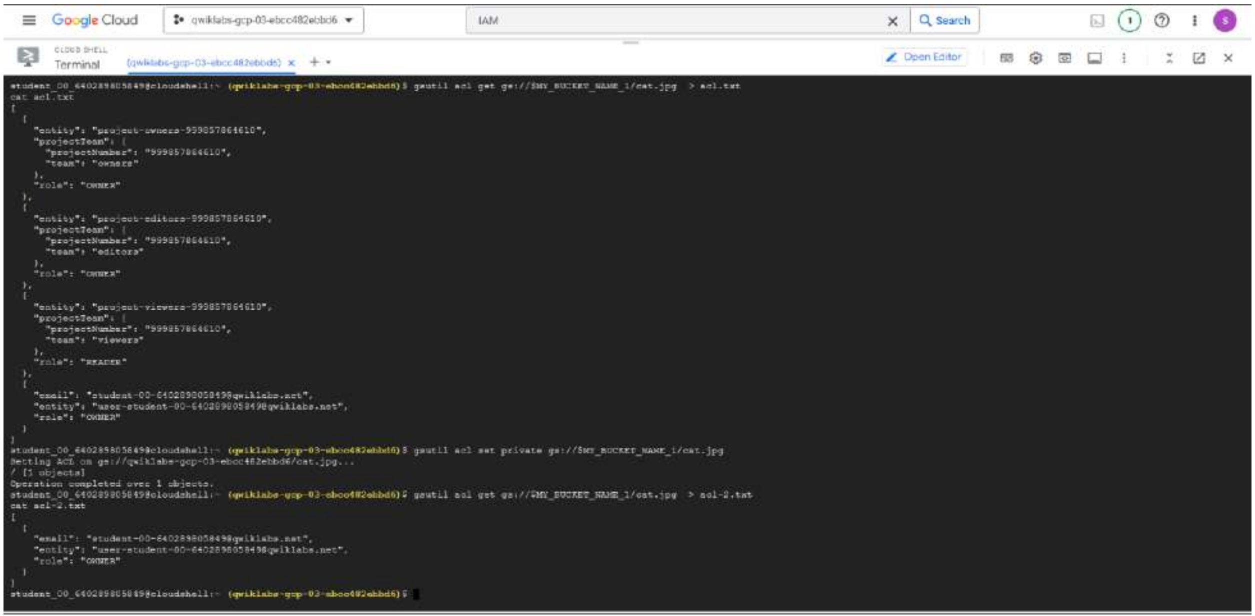
Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
IAM
Search
CLOUD SHELL
Terminal
Open Editor
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ MY_BUCKET_NAME_2=qwiklabs-gcp-03-ebcc482ebbd623
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ MY_REGION=us-central1
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gsutil mb gs://$MY_BUCKET_NAME_2
Creating gs://qwiklabs-gcp-03-ebcc482ebbd623/...
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gcloud compute zones list | grep $MY_REGION
NAME: us-central1-c
REGION: us-central1
NAME: us-central1-a
REGION: us-central1
NAME: us-central1-f
REGION: us-central1
NAME: us-central1-b
REGION: us-central1
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ MY_ZONE=us-central1-c
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gcloud config set compute/zone $MY_ZONE
Updated property [compute/zone].
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ MY_VMNAME=second-vm
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gcloud compute instances create $MY_VMNAME \
--machine-type "e2-standard-2" \
--image-project "debian-cloud" \
--image-family "debian-11" \
--subnet "default"
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-ebcc482ebbd6/zones/us-central1-c/instances/second-vm].
NAME: second-vm
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.3
EXTERNAL_IP: 34.135.85.200
STATUS: RUNNING
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gcloud compute instances list
NAME: first-vm
ZONE: us-central1-c
MACHINE_TYPE: e2-micro
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.2
EXTERNAL_IP: 34.29.206.169
STATUS: RUNNING
NAME: second-vm
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.3
EXTERNAL_IP: 34.135.85.200
STATUS: RUNNING
student_00_64028980584 9@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$
Transferred 1 item
credentials.json
/home/student_00_64028980584/

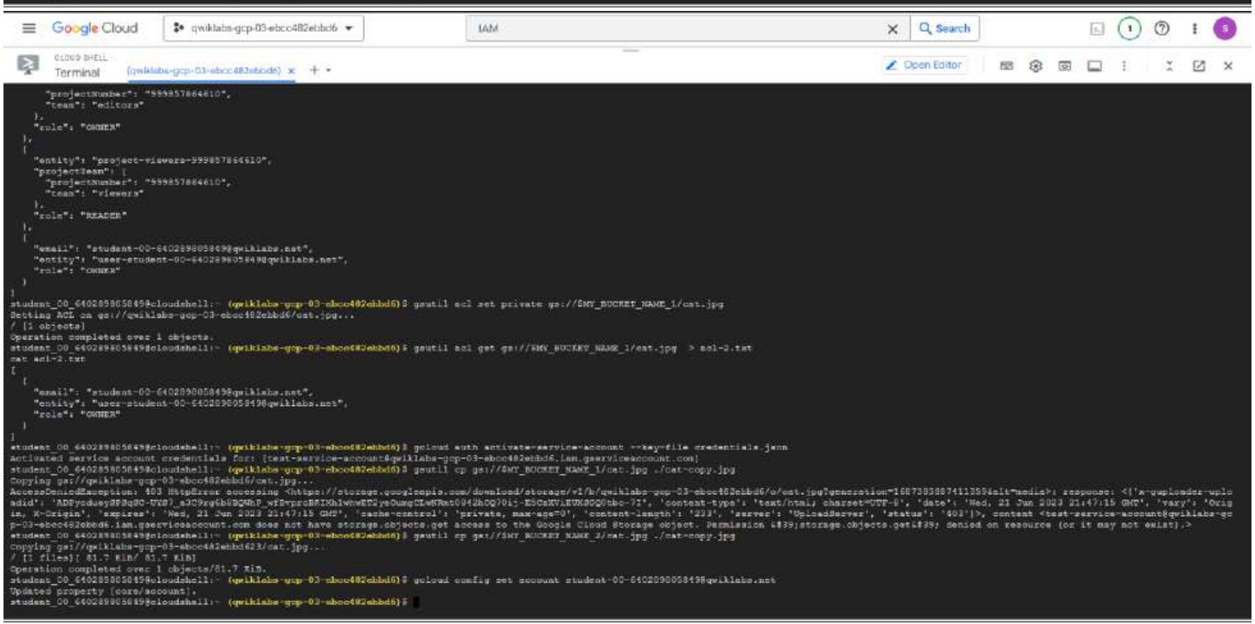

Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
IAM
Search
Cloud Shell
Terminal
Open Editor
gsutil mb gs://$MY_BUCKET_NAME_2
Creating gs://qwiklabs-gcp-03-ebcc482ebbd623/...
gcloud compute zones list | grep $MY_REGION
NAME: us-central1-c
REGION: us-central1
NAME: us-central1-a
REGION: us-central1
NAME: us-central1-f
REGION: us-central1
NAME: us-central1-b
REGION: us-central1
MY_ZONE="us-central1-c"
gcloud config set compute/zone $MY_ZONE
Updated property [compute/zone].
MY_VMNAME=second-vm
gcloud compute instances create $MY_VMNAME \
--machine-type "e2-standard-2" \
--image-project "debian-cloud" \
--image-family "debian-11" \
--subnet "default"
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-03-ebcc482ebbd6/zones/us-central1-c/instances/second-vm].
NAME: second-vm
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.3
EXTERNAL_IP: 34.135.85.200
STATUS: RUNNING
gcloud compute instances list
NAME: first-vm
ZONE: us-central1-c
MACHINE_TYPE: e2-micro
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.2
EXTERNAL_IP: 34.29.206.189
STATUS: RUNNING
NAME: second-vm
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.3
EXTERNAL_IP: 34.135.85.200
STATUS: RUNNING
gcloud iam service-accounts create test-service-account2 --display-name "test-service-account2"
Created service account [test-service-account2].

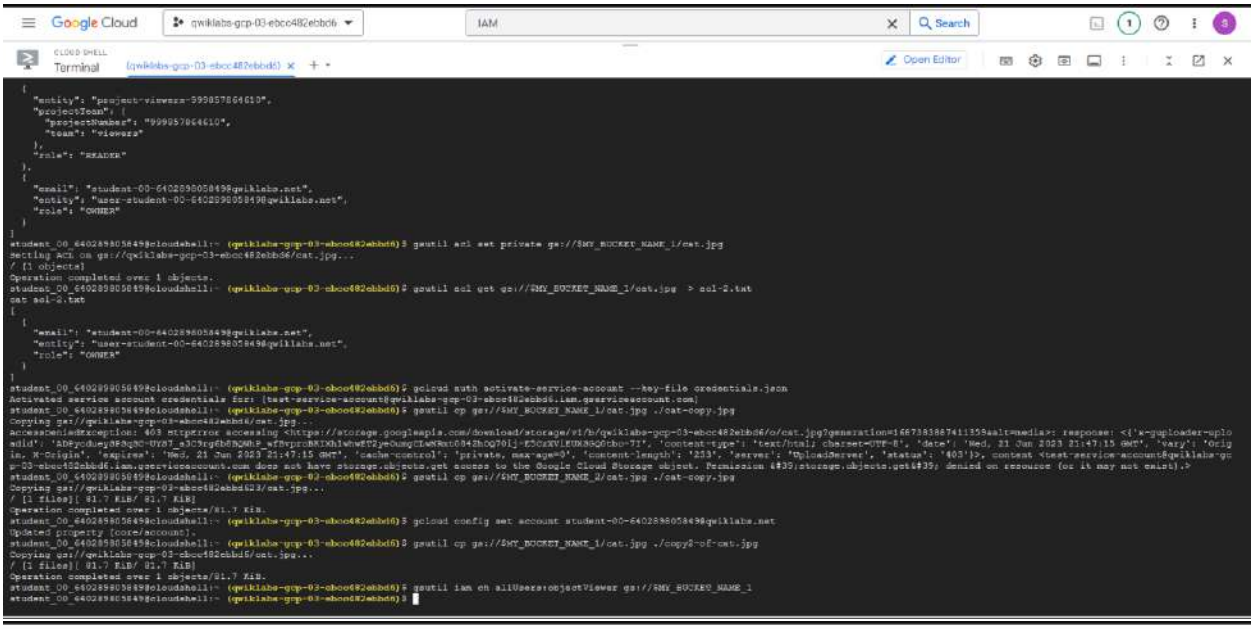

Accessing the Google Cloud Console and Cloud Shell
End Lab
00:42:03
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.
Open Google Cloud console
Username
Password
GCP Project ID
API [iam.googleapis.com] not enabled on project [568255523887]. Would you like to enable and retry (this will take a few minutes)? (y/N)?
2. In the Cloud Console, on the Navigation menu, click IAM & admin > Service accounts.
Note: Refresh the page till you see test-service-account2.
Click Check my progress to verify the objective.
Create a second bucket, VM instance and an IAM service account.
Check my progress
Assessment Completed!
3. In Cloud Shell, execute the following command to grant the second service account the Project viewer role:
gcloud projects add-iam-policy-binding $GOOGLE_CLOUD_PROJECT --member serviceAccount:test-service-account2@${GOOGLE_CLOUD_PROJECT}.iam.gserviceaccount.com --role roles/viewer
Note: GOOGLE_CLOUD_PROJECT is an environment variable that is automatically populated in Cloud Shell and is set to the project ID of the current context.
4. In the Cloud Console, on the Navigation menu, click IAM & admin > IAM.
Overview
10/20
Objectives
Lab Setup
Task 1. Explore the Google Cloud Console
Task 2. Explore Cloud Shell
Task 3. Work with Cloud Storage in Cloud Shell
Task 4. Explore the Cloud Shell code editor
End your lab
Resource Management
Billing
Interacting with Google Cloud
Computing Options
Lab Intro
Accessing the Google Cloud Console and Cloud Shell
Lab solution
Summary
Introduction to Google Cloud
Introduction to Containers and Kubernetes
Kubernetes Architecture

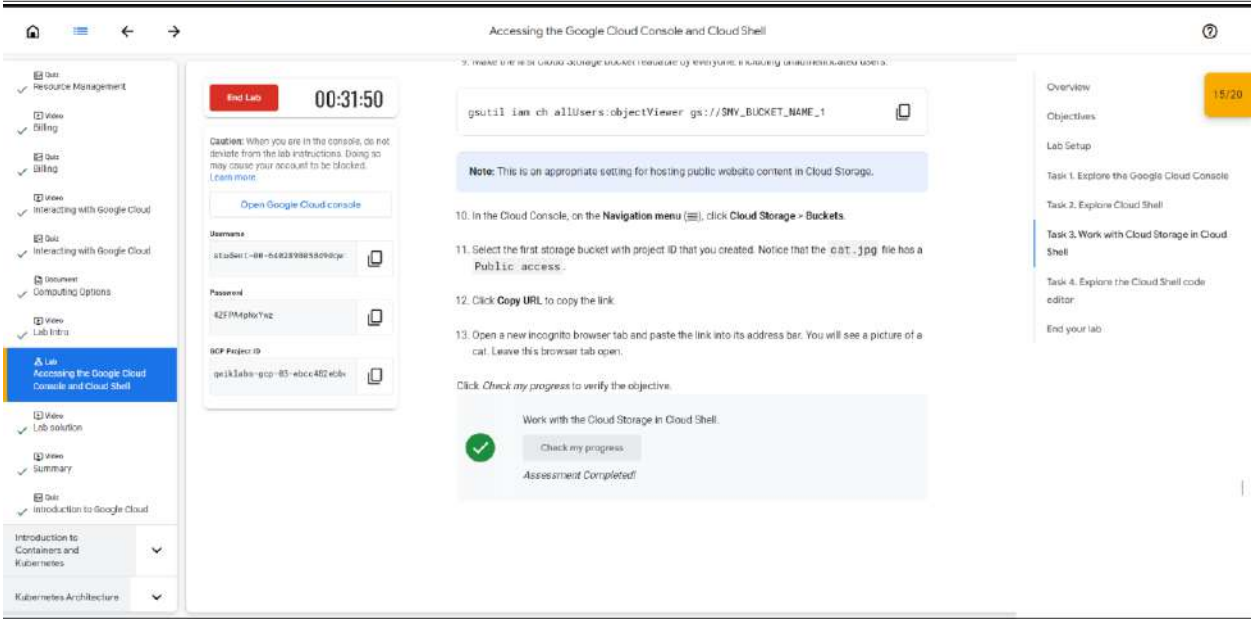

Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
IAM
Search
CLOUD SHELL
Terminal
Open Editor
EXTERNAL_IP: 34.135.85.200
STATUS: RUNNING
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gcloud iam service-accounts create test-service-account2 --display-name "test-service-account2"
Created service account [test-service-account2].
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gcloud projects add-iam-policy-binding $GOOGLE_CLOUD_PROJECT --member serviceAccount:test-service-account2@${GOOGLE_CLOUD_PROJECT}.iam.gserviceaccount.com --role roles/viewer
Updated IAM policy for project [qwiklabs-gcp-03-ebcc482ebbd6].
bindings:
- members:
  - serviceAccount:qwiklabs-gcp-03-ebcc482ebbd6@qwiklabs-gcp-03-ebcc482ebbd6.iam.gserviceaccount.com
  role: roles/bigquery.admin
- members:
  - serviceAccount:999857864610@cloudbuild.gserviceaccount.com
  role: roles/cloudbuild.builds.builder
- members:
  - serviceAccount:service-999857864610@gcp-sa-cloudbuild.iam.gserviceaccount.com
  role: roles/cloudbuild.serviceAgent
- members:
  - serviceAccount:service-999857864610@compute-system.iam.gserviceaccount.com
  role: roles/compute.serviceAgent
- members:
  - serviceAccount:service-999857864610@container-engine-robot.iam.gserviceaccount.com
  role: roles/container.serviceAgent
- members:
  - serviceAccount:999857864610-compute@developer.gserviceaccount.com
  - serviceAccount:999857864610@cloudservices.gserviceaccount.com
  - serviceAccount:test-service-account8@qwiklabs-gcp-03-ebcc482ebbd6.iam.gserviceaccount.com
  role: roles/editor
- members:
  - serviceAccount:admiral@qwiklabs-services-prod.iam.gserviceaccount.com
  - serviceAccount:qwiklabs-gcp-02-ebcc482ebbd6@qwiklabs-gcp-02-ebcc482ebbd6.iam.gserviceaccount.com
  - user:student-00-640289805849@qwiklabs.net
  role: roles/owner
- members:
  - serviceAccount:qwiklabs-gcp-03-ebcc482ebbd6@qwiklabs-gcp-03-ebcc482ebbd6.iam.gserviceaccount.com
  role: roles/storage.admin
- members:
  - serviceAccount:test-service-account2@qwiklabs-gcp-02-ebcc482ebbd6.iam.gserviceaccount.com
  - user:student-00-640289805849@qwiklabs.net
  role: roles/viewer
etag: BwXqpEwEF4=
version: 1
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gsutil cp gs://cloud-training/ak8s/cat.jpg cat.jpg
Copying gs://cloud-training/ak8s/cat.jpg...
/ [1 files][81.7 KiB/ 81.7 KiB]
Operation completed over 1 objects/81.7 KiB.
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$

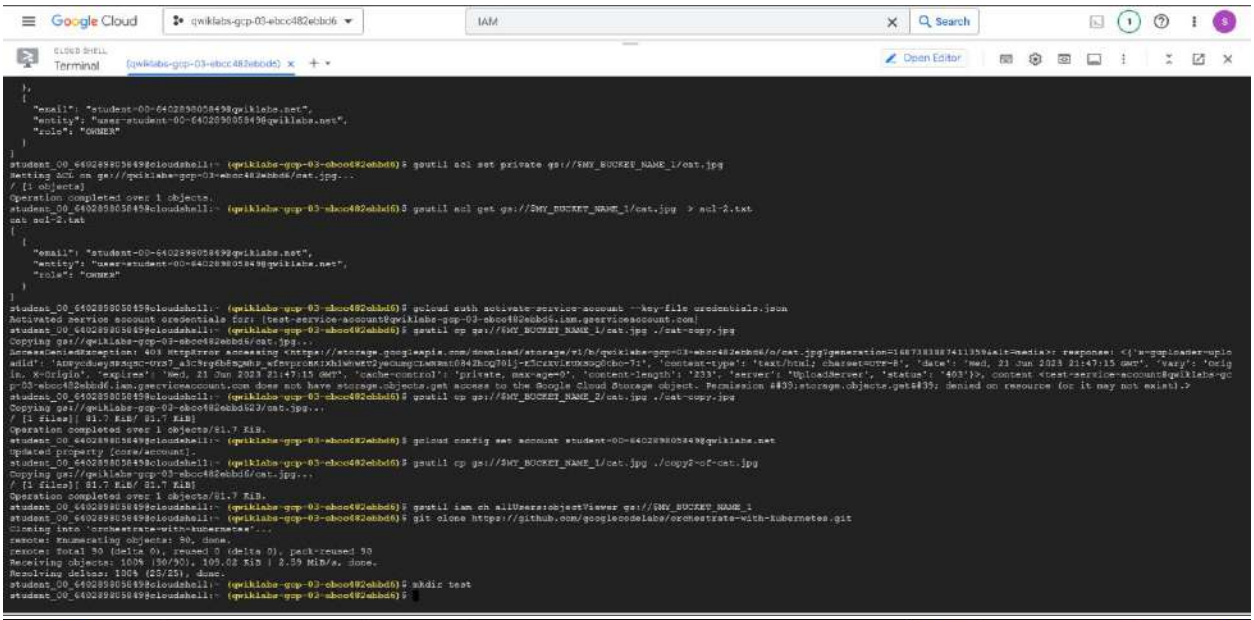

Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
IAM
Search
CLOUD SHELL
Terminal
Open Editor
version: 1
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gsutil cp gs://cloud-training/ak8s/cat.jpg cat.jpg
Copying gs://cloud-training/ak8s/cat.jpg...
/ [1 files][81.7 KiB/ 81.7 KiB]
Operation completed over 1 objects/81.7 KiB.
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-02-ebcc482ebbd6)$ gsutil cp cat.jpg gs://$MY_BUCKET_NAME_1
Copying file://cat.jpg [Content-Type=image/jpeg]...
/ [1 files][81.7 KiB/ 81.7 KiB]
Operation completed over 1 objects/81.7 KiB.
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gsutil cp gs://$MY_BUCKET_NAME_1/cat.jpg gs://$MY_BUCKET_NAME_2/cat.jpg
Copying gs://qwiklabs-gcp-03-ebcc482ebbd6/cat.jpg [Content-Type=image/jpeg]...
/ [1 files][81.7 KiB/ 81.7 KiB]
Operation completed over 1 objects/81.7 KiB.
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-02-ebcc482ebbd6)$ gsutil acl get gs://$MY_BUCKET_NAME_1/cat.jpg > acl.txt
cat acl.txt
[
  {
    "entity": "project-owners-999857864610",
    "projectTeam": {
      "projectNumber": "999857864610",
      "team": "owners"
    },
    "role": "OWNER"
  },
  {
    "entity": "project-editors-999857864610",
    "projectTeam": {
      "projectNumber": "999857864610",
      "team": "editors"
    },
    "role": "OWNER"
  },
  {
    "entity": "project-viewers-999857864610",
    "projectTeam": {
      "projectNumber": "999857864610",
      "team": "viewers"
    },
    "role": "READER"
  },
  {
    "email": "student-00-640289805849@qwiklabs.net",
    "entity": "user-student-00-640289805849@qwiklabs.net",
    "role": "OWNER"
  }
]
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-02-ebcc482ebbd6)$

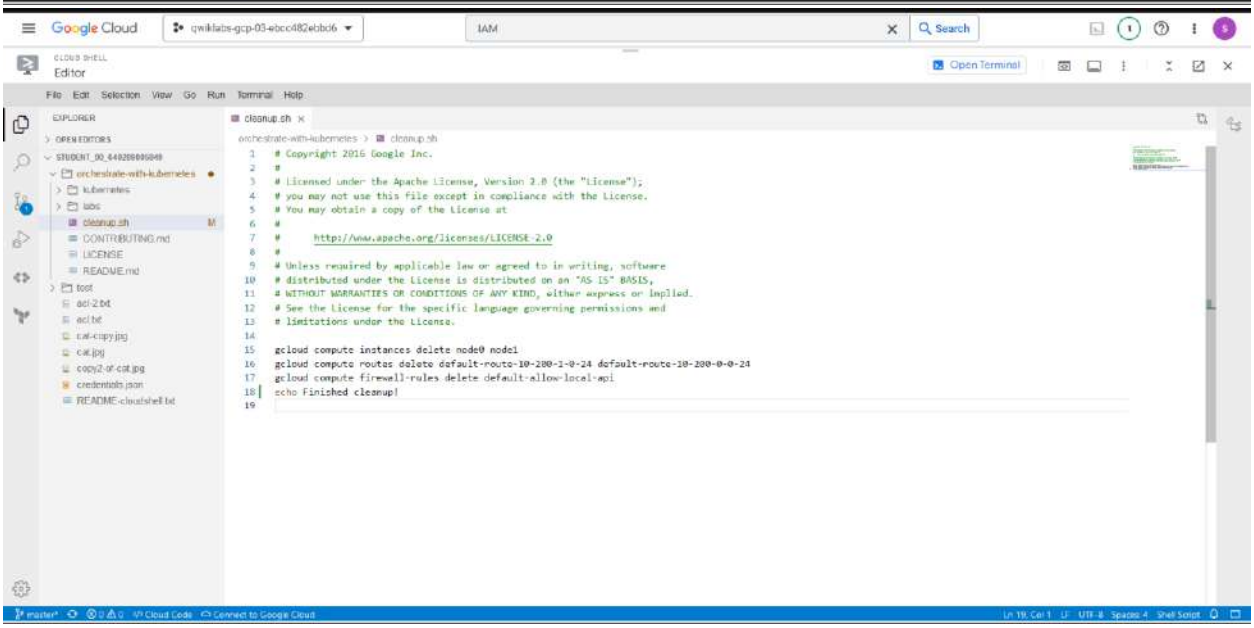

Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
IAM
Search
CLOUD SHELL
Terminal
(qwiklabs-gcp-03-ebcc482ebbd6)
Open Editor
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gsutil acl get gs://$MY_BUCKET_NAME_1/cat.jpg > acl.txt
cat acl.txt
"entity": "project-owners-999857864610",
"projectTeam": {
"projectNumber": "999857864610",
"team": "owners"
"role": "OWNER"
"entity": "project-editors-999857864610",
"projectTeam": {
"projectNumber": "999857864610",
"team": "editors"
"role": "OWNER"
"entity": "project-viewers-999857864610",
"projectTeam": {
"projectNumber": "999857864610",
"team": "viewers"
"role": "READER"
"email": "student-00-640289805849@qwiklabs.net",
"entity": "user-student-00-640289805849@qwiklabs.net",
"role": "OWNER"
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gsutil acl set private gs://$MY_BUCKET_NAME_1/cat.jpg
Setting ACL on gs://qwiklabs-gcp-03-ebcc482ebbd6/cat.jpg...
/ [1 objects]
Operation completed over 1 objects.
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gsutil acl get gs://$MY_BUCKET_NAME_1/cat.jpg > acl-2.txt
cat acl-2.txt
"email": "student-00-640289805849@qwiklabs.net",
"entity": "user-student-00-640289805849@qwiklabs.net",
"role": "OWNER"
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$

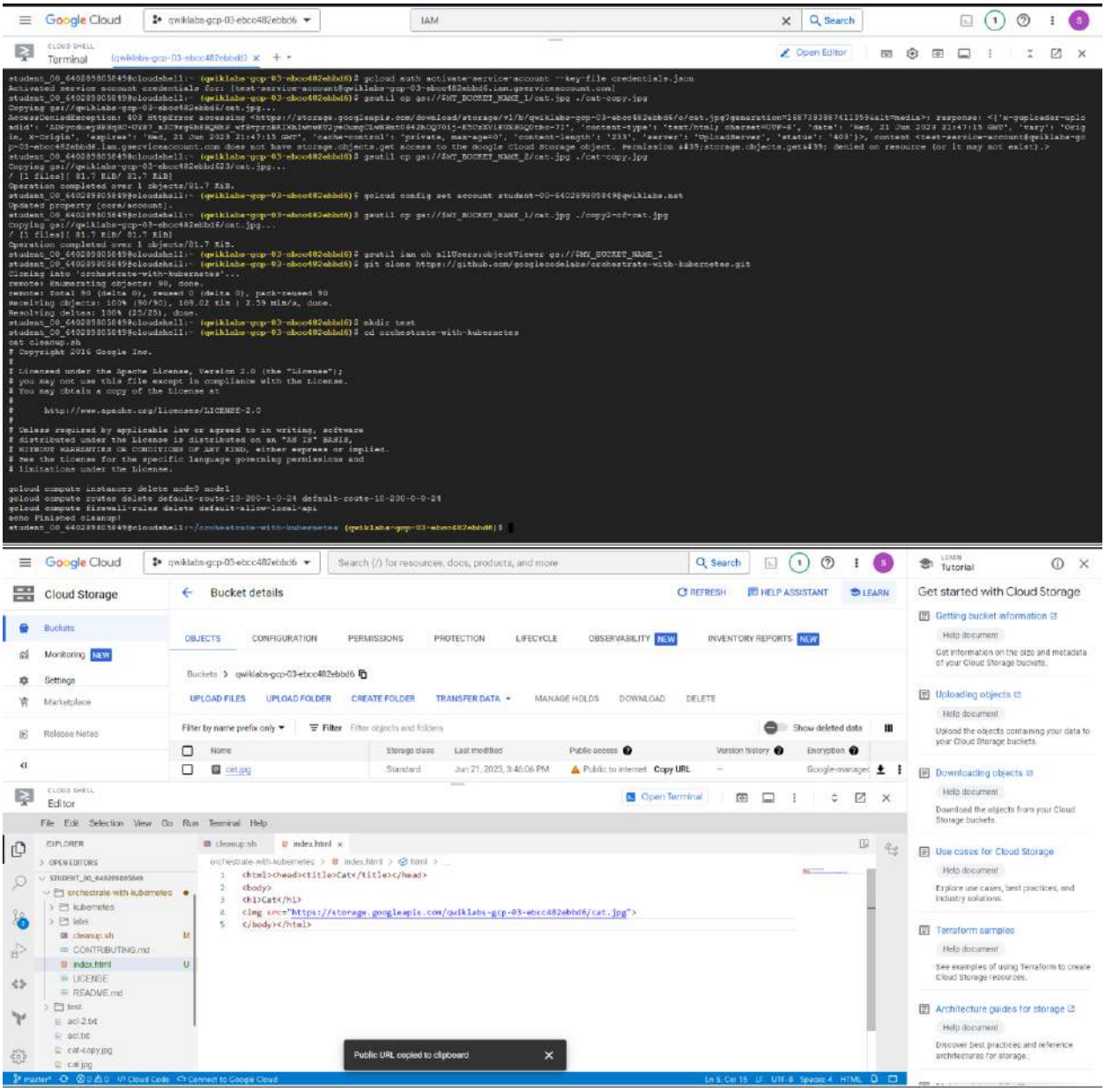

Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
IAM
Search
CLOUD SHELL
Terminal
(qwiklabs-gcp-03-ebcc482ebbd6)
Open Editor
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gsutil acl set private gs://$MY_BUCKET_NAME_1/cat.jpg
Setting ACL on gs://qwiklabs-gcp-03-ebcc482ebbd6/cat.jpg...
/ [1 objects]
Operation completed over 1 objects.
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gsutil acl get gs://$MY_BUCKET_NAME_1/cat.jpg > acl-2.txt
cat acl-2.txt
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gcloud auth activate-service-account --key-file credentials.json
Activated service account credentials for: [test-service-account@qwiklabs-gcp-03-ebcc482ebbd6.iam.gserviceaccount.com]
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gsutil cp gs://$MY_BUCKET_NAME_1/cat.jpg ./cat-copy.jpg
Copying gs://qwiklabs-gcp-03-ebcc482ebbd6/cat.jpg...
p-03-ebcc482ebbd6.iam.gserviceaccount.com does not have storage.objects.get access to the Google Cloud Storage object. Permission 'storage.objects.get' denied on resource (or it may not exist).>
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gsutil cp gs://$MY_BUCKET_NAME_2/cat.jpg ./cat-copy.jpg
Copying gs://qwiklabs-gcp-03-ebcc482ebbd623/cat.jpg...
/ [1 files][81.7 KiB/ 81.7 KiB]
Operation completed over 1 objects/81.7 KiB.
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$ gcloud config set account student-00-640289805849@qwiklabs.net
Updated property [core/account].
student_00_640289805849@cloudshell:~ (qwiklabs-gcp-03-ebcc482ebbd6)$


Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
IAM
Search
Cloud Shell
Terminal
Open Editor
student-00-6402898058498@qwiklabs.net
gsutil acl set private gs://$MY_BUCKET_NAME_1/cat.jpg
gsutil acl get gs://$MY_BUCKET_NAME_1/cat.jpg > acl-2.txt
cat acl-2.txt
gcloud auth activate-service-account --key-file credentials.json
gsutil cp gs://$MY_BUCKET_NAME_1/cat.jpg ./cat-copy.jpg
gsutil cp gs://$MY_BUCKET_NAME_2/cat.jpg ./cat-copy.jpg
gcloud config set account student-00-6402898058498@qwiklabs.net
gsutil cp gs://$MY_BUCKET_NAME_1/cat.jpg ./copy2-of-cat.jpg
gsutil iam ch allUsers:objectViewer gs://$MY_BUCKET_NAME_1


Accessing the Google Cloud Console and Cloud Shell
End Lab
00:31:50
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more
Open Google Cloud console
Username
Password
GCP Project ID
gsutil iam ch allUsers:objectViewer gs://$MY_BUCKET_NAME_1
Note: This is an appropriate setting for hosting public website content in Cloud Storage.
10. In the Cloud Console, on the Navigation menu (≡), click Cloud Storage > Buckets.
11. Select the first storage bucket with project ID that you created. Notice that the cat.jpg file has a Public access.
12. Click Copy URL to copy the link.
13. Open a new incognito browser tab and paste the link into its address bar. You will see a picture of a cat. Leave this browser tab open.
Click Check my progress to verify the objective.
Work with the Cloud Storage in Cloud Shell.
Check my progress
Assessment Completed!
Overview
15/20
Objectives
Lab Setup
Task 1. Explore the Google Cloud Console
Task 2. Explore Cloud Shell
Task 3. Work with Cloud Storage in Cloud Shell
Task 4. Explore the Cloud Shell code editor
End your lab
Resource Management
Billing
Billing
Interacting with Google Cloud
Interacting with Google Cloud
Computing Options
Lab Intro
Accessing the Google Cloud Console and Cloud Shell
Lab solution
Summary
Introduction to Google Cloud
Introduction to Containers and Kubernetes
Kubernetes Architecture


Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
IAM
Search
Terminal
Open Editor
gsutil acl set private gs://$MY_BUCKET_NAME_1/cat.jpg
gsutil acl get gs://$MY_BUCKET_NAME_1/cat.jpg > acl-2.txt
cat acl-2.txt
gcloud auth activate-service-account --key-file credentials.json
gsutil cp gs://$MY_BUCKET_NAME_1/cat.jpg ./cat-copy.jpg
gsutil cp gs://$MY_BUCKET_NAME_2/cat.jpg ./cat-copy.jpg
gcloud config set account student-00-64028980584@qwiklabs.net
gsutil cp gs://$MY_BUCKET_NAME_1/cat.jpg ./copy2-of-cat.jpg
gsutil iam ch allUsers:objectViewer gs://$MY_BUCKET_NAME_1
git clone https://github.com/googlecodelabs/orchestrate-with-kubernetes.git
mkdir test


Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
IAM
Search
Editor
Open Terminal
File Edit Selection View Go Run Terminal Help
EXPLORER
cleanup.sh
orchestrate-with-kubernetes
kubernetes
labs
cleanup.sh
CONTRIBUTING.md
LICENSE
README.md
test
acl-2.txt
acl.txt
cat-copy.jpg
cat.jpg
copy2-of-cat.jpg
credentials.json
README-cloudshell.txt
Copyright 2016 Google Inc.
Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at
http://www.apache.org/licenses/LICENSE-2.0
Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
gcloud compute instances delete node0 node1
gcloud compute routes delete default-route-10-200-1-0-24 default-route-10-200-0-0-24
gcloud compute firewall-rules delete default-allow-local-api
echo Finished cleanup!


Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
IAM
Search
Terminal
Open Editor
gcloud auth activate-service-account --key-file credentials.json
gsutil cp gs://$MY_BUCKET_NAME_1/cat.jpg ./cat-copy.jpg
gsutil cp gs://$MY_BUCKET_NAME_2/cat.jpg ./cat-copy.jpg
gcloud config set account student-00-640289805849@qwiklabs.net
gsutil cp gs://$MY_BUCKET_NAME_1/cat.jpg ./copy2-of-cat.jpg
gsutil iam ch allUsers:objectViewer gs://$MY_BUCKET_NAME_1
git clone https://github.com/googlecodelabs/orchestrate-with-kubernetes.git
mkdir test
cd orchestrate-with-kubernetes
gcloud compute instances delete node0 node1
gcloud compute routes delete default-route-10-200-1-0-24 default-route-10-200-0-0-24
gcloud compute firewall-rules delete default-allow-local-api
echo Finished cleanup!

