Google Cloud

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 course 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

- Interact with the Google Cloud console and Cloud Shell
- Deploy solutions using Google Cloud Marketplace
- Implement VPC networks and firewall rules
- Create and customize VM instances using Compute Engine
- 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 clasroom activities
Who this course is for	• 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	• Compute Engine • VPC Networking • Identity and Access Management (IAM) • Cloud Storage • Cloud SQL • Cloud Spanner • Firestore • Cloud Bigtable • BigQuery • Resource Manager • Cloud Monitoring • Cloud Logging • Cloud Interconnect • Cloud VPN • Cloud Load Balancing
Prerequisite	To get the most out of this course, participants should: • 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	• 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
- Interact with the Google Cloud console and Cloud Shell
- Create Cloud Storage buckets
- Deploy solutions using Google Cloud Marketplace

Activities

- Lab: Console and Cloud Shell
- Lab: Infrastructure Preview
- Module quiz

Module 02 Virtual Networks

Objectives

- List the VPC objects in Google Cloud
- Explore VPC Networking
- Implement Private Google Access and Cloud NAT

Activities

- Lab: VPC Networking
- Lab: Implement Private Google Access and Cloud NAT
- Module 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
- Create and customize VM instances using Compute Engine

Activities

- Lab: Creating Virtual Machines
- Lab: Working with Virtual Machines
- Module quiz

Module 04 Identity and Access Management (IAM)

Objectives

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

Activities

- Lab: Cloud IAM
- Module quiz

Module 05 Storage and Database Services

Objectives

- Differentiate between Cloud Storage, Cloud SQL, Cloud Spanner, Firestore and Cloud Bigtable
- Choose a data storage service based on your requirements
- Implement data storage services

Activities

- Lab: Cloud Storage
- Lab: Implementing Cloud SQL
- Module quiz

Module 06 Resource Management

Objectives

- Describe the cloud resource manager hierarchy
- Recognize how quotas protect Google Cloud customers
- Organize resources using labels
- Explain the behavior of budget alerts in Google Cloud
- Examine billing data with BigQuery

Activities

- Lab: Examining Billing Data with BigQuery
- Module 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
- Identify and fix errors using Cloud Debugger

Activities

- Lab: Resource Monitoring
- Lab: Error Reporting and Debugging
- Module 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 Google Cloud HA VPN
- Recall when to use Shared VPC and when to use VPC Network Peering

Activities

- Lab: Virtual Private Networks (VPN)
- Module 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

- Lab: ILT Configure an HTTP Load Balancer with Autoscaling
- Lab: Configuring an Internal Load Balancer
- Module quiz

Module 10 Infrastructure Automation

Objectives

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

Activities

- Lab: Automating the Deployment of Infrastructure Using Terraform
- Module quiz

Module 11 Managed Services

Objectives

Describe the managed services for data processing in Google Cloud

Activities

Module quiz