

HiveMQ and

Transportation & Logistics

At a glance

Industry

Transportation and Logistics

Challenges

- Message routing system could not support peak season and needed daily restart
- No insight into the data, finding a problem was like a needle in a haystack
- Frequent downtime meant customers couldn't track packages in real-time

Results:

- New infrastructure supports 150,000+ drivers for real-time package tracking, text messaging, and route optimization
- Reliable real-time data delivery satisfies 743.5 million customer tracking requests per day
- Continuous delivery route optimization saves up to 10 million gallons of fuel and \$50 million per year

HiveMQ Enables Package Delivery Tracking and Route Optimization for Large Shipping Company

Modernizing Driver Communications and Package Tracking

More than 150,000 drivers at one of the largest shipping companies in the world use a handheld device to scan packages, track deliveries, and receive optimized delivery routes.

The modern, fully connected version of the system was deployed in 2018 with a traditional message broker that supported MQTT, the leading protocol for the Internet of Things (IoT). However, as the shipping and logistics company scaled and especially during their peak season between Black Friday and Christmas, the number of devices, connections, and topics being created overwhelmed the broker, causing a lot of headaches.

The message broker was breaking frequently, especially as loads increased, and every time it didn't work there was a delay in real-time data for customers.

The previous solution also had very little visibility or dashboarding capabilities, so finding the source of a problem was like finding a needle in a haystack. If 100,000 users were connected, and one of them was having a problem, with limited visibility the issue was very manual and time-consuming to solve.

The shipping company spun up additional pieces in the architecture to make it work temporarily, but it was still unstable. They knew it wouldn't be able to handle the next peak season so they started to look at alternatives and evaluated enterprise-grade MQTT platforms that could solve these challenges.

Finding the Right IoT Messaging Solution

The company heard about HiveMQ via its MQTT expertise, and received a trial license. They had a stress test tool they had developed in-house and immediately ran HiveMQ against their current message broker. The current message broker broke under the stress test. HiveMQ had no problems whatsoever, so they doubled the load and again, it performed perfectly. That's when they knew this was the middleware solution that would help them get their data from driver devices to backend systems and back again with no issues.

There are a few other reasons the company ultimately ended up going with HiveMQ after further evaluation. First, they were looking for a platform made for MQTT and tailor-made for their sorts of workloads with lots of devices and connections. MQTT was the right protocol because it is lightweight and perfect for IoT, and HiveMQ had the right feature set to enable it for their use cases.

The HiveMQ control center solved the visibility issues they had with their previous solution, giving them the tools they needed to manage the movement of the data and find issues quickly. Security was another important consideration and HiveMQ had all of the modern authentication and authorization schemes they could want in a product.

Most importantly, they knew HiveMQ could scale thanks to the load test, which meant it would make it through a peak holiday season with ease and scale with any number of additional use cases.

Shipping Company Deploys HiveMQ to Support Driver Messaging, Package Tracking and Route Optimization

Once the company chose HiveMQ and did their test in-house, they were surprised at how quickly they got it up and running. They were set up in about a day, running and handling all of their loads.

The shipping company is using the HiveMQ MQTT Platform to power multiple use cases including:

1. Driver communication via handheld devices
2. Package tracking

3. Route optimization

4. Asset Tracking, Route Optimization, Real-Time Monitoring

These functions are essential to the way that the company and their drivers do business every day. Drivers use the text messaging function frequently for communicating with the package centers about details such as a package left at the shipping facility. Package tracking information is updated and emailed to customers in real-time.

The route optimization system is especially innovative and routes are delivered to drivers on their device every morning via HiveMQ. A driver makes between 120-175 stops a day and the system constantly calculates routes for every combination of those stops to ensure top efficiency, evaluating more than 200,000 alternative ways to run a single route. In turn, it reduces miles driven, fuel consumed, and carbon emissions.

Improved Efficiency and Customer Experience with HiveMQ

The company knows they're doing two things with HiveMQ: improving customer experience and increasing efficiency. With the old solution failing frequently, customers no longer received real-time access to their shipping information. Real-time updates are what customers expect from a leading logistics company and now HiveMQ allows them to deliver on that promise every day.

In fact, the solution enables the company to satisfy 743.5 million customer tracking requests per day. The platform throughput is more than 5 billion messages per month, and most importantly, the system is running with 100 percent uptime.

The company has saved 100 million miles and 10 million gallons of fuel per year with the system for dynamic route optimization that HiveMQ allows to be delivered to all 150,000 driver devices dynamically throughout the day. The solution is estimated to save them up to 10 million gallons of fuel and \$50 million per year.

Now that HiveMQ is set up as the foundation for data movement at, there are many other use cases in the works and HiveMQ will be the messaging choice.