Google Cloud

Enterprise Database Migration

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.

DURATION
4 days

LEVEL
Intermediate

FORMAT
ILT or on-demand

What you'll learn

- 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.

Overview	10 Modules · 80 Videos · 11 Labs · 3 Classrom activities
Who this course is for	Engineers planning a data migration to GCP; Engineers working on a database migration project; and Technical managers, IT decision-makers, and others who want to understand the benefits, risks, rewards, and processes of migrating databases to the cloud.
Products	Associated topic areas
Prerequisite	GCP Professional Cloud Architect and/or Professional Data Engineer certification; Understanding of relational and NoSQL database design; Database development experience using SQL; Programming experience.
Not covered	Database Administration tasks

Module 01 Migrating Enterprise Databases to the Cloud

Objectives

- 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.

Activities Lecture

Module 02 Google Cloud Data Migration Solutions

Objectives

- 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.

Activities Lecture, labs, and activity

Module 03 Google Implementation Methodology

Objectives

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

Activities Lecture and activity

Module 04 Migration Strategies

Objectives

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

Activities Lecture

Module 05 Networking for Secure Database Connectivity

Objectives

- 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.

Activities Lecture and labs

Module 06 Migrating SQL Server Databases to Google Cloud

Objectives

- 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.

Activities Lecture and labs

Module 07 Migrating Oracle Databases to Google Cloud

Objectives

- 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.

Activities Lecture and lab

Module 08 Testing and Monitoring Databases in Google Cloud

Objectives

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

Activities Lecture and labs

Module 09 Google Cloud Data Migration Tools

Objectives

- 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

Activities Lecture and lab

Module 10 Making the Business Case for Moving to Google Cloud

Objectives

- 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.

Activities Lecture and activity