
Top 4 Data Strategies to Accelerate Digital Payments Transformation

How new technology advancements deliver petabyte scale for instant insight.

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Contents

Digital Payment Trends	3
Growth in Digital Attacks	5
The Data Challenges in 2020	6
Strategy Recommendations	9
Strategy Recommendation #1.....	10
Strategy Recommendation #2.....	11
Strategy Recommendation #3.....	12
Strategy Recommendation #4.....	13
Use Cases.....	15
Use Case #1	16
Use Case #2	17
Use Case #3	18
Conclusion.....	19



2020 is a time of rapid eCommerce adoption and with it, cashless transactions.

Global payments are expected to reach \$2 trillion by 2025, and each year, non-cash payments are accounting for an increasing share of this massive market. Alternative payments such as digital wallets, mobile and pre-paid systems are growing by 50% and are now the dominant and fastest growing payment method.

The growing adoption of mobile payments, combined with a rapid 25% uptake in eCommerce in a COVID-revised forecast are among the many factors causing disruptions in discreet parts of banking and the payments landscape.

\$2.3T

Global payments revenue by 2019¹

68%

Growth in the European Central Bank TARGET Instant Payment Settlement (TIPS) 2019-24²

49.5%

Transactions made by Alternative Payment Methods (APM) e.g. digital wallets and mobile vs Cards/Bank in 2019²

25%

COVID-revised forecast growth for eCommerce transactions by value, USA for 2020-2023³



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An estimated
82%
of firms report they are
vulnerable to payments fraud. ⁴

The proliferation of digital payments which can be executed anywhere, anytime, from any device is naturally appealing to both buyers and sellers. The advantages however, are accompanied by additional risk, most notably fraud and theft.



Digital Attacks are Serious, Global and Growing.

While consumers enjoy access to goods and services from all over the world, fraudsters harness stolen data to launch corresponding attacks.

Businesses need tools that can identify global fraud while maintaining a low-friction environment for trusted users.

And, for real-time financial service businesses, there is a need for extreme scale computing that can scale from tens of terabytes to petabyte volumes.

For these applications, speed is critical – a delay of even a few milliseconds can result in fraudulent transactions, and unacceptable risk exposures.





Data is at the Heart of Insight and Digital Transformation

Modern digital payment applications are increasingly relying on more data, analytics, machine learning, and AI technologies needed to provide fast, secure digital payment and related services that today's consumers demand.

Key technology challenges that must be addressed include:

1. Scaling to meet rapidly increasing data volumes while lowering latency and cost.
2. Eliminating data silos and complexity while building a modern system of insight between your system of record and the edge.
3. Keeping your application responsive with sub-millisecond latency and available using geo-distributed applications.

In short, building a future-ready data platform that leverages valuable existing investments.

It is estimated that global data will grow from 33 zettabytes (ZB) in 2018 to

175 ZB

created annually by 2025 and 90 ZB by IoT Devices ⁵

30%

of the world's data will need real-time processing by 2025 ⁵

74%

of Firms want to be "data-driven" yet

29%

of Firms are successful at connecting data to action ⁵

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Real-time Data Creates Value for Digital Payments

Extreme competition from non-traditional payment providers is motivating the entire industry to aggressively create value-added services for retail and corporate customers.

Recent advancements in analytics, artificial intelligence, and machine learning represent a generational opportunity to move digital payment transactions beyond being simply convenient and cost-effective.

By integrating analytics into the payment process in real time, each transaction has the potential to produce better business outcomes. Personalized products and services, more engaging customer experiences, threat detection, and fraud prevention are among the transactional outcomes that can ultimately grow revenues, increase customer loyalty, and reduce risk.



Limitations of Conventional Data Architectures

The ability to deliver actionable intelligence within milliseconds, at the point of transaction, is severely constrained by conventional data architectures.

