

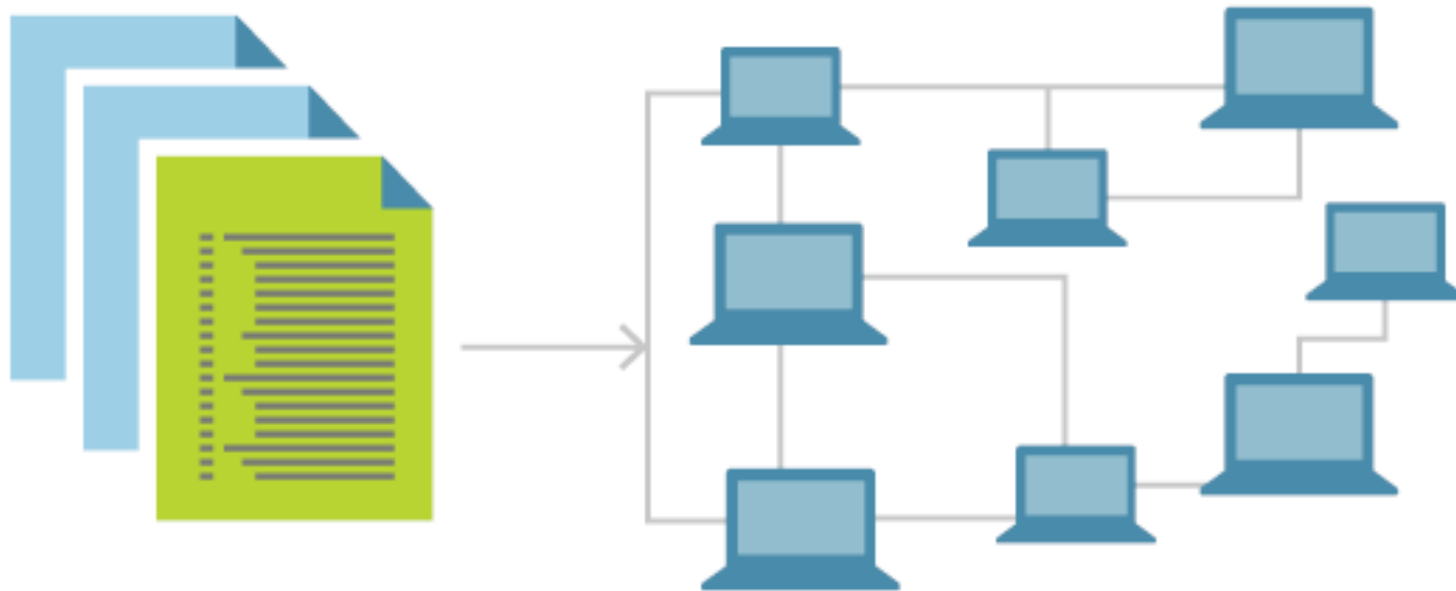


Module 5: Infrastructure as Code

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Infrastructure as Code Diagram Overview





Module Objectives:

- **Module 5-1:** Understanding the Concept of Infrastructure as Code (IaC)
- **Module 5-2:** IaC Toolkits
- **Module 5-3:** Terraform as an Industry Standard



What is Infrastructure as Code?

Infrastructure as Code (IaC) refers to the practice of managing and provisioning infrastructure using code and automation. Instead of manually setting up servers, networks, and other infrastructure components, IaC involves defining these resources in code, typically using a high-level descriptive language.



IaC Benefits

- **Reproducibility:** You define your infrastructure in code, ensuring that the same configuration is applied every time you create it.
- **Version Control**
- **Collaboration**



Common IaC Tools

- Terraform
- AWS CloudFormation
- Azure ARM Templates
- Azure Bicep
- Ansible
- Puppet
- Chef



Understanding Terraform

Terraform is an open-source infrastructure as code (IaC) tool developed by HashiCorp. It enables users to define and manage both on-premises & cloud infrastructure resources using a declarative configuration language, HCL.

