

## GC-AGCD

# ARCHITECTING WITH GOOGLE CLOUD: DESIGN AND PROCESS



DURATION	LEVEL	TECHNOLOGY	DELIVERY METHOD	TRAINING CREDITS
2 Days	Intermediate	Google Cloud	VILT & ILT	NA

### INTRODUCTION

This two-day instructor-led course features a combination of lectures, design activities, and hands-on labs to show you how to use proven design patterns on Google Cloud to build highly reliable and efficient solutions and operate deployments that are highly available and cost-effective.

It is a continuation of the Architecting with Google Compute Engine or Architecting with Google Kubernetes Engine course and assumes hands-on experience with the technologies covered in either of those courses.

### 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

This manual assumes the user understands the basics of using Google or search engines.

### COURSE OBJECTIVES

This course teaches participants the following skills:

- Apply a tool set of questions, techniques, and design considerations.
- Define application requirements and express them objectively as KPIs, SLO's and SLI's.
- Decompose application requirements to find the right microservice boundaries.
- Leverage Google Cloud developer tools to set up modern, automated deployment pipelines.
- Choose the appropriate Google Cloud Storage services based on application requirements.
- Discuss Google Cloud network architectures, including hybrid architectures.
- Implement reliable, scalable, resilient applications balancing key performance metrics with cost.
- Choose the right Google Cloud deployment services for your applications.
- Secure cloud applications, data and infrastructure.
- Monitor service level objectives and costs using Cloud Monitoring.

### COURSE CONTENT

#### Lesson 1: Defining the Service

- Describe users in terms of roles and personas.

- Evaluate KPIs using SLOs and SLIs.

- Determine the quality of application requirements using SMART criteria.

## Lesson 2: Microservice Design and Architecture

- Decompose monolithic applications into microservices.
- Recognise appropriate microservice boundaries
- Design consistent, standard RESTful service APIs.
- Identify the 12-factor best practices for implementing services.

## Lesson 3: DevOps Automation

- Discuss the automation of service deployment using CI/CD pipelines.
- Explain how to leverage Cloud Source Repositories for source and version control.
- Automate builds with Cloud Build and build triggers.
- Container Registry Manage container images with.

## Lesson 4: Choosing Storage Solutions

- Identify the use cases for Spanner.
- Identify the use cases for Cloud SQL.
- Identify the use cases for Firestore.
- Identify the use cases for Memorystore.

## Lesson 5: Google Cloud and Hybrid Network Architecture

- Discuss the design of VPC networks to optimise for cost, security, and performance.
- Describe how global and regional load balancers provide access to services.
- Connect networks using peering and VPNs.
- Define hybrid networks between Google Cloud and on-premises data centres using Cloud Interconnect.

## Lesson 6: Deploying Applications to Google Cloud

- Choose the appropriate Google Cloud deployment service for your applications.
- Configure scalable, resilient infrastructure using Instance Templates and Groups.
- Orchestrate microservice deployments using Kubernetes and GKE.
- Leverage App Engine for a completely automated platform as a service (PaaS).

## Lesson 7: Designing Reliable Systems

- Discuss the design of services to meet requirements for

availability, durability, and scalability.

- Identify the failures to be avoided to implement a fault-tolerant system.

## Lesson 8: Security

- Identify the best practices for designing secure systems.
- Discuss the use of organisational policies and folders to simplify cloud governance.
- Identify Google Cloud services that can be leveraged for access management.
- Identify Google Cloud services that can be leveraged to mitigate DDoS attacks.

## Lesson 9: Maintenance and Monitoring

- Discuss different ways to manage new service versions.
- Describe how to forecast, monitor, and optimise service costs.
- Observe if your services are meeting their SLOs using Cloud Monitoring and Dashboards.
- Use Uptime Checks to determine service availability.
- Respond to service outages using Cloud Monitoring Alerts.

## ASSOCIATED CERTIFICATIONS & EXAM

There is no international certification linked to this course currently.