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USE CASE:
Elevating Customer Loyalty Programs
Through Digital Transformation

One of the fundamental reasons that digital transformations in the retail industry are considered to be so complex is the fact that their business is extremely fragmented. eCommerce activities, an essential growth engine for any retailer, are interconnected to additional pillars of the retail business which are just as paramount to the business, such as brick and mortar sales, financial offers (retailer's credit card with benefits on partnering retailers and service providers), establishing and promoting private label brands and managing customer loyalty programs.

Traditionally, the majority of medium and large-scale retailers managed most of their transactional data on legacy systems. That's where this data is stored and retrieved from. However, the ability to generate additional value to the customer (and concurrently, new revenue streams) is closely tied to digital innovation, and namely to the ability to deliver digital services at speed and scale. This is something that cumbersome systems of record were never designed to deliver, underlying the unmet need in facilitating time-sensitive digital applications.

Take customer loyalty programs, for example. **Customer data is widely dispersed across multiple systems of record, making it complex to quickly retrieve and aggregate it across all activities and channels**. To add on to this challenge, retailers rapidly diversify into new verticals and channels, forming partnerships with other retailers and service providers. Customers react to loyalty program offerings when they receive clear value and extensive, up to date and personalized service. Retailers are therefore expected to accumulate and present data in near real-time and easily serve data-centric smart applications, enabling personalized and smooth user experience throughout digital channels. For retailers, loyalty programs are far more than a tool to incentivize re-purchasing and increase revenue from an existing customer base. The extended partnerships with multiple business partners, and the perceived value of these programs, has turned loyalty points into hard currency - one that can have real impact on retailers' balance sheets. Hence, the fact that loyalty infrastructure and applications need to be digitally constructed as a financial service is not an overstatement.

Retailers are expected to accumulate and present data in near real-time and serve data-centric smart apps, in order to deliver a personalized and smooth user experience on digital channels
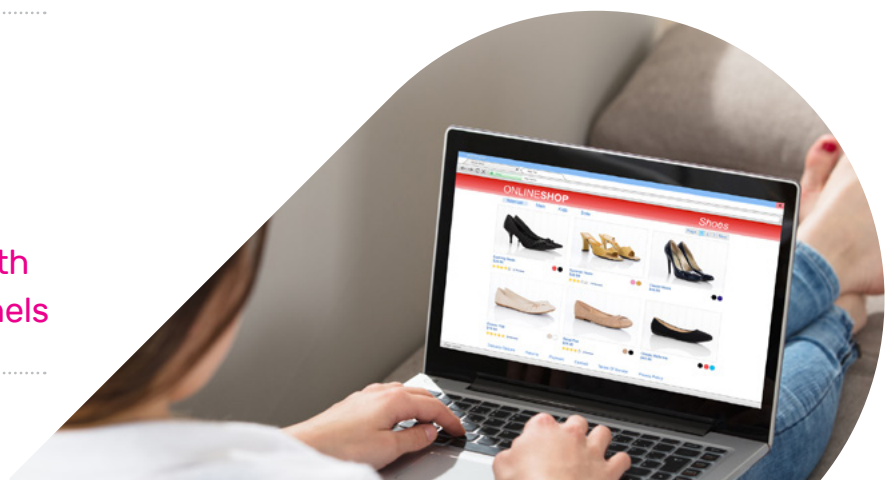
One reason for making loyalty programs the Achilles heel of the digital transformation is rooted in their legacy: they've been around for ages. While online shopping was introduced in the late 90's and received massive adoption only a decade ago, retailers have had various loyalty programs for over 50 years, with customer records stored in aging data stores. Many of them have been constructed as a rigid, next-day batch operation with limited value for the end customer. Even when transformed, many of those characteristics have been lifted and shifted, perpetuating the challenges and holding back innovation. **Since the core of any loyalty program is customer data, transferring this data to a unified repository which is highly accessible by all facets of the retailer's business is the most critical - and complex - part of undergoing digital transformation.**

