SingleStore

Fast Analytics in Financial Services

An Exploration of Four Customer Examples

Table of Contents

I. Fast Analytics for Financial Services on Any Data, Anywhere

SingleStore helps power data innovation for half of the top 10 banks in North America

Financial services organizations are some of the world's most effective users of data—and the advanced data services required—to fuel innovation, improve customer experience, and drive growth. They are increasingly looking to leverage new technologies such as Cloud and AI, and harness new and faster data sources in order to power their business forward.

From algorithmic trading and dynamic portfolio analysis to real-time fraud detection, regulatory compliance, and protection from cyberthreats, Financial Services organizations are increasingly focused on fast analytics using real-time data to power some of the compelling use cases. These efforts to digitally transform and innovate business has exposed the limitations of legacy data architectures.

Yesterday's data fabric was not designed to handle the speed, scale, and agility that financial service organizations need today to succeed.

SingleStore helps power data innovation for half of the top 10 banks in North America, capital markets firms, and a growing number of FinTechs. This eBook exemplifies how top tier financial services organizations have leveraged SingleStore to drive fast analytics on any data, anywhere, to deliver actionable insights, and truth in every moment.

II. Key Goals & Dynamics That Are Driving Financial Services

Financial services organizations are driven to innovate and differentiate themselves, but to do so, they are challenged with building a digital foundation that has the economy and scale to bring real-time tailored and actionable insights to provide:

In-the Moment Customer Experience

Delivering the right information and offers at the right time to the right customer still remains an elusive challenge for many financial services firms

51% of consumers expect banks to anticipate their needs and make relevant decisions

94% of banks cannot deliver

Fraud & Risk Protection

Real-time fraud monitoring that is personalized to the individual customer's transactions, protecting the business and preventing customer disappointment.

Credit card **fraud reports jumped 104%** between 2019 and 2020

More than **50% of corporate treasurers** expect real-time risk management from their banks

Algorithmic Trading & Portfolio Analysis

Algorithmic trading dynamic portfolio analysis and optimization of real-time trading decisions to manage risk in order to meet long-term strategic asset allocations.

Algorithmic trading market size is projected to reach **USD 19.2 Billion by 2027**

Data-as-a-Service

Launch new products and services including integrations with an ecosystem of partners.

76% of financial services companies plan to collaborate with other financial services organizations

SingleStore

III. The Need for Speed, Scale, and Agility

The majority of financial services organizations rely on decades-old technology to power mission-critical systems, resulting in data innovation being pushed out to the edge of the infrastructure.

But today's cutting-edge use cases demand a new breed of data infrastructure that can deliver the speed, scale, and agility required to eliminate event-to-insight latency.

What Financial Services needs today is a data platform that can deliver:

SPEED

Accelerate speed-to-insights

- Ability to ingest and process data in real-time—up to millions of events per second
- Super-low latency query responses
- Eliminate or minimize the need for ETL batch windows

+

SCALE

Scale easily without compromising performance

- Handle growth of all kinds at petabyte scale
- Growth in the amount of data ingested per unit of time
- Growth in concurrent queries, in the number of users and in data storage

