Cockroach Labs

[CASE STUDY]

SUPERBET

How Superbet Migrated to the Cloud with CockroachDB

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INDUSTRY:
Online sports betting in 10+ markets

CHALLENGES:
Incredible scale while ensuring data integrity and zero downtime in a regulated market

SOLUTION:
A cloud-agnostic, resilient key-value store that could support cloud migration

About Superbet

Superbet aims to bring technology-powered entertainment to the world, with a focus on sports and gaming. Starting out in Romania in 2008, Superbet found success early on with the award for Best Overall Sports Betting Operator in Central and Eastern Europe (CEE), and has since expanded into multiple European markets, including Belgium and Poland.

Now Superbet brings in over $1 billion in revenue. Behind the sports betting platform is Happening, a tech engine that supports Superbet's consumer brands, including Napoleon and Lucky7 Ventures. In anticipation of continued success at Superbet, the DevOps team at Happening wanted to focus on streamlining their critical data stores, and ultimately decided to move from an on-prem NoSQL solution to on-prem CockroachDB to CockroachDB running on AWS.

With the expectation of 10x business growth over the following three years, the team knew they needed a reliable, cloud-agnostic solution, like CockroachDB. They also wanted to ensure data integrity and minimal customer impact while migrating their applications to the cloud.

Watch YouTube**:** How Superbet Migrated to the Cloud with CockroachDB ▸

100M+

ACTIVE TICKETS PER MONTH

Up to 400+

VCPU PER CLUSTER

Up to 14TB

OF DATA PER CLUSTER

Scaling in a regulated industry

In 2023, the European sports betting industry market size was estimated at $33.75 billion. In order to operate, businesses must acquire licenses to do business, and then they must comply with strict regulations to retain the license. Oftentimes this requires the capability to control where data resides which is difficult to accomplish with certain legacy solutions.

Additionally, spikes in traffic as a result of major sporting events generate heavy reads and writes and may complicate processing payouts – making the choice of database extremely critical. For example, Superbet's Tickets Service stores information for up to 100M+ active tickets per month. The information relevant for each transaction is stored in a ticket – a binding contract with the customer.

Not only must the data be consistent for the customers, but also, since bets can be made months in advance, they must be stored for variable amounts of time. If data was lost or inaccurate, not only was Superbet at risk of losing customers, they were at risk of losing a license.

When Sergej Jakovljev, Site Reliability Engineer at Superbet, began working with Superbet, his team was operating on an on-prem system built on top of MongoDB. At the time, their system was TTL heavy with millions of rows expiring on a regular basis, leading to some compaction issues, clogging up their data store, and dragging down performance. The existing schema also resulted in inefficient sharding, creating further overhead. As Sergej's team looked to refactor their application, they also explored alternative solutions that would better support future scaling ambitions.

If the team were to switch to a whole new system, they wanted a database that could:

- Horizontally scale without sharding, as they expected 10x growth in the following 3 years
- Geo-partition to locations that required data and processing in the license country
- Guarantee high availability via a durable key-value store
- Ensure regulatory compliance via a flexible distributed solution

This was when they found CockroachDB.

"CockroachDB checked all the boxes. As I see it, CockroachDB is a really scalable key-value store that has all the features that you would want, like out-of-the-box backups, support for secondary indexes, automatic data sharding, and rebalancing. There are no hacky workarounds. You don't need to reinvent the wheel for each use-case. It just works."

