# **Google Cloud Architect**

#### **Course Overview**

A Cloud Architect designs, develops, and manages robust, secure, scalable, and dynamic solutions. This learning path guides you through a curated collection of concepts and labs that provide you with real-world, hands-on experience using Google Cloud technologies essential to the Cloud Architect role.

Duration: 10 days / 80 hours

Level: Professional

**Prerequisites:** There is no prerequisite for this learning path. Basic knowledge of Linux and Network administration is helpful but not mandatory.

Course Outcome: Learner can take Google Cloud Certified Professional Cloud Architect exam

## **Table of Content**

## **Google Cloud Fundamentals: Core Infrastructure**

- Introducing Google Cloud
- Resources and Access in the Cloud
- Virtual Machines and Networks in the Cloud
- Storage in the Cloud
- Containers in the Cloud
- Applications in the Cloud
- Prompt Engineering
- Lab
  - o Google Cloud Fundamentals: Getting Started with Cloud Marketplace
  - Getting Started with VPC Networking and Google Compute Engine
  - Optional Google Cloud Fundamentals: Getting Started with Cloud Storage and Cloud SQL
  - o Optional Hello Cloud Run

# **Essential Google Cloud Infrastructure: Foundation**

- Interacting with Google Cloud
- Virtual Networks
- Virtual Machines
- Lab
  - Working with the Google Cloud Console and Cloud Shell
  - VPC Networking

- o Optional Implement Private Google Access and Cloud NAT
- Creating Virtual Machines
- Optional Working with Virtual Machines

## **Essential Google Cloud Infrastructure: Core Services**

- Identity and Access Management (IAM)
- Storage and Database Services
- Resource Management
- Lab
  - Exploring IAM
  - Cloud Storage
  - Optional Implementing Cloud SQL
  - Optional Examining Billing data with BigQuery

#### Elastic Google Cloud Infrastructure: Scaling and Automation

- Interconnecting Networks
- Load Balancing and Autoscaling
- Infrastructure Automation
- Managed Services
- Lab
  - Configuring Google Cloud HA VPN
  - o Configure an Application Load Balancer with Autoscaling
  - o Optional Configure an Internal Network Load Balancer
  - o Optional Automating the Deployment of Infrastructure Using Terraform

#### **Getting Started with Google Kubernetes Engine**

- Introduction to Containers and Kubernetes
- Kubernetes Architecture
- Kubernetes Operations
- Lab
  - Working with Cloud Build
  - Deploying GKE Autopilot Clusters
  - Optional Deploying GKE Autopilot Clusters from Cloud Shell

#### **Developing Applications with Cloud Run on Google Cloud: Fundamentals**

- Fundamentals of Cloud Run
- Service Identity and Authentication
- Application Development, Testing, and Integration
- Lab
  - Implementing Least Privilege IAM Policy Bindings in Cloud Run [APPRUN]
  - Using Cloud PubSub with Cloud Run [APPRUN]

## **Reliable Google Cloud Infrastructure: Design and Process**

- Defining Services
- Microservice Design and Architecture
- DevOps Automation
- Choosing Storage Solutions
- Google Cloud and Hybrid Network Architecture
- Deploying Applications to Google Cloud
- Designing Reliable Systems
- Security
- Maintenance and Monitoring
- Lab
  - Building a DevOps Pipeline
  - Deploying Apps to Google Cloud
  - Optional Monitoring Applications in Google Cloud

## Logging and Monitoring in Google Cloud

- Introduction to Google Cloud Operations Suite
- Monitoring Critical Systems
- Alerting Policies
- Advanced Logging and Analysis
- Working with Audit Logs
- Lab
  - o Monitoring and Dashboarding Multiple Projects
  - Alerting in Google Cloud
  - Optional Log Analytics on Google Cloud
  - Cloud Audit Logs

# **Observability in Google Cloud**

- Configuring Google Cloud Services for Observability
- Monitoring Google Cloud Network
- Investigating Application Performance Issues
- Optimizing the Costs for Google Cloud Observability
- Lab
  - Monitoring a Compute Engine by using Ops Agent
  - Analyzing Network Traffic with VPC Flow Logs
  - o Optional View application latency with Cloud Trace