



DELL TECHNOLOGIES AND NVIDIA SOLUTIONS FOR RETAIL

Protecting retail assets and unlocking the potential of your data with AI-driven computer vision

Dell Technologies and NVIDIA asset protection solutions bring together an integrated ecosystem of innovative computer vision and AI capabilities to help retailers reduce theft and protect profits.

The retail industry is undergoing an accelerated adoption of digital transformation. More than ever before, retailers are investing in data-driven processes that help increase revenues and deliver sustainable, agile business operations.

Many are implementing intelligent video systems that combine camera sensor data and AI to produce real-time actionable insights. Computer vision systems enable retailers to respond faster and with greater precision to market demands and day-to-day business requirements—such as improving safety and security in store as well as helping to minimize asset shrinkage.

Asset shrinkage is a growing problem in retail, and its impact increases year over year. In fact, the Sensormatic Global Shrink Index reports annual losses totaling over \$99 billion.¹ Putting this in context, the figure amounts to 1.82 percent of sales, which is significant when retail margins can be as little as 2 percent.

Dell Technologies in partnership with NVIDIA provides an expansive portfolio of AI-driven, validated computer vision solutions that retailers can leverage to help protect their assets and unlock the full potential of their data. Our best-of-breed hardware and software combine to deliver high-performance and scalable IT infrastructure. Together, we deliver essential and proven solutions for all stages of your AI journey.

CUSTOMER SUCCESS METRICS

- **Realize sustainable business value** by implementing proven asset protection solutions that have performed with 99% accuracy, helped reduce theft by up to 40%, and increased ROI between 300 to 500%.²
- **Create agility** with an extensive NVIDIA GPU-enabled portfolio of validated safety, security, computer vision, and advanced analytics solutions.
- **Reduce costs** with NVIDIA Fleet Command—a hybrid-cloud platform for managing and scaling AI at the edge. From one control plane, anyone with a browser and an Internet connection can deploy applications, update software over the air, and monitor location health. Fleet Command combines the benefits of edge computing with the ease of software as a service.
- **Strengthen data security** with Dell Technologies, the #1 infrastructure provider of global safety, security, and computer vision solutions.³

Driving business results in retail with asset protection workflows

Dell Technologies and NVIDIA solutions enable retailers to transform digitally with artificial intelligence and computer vision by bringing together the latest in intelligent video, IoT, compute, storage, networking, analytics, and cloud technologies. Whether leveraging existing cameras or deploying net-new capabilities across multiple retail locations, our solutions enable retailers to prevent theft in real time. These solutions can uncover criminal activity, employee errors, and customer self-checkout anomalies. Our asset protection portfolio spans the shop floor, the various points of sale, and the distribution center.

Solutions can be tailored to your specific needs across a broad range of use cases to better protect your retail assets, including:

- Identification of mis-scans and ticket switching:** Point-of-sale theft can occur in a number of ways. Mis-scans and ticket switching are two of the most common. A mis-scan can be the accidental or deliberate act of not successfully swiping a barcode. Ticket switching is typically a deliberate act of theft whereby a customer swaps the label of a cheaper product for a more expensive item. In this case, Dell Technologies and NVIDIA solutions are positioned at the point of sale to help monitor products as they are moved from basket to bagging. If any product is moved across without scanning or with incorrect scanning, the checkout process will be halted and staff notified. A similar computer vision solution can be implemented in traditional cashier lanes to help identify mis-scans by employees.
- Mitigation of organized theft and shoplifting:** With Dell Technologies and NVIDIA computer vision solutions, retailers can help prevent theft wherever it occurs—whether at checkout, in aisle, at the front of the store, or in employee-only areas like warehouses or at the back of the store. Video combined with edge

analytics, machine learning, and AI help identify suspicious behavior and can send alerts to the appropriate store personnel, security staff, and/or authorities in real time.

