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BELGIAN UNIVERSITY

USES CLUSTERCONTROL TO

KEEP MOODLE DATABASES RUNNING

AP UNIVERSITY OF APPLIED SCIENCES AND ARTS ANTWERP

BAP UNIVERSITY OF APPLIED SCIENCES AND ARTS ANTWERP

- Industry: Education
- Location: Belgium
- Data Center: 3

USE CASE
The need to improve performance and enhance scalability for an in-demand e-learning system for 14,000 students.

WHY SEVERALNINES
Easy deployment and management of highly available database clusters by a busy IT team, which reduced the amount of work while improving stability and performance.

INTRODUCTION

Founded in 2013 after a merger between Plantijn University College and Artesis University College, AP Hogeschool Antwerpen (AP University of Applied Sciences and Arts Antwerp) is a non-profit public higher-education institution located in the urban setting of the large city of Antwerp. AP has roots dating all the way back to 1664 when the Royal Academy of Fine Arts Antwerp was founded. Officially recognized by the Flemish Ministry of Education and Training of Belgium, AP Hogeschool Antwerpen (AP) is a large coeducational Belgian higher education institution.

AP Hogeschool Antwerpen (AP) offers courses and programs leading to officially recognized higher education degrees in several areas of study. The university also provides several academic and non-academic facilities and services to students including a library, sports facilities, financial aids and/or scholarships, study abroad and exchange programs, as well as administrative services. With more than 14,000 students the school offers graduate and bachelors programs across a variety of disciplines.

"While it improved over time the system was just becoming too important for us to keep fiddling with it ourselves"

Systems Operator, AP University of Applied Sciences and Arts Antwerp

Calling itself a university of applied sciences it strives for an inviting, open form of cooperation, constantly questioning itself, always looking for new perspectives and insights. A university of applied sciences that is open to different, new and non-compliant input and influences.

CHALLENGE

Digital learning has long been part of the ethos of AP Hogeschool Antwerpen, but when it started hosting its electronic learning platform on its own servers after being part of the Blackboard-network of the University of Antwerp for years, the need for more professional tools grew.

The university leverages the popular open source LMS

platform Moodle to power its e-learning programs, however, with the number of students and teachers using the platform increasing, it was putting quite a strain on the MySQL database. "We were organizing our own databases with self-made scripts," said the systems operator responsible for the setup at AP Hogeschool Antwerpen. (Note: the University does not permit the names of its employees to appear in public-facing materials)

The team attempted to replicate the data across multiple datacenters, but it resulted in several errors. Unfortunately the team did not have specialized database knowledge and the team managing the Moodle platform needed to scale. They were also challenged with maintenance. "We had lots of trouble keeping the replication working," said the Systems Operator. "While it improved over time the system was just becoming too important for us to keep fiddling with it ourselves." The manual setup was resulting in performance impacts to the students and teachers using the system.

The team needed a way to cluster the databases across multiple data centers to allow them to handle the thousands simultaneous connections that were occurring as students and teachers alike were trying to keep the education process moving forward. The team was constantly on pins and needles anticipating a potential crash.

SOLUTION

Like many IT professionals, the team turned to Google to try to solve their database scalability and performance issues. When they came across ClusterControl they realized that what they were attempting to achieve could be completely automated. "We looked at a lot of solutions but none of them were right for our situation," said the Systems Operator. "At some point we decided that ClusterControl was the only product that would meet our needs."

Initially using ClusterControl for the deployment of a clustered MariaDB stack, the team quickly began discovering additional features that could help them improve performance and reduce the time spent working on the database side of things. "It made life a lot easier when it came to database management." said the Systems Operator. "I was spending a lot of time repairing broken replications after very busy periods, where with ClusterControl, this is only one click away so to speak."

The pre-configurations in ClusterControl also improved the stability of the system, making the replication between nodes more robust. The team also took advantage of the database monitoring functions, especially the query monitoring which provided insight that the team had not had before. The Moodle database has about 200 tables, but Moodle plugins come with their own schemas and not all of them are properly indexed or optimized - as the IT team would find out. Thanks to the query monitor, the developers could identify the slow

"**At some point**, a mistake was made by us, making the database corrupt, but **thanks to ClusterControl**, fixing it was a **lot easier** than what it would have been **without it**."

