AEROSPIKE

Transform financial services with real-time data and analytics

SOLUTION BRIEF

The real-time data imperative

To thrive in today's highly competitive digital environment, financial services companies will need to modernize their data infrastructure, connecting and streamlining information flow across exploding arrays of data sources and datasets. This will power their customer-facing front office applications, risk mitigation and trading analysis, conduct faster and more cost-effective settlements, payments and adhere to compliance regulations.

Mission-critical financial services applications can be modernized, providing significant ROI with Aerospike's real-time data platform.

Aerospike customers have seen:

90% reduction
in payment and identity fraud exposure

60% reduction
in real-time data infrastructure costs

30% increase
in consumer spend via personalization

Millions of dollars saved
per year from mainframe offloading

The Aerospike Real-time Data Platform at the core of financial services applications

The Aerospike real-time data platform enables financial services organizations to act in real time across billions of database transactions while reducing server footprint. Aerospike ingests and acts on streaming data where transactions occur. Plus, Aerospike simultaneously can augment this edge data in real-time with data from systems of record, third party sources, or data lakes for operational, transactional, and analytical workloads.

As a result, Aerospike's real-time data platform enables financial services companies to power solutions in these areas:

- Payments
- Fraud and Identity Management
- Customer 360
- Mainframe Offloading
- Brokerage Margin Lending
- Time-series Analytics for Trading

Payments

The global online payments market size was valued at more than $3 trillion in 2019, and is expected to grow 40 percent in two years, with projections of reaching more than $17 trillion in 2027. This surge is also being felt in the instant payments arena, which although a much smaller market share, is expected to grow at a compound annual growth rate of about 43 percent until 2025.

At the heart of all this growth is a highly discerning customer base that expects a secure, fast, and reliable digital experience with every interaction. Data surrounding each payment transaction is also rapidly expanding, as are new regulations and requirements (ISO 20022, GDPR, and PSD2, etc.), with vendors looking to monetize this wealth of information with surrounding recommendations and offers.

Major European Bank creates instant payment network with real-time settlement

A major European bank uses the Aerospike Real-time Data Platform to deliver a fast, reliable, and cost-efficient way for customers to make payments from any euro-area bank while maintaining privacy and security. The goal was to bring euro-area banks up to par with instant payment services from the likes of PayPal, Google, Facebook, Amazon, and Alibaba. It also laid the groundwork for offering other services like person-to-person mobile payments.

With the Aerospike Real-time Data Platform, this major European bank is capable of handling 43 million transactions per day with uninterrupted availability and costing 0.20 euro cents (E0.0020) per payment.

> ***"Aerospike was able to provide the 24/7 availability that is required with a high availability built-in; ensure 10,000 writes per second with the lowest possible latency; offer top-notch customer support; and provide cross-center data replication possibilities."***
>
> *Technical Officer of IT Innovation and Development at a Major European Bank*

PhonePe enhances payments platform for digital commerce

PhonePe, the leading Indian digital payment platform with 300 million users accepted by 20 million merchants in India, relies on Aerospike to power its services which include online and mobile point-of-sale (mPOS) payments, in-app bill payments and sending money, on-the-go solutions (taxi, metro, bus, toll), and cashless payments at your doorstep (newspaper, home services).

> ***"At PhonePe, we use Aerospike to power a humongous amount of platform components with incredible sophistication to power a variety of use cases, such as dynamic code push, growth, recommendation engines, chatbots, and security analyzers."***
>
> *Koushik Ramachandra, software architect at PhonePe*

Fraud

It's critical that payment companies today are able to immediately verify online identities and stop fraud transactions – such as identity theft or stolen credit cards– in their tracks. At the same time, they must be able to prevent false positives and reduce any customer inconvenience. Such fraud prevention strategies require machine learning at the edge.

PayPal scales fraud prevention data 32% annually

PayPal tracks 150 million customers' enrollment, payment, invoicing patterns, and profile data. Fraud is an issue since users and their devices are constantly on the move. Every payment transaction requires hundreds of database reads/writes and the process window for the fraud algorithm is short during the payment transition when users may not have great network connections.

Using Aerospike has given the world's largest online payment system the ability to process and analyze data to identify emerging fraud patterns in under 200 milliseconds, even at volumes over 150TB's, and meet fraud calculation service level agreements over 99 percent of the time, all while providing a 30x reduction in false positives. Best yet, they were able to do all of this at the same time they reduced their server count from 360 servers down to 20 and expanded load with 10x lower TCO.

