



WHITE PAPER

Level Up Your Gametech with a Real-Time Database

Nine gaming database use cases for Redis Enterprise



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Introduction

User experience is at the heart of the Gaming industry. Companies looking to gain a competitive advantage in the digital world must create unique and dynamic experiences in order to drive both customer acquisition and continued retention.

Redis is the database of choice for gaming companies to support real-time scenarios such as highly personalized interactions, content caching, user session management, scoring, ranking, leaderboards, social engagement, messaging, notifications, real-time analytics, and high-speed transactions. Whether by directly improving player interactions, or improving the backend performance of your game, these use cases will all improve your player experience.

With its efficiency and versatility in delivering real-time engaging experiences at scale, Redis Enterprise meets your mission-critical needs by substantially simplifying the process of scaling Redis deployments in a range of cloud environments closest to your players to give them a great in-game experience.

Power your next world-wide game launch with Redis Enterprise!

Gaming Use Cases Powered By Redis Enterprise

Player Interactions

1. Leaderboards and Ranking

Massively scalable multi-player games have challenging requirements of distributed computations and instantaneous visibility into who's leading, by how much and how many are in the lead. Leaderboards are commonly used in gaming platforms where gamification can lead to better user experience. Sorted sets in Redis are a perfect fit for implementing a leaderboard, which has made Redis a popular choice for many gaming applications.

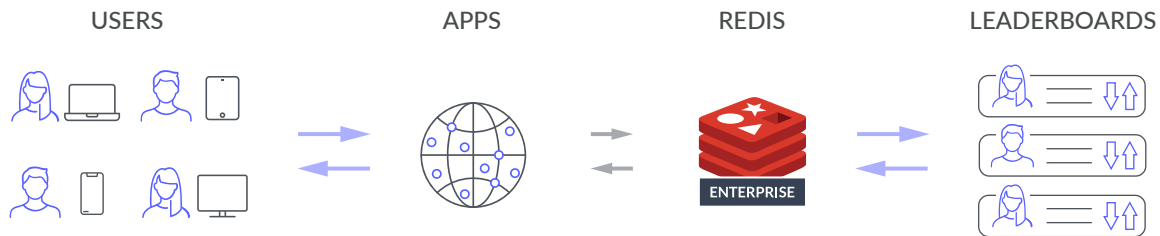


Figure 1. Keep track of users' progress through ranking, scoring, and leaderboards



Jelly Button Games Ltd., subsidiary of Playtika, designs and develops multiplayer free-to-play games. Jelly Button Games uses Redis Enterprise for caching, session store, tracking leaderboards in real-time, messaging, and many more use cases. Redis Enterprise has enabled Jelly Button Games to reduce cost and downtime while increasing performance, stability, and faster time to market.

2. Personalization

Gaming applications can use Redis Enterprise to collect and process high volumes of in-game data and segment gameplay variations and identify quickly top performing configurations. High velocity user acquisition and persistent user engagement both require gaming applications to respond with appropriate content in milliseconds. The blazing fast throughput and low latencies of Redis Enterprise, as well as its built-in analytics capabilities, deliver these kinds of rich experiences to power conversions, engagement, and user acquisition.

