SOLUTIONS OVERVIEW | LOGISTICS

Streaming Applications: The Key to Transparent, Resilient Logistics and Supply Chain Systems

Is your streaming data working for you?

When harnessed to its full potential, streaming data should empower you with real-time (we're talking within milliseconds, not hours) visibility into your product — from the moment it leaves a distribution center to the second it arrives at a consumer's doorstep. It should provide you with the ultimate situational awareness — whether you're looking at your global supply chain or zooming in on an individual truck. When combined with business logic, your streaming data should free up your teams to focus on strategic work while routine decisions are automated.

Streaming data, analytics tools, and database applications all dominate the market today, but only offer piecemeal insights for modern logistics and supply chain challenges. Streaming applications bridge the gap between streaming data and full-fledged, entity-relational web applications.

Nstream is the first full-stack streaming applications platform. We use a web of stateful objects that run business logic in-stream at the speed of your data. The result? Streaming applications that empower you to improve operational efficiency and customer satisfaction through comprehensive observability and closed-loop automation at scale.

Take full advantage of your streaming data with Nstream to reduce operational blindness, opportunity cost, and human error.

What Makes Nstream Different?

Three key technical innovations pioneered by Nstream make streaming applications possible for a range of use cases across industries:

1. **Stateful Objects:** Unlike stateless approaches, stateful objects remember what they were doing between operations, so your application entities don't need to reload their state from disk every time they're accessed. Related states can be materialized locally so relevant context is already available when new data is received. Your business logic runs with zero added latency the instant any state change is observed.

2. **Streaming APIs:** Observe granular real-time changes to the computed state of any entity, without having to poll for updates. Any API client — be it a web browser, command line tool, or third-party system integration — can stream just the data they're interested in, without having to consume the entire firehose.

3. **Real-Time UIs:** Continuously synchronized user interfaces give you a full fidelity real-time view of what's happening right now — at any level of detail — providing improved situational awareness to enable better decision-making.

An Open-Source Platform for Developers

The Nstream Platform is built by developers, for developers. An unwavering commitment to open source means developers can feel confident investing their time and energy without fear of vendor lock-in. An intuitive distributed objects programming model keeps code concise and maintainable. And vertical integration of the full application stack simplifies deployment and operations, without compromising performance, scalability, or generality.

- **Turn streaming data into real-time state:** Route streaming data to specific stateful objects pertinent to each message. Track the evolving state of each and every entity so that application code can instantly interpret incoming events without having to wait on external queries.

- **Continuously evaluate stateful business logic:** Run arbitrary business logic in response to cascades of granular state changes that propagate across a web of stateful objects, incrementally enriching, aggregating, and reducing the data as it flows.

- **Instantly act on computed insights:** Detect and respond to operational issues as they occur — even the ones that only become apparent in the context of multiple in-motion and at-rest data sources.

- **Stream incremental updates to API clients:** Dynamically subscribe to thousands of individual stateful objects over a single multiplexed network connection, without incurring the overhead of polling, or wasting bandwidth by subscribing to overly broad firehoses of data.

- **Interact with live data visualizations:** Transform web user interfaces from one frame per hour "snapshots" to 60 frame per second "movies" of the computed real-time state of every aspect of your application.

Realize the Benefits of Streaming Data

With Nstream, organizations can fully realize the benefits of streaming data. Streaming applications allow you to continuously model the ever-evolving state of your business, continuously evaluate time-sensitive decisions in comprehensive real-time context, and oversee every automated action as it's taken.

Streaming applications help organizations:

- Understand the truth about what's happening right now
- Interpret the context-dependent meaning of streaming data in real-time
- Make better informed decisions about how to remediate suboptimal situations
- Take automated action to prevent problems from escalating
- Increase real-time data availability and governance with granular streaming APIs
- Outpace competitors in the rapidly evolving streaming data landscape

How Streaming Applications Benefit Logistics

Business and technical use cases for Nstream include:

- **Fraud detection:** Fuse and process data from multiple sources (e.g. transaction history, location, current transaction data) in-stream to identify and flag suspicious transactions in real-time.

- **Inventory Control:** Monitor inventory in real-time to proactively reroute supplies or stock up before supplies run low.

- **Coordinated Communication:** Gather all relevant, real-time context to provide retail stores, truck drivers, individual customers, and other suppliers with timely updates.

- **Real-time + hyper-relevant offers:** Use precise data to provide directions to drivers. Location services also allow suppliers to keep track of the products they have in transit, adding another level of loss prevention.

Getting Started With Nstream:

There's no need to wait to start turning your streaming data into streaming applications. Visit Nstream's free open-source platform, SwimOS, to get started