

CASE STUDY



Wanderu

Neo4j Frees Travelers to Wanderu Across America

INDUSTRY

Travel

CHALLENGE

Help consumers to find and book inter-city bus and train travel across the US.

STRATEGY

- Set up a search engine site that integrates millions of bus and train itineraries between US cities.
- Integrate with local public transit, walking, and biking directions to and from every station.

SOLUTION

Neo4j, the perfect tool for managing complex data, searches and recommendations

RESULT

- Neo4j finds customers their best travel options.
- Graph database manages hundreds users a minute and an inventory of millions of trips
- Handles task that would be “very inefficient” using a relational model.

Wanderu’s groundbreaking platform allows users to seamlessly book travel across America by bus or train using a Neo4j-based search system that integrates local public transit, walking, and biking directions.

Challenge

Wanderu’s key business challenge was how to collect, standardize, then connect together all this data – from bus and train companies and multiple public sources including Google Maps.

Chief Technology Officer Eddy Wong, a 15-year software industry veteran and former Chief Architect at Open Sesame, a personalization technology start-up acquired by Adobe, quickly realized this task was beyond conventional relational databases.

“When we started we didn’t know anything about Neo4j, but by looking at the problem it jumped out at us that we wanted a graph model. We wanted the flexibility of a schema-less database and no way would self-joins in a relational model perform – we did not like the relational model for our main use case.”

Solution

Wanderu already stored its data on cities, stations, trips and carriers in a MongoDB NoSQL database, but it needed Neo4j to perform the “path finding” – the complex search and discovery required to recommend to customers their best travel options. So the company linked MongoDB and Neo4j together, using a replication mechanism called Mongo Connector.

“Our solution was to have two stores and let Neo4j do the path finding,” Eddy said. “They say that in the NoSQL approach you should try to avoid joins, but even though we did a join between Neo4j and MongoDB, it was much better than a relational database self-join, so we were glad to have picked Neo4j together with MongoDB.”

Explaining why Wanderu selected Neo4j over other graph databases, he said: “We chose Neo4j because its graph traversal framework is the most advanced and flexible one that we saw. We were able to implement a variation of the shortest-path algorithm with Neo4j, while the other graph databases don’t seem to make that easy.”

“The other graph databases that we looked at were proprietary ones and we wanted an open-source one. With open-source, you can inspect the code if you want to and you have the choice to extend the functionality. We also liked the vibrant open-source community behind Neo4j.”

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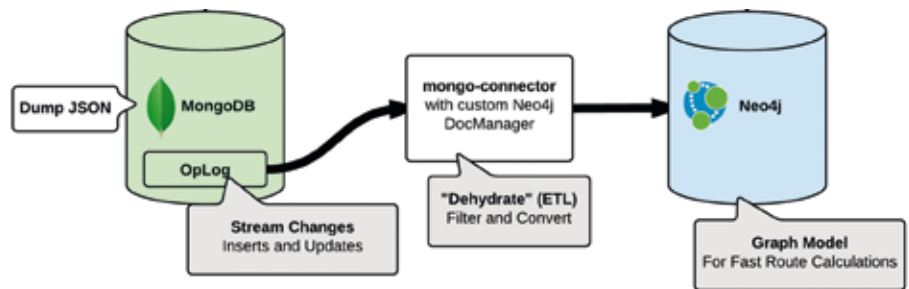
“Neo4j allows us to focus on making travel searches better, rather than making SQL queries perform”

- Eddy Wong, CTO of Wanderu

Result

Since its launch, Neo has easily coped with the demands placed on it, far surpassing the expectations of Mr. Wong.

“So far, we’re handling just under 1 million users a month and we haven’t had a problem. Actually, we were surprised that we didn’t have to add an extra caching layer. Neo4j was very fast.”



Looking into the future, Neo also gives Wanderu a platform for providing more and new ways of connecting data. “We still have a lot of possibilities in terms of storing extra information in the graph,” Eddy said. Wanderu is planning innovative links between transportation information (a graph), other travel data, and users’ social graphs. “It’s all coming together: graphs are indeed everywhere, from transportation networks to social graphs”, commented Eddy. “Neo4j provides a platform for advanced recommendations. Having built a personalization platform in the past, it’s great to have a platform that facilitates recommendations. Neo4j allows us to focus on making travel searches better, rather than making SQL queries perform”, Eddy concluded.

About Wanderu

Wanderu is Travel for the Next Generation, providing the simplest way to find and book bus and train travel. We help millions of travelers locate the best travel options at the best price. By working directly with hundreds of ground travel providers, Wanderu provides service to over 85% of the US, and major hubs in both Canada and Mexico. Our partners include the largest providers in the world, including Amtrak, Greyhound, Megabus, Boltbus, Peter Pan Bus Lines, Grupo Senda and Trailways of New York.

Neo4j is the leader in graph database technology. As the world's most widely deployed graph database, we help global brands – including [Comcast](#), [NASA](#), [UBS](#), and [Volvo Cars](#) – to reveal and predict how people, processes and systems are interrelated.

Using this relationships-first approach, applications built with Neo4j tackle connected data challenges such as [analytics and artificial intelligence](#), [fraud detection](#), [real-time recommendations](#), and [knowledge graphs](#). Find out more at [neo4j.com](#).

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