



WHITE PAPER

Redis Enterprise for E-commerce

The Most Responsive, Scalable and Highly Available Database for E-commerce Applications

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Introduction

Customer experience is best when personal. Creation of unique experiences should anticipate customer behavior. Transformative customer acquisition and revenue growth depends on how fast users can get to your products and find what they are looking for. Site speed is crucial in search engine ranking. The competitive world of retail depends heavily on high performance applications that present the right offer to the right demographic at the right time.

Redis is a popular choice in the retail industry for numerous high performance use cases such as highly personalized interactions, caching recent views and purchases, inventory and product updates, user session management and analysis, custom pricing, location based recommendations and high speed transaction management. Modern ecommerce platforms and retailers rely on Redis due to its extreme throughput and low latencies, its versatility and simplicity of deployment, and broad community engagement. Redis Labs has further enhanced Redis' attributes of performance, availability, and scale to meet the rigorous demands of the retail industry.

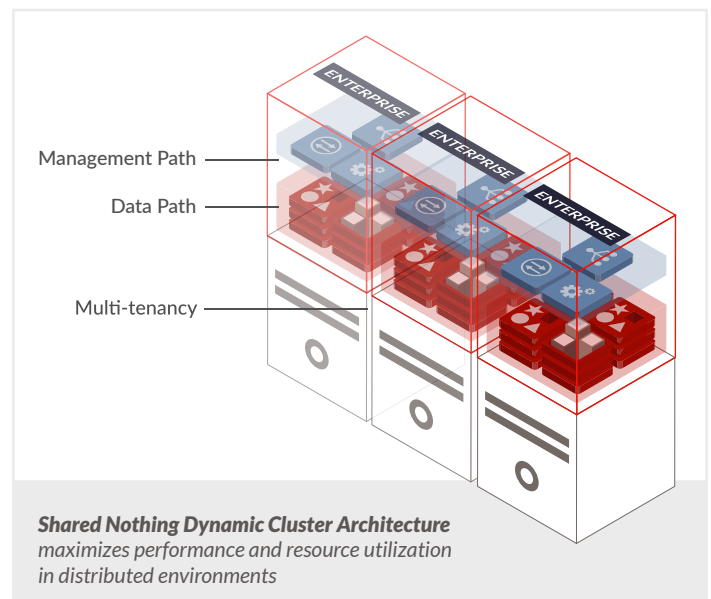
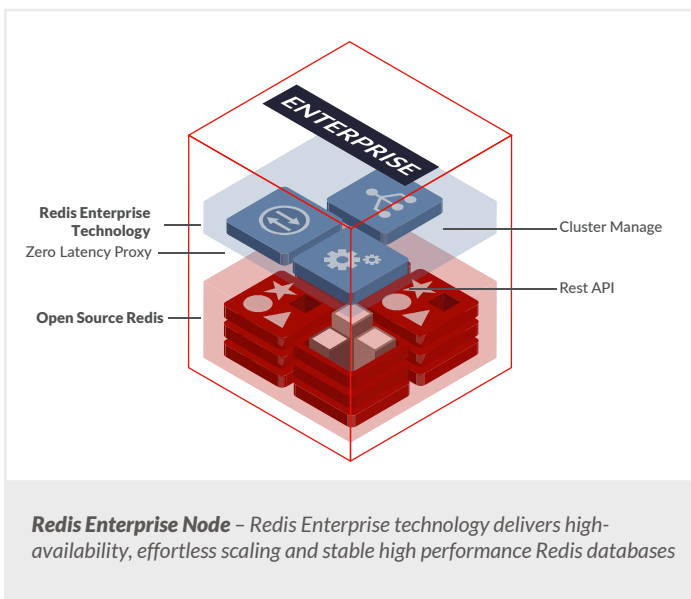
Why Redis Enterprise is the Best Choice for E-commerce

In e-commerce scenarios, downtime directly impacts revenue and customer experience, making true high availability a critical factor in choosing your database. Scaling to handle peaks in traffic must be non-disruptive and effortless. Redis Enterprise enhances Redis deployments with seamless, zero-downtime scaling and clustering as well as world class high availability including persistence, cross rack/zone/region in-memory replication, instant automatic failover, backups and disaster recovery.

Performance is another crucial factor for retail applications. Even in peak traffic, retail applications need to be highly responsive. The margins of retail require that this performance is delivered in the most cost effective manner. Benchmarked at >1.5 million operations per second at <1 ms latency on a single modest AWS EC2 instance, Redis Enterprise technology adds stable high performance and linear automatic scaling to Redis deployments while reducing operational overheads to bare minimums.

The world of retail demands very rapid time to market for new ideas and products, and the technology that underpins this must be hassle-free and flexible to deploy. Redis Enterprise technology can be deployed on the cloud or PaaS of your choice as a fully managed service, **Redis Enterprise Cloud**, or deployed in your own data centers, in VPCs, or hybrid environments as down-loadable software, **Redis Enterprise Software**. Redis Enterprise also enables running Redis on cost effective Flash memory used as an ex-tension of RAM, so you can process and analyze extremely large datasets with high throughput and extremely low latencies at upto 70% lower costs.