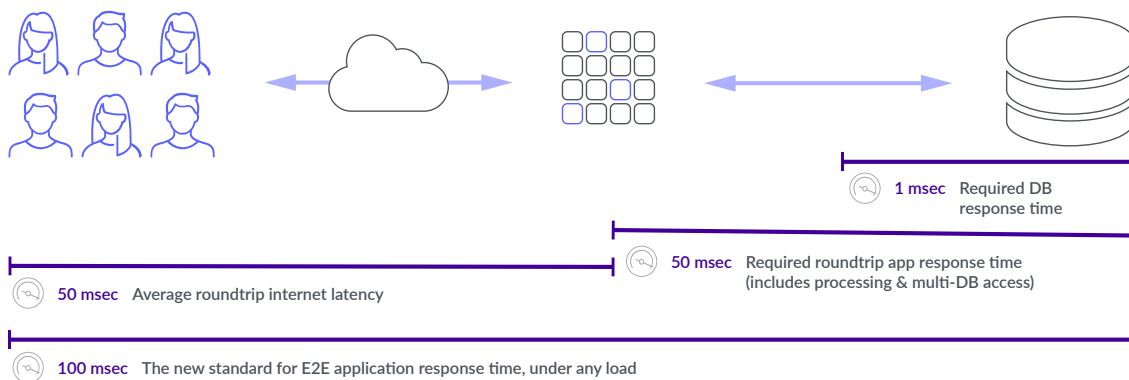


Figure 2. Fast data ingest, content serving and instantaneous analytics for personalization

3. Community & Matchmaking

Whether it's to form a team or to face off against foes in a battle royale, the hallmark of effective matchmaking is matching up compatible players. It's a crucial element in building a game's community, and it has to happen in real-time. After all, the last thing players want to do is wait to play a game. With the ability to handle millions of matchmaking requests concurrently and less than one millisecond latency, Redis Enterprise can run smart matchmaking algorithms with multiple factors (including location, player rating, and more) in real-time. So every player is seamlessly matched with the right team—or against similar opponents.

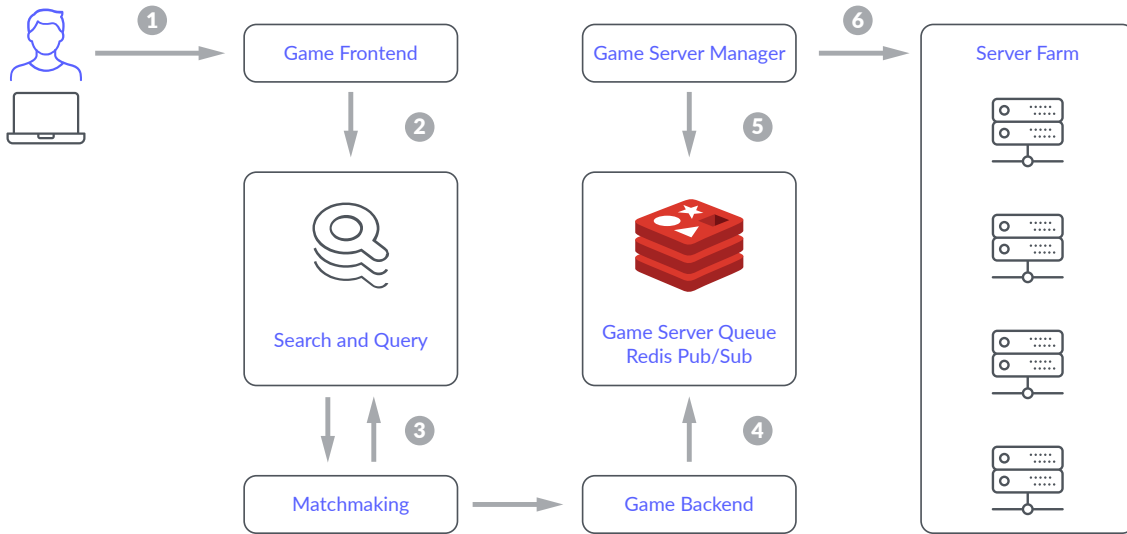


Figure 3. Use Search and Query and a Redis server to manage matchmaking queues and return results at real-time speed.

4. Inventory

Game inventories include catalogs for currencies, in-game stores, players, and characters. And all of them need to be available to the player at any time. The combination of in-memory architecture with scalability and durability in Redis Enterprise gives gaming companies the real-time responsiveness to show players any inventory catalog they want, when they want. This translates to a better player experience and better game monetization.

