Architecting with Google Cloud Platform: Design and Process

Duration: 2 Days Course Code: GO5974

Overview:

This two-day instructor-led Google Cloud Platform 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 define and balance business and technical requirements to design Google Cloud deployments that are highly reliable, highly available, secure, and cost-effective.

Target Audience:

This class is intended for the following participants: Cloud Solutions Architects, Site Reliability Engineers, Systems Operations professionals, DevOps Engineers, IT managers and Individuals using Google Cloud to create new solutions or to integrate existing systems, application environments, and infrastructure

Objectives:

- This course teaches participants the following skills:
- 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 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 Google Cloud tools

Prerequisites:

To get the most out of this course, participants should have:

Completed **Architecting with Google Compute Engine, Architecting with Google Kubernetes,** 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

Content:

Module 1: Defining the Service

Describe users in terms of roles and personas

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

Module 2: 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

Module 3: 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

Module 4: 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

Module 5: 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

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

Module 7: 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

Module 8: 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

Module 9: Maintenance and Monitoring

Manage new service versions using rolling updates, blue/green deployments, and canary releases

Forecast, monitor, and optimize service cost

- Create infrastructure with code using Deployment Manager and Terraform

Kubernetes and GKE

Leverage App Engine for a completely automated platform as a service (PaaS)

- Create serverless applications using Cloud Functions

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

Further Information:

For More information, or to book your course, please call us on 0800/84.009

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