



# WHY INTELLIGENT APPLICATIONS NEED A GRAPH DATABASE WITH UNLIMITED SCALABILITY

THE CONNECTED  
SOLUTIONS SERIES

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**Scalability**

Security

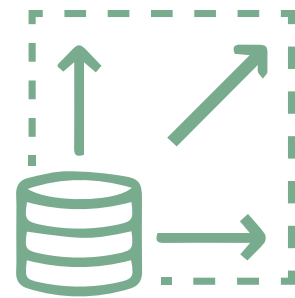
Agility



# Intelligent applications

Intelligent applications come with new requirements. They need full context to support smart decision making in real time, and they must be able to scale without limits to meet unexpected demand.

## Unbounded Scale



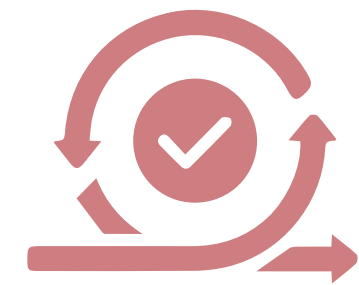
*No limits,  
no surprises*

## Security & Data Privacy



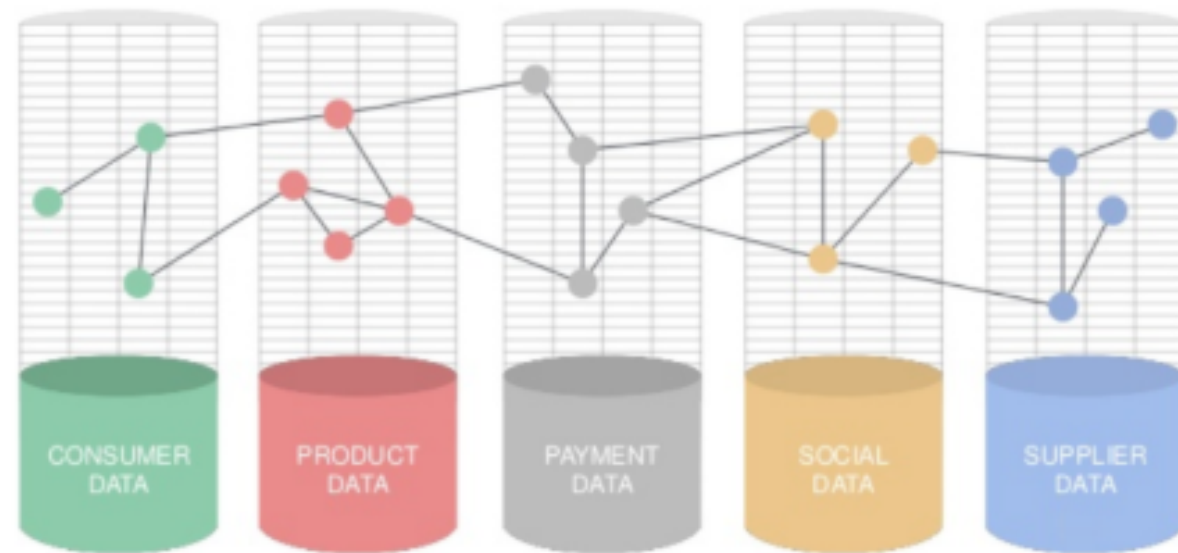
*Built in, locked down*

## Agility



*Thrives on  
change*

# Relational databases



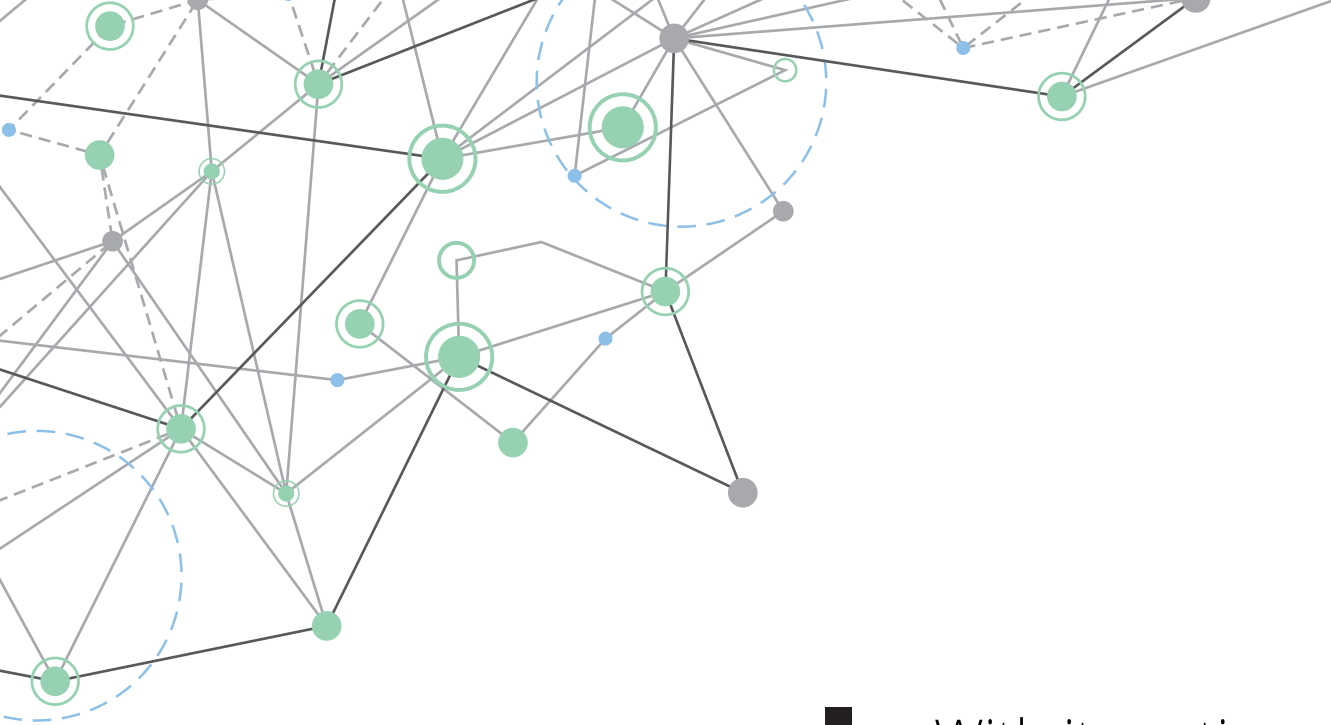
Relational databases scale, but with limited connections across tables.

As a result, JOINS severely degrade performance.

Fully transactional

Hard to change

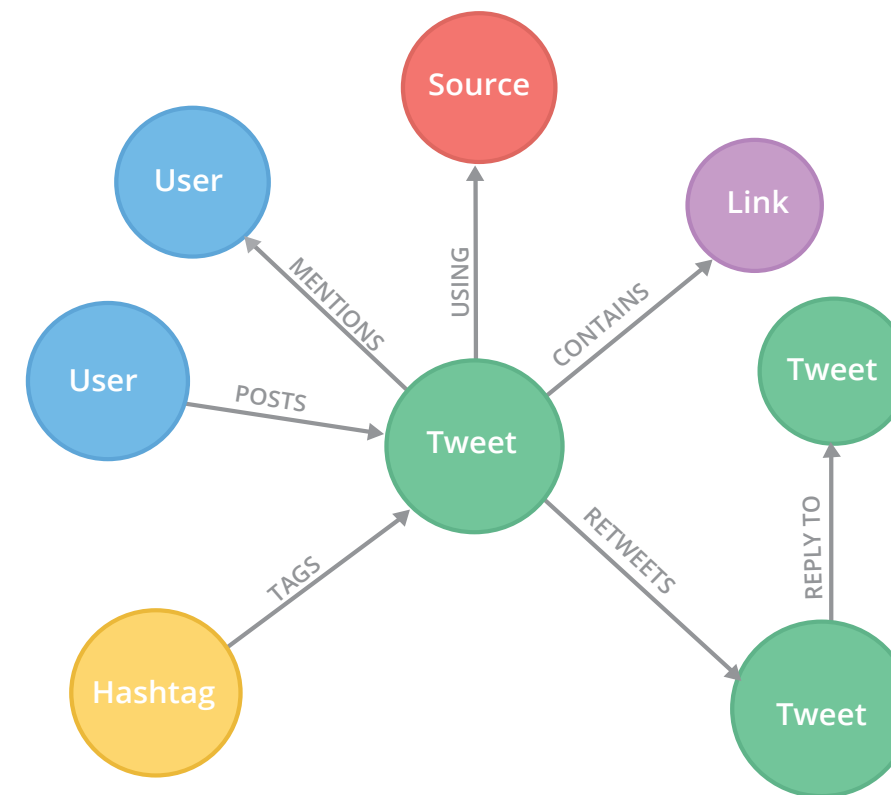
Not optimized for connected data



# Neo4j graph database

With its native graph data model, Neo4j offers extreme efficiency.

