Google Cloud Architect Course

Course Duration: 80 Hours **Course code: GCA**

1. Course Overview

This course is designed to equip learners with the skills required to design, develop, and manage robust, secure, scalable, and highly available solutions on Google Cloud Platform (GCP). It covers core cloud architecture principles, GCP services, solution design, security, networking, and cost optimization to prepare learners for real-world cloud architect roles.

2. What you'll learn?

By the end of the course, you will be able to:

- Design scalable and highly available cloud architectures
- Select appropriate GCP services for different use cases
- Design secure and compliant cloud solutions
- Implement networking and hybrid cloud architectures
- Optimize performance and cost of cloud solutions
- Manage and monitor cloud infrastructure
- Design disaster recovery and backup strategies
    - Apply best practices for cloud architecture

3. Target Audience

- Cloud Architects
- Solution Architects
- Cloud Engineers
- DevOps Engineers
- IT Professionals transitioning to cloud roles

4. Pre-Requisites

Before taking this course, you should have:

- Basic knowledge of cloud computing
- Familiarity with Google Cloud Platform
- Understanding of networking and security concepts
- Basic experience with Linux and command-line tools

5. Course content

Module 1: Course Introduction

- Course objectives and structure
- Overview of cloud architecture
- Introduction to Google Cloud Platform

Module 2: GCP Core Services Overview

- Compute services (Compute Engine, GKE, App Engine)
- Storage services (Cloud Storage, Persistent Disks)
- Database services (Cloud SQL, BigQuery, Firestore)
- Networking services overview

Module 3: Designing Cloud Architecture

- Principles of cloud architecture
- Designing scalable and resilient systems
- Microservices vs monolithic architecture
- High availability design patterns

Module 4: Identity and Access Management (IAM)

- IAM roles and policies
- Service accounts
- Resource hierarchy
- Access control best practices

Module 5: Networking and Hybrid Connectivity

- VPC design and configuration
- Subnets and IP management
- VPN and Interconnect
- Hybrid cloud architecture

Module 6: Compute and Application Deployment

- Choosing compute options
- Deploying applications on GCP
- Containerized applications with GKE
- Serverless architecture

Module 7: Storage and Database Design

- Selecting storage solutions
- Designing database architectures
- Data lifecycle management
- Backup and recovery strategies

Module 8: Security and Compliance

- Cloud security best practices
- Data protection and encryption
- Network security
- Compliance and governance

Module 9: Monitoring, Logging, and Operations

- Google Cloud Operations Suite
- Monitoring system health
- Logging and alerting
- Troubleshooting issues

Module 10: Cost Optimization and Resource Management

- Pricing models in GCP
- Cost optimization strategies
- Budgeting and billing management
- Resource efficiency

Module 11: High Availability and Disaster Recovery

- Designing for fault tolerance
- Multi-region deployment
- Backup and DR strategies
- Failover mechanisms

Module 12: DevOps and Automation

- CI/CD pipelines
- Infrastructure as Code (Terraform)
- Automation tools
- Deployment strategies

Module 13: Advanced Architecture Topics

- Multi-cloud strategies
- Event-driven architecture
- API management
- Integration patterns

Module 14: Hands-On Labs and Case Studies

- Designing real-world architectures
- Deploying applications
- Troubleshooting scenarios
- Performance optimization

Module 15: Capstone Project

- Design a complete cloud architecture solution
- Implement security, networking, and scaling
- Optimize performance and cost
- Final project evaluation and presentation

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