Enterprise Infrastructure Engineering with Terraform (AWS) Training

Duration: **4 Day**

BILGINÇ IT Academy
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Overview

Enterprise Infrastructure Engineering with Terraform (AWS) Training is a **four-day, hands-on course** designed for experienced Terraform users who want to develop their ability to design, build, govern and automate enterprise infrastructure on **Amazon Web Services (AWS)**.

The programme explores how engineering teams apply**Infrastructure as Code (IaC)** principles to create and manage AWS resources in complex organisational environments.

Participants gain practical experience with **reusable Terraform modules**, **infrastructure governance**, **multi-environment deployments**, **remote state management** and **secure automation**.

The training also covers **GitHub Actions**, **OpenID Connect (OIDC)**, **migration of existing infrastructure into Terraform** and engineering practices for building**production-ready cloud infrastructure**.

Rather than focusing solely on writing Terraform configurations, the course examines how these configurations can be developed and managed to support **scalability, maintainability, security and operational consistency** at enterprise scale.

Through practical activities, learners explore the complete**infrastructure engineering lifecycle**, from designing Terraform architectures and automating deployments to managing existing AWS resources and modernising production environments.

Prerequisites

The stated prerequisites for this course are:

- A working understanding of**Microsoft 365 services**, including **Microsoft Teams**, **SharePoint** and **Exchange Online**
- Familiarity with **IT administration** and basic**troubleshooting concepts**
- Access to a **Microsoft 365 tenant** for practical laboratory exercises (**recommended**)

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Who Should Attend

This course is intended for technical professionals involved in the design, development, automation and management of cloud infrastructure.

It is particularly relevant to:

- **Cloud Engineers**
- **Infrastructure Engineers**
- **Platform Engineers**
- **DevOps Engineers**
- **Site Reliability Engineers (SREs)**
- **Cloud Architects**

What You Will Learn

By completing the **Enterprise Infrastructure Engineering with Terraform (AWS) Training**, participants will develop the skills needed to design, automate and manage AWS infrastructure using enterprise Terraform engineering practices.

By the end of the course, learners will be able to:

- Understand and apply **enterprise Terraform architecture** principles.
- Design and manage **reusable Terraform modules**.
- Incorporate **validation and governance** into infrastructure engineering processes.
- Build **secure CI/CD pipelines using GitHub Actions**.
- Implement secure authentication through **OpenID Connect (OIDC)**.
- **Migrate existing AWS infrastructure into Terraform management**.
- Develop **production-ready Infrastructure as Code solutions**.

The course covers the full **infrastructure engineering lifecycle**, from designing **enterprise Terraform architectures** and creating **reusable modules**, through implementing **automation and governance**, to managing and modernising **production AWS environments**.

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Outline

Module 1: Enterprise Terraform Engineering

This module introduces the engineering principles behind modern **Infrastructure as Code (IaC)** practices.

Participants explore how enterprise teams structure **Terraform projects**, organise environments and manage infrastructure state to support scalable and maintainable cloud solutions.

Topics Covered:

- **Enterprise Terraform architecture** and engineering principles
- Structuring **Terraform projects**
- Organising **deployment environments**
- **Terraform State management**
- Engineering practices for **scalable and maintainable cloud infrastructure**

Module 2: Engineering Robust Terraform Configurations

This module focuses on developing **reliable and resilient Terraform configurations**.

Participants learn techniques for reducing configuration errors and creating infrastructure code that is easier to maintain, extend and support.

Topics Covered:

- **Terraform configuration validation**
- **Input sanitisation**
- **Terraform expressions**
- **Local values (Locals)**
- **Reusable configuration techniques**
- Reducing **deployment errors**
- Developing **maintainable and extensible infrastructure configurations**

Module 3: Building Reusable Infrastructure with Modules

This module examines how **Terraform modules** support consistent and reusable infrastructure development across enterprise environments.

Participants learn how to design module interfaces, manage inputs and outputs, and apply versioning approaches to shared infrastructure components.

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Topics Covered:

- Designing **reusable Terraform modules**
- Creating **module interfaces**
- Managing **module inputs and outputs**
- Implementing **module versioning strategies**
- Building reusable components for **enterprise-scale infrastructure deployments**

Module 4: Managing Enterprise Infrastructure

This module explores how organisations manage AWS infrastructure across**multiple environments** while maintaining consistency and control.

Participants examine the use of **parameterisation**, **remote state** and structured project layouts to support different deployment requirements.

Topics Covered:

- **Multi-environment infrastructure management**
- **Parameterisation**
- **Remote State management**
- **Structured Terraform project layouts**
- Maintaining **consistency across environments**
- Supporting **development, testing and production deployments**

Module 5: Publishing and Consuming Remote Modules

This module introduces the practices used by engineering teams to publish, version and consume **Terraform modules through Git repositories**.

Participants explore how shared modules can be maintained and how new functionality can be introduced into existing infrastructure safely.

Topics Covered:

- Publishing **Terraform modules using Git repositories**
- Consuming **remote Terraform modules**
- **Module version management**
- **Dependency management**
- **Release strategies**

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- Safely introducing **new functionality into existing infrastructure**

Module 6: Secure Infrastructure Automation with GitHub Actions

This module focuses on building secure infrastructure deployment pipelines using**GitHub Actions** and **OpenID Connect (OIDC)**.

Participants learn how to improve automation security by replacing persistent AWS credentials with **short-lived identity tokens**.

Topics Covered:

- Creating **CI/CD pipelines with GitHub Actions**
- **OpenID Connect (OIDC) authentication**
- Replacing **long-lived AWS credentials** with short-lived identity tokens
- **Automating Terraform infrastructure deployments**
- Implementing **controlled environment promotion workflows**

Module 7: Migrating Existing Infrastructure into Terraform

This module explores how to bring existing AWS resources under**Terraform management without rebuilding the infrastructure**.

Participants learn how to import resources, maintain Terraform State and modernise existing configurations safely.

Topics Covered:

- Bringing **existing AWS resources under Terraform management**
- **Importing resources into Terraform**
- **Terraform State management**
- Refactoring configurations using **moved blocks**
- Managing infrastructure **without recreating existing resources**
- **Safely and incrementally modernising legacy environments**

Module 8: Engineering for Production

The final module brings together the techniques covered throughout the course to support the development of **production-ready Infrastructure as Code solutions**.

Participants apply enterprise engineering practices with an emphasis on creating AWS infrastructure that is scalable, maintainable and operationally resilient.

Topics Covered:

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- Building **production-ready Infrastructure as Code solutions**
- **Scalability**
- **Maintainability**
- **Infrastructure governance**
- **Automation**
- **Operational resilience**