KOENIG
step forward

KOENIG SOLUTIONS · COURSE OUTLINE

Terraform Certified Associate with GCP

Learn to build and manage Google Cloud infrastructure with Terraform, from providers and state files to modules and Terraform Cloud.

4 Days	6	28	30
8 HOURS A DAY	MODULES	TOPICS	HANDS-ON LABS

COURSE OVERVIEW

Equip participants with the essential skills to proficiently leverage Terraform for Infrastructure as Code (IaC) on Google Cloud, covering setup, configuration management, modularization, remote state handling, and utilization of Terraform Cloud for scalable and secure infrastructure deployment, ultimately preparing them for success in obtaining the Terraform Certified Associate (003) certification.

WHO THIS COURSE IS FOR

- **Cloud Engineers**
- **DevOps Engineers**
- **Infrastructure Engineers**
- **System Administrators**
- **Site Reliability Engineers**

PREREQUISITES

- Basic knowledge of Google Cloud.

TOOLS AND REQUIREMENTS

- Cloud Platform: Google Cloud
- Terraform Version: Latest
- Lab Requirement: Participant Google Cloud Trial Account Required

LEARNING OBJECTIVES

- Explain Infrastructure as Code concepts and Terraform providers
- Authenticate Terraform with GCP and run init, plan, apply
- Describe the Terraform state file and its desired and current states
- Apply Terraform variables, meta-arguments and conditional expressions
- Use data sources, dynamic blocks and local-exec provisioners
- Build reusable Terraform modules and manage workspaces
- Configure remote state backends and integrate Terraform with Git
- Deploy infrastructure with Terraform Cloud and Sentinel policies

COURSE SYLLABUS

6 Modules, 28 Topics

01

3 Labs

Getting Started & Setting Up Labs

TOPICS

- Introduction to Infrastructure as Code and Terraform
- Comparison between Terraform and Ansible
- Introduction to Azure CLI
- Understanding Terraform Providers
- Authenticate GCP with Terraform
- **Basic Terraform commands:** init, plan, apply

02

5 Labs

Building Cloud Infrastructure with Terraform

TOPICS

- Understanding Terraform State file
- Understanding Working of State file - Desired State & Current State
- Terraform Provider Versioning

03

15 Labs

Read, Generate, Modify Configurations

TOPICS

- Understanding Attributes and Output Values in Terraform
- Understanding Terraform Variables and Data Types - (String, Number, Boolean, List, Map)
- Understanding Meta-Arguments - (for_each, count, depends_on)
- Understanding conditional expression and locals
- Understanding Expressions - for & Splat expression
- Understanding Data Sources & Dynamic Blocks
- Understanding Local-Exec Provisioner
- Terraform Commands - validate, fmt

04

3 Labs

Terraform Modules & Workspaces

TOPICS

- Applying the DRY (Don’t Repeat Yourself) principle
- Understanding Usage of Terraform Modules
- Standard Structure of Terraform Modules
- Understanding and implementing Terraform workspaces

05

3 Labs

Remote State Management

TOPICS

- Integrating Terraform with Git for team collaboration
- Understanding Basic Working of Git
- Challenges and security considerations in Terraform state
- Terraform State Backend Configuration

06

Lab

Terraform Cloud and Enterprise Overview

TOPICS

Introduction to Terraform Cloud · Creating infrastructure with Terraform Cloud · Overview of Sentinel Security in Terraform

HANDS-ON LABS

Practise What You Learn

#	MODULE	ACTIVITY
01	**Getting Started & Setting Up Labs**	■ Installation of Terraform on Windows ■ Setting Up Terraform on Windows and Azure Authentication ■ Defining Provider & Using Basic Terraform commands
02	**Building Cloud Infrastructure with Terraform**	■ Creating Compute Engine in Azure ■ Provisioning Cloud Virtual Networks, Sub Network, Static External IPs, and Network Interfaces ■ Deploying Linux Compute Engines ■ Configuring Compute Disk & Firewall ■ Methods to define Terraform Provider Versions
03	**Read, Generate, Modify Configurations**	■ Handling Terraform attributes and output values ■ Referencing attributes across resources ■ Methods to Define Variables & Variable Arguments ■ Fetching Data from List & Map in Variables ■ Using Meta-Arguments ■ Using Conditional expression and Locals ■ Using for and Splat expression ■ Using Data Sources ■ Using Dynamic Blocks ■ Exploring debugging techniques in Terraform ■ Local-Exec Provisioner ■ Using terraform validate and terraform fmt ■ Replacing Resource in terraform manually - taint and replace ■ Using Terraform Graph utility ■ Saving Terraform Plan to a file and apply from plan file
04	**Terraform Modules & Workspaces**	■ Creating and Using local Modules ■ Utilizing Modules from Terraform Registry ■ Working with Terraform Workspaces
05	**Remote State Management**	■ Handling Git commands (initialize, commit, push, tagging, branching) ■ Remote state management with Terraform, including importing existing resources ■ Putting terraform state file on Google Cloud Storage
06	**Terraform Cloud and Enterprise Overview**	Deploying Infrastructure with Terraform Cloud and Sentinel Security

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

Learn the Way That Suits You

Classroom Training | Live Online Classes (ILO) | Fly-Me-A-Trainer (FMAT) | Flexi (Self-Paced) | 1-on-1 Training

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Talk to a learning advisor about schedules, group training and customised delivery.

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