

NUCLEUS  
RESEARCH

# REDIS STABILIZES DATA INFRASTRUCTURE

## ANALYST

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## THE BOTTOM LINE

Nucleus found that Redis Inc. offers users increased infrastructure stability, improved storage flexibility, and reduced IT costs. One organization cited zero Redis product-related issues in terms of downtime and scaling following deployment. Another organization was able to cut its data infrastructure costs by 50 percent when migrating from AWS to Redis Enterprise. The organization also experienced functionally no downtime, reducing associated downtime and maintenance costs due to Redis Enterprise's stability. These themes align with the findings of a Nucleus market survey of 184 database administrators, where we found the mean projected data scaling rate of Redis users by 2025 is over 95 percent, and they prioritize performance, scalability, third-party compatibility, and ease-of-use when choosing a vendor, with a plurality citing scalability as their primary consideration.

## OVERVIEW

A fully managed in-memory database provides key advantages for caching use cases, including processing speed and computational efficiency. Eliminating disk I/O operations allows for immediate data access, essential for swift transaction processing. A fully managed database alleviates the IT team from maintenance and scaling tasks, making resource management more straightforward. These benefits become more substantial when the database has multimodel capabilities. Managing different data types within a single system can simplify operations and decrease data fragmentation. In a context of constrained budgets, the ability to do more with less, thanks to a multimodel database, helps to optimize resources and reduce costs.

## REDIS

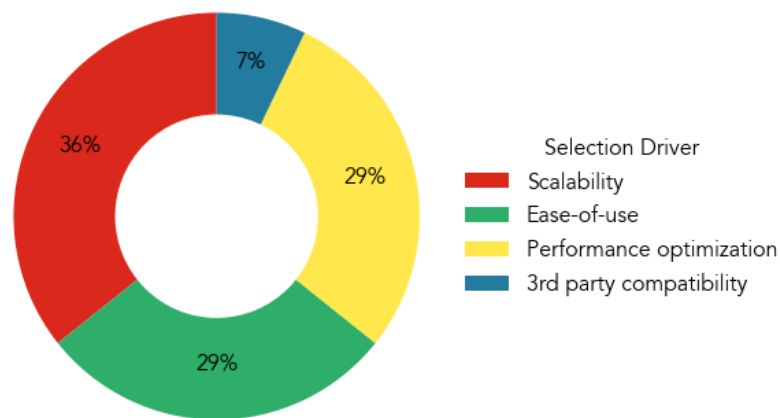
Redis, a real-time data platform, accommodates a diverse assortment of abstract data types, like strings, lists, hashes, and more, providing direct operations for these. Redis also features additional capabilities like a messaging system based on the publish-subscribe model, clustering, and primary-replica replication. Compatible with leading cloud service providers like Microsoft Azure, Google Cloud, and AWS, Redis products support diverse infrastructures and deployments like multi-cloud, hybrid cloud, Kubernetes, and microservices. Redis Inc.'s commercially offered version, Redis Enterprise, is a multimodel data platform characterized by its distributed system, commonly utilized for high-speed transactions, fraud detection, ML, IoT, and other applications. Redis Enterprise's search function includes secondary indexes, a query engine, and full-text search capabilities. Other features like Triggers and Functions allow developers to process data within Redis, bringing the business logic closer to the data. It also leverages advanced data structures and algorithms, including Bloom filters and Top-K, among others, enhancing the platform's versatility and robustness. Supporting multiple built-in, document, and vector data models, Redis Enterprise facilitates the creation of contemporary applications and the generation of insights from different data modes. It is also compatible with languages like Python, Java, C, and JavaScript, allowing any functionality programming across data models. Redis is recognized as a Leader in this year's Database Technology Value Matrix (Nucleus Research x140 – Database Technology Value Matrix – July 2023).

