



Earth Sciences

Vaisala Switches to Qumulo File Fabric (QF2) to Handle Growing Volume, Variety and Velocity of Data for Modeling and Forecast

A global leader in environmental and industrial measurement replaces legacy storage with QF2, a modern, highly scalable file storage system, to stay ahead of performance and capacity issues from growing flood of environmental sensor and modeling data.

A Flood of Data

Vaisala has a clear mission: ensuring reliable environmental observations for better decision making. As a global leader in environmental and industrial measurement products and services, the company's 1,600-plus employees work tirelessly with customers to increase the precision of observational data and resulting insight to improve safety, efficiency and return on investment across a broad range of industries, from transportation and energy to agriculture and life sciences.

Vaisala's energy division takes this mission to heart, performing modeling and forecasting services for efficient planning, assessment and deployment of renewable energy systems. Working with everything from in-the-field sensor data to the advanced weather and climate models of national and international weather services, Vaisala helps clients project potential solar, hydro and wind power generation 10 minutes to 30 years into the future.

All of which creates an interesting data processing and storage challenge: efficiently managing a vast volume of tiny sensor measurements, combined with huge and massively complex forecasting models, to generate meaningful assessments on the ground. And, in fact, above it. "Our simulations cover a cube of space across a rectangle of land, all the way up to the clouds – and then over decades of time," says Paul English, IT manager, Energy R&D for Vaisala. "As the resolution of those models and sensors go up, the volume, variety and velocity of that data increases exponentially."

Vaisala needed a system that was optimized for a flood of both small and large files, and unfortunately the company's previous legacy storage vendor wasn't up to the task. But more importantly, the system was a black box when it came to understanding the data storage and usage.

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"We found ourselves constantly fussing with the previous system, moving data around as 'SmartPools' filled up — trying to understand what's being used and what's stored where, running reports that were out of date before they even finished — it was frustrating," English says.

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Solution Overview

- 4 Qumulo QC208 hybrid storage appliances
- NFS and REST protocols
- HPC cluster
- Qumulo Care enterprise support

Key Benefits for Vaisala

- Speeds performance to handle growing volume and velocity of data
- Scales throughput and capacity with each additional node
- Provides real-time data analytics for instant insight and visibility of file usage, capacity and performance
- Reduces management thanks to high reliability and intuitive dashboard
- Increases ability to leverage data through REST-based API
- Delivers proactive Qumulo Care support for uninterrupted operation

His team knew that as its large scale machine data processing and storage load continued to grow, those problems would only get worse. Thus began the search for a new storage solution.

Achieving Insight at Scale

Vaisala's HPC architecture and file-oriented modeling puts a premium on storage for linear scalability of capacity and performance. That limited its options, so the company certainly considered a simple refresh of the previous scale-out NAS system. English also started conversations with a company that was taking storage in a new, modern direction, and the more he learned about Qumulo, the more excited he was about the possibilities.

Qumulo offers a modern approach to file storage, delivering fast, flexible and highly scalable storage together with the real-time analytics necessary for visibility into data usage and performance at petabyte scale. This combination promised the storage performance and scale he needed, with the insight that he'd entirely lacked from his old system.

English was also encouraged by how well Qumulo incorporated his needs into its development process. "The team at Qumulo seemed genuinely happy to talk with us, and seeing that feedback actually make it into the product was wonderful," he says.

Vaisala ultimately selected Qumulo's QC208 hybrid storage appliances, deploying a four-node cluster capable of storing over 400TB of usable data. "The whole deployment process was very smooth," notes English. "For a brand new hardware and software platform to be deployed so easily, that's impressive."

Leveraging Storage, Not Managing It

The team at Vaisala noticed a performance improvement out of the gate with Qumulo, calling the new cluster "much faster" than the previous platform. More important, however, were the performance insights gained through QF2.

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In fact, with QF2's intuitive dashboard and easy user management, English even takes it one step further and lets the research and production groups monitor the system themselves — freeing his team up to do other tasks. Which highlights a general theme he's seen with QF2: he and his team can now spend more of their time on adding value.

"With QF2, we've traded our time managing storage for opportunity leveraging the data" he says. "Storage management is not particularly productive for the organization; we'd rather concentrate on working with internal customers on products and services. We get way better ROI when I can talk with our teams and say 'how can I help you?' instead of being asked 'what can you do for me?'"

For Vaisala, getting that value out of data often comes in the form of building custom tools and integrations leveraging QF2's REST API to improve data modeling and forecasting efficiency. Prior to QF2, reporting on workflows was a several day process. Now with QF2 deployed, Vaisala has instant insight on storage utilization, data load, and even the speed and location of changes to the system — which is critical given the increasing velocity of data ingest.

"Our 'ah ha!' moment was the realization we can integrate QF2's API calls with other APIs to make the overall impact much greater. Not only are we leveraging QF2's calls, but we can also customize these insights to our specific needs," says English.

The large-scale nature of Vaisala's machine data processing and storage means constant growth, whether that's an increase in the volume of sensor data, or higher resolution of government weather forecasting models. English is already in the process of adding another QF2 storage node and anticipates more in the future. That's just one area where the Qumulo Care enterprise support team helps.

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"I don't think I've experienced any other vendor ever taking such good care of me," he says. "The Qumulo Care team has been great across the board. Whether it's a problem and we need help, or we are looking for a deeper conversation about what changes to the product can best suit our needs, Qumulo listens." Then the company responds, using its agile software development and release process, allowing customers to pull it in the direction they need.

Given the twin drivers of a growing renewable energy market and exploding data, change and growth are likely to be the only constants — making Vaisala's choice of Qumulo's modern, highly scalable file storage a smart one indeed.

Vaisala is a global leader in environmental and industrial measurement. Building on 80 years of experience, Vaisala contributes to a better quality of life by providing a comprehensive range of innovative observation and measurement products and services for chosen weather-related and industrial markets. Headquartered in Finland, Vaisala employs approximately 1,600 professionals worldwide and is listed on the NASDAQ OMX Helsinki stock exchange.

