

MEETING THE SCALABILITY AND PERFORMANCE CHALLENGES OF ONLINE GAMING

INTRODUCTION

Online gaming continues to grow in popularity, whether for huge gaming communities like Riot Games' League of Legends or gaming sites like bet365, one of the world's leading online gambling groups. This growth is forcing changes to existing infrastructure in order to keep up with demand and innovation. Traditional relational databases can't meet the requirements for massive scalability, speed, and fault tolerance. Plus, the costs of these traditional systems keep rising. Let's look at some of the challenges you may be facing with your online gaming and betting platforms.

THE ONLINE GAMING CHALLENGE

Over the last decade, the massive adoption of mobile devices and the arrival of ubiquitous connectivity have moved online gaming and betting from a traditional brick and mortar activity to one where people can place bets or play games online anytime, anywhere.

This change has brought huge numbers of new players to online gaming and betting as a form of entertainment. More players, fast development cycles, and the ability to quickly deploy in the cloud have brought new competitors to this fast-growing industry.

Innovation is critical to retain long-term customer loyalty and is changing the way gamers play online. These changes include the move away from single bets on an event to in-game betting on an ever-increasing range of metrics. The advent of regional gaming competitions, like the League of Legends World Championship with an annual grand prize of \$1 million, show just how far gaming has come.

Your IT Infrastructure is being challenged to keep up. Gaming sites have millions of simultaneous players. Betting and gaming

WHY RIAK® KV ENTERPRISE FOR GAMING?

- Simplified Development
- Enhanced Scalability
- High Availability
- Fault Tolerance
- Simplified Operations
- Lower Total Cost of Ownership

applications have to capture and process statistics in real time. These must include diverse game variables for each player—both before and during the event. In betting, the odds constantly change and players are looking for opportunities to place micro-bets during games, settle those bets, and reuse the proceeds for new opportunities. This means the frequency at which odds must be calculated is extremely high. But those odds must also be reviewed against the marketplace to ensure players bet with you instead of your competitor.

Your IT infrastructure is also challenged by the need for agility. Gaming and betting sites must be able to handle both predictable and random spikes in demand. In both cases, maintaining infrastructure that sits idle 90% of the time waiting for a spike is a waste of resources. In addition, a poor user experience will quickly lose customers, and downtime is catastrophic. The database infrastructure is critical to every step of the gaming and betting process and to ensure performance is maintained at scale. Scaling and performance are only some aspects of infrastructure agility. Your systems must also detect and respond to fraud as well as be adaptable to adhere to complex and detailed regulatory changes.

GAMING ON RIAK®

Riak is a distributed database designed to address a number of challenges of gaming and betting platforms. Riak delivers performance, scale, and constant uptime at a lower cost than traditional relational databases.

MANAGING HUGE VOLUMES OF PLAYERS & DATA

Gaming and betting applications track hundreds, even thousands of variables. Calculating odds and managing real-time account and transaction data means that billions of data points and terabytes of data are being acted upon in an online gaming and betting system. Relational databases are not designed to work at this scale. Riak stores and retrieves data for some of the world's largest gaming and betting platforms, and it scales near linearly on commodity hardware.

AGILITY — SCALING UP AND DOWN

Riak is optimized to use commodity hardware resources efficiently. It delivers results that outperform traditional relational databases that are often running on some of the most expensive hardware systems available. When your peak periods occur, Riak scales easily and quickly with zero downtime. Because Riak is designed for commodity hardware, you can expand or reduce the database infrastructure to meet your changing business. Riak's distributed design allows it to easily grow as needed, both within a single data center or across multiple data centers.

MAINTAINING HIGH AVAILABILITY

Hardware does fail. When it does, your IT infrastructure needs to cope, and your systems must continue to operate while quickly getting resources back online. Online gaming and betting solutions demand high availability, and Riak is designed to meet this requirement. When data is written to Riak, it is automatically replicated in the cluster. Even if nodes fail, data is still available for reads and writes, and the system stays online so your players are not interrupted.

