Terraform Essentials

Course TF101 3 Days Instructor-led, Hands on

Introduction

As enterprises seek to deploy and maintain increasingly complex cloud infrastructure, there is a necessity to use "Infrastructure as Code" (IaC) tools, like Terraform. An open-source, state management tool developed by HashiCorp, Terraform allows developers to use a common coding interface to work through their various clouds safely and efficiently. Attendees will leave being able to write and understand Terraform code (HCL), have a clear understanding of Terraform's various components and supporting tools, as well as when to reach for Terraform over another IaC tool, such as Ansible.

Who Should Attend?

- DevOps Engineers
- Software Developers
- Technical Managers and Leads
- System and Cloud Administrators
- Network Engineers and Developers

Course Objectives

- Writing Terraform HCL code
- Deploying into common clouds such as AWS, Azure, Google Cloud, Docker, Oracle, Kubernetes, and VMWare
- Where Terraform fits in the Enterprise CI/CD model
- Differences between Terraform and Ansible
- Best practices
- Prepare for HashiCorp's Terraform Associate Certification
- AI LLM prompt engineering for Terraform snippets and jumpstarting solutions

Prerequisites

Although not required, students with some experience programming, or pre-existing knowledge of cloud architecture, will most appreciate the technical nature of this hands-on course.

Course Outline

Module 1: Introduction to Terraform

- Terraform Course Map
- Introduction to Terraform

Contact ISInc for more information at 916.920.1700 or by visiting our website at http://www.isinc.com

- Terraform Install

Module 2: Terraform Modules

- Terraform HCL Syntax
  - Up and Running with Terraform
- Terraform Variables
  - Terraform Variables
- Terraform Locals
  - Output Values
- Avoid the :latest Tag
  - Terraform and Docker

Module 3: Beyond Basics

- Terraform CLI Workspaces
- Terraform Expressions and Errors
- Resources - replace vs taint
- Dynamic Operations with Functions
- Creating a Terraform Module
- Moving State - terraform state mv
- Dynamic Provisioning with tfvars Files
- Data Sources and HTTP Provider
- Import pre-existing infrastructure
  - CHALLENGE - AWS import

Module 4: Loops

- for_each
  - Looping Constructs - for_each

Module 5: Provisioning

- local-exec Provisioner
- Creating Delays
- Terraform - templatefile Function

Module 6: Terraform Cloud

- Terraform Cloud and Terraform Enterprise
- Triggering Cloud Builds via Git Commits

Module 7: Dynamic Blocks

- Dynamic Blocks

Module 8: AWS

- Terraform and AWS

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- Output Values and AWS
- AWS and looping with count vs for_each
- Correcting Resource Drift and AWS
    - Terraform and AWS

Module 9: Azure

- Terraform and Azure

Module 10: Google Cloud Platform

- Terraform and Google Cloud Platform

Module 11: Oracle

- Terraform and Oracle Cloud Infrastructure

Module 12: Terraform and Enterprise

- Deploy a Go RESTful API microservice with Terraform
- Terraform vs. Ansible
    - Terraform and Ansible

Module 13: VMWare

- Terraform and VMWare

Module 14: Helpful DevOps Tools (OPTIONAL)

- Open Policy Agents and Terraform
- GitHub Actions - GitLeaks
- GitHub Actions - Terraform
- Terragrunt

Module 15: Terraform Associate Exam

- Mock Exam