

# SaaS Multitenancy for Putting Industrial Data to Work

## **Case Study**







partner network SaaS Architecture Competency

## GE Digital SaaS Multitenancy

Learn how CloudGeometry enabled GE Digital to scale and manage IoT data integration with a resilient SaaS architecture. Explore the benefits of their multi-tenant solution.



GE Digital

## **INDUSTRY**

Manufacturing & operations across sectors: aviation, energy, water / wastewater, automotive and more

## SOLUTION

Cloud-native secure multi-tenancy, billing & financial systems Integrations, migration, streaming data

## **CLIENT**

**GE** Digital



## **GE** Digital

In unlocking the potential of IoT and its rich data streams of data for heavy industry, GE Digital has pioneered digital transformation across long-established sectors of the global economy. Its scalable, asset-centric data foundation provides a comprehensive and secure multi-tenant application platform that can run, scale, and extend digital industrial solutions. It leverages SaaS design principles to span edge technologies, analytics and machine learning, big data, and asset-centric digital twins. Real-time stream processing unifies edge sensors and centralized information systems in an integrated cloud fabric.

#### The Challenge

An innovative business model for monetizing IoT across industries and devices promised to open new pathways to data leverage. However, established data integration approaches, even using containers, quickly exposed gaps in manageability and scalability. Neither big data warehousing nor microservices enabled sufficient agility to meet the rapidly evolving landscape of signals, sensors, and analytics across the company's diverse customer base. Application deployment hit DevOps hard, as the number of moving parts and the dynamic activities accelerated. Moreover, keeping up with the most innovative of its customers risked GE needing to manage an expanding network of tenant islands.

Secure multi-tier multi-tenancy Kubernetes runs multiple isolated applications on elastic infrastructure, leveraging namespaces and IAM security roles / policies.

IIoT workload deployment automation Automation of workload launch, scaling, rollbacks, etc. makes on-boarding new industrial customers a matter only a few human hours.

Full-stack fine-grained billing Customized CostToServe module calculates compute and storage resource utilization per tenant, per device and per user.



## **GE** Digital

## **The Solution**

- Software manageability and agility became the prime directive. To make the transition to a more future-proof technology strategy, the organization turned to the experts at the CloudGeometry. We worked together to design and deploy a SaaS architecture that could reach the next level of resilience and robustness. Kubernetes as service in Amazon (EKS) was used to deploy, scale, and operate all system environments. It's a virtuous combination of containerization and work orchestration.
- Ingestion of IIoT event payloads from both physical and digital devices are piped through Kafka streaming logic, accommodating different customers with different operational needs. This approach helps to quickly deploy the full-scale system for any new tenant; Docker, Jenkins, and Ansible drive a CI/CD toolchain. It also simplifies resizing different instances to fit workload needs dynamically.
- The company's platform is designed to offer a mix and match of IIoT workloads. One customer/tenant running on the platform in turn hosts multiple child entities as end-users and collections of IoT Device networks. This sort of multi-tier federation is also a key benefit of Kubernetes design principles. A separate ELK cluster is deployed per each tenant; it supports fine-grained billing, monitoring, and analytics.

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#### The Benefits

Migrating 12 microservices from EC2 to AWS EKS translated a SaaS business model into an operationally sustainable multi-tenancy IIoT workload portfolio offering.



## **Technology Solutions & Services** to build, optimize and run your cloud software and operations.

## **TECHNOLOGY SOLUTIONS**

**APPLICATION MODERNIZATION** 

Transform Legacy Systems for Future-Ready Innovation

**CLOUD COST MANAGEMENT** Optimize Cloud Spending for Maximum ROI and Efficiency

## FOUNDATION SERVICES

#### **CLOUD INFRA & OPS**

Robust Infrastructure Solutions for Seamless Operations

- DevOps as a Service
- Managed Cloud Operations
- Cloud Spend Optimization
- Resilience, Continuity & Backup
- AWS Well-Architected

#### AI & DATA

Achieve breakthrough automation and analytic insights via cutting-edge data strategies

#### SECURITY AND COMPLIANCE

Reinforce your cloud infra, workload, operations, and development end-to-end

#### **MODERNIZATION & MIGRATION**

Smooth Transitions to Modern Architectures with Minimal Disruption

- Application Modernization
- Kubernetes Adoption
- AWS Database Migration
- Data Engineering Operations
- Data Integration
- Data Migration
- Cloud Migration & Adoption

## ADVANCED SERVICES

#### **CLOUD-NATIVE DEVELOPMENT**

Build Scalable, Resilient Applications with Cloud-Native Technologies

- CI/CD
- Multi- Platform App Design & Development
- Cloud-Ready Teams
- Enterprise SaaS Modernization
- Multi-Tenancy SaaS
- B2B Customer Success Engineering

## AI/ML & DATA SERVICES

#### AI/ML & DATA

Leverage Advanced Analytics and Machine Learning to achieve exponential acceleration in the ROI of your data assets

#### **CLOUD-NATIVE OPERATIONS**

Streamline Operations with Advanced Cloud-Native Practices

- Platform Engineering
- Workload Management
- Monitoring & Observability
- Infrastructure Management

- AI/ML Engineering for Data Analytics
- Generative AI
- Traditional ML for Data Analytics
- AI/ML Development and and Data Science
- Data Engineering for MLOps



## CloudGeometry

San Francisco

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

New York

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.

- As AWS Advanced Consulting partners, our certified solution architects and platform engineers help address the range of challenges facing enterprise innovators and venture funded startups alike.
- The Cloud Native Computing Foundation has accredited us as a Kubernetes Certified Service Provider.
- We serve as charter contributors to the Linux Foundation Data & AI Commons (LF Data & AI), supporting a diverse, sustainable ecosystem for open source data and AI technologies.

Over the last decade, we've built and deployed hundreds of big, fast full-stack apps with well-engineered cloud infrastructure across industries: Financial Services, Industrial Automation, Healthcare, AdTech, Consumer-grade Mobile, smart devices, and more.

From enterprise upgrades to data engineering to cloud-native scale-out, CloudGeometry helps you plot the shortest path across all dimensions of modern cloud software engineering.



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## Advanced Consulting Partner

SaaS Amazon Kinesis AWS Lambda Amazon Redshift AWS Database Migration Service







# CloudGeometry

Expert Platform Engineering & DevOps

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AI & Machine Learning Data Services

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