Introduction to GCP Infrastructure

Essential Cloud Infrastructure: Foundation

GCP CONSOLE, CLOUD SHELL

QWIKLABS CONSOLE AND CLOUD SHELL, INFRASTRUCTURE PREVIEW

Google Cloud

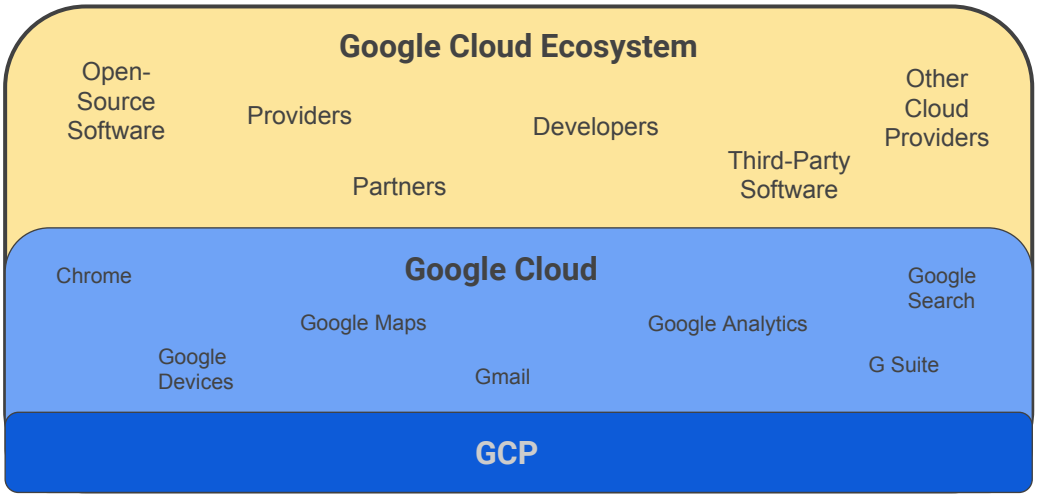
Last modified 2018-2-21

Agenda

- **Google Cloud Platform (GCP) Infrastructure**
- Using GCP
- Labs and Demos
- Quiz

Google Cloud

Google Cloud Platform



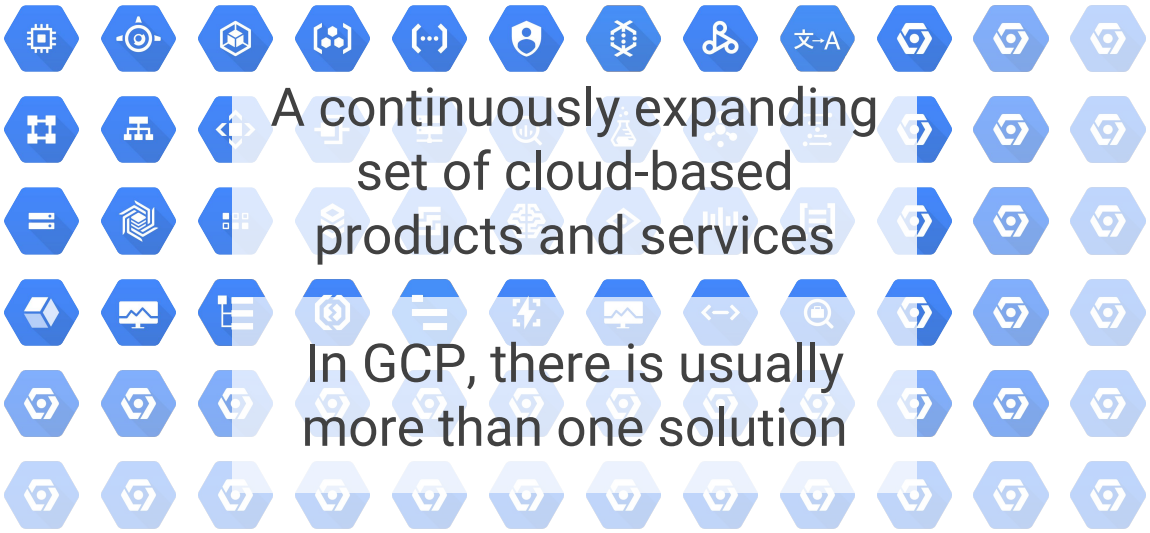
Google Cloud

Google Cloud Platform, GCP, is part of Google Cloud, which includes many products and services.