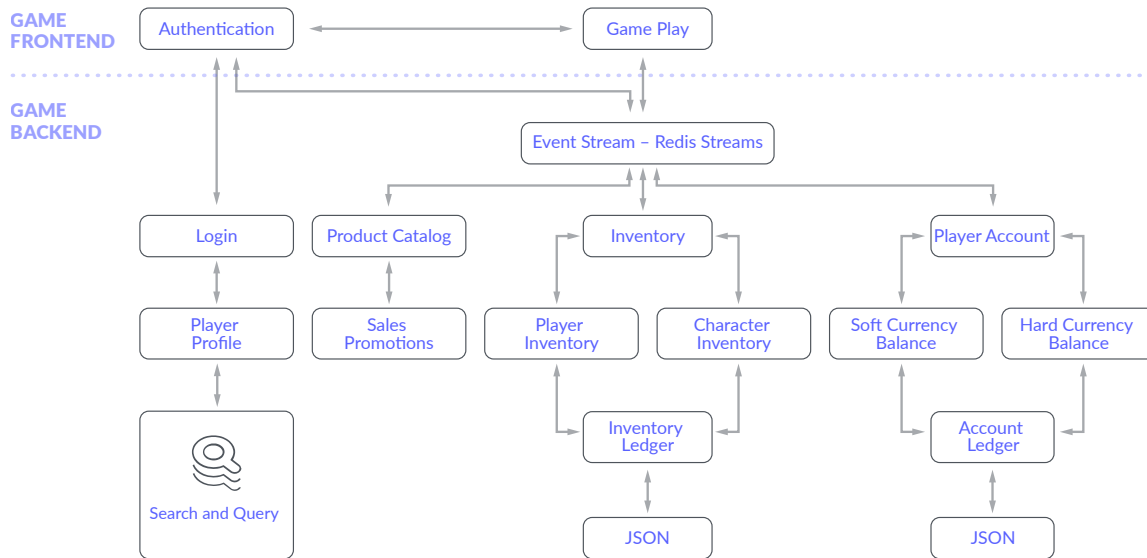


Figure 4. Use Search and Query and Redis Streams to serve inventories from document stores in real-time.

Backend Performance Improvements

5. Caching

Caching with Redis is an important technique used by game developers to reduce the load on datastores such as MySQL, Cassandra, and MongoDB while enjoying blazing fast response times. Caching is often the smartest way to serve content like graphics, pictures, thumbnails, music, labels, metadata, tags, and more at lightning speeds. This enables extreme responsiveness in mobile game applications and game experiences with minimal resources and overhead on expensive disk-based RDBMS databases.

Redis is ideal for caching, not just because it's 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 with Redis Enterprise is critical to ensuring that user experience does not suffer during cache outages.

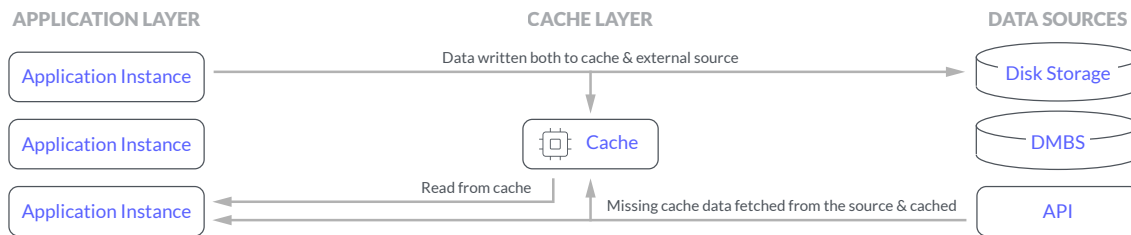


Figure 5. Use cache to serve graphics, imagery, pictures, tags, and more at lightning speeds

6. High-Speed Transactions

Games need Redis' low latency ability to handle every type of data processing requirement at high performance and at an unprecedented scale especially when data arrives in great volume and at high speed.

Gameplay actions, account authentications, media purchases, content downloads, and other transactions require the impressive performance of Redis, but with controls over consistency and durability. Redis Enterprise provides tunable levels of consistency and durability for multi-operation command execution and facilitates the implementation of high-speed transactions in Redis. Often, applications like bid management require built-in analytics on top bids or bid ranges, for which built-in analytic commands within Redis Sorted Sets can be implemented with great simplicity.