> ***"PayPal is innovating deep analytics with Aerospike and Intel Persistent Memory to rapidly respond to emerging fraud patterns."***
>
> *Mikhail Kourjanski, PayPal's principal architect*

Barclays centralizes fraud data while drastically reducing cost of service

When Barclays, the multinational bank, decided that its fraud detection solution across various business units was becoming too difficult to maintain and evolve, it turned to Aerospike. As a result, its fraud detection system allowed Barclays' dataset to go from 3TB to 30TB-plus over the course of just three years. The Aerospike Real-time Data Platform also allowed them to share fraud rules across platforms, and facilitate machine learning consistently to achieve a maximum of two-digit (<100) millisecond response time for 99.99 percent of transactions.

> ***"With Aerospike, we were able to dramatically reduce stand-in processing (STIP), data consistency issues, and reduce false positives and false negatives for future transactions."***
>
> *Dheeraj Mudgil, Vice President, Enterprise Fraud Architect, Barclays.*

Customer 360

A Chase study finds that a majority of consumers require personalized experiences in any digital interaction, and that includes payments. More people are embracing peer-to-peer payments systems (P2P) like Venmo and PayPal, not only because it allows them to send money to a family member or friend, but because it makes it easier to track expenditures.

At the same time, customer personalization is often key for debit or credit cards, with companies offering users loyalty points on everything from travel to groceries. Such payment methods also offer some consumer protection in the form of reverse payments and error resolutions, which are currently not available with instant payments, although there is some exploration in that area.

DBS Bank builds global API platform for Customer 360

In order to offer a truly personalized experience, DBS Bank needed to bring in customer transactional data from everywhere in the bank including mortgages, credit cards, core banking, consumer loans, car insurance, etc. in order to make real-time decisions to accept or reject loan or new account requests and to make real-time offers for increased credit and new services. To accomplish this, the bank needed to dramatically reduce their development lifecycle and decided to use API's in the form of a scalable and performant cross-country/ cross-system internal API layer that is the foundation they are using to build better services, faster.

> ***"We wanted...support for secondary indexes (and) an architecture that was fully scalable, distributed, shared nothing design. These are (some) of the reasons that we chose Aerospike."***
>
> *Matteo Pelati, SVP, Data and Global APIs Engineering DBS Bank*

Airtel builds "Digital brain" for personalized customer engagement in real time

Bharti Airtel Limited, also known as Airtel, is the world's fourth largest mobile network operator and is also a successful bank. Airtel launched a Customer 360 initiative that provides a holistic set of historical data and real-time triggers from their current siloed data from different business units. Aerospike played a critical role in helping Airtel meet these goals, providing the ability to take data from 350 million customers across all customer data channels and bring that into one database. This was done at a rate of more than 40,000 transactions per second with sub-millisecond performance, which significantly improved their reads and writes.

> ***"From the very inception, we need a very resilient persistence to prevent data loss and realize 99.999 percent reliability."***
> ***"Aerospike made some bespoke enhancements into the core product to allow that to happen."***
>
> *Harmeen Mehta, former global CIO and head of digital at Airtel*

Identity management

Considered an aspect of Fraud Management, the need for increased identity protection is increasing. With COVID forcing more people to move online, the increase in card-not-present (CNP) fraud is causing financial services organizations to step up their game. The primary challenge is often performance since identity theft can take place very quickly and financial services organizations need to be able to detect the problem and make a decision in milliseconds. If they take too long, customers get upset and abandon transactions.

ThreatMetrix/LexisNexis Risk Solutions secures global digital identities at scale

ThreatMetrix, a LexisNexis Risk Solutions company, provides authentication and fraud prevention services for online transactions. Their customers are financial services and e-commerce companies that need to make decisions about transactions in milliseconds to prevent fraud. ThreatMetrix handles over 130 million transactions across 40,000 websites and delivers hundreds of attributes to their financial service customers in less than 100 milliseconds.

"Aerospike on a technology basis allows us to do more complex risk calculations in less time. A more thorough risk calculation allows better accuracy for our customers, to avoid friction in their transactions and ultimately avoid losing money in fraud."

Nick Blievers, Senior Director Engineering, ThreatMetrix

Brokerage margin lending

Banks have been rushing to switch from batch to real-time applications because 70% of their money comes from 20 billion loans. Trading on margin is driving much of this as banks want to provide maximum margin to non-risky traders at the same time they provide less margin to risky traders. Real-time data is essential to being able to quickly make decisions in this highly profitable area.

Top 3 Global Brokerage Firm grows margin lending while reducing intraday trading risk in real-time

A top three global brokerage firm, known for its robust online and mobile trading platforms, commission-free trades, full-service investment management, and online trading and banking services to clients around the world with total client assets north of $3.5 trillion needed to grow margin lending while reducing their intraday trading risk in real-time … and keep up with the competition.

