LYVE™ Mobile

Solution Brief
TRANSFERRING DATA FROM ENDPOINT TO CORE FOR ML AND ANALYTICS

Managing Mass Data Collection for ADAS/AD

Discover end-to-end architecture for data collection, transfer, and storage.

In Partnership With

Solution Summary

Seagate brings together an end-to-end architecture by combining **NI** Data Record System AD, Seagate Lyve Mobile edge storage and data transfer as a service for handling and moving data at the edge, Seagate CORTX object storage, the **IBM** Spectrum Scale file system for colocation-based data movement, and **NVIDIA** AI training.

Benefits Summary

- Faster access to vehicle data
- Optimized cost with the ability to scale up or down
- Subscription-based solution for data transfer and storage

The development of Advanced Driver-Assistance Systems (ADAS) and Automated Driving (AD) requires the collection of mass data and fast analyzation. It's critical to find solutions and workflows that efficiently and cost effectively bridge this data from the car to the data center/core where it can be analyzed ASAP.

What are the best ways to transfer massive volumes of data? That's the 100TB question. In order to get the most value out of business data, enterprises need more efficient ways to enable its flow. Every industry handling massive data sets—from 100TB to multiple petabytes—faces transport challenges.

Seagate, NI, IBM, and NVIDIA have partnered to address this challenge by providing secure and affordable data capture, data movement, and global access to datasets for AI-based training.

The Challenge

ADAS and AD algorithm development requires data from a variety of different sensors in the vehicles. These sensors include 12+ cameras in the car, lidar, radar, ultrasonic sensors, and other vehicle parameters which create 100TB+ of data per car daily.

There are a variety of ways this data is recorded and then transferred to data centers for algorithm development, from consumer-grade storage drives in very large bays within the vehicle to integrated data loggers and storage devices. In both instances, security, scalability, and transfer cost is exceedingly expensive and challenging.

Solutions can cost up to $200K per vehicle to support the capacity required. For a fleet of 100 vehicles, that's $20M+ capex up front to secure the required data storage. Additionally, these solutions require new capex purchases of storage components as technology continues to push towards fully automated vehicles.

ADAS and AD vehicle developers need a more cost-effective and scalable solution to gain access to more data, faster.

The Solution

Today's AD and ADAS programs require world-class, integrated algorithms for maximum performance and safety. The collected data needs to flow from vehicle to data center, where the required compute platforms are housed. Unfortunately for the Tier 1s and car makers, this means becoming an IT expert in IoT and the edge/macro edge. That's why Seagate has partnered with **NI, IBM and NVIDIA**—providing secure and affordable data capture, data movement, and global access to datasets for AI-based training.

Seagate Lyve Mobile edge storage and data transfer as a service offers cost-effective solutions ranging from 8TB to over 200TB, all engineered to withstand the harsh, mobile environment of vehicles.

Specifically, Lyve Mobile Array is a portable, rackable solution that records high throughput sensory data by securing to the trunk of the car via the Lyve Mobile Mount. The optional available PCIe adapter can be used for an external PCIe port on your recording system or with enterprise-grade self-encrypting drives. Delivering high-capacity and high-performance data transfers, Lyve Mobile Array is built with industry-standard AES 256-bit hardware encryption and key management in a rugged, lockable transport case for superior data transport and security. Additionally, it's agnostic to data logger form factors and architectures.

Capacity-tier hot datasets are pulled into IBM's performance tier while other datasets that require cooler storage can be moved to **Seagate Lyve Cloud** where they remain stored long term with high availability.

IBM Spectrum Scale forms large data lakes and content repositories for high-performance computing (HPC) and analytics workloads by providing high-performance parallel processing with high bandwidth and low latency for the full use of GPUs when running on multiple **NVIDIA** GPU systems. Spectrum Scale also prevents GPUs from waiting for data and helps in building more affordable, optimized data and AI solutions.

NVIDIA GPUs perform scale-out AI training by getting their RDMA high-bandwidth GPU directly from Spectrum Scale. Spectrum Scale can also manage datasets for NVIDIA and **NI's** on-prem as well as cloud based simulation and testing environments.

The Total Solution

The following five elements work together so that data analysts and developers can focus on their work while the IT experts handle data flow and infrastructure.