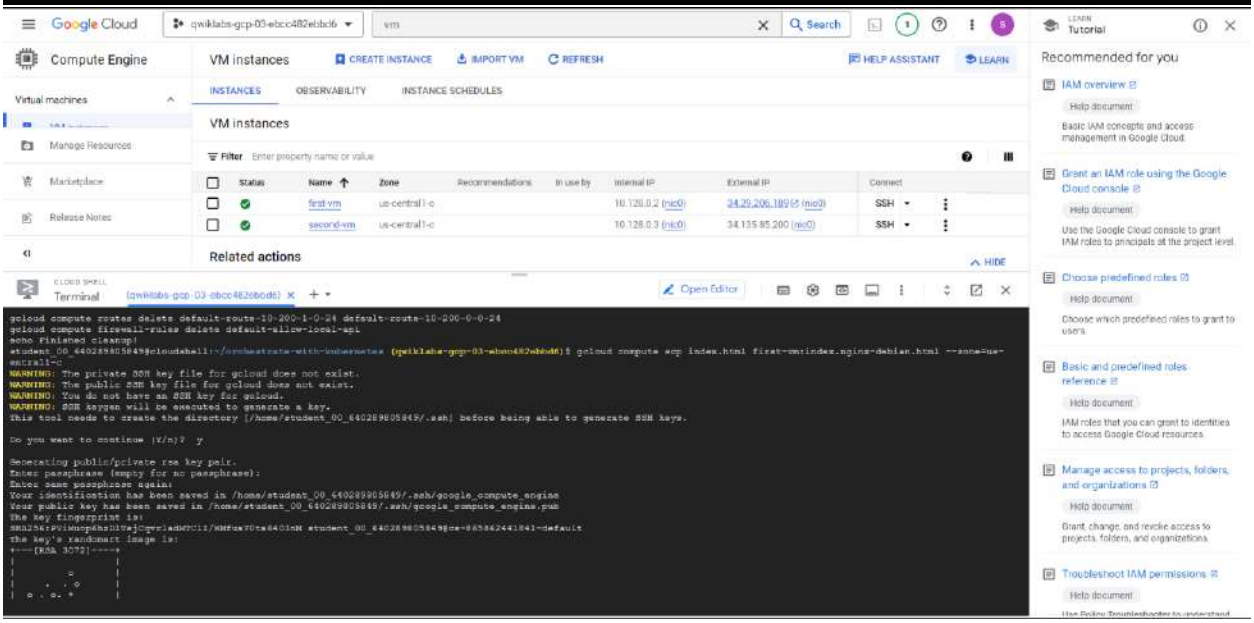
Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
Search (/) for resources, docs, products, and more
Search
Cloud Storage
Bucket details
REFRESH
HELP ASSISTANT
LEARN
Buckets
Monitoring NEW
Settings
Marketplace
Release Notes
OBJECTS
CONFIGURATION
PERMISSIONS
PROTECTION
LIFECYCLE
OBSERVABILITY NEW
INVENTORY REPORTS NEW
Buckets > qwiklabs-gcp-03-ebcc482ebbd6
UPLOAD FILES
UPLOAD FOLDER
CREATE FOLDER
TRANSFER DATA
MANAGE HOLDS
DOWNLOAD
DELETE
Filter by name prefix only
Filter
Filter objects and folders
Show deleted data
Name
Storage class
Last modified
Public access
Version history
Encryption
cat.jpg
Standard
Jun 21, 2023, 9:46:06 PM
Public to internet
Copy URL
Google-managed
Open Terminal
Editor
File Edit Selection View Go Run Terminal Help
EXPLORER
OPEN EDITORS
orchestrate-with-kubernetes
kubernetes
labs
cleanup.sh
CONTRIBUTING.md
index.html
LICENSE
README.md
test
acl-2.txt
acl.txt
cat-copy.jpg
cat.jpg
cleanup.sh
index.html
orchestrate-with-kubernetes > index.html > html > ...
<html><head><title>Cat</title></head>
<body>
<h1>Cat</h1>
<img src="https://storage.googleapis.com/qwiklabs-gcp-03-ebcc482ebbd6/cat.jpg">
</body></html>
Public URL copied to clipboard
master*
Cloud Code
Connect to Google Cloud
Ln 5, Col 15
UTF-8
Spaces: 4
HTML
LEARN
Tutorial
Get started with Cloud Storage
Getting bucket information
Help document
Get information on the size and metadata of your Cloud Storage buckets.
Uploading objects
Help document
Upload the objects containing your data to your Cloud Storage buckets.
Downloading objects
Help document
Download the objects from your Cloud Storage buckets.
Use cases for Cloud Storage
Help document
Explore use cases, best practices, and industry solutions.
Terraform samples
Help document
See examples of using Terraform to create Cloud Storage resources.
Architecture guides for storage
Help document
Discover best practices and reference architectures for storage.

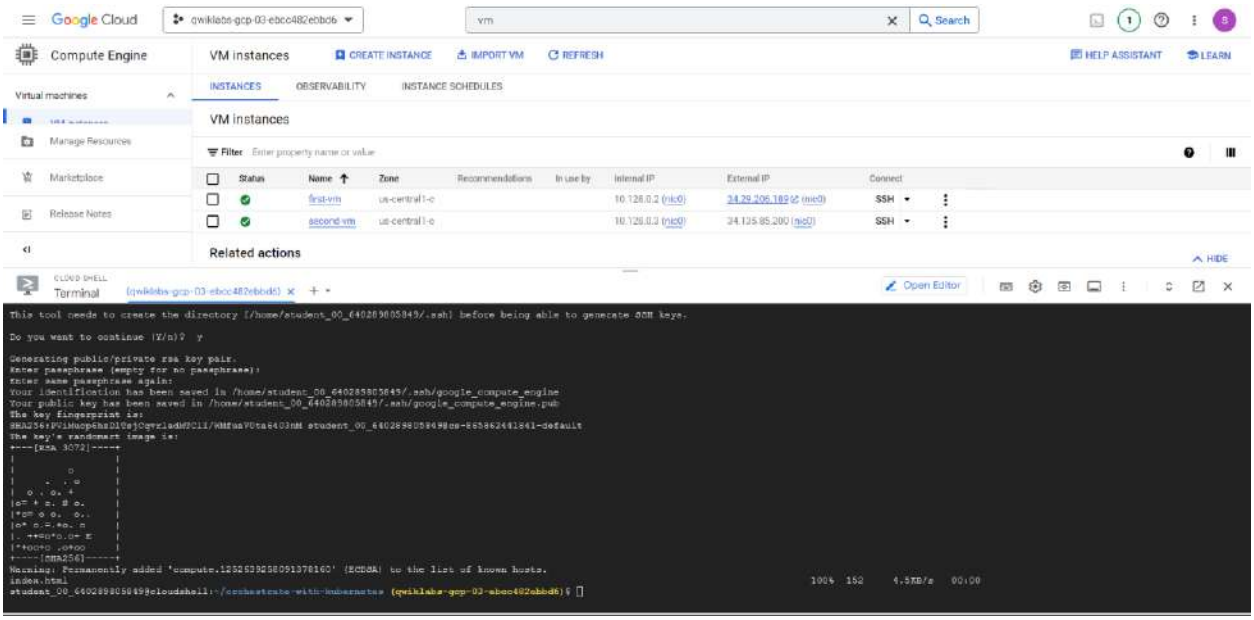
Navegación privada de Mozilla Firefox

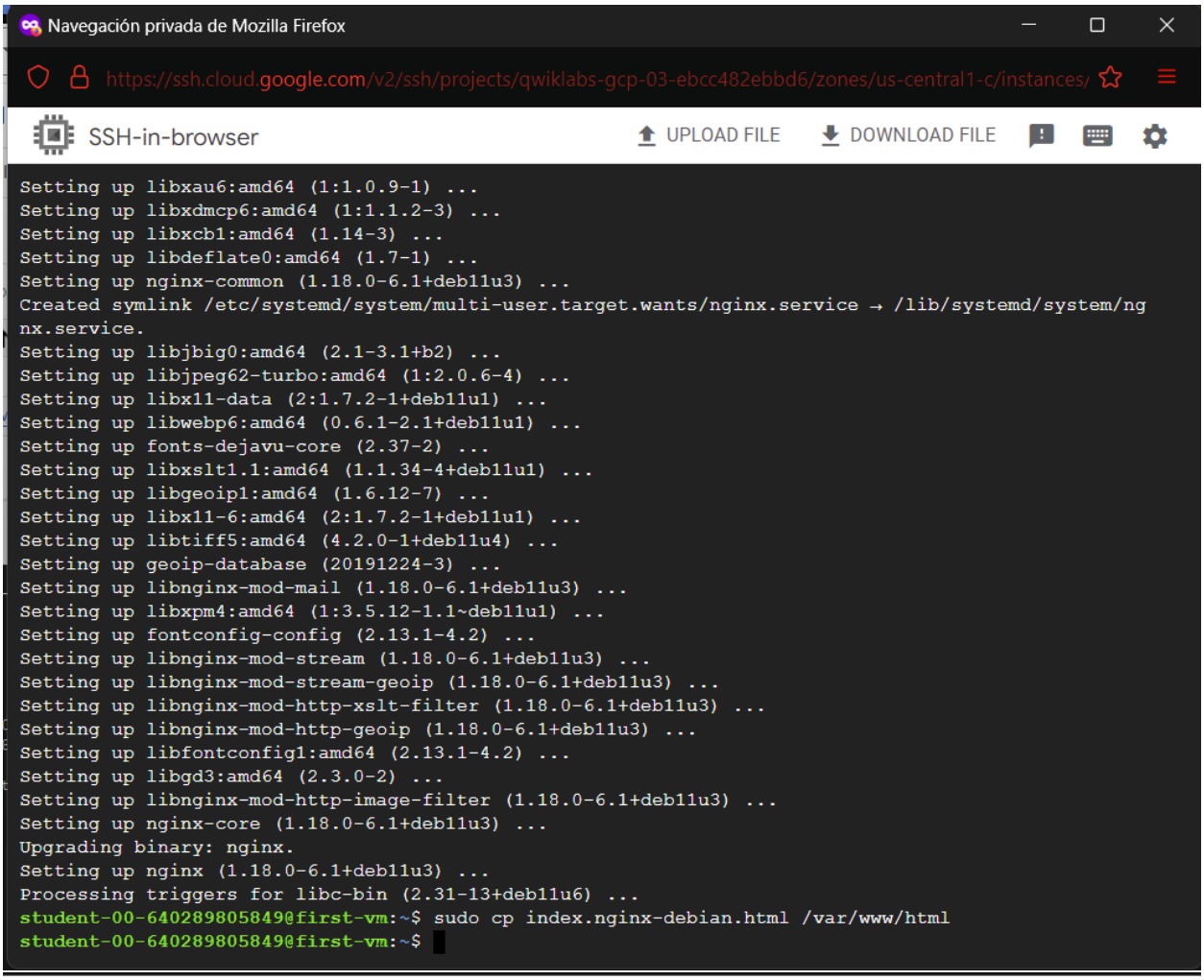
https://ssh.cloud.google.com/v2/ssh/projects/qwiklabs-gcp-03-ebcc482ebbd6/zones/us-central1-c/instances/

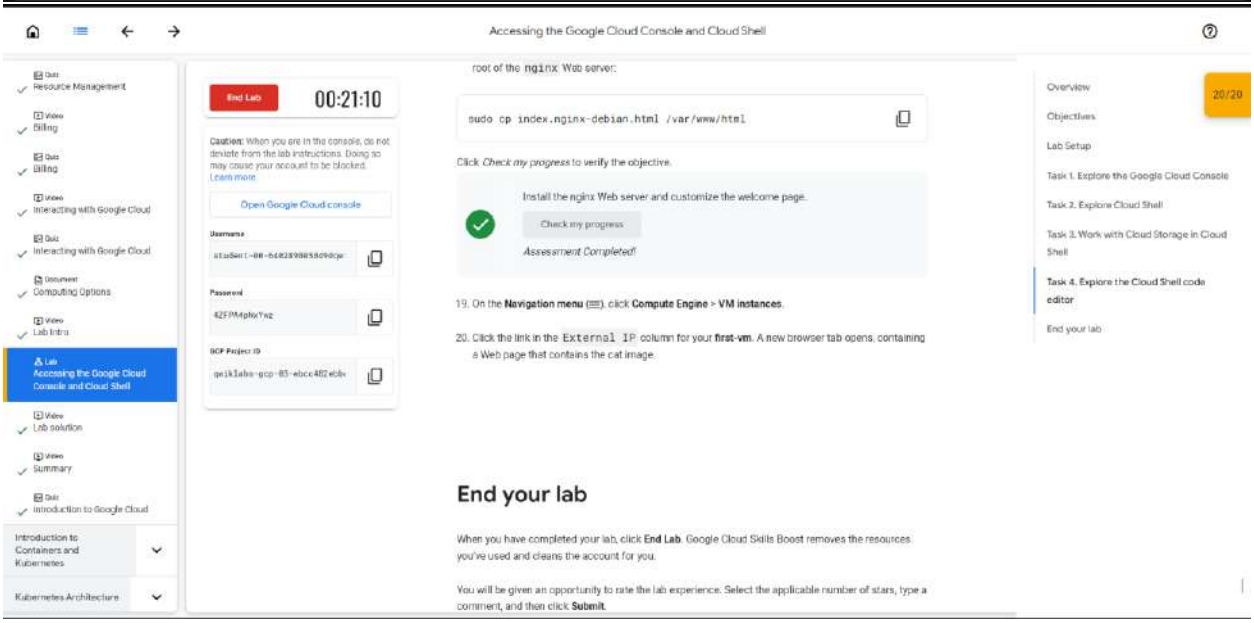
SSH-in-browser UPLOAD FILE DOWNLOAD FILE

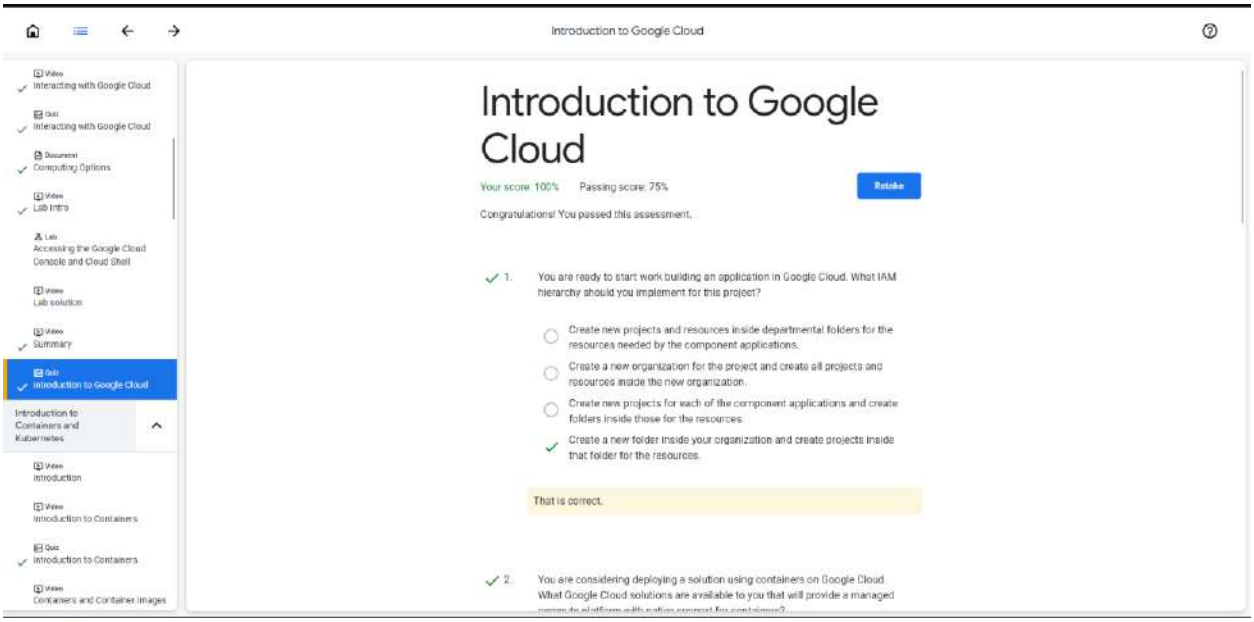
```
Linux first-vm 5.10.0-23-cloud-amd64 #1 SMP Debian 5.10.179-1 (2023-05-12) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Creating directory '/home/student-00-640289805849'.
student-00-640289805849@first-vm:~$ sudo apt-get remove -y --purge man-db
sudo touch /var/lib/man-db/auto-update
sudo apt-get update
sudo apt-get install nginx
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libgdbm6 libpipeline1
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  man-db*
0 upgraded, 0 newly installed, 1 to remove and 0 not upgraded.
After this operation, 2943 kB disk space will be freed.
(Reading database ... 57169 files and directories currently installed.)
Removing man-db (2.9.4-2) ...
(Reading database ... 56832 files and directories currently installed.)
Purging configuration files for man-db (2.9.4-2) ...
touch: cannot touch '/var/lib/man-db/auto-update': No such file or directory
Get:1 https://packages.cloud.google.com/apt google-compute-engine-bullseye-stable InRelease [5146
]
Get:2 https://packages.cloud.google.com/apt cloud-sdk-bullseye InRelease [6403 B]
Hit:3 https://deb.debian.org/debian bullseye InRelease
Get:4 https://deb.debian.org/debian-security bullseye-security InRelease [48.4 kB]
```

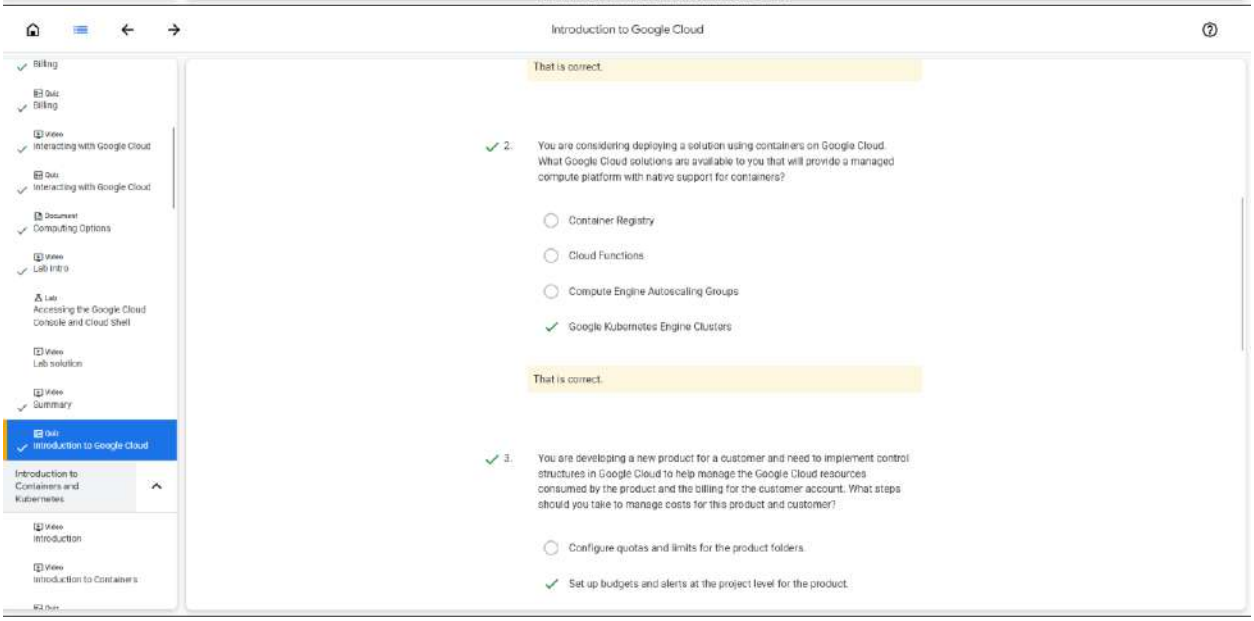


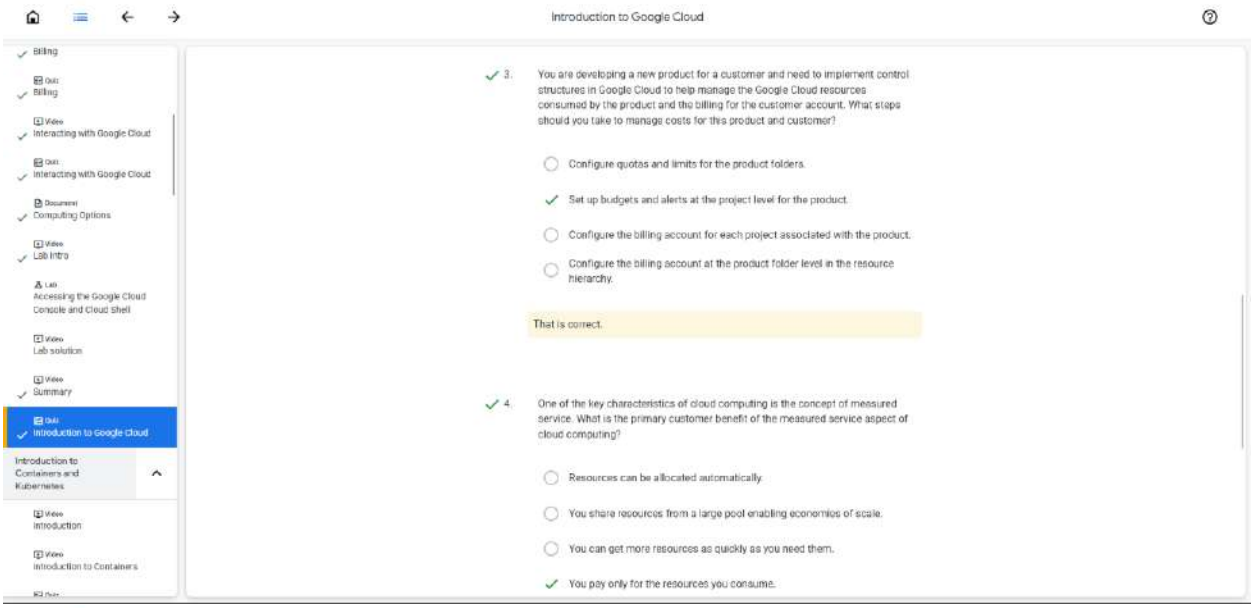

Google Cloud
qwiklabs-gcp-03-ebcc482ebbd6
vm
Search
Compute Engine
VM instances
CREATE INSTANCE
IMPORT VM
REFRESH
HELP ASSISTANT
LEARN
Virtual machines
INSTANCES
OBSERVABILITY
INSTANCE SCHEDULES
Manage Resources
Marketplace
Release Notes
VM instances
Filter
Enter property name or value
Status
Name
Zone
Recommendations
In use by
Internal IP
External IP
Connect
first-vm
us-central1-c
10.128.0.2 (nic0)
34.29.206.189 (nic0)
SSH
second-vm
us-central1-c
10.128.0.3 (nic0)
34.135.85.200 (nic0)
SSH
Related actions
HIDE
CLOUD SHELL
Terminal
(qwiklabs-gcp-03-ebcc482ebbd6)
Open Editor
This tool needs to create the directory [/home/student_00_640289805849/.ssh] before being able to generate SSH keys.
Do you want to continue (Y/n)? y
Generating public/private rsa key pair.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/student_00_640289805849/.ssh/google_compute_engine
Your public key has been saved in /home/student_00_640289805849/.ssh/google_compute_engine.pub
The key fingerprint is:
SHA256:PPiMxcp4haDlOs3Cgvr1sdMPCII/WMfaaVOta4403nM student_00_640289805849@cs-865862441841-default
The key's randomart image is:
+---[RSA 3072]----+
| o |
| o |
| . . o |
| o . o. + |
|o= + =. S o. |
|*=* o o. o.. |
|o* o.=.+o. = |
|. ++o=*o.o= E |
|*+oo=o .o+oo |
+----[SHA256]-----+
Warning: Permanently added 'compute.1252639258091378160' (ECDSA) to the list of known hosts.
index.html 100% 152 4.5KB/s 00:00
student_00_640289805849@cloudshell:~/orchestrate-with-kubernetes (qwiklabs-gcp-03-ebcc482ebbd6)$

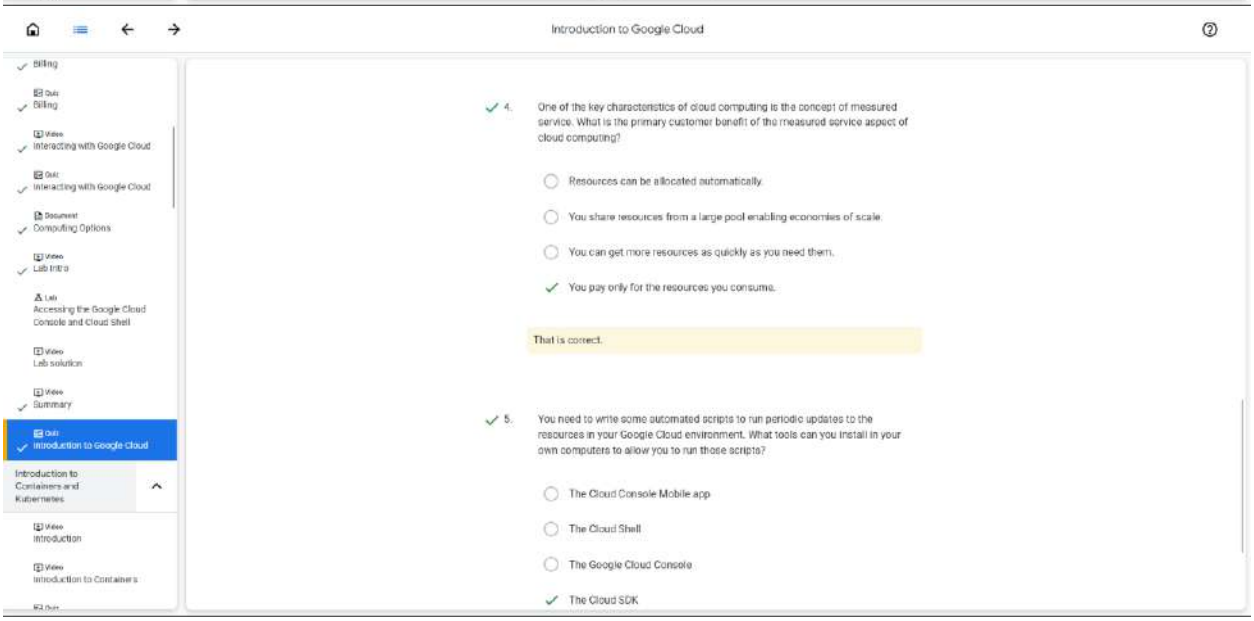

Navegación privada de Mozilla Firefox
https://ssh.cloud.google.com/v2/ssh/projects/qwiklabs-gcp-03-ebcc482ebbd6/zones/us-central1-c/instances/
SSH-in-browser
UPLOAD FILE
DOWNLOAD FILE
Setting up libxau6:amd64 (1:1.0.9-1) ...
Setting up libxdmcp6:amd64 (1:1.1.2-3) ...
Setting up libxcb1:amd64 (1.14-3) ...
Setting up libdeflate0:amd64 (1.7-1) ...
Setting up nginx-common (1.18.0-6.1+deb11u3) ...
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /lib/systemd/system/nginx.service.
Setting up libjbig0:amd64 (2.1-3.1+b2) ...
Setting up libjpeg62-turbo:amd64 (1:2.0.6-4) ...
Setting up libx11-data (2:1.7.2-1+deb11u1) ...
Setting up libwebp6:amd64 (0.6.1-2.1+deb11u1) ...
Setting up fonts-dejavu-core (2.37-2) ...
Setting up libxslt1.1:amd64 (1.1.34-4+deb11u1) ...
Setting up libgeoip1:amd64 (1.6.12-7) ...
Setting up libx11-6:amd64 (2:1.7.2-1+deb11u1) ...
Setting up libtiff5:amd64 (4.2.0-1+deb11u4) ...
Setting up geoip-database (20191224-3) ...
Setting up libnginx-mod-mail (1.18.0-6.1+deb11u3) ...
Setting up libxpm4:amd64 (1:3.5.12-1.1~deb11u1) ...
Setting up fontconfig-config (2.13.1-4.2) ...
Setting up libnginx-mod-stream (1.18.0-6.1+deb11u3) ...
Setting up libnginx-mod-stream-geoip (1.18.0-6.1+deb11u3) ...
Setting up libnginx-mod-http-xslt-filter (1.18.0-6.1+deb11u3) ...
Setting up libnginx-mod-http-geoip (1.18.0-6.1+deb11u3) ...
Setting up libfontconfig1:amd64 (2.13.1-4.2) ...
Setting up libgd3:amd64 (2.3.0-2) ...
Setting up libnginx-mod-http-image-filter (1.18.0-6.1+deb11u3) ...
Setting up nginx-core (1.18.0-6.1+deb11u3) ...
Upgrading binary: nginx.
Setting up nginx (1.18.0-6.1+deb11u3) ...
Processing triggers for libc-bin (2.31-13+deb11u6) ...
student-00-640289805849@first-vm:~$ sudo cp index.nginx-debian.html /var/www/html
student-00-640289805849@first-vm:~$

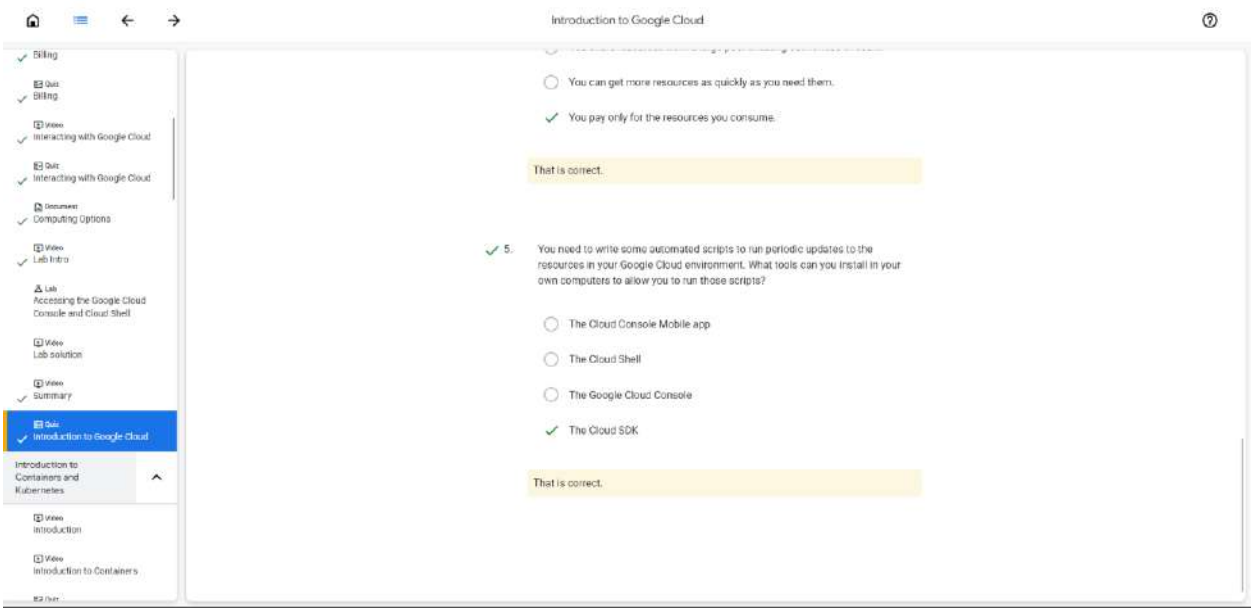

Accessing the Google Cloud Console and Cloud Shell
End Lab
00:21:10
root of the nginx Web server:
sudo cp index.nginx-debian.html /var/www/html
Click Check my progress to verify the objective.
Install the nginx Web server and customize the welcome page.
Check my progress
Assessment Completed!
19. On the Navigation menu (≡), click Compute Engine > VM instances.
20. Click the link in the External IP column for your first-vm. A new browser tab opens, containing a Web page that contains the cat image.
End your lab
When you have completed your lab, click End Lab. Google Cloud Skills Boost removes the resources you've used and cleans the account for you.
You will be given an opportunity to rate the lab experience. Select the applicable number of stars, type a comment, and then click Submit.
Overview
20/20
Objectives
Lab Setup
Task 1. Explore the Google Cloud Console
Task 2. Explore Cloud Shell
Task 3. Work with Cloud Storage in Cloud Shell
Task 4. Explore the Cloud Shell code editor
End your lab

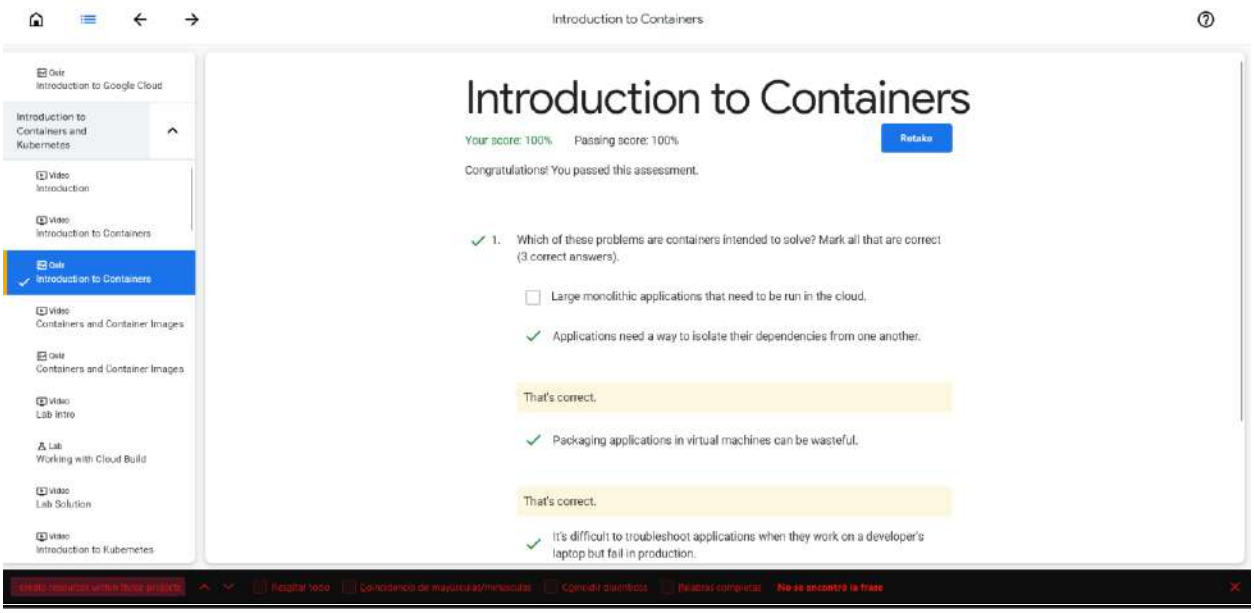

Introduction to Google Cloud
Video
Interacting with Google Cloud
Quiz
Interacting with Google Cloud
Document
Computing Options
Video
Lab Intro
Lab
Accessing the Google Cloud Console and Cloud Shell
Video
Lab solution
Video
Summary
Quiz
Introduction to Google Cloud
Introduction to Containers and Kubernetes
Video
Introduction
Video
Introduction to Containers
Quiz
Introduction to Containers
Video
Containers and Container Images
Introduction to Google Cloud
Your score: 100%
Passing score: 75%
Retake
Congratulations! You passed this assessment.
1. You are ready to start work building an application in Google Cloud. What IAM hierarchy should you implement for this project?
Create new projects and resources inside departmental folders for the resources needed by the component applications.
Create a new organization for the project and create all projects and resources inside the new organization.
Create new projects for each of the component applications and create folders inside those for the resources.
Create a new folder inside your organization and create projects inside that folder for the resources.
That is correct.
2. You are considering deploying a solution using containers on Google Cloud. What Google Cloud solutions are available to you that will provide a managed

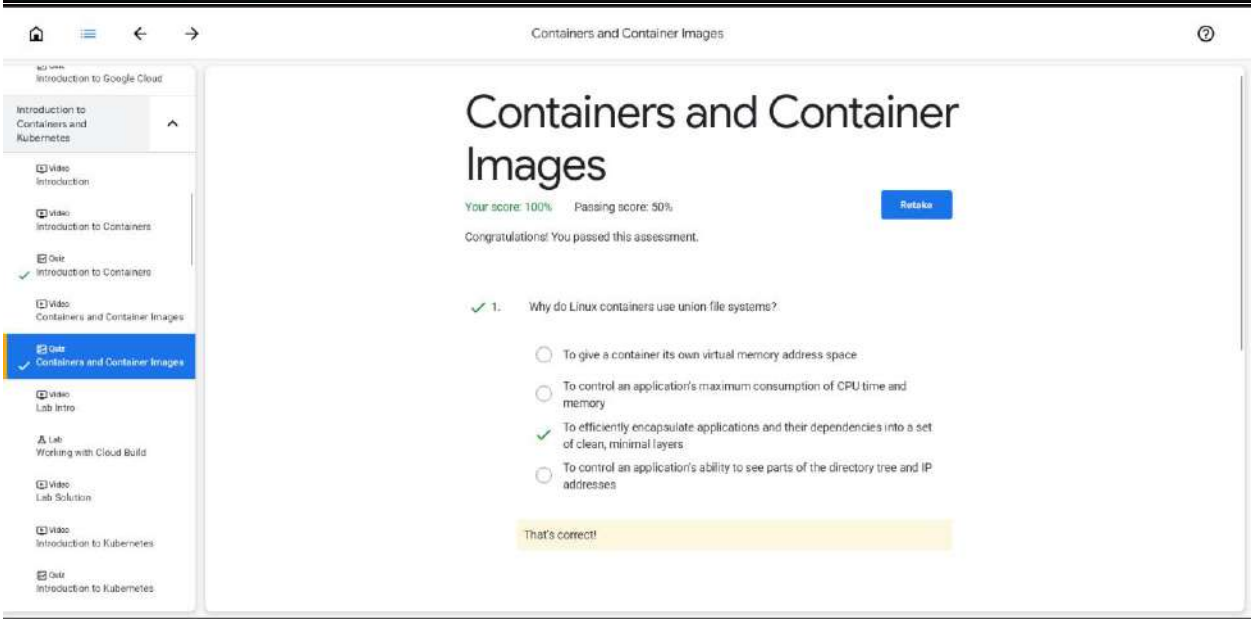

Introduction to Google Cloud
Billing
Quiz
Billing
Video
Interacting with Google Cloud
Quiz
Interacting with Google Cloud
Document
Computing Options
Video
Lab Intro
Lab
Accessing the Google Cloud Console and Cloud Shell
Video
Lab solution
Video
Summary
Quiz
Introduction to Google Cloud
Introduction to Containers and Kubernetes
Video
Introduction
Video
Introduction to Containers
That is correct.
2. You are considering deploying a solution using containers on Google Cloud. What Google Cloud solutions are available to you that will provide a managed compute platform with native support for containers?
Container Registry
Cloud Functions
Compute Engine Autoscaling Groups
Google Kubernetes Engine Clusters
That is correct.
3. You are developing a new product for a customer and need to implement control structures in Google Cloud to help manage the Google Cloud resources consumed by the product and the billing for the customer account. What steps should you take to manage costs for this product and customer?
Configure quotas and limits for the product folders.
Set up budgets and alerts at the project level for the product.