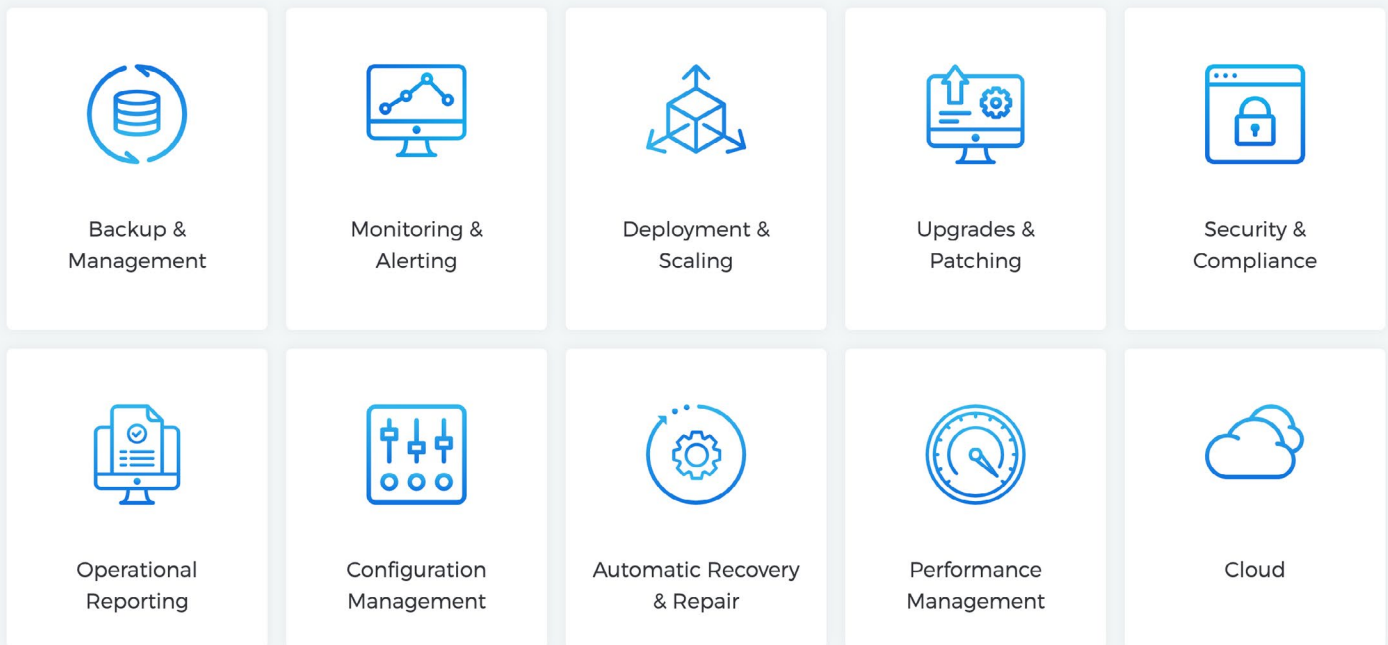**Systems Operator**, AP University of Applied Sciences and Arts Antwerp

queries and get tips on how to get them to run faster - for instance, adding a missing index to a table.

The team also quickly benefited from the backup and restore functionality. "At some point, a mistake was made by us, making the database corrupt, but thanks to ClusterControl, fixing it was a lot easier than what it would have been without it," said the Systems Operator.

WHY SEVERALNINES?

Since implementing ClusterControl in production to power their Moodle databases, the team has seen several benefits.

- **Deployments Pre-Configured for High Availability:** ClusterControl allowed the team to quickly and easily deploy pre-configured, highly available MariaDB databases; removing the need for manual scripts and specialized database knowledge.

- **Improved Performance:** The system has seen both speed increases and improved stability. "The Query Monitoring in ClusterControl showed us that seven of the queries were responsible for a lot of our CPU usage," said the Systems Operator. "ClusterControl has provided us with a lot of insight."

- **Increased Productivity:** CThe team no longer has to spend time fixing issues or manually performing maintenance tasks. "It has taken away a lot of our work and has made several decisions easier," said the systems responsible.

Backup & Management	Monitoring & Alerting	Deployment & Scaling	Upgrades & Patching	Security & Compliance
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