

Romet Builds Automated IoT-based Solution on AWS, Accelerates Time-to-Market

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Romet provides measurement services for natural gas utilities all over the world. Romet's end-to-end solution consists of edge-point devices, data-gathering modules, and a communications platform for transmitting data back to end users.

Romet recently decided it wanted to enhance its data collection and distribution capabilities by taking advantage of IoT technology. Romet specifically wanted to leverage the Amazon Web Services (AWS) platform to build a robust cloud data infrastructure that could scale efficiently without compromising security. The company decided to bring in ClearScale, an AWS Premier Consulting Partner, to design the ideal big data solution for Romet on the cloud.

"We knew that our company was poised for significant growth and we needed the right partner to help us build a scalable data management platform on AWS. ClearScale designed and implemented a solution to collect and analyze the data generated across our network of IoT devices, allowing us to serve our clients even more effectively."

Reza Soudmand, Director of Product Development, Romet Limited

The Challenge

Romet saw significant growth potential in its future. The natural gas solutions provider expected to onboard many new clients in the near future, creating urgency around the need to upgrade its data management infrastructure. Romet specifically wanted to centralize activities related to device management, device configuration, data storage, and analysis. The company also hoped to enhance its customer portal for sharing data directly with clients.

Romet set up a smart data-gathering system around its gas meters. Three different, yet interdependent components, would be linked together during the commissioning process and installed at each location. To complement its physical IoT infrastructure, Romet also needed digital infrastructure that could handle its projected data volumes. In other words, the company needed a cloud data lake that could store every data point collected by mechanical meters. This data would need to be accessible in some form to Romet, its utility customers, and their end users.

One of Romet's top priorities was implementing a solution that was secure, yet customizable, so that people across different organizations could view and pull only the data they were permitted to access. Given the scope of the project and the many technologies involved, Romet decided to bring in a cloud expert who could ensure a successful execution across the board. ClearScale had the AWS specialization and experience Romet needed to feel confident moving forward.

The ClearScale Solution

Romet asked ClearScale to deliver three solutions:

- An **IoT Device Management MVP** to configure and manage devices in AWS
- An **IoT Data Pipeline MVP** to implement an ETL process with comprehensive data analytics and consumer segregation for future data science operations
- An **IoT Data Portal MVP** to customize device controls and share data

In addition, Romet wanted as much infrastructure as possible to be cloud-native.

The IoT Device Management MVP

The first step in configuring Romet's device management solution was to set up a streamlined device commissioning process. ClearScale had to ensure that any new physical devices were pre-configured properly before connecting them to [AWS IoT Core](#). The ClearScale team decided to follow a [Just-In-Time Registration \(JITR\) approach](#) that involved creating a Certificate Management API. The API wraps around the AWS IoT API and includes methods to address both CA and Device certificates.

For configuration purposes, ClearScale used AWS IoT's Device Shadow service. Romet's IoT devices weren't designed to maintain a constant connection to the cloud, so ClearScale had to figure out a way to streamline synchronizations. By using a Device Shadow, ClearScale enabled data to travel successfully from Romet's devices to the cloud when online. At the same time, ClearScale set up the solution so that device administrators could send configuration requests back to devices whenever necessary.

The IoT Data Pipeline MVP

For Romet's IoT Data Pipeline MVP, ClearScale proposed two different types of storage: Amazon S3 for raw data and Amazon DynamoDB for data that would be available through the customer portal. ClearScale configured AWS' IoT rules to read incoming data and redirect it to the [Amazon Kinesis Data Firehose](#) service. Then, serverless [AWS Lambda functions](#) take this data, validate it, and save it in both S3 and DynamoDB tables. Romet's new pipeline automatically executes these workflows so that engineers don't have to do this manually.

The IoT Data Portal MVP

The last MVP ClearScale delivered for Romet was a data portal that utilities could use to evaluate device readings and overall performance. ClearScale tackled this part of the project with multi-tenancy in mind by setting up six different roles.

Each role comes with pre-defined visibility and access permissions. All user profiles are stored in [AWS Cognito](#). Some users are only allowed to read narrow data feeds while others have access to larger groups of devices and can even trigger actions, such as requesting on-demand reporting or performing remote device reboots.

The Benefits

Thanks to ClearScale's efforts, Romet now has a scalable, secure, and automated IoT solution that it can trust going forward. On the technical side, Romet's infrastructure supports multi-tenancy and segregates data according to role-based access controls. The API ClearScale built also configures new devices remotely and automatically, saving the natural gas solutions provider from having to visit client sites in person.

By implementing these MVPs on AWS, Romet's data infrastructure is also highly cost-efficient. ClearScale implemented managed services and serverless tools, which reduce how much time engineers have to spend maintaining IT infrastructure. Romet can also get customers up and running more quickly, which means it can grow revenues faster.