

GC-AGCE ARCHITECTING WITH GOOGLE COMPUTE ENGINE



| DURATION | LEVEL | TECHNOLOGY | DELIVERY METHOD | TRAINING CREDITS |
|----------|--------------|--------------|-----------------|------------------|
| 3 Days | Intermediate | Google Cloud | VILT & ILT | NA |

INTRODUCTION

This three-day course will familiarise 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.

AUDIENCE PROFILE

This course is intended for the following participants:

- Cloud Solutions Architects
- Site Reliability Engineers
- Systems Operations professionals
- DevOps Engineers
- IT managers
- Individuals using Google Cloud to create new solutions or to integrate existing systems, application environments, and infrastructure with Google Cloud

PREREQUISITES

- Completed Google Cloud Platform Fundamentals: Core Infrastructure or have equivalent experience.
- Basic proficiency with command-line tools and Linux operating system environments.
- Systems Operations experience including deploying and managing applications, either on-premises or in a public cloud environment.

COURSE OBJECTIVES

This course teaches participants the following skills:

- Interact with the Google Cloud console and Cloud Shell.
- Deploy solutions using Google Cloud Marketplace.
- Implement VPC networks and firewall rules.
- Create and customise 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.

COURSE CONTENT

Lesson 1: Introduction to Google Cloud

Topics

- 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
- Quiz.

Lesson 2: Virtual Networks

Topics

- 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.
- Quiz.

Lesson 3: Virtual Machines

- Recall the CPU and memory options for virtual machines.
- Describe the disk options for virtual machines.
- Explain VM pricing and discounts.
- Create and customise VM instances using Compute Engine.

Activities

- Lab: Creating Virtual Machines.
- Lab: Working with Virtual Machines.
- Quiz.

Lesson 4: Identity and Access Management (IAM)

Topics

- 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

- Lab: Cloud IAM.
- Quiz.

Lesson 5: Storage and Database Services

Topics

- 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

- Lab: Cloud Storage.
- Lab: Implementing Cloud SQL.
- Quiz.

Lesson 6: Resource Management

Topics

- Describe the cloud resource manager hierarchy.
- Recognise how quotas protect Google Cloud customers.
- Organise resources using labels.
- Explain the behaviour of budget alerts in Google Cloud.
- Examine billing data with BigQuery.

Activities

- Lab: Examining Billing Data with BigQuery.
- Quiz.

Lesson 7: Resource Monitoring

Topics

- 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.
- Quiz.

Lesson 8: Interconnecting Networks

Topics

- 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
- Lab: Virtual Private Networks (VPN)

Lesson 9: Load Balancing and Autoscaling

Topics

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

Activities

- Lab: ILT Configure an HTTP Load Balancer with Autoscaling.
- Lab: Configuring an Internal Load Balancer.
- Quiz

Lesson 10: Infrastructure Automation

Topics

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

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| <ul style="list-style-type: none">– Outline the Google Cloud Marketplace. Activities <ul style="list-style-type: none">– Lab: Automating the Deployment of Infrastructure Using Terraform. | <ul style="list-style-type: none">– Quiz. Lesson 11: Managed Services Topics <ul style="list-style-type: none">– Describe the managed services for data | processing in Google Cloud. Activities <ul style="list-style-type: none">– Quiz. |
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ASSOCIATED CERTIFICATIONS & EXAM

This course prepares you for the Google Cloud Certified: Associate Cloud Engineer, and the Google Cloud Certified: Professional Cloud Architect exams.