+

AGILITY

Leverage any type of data and run anywhere

- Unify all types of data patterns and sources: real-time and historical, unstructured and structured, streaming and batch
- Leverage existing skill sets (i.e., SQL)
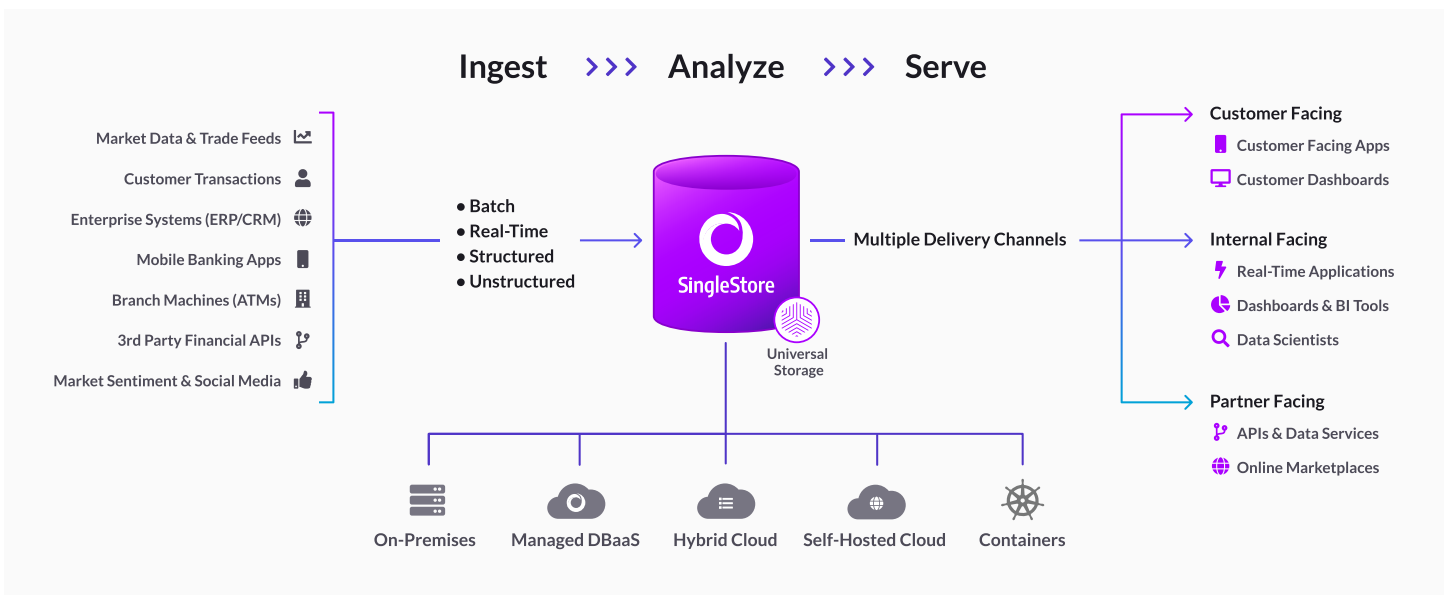- Run anywhere: on-premise, in any cloud (AWS, Azure, GCP), in a hybrid mode, or on containers

McKinsey & Company

"Sharpening analytics efforts could lead to an increase in earnings of as much as $1 trillion annually for the global banking industry.

IV. Drive Mission Critical Use Cases

From enabling real-time fraud analytics and algorithmic trading to powering dashboards for portfolio analytics and dynamic risk management, SingleStore offers the next generation unified database for fast analytics on any data, anywhere.

SingleStore is built from the ground up as a distributed, highly-scalable unified database that can deliver maximum performance for both transactional and analytical workloads. With 10x the performance at 1/3 the cost compared to legacy infrastructure, we deliver the speed, scale, and agility in one powerfully simple, cloud-native, relational database, helping you to drive analytics and insights fast, and in the moment!

Ingest >>> **Analyze** >>> **Serve**

Market Data & Trade Feeds
Customer Transactions
Enterprise Systems (ERP/CRM)
Mobile Banking Apps
Branch Machines (ATMs)
3rd Party Financial APIs
Market Sentiment & Social Media

- Batch
- Real-Time
- Structured
- Unstructured

SingleStore

Universal Storage

Multiple Delivery Channels

Customer Facing
- Customer Facing Apps
- Customer Dashboards

Internal Facing
- Real-Time Applications
- Dashboards & BI Tools
- Data Scientists

Partner Facing
- APIs & Data Services
- Online Marketplaces

On-Premises | Managed DBaaS | Hybrid Cloud | Self-Hosted Cloud | Containers

With SingleStore, Financial services organizations are able to ingest and aggregate millions of events or transactions every second, and do real-time processing and analytics (with sub-second latencies) on petabytes of data. The analytics and data can then be served, in real-time, to power applications and dashboards across a variety of channels including external customer facing applications, internal operational applications and dashboards, and also interfaces to partner facing applications and online marketplaces.

