AKAMAS

SUCCESS STORY

Delivering high quality SaaS services at lower cloud cost and carbon footprint

AI-powered optimization of cloud-based Kubernetes microservices enables higher cost efficiency and sustainability

TeamSystem

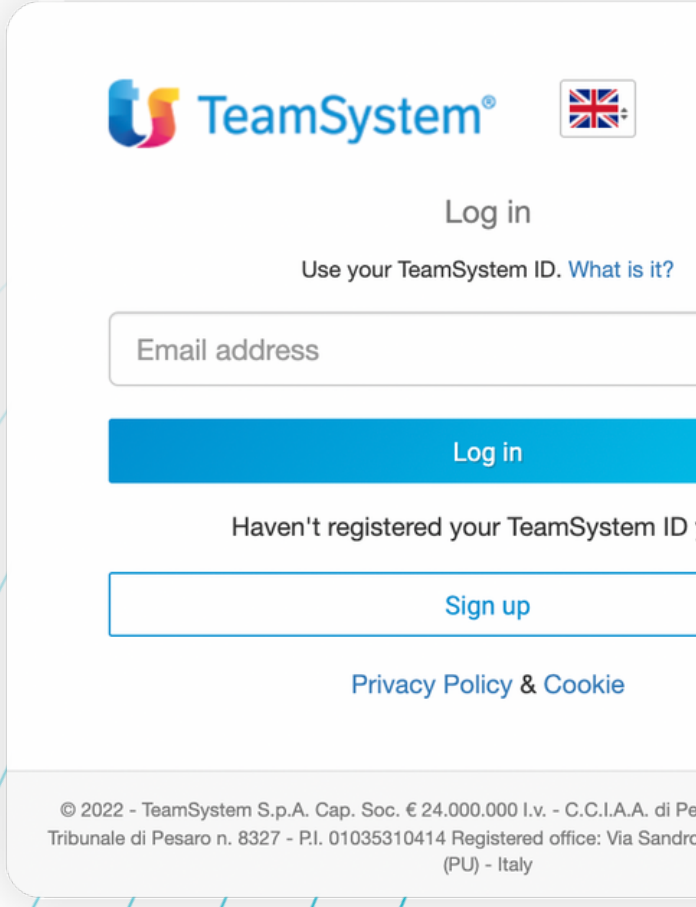
An European leader in accounting, payroll & business management software

TeamSystem is a leading provider of business software applications and services to hundred of thousands of SME clients, labor professionals and accountants in the Italian market.

TeamSystem develops a variety of **accounting, HR, payroll, financial services and business management software**, that are mostly offered in SaaS mode.

All new services are developed as **cloud-native applications** on **Kubernetes** on either **Azure** or **AWS**.

TeamSystem keeps investing in new technologies, modern development & delivery practices, and any innovative solutions that can prove the ability to provide competitive advantages.



1,7M
overall users

400M
invoices per year

2300
employees worldwide

€460M
gross revenue

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The initial challenge

Reducing growing cloud costs without impacting service quality and business agility

TeamSystem as many companies delivering business-critical SaaS services today was facing much higher costs than expected. In general, moving from on-premise to the cloud (often to a multi-cloud) is a strategic choice that delivers several benefits, including higher business agility. As a consequence, growing cloud bills are disregarded, at least during the initial migration phase. However, sooner or later, growing cloud costs become a major concern, as they may hamper the ability to deliver services in cost-effective manner.

In general, tuning Kubernetes microservices applications is a daunting task even for the best performance experts and SREs due to the complexity of Kubernetes resource management mechanisms. A manual tuning approach typically requires weeks and months for just one microservice while still failing to ensure the desired tradeoffs among service performance, resilience and cost. Therefore, over-provisioning becomes the only real option, in particular in contexts where development and release cycles get shorter and shorter.

At **TeamSystem**, this scenario was further exacerbated by their specific kind of applications that require frequent relevant updates to stay aligned to the legislation and to be delivered at the exact time when new invoicing rules need to be in place. While a solid (yet manual) performance testing practices and modern load testing tools were in place, it soon became evident that the hundreds of microservices needed to be optimized for cost efficiency.

“Kubernetes is great as it abstracts application performance problems by providing automated scalability, but this also drives higher costs. Of course, end-users are satisfied as they are receiving the quality of service they expect but this does not make the service cost effective anymore”