- No JOINS
- Scale up effortlessly
- Simple but powerful
- Change at will
- Relationships stored as first-class entities



*"Our Neo4j solution is literally thousands of times faster than the prior MySQL solution, with queries that require 10-100 times less code."*

*– Volker Pacher,  
Senior Developer, eBay*



## Scaling with Neo4j

Neo4j scales with your data and your business needs, minimizing cost and hardware while maximizing performance across connected datasets.

Neo4j invented the graph database. Data integrity is not only fundamental to the graph model, but to the customers who rely on a graph database for mission-critical applications.

Enabling unbounded sharding required careful engineering so that graph data would never be corrupted.

The result? Your mission-critical applications scale safely and with confidence.



*"At albelli we regularly deal with petabytes of data, and we are most excited about the new scalability features in Neo4j 4.0. The ability to horizontally scale with the new sharding and federation features, alongside Neo4j's optimal scale-up architecture, will enable us to grow our graph database without barriers."*

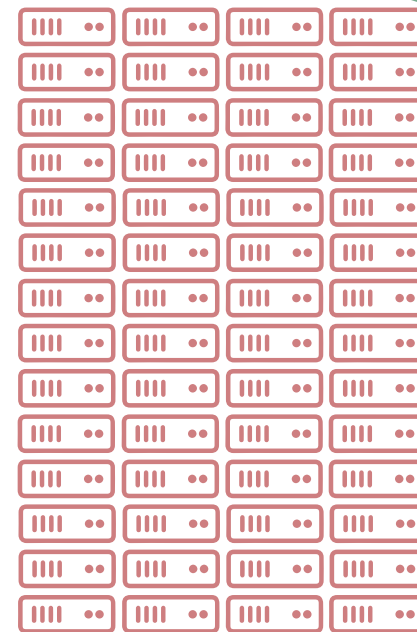
*– Josh Marcus,  
Chief Technology Officer, albelli*

Scale with  
Neo4j makes  
you rethink  
big data

# Extreme Hardware Efficiency

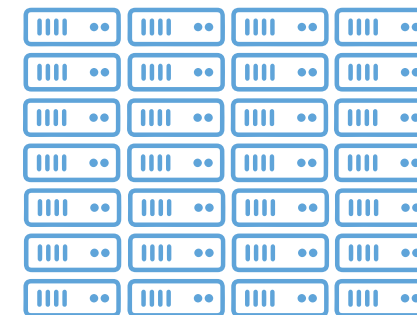
## Case Study: Activity Feed for a Professional Social Network

Developed **version 1**  
on a document database  
using a 125-instance cluster  
storing 20TB of data.



**v1**  
Too slow

Developed **version 2**  
on a wide-column store using  
a 48-instance cluster storing  
50TB of data.



**v2**  
Faster, more efficient  
but still too slow

Developed **version 3**  
(and beyond) on Neo4j  
using a 3-instance cluster  
storing just 33GB of data.



