

# Zielbox Terraform Contents



You'll dive into the world of infrastructure as code and learn how to provision and manage your infrastructure using Terraform.

Throughout the course, you'll gain a deep understanding of Terraform's core concepts and features. You'll start with the basics, learning how to write Terraform configuration files, define resources, and apply changes to your infrastructure.

As the course progresses, you'll explore advanced topics such as managing variables, modules, and remote state storage. You'll also discover how to integrate Terraform with other tools and services like AWS, Azure, and Kubernetes.

By the end of the course, you'll have the skills and knowledge to confidently leverage Terraform to create, modify, and scale your infrastructure with ease. Join us on this transformative journey and become an infrastructure automation expert with Terraform!

**Audience** – Beginner/Intermediate

## Course Modules

### Module 1 – Introduction

Introduction to Course overview

- Document - Code Repository
- Our community
- Central PPT Notes

### Module 2 - Getting Started & Setting Up Labs

- Installation Process of Terraform
- Installing Terraform - MacOS and Linux Users
- Document - Terraform Downloads Page
- Choosing Right IDE for Terraform
- Install & Setup Source Code Editor
- Visual Studio Code Extensions

Sample Code - Extension Test  
Setting up AWS account

### Module 3 - Deploying Infrastructure with Terraform

Authentication and Authorization  
Create User for AWS Account  
Launch First Virtual Machine through Terraform  
Terraform Code - First EC2 Instance  
Important Security Pointer  
Resource and Providers  
Create GitHub Repository through Terraform  
Terraform Destroy  
Understanding Terraform State files  
Understanding Desired & Current States (NEW)  
Challenges with the current state on computed values (NEW)  
Terraform Provider Versioning  
Terraform Refresh  
AWS Provider - Authentication Configuration

### Module 4 - Read, Generate, Modify Configuration

Overview of Course Lecture Format  
Cross Resource Attribute References  
Cross Reference Resource Attributes Practical  
Output Values  
Terraform Variables  
Approaches for Variable Assignment  
Data Types for Variables  
Fetching Data from Maps and List in Variable  
Count and Count Index  
Conditional Expressions  
Local Values  
Terraform Functions  
Data Sources  
Note - Filters in Data Sources  
Debugging in Terraform  
Terraform Format  
Validating Terraform Configuration Files  
Load Order & Semantics  
Dynamic Blocks  
Tainting Resources  
Splat Expressions  
Terraform Graph

Saving Terraform Plan to File  
Terraform Output  
Terraform Settings  
Dealing with Large Infrastructure  
Zipmap Function  
Comments in Terraform  
Challenges with Count Meta-Argument  
Data Type - SET  
for\_each in Terraform

## **Module 5 - Terraform Provisioners**

Understanding Provisioners in Terraform  
Types of Provisioners  
Implementing remote-exec provisioners  
Implementing local-exec provisioners  
Creation-Time & Destroy-Time Provisioners  
Failure Behavior for Provisioners  
Null Resource

## **Module 6 - Terraform Modules & Workspaces**

Understanding DRY principle  
Implementing EC2 module with Terraform  
Variables and Terraform Modules  
Using Locals with Modules  
Referencing Module Outputs  
Terraform Registry  
Requirement for Publishing Modules in Terraform Registry  
Terraform Workspace  
Implementing Terraform Workspace  
Remote State Management

## **Module 7 - Integrating with GIT for team management**

Security Challenges in Committing TFState to GIT  
Module Sources in Terraform  
Terraform and .gitignore  
Terraform Backends  
Implementing S3 Backend  
State File locking  
Integrating DynamoDB with S3 for state locking  
Terraform State Management  
Cross- Project Collaboration using Remote State

Implementing Remote States Connections  
Overview of Terraform Import - NEW  
Terraform Import Practical – NEW

## **Module 8 - Security Primer**

Terraform Provider UseCase - Resources in Multiple Regions  
Handling Multiple AWS Profiles with Terraform Providers  
Note - STS  
Terraform & Assume Role with AWS STS  
Sensitive Parameter  
Note - HashiCorp Vault  
Overview of HashiCorp Vault  
Terraform and Vault Integration  
Dependency Lock File

## **Module 9 - Terraform Cloud & Enterprise Capabilities**

Overview of Terraform Cloud  
Creating Terraform Cloud Account  
Creating Infrastructure with Terraform Cloud  
Overview of Sentinel  
Overview of Remote Backends  
Implementing Remote Backend Operations  
Air Gapped Environments