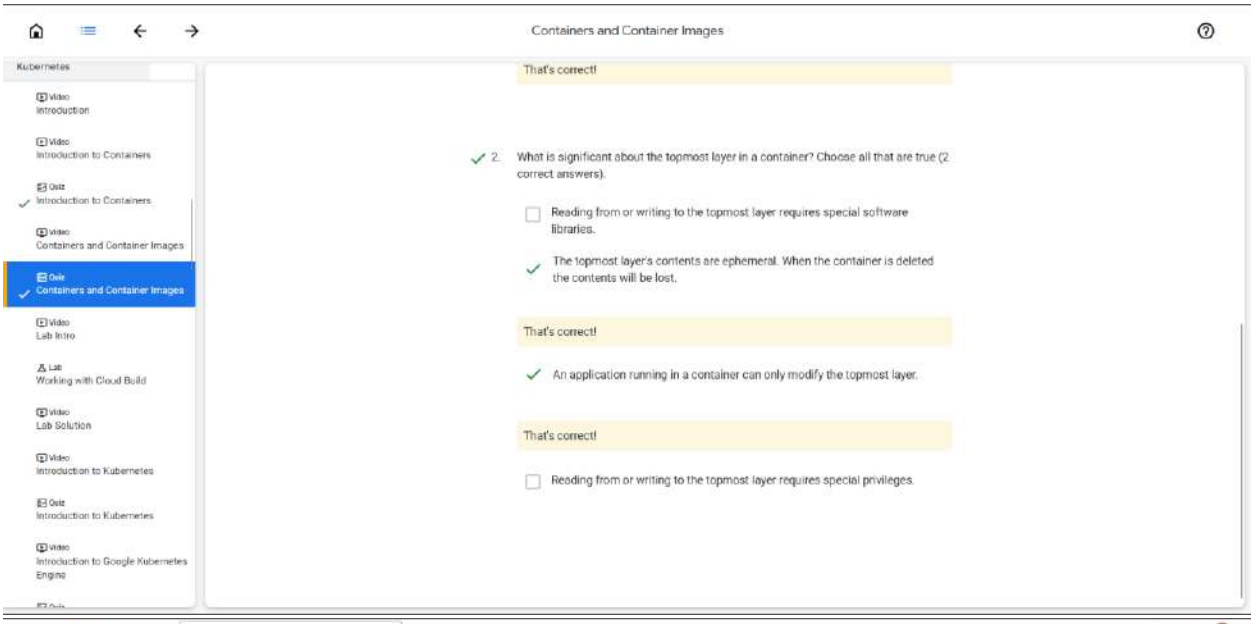

Introduction to Google Cloud
Billing
Quiz
Billing
Video
Interacting with Google Cloud
Quiz
Interacting with Google Cloud
Document
Computing Options
Video
Lab Intro
Lab
Accessing the Google Cloud Console and Cloud Shell
Video
Lab solution
Video
Summary
Quiz
Introduction to Google Cloud
Introduction to Containers and Kubernetes
Video
Introduction
Video
Introduction to Containers
3. You are developing a new product for a customer and need to implement control structures in Google Cloud to help manage the Google Cloud resources consumed by the product and the billing for the customer account. What steps should you take to manage costs for this product and customer?
Configure quotas and limits for the product folders.
Set up budgets and alerts at the project level for the product.
Configure the billing account for each project associated with the product.
Configure the billing account at the product folder level in the resource hierarchy.
That is correct.
4. One of the key characteristics of cloud computing is the concept of measured service. What is the primary customer benefit of the measured service aspect of cloud computing?
Resources can be allocated automatically.
You share resources from a large pool enabling economies of scale.
You can get more resources as quickly as you need them.
You pay only for the resources you consume.

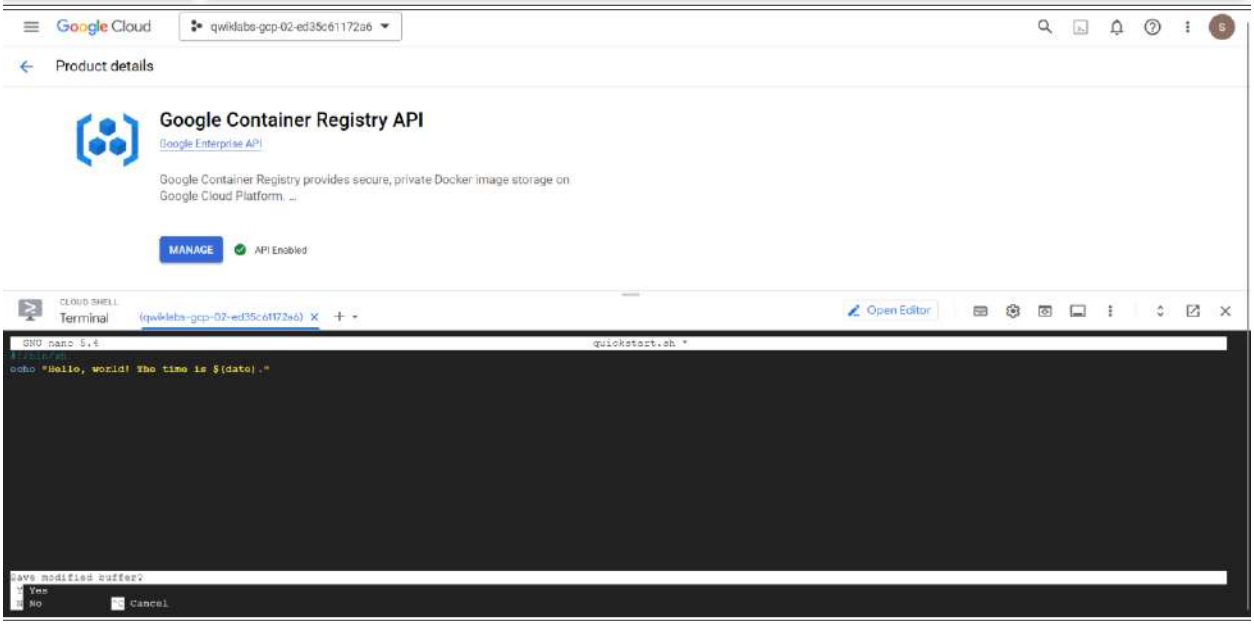

Introduction to Google Cloud
Billing
Quiz
Billing
Video
Interacting with Google Cloud
Quiz
Interacting with Google Cloud
Document
Computing Options
Video
Lab Intro
Lab
Accessing the Google Cloud Console and Cloud Shell
Video
Lab solution
Video
Summary
Quiz
Introduction to Google Cloud
Introduction to Containers and Kubernetes
Video
Introduction
Video
Introduction to Containers
4. One of the key characteristics of cloud computing is the concept of measured service. What is the primary customer benefit of the measured service aspect of cloud computing?
Resources can be allocated automatically.
You share resources from a large pool enabling economies of scale.
You can get more resources as quickly as you need them.
You pay only for the resources you consume.
That is correct.
5. You need to write some automated scripts to run periodic updates to the resources in your Google Cloud environment. What tools can you install in your own computers to allow you to run those scripts?
The Cloud Console Mobile app
The Cloud Shell
The Google Cloud Console
The Cloud SDK


Introduction to Google Cloud
Billing
Quiz
Billing
Video
Interacting with Google Cloud
Quiz
Interacting with Google Cloud
Document
Computing Options
Video
Lab Intro
Lab
Accessing the Google Cloud Console and Cloud Shell
Video
Lab solution
Video
Summary
Quiz
Introduction to Google Cloud
Introduction to Containers and Kubernetes
Video
Introduction
Video
Introduction to Containers
You can get more resources as quickly as you need them.
You pay only for the resources you consume.
That is correct.
5. You need to write some automated scripts to run periodic updates to the resources in your Google Cloud environment. What tools can you install in your own computers to allow you to run those scripts?
The Cloud Console Mobile app
The Cloud Shell
The Google Cloud Console
The Cloud SDK
That is correct.

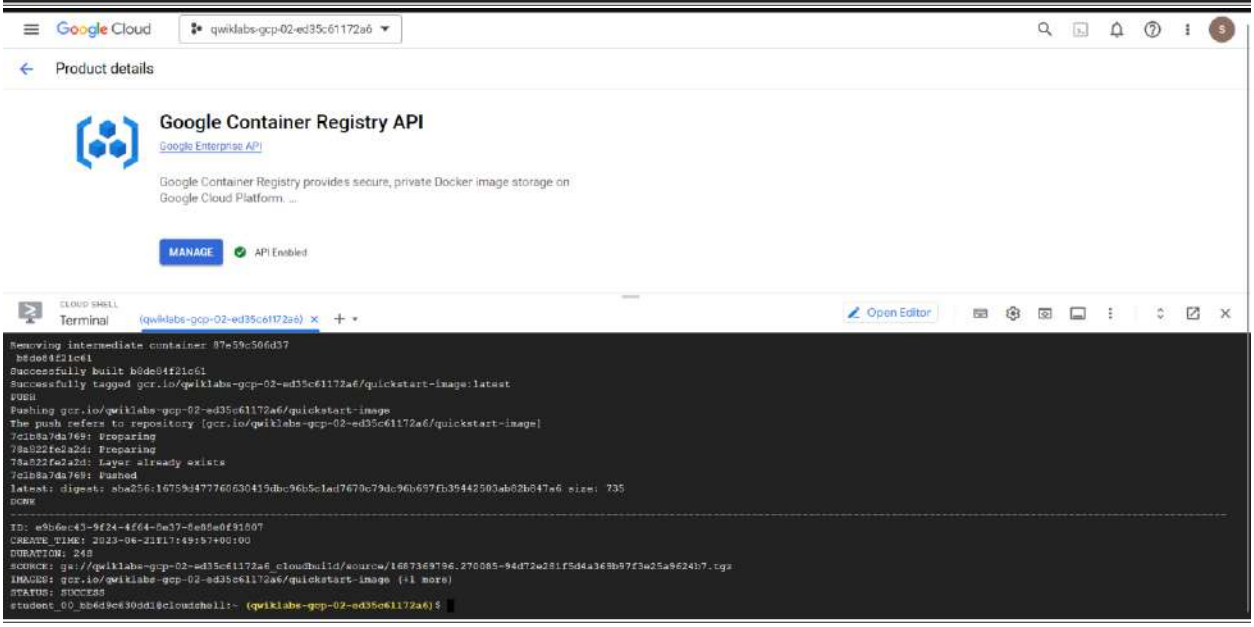

Introduction to Containers
Introduction to Google Cloud
Introduction to Containers and Kubernetes
Video Introduction
Video Introduction to Containers
Quiz Introduction to Containers
Video Containers and Container Images
Quiz Containers and Container Images
Video Lab Intro
Lab Working with Cloud Build
Video Lab Solution
Video Introduction to Kubernetes
Introduction to Containers
Your score: 100%
Passing score: 100%
Retake
Congratulations! You passed this assessment.
1. Which of these problems are containers intended to solve? Mark all that are correct (3 correct answers).
Large monolithic applications that need to be run in the cloud.
Applications need a way to isolate their dependencies from one another.
That's correct.
Packaging applications in virtual machines can be wasteful.
That's correct.
It's difficult to troubleshoot applications when they work on a developer's laptop but fail in production.

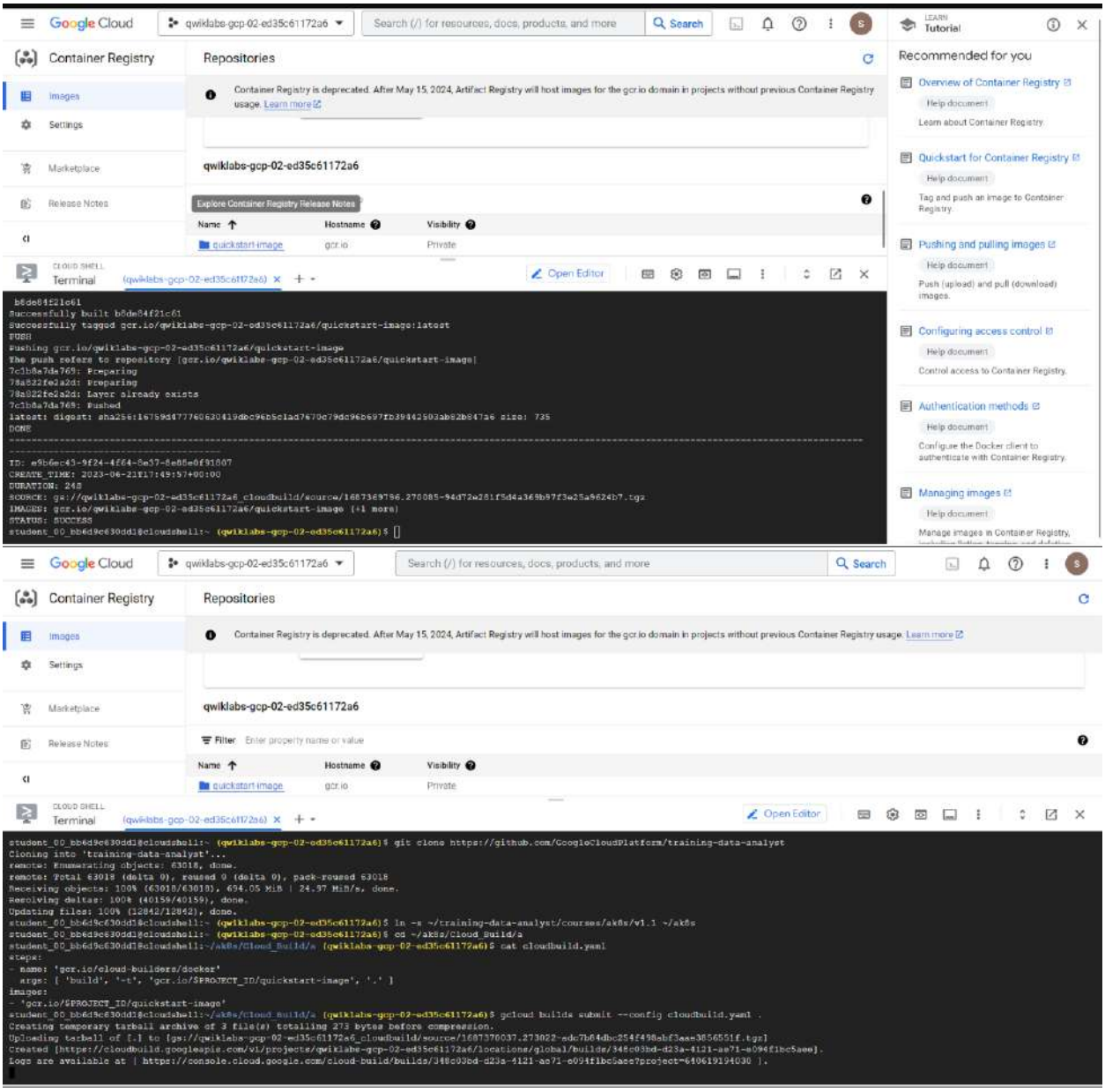

Containers and Container Images
Introduction to Google Cloud
Introduction to Containers and Kubernetes
Video Introduction
Video Introduction to Containers
Quiz Introduction to Containers
Video Containers and Container Images
Quiz Containers and Container Images
Video Lab Intro
Lab Working with Cloud Build
Video Lab Solution
Video Introduction to Kubernetes
Quiz Introduction to Kubernetes
Containers and Container Images
Your score: 100%
Passing score: 50%
Retake
Congratulations! You passed this assessment.
1. Why do Linux containers use union file systems?
To give a container its own virtual memory address space
To control an application's maximum consumption of CPU time and memory
To efficiently encapsulate applications and their dependencies into a set of clean, minimal layers
To control an application's ability to see parts of the directory tree and IP addresses
That's correct!


Containers and Container Images
Kubernetes
Video
Introduction
Video
Introduction to Containers
Quiz
Introduction to Containers
Video
Containers and Container Images
Quiz
Containers and Container Images
Video
Lab Intro
Lab
Working with Cloud Build
Video
Lab Solution
Video
Introduction to Kubernetes
Quiz
Introduction to Kubernetes
Video
Introduction to Google Kubernetes Engine
That's correct!
2. What is significant about the topmost layer in a container? Choose all that are true (2 correct answers).
Reading from or writing to the topmost layer requires special software libraries.
The topmost layer's contents are ephemeral. When the container is deleted the contents will be lost.
That's correct!
An application running in a container can only modify the topmost layer.
That's correct!
Reading from or writing to the topmost layer requires special privileges.

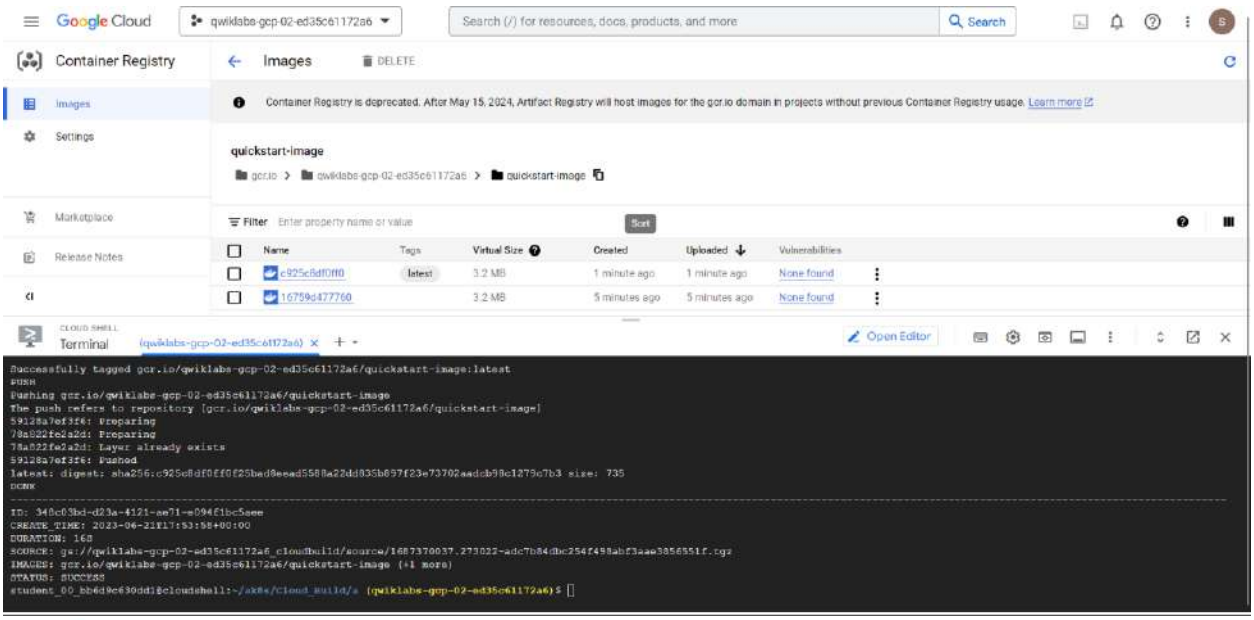

Google Cloud
qwiklabs-gcp-02-ed35c61172a6
Product details
Google Container Registry API
Google Enterprise API
Google Container Registry provides secure, private Docker image storage on Google Cloud Platform. ...
MANAGE
API Enabled
CLOUD SHELL
Terminal
(qwiklabs-gcp-02-ed35c61172a6)
Open Editor
GNU nano 5.4
quickstart.sh *
#!/bin/sh
echo "Hello, world! The time is $(date)."
Save modified buffer?
Yes
No
Cancel

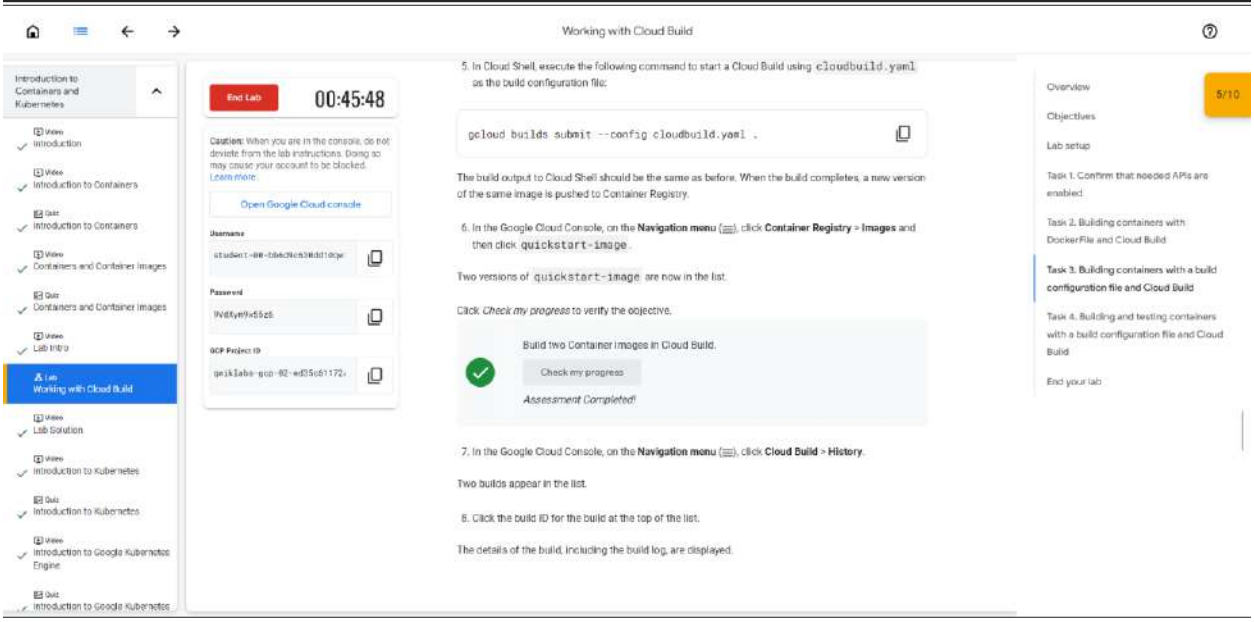

Google Cloud
qwiklabs-gcp-02-ed35c61172a6
Product details
Google Container Registry API
Google Enterprise API
Google Container Registry provides secure, private Docker image storage on Google Cloud Platform. ...
MANAGE
API Enabled
CLOUD SHELL
Terminal
(qwiklabs-gcp-02-ed35c61172a6)
Open Editor
GNU nano 5.4
Dockerfile *
FROM alpine
COPY quickstart.sh /
CMD ["/quickstart.sh"]
File Name to Write: Dockerfile
Help
Cancel
DOS Format
Mac Format
Append
Prepend
Backup File
Browse

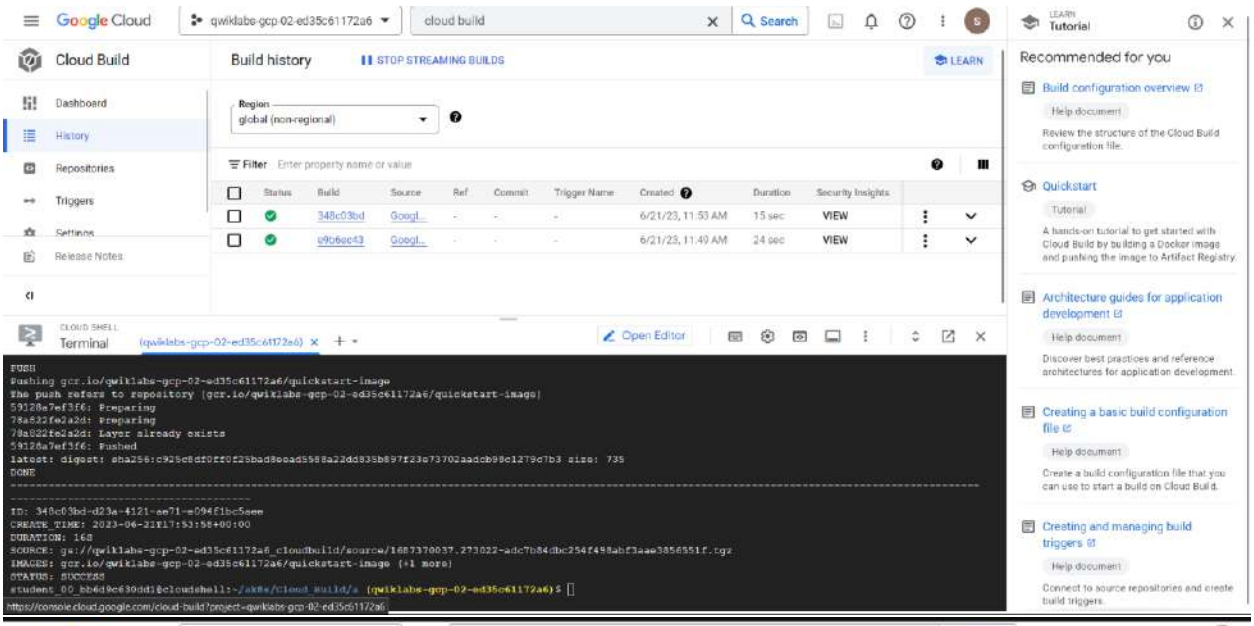

Google Cloud
qwiklabs-gcp-02-ed35c61172a6
Product details
Google Container Registry API
Google Enterprise API
Google Container Registry provides secure, private Docker image storage on Google Cloud Platform. ...
MANAGE
API Enabled
CLOUD SHELL
Terminal
(qwiklabs-gcp-02-ed35c61172a6)
Open Editor
Removing intermediate container 87e59c506d37
b8de84f21c61
Successfully built b8de84f21c61
Successfully tagged gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image:latest
PUSH
Pushing gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image
The push refers to repository [gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image]
7c1b8a7da769: Preparing
78a822fe2a2d: Preparing
78a822fe2a2d: Layer already exists
7c1b8a7da769: Pushed
latest: digest: sha256:16759d477760630419dbc96b5c1ad7670c79dc96b697fb39442503ab82b847a6 size: 735
DONE
ID: e9b6ec43-9f24-4f64-8e37-6e85e0f91507
CREATE_TIME: 2023-06-21T17:49:57+00:00
DURATION: 24S
SOURCE: gs://qwiklabs-gcp-02-ed35c61172a6_cloudbuild/source/1687369796.270085-94d72e281f5d4a369b97f3e25a9624b7.tgz
IMAGES: gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image (+1 more)
STATUS: SUCCESS
student_00_bb6d9c630dd1@cloudshell:~ (qwiklabs-gcp-02-ed35c61172a6)$

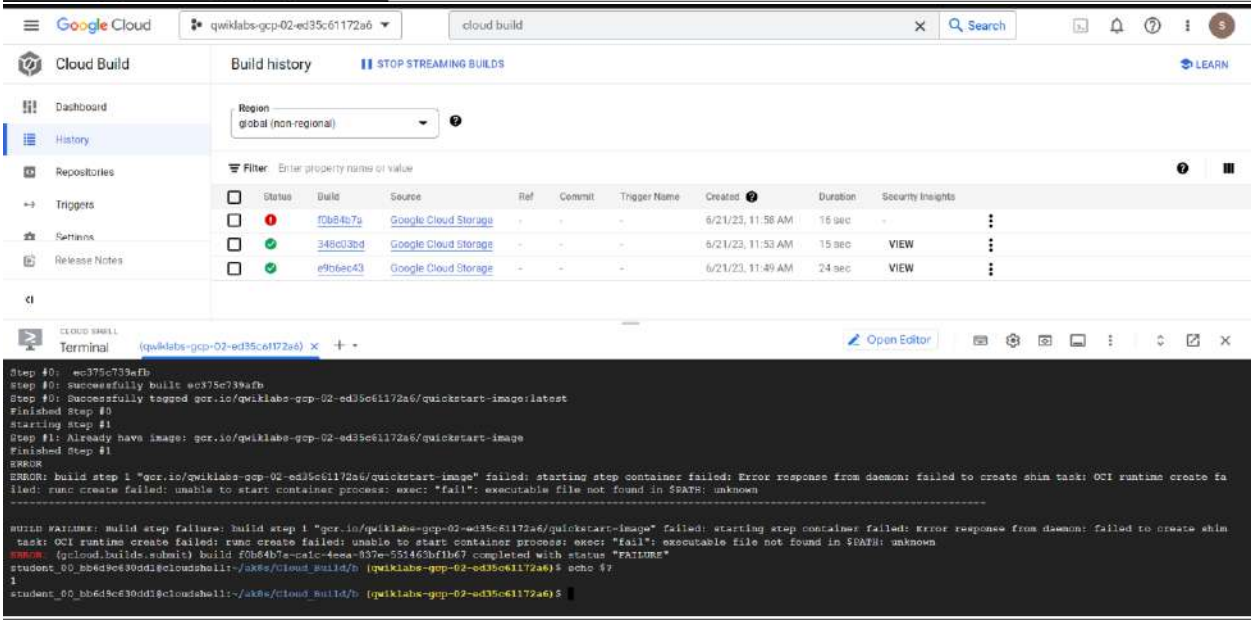

Google Cloud
qwiklabs-gcp-02-ed35c61172a6
Search (/) for resources, docs, products, and more
Search
Container Registry
Repositories
Images
Settings
Marketplace
Release Notes
Container Registry is deprecated. After May 15, 2024, Artifact Registry will host images for the gcr.io domain in projects without previous Container Registry usage. Learn more
qwiklabs-gcp-02-ed35c61172a6
Explore Container Registry Release Notes
Name
Hostname
Visibility
quickstart-image
gcr.io
Private
CLOUD SHELL
Terminal
(qwiklabs-gcp-02-ed35c61172a6)
Open Editor
b6de84f21c61
Successfully built b6de84f21c61
Successfully tagged gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image:latest
PUSH
Pushing gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image
The push refers to repository [gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image]
7c1b8a7da765: Preparing
78a822fe2a2d: Preparing
78a822fe2a2d: Layer already exists
7c1b8a7da765: Pushed
latest: digest: sha256:16759d77760630419dbc96b5c1ad7670c79dc96b697fb39442503ab82b847a6 size: 735
DONE
ID: e9b6ec45-9f24-4f64-8e57-8e85e0f91007
CREATE_TIME: 2023-06-21T17:49:57+00:00
DURATION: 24S
SOURCE: gs://qwiklabs-gcp-02-ed35c61172a6_cloudbuild/source/1687369786.270085-94d72a281f5d4a369b97f3e25a9624b7.tgz
IMAGES: gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image (+1 more)
STATUS: SUCCESS
student_00_bb6d9c630dd1@cloudshell:~ (qwiklabs-gcp-02-ed35c61172a6)$
LEARN
Tutorial
Recommended for you
Overview of Container Registry
Help document
Learn about Container Registry.
Quickstart for Container Registry
Help document
Tag and push an image to Container Registry.
Pushing and pulling images
Help document
Push (upload) and pull (download) images.
Configuring access control
Help document
Control access to Container Registry.
Authentication methods
Help document
Configure the Docker client to authenticate with Container Registry.
Managing images
Help document
Manage images in Container Registry,