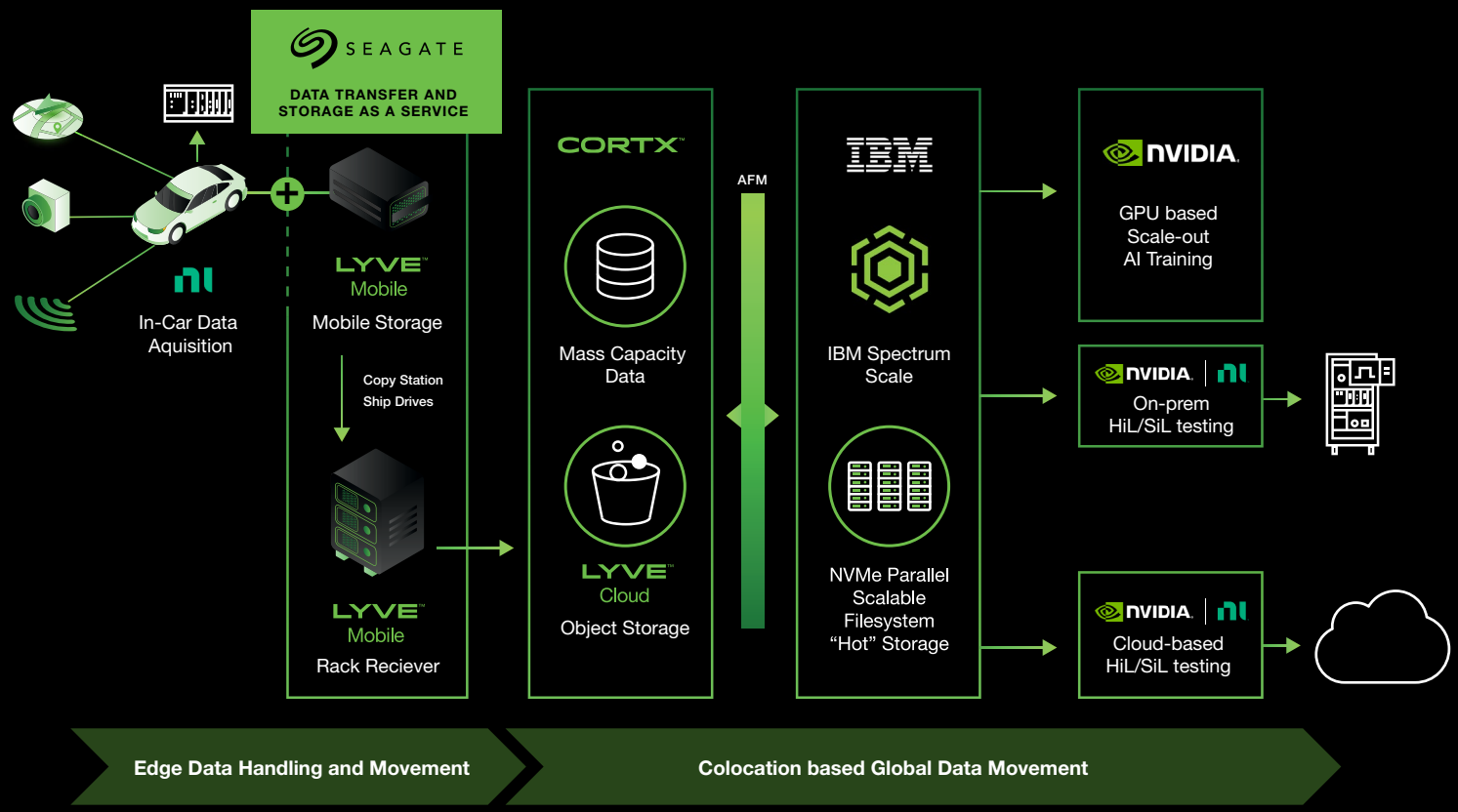
1. **Data logging:** NI Data Loggers enable data to be collected from different sensors in the vehicle. NI provides the PXI chassis with configurable and expandable components to fit any ADAS or AD data logging challenge.

2. **Data Transfer:** Lyve Mobile is a scalable data transfer as a service for collecting all vehicle data and moving it to data centers. Multiple devices can be used in the solution to provide higher capacities. Additionally, Seagate's subscription based model significantly reduces the upfront capital needed for the total solution and includes overprovisioning, global support, and capacity upgrades.

3. **Data Center Storage:** Seagate CORTX object storage can be used within each data center for consolidation, backup, and sharing. Additionally, it can be offered on a subscription basis to reduce upfront capital expenditures.

4. **File System Software:** IBM provides Spectrum Scale and NVMe parallel scalable file systems with "hot" storage to enable syncing across multiple global data centers.

5. **AI Training Compute Platforms:** Equips AI developers with the necessary compute resources and tools for building AV algorithms.



Features & Benefits

- Best-in-class solutions offering global support from subject matter experts
- Subscription-based model reduces upfront capital expenditure requirements
- Provides end-to-end data collection and transfer, data center infrastructure, and global synchronization
- Leading AI development compute platform

Conclusion

For ADAS/AD Tier 1s and car makers needing to jump start their workflow and infrastructure requirements with scalability and reduced upfront capital needs, NI, Seagate, IBM, and NVIDIA have partnered to provide trusted, powerful solutions backed by global leadership in data management, collaboration, and AV algorithm development.

Ready to Learn More?

Please visit Seagate www.seagate.com/products/data-transport/ to learn more about world-class, subscription-based data storage and transfer solutions.

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