Google Cloud

AlloyDB Essentials

Key information

Course code	AlloyDB Essentials
Course version	1.0
Course title	AlloyDB Essentials
Description	This course explores the benefits of AlloyDB, especially compared to PostgreSQL on Cloud SQL. It will walk you through AlloyDB's unique architecture, and explain how to configure deployments on Google Cloud. The course is divided into two parts: AlloyDB Administration Essentials (architecture and configuration) and AlloyDB Optimization Essentials (performance tuning).
What you'll learn	Part 1: • Understand the differences between AlloyDB and Cloud SQL. • Describe AlloyDB's architecture and its advantages for demanding workloads. • Create and manage an AlloyDB instance. Part 2: • Leverage Index Advisor recommendations to improve query performance. • Use Adaptive Autovacuum to free up database resources. • Describe and configure the Columnar Engine to speed up analytical queries.
Duration	3 hours
Level	Intermediate
Format	Instructor-led

Content overview

Who this course is for	Data Engineers and Database Administrators
Total modules	8
Total videos	0
Total Labs	0
Total classroom activities	0
Prerequisites	Comfortable working in Google Cloud with Cloud Shell and the Google Cloud Console. Basic knowledge of PostgreSQL management. Basic knowledge of Cloud SQL and database administrative tasks is useful.
Products	AlloyDB
Not covered	SQL and RDBMS basics

Content breakdown

Part 1: AlloyDB Administration Essentials	
Module 1 title	The Value of AlloyDB
Module 1 topics	1. Traditional PostgreSQL: Monolithic limitations 2. Cloud SQL: Monolithic scaling 3. AlloyDB: Cloud-native design 4. AlloyDB: Performance advantages 5. AlloyDB: Intelligent storage
Module 1 objectives	• Understand the differences between AlloyDB and Cloud SQL.

Module 1 activities	none
Module 2 title	Architecture Overview
Module 2 topics	1. Disaggregated storage 2. WAL processing 3. Read pool scaling 4. Automatic data tiering 5. Dynamic shard mapping
Module 2 objectives	• Describe AlloyDB's architecture and its advantages for demanding workloads.
Module 2 activities	none
Module 3 title	Get Started with AlloyDB
Module 3 topics	1. Instance configuration 2. Network connectivity 3. Connection methods 4. Scaling instances 5. Backup and recovery 6. Additional Resources
Module 3 objectives	• Create and manage an AlloyDB instance.
Module 3 activities	none
Module 4 title	AlloyDB Administration Essentials Quiz
Module 4 topics	1. Knowledge checks re AlloyDB Administration Essentials
Module 4 objectives	• Understand the differences between AlloyDB and Cloud SQL. • Describe AlloyDB's architecture and its advantages for demanding workloads. • Create and manage an AlloyDB instance.
Module 4 activities	none

Part 2: AlloyDB Optimization Essentials	
Module 1 title	Index advisor
Module 1 topics	1. DBA tasks 2. Indexing challenges 3. Database indexes 4. Index advisor: Smart recommendations. 5. Performance gains
Module 1 objectives	• Leverage Index Advisor recommendations to improve query performance.
Module 1 activities	none
Module 2 title	Adaptive autovacuum
Module 2 topics	1. MVCC overview 2. VACUUM purpose 3. Adaptive autovacuum: Dynamic resource management. 4. Performance improvement
Module 2 objectives	• Use Adaptive Autovacuum to free up database resources.
Module 2 activities	none
Module 3 title	Columnar Engine
Module 3 topics	1. Row vs. Columnar: Storage differences. 2. Analytical efficiency 3. In-memory engine 4. Metadata optimization 5. Execution modes 6. Additional Resources
Module 3 objectives	• Describe and configure the Columnar Engine to speed up analytical queries.
Module 3 activities	none
Module 4 title	AlloyDB Optimization Essentials Quiz

Module 4 topics	1. Knowledge checks re AlloyDB Optimization Essentials
Module 4 objectives	• Understand the differences between AlloyDB and Cloud SQL. • Leverage Index Advisor recommendations to improve query performance. • Use Adaptive Autovacuum to free up database resources. • Describe and configure the Columnar Engine to speed up analytical queries.
Module 4 activities	none