



Elevating Cloud Multi-tenancy for Scientific Discovery

Case Study



partner
network

SaaS Architecture
Competency

Elevating Cloud Multitenancy for Scientific Discovery



INDUSTRY

Scientific Data Cloud

SOLUTION

Optimized scientific data management with AWS solutions, implementing single sign-on, automating data pipelines, achieving substantial cost savings, and delivering top-tier service to pharmaceutical giants.

CLIENT

TetraScience



CloudGeometry

TetraScience

In the realm of scientific discovery, data is the lifeblood that fuels innovation, and TetraScience has always been at the forefront of harnessing the power of that scientific data. With a vast integration network and a mission to accelerate scientific discovery, TetraScience is a beacon in the life sciences domain. However, as they grew, so did the complexity of their data and systems, threatening their ability to enable data to empower innovation. Like any forward-thinking company, they faced challenges that required seasoned expertise and a hands-on approach.

The Challenge

TetraScience's platform offers its users the flexibility to either utilize their own Tetra Science instance or the Tetra Science Cloud. This dual offering means that the cloud has to be adept at handling multitenancy. Each lab, with its unique set of users and administrators, has to seamlessly function within a single tenant. The challenge was not just about ensuring smooth operations but also about enhancing user experience, security, and efficiency.

The Solution

Our first order of business was to refine their multitenancy situation. We implemented single sign-on (SSO) using AWS Cognito middleware, enabling users to leverage any third-party identity provider. This not only streamlined user access but also eliminated manual, error-prone, administrative tasks.

We also crafted a pipeline to work with their software that seamlessly moved data from equipment to S3, and from S3 to the database for in-depth analysis. This was no small feat, considering we were handling more than 1000 files per second. Our solution utilized AWS Glue, a managed Spark instance, ensuring that the data flow was both efficient and reliable, even when transferring hundreds of millions, or even billions of records while keeping the application running.

Enhanced User Experience

With the implementation of single sign-on using AWS Cognito middleware, TetraScience provided its users with seamless access, eliminating cumbersome manual administrative tasks.

Efficient Data Management

Our tailored pipeline ensured swift and reliable data movement from equipment to S3 and from S3 to the database, handling over 1000 files per second, optimizing data analysis processes.

Optimized Cost Management

By implementing resource monitoring tools and enabling microservices to autonomously manage their resources, TetraScience reduced operational costs by tens of thousands of dollars per month, ensuring that they and their clients could deliver top-tier services without straining their budget.

The Solution

This pipeline had to be completely automated; TetraScience doesn't have access to client AWS instances, so if something went wrong, the pipeline needed to detect and fix it on its own.

One of the most significant achievements of our engagement was the substantial cost savings. We built a tool for administrators to monitor and manage resources. Given that the development environment alone had a potential monthly cost of \$50,000 every month, our tool not only provided invaluable insights into resource allocation, it simplified the sometimes difficult and frustrating process of cleaning up AWS resources, leading to significant savings. Additionally, our solution allowed microservices to autonomously manage their resources, further optimizing costs.

The Benefits

Our engagement with TetraScience was not just about providing solutions; it was about driving results. With the improvements, TetraScience could offer a more robust, secure, and efficient platform to its users, which include giants like Pfizer and Merck. The enhanced multitenancy capabilities meant that TetraScience could cater to its diverse clientele more effectively, ensuring that each client, regardless of size, received top-tier service. Moreover, the cost-saving measures implemented ensured that TetraScience and its clients could maintain their cutting-edge services without compromising on budgetary constraints.

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CloudGeometry delivers expert technical services, helping our clients unlock the full potential of cloud-native open source tooling and commercial platform technologies.

With roots in Silicon Valley, we've seen firsthand what works (and what doesn't). Count on CloudGeometry to accelerate application modernization, Kubernetes adoption, developer enablement, secure multi-tenancy, AI/MLOps, DevOps automation and more.

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[CloudGeometry.io](https://cloudgeometry.io)
+1 408 444-7061
info@cloudgeometry.io
github.com/cloudgeometry

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100 S Murphy Ave #200
Sunnyvale, CA
94086 USA

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