Prevailing data architectures today are built to store transactional and analytical data separately, in silos. Consequently, they fail to bring transactional data together with historical data for analysis in real time. Most analytical database systems are designed to access historical data at periodic batch intervals. They cannot meet low latency requirements, resulting in unacceptable response times, outdated information, or incomplete information. This can lead to customer abandonment, payment denial, fraud and missed cross-sell opportunities and eventually, all can hurt the customer experience.

Top 4 Data Strategies to Accelerate Digital Payments Transformation

Today's leading financial institutions and payment providers are increasingly relying on real time data, analytics, machine learning, and AI technologies to capitalize on the information needed to combat financial crime with actionable insights. Here are the top four approaches that have the greatest impact when creating next-generation approaches to reducing risk, growing revenue and enhancing customer experiences.



Strategy

1

Enhanced Data Ingestion and Real-time Decisioning

To enhance real-time decision-making for identity resolution, fraud prevention, and customer 360, you'll need to pull in more data from the edge across data sources. Integrated machine learning with edge devices becomes crucial in tightening the loop between detecting and countering new fraud patterns.

A flexible API layer is one good way to ensure you're not missing anything.

Aerospike enables real-time data ingest and analytics with Kafka and Spark connectors for digital payment applications to gain key insights for immediate, actionable intelligence.

Want to see an [ingestion virtuoso](#) in action?*

Strategy

2

Prepare your Machine Learning and Artificial Intelligence Systems for Extreme Scale

Rapid advances in Machine Learning and Artificial Intelligence play a key role in the fight against financial crime. ML Techniques used in simulation models help prepare the financial institution for potential fraud and can significantly improve existing financial crime detection systems.

However, AI systems are constantly hungry for more data to become smarter to outwit fraudsters. To do so, you'll need to synthesize streaming data with system of record behavior. The more data that can be analyzed in real-time, the better the result.

Learn how to architect a system around this in our [AI Innovation in Digital Banking Webinar](#).





Strategy

3

Power Intelligent Payment Systems with Real-time Decisioning on Transaction Data

A new generation of application architecture eliminates the wall between transaction processing and analytics. Gartner refers to this as "Hybrid Transaction/Analytical Processing" (HTAP). An (HTAP) architecture is best enabled by in memory computing technology to allow analytical processing on the same (in memory) data store that is used to perform transaction processing.

By removing the latency associated with moving data from operational databases to data warehouses for analytical processing, this architecture enables real-time decisioning on live transaction data.

See how [PayPal reduces fraud with real-time decisioning](#).

Strategy

4

Implement Next Gen Technology Advancements

Advancements in real-time decisioning and putting ML/AI technologies in place has been constrained by the high cost and limited capacity of DRAM.

Aerospike's Hybrid Memory Architecture™ and Intel® Optane™ persistent memory, together deliver fast access to massive terabytes to petabyte volumes for extreme scale with similar performance to DRAM but at a substantially lower cost.

