

# Lightning-fast payments with NATS.io

NATS accelerates multi-cloud, lightweight, low latency payment processing for Form3

## CHALLENGES

- Rapid growth & banking requirements stressed Form3 payment platform
- Inability to meet customer SLAs due to delays up to 300 milliseconds (ms)
- Increased complexity & security due to multiple standards/requirements
- Required multi-cloud & instant cloud switching for scaling & resiliency

## NATS

- Open source, cloud-native, cloud-agnostic messaging & communications platform
- Scalable, low latency & resilient system, no need for specialized tools/middleware
- Simple to use, lightweight & fast, secure & compliant
- Includes Jetstream with configurable persistence layer for cloud-switching/failover

## RESULTS

- Improved SLAs: over 6x reduction in latency > 300ms to <50ms
- Increased operational resiliency, scalability & availability
- Data-at-rest encryption & security
- Cloud portability & cloud-native/-agnostic architecture



*“Because it is so simple to set up, has such low latency and high capacity per server, NATS works equally well in almost any environment and in any cloud.”*

- Adelina Simion,  
a Technology Evangelist with Form3

## ABOUT FORM3

[Form3](#), a cloud payment processing platform, leverages NATS for its messaging and communications between banks and external payment processing systems, enabling faster payment processing as a service with improved SLAs, multiple clouds and near-instant failover.



*“With NATS, the top latency for messages immediately dropped to less than 50 milliseconds between locally hosted servers, an improvement of more than 6x. NATS could process higher volumes of transactions faster with a much smaller infrastructure footprint (CPU and RAM).”*

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## Challenges

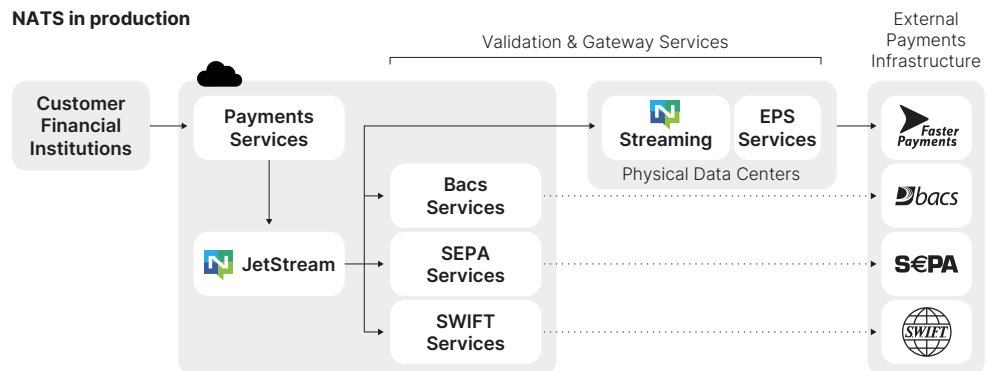
Form3, a Payments-as-a-Service platform in the AWS cloud, wanted to expand its distributed architecture infrastructure by pushing payment processing closer to end users, reduce data latency and improve availability. It was processing over 1 million faster payments transactions a day. But AWS’s SQS queues were causing delays of up to 300 milliseconds. And AWS’s 99.9% uptime SLAs were insufficient for the critical payment infrastructure. Form3 needed to create a higher availability service with multi-cloud capabilities for cloud choice and near-instant failover. Additionally, physical data centers required lightweight event bus systems to handle their limited compute footprint and capacity.

## NATS

Form3 replaced its legacy pub-sub event bus and message services with NATS, an open-source, cloud-native messaging platform sponsored by Synadia. NATS met Form3 requirements for performance, scalability, latency, reliability, resilience and compute. Since NATS is simple to set up and offers low latency and high capacity per server, it works in almost any environment and in any cloud. With NATS, Form3 created a cloud-agnostic architecture leveraging JetStream and its highly configurable persistence layer, enabling workloads to shift among clouds.

*“It lets us break free from the SLAs of any one cloud and create our own.”*

### NATS in production



## Results

With NATS and JetStream, Form3 successfully built a multi-cloud, low-latency payments platform that is scalable, resilient and efficient.

- **Low Latency:** NATS decreased average latency by 6x – from 300ms to 50ms – by replacing SQS and SNS
- **Improved developer productivity:** Form3’s Go language and NATS share similar design principles – performance, scalability and ease of use.
- **Performance & scalability:** NATS delivered higher messaging throughput on a smaller cloud footprint and runs in low resource environments.
- **High reliability:** NATS never requires restarts.
- **Lightweight:** NATS uses minimal resources and simple text-based protocol to reduce complexity. Offers easy integration without infrastructure changes.
- **Data persistence:** Jetstream’s highly configurable persistence layer features a distributed key/value database, data-at-rest encryption by default and horizontal scalability.
- **Multi-cloud choice:** NATS enables a multi-cloud-ready, active/active architecture for higher uptimes

The transition to NATS increased Form3’s ability to handle rapid growth, improve SLAs, and future-proof their operations for further innovations and expansions.

*“NATS enabled Form3 to handle a greater volume of payments than the previous architecture, something that will simplify and reduce future scaling costs.”*

