

## Case Study



### United States Army

## Graph Technology Keeps the Army Up and Running by Tracking and Analyzing Equipment Maintenance

#### INDUSTRY

Government & Defense

#### CHALLENGE

Master Data Management

#### GOAL

Modernize the US Army's IT system for visibility of maintenance and support costs

#### CHALLENGE

Old mainframe system wasn't flexible enough to meet current needs

#### SOLUTION

Use the Neo4j graph database in place of existing mainframe-based system

#### RESULT

- Now able to rapidly store, explore and visualize the Army's wealth of logistics and cost data
- Neo4j also serves as an analytics platform able to store all logistics data in one place

### Overview

The U.S. Army is the largest branch of America's Armed Forces. In support of more than one million Active, Guard and Reserve soldiers and ~200,000 civilian staff, the Army has the need to provide and maintain a staggering amount of equipment; from helicopters and armored vehicles to small arms. Data depicting the maintenance cost of this equipment is now being tracked and analyzed in a Department of Defense (DoD) information system that employs Neo4j graph technology.

### The Challenge

Equipment levels on the scale of the U.S. Army require a massive amount of maintenance and support, necessitating the procurement of millions of spare parts per year. Since maintenance, operation and support costs of equipment (depending on the program and program longevity) represent as much as 80 percent of the total lifecycle costs, it is understandable that the tracking of these costs is very important.

The tracking of parts orders and the connections to the systems, components and subcomponents that they are being ordered for is a significant logistical challenge for the Army. Army leaders need the ability to rapidly query this connected data to:

- Forecast the need for replacement parts
- Calculate mean time to failure rates
- Perform multi-dimensional cost comparison and trend analysis
- Inform the Army's budget requirements process
- Answer vital "what-if" questions such as the cost of deploying certain forces and the supporting equipment to a new war zone

The level of data management was becoming increasingly difficult on the Army's aging mainframe-based system as the volume of available data was increasing and many of the historical data sources were changing. It was obvious that a system with more flexibility would offer greater performance and the ability to add in new dimensions for more insights and richer analysis.

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"[Neo4j] is giving us visibility into more detailed connections within our data that were previously much harder to find or perhaps sometimes even overlooked."

– Preston Hendrickson,  
Technical Lead,  
CALIBRE

### The Solution

The Army recognized the need to modernize its core tracking system. Working with [CALIBRE](#), an employee-owned management consulting and IT solutions company, that delivers enduring solutions to defense, federal and commercial clients, the U.S. Army is now employing Neo4j as a major part of their solution for providing greater visibility into the total costs of owning a system.

### The Results

Adding in Neo4j capabilities to the US Army's IT solution for the visibility of operating and support costs provides the US Army with a much more flexible and robust view of the parts requirements and costs of these parts across systems, components and subcomponents. Thanks to [Neo4j](#), it is now much easier for the US Army to rapidly store, explore and visualize this wealth of logistics and cost data.

The contrast with the previous system is stark.

Preston Hendrickson, who leads CALIBRE's technical team for the US Army's Operating and Support Management Information System, said, "The scale of the information Neo4j handles is vast. For example, just one of the tanks we track includes ~10 million parts records, creating more than 15 million possible relationships among the components for our cost allocation algorithms to work through."

Preston continued, "The flexibility and speed at which we can now add in new data sources or make changes to the structures of current data has been a real game changer for our IT team."

"Likewise, Neo4j also saves our analytics team huge amounts of time. The graph now serves as an analytics platform that is capable of housing everything they need together in one place. This is giving us visibility into more detailed connections within our data that were previously much harder to find or perhaps sometimes even overlooked. Analysts can now look for answers to their questions and perform 'what-if' scenarios immediately without having to load data from multiple sources and in some cases reload a mainframe for repeat computation."

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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