Research by E-CARD Leads to Galera Cluster

GALERA CLUSTER

The Bulgarian National Lottery is the largest licensed gambling operator in Bulgaria. It is one of the most innovative lotteries in Europe and is among the fastest growing businesses in Eastern Europe. At present, they operate 18,500 point of sale machines for instant tickets, as well as an additional 1,550 point of sale machines for drawings. They have managed this through thorough innovations in technology, strategic distribution and advertising, while promoting responsible gaming, good causes and CSR goals. This has resulted in the National Lottery becoming one of the best known consumer brands in Bulgaria.

Quick Facts

- Customer name: E-CARD
- Contact name: Rumen Palov
- Industry: On-Line Gambling
- Headquarters: Sofia, Bulgaria
- Site: http://www.e-card.bg

Established in 2000, E-CARD, LTD, is a Bulgarian company specializing in the development of interactive projects, TV shows, and SMS and IVR applications. They have taken part in numerous projects in Bulgaria and abroad and are a valued member of the Bulgarian Web Association. Additionally, they are also licensed by the Bulgarian State Commission on Gambling for the production of gambling software and platforms.

E-CARD created and developed the entire infrastructure for the National Lottery JSC in Bulgaria. This includes the systems managing instant tickets and drawing games, logistics, marketing tools such as video on demand, the banner system for the point of sale machines, and the website.

Challenges

Seeking to become a role model in the gambling industry, National Lottery and E-CARD set out to build a system that was responsible, innovative, fast and entertaining. For the back-end database they required a system that could manage real-time processing of transactions and provide a certainty that commits would propagate through the deployment that was familiar to their developers and administrators. It would also need to be zero tolerant of data loss, able to handle peaks, and have zero downtime.

"We wanted a solution which was backward compatible with our frameworks, as we have used mainly MySQL, which was reliable and nearly 100% data consistent," Rumen Palov, CTO at E-CARD, explains. "If our application were to execute a commit and receive a successful response, we needed a 100% guarantee that we have rows of data in our database — and for more than that one instance."

There were many options that Palov explored. "First, we tried MySQL NDB Cluster. That was a very frustrating experience. After that we tried a few other plugins and extensions of MySQL, but they weren't complete solutions. At the end of this process, we found Galera with MySQL. It responded to our needs nearly 100% of the time."

Solution

In order to provide for nearly twenty thousand point of sale machines for the National Lottery, E-CARD uses Galera Cluster for MySQL, Perl, MemCache and Redis. The database layer runs on nine FreeBSD servers configured into three clusters. Each server has 16 cores, 410 to 820 GB of RAM, and uses a mix of SSD and SAS storage. Additionally, they replicate data from one cluster into another using standard MySQL replication.

Benefits

The system took more than two years to implement and E–CARD continues to develop and improve upon the system daily. They began by deploying clusters on their own into production. Later, as the business grew they entered into a professional support service contract with Codership. Codership was able to deliver FreeBSD ports for Galera Cluster and the MySQL Server, which was patched to use Galera replication. "Codership is a company that delivers solutions for database clustering in the right time and the correct form for us," says Palov. "They have a very strong Engineering and QA team. They understand and react to our problems in a very professional and reasonable way."

The main benefits they have found are data safety and robustness as well as a reliability of service. They now always have three replicas of their data. They also no longer depend on a single server and can instead provide uninterrupted service.