Technology challenges that loyalty programs pose in retailers' digital journeys

While no two retailers are the same, there are similarities and typical patterns in the way they go about their digital transformation. One of these similarities relates to the architecture that the enterprise relies its IT infrastructure on. It typically includes a mix of older, relational databases and more modern cloud-based data services. In some cases, retailers don't want to put all their eggs in one basket, and decide to move its digital storage to multiple public cloud providers - which only intensifies the technological challenge of creating common ground and a unified platform for all the data housed by the retailer.

This fragmentation creates data duplication issues, as multiple diverse data stores propagate customer data from multiple sources across the retailer's customer touchpoints. Another possible challenge is in compromised performance of the retailer's business apps, facing the mounting volume of online transactions.

These limitations tend to impact retailers' ability to effectively manage their loyalty programs. Unlike systems that rely solely on an internal database, loyalty programs often include benefits by third-party vendors, such as airlines, hospitality providers and other retail chains. As such, managing this data relies on integrations with multiple third-party loyalty systems, leading to latency challenges and even worse: difficulty to create a single representation of the truth, a "Northern Star'' that all partners participating in the retailer's loyalty program can agree upon.

The difficulty to present a single view of customer data, combined with slow response times and limited operational analytics, is hindering loyalty programs, preventing retailers from providing a fully functional and interactive loyalty dashboard to its customers. The result tends to be detrimental to the retailer's brand: customer complaints, frustration and ultimately churn.

Addressing Loyalty System Issues with a Digital Integration Hub

One way to address the challenge of managing multi-party data of customer loyalty programs is by implementing a Digital Integration Hub, or DIH. As a middleware, **the DIH decouples digital applications from underlying systems of record, providing multi-protocol APIs over unified data models that combine disparate data sources into a single source of truth** that supports the creation of new, modern applications.

A DIH is primarily constructed to store and serve hot operational data, and thus cope with the challenges of high availability, low latency, transactional consistency and scale. The following figures show the data flow into DIH, compared to a traditional IT infrastructure that retailers currently use:
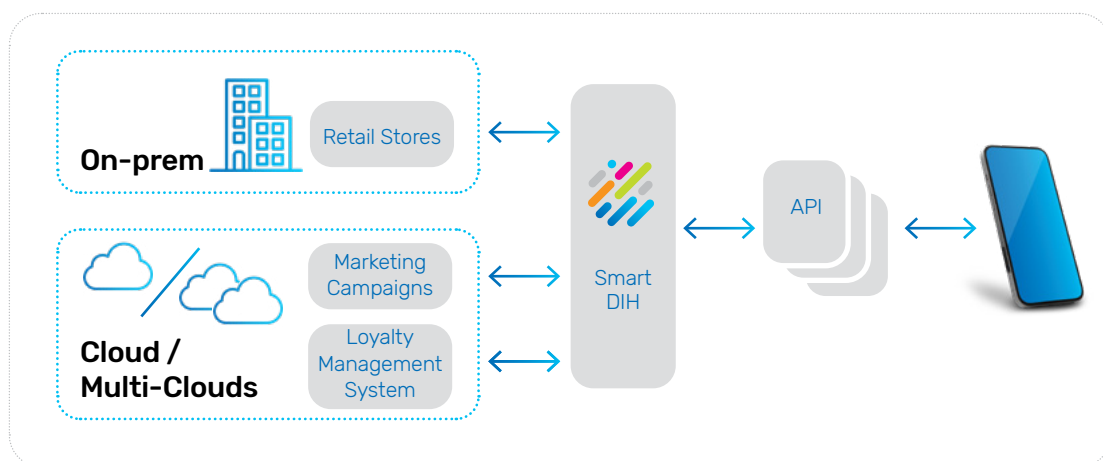