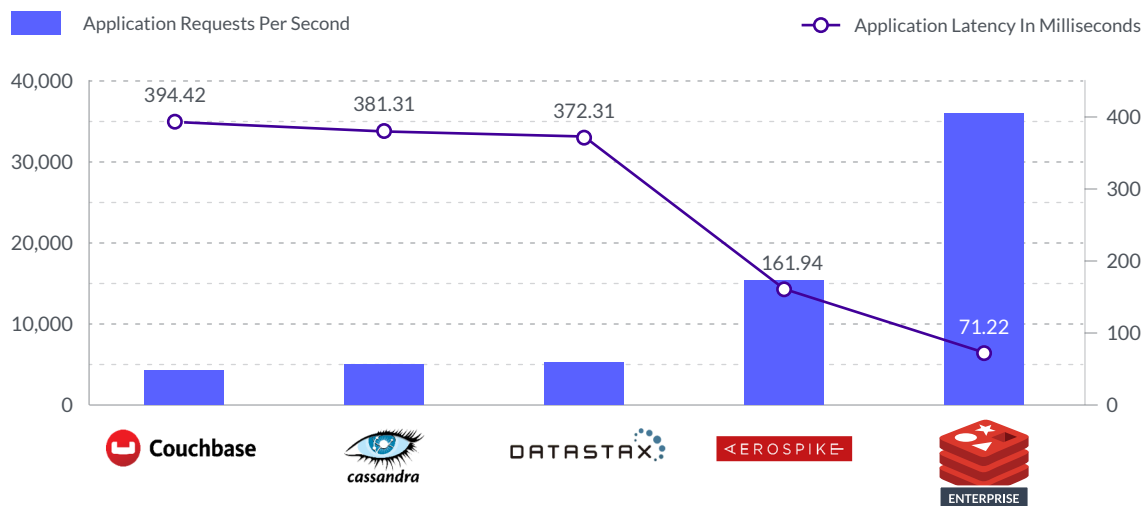


Figure 6. Attain consistency and durability of high-speed transactions



Responsible for the wildly popular Trivia Crack and Pictionary online games, Etermax had exhausted the capabilities of its open source Redis installation. In an effort to push past the CPU bottlenecks, lack of scalability, and prohibitive costs of its existing database configuration, Etermax turned to enterprise-grade Redis Enterprise from Redis.

7. Session Stores

Redis Enterprise is a popular database ideal for both cache and session store use cases, delivering both the high-availability required for caching and session store scenarios as well as the durability needed for session store with in-memory replication. Redis Enterprise is used as both a cache and a session store in a single setup, as shown in the picture below.

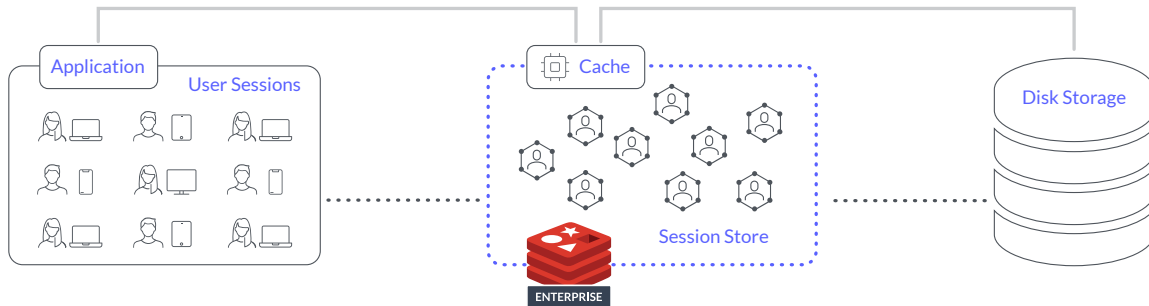


Figure 7. Designing Cache and Session Store with Redis Enterprise

8. Real-Time Analytics

Real-time analytics give gaming companies a unified view of the events fired in the game. This covers everything from segmentation of players to serving customized promotions to game status reporting. There are a lot of in-game events running concurrently at any given time, and a real-time dashboard can present all the reports necessary to maintain high performance—and improve it. And with the responsiveness of Redis Enterprise, event analytics happen in real time.

