

Q2 Software Adds Near-Real-Time Alerting to Its Digital Banking Platform Using Confluent Platform

Q2

Headquarters

Austin, Texas, USA

Industry

Financial Services/Banking

Challenge

Enable FIs on the Q2 digital banking platform to send near-real-time alerts to customers as transactions and other account events occur

Solution

Use Confluent Platform and Kafka to implement a scalable event-driven architecture that powers the alerting system and broader digital transformation

Results

- Customer alert responsiveness improved by orders of magnitude
- Kafka adoption simplified
- Latency lowered; resiliency increased
- Secure, scalable design implemented

One out of 10 digital banking customers in the U.S. uses Q2's secure, data-driven digital banking platform to meet their digital banking needs. In fact, a third of the top domestic banks rely on the power, flexibility, and performance of Q2's platform as central to their digital strategy. For financial institutions (FIs), including many Q2 customers, ensuring a strong digital strategy is in place is more important than ever, especially as more retail and commercial customers complete transactions online rather than in person.

Q2 is in the midst of its own digital transformation, spurred in part by increased adoption of its banking platform. To keep pace with the business's growth and the real-time needs of the FIs it serves, Q2 recognized a need to upgrade its IT architecture, which relied on monolithic systems and processes that could not easily scale to meet surging demand. The previous legacy system that used to send alerts to FI customers was based on batch processes and polling, which slowed response times. Working with Confluent, Q2 adopted a new event-driven architecture underpinned by Confluent Platform and Apache Kafka®. This mission-critical event streaming infrastructure connects systems across the company and enables Q2 to scale efficiently while providing FI customers a new, near-real-time alerting service.

"Technology is a great equalizer that enables our clients to compete with the largest banks in the world. One of the significant technology advantages that Confluent Platform provides is the ability to share—across our product portfolio—the significant events that occur throughout an end users' financial journey, from opening an account to initiating a home or small business loan to saving for college or retirement," said Jordan Hager, vice president, hosting architecture at Q2. "We never use the excuse that 'we're learning' to lessen our customers' expectations of our digital services. Confluent expertise and Confluent Platform capabilities are helping us shorten the learning curve as Kafka takes on a larger role in our modern software architecture."

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As Q2 begins to roll out its new event streaming-based alerting system to customers, Q2 engineers can now focus on using event streaming with Confluent Platform to enable greater scalability and open new opportunities. "Confluent Platform and Kafka are game-changing technologies for us," said Robert Ruetz, software developer at Q2. "We're breaking up our large legacy

monolith into smaller pieces and Kafka allows us to now have fast, resilient communications between these smaller pieces. On top of that, we are learning new ways to solve old problems, more quickly and easily. Confluent is helping us think more in terms of asynchronous event streams rather than synchronous request-response paradigm."

Business Results

Customer alert responsiveness improved by orders of magnitude. "The event-driven alerting system we've developed and deployed with Confluent Platform sends alerts to customers much faster than the system we had been using," said Ruetz. "And we expect further increases in performance as we continue to improve the system."

Kafka adoption simplified. "Confluent made it possible to ease into our Kafka adoption," said Pedro Flores, enterprise architect at Q2. "Confluent documentation is great, and the support has been outstanding, simplifying the process for me as the owner of the Kafka infrastructure. Without Confluent resources, the first time we ran into an issue I would have been dead in the water."

Latency lowered; resiliency increased. "With the pandemic, digital banking is now more important than ever. The customer experience has to be fast, and it has to instill confidence," said Ruetz. "With Confluent Platform, we've reduced latency while improving availability and resiliency. Kafka and Confluent Platform gives us the ability to run audits and replay events, which is invaluable in our industry."

Secure, scalable design implemented. "We needed to rapidly scale our product and get past the maintenance, deployment, and traffic limitations of our monolith. At the same time, we had to find a solution that met the requirements of our risk-averse and security-oriented FIs," said Ruetz. "The alerting system we architected with Kafka and Confluent Platform checked all the boxes for scalability and security."

Technical Solution

Q2 engineers started implementing the new alerting infrastructure using open source Kafka before moving to Confluent Platform. Initially, some on the team leaned toward remaining with the status quo. "We had developers ask, 'Why can't we hire some Kafka people?' While Kafka is extremely configurable, that configurability is where a lot of its power—and a lot of frustration—comes from," said Ruetz. "The developers saw the value in Confluent once we had Confluent engineers come in to review our designs. They saved us from making a lot of mistakes early on and helped us eliminate many bottlenecks."

The initial meetings with Confluent engineers laid the foundation for the event-driven architecture in place at Q2 today. "We worked closely with Confluent engineers to design, architect, implement, and roll out the Kafka

environment we're using today, and the entire experience was positive," said Flores. "Among other things, they helped us with our security model, which includes mutual SSL and authentication against Active Directory using Confluent LDAP Authorizer."

A key technical challenge for the alerting system was finding a way to enable FIs to send alert events to the Q2 Kafka infrastructure. To address this challenge, Q2 engineers created an HTTP endpoint FIs can access. This endpoint takes messages from the FIs and publishes them as Kafka events, which then flow to a consumer responsible for alerting the customer.

With the alerting system in production, Q2 teams use Confluent Control Center to manage their clusters and monitor cluster health. "I'm not on the Ops team, but even

for me, it has been very helpful to use Control Center to dig into the metrics at the topic level or the consumer level and identify consumer lag points."

Q2 has since expanded the use of Confluent Platform to other projects, including one where Kafka is being used to standardize and move data from Apache Cassandra databases to Molecula's Cloud Data Access platform. "This solution uses multiple features of Confluent Platform," Flores explained. "We structure the data from our Cassandra databases using a model stored in Schema Registry, and we use Confluent Replicator to replicate topics across multiple datacenters."

"We move nearly 1.5 trillion dollars through our platform each year, so reliability is critical for us; we cannot have data loss or message-write failures," said Hager. "As we continue to extend our platform into loan origination, loan decisioning, and other areas, the need to reliably share data becomes more critical. Having Confluent Platform as part of our software architecture enables us to easily move data across products and across datacenters, public and private, to fulfill that need."

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