SingleStore is helping power some of the most compelling use cases across:

Premium Customer Experiences
- Dynamic recommendations and offers
- Customer 360 omni-channel operational data stores
- Targeted advertising/campaigns

Dynamic Portfolio Analytics
- Real-time portfolio analytics
- Wealth management dashboards
- Portfolio risk analysis

Fraud and Risk Mitigation
- On the swipe card fraud detection
- Real-time trade surveillance and analysis
- Algorithmic trading risk
- Real-time operational risk analytics
- Cybersecurity

Data-as-a-Service
- New FinTech applications
- Payment gateways
- Open banking and APIs
- Data marketplaces

V. Customer Stories

Top 5 North American Financial Services Organization

Real-time Wealth Management Dashboards

Page 8

Leading Tier 1 North American Bank

Real-time Fraud Detection

Page 10

Leading North American Asset Management Firm

Smart Portfolio Risk Analytics

Page 12

Fortune 50 Bank

Real Time Operational Analytics

Page 14

Top 5 North American Financial Services Organization

Real-time Wealth Management Dashboards

A leading top 5 North American financial services company delivers reliable real-time dashboard performance to over 40,000 concurrent high net worth wealth management clients.

10-20ms
RESPONSE TIME

4-5 TBs
OF DATA ACROSS 40K USERS

Objective

Provide fast premium digital customer experience on portfolio dashboards to high net-worth investors.

Pain Point

With more than 40,000 users accessing the portfolio dashboards during market spikes, they couldn't deliver millisecond query responses and comprehensive portfolio views when it mattered most, during volatile market events.

Key Challenges Before SingleStore

Built-in Latencies: The infrastructure was based on legacy architecture with batch extract, transform, and load (ETL) processes into a traditional data warehouse that couldn't power fast, interactive dashboards.
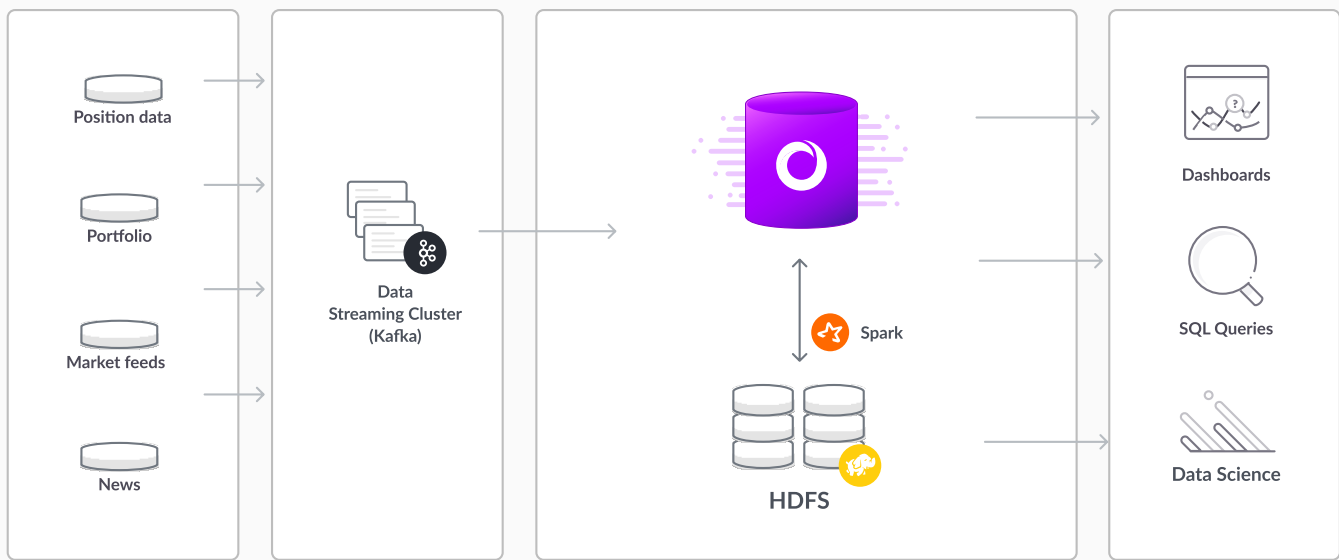
Performance Degradation: Previous query acceleration attempts with in-memory cache solutions resulted in breakage of existing SQL queries. This additional complexity reduced reliability and durability.

