Using Edge Computing to Improve API Processing on an Ecommerce Site with Tens of Thousands of Products

Processing complex queries with EdgeWorkers + EdgeKV and ensuring scalability

High-speed page loads

6x
API response performance

Improved customer experience

Solving personalization performance issues with edge computing

Nissen, a long-running catalog shopping company popular primarily with women, also focuses on the internet shopping business. In addition to the core Nissen Online website, the company has a distinctive service lineup that includes operation of an online mall specializing in plus-size brand fashion as well as multiple multi-brand stores set up in various other online malls.

Nissen's philosophy is to bring to life the things that each and every shopper wishes they had, but in a form that is better than they even imagined. Its mission is to leave shoppers with the feeling that they got more than they expected. To that end, Nissen never compromises on providing high-quality online shopping experiences and services.

"We are actively working on IT measures in order to maintain our mission, vision, and values. Of course we aim to build and operate stable infrastructure, but we have also focused on an 'active IT' strategy from an early stage in order to deliver value to our customers," says Yuichi Kato of the IT Strategy Promotion Dept., Management Promotion Div., at Nissen Holdings.

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Industry

Retail and Consumer Goods

Solutions

- EdgeKV
- EdgeWorkers

Ecommerce site performance is an extremely important part of online shopping. If users are not able to smoothly view products and make purchases, they will quickly choose to go to competitors' sites instead. That's why Nissen took steps at an early stage to maintain and improve their ecommerce sites' performance using Akamai Connected Cloud. In recent years, protection of user data has come to be considered the responsibility of the service provider, so Nissen is actively utilizing Akamai's security solutions to improve safety on its services.

However, web technology and device environments have changed and evolved dramatically since the company first started its online shopping business. Of particular importance now is the emphasis on personalization to match individual preferences and activities. CDN technology offers the advantage of high-speed web page loading by caching static content data at the edge of the network close to users. Meanwhile, personalization technology dynamically displays content based on user attributes and purchase history, and there were issues with how this required frequent API processing.

"With the increase in API calls, there was a need to resolve page display performance and load issues. We carry an extremely large number of products, and with customer-specific recommendations and similar features, the patterns of the queries included in API requests were so complex that there were issues with the CDN cache hit ratio. The wide variation in API requests placed a significant load on the origin server, so we were trying to think of a more efficient way to offload to the edge of the network," reflects Hiroki Arai of the IT Strategy Promotion Dept., Management Promotion Div.

They began to consider edge computing technology as a way to solve that issue. If product code elements contained in queries can be parsed through edge processing and stored, the cache hit rate will be improved dramatically and the load on the origin server reduced, thereby cutting costs and improving the user experience.

Akamai provides serverless edge computing that enables the implementation of custom logic on edge servers via EdgeWorkers and a key-value store database that runs at the edge via EdgeKV.

Kato and his colleagues have long been trusting users of Akamai services. That's why they decided to implement EdgeWorkers and EdgeKV. Another key reason was that front-end engineers can code in JavaScript, a language they're familiar with, meaning that Nissen could make use of the skills it already has in-house.

> EdgeWorkers managed to improve our API performance by six times. Now we don't hesitate to launch promotions that will cause a lot of traffic. Nissen's business is supported by Akamai.

– Yuichi Kato,
IT Strategy Promotion Dept.,
Management Promotion Div.,
Nissen Holdings Co., Ltd.

"We could never let go of Akamai's high-quality services. Akamai has supported our company for many years. They understand how Nissen Online works and continue to give us precise advice and technical support," says Kato.

Partitioning complex queries at the edge for optimization

Previously on Nissen Online, when a user accessed the site, long requests (URL) would be made by the browser/app listing multiple items (product codes).

For example, if there are products A, B, C, and D, it would recognize A+B, B+C+D, and C+D as different requests. Since there are over 30,000 products, there is a massive number of possible patterns in which they can be combined, which is very bad for the cache hit rate. This results in a lot of requests being processed at the origin.

Nissen addressed this by developing code that partitions long, complex requests at the edge of the network using EdgeWorkers and efficiently improves the cache hit rate. By using EdgeKV alongside it and storing product data in a partitioned database, they were able to reduce the number of queries that reach the origin and dramatically improve server loads.

"We offloaded most of the complex patterns of queries onto the edge of the network for processing and made API response performance six times faster. This resulted in better site performance and a better user experience. The fact that we were able to partition queries by product code on the edge of the network like this was something we were never able to do before, and that made me feel there was great value in edge computing," says Arai.

Performance improvements contribute to all kinds of sales strategies

Previously on Nissen Online, there were cases in which they avoided promoting on social media out of fear that too many visits would hurt site performance. On the site's current infrastructure, there is now enough capacity to easily handle a wider variety of strategies, so the business wing is able to actively plan services and content that they always wanted to do.

The programs and initiatives developed by Nissen even won the top award at Akamai's APJ EdgeWorkers Coding Contest for being cutting-edge ideas capable of resolving similar issues faced by ecommerce sites throughout the world. In addition to their functionality and innovativeness, they were praised for exhibiting potential to have an impact on society as well.

For Nissen's part, they want to further improve their technical initiatives by improving personalization and response so that users can further enjoy their shopping experience. They have high expectations that EdgeWorkers will serve as the infrastructure needed to implement those systems and sense great potential for even more practical applications.

In closing, Kato voiced his high hopes for Akamai: "We are very grateful for the generous support we've received from Akamai. For example, after we clearly explain what it is we can and can't do in our daily operations, they respond with some proposals that resolve those problems. This is the sort of trustworthy support that left an impression on me. Moving forward in the internet shopping industry, we will continue to need to improve customer services with rich content, security, and various other measures. We hope Akamai will continue flourishing as Nissen's partner and supporting our businesses in the future."

Nissen was founded in 1970 in the kimono fabrics mail order catalog business. In 1975, the company launched the general catalog "Nissen," and they went on to lead a boom in mail order shopping for women's fashion. Recently, Nissen is focused on its Internet shopping business. Under the mission statement of "Giving shoppers better than they imagined and more than they expected," Nissen offers women's clothing and other apparel to satisfy a wide range of needs, interior decorating goods, and everyday household items.