**Reduce costs by 50%  
by switching from  
AWS to Redis**

## SURVEY FINDINGS

Nucleus surveyed 184 database administrators to investigate the state of the database technology market. The survey found a mean increase in projected data storage of over 95 percent by 2025 for Redis users. This response highlights the vendor's enablement of organizations with ballooning data volumes and high-growth business segments. Nucleus also found that Redis adopters prioritized performance optimization, scalability, third-party compatibility, and ease-of-use when choosing a vendor, with a plurality citing scalability as their primary consideration.

Primary Selection Driver of Redis Adopters



## KEY BENEFITS

Redis Enterprise provides several key benefits, including increased infrastructure stability, improved storage flexibility, and reduced IT costs.

- **Increased Infrastructure Stability:** Users cite that Redis stands out due to advanced in-memory operations, contributing to the stability of their IT infrastructure. The database management system enables efficient provisioning, automation, monitoring, and patching of applications, fostering an environment of reliability. A multinational financial services company in the USA, after integrating Redis Enterprise with Cloud Foundry, reported zero Redis product-related issues in terms of downtime and scaling following deployment.
- **Improved Storage Flexibility:** Redis offers a unique combination of in-memory caching and persistent data storage. This flexible storage capability ensures data

persistence even in system downtimes, eradicating the necessity to regenerate cache. A global electronic payments firm adopted Redis Enterprise as simultaneously a caching and persistent data store, citing greater storage flexibility and operational agility following deployment.

- **Reduced IT Costs:** Redis offers a cost-efficient solution for database deployment and operation. It enables organizations to leverage competitive in-memory database services at a lower cost compared to other vendors. A Latin American software platform cited that in migrating from AWS to Redis Enterprise, the latter cut its costs by slightly over 50 percent. The organization also experienced functionally zero downtime, reducing associated downtime and maintenance costs.

## USER INTERVIEWS

Nucleus interviewed multiple Redis customers to investigate the value delivered by the suite.

### MULTINATIONAL FINANCIAL SERVICES PROVIDER

A multinational financial services organization based in the USA, with a workforce exceeding 150,000, opted to evolve its infrastructure using Cloud Foundry. The decision was driven by the need for improved security and efficiency in the management of application instances and functions.

Before this, the organization did not use a specific product for in-memory storage. The adoption of Cloud Foundry, a PaaS technology lacking persistent storage, necessitated an in-memory storage solution. In 2017, the organization started using Cloud Foundry in-house, concurrently evaluating Hazelcast, Memcached, and Redis Enterprise for in-memory storage. Redis Enterprise was chosen for its ease of installation, operating system compatibility, scalability, performance, and ease of maintenance.

The process of setting up Redis Enterprise occurred alongside building the Cloud Foundry environment, which became production-ready within two to three months. As applications began migrating to Cloud Foundry, Redis-based applications were rapidly deployed. Within six to nine months, Redis Enterprise had been widely adopted across the organization.

The transition to Redis Enterprise yielded multiple benefits for the financial services firm. It experienced high stability with zero product-related issues following its deployment. The company also achieved low ongoing costs when compared to other databases considered, contributing to substantial savings. Redis also played a significant role in the successful rollout of its cloud footprint. Furthermore, the company found Redis Enterprise easy to

provision, automate, monitor, and patch, superior to the caching services provided by Google or Microsoft for on-premises deployments. In terms of hardware requirements for a high-performing cluster, Redis Enterprise was highly efficient; the company found that three physical servers running Redis Enterprise could outperform what traditionally would require five servers. Additionally, when the need arose to switch from primary to secondary servers, the downtime was minimal, at less than 20 seconds.

## GLOBAL ELECTRONIC PAYMENTS FIRM

This multinational financial services firm with over 25,000 employees had previously used Oracle and other in-memory caching solutions. In 2016, it sought a solution that offered both in-memory and persistent capabilities, which was driven by the need to prevent cache recreation whenever the system went down. The firm, being data-oriented and processing billions of cards regularly, considered various alternatives including Aerospike, MongoDB, and Hazelcast. Although MongoDB could provide persistent data storage, it was more suitable as a document store. Aerospike fulfilled some criteria but fell short in terms of vendor nonfunctional requirements and market share.

