



# Learning Guide for Associate Cloud Engineer Certification

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## Get Trained

- ❑ Review the [exam guide](#) to understand the scope of the certification exam and technical areas to focus. *(estimated time: 30 mins)*
- ❑ Take the [practice exam](#) to familiarize with the type of questions that might be on the exam, check readiness to take the exam and assess whether additional preparation and/or hands-on experience is needed. *(estimated time: 45 mins)*
- ❑ Complete the Cloud Infrastructure track trainings either through Coursera or Classroom Instructor-Led offerings. The training curriculum and content is the same across on-demand and instructor-led offerings.

### On-Demand (Coursera)

Complete the first 5 courses of [Architecting with Google Cloud Platform Specialization](#) (listed below):

1. [Google Cloud Platform Fundamentals: Core Infrastructure](#) *(estimated time: 11 hours)*
2. [Essential Cloud Infrastructure: Foundation](#) *(estimated time: 9 hours)*
3. [Essential Cloud Infrastructure: Core Services](#) *(estimated time: 9 hours)*
4. [Elastic Cloud Infrastructure: Scaling and Automation](#) *(estimated time: 9 hours)*
5. [Elastic Cloud Infrastructure: Containers and Services](#) *(estimated time: 9 hours)*

or

### Classroom Instructor-Led

Attend the following 2 classroom offerings:

1. [Google Cloud Platform Fundamentals: Core Infrastructure](#) *(duration: 1 day)*
  2. [Architecting with Google Cloud Platform: Infrastructure](#) *(duration: 3 days)*
- ❑ For those with an AWS background, review the [Google Cloud Platform for AWS](#)



[Professionals](#). Similarly review the [Google Cloud Platform for Azure Professionals](#) for those familiarity with Azure. (estimated time: 3 hours)

## Acquire Hands-On Experience

- ❑ Complete a set of self-paced labs for gaining hands-on experience to deploy applications, monitor operations, and manage enterprise solutions.

### Qwiklabs Quests

Complete the following 2 quests:

1. Introductory: [GCP Essentials](#) (5 labs, estimated time: 3 hours)
2. Fundamental: [Cloud Architecture Quest](#) (5 labs, estimated time: 7 hours)

Completion of the following quests are highly recommended:

1. Introductory: [Deploying Applications](#) (5 labs, estimated time: 5 hours)
2. Fundamental: [Security & Identity Fundamentals](#) (7 labs, estimated time: 7 hours)
3. Fundamental: [Stackdriver](#) (9 labs, estimated time: 8 hours)
4. Fundamental: [Networking in the Google Cloud](#) (5 labs, estimated time: 6 hours)
5. Advanced: [Kubernetes in the Google Cloud](#) (5 labs, estimated time: 5 hours)
6. Advanced: [Network Performance and Optimization](#) (7 labs, estimated time: 7 hours)
7. Advanced: [Deployment Manager](#) (10 labs, estimated time: 10 hours)
8. Advanced: [Managing Cloud Infrastructure with Terraform](#) (6 labs, estimated time: 7 hours)
9. Expert: [Kubernetes Solutions](#) (10 labs, estimated time: 11 hours)
10. Expert: [Google Cloud Solutions I: Scaling Your Infrastructure](#) (9 labs, estimated time: 12 hours)

## Gain Solution Design and Development Experience

- ❑ Review the cloud infrastructure solutions at [Google Cloud Solutions](#) under the following categories of compute, storage, networking, etc. (estimated time: 20 hours)

### A. Compute

- [Using Clusters for Large-scale Technical Computing in the Cloud](#)
- [Designing Robust Systems](#)
- [Image Management Best Practices](#)
- [Deploying MongoDB on Google Compute Engine](#)
- [Using Firebase for Real-time Events on App Engine](#)
- [Setting Up LAMP on Compute Engine](#)
- [Running Windows Server Failover Clustering](#)
- [Choosing a Computing Option](#)
- [Best Practices for Compute Engine Region Selection](#)
- [Reliable task scheduling on Compute Engine with Cloud Scheduler](#)



- [Deploying a Multi-Subnet SQL Server 2016 Always On Availability Group on Compute Engine](#)

## B. Storage

- [Transferring Big Data Sets to Cloud Platform](#)
- [Automating the Classification of Data Uploaded to Cloud Storage](#)
- [Building Scalable Web Applications with Cloud Datastore](#)
- [Choosing the Right Architecture for Global Data Distribution](#)
- [Loading, Storing, and Archiving Time Series Data](#)
- [Choosing a Storage Option](#)

## C. Networking

- [Application Capacity Optimizations with Global Load Balancing](#)
- [Best Practices for Floating IP Addresses](#)
- [Building High-throughput VPNs](#)
- [Build high availability and high bandwidth NAT gateways](#)
- [Using APIs from an External Network](#)
- [Automated Network Deployment: Building a VPN Between GCP and AWS](#)
- [How to set up remote access to MySQL on Compute Engine](#)
- [Exposing gRPC services as REST APIs using Cloud Endpoints](#) ([Part 1](#), [Part 2](#))

## D. Security & IAM

- [Best Practices for DDoS Protection and Mitigation on Google Cloud Platform](#)
- [Securing your Cloud Platform Account with Security Keys](#)
- [Scenarios for Exporting Stackdriver Logging: Security and Access Analytics](#)
- [Policy Design for Customers](#)
- [Securing Rendering Workloads](#)
- [Authentication in HTTP Cloud Functions](#)
- [Securely Connecting to VM Instances](#)
- [Deploying a Fault-Tolerant Microsoft Active Directory Environment](#)
- [Federating Google Cloud Platform with Active Directory: Configuring single sign-on](#)