– Sergej Jakovljev

Site Reliability Engineer, Superbet

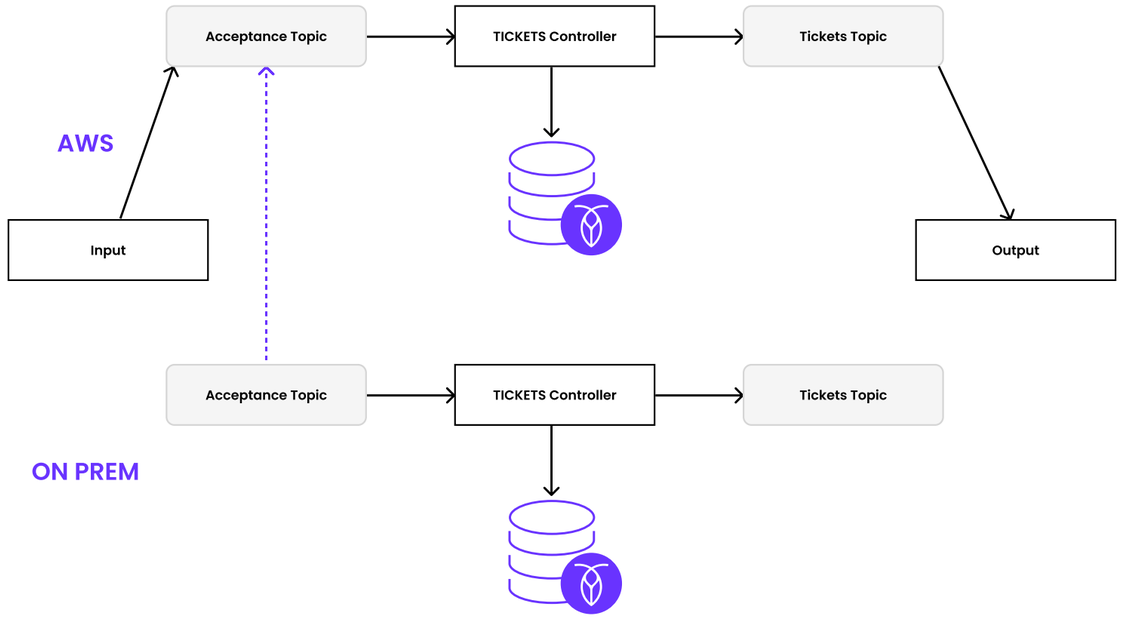
Automated DevOps & the Cloud Migration

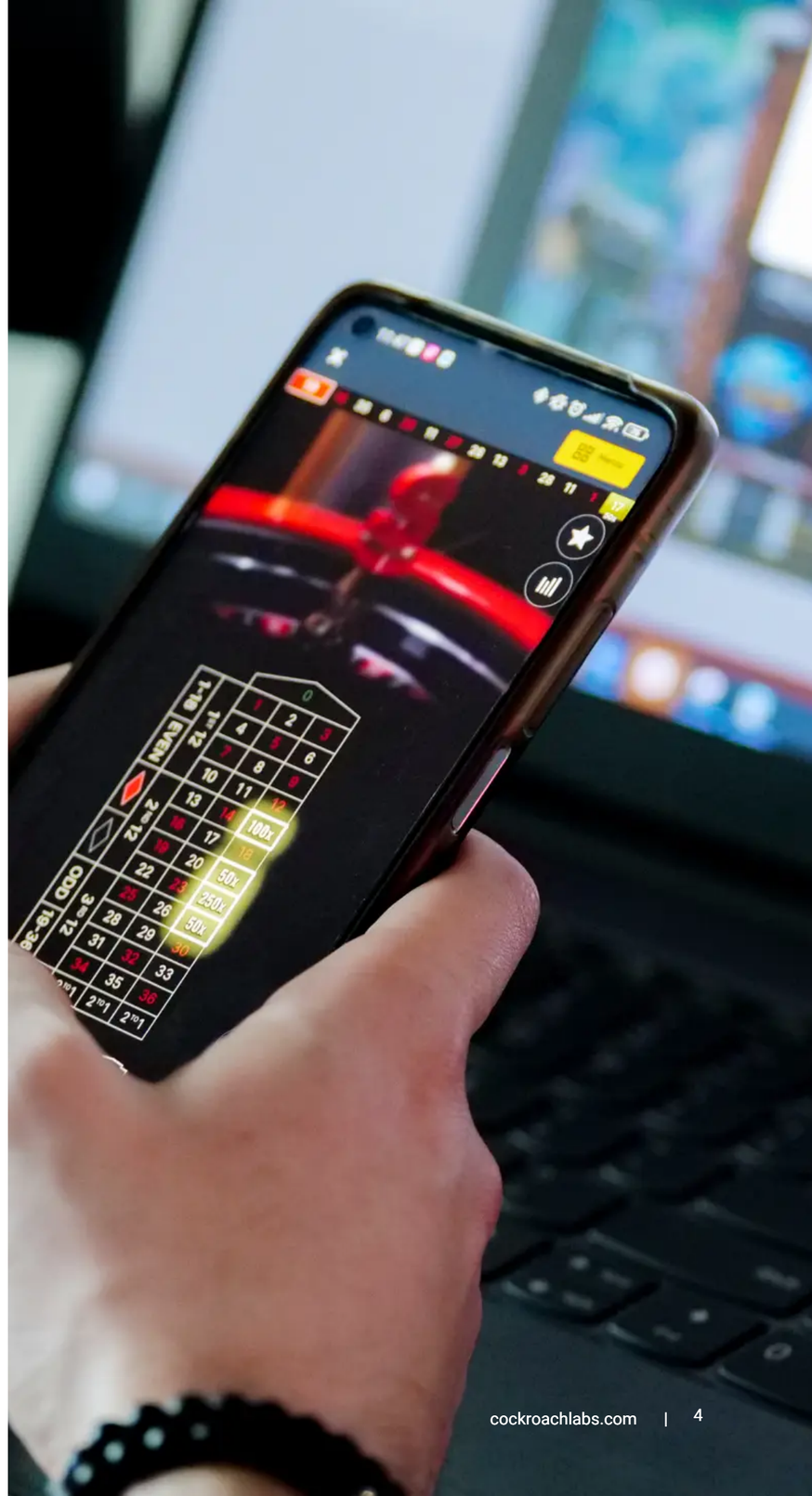
The DevOps team started with CockroachDB on-prem as the single source of truth for their data. There were a number of key benefits that CockroachDB offered as compared to other databases on the market. First, CockroachDB automatically clears up time to live (TTL) data, solving their data compaction issue. This helps to ensure regulatory compliance, efficient storage, and reduced overhead.

