

Dell Transforms its PRISM Inventory System with SingleStore to Run at the Speed of Business

From 30 minutes to NRT

From 30-minute delayed reports to near real-time reporting

6:1

Consolidated 6 regional reporting instances into 1 global instance

3.6 TB

of data in columnstore within the SingleStore database cluster

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Himanshu Gupta
Senior Technical Consultant,
Dell Technologies

[Dell Technologies](#), founded by Michael Dell in 1984, is one of the largest companies in the world, with more than 165,000 employees across the globe. Today, Dell Technologies, which at time of publication [ranks #31 on the Fortune 500](#), is instrumental in changing the digital landscape the world over, delivering solutions that help customers prepare for anything, anytime.

Challenges/Goals

Enterprise procurement and third-party logistics systems have many moving parts, and data disconnects can lead to many inefficiencies and wasted resources. Dell's existing inventory and enterprise resource planning (ERP) system, Glovia, provided batch data updates, with reports available every 30 minutes, and was not integrated with Dell's supply chain systems. These factors led to data disconnects and did not support the needs of a fast-paced global enterprise.

Glovia reporting queries were taking too much compute power, and its storage needs were exploding. Since the minimum required holding period for audits is seven years, Dell already has to store substantial amounts of historical data in its Teradata enterprise data warehouse, and regional regulations in some parts of the world – e.g., minimum hold time requirements of up to 30 years of data in China – make it even more challenging.

Dell needed to streamline its data footprint and optimize its inventory processes by modernizing PRISM and moving from batch data updates to real-time streaming reports. The team wanted to move from its legacy application to a modern technology stack within a year by creating a real-time inventory application with the speed and scale to meet the needs of the business.

Technology Requirements

Glovia's architecture was based on regional data instances. The new system needed to consolidate these into a unified global platform that could manage multiple data sources, JSON objects, and Kafka data streaming. The team, led by [Himanshu Gupta](#), Senior Technical Consultant, Dell Technologies, also wanted to increase the system's speed and performance with an in-memory relational database.

Why SingleStore?

The PRISM team considered various options to meet the need. “We considered MariaDB and NoSQL databases, as well as Oracle Database in-memory. What we wanted was a relational database that had the speed of NoSQL. We chose SingleStore,” said Gupta.

SingleStore is a multi-model relational database built for speed, scale, and agility. It supports all major data types including JSON objects, and ingests data directly from Apache Kafka, which enabled Dell Technologies to deploy an event-driven architecture delivering real-time data, accelerating time to insight for Dell inventory and ERP users.

SingleStore offers ultra-fast ingest, super low latency, high-performance queries, and the ability to handle petabyte-scale data volumes. Storage and compute are separated, which allows for independent scaling of both transactional and analytical workloads (OLTP and OLAP) in a single platform. And SingleStore is memory-optimized to drive ultra-low latency for scalable transactions and analytics.

Solution

Dell Technologies runs [SingleStore DB](#) as a self-managed solution in its virtual machine (VM) farms, because it has the technical expertise and resources to support this infrastructure and because it avoids moving sensitive data, including inventory data, into the cloud.

PRISM runs on a 20-node SingleStore cluster, adeptly deployed across data centers to ensure business continuity, and with SingleStore, replication across data centers now occurs in real time. PRISM has 1.87TB of data in memory and 3.6 TB of data in columnstore within the SingleStore clusters.

PRISM sends Change Data Capture and Batch processed data to a data lake that uses Kafka, StreamSets, and Oracle GoldenGate and divides its dataflows based on data types and speeds:

- PRISM manages real-time dataflows, and operational reporting that requires 1-2 years of data retention, with SingleStore. It sends data that requires real-time and near real-time processing into the Enterprise Information System, which streams real-time and operational data into SingleStore through native Kafka ingestion. Single Store powers PRISM’s real-time operational analytics and reporting via VMware Pivotal Cloud Foundry, Oracle Power BI, and custom-built microservices.
- PRISM sends non-real-time and non-operational data into Greenplum (now branded as VMware Tanzu Greenplum). Greenplum supports PRISM historical reporting via Microsoft Power BI, Salesforce Tableau, and Microsoft SQL Server.

Outcomes

With SingleStore, Dell Technologies now powers its inventory and ERP operations with real-time data built on event-driven architecture.

Dell's PRISM inventory system now runs at the speed of business

"Our Glovia legacy application on Oracle provided batch 30-minute reports. After implementing SingleStore, analytic reports load within a minute, giving our users on-demand reporting in near real time," said Gupta.

Dell is saving massive data storage cost with columnstore compression

With SingleStore, the PRISM system can store and query JSON data as a column type to efficiently store and analyze multi-attribute objects. SingleStore's combined rowstore/columnstore architecture and data compression capabilities are helping Dell save a massive amount of data storage.

SingleStore Support helps cross-train Oracle teams to evolve the business

As they migrate PRISM to SingleStore, Gupta and the team are putting the skilled resources in place to optimize their deployment. That includes cross-training some of Dell's Oracle experts on SingleStore, and SingleStore Support is assisting with this process.

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[Himanshu Gupta](#)

Senior Technical Consultant,
Dell Technologies

Gupta and the team have ambitious plans. PRISM is already managing real-time dataflows, and operational reporting that requires it to retain years of data, with SingleStore. They want to extend this functionality by also flowing data from external sources into SingleStore in order to perform data reconciliation on both internal and external data. They also want to use SingleStore's ultrafast data streaming capabilities to power analytics, data visualization, and AI and machine learning via Power BI, Tableau, Domino, Data Robot, and other consuming applications

Learn more about how Dell Technologies and SingleStore are working together

to unleash the power of real-time, data-intensive applications in this [blog post](#), Scale Your Speed

Dell and SingleStore are proud to have been working together for many years. Check out this [video](#) featuring Dell's Darryl Smith, Getting it Right Exactly Once: Principles for Streaming Architectures



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