## E. Deployment

- [Best Practices for Using Deployment Manager](#)
- [Automated Network Deployment: Startup](#)
- [Creating a Shared VPC with Deployment Manager](#)
- [Compute Engine Management with Puppet, Chef, Salt, and Ansible](#)

## F. Logging, Monitoring

- [Design Patterns for Exporting Stackdriver Logging](#)
- [Customizing Stackdriver Logs for Kubernetes Engine with Fluentd](#)
- [Autoscaling an Instance Group with Stackdriver Custom Metrics](#)



- [Using Stackdriver Uptime Checks for Triggering Cloud Functions on a Schedule](#)

#### G. CI/CD, Development & Test

- [Continuous Deployment to Kubernetes Engine using Jenkins](#)
- [Continuous Deployment on Compute Engine Using Ansible with Spinnaker](#)
- [Continuous Delivery Pipelines with Spinnaker and Kubernetes Engine](#)
- [Automating Canary Analysis on Google Kubernetes Engine with Spinnaker](#)
- [Using Jenkins for Distributed Builds on Compute Engine](#)

#### H. Microservices & Containers

- [Preparing a Kubernetes Engine Environment for Production](#)
- [Heterogeneous Deployment Patterns with Kubernetes](#)
- [Best Practices for Building Containers](#)
- [Best Practices for Operating Containers](#)
- [Deploying Memcached on Kubernetes Engine](#)
- [Architecture: Scalable Commerce Workloads using Microservices](#)
- [Using Google Cloud Platform Services from Google Kubernetes Engine](#)
- [Creating GKE Private Clusters with Network Proxies for External Access](#)
- [Running Dedicated Game Servers in Kubernetes Engine](#)
- [Distributed Load Testing Using Kubernetes](#)
- [Choose Size and Scope of Google Kubernetes Engine Clusters](#)
- [Using Kubernetes Engine to Deploy Apps with Regional Persistent Disks](#)
- [Help secure software supply chains on Google Kubernetes Engine](#)

#### I. Mobile Apps

- [Mobile App Backend Services](#)
- [Build a Mobile App Using Google Compute Engine and REST](#)
- [Build an Android App Using Firebase and the App Engine Flexible Environment](#)

#### J. Open Source

- [Google Cloud Platform for OpenStack Users](#)

#### K. Migration

- [Best Practices for Migrating Virtual Machines to Compute Engine](#)
- [Best Practices for App Engine Standard Environment Memcache](#)
- [Migrating On-Premises Hadoop Infrastructure to Google Cloud Platform](#)
- [Migrating HDFS Data from On-Premises to Google Cloud Platform](#)
- [Migrating a MySQL Cluster to Compute Engine Using HAProxy](#)
- [Architecture: Delivering Aggregated Travel Data with Minimal Latency](#)
- [Migrating from DynamoDB to Cloud Spanner](#)

#### L. Hybrid Cloud

- [Hybrid and Multi-Cloud Patterns and Practices](#)



- [Hybrid and Multi-Cloud Architecture Patterns](#)
- [Hybrid and Multi-Cloud Network Topologies](#)
- [Hybrid Connectivity Using Your Own Public IP Addresses on Compute Engine](#)
- [Building a Hybrid Render Farm](#)
- [Deploying the Elastifile Cross-Cloud Data Fabric](#)

#### M. Backup, Archival and Disaster Recovery

- [Disaster Recovery Building Blocks](#)
- [Disaster Recovery Scenarios for Applications](#)
- [Disaster Recovery Scenarios for Data](#)
- [Building a Microsoft SQL Server Disaster Recovery Plan with Compute Engine](#)

#### N. SAP on GCP

- [Architecture: SAP Hybris Deployment](#)
- [Running SAP Hybris Using SAP HANA](#)
- [SAP HANA High Availability and Disaster Recovery Planning](#)
- [Integrating GCP services with Cloud Foundry on SAP Cloud Platform](#)

## Review Documentation, Blogs and Whitepapers

- ❑ Review the [Pricing Calculator](#), [Product Pricing](#), [Cost Comparison Calculator](#) and the [Always Free Usage Limits](#). *(estimated time: 3 hours)*
- ❑ Read the Google Cloud Platform [security](#) whitepapers. For example: [Infrastructure Security](#) and [Encryption at Rest](#). *(estimated time: 2 hours)*
- ❑ Read the [Site Reliability Engineering Book](#), especially the Chapter 2 (The Production Environment at Google, from the Viewpoint of an SRE), Chapter 6 (Monitoring Distributed Systems) and Chapter 17 (Testing for Reliability). *(estimated time: 3 hours)*
- ❑ Explore the current [Google Cloud Platform Marketplace](#) solution offerings. *(estimated time: 2 hours)*
- ❑ View the short videos at [Cloud Performance Atlas](#), that dive into the intricacies of App Engine, GCE, GKE, and Networking. *(estimated time: 2 hours)*
- ❑ In general, review the [Google Cloud Platform Documentation](#) and the [Google Cloud Platform Blogs](#). *(estimated time: 4+ hours)*

## Get Ready for the Exam

- ❑ Complete the training module on [Preparing for the Google Cloud Associate Cloud Engineer Exam](#) *(estimated time: 8 hours)*
- ❑ Re-take the [practice exam](#) *(estimated time: 45 mins)*