Case Study

Telenor

Resource Authorization Challenge Solved with Graph Database

INDUSTRY
Telecommunications

CHALLENGE
– Identity & Access Management
– Real-time Query & Calc
– Resource Authorization

STRATEGY
Build New Authorization Engine Using the Neo4j Graph Database

SOLUTION
Neo4j Graph Database Integration with platform Framework

RESULT
Drastically increased query speed, and simplification of the implemented business traversal rules using Neo4j instead of SQL

Telenor Norway is the leading supplier of the country's telecommunications and data services. With more than 3 million mobile subscribers, it is also the nation's number one broadband provider, and part of Telenor Group: one of the world's largest mobile operators.

Telenor's systems expose customer and product data to a range of different channels, among others a self-service web solution where business customers may manage their own portfolio. System availability and access/retrieval response times are critical to customer satisfaction.

Situation

Behind Telenor's online self-service management portal, you find the middleware responsible for managing customer organizational structures, agreements, subscriptions, and user access to their business mobile subscriptions. The middleware is backed by Sybase, with queries implemented as stored procedures. Because mobile subscriptions have been increasing – resulting in large customer portfolios – and because users expect near real-time timeliness and real-time response times from online systems, the existing resource authorization module written in SQL did not longer prove to be performing well enough. Resource authorization would take as much as 20 minutes for the largest customers, and needed to be pre-calculated and cached each night, something also resulting in stale data.

Sebastian Verheughe, architect and developer of the Telenor Mobile Middleware Services, says, "As a premium Telco provider in Norway, we need a reliable system to cater to our large user base. The Neo4j database delivers high performance services for our value chain." The solution covers both corporate and residential customers, their corporate structure, the subscriptions containing the phone number, price plan and owner/payer/user of the subscriptions, billing accounts, and any corporate or residential agreements providing discounts for all agreement members.

neo4j

Case Study

> "The Neo4j graph database gives us drastically improved performance and a simple language to query our connected data."

> "Neo4j's high performance engine provides flexibility of data representation along with features that go beyond traditional relational databases."

– Sebastian Verheughe,
Architekt & Entwickler Telenor
Mobile Middleware Services

Why Neo4j?

Modeling the resource graph in Neo4j was quite natural, since the domain being modeled is inherently a graph. Neo4j provided fast and secure access and answers to important questions like: Which subscriptions can a user access, does the user have access to the given resource, and which agreements is a customer party to? The speed and accuracy of these operations is quite critical, because system users are not able to access data until authorization calculation is performed.

"With complex dependencies between accounts, products and companies, Neo4j's high performance engine provides flexibility of data representation along with features that go beyond traditional relational databases."

Benefits

By overcoming both the performance and the data currency limitations of the previous module, Neo4j enabled high performance and reliable execution of authorization rules during all access to protected data. The transition resulted not just in faster performance, but in more maintainable code, because the access rules could be expressed so much more easily in a graph. Query and response times were reduced to seconds, and even milliseconds in many cases, from many minutes.

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.

Questions about Neo4j?

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