Lumo Powers Smart Agriculture with HiveMQ

At a glance

What do they do?

- Support growers to help them conserve time, money, and water
- Offer a smart irrigation application that automates irrigations, detects faults, and delivers precise volumes of water

Challenges

- Resource constrained, solar powered devices
- Limited connectivity in remote areas with rolling topographies

Solution

- Fully-managed HiveMQ Cloud is maintained and configured by the HiveMQ team
- Integration with Kafka, Postgres, and Amazon S3 to keep data pipelines flowing from edge to cloud

Results

- Cut several months of development time and sped time-to-market
- Acquired 19 customers in the first year to market, including some of the world's largest growers

Helping Growers Conserve Time, Money, and Water

Lumo, a smart agtech company founded in 2022, is committed to supporting growers with cutting-edge technology to help them conserve their most precious resources: time, money, and water. The Lumo One smart valve uses sensors, wireless connectivity, and computing to deliver precise water volumes, detect leaks, and optimize irrigation system health. Ultimately, the goal is to enhance farm productivity, water security, and food production for future generations.

Lumo set out to leverage IoT technology to power the Lumo One smart valve and revolutionize irrigation, providing growers with automated solutions that conserve resources and improve overall farm efficiency. The growers that Lumo serves operate in remote areas with rolling topographies and heavy foliage. This posed a challenge for Lumo with respect to remote device connectivity, edge-to-cloud data flow, security, and scalability, which led them to adopt HiveMQ as the IoT messaging foundation for their smart irrigation application.

Laying the Foundation for a Smart Irrigation Application

The Lumo One smart valve precisely controls and measures how much water is applied to crops. The device is rugged, with a built-in computer and flow meter, and is wirelessly connected.

Reliability and low-latency data transfer is critical since an erroneous irrigation will negatively impact crop health and the livelihood of growers trusting Lumo to manage their water delivery.

In order to enable an internet-connected, solar powered device in the most remote edge locations, Lumo needed an IoT messaging foundation designed for constrained devices and high reliability.

MQTT is the leading IoT protocol and fits the bill since it is lightweight and efficient, supports bi-directional messaging between devices and the cloud, can scale to millions of connected devices, and works well over unreliable networks. MQTT is also security-enabled, but Lumo needed an enterprise-grade MQTT platform to pull the full features and functionality out of MQTT with the utmost security and reliability.

Cihan Ucar, CTO of Lumo, had worked with HiveMQ, the leading MQTT platform, previously at Flo (acquired by Moen), and knew what he needed as he built out his IoT messaging infrastructure. "I had worked with HiveMQ previously so I knew their product met our needs, and the team's responsiveness was a big reason I went with them again at Lumo," said Ucar.

"More importantly, we chose HiveMQ because growers' livelihoods depend on Lumo's ability to alert them to issues with their irrigation systems. The difference between detecting and addressing a catastrophic leak within 1 minute, instead of 1 hour, can be hundreds of thousands of gallons of water wasted and thousands of dollars of crop and/or equipment damage."

HiveMQ met Lumo's technical requirements including full MQTT 5 support and the ability to run on Kubernetes with full automation. HiveMQ could integrate with Kafka, Postgres, and Amazon S3 to complete their tech stack and play a pivotal role in keeping data pipelines flowing from the Lumo One smart devices at the edge to the cloud.

Above all, HiveMQ was secure and reliable, which would allow them to build the Lumo One smart valve in a way that would foster customer trust. "We want our customers to know we offer 100 percent reliability and efficiency, and we are not a risk to them because they know we are working with HiveMQ, the best in class. Farmers trust us, and we trust HiveMQ to give us 100% reliability, so we can deliver water like we promised."

Deploying HiveMQ as a Managed Service

Lumo uses AWS as its primary cloud provider, and opted for HiveMQ Cloud, a fully managed enterprise service marked by dedicated support, responsiveness, and a collaborative approach. The fully

managed service is maintained and configured by the HiveMQ team.

"HiveMQ really became an extension of our team," said Ucar. "They helped us to overcome technical challenges like latency and integrating with our enterprise and IT systems so we could get the solution to market faster. We love the quality of dedicated support and responsiveness. You don't see this much customer obsession and responsiveness at many other companies of this size."

Deploying with a dedicated HiveMQ Cloud improved the stability of the data pipelines and saved Lumo a substantial amount of engineering time. Cutting several months of development time helped them to mature their tech stack rapidly, so they could deploy engineering resources on their core business challenges. For instance, they are building highly requested features such as Flow Vision for comparing irrigation events, irrigation scheduling logic, and reporting capabilities as the data pipelines are more secure.

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> *Cihan Ucar, CTO of Lumo*
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In the first year to market, Lumo acquired 19 customers, including some of the world's largest specialty crop growers and 3 of the top 5 wine grape growers globally. The solution is scalable, so as Lumo adds customers rapidly in their growth phase, it can grow with them seamlessly.

"Lumo is doing some great things to save water and help farmers be more efficient, which is made possible with the help of solutions like HiveMQ," said Ucar. "Thanks to HiveMQ and its powerful extensions, we could expedite our go-to-market time to deliver a unique and disruptive solution."