

Executive Summary: Fraud Detection

“While there are entirely different types of fraud, they all hold one very important thing in common: **the deception relies upon layers of indirection only uncovered through connected analysis.**”

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Today’s Fraud Rings Are Sophisticated



ORGANIZED RINGS



SYNTHETIC IDENTITIES



STOLEN IDENTITIES



HIJACKED DEVICES

Challenge: The Fluid Face of Fraud

Yusuf* had no way to work around the math: His fraud detection team was allowed only five minutes to review potentially fraudulent transactions. Just querying the database took eight.

“Since our analysts were having to review 10,000 daily transactions; this wasn’t sustainable,” Yusuf said. “Also, a relational database wasn’t the right solution to perform link analysis queries so it placed a huge burden on our database.”

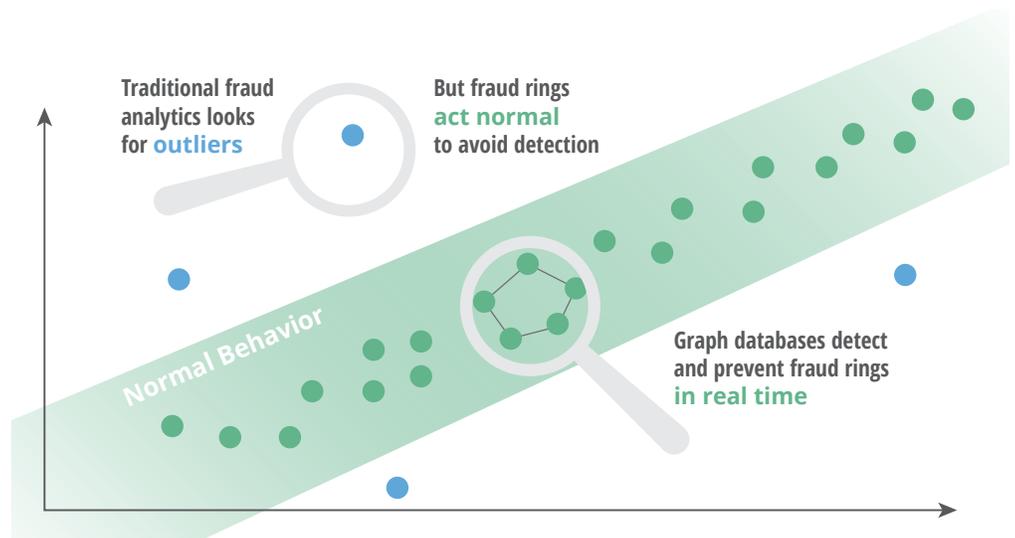
The problem: Querying Microsoft SQL Server required an immense amount of JOINS that continually devastated analyst efficiency. Yusuf’s fraud detection team at this Fortune 500 financial services company* simply couldn’t use the data they already had on hand.

Yusuf’s challenge was one faced by many fraud detection teams: detecting fraud rings that – when analyzed individually – didn’t arouse suspicion but, when identified as a whole, defrauded the company of millions of dollars.

Where Traditional Fraud Detection Fails

Traditional fraud detection methods focus on identifying individual IP or device addresses and by looking for outliers within large datasets. **But these efforts aren’t enough to detect a fraud ring.**

Today’s sophisticated fraud rings use synthetic or stolen identities in addition to well-coordinated actions designed to look normal and slip past traditional fraud detection tools.



Gartner has outlined that tomorrow’s fraud detection approaches [must include big data and entity-link analysis across multiple channels and products.](#)

With traditional database technology, this is easier said than done. That’s because relational and NoSQL databases aren’t designed to analyze connections – the very behavior that defines fraud ring behavior and coordination.

** This Neo4j customer has asked for anonymity, and all names are used for illustrative purposes only. All facts and figures are real and confirmed by the customer.*

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Neo4j Graph Platform Benefits

Neo4j Database

Support [massive connected data analysis](#) powered by the Neo4j native graph database and its underlying enterprise architecture: the core of all real-time fraud prevention solutions.

Data Discovery & Visualization

Easily communicate graph-based fraud prevention results to non-technical peers and executives using [Neo4j Bloom for data visualization](#).

Cypher Query Language

[Cypher](#) is easy to learn for analysts and yet expressive – and performant enough to identify fraud rings effectively within massive, interconnected datasets.

Data Integration Tools

Accelerate the transformation of your tabular big data into connected graphs with [powerful integration tooling](#) for seamless fraud analysis across data sources – with a data model that evolves without interruption

Graph Analytics

Power your offline [fraud analytics with a connections-first approach](#) that reveals otherwise hard-to-find patterns of advanced fraudsters and then smoothly feed those insights into your operational connections-first database.

Solution: Unmasking Fraud Rings with Connected Data

Yusuf knew he needed a database optimized for storing and traversing several levels of connections. That's when he found Neo4j.

Even though his analysts didn't initially know how to use graph technology, Yusuf said, "Neo4j provided our team with in-depth training on its fraud detection capabilities."

With Neo4j, analysts at the Fortune 500 company were able to make faster, more accurate decisions. As a result, they had time for new, more extensive investigations into potential fraud rings gleaned from emerging clusters of connections.

The data analysis and resulting visualizations made possible by Neo4j cut the manual review time in half – **from eight minutes to just under three.**

Reviewing nearly twice the number of transactions daily, Yusuf's fraud detection team uncovered previously unnoticed activity to instantly stop fraud rings in real time, saving thousands of dollars a day.

Read the rest of the story at neo4j.com/case-studies/fortune-500-financial-services/

Next-Level Fraud Detection with Neo4j

Neo4j is a native graph database that takes a connections-first approach to data. These relationships are persisted as first-class entities equal to other data points – rather than disappearing after each analysis or being prohibitively expensive to query.

Fraud detection powered by Neo4j uncovers hard-to-detect patterns in real time, enabling teams to identify and stop criminal activity as it occurs.

Using graph technology, anti-fraud teams augment discrete data scrutiny with connected data analysis. Teams then identify the relationships between people, accounts, business entities, transactions and other data.

Fraud Prevention Applications Built on Neo4j

- Identify key relationships to detect and trace fraud
- Identify sythetic identities, anonymities and hijacked identities
- Reduce false positives in detection results that impede valid transactions
- Reduce the negative economic impact of the shadow economy

[Learn more about using Neo4j to detect and stop fraud](#)

Neo4j, Inc. is the graph company behind the leading platform for connected data. The Neo4j graph platform helps organizations make sense of their data by revealing how people, processes and digital systems are interrelated. This connections-first approach powers intelligent applications tackling challenges such as artificial intelligence, fraud detection, real-time recommendations and master data.

More than 250 commercial customers, including global enterprises like Walmart, Comcast, Cisco, eBay and UBS use Neo4j to create a competitive advantage from connections in their data.

Questions about Neo4j?

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