

USING ALLOYDB TO POWER THE NEXT-GENERATION E-COMMERCE SOLUTION

In today's fast-paced retail environment, customers demand an e-commerce journey that is quicker than taking a product off the shelf – a standard our client aimed to exceed. To pave the way for a new era of e-commerce, one of Austria's top grocery and drugstore chains rethought its entire e-commerce strategy.

In partnership with Posedio, a solution was developed that lays the foundation for the retail of tomorrow: fast, scalable, and sustainable. With its ability to process both transactional and analytical queries at high speed, AlloyDB established the basis for that digital transformation.

CHALLENGE

The fast-paced expansion of e-commerce requires efficiency in order processing, payment transactions, delivery, and warehouse management.

Customers expect a seamless omnichannel experience. However, the existing systems could no longer meet these requirements. Real-time inventory tracking, ensuring product availability, and maintaining consistently high system performance were essential. Our client chose Google Cloud as its technological foundation, driven by its innovative capabilities, scalability, and strong sustainability values. Posedio, as a long-standing partner and cloud transformation specialist, was commissioned to design and implement AlloyDB as the core of the e-commerce database.

! APPROACH

AlloyDB, a PostgreSQL-compatible database, combines cutting-edge database technologies with AI-powered analytics. Its ability to provision databases on demand, ensure the highest security standards, and increase developer productivity through managed services makes AlloyDB the ideal solution.

In the early stages of development, a centrally managed PostgreSQL instance was used. However, as team sizes and requirements grew, this setup became insufficient. Tight coupling led to bottlenecks in database provisioning and workloads that negatively impacted other products competing for resources on the shared database. The shared use of a single database forced compromises in performance between transactional and analytical queries. Prioritizing transaction processing restricted the availability of crucial analytical results along the customer journey.

IMPLEMENTATION

Posedio developed a plan to introduce AlloyDB as the central database technology for the new e-commerce platform:

- 1 INFRASTRUCTURE DEPLOYMENT** Three AlloyDB clusters were provisioned automatically using Terraform and seamlessly integrated into the existing infrastructure. Automated backups with point-in-time recovery were implemented to ensure maximum data availability.

2 ACCESS MANAGEMENT & SECURITY

By leveraging an authentication proxy and consistently applying a zero-trust architecture with workload identity, IAM, and encryption, database access was strictly controlled and transparently auditable.

3 DEPLOYMENT EXPERIENCE OPTIMIZATION

Database access is now available across the entire network, increasing development flexibility. Developers can independently and more rapidly build and deploy new services without relying on external teams.

RESULTS

Following the successful implementation of AlloyDB, development teams immediately benefited from significantly reduced provisioning times.

The performance of analytical queries improved by several orders of magnitude, enabling more precise forecasts for inventory and delivery capacities. Thanks to the AlloyDB Query Analyzer, developers can now optimize queries independently, further increasing system efficiency.

Transactional queries also became significantly faster: whereas response times previously averaged around 100 ms with a P(99) of 600 ms, they now range between 25 and 50 ms on average, with P(99) under 80 ms.

Another critical factor is sustainability. AlloyDB clusters operate in resource-efficient, low-carbon regions, significantly reducing environmental impact and steering e-commerce towards a greener future.

By implementing AlloyDB, our client has not only elevated their e-commerce platform technologically but also created the foundation for agile, fast, and sustainable business processes. Enhanced developer productivity, improved system stability, and an optimized customer experience demonstrate that modern cloud technologies can deliver true competitive advantages.