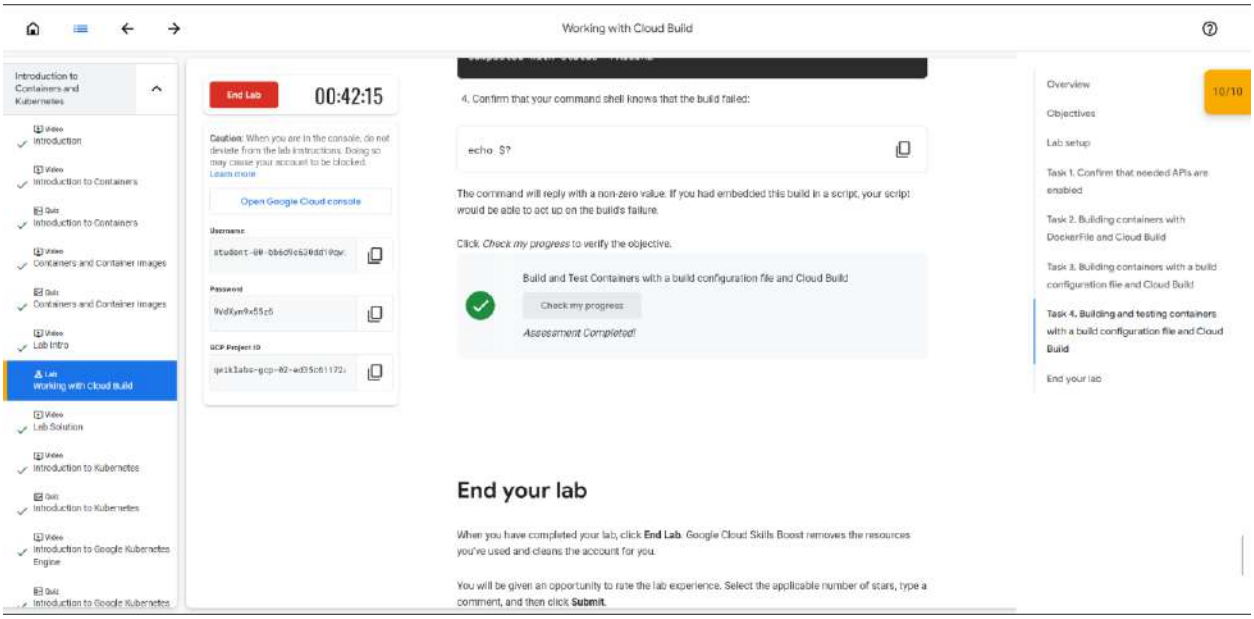
Google Cloud
qwiklabs-gcp-02-ed35c61172a6
Search (/) for resources, docs, products, and more
Search
Container Registry
Repositories
Images
Settings
Marketplace
Release Notes
Container Registry is deprecated. After May 15, 2024, Artifact Registry will host images for the gcr.io domain in projects without previous Container Registry usage. Learn more
qwiklabs-gcp-02-ed35c61172a6
Filter
Enter property name or value
Name
Hostname
Visibility
quickstart-image
gcr.io
Private
CLOUD SHELL
Terminal
(qwiklabs-gcp-02-ed35c61172a6)
Open Editor
student_00_bb6d9c630dd1@cloudshell:~ (qwiklabs-gcp-02-ed35c61172a6)$ git clone https://github.com/GoogleCloudPlatform/training-data-analyst
Cloning into 'training-data-analyst'...
remote: Enumerating objects: 63018, done.
remote: Total 63018 (delta 0), reused 0 (delta 0), pack-reused 63018
Receiving objects: 100% (63018/63018), 694.05 MiB | 24.97 MiB/s, done.
Resolving deltas: 100% (40159/40159), done.
Updating files: 100% (12842/12842), done.
student_00_bb6d9c630dd1@cloudshell:~ (qwiklabs-gcp-02-ed35c61172a6)$ ln -s ~/training-data-analyst/courses/ak8s/v1.1 ~/ak8s
student_00_bb6d9c630dd1@cloudshell:~ (qwiklabs-gcp-02-ed35c61172a6)$ cd ~/ak8s/Cloud_Build/a
student_00_bb6d9c630dd1@cloudshell:~/ak8s/Cloud_Build/a (qwiklabs-gcp-02-ed35c61172a6)$ cat cloudbuild.yaml
steps:
- name: 'gcr.io/cloud-builders/docker'
  args: ['build', '-t', 'gcr.io/$PROJECT_ID/quickstart-image', '.']
images:
- 'gcr.io/$PROJECT_ID/quickstart-image'
student_00_bb6d9c630dd1@cloudshell:~/ak8s/Cloud_Build/a (qwiklabs-gcp-02-ed35c61172a6)$ gcloud builds submit --config cloudbuild.yaml .
Creating temporary tarball archive of 3 file(s) totalling 273 bytes before compression.
Uploading tarball of [.] to [gs://qwiklabs-gcp-02-ed35c61172a6_cloudbuild/source/1687370037.273022-adc7b84dbc254f498abf3aae3856551f.tgz]
Created [https://cloudbuild.googleapis.com/v1/projects/qwiklabs-gcp-02-ed35c61172a6/locations/global/builds/348c03bd-d23a-4121-ae71-e094f1bc5aee].
Logs are available at [https://console.cloud.google.com/cloud-build/builds/348c03bd-d23a-4121-ae71-e094f1bc5aee?project=640619194030].

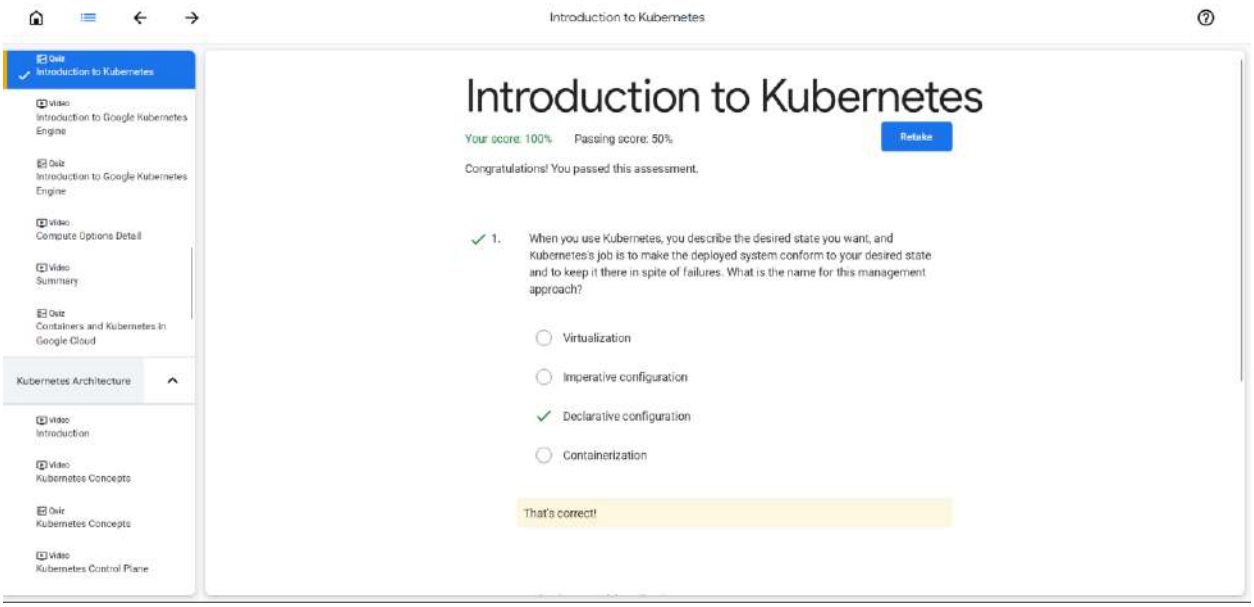

Google Cloud
qwiklabs-gcp-02-ed35c61172a6
Search (/) for resources, docs, products, and more
Search
Container Registry
Images
DELETE
Images
Settings
Marketplace
Release Notes
Container Registry is deprecated. After May 15, 2024, Artifact Registry will host images for the gcr.io domain in projects without previous Container Registry usage. Learn more
quickstart-image
gcr.io > qwiklabs-gcp-02-ed35c61172a6 > quickstart-image
Filter Enter property name or value
Sort
Name
Tags
Virtual Size
Created
Uploaded
Vulnerabilities
c925c8df0ff0
latest
3.2 MB
1 minute ago
1 minute ago
None found
16759d477760
3.2 MB
5 minutes ago
5 minutes ago
None found
CLOUD SHELL
Terminal
(qwiklabs-gcp-02-ed35c61172a6)
Open Editor
Successfully tagged gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image:latest
PUSH
Pushing gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image
The push refers to repository [gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image]
59128a7ef3f6: Preparing
78a822fe2a2d: Preparing
78a822fe2a2d: Layer already exists
59128a7ef3f6: Pushed
latest: digest: sha256:c925c8df0ff0f25bad8eead5588a22dd835b897f23e73702aadcb98c1279c7b3 size: 735
DONE
ID: 340c03bd-d23a-4121-ae71-e094f1bc5eee
CREATE_TIME: 2023-06-21T17:53:58+00:00
DURATION: 16S
SOURCE: gs://qwiklabs-gcp-02-ed35c61172a6_cloudbuild/source/1687370037.273022-adc7b84dbc254f498abf32aeb856551f.tgz
IMAGES: gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image (+1 more)
STATUS: SUCCESS
student_00_bb6d9c630dd1@cloudshell:~/ak8s/Cloud_Build/a (qwiklabs-gcp-02-ed35c61172a6)$

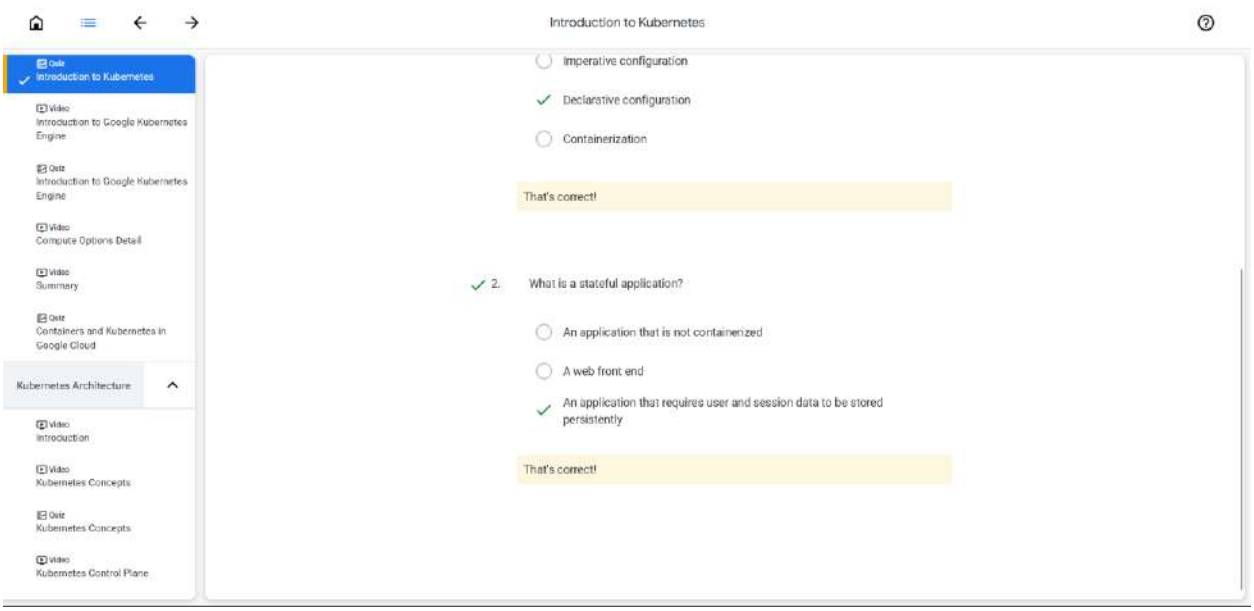

Working with Cloud Build
Introduction to Containers and Kubernetes
Introduction
Introduction to Containers
Introduction to Containers
Containers and Container Images
Containers and Container Images
Lab Intro
Lab
Working with Cloud Build
Lab Solution
Introduction to Kubernetes
Introduction to Kubernetes
Introduction to Google Kubernetes Engine
Introduction to Google Kubernetes
End Lab
00:45:48
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.
Open Google Cloud console
Username
Password
GCP Project ID
5. In Cloud Shell, execute the following command to start a Cloud Build using cloudbuild.yaml as the build configuration file:
gcloud builds submit --config cloudbuild.yaml .
The build output to Cloud Shell should be the same as before. When the build completes, a new version of the same image is pushed to Container Registry.
6. In the Google Cloud Console, on the Navigation menu, click Container Registry > Images and then click quickstart-image.
Two versions of quickstart-image are now in the list.
Click Check my progress to verify the objective.
Build two Container Images in Cloud Build.
Check my progress
Assessment Completed!
7. In the Google Cloud Console, on the Navigation menu, click Cloud Build > History.
Two builds appear in the list.
8. Click the build ID for the build at the top of the list.
The details of the build, including the build log, are displayed.
Overview
5/10
Objectives
Lab setup
Task 1. Confirm that needed APIs are enabled
Task 2. Building containers with Dockerfile and Cloud Build
Task 3. Building containers with a build configuration file and Cloud Build
Task 4. Building and testing containers with a build configuration file and Cloud Build
End your lab

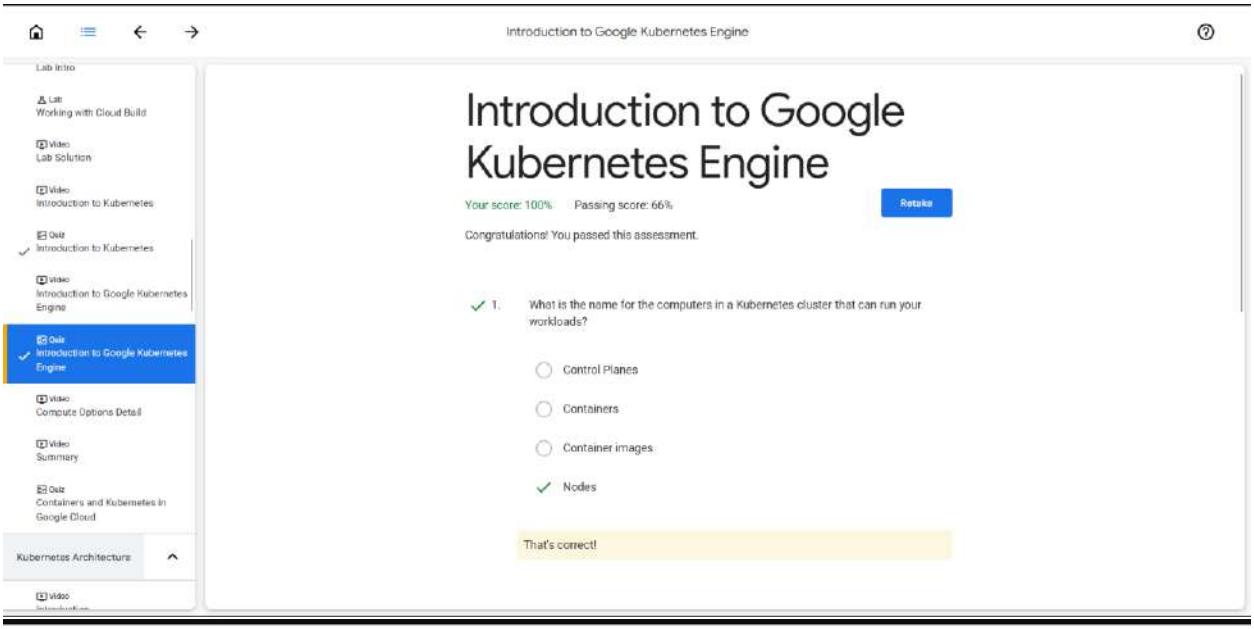

Google Cloud
qwiklabs-gcp-02-ed35c61172a6
cloud build
Search
Cloud Build
Build history
STOP STREAMING BUILDS
LEARN
Dashboard
History
Repositories
Triggers
Settings
Release Notes
Region
global (non-regional)
Filter
Enter property name or value
Status
Build
Source
Ref
Commit
Trigger Name
Created
Duration
Security Insights
348c03bd
Googl...
6/21/23, 11:53 AM
15 sec
VIEW
e9b6ec43
Googl...
6/21/23, 11:49 AM
24 sec
VIEW
Tutorial
Recommended for you
Build configuration overview
Help document
Review the structure of the Cloud Build configuration file.
Quickstart
Tutorial
A hands-on tutorial to get started with Cloud Build by building a Docker image and pushing the image to Artifact Registry.
Architecture guides for application development
Help document
Discover best practices and reference architectures for application development.
Creating a basic build configuration file
Help document
Create a build configuration file that you can use to start a build on Cloud Build.
Creating and managing build triggers
Help document
Connect to source repositories and create build triggers.
CLOUD SHELL
Terminal
(qwiklabs-gcp-02-ed35c61172a6)
Open Editor
PUSH
Pushing gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image
The push refers to repository [gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image]
59128e7ef3f6: Preparing
78a822fe2a2d: Preparing
78a822fe2a2d: Layer already exists
59128e7ef3f6: Pushed
latest: digest: sha256:c925e8df0ff0f25bad8e0ad5588a22dd835b897f23e73702aadcb98e1279c7b3 size: 735
DONE
ID: 348c03bd-d23a-4121-ae71-e094f1bc5eee
CREATE_TIME: 2023-06-21T17:53:58+00:00
DURATION: 16S
SOURCE: gs://qwiklabs-gcp-02-ed35c61172a6_cloudbuild/source/1687370037.273022-adc7b84dbc254f498abf3aae3856551f.tgz
IMAGES: gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image (+1 more)
STATUS: SUCCESS
student_00_bb6d9e630dd1@cloudshell:~/ak8s/Cloud_Build/a (qwiklabs-gcp-02-ed35c61172a6)$
https://console.cloud.google.com/cloud-build?project=qwiklabs-gcp-02-ed35c61172a6

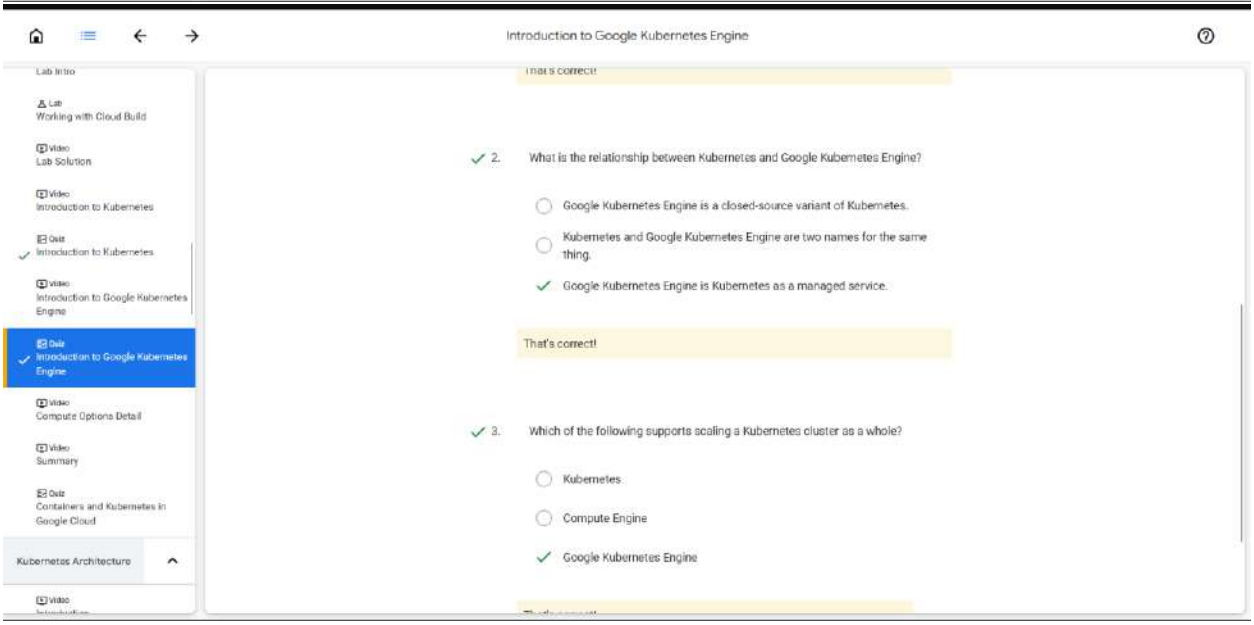

Google Cloud
qwiklabs-gcp-02-ed35c61172a6
cloud build
Search
Cloud Build
Build history
STOP STREAMING BUILDS
LEARN
Dashboard
History
Repositories
Triggers
Settings
Release Notes
Region
global (non-regional)
Filter
Enter property name or value
Status
Build
Source
Ref
Commit
Trigger Name
Created
Duration
Security Insights
f0b84b7a
Google Cloud Storage
6/21/23, 11:58 AM
16 sec
348c03bd
Google Cloud Storage
6/21/23, 11:53 AM
15 sec
VIEW
e9b6ec43
Google Cloud Storage
6/21/23, 11:49 AM
24 sec
VIEW
CLOUD SHELL
Terminal
(qwiklabs-gcp-02-ed35c61172a6)
Open Editor
Step #0: ec375c739afb
Step #0: Successfully built ec375c739afb
Step #0: Successfully tagged gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image:latest
Finished Step #0
Starting Step #1
Step #1: Already have image: gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image
Finished Step #1
ERROR
ERROR: build step 1 "gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image" failed: starting step container failed: Error response from daemon: failed to create shim task: OCI runtime create failed: runc create failed: unable to start container process: exec: "fail": executable file not found in $PATH: unknown
BUILD FAILURE: build step failure: build step 1 "gcr.io/qwiklabs-gcp-02-ed35c61172a6/quickstart-image" failed: starting step container failed: Error response from daemon: failed to create shim task: OCI runtime create failed: runc create failed: unable to start container process: exec: "fail": executable file not found in $PATH: unknown
ERROR: (gcloud.builds.submit) build f0b84b7a-ca1c-4eea-837e-551463bf1b67 completed with status "FAILURE"
student_00_bb6d9e630dd1@cloudshell:~/ak8s/Cloud_Build/b (qwiklabs-gcp-02-ed35c61172a6)$ echo $?
1
student_00_bb6d9e630dd1@cloudshell:~/ak8s/Cloud_Build/b (qwiklabs-gcp-02-ed35c61172a6)$

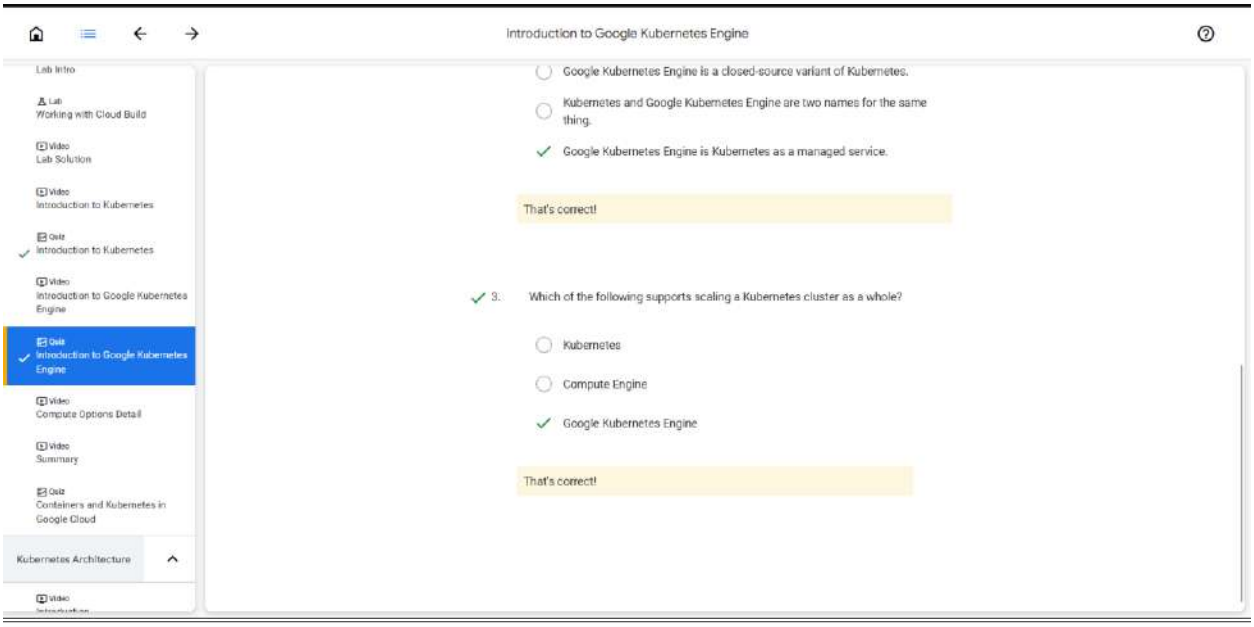

Working with Cloud Build
Introduction to Containers and Kubernetes
Video Introduction
Video Introduction to Containers
Quiz Introduction to Containers
Video Containers and Container Images
Quiz Containers and Container Images
Video Lab Intro
Lab Working with Cloud Build
Video Lab Solution
Video Introduction to Kubernetes
Quiz Introduction to Kubernetes
Video Introduction to Google Kubernetes Engine
Quiz Introduction to Google Kubernetes
End Lab
00:42:15
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked.
Learn more
Open Google Cloud console
Username
Password
9vdKym9x55z6
GCP Project ID
4. Confirm that your command shell knows that the build failed:
echo $?
The command will reply with a non-zero value. If you had embedded this build in a script, your script would be able to act up on the build's failure.
Click Check my progress to verify the objective.
Build and Test Containers with a build configuration file and Cloud Build
Check my progress
Assessment Completed!
End your lab
When you have completed your lab, click End Lab. Google Cloud Skills Boost removes the resources you've used and cleans the account for you.
You will be given an opportunity to rate the lab experience. Select the applicable number of stars, type a comment, and then click Submit.
Overview
10/10
Objectives
Lab setup
Task 1. Confirm that needed APIs are enabled
Task 2. Building containers with Dockerfile and Cloud Build
Task 3. Building containers with a build configuration file and Cloud Build
Task 4. Building and testing containers with a build configuration file and Cloud Build
End your lab

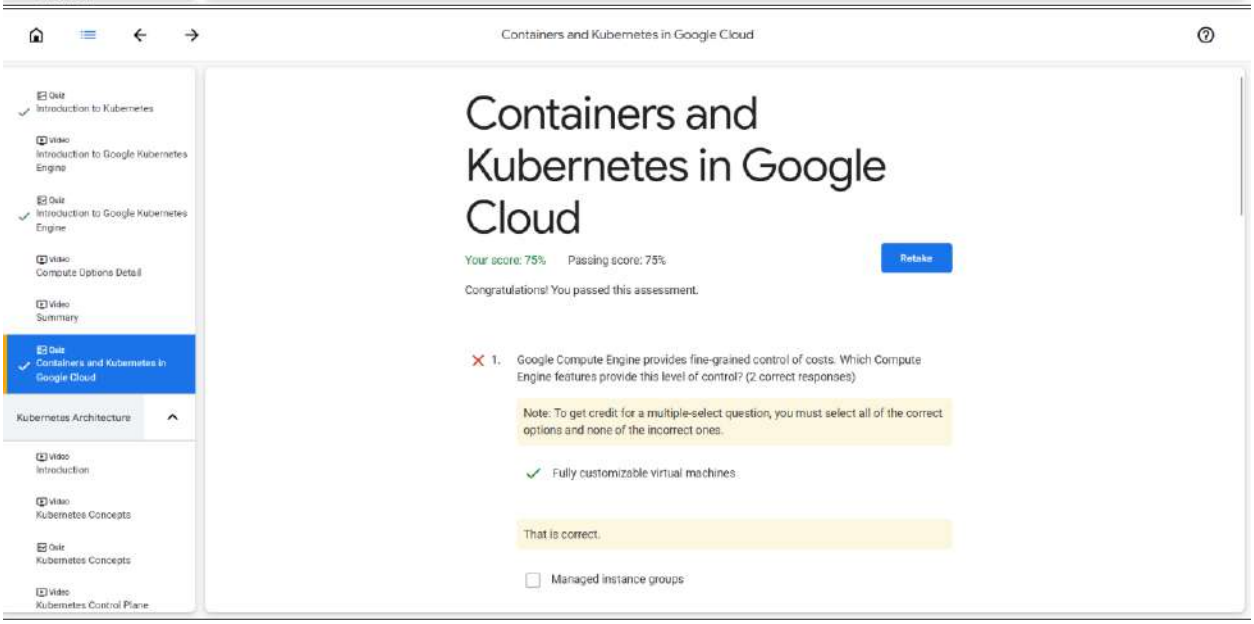

Introduction to Kubernetes
Quiz
Introduction to Kubernetes
Video
Introduction to Google Kubernetes Engine
Quiz
Introduction to Google Kubernetes Engine
Video
Compute Options Detail
Video
Summary
Quiz
Containers and Kubernetes in Google Cloud
Kubernetes Architecture
Video
Introduction
Video
Kubernetes Concepts
Quiz
Kubernetes Concepts
Video
Kubernetes Control Plane
Introduction to Kubernetes
Your score: 100%
Passing score: 50%
Retake
Congratulations! You passed this assessment.
1. When you use Kubernetes, you describe the desired state you want, and Kubernetes's job is to make the deployed system conform to your desired state and to keep it there in spite of failures. What is the name for this management approach?
Virtualization
Imperative configuration
Declarative configuration
Containerization
That's correct!

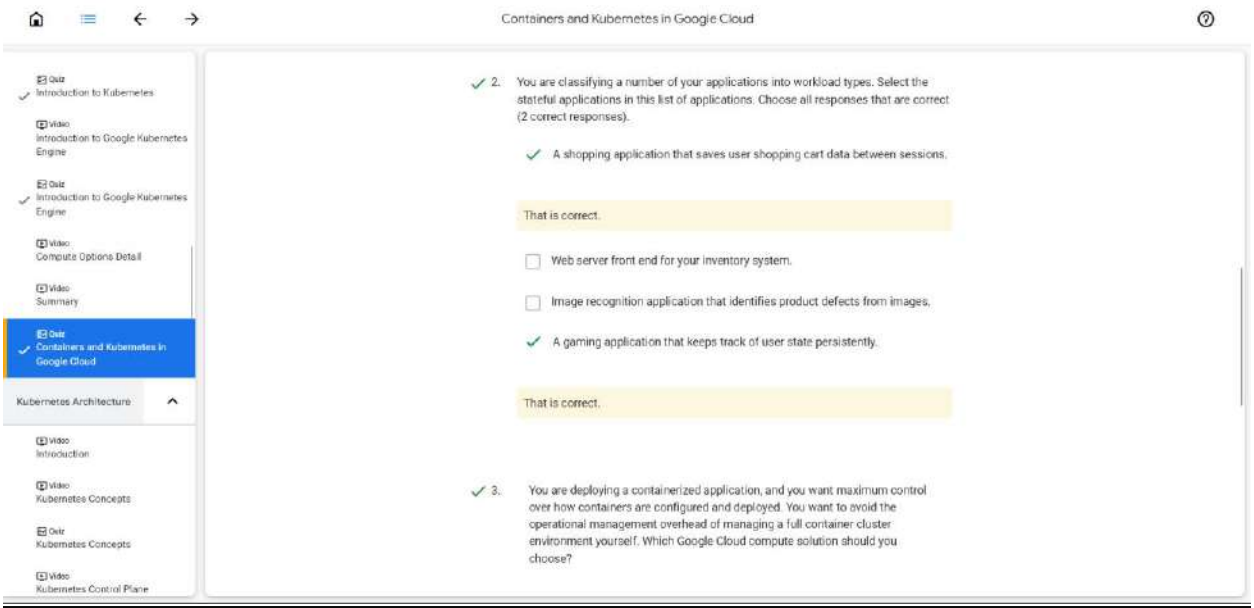

Introduction to Kubernetes
Quiz
Introduction to Kubernetes
Video
Introduction to Google Kubernetes Engine
Quiz
Introduction to Google Kubernetes Engine
Video
Compute Options Detail
Video
Summary
Quiz
Containers and Kubernetes in Google Cloud
Kubernetes Architecture
Video
Introduction
Video
Kubernetes Concepts
Quiz
Kubernetes Concepts
Video
Kubernetes Control Plane
Imperative configuration
Declarative configuration
Containerization
That's correct!
2. What is a stateful application?
An application that is not containerized
A web front end
An application that requires user and session data to be stored persistently
That's correct!

