

Universidad Nacional de San Agustín

# Base de datos

## Spanner: Becoming a SQL System

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## Spanner

What is spanner?

Architecture

Scalability and Disponibility

# Spanner

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Spanner is used as an OLTP database management system ( for AdWords and Google Play), and is publicly available in Cloud Spanner on the Google Cloud Platform (GCP) [2].



Cloud  
Spanner

# Spanner

What is spanner?



	Spanner	Traditional relational	Traditional non-relational
Scheme	yes	yes	no
SQL	yes	yes	no
Consistency	strong	strong	eventual
Availavility	high	Failover	High
Scalability	Horizontal	Vertical	Horizontal
Replication	Automatic	Configurable	Configurable

Table: Properties of Spanner. Source: Cloud spanner

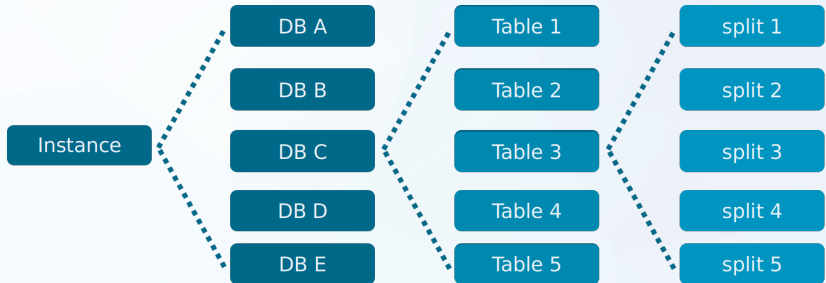
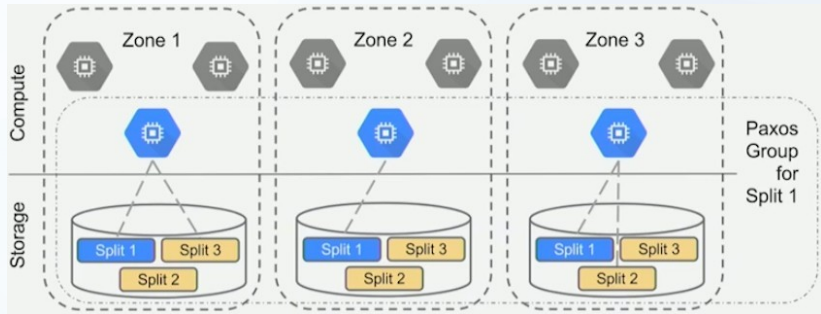


Figure: Example of horizontal partition.

# Architecture

Sharded, geo-replicated relational database



**Figure:** Spanner is a sharded, geo-replicated relational database. It uses a replicated write-ahead redo log, and the Paxos protocol.



## Why Spanner is scalable?

Spanner follows a range sharding architecture, so it reduce disk space and memory use.

## What technologies support Spanner's disponibility?

Truetime, automatic replication.





- [1] J. C. Corbett, J. Dean, M. Epstein, A. Fikes, C. Frost, J. J. Furman, S. Ghemawat, A. Gubarev, C. Heiser, P. Hochschild *et al.*, “Spanner: Google’s globally distributed database,” *ACM Transactions on Computer Systems (TOCS)*, vol. 31, no. 3, pp. 1–22, 2013.
- [2] D. F. Bacon, N. Bales, N. Bruno, B. F. Cooper, A. Dickinson, A. Fikes, C. Fraser, A. Gubarev, M. Joshi, E. Kogan *et al.*, “Spanner: Becoming a sql system,” in *Proceedings of the 2017 ACM International Conference on Management of Data*, 2017, pp. 331–343.

