



To discuss this course and customizations:
Call: 434-509-5680 or Email: sales@cloudcontraptions.com

Manage and Automate Azure Infrastructure with Terraform

Class Duration

21 hours of live training delivered over 3-5 days to accommodate your scheduling needs

Prerequisites

- Familiarity with Azure Cloud resources and services.
- Command-line terminal and basic scripting experience.
- Comfortable using an editor such as VSCode or VIM.

Target Audience

Designed for cloud engineers, DevOps/SREs, platform engineers, and software architects delivering on Azure at scale, as well as engineering managers and L&D leaders standardizing infrastructure delivery. Teams seeking consistent, compliant, and auditable provisioning—spanning greenfield and brownfield estates—will gain practical patterns for modularization, state management, policy enforcement, and pipeline integration that accelerate delivery while controlling cost and risk.

Description

This live, expert-led course equips engineering teams to deliver secure, scalable Azure infrastructure with Terraform. Participants move from IaC fundamentals and the Terraform CLI to hands-on HCL design, Azure provider setup, and creation of production-grade resources. You will master state management, module architecture, and techniques to prevent drift and accelerate reuse. The course then advances into enterprise concerns—security and compliance, RBAC, secrets management, performance optimization, and rigorous troubleshooting—before closing with CI/CD, GitOps, automated testing, and governance patterns. The result is a repeatable, auditable infrastructure delivery pipeline that shortens release cycles, reduces risk, and drives cloud ROI.



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Learning outcomes

- Explain IaC principles, Terraform's role on Azure, and when to prefer Terraform over ARM/Bicep.
- Execute the Terraform CLI workflow (init/plan/apply/destroy) and organize projects with HCL and providers.
- Author robust HCL using variables, locals, validations, functions, tfvars, and environment variables.
- Build core Azure resources (RGs, VNets, compute, storage, databases, identity) with secure provider auth.
- Design, publish, and version reusable modules with clear interfaces, dependencies, and scalability in mind.
- Manage state safely across local and remote backends, handle drift, and import existing Azure resources.
- Apply best practices for security, compliance, RBAC/least-privilege, performance tuning, and troubleshooting.
- Integrate Terraform into CI/CD and GitOps workflows with automated testing, policy, governance, and monitoring.

Training Materials

All students receive comprehensive courseware covering all topics in the course. Students will access the courseware through GitHub. The courseware is a collection of documents and extensive code samples. Students practice the topics covered through challenging hands-on lab exercises.

Software Requirements

Students will need a free, personal GitHub account to access the courseware. Students will need a computer with a modern web browser, Visual Studio Code, Azure CLI, and Terraform installed.

Training Topics

Introduction to Infrastructure as Code (IaC)

- IaC principles and benefits
- IaC vs traditional scripting
- Terraform overview and role in Azure automation

Getting Started with Terraform

- Terraform CLI workflow: plan, apply, destroy



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- Project structure and HCL files
- Providers and resource configuration
- Using Terraform documentation
- Managing Azure resources

Building Infrastructure on Azure

- Terraform architecture and state management
- Local and remote backends
- Azure provider authentication and setup
- Creating resource groups, networks, and compute
- Managing storage, databases, and identity
- Terraform vs ARM templates and Bicep

HCL Programming and Configuration Skills

- HCL syntax, variables, locals, outputs
- Input variable types and validation
- Expressions and operators
- Functions for dynamic infrastructure
- TFVARS and environment variables

Deep Dive into Resources and Modules

- Resource blocks, dependencies, meta arguments
- Data sources and Azure-specific resources
- Designing and using custom modules
- Publishing and maintaining reusable modules
- Module best practices for scalability

State Management and Importing Resources

- State architecture and backends (local, remote, Azure storage)
- Managing drift and out-of-band changes
- Importing existing Azure resources
- Third-party tools for state management

Best Practices and Troubleshooting

- Debugging: logs, errors, audit trails
- Common state and configuration issues
- IaC best practices: version control, modularization, automation
- Security and compliance: secrets, least privilege, RBAC



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- Optimizing performance and resource creation

Advanced Concepts and Enterprise Integration

- Terraform in hybrid and enterprise contexts
- DevOps and GitOps with Terraform
- CI/CD pipeline integration
- Automated testing and validation
- Governance and compliance management

Integrating Terraform with Azure and HashiCorp Ecosystem

- Azure Key Vault, Monitor, and native integrations
- Integration with Vault, Consul, Packer, Nomad
- Provisioners for configuration management
- End-to-end automation workflows