Enterprise Database Migration

Duration: 04 Days
Course level: Fundamental
Delivery type: Instructor-led Virtual / Classroom

Course Description

This course is intended to give architects, engineers, and developers the skills required to help enterprise customers architect, plan, execute, and test database migration projects. Through a combination of presentations, demos, and hands-on labs participants move databases to GCP while taking advantage of various GCP services. This course covers how to move on-premises, enterprise databases like SQL Server to Google Cloud (Compute Engine and Cloud SQL) and Oracle to Google Cloud bare metal.

Course objectives

This course teaches participants the following skills:

- Plan, execute, test, and monitor simple and complex enterprise database migrations to Google Cloud.
- Evaluate on-premises database architectures and plan migrations to cloud-optimized deployments.
- Choose appropriate Google Cloud database targets based on on-premises data sources.
- Migrate SQL Server databases to Cloud SQL and Compute Engine.
- Run Oracle databases on Google Cloud bare metal.
- Recognize and overcome the real-world challenges of moving data to prevent data loss, preserve data integrity, and minimize downtime.
- Test and monitor data migration projects.
- Leverage tools to automate data migration.
- Make the business case for moving databases to Google Cloud.

Intended audience

- Engineers planning a data migration to GCP
- Engineers working on a database migration project
- Technical managers, IT decision-makers, and others who want to understand the benefits, risks, rewards, and processes of migrating databases to the cloud

Prerequisites

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

- GCP Professional Cloud Architect and/or Professional Data Engineer certification.
- Understanding of relational and NoSQL database design.
- Database development experience using SQL.
- Programming experience.

Course Outline

Module 1: Migrating Enterprise Databases to the Cloud

- Get a high-level solution overview of use cases, customers, and competitors
- Understand traditional database architectures

- Optimize databases for the cloud
- Architect cloud databases for high-availability, scalability, and durability

Module 2: Google Cloud Data Migration Solutions

- Evaluate the database solutions available on Google Cloud
- Run databases on Google Cloud infrastructure using Compute Engine
- Leverage Kubernetes and GKE for deploying databases
- Use Cloud SQL for managed database solutions
- Provision Bare Metal Solution for Oracle databases
- Estimate the cost of database solutions

Module 3: Google Implementation Methodology

- Migrate to the cloud using Google's implementation methodology
- Perform the key database migration activities
- Choose the appropriate database migration approach

Module 4: Migration Strategies

- Lift and shift databases from on-premises to Google Cloud
- Back up and restore databases from on-premises to Google Cloud services
- Migrate databases to the cloud with no downtime
- Optimize databases for the cloud

Module 5: Networking for Secure Database Connectivity

- Build secure networks to host databases and database client applications
- Allow secure communication across networks using VPC Peering, VPNs, and interconnect
- Control access to databases using firewall rules
- Automate network infrastructure using Terraform

Module 6: Migrating SQL Server Databases to Google Cloud

- Lift and shift SQL Server databases using Compute Engine
- Employ Cloud SQL for managed SQL Server databases
- Architect SQL Server for security, high availability, and disaster recovery
- Configure SQL Server to run with Kubernetes on GKE

Module 7: Migrating Oracle Databases to Google Cloud

- Explain why running Oracle on Google Cloud makes sense
- Review the technical specs of Oracle BMS
- Define common use cases for running Oracle on Google Cloud

Module 8: Testing and Monitoring Databases in Google Cloud

- Use unit, integration, and regression testing techniques to ensure database migration success
- Monitor your migration projects with Google tools

Module 9: Google Cloud Data Migration Tools

- Move large amounts of data to the cloud using Google transfer services
- Program data processing and ETL pipelines using Cloud Data Fusion
- Create workflows using Composer
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Module 10: Making the Business Case for Moving to Google Cloud

- Write a business case to justify a database migration
- Perform risk and cost/benefit analysis on a cloud migration project
- Estimate the costs associated with database migration

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