**v3**  
Blazing fast, efficient,  
300% less human  
effort to maintain

WATCH VIDEO

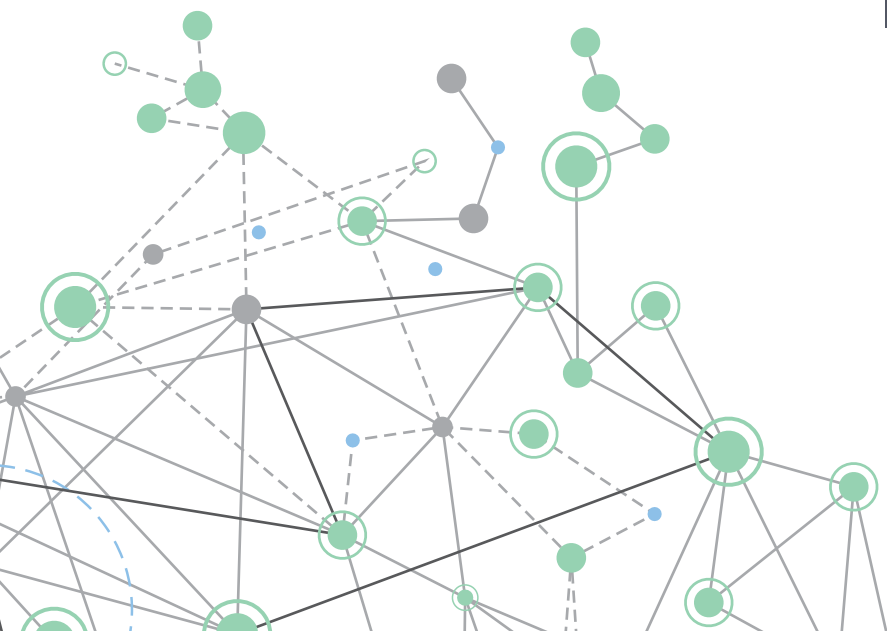
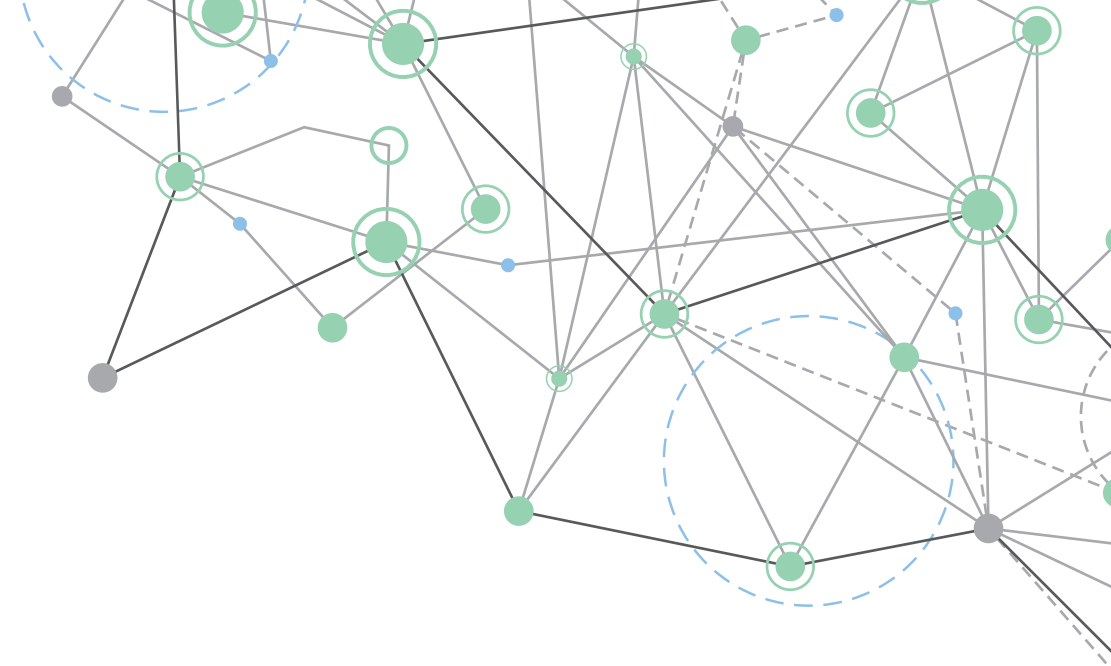


# What is sharding?

A large graph database may have trillions of nodes. Consider LinkedIn, for example.

Picture all of the people in your professional network as a single, coherent graph. The physical storage of such a graph is divided, or sharded, across many servers or clusters, despite the fact that it's still a single graph dataset.

While common in the relational database world, sharding is new to graph databases. Sharding is the division of a single logical database into as many physical databases as required.

