

Google Cloud relational databases

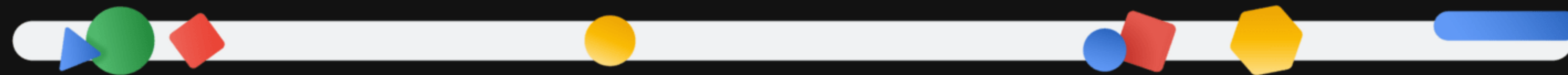


A relational database organizes data in predefined relationships and stores data in one or more tables of columns and rows, making it easy to see and understand how different data structures relate to each other. As a result they are used for applications in which the structure of the data does not change often. They offer ACID properties for this data.

Click each item below to learn more about ACID properties.

+	A-tomic
+	C-onsistent
+	I-solated
+	D-urable

Relational databases are used everywhere, from small businesses to large enterprises, for a wide range of applications, like e-commerce, banking, and social media. They’re also commonly used for gen AI applications. Let’s briefly explore the three Google Cloud relational database offerings: Cloud SQL, AlloyDB, and Spanner.



Cloud SQL

A fully-managed, cost-effective database service that provides the flexibility to choose the right capabilities based on your performance, availability, and data protection needs for your database workloads. Cloud SQL comes in three engines: PostgreSQL, MySQL, and SQL Server.

Use cases: E-commerce platforms, content management systems, and social networking sites.



An SQL-based, fully managed, scalable relational database

AlloyDB

A fully-managed PostgreSQL-compatible database service for your most demanding enterprise workloads. AlloyDB combines the best of Google with PostgreSQL, for superior performance, scale, and availability.

Use cases: Real-time trading platforms, high-volume e-commerce, online gaming leaderboards, fraud detection systems, personalized recommendations, and real-time inventory management.



A high-performance PostgreSQL-compatible database

Spanner

Spanner is unique because it blends aspects of both relational and non-relational databases. Spanner uses a relational schema with tables, rows, and columns, and it offers SQL support like a relational database. It also offers strong consistency and ACID transactions. But Spanner also possesses non-relational qualities, like its ability to scale horizontally and handle massive datasets with high traffic loads. It can distribute data globally, a capability typically found in NoSQL databases, while also providing strong consistency, which is often a feature related to relational databases. Spanner also supports multiple data models such as graph, full-text search, and vectors, enabling complex applications to be run on a single database.

When your application needs to operate across multiple regions with strong data consistency, Spanner is the answer. It provides a single, global database with high availability and low latency. Spanner has high availability, is globally consistent, and capable of performing up to tens of thousands of read/write operations per second.

Use cases: Global financial institutions, supply chain management systems, online gaming with global player bases, healthcare systems, telecommunications networks, government services, Internet of Things (IoT) platforms, large social networks, and big data analytics.



A multi-model, fully managed, scalable relational database