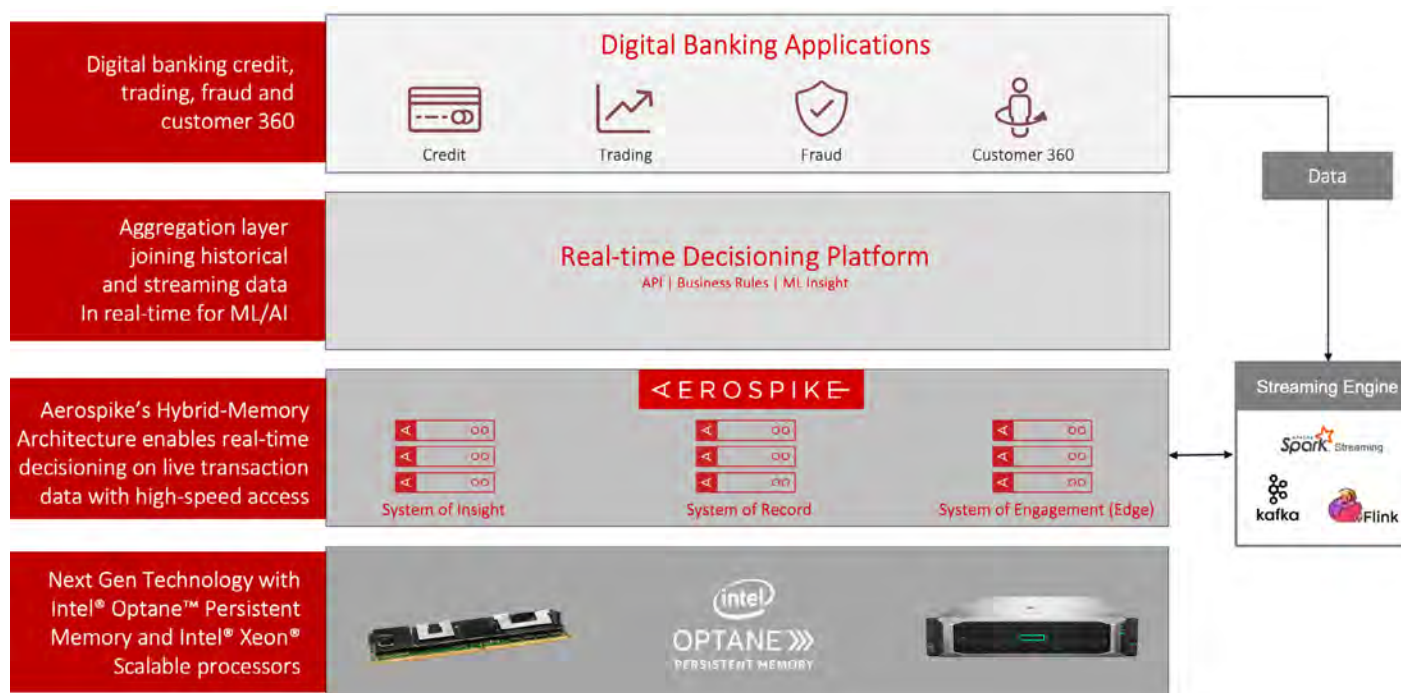
This technology enables very high data throughput with extremely low latency, and fast restarts, to power a variety of data-intensive use cases.

Learn more about next [generation hybrid-memory advancements](#).

Next Gen Data Architecture Aerospike on Intel® Optane™ Persistent Memory

Given the volume, velocity and variety of financial and sensitive customer data, many financial institutions are reinventing their data architecture — transitioning to a next generation data platform that is optimized for the speed, scale and complexity of the data that the industry demands.

The Aerospike Hybrid Memory Architecture™ (HMA) delivers a fundamentally different approach which allows modern digital banking applications to take advantage of performance at linear scale, always-on data persist on fast SSD devices, leveraging primary key indexes in DRAM, SSD, or Intel® Optane™ persistent memory.



Seeing is **believing.**

Aerospike is the industry's first database with hybrid memory architecture, incorporating revolutionary advances in database design. A number of unique and innovative attributes of the Aerospike database architecture enable applications built upon it to consistently deliver unprecedented real-time decisioning and transactional analytic with sub-millisecond latency, at any scale, at as little as one fifth the total cost of ownership of other databases.

The following innovators have implemented their versions of the recommended strategies. Read on to see a high level overview of their results.



Real-time Fraud
Detection for Digital
Payments

[SEE CASE STUDY >](#)



Securing Digital
IDs at Scale

[SEE CASE STUDY >](#)



Real-time Settlement
of Instant Payments

[SEE CASE STUDY >](#)

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"PayPal is innovating deep analytics with Aerospike and Intel Persistent Memory to rapidly respond to emerging fraud patterns."

