

Dell PowerEdge Servers: Bring Edge Computing to Your Data

