FYI Docs chooses Pythian for PostgreSQL performance fixes and to reduce cloud spend

After resolving Postgres database performance challenges, Pythian helped FYI Docs optimize its AWS cloud spend and free up internal resources to focus on innovation.

FYI Software (FYI Docs) is an accounting solutions technology company founded in 2016 based in Adelaide, Australia. Nearly 15,000 finance and accounting professionals depend on the platform's process automation, cloud documentation management, and application integration features to improve their workflows and productivity. Today, FYI Docs serves 950 accounting practices worldwide and hosts over 250 million documents in the cloud.

The organization has experienced several years of hypergrowth and the exponential expansion of its team. FYI Docs' technology team noticed queries on its production PostgreSQL database slowed down intermittently. Housed on an Amazon Web Services (AWS) Aurora environment, this Australian PostgreSQL database suffered seemingly random outages. Allocating more company resources briefly addressed performance issues but did not rectify the root of the recurring problem.

FYI Docs' experienced team responded promptly to the challenge by implementing a series of fixes. When the performance issues returned, the company sought a more proactive solution to free up its internal team before the downtime could significantly impact the business. FYI Docs wanted to ensure that external-facing areas such as customer onboarding, support response times, and sales demos would all perform reliably around the clock, anywhere in the world.

Seeking a trusted advisor and technical resource to diagnose and address its technical challenges, FYI Docs asked AWS to recommend a partner with deep Postgres and AWS expertise. AWS recommended Pythian, whose Postgres database health check uncovered a series of optimizations to improve database performance while reducing the customer's cloud spend. FYI Docs asked Pythian to deploy its recommendations on its Australian and U.K. databases to ensure future scalability. Data table partitioning significantly reduced slowdowns and improved performance, while knowledge transfer sessions were held to further empower FYI Docs' internal teams.

Industry

Information Technology

Location(s)

Adelaide, Australia

Technologies

- Amazon Aurora
- Amazon Elastic Compute Cloud (Amazon EC2)
- Amazon Web Services Command Line Interface (AWS CLI)
- CloudWatch
- PostgreSQL

Overview

FYI Docs is a leading accounting solutions technology company based in Adelaide, Australia. Over 15,000 finance and accounting professionals worldwide rely on the platform's automated processes, cloud documentation management, and integration features.

FYI Docs sought a trusted advisor and technical resource to diagnose and address its technical challenges. When the business turned to AWS for a trusted partner, it recommended Pythian. Pythian helped improve database performance while reducing cloud spend.

The customer now benefits from fewer database performance issues, greater savings on its cloud spend, and a reliable partner with deep technical expertise in Postgres and AWS.

The company's proactive approach has paid dividends. Customers and stakeholders can expect fewer database performance issues while the company saves on its cloud spend. Now, the company can allocate all of its internal resources toward platform improvements and new features, and it has a partner with deep technical expertise in Postgres and AWS that it can rely on.

The Challenge: Rising data volumes, decreased cloud database performance, and increased cloud costs

As modern organizations tap into the transformative value of their data, the amount of data they collect, store, and analyze increases. FYI Docs' accelerated growth caused its largest PostgreSQL database on AWS Aurora to balloon in size. FYI Docs' team realized that this rapid increase in database scale resulted in several challenges that, if not managed proactively, could significantly impact platform performance and the overall customer experience.

Poor database performance

When internal teams executed commands or ran queries on their Australian PostgreSQL databases, poor performance would result in long response times, crashes, or errors. If they continued to intensify, these intermittent outages could affect the customer experience on the accounting platform and impair the effectiveness of sales, support, and training teams.

FYI Docs had identified that its Australian Postgres database—at more than three terabytes—was responsible for the database issues and implemented several temporary performance solutions. To ensure disruptions would not significantly impact its operations or customers, the company sought a partner with a track record of conducting performance reviews on AWS and PostgreSQL. The company also wanted to work with a team that could act as an advisor and technical resource to support its internal teams and share best practices.

Increased cloud costs

The company could anticipate its Aurora cloud spend for a time as its disk volumes grew on its Sydney PostgreSQL databases. However, in 2022, cloud costs began to increase disproportionately.

FYI Docs' internal teams were aware of potential solutions to their issues with PostgreSQL on AWS Aurora, but sought advice from an adviser with technical domain experience. Ultimately, it turned to Pythian for deep expertise in running robust health checks to identify database issues while developing solutions to resolve them.

As FYI Docs continued to see rapid growth while delivering innovative platform enhancements for its customers, it sought a partner to help it overcome the following challenges:

- **Poor database performance that was redirecting internal resources.** Over time, FYI Docs' largest PostgreSQL database on AWS Aurora began to experience frequent performance issues that could eventually impact the customer experience; detract from platform feature development; and hinder internal sales, support, and training teams.

Business Need:

As the organization experienced rapid growth and delivered platform enhancements, it sought a partner to address database challenges. Its largest PostgreSQL database on AWS Aurora suffered frequent performance issues threatening the customer experience, platform development, and internal teams. FYI Docs also noticed increasing cloud costs without a clear cause.

- **Increased cloud costs.** As database performance decreased, the organization noticed its cloud costs were increasing but could not pinpoint the exact cause.