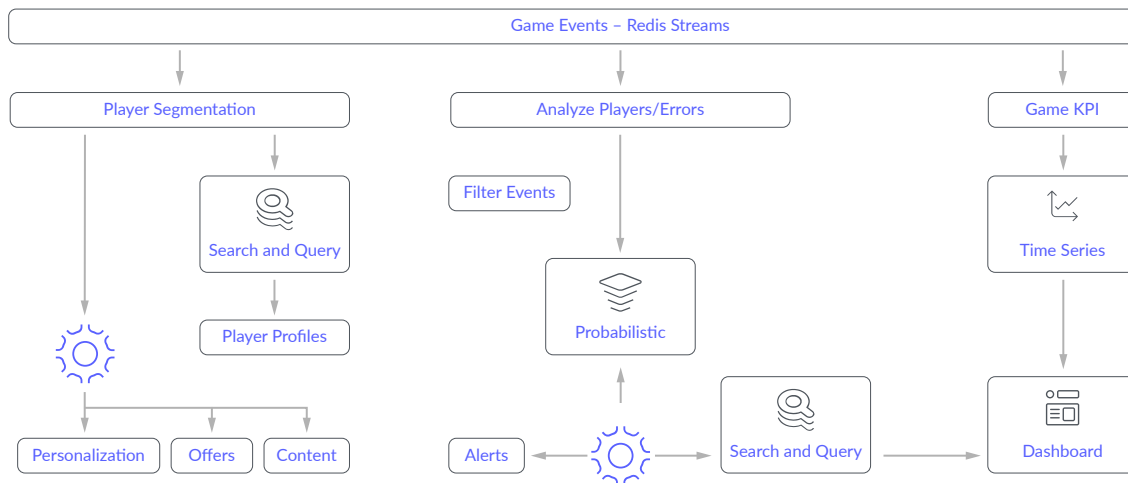


Figure 8. Combining Redis Streams with multiple modules to customize and understand a game in real time.

9. Cheat Analytics

It's more important than ever to weed out bad actors that cripple the community and break the game. At the same time, false positives have to be avoided so legitimate gamers aren't flagged, placing equal importance on accuracy and speed in analyzing potential cheaters. The responsiveness and low latency of Redis Enterprise is essential, running millions of events concurrently to provide the speed necessary for complete, accurate analysis in milliseconds.

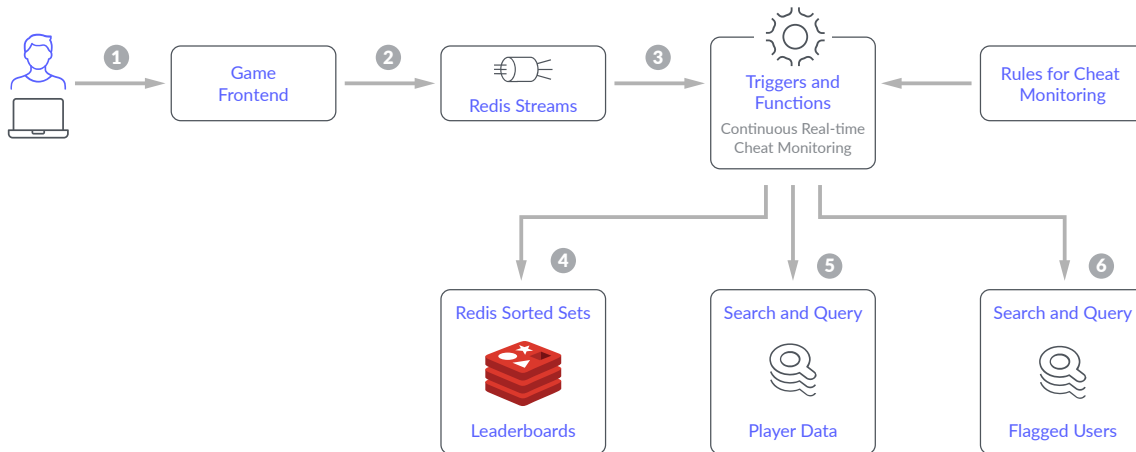


Figure 9. Redis Streams and Redis Sorted Sets combined with Search and Query modules for real time cheat analytics.