The Google Cloud itself is part of a much larger ecosystem that consists of partners and providers. Google is a strong supporter of open-source software and participates with a global community of contributors.

GCP is a computing solution platform that includes Infrastructure, Platform, and Software.

GCP is...



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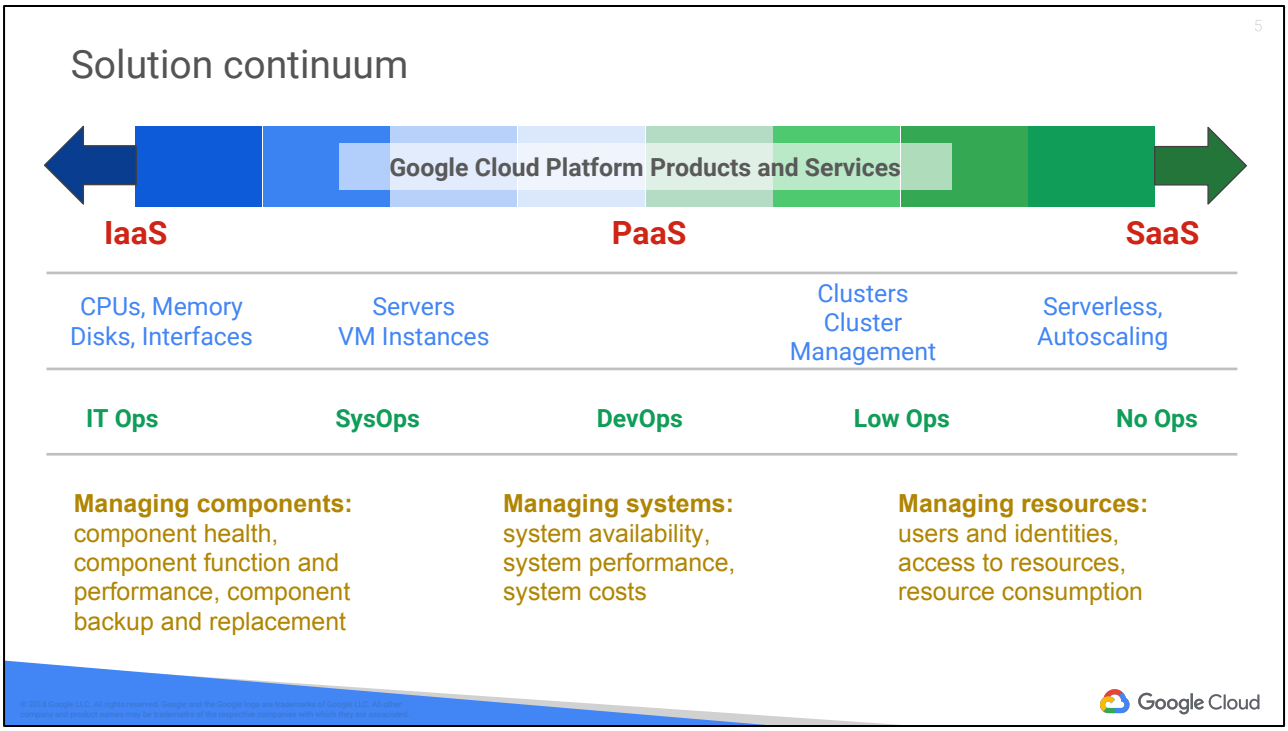
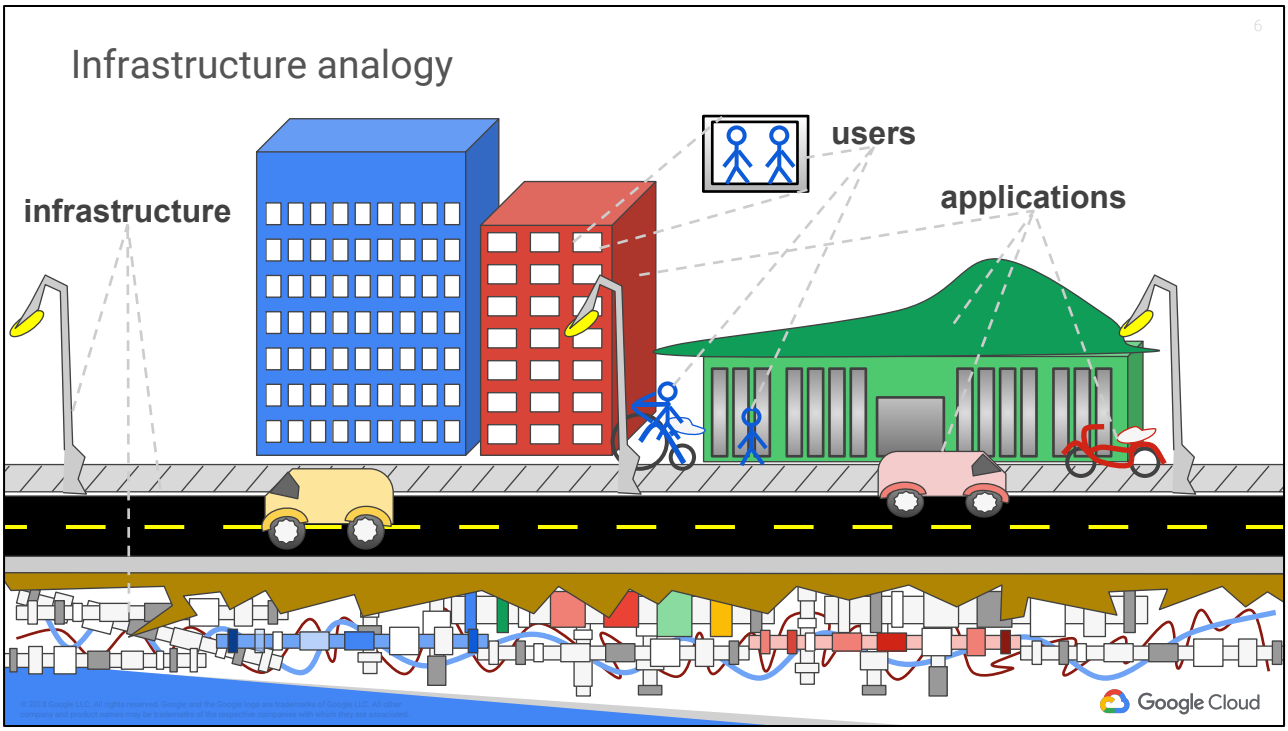
Many GCP products and services have a unique blue hexagonal logo. Products without a unique logo are represented by a generic hexagon logo. There are currently between 50 and 100 products in GCP.



Google Cloud Platform spans from Infrastructure as a Service (IaaS) to Software as a Service (SaaS). You really can build applications on GCP for the web or mobile that are global, autoscaling, and assistive, and that provide services where the infrastructure is completely invisible to the user. It is not just that Google has opened the infrastructure that powers applications like search, gmail, maps, and G Suite. Google has opened all of the services that make these products possible and packaged them up for your use.