*- Mikhail Kourjanski PhD,
Principal Architect, PayPal*



Powering Global Fraud Prevention
at PayPal (\$280B+ payments)

Results with Aerospike:

- ✓ Reduced server footprint
- ✓ 15x improved SLAs
- ✓ 30x reduction of false positive
- ✓ 10x improvement in fraud calculation data used



Securing Digital Identities at Scale

Results Supporting Financial Services Customers:

- ✓ 130M transactions daily across 40,000 websites.
- ✓ 100's of attributes delivered in <100ms.
- ✓ 450TB growing to 1.3PB
- ✓ \$3.3M saved over 3 years

"We are simply in a latency game and they (Aerospike) are the best in the latency game... Aerospike just works!"

*- Matthias Naumhof, CTO,
LexisNexis®*

*“In hours I had my
(Aerospike) dev
environment.”*

**Technical Officer,
IT Innovation & Development
Department, Banca D'Italia***

***Note: Banca D'Italia, as a member bank of the European Central Bank, was selected as technology lead**

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EUROPEAN CENTRAL BANK

EUROSYSTEM

Real-time TARGET Instant Payment Settlement (TIPS) at European Central Bank

Results with Aerospike:

- ✓ True end-to-end user payments (via their bank) within seconds
- ✓ 43 million transactions per day
- ✓ 24x7x365 availability
- ✓ Less than €0.0020 cost per payment transaction
- ✓ Scalability enabled for 1000's of European banks



How Payment Providers are Applying Real-time Decisioning and Transactional Analytics

FinTech companies as well as established payment providers alike recognize that real-time decisioning and transactional analytics are no longer optional. To survive and grow, payment service providers must continuously invent new use cases to promote customer loyalty and profitability, while reducing costs and risk.

Fraud detection and prevention. Detecting false positives, payment fraud, AML check, online and POS purchase fraud, bot account creation in real time enabling faster settlements and safer transfer of money

Real-time digital identity check. Checking digital identity, authentication, two-factor authentication check, biometric identity check at POS, online money transfer, P2P payments, cross-border processing, cyber threat, AML check

PCI DSS & PSD2 compliance. Payment services providers need to make customer data accessible as APIs for 3rd party consumption

Digital wallet and mobile commerce. Digital identity authentication, two-factor check for commerce, faster response to account inquiry, catalog access for m-commerce, loyalty and rewards management POS targeting and offers. Targeted, personalized offers and coupons at POS and time of purchase based on profile data

POS targeting and offers. Targeted, personalized offers and coupons at POS and time of purchase based on profile data and shopping behavior

Learn More

If you're an application developer or technical executive interested in learning more about how Aerospike works and how it can benefit your payment system, download our solution brief, *Intel Financial Services Solution Brief*.

For more information, visit www.aerospike.com/digital-payments/

Endnotes

1 Bruno, P., Denecker, O., & Niederkorn, M. (2019, September). Global Payments Report 2019: Amid sustained growth, accelerating challenges demand bold actions. McKinsey & Company. <https://www.mckinsey.com/~media/mckinsey/industries/financial%20services/our%20insights/tracking%20the%20sources%20of%20robust%20payments%20growth%20mckinsey%20global%20payments%20map/global-payments-report-2019-amid-sustained-growth-vf.ashx>

2 Global Data

3 Fraud Without Borders - Cybercrime Report (July - December 2019). (2020). LexisNexis Risk Solutions. <https://risk.lexisnexis.com/global/en/insights-resources/research/cybercrime-report#:~:text=The%20LexisNexis%C2%AE%20Risk%20Solutions,global%2C%20regional%20and%20industry%20connections.>

4 AFP Payments Fraud & Control Survey, J.P. Morgan

5 Reinisel, D., Gantz, J., & Rydning, J. (2018, November). Data Age 2025, IDC . The Digitization of the World from Edge to Core. Seagate.Com. <https://www.seagate.com/files/www-content/our-story/trends/files/idc-seagate-dataage-whitepaper.pdf>

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