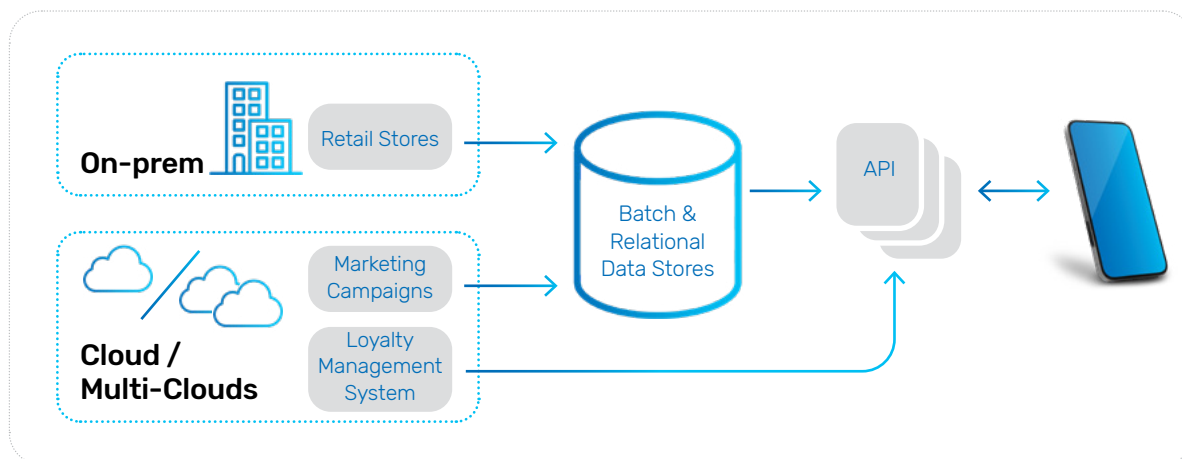**Figure 1:** IT infrastructure with a DIH layer

Figure 2: Traditional IT infrastructure used by retail chains

GigaSpaces has built a Digital Integration Hub (DIH) based on its mature and proven distributed in-memory data grid, offering retailers **exceptionally low-latency performance and seamless multi-data type ingestion**. This technology gives retailers the flexibility to automatically scale up and out - depending on moment-to-moment performance requirements, while guaranteeing data integrity according to strict ACID requirements. Furthermore, it supports event-based messages to various front-end applications, as pre-defined by the retailer.

The Smart DIH was designed to hold large volumes of data - millions of records per month, accounting for several Tera-Bytes. This data is kept in tiered storage, divided to hot and warm data, optimized for the retailer's specific needs. One of the main differentiators of the GigaSpaces smart DIH is its data ingestion performance, delivering speed of over 500 transactions per second.

The GigaSpaces Smart DIH is fully customizable with any cloud/multi-cloud/on-prem/hybrid configuration, with universal connectivity to any system of record across, as well as to the loyalty APIs run by external partners. It's app-agnostic, supporting any business application the retailer and its partners may have, using a wide range of APIs including REST, SQL, JDBC, and others. This gives retailers freedom to add new partners to their loyalty program in the future, with minimal integration efforts.

The connectors used by the Smart DIH support both synchronous and asynchronous interactions, making them compatible with supporting streaming data sources as well as more traditional message queuing technologies.

The business benefits of incorporating Smart DIH to retailer loyalty programs:

- ✓ Supporting a variety of digital apps in real-time

- ✓ Accelerating the building and rolling out of new applications, meeting evolving market trends

- ✓ Incorporating data on millions of customers from all business units and partners into a single dashboard, providing valuable insights on program performance

- ✓ Delivering customers a truly personalized, digital experience, with instant visibility to their real-time loyalty points balance and available benefits

- ✓ Monetizing loyalty data with real-time payments and time-sensitive promotions customized to each customer segment

- ✓ Lowering dependencies on dedicated data experts in ongoing support of the system, reducing TCO