






Architecting with Google Compute Engine

This course will familiarize you with Google Cloud's flexible infrastructure and platform services, with a specific focus on Compute Engine. This session uses a combination of lectures, demos, and hands-on labs to explore and deploy solution elements, including infrastructure components like networks, systems, and application services. You'll also learn how to deploy practical solutions such as hybrid networking, customer-supplied encryption keys, security and access management, quotas and billing, and resource monitoring.

 **DURATION**
3 days

 **LEVEL**
Intermediate

 **FORMAT**
Instructor led
On-demand

What you'll learn

- Configure VPC networks and virtual machines
- Administer Identity and Access Management for resources
- Implement data storage services in Google Cloud
- Manage and examine billing of Google Cloud resources
- Monitor resources using Google Cloud services
- Connect your infrastructure to Google Cloud
- Configure load balancers and autoscaling for VM instances
- Automate the deployment of Google Cloud infrastructure services
- Leverage managed services in Google Cloud



Overview	11 Modules · 133 Videos · 17 Labs · 28 Classroom activities
Who this course is for	<ul style="list-style-type: none">• Cloud Solutions Architects, DevOps Engineers• Individuals using Google Cloud to create new solutions or to integrate existing systems, application environments, and infrastructure, with a focus on Compute Engine
Products	<ul style="list-style-type: none">• Compute Engine• VPC Networking• Cloud IAM• Cloud Storage• Cloud SQL• Cloud Spanner• Cloud Firestore• Cloud Bigtable• BigQuery• Resource Manager• Cloud Monitoring• Cloud Logging• Cloud Interconnect• Cloud VPN• Cloud Load Balancing• Deployment Manager
Prerequisite	<p>To get the most out of this course, participants should:</p> <ul style="list-style-type: none">• Have completed Google Cloud Fundamentals: Core Infrastructure or have equivalent experience• Have basic proficiency with command-line tools and Linux operating system environments• Have systems operations experience, including deploying and managing applications, either on-premises or in a public cloud environment
Not covered	<ul style="list-style-type: none">• Google Kubernetes Engine• App Engine• Cloud Functions• Cloud Run



Module 01 Introduction to Google Cloud

- Objectives**
- List the different ways of interacting with Google Cloud
 - Use the Cloud Console and Cloud Shell
 - Create Cloud Storage buckets
 - Use the Google Cloud Marketplace to deploy solutions

Activities 2 labs and 1 quiz

Module 02 Virtual Networks

- Objectives**
- List the VPC objects in Google Cloud
 - Differentiate between the different types of VPC networks
 - Implement VPC networks and firewall rules
 - Implement Private Google Access and Cloud NAT

Activities 2 labs and 1 quiz

Module 03 Virtual Machines

- Objectives**
- Recall the CPU and memory options for virtual machines
 - Describe the disk options for virtual machines
 - Explain VM pricing and discounts
 - Use Compute Engine to create and customize VM instances

Activities 2 labs and 1 quiz

Module 04 Cloud IAM

- Objectives**
- Describe the Cloud IAM resource hierarchy
 - Explain the different types of IAM roles
 - Recall the different types of IAM members
 - Implement access control for resources using Cloud IAM

Activities 1 lab and 1 quiz

Module 05 Storage and Database Services

- Objectives**
- Differentiate between Cloud Storage, Cloud SQL, Cloud Spanner, Cloud Firestore and Cloud Bigtable



- Choose a data storage service based on your requirements
- Implement data storage services

Activities 2 labs and 1 quiz

Module 06 **Resource Management**

- Objectives**
- Describe the cloud resource manager hierarchy
 - Recognize how quotas protect Google Cloud customers
 - Use labels to organize resources
 - Explain the behavior of budget alerts in Google Cloud
 - Examine billing data with BigQuery

Activities 1 lab and 1 quiz

Module 07 **Resource Monitoring**

- Objectives**
- Describe the services for monitoring, logging, error reporting, tracing, and debugging
 - Create charts, alerts, and uptime checks for resources with Cloud Monitoring
 - Use Cloud Debugger to identify and fix errors

Activities 2 labs and 1 quiz

Module 08 **Interconnecting Networks**

- Objectives**
- Recall the Google Cloud interconnect and peering services available to connect your infrastructure to Google Cloud
 - Determine which Google Cloud interconnect or peering service to use in specific circumstances
 - Create and configure VPN gateways
 - Recall when to use Shared VPC and when to use VPC Network Peering

Activities 1 lab and 1 quiz

Module 09 **Load Balancing and Autoscaling**

- Objectives**
- Recall the various load balancing services
 - Determine which Google Cloud load balancer to use in specific circumstances
 - Describe autoscaling behavior
 - Configure load balancers and autoscaling



Activities 2 labs and 1 quiz

Module 10 **Infrastructure Automation**

Objectives

- Automate the deployment of Google Cloud services using Deployment Manager or Terraform
- Outline the Google Cloud Marketplace

Activities 2 labs and 1 quiz

Module 11 **Managed Services**

Objectives Describe the managed services for data processing in Google Cloud

Activities 1 quiz

