



Architecting with Google Cloud Design and Process

Course description

In this course, you will learn the fundamental principles, best practices, and systematic processes required to design, implement, and optimize robust, scalable, and secure solutions on Google Cloud Platform (GCP). You will gain a deep understanding of Google Cloud's architectural framework, service offerings, and how to make informed design decisions that align with business objectives and technical requirements. This course emphasizes practical application, guiding you through the complete architectural lifecycle from requirements gathering to operational excellence, focusing on the pillars of cost optimization, security, reliability, performance, and operational efficiency.

- Course level: Professional
- Duration: 3 days

Activities

This course includes presentations, in-depth architectural discussions, hands-on design exercises, case studies, solution whiteboarding sessions, and demonstrations of key Google Cloud services in an architectural context.

Course objectives

In this course, you will learn to:

- Explain Google Cloud's foundational architectural principles and global infrastructure.
- Apply a structured design process to translate business requirements into viable Google Cloud architectures.
- Design secure, highly available, scalable, and cost-optimized solutions leveraging appropriate Google Cloud services.
- Select optimal compute, storage, networking, and database solutions for various workloads.
- Implement robust identity, access management, and data protection strategies on GCP.
- Integrate DevOps and Site Reliability Engineering (SRE) practices into cloud architecture for operational excellence.
- Evaluate and optimize existing Google Cloud architectures for performance, cost, and security.
- Develop architectural documentation, including design patterns and decision records.

Intended audience

This course is intended for professionals responsible for designing, implementing, and managing solutions on Google Cloud:

- Solutions Architects
- Cloud Engineers
- DevOps Engineers
- Technical Leads
- System Administrators
- Enterprise Architects
- IT Managers and Directors overseeing cloud initiatives
- Developers aiming to specialize in cloud architecture

Prerequisites

We recommend that attendees of this course have:

- Solid understanding of core cloud computing concepts (e.g., IaaS, PaaS, SaaS, serverless).
- Familiarity with networking fundamentals (e.g., VPCs, subnets, routing, firewalls, VPNs).
- Basic experience with Google Cloud Platform services (e.g., navigating the console, using gcloud CLI, deploying basic resources).

- Understanding of general IT infrastructure, database concepts, and application development lifecycles.

Course outline

Module 1: Foundations of Google Cloud Architecture

- Google Cloud's Global Infrastructure and Regions/Zones
- Core Architectural Principles: Scalability, Reliability, Security, Cost Optimization, Operational Excellence
- Shared Responsibility Model in Google Cloud
- Understanding the Google Cloud Resource Hierarchy
- Google Cloud's Approach to Sustainability in Architecture

Module 2: The Architectural Design Process

- Requirements Gathering and Analysis for Cloud Solutions
- Translating Business Objectives to Technical Requirements
- Architectural Decision Records (ADRs) and Documentation
- Leveraging Google Cloud Adoption Framework (CAF) for Strategy
- Designing for Business Continuity: Disaster Recovery, High Availability, and Backup Strategies
- Incorporating Cost Management and Optimization Early in Design

Module 3: Compute and Network Architecture Patterns

- Designing with Compute Engine: VM Instance Families, Managed Instance Groups, Custom Images
- Containerized Architectures: Google Kubernetes Engine (GKE), Cloud Run, Anthos
- Serverless Compute: Cloud Functions, App Engine, Workflow Orchestration
- Network Design: Virtual Private Cloud (VPC), Shared VPC, Private Access
- Hybrid and Multi-Cloud Networking with Cloud VPN, Cloud Interconnect, and Peering
- Global and Regional Load Balancing, DNS (Cloud DNS), and CDN (Cloud CDN)
- Network Security: Firewall Rules, Cloud Armor, VPC Service Controls, Private Google Access

Module 4: Storage and Database Design

- Object Storage: Cloud Storage Classes, Lifecycle Management, Data Archiving
- Block and File Storage: Persistent Disk (Standard, SSD), Filestore, NetApp Cloud Volumes Service
- Relational Databases: Cloud SQL, Cloud Spanner for Global Scale
- NoSQL Databases: Firestore, Cloud Bigtable for High Throughput
- Data Warehousing and Analytics: BigQuery Architecture for Petabyte-Scale Data
- Data Migration Strategies to Google Cloud (Online/Offline, Database Migrations)

Module 5: Security, Identity, and Compliance Architecture

- Identity and Access Management (IAM) Best Practices: Least Privilege, Service Accounts
- Resource Hierarchy Design for Effective Policy Enforcement
- Data Protection: Encryption at Rest and In Transit, Key Management Service (KMS)
- Security Monitoring and Auditing: Security Command Center, Cloud Audit Logs
- Compliance and Governance on Google Cloud: Organizational Policies, Assured Workloads
- Advanced Network Security: BeyondCorp Enterprise, Identity-Aware Proxy (IAP)

Module 6: Operational Excellence and DevOps Architecture

- Monitoring, Logging, and Alerting Strategies with Cloud Monitoring, Cloud Logging, Cloud Trace
- Infrastructure as Code (IaC): Designing with Terraform and Cloud Deployment Manager
- CI/CD Pipelines: Cloud Build, Cloud Source Repositories, Artifact Registry
- Implementing Site Reliability Engineering (SRE) Principles on GCP
- Designing for Proactive Fault Tolerance and Resiliency
- Automated Incident Response and Remediation

Module 7: Advanced Architectures and Optimization

- Event-Driven Architectures: Cloud Pub/Sub, Eventarc, Cloud Scheduler
- Machine Learning (ML) Integration: Vertex AI Architecture, AI Platform

- API Management and Integration: Apigee, Cloud Endpoints, API Gateway
- Migration Strategy Deep Dive: Lift & Shift, Replatforming, Refactoring
- Advanced Cost Optimization: Rightsizing, Committed Use Discounts, Sustained Use Discounts
- Performance Tuning and Capacity Planning for High-Demand Workloads

Module 8: Architectural Case Studies and Project Planning

- Real-world Google Cloud Architecture Case Studies Across Industries
- Capstone Project: Designing a Comprehensive Solution for a Given Business Scenario
- Conducting Architectural Reviews and Peer Feedback
- Planning for Continuous Optimization, Evolution, and Governance of Cloud Architectures
- Next Steps and Resources for Google Cloud Professional Architect Certification

Your course overview ends here.
But your cloud journey doesn't!

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About CloudThat

Established in 2012, CloudThat is an award-winning company and the first in India to offer cloud training and consulting services for individuals and enterprises worldwide. Recently, it won Google Cloud's New Training Partner of the Year Award for 2025, becoming the first company in the world in 2025 to hold awards from all three major cloud giants: AWS, Microsoft, and Google. CloudThat notably won consecutive AWS Training Partner of the Year (APJ) awards in 2023 and 2024 and the Microsoft Training Services Partner of the Year Award in 2024, bringing its total award count to an impressive 12 awards in the last 8 years.

CloudThat specializes in Cloud Migration, Data Platforms, DevOps, IoT, and cutting-edge technologies like Gen AI & AI/ML. As a Microsoft Solutions Partner, AWS Premier Tier Training Partner, Google Cloud Platform Partner, and collaborator with leading organizations like HPE, Oracle, Nvidia and Databricks, CloudThat has trained over 850,000 professionals across 600+ cloud certifications, empowering students and professionals worldwide to advance their skills and careers.

To know more about our cloud certification training, email at sales@cloudthat.com or call us at [+91-8880002200](tel:+91-8880002200) or [+1-8555588830](tel:+1-8555588830) for those from outside India.