

## Case Study



## Walmart

## Walmart uses Neo4j to optimize customer experience with personal recommendations

**INDUSTRY**

e-Commerce

**CHALLENGE**

Give customers the best web experience

**STRATEGY**

Improve online product recommendations for customers

Substitute a RDBMS system using a complex batch process with a graph database for real-time recommendations

**SOLUTION**

Neo4j, a perfect tool for real-time recommendations

**RESULT**

Understand online shoppers' behavior and the relationship between customers and products

Optimize-up and cross-sell major product lines in core markets

Walmart is unique – a family-owned business that in a little over 50 years has become the world's largest public corporation, with over 2 million employees and annual revenues of \$470 billion.

Walmart has become the world's biggest retailer by understanding its customers' needs, and an important tool in achieving that has become the Neo4j database.

Walmart deals with almost 250 million customers weekly through its 11,000 stores across 27 countries, and through its retail websites in 10 countries. Walmart's Brazilian eCommerce group chose Neo4j to help Walmart understand the behavior and preferences of these online buyers with enough speed and in enough depth to make real-time, personalized, 'you may also like' recommendations, a proven way to maximize revenue.

As Walmart Software Developer, Marcos Wada, of the eCommerce – Brazil group explains: "Neo4j helps us to understand our online shoppers' behavior and the relationship between our customers and products, providing a perfect tool for real-time product recommendations."

**Challenge**

In its drive to provide the best web experience for its customers, Walmart wanted to optimize its online recommendations.

These days, shoppers expect finely tuned, highly personalized recommendations and react less well to one-size-fits-all suggestions. But to achieve this requires data products that can connect masses of complex buyer and product data (and connected data in general) to gain insight into customer needs and product trends, super-fast.

Walmart recognized the challenge it faced in delivering this with traditional relational database technology.

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"Neo4j helps us to understand our online shoppers' behavior and the relationship between our customers and products, providing a perfect tool for real-time product recommendations.... As the current market leader in graph databases, and with enterprise features for scalability and availability, Neo4j is the right choice to meet our demands. It suits our needs very well."

*– Marcos Wada,  
Software Developer,  
Walmart*

As Marcos explained: "A relational database wasn't satisfying our requirements about performance and simplicity, due the complexity of our queries."

To address this, Marcos' team decided to use Neo4j, a graph database, for which category Neo4j is the market leader.

### Solution

By design, graph databases can quickly query customers' past purchases, as well as instantly capture any new interests shown in the customers' current online visit – essential for making real-time recommendations.

Matching historical and session data in this way is trivial for graph databases like Neo4j, enabling them to easily outperform relational and other 'NoSQL' data products.

Marcos had first seen Neo4j demonstrated at the QCON New York conference in 2012 and he recognized: "With Neo4j, we could substitute a heavy batch process with a simple and real-time graph database."

Based on this, his team trialed the technology, citing positive results that helped finalize the decision. The verdict? "It suits our needs very well."

### Benefits

Walmart is now using Neo4j to make sense of online shoppers' behavior in order to be able to optimize-up and cross-sell major product lines in core markets.

It has deployed Neo4j in its remarketing application, run by the company's eCommerce IT team based in Brazil. Walmart has been using Neo4j in production since early 2013 and this year migrated to version 2.0.

Marcos explained the benefits: "With Neo4j we could substitute a complex batch process that we used to prepare our relational database with a simple and real-time graph database. We could build a simple and real-time recommendation system with low latency queries."

He concluded: "As the current market leader in graph databases, and with enterprise features for scalability and availability, Neo4j is the right choice to meet our demands."

Neo Technology is the creator of Neo4j, the world's leading graph database that brings data relationships to the fore. From companies offering personalized product and service recommendations; to websites adding social capabilities; to telcos diagnosing network issues; to enterprises reimagining master data, identity, and access models; organizations adopt graph databases to model, store and query both data and its relationships. Large enterprises like Walmart, eBay, UBS, Nomura, Cisco, HP, and Telenor, as well as startups like CrunchBase, Medium, Polyvore, and Zephyr Health use Neo4j to unlock business value from data relationships.

Questions about Neo4j?

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