HIVEMQ

Berlex Connects Traffic Signals to the Cloud with HiveMQ

Berlex

Location
Kungälv, Sweden

Application
Portable, cloud-based traffic signals

Key Challenges
- Reliable, high-availability control and monitoring of traffic signals from the cloud.

Results
- Successful deployment in Sweden and Norway with planned European expansion.
- Real-time information delivery with constant monitoring.
- High level of customer satisfaction and very positive response from current users.

BERLEX

For nearly 50 years, the Swedish company Berlex has been designing and manufacturing new ways to improve traffic safety. From offices in Kungälv, Stockholm, and Gothenburg, Sweden, the company offers comprehensive solutions that are making traffic closures safer for everyone on the road. Berlex deploys HiveMQ to power its newest generation of cloud-based portable traffic signals. Their innovative R6 traffic signal is one of the first mobile traffic signals to be controlled by a cloud-based service. Berlex's connected solution allows customers to monitor the new traffic signals on a smartphone, computer, or tablet anytime and from anywhere.

HiveMQ Provides Key Integration with Existing Microsoft Azure Services

The suitability of the MQTT protocol for the Berlex R6 connected traffic signal was clear from the start: "We favor MQTT for IoT solutions. It is the universal protocol that almost every computer language can implement and our hardware partner, Mobile Integrator, uses MQTT in most of their products. The MQTT protocol has a lot of nice features and is growing quite big with the Internet of Things." said Jonas Inghammar, CEO of Effectsoft Halmstad AB, Sweden, and system integration lead for the Berlex R6 project.

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> *Gustav Nyblom, CTO, Berlex, Sweden*

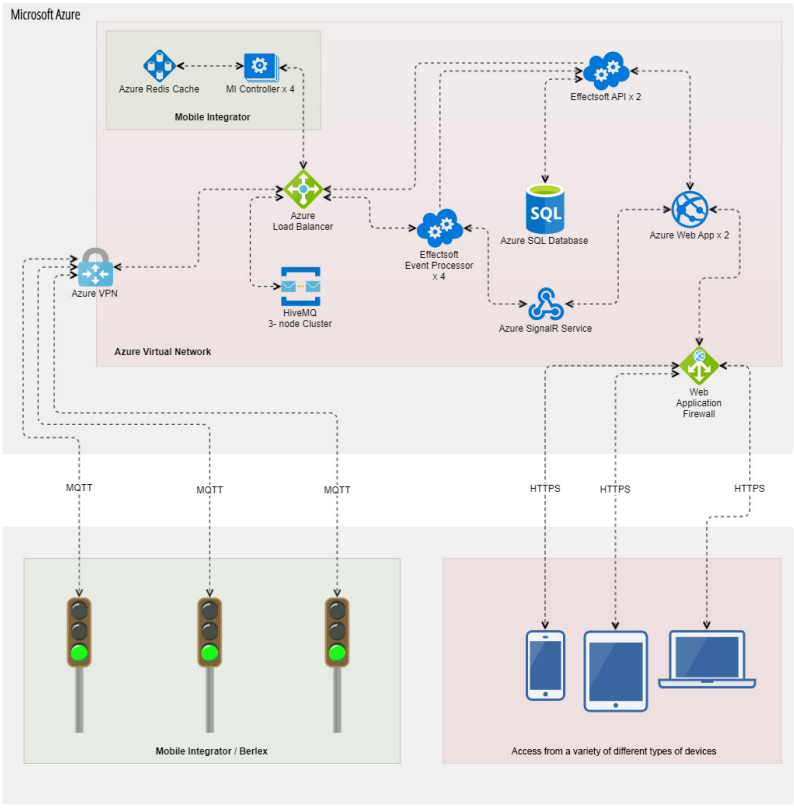
Since Effectsoft uses a Microsoft Azure infrastructure, the original plan was to implement the new Berlex solution with Azure IoT Hub. However, Azure IoT requires the use of transport layer security (TLS). The TLS requirement ruled out the use of Azure IoT in the R6 project for two fundamental reasons: First, the modems in the traffic signals have weak CPUs that are not built to process TLS; secondly, Berlex traffic signals operate on a private network that doesn't need TLS encryption. The search for an alternative technology quickly led Berlex to

HiveMQ. The choice was easy. The HiveMQ Enterprise MQTT broker not only offered the right fit for the Berlex solution but also brought other useful features to the project:

- HiveMQ's ability to run without TLS reduces the need for greater computing capacity in each traffic signal and satisfies a core requirement of the Berlex project.
- HiveMQ's support for MQTT 5 shared subscriptions gives Berlex and Mobile Integrator the flexibility they need to set up MQTT clients on Azure that share subscriptions to relevant topics.
- HiveMQ clusters can be configured with ease to achieve the high availability the Berlex use case requires.
- Each HiveMQ cluster is able to consolidate the log files of all its cluster nodes onto a central Syslog server for easier monitoring and troubleshooting of the entire system.

Berlex Achieves Near Real-time Latency and Always-on Reliability with HiveMQ

Berlex R6 traffic signals are outfitted with 3G modems that operate in a private mobile network and communicate with the world over special Sierra Wireless SIM cards. Endpoints from Sierra terminate in Berlex's Azure environment. The entire Berlex system runs in an Azure virtual network with a central load balancer that distributes work to a 3-node HiveMQ cluster.



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Berlex's connected solution simplifies the process of setting up traffic signals and reduces the time that their customers need to spend in dangerous traffic work zones. The system enables customers to carry out numerous tasks such as checking the battery status of a traffic signal or performing an inspection, remotely, with no need for risky and time-consuming on-site intervention.

Each portable R6 traffic signal is equipped with radar that allows the signal to see traffic. Sensors within the signals publish detailed information on the current status of the signal as MQTT data. Within the Berlex Connect cloud service, HiveMQ captures the continuous stream of MQTT data from each signal and shares the information with the appropriate subscribers. To prevent interruption of the traffic signal operation, high availability is essential for the system. Berlex customers monitor the real-time information on individual portals with customized user roles that fit their specific use case.

Throughout Europe, there are big initiatives to implement dynamic sharing of traffic information. For example, smart traffic systems that ensure the quick passage of emergency vehicles or GPS-based queue warning systems that give drivers real-time information about upcoming traffic conditions. Berlex is one of the few companies in the world that can provide that kind of information.

Jonas Inghammar, CEO, Effectsoft Halmstad AB, and system integration lead for the Berlex R6 project, concludes: "*When you connect things to the cloud and start collecting data, it opens up many new and interesting ways to create solutions. MQTT and HiveMQ are important enabling technologies that ensure our system can integrate with other traffic infrastructure systems. The new cloud approach we have implemented with Berlex opens the way for a lot of innovation.*"

Fast and Reliable Messaging for Connected Devices

The HiveMQ enterprise MQTT platform can help power your connected assets.

We are ready to make HiveMQ and MQTT the core part of your infrastructure to improve efficiencies and implement predictive maintenance in addition to data integration for machine learning.

Contact us to discover how we may be able to help create your next IoT project.

Contact us sales@hivemq.com
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