

Rakuten modernizes advertising services, minimizing total cost of ownership



[Rakuten Group, Inc.](#) is a global technology leader in services that empower individuals, communities, businesses and society. Founded in Tokyo in 1997 as an online marketplace, Rakuten has expanded to offer services in e-commerce, fintech, digital content and communications to 1.8 billion members around the world. The Rakuten Group has more than 30,000 employees, and operations in 30 countries and regions.

Challenges

- Required improved performance, reliability and flexibility to handle increasing volumes of vital data effectively
- The legacy Oracle RDBMS platform was expensive to expand and scale
- The legacy platform lacked necessary integration and personalization capabilities

Outcomes

- Couchbase ensures nearly 100% availability, low read latency, and data backups
- By consolidating databases with Couchbase's scalable platform, TCO reduced by 20%, enhancing cost efficiency
- Couchbase's multipurpose database, SQL for JSON, and rich features increased capabilities while reducing complexity

Industry

- [Retail & E-commerce](#)
- [High Tech](#)

Customer application

- E-commerce marketplace

Use case

- [Product catalog](#)

Product

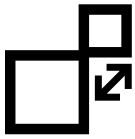
- [Couchbase server](#)



“We greatly value Couchbase’s ability to scale effortlessly, crucial for swift onboarding of new advertisement services. Additionally, the global support relationship with Couchbase has been invaluable in our operations.”

— **Howell Caba**, Manager for Ad Delivery Platform, Rakuten

Rakuten Ichiba, Rakuten's flagship e-commerce platform, shapes online shopping with its cash back, deals and rewards offerings. As the Ichiba marketplace continues to grow, advertising has become a crucial tool for sellers aiming to capture the attention of customers. To help merchants and manufacturers in achieving their promotions objectives, Rakuten offers a range of ad services that include displays, targeted displays, news, search and coupons.



THE CHALLENGE: **Modernize services while reducing complexity and cost**

To power their programmatic advertisements, Rakuten relies on vast real-time data, including accurate shop and item information. Managing these large datasets required a database that could provide high availability, low read latency, and reliable data backups, all while leveraging machine learning technology.

Initially built on Oracle RDBMS, Ichiba's core platform struggled to keep up with the growing array of services, leading to scalability issues and escalating costs. To meet service demands, Rakuten deployed additional products that demanded significant resources to manage.

The legacy Oracle system also created engineering bottlenecks due to its integration limitations and hindered personalization capabilities, which soon became a roadblock for customer acquisition. To overcome these hurdles, Rakuten sought a more agile, flexible and cost-effective solution.



THE SOLUTION: **A versatile multipurpose NoSQL database**

To address all the company's database challenges, Rakuten opted for Couchbase's NoSQL database for its advertisement systems. By deploying two clusters in an active-passive setup, Rakuten achieved nearly 100% availability and improved the system's resilience. Now, all advertisement services data resides in Couchbase, ensuring data delivery with extremely low latency. Rakuten has seamlessly integrated new advertisement services and expanded its support to help enhance the experience for both merchants and shoppers on Ichiba.

"We greatly value Couchbase's ability to scale effortlessly, crucial for swift onboarding of new advertisement services," said Howell Caba, Rakuten's Ad Delivery Platform Manager. "Additionally, the global support relationship with Couchbase has been invaluable in our operations."





THE RESULTS: Enhanced performance with 20% lower TCO

Rakuten has achieved remarkable success since moving to Couchbase. The company slashed total cost of ownership by 20% through the elimination of Redis and Aerospike databases, consolidating instead on Couchbase. Fewer databases lowered maintenance costs, reduced code complexity and facilitated smoother upgrades. Presently, the Couchbase architecture comprises 45 nodes and 2 clusters supporting over 70,000 shops on Ichiba, boasting a catalog of over 475 million items.

With developers collaborating on a single development platform using SQL++, Rakuten is delivering global applications ahead of schedule, despite team members being dispersed across various locations. Additionally, the platform effortlessly handles spikes in traffic, such as Rakuten's quarterly SuperSale Campaign Events and Shopping Marathons.

Further optimizing its costs, Rakuten migrated additional data processes, such as ID mapping and item recommendation, to Couchbase. This has provided Rakuten with the ability to optimize cluster performance through active-active clustering and by separating read/write events.

The next step on Rakuten's roadmap is to bring additional data into Couchbase so that everything related to ad delivery is stored together. Additionally, Rakuten aims to implement auto-switching between clusters and migrate to Couchbase Capella™ DBaaS on Google Cloud in the near future.



Modern customer experiences need a flexible database platform that can power applications spanning from cloud to edge and everything in between. Couchbase's mission is to simplify how developers and architects develop, deploy and run modern applications wherever they are. We have reimagined the database with our fast, flexible and affordable cloud database platform Capella, allowing organizations to quickly build applications that deliver premium experiences to their customers – all with best-in-class price performance. More than 30% of the Fortune 100 trust Couchbase to power their modern applications. For more information, visit www.couchbase.com and follow us on X (formerly Twitter) @couchbase.

