

Retail Leader Optimizes Decision-making by Revamping Data Management

Case Study



Overview

Modernizing merchandize management

A retail giant operating 5,900 stores, across nine African countries and Brazil with over 50,000 employees, needed to revamp its merchandize management capabilities. Its on-premises application could not scale up or scale out flexibly and the IT ecosystem did not have a disaster recovery (DR) plan or a fallback strategy.

Zensar's brief:

- Consolidate data from various sources while ensuring data integrity.
- Streamline how data is accessed and consumed.
- Enable centralized database management with improved availability, scalability, and integration.
- Ensure data resilience and reliability with cloud enablement.

Beyond the brief:

We helped the client generate timely, unified, and consolidated transactional reports to power decision-making processes.



Challenges

Managing disparate data systems

The IT department had to aggregate and reconcile data from multiple monolithic applications and varied data sources. Inconsistent data formats and schema across different databases hindered data integration efforts, leading to a decentralized data management strategy.



Solution

Transforming the data management landscape

We collaborated with the client's team to assess and analyze their data management landscape. Using the findings, we planned and deployed a comprehensive solution spanning four critical aspects.

Data restructuring and modernization

- Leveraged Google Cloud Platform (GCP)-native services for scalability, reliability, and integration capabilities.
- Built a single normalized Entity-Relationship Diagram (ERD) model that's tailored to fulfill the business requirements of all alliance companies.
- Segregated the ERD model at the instance level of Google Cloud SQL for data isolation.
- Used the GCP-native ETL tool to migrate data from the legacy system to a new architecture.

Data integrity and access management

- Utilized Google Cloud SQL for centralizing database management and ensuring data consistency and accessibility.
- Enabled single-sign-on authentication and authorization.
- Implemented DR and fallback mechanisms, leveraging GCP-native features that ensure high availability and data resilience.

User interface (UI) enhancement

- Adopted a micro-frontend architecture to enable modular UI development and independent deployment and scalability of frontend components.
- Developed a responsive UI application to support mobile, tablet, and desktop applications.

Solution optimization

- Employed the strangulation journey approach to optimize business continuity, scalability, agility, and risk mitigation.
- Implemented command-query-responsibility segregation (CQRS) to separate concerns between read and write operations and enhance performance and scalability.
- Organized microservices around business domains to facilitate independent development, deployment, and scalability.

Solution enablers

Tech stack:

- Java (OpenJDK)
- Spring Boot
- Git
- Junit/SonarQube
- Compute Engine
- Cloud DNS
- Cloud Memory Store
- Cloud Run
- Cloud SQL (PostgreSQL)
- Cloud Storage
- Cloud Build
- Cloud Monitoring
- Angular
- APIGEE X
- Google Pub/Sub



Impact

Energized decision-making and operations

According to internal benchmarks, these results were delivered:

- 20–30 percent faster time-to-insight
- 25 percent improvement in data team productivity
- Efficient decision-making, enabled by a unified data architecture
- Modernized application with optimized support for mobile, tablet, and desktop access

Business outcomes:

The solution empowered management with timely and crucial insights and on-the-go business users with easy access to reliable data.

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