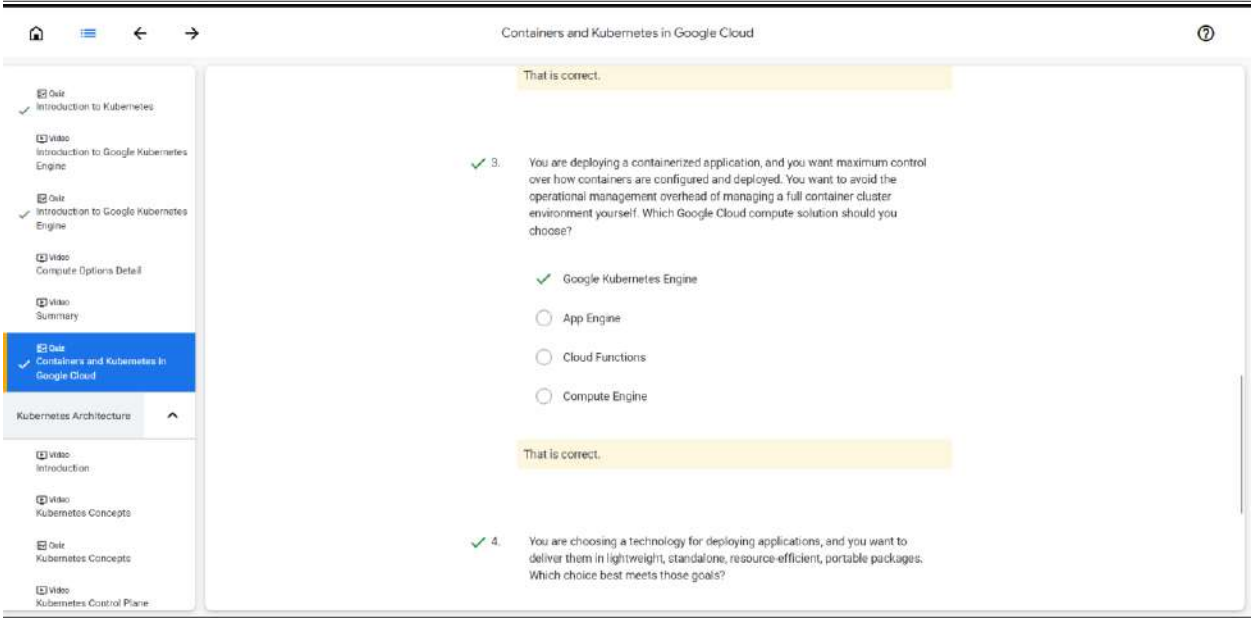

Introduction to Google Kubernetes Engine
Lab Intro
Lab
Working with Cloud Build
Video
Lab Solution
Video
Introduction to Kubernetes
Quiz
Introduction to Kubernetes
Video
Introduction to Google Kubernetes Engine
Quiz
Introduction to Google Kubernetes Engine
Video
Compute Options Detail
Video
Summary
Quiz
Containers and Kubernetes in Google Cloud
Kubernetes Architecture
Video
Introduction to Google Kubernetes Engine
Your score: 100%
Passing score: 66%
Retake
Congratulations! You passed this assessment.
1. What is the name for the computers in a Kubernetes cluster that can run your workloads?
Control Planes
Containers
Container images
Nodes
That's correct!

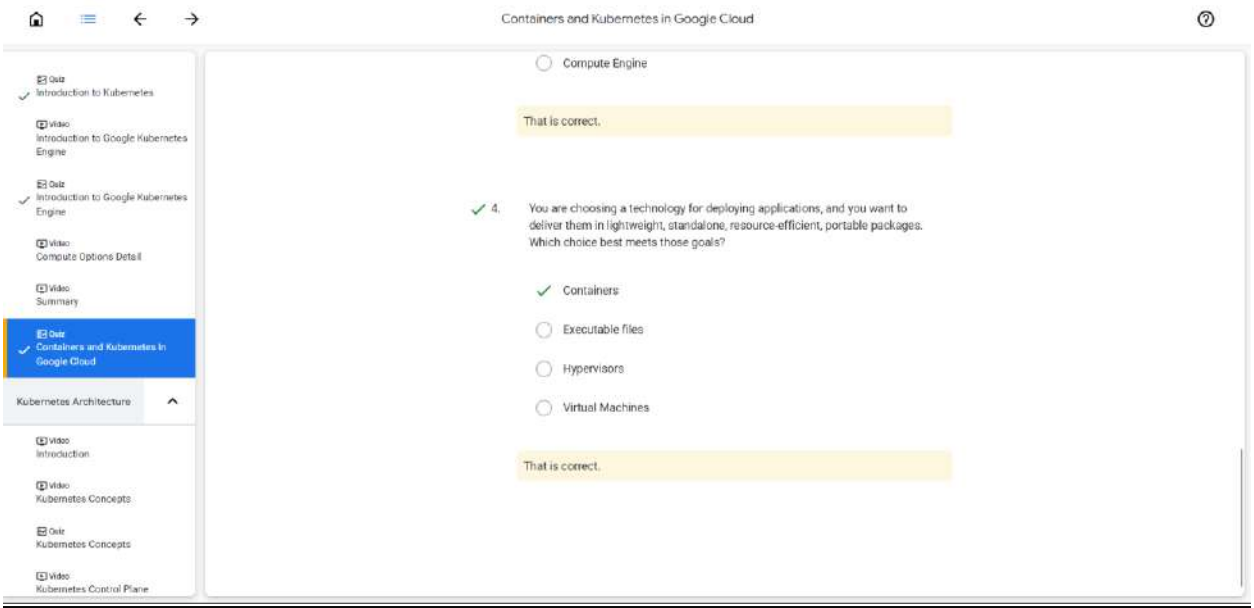

Introduction to Google Kubernetes Engine
That's correct!
2. What is the relationship between Kubernetes and Google Kubernetes Engine?
Google Kubernetes Engine is a closed-source variant of Kubernetes.
Kubernetes and Google Kubernetes Engine are two names for the same thing.
Google Kubernetes Engine is Kubernetes as a managed service.
That's correct!
3. Which of the following supports scaling a Kubernetes cluster as a whole?
Kubernetes
Compute Engine
Google Kubernetes Engine

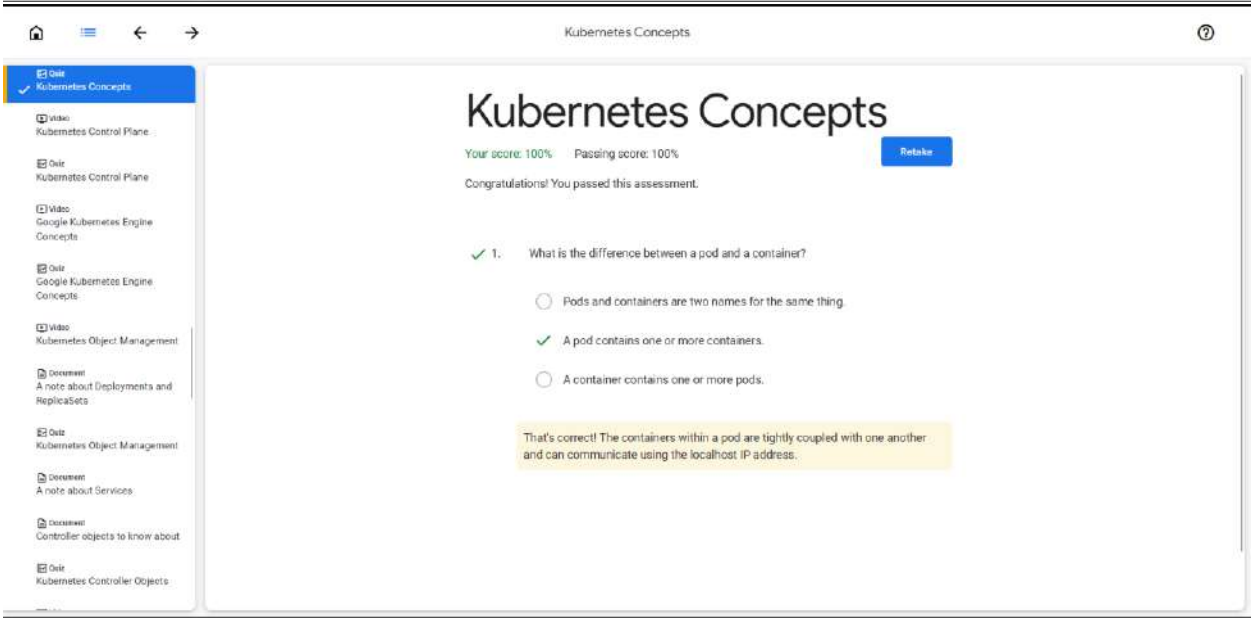

Introduction to Google Kubernetes Engine
Lab Intro
Lab
Working with Cloud Build
Video
Lab Solution
Video
Introduction to Kubernetes
Quiz
Introduction to Kubernetes
Video
Introduction to Google Kubernetes Engine
Quiz
Introduction to Google Kubernetes Engine
Video
Compute Options Detail
Video
Summary
Quiz
Containers and Kubernetes in Google Cloud
Kubernetes Architecture
Video
Google Kubernetes Engine is a closed-source variant of Kubernetes.
Kubernetes and Google Kubernetes Engine are two names for the same thing.
Google Kubernetes Engine is Kubernetes as a managed service.
That's correct!
3. Which of the following supports scaling a Kubernetes cluster as a whole?
Kubernetes
Compute Engine
Google Kubernetes Engine
That's correct!

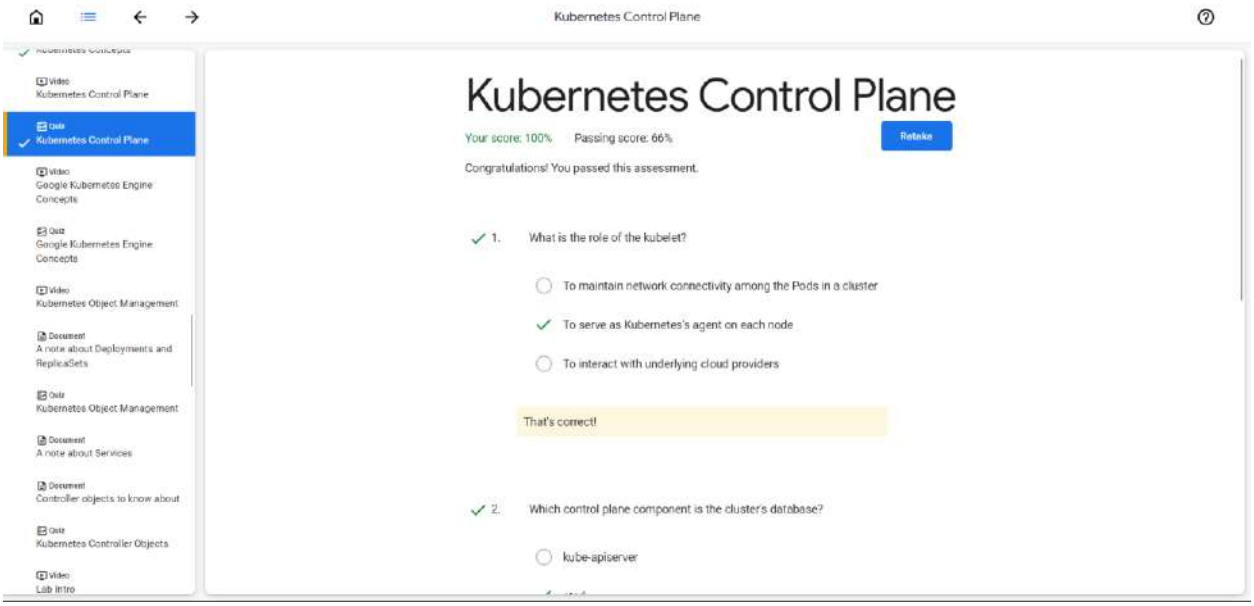

Containers and Kubernetes in Google Cloud
Quiz
Introduction to Kubernetes
Video
Introduction to Google Kubernetes Engine
Quiz
Introduction to Google Kubernetes Engine
Video
Compute Options Detail
Video
Summary
Quiz
Containers and Kubernetes in Google Cloud
Kubernetes Architecture
Video
Introduction
Video
Kubernetes Concepts
Quiz
Kubernetes Concepts
Video
Kubernetes Control Plane
Containers and Kubernetes in Google Cloud
Your score: 75%
Passing score: 75%
Retake
Congratulations! You passed this assessment.
1. Google Compute Engine provides fine-grained control of costs. Which Compute Engine features provide this level of control? (2 correct responses)
Note: To get credit for a multiple-select question, you must select all of the correct options and none of the incorrect ones.
Fully customizable virtual machines
That is correct.
Managed instance groups

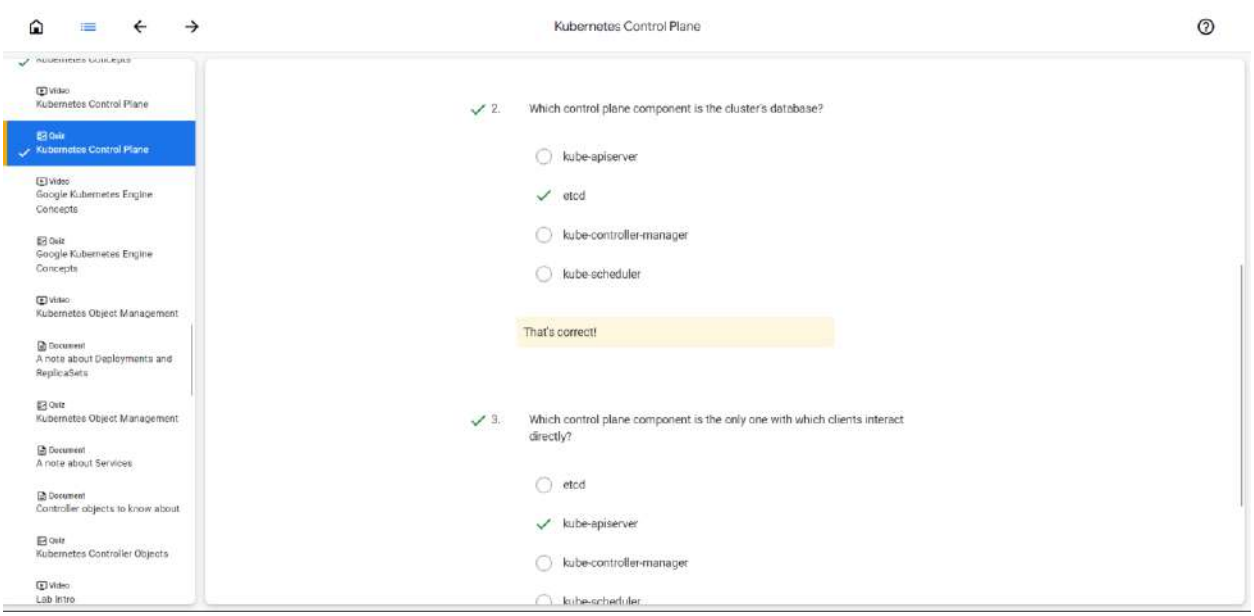

Containers and Kubernetes in Google Cloud
Quiz
Introduction to Kubernetes
Video
Introduction to Google Kubernetes Engine
Quiz
Introduction to Google Kubernetes Engine
Video
Compute Options Detail
Video
Summary
Quiz
Containers and Kubernetes in Google Cloud
Kubernetes Architecture
Video
Introduction
Video
Kubernetes Concepts
Quiz
Kubernetes Concepts
Video
Kubernetes Control Plane
2. You are classifying a number of your applications into workload types. Select the stateful applications in this list of applications. Choose all responses that are correct (2 correct responses).
A shopping application that saves user shopping cart data between sessions.
That is correct.
Web server front end for your inventory system.
Image recognition application that identifies product defects from images.
A gaming application that keeps track of user state persistently.
That is correct.
3. You are deploying a containerized application, and you want maximum control over how containers are configured and deployed. You want to avoid the operational management overhead of managing a full container cluster environment yourself. Which Google Cloud compute solution should you choose?

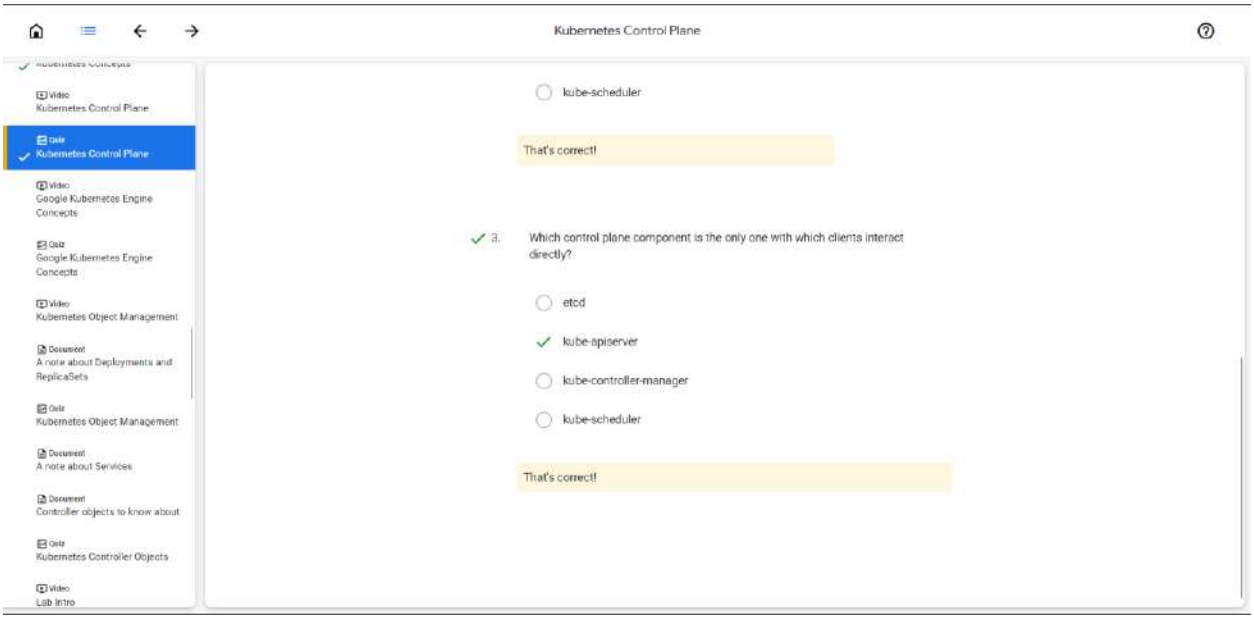

Containers and Kubernetes in Google Cloud
That is correct.
Quiz
Introduction to Kubernetes
Video
Introduction to Google Kubernetes Engine
Quiz
Introduction to Google Kubernetes Engine
Video
Compute Options Detail
Video
Summary
Quiz
Containers and Kubernetes in Google Cloud
Kubernetes Architecture
Video
Introduction
Video
Kubernetes Concepts
Quiz
Kubernetes Concepts
Video
Kubernetes Control Plane
3. You are deploying a containerized application, and you want maximum control over how containers are configured and deployed. You want to avoid the operational management overhead of managing a full container cluster environment yourself. Which Google Cloud compute solution should you choose?
Google Kubernetes Engine
App Engine
Cloud Functions
Compute Engine
That is correct.
4. You are choosing a technology for deploying applications, and you want to deliver them in lightweight, standalone, resource-efficient, portable packages. Which choice best meets those goals?

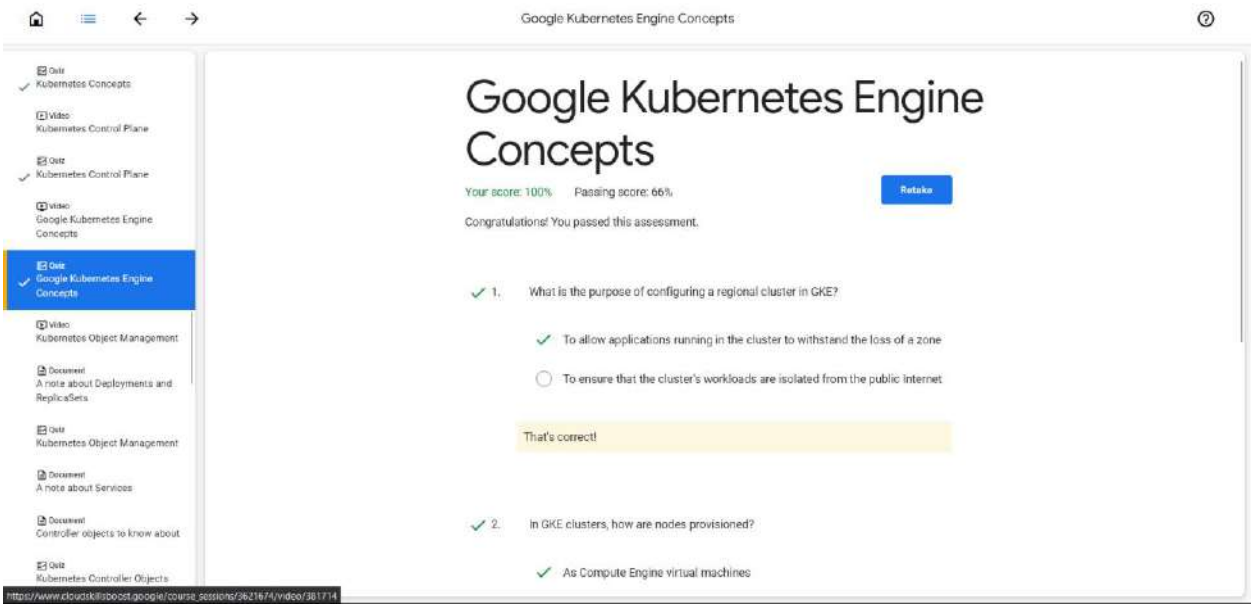

Containers and Kubernetes in Google Cloud
Quiz
Introduction to Kubernetes
Video
Introduction to Google Kubernetes Engine
Quiz
Introduction to Google Kubernetes Engine
Video
Compute Options Detail
Video
Summary
Quiz
Containers and Kubernetes in Google Cloud
Kubernetes Architecture
Video
Introduction
Video
Kubernetes Concepts
Quiz
Kubernetes Concepts
Video
Kubernetes Control Plane
Compute Engine
That is correct.
4. You are choosing a technology for deploying applications, and you want to deliver them in lightweight, standalone, resource-efficient, portable packages. Which choice best meets those goals?
Containers
Executable files
Hypervisors
Virtual Machines
That is correct.

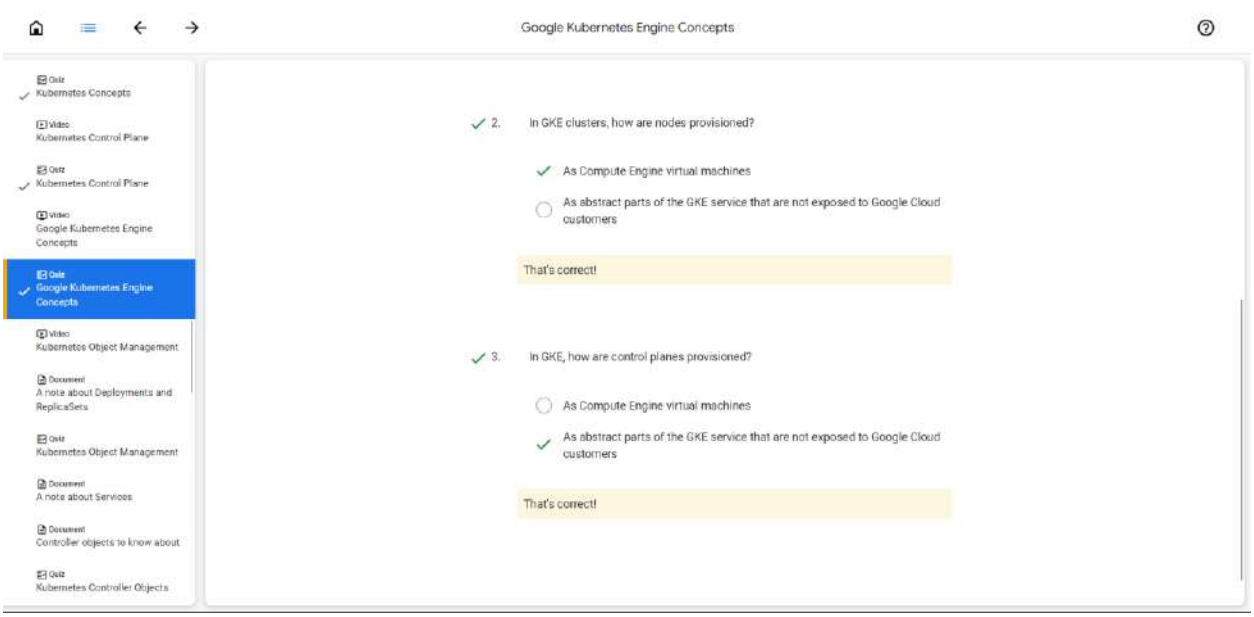

Kubernetes Concepts
Quiz
Kubernetes Concepts
Video
Kubernetes Control Plane
Quiz
Kubernetes Control Plane
Video
Google Kubernetes Engine Concepts
Quiz
Google Kubernetes Engine Concepts
Video
Kubernetes Object Management
Document
A note about Deployments and ReplicaSets
Quiz
Kubernetes Object Management
Document
A note about Services
Document
Controller objects to know about
Quiz
Kubernetes Controller Objects
Kubernetes Concepts
Your score: 100%
Passing score: 100%
Retake
Congratulations! You passed this assessment.
1. What is the difference between a pod and a container?
Pods and containers are two names for the same thing.
A pod contains one or more containers.
A container contains one or more pods.
That's correct! The containers within a pod are tightly coupled with one another and can communicate using the localhost IP address.

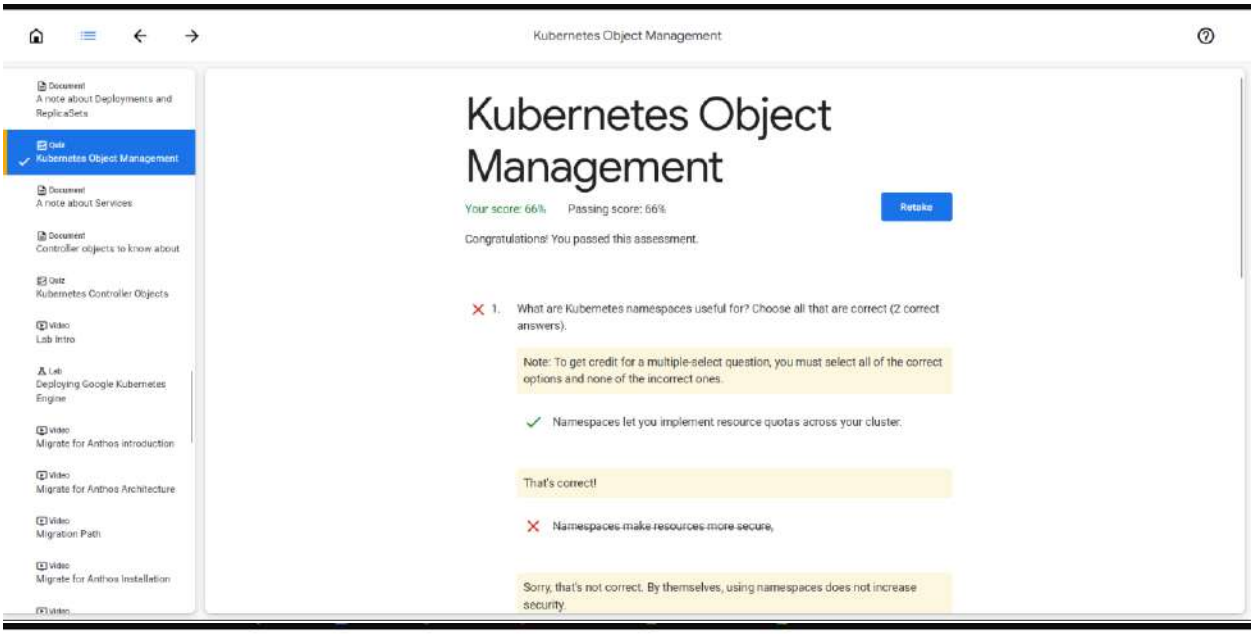

Kubernetes Control Plane
Video
Kubernetes Control Plane
Quiz
Kubernetes Control Plane
Video
Google Kubernetes Engine Concepts
Quiz
Google Kubernetes Engine Concepts
Video
Kubernetes Object Management
Document
A note about Deployments and ReplicaSets
Quiz
Kubernetes Object Management
Document
A note about Services
Document
Controller objects to know about
Quiz
Kubernetes Controller Objects
Video
Lab Intro
Kubernetes Control Plane
Your score: 100%
Passing score: 66%
Retake
Congratulations! You passed this assessment.
1. What is the role of the kubelet?
To maintain network connectivity among the Pods in a cluster
To serve as Kubernetes's agent on each node
To interact with underlying cloud providers
That's correct!
2. Which control plane component is the cluster's database?
kube-apiserver

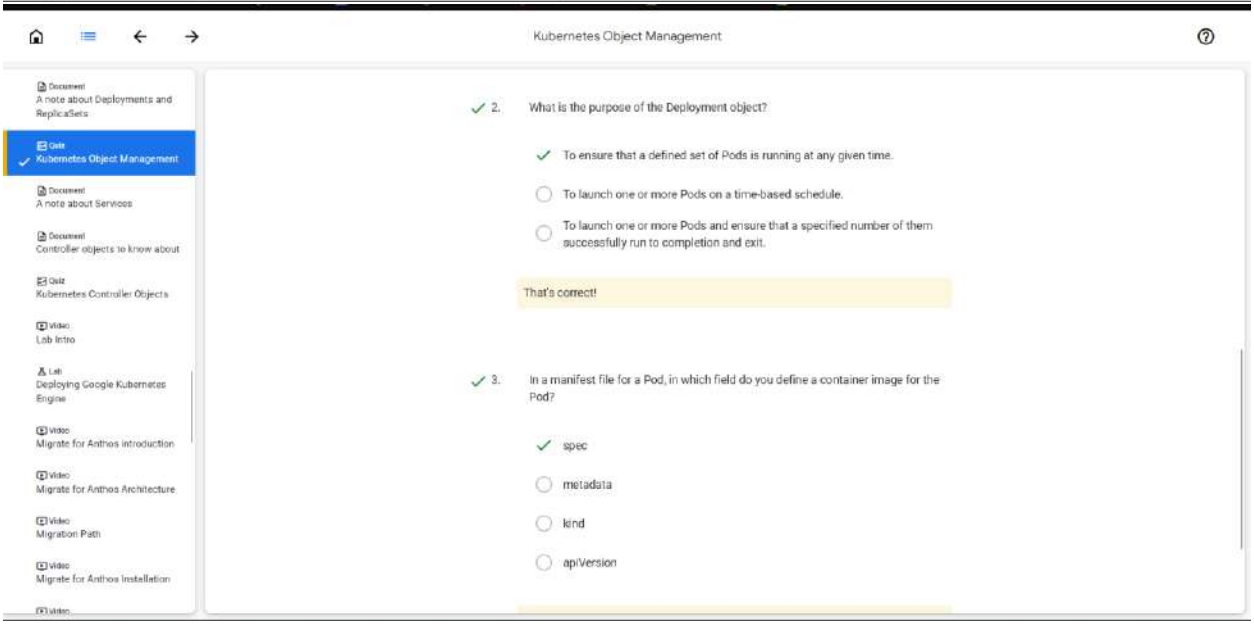

Kubernetes Control Plane
Video
Kubernetes Control Plane
Quiz
Kubernetes Control Plane
Video
Google Kubernetes Engine Concepts
Quiz
Google Kubernetes Engine Concepts
Video
Kubernetes Object Management
Document
A note about Deployments and ReplicaSets
Quiz
Kubernetes Object Management
Document
A note about Services
Document
Controller objects to know about
Quiz
Kubernetes Controller Objects
Video
Lab Intro
2. Which control plane component is the cluster's database?
kube-apiserver
etcd
kube-controller-manager
kube-scheduler
That's correct!
3. Which control plane component is the only one with which clients interact directly?
etcd
kube-apiserver
kube-controller-manager
kube-scheduler

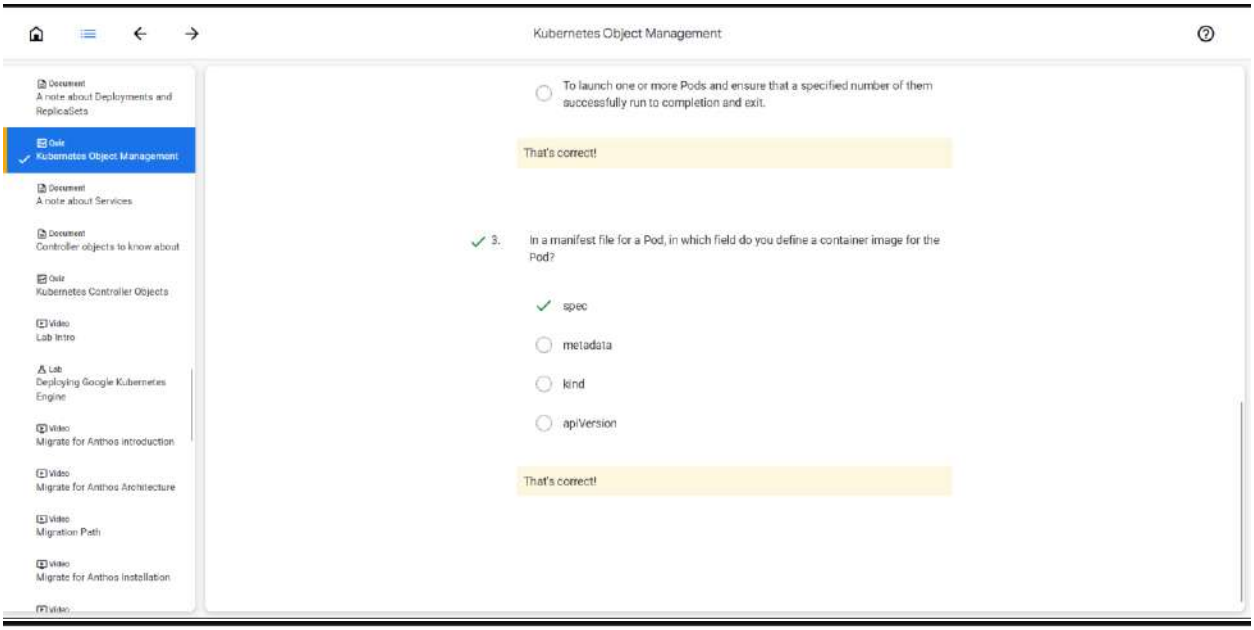

Kubernetes Control Plane
Video
Kubernetes Control Plane
Quiz
Kubernetes Control Plane
Video
Google Kubernetes Engine Concepts
Quiz
Google Kubernetes Engine Concepts
Video
Kubernetes Object Management
Document
A note about Deployments and ReplicaSets
Quiz
Kubernetes Object Management
Document
A note about Services
Document
Controller objects to know about
Quiz
Kubernetes Controller Objects
Video
Lab Intro
kube-scheduler
That's correct!
3. Which control plane component is the only one with which clients interact directly?
etcd
kube-apiserver
kube-controller-manager
kube-scheduler
That's correct!