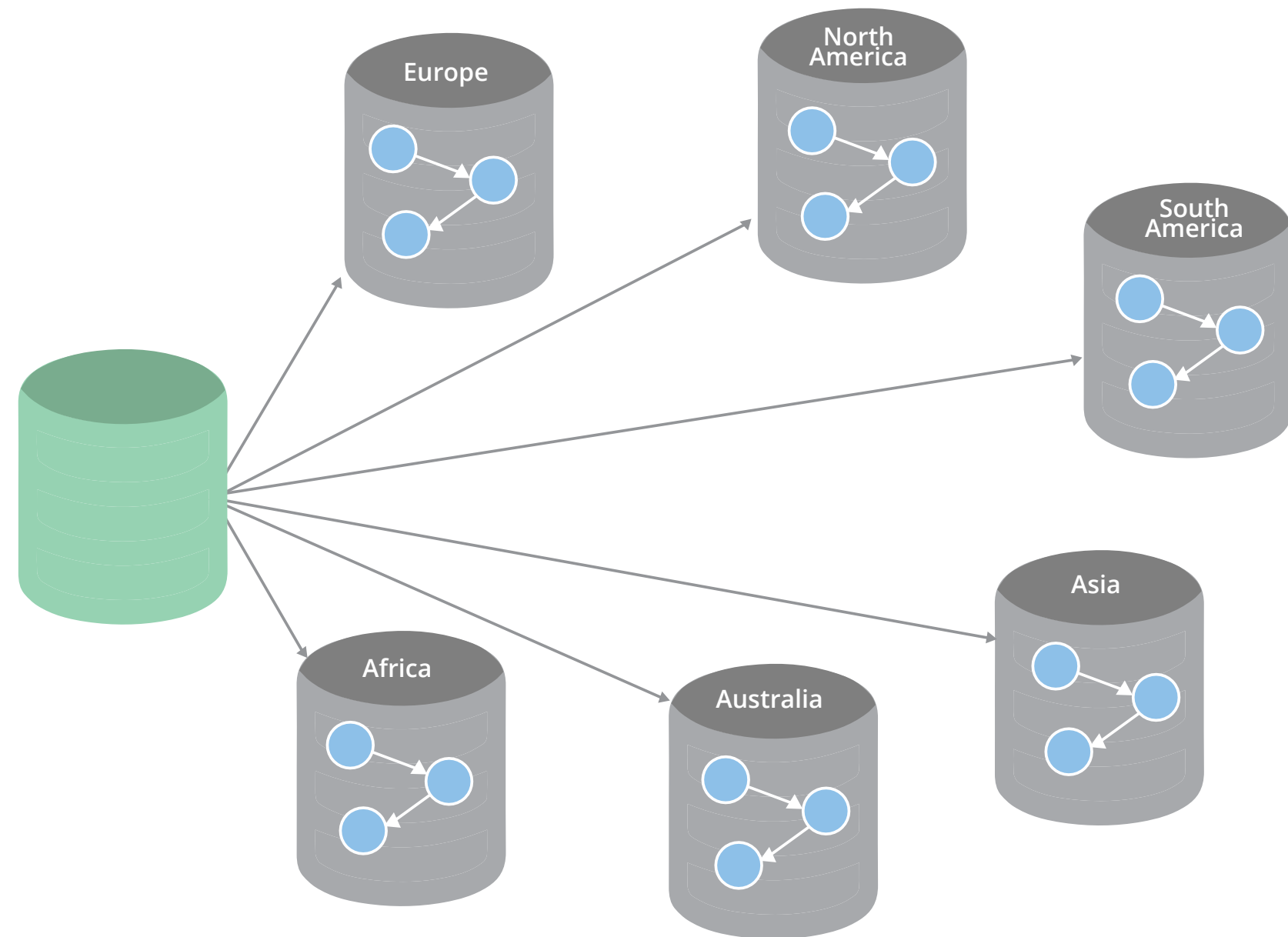


# A few reasons to shard a graph

Isolate data for compliance with laws like GDPR

Minimize latency by storing segments close to users

Break up very large graphs (tens of billions of nodes)





# Federated graphs

The real reason to put your data in a graph is to ensure you can ask any question you want and to perform graph analytics at scale.

While sharding divides graphs, federated graphs bring multiple graphs together, supporting queries across graph databases that may have different logical structures.



## Last-minute shopping

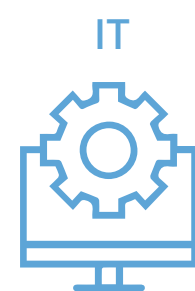
Is SuperToy available in ANY of our global locations?

Federated graphs put sharded graphs together so they can be queried as one big graph.



## Federated graphs with different schemas

Graphs are everywhere. So what happens once you have graphs across your organization? Federated graphs enable you to run queries across ALL your graphs.



*The ability to query  
across graph databases  
with different schemas is an  
entirely new capability for the  
graph database world.*

*No other graph database on  
the market offers this feature.*



# Get started

Once you decide to adopt graph technology, you need enterprise-grade capabilities, not a graph layer on top of an existing data store.

Neo4j has invested time and expertise in solving the difficult computer science problems inherent in scaling a graph database.

Neo4j is the world's leading graph database. That's why more than 75% of the Fortune 100 already use Neo4j.

Learn more about scalability for graph databases in this white paper [how Neo4j powers tomorrow's connected data solutions](#).



Neo4j is the leading graph database platform that drives innovation and competitive advantage at Airbus, Comcast, eBay, NASA, UBS, Walmart and more. Hundreds of thousands of community deployments and more than 400 customers harness connected data with Neo4j to reveal how people, processes, locations and systems are interrelated.

Using this relationships-first approach, applications built using Neo4j tackle connected data challenges including artificial intelligence, fraud detection, real-time recommendations and master data. Find out more at [Neo4j.com](#).

Questions about Neo4j?

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[neo4j.com/contact-us](https://neo4j.com/contact-us)