



CPO200 - Version: 1
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Architecting with Google Cloud Platform: Design and Process



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 **2 days Course**

Description:

This two-day instructor-led class equips students to build highly reliable and efficient solutions on Google Cloud Platform, using proven design patterns and the principles of Google Site Reliability Engineering (SRE). It is a continuation of the Architecting with Google Cloud Platform: Infrastructure course and assumes hands-on experience with the technologies covered in that course.

Through a combination of presentations, demos, and hands-on labs, participants learn to design GCP deployments that are highly reliable and secure; and how to operate GCP deployments in a highly available and cost-effective manner.

Intended audience:

Cloud Solutions Architects, Site Reliability Engineers, Systems Operations professionals, DevOps Engineers, IT managers.

Individuals using Google Cloud Platform to create new solutions or to integrate existing systems, application environments, and infrastructure with the Google Cloud Platform.

Prerequisites:

Completed Architecting with Google Cloud Platform: 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

Objectives:

Design for high availability, scalability, and maintainability.

Assess tradeoffs and make sound choices among Google Cloud Platform products.

Integrate on-premises and cloud resources.

Identify ways to optimize resources and minimize cost.

Implement processes that minimize downtime, such as monitoring and alarming, unit and integration testing, production resilience testing, and incident post-mortem analysis.

Implement policies that minimize security risks, such as auditing, separation of duties and least privilege.

Implement technologies and processes that assure business continuity in the event of a disaster.

Topics:

Module 1: Defining the Service

- Design in this class.
- State and solution.
- Measurement.
- Gathering requirements, SLOs, SLAs, and SLIs (key performance indicators).

Module 2: Business-logic layer design

- Microservices architecture.
- GCP 12-factor support.
- Mapping compute needs to Google Cloud Platform processing services.
- Compute system provisioning.

Module 3: Data layer design

- Classifying and characterizing data.
- Data ingest and data migration.
- Identification of storage needs and mapping to Google Cloud Platform storage systems.

Module 4: Presentation layer design

- Network edge configuration.
- Network configuration for data transfer within the service, including load balancing and network location.
- Network integration with other environments, including on premise and multi-cloud.

Module 5: Design for resiliency, scalability, and disaster recovery

- Failure due to loss of resources.
- Failure due to overload.
- Strategies for coping with failure.
- Business continuity and disaster recovery, including restore strategy and data lifecycle management.
- Scalable and resilient design.

Module 6: Design for security

- Google Cloud Platform security.
- Network access control and firewalls.
- Protections against denial of service.
- Resource sharing and isolation.
- Data encryption and key management.
- Identity access and auditing.

Module 7: Capacity planning and cost optimization

- Capacity planning.
- Pricing.

Module 8: Deployment, monitoring and alerting, and incident response

- Deployment.

- Monitoring and alerting.
- Incident response.