

# Architecting with Google Compute Engine

## Course Overview

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This is a 3-day class

This class introduces participants to the comprehensive and flexible infrastructure and platform services provided by Google Cloud Platform, with a focus on Compute Engine. Through a combination of presentations, demos, and hands-on labs, participants explore and deploy solution elements, including infrastructure components such as networks, systems, and application services. This course also covers deploying practical solutions including securely interconnecting networks, customer-supplied encryption keys, security and access management, quotas and billing, and resource monitoring.



## Who Should Attend

Cloud Solutions Architects, DevOps Engineers. Individuals using Google Cloud Platform to create new solutions or to integrate existing systems, application environments, and infrastructure with a focus on Google Compute Engine.

## Course Objectives

Consider the entire range of Google Cloud Platform technologies in their plans Learn methods to develop, implement, and deploy solutions Distinguish between features of similar or related products and technologies Recognize a wide variety of solution domains, use cases, and applications Develop essential skills for managing and administering solutions Develop knowledge of solution patterns?methods, technologies, and designs that are used to implement security, scalability, high availability, and other desired qualities

## Course Outline

### 1 INTRODUCTION TO GOOGLE CLOUD PLATFORM

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

### 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

### 3 VIRTUAL MACHINES

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

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## 4 CLOUD IAM

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

## 5 DATA STORAGE SERVICES

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

## 6 RESOURCE MANAGEMENT

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

## 7 RESOURCE MONITORING

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

## 8 INTERCONNECTING NETWORKS

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

## 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

## 10 AUTOSCALING

Autoscaling, Policies, Configuration  
Lab: Autoscaling

## 11 INFRASTRUCTURE AUTOMATION WITH GOOGLE CLOUD PLATFORM APIS

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

## 12 INFRASTRUCTURE AUTOMATION WITH DEPLOYMENT MANAGER

Deployment Manager, Configuration, Cloud Launcher  
Lab: Deployment Manager

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## 13 MANAGED SERVICES

Cloud Dataproc, Cloud Dataflow, BigQuery, Cloud Datalab



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