

COURSE OUTLINE

Architecting with Google Cloud Platform: Design and Process

Duration: 2 Days

Course Description:

This two-day 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.

Course Objectives:

This course teaches participants the following skills:

- 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.

Course Outlines:

The course includes presentations, demonstrations, and hands-on labs.

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: Network 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 premises 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.

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