



Building the Future of Omnichannel Retail

Transform your retail business with Google Cloud
and Confluent event streaming.

The history of the retail industry is one of constant transformation, from mom and pop stores to catalog shopping to malls and department stores to e-commerce and now omnichannel experiences. In 2020, the pace of change accelerated as in-store foot traffic and retail growth slowed overall¹ while digital sales grew sharply. In response, retailers introduced a wide range of innovations, such as curbside pickup, contactless returns, and personalized shopping.

Today, retailers are continuing to extend and enhance the omnichannel experience by adopting data-intensive technologies like augmented reality (AR) and artificial intelligence (AI). But many face roadblocks in the form of fragmented data and applications. Critical data may be scattered across many different platforms, such as point-of-sale (POS), enterprise resource planning (ERP), and e-commerce platforms. And legacy systems may run in on-premises data centers while customer-facing apps and interfaces reside in the cloud.

This is why a growing number of retailers are taking advantage of Google Cloud together with event streaming made possible by Apache Kafka® and Confluent. Together, these technologies can combine disparate data in real time to help you:

- Get a 360-degree look at customer behavior across all your channels
- Personalize the retail experience in real time with contextually relevant offers and content
- Provide a seamless and easy-to-use omnichannel experience
- Improve inventory tracking and order fulfillment everywhere

This e-book explains how retailers can use Google Cloud with Confluent's complete event streaming platform for Apache Kafka to create a highly personalized, omnichannel shopping experience while streamlining operations and managing costs.



Why retailers are moving to the cloud

Retailers, long familiar with customers' preference to shop both online and in store, have prioritized digital transformation. According to a Global Retail Industry Digital Transformation study by Fujitsu, about 39.8% of retailers surveyed are increasing their overall technology budgets with 37.8% mentioning communication, networking, and cloud as the focus.²

Moreover, a convergence of several trends, which we will explore at right, is driving retailers to expand their investments in cloud technology.

Extreme e-commerce growth, including mobile

E-commerce is critical to retailers' ability to grow. More than one-third (34.3%) of retailers now sell the majority of their products and services online.² The pandemic has made e-commerce—including mobile commerce—even more critical to retailers' business models. According to data from McKinsey, e-commerce penetration accelerated by 10 years during the first three months of 2020.³ Meanwhile, mobile devices are on track to contribute more than 50% of online spend by September 2022.⁴

To deliver a great customer experience, online retailers must be able to scale rapidly and handle unpredictable surges in site traffic and transactions. But many retailers have difficulty adding "surge capacity" to on-premises infrastructure without having to buy and maintain costly equipment. This is a major reason why retailers are moving to the cloud.

Consumer demand for "anywhere" omnichannel experiences

Nearly two-thirds (64.2%) of retail executives believe that online and physical retailing are moving closer together.⁵ On a growing number of e-commerce websites, consumers can choose from a wide variety of omnichannel fulfillment options, including buy online, pickup in store (BOPIS), curbside pickup, and pickup at designated lockers. Plus, roughly 10% of retailers now allow shoppers to interact in store through their mobile apps.⁶

Making all this happen requires the ability to collect and synthesize data from multiple channels in real time.

One-to-one personalization

Today's consumers expect a highly personalized retail experience. More than 70% feel frustrated when a shopping experience is impersonal,⁷ and 36% say they want better personalization from retailers.⁸ Not surprisingly, retailers that deliver a personalized experience tend to earn more. Research by BCG shows that best-in-class personalization can increase average order value (AOV) by 10–20%.⁹

Retailers routinely personalize content, recommendations, offers, and discounts based on customer behavior. A growing number also use AR to deliver truly unique customer experiences such as virtual in-home product tryouts and fitting rooms, requiring sophisticated personalization engines that can gather data from multiple sources and analyze it in real time.

AI-powered opportunities

AI promises to transform the retail experience at all levels. On the front end, it can learn what customers want and help retailers provide even better personalized content and product recommendations in real time. On the back end, it can help optimize fulfillment across multiple warehouses, stores, and shipping providers, also in real time.

Applying AI successfully to any retail challenge requires the coordination of large amounts of real-time event data as well as relevant contextual data, all of which may come from a variety of sources.

