

Google Cloud Fundamentals: Core Infrastructure

Course Duration: 8 Hours

Course code: GCF-CF

1. Course Overview

This course provides a foundational understanding of Google Cloud Platform (GCP) core infrastructure, including compute, storage, networking, and identity management. It introduces learners to essential cloud concepts and demonstrates how to deploy, manage, and monitor applications in Google Cloud using key services.

2. What you'll learn?

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

- Understand Google Cloud core infrastructure components
- Describe GCP global infrastructure (regions and zones)
- Deploy and manage virtual machines using Compute Engine
- Configure storage solutions in Google Cloud
- Implement Virtual Private Cloud (VPC) networking
- Use Identity and Access Management (IAM) effectively
- Monitor and manage resources using GCP tools
- Apply best practices for security and cost optimization

3. Target Audience

- Cloud beginners and IT professionals
- System administrators and network engineers
- Developers and DevOps engineers
- Students and aspiring cloud professionals

4. Pre-Requisites

Before taking this course, you should have:

- Basic understanding of IT infrastructure
- Familiarity with networking fundamentals
- Basic knowledge of operating systems (Linux/Windows)
- No prior cloud experience required

5. Course content

Module 1: Course Introduction

- Course overview and objectives
- Introduction to cloud computing
- Overview of Google Cloud Platform

Module 2: Google Cloud Overview

- GCP services and categories
- Global infrastructure (regions, zones, edge locations)
- Resource hierarchy (Organization, Folder, Project)
- Billing and account setup

Module 3: Identity and Access Management (IAM)

- IAM concepts and roles
- Members and policies
- Service accounts
- Best practices for access control

Module 4: Compute Engine Fundamentals

- Virtual machine concepts
- Creating and managing VM instances
- Machine types and pricing
- Startup scripts and metadata

Module 5: Storage Services

- Cloud Storage (object storage)
- Storage classes and lifecycle policies
- Persistent disks and snapshots
- Filestore basics

Module 6: Virtual Private Cloud (VPC) Networking

- VPC concepts and components
- Subnets and IP addressing
- Firewall rules and routes
- Shared VPC

Module 7: Load Balancing and Traffic Management

- Types of load balancing in GCP
- HTTP(S), TCP/UDP load balancing
- Traffic distribution strategies
- Health checks

Module 8: Cloud Monitoring and Logging

- Google Cloud Operations suite
- Monitoring metrics and dashboards
- Logging and log analysis
- Alerts and notifications

Module 9: Deployment and Resource Management

- Google Cloud Console
- gcloud CLI basics
- Cloud Shell usage
- Deployment Manager overview

Module 10: Security in Google Cloud

- Data encryption (at rest and in transit)
- Firewall and network security
- Identity-aware proxy
- Security best practices

Module 11: Cost Management and Billing

- Pricing fundamentals
- Billing accounts and budgets
- Cost monitoring and alerts
- Optimization strategies

Module 12: High Availability and Reliability

- Designing for availability
- Multi-zone deployments
- Backup and recovery basics
- Fault tolerance concepts

Module 13: Introduction to Containers and Serverless

- Overview of containers
- Google Kubernetes Engine (GKE) basics
- Cloud Run introduction
- App Engine basics

Module 14: Best Practices and Optimization

- Resource optimization
- Performance tuning basics
- Security and compliance best practices
- Operational efficiency

Module 15: Hands-On Labs and Use Cases

- Deploying a VM instance
- Configuring storage and networking
- Monitoring applications
- Real-world scenarios

Module 16: Course Summary and Assessment

- Review of key concepts
- Practical assessment
- Q&A session
- Next steps and learning path