Business Impacts with SingleStore

Fast Responsiveness: Streaming ingest with instant query responses in under 10-20 milliseconds, with no latencies.

High Concurrency: 40,000+ users are supported with no contention, even when market events cause spikes in usage.

5X the Data Analyzed: Five years' history instead of one; applications and user-driven queries can draw on five times as much data at hand for deeper analysis.

Architecture with SingleStore: Modernized Wealth Management Architecture

Leading Tier 1 North American Bank

Real-time Fraud Detection

A Tier 1 North American Bank is able to drive real-time fraud detection of its credit and debit card transactions, on the swipe. The results are effective fraud detection in real-time, reduced cost of doing business, and improved customer satisfaction.

<50ms

REAL-TIME FRAUD DETECTION IN UNDER 50MS

Objective

Modernize fraud detection and analytics from a reactive to a proactive model.

Pain Point

Significant lag in fraud detection as they were dependent on overnight batch jobs leaving criminals a large window of opportunity.

Key Challenges Before SingleStore

Limitations of the traditional operational data store, including:

Lag in Fraud Detection: Nightly batch jobs needed to accumulate feature records for each customer leading to fraudulent transactions unidentified for hours or days.
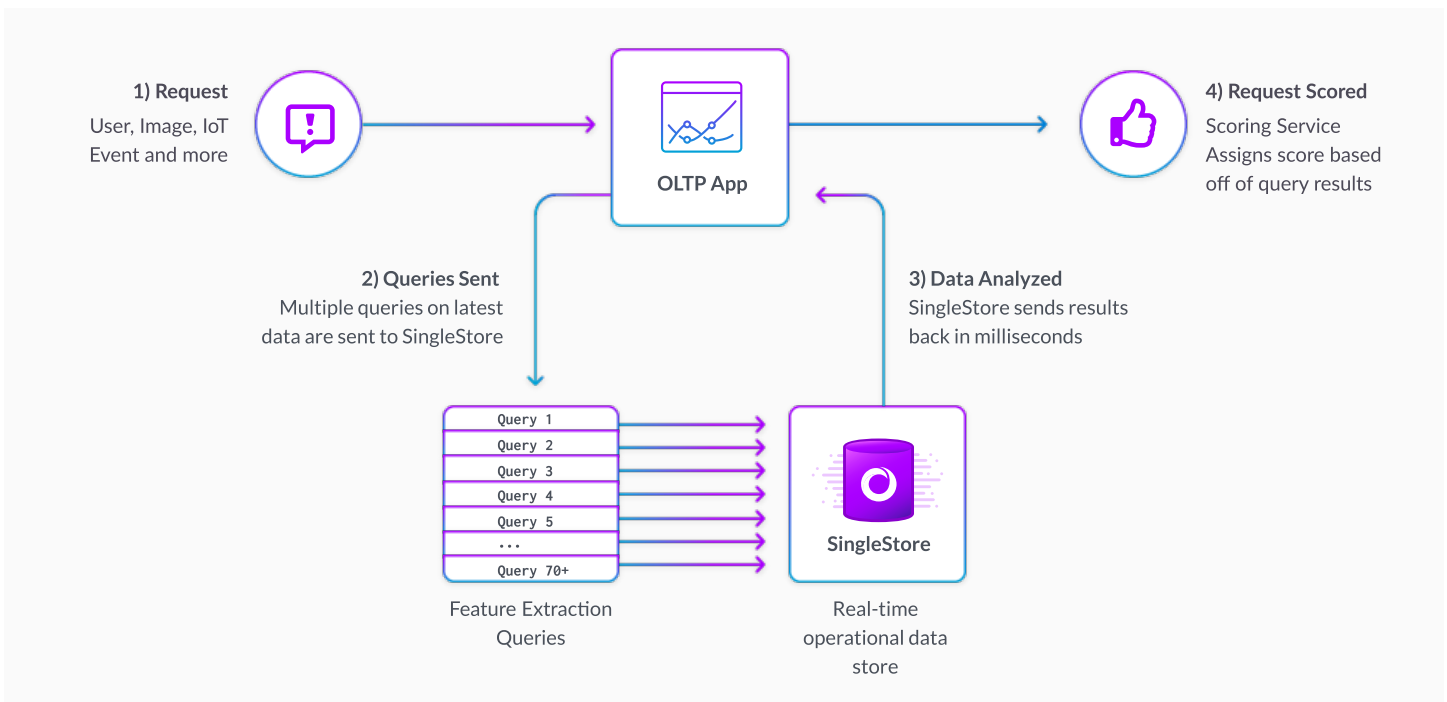
Model Refinement: Difficult to iterate models/add new queries for optimization and detection improvement.