The Solution: Pythian identified performance issues, prototyped a solution, and implemented recommendations to remove bottlenecks and manage rising cloud costs

Pythian's team of AWS and PostgreSQL experts conducted a comprehensive Postgres health check that confirmed some of FYI Docs' suspicions and uncovered several opportunities for improvement. Pythian then created a proof of concept to demonstrate its recommendations on a test server. Delighted to have a prescriptive and proactive solution, FYI Docs asked Pythian to deploy these recommendations on its Australian and London production databases. Additionally, Pythian implemented hash partitioning, reducing the customer's read I/O costs.

To support FYI Docs, Pythian:

- **Conducted a robust Postgres database health check and provided several key recommendations.** The health check identified existing performance issues, and recommended several optimizations to improve security, configuration, stability, availability, and platform monitoring.
- **Implemented Postgres database optimizations in production.** After a demonstration, FYI Docs asked Pythian to implement its recommendations to improve cloud database performance for its Sydney and London databases as a proactive measure.
- **Recommended reducing the frequency of disk checking.** Upon discovering that the database's autovacuum was not optimized, Pythian recommended several measures to minimize I/O operation costs.

To identify the cause of the hanging database queries on FYI Docs' PostgreSQL database, Pythian's experts conducted an in-depth health check. After reviewing the database and related infrastructure, the team recommended several improvements across performance, security, configuration, stability, availability, and monitoring.

Most pertinent to database performance was the Australian database's table size. Pythian found that the table's size was over three terabytes, resulting in heavy indexing. As a result, the data could not be easily processed, and queries sometimes hung indefinitely.

The un-optimized autovacuum and continuous disk checking further contributed to the slowdown. This vacuum maintenance process, responsible for removing redundant indexes from the table after updates and operations, took 13 hours; it needed to be tuned. The constant disk checking led to increased cloud costs. Left unoptimized, associated maintenance activities heavily burdened I/O operations, increasing cloud spend and impacting performance.

Solution/What We Did:

To support FYI Docs' technical database challenges, the Pythian team delivered:

- A robust Postgres database health check with key recommendations to resolve its performance issues while enhancing security, configuration, stability, availability, and platform monitoring
- The recommended database optimizations to improve cloud database performance for FYI Docs' Sydney and London databases
- Several critical autovacuum optimization measures to minimize I/O operation costs

Pythian recommended several options to resolve PostgreSQL database performance issues and rising cloud costs. To mitigate the main database table concerns, it recommended partitioning it into smaller tables, allowing future queries to run more efficiently on smaller tables. Pythian also recommended reducing FYI Docs' AWS instance size and tuning the default autovacuum configuration, as this would help reduce performance issues and control rising cloud costs.

After Pythian demonstrated these options on a test server, FYI Docs chose Pythian to implement these solutions on its Australian database alongside its internal teams. Pythian then implemented table partitioning, instance size reduction, and autovacuum optimization on FYI Docs' U.K. database.

Results: Improved database performance and reduced cloud costs

Benefits to FYI Docs include:

- **Greater database performance, scalability, and stability.** The PostgreSQL database runs efficiently with a new partition and no longer suffers from query slowdowns.
- **Knowledge transfer further enables FYI Docs' proactive approach.** Deep collaboration and knowledge transfer will enhance the company's proactive approach to its architecture needs and challenges as the business scales.
- **Better allocation of internal resources.** Internal teams can now focus on new features and enhancements to the core product instead of time-consuming performance fixes. The company's cloud spending is now more efficient after database optimizations.

FYI Docs looked to Pythian as a collaborative business advisor to support its hypergrowth and to implement a more proactive infrastructure strategy for the future. As a trusted advisor and solutions implementation partner, Pythian's enhancements have given FYI Docs greater peace of mind.

"Pythian was invaluable in resolving our database performance challenges. It came at the right time with the right experience for the project, allowing our team to focus on innovation and platform development. Between identifying the core and working with our team to implement recommendations, it isn't just a service provider—it's a strategic advisor and synergistic partner. Collaborating with Pythian supports FYI Docs' ability to scale our infrastructure over the next five years."

– Alan McLeod, CTO at FYI Docs

Result/Key Outcomes:

By reducing table disk read frequency and tuning the default autovacuum configurations, Pythian resolved FYI Docs' database performance issues. The customer's internal teams can focus on product development instead of performance fixes. Customer-facing teams are confident that their customer success and revenue-driving activities are reliable. Its cloud spending is more predictable after several AWS infrastructure enhancements.

Partitioning and reducing the size of the largest PostgreSQL database tables allows FYI Docs to prioritize growth and platform development without fear of hanging queries or outages. By proactively addressing the challenge, the company can be confident that its platform stability and performance will support its customers for years to come.

Knowledge transfer sessions and regular collaboration will support the organization's internal teams as they experience future growth and face increasingly large data volumes. Sharing best practices and advanced technical insights has helped the company's internal teams stay aligned with database improvements and optimizations.

Reducing the table's disk read frequency and tuning the default autovacuum configurations has enabled several organizational benefits:

- FYI Docs' technology team can focus on delivering new, innovative product features.
- Sales, training, and support teams are confident that their customer success and revenue-driving activities are reliable.
- Cloud costs are now more predictable due to infrastructure enhancements on AWS.

Thanks to its proactive culture, innovative accounting platform, and skilled technical team, FYI Docs is positioned for continued hypergrowth. Its infrastructure is now better equipped to manage its skyrocketing data volumes and growing customer base as it scales.

About Pythian

Founded in 1997, Pythian is a global IT services company that helps organizations transform how they compete and win by helping them turn data into valuable insights, predictions and products. From cloud automation to machine learning, Pythian designs, implements and supports customized solutions to the toughest data challenges.

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