

Kalkitech Helps Smart Cities Integrate Data from Diverse Smart Meters with Kalki.io Solution on AWS



Executive Summary

AWS Smart City Partner Kalkitech developed the Kalki.io Utility Data Hub to improve visibility into energy consumption and accounting with automated monitoring and alerts for any type of field device. Kalkitech works with 1,000 global customers, including utilities and private sector companies, to enable data acquisition and IT transformation at the edge and on the cloud. The Kalki.io data hub Neon multi-tenant solution runs on Amazon EC2, using Amazon S3 for data storage and archiving and Amazon CloudWatch to monitor resource utilization.

Many utilities aspire to provide smart services to consumers, but legacy hardware can hold them back from digital innovation. Even when a utility's IT systems are regularly upgraded, the lifecycle for field assets such as energy or water meters is usually 10–20 years. Hardware vendors, communication protocols, and interface types also vary significantly, making modernization difficult.

Furthermore, legacy hardware requires manual monitoring and reading, which leads to long billing cycles. More frequent, detailed visibility into data collected from meters could influence a customer's energy consumption and eliminate waste. Visibility is also critical for utilities to detect and fix energy leaks and to ensure a stable power supply across the grid.

Providing Standardized Cloud Interface via a Device-Agnostic Data Hub

Kalkitech's [Kalki.io Utility Data Hub](#) solves the issue of diverse legacy hardware with Internet of Things (IoT) technology. Kalki.io is a device-agnostic middleware that uses IoT/protocol adaptors to collect meter data from proprietary field devices and send it to the Amazon Web Services (AWS) Cloud for monitoring. The solution is one of many offered by Kalkitech, a digital transformation specialist and an [AWS Public Sector Partner](#) with 24 years of experience helping industries build connected solutions at the edge.

"Kalkitech takes away the burden of integrating data from different devices communicating on different protocols," explains Nirmal Thaliyil, assistant vice president of Product Management and Marketing at Kalkitech. "Kalki.io delivers a standardized interface that our customers can use as a foundation for building any type of application, such as a data lake or analytics tool, or a mobile app for consumer billing." Kalki.io offers four product segments for customers, including utilities, smart cities, commercial, and industrial companies. One of its primary products currently in use in smart cities is the Metering Headend, used for remote acquisition of data from utility meters for power, water, and gas.

Achieving a Low Cost of Ownership with a Highly Scalable Solution

For smart city projects requiring a low cost of ownership, the Neon deployment model of Kalki.io offers the most economical cost per device. "Kalkitech's Kalki.io Neon is a highly scalable, multi-tenant solution hosted on AWS. Customers don't have to maintain the platform and can roll out Kalki.io immediately without dedicating a data center or upskilling team members," says Thaliyil. A web-based console simplifies configuration, access, and monitoring for system administrators using Kalki.io within utilities.

Kalki.io's Neon software as a service (SaaS) is hosted on [Amazon Elastic Compute Cloud](#) (Amazon EC2) instances, which Kalkitech monitors using [Amazon CloudWatch](#). Meter data—including billing load, energy consumption, and voltage—is transferred every 30 minutes to [Amazon Kinesis](#) and [Amazon Simple Storage Service](#) (Amazon S3) and archived for up to five years in accordance with local regulatory requirements. Data can also be pulled from any type of meter data management service and pushed to AWS services such as [AWS Internet of Things \(IoT\) Core](#), [AWS IoT Analytics](#), and [Amazon Timestream](#) for further processing and analytics.

Meeting Local Data Security and Regulatory Requirements

With [AWS Regions](#) across the globe, AWS is recognized as a highly secure cloud platform that ensures compliance with data security and residency requirements for smart city projects. Plus, Kalki.io has no exposed public gateways, which reduces the threat of attacks.

Thaliyil says, "On a global level, AWS exceeds the requirements put forward by our customers in the public and private sectors. This was one of the reasons we built Kalki.io on AWS."

About Kalkitech



Kalkitech has more than 24 years of experience delivering digital transformation solutions to energy and utility customers throughout the world. Its expertise in IoT and edge technology helps industries capture and use field data to boost operational efficiency. Kalkitech solutions, such as the Kalki.io Data Hub middleware, are scalable and reliable, and they can support millions of managed and unmanaged assets, legacy devices, and software applications.



Improving Operational Efficiency and Customer Satisfaction

With Kalki.io, manual monitoring and maintenance are things of the past. Push notifications go out when device tampering or technical issues are detected, and customers can monitor device connectivity as well as network health status from a central dashboard or command center.

In the case of utilities and smart cities employing the Kalki.io Metering Headend, there are both internal and customer-facing benefits. On the back end, operational efficiency—including energy accounting, a system that measures, analyzes, and reports energy consumption—increases through enhanced visibility. Smart city and utility customers can detect and remedy potential energy leaks to improve sustainability. Furthermore, consumer satisfaction increases because Kalki.io facilitates faster power restoration in case of outages and a more stable overall power supply. Utilities receive automated downtime notifications and can quickly troubleshoot when supply interruptions occur.

Saving Energy with Higher Visibility into Consumption

In addition to gaining a reliable power supply, utility consumers get clearer visibility into consumption. Kalki.io can easily be linked to an online usage portal or mobile app where consumers can access their meter energy usage profile anytime. This helps smart city residents better control their usage by monitoring and adjusting energy consumption to be more environmentally conscious and cut costs. Utilities can also increase their billing frequency and accuracy through real-time readings from field devices.

Receiving Marketing Support from the AWS Smart City Program

Kalkitech continues to work with AWS technical and marketing teams to reach a wider audience for the Kalki.io platform. Recently, the company participated in the AWS Smart City Partner Pilot, receiving sandbox funding to build a test bed for large-scale simulations, headend system stress tests, and million-meter scalability testing. Thaliyil says, “Scalability is a major bottleneck for most headend solutions on the market, so the test bed really helps us showcase our product’s scalability and data availability to potential customers.”

Thaliyil concludes, “AWS has helped us in many ways, including through participation in webinars and access to Market Development Funds that we used to run successful online ads. We’ve generated many qualified leads and are converting new opportunities on an ongoing basis.”