- Detection of sweetheart dealings:** In a similar fashion to ticket-switching and mis-scans, sweetheart deals can be minimized with Dell Technologies and NVIDIA computer vision solutions. The Oxford Dictionary defines sweetheart deals as “an arrangement or agreement reached privately by two sides in an unofficial or illicit way.” Dell Technologies and NVIDIA solutions help prevent sweetheart deals by detecting products as they are checked out by an assistant and notifying managerial staff when misuse of an employee discount code or an improper entry has been detected.

In all use cases, data protection and privacy are of the utmost importance. Our software partners do not collect personally identifiable information and take proactive measures such as face redaction to ensure privacy and compliance.

A robust, end-to-end portfolio

Retailers that are looking to implement computer vision and AI-driven technologies aimed at optimizing asset protection face complexities in designing, sizing, integrating, and configuring these systems. This complex process can increase capital and operating expenses.

Dell Technologies and NVIDIA have partnered to simplify and streamline the deployment process with solutions that span the entire AI ecosystem—including support for asset protection workloads with holistic security and management.

Together with our validated ecosystem of industry partners, we deliver the right mix of technology and subject matter expertise, making it easy for you to deploy, manage, and scale a solution designed for your specific needs. Our edge-to-core-to-cloud integration approach ensures system continuity across in-store, data center, and cloud services to help lower overall total cost of ownership while maximizing the value of your data for use in asset protection and larger-scale operational workflows (Figure 1).

Figure 1: In-store ecosystem from the edge to the data center to the cloud.