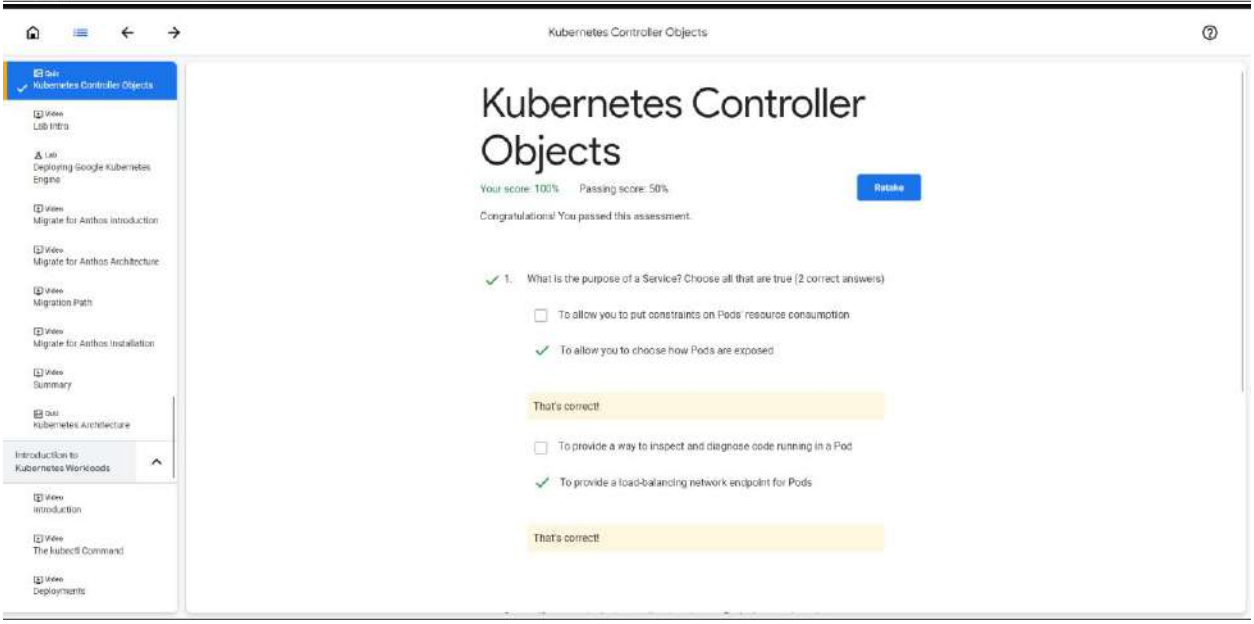

Google Kubernetes Engine Concepts
Quiz
Kubernetes Concepts
Video
Kubernetes Control Plane
Quiz
Kubernetes Control Plane
Video
Google Kubernetes Engine Concepts
Quiz
Google Kubernetes Engine Concepts
Video
Kubernetes Object Management
Document
A note about Deployments and ReplicaSets
Quiz
Kubernetes Object Management
Document
A note about Services
Document
Controller objects to know about
Quiz
Kubernetes Controller Objects
Google Kubernetes Engine Concepts
Your score: 100%
Passing score: 66%
Retake
Congratulations! You passed this assessment.
1. What is the purpose of configuring a regional cluster in GKE?
To allow applications running in the cluster to withstand the loss of a zone
To ensure that the cluster's workloads are isolated from the public internet
That's correct!
2. In GKE clusters, how are nodes provisioned?
As Compute Engine virtual machines

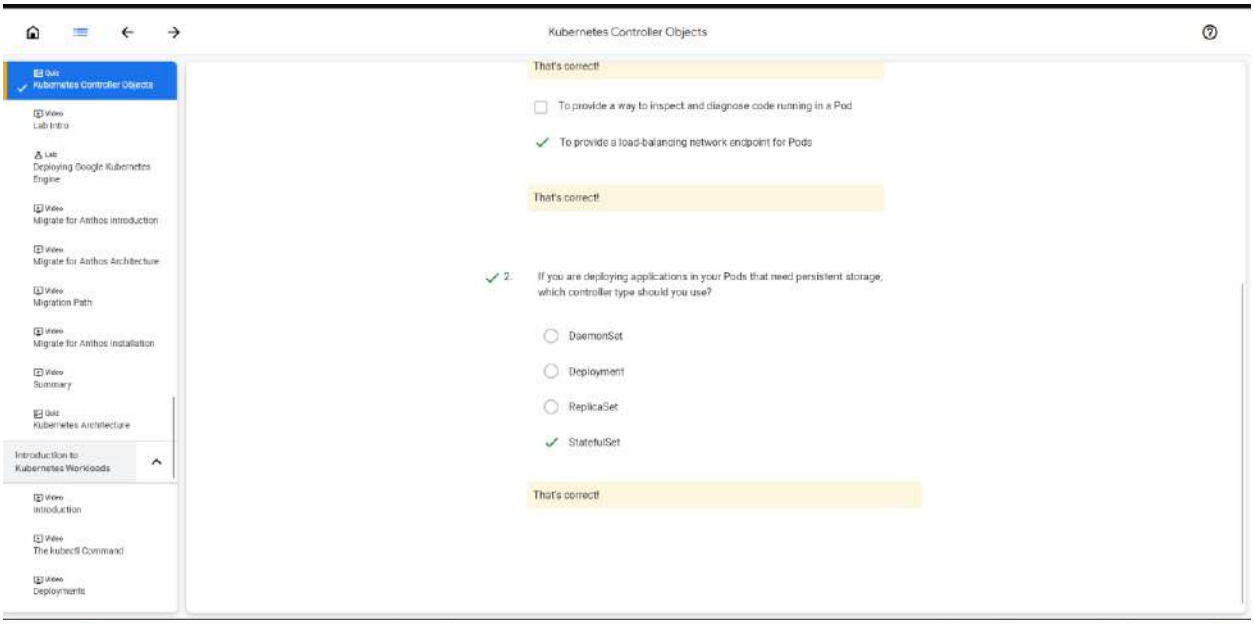

Google Kubernetes Engine Concepts
Quiz
Kubernetes Concepts
Video
Kubernetes Control Plane
Quiz
Kubernetes Control Plane
Video
Google Kubernetes Engine Concepts
Quiz
Google Kubernetes Engine Concepts
Video
Kubernetes Object Management
Document
A note about Deployments and ReplicaSets
Quiz
Kubernetes Object Management
Document
A note about Services
Document
Controller objects to know about
Quiz
Kubernetes Controller Objects
2. In GKE clusters, how are nodes provisioned?
As Compute Engine virtual machines
As abstract parts of the GKE service that are not exposed to Google Cloud customers
That's correct!
3. In GKE, how are control planes provisioned?
As Compute Engine virtual machines
As abstract parts of the GKE service that are not exposed to Google Cloud customers
That's correct!

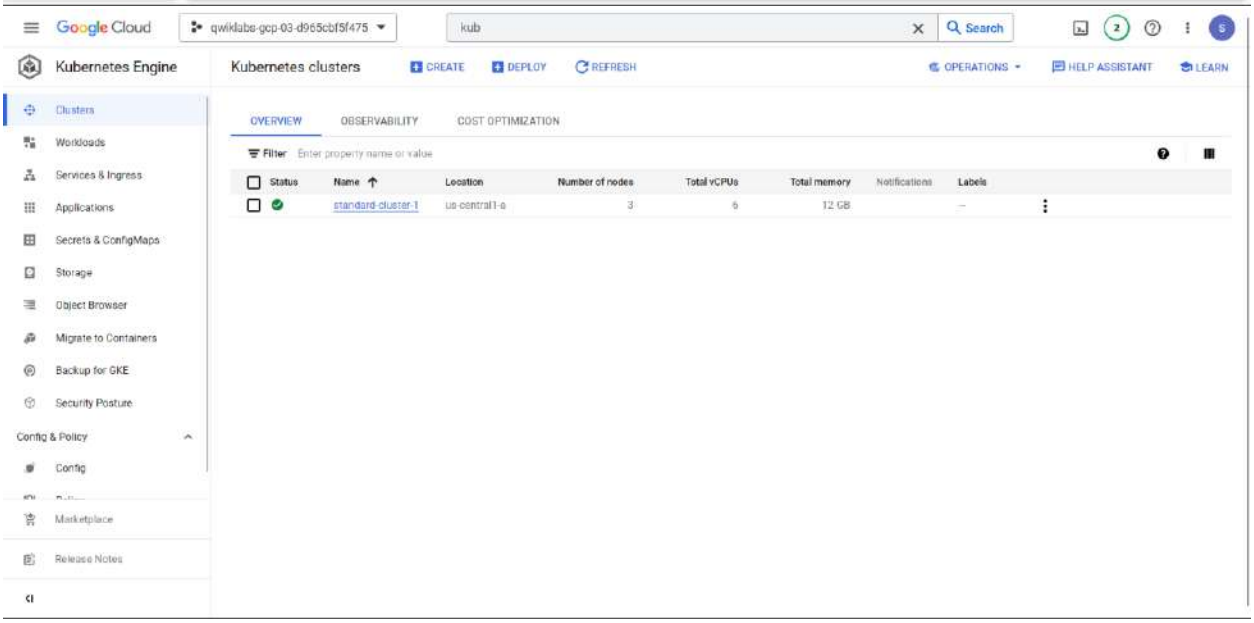

Kubernetes Object Management
Document
A note about Deployments and ReplicaSets
Quiz
Kubernetes Object Management
Document
A note about Services
Document
Controller objects to know about
Quiz
Kubernetes Controller Objects
Video
Lab Intro
Lab
Deploying Google Kubernetes Engine
Video
Migrate for Anthos introduction
Video
Migrate for Anthos Architecture
Video
Migration Path
Video
Migrate for Anthos Installation
Kubernetes Object Management
Your score: 66%
Passing score: 66%
Retake
Congratulations! You passed this assessment.
1. What are Kubernetes namespaces useful for? Choose all that are correct (2 correct answers).
Note: To get credit for a multiple-select question, you must select all of the correct options and none of the incorrect ones.
Namespaces let you implement resource quotas across your cluster.
That's correct!
Namespaces make resources more secure.
Sorry, that's not correct. By themselves, using namespaces does not increase security.

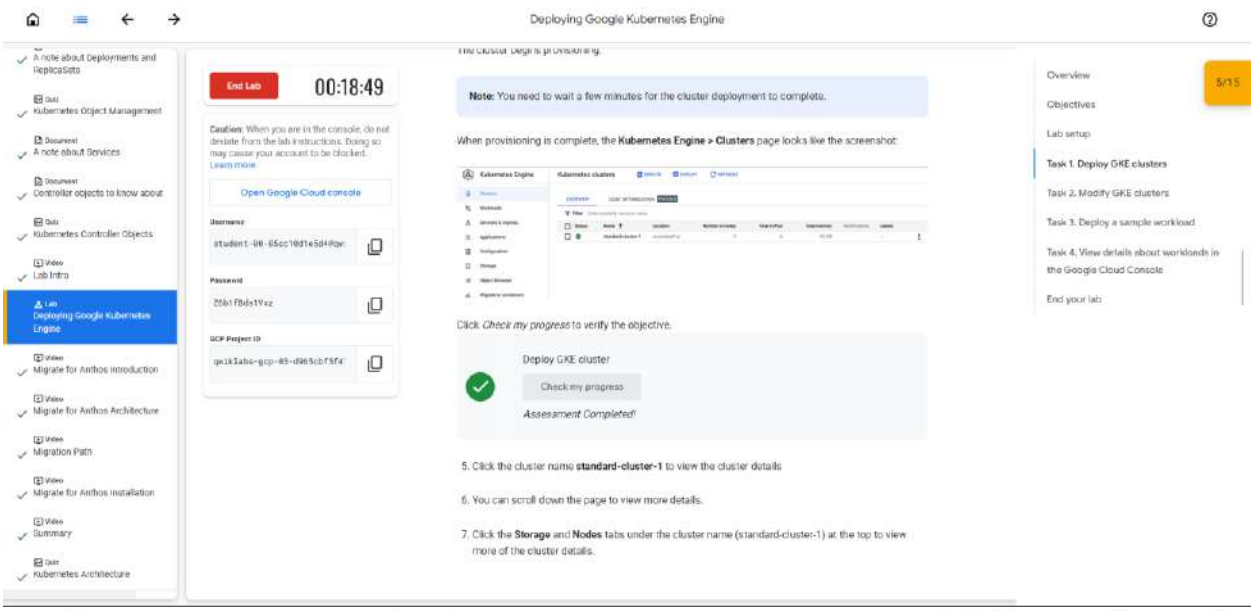

Kubernetes Object Management
Document
A note about Deployments and ReplicaSets
Quiz
Kubernetes Object Management
Document
A note about Services
Document
Controller objects to know about
Quiz
Kubernetes Controller Objects
Video
Lab Intro
Lab
Deploying Google Kubernetes Engine
Video
Migrate for Anthos introduction
Video
Migrate for Anthos Architecture
Video
Migration Path
Video
Migrate for Anthos Installation
2. What is the purpose of the Deployment object?
To ensure that a defined set of Pods is running at any given time.
To launch one or more Pods on a time-based schedule.
To launch one or more Pods and ensure that a specified number of them successfully run to completion and exit.
That's correct!
3. In a manifest file for a Pod, in which field do you define a container image for the Pod?
spec
metadata
kind
apiVersion

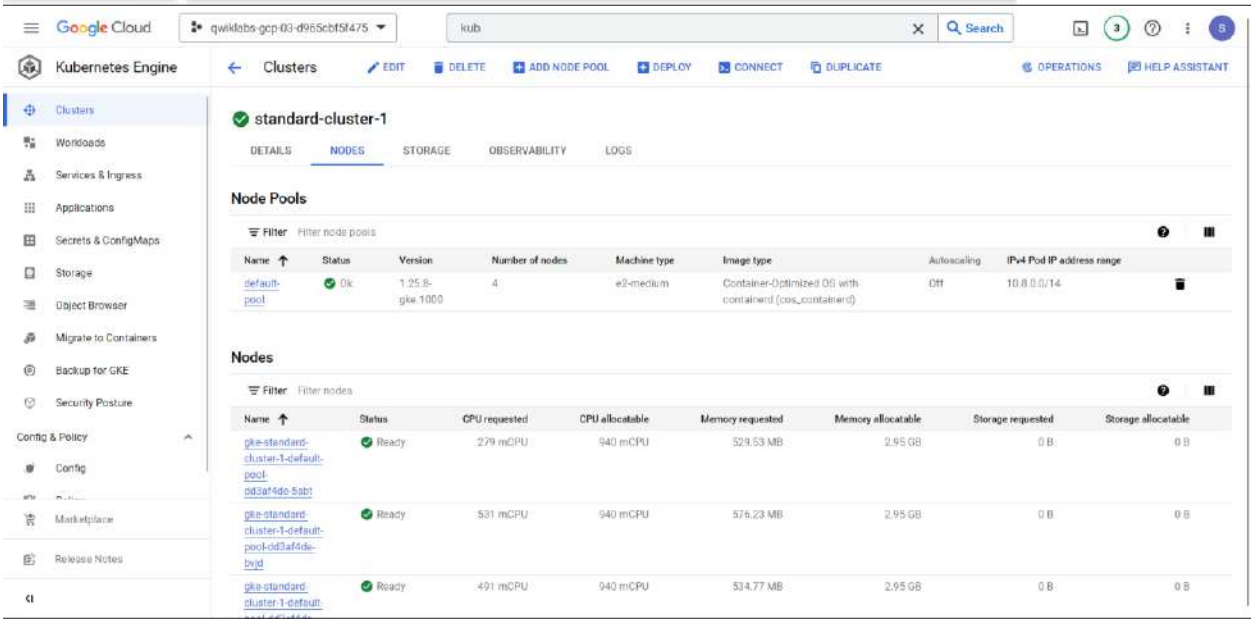

Kubernetes Object Management
Document
A note about Deployments and ReplicaSets
Quiz
Kubernetes Object Management
Document
A note about Services
Document
Controller objects to know about
Quiz
Kubernetes Controller Objects
Video
Lab Intro
Lab
Deploying Google Kubernetes Engine
Video
Migrate for Anthos introduction
Video
Migrate for Anthos Architecture
Video
Migration Path
Video
Migrate for Anthos installation
To launch one or more Pods and ensure that a specified number of them successfully run to completion and exit.
That's correct!
3. In a manifest file for a Pod, in which field do you define a container image for the Pod?
spec
metadata
kind
apiVersion
That's correct!

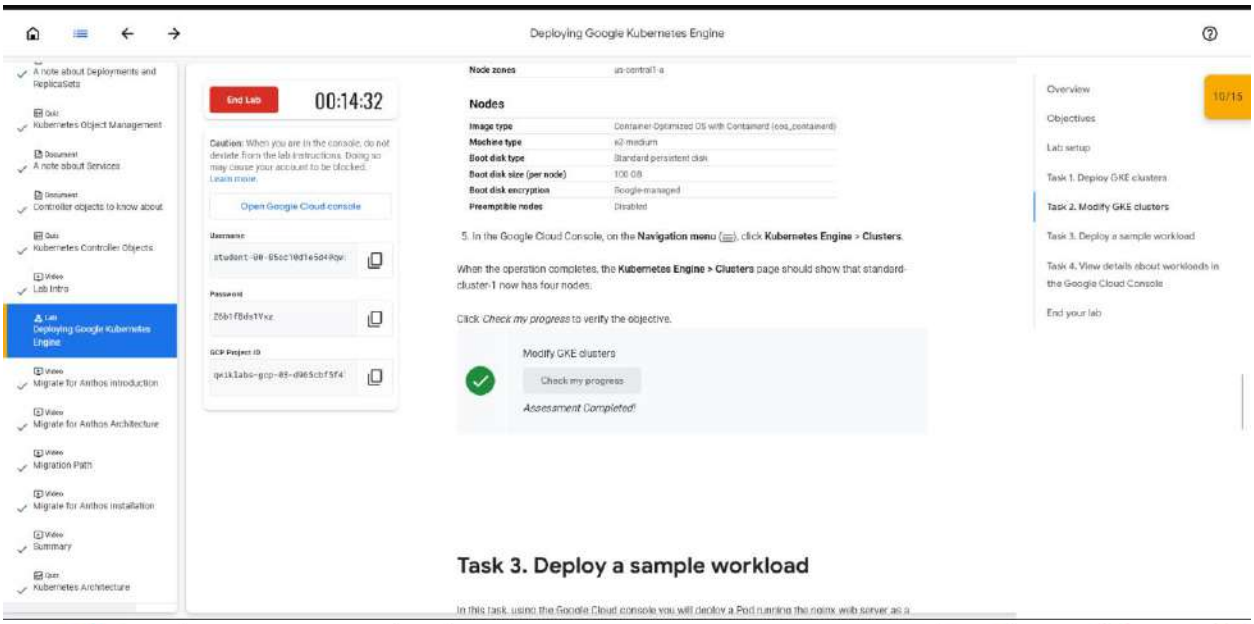

Kubernetes Controller Objects
Quiz
Kubernetes Controller Objects
Video
Lab Intro
Lab
Deploying Google Kubernetes Engine
Video
Migrate for Anthos introduction
Video
Migrate for Anthos Architecture
Video
Migration Path
Video
Migrate for Anthos installation
Video
Summary
Quiz
Kubernetes Architecture
Introduction to Kubernetes Workloads
Video
Introduction
Video
The kubectl Command
Video
Deployments
Kubernetes Controller Objects
Your score: 100% Passing score: 50%
Retake
Congratulations! You passed this assessment.
1. What is the purpose of a Service? Choose all that are true (2 correct answers)
To allow you to put constraints on Pods' resource consumption
To allow you to choose how Pods are exposed
That's correct!
To provide a way to inspect and diagnose code running in a Pod
To provide a load-balancing network endpoint for Pods
That's correct!

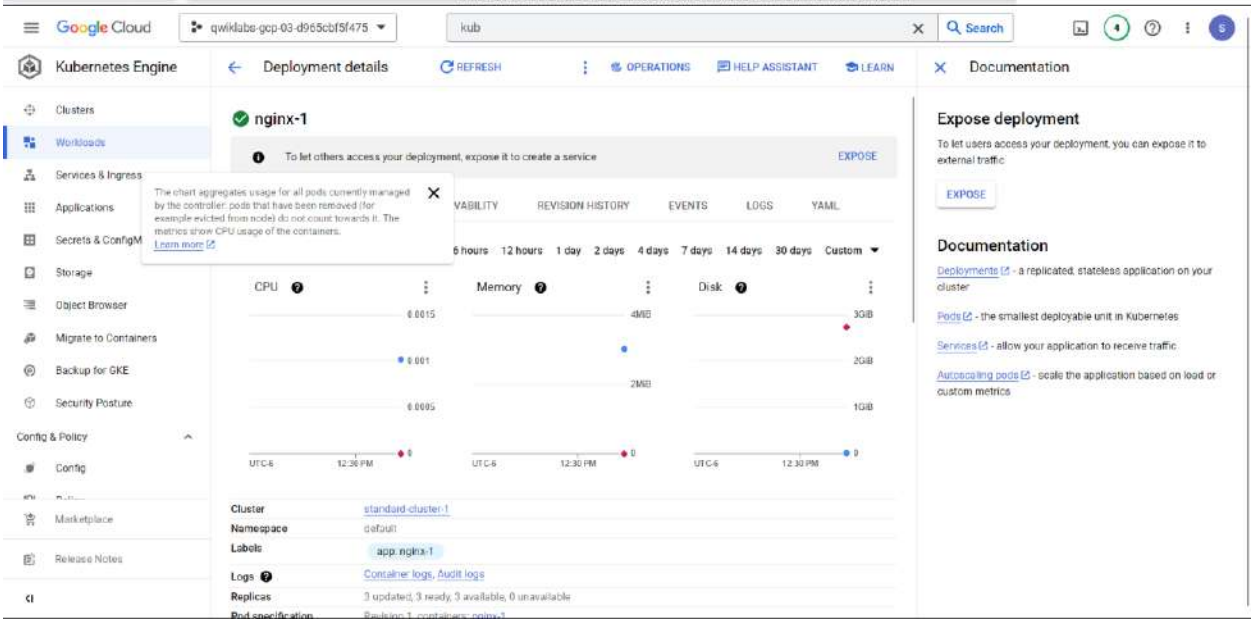

Kubernetes Controller Objects
Quiz
Kubernetes Controller Objects
Video
Lab Intro
Lab
Deploying Google Kubernetes Engine
Video
Migrate for Anthos Introduction
Video
Migrate for Anthos Architecture
Video
Migration Path
Video
Migrate for Anthos Installation
Video
Summary
Quiz
Kubernetes Architecture
Introduction to Kubernetes Workloads
Video
Introduction
Video
The kubectl Command
Video
Deployments
That's correct!
To provide a way to inspect and diagnose code running in a Pod
To provide a load-balancing network endpoint for Pods
That's correct!
2. If you are deploying applications in your Pods that need persistent storage, which controller type should you use?
DaemonSet
Deployment
ReplicaSet
StatefulSet
That's correct!

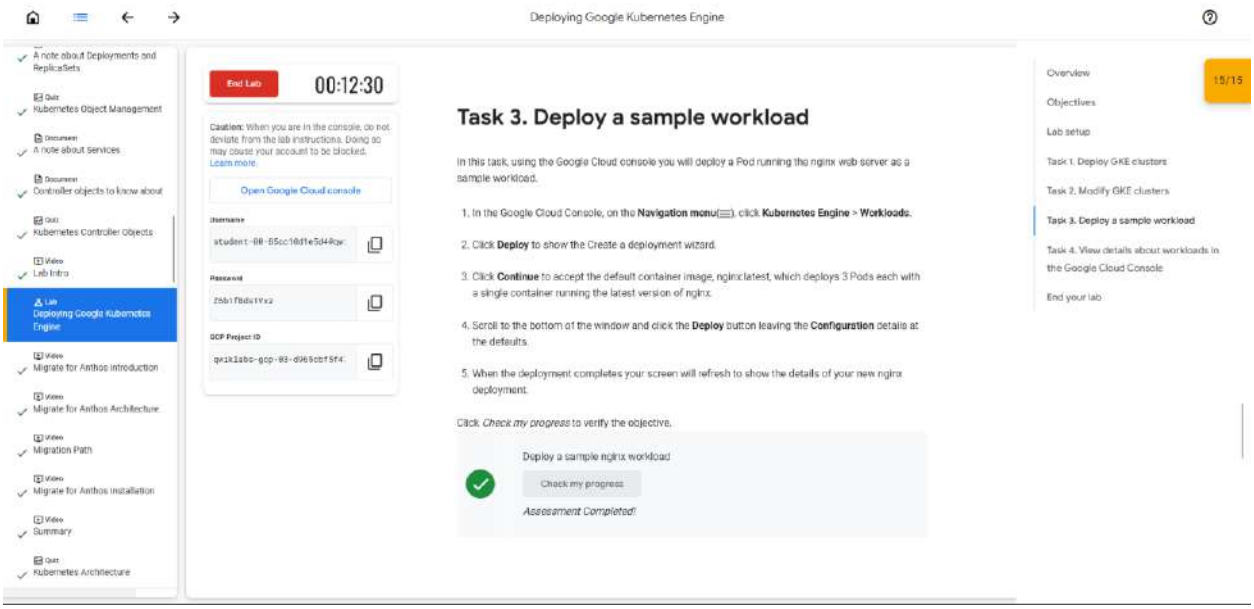

Google Cloud
qwiklabs-gcp-03-d965cbf5f475
kub
Search
Kubernetes Engine
Kubernetes clusters
CREATE
DEPLOY
REFRESH
OPERATIONS
HELP ASSISTANT
LEARN
Clusters
Workloads
Services & Ingress
Applications
Secrets & ConfigMaps
Storage
Object Browser
Migrate to Containers
Backup for GKE
Security Posture
Config & Policy
Config
Marketplace
Release Notes
OVERVIEW
OBSERVABILITY
COST OPTIMIZATION
Filter Enter property name or value
Status
Name
Location
Number of nodes
Total vCPUs
Total memory
Notifications
Labels
standard-cluster-1
us-central1-a
3
6
12 GB

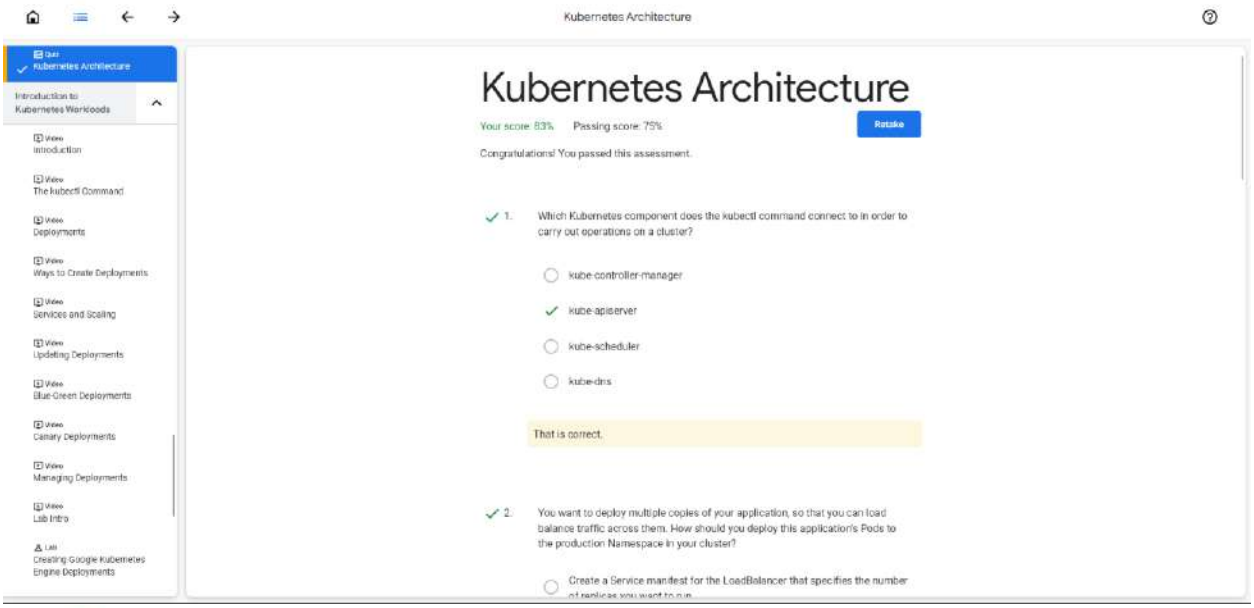

Deploying Google Kubernetes Engine
End Lab
00:18:49
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more
Open Google Cloud console
Username
Password
GCP Project ID
Note: You need to wait a few minutes for the cluster deployment to complete.
When provisioning is complete, the Kubernetes Engine > Clusters page looks like the screenshot:
Click Check my progress to verify the objective.
Deploy GKE cluster
Check my progress
Assessment Completed!
5. Click the cluster name standard-cluster-1 to view the cluster details
6. You can scroll down the page to view more details.
7. Click the Storage and Nodes tabs under the cluster name (standard-cluster-1) at the top to view more of the cluster details.
Overview
Objectives
Lab setup
Task 1. Deploy GKE clusters
Task 2. Modify GKE clusters
Task 3. Deploy a sample workload
Task 4. View details about workloads in the Google Cloud Console
End your lab
5/15

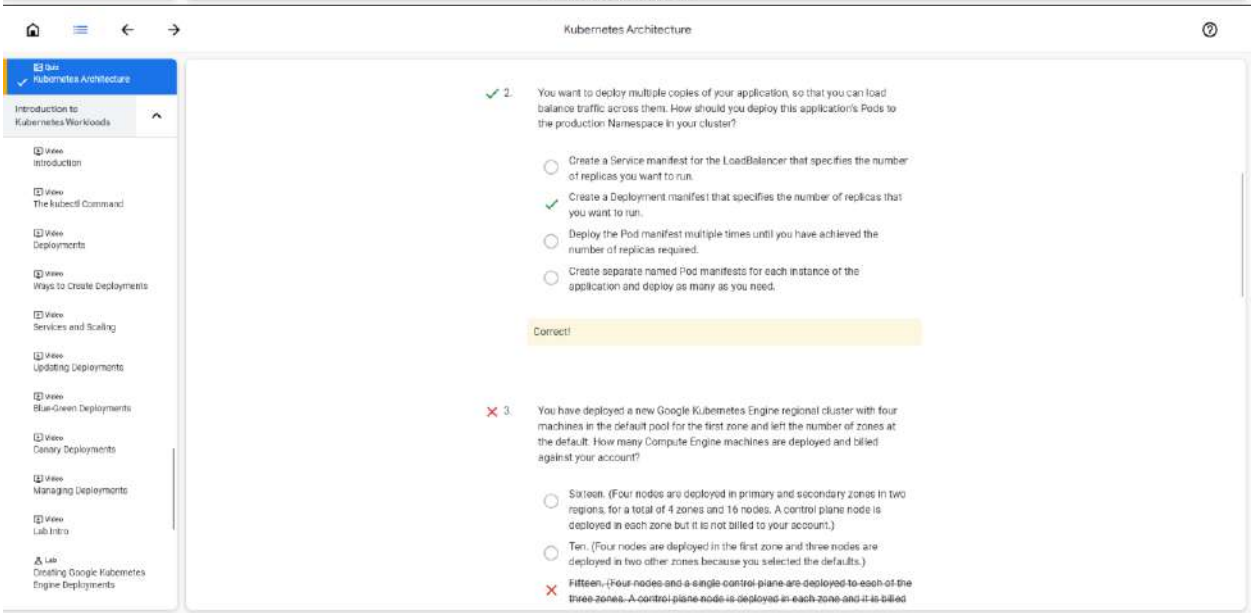

Google Cloud
qwiklabs-gcp-03-d965cbf5f475
kub
Search
Kubernetes Engine
Clusters
EDIT
DELETE
ADD NODE POOL
DEPLOY
CONNECT
DUPLICATE
OPERATIONS
HELP ASSISTANT
standard-cluster-1
DETAILS
NODES
STORAGE
OBSERVABILITY
LOGS
Node Pools
Filter Filter node pools
Name Status Version Number of nodes Machine type Image type Autoscaling IPv4 Pod IP address range
default-pool OK 1.25.8-gke.1000 4 e2-medium Container-Optimized OS with containerd (cos_containerd) Off 10.8.0.0/14
Nodes
Filter Filter nodes
Name Status CPU requested CPU allocatable Memory requested Memory allocatable Storage requested Storage allocatable
gke-standard-cluster-1-default-pool-dd3af4de-5sbt Ready 279 mCPU 940 mCPU 529.53 MB 2.95 GB 0 B 0 B
gke-standard-cluster-1-default-pool-dd3af4de-bvjd Ready 531 mCPU 940 mCPU 576.23 MB 2.95 GB 0 B 0 B
gke-standard-cluster-1-default- Ready 491 mCPU 940 mCPU 534.77 MB 2.95 GB 0 B 0 B
Clusters
Workloads
Services & Ingress
Applications
Secrets & ConfigMaps
Storage
Object Browser
Migrate to Containers
Backup for GKE
Security Posture
Config & Policy
Config
Marketplace
Release Notes

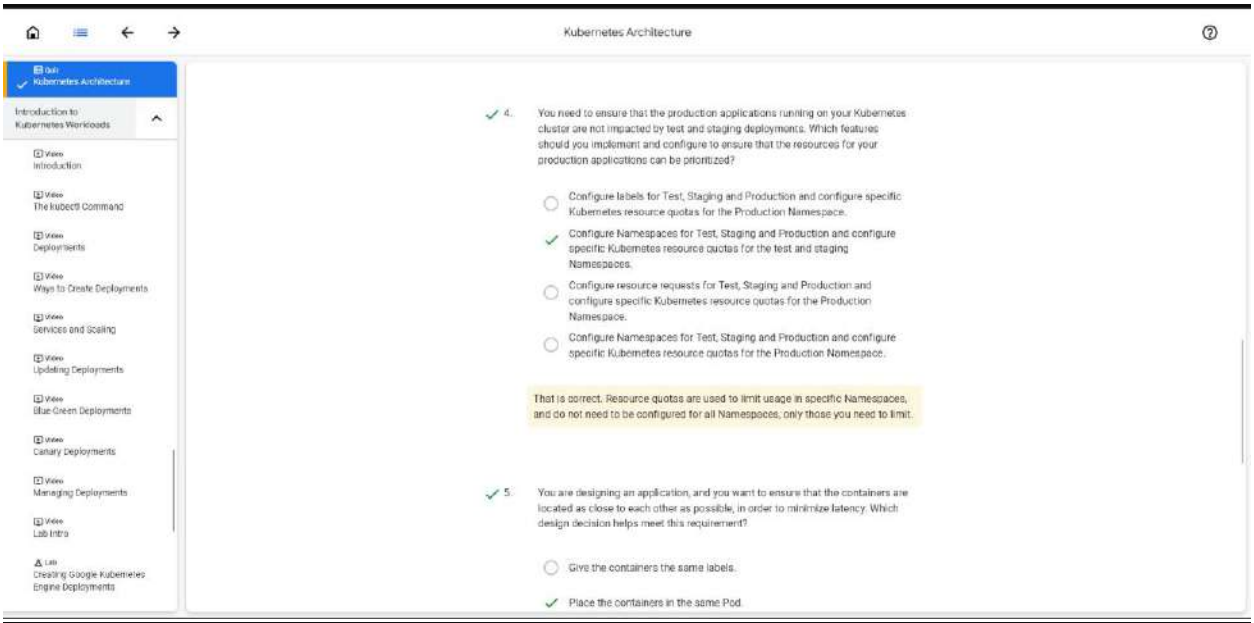

Deploying Google Kubernetes Engine
End Lab
00:14:32
Open Google Cloud console
Nodes
Node zones
us-central1-a
Image type
Container-Optimized OS with Containerd (cos_containerd)
Machine type
e2-medium
Boot disk type
Standard persistent disk
Boot disk size (per node)
100 GB
Boot disk encryption
Google-managed
Preemptible nodes
Disabled
5. In the Google Cloud Console, on the Navigation menu, click Kubernetes Engine > Clusters.
When the operation completes, the Kubernetes Engine > Clusters page should show that standard-cluster-1 now has four nodes.
Click Check my progress to verify the objective.
Modify GKE clusters
Check my progress
Assessment Completed!
Overview
10/15
Objectives
Lab setup
Task 1. Deploy GKE clusters
Task 2. Modify GKE clusters
Task 3. Deploy a sample workload
Task 4. View details about workloads in the Google Cloud Console
End your lab
Task 3. Deploy a sample workload