What event streaming is—and why retailers need it

A brief overview of event streaming



Events

Every retail transaction creates data, such as the product purchased, its price, the customer's name, etc. Developers call such a transaction an *event*. Events include customer purchases on a website or mobile app, purchases made in store, returns, etc.



Event streaming

Also called event stream processing (ESP), real-time data streaming, or complex event processing (CEP), event streaming is the continuous processing of real-time data directly as it is produced or received, as opposed to the older paradigm of batch processing.



Event-driven architecture

When an event streaming platform is at the core of an organization's architecture, it becomes possible to centralize all data and distribute it to every application or system within the organization.

An event is a collection of information at a given point in time. For example, it can be a customer's decision to click on the "add to cart" button or save an item to a wish list. Event streaming is a new paradigm that sees data as a continuous stream of events. These streams can be contextualized with historical data points to generate new events in real time, such as personalized product recommendations or a lowest-cost shipping option. Retailers can use event streaming for anything from serving up personalized content and offers to streamlining fulfillment.

Apache Kafka is an open source, distributed streaming platform that is today's de facto standard for event streaming. Founded by the original creators of Kafka, Confluent offers enterprise-scale solutions that make Kafka easier and more cost-effective to secure, operate, and integrate seamlessly with Google Cloud services.



How Google Cloud and Confluent can position retailers for the future

Google Cloud has embraced automation to make the cloud easy to use and to help retailers as well as other businesses accelerate their digital transformations and adopt AI. Retailers that combine Google Cloud infrastructure and analytics services with fully managed event streaming from Confluent can more rapidly achieve business goals such as personalizing the customer experience, improving their omnichannel sales, and streamlining operations.

Inspiring customer experiences

The ability to deliver an amazing customer experience is essential to growing revenues. In a Forbes Insights survey of 200 marketing leaders, 40% of executives said their customer personalization efforts have directly affected cart size in direct-to-consumer channels such as e-commerce.¹⁰

Below is an example of how Google Cloud and Confluent event streaming can support the rapid creation of unique and innovative shopping experiences.

Success story:

Nuuly launches a clothing rental subscription service in record time

Urban Outfitters recently launched Nuuly, a clothing rental service that allows subscribers to choose six items per month from its large and growing collection of up-and-coming designer clothing, iconic label items, and unique vintage finds.

Challenge:

Build an entirely new clothing rental subscription service in a matter of months.

Solution:

Use Google Cloud Platform with Confluent Cloud and Apache Kafka to build a reliable, real-time event-driven architecture that serves as the core operating platform for the entire service.

Results:

- Flawless launch
- Stable production operations
- Crucial target launch date met
- Administrative overhead reduced by 10%

In their own words:

"We truly think of Confluent Cloud and Kafka as the central nervous system of our business, spanning everything from the customer-facing applications to distribution center operations from a technology perspective. We've trusted our entire business on Confluent expertise in ensuring that our Kafka cluster is going to keep running smoothly and operating as it is supposed to."

—Chirag Dadia

Director of Engineering
Nuuly

[READ THE FULL-LENGTH CASE STUDY ▶](#)

Elevate your mobile experience

Although mobile devices account for 60% of visits to e-commerce websites, they only represent 40% of sales.¹¹ To close the gap, many retailers have made delivering a rich and engaging mobile experience a top priority. Thus they are building mobile apps alongside responsive webpages, using microservices to create more agile mobile apps, and introducing Progressive Web Apps.

PROGRESSIVE WEB APPS ▶

However, executing any of these mobile development strategies requires dynamically integrating data from many different sources. Plus, you need enough processing power to allow your mobile app and webpages to handle unpredictable spikes in traffic and transactions without crashing or slowing down.

Google Cloud and Confluent event streaming can address both these challenges. Together, they can pull real-time data from e-commerce, inventory, ERP, POS, and legacy systems to support your mobile experience and permit fast page loading and transaction processing, even during periods of rapid growth.

Personalize everything, everywhere

Personalization is a must-have for retailers that want to grow. Personalized product recommendations, content, and offers can all increase revenues. For example, Netflix's sophisticated recommendation system generates \$1 billion each year by keeping viewers engaged and preventing service cancellations.¹²

The most effective personalization is powered by AI that can learn what customers really want. Google Cloud and Confluent event streaming can unify customer data in real time, allowing AI to match customers with the right products, content, and offers based on their search and purchase history, what similar customers are buying, and more.

