

Course Outline

The course includes presentations, demonstrations, and hands-on labs.

Essential Cloud Infrastructure: Foundation

Module 1: Introduction to Google Cloud Platform

- Google Cloud Platform (GCP) Infrastructure
- Using GCP
- Lab: Console and Cloud Shell
- Demo: Projects
- Lab: Infrastructure Preview

Module 2: Virtual Networks

- Virtual Private Cloud (VPC), Projects, Networks, Subnetworks, IP addresses, Routes, Firewall rules
- Subnetworks for resource management instead of physical network topology
- Lab: Virtual Networking
- Lab: Bastion Host

Module 3: Virtual Machines

- Compute Engine
- Lab: Creating Virtual Machines
- Compute options (vCPU and Memory)
- Images
- Common Compute Engine actions
- Lab: Working with Virtual Machines

Essential Cloud Infrastructure: Core Services

Module 4: Cloud IAM

- Organizations, Roles, Members, Service accounts, Cloud IAM best practices
- Lab: Cloud IAM

Module 5: Data Storage Services

- Cloud Storage
- Lab: Cloud Storage
- Cloud SQL
- Lab: Cloud SQL
- Cloud Spanner, Cloud Datastore
- Lab: Cloud Datastore
- Cloud Bigtable

Module 6: Resource Management

- Cloud Resource Manager, Quotas, Labels, Names, Billing
- Demo: Billing Administration
- Lab: Examining Billing Data with BigQuery

Module 7: Resource Monitoring

- Stackdriver, Monitoring
- Lab: Resource Monitoring (Stackdriver)
- Logging, Error Reporting, Tracing, Debugging
- Lab: Error Reporting and Debugging (Stackdriver)

Elastic Cloud Infrastructure: Scaling and Automation

Module 8: Interconnecting Networks

- Cloud Virtual Private Network (VPN)
- Lab: Virtual Private Networks (VPN)
- Cloud Router, Cloud Interconnect, External Peering, Cloud DNS

Module 9: Load Balancing

- Managed Instance Groups, HTTPS load balancing, Cross-region and content-based load balancing, SSL proxy/TCP proxy load balancing, Network load balancing
- Lab: VM Automation and Load Balancing

Module 10: Autoscaling

- Autoscaling, Policies, Configuration
- Lab: Autoscaling

Module 11: Infrastructure Automation with Google Cloud Platform APIs

- Infrastructure automation, Images, Metadata, Scripts, Google Cloud API
- Lab: Google Cloud Platform API Infrastructure Automation

Module 12: Infrastructure Automation with Deployment Manager

- Deployment Manager, Configuration, Cloud Launcher
- Lab: Deployment Manager

Module 13: Managed Services

- Cloud Dataproc, Cloud Dataflow, BigQuery, Cloud Datalab

Elastic Cloud Infrastructure: Containers and Services

Module 14: Application Infrastructure Services

- Cloud Pub/Sub, API Management, Cloud Functions, Cloud Source Repositories, Specialty APIs

Module 15: Application Development Services

- App Engine

Module 16: Containers

- Containers, Kubernetes Engine, Container Registry
- Lab: Kubernetes Load Balancing
- Kubernetes Engine, App Engine, or Containers on Compute Engine?