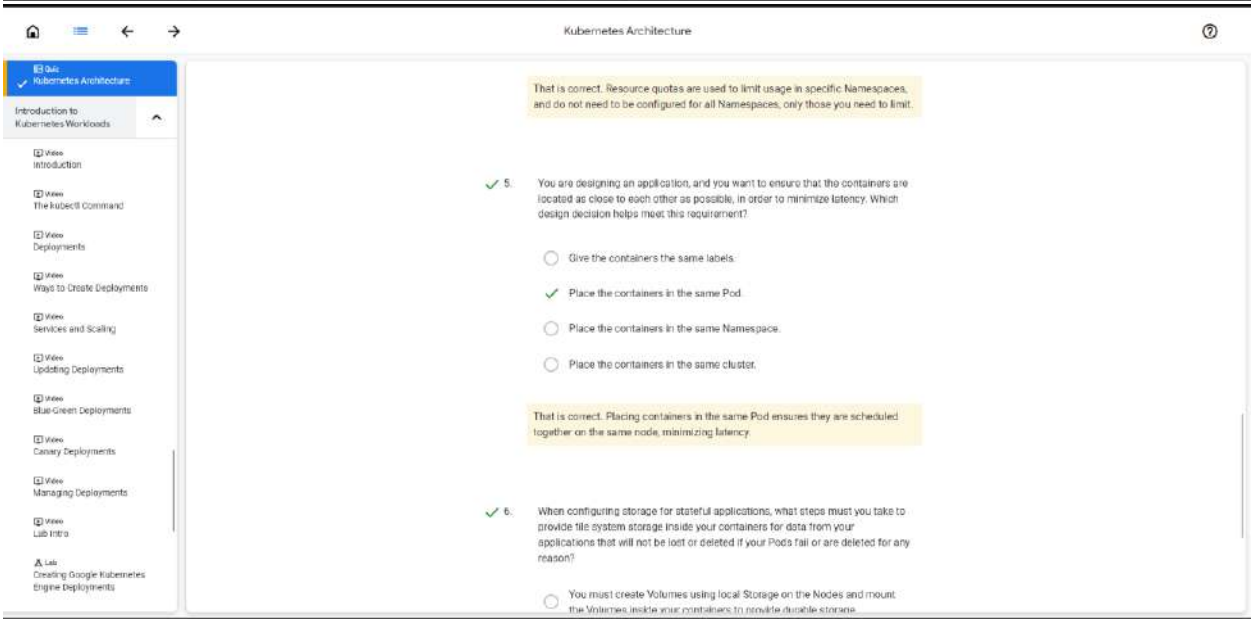

Google Cloud
qwiklabs-gcp-03-d965cbf5f475
kub
Search
Kubernetes Engine
Deployment details
REFRESH
OPERATIONS
HELP ASSISTANT
LEARN
Documentation
Clusters
Workloads
Services & Ingress
Applications
Secrets & ConfigM
Storage
Object Browser
Migrate to Containers
Backup for GKE
Security Posture
Config & Policy
Config
Marketplace
Release Notes
nginx-1
To let others access your deployment, expose it to create a service
EXPOSE
VABILITY
REVISION HISTORY
EVENTS
LOGS
YAML
6 hours
12 hours
1 day
2 days
4 days
7 days
14 days
30 days
Custom
CPU
Memory
Disk
Cluster
standard-cluster-1
Namespace
default
Labels
app:nginx-1
Logs
Container logs, Audit logs
Replicas
3 updated, 3 ready, 3 available, 0 unavailable
Expose deployment
To let users access your deployment, you can expose it to external traffic
EXPOSE
Documentation
Deployments - a replicated, stateless application on your cluster
Pods - the smallest deployable unit in Kubernetes
Services - allow your application to receive traffic
Autoscaling pods - scale the application based on load or custom metrics

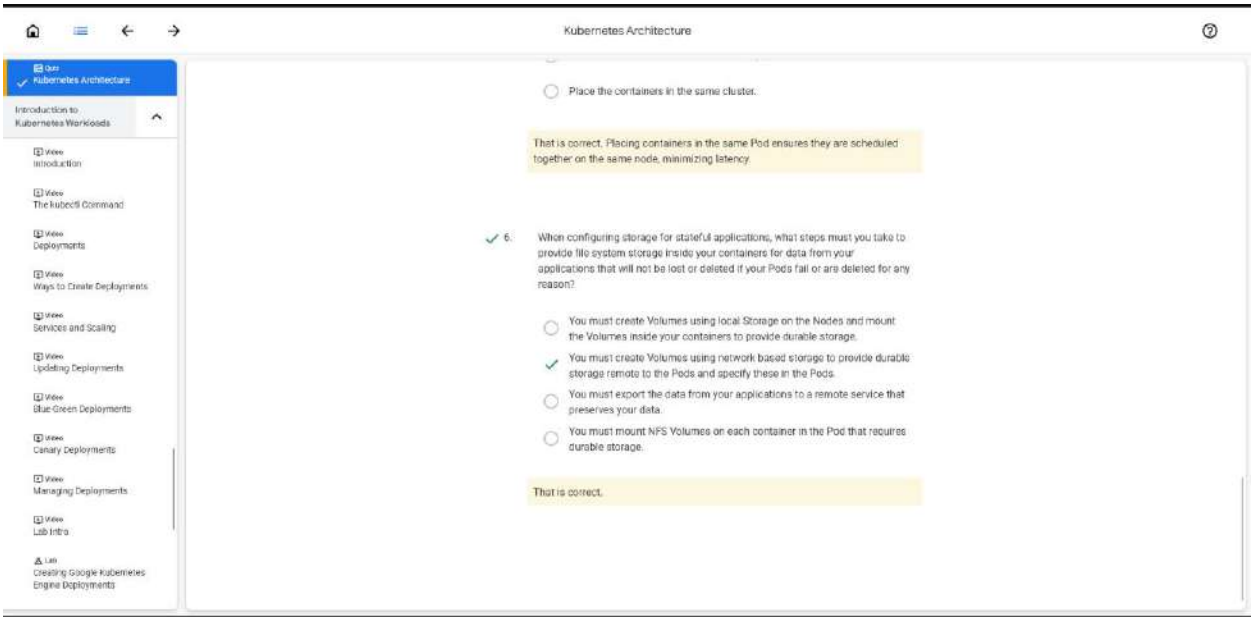

Deploying Google Kubernetes Engine
A note about Deployments and ReplicaSets
Quiz
Kubernetes Object Management
Document
A note about Services
Document
Controller objects to know about
Quiz
Kubernetes Controller Objects
Video
Lab Intro
Lab
Deploying Google Kubernetes Engine
Video
Migrate for Anthos Introduction
Video
Migrate for Anthos Architecture
Video
Migration Path
Video
Migrate for Anthos Installation
Video
Summary
Quiz
Kubernetes Architecture
End Lab
00:12:30
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more
Open Google Cloud console
Username
student-08-85cc10d1e5d4@qw
Password
Z5bi7BdsYVx2
GCP Project ID
qwiklabs-gcp-03-d965cbf5f4
Task 3. Deploy a sample workload
In this task, using the Google Cloud console you will deploy a Pod running the nginx web server as a sample workload.
1. In the Google Cloud Console, on the Navigation menu(≡), click Kubernetes Engine > Workloads.
2. Click Deploy to show the Create a deployment wizard.
3. Click Continue to accept the default container image, nginx:latest, which deploys 3 Pods each with a single container running the latest version of nginx.
4. Scroll to the bottom of the window and click the Deploy button leaving the Configuration details at the defaults.
5. When the deployment completes your screen will refresh to show the details of your new nginx deployment.
Click Check my progress to verify the objective.
Deploy a sample nginx workload
Check my progress
Assessment Completed!
Overview
15/15
Objectives
Lab setup
Task 1. Deploy GKE clusters
Task 2. Modify GKE clusters
Task 3. Deploy a sample workload
Task 4. View details about workloads in the Google Cloud Console
End your lab

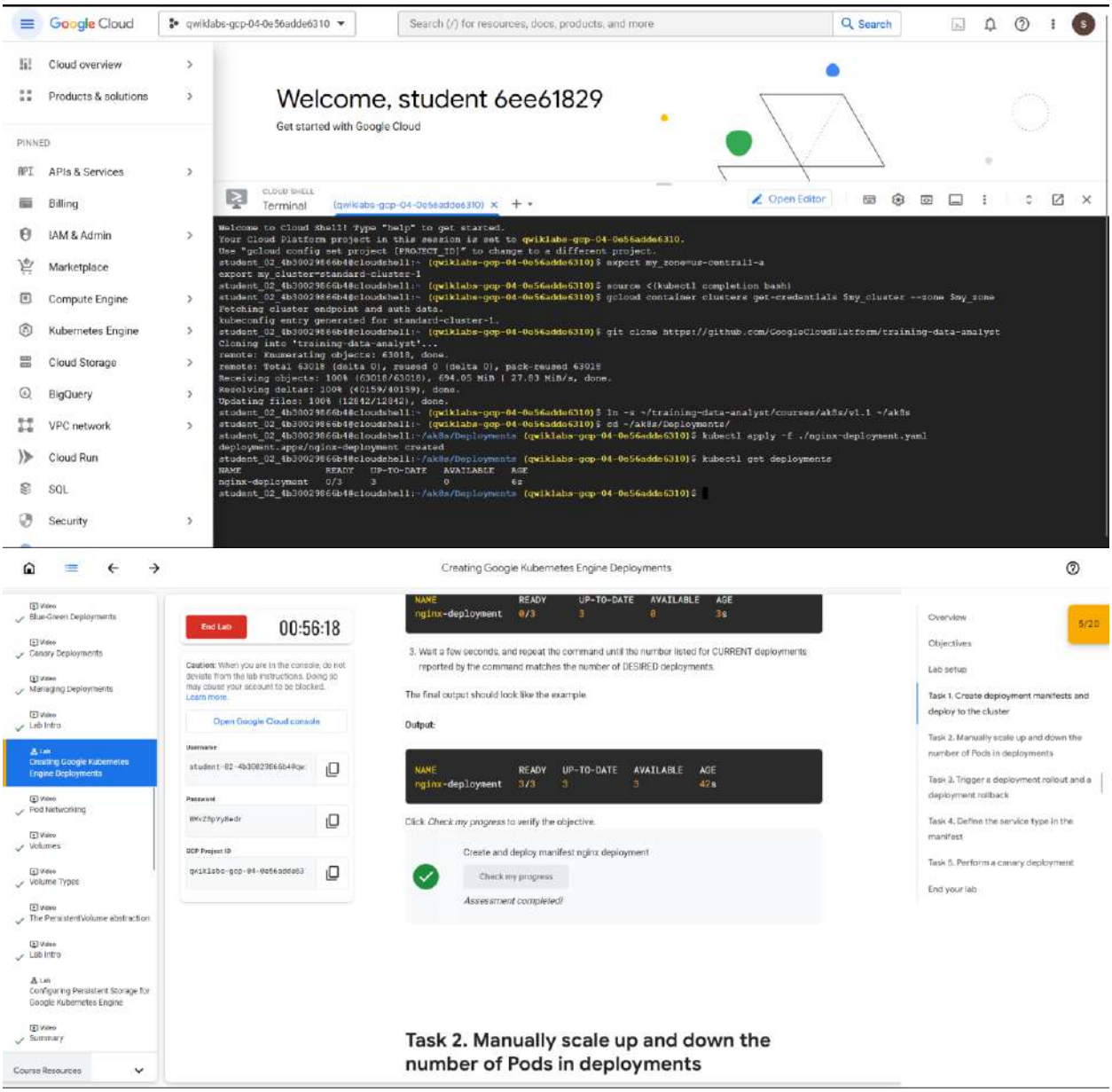

Kubernetes Architecture
Quiz
Kubernetes Architecture
Introduction to Kubernetes Workloads
Video
Introduction
Video
The kubectl Command
Video
Deployments
Video
Ways to Create Deployments
Video
Services and Scaling
Video
Updating Deployments
Video
Blue-Green Deployments
Video
Canary Deployments
Video
Managing Deployments
Video
Lab Intro
Lab
Creating Google Kubernetes Engine Deployments
Kubernetes Architecture
Your score: 83%
Passing score: 75%
Retake
Congratulations! You passed this assessment.
1. Which Kubernetes component does the kubectl command connect to in order to carry out operations on a cluster?
kube-controller-manager
kube-apiserver
kube-scheduler
kube-dns
That is correct.
2. You want to deploy multiple copies of your application, so that you can load balance traffic across them. How should you deploy this application's Pods to the production Namespace in your cluster?
Create a Service manifest for the LoadBalancer that specifies the number


Kubernetes Architecture
Quiz
Kubernetes Architecture
Introduction to Kubernetes Workloads
Video
Introduction
Video
The kubectl Command
Video
Deployments
Video
Ways to Create Deployments
Video
Services and Scaling
Video
Updating Deployments
Video
Blue-Green Deployments
Video
Canary Deployments
Video
Managing Deployments
Video
Lab Intro
Lab
Creating Google Kubernetes Engine Deployments
2. You want to deploy multiple copies of your application, so that you can load balance traffic across them. How should you deploy this application's Pods to the production Namespace in your cluster?
Create a Service manifest for the LoadBalancer that specifies the number of replicas you want to run.
Create a Deployment manifest that specifies the number of replicas that you want to run.
Deploy the Pod manifest multiple times until you have achieved the number of replicas required.
Create separate named Pod manifests for each instance of the application and deploy as many as you need.
Correct!
3. You have deployed a new Google Kubernetes Engine regional cluster with four machines in the default pool for the first zone and left the number of zones at the default. How many Compute Engine machines are deployed and billed against your account?
Sixteen. (Four nodes are deployed in primary and secondary zones in two regions, for a total of 4 zones and 16 nodes. A control plane node is deployed in each zone but it is not billed to your account.)
Ten. (Four nodes are deployed in the first zone and three nodes are deployed in two other zones because you selected the defaults.)
Fifteen. (Four nodes and a single control plane are deployed to each of the three zones. A control plane node is deployed in each zone and it is billed

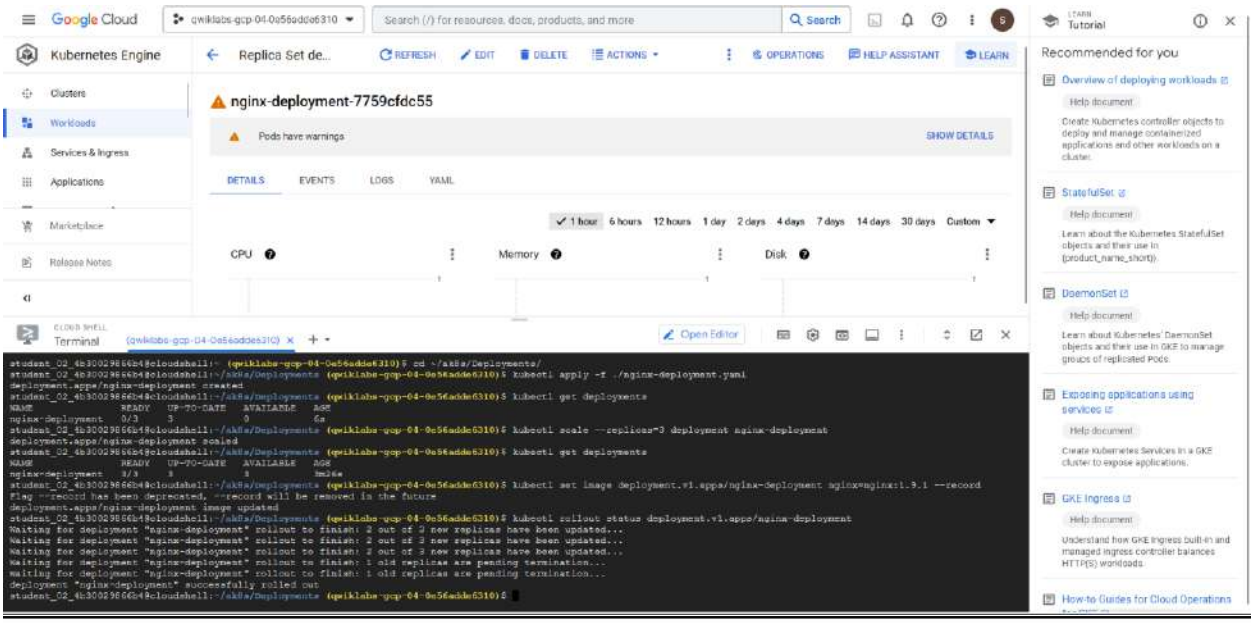

Kubernetes Architecture
Quiz
Kubernetes Architecture
Introduction to Kubernetes Workloads
Video
Introduction
Video
The kubectl Command
Video
Deployments
Video
Ways to Create Deployments
Video
Services and Scaling
Video
Updating Deployments
Video
Blue-Green Deployments
Video
Canary Deployments
Video
Managing Deployments
Video
Lab Intro
Lab
Creating Google Kubernetes Engine Deployments
4. You need to ensure that the production applications running on your Kubernetes cluster are not impacted by test and staging deployments. Which features should you implement and configure to ensure that the resources for your production applications can be prioritized?
Configure labels for Test, Staging and Production and configure specific Kubernetes resource quotas for the Production Namespace.
Configure Namespaces for Test, Staging and Production and configure specific Kubernetes resource quotas for the test and staging Namespaces.
Configure resource requests for Test, Staging and Production and configure specific Kubernetes resource quotas for the Production Namespace.
Configure Namespaces for Test, Staging and Production and configure specific Kubernetes resource quotas for the Production Namespace.
That is correct. Resource quotas are used to limit usage in specific Namespaces, and do not need to be configured for all Namespaces, only those you need to limit.
5. You are designing an application, and you want to ensure that the containers are located as close to each other as possible, in order to minimize latency. Which design decision helps meet this requirement?
Give the containers the same labels.
Place the containers in the same Pod.

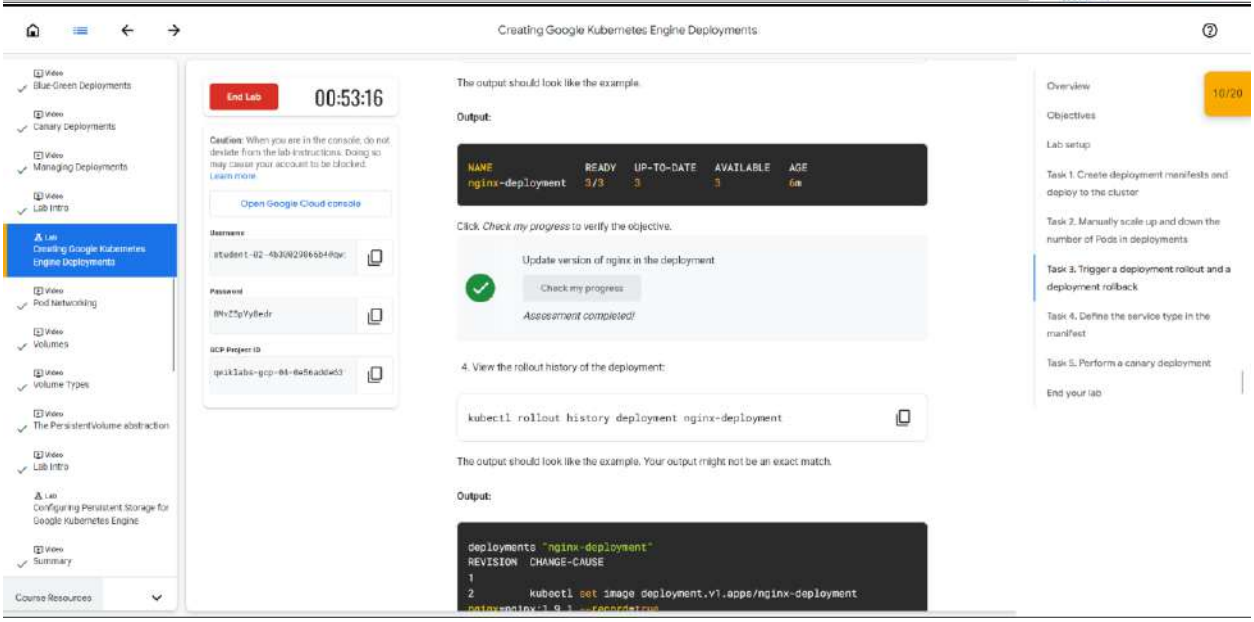

Kubernetes Architecture
Quiz
Kubernetes Architecture
Introduction to Kubernetes Workloads
Video
Introduction
Video
The kubectl Command
Video
Deployments
Video
Ways to Create Deployments
Video
Services and Scaling
Video
Updating Deployments
Video
Blue-Green Deployments
Video
Canary Deployments
Video
Managing Deployments
Video
Lab Intro
Lab
Creating Google Kubernetes Engine Deployments
That is correct. Resource quotas are used to limit usage in specific Namespaces, and do not need to be configured for all Namespaces, only those you need to limit.
5. You are designing an application, and you want to ensure that the containers are located as close to each other as possible, in order to minimize latency. Which design decision helps meet this requirement?
Give the containers the same labels.
Place the containers in the same Pod.
Place the containers in the same Namespace.
Place the containers in the same cluster.
That is correct. Placing containers in the same Pod ensures they are scheduled together on the same node, minimizing latency.
6. When configuring storage for stateful applications, what steps must you take to provide file system storage inside your containers for data from your applications that will not be lost or deleted if your Pods fail or are deleted for any reason?
You must create Volumes using local Storage on the Nodes and mount the Volumes inside your containers to provide durable storage.

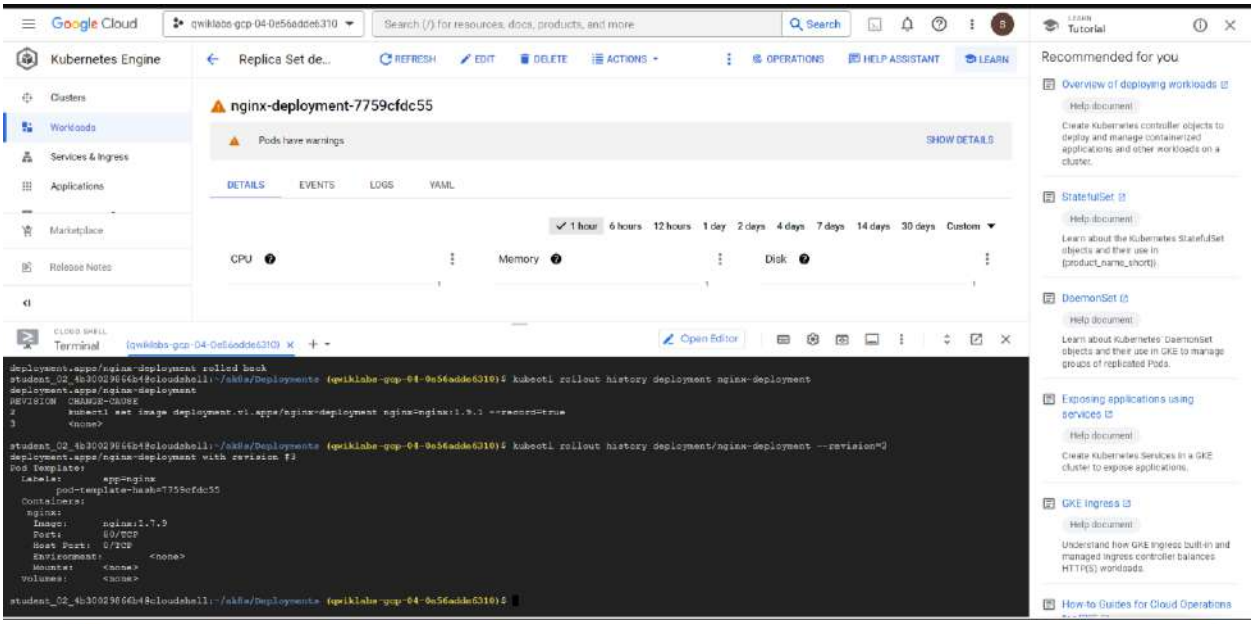

Kubernetes Architecture
Quiz
Kubernetes Architecture
Introduction to Kubernetes Workloads
Video
Introduction
Video
The kubectl Command
Video
Deployments
Video
Ways to Create Deployments
Video
Services and Scaling
Video
Updating Deployments
Video
Blue-Green Deployments
Video
Canary Deployments
Video
Managing Deployments
Video
Lab Intro
Lab
Creating Google Kubernetes Engine Deployments
Place the containers in the same cluster.
That is correct. Placing containers in the same Pod ensures they are scheduled together on the same node, minimizing latency.
6. When configuring storage for stateful applications, what steps must you take to provide file system storage inside your containers for data from your applications that will not be lost or deleted if your Pods fail or are deleted for any reason?
You must create Volumes using local Storage on the Nodes and mount the Volumes inside your containers to provide durable storage.
You must create Volumes using network based storage to provide durable storage remote to the Pods and specify these in the Pods.
You must export the data from your applications to a remote service that preserves your data.
You must mount NFS Volumes on each container in the Pod that requires durable storage.
That is correct.

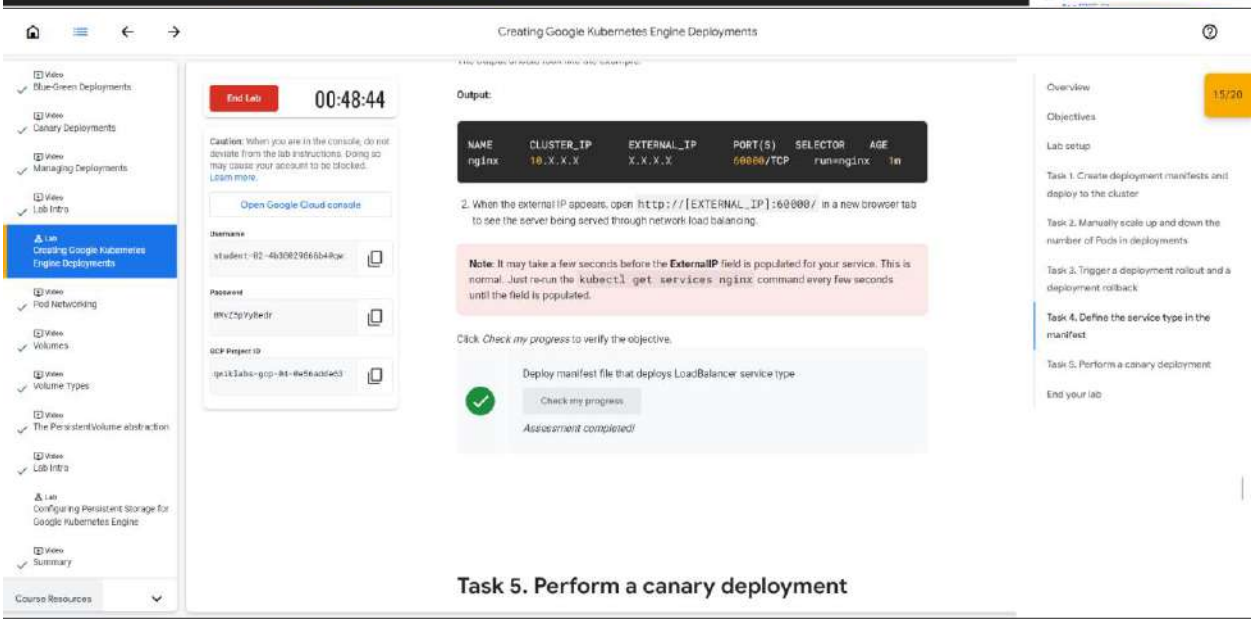

Google Cloud
qwiklabs-gcp-04-0e56adde6310
Search (/) for resources, docs, products, and more
Search
Cloud overview
Products & solutions
PINNED
APIs & Services
Billing
IAM & Admin
Marketplace
Compute Engine
Kubernetes Engine
Cloud Storage
BigQuery
VPC network
Cloud Run
SQL
Security
Welcome, student 6ee61829
Get started with Google Cloud
CLOUD SHELL
Terminal
(qwiklabs-gcp-04-0e56adde6310)
Open Editor
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to qwiklabs-gcp-04-0e56adde6310.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
student_02_4b30029866b4@cloudshell:~ (qwiklabs-gcp-04-0e56adde6310)$ export my_zone=us-central1-a
export my_cluster=standard-cluster-1
student_02_4b30029866b4@cloudshell:~ (qwiklabs-gcp-04-0e56adde6310)$ source <(kubectl completion bash)
student_02_4b30029866b4@cloudshell:~ (qwiklabs-gcp-04-0e56adde6310)$ gcloud container clusters get-credentials $my_cluster --zone $my_zone
Fetching cluster endpoint and auth data.
kubeconfig entry generated for standard-cluster-1.
student_02_4b30029866b4@cloudshell:~ (qwiklabs-gcp-04-0e56adde6310)$ git clone https://github.com/GoogleCloudPlatform/training-data-analyst
Cloning into 'training-data-analyst'...
remote: Enumerating objects: 63018, done.
remote: Total 63018 (delta 0), reused 0 (delta 0), pack-reused 63018
Receiving objects: 100% (63018/63018), 694.05 MiB | 27.83 MiB/s, done.
Resolving deltas: 100% (40159/40159), done.
Updating files: 100% (12842/12842), done.
student_02_4b30029866b4@cloudshell:~ (qwiklabs-gcp-04-0e56adde6310)$ ln -s ~/training-data-analyst/courses/ak8s/v1.1 ~/ak8s
student_02_4b30029866b4@cloudshell:~ (qwiklabs-gcp-04-0e56adde6310)$ cd ~/ak8s/Deployments/
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56adde6310)$ kubectl apply -f ./nginx-deployment.yaml
deployment.apps/nginx-deployment created
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56adde6310)$ kubectl get deployments
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-deployment 0/3 3 0 6s
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56adde6310)$

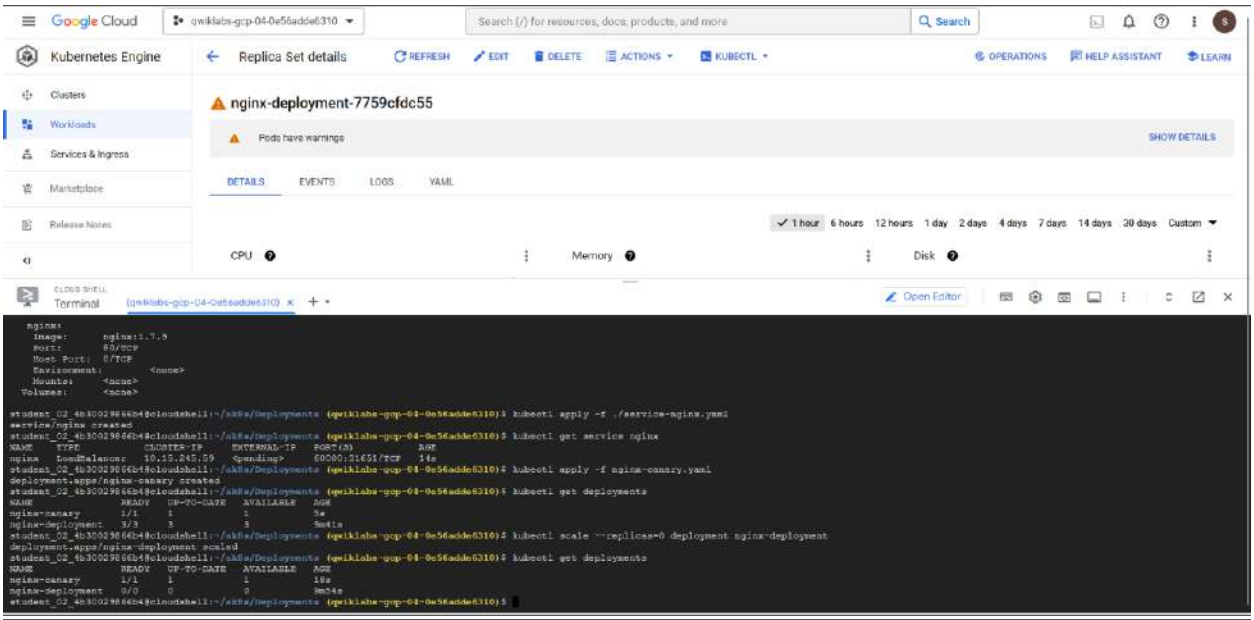
Creating Google Kubernetes Engine Deployments
End Lab
00:56:18
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.
Open Google Cloud console
Username
Password
GCP Project ID
Blue-Green Deployments
Canary Deployments
Managing Deployments
Lab Intro
Creating Google Kubernetes Engine Deployments
Pod Networking
Volumes
Volume Types
The PersistentVolume abstraction
Lab Intro
Configuring Persistent Storage for Google Kubernetes Engine
Summary
Course Resources
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-deployment 0/3 3 0 3s
3. Wait a few seconds, and repeat the command until the number listed for CURRENT deployments reported by the command matches the number of DESIRED deployments.
The final output should look like the example.
Output:
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-deployment 3/3 3 3 42s
Click Check my progress to verify the objective.
Create and deploy manifest nginx deployment
Check my progress
Assessment completed!
Overview
5/20
Objectives
Lab setup
Task 1. Create deployment manifests and deploy to the cluster
Task 2. Manually scale up and down the number of Pods in deployments
Task 3. Trigger a deployment rollout and a deployment rollback
Task 4. Define the service type in the manifest
Task 5. Perform a canary deployment
End your lab
Task 2. Manually scale up and down the number of Pods in deployments