Business Impacts with SingleStore

Fast Responsiveness: For credit card swipes in under 50ms by evaluating 70+ sophisticated fraud detection queries.

On-the-swipe Fraud Detection: Move from overnight batch process to fraud detection "on the swipe".

Continuous Optimization: Easily add new features for continuous optimization of the model to detect more fraud cases.

Architecture with SingleStore - Real-Time Fraud Analytics

Leading North American Asset Management Firm

Real-time Wealth Management Dashboards

With SingleStore, one of the leading North American asset management companies has dramatically improved the performance of their analytical engine to automatically perform portfolio and market risk assessments.

FASTER
ANALYTICS

3x
REDUCTION IN COST

Objective
Improve analytical performance to pro-actively mitigate portfolio, market, & credit risk.

Pain Point
The analytics engine that powered portfolio optimization and risk mitigation was struggling to meet the speed and performance requirements of fund managers for portfolio analytics.
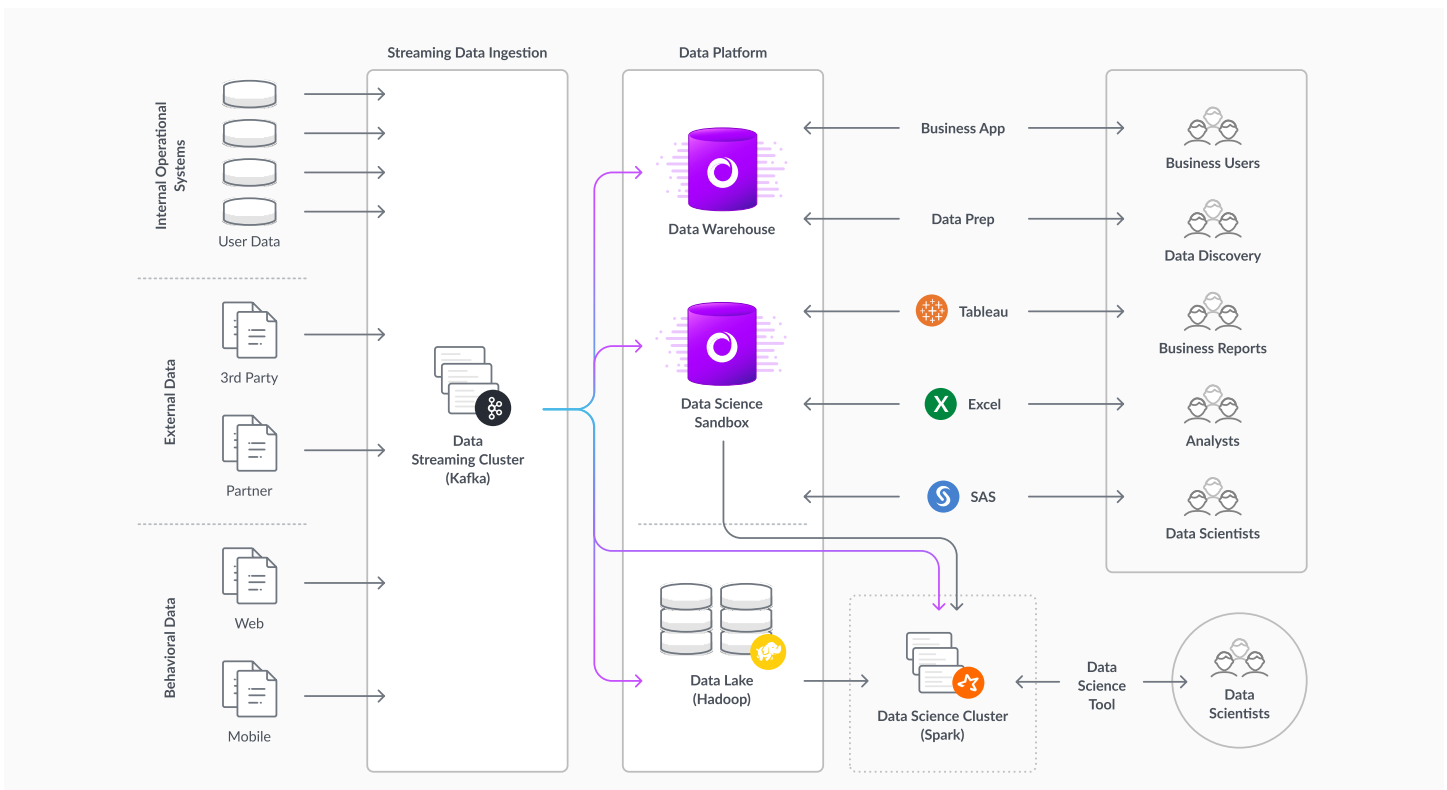
Key Challenges Before SingleStore

Speed and Performance: The previous legacy infrastructure was a batch oriented architecture that was quickly becoming too expensive, overly complex, and too slow to support growing numbers of users and analytic demands.

Business Impacts with SingleStore

Dramatic Improvement in Performance: Now able to accommodate high concurrency demands with more advanced queries that couldn't be completed with their previous Oracle database solution.

Additional Risk Management Capabilities: The new distributed database is able to continuously ingest, analyze, and guide fund managers and their customers to recommended actions.

3X Cost Reduction: SingleStore enabled a 3X cost reduction due to efficient hardware utilization over Oracle and the ability to use compressed disk and less memory for the same queries.

Architecture with SingleStore - Portfolio Risk Analytics

Fortune 50 Bank

Real-Time Operational Analytics

A Fortune 50 company is able to provide their CEO and senior executives with comprehensive, real-time visibility intoenterprise operations across finance, support, sales, marketing, and other domains.

LOWER

TIME-TO-INSIGHTS FROM DAYS TO MINUTS

Objective

Deliver near real-time visibility into business performance and enterprise operations across dozens of finance, support, sales, marketing, and other ERP applications.

Pain Point

The executive dashboards took hours or days to refresh, and did not provide a real-time view of critical business and operational performance indicators.

