NSTREAM

ANOMALY DETECTION SOLUTION

Why Investing in Streaming Data Applications for Anomaly Detection is Vital for Business

Streaming data applications excel at the use case of real-time anomaly detection, offering companies a resource- and cost-effective investment to more effectively spot fraud and implement mitigation measures before it causes irreparable damage.

Businesses are not realizing the full value of their streaming data

More than 80% of Fortune 100 companies use Apache Kafka to transport massive quantities of streaming data and maintain a real-time data pipeline. In other words: Leading enterprises are all in on data streaming to usher in the next generation of business innovation.

But moving data — even at scale — is not the same as deriving its full value. Businesses need tangible outcomes from their data in less time. To meet this need, they must modernize the application layer to see, understand, and act on streaming data as soon as it arrives. Failure to adapt will lead to greater operational costs, missed opportunities to boost revenue, and increased risk.

How streaming data applications harness the full potential of streaming data

Streaming data applications enable full visibility, context, and automation to accelerate streaming data time-to-value and complete the data pipeline. As a result, enterprises can execute sophisticated use cases, such as customer 360 and fraud detection, in true real-time.

Whereas most applications are database-driven and do not work well with streaming data by default, streaming data applications are designed to work directly with real-time data. This includes the ability to instantly run business logic — essential rules and domain knowledge — against streaming data and continuously push the results to downstream systems.

Why streaming data applications excel at spotting anomalies

Spotting and stopping fraudulent activity – or anomalies in company data – requires a nuanced and time-sensitive approach that many traditional data processing architectures cannot attain. These architectures struggle with real-time data processing due to their stateless services, inefficiencies with structured data, and scalability constraints as volumes grow or latencies compound.

However, the consequences of poor anomaly detection solutions can be immense: In 2022 alone, consumers lost nearly $8.8 billion to fraud. Companies with poor anomaly detection also risk revenue, reputation, and customer trust and loyalty.

Streaming data applications are ideal for anomaly detection cases where immediacy is critical, and allow organizations to quickly identify anomalies and fraud to better prevent financial losses, damage to brand reputation, and customer distrust. What's more, streaming applications can mitigate the need for companies to invest in niche (and costly) software solutions for fraud detection, freeing up budgets and teams.