PROCESSING SPEED

Whether calculating odds, providing data to mobile apps, or settling bets, performance is critical. Riak is designed to operate at scale and outperforms RDBMS in terms of throughput—all while running on commodity hardware. Riak is the perfect database choice for the fast-paced, Big-Data challenges of online gaming and betting applications.

COSTS OF MALICIOUS ACTIVITY

Shutting down malicious betting as quickly as possible is critical to availability and profitability of betting applications. The speed and volume of bets being placed online makes it difficult to detect malicious betting, particularly as criminals turn to automation to try and beat the system. Riak outperforms RDBMS in terms of both processing power and operational expense. The simplicity and agility of Riak ensures that changes can be made and deployed quickly across the infrastructure to help mitigate evolving threats.

REGULATORY CHANGES

Implementing regulatory changes, whether specific to a single country or industry-wide, is complex and time consuming. Riak's design and simplicity allows rapid development and accelerates implementation of regulatory change.

RIAK USE CASES



PLAYER DATA

Riak KV provides low-latency, highly available data storage for player data, including user and profile information, game performance, statistics and rankings, and more. Riak KV also provides many different tools for querying and indexing this data, such as a full-text search engine and secondary indexing.



SESSION STORAGE

Riak KV is frequently used to store and serve session data with predictable low-latency, which is necessary for game play. Riak KV imposes no restrictions on the type of content stored (since all objects are stored on disk as binaries), so session data can be encoded in many ways and can evolve without administrative changes to schemas.



GLOBAL DATA LOCALITY

While gaming, players require a low-latency experience, regardless of their physical location. Interrupted or slow game play can lead to poor user experience and player abandonment. Riak Enterprise's multi-cluster capabilities allow game data to be physically close to players for fast response times regardless of player location.



CHAT

A meaningful chat network helps gamers stay engaged. Whether betting with or against a friend, trying to beat their score, or teaming up to get through a hard level, the ability to easily play with friends enhances the gaming experience. Social gaming requires the ability to maintain a roster of friends, a list of blocked players, or metadata about friends. Riak's highly available, low-latency architecture handles the unstructured data created by chat applications.



IoT AND TIME SERIES DATA

When playing games and betting, time-stamped data is created by events, such as in-game bets, store purchases, game actions, and VR device sensor readings. Ingesting, storing, and analyzing large amounts of time series data requires fast, reliable, and scalable data reads and writes. Riak TS is a high performance, highly resilient NoSQL database optimized for fast reads and writes of time series data.

CONCLUSION

To continue to scale and innovate with your online gaming and betting applications, a fast user experience is critical. Whether managing session data for millions of gamers or updating betting odds as a game progresses, you need to provide a seamless player experience.

Staying connected with players and meeting their expectations requires a database that can process huge amounts of data accurately with no downtime.

Riak is a distributed NoSQL database architected for resiliency, massive scalability, and to ensure globally distributed reads and writes are fast. Riak scales near linearly on commodity hardware and is easy to operate at scale.



“ Given the huge amount of data we process on a daily basis—from customer details to betting odds—it was imperative that we had a platform to support this. We selected Riak KV and have not been disappointed with the results. ”

— Martin Davies, Chief Executive Officer, Technology at bet365

ABOUT BASHO TECHNOLOGIES

Basho, the creator of the world's most resilient databases, is dedicated to developing disruptive technology that simplifies enterprises' most critical distributed systems data management challenges. Basho has attracted one of the most talented groups of engineers and technical experts ever assembled devoted exclusively to solving some of the most complex distributed systems challenges presented by Big Data and IoT.

Basho's database, Riak® KV, the industry leading distributed NoSQL database, is used by fast growing Web businesses and by one-third of the Fortune 50 to power their critical Web, mobile and social applications. Built on the same foundation, Basho introduced Riak TS, which is the first enterprise-ready NoSQL database specifically optimized to store, query and analyze time series data. Basho also provides Riak integrations for a variety of Big Data technologies like Apache Spark, Redis, Mesos, and Apache Solr.

For more information visit Basho.com which is full of interesting use cases, customer case studies and product detail, or docs.basho.com for technical documentation.