# Professional Cloud Architect Training

## *COURSE CONTENT*

## About Multisoft

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## About Course

The Professional Cloud Architect training offered by Multisoft Systems is designed to prepare participants for the Google Cloud Certified - Professional Cloud Architect exam. This comprehensive course equips learners with the skills needed to design, develop, and manage secure, scalable, and highly available cloud architectures using Google Cloud technologies.

# Module 1: Designing and planning a cloud solution architecture

**1.1 Designing a solution infrastructure that meets business requirements. Considerations include:**

- ✓ Business use cases and product strategy
- ✓ Cost optimization
- ✓ Supporting the application design
- ✓ Integration with external systems
- ✓ Movement of data
- ✓ Design decision trade-offs
- ✓ Build, buy, modify, or deprecate
- ✓ Success measurements (e.g., key performance indicators [KPI], return on investment [ROI], metrics)
- ✓ Compliance and observability

**1.2 Designing a solution infrastructure that meets technical requirements. Considerations include:**

- ✓ High availability and failover design
- ✓ Elasticity of cloud resources with respect to quotas and limits
- ✓ Scalability to meet growth requirements
- ✓ Performance and latency

**1.3 Designing network, storage, and compute resources. Considerations include:**

- ✓ Integration with on-premises/multicloud environments
- ✓ Cloud-native networking (VPC, peering, firewalls, container networking)
- ✓ Choosing data processing technologies
- ✓ Choosing appropriate storage types (e.g., object, file, databases)
- ✓ Choosing compute resources (e.g., spot, custom machine type, specialized workload)

✓ Mapping compute needs to platform products

**1.4 Creating a migration plan (i.e., documents and architectural diagrams). Considerations include:**

✓ Integrating solutions with existing systems

✓ Migrating systems and data to support the solution

✓ Software license mapping

✓ Network planning

✓ Testing and proofs of concept

✓ Dependency management planning

**1.5 Envisioning future solution improvements. Considerations include:**

✓ Cloud and technology improvements

✓ Evolution of business needs

✓ Evangelism and advocacy

# Module 2: Managing and provisioning a solution infrastructure

**2.1 Configuring network topologies. Considerations include:**

✓ Extending to on-premises environments (hybrid networking)

✓ Extending to a multicloud environment that may include Google Cloud to Google Cloudcommunication

✓ Security protection (e.g. intrusion protection, access control, firewalls)

**2.2 Configuring individual storage systems. Considerations include:**

✓ Data storage allocation

✓ Data processing/compute provisioning

✓ Security and access management

✓ Network configuration for data transfer and latency

✓ Data retention and data life cycle management

✓ Data growth planning

## 2.3 Configuring compute systems. Considerations include:

✓ Compute resource provisioning

✓ Compute volatility configuration (spot vs. standard)

✓ Network configuration for compute resources (Google Compute Engine, Google Kubernetes Engine, serverless networking)

✓ Infrastructure orchestration, resource configuration, and patch management

✓ Container orchestration

# Module 3: Designing for security and compliance

## 3.1 Designing for security. Considerations include:

✓ Identity and access management (IAM)

✓ Resource hierarchy (organizations, folders, projects)

✓ Data security (key management, encryption, secret management)

✓ Separation of duties (SoD)

✓ Security controls (e.g., auditing, VPC Service Controls, context aware access, organization policy)

✓ Managing customer-managed encryption keys with Cloud Key Management Service

✓ Remote access

## 3.2 Designing for compliance. Considerations include:

✓ Legislation (e.g., health record privacy, children's privacy, data privacy, and ownership)

✓ Commercial (e.g., sensitive data such as credit card information handling, personally identifiable information [PII])

✓ Industry certifications (e.g., SOC 2)

✓ Audits (including logs)

# Module 4: Analyzing and optimizing technical and business processes

**4.1 Analyzing and defining technical processes. Considerations include:**

- ✓ Software development life cycle (SDLC)
- ✓ Continuous integration / continuous deployment
- ✓ Troubleshooting / root cause analysis best practices
- ✓ Testing and validation of software and infrastructure
- ✓ Service catalog and provisioning
- ✓ Business continuity and disaster recovery

**4.2 Analyzing and defining business processes. Considerations include:**

- ✓ Stakeholder management (e.g. influencing and facilitation)
- ✓ Change management
- ✓ Team assessment / skills readiness
- ✓ Decision-making processes
- ✓ Customer success management
- ✓ Cost optimization / resource optimization (CapEx / OpEx)

**4.3 Developing procedures to ensure reliability of solutions in production (e.g., chaos engineering, penetration testing)**

# Module 5: Managing implementation (~11% of the exam)

**5.1 Advising development/operation teams to ensure successful deployment of the solution. Considerations include:**

- ✓ Application development
- ✓ API management best practices
- ✓ Testing frameworks (load/unit/integration)
- ✓ Data and system migration and management tooling

5.2 Interacting with Google Cloud programmatically. Considerations include:

- ✓ Cloud Shell
- ✓ Google Cloud SDK (gcloud, gsutil and bq)
- ✓ Cloud Emulators (e.g. Bigtable, Spanner, Pub/Sub, Firestore)

## Module 6: Ensuring solution and operations reliability

6.1 Monitoring/logging/profiling/alerting solution

6.2 Deployment and release management

6.3 Assisting with the support of deployed solutions

6.4 Evaluating quality control measures