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AN INFLUXDATA CASE STUDY

SeaBits Leverages InfluxDB to Monitor Boat Performance

SeaBits

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Powerful Data Visualizations Give Boaters Timely Insights

Company in brief

SeaBits is a platform for marine electronics that empowers boat owners to understand the working condition of their boat and its components. The SeaBits community of developers shares tools and tactics for collecting, analyzing and acting on the data their vessels produce.

Case overview

A SeaBits community member used InfluxDB to build an app that connects disparate sources of boat data to powerful analysis tools. The monitoring app connects data from the boat's instruments to a unified dashboard that gives boaters information about critical metrics such as weather conditions, boat speed, equipment status and engine performance.

The business challenge

Boat instruments have produced real-time data for decades — for example, vessel direction, windspeed and engine temperature. However, to truly understand what's going on with a boat and to optimize its performance, boaters also need historical data and a way to navigate it.

The plugin **Signal K to InfluxDB** connects data from the marine open-source standard Signal K to the time series database InfluxDB. Powered by InfluxDB, the plugin enables boaters to easily identify patterns in their data in real time and historically. They can view sensor data over time and combine it to understand why they have a problem or a performance improvement opportunity.

Technologies used: Grafana, InfluxDB, NMEA 2000, Signal K.

The technical challenge

Even modern boats tend to have a motley collection of specialized sensors onboard, often based on proprietary or archaic technologies. The boat neworks have slow upload speeds, unreliable connections and scarce remote access. Many boaters deploy DIY gadgets as a workaround, adding to the network complexity.

Internet access on the water is limited to LTE or 3G connectivity, so boaters with rich data needs must downsample at the source to avoid choking their connection with streams of data.

Boaters also need to combine their sensor readings with data from other sources like GPS and weather to truly understand what is going on with their systems at the time.

The solution

SeaBits founder Steve Mitchell created the community in 2007 to empower marine enthusiasts to share information and tools for managing technology on their vessels. It was through that community that he met Teppo Kurki, a software engineer who operates a 35-foot boat as a hobby. The sensors on their boats, like most, run through a server that uses an open-source marine data format called Signal K. Boaters can buy a purpose-built Signal K black box or run it on computers as small as a Raspberry Pi. Signal K is based on Node.js, which means it can pass data to standard web technologies.

Teppo used Signal K to collect and transform the data into a single format then built a connector in InfluxDB to aggregate and analyze the data. That empowers boaters to understand their system performance. For example, a real-time alert for high engine temperature might be benign or it might be a symptom of a big problem. To figure that out, boaters need access to patterns of data.

With the plugin Signal K to InfluxDB, Steve and Teppo used Grafana dashboards to show the performance of individual systems historically and in real time. They can also combine data sets to understand how environmental factors such as weather and geography impact their systems. With InfluxDB, they are able to transform the data and use it to trigger alerts.

> *“From the data that Signal K sends in, you can create just about anything you want in terms of visualization. You can zoom in on particular things and ask: "Hey, why was the engine room hot then?”*

Steve Mitchell, Founder, SeaBits

Results

This setup allows boaters to visualize their situation in dashboards — for example, a weather dashboard that includes data from both onboard sensors and external forecasts, or an electrical system dashboard that shows the status of onboard solar panels and batteries. For the engine temperature alert, Steve was able to compare the time-stamped alert with windspeed data and discovered that his engine was straining against a 45-knot headwind at the time.

What’s next

The team is excited about building out geographic features so they can run queries such as: Show me all the data I generated while my boat traversed a given geographic area. They also want to use InfluxDB plugins to translate measurements automatically.

About InfluxData

InfluxData is the creator of InfluxDB, the leading time series platform. We empower developers and organizations, such as Cisco, IBM, Lego, Siemens, and Tesla, to build transformative IoT, analytics and monitoring applications. Our technology is purpose-built to handle the massive volumes of time-stamped data produced by sensors, applications and computer infrastructure. Easy to start and scale, InfluxDB gives developers time to focus on the features and functionalities that give their apps a competitive edge. InfluxData is headquartered in San Francisco, with a workforce distributed throughout the U.S. and across Europe. For more information, visit influxdata.com and follow us @InfluxDB.