Redis Enterprise technology relieves customers of all operational hassle related to scaling, high availability and ongoing management of Redis, while including complete compatibility with the open source.



E-commerce and Retail Use Cases Powered by Redis Enterprise

Personalization & User session management:

Retailers worldwide thrive and grow faster when they are able to react to user choices in real time and present location and behavior based recommendations. Redis' extremely high throughput at sub-millisecond latencies with very little hardware make it the most popular choice as a first responder database for storing real time user session data.

Redis data structures like Hash, Geo, Sets and Sorted Sets allow for incredible flexibility in processing of user data and characteristics like preferences and location to ensure they are presented with custom offers, pricing and recommendations. With Redis data structures, businesses can implement complex functionality with simplicity and low ongoing overhead.

Jet.com, the audacious new e-commerce force, uses Redis Enterprise to deliver customized pricing on jet.com. With thousands of users faced with choosing from countless products daily, jet.com utilizes the power of Redis to present the right product to consumers, while Redis Labs provides the easy automatic scaling and effortless high availability.



"Redis Labs has helped us deliver a seamless user experience and grow our business to hundreds of thousands of users," said John Turek, SVP Development, Jet.com. "The power of Redis helps us deliver a reliable, high performance website, and Redis Labs adds the critical elements of high availability and seamless scaling that are necessary for us."

Customer Engagement:

Engaging customers by allowing them to share purchases, ratings, opinions and follow influencers, requires a highly responsive application built to handle complex social and messaging functionality with simplicity and low overhead. Redis powers social conversations, online chat, ratings systems for many of the world's top e-commerce websites, because it handles complex functionality such as messaging, queues, and lists with extraordinary ease, at sub-millisecond latencies even at extremely high volumes.

Spot.IM's next generation community engagement platform is architected for blazing fast responsiveness and incredible scale, handling thousands of requests per second, and processing over one billion page views a month. To achieve this with simplicity and high performance Spot.IM relies on enterprise-grade, highly available, seamlessly scalable Redis on Flash from Redis Labs.



"I am yet to encounter limits with Redis Labs' scalability. It allows me to handle peaks in traffic that grow 2000% without any need to scale my database infrastructure."

Ishay Green, CTO

SPOT.IM

High Speed Transactions:

The e-commerce industry relies on high-speed transactions for continued customer satisfaction and revenue growth. With round trip Internet response times expected to be in the <100 ms range and Internet latencies taking up >50 ms, Redis plays a critical role as the database that responds in <1 ms with very few hardware resources, even as transactions scale to millions of operations/second,

Stance.com, a pioneer of the modern retail shopping experience, architected a modern, high performance, highly responsive website that uses Redis Enterprise to power its stock notification system. Redis is used to fetch inventory information from the system of record and transmit it to requesting clients. The requesting clients can range from hundreds to thousands, while Redis' latency stays consistently below 0.07 ms.



"Our stock notifier system has to simultaneously inform thousands of clients about inventory availability with sub-millisecond latencies. Only Redis can do this."

Real Time Analytics:

Retail and e-commerce companies depend on real time analytics such as session analysis, behavior based recommendations, location-based offers, top trending items and spot promotions to encourage upsell and cross sell. Redis data structures such as Geo, Sets, Sorted Sets and Hashes are ideal building blocks for hybrid transaction and analytics use cases. Recommendation engines, bid analyzers and top trends built on Redis are commonplace in most retail applications and scenarios.

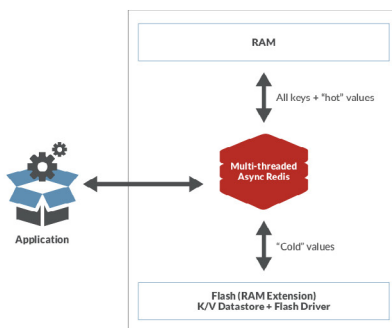


"Only Redis could handle the volume and scale of processing we needed for our recommendations engine."

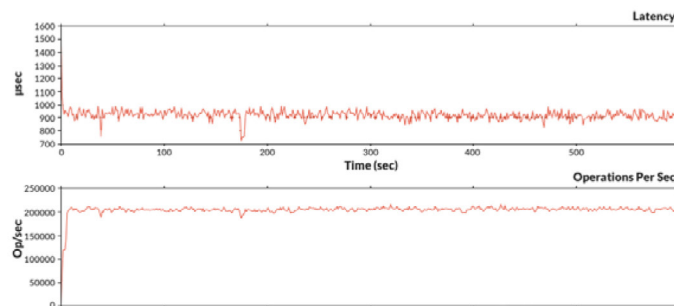
Ninad Divadkar, Software Engineer

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Redis' proficiency at swift data processing enables it to accelerate analysis across a wider variety of data sets and data types, without requiring the deep data model and application changes that are characteristic of RDBMS based applications. With Redis on Flash, large dataset analysis at in-memory speeds becomes cost-effective because Redis Labs has added an-other layer of optimization where Flash can be used as an extension of RAM at a configurable ratio. This ensures the highest throughput and lowest latencies at a cost that can be fine-tuned based on the workload.



