Project 2: Multi-Cloud Auto Deployment using Terraform (AWS + GCP)

Introduction

This project demonstrates the automation of infrastructure deployment across multiple cloud providers (AWS and GCP) using Terraform. The primary objective was to ensure scalable, consistent, and reusable infrastructure provisioning by leveraging Infrastructure as Code (IaC).

Abstract

The multi-cloud setup provisions virtual machines and networking resources on AWS and GCP. It uses modular Terraform configurations for scalability, automated VPC and subnet creation, and web server deployment. The deployment is validated using Terraform's plan and apply commands, ensuring that changes are consistent across providers.

Tools Used

Terraform, AWS CLI, GCP CLI, Git, EC2 Instances, Networking (VPC, Subnets, Security Groups), NGINX

Steps Involved

1. Installed prerequisites (Terraform v1.x, AWS CLI, GCP CLI, Git).
2. Configured Terraform providers for AWS and GCP.
3. Wrote modular Terraform files (main.tf, variables.tf, outputs.tf, provider.tf).
4. Initialized Terraform using `terraform init`.
5. Previewed changes with `terraform plan`.
6. Applied configuration with `terraform apply` to provision resources in AWS and GCP.
7. Validated infrastructure by checking web server deployment and connectivity.
8. Used `terraform destroy` to clean up resources after testing.

Conclusion

This project successfully proved that Terraform can provision and manage infrastructure across multiple cloud providers with a single configuration. It reinforced modular design principles and improved multi-cloud automation expertise.