Alternative solutions are possible. For example, you could start up your own VM in GCE, install open source MySQL on it, and run it just like a MySQL database on your own computer in a data center. Or, you could use the Cloud SQL service, which provides a MySQL instance and handles rote work like backups and security patching for you, using the same services Google does to automate backups and patches. Or, you could move to a noSQL database that is autoscaling and serverless so that growth no longer requires adding server instances or possible changing the design to handle the new capacity.

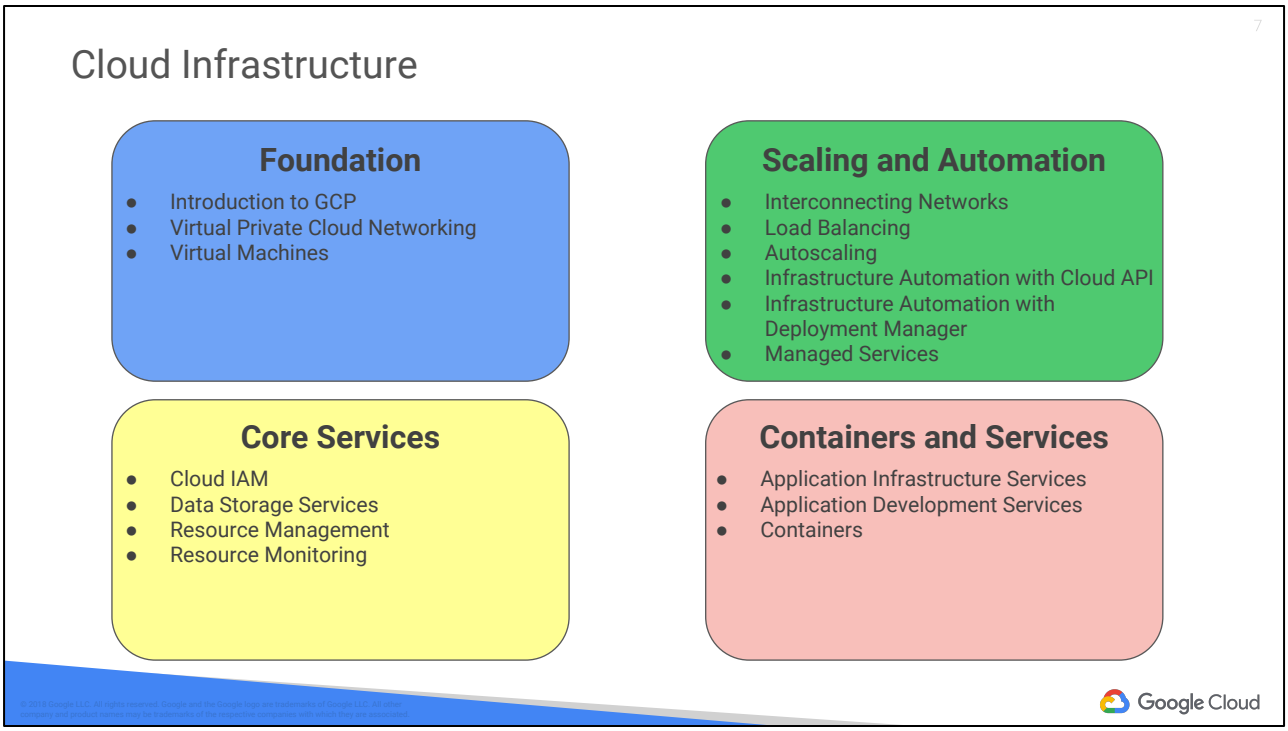
Notice that each alternative solution on the continuum causes concern about different objects, which changes the role of the operations staff and changes the items that are being managed.



An IT infrastructure is like a "city infrastructure." The infrastructure is the basic underlying framework of fundamental facilities and systems such as transport, communications, power, water, fuel and other essential services. The people in the city are like "users," and the cars and bikes and buildings in the city are like "applications." Everything that goes into creating and supporting those applications/buildings for the users/citizens is the infrastructure.

