



Automotive

Hyundai MOBIS Relies on Qumulo File Fabric (QF2) in Developing the Future of the Connected Car

Autonomous driving is a core R&D focus for Hyundai MOBIS that requires analyzing terabytes of real-world video data. Unfortunately, this global top-tier automotive parts supplier's existing scale-up storage was too fragmented and expensive to efficiently handle the load. QF2, a modern, highly scalable file storage system provided the missing performance, scalability and simplicity at a price that was too good to pass up.

A Fragmented View of the World

The automobile is quickly morphing from an isolated, largely mechanical piece of equipment to one of the most technically sophisticated and connected platforms on the planet. From entertainment and navigation to driver assistance and crash avoidance, the car of today is vastly different from those of a few short years ago. The huge opportunity to shape the future of that connected car, especially around autonomous driving, is drawing the interest of companies from Google to Uber and Tesla to GM.

The one thing these initiatives all have in common is data — miles and miles of data. Every sensor and every system on connected cars generates a steady stream of information. The research and development behind future systems requires analysis of massive files and data sets. Dealing with the volume, velocity and variety of all that data creates a challenge all its own.

As the world's sixth largest supplier of parts and components — for automobiles from the likes of Hyundai, Chrysler, General Motors, Subaru and others — Hyundai MOBIS is naturally in the thick of that connected car development. Assisted and autonomous driving in particular is a core focus of the company's current R&D efforts, both in the U.S. and in its Asian and European operations.

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— **John Beck,**
IT Manager,
Hyundai MOBIS

Helping vehicles to “see” and react like a human requires that the development team collect and pour through hundreds of terabytes of real-world video. Researchers drive vehicles through a broad range of geographies, climates and environments, while cameras steadily record the journey. Back in the lab, important elements of that street-level world view, such as signs, signals, pedestrians and hazards, are carefully identified and fed into the latest training scenarios.

Storing that massive quantity of video and keeping it indefinitely accessible is a challenge for the Hyundai MOBIS IT team. The last thing they need is a storage system that makes the process harder.



Solution Overview

- 6 Qumulo QC208 hybrid storage appliances
- SMB, NFS and REST protocols
- Qumulo Care enterprise support

Key Benefits for Hyundai MOBIS

- Provides a real-time view into global data footprint through data analytics
- Scales capacity and performance with each additional node, without creating separate volumes or silos of storage
- Reduces costs with as-needed expandability and budget-friendly commodity hardware
- Eliminates management headaches through simple set-up and virtually maintenance-free operation
- Ensures continual operation and peace of mind through proactive Qumulo Care monitoring and support

"We can't store large quantities of video in small pockets of fragmented storage," says John Beck, IT manager for Hyundai MOBIS. "Yet, that's what we had with our existing NetApp scale-up storage system, and adding more capacity threatened to only make the situation worse."

Legacy scale-up NAS, such as NetApp, has a significant Achilles' heel: size-limited volumes create capacity silos that require manual data management and migration. Adding additional capacity simply creates more silos and fragmentation, and that capacity must be purchased en masse, instead of as-needed, which balloons up-front costs.

That scenario quickly drove Beck and his team to look for a new storage solution.

Simplicity at Scale

Beck recognized that something like scale-out storage was a better alternative for Hyundai MOBIS, delivering the single-volume architecture and linear scalability lacking in legacy scale-up solutions. The company's European operation was already using scale-out NAS from EMC Isilon, and colleagues recommended it to Beck.

Beck found a more innovative solution with QF2.

QF2 is a modern, highly scalable file storage system that is fast, flexible and delivers the real-time analytics necessary for visibility into data usage and performance at petabyte scale. The combination provides the storage performance and scale Beck's team requires, while its flash-first hybrid architecture leverages affordable commodity hardware to keep costs for Hyundai MOBIS well below offerings from either Isilon and NetApp.

Beck was also impressed that Qumulo's founders included many of the early pioneers from Isilon, who had come together again to reinvent scale-out storage. Beck's team selected Qumulo's QC208 hybrid storage appliances, deploying a six node cluster capable of storing more than 600TB of data.

Yet, according to Beck, even at that scale, the deployment was dead simple. "With Qumulo, I just connected some cables and I was done," he says. "I deployed the NetApp storage barely six months earlier, and had a totally different experience. Qumulo is so easy to set up and maintain. Working with NetApp was the exact opposite."

Managing the Future of Automotive Development

Hyundai MOBIS' R&D team is currently storing tremendous data on the QF2 system, with more data being added all the time. The fact that the cluster can ingest that steady stream of machine data without constant management is a substantial benefit, freeing Beck's team to concentrate on other things.

"The QF2 cluster is super simple for us to maintain – in fact, other than occasional software updates, we really don't have to spend any time on it at all," he notes.

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The Qumulo Care support team helps in that regard by proactively monitoring the system and alerting Beck to any potential problems. Qumulo Care has even alerted Beck about possible drive issues before any failure could disrupt operations at Hyundai MOBIS – a fact he truly appreciates.

"The Qumulo support team is amazing in its ability to help us head off issues before they become problems," he says. "With NetApp, we'd get an alert after a failure, not before. Qumulo's proactive monitoring is a pretty cool advantage and the best service experience I've ever had — it seems like they're actually watching out for us."

Based on the team's success with Qumulo, Beck has significant plans for expanding the deployment over time. As the company broadens development of autonomous driving, Beck's team will need to pull data from other global R&D centers onto the cluster, making the performance, capacity, scalability and manageability of the QF2 storage even more important. Beck's team also plans to store other types of data from different departments throughout the company, so QF2's ability to handle small and large file sizes equally well will be another important advantage.

In expanding the deployment, Beck is particularly keen to take advantage of QF2's real-time analytics. "As we scale the system to handle data globally, having a real-time view of everything that's happening on the cluster will be critical for staying ahead of the needs of other teams," he explains.

Overall Beck is extremely impressed with the QF2 system, and finds that he no longer has to worry about his data. "Managing data with QF2 is so simple it's hard to describe the impact," he says. "It has given us tremendous ROI in terms of time saved and problems eliminated, and having that reliable storage we can finally trust makes us eager to use it more broadly throughout the company."

