

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**

200 - Intermediate

**FORMAT**

Instructor-led, On-demand

What you'll learn

- 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 Classroom 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	• Managed Service for Apache Airflow • Bare Metal Solution for SAP, Bare Metal Solution for Oracle • Hybrid Data Fusion • Oracle Database@Google Cloud • Google Kubernetes Engine • Advanced Compute Images • Database Center • SQL Server • Compute Engine • Cloud SQL • Oracle • Bare Metal Solution • Kubernetes • GKE • Cloud Data Fusion
Prerequisites	• 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

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| Objectives | <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• Lecture |
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Module 02

Google Cloud Data Migration Solutions

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| Objectives | <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• Lecture, labs, and activity |
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Module 03

Google Implementation Methodology

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| Objectives | <ul style="list-style-type: none">• Migrate to the cloud using Google's implementation methodology• Perform the key database migration activities• Choose the appropriate database migration approach. |
| Activities | <ul style="list-style-type: none">• Lecture and activity |
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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
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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
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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
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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
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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
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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
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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