Luca Montecchiani
Lead Software Architect and Product Owner at TeamSystem

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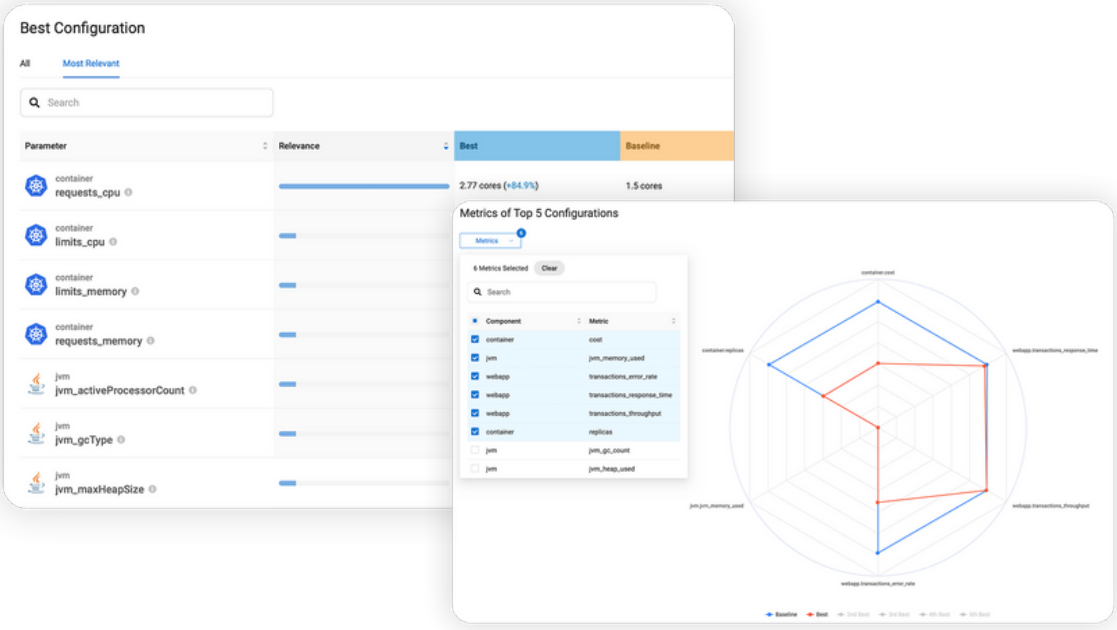
The achieved benefits: cost reduction

Optimized Java and Kubernetes parameters to reduce cost while preserving quality of services found in less than a day!

Akamas optimization was applied to **TeamSystem** most critical microservices, in particular to the **Business-to-Business Stateless Authorization Service** deployed on **Azure Kubernetes Service (AKS)** which provided the access layer for all **TeamSystem Digital** services.

The optimization goal was set to **minimize the overall service cost**, that is the cost defined by Azure Container Instances pricing based on vCPU and memory. Constraints were set for any optimized configurations to introduce zero degradation on the service response time, throughput and error rate with respect to the original configuration, taken as baseline in the optimization.

Akamas in just **20 hours** automatically found a better configuration of JVM and Kubernetes parameters and requiring lower number of pods, thus providing **49% cost reduction at peak load** and **66% at off-peak** load with a slight improvement on the average response time (about 5% reduction) while keeping same throughput of the baseline configuration.



Recommended configuration under peak load (partial)

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The achieved benefits: lower application latency

Optimized configurations improve application latency by avoiding autoscaling being triggered under higher loads

An additional benefit of the Akamas optimization was measured by TeamSystem in terms of **lower application latency**. Indeed, since the autoscaling parameters were included as tunable parameters in the optimization study, the best configurations identified by Akamas were also optimized from that perspective. Having **autoscaling triggered less often** to create pod replicas in the best configuration than in the baseline configuration, directly translates into lower application latency as new pod replicas requires some time before they can contribute to sustain the load.

It is worth noticing that all these results were achieved by Akamas without any manual intervention and without any information on the application under analysis or any knowledge of the Kubernetes environment, autoscaling policies and underlying technologies in place at TeamSystem.

The adoption of Akamas not only achieved the expected **significative cost savings** at business speed, but also provided **insights on potential tradeoffs** among competing goals, thus effectively empowering TeamSystem developers, performance engineering & SRE teams and service architects in their critical decision processes.

"Thanks to Akamas, TeamSystem has improved the efficiency of our critical microservices as we would never been able to do manually. The ability to consistently deliver the highest level of quality to our end-users at the lowest possible cost is an important differentiator for us."

Luca Montecchiani
Lead Software Architect and Product Owner at TeamSystem

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Autonomus Performance Optimization

Akamas is the AI-powered autonomous optimization solution that enables enterprises and online businesses to deliver unprecedented levels of service performance and resilience at minimum cost. Built by veterans in performance engineering and data science, Akamas exploits advanced machine learning techniques to optimize hundreds of interdependent service configuration parameters while matching both technical and business goals. Akamas customers include leading enterprise organizations in financial and online services.

Full-stack

Any technology, any parameter, any system

AI-driven

Let AI find the optimal configuration

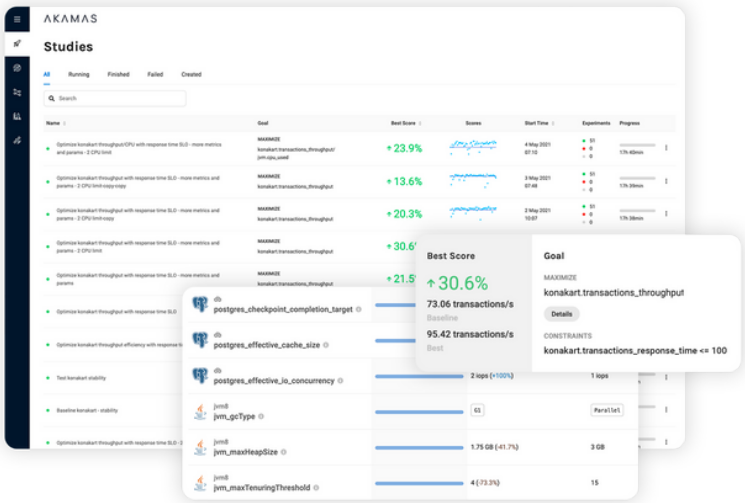
Goal-oriented

Set your goals & constraints for the right tradeoffs

Closed-loop

Automation that fits your delivery process

Test it out!
Contact us at
info@akamas.io



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