This is because streaming data applications built on the Nstream Platform reduce the complexity of traditional data processing architectures to unlock real-time business visibility, enhanced automation, and sophisticated business logic with net-zero latency.
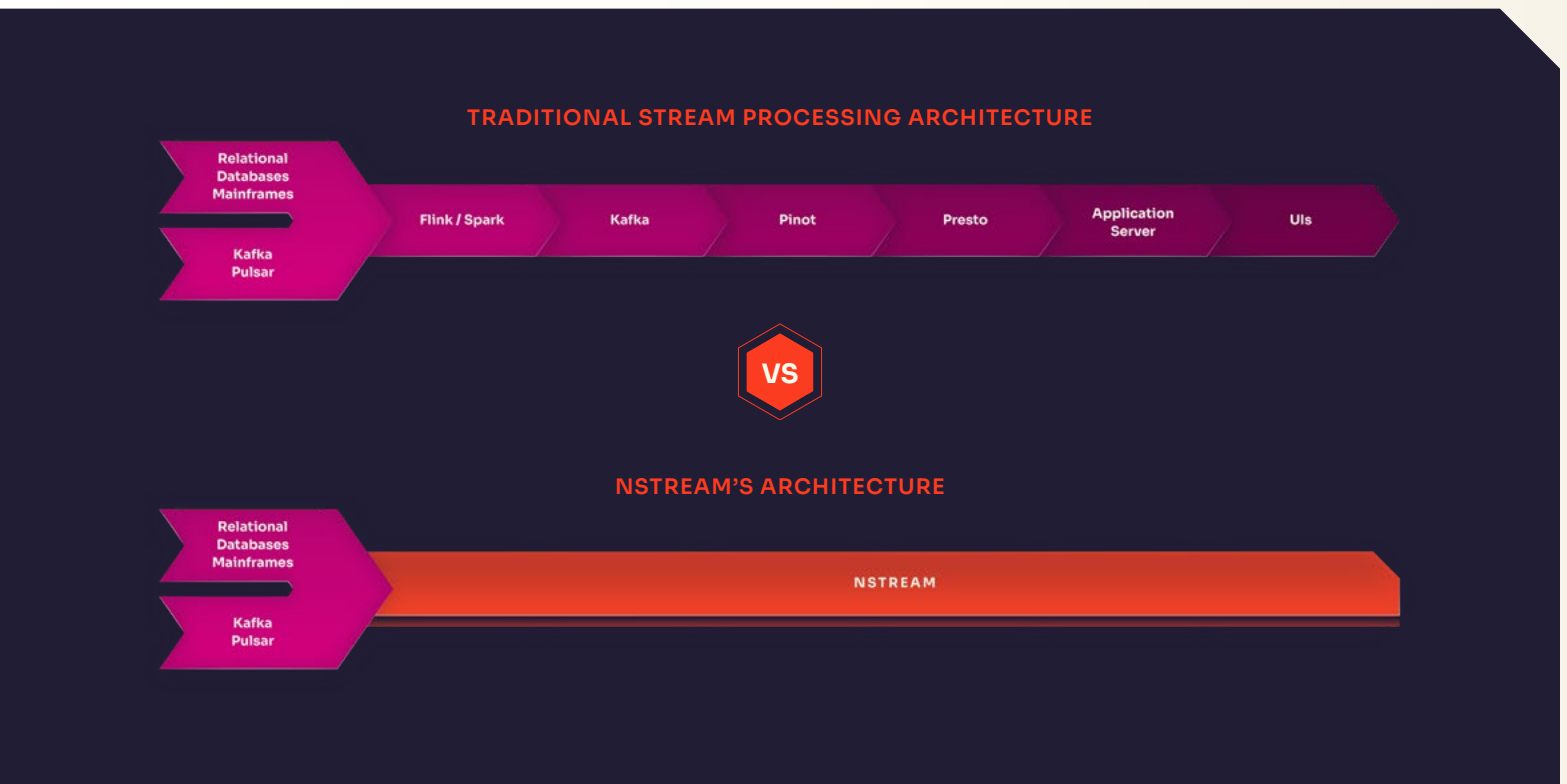
In the case of fraud detection, streaming data applications can fuse and process data from multiple sources incrementally (e.g., transaction history, location, current transaction data, etc.) to identify and flag suspicious transactions in true real-time. Companies can then implement sophisticated automation to better stop fraudulent events in their tracks (e.g., In credit card fraud: sending an automated notification and freezing the card).

Build streaming data applications in minutes, not months, with Nstream

Nstream is the industry's first full-stack streaming data application development platform that allows enterprises to design and deploy applications faster and more efficiently than ever before. In fact, Nstream delivers a 10x faster time-to-value and a 70% lower total cost of ownership (TCO) compared to alternate approaches.

Traditional application architectures involve complexity that quickly drives up cost and latency. Nstream, on the other hand, offers a fully-integrated solution that enables real-time visibility and action while eliminating the need to integrate multiple data systems and hire new SMEs or vendors.

TRADITIONAL STREAM PROCESSING ARCHITECTURE

Relational Databases Mainframes

Kafka Pulsar

Flink / Spark → Kafka → Pinot → Presto → Application Server → UIs

VS

NSTREAM'S ARCHITECTURE

Relational Databases Mainframes

Kafka Pulsar

NSTREAM

How your business benefits with the Nstream Platform

BENEFIT	HOW?	WHY DOES IT MATTER?
Total business visibility	A real-time user interface provides a live model of the ever-evolving state of the business. View functional operations or zoom in on real-world objects, such as assets, transactions, customers, etc.	Real-time visibility is vital to understanding complex business operations and spotting potential issues well in advance. *Proof point:* An enterprise customer uses Nstream to deploy a real-time interactive map view of 20M+ IoT devices.
Sophisticated automation	Context-enriched streaming data is used to execute nuanced, time-sensitive decisions.	Acting on insights at the same speed as data processing makes the business more agile and competitive.
Faster time to value and lower total cost of ownership (TCO)	The end-to-end streaming application stack removes the need for multiple data systems that must be set up and maintained.	Managing multiple distributed data systems is time-consuming and expensive. *Proof point:* Nstream offers a 10x faster time-to-value with a 70% lower TCO.
Fully integrated software	Streaming data applications unify state, compute, persistence, and messaging into a single, vertically integrated data processing architecture.	Teams can focus on implementing business logic for specific use cases. *Proof point:* Nstream applications require 4x fewer engineering hours to design, build, test, and maintain.
Stream-to-stream joins	Stateful processing and entity-parallel services ensure that all necessary context remains with relevant business objects, rather than scattered across database tables.	Implement a full-context real-time decision-making system while preventing a prohibitive cost increase and high latency.