Redis Enterprise – The Best Deployment Choice for Gaming Companies

Downtime directly impacts revenue and customer experience, making true high availability a critical factor in choosing your database. But availability is more than just the game being up. Scaling to handle peaks in traffic must also 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 your game. Gaming applications need to be highly responsive even during peak traffic, and industry economics 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 one modest AWS EC2 instance, Redis Enterprise adds stable high performance and linear automatic scaling to Redis deployments, while reducing operational overheads and resource costs to bare minimums.

Redis Enterprise can be deployed on the cloud or PaaS of your choice as a fully managed service, via the Redis Enterprise Cloud, or in your own data centers, VPCs, or hybrid environments as downloadable software. Redis Enterprise can also run Redis on cost-effective Flash memory used as an extension of RAM, so you can process and analyze extremely large datasets with high throughput and extremely low latencies at up to 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 Redis software.

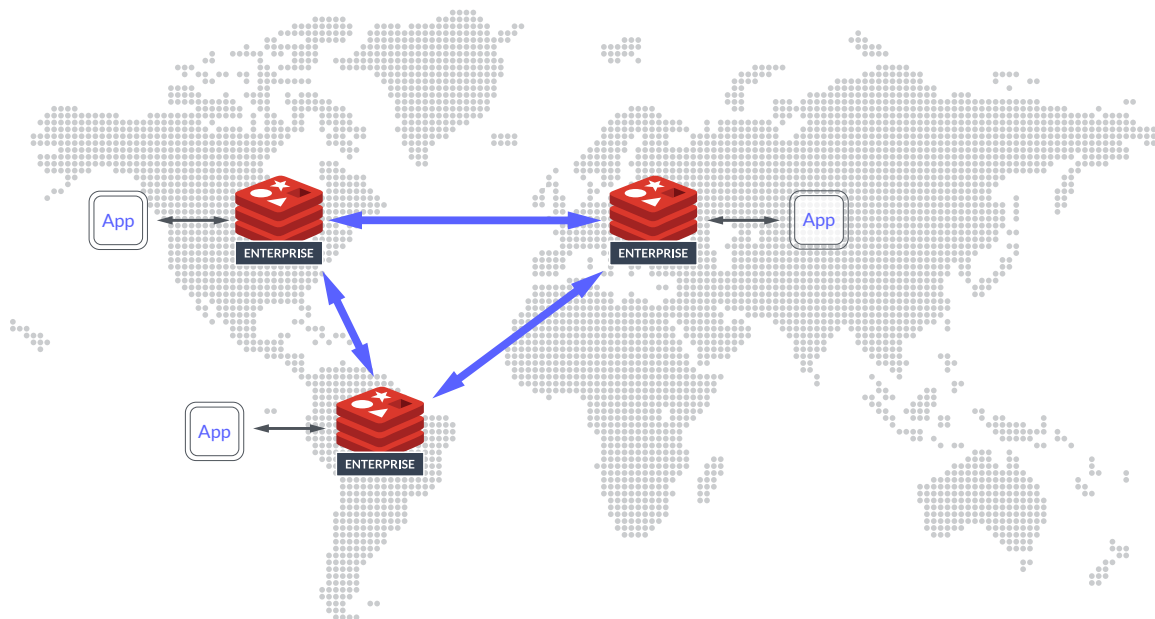


Figure 10. Only Redis Enterprise offers Active-Active Geo Distribution based on conflict-free replicated data types (CRDT)

Next Steps

Data is the lifeline of every business, and Redis helps organizations reimagine how fast they can process, analyze, make predictions, and take action on the data they generate. Redis provides a competitive edge to any business by delivering open source and enterprise-grade data platforms to power applications that drive real-time experiences at any scale. Developers rely on Redis to build performance, scalability, reliability, and security into their applications.

Born in the cloud-native era, Redis uniquely enables users to unify data across multi-cloud, hybrid and global applications to maximize business potential. Learn how Redis can give you this edge at redis.com.



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