At the time, the team knew that to handle their anticipated business growth, they would have to move applications from running on-prem to running in the cloud. They ultimately chose to migrate to AWS knowing that a cloud migration is a complex process, and the business had to keep running. Since CockroachDB can run on-prem and in a hybrid cloud environment, CockroachDB would be able to support Superbet's entire cloud migration from start to finish. For more granular management control, the team chose to self-host a CockroachDB deployment on AWS.

Two of Superbet's key markets are Romania and Poland, which used to require data to be processed in the licensing country, but AWS did not have an availability zone in either location. Luckily, CockroachDB can run anywhere and allows you to control where data lives. Therefore Superbet could leverage a mix of running on-prem in those countries and also on AWS in other locations.

As you can see from the diagram, CockroachDB's hybrid cloud capability provided the necessary infrastructure for the eventual migration off of their on-prem infrastructure.





Beyond the seamless cloud migration, CockroachDB also offers online schema changes. For example, as more data came in and the business continued to evolve, engineers could add columns or change the database without taking down the whole database and reconfiguring it. This ensured minimal impact to customers. Additionally, since CockroachDB is PostgreSQL compatible many developers were already familiar, ensuring a smooth transition for the whole team during the migration process.

Optimizing CockroachDB

Since using CockroachDB, the team has been able to handle their meteoric growth and have no plans of stopping. When first implementing CockroachDB, the team shared a number of learnings to improve performance from the start.

These tips can be applied to any heavy-write use case to ensure the most efficient use of engineering resources, with minimal impact to customers.

- Scheduled and incremental backups for resource optimization and cost efficacy
- Essential monitoring via Prometheus in CockroachDB
- Column families to reduce the number of keys stored
- Leverage CockroachDB's built-in DB Console to make debugging for devs (SQL) and devops (cluster status) much simpler
- CockroachDB's best-in-class support team and documentation for any additional questions

> *"Because CockroachDB is a distributed SQL database, it's really resilient. This allowed us to start really small and grow on demand."*
>
> – **Ivan Hrastinski**
> Engineering Manager, Superbet

What's next

Looking ahead, Superbet's ambition continues as they look to expand into three additional markets. In pursuit of this expansion, CockroachDB's multi-tenancy has piqued Superbet's interest. By combining everything into one large cluster, the company will be able to expand into new markets faster, develop features more quickly, and save on development costs.

To learn more about what Superbet and Happening is building, visit their website happening.xyz.

Ready to get started?

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