The purpose of this class is to explore, as efficiently and clearly as possible, the infrastructure services provided by GCP. You should become familiar enough with the infrastructure services that you will know what the services do and basically how to use them.

By the end of this class you will be *prepared to learn* anything you need to know to use the Google Cloud Platform.



This class consists of four parts:

1. Foundation: Basic technologies of the essential infrastructure.
2. Core Services: Building blocks of the essential infrastructure.
3. Scaling and Automation: Augmented infrastructure providing systems built on top of the basics that multiply their power
4. Containers and Services: Application infrastructure providing services to make it easier to develop applications for users

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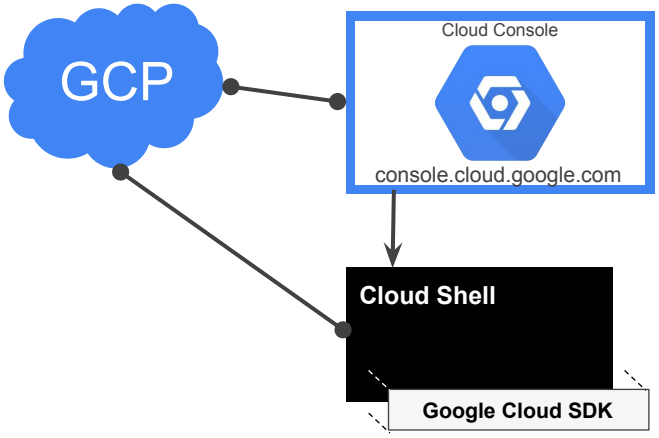
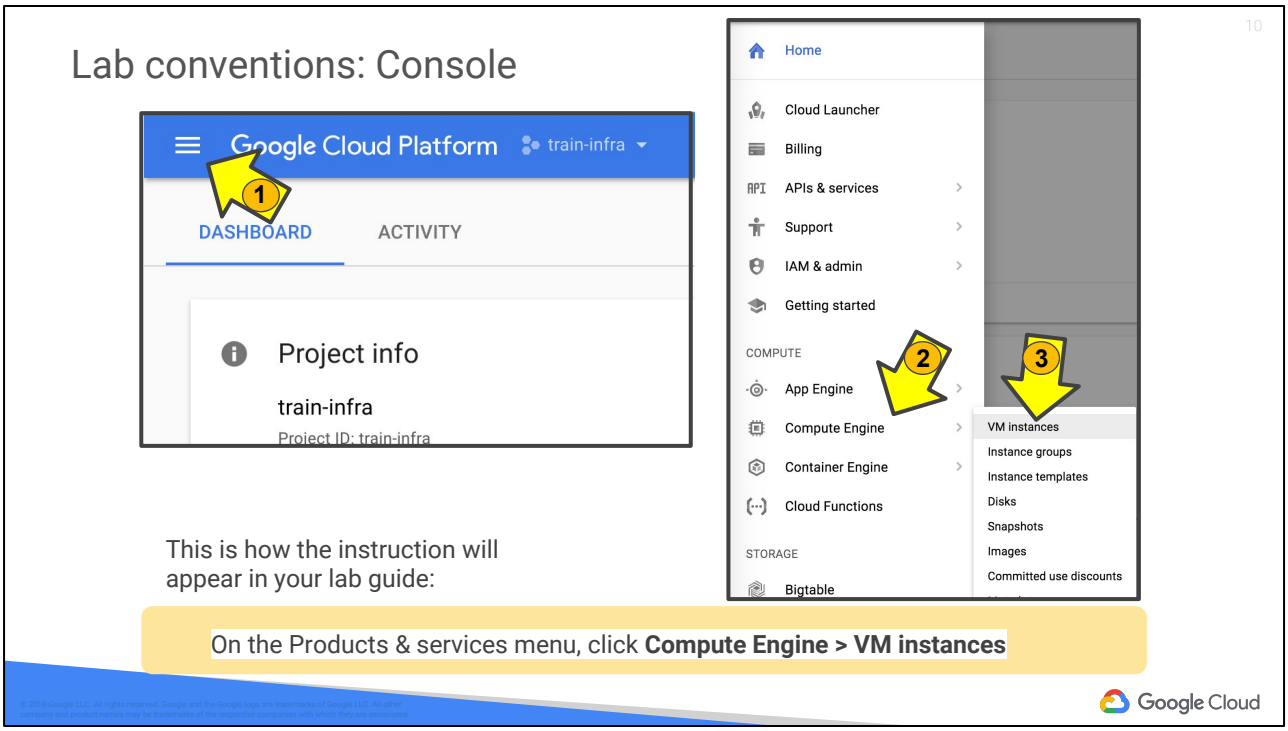
Google Cloud Shell