Key Challenges Before SingleStore

Complex Architecture: The dashboards were fed by a combination of Apache Hadoop, data warehouses, and specialized NoSQL caching solutions.
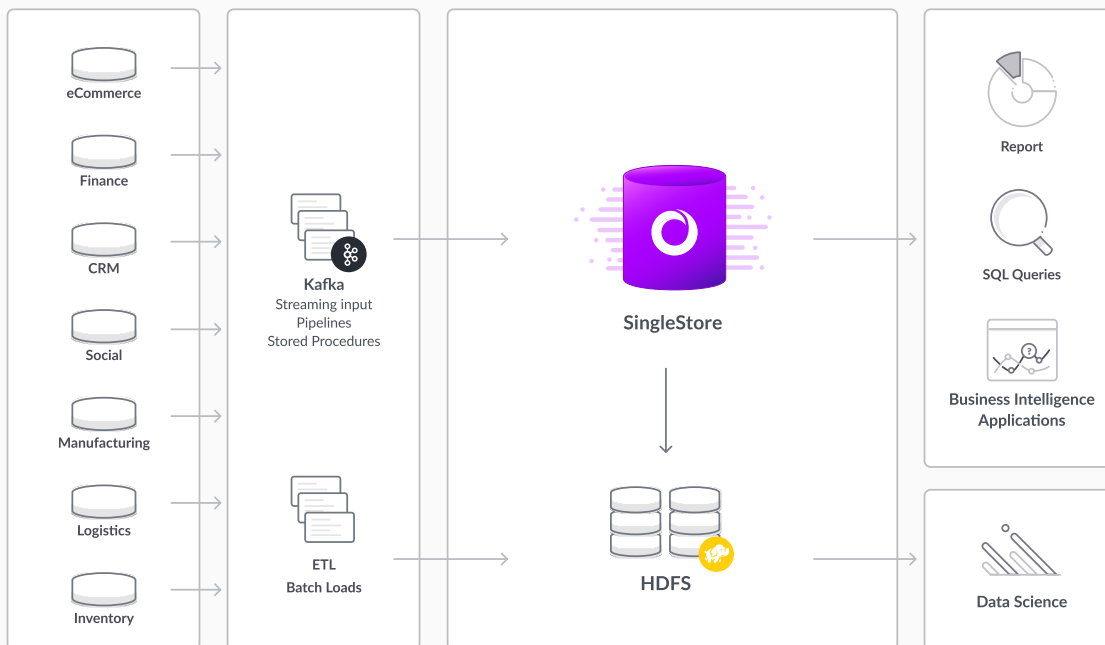
Performance Bottlenecks: The current infrastructure couldn't support continuous data ingestion with fast query performance. Furthermore query performance was unreliable and very hard to tune due to the complexity of Hadoop.

Business Impacts with SingleStore

Insights in Minutes: Analytics now run against near real-time data and so information that used to take days to arrive now takes minutes.

Single Source of Truth: There's now a single source of truth for investor reporting. The CEO and senior executives have direct real-time insights into operations.

Analytical Agility: Using SQL, any analyst can make any query, anytime, and get results quickly. In combination with BI tools, interactive probing that leads to real, timely, and actionable insights is supported.