Read more: <https://developer.hashicorp.com/terraform/intro>





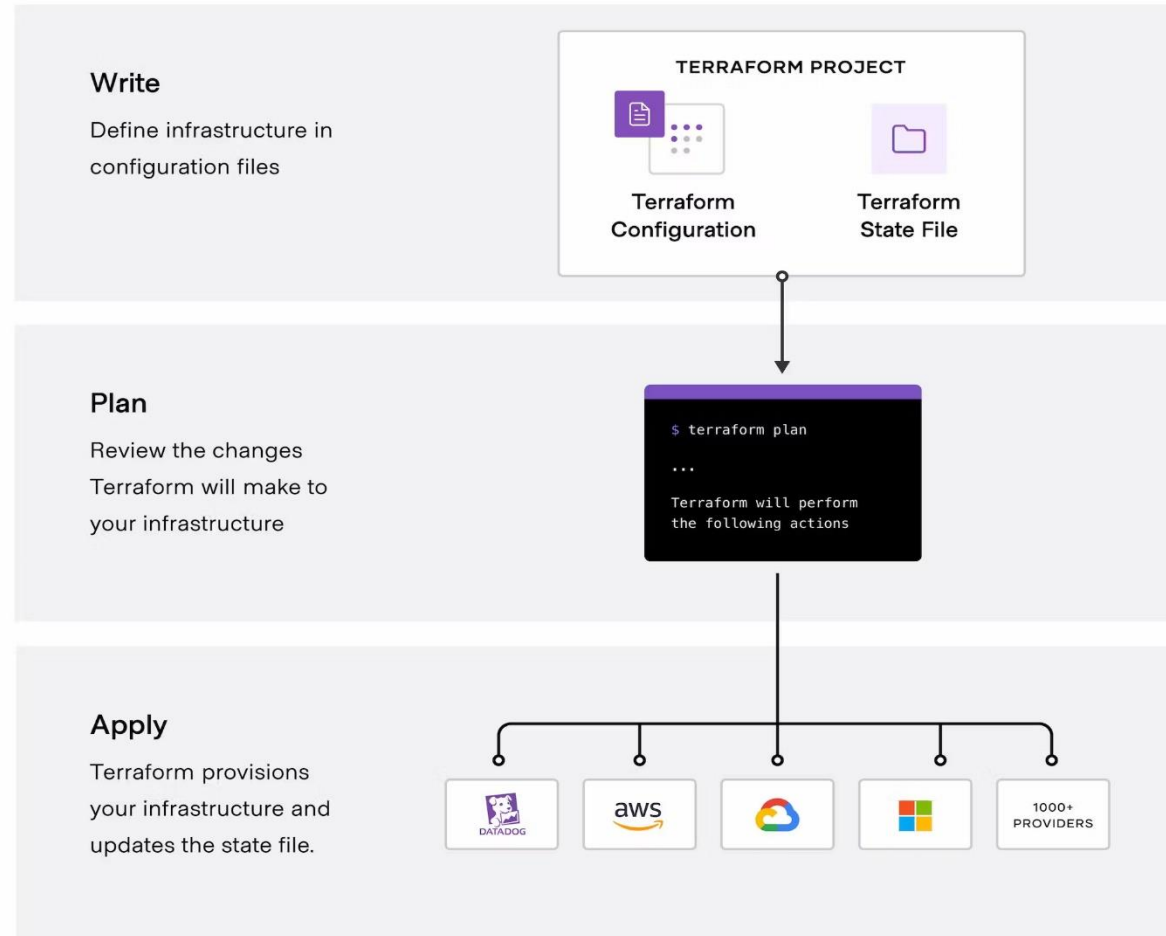
Declarative Programming

Declarative programming is a programming paradigm that focuses on expressing the desired outcome rather than specifying the step-by-step instructions to achieve that outcome.

Features: **Focus on What, Not How, Higher Abstraction Level, Clear Intent, Automatic Optimization, Conciseness**



Terraform Workflow





Terraform Concepts

- Declarative Configuration
- Infrastructure as Code (IaC)
- Resource Providers
- State Management
- Dependency Management
- Modularity
- Provisioners
- Graph of Resources
- Remote State Backend



IaC Task

- <https://learn.microsoft.com/en-us/azure/virtual-machines/linux/quick-create-terraform> - Practice Task
- <https://learn.microsoft.com/en-us/azure/virtual-machines/linux/quick-cluster-create-terraform> - Task



IaC Task

