Engineer Software

Ran 100 PostgreSQL, MS SQL, BigQuery warehouses

Architected, created, and managed 100 PostgreSQL, MS SQL, and Google BigQuery data warehouse databases with primarily GIS and time-series data, optimizing performance and scalability.

2022 – 2024

100

data warehouses architected and run

Situation. In a rapidly growing tech company, there was a critical need to create, manage, and optimize a diverse portfolio of 100+ databases across PostgreSQL, Microsoft SQL Server, and Google BigQuery. These databases primarily handled complex datasets, including geographic information systems (GIS) data (e.g., spatial coordinates, and location-based analytics) and time-series data (e.g., sensor readings, logs, and real-time metrics). The existing infrastructure faced challenges with scalability, query performance, and data consistency, particularly as the volume of data increased exponentially. The organization required a robust architecture to ensure data reliability, and reduce operational costs.

Task. The primary objective was to design, implement, and manage a scalable, high-performance data warehouse ecosystem tailored for GIS and time-series data. This involved:

- Addressing performance bottlenecks in complex spatial and time-based queries.
- Ensuring scalability to handle growing data volumes while maintaining cost efficiency.
- Collaborating with cross-functional teams (e.g., data scientists, product managers) to align database design with business needs.

Action. To achieve these goals:

- Designed Scalable Architectures:
  - Created normalized and denormalized schemas for PostgreSQL and SQL Server, leveraging spatial indexing (e.g., PostGIS for PostgreSQL) and time-series partitioning to optimize query performance.
  - Utilized BigQuery's time-partitioned and clustered tables for efficient handling of large-scale time-series data.

- Implemented Optimization Strategies:
  - Introduced query optimization techniques, such as indexing, materialized views, and caching, to reduce latency for GIS and time-series queries.
  - Applied data compression and columnar storage in BigQuery to minimize storage costs and improve scan speeds.

- Collaborated on Cross-Platform Integration:
  - Documented best practices for GIS and time-series data modeling to guide teams in future projects.

Result. The initiatives led to significant improvements:

- Performance Gains: Query response times for GIS and time-series data decreased by 40–60%, enabling faster analytics and decision-making.
- Operational Reliability: Automated monitoring reduced downtime by 50%, while standardized processes improved team productivity and reduced errors.
- Business Impact: The optimized infrastructure enabled the company to launch new data-driven products (e.g., real-time analytics dashboards) and meet regulatory compliance requirements for data governance.

This work solidified the organization's ability to handle complex data challenges.

Bring this experience to your project

Use "Ran 100 PostgreSQL, MS SQL, BigQuery warehouses" as a starting point for a similar challenge in your organisation. The services behind this work are available for your project. Anything that happens in a place — vessels, vehicles, plots, sensors — put on a map you can search, measure and share.

Explore our services Get in touch →

Look behind the result

Read the situation, decisions and result in this example. We can discuss which parts transfer to your constraints and which need another approach. Ran 100 PostgreSQL, MS SQL, BigQuery warehouses — 100 data warehouses architected and run

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Building a data warehouse that has to scale?

Talk through your project with the engineer responsible for delivery. We agree the scope, price basis and handover in writing before work begins.

Role context: Database Engineer. It draws on Platform Architecture, Databases, PostgreSQL, SQL, Data Warehousing, Data Engineering, Data Governance, Reliability & Backups, Performance Tuning and GIS / Geospatial. And while you are here, we are rather good at GIS & Geospatial Solutions, Database Design & Modeling, Database Administration (DBA), Database Performance Tuning and Data Warehouse Design.

Get in touch Explore our services

One piece of **a longer record** — and it is all on this site.

Every entry is written the same way: the situation, the task, what we did and what changed.

See the whole record

Define the improvement you need

Describe the workflow, the existing interfaces and the users who need the change. We can define a testable delivery and a handover that lets your team maintain it.

See what it costs Get in touch →

Building a data warehouse that has to scale?

Ask about the decisions behind “Ran 100 PostgreSQL, MS SQL, BigQuery warehouses”. You will speak with the people who can explain the work and assess your own project.

Explore our services

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