Clearscale

Case Study

Turning an Unstable IoT Platform Into a Reliable Lab Monitoring System

Clearscale redesigned the architecture on AWS, stabilizing performance, reducing costs, and ensuring accurate real-time lab data.

Client Profile

Industry   Healthcare and Life Science

Technology   IoT   Data & Analytics   Manufacturing

Migration and Modernization

Overview

A scientific monitoring provider faced performance and stability challenges with its IoT platform. Clearscale redesigned and migrated the system on AWS, stabilizing data flows, improving read performance, and reducing operational costs.
The result: reliable, real-time access to lab data that researchers could trust.

Meet Our Hero: Safeguarding Critical Lab Envrionments

This company provides laboratory monitoring systems that collect real-time data from thousands of connected devices. Researchers and lab managers rely on the system to track critical conditions, ensure compliance, and protect valuable experiments.

However, the platform's growing complexity created risks. Performance issues made data retrieval unreliable, and cost inefficiencies were mounting. Manual processes further limited the team's ability to scale. The organization needed a more stable, automated IoT solution that could handle its expanding fleet of devices and deliver accurate data to scientists when they needed it most.

The Goal

- Stabilize the IoT monitoring platform
- Improve data read performance at scale
- Optimize costs with more efficient architecture
- Support complex monitoring scenarios
- Automate deployments for faster, more reliable releases

The Challenge

Challenge 01

IoT platform instability created unreliable data access

Challenge 02

Data read performance was too slow for real-time research needs

Challenge 03

Operational costs were rising with inefficient processes

Challenge 04

Complex monitoring scenarios lacked adequate support

Challenge 05

Manual deployments slowed development and increased risk

The Solution

Clearscale rebuilt the IoT architecture on AWS, addressing performance, scalability, and cost challenges.

Step 01: Device Management and State Handling

- Implemented IoT Shadows to synchronize and stabilize device states
- Built workflows to suppress redundant signals and handle complex monitoring scenarios

**Step 02:** Data Flow and Storage Optimization

- Streamlined data ingestion with AWS IoT Core and Kinesis Data Firehose
- Stored high-volume time-series data in Amazon Timestream
- Integrated Amazon S3 for secure, scalable storage

Step 03: APIs and Querying

- Enhanced APIs with Amazon API Gateway
- Enabled scientists to query data using Amazon Athena for real-time insights

Step 04: Automation and Fleet Organization

- Automated deployments with AWS Lambda-based CI/CD
- Organized devices into a fleet structure for easier management
- Reduced manual intervention with scalable automation
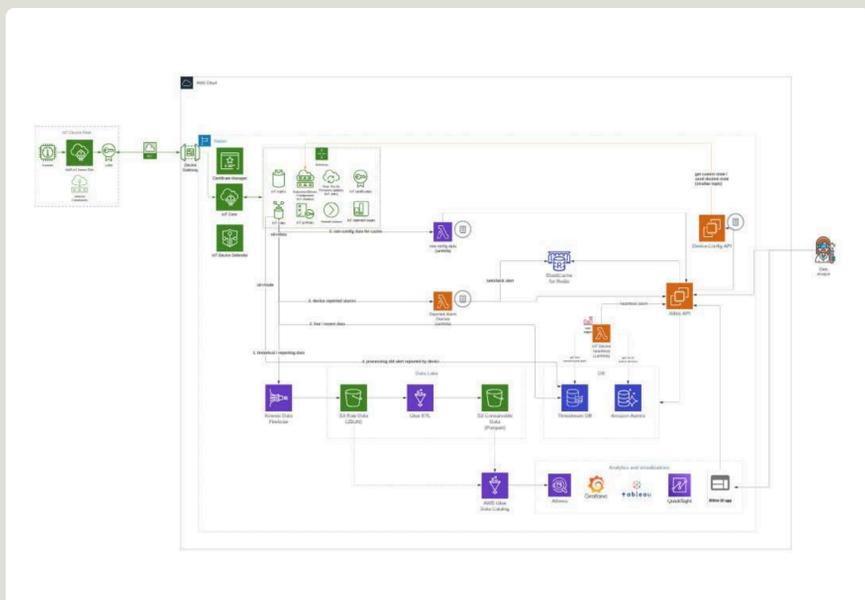
The Impact

Stabilized IoT platform, ensuring reliable data collection

Improved read performance, supporting real-time scientific analysis

Optimized costs through efficient use of AWS serverless services

Supported complex monitoring scenarios, enhancing lab reliability

Automated deployments, reducing risk and accelerating releases

Turn Cloud Chaos Into Clear Results On AWS

Clearscale helps organizations break free from cloud chaos and experience clear results on AWS. If your business depends on monitoring or managing connected devices, let's build a smarter foundation together.

Talk to an Engineer