- The Web UI comes with a CLI
- The CLI has Google Cloud SDK pre-installed

- Cloud Shell is…
  - A tiny *ephemeral* VM
  - CLI pre-installed
    - **gcloud**
    - **gsutil**
  - SDK APIs pre-installed
  - 5 GB user data persists
  - OS + SW is reconstituted
    - After 30 minutes
    - If there is a connection interruption



You can get to almost any dialog in the GCP Console with three clicks.

(1) The three horizontal lines is the "Products and Services" icon. It opens a menu from the side.

(2) All of the major products and services are listed in the menu. Selecting one usually opens a submenu.

(3) The submenu contains major sections.

In this example you would be instructed navigate to the Products & services menu and click Compute Engine, and then VM instances.

Lab conventions: Cloud Shell

Items in black boxes with white type are command line instructions you enter in Cloud Shell or an SSH terminal:

```
gcloud compute list
```

Usually you can copy and paste these commands if desired.

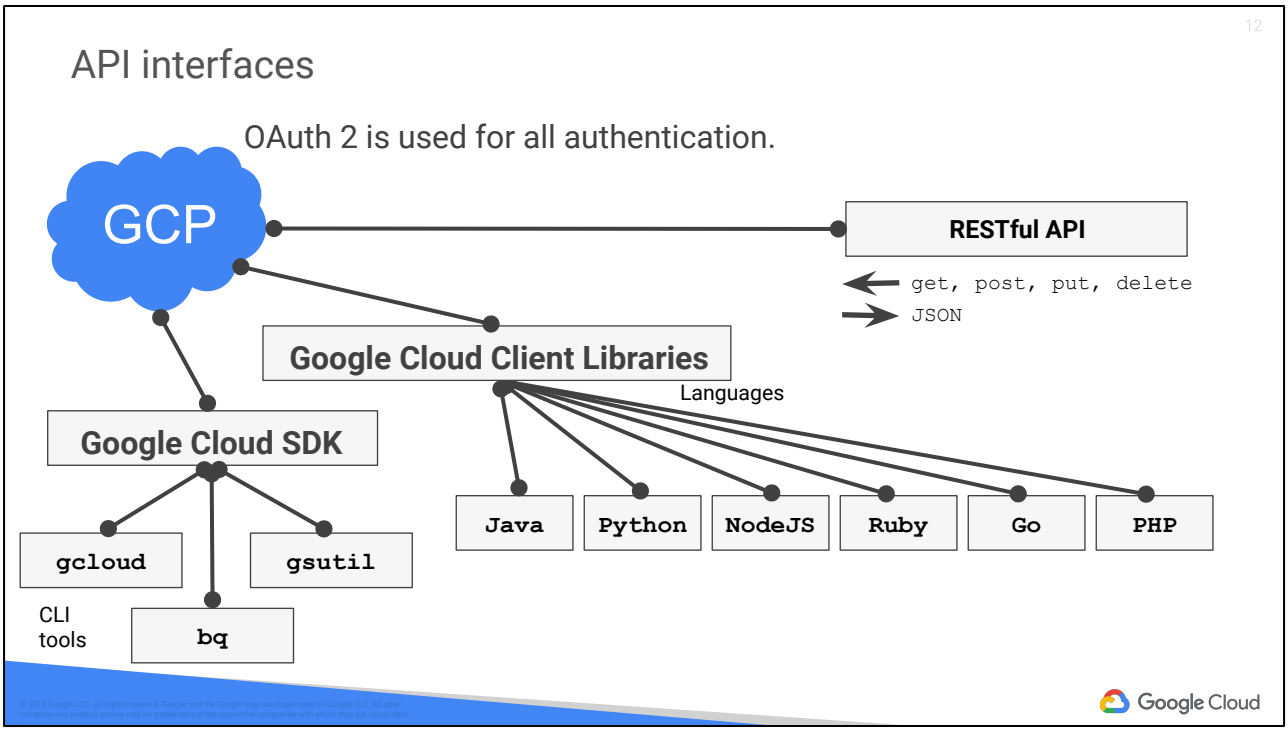
That's often useful for more complex commands.