Create unique experiences with augmented reality

AR is reality augmented with digital data. Omnichannel retailers are starting to use AR to deliver unique and personalized shopping experiences. For example, home improvement and housewares brands are allowing customers to see how products will look in their homes. Fashion companies are pioneering virtual fitting rooms. Some retailers are even launching virtual pop-up stores.

AR delivery requires data from multiple sources—such as your product information database, your website, consumers' devices, and your content library—to be combined. With Google Cloud and Confluent event streaming, you can instantly collect and synthesize all this data in real time, including text, pictures, videos, and 3D assets.



Modern omnichannel excellence

Today's consumers want omnichannel shopping choices that are seamless, integrated, and ultra-convenient. For example, they want to order online or even via social media, pick up orders curbside or in store, and choose from multiple return options. In addition, they want to see the status of all their orders from a given vendor—regardless of channel—in one accessible place.

None of this can happen, however, unless you can easily integrate sales, customer, and fulfillment data from all your critical systems. Read on to learn how Google Cloud and Confluent event streaming can help you harness this data to deliver a stellar omnichannel experience.

Stand out with flexible fulfillment

Flexible fulfillment is the foundation of a great omnichannel experience. By orchestrating your in-store and digital channels with shipping and delivery workflows, you can make it easy for customers to receive and return products on their terms.

Common types of omnichannel fulfillment include:

- **BOPIS** (buy online, pickup in store): When consumers buy online and pick up in store, there's a good chance (85%) they'll make additional purchases.¹³
- **BOPAC** (buy online, pickup at curb): Curbside services are also expanding to address returns as well.¹⁴
- **BOPIL** (buy online, pickup in locker): In this case, customers can pick up items in an electronic parcel locker, bypassing store employees altogether.

- **BORIS** (buy online, return in store): Customers can drive to their neighborhood store to return items conveniently rather than having to pack and label them for shipping.
- **Ship from store**: These programs can increase speed of delivery and lower costs by letting you ship from a local store that's closer to your customer instead of from the factory or central warehouse.

This kind of fulfillment is complex and requires data from multiple platforms, such as e-commerce and POS, in addition to the ERP platform that typically manages fulfillment logistics. Google Cloud and Confluent event streaming let you unite all of this data in real time, so you can efficiently locate and ship products, continually update order status, and make sure in-store sales reps are ready to help online customers.

Deliver a consistent omnichannel experience

An omnichannel experience should transcend devices and locations. Customers should have a consistent experience online, whether they're using a laptop, tablet, or mobile phone. Customer reports should include purchases from online and in-store outlets. And in-store sales reps should be able to see customers' online purchase histories and wish lists.

Delivering a consistent omnichannel experience, however, means all customer data must be available to all touch points at all times. Most omnichannel experiences fall short in this area. With Google Cloud and Confluent event streaming, you can create a unified 360-degree customer profile that consolidates real-time data from your online storefronts, physical storefronts, loyalty programs, and more.

Operational efficiency

Retail operations can be extremely complex and data intensive. Two types of data are especially critical to retail operations: inventory levels and product information. Inventory levels change minute by minute and may be tracked in your ERP, POS, or dedicated inventory system. Product information may change daily, monthly, or seasonally, and it typically resides in multiple product information databases and content management systems (CMS).

Keeping inventory and product data accurate and making it available to all your systems and channels is a major challenge. Until recently, it required building and maintaining multiple custom connectors. Below is an explanation of how Google Cloud and Confluent event streaming can help you manage all this data to dramatically improve operational efficiency.

Manage inventory data in real time

Accurate inventory data is essential to ensuring that your customers know if your products are in stock—and, if not, how long they will be back ordered. It is also critical to intelligent fulfillment applications that identify the fastest and least costly ways to deliver orders. Plus, your supply chain analysts need inventory trend data to know how much product to order or produce.

With Google Cloud and Confluent event streaming, you can ensure all your systems have the latest information on how much of each product is available across all your warehouses and store locations.

•

Automate your commerce operations

Product information is a moving target. New products may be released and old ones discontinued. New product photos and videos may become available. Pricing may also change based on market and behavioral analyses.

