Find your edge

Comprehensive solutions for the retail edge from Dell Technologies

Retail

More than ½

of enterprise data will be created and processed outside the data center or cloud by 2022[1]

75.44 billion

Internet of Things (IoT)-connected devices are projected worldwide by 2025[2]

70%

of retail and consumer product companies' back-office processes remain un-automated[3]

Retail companies today are handling massive amounts of data flowing in from edge devices: sensors in stores or distribution centers, cellular and WiFi tracking systems, mobile apps that target ads based on geolocation, video cameras, radio-frequency identification (RFID) chips and point-of-sale (POS) devices, to name only a few. This data-driven landscape presents exciting opportunities. With insights from IoT data, retail companies can optimize supply chain logistics, improve the customer experience and create large-scale efficiencies.

To minimize data latencies and bandwidth costs, retailers are shifting applications and their underlying compute resources from the cloud and core data centers to the edge. But this process comes with its own unique set of challenges. Traditional data center hardware solutions are designed for a data center, not a retail location where space may be constrained. Other issues at the edge include onsite support resources, incompatibilities between new and old technologies, suboptimal operating conditions and security challenges in the form of cyberattacks or ransomware.

To meet these challenges, retailers need solutions designed to optimize data collection and analysis at the edge. Dell Technologies offers a unified family of edge-optimized platforms that enable a consistent approach to deploying hardware and applications and managing infrastructure and data. This brief expands on key portfolio offerings, with a particular emphasis on the new Dell EMC PowerEdge XE2420.

Best practices for deploying and managing Dell EMC PowerEdge servers for an edge solution

Because edge deployments often take place in remote locations far beyond the controlled environment of a data center, it is critical to use best practices to help ensure security and close monitoring when deploying and configuring PowerEdge solutions.

- From a **security** standpoint, best practices include launching Dell LifeCycle Controller to ensure the firmware and BIOS are up to date, as well as enabling lockdown mode to prevent unauthorized changes.

- For **management**, configuring remote access and alerts through iDRAC9 and role-based access through OpenManage provides authorized admins with robust tools to detect and prevent issues or potential threats. These include the ability to monitor server environments across multiple devices using OpenManage Enterprise or OpenManage Mobile; integrations with Vmware vCenter® and Microsoft Systems Center; and monitoring tools to detect key hardware faults and other server problems.

(intel)

Best practices for retail companies at the edge

For retailers, data originates from three primary sources: online, in-store and along the supply chain. The online space is serviced by cloud and core data centers and doesn't interact with the edge. That leaves stores and supply chains as the spaces ripe for optimization with edge technologies.

In-store

- **Creating a seamless customer experience:** Unifying customers' in-store and online experiences (for example, allowing customers to buy an item online but pick it up or return it to a brick and mortar location) requires data sources and applications that are in sync no matter the location of the transaction.

  - For example, edge devices such as app-driven pickup lockers, employee scanners and centralized inventory databases need to communicate and update data in real time.

- **Using sensors to improve in-store processes:** This could include anything from shelf sensors that keep track of inventory out on the floor, to RFID passive tags that track stock or customer interactions, to sensors or video cameras in a supermarket that capture how quickly lines move.

  - Using this sensor-generated data, retail companies can analyze patterns and use the information to improve current processes (such as sending more staff to the checkout registers at times of peak traffic).

  - Taking this analysis a step further, businesses can create machine learning models that make recommendations—for example, alerting a company when it is time to move stock from a distribution center to a store based on past consumption patterns.

- **Using video surveillance to detect patterns and optimize staff efficiency:** This video data gives companies the tools they need to analyze foot traffic volumes across several locations or how customers interact with products in-store. By studying employee movements and patterns, retailers can optimize efficiency on the store floor.

- **Using financial and business data:** Every customer transaction generates data: How much did they spend? At which location did they spend it? What did they spend it on? Did they use a store credit card, coupons or participate in a rewards program? All of this POS data can be used to better predict and cater to future puchasing experiences.

Along the supply chain

- **Monitoring remotely:** Sensors or RFID tags in a warehouse can help companies monitor delivery times, whether equipment is operating at maximum efficiency and detect optimizations like available delivery bays.

- **Increasing automation or robotic efficiencies:** Tracking the location of automated devices with RFIDs or other components, companies can create models that verify the location of a device within a warehouse and then allocate tasks accordingly.

- **Optimizing transportation:** Using GPS data, retailers can track the routes delivery trucks take and optimize these routes or better predict when items will be delivered to a brick and mortar location.

- **Protecting perishable inventory:** Retailers can use sensors inside freezers and coolers to regulate temperatures and prevent food spoilage. Increasingly, retailers are shifting away from a model that involves human intervention (for example, a manager receiving an alert about abnormal temperatures and manually addressing it) and toward a more automated process where machine learning models help activate a set of rules for addressing abnormalities.

The Dell EMC portfolio has solutions to suit every need, from the core to the cloud to the edge

iDRAC9 Datacenter
The new Datacenter license for iDRAC9 includes telemetry streaming, real-time BIOS Live Scanning, automatic SSL certificate enrollment and renewal and enhanced thermal management.

