Google Cloud

Architecting with Google Cloud Design and Process

This 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. This course was created for those who have already completed the Architecting with Google Compute Engine or Architecting with Google Kubernetes Engine course.

DURATION
2 days

LEVEL
Intermediate

FORMAT
Instructor led
On-demand

What you'll learn

- 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

Overview	9 modules · 82 videos · 3 labs · 25 total classroom activities
Who this course is for	• 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
Products	• App Engine • Cloud Functions • IAM • Cloud Load Balancing • Compute Engine • Cloud Build • Container Registry • VPC Networking
Prerequisite	• Have completed Architecting with Google Compute Engine, Architecting with Google Kubernetes Engine, 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	Tips and advice on taking the Professional Cloud Architect exam

Module 01 Defining the Service

Objectives	• Describe users in terms of roles and personas • Evaluate KPIs using SLOs and SLIs • Determine the quality of application requirements using SMART criteria
Activities	• 3 activities • quiz

Module 02 Microservice Design and Architecture

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

Activities
- 2 activities
- 1 quiz

Module 03 DevOps Automation

Objectives
- 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
- Manage container images with Container Registry

Activities
- 1 lab
- 1 quiz

Module 04 Choosing Storage Solutions

Objectives
- 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

Activities
- 2 activities
- 1 quiz

Module 05 Google Cloud and Hybrid Network Architecture

Objectives
- Discuss the design of VPC networks to optimize 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 centers using Cloud Interconnect

Activities
- 2 activities
- 1 quiz

Module 06 Deploying Applications to Google Cloud

Objectives
- 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)

Activities
- 1 lab
- 1 quiz

Module 07 Designing Reliable Systems

Objectives
- 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

Activities
- 2 activities
- 1 quiz

Module 08 Security

Objectives
- Identify the best practices for designing secure systems
- Discuss the use of organizational 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

Activities
- 1 activity
- 1 quiz

Module 09 Maintenance and Monitoring

Objectives
- Discuss different ways to manage new service versions
- Describe how to forecast, monitor, and optimize 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

Activities
- 1 activity
- 1 lab
- 1 quiz