Architecting with Google Cloud: Design and Process

Duration: 2 Days Course Code: GO5974

Overview:

Use Google Cloud to create new solutions or to integrate existing systems, application environments, and infrastructure.

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.

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Target Audience:

This course is recommended to anyone looking to create new solutions or to integrate existing systems, application environments, and infrastructure with Google Cloud:
- Cloud solutions architects
- Systems operations professionals
- DevOps engineers
- IT managers

Objectives:

- **After this course participants should be able to:**
- Apply a tool set of questions, techniques and design considerations.
- Define application requirements and express them objectively as KPIs, SLOs and SLIs.
- 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.

Prerequisites:

- Have completed Architecting with Google Compute Engine (GO5973), Architecting with Google Kubernetes Engine (GO6594), 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.

Testing and Certification

This course is part of the Learning Paths towards Associate Cloud Engineer and Professional Cloud Architect certification.

Follow-on-Courses:

Depends on the profile of the participants.

Content:

Module 1: Defining the expected Service

- Describe users in terms of roles and personas.
- Evaluate KPIs using SLOs and SLIs.
- Determine the quality of application requirements using SMART criteria.

Module 2: Microservices design and architecture

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

Module 3: DevOps Automation

- 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.

Module 4: Choosing Storage solutions

- Identify the use cases for :
- Spanner.
- Cloud SQL.
- Firestore.
- Memorystore.

Module 5: Google Cloud and hybrid network architecture

- 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.

Module 6: 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.
- Leverage App Engine for a completely automated platform as a service (PaaS).

Module 7: Designing reliable systems

- 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.

Module 8: Security

- 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.

Module 9: Maintenance and Monitoring

- 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.

Additional Information:

Official course book provided to participants.

Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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