Dell EMC PowerEdge XR2
Traditionally, IT has owned server purchasing decisions while OT owns everything outside of the data center. The Dell EMC PowerEdge XR2 changes the game with a platform that both organizations can agree on. Built from the ground up for harsh environments, this compact solution is temperature resilient and shock resistant and has a minimal footprint.

Top 5 considerations for retail companies at the edge

To implement these best practices, retail companies need a compute solution with the right mix of flexibility, power, storage capacity, serviceability and durability. The table below demonstrates how the Dell EMC PowerEdge XE2420, powered by Intel, meets these needs.

Requirements for retailers with infrastructure at the edge	How the Dell EMC PowerEdge XE2420 addresses these needs	How retail companies can benefit
1. Small footprint: Retailers need a compact and efficient solution that won't use up valuable retail floor space and that fits into existing spaces, such as a two-post rack setup	2U, short-depth (600mm) form factor can fit into small areas and existing IT architecture	Save on power and cooling expenses and prevent costly IT buildouts with a dense, adaptable compute solution
2. Power: An edge solution for retail must have enough accelerators to handle advanced analytics and machine learning training and inference	Supports up to four accelerators for high performance	Boost ROI with a high-performance solution that delivers the data insights needed to innovate and optimize
3. Large storage capacity: Massive volumes of customer- or warehouse-generated data require massive amounts of storage	The PowerEdge XE2420 can be configured with up to 92 TB of storage	Increase data center density and meet high storage demands
4. Easy servicing and maintenance: Retailers need a solution that maintenance staff can access and service without hassle, even in smaller spaces or within infrastructures not optimized for edge technologies	Front-accessible I/O and power	Easily access equipment even in cramped or confined environments
5. Ruggedness: Retailers need a robust solution that can withstand harsh conditions—whether in a closet at the back of a retail location or in a large warehouse with limited climate control	Extended operating temperature tolerance (from 5° to 40° C), optional filtered bezel to protect equipment in dusty environments, and Network Equipment-Building System (NEBS) Level 1 certification	Save on repair and maintenance costs with a solution optimized for harsh edge environments

In addition, retail companies need a solution that can:

- Deliver data—especially video data for surveillance or visual security purposes—quickly
- Be configured to respond quickly to shifts in customer demand
- Protect data from malicious actors

Meeting these needs, the Dell EMC PowerEdge XE2420 is a low-latency system that offers fast networking and high network throughput (from 1-100 Gbe), supports multiple configurations of accelerators and storage and employs real-time BIOS Live Scanning with the iDRAC9 Datacenter license.

Applications at the edge

- Smart stores
- Surveillance
- Branch in a box
- Visual security
- Asset tracking

Reap the benefits of an optimized infrastructure with solutions designed for the edge

With data captured at the edge, retailers can analyze key metrics and use those insights to improve their operations—tailoring the in-store experience to meet the needs of individual customers while optimizing supply chain logistics. But to implement these innovations, they need equipment that has been designed to deliver power, speed, flexibility and security at the edge.

Dell Technologies offers a full portfolio of solutions to address the compute, network and storage needs of retailers operating at the edge. With Dell EMC PowerEdge XE2420 servers and iDRAC9 management software, organizations can increase their return on investment, lower total cost of ownership and protect their valuable data. From the edge to the cloud to the core data center, Dell Technologies helps companies thrive.

To learn more about how Dell Technologies solutions can help your company gain an edge, visit https://www.delltechnologies.com/en-us/servers/specialty-servers/PowerEdge-XE-Servers.

Intel and Dell Technologies:

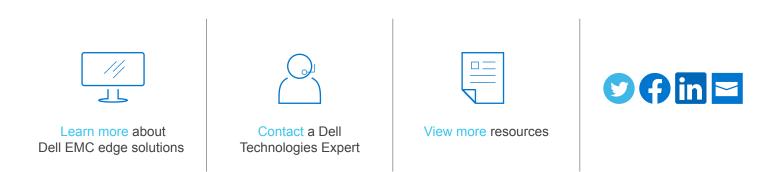Working together to create comprehensive solutions for the edge

Intel supports a wide range of retail environments with innovative solutions: from AI technologies that help businesses understand shopper behaviors, to the Intel Responsive Retail Platform, which uses analytics to improve sales staff efficiency, reduce costs and improve customer experiences. Intel's focus on the retail revolution is enabling richer customer experiences, more efficient supply chain management and enhanced retail analytics. The ability to run various retail workloads and use tools to gain additional insights, coupled with the Dell EMC PowerEdge XE2420, helps customers leverage the latest capabilities from their trusted partners at the edge: Dell Technologies and Intel.

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[1] https://www.gartner.com/en/newsroom/press-releases/2018-12-03-gartner-says-the-future-of-it-infrastructure-is-always-on-always-available-everywhere

[2] https://www.statista.com/statistics/471264/iot-number-of-connected-devices-worldwide/

[3] https://www.digitalistmag.com/customer-experience/2019/03/25/creating-intelligent-enterprise-in-retail-part-2-ai-rpa-future-store-06197260

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