

Updated on 05/08/2026

Sign up

GCP Certification Training - Cloud Database Engineer

4 days (28 hours)

Overview

The Professional Cloud Database Engineer is a Google Cloud certification designed for professionals responsible for designing, deploying, migrating, monitoring, and optimizing cloud databases. It validates advanced skills in Google Cloud Platform database services and best practices for production operations.

Our Professional Cloud Database Engineer Certification training will help you master Google Cloud database architectures by covering essential services such as Cloud SQL, AlloyDB, Cloud Spanner, Firestore, and Bigtable.

You will learn to design, deploy, secure, migrate, and optimize databases in a cloud environment. The training also covers strategies for high availability, disaster recovery, monitoring, automation, and cost control.

Upon completion of the course, you will be able to select the database service best suited to a business need, ensure data performance and security, manage a migration to Google Cloud, and operate critical production environments.

Like all our training courses, this one will introduce you to **the latest stable version** of the technology and its new features.

Objectives

- Understand Google Cloud database services
- Design high-performance and resilient database architectures
- Deploy and administer Cloud SQL, AlloyDB, Spanner, Firestore, and Bigtable

- Secure access, connections, and data
- Implement backup, high availability, and disaster recovery strategies
- Effectively prepare for the Professional Cloud Database Engineer certification

Target Audience

- Database administrators
- Data engineers and data platform engineers
- Cloud architects and solutions architects
- DevOps engineers, SREs, and operations managers
- Professionals preparing for the Google Cloud Database Engineer certification

Prerequisites

- Solid knowledge of relational and/or NoSQL databases
- Basic understanding of cloud computing and application architecture
- Experience in database administration, operations, or migration
- Some hands-on experience with Google Cloud Platform is recommended

Curriculum for our Professional Cloud Database Engineer Certification Training

[Day 1 - Morning]

Database Fundamentals on Google Cloud

- Understanding the role of a Professional Cloud Database Engineer
- Identify the differences between relational, NoSQL, and distributed databases
- Understanding the concepts of scalability, availability, latency, and resilience
- Explore the main Google Cloud database services
- Match business needs to the right database models
- Hands-on workshop: Selecting the right database service for various business scenarios.

[Day 1 - Afternoon]

Choosing GCP database services

- Compare Cloud SQL, Cloud Spanner, Firestore, Bigtable, and AlloyDB
- Understand OLTP, analytics, real-time, and global application use cases
- Identify selection criteria: volume, consistency, data model, cost, and criticality
- Understand single-region, multi-region, and global architectures
- Assess application constraints before designing a database solution

Design a cloud-native database architecture

- Design a data architecture tailored to business requirements
- Integrate databases with Compute Engine, GKE, Cloud Run, and App Engine
- Define connection, pooling, and application access management strategies
- Understand the impact of data location on performance
- Structure development, testing, and production environments
- Hands-on workshop: Design a target database architecture for a mission-critical application.

[Day 2 - Morning]

Deploy and administer Cloud SQL and AlloyDB

- Create and configure Cloud SQL instances for PostgreSQL, MySQL, and SQL Server
- Understand the benefits of AlloyDB for demanding PostgreSQL workloads
- Configure instance, storage, network, and maintenance settings
- Manage users, connections, extensions, and database settings
- Set up backups, point-in-time restoration, and replication
- Hands-on workshop: Deploy a secure Cloud SQL database and test a restore.

[Day 2 - Afternoon]

Using Cloud Spanner, Firestore, and Bigtable

- Understand the principles of Cloud Spanner: distribution, strong consistency, and high availability
- Identify use cases suitable for Firestore in web and mobile applications
- Understand Bigtable use cases for big data and time series
- Model data according to the constraints of each service
- Evaluate trade-offs between performance, consistency, cost, and ease of operation
- Hands-on workshop: Compare several NoSQL and distributed architectures on GCP.

Optimize database performance

- Identify bottlenecks at the query, index, storage, and network levels
- Analyze performance using Query Insights, logs, and Google Cloud metrics
- Optimizing indexes, execution plans, and relational schemas
- Understand partitioning, sharding, and scaling strategies
- Implement continuous optimization practices in production
- Hands-on workshop: Diagnosing and optimizing a database experiencing application slowdowns.

[Day 3 - Morning]

Securing data and access

- Implementing IAM best practices for Google Cloud database services
- Secure connections with private IPs, private networks, SSL/TLS, and access control

- Understanding data encryption at rest and in transit
- Manage secrets, service accounts, and application access
- Implement auditing, traceability, and compliance for data access
- Hands-on workshop: Hardening the security of a Cloud SQL architecture exposed to an application.

[Day 3 - Afternoon]

High availability, backup, and disaster recovery

- Define RTO and RPO objectives based on business criticality
- Configure high availability mechanisms on Cloud SQL, Spanner, and other services
- Understand backup, restore, and replication strategies
- Prepare for regional outages, data corruption, and human error
- Formalize post-incident recovery and validation procedures
- Hands-on workshop: Simulate an incident and execute a recovery plan.

Migrate databases to Google Cloud

- Evaluate migration strategies: rehost, replatform, and refactor
- Explore Database Migration Service and related tools
- Prepare the inventory, compatibility analysis, and migration plan
- Minimizing service disruptions during a migration
- Validate data, performance, and connections after migration
- Hands-on workshop: Building a migration plan from an on-premises database to Google Cloud

[Day 4 - Morning]

Monitor, automate, and scale operations

- Set up monitoring with Cloud Monitoring, alerts, and dashboards
- Analyze logs with Cloud Logging and audit logs
- Automate administrative tasks with scripts, APIs, and Infrastructure as Code
- Manage updates, maintenance windows, and changes in production
- Define operations runbooks for recurring incidents
- Hands-on workshop: Create a database monitoring dashboard and critical alerts.

[Day 4 - Afternoon]

Governance, costs, and data integration

- Implementing data governance tailored to cloud environments
- Understanding data retention, classification, and lifecycle policies
- Integrate operational databases with BigQuery, Dataflow, and Pub/Sub
- Optimize costs related to storage, resources, backups, and data transfers
- Apply a FinOps approach to Google Cloud database services

- Hands-on workshop: Analyze and optimize the cost of a GCP database architecture.

Preparation for the Professional Cloud Database Engineer exam

- Understand the structure of the Professional Cloud Database Engineer exam
- Review key areas: design, deployment, migration, security, performance, and operations
- Analyze exam scenarios and identify the most appropriate answers
- Recognize common pitfalls related to Google Cloud database services
- Create a personalized study plan after the training
- Hands-on workshop: Taking the practice exam + review.

Target Audience

This training is intended for both individuals and companies, large or small, seeking to train their teams in new advanced IT technologies or to acquire specific industry knowledge or modern methodologies.

Entry-level assessment

The pre-training assessment complies with Qualiopi quality standards. Upon final registration, the learner receives a self-assessment questionnaire that allows us to evaluate their estimated proficiency in various types of technologies, as well as their expectations and personal goals for the upcoming training, within the limits imposed by the selected format. This questionnaire also allows us to anticipate certain connection or internal security issues within the company (intra-company or virtual classroom) that could pose challenges for monitoring and ensuring the smooth running of the training session.

Teaching Methods

Practical Course: 60% Practical, 40% Theory. Training materials distributed in digital format to all participants.

Organization

The course alternates between theoretical input from the trainer, supported by examples and reflection sessions, and group work.

Assessment

At the end of the session, a multiple-choice questionnaire is used to verify that the skills have been properly acquired.

Certification

A certificate will be issued to each trainee who has completed the entire training program.