An example of what the command output should look like:

```
username@train-infra: gcloud compute list

Your active configuration is:
[cloudshell-30772]
[component_manager]
disable_update_check = True
[compute]
gce_metadata_read_timeout_sec = 5
[core]
account = tomstern@google.com
check_gce_metadata = False
disable_usage_reporting = False
project = train-infra
[metrics]
environment = devshell

username@train-infra:~$
```



For historical reasons, gsutil, gcloud, and bq are currently separate. gsutil is a python application that uses the SDK to access Google Cloud Storage (GCS) API.

gcloud is a command line tool that is the home to all the rest of the GCP API.

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Lab: Console and Cloud Shell

Objectives

In this lab, you learn how to perform the following tasks:

- Get access to GCP
- Create a Cloud Storage bucket using the GCP Console
- Create a Cloud Storage bucket using Cloud Shell
- Become familiar with Cloud Shell features

Completion: 20 minutes

Access: 40 minutes

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Lab: Console and Cloud Shell

Demo: Projects

In this demo you will see how to create, delete, and switch contexts between projects.

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Demo: Projects

Lab: Infrastructure Preview

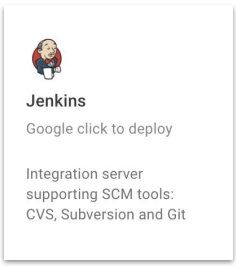
Objectives

In this lab, you learn how to perform the following tasks:

- Use Cloud Launcher to build a Jenkins Continuous Integration environment
- Verify that you can manage the service from the Jenkins UI
- Administer the service from the Virtual Machine host through SSH

Completion: 15 minutes

Access: 30 minutes



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Lab: Infrastructure Preview

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Quiz

Is there usually more than one solution for a task or application in Google Cloud Platform?

1. Yes
2. No

Quiz

Which of the following tools allow you to interact with Google Cloud Platform (select 2)?

1. Cloud Console which is a web-based, graphical user interface that you access through console.cloud.google.com.
2. Google Cloud Wi-Fi hotspot which is available in some cities.
3. Google Cloud SDK which is a command-line interface that can be installed locally or accessed through Cloud Shell.
4. Google Cloud Operator which is a phone service that uses speech recognition to transmit your commands.

Quiz

What is the difference between Cloud Console and Cloud Shell?

1. Cloud Console is a command-line tool, while Cloud Shell is a graphical user interface
2. Cloud Shell is a command-line tool, while Cloud Console is a graphical user interface
3. Cloud Shell is a locally installed tool, while Cloud Console is a temporary virtual machine.
4. There is no difference as these tools are 100% identical.

More resources

Google Cloud Platform
https://cloud.google.com/

Console
https://console.cloud.google.com/

Documentation
https://cloud.google.com/docs/

Training
https://cloud.google.com/training/

Certification
https://cloud.google.com/certification/

Google Cloud