Redis Enterprise was eventually selected and deployed. The deployment process was straightforward, albeit with challenges that typically accompany the introduction of a new product. Nevertheless, Redis worked closely with the firm to address any issues that arose. Testing and certifying was a significant task, taking between three to six months, especially for critical application workflows related to card processing.

The firm saw tangible benefits from using Redis Enterprise. Primarily, it used it as both a caching and a persistent data store, which allowed them to accomplish more with a single database compared to a narrow point solution. The firm saved over \$200,000 in reduced annual licensing costs and the elimination of cache recreation when the system went down. Redis Enterprise enabled faster onboarding, and there was no need to hire external consultants as in-house resources were sufficient for Redis Enterprise deployment and operation. Redis also provided strong support, which significantly reduced downtime. The firm particularly commended the support it received from Redis.

## LATIN AMERICAN SOFTWARE PROVIDER

The Latin American software platform, with over \$42 million in revenue and more than 5,000 employees, had been a user of Redis open source for two years prior to signing on with Redis Inc. The company's primary use case for Redis open source was to create an online feature store to house features for machine learning for training and online learning. Their system consisted of two storage layers, one for offline features and another for online

storage, with the latter requiring low latency access to the current versions where Redis open source was utilized.

The company was motivated to explore other options due to the high costs associated with using a Redis distribution in AWS using the ElastiCache feature. Redis Inc. proposed a similar offering with lower migration costs to the enterprise version due to the company's existing use of Redis. When considering other alternatives, the company evaluated Cassandra, ScyllaDB, and DynamoDB. DynamoDB was the most closely competitive to Redis Enterprise; its costs were comparable but didn't offer the same features as Redis and thus was not a viable option.

The migration process began in April 2022 and was executed with zero downtime. The transition only required flipping over the clients and then shutting down the old system without any setbacks.

The benefits of moving to Redis Enterprise were substantial for the company. It achieved a cost reduction slightly above 50 percent, enjoyed excellent support from Redis Inc., and encountered fewer stability and downtime issues compared to its experience with AWS ElastiCache. The company has plans to leverage additional features that were not available in the open-source offering moving ahead.

## BEST PRACTICES

Through end-user interviews, Nucleus has identified several best practices for users to keep in mind when deploying Redis Enterprise.

- **Opt for Managed Solutions:** While managed solutions may appear more expensive compared to hosted, they can offer a better return on investment by maintaining a lean team and efficient operations.
- **Frequent Feedback to Vendor:** Redis Inc. is receptive to user feedback, leading to continuous product improvement. Regularly engage with the Redis team to provide input and suggestions.
- **Use Redis' Best Practices Documentation:** Leverage the comprehensive documentation offered by Redis Inc. It is a valuable resource for learning best practices, and it helps in preventing and troubleshooting potential issues.
- **Education Around the Product:** Encourage your application teams to learn about the product. Understanding Redis Enterprise's features and capabilities can optimize its application and increase overall effectiveness.

- **Utilize Blueprints:** Provide your application teams with blueprints - predefined examples of code for specific situations. These can expedite adoption and reduce the learning curve by illustrating best usage scenarios.

## LOOKING AHEAD

In the face of persistent economic unpredictability, especially within the technology sector, organizations – particularly those with limited resources such as SMBs and startups – are increasingly turning towards Redis Enterprise. Its potent combination of an in-memory database with multimodel capabilities allows diverse data types to be managed within a single system, presenting a competitive advantage. This facilitates greater scalability, performance, and integration, with notable enhancements to security over the conventional multi-database approach (Nucleus Research x140 – Database Technology Value Matrix – July 2023). Based on discussions with end-users, there’s a notable inclination for Redis Enterprise in scenarios demanding simplified data management, data consolidation, and scalability, particularly for resource-constrained teams. This rising emphasis on Redis, fueled by market circumstances, points towards an accelerated adoption trend as companies reorient their database strategies for enhanced efficiency and cost-effectiveness.