

Bank Rakyat Indonesia Increases Financial Inclusion and Extends Microfinance Opportunities Using an Event-Driven Architecture Enabled by Confluent Platform



Headquarters

Indonesia

Industry

Financial

Challenge

Drive a digital transformation at the largest bank in Indonesia to improve the bank's market position and increase financial inclusion across the country

Requirements

Move from synchronous to asynchronous microservices development on an enterprise-ready platform. Enable stream processing for real-time data processing in flight.

Solution

Use Confluent Platform and Apache Kafka to deploy an event-driven microservices architecture that powers big data analytics for real-time credit scoring, fraud detection, and merchant assessment services.

Results

- Fraud detection performed in real time
- Loan disbursement times cut from two weeks to two minutes
- ISO-certified open API created
- Loan defaults predicted proactively; NPL at 0%

With 75 million customers and a market cap of more than \$38B, Bank Rakyat Indonesia (BRI) is the largest bank in Indonesia and the largest microfinance institution in the world. BRI is in the midst of a digital transformation that is simultaneously strengthening the bank's position among Southeast Asia's most successful financial institutions and enabling it to increase financial inclusion across Indonesia, which has one of the highest unbanked populations in the world.

The transformation at BRI is enabled by an event-driven architecture based on Confluent Platform and Apache Kafka that is powering real-time analytics for credit scoring, fraud detection, and merchant assessment services. Among the innovations being driven by event streaming are a system that detects anomalous customer transactions in real time, an ISO 27001 certified open API that connects BRI with a digital ecosystem of partners, an early warning system that identifies customers who are at risk of payment default, and a microlending app, named Pinang, that is helping BRI reach untapped new market segments.

"Confluent Platform and Apache Kafka, by enabling us to build and deploy realtime event-driven systems for credit scoring, have helped BRI become the most profitable bank in Indonesia," says Kaspar Situmorang, Executive Vice President, Digital Center of Excellence at BRI. "With event streaming and the ability to capitalize on real-time analytics in merchant services, we tripled agent banking sales. And, thanks to Confluent and Kafka, our fraud detection systems are now able to detect anomalies immediately, so we can take action to shut down fraudulent activities as they are attempted."

"Confluent Platform and Apache Kafka, by enabling us to build and deploy real-time event-driven systems for credit scoring, have helped BRI become the most profitable bank in Indonesia."

Kaspar Situmorang, Executive Vice President at Bank Rakyat Indonesia

BRI is currently looking at ways to scale its successful microfinance model, predicated on real-time event streaming, to markets across Southeast Asia and worldwide.

Business Results

Fraud detection performed in real time. "Prior to last year, it was taking two weeks to a month to detect fraud, because the data we needed first had to go to a data warehouse, and from there to an analyst," says Situmorang. "With Confluent Platform and Kafka integrated into our stack, we're now able to detect and stop fraud in real time. We're the first bank in Indonesia with this capability, and it is already reducing fraud by blocking cards compromised by skimmers."

Loan disbursement times cut from two weeks to two minutes. "Loan disbursement used to require two weeks of paper-based, manual processing," Situmorang says. "With the Pinang app, that has been cut to two minutes. Behind the scenes that improvement is powered by Confluent Platform, which we use for digital verification, instant scoring, digital signatures, and communicating a massive amount of information in real time."

ISO-certified open API created. "We created an open API in support of a Digital Partnership Model that enables BRI to connect with fintech companies and create a digital ecosystem," says Situmorang. "Previously, if a company wanted to work with BRI, it could take four months to set up the necessary channels via host-to-host VPNs. With the open API, which is powered by Kafka event streaming and has been certified to ISO 27001, you can now get up and running in a sandbox and move to production in less than an hour."

Loan defaults predicted proactively; NPL at 0%. "Using the credit scoring system we built atop Confluent Platform, we can identify customers at risk of default and reach out to them before default occurs," notes Situmorang. "And on the microfinance side, we're seeing non-performing loan (NPL) rates close to 0%, which is unprecedented."

Technical Solution

One key to the successful restructuring of BRI's digital operating model was adopting an event-driven architecture, moving away from synchronous to asynchronous microservices development. The dependencies inherent in synchronous microservices affected reliability in years past. "We started our journey with asynchronous microservices, and now everything is managed and controlled via Kafka so it's easier to see and monitor," says Situmorang.

Reliability was an important factor in the bank's decision to deploy Confluent Platform. "We love open source, but at the same time we're not a startup. We're a large financial

institution that works with world-class organizations, and we need services that make it easier for us to sleep at night," Situmorang explains. "Confluent Platform is very reliable; it's never down. It has become our backbone." In addition, BRI also uses Confluent Replicator to improve reliability within the infrastructure.

BRI is combining machine learning with event streaming to solve challenges that affect the entire industry. One example is the bank's fraud detection service, which was built using KSQL to perform real-time data processing against Kafka Streams. "KSQL is tremendously helpful in

enabling us to detect anomalies in real time, determine if a particular transaction is likely fraudulent, and then block it if necessary," says Situmorang.

The improved fraud detection, increased revenues, and more efficient loan processing that have been facilitated by real-time event streaming are a source of pride for

Situmorang and his group. More important to them, however, is the ability to provide all Indonesians with access to financial services. "We still have more than 50 million unbanked people in Indonesia. Without access to financial services, they struggle to do business. Our goal, which Confluent Platform is helping us achieve, is to increase financial inclusion to 80% by next year."

"We love open source, but at the same time we're not a startup. We're a large financial institution that works with world-class organizations, and we need services that make it easier for us to sleep at night. Confluent Platform is very reliable; it's never down. It has become our backbone."

— Kaspar Situmorang, Executive Vice President at Bank Rakyat Indonesia

Learn More About Bank Rakyat Indonesia

bri.co.id/en/