The results in the words of one of the vice presidents involved,

"We are now able to perform over 13 billion queries per day with 99.9 percent requests returned in sub-milliseconds," he says. "Based on our ability to keep all intraday event-based data available – with strong consistency and high throughput – in the application layer, we are now able to offer margin loans with appropriate risk management and compliance controls for over 14 million accounts in real time – the interest of which is a major source of income for (our company)."

Mainframe offloading

Banks and Brokerages have huge investments in legacy systems that run batch applications which often prevent them from being as nimble as they would like in today's rapidly changing world. Loan approval and trade execution are just two examples of where end-of-day batch processing is no longer acceptable to customers.

Top 3 Global Brokerage Firm migrates from mainframe batch to a real-time intraday operational store

One of the world's top three global brokerages, known for its robust online and mobile trading platforms and commission-free trades, offers full-service investment management, online trading, and banking services to clients around the world with total client assets north of $3.5 trillion. The firm was at a crossroads.

The combination of an RDBMS and a RAM-based cache fronting a traditional mainframe database was unable to consistently and reliably support ever-growing workloads during trading hours. This reality had become a major impediment to the company's strategic goal of releasing a steady flow of new and updated applications to its mobile customer base. The business mandate to seamlessly service more than 10 million customers and process more than 250 million transactions daily, while positioning itself to eventually process 1 billion transactions per day, was at risk.

With Aerospike's unique hybrid architecture, the bank was able to offload the transactions that were over-taxing their legacy systems and exceed all of their objectives. The Aerospike Real-time Data Platform allowed the bank to implement a new intraday operational data store, drive margin loans, and resulted in a system of record that has prevented outages and ensured real-time access to all data. The benefits have been two-fold as customer satisfaction improved significantly at the same time the bank saved over $10,000 per day with mainframe offloading.

> ***"If there is an outage or any other issues, the customer experience is not impacted. Messages will queue up and, when they become available, they will be written, keeping the system of record as a source system with our mainframe DB2 because this data is leveraged by lots of other applications."***
>
> *Leader of a Top 3 Global Brokerage*

Time-series analytics for trading

Trading is evolving. New advances in algorithmic trading strategies, artificial intelligence, neural nets, NLP, deep learning, statistical analysis, and pattern recognition have resulted in the need for leading traders and quantitative research firms needing a platform to extract insights from truly massive datasets. Traders use these massive data sets, large scale analysis, and cutting edge machine learning to create trading advantages. Their main challenges are the ability to grow and scale in order to keep track of so many disparate datapoints in real time without their costs spiraling out of control.

Leading Quantitative Research Company built a time-series database for point-in-time lookupsoperational store

A leading quantitative research company leverages deep analysis of large, and often noisy, historical and current market data enriched with 3rd party source data to predict the movements in global financial markets with time series data. From there they conduct arbitrage, predict individual company events, and look for investable trends and global macro strategies. Their challenge was accessing as much data as they wanted during the time frame they needed and have it all be time stamped so they could prioritize it. Bottom line: they wanted to monitor 200 fields for each of 200,000 products and maintain up to 10 versions of each data point with refreshes every 5 minutes. Plus, they wanted to maintain 20 years of data online while minimizing their data footprint.

With the Aerospike Real-time Data Platform, the company was able to reduce impossibly-long data refreshes down to 12 minutes while increasing data accuracy by more than 20%. They are now able to keep up to 20 years of data online and update it every five minutes. At the same time they have scaled beyond 1PiB while maintaining performance. 95% of their reads and writes are conducted in under 1 millisecond with a throughput of over 1 million transactions per second.

> ***"Data refreshes that hadn't been possible due to length of time needed, are now possible to complete in 12 minutes on Aerospike...leading to data that is 10-20% more accurate."***
>
> *Vice President, Engineering,*
> *Leading Quantitative Research Company*

The Aerospike Real-time Data Platform enables organizations to act instantly across billions of transactions while reducing server footprint by up to 80 percent. The Aerospike multi-cloud platform powers real-time applications with predictable sub-millisecond performance up to petabyte scale with five-nines uptime and globally distributed, strongly consistent data. Applications built on the Aerospike Real-time Data Platform fight fraud, provide recommendations that dramatically increase shopping cart size, enable global digital payments, and deliver hyper-personalized user experiences to tens of millions of customers. Customers such as Airtel, Experian, Nielsen, PayPal, Snap, Verizon Media and Wayfair rely on Aerospike as their data foundation for the future. Headquartered in Mountain View, California, the company also has offices in London, Bangalore and Tel Aviv.

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