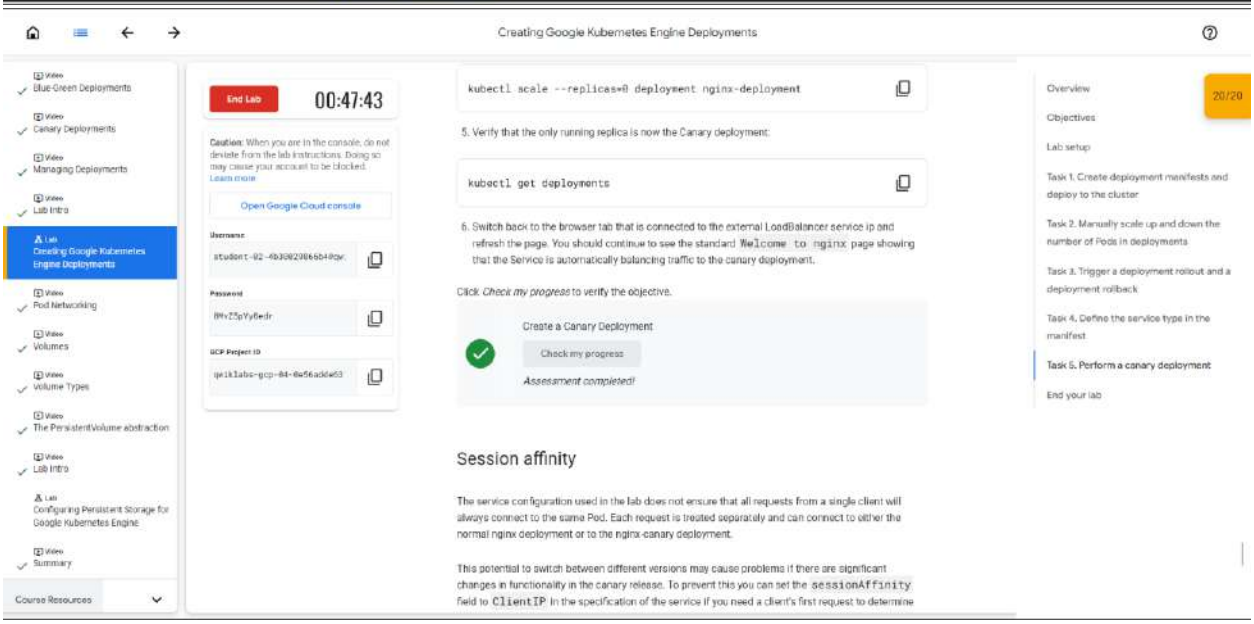

Google Cloud
Search
Kubernetes Engine
Replica Set de...
REFRESH
EDIT
DELETE
ACTIONS
OPERATIONS
HELP ASSISTANT
LEARN
Clusters
Workloads
Services & Ingress
Applications
Marketplace
Release Notes
nginx-deployment-7759cfdc55
Pods have warnings
SHOW DETAILS
DETAILS
EVENTS
LOGS
YAML
1 hour
6 hours
12 hours
1 day
2 days
4 days
7 days
14 days
30 days
Custom
CPU
Memory
Disk
Terminal
Open Editor
student_02_4b30029866b4@cloudshell:~ (qwiklabs-gcp-04-0e56addde6310)$ cd ~/ak8s/Deployments/
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56addde6310)$ kubectl apply -f ./nginx-deployment.yaml
deployment.apps/nginx-deployment created
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56addde6310)$ kubectl get deployments
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-deployment 0/3 3 0 6s
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56addde6310)$ kubectl scale --replicas=3 deployment nginx-deployment
deployment.apps/nginx-deployment scaled
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56addde6310)$ kubectl get deployments
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-deployment 3/3 3 3 2m16s
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56addde6310)$ kubectl set image deployment.v1.apps/nginx-deployment nginx=nginx:1.9.1 --record
Flag --record has been deprecated, --record will be removed in the future
deployment.apps/nginx-deployment image updated
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56addde6310)$ kubectl rollout status deployment.v1.apps/nginx-deployment
Waiting for deployment "nginx-deployment" rollout to finish: 2 out of 3 new replicas have been updated...
Waiting for deployment "nginx-deployment" rollout to finish: 2 out of 3 new replicas have been updated...
Waiting for deployment "nginx-deployment" rollout to finish: 2 out of 3 new replicas have been updated...
Waiting for deployment "nginx-deployment" rollout to finish: 1 old replicas are pending termination...
Waiting for deployment "nginx-deployment" rollout to finish: 1 old replicas are pending termination...
deployment "nginx-deployment" successfully rolled out
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56addde6310)$
Tutorial
Recommended for you
Overview of deploying workloads
Help document
Create Kubernetes controller objects to deploy and manage containerized applications and other workloads on a cluster.
StatefulSet
Help document
Learn about the Kubernetes StatefulSet objects and their use in {product_name_short}.
DaemonSet
Help document
Learn about Kubernetes' DaemonSet objects and their use in GKE to manage groups of replicated Pods.
Exposing applications using services
Help document
Create Kubernetes Services in a GKE cluster to expose applications.
GKE Ingress
Help document
Understand how GKE Ingress built-in and managed ingress controller balances HTTP(S) workloads.
How-to Guides for Cloud Operations

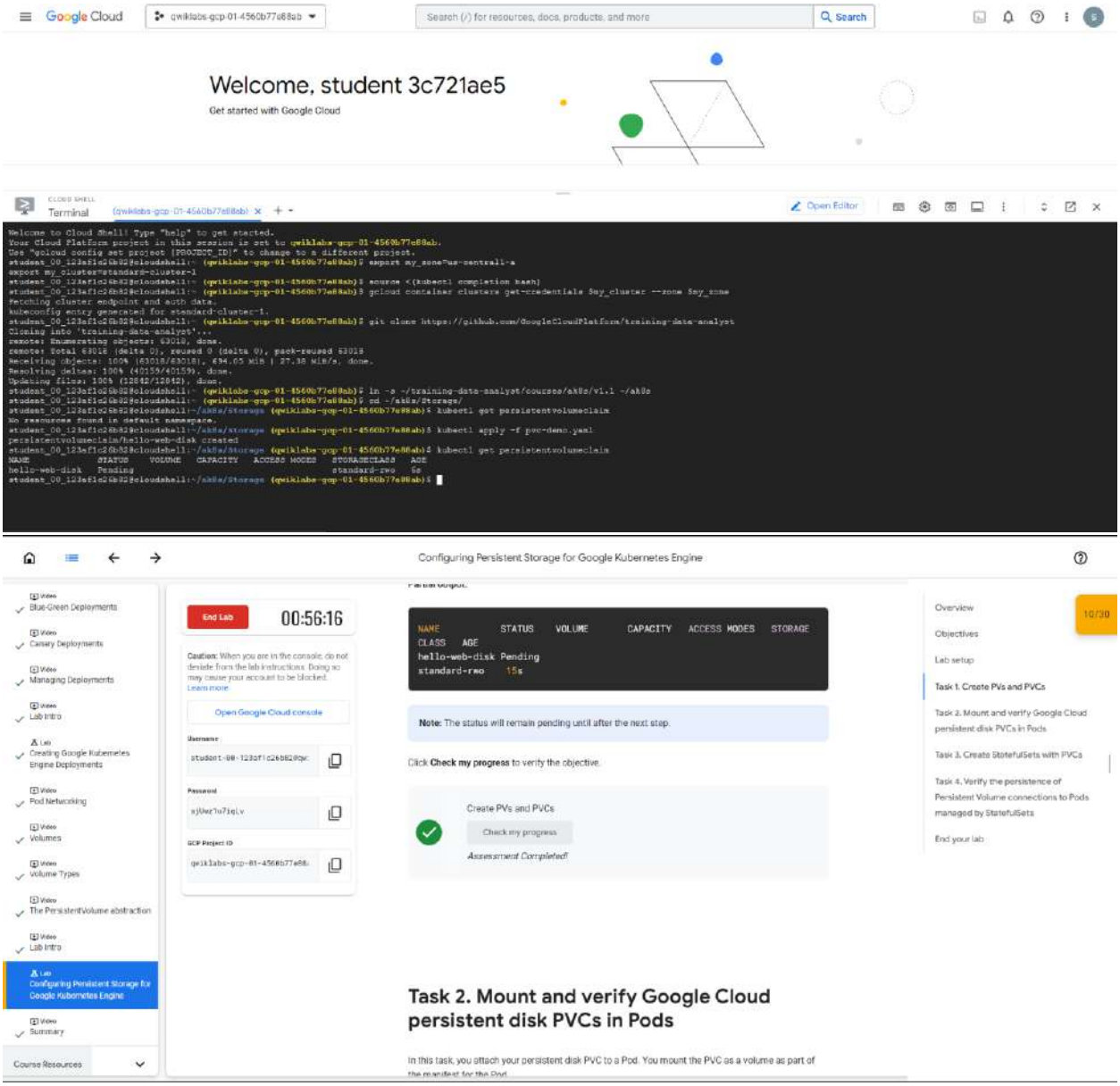

Creating Google Kubernetes Engine Deployments
Blue-Green Deployments
Canary Deployments
Managing Deployments
Lab Intro
Creating Google Kubernetes Engine Deployments
Pod Networking
Volumes
Volume Types
The PersistentVolume abstraction
Lab Intro
Configuring Persistent Storage for Google Kubernetes Engine
Summary
Course Resources
End Lab
00:53:16
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more
Open Google Cloud console
Username
student-02-4b30029866b4@qw
Password
8NvZ5pYyBedr
GCP Project ID
qwiklabs-gcp-04-0e56addde63
The output should look like the example.
Output:
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-deployment 3/3 3 3 6m
Click Check my progress to verify the objective.
Update version of nginx in the deployment
Check my progress
Assessment completed!
4. View the rollout history of the deployment:
kubectl rollout history deployment nginx-deployment
The output should look like the example. Your output might not be an exact match.
Output:
deployments "nginx-deployment"
REVISION CHANGE-CAUSE
1
2 kubectl set image deployment.v1.apps/nginx-deployment
Overview
Objectives
Lab setup
Task 1. Create deployment manifests and deploy to the cluster
Task 2. Manually scale up and down the number of Pods in deployments
Task 3. Trigger a deployment rollout and a deployment rollback
Task 4. Define the service type in the manifest
Task 5. Perform a canary deployment
End your lab
10/20

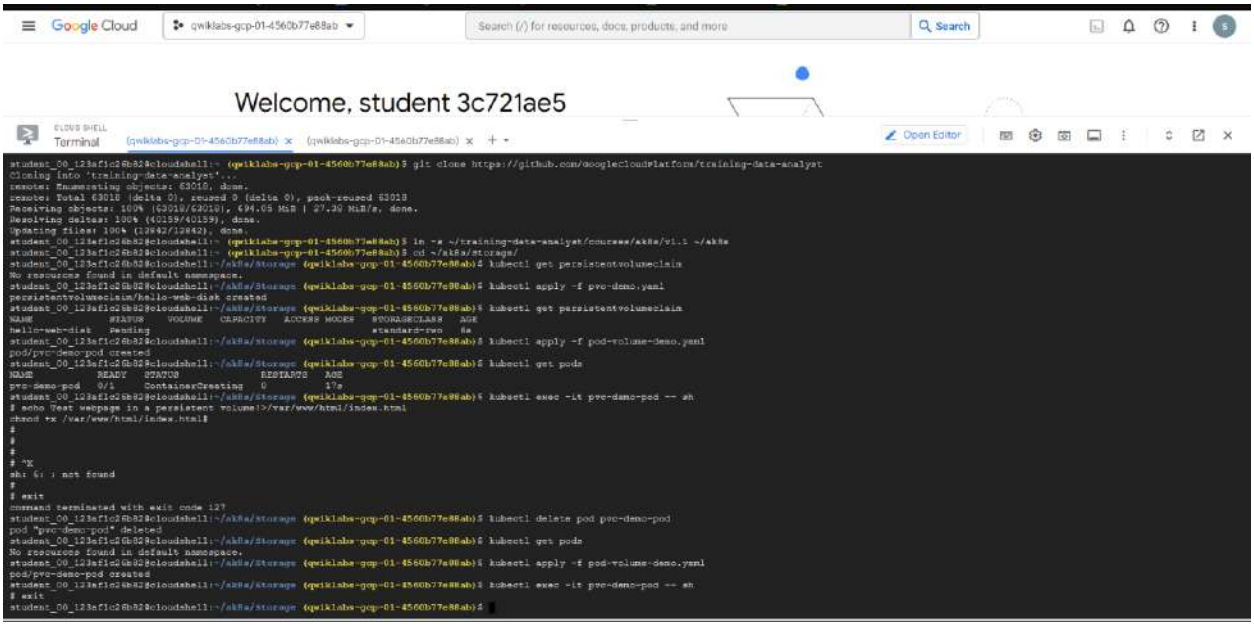

Google Cloud
Search
Kubernetes Engine
Replica Set de...
REFRESH
EDIT
DELETE
ACTIONS
OPERATIONS
HELP ASSISTANT
LEARN
Clusters
Workloads
Services & Ingress
Applications
Marketplace
Release Notes
nginx-deployment-7759cfdc55
Pods have warnings
SHOW DETAILS
DETAILS
EVENTS
LOGS
YAML
1 hour
6 hours
12 hours
1 day
2 days
4 days
7 days
14 days
30 days
Custom
CPU
Memory
Disk
Terminal
Open Editor
deployment.apps/nginx-deployment rolled back
student_02_4b30029666b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56addde6310)$ kubectl rollout history deployment nginx-deployment
deployment.apps/nginx-deployment
REVISION CHANGE-CAUSE
2 kubectl set image deployment.v1.apps/nginx-deployment nginx=nginx:1.9.1 --record=true
3 <none>
student_02_4b30029666b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56addde6310)$ kubectl rollout history deployment/nginx-deployment --revision=2
deployment.apps/nginx-deployment with revision #2
Pod Template:
Labels: app=nginx
pod-template-hash=7759cfdc55
Containers:
nginx:
Image: nginx:1.7.9
Port: 80/TCP
Host Port: 0/TCP
Environment: <none>
Mounts: <none>
Volumes: <none>
student_02_4b30029666b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56addde6310)$
Tutorial
Recommended for you
Overview of deploying workloads
Help document
Create Kubernetes controller objects to deploy and manage containerized applications and other workloads on a cluster.
StatefulSet
Help document
Learn about the Kubernetes StatefulSet objects and their use in {product_name_short}.
DaemonSet
Help document
Learn about Kubernetes' DaemonSet objects and their use in GKE to manage groups of replicated Pods.
Exposing applications using services
Help document
Create Kubernetes Services in a GKE cluster to expose applications.
GKE Ingress
Help document
Understand how GKE Ingress built-in and managed Ingress controller balances HTTP(S) workloads.
How-to Guides for Cloud Operations

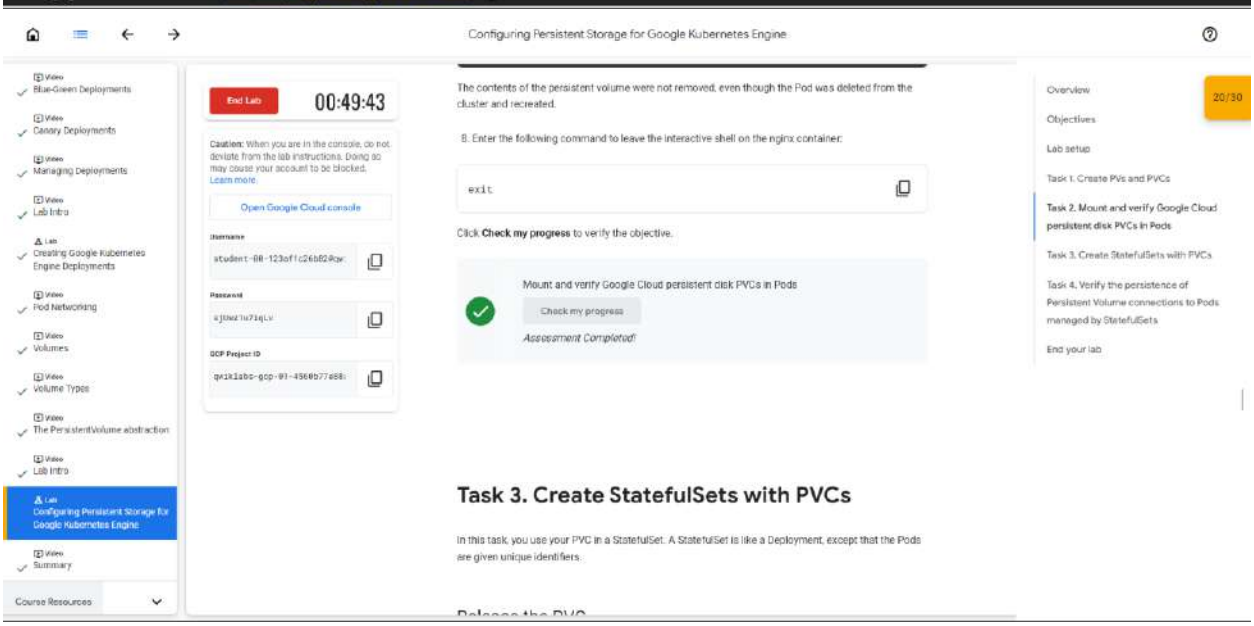

Creating Google Kubernetes Engine Deployments
Video
Blue-Green Deployments
Video
Canary Deployments
Video
Managing Deployments
Video
Lab Intro
Lab
Creating Google Kubernetes Engine Deployments
Video
Pod Networking
Video
Volumes
Video
Volume Types
Video
The PersistentVolume abstraction
Video
Lab Intro
Lab
Configuring Persistent Storage for Google Kubernetes Engine
Video
Summary
Course Resources
End Lab
00:48:44
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.
Open Google Cloud console
Username
student-02-4b30029666b4@qw
Password
8NvZ5pYyBe8r
GCP Project ID
qwiklabs-gcp-04-0e56addde63
Output:
NAME CLUSTER_IP EXTERNAL_IP PORT(S) SELECTOR AGE
nginx 10.X.X.X X.X.X.X 60000/TCP run=nginx 1m
2. When the external IP appears, open http://[EXTERNAL_IP]:60000/ in a new browser tab to see the server being served through network load balancing.
Note: It may take a few seconds before the ExternalIP field is populated for your service. This is normal. Just re-run the kubectl get services nginx command every few seconds until the field is populated.
Click Check my progress to verify the objective.
Deploy manifest file that deploys LoadBalancer service type
Check my progress
Assessment completed!
Overview
15/20
Objectives
Lab setup
Task 1. Create deployment manifests and deploy to the cluster
Task 2. Manually scale up and down the number of Pods in deployments
Task 3. Trigger a deployment rollout and a deployment rollback
Task 4. Define the service type in the manifest
Task 5. Perform a canary deployment
End your lab
Task 5. Perform a canary deployment

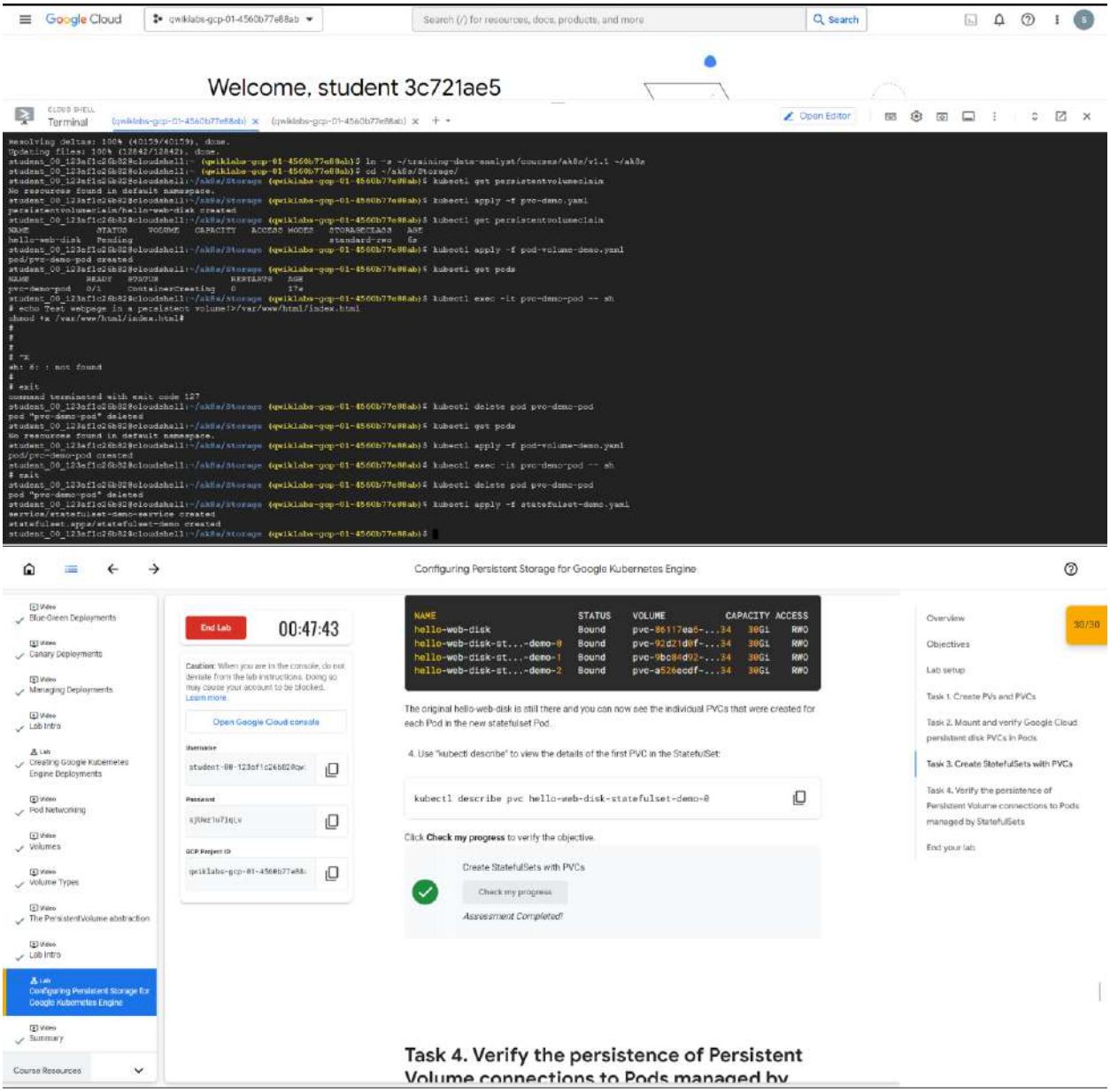

Google Cloud
Search
Kubernetes Engine
Replica Set details
REFRESH
EDIT
DELETE
ACTIONS
KUBECTL
OPERATIONS
HELP ASSISTANT
LEARN
Clusters
Workloads
Services & Ingress
Marketplace
Release Notes
nginx-deployment-7759cfdc55
Pods have warnings
SHOW DETAILS
DETAILS
EVENTS
LOGS
YAML
1 hour
6 hours
12 hours
1 day
2 days
4 days
7 days
14 days
30 days
Custom
CPU
Memory
Disk
Terminal
Open Editor
nginx:
Image: nginx:1.7.9
Port: 80/TCP
Host Port: 0/TCP
Environment: <none>
Mounts: <none>
Volumes: <none>
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56adde6310)$ kubectl apply -f ./service-nginx.yaml
service/nginx created
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56adde6310)$ kubectl get service nginx
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
nginx LoadBalancer 10.15.245.59 <pending> 60000:31651/TCP 14s
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56adde6310)$ kubectl apply -f nginx-canary.yaml
deployment.apps/nginx-canary created
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56adde6310)$ kubectl get deployments
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-canary 1/1 1 1 5s
nginx-deployment 3/3 3 3 5m41s
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56adde6310)$ kubectl scale --replicas=0 deployment nginx-deployment
deployment.apps/nginx-deployment scaled
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56adde6310)$ kubectl get deployments
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-canary 1/1 1 1 18s
nginx-deployment 0/0 0 0 5m54s
student_02_4b30029866b4@cloudshell:~/ak8s/Deployments (qwiklabs-gcp-04-0e56adde6310)$


Creating Google Kubernetes Engine Deployments
Blue-Green Deployments
Canary Deployments
Managing Deployments
Lab Intro
Creating Google Kubernetes Engine Deployments
Pod Networking
Volumes
Volume Types
The PersistentVolume abstraction
Lab Intro
Configuring Persistent Storage for Google Kubernetes Engine
Summary
Course Resources
End Lab
00:47:43
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more
Open Google Cloud console
Username
student-02-4b30029866b4@qw
Password
8MrZ5pYyf6eJr
GCP Project ID
qwiklabs-gcp-04-0e56adde63
kubectl scale --replicas=0 deployment nginx-deployment
5. Verify that the only running replica is now the Canary deployment:
kubectl get deployments
6. Switch back to the browser tab that is connected to the external LoadBalancer service ip and refresh the page. You should continue to see the standard Welcome to nginx page showing that the Service is automatically balancing traffic to the canary deployment.
Click Check my progress to verify the objective.
Create a Canary Deployment
Check my progress
Assessment completed!
Session affinity
The service configuration used in the lab does not ensure that all requests from a single client will always connect to the same Pod. Each request is treated separately and can connect to either the normal nginx deployment or to the nginx-canary deployment.
This potential to switch between different versions may cause problems if there are significant changes in functionality in the canary release. To prevent this you can set the sessionAffinity field to ClientIP in the specification of the service if you need a client's first request to determine
Overview
20/20
Objectives
Lab setup
Task 1. Create deployment manifests and deploy to the cluster
Task 2. Manually scale up and down the number of Pods in deployments
Task 3. Trigger a deployment rollout and a deployment rollback
Task 4. Define the service type in the manifest
Task 5. Perform a canary deployment
End your lab


Google Cloud
qwiklabs-gcp-01-4560b77e88ab
Search (/) for resources, docs, products, and more
Search
Welcome, student 3c721ae5
Get started with Google Cloud
Terminal
Open Editor
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to qwiklabs-gcp-01-4560b77e88ab.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
student_00_123af1c26b82@cloudshell:~ (qwiklabs-gcp-01-4560b77e88ab)$ export my_zone=us-central1-a
export my_cluster=standard-cluster-1
student_00_123af1c26b82@cloudshell:~ (qwiklabs-gcp-01-4560b77e88ab)$ source <(kubectl completion bash)
student_00_123af1c26b82@cloudshell:~ (qwiklabs-gcp-01-4560b77e88ab)$ gcloud container clusters get-credentials $my_cluster --zone $my_zone
Fetching cluster endpoint and auth data.
kubeconfig entry generated for standard-cluster-1.
student_00_123af1c26b82@cloudshell:~ (qwiklabs-gcp-01-4560b77e88ab)$ git clone https://github.com/GoogleCloudPlatform/training-data-analyst
Cloning into 'training-data-analyst'...
remote: Enumerating objects: 63018, done.
remote: Total 63018 (delta 0), reused 0 (delta 0), pack-reused 63018
Receiving objects: 100% (63018/63018), 694.65 MiB | 27.38 MiB/s, done.
Resolving deltas: 100% (401559/401559), done.
Updating files: 100% (12842/12842), done.
student_00_123af1c26b82@cloudshell:~ (qwiklabs-gcp-01-4560b77e88ab)$ ln -s ~/training-data-analyst/courses/ak8s/v1.1 ~/ak8s
student_00_123af1c26b82@cloudshell:~ (qwiklabs-gcp-01-4560b77e88ab)$ cd ~/ak8s/Storage/
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl get persistentvolumeclaim
No resources found in default namespace.
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl apply -f pvc-demo.yaml
persistentvolumeclaim/hello-web-disk created
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl get persistentvolumeclaim
NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS AGE
hello-web-disk Pending standard-rwo 5s
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$
Configuring Persistent Storage for Google Kubernetes Engine
End Lab
00:56:16
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more
Open Google Cloud console
Username
student-00-123af1c26b82@qw
Password
sjUwz7u7iqLv
GCP Project ID
qwiklabs-gcp-01-4560b77e88
NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGE CLASS AGE
hello-web-disk Pending standard-rwo 15s
Note: The status will remain pending until after the next step.
Click Check my progress to verify the objective.
Create PVs and PVCs
Check my progress
Assessment Completed!
Overview
10/30
Objectives
Lab setup
Task 1. Create PVs and PVCs
Task 2. Mount and verify Google Cloud persistent disk PVCs in Pods
Task 3. Create StatefulSets with PVCs
Task 4. Verify the persistence of Persistent Volume connections to Pods managed by StatefulSets
End your lab
Blue-Green Deployments
Canary Deployments
Managing Deployments
Lab Intro
Creating Google Kubernetes Engine Deployments
Pod Networking
Volumes
Volume Types
The PersistentVolume abstraction
Lab Intro
Configuring Persistent Storage for Google Kubernetes Engine
Summary
Course Resources
Task 2. Mount and verify Google Cloud persistent disk PVCs in Pods
In this task, you attach your persistent disk PVC to a Pod. You mount the PVC as a volume as part of


Google Cloud
qwiklabs-gcp-01-4560b77e88ab
Search (/) for resources, docs, products, and more
Search
Welcome, student 3c721ae5
CLOUD SHELL
Terminal
(qwiklabs-gcp-01-4560b77e88ab)
Open Editor
student_00_123af1c26b82@cloudshell:~ (qwiklabs-gcp-01-4560b77e88ab)$ git clone https://github.com/googlecloudplatform/training-data-analyst
Cloning into 'training-data-analyst'...
remote: Enumerating objects: 63018, done.
remote: Total 63018 (delta 0), reused 0 (delta 0), pack-reused 63018
Receiving objects: 100% (63018/63018), 694.05 MiB | 27.39 MiB/s, done.
Resolving deltas: 100% (40159/40159), done.
Updating files: 100% (12842/12842), done.
student_00_123af1c26b82@cloudshell:~ (qwiklabs-gcp-01-4560b77e88ab)$ ln -s ~/training-data-analyst/courses/ak8s/v1.1 ~/ak8s
student_00_123af1c26b82@cloudshell:~ (qwiklabs-gcp-01-4560b77e88ab)$ cd ~/ak8s/Storage/
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl get persistentvolumeclaim
No resources found in default namespace.
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl apply -f pvc-demo.yaml
persistentvolumeclaim/hello-web-disk created
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl get persistentvolumeclaim
NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS AGE
hello-web-disk Pending standard-rwo 6s
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl apply -f pod-volume-demo.yaml
pod/pvc-demo-pod created
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl get pods
NAME READY STATUS RESTARTS AGE
pvc-demo-pod 0/1 ContainerCreating 0 17s
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl exec -it pvc-demo-pod -- sh
echo Test webpage in a persistent volume!>/var/www/html/index.html
chmod +x /var/www/html/index.html
#
#
#
^X
sh: 5: : not found
#
exit
command terminated with exit code 127
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl delete pod pvc-demo-pod
pod "pvc-demo-pod" deleted
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl get pods
No resources found in default namespace.
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl apply -f pod-volume-demo.yaml
pod/pvc-demo-pod created
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl exec -it pvc-demo-pod -- sh
exit
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$


Configuring Persistent Storage for Google Kubernetes Engine
Blue-Green Deployments
Canary Deployments
Managing Deployments
Lab Intro
Creating Google Kubernetes Engine Deployments
Pod Networking
Volumes
Volume Types
The PersistentVolume abstraction
Lab Intro
Configuring Persistent Storage for Google Kubernetes Engine
Summary
Course Resources
End Lab
00:49:43
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.
Open Google Cloud console
Username
student-00-123af1c26b82@qw
Password
qjbwz7u71qLv
GCP Project ID
qwiklabs-gcp-01-4560b77e88
The contents of the persistent volume were not removed, even though the Pod was deleted from the cluster and recreated.
8. Enter the following command to leave the interactive shell on the nginx container:
exit
Click Check my progress to verify the objective.
Mount and verify Google Cloud persistent disk PVCs in Pods
Check my progress
Assessment Completed!
Overview
20/30
Objectives
Lab setup
Task 1. Create PVs and PVCs
Task 2. Mount and verify Google Cloud persistent disk PVCs in Pods
Task 3. Create StatefulSets with PVCs
Task 4. Verify the persistence of Persistent Volume connections to Pods managed by StatefulSets
End your lab
Task 3. Create StatefulSets with PVCs
In this task, you use your PVC in a StatefulSet. A StatefulSet is like a Deployment, except that the Pods are given unique identifiers.


Google Cloud
qwiklabs-gcp-01-4560b77e88ab
Search (/) for resources, docs, products, and more
Search
Welcome, student 3c721ae5
Terminal
Open Editor
resolving deltas: 100% (40159/40159), done.
Updating files: 100% (12842/12842), done.
student_00_123af1c26b82@cloudshell:~ (qwiklabs-gcp-01-4560b77e88ab)$ ln -s ~/training-data-analyst/courses/ak8s/v1.1 ~/ak8s
student_00_123af1c26b82@cloudshell:~ (qwiklabs-gcp-01-4560b77e88ab)$ cd ~/ak8s/Storage/
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl get persistentvolumeclaim
No resources found in default namespace.
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl apply -f pvc-demo.yaml
persistentvolumeclaim/hello-web-disk created
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl get persistentvolumeclaim
NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS AGE
hello-web-disk Pending standard-rwo 6s
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl apply -f pod-volume-demo.yaml
pod/pvc-demo-pod created
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl get pods
NAME READY STATUS RESTARTS AGE
pvc-demo-pod 0/1 ContainerCreating 0 17s
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl exec -it pvc-demo-pod -- sh
echo Test webpage in a persistent volume!>/var/www/html/index.html
chmod +x /var/www/html/index.html#
#
#
#
^X
sh: 6: : not found
#
exit
command terminated with exit code 127
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl delete pod pvc-demo-pod
pod "pvc-demo-pod" deleted
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl get pods
No resources found in default namespace.
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl apply -f pod-volume-demo.yaml
pod/pvc-demo-pod created
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl exec -it pvc-demo-pod -- sh
exit
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl delete pod pvc-demo-pod
pod "pvc-demo-pod" deleted
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$ kubectl apply -f statefulset-demo.yaml
service/statefulset-demo-service created
statefulset.apps/statefulset-demo created
student_00_123af1c26b82@cloudshell:~/ak8s/Storage (qwiklabs-gcp-01-4560b77e88ab)$

Configuring Persistent Storage for Google Kubernetes Engine
Blue-Green Deployments
Canary Deployments
Managing Deployments
Lab Intro
Creating Google Kubernetes Engine Deployments
Pod Networking
Volumes
Volume Types
The PersistentVolume abstraction
Lab Intro
Configuring Persistent Storage for Google Kubernetes Engine
Summary
Course Resources
End Lab
00:47:43
Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more
Open Google Cloud console
Username
student-00-123af1c26b82@qw
Password
GCP Project ID
qwiklabs-gcp-01-4560b77e88ab
NAME STATUS VOLUME CAPACITY ACCESS
hello-web-disk Bound pvc-86117ea6-...34 30Gi RWO
hello-web-disk-st...-demo-0 Bound pvc-92d21d0f-...34 30Gi RWO
hello-web-disk-st...-demo-1 Bound pvc-9bc84d92-...34 30Gi RWO
hello-web-disk-st...-demo-2 Bound pvc-a526ecdf-...34 30Gi RWO
The original hello-web-disk is still there and you can now see the individual PVCs that were created for each Pod in the new statefulset Pod.
4. Use "kubectl describe" to view the details of the first PVC in the StatefulSet:
kubectl describe pvc hello-web-disk-statefulset-demo-0
Click Check my progress to verify the objective.
Create StatefulSets with PVCs
Check my progress
Assessment Completed!
Overview
30/30
Objectives
Lab setup
Task 1. Create PVs and PVCs
Task 2. Mount and verify Google Cloud persistent disk PVCs in Pods
Task 3. Create StatefulSets with PVCs
Task 4. Verify the persistence of Persistent Volume connections to Pods managed by StatefulSets
End your lab
Task 4. Verify the persistence of Persistent Volume connections to Pods managed by