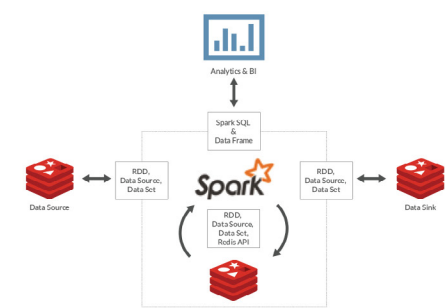
Redis Enterprise Flash uses a combination of RAM and Flash memory



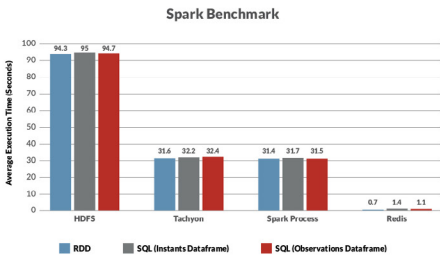
Redis Enterprise benchmarked to >2M ops/second at <1ms latency with 20% RAM and 80% Flash on a single standard server

In iterative processing scenarios such as those with Apache Spark, Redis data structures accelerate processing and allow for faster responses to analytical queries. The Spark-Redis connector package allows Spark to directly access Redis data structures for the most efficient in-memory data processing. Redis also functions as a serving layer for Spark SQL and an accelerator for Spark processing.

A large e-commerce platform uses Redis Enterprise to accelerate Big Data analytics, in front of other disk based NoSQL databases, reducing analytic processing times up to 45 times.



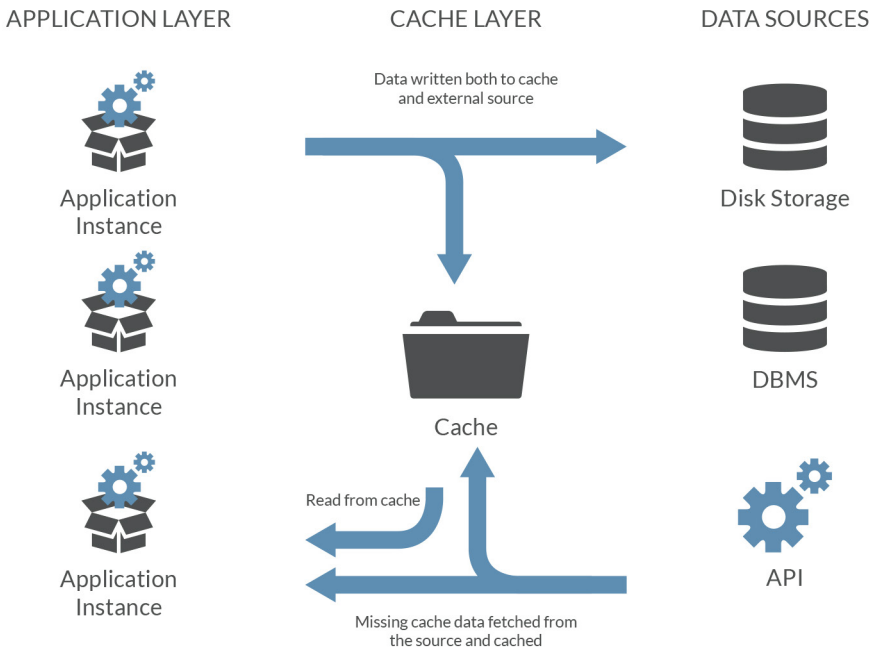
Redis is a data source, data sink, accelerator and serving layer



Faster Spark processing with Redis by upto 100 times compared to HDFS and 45 times compared to Tachyon or Spark process memory

Caching:

Caching is often the smartest way for online retailers and e-commerce platforms to achieve extreme responsiveness for their users, with minimal resources and minimal overhead on expensive RDBMS databases. Redis is ideal for caching, not just because it is very fast, but because it includes features like data structure variety, customizable expiration, eviction, intelligent caching, request pipelining, as well as data persistence and high availability. A highly available cache is critical so that user experience does not suffer during cache outages.



While traditionally data warehouses have provided static reports , there is an increasing move towards dynamic, customizable reporting. With Redis as a cache in front of traditional disk based databases, and with data structures providing the much-needed pre-sorting in-memory, Redis solves analytics problems like dynamic querying over millions of records at sub-millisecond latencies.



"We use Redis for session state management and caching. Redis Enterprise provided the effortless clustering, enterprise grade high availability and 24x7 support we need for our critical applications"

Brian Kalmar, Software Engineer

GIANT EAGLE SUPERMARKETS

Next Steps:

Learn more about Redis Labs' deep deployment expertise by visiting redislabs.com or emailing expert@redislabs.com



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