



Terraform

Introduction to Terraform

Learning Objective

- ❖ Understanding IAC Tools and Terraform

Topics Covered

- What is Automation and Infrastructure as a Code?
- IAC Tools
- Advantages of IAC
- Difference between Deployment, Configuration Management and Provisioning
- Idempotent and Non-idempotent
- Infrastructure Deployment Phases

Hand-on Lab:

- Installing Terraform in Windows and Linux

Getting Started with HashiCorp Configuration Language

Learning Objective

- ❖ Writing Simple Automation Scripts

Topics Covered

- ❑ Understanding HashiCorp Configuration Language
- ❑ Understanding Providers and Resources
- ❑ Provider Registry
- ❑ Terraform Lifecycle
 - ❑ Init
 - ❑ Code
 - ❑ Plan
 - ❑ Validate
 - ❑ Apply
 - ❑ Destroy
- ❑ Understanding Drift Detection by Terraform State

Hand-on Lab:

- ❑ Initializing a Directory and Writing a HCL
- ❑ Validate and Plan the HCL
- ❑ Terraform Apply to Launch an EC2 Windows or Linux Instance in AWS Cloud
- ❑ Terraform Apply to Check Idempotent and Non-Idempotent behaviour
- ❑ Changing the HCL Resources like Security Group or AMI or to Change the Infrastructure
- ❑ Destroying the Infrastructure using Terraform Destroy

Terraform Variables

Learning Objective

- ❖ Using Variables in HCL

Topics Covered

- ❑ What are Variables? Declaring Variables in HCL
- ❑ Using Variables in External File
- ❑ Variable Type Constraints

- ❑ Suppressing Sensitive Values in CLI Output
- ❑ Variable in CLI
- ❑ Local Values
- ❑ Output Value
- ❑ Modules
- ❑ Divide Files

Hand-on Lab:

- ❑ Use AWS Resources as Variable in HCL or in External File
- ❑ Using Output Values to Get Information About Resources

Terraform Cloud

Learning Objective

- ❖ **Terraform Organization and Workspace**

Topics Covered

- ❑ What is Terraform Cloud
- ❑ Creating Terraform Cloud Account
- ❑ Organization
- ❑ Workspace

Hand-on Lab:

- ❑ Creating a Terraform Cloud Account, Organization and Workspace
- ❑ Using Terraform Login to Authenticate with Terraform Cloud and Connect Local Files to Remote Workspace
- ❑ Using Terraform Plan and Apply to Trigger via CLI and Check the Changes in Terraform Cloud

Terraform Provisioners

Learning Objective

- ❖ Provisioners
- ❖ Local-exec
- ❖ Remote-exec
- ❖ File
- ❖ Connection
- ❖ Null Resources

Terraform Providers

Learning Objective

- ❖ Providers
- ❖ Terraform Registry
- ❖ Terraform Registry Providers and Module
- ❖ Private Registry
- ❖ Terraform Provider Command
- ❖ Terraform Provider Configuration
- ❖ Terraform Modules
- ❖ Fine Line

Resource Meta-Arguments

Learning Objective

- ❖ Resource Meta Arguments
- ❖ Depends_on
- ❖ Count
- ❖ For_each
- ❖ Resource Behaviour and Lifecycle
- ❖ Resource Providers and Alias

Expressions

Learning Objective

- ❖ Introduction to Terraform Expressions
- ❖ Types and Values
- ❖ Strings and Strings Templates
- ❖ Expressions - Operators
- ❖ Conditional Expressions
- ❖ Expressions - For Expressions
- ❖ Expression - Splat Expressions
- ❖ Dynamic Blocks
- ❖ Version Constraints

Terraform State

Learning Objective

- ❖ Terraform State MV
- ❖ Terraform State Backups
- ❖ Terraform State CLI

Terraform Modules

Learning Objective

- ❖ Finding Modules
- ❖ Using Modules
- ❖ Publishing Modules
- ❖ Verified Modules
- ❖ Standard Module Structure
- ❖ Creating Modules