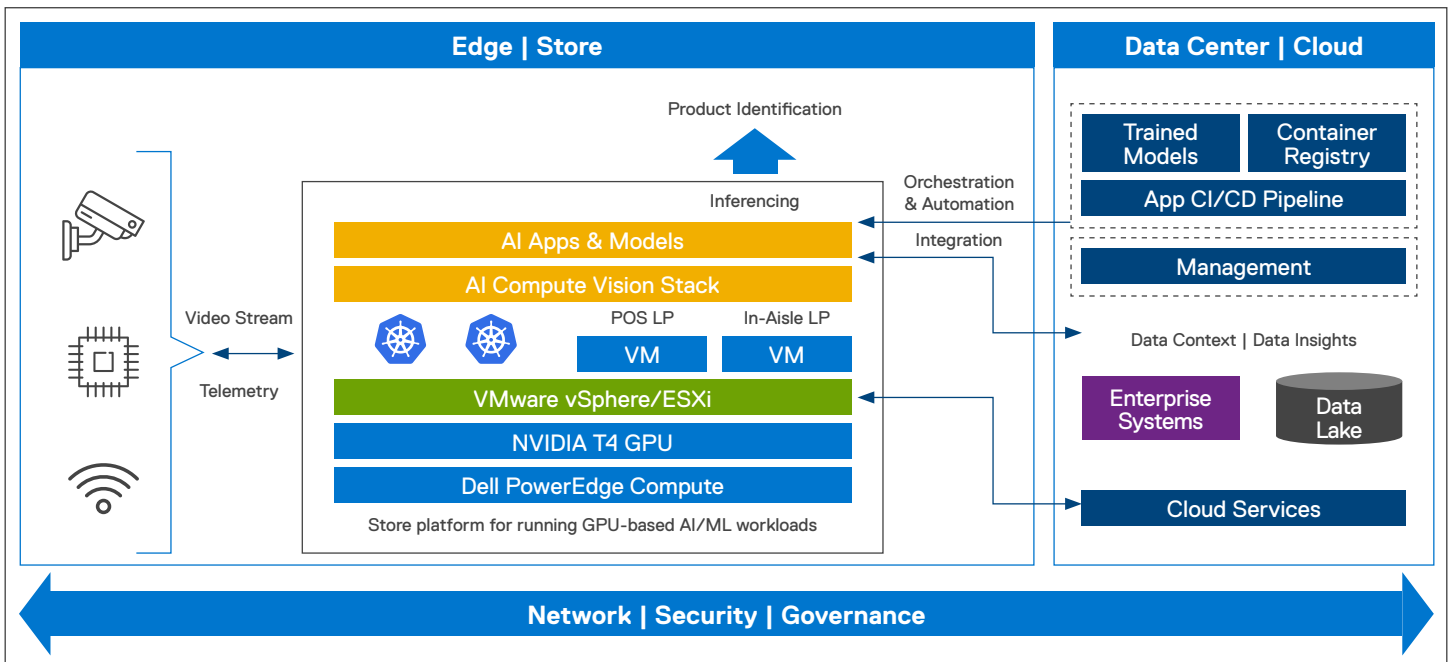
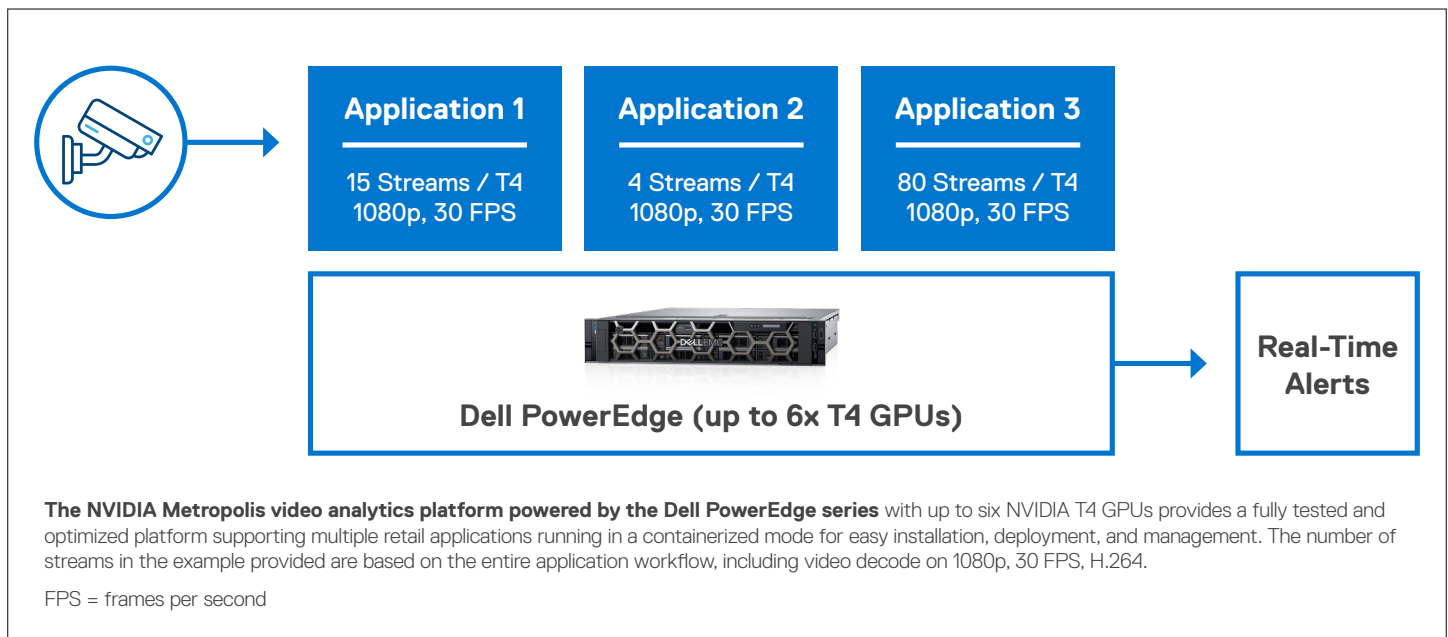


Figure 2: The NVIDIA Metropolis video analytics platform powered by the Dell PowerEdge series



Our solutions bring together:

- Real-time edge compute and analytics:** Dell Technologies family in-store compute platforms host NVIDIA GPU acceleration with partner analytics software to capture, analyze, and gain insights from video cameras and other sensing devices for real-time data analytics and machine learning. With over 24 computer vision partners and a choice of bare-metal to hyperconverged infrastructure, retailers gain access to an ecosystem of validated solutions suited to their application needs that provide even more assurance and risk mitigation to their investment.
- The NVIDIA Metropolis video analytics platform is an edge-to-cloud platform that can turn anonymized video into valuable insights and includes an integrated and tested solution based on the Dell EMC PowerEdge server series and NVIDIA T4 GPUs (Figure 2). This configuration has been tuned to get the most out of NVIDIA GPUs to lower the total cost of ownership and features the leading performance for real-world live video deployments as measured by our combined speed and accuracy rate. The containerized Docker solution works with NVIDIA GPU Cloud (NGC) for download and installation of software applications to deploy multiple intelligent video analytics algorithms on a single server across as many GPUs as needed.
- The software-defined data center:** With Dell Technologies next-generation storage and data protection solutions, you can manage current data and future workloads with efficiency, security, and scalability. Our hyperconverged infrastructure combines servers, storage, networking, and virtualization into one cloud-ready solution to achieve true application deployment flexibility.

- Data integration across a multi-cloud environment:** As you expand your AI capabilities using multiple cloud-native workloads, a VMware vSphere or ESXi platform combines into one preengineered ready-to-run platform to eliminate silos of operation with service management, governance, security, automation, and orchestration tools. In this environment, multiple video analytics applications can coincide on a single server in a containerized manner, making it easy to deploy, manage, and scale. Likewise, video stream and telemetry data collected from a variety of edge systems can be fed into cloud services hosting deep learning models and data lakes to achieve more meaningful and profitable outcomes. For more advanced systems, data can be pushed back to the edge for further inferencing and product identification, providing a distinct competitive advantage for retailers.
- Secure, resilient IT:** Dell Technologies helps customers mitigate cybersecurity risks through our open network community. Our industry-leading hardware and partner offerings help address network complexities and governance requirements in an end-to-end asset protection solution deployment.
- A comprehensive, lab-validation test approach:** To help deliver to your organization a solution that works from day one, Dell Technologies and NVIDIA align validation standards with our partners to test hardware and software in extreme, real-world scenarios in order to reduce deployment risk. Our three full-time global IoT labs plus an NVIDIA testing/validation lab enables our customers to have confidence in our solutions and gain access to the latest capabilities on the market.



Transforming retail, together

Dell Technologies and NVIDIA have a proven track record of success with some of the largest big box and online retailers, resulting in loss prevention solutions with 99 percent accuracy and the ability to reduce theft by up to 40 percent.² We offer an extensive GPU-enabled portfolio of enterprise products ranging from tried-and-tested datacenter platforms to capable edge servers.

The configurations for these products are ready for NVIDIA's NGC deep learning framework, removing the overhead from enabling AI-empowered insights and accelerating the time to readiness. Dell Technologies and NVIDIA are also collaborating on developing desktop to the data center to the edge computing solutions. AI solutions can be developed and validated at the Dell Technologies Labs, with NVIDIA providing workload testing and collaboration.

REALIZING EXPONENTIAL BUSINESS VALUE

By implementing asset protection using platforms from Dell Technologies and NVIDIA, retailers can dramatically reduce their

total cost of ownership (TCO) and accelerate time to market. A conservative model signifies the potential for a significant reduction in asset shrinkage of up to 40 percent, enabling a short payback period in a matter of months, not years.² Our customers have experienced between 300 and 500 percent returns on investment. Dell Technologies can work with you to understand your asset shrinkage landscape and propose scenario-based business cases.

MOVING FORWARD WITH TRUSTED PARTNERS

The strategic partnership between NVIDIA and Dell Technologies is focused on helping our customers realize the value of their data with innovative AI solutions. Our solutions portfolio and expertise help reduce the risk, cost, and complexity of implementation by leveraging comprehensive solutions that are aligned to your specific business requirements. Working with your organization, our approach will help guide you through your AI journey to mitigate risk while decreasing the time to value by ensuring that your retail solution is tailored to your business needs and delivers measurable results today and well into the future.



Learn more
about our solutions
for retail.



Contact
one of our experts
for retail.



Connect
with us.

1. <https://www.sensormatic.com/landing/shrink-index-sensormatic>

2. Data based on Dell Technologies internal analysis

3. IHS "Enterprise & IP Storage Used for Video Surveillance—2019", April 2019

Photo source (page 4): Ashim D'Silva on Unsplash.