How Nstream's innovation work

Nstream helps you create powerful streaming data applications in minutes, not months. It is possible because of the following technology innovations.

- **Stateful services:** With stateful services, applications do not forget their state and have the functionality of an application server on real-time / streaming data.

- **Streaming APIs:** Streaming APIs facilitate pushing data through the entire application stack. Think of streaming APIs as having the functionality of REST APIs but for real-time / streaming data.

- **Real-time user interfaces (UIs) and enterprise integrations:** Real-time UIs allow users to see the real-time state of their business down to the real-world object (such as a customer, truck, asset, or connected device) scale. Our real-time UIs easily integrate with business intelligence (e.g., Tableau), enterprise applications (e.g., Twilio), microservices, and custom UIs (e.g., Angular, React).

How Nstream advances anomaly detection across verticals

RETAIL
Combat payment and customer fraud

With Nstream, retailers can identify unusual patterns in sales and detect known fraudulent patterns by comparing vast amounts of data – including point-of-sale transactions, customer behavior, and inventory levels.

This proactive approach helps retailers optimize their inventory management and mitigate the risk of financial losses due to fraudulent transactions.

LOGISTICS/TRANSPORTATION
Track inventory down to the pallet

With streaming data applications built on Nstream, you can seamlessly track the real-time state of real-world objects, such as trucks, pallets of inventory, or individual assets.

This granular view can help manufacturers track their inventory, detect anomalies in the supply chain (such as delayed or counterfeit products), and better monitor supplier performance in real-timereal time.

FINANCIAL SERVICES
Notify customers as soon as discrepancies appear

Customers want to know immediately when a fraudulent charge hits their bank account/ creditaccount / credit card.

Streaming data applications built on Nstream enable stream-to-stream joins at scale and ensures isolatione of events at the entity level. This allows banks to compare large amounts of data and flag for customers the moment a discrepancy is noted.

Additionally, Nstream can help financial institutions monitor market behavior to identify unusual trading activities.

Case Study: Itron drives the future of smart power grid

Itron helps utilities and cities safely, securely, and reliably deliver critical energy infrastructure solutions to communities in more than 100 countries. Itron needed a scalable solution that would allow its customers to monitor millions of endpoints and monitor the power grid in real time to accelerate EV charging deployments. With Nstream's technology, Itron can now view the status of real-world objects – such as track meters, substations, and additional transformers – as they update in real time.

With a real-time view of grid infrastructure, Itron utility customers can identify where chargers aren't in use and, therefore, better control electricity use at charging stations by conserving energy instead of running chargers non-stop.

As a result, Itron's solution can save end customers more than 35% on their energy costs through managed charging and can save utilities more than 20% annualized, considering grid infrastructure investments and ongoing management.

Nstream receives industry recognition

Gartner.

Nstream has been recognized by Gartner as an example vendor of Unified Real-Time Platforms in the Market Guide for Event Stream Processing for its streaming application platform as a service (PaaS).

Intellyx

The analyst firm Intellyx honored Nestream with the Digital Innovator Award for driving enterprise digital transformation, and recognizes Nstream as a vendor worth watching.

Getting started FAQ

Q: Do I need to replace my tech stack to use Nstream?
A: No. Nstream helps you build SDAs and sends data back to your existing systems without being disruptive to your current stack.

Q: Does Nstream integrate with my existing streaming data technologies?
A: Yes, Nstream will easily integrate with your existing stack. Here are just some examples of our integrations: Tableau, Thoughtspot, Looker, ServiceNow, Twilio, Angular, React.

Q: Do I need streaming data developer experience to build a streaming app?
A: No! Nstream is a low-to-no-code solution; we provide templates to help you get started and on your way to building streaming applications in minutes (not months!).

Ready to build your own streaming data application?

Streaming data applications present an exciting opportunity to take your streaming data to the next level. Nstream is the first open-source, full-stack streaming data application platform. To learn more about Nstream or to get started with Nstream and your existing tech stack, discover more here.

About Nstream

Nstream's application development platform, built on SwimOS - has been open-source since 2019.

Nstream is an innovator in open-source, full-stack streaming data application development platforms, revolutionizing real-time operations for enterprises. With Nstream's cutting-edge innovations, organizations can effortlessly harness the power of streaming data, reduce operational costs, and improve scalability and agility. Nstream's technology enables businesses to unlock the full potential of their data, turning insights into action — immediately.