Microservices—large global general merchandise retailer

About the client

A large global general merchandise retailer is a famed omnichannel success story. The client is known for its innovative experiments

with both store and digital retail formats. The retailer operates over 5,000 stores across the US, Canada, and Mexico. In an average

international market, the retailers' ecommerce merchandise is typically in the order of hundreds of thousands of SKUs.

Business challenge

For the retailer's Canada division, a scalability challenge was imminent. The client was planning to

expand SKU volume by a factor of five, from 200,000 to a million, with much of the growth driven by the

addition of a marketplace. A million was only the start; by end of 2018, the retailer envisaged a SKU

volume of 10 million units. The existing Oracle ATG-based system could not meet the challenge of

delivering the right data to the front-end and checkout in the order of tens of milliseconds. In addition,

the monolithic nature of the proprietary ecommerce platform implied that point changes could not be

made without overhauling the entire system. The retailer could not isolate the monolithic system and

improve the pricing, availability, and catalogue function individually. The solution? Microservices

Litmus7 approach

Litmus7 stepped in. Two services were built – one for pricing and availability and one for catalogue, both for general merchandise and grocer

In the past, the Oracle ATG platform ingested pricing data from a legacy mainframe system in a flat file format, availability data from a Sterling Commerce order management system, and product catalogue from STEP, a product information management system from Stibo Systems. The interfaces and the data sources remained the same. The Litmus7 replicated the original ATG functionality using Apache Kafka for messaging, Apache Spark for streaming processing, and finally the NoSQL Cassandra as the database. This alternative system delivered pricing, availability, and catalogue data to the front-end, namely checkout, cart, and the product listing page.

Requirements were stringent. SKU information, price, and up to the minute inventory information had to furnished to front-end and checkout in 10 milliseconds. The product listing page (about 200 SKUs) would have to be loaded in 40-50 milliseconds. Data operations were complex and involved selecting the winning candidate among multiple merchants selling the same product, based on the lowest price (including delivery cost). One million SKUs had individual price points across 18 regions. Therefore, just price involved 18 million data points. The overnight batch process for ingestion into the Oracle ATG platform was another scalability challenge. A 100,000 SKU volume took hours. With the advent of the marketplace model, the requirement was to reflect any change, such as SKU or a price movement in minutes.
The microservices implementation was a resounding success. Requirements were met, the project operated in the CI/CD mode, and the retailer's Canada division is now all set to reach 10 million SKUs through the marketplace model by end of 2018

> " Pricing, availability, and catalogue taken out of Oracle ATG and built into microservices "

10-40 millisecond response time

Working with us, retailer achieved

200k to **1** million SKUs