Training: Google Cloud
Architecting with Google Cloud: Design and Process

TRANING TERMS

2026-11-23 | 2 days | Virtual Classroom
2026-11-25 | 2 days | Virtual Classroom
2026-12-17 | 2 days | Virtual Classroom

TRAINING GOALS:

This two-day instructor-led class equips students to build highly reliable and efficient solutions on Google Cloud using proven design patterns. It is a continuation of the Architecting with Google Compute Engine or Architecting with Google Kubernetes Engine course and assumes hands-on experience with the technologies covered in either of those courses. Through a combination of presentations, design activities, and hands-on labs, participants learn to design Google Cloud deployments that are highly reliable and secure; and how to operate Google Cloud deployments in a highly available and cost-effective manner.

Course objectives:

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 Architect cloud and hybrid networks 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 Stackdriver tools.

Audience:

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 the Google Cloud.

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

CONSPECT:

- Defining the Service
  - Describe users in terms of roles and personas.

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ul. Tatarska 5, 30-103 Kraków, tel.: (12) 298 47 77
ul. Postępu 18B, 02-676 Warszawa, tel.: (22) 417 41 70
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- Write qualitative requirements with user stories.
- Write quantitative requirements using key performance indicators (KPIs).
- Evaluate KPIs using SLOs and SLIs.
- Determine the quality of application requirements using SMART criteria.

- Microservice Design and Architecture
  - Decompose monolithic applications into microservices.
  - Recognize appropriate microservice boundaries.
  - Architect stateful and stateless services to optimize scalability and reliability.
  - Implement services using 12-factor best practices.
  - Build loosely coupled services by implementing a well-designed REST architecture.
  - Design consistent, standard RESTful service APIs.
- DevOps Automation
  - Automate service deployment using CI/CD pipelines.
  - Leverage Cloud Source Repositories for source and version control.
  - Automate builds with Cloud Build and build triggers.
  - Manage container images with Google Container Registry.
  - Create infrastructure with code using Deployment Manager and Terraform.
- Choosing Storage Solutions
  - Choose the appropriate Google Cloud data storage service based on use case, durability, availability, scalability and cost.
  - Store binary data with Cloud Storage.
  - Store relational data using Cloud SQL and Spanner.
  - Store NoSQL data using Firestore and Cloud Bigtable.
  - Cache data for fast access using Memorystore.
  - Build a data warehouse using BigQuery.
- Google Cloud and Hybrid Network Architecture
  - Design VPC networks to optimize for cost, security, and performance.
  - Configure global and regional load balancers to provide access to services.
  - Leverage Cloud CDN to provide lower latency and decrease network egress.
  - Evaluate network architecture using the Cloud Network Intelligence Center.
  - Connect networks using peering and VPNs.
  - Create hybrid networks between Google Cloud and on-premises data centers using Cloud Interconnect.
- Deploying Applications to Google Cloud
  - 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.

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- Leverage App Engine for a completely automated platform as a service (PaaS).
- Create serverless applications using Cloud Functions.

- Designing Reliable Systems
  - Design services to meet requirements for availability, durability, and scalability.
  - Implement fault-tolerant systems by avoiding single points of failure, correlated failures, and cascading failures.
  - Avoid overload failures with the circuit breaker and truncated exponential backoff design patterns.
  - Design resilient data storage with lazy deletion.
  - Analyze disaster scenarios and plan for disaster recovery using cost/risk analysis.
- Security
  - Design secure systems using best practices like separation of concerns, principle of least privilege, and regular audits.
  - Leverage Cloud Security Command Center to help identify vulnerabilities.
  - Simplify cloud governance using organizational policies and folders.
  - Secure people using IAM roles, Identity-Aware Proxy, and Identity Platform.
  - Manage the access and authorization of resources by machines and processes using service accounts.
  - Secure networks with private IPs, firewalls, and Private Google Access.
  - Mitigate DDoS attacks by leveraging Cloud DNS and Cloud Armor.
- Maintenance and Monitoring
  - Manage new service versions using rolling updates, blue/green deployments, and canary releases.
  - Forecast, monitor, and optimize service cost using the Google Cloud pricing calculator and billing reports and by analyzing billing data.
  - Observe whether 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.

REQUIREMENTS:

Completion of Architecting with Google Compute Engine, Architecting with Google Kubernetes Engine or 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.

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Difficulty level



CERTIFICATE:

The participants will obtain certificates signed by Google Cloud Platform.

This course additionally prepares you for **Professional Cloud Architect** certification exam available at Kryterion test centers.

TRAINER:

Authorized Google Cloud Platform Trainer.

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