



Delivering Insights to Better Manage Diseases and Promote Wellness

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— Brad Ball, Director, Data Analytics, Big Data, Quest Diagnostics

Overview

Quest Diagnostics is a leading provider of diagnostic insights focused on improving patient outcomes. Quest annually serves one-third of the adult population in the United States and works with half the physicians and hospitals, resulting in the largest repository of clinical results in the United States.

Working with Cloudera, Quest is creating an enterprise data hub and implementing advanced analytics, including sentiment analysis, to better connect the dots across the healthcare ecosystem. The company focuses on revealing new avenues to identify and treat disease, inspire healthy behaviors, and improve overall healthcare management.

Impact

Quest produces more than 750,000 lab results daily, amassing more than 20 billion lab results over the past decade.

Through its big data platform, built on Cloudera Enterprise, the company can coalesce its data, along with inputs from other unstructured and structured data sources, to obtain new clinical insights. These insights help providers improve care management, and identify patients at risk and those in the early stages of disease.

“Using the Cloudera platform, we’re taking our data analytics to a higher level to improve health outcomes,” said Brad Ball, Director, Data Analytics, Big Data, Quest Diagnostics. “We’re able to build avenues for additional insights on how to study diseases and, in some ways, better care for different disease states. We’re also able to help guide patients toward healthier lifestyles, and better the healthcare market itself. It’s not just about making people well again. It’s really about making sure they don’t get sick.”

One example of the innovation made possible through Quest’s big data platform is the company’s new Population Lab Insights product. “With Population Lab Insights, we can show at a high level where there might be gaps in care,” said Ball. “It allows providers to drill down into individual patient results to see if they need a particular test they’re not getting.”

Business Drivers

For years, Quest has used its data to improve operational efficiencies and enhance lab services. However, because Quest maintained different data sets in different data warehouses across the organization, it was time-consuming for data analysts to perform the more advanced analytics providers now require.

“If you wanted to work with a data set to do a study, you had to get in a queue to get IT to build the data feed,” said Ball. “We needed to give our analysts closer access to the data. The goal isn’t to replace data warehouses; it’s to enable us to explore data in a way we haven’t been able to before.”



Key Highlights

Industry

- Healthcare

Location

- Headquarters: Madison, NJ, USA

Business Application(s) Supported

- Population Lab Insights
- Business Intelligence

Impact

- Enables greater agility in delivering new products
- Delivers new insights that help improve patient care and support healthier lifestyles
- Addresses HIPAA requirements for data security with comprehensive audit and encryption capabilities

Data Sources

- Billing
- Lab results
- Orders

Solution

- Modern Data Platform: Cloudera Enterprise
- Workloads: Analytic Database, Data Engineering, Operational Database
- Components: Apache Flume, Apache HBase, Apache Hive, Apache Impala (incubating), Apache Spark Streaming, Apache Sqoop, Cloudera Navigator, Hue
- BI & Visualization Tools: Tableau, IBM Cognos

Big Data Scale

- 20+ billion lab results

Solution

“The Cloudera Enterprise platform is the cornerstone of our next-generation analytics platform, and the outstanding partnership we have developed with Cloudera has allowed us to quickly aggregate, cleanse, enrich, and visualize our data in ways we struggled with in the past,” explained Bill Leister, Vice President, Analytics, Informatics, and Business Intelligence. “With our data lake, we can present insights that drive operational efficiency, enrich our clinical reports, and support the growing need to manage population health and lab utilization.” Added Ball, “We’re doing an awful lot, including some cutting-edge things today using Apache Spark with Cloudera, and, in the future, using [Apache Kudu](#). Cloudera Professional Services and Cloudera Support provide the expertise to help us move to productizing and using the data.”

Quest uses Cloudera Enterprise to easily combine its structured data with various unstructured data. With all the data together within an enterprise data hub, the platform can support a variety of initiatives, including advancing data science, analytic database, and operational database workloads. It also allows Quest to deliver new products, such as Population Lab Insights.

The platform can process data in motion using [Apache Spark Streaming](#). “Quest prides itself on being faster, and getting faster everyday,” said Ball. “We know patients and clinicians want and need our diagnostic insights and results at the speed-of-decision. Cloudera enables us to keep our high level of speed, while vastly increasing the data sizes underneath those analytics.” Data analysts and data scientists can access the data for high-performance SQL business intelligence (BI) and analytics using the skills and tools that they already rely on, such as [Tableau](#) software for data visualization and IBM Cognos software for BI.

“Our e-order product has been a great use case for us to prove out the ability to pull data together from a lot of different data sources into the data lake and show how we can run different reports and save staff a lot of time and energy in gathering all this disparate information on a weekly or monthly basis,” said Leister.

In healthcare, data governance is a huge concern, and Cloudera’s platform automatically provides data governance capabilities through Cloudera Navigator. With [Cloudera Navigator](#) Quest can monitor data access, enforce policies based on the Health Insurance Portability and Accountability Act (HIPAA) requirements, and demonstrate compliance. “Our Cloudera data lake is fully HIPAA compliant,” said Ball. “The environment includes encryption at rest and in motion, authorization, authentication, and the full set of requirements to be HIPAA compliant and secure.”

Why Cloudera

“Quest Diagnostics chose Cloudera because we were looking for a partner that brought both deep big data technology expertise and implementation support,” said Jason O’Meara, Director, Analytics and Data Architecture. “The Cloudera enterprise data hub met the core requirements for our big data lake, including a very robust security and audit framework. Cloudera also demonstratively proved they were committed to our successful implementation and provided the right combination of software, support, training, partner certification, and services expertise to ensure we are successful in using big data technologies to meet our business needs.”

“Healthcare is increasingly becoming a team sport and requires great partnerships to successfully manage the cost of care and improve patient outcomes,” concluded Leister. “Our partnership with Cloudera is building the platform that enables us to deliver insights to clients and patients that lead to better outcomes.”

About Cloudera

Cloudera delivers the modern platform for data management and analytics. We provide the world’s fastest, easiest, and most secure Apache Hadoop platform.

cloudera.com

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