Google Cloud

Getting Started with Terraform for Google Cloud

This course provides an introduction to using Terraform for Google Cloud. It enables learners to describe how Terraform can be used to implement infrastructure as a code and to apply some of its key features and functionalities to create and manage Google Cloud infrastructure. Learners will get hands-on practice building Google Cloud resources using Terraform.

DURATION
1 day

LEVEL
Introductory

FORMAT
On-demand
Instructor led

What you'll learn

- Define the business need for infrastructure as code and the benefits of using it in your environment.
- Explain the features and functionalities of Terraform.
- Use Terraform resources, variables, and output values to create Google Cloud infrastructure resources.
- Use Terraform modules to build reusable configurations.
- Explain Terraform state and its importance.

Overview	5 modules
Who this course is for	Cloud engineers, DevOps engineers, and individuals who want to start using Terraform to automate infrastructure provisioning with a focus on Google Cloud Platform
Products	• Compute Engine • VPC Networking • Cloud Storage • Terraform • Cloud Foundation Toolkit
Prerequisite	To get the most out of this course, participants should: • Complete Google Cloud Fundamentals: Core Infrastructure • Have basic programming skills and familiarity with using CLI • Have general familiarity with Google Cloud
Not covered	Cloud Build

Module 01 Introduction to Terraform for Google Cloud

Topics

Introduction to IaC

- What is infrastructure as code (IaC)?
- Problems IaC can solve
- Benefits of IaC
- Provisioning versus configuration
- Imperative versus declarative approach

Introduction to Terraform

- Terraform overview
- Terraform features
- IaC configuration workflow
- Terraform use cases

Using Terraform

- How to use Terraform
- Running Terraform in production

Objectives

- Installing Terraform
- Authentication for Google Cloud

Objectives

Upon completion of this module, the student will be able to:

- Define infrastructure as code.
- Explain the features and benefits of using Terraform.
- Explain the use case of Terraform for Google Cloud.
- Describe how to use Terraform for Google Cloud.

Activities

1 quiz

Module 02 Terms and concepts

Topics

The Author phase

- Terraform Directory structure
- Introduction to HCL syntax
- Resources
- Variables
- State
- Modules

Terraform commands

- terraform init
- terraform plan
- terraform apply
- terraform fmt
- terraform destroy

Terraform Validator tool

- Introduction
- Why use the Terraform Validator tool
- Validation workflow
- Terraform Validator use cases

Objectives

Upon completion of this module, the student will be able to:

- Explain the Terraform workflow.
- Create basic configuration files within Terraform.
- Explain the purpose of a few Terraform commands.
- Describe the Terraform Validator tool.
- Create, update, and destroy Google Cloud resources using Terraform.

Activities

- 1 lab
- 1 quiz

Module 03 Writing Infrastructure Code for Google Cloud

Topics

Introduction to Resources

- Resources overview
- Syntax
- Example
- Refer a resource attribute

Considerations to define a resource block

Meta-arguments for resources

Resource dependencies

- Implicit dependency
- Explicit dependency

Introduction to Variables

- Overview
- Syntax to declare a variable
- Syntax to reference and assign a value to a variable
- Variables best practices

Introduction to output values

- Output values overview
- Best practices

Terraform Registry and CFT

- Introduction to Terraform Registry
- Introduction to CFT

Objectives

Upon completion of this module, the student will be able to:

- Declare the resources within Terraform.
- Explain implicit and explicit resource dependencies.
- Use variables and output values within the root configuration.
- Explain Terraform Registry and Cloud Foundation Toolkit.

Activities

- 1 lab
- 1 quiz

Module 04 Organizing and Reusing Configuration with Terraform Modules

Topics

- Introduction to modules:
  - Why are modules needed
  - What is a module?
  - Example
- Reusing configurations by using modules
  - Module sources
  - Calling a module into the source configuration
- Using variables to parameterize your configuration
- Pass resource attributes using output variables
- Module use cases, benefits, and best practices

Objectives

Upon completion of this module, the student will be able to:

- Define Terraform modules.
- Use modules to reuse configurations.
- Use modules from the public registry.
- Use input variables to parameterize configurations.
- Use output values to access resource attributes outside the module.

Activities

- 1 lab
- 1 quiz

Module 05 Introduction to Terraform State

Topics

- Introduction to Terraform state
  - How information is stored in a Terraform state file
- Ways to save a state file
- Storing a state file in a Cloud Storage bucket
  - Issues when storing the Terraform state locally
  - Benefits of storing a state file in a Cloud Storage bucket
  - Process of storing a Terraform state file remotely in a Cloud Storage bucket
- Terraform state best practices

Objectives

Upon completion of this module, the student will be able to:

- Define Terraform state.
- List the benefits of storing the state file remotely.
- Explain how to store the Terraform state in a Cloud Storage bucket.
- Explain Terraform state best practices.

Activities

- 1 lab
- 1 quiz