Manually updating product data for all your channels—including your e-commerce stores, social media stores, physical product catalogs, and third-party marketplaces like Amazon—can be extremely time-consuming and expensive. Plus, you can end up showing outdated or inaccurate information to your customers.

Google Cloud and Confluent event streaming let you capture the latest product copy, imagery, video, and pricing data in real time and automatically make it available to all your channels.

A top home improvement retailer brings real-time price updates to retail centers

With Google Cloud and Apache Kafka, one of the largest U.S. home improvement retailers provides all its retail centers with product pricing updates in real time. As a result, customers get more accurate quotes for home improvement projects—and no unfortunate surprises.

"Using Confluent, we've been able to leverage the power of event streaming with Kafka to make our business processes more frictionless for our customers, all without having to rebuild our legacy systems from scratch."

—A lead engineer

Take the next step

Seven out of 10 leading retail and consumer packaged goods (CPG) companies rely on Google Cloud. Google Cloud and Confluent together provide a strong foundation that allows retailers to accelerate their digital transformations, adopt AI and AR, and deliver a highly personalized omnichannel experience. With Google Cloud and Confluent, you can prepare to connect with consumers in any and all possible futures.

Learn more about getting started with Google Cloud and Confluent:

www.confluent.io/partner/google-cloud-platform

- ¹ Retail – “80%+...,” eMarketer: <https://forecasts-na1.emarketer.com/5a53eff9d8690c0d70ffaa00/585191890626310a2c186889>
- ² Fujitsu: <https://www.fujitsu.com/global/imagesgig5/DX-trends-global-retail-industry-2021.pdf>
- ³ McKinsey: <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/five-fifty-the-quickening>
- ⁴ Adobe Digital Economy Index: https://www.adobe.com/content/dam/www/us/en/experience-cloud/digital-insights/pdfs/adobe_analytics-digital-economy-index-2020.pdf
- ⁵ Fujitsu: <https://www.fujitsu.com/global/imagesgig5/DX-trends-global-retail-industry-2021.pdf>
- ⁶ Retail Dive: <https://www.retaildive.com/ex/mobilecommercedaily/one-in-10-retailers-use-in-store-features-in-their-mobile-apps-report>
- ⁷ Segment: <http://grow.segment.com/Segment-2017-Personalization-Report.pdf>
- ⁸ Retail TouchPoints: <https://retailtouchpoints.com/topics/customer-experience/nrf19-36-of-shoppers-want-better-personalization-but-hesitate-to-share-personal-info>
- ⁹ BCG: <https://www.bcg.com/en-us/publications/2019/next-level-personalization-retail>
- ¹⁰ Forbes Insights/Arm Treasure Data, 2019
- ¹¹ Adobe Digital Economy Index: https://www.adobe.com/content/dam/www/us/en/experience-cloud/digital-insights/pdfs/adobe_analytics-digital-economy-index-2020.pdf
- ¹² <https://martechtoday.com/roi-recommendation-engines-marketing-205787>
- ¹³ Business Insider, Gregory Magana, February 22, 2019, <https://www.businessinsider.com/us-consumers-use-buy-online-pickup-in-store-2019-2>
- ¹⁴ 2020 Online Apparel Report, Digital Commerce 360



ABOUT CONFLUENT

Confluent, founded by the original creators of Apache Kafka®, pioneered the enterprise-ready event streaming platform. With Confluent, organizations benefit from the first event streaming platform built for the enterprise with the ease of use, scalability, security, and flexibility required by the most discerning global companies to run their business in real time. Companies leading their respective industries have realized success with this new platform paradigm to transform their architectures to streaming from batch processing, spanning on-premises and multi-cloud environments. Confluent is headquartered in Mountain View and London, with offices globally.

To learn more, please visit
www.confluent.io

Download Confluent Platform and Confluent Cloud at:
www.confluent.io/download

Copyright © Confluent, Inc. 2021

Confluent and associated marks are trademarks or registered trademarks of Confluent, Inc.

Apache® and Apache Kafka® are either registered trademarks or trademarks of the Apache Software Foundation in the United States and/or other countries. No endorsement by the Apache Software Foundation is implied by the use of these marks. All other trademarks are the property of their respective owners.

©2021 Google LLC. All rights reserved. Google and the Google logo are registered trademarks of Google LLC.