

Terraform: A Beginner's Guide – Summary

1. What is Infrastructure as Code (IaC)?

IaC allows managing and provisioning computing infrastructure through machine-readable definition files instead of manual hardware configuration.

2. What is Terraform?

Terraform is an open-source IaC tool by HashiCorp to define cloud and on-premises resources using a declarative language.

3. Installing Terraform

- Windows: Download binary, add to PATH, verify with ``terraform -v``
- macOS: Install via Homebrew (``brew install terraform``), verify with ``terraform -v``
- Linux: Install via package manager, verify with ``terraform -v``

4. Creating a Terraform Project

- Create a project directory
- Create ``main.tf`` file
- Define provider and resources

5. Basic Terraform Commands

- ``terraform init``: Initialize directory
- ``terraform plan``: Show execution plan
- ``terraform apply``: Apply changes
- ``terraform show``: Show current state
- ``terraform destroy``: Destroy infrastructure

6. Working with Variables and Outputs

- Variables: Define in ``variables.tf``, referenced in ``main.tf``
- Outputs: Define in ``outputs.tf`` to display infrastructure info

7. Modules

Modules group resources for reuse and better organization.

8. Managing Environments

- Folders: Organize configuration files
- Workspaces: Manage multiple versions in a single configuration

9. Terraform Project Structure

- ``main.tf``: Main configuration
- ``variables.tf``: Variables
- ``outputs.tf``: Outputs
- ``terraform.tfvars``: Variable values

10. AWS Examples (Short)

- ****Create IAM User****:

```
resource "aws_iam_user" "user1" {  
  name = "user1"  
}
```

- ****Create EC2 Instance****:

```
resource "aws_instance" "example" {  
  ami          = "ami-12345678"  
  instance_type = "t2.micro"  
}
```

Terraform for Beginners: A Concise Guide

What is IaC?



Infrastructure as Code: Automate infrastructure deployment

Installing Terraform (Windows, macOS, Linux)



Download binary, add to PATH, verify via "terraform -v"



Creating a Project

Initialize with "terraform init", define resources in .tf files

Basic Commands



Plan: "terraform plan", Apply: "terraform apply", Destroy: "terraform destroy"

Variables & Outputs



Declare variables in .tfvars, output output values with "output" block

Modules



Reusable infrastructure components, sourced locally or from registry

AWS IAM/EC2



Configure AWS provider, create IAM roles, EC2 instances

Project Structure



tf files, variables.tf, outputs.tf, modules/ directory