



Scalable high performance in the web

1. FC Köln modernized its website with AWS

Reference project:



“We were able to modernize our website and lower our costs with AWS. The managed services from T-Systems offer everything our fan community needs to interact with our website content quickly and reliably.”

Dominic Theißen, Head of IT, FC Köln

1. FC Köln isn't just any soccer club – it's one of the 20 largest sports clubs in the world. And their red-and-white-clad fans in Germany's fourth-largest city follow their club through feast and famine. The three-time German champion certainly feasted in the 2021/22 Bundesliga season – Cologne's “Billy Goats” finished the season a strong 7th and will play in the UEFA Conference League in 2022.

The soccer club depends on its website [fc.de](https://www.fc.de), the central medium for interacting with its 114,000 supporters. In addition to presenting the latest news and information, such as video content, it is also the central channel for ticket sales and the fan shop. The complex website also integrates third-party content. 24/7 availability is a must, of course, to meet its fans' information needs – but when ticket sales start and around match days, the load on the website skyrockets to more than tenfold. The site operators wanted to ensure a good user experience even during such peak loads. As such, the performance of the site is a decisive factor for the club's digital footprint.

At a glance

- Ensure scalability and performance of the website
- Leverage potential cost savings
- Agile, dynamic management of the infrastructure
- Enhanced user experience for the central channel for fans
- Migration to AWS
- Modernization through replatforming and reengineering
- Implementation of modern GitOps-based deployment strategies
- New security mechanisms based on AWS best practices
- Managed services from T-Systems according to DevOps principles
- Capture of further digitalization potential through modern AWS services
- Cost efficiency
- High degree of automation (infrastructure scaling, infrastructure as code, and CI/CD pipelines)

Reference in detail

The challenge

In the past, scaling capabilities and capacity management repeatedly posed challenges to the web team. The CMS did not support scaling. The legacy environment was not actively improved by the provider, nor was it documented sufficiently. The only way to deal with the temporary peaks under the classic hosting model was to increase infrastructure capacity in the long term. The result was high, unnecessary costs for infrastructure – because the peak load resources had to be operated and paid for the entire time. The web team at 1. FC Köln set out to find a model for dynamic system provisioning, based on user requests. They wanted the system to run in a dynamic mode, not only due to regular changes to servers, middleware, and applications. Last but not least, the system had to deliver consistently high performance – at low costs. 1. FC Köln decided to migrate to AWS and selected T-Systems as its consulting, migration, and managed services partner to do so.



The solution

Together with the web agency, T-Systems modernized the entire website. The originally planned lift-and-shift approach was quickly replaced by a reengineering and replatforming model. The process involved modernizing both the application level (by the web agency) and the infrastructure level. At the same time, the website was given new, modern security mechanisms based on AWS best practices. In the first step, T-Systems built the landing zone in the Billy Goats' AWS account, with central security configurations. It enables management of the AWS resources from a single source. The foundation of the website consists of redundant EC2 instances for the back end (in two European AWS availability zones), which are linked through load balancing and auto-scaling. They serve as the hosting platform for an Apache PHP back-end construct, where the website runs.

An upstream content delivery network serves static content and utilizes the Amazon CloudFront service. The back end also hosts an in memory cache (Redis), which buffers user requests, an NFS file share to store static data (such as JavaScripts, CSS, HTML, and media data), and a Relational Database Service (RDS) that replaced the old MySQL database. The security features implemented by T-Systems include a web application firewall and AWS GuardDuty, whose settings were optimized based on the collected logs for the website. They protect the site against the usual web exploits and bots and contribute to maintaining high performance. This cloud-native foundation also enabled the web team to implement DevOps practices. In their approach, Amazon machine images are generated automatically, based on the established Git-Flow principle. The GitLab CI pipeline rolls out the deployments to the (new) development environment and – after release by an admin – to the production environment.

Customer benefits

The editorial team now has a modern platform for running its website, one that can respond dynamically to user requests. Resources are scaled back automatically under low loads, generating significant cost benefits – and the architecture ensures that performance remains good for users even under higher loads. At the same time, the DevOps approach enables agile, dynamic management by the web team. T-Systems has their back, as a recognized managed services partner (Leader in ISG's Provider Lens for AWS Ecosystem). With their new foundation and access to the AWS ecosystem, 1. FC Köln can now take the next steps toward digitalization. The analysis of log files enables targeted offers for fans – and much more. As an AWS partner, T-Systems also ensures that best practices such as the Well-Architected Framework are followed. "We were able to modernize our website and lower our costs with AWS. We can tackle the challenges that operators of modern sports websites face. The managed services from T-Systems offer everything our fan community needs to interact with our website content quickly and reliably," summarizes Dominic Theißen, Head of IT for the Billy Goats.

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