Architecture with SingleStore: Modernized Architecture for Fastboards

SingleStore

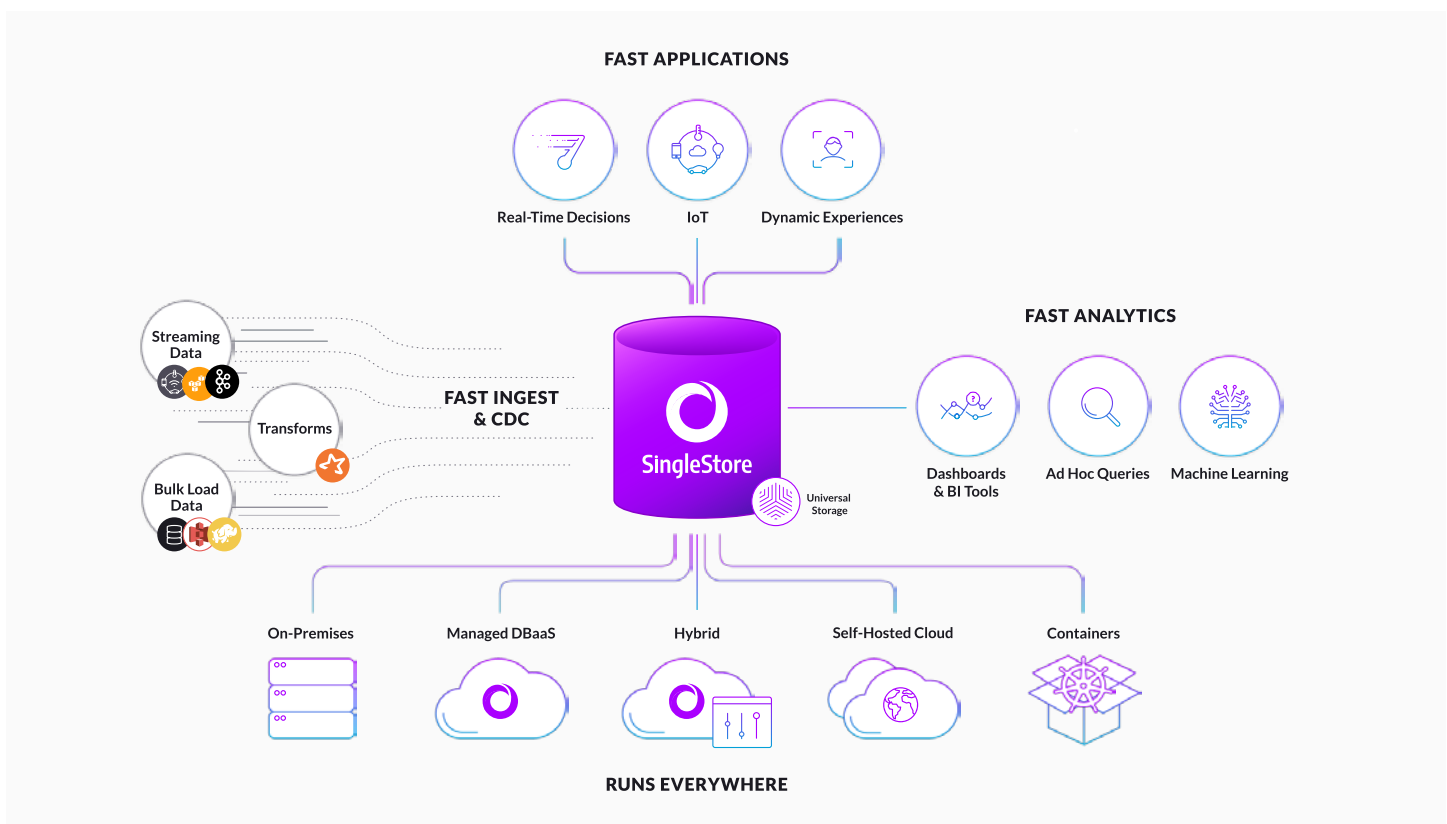# VI. SingleStore Drives Fast Analytics in Financial Services

SingleStore Store offers a next generation unified database for fast analytics on any data, anywhere. From enabling real-time fraud analytics to powering applications and dashboards for portfolio analytics and dynamic risk management, all of the stories described here are made possible by leveraging a cloud-native, massively scalable architecture that provides fast ingest and query performance with high concurrency.

SingleStore helps half of the top 10 financial services providers in North America along with capital markets firms, and a growing number of FinTechs around the globe accelerate the performance of their data infrastructure to support real-time decision making and deliver exceptional customer experiences.

Financial service organizations choose SingleStore to move past the limitations of their legacy data architectures and the performance issues caused by batch ingestion, slow queries and poor scalability. With SingleStore, financial services institutions of any size can deliver real-time decisions for their internal and customer-facing applications with a cost-effective, simplified data architecture.

With 10x the performance at 1/3 the cost compared to legacy infrastructure, SingleStore delivers the speed, scale, and agility in one powerfully simple, cloud-native, relational database, helping you to drive analytics and insights fast, and in the moment!

And with **SingleStore Managed Service**, the fully-managed, on-demand cloud database service you can get started in just a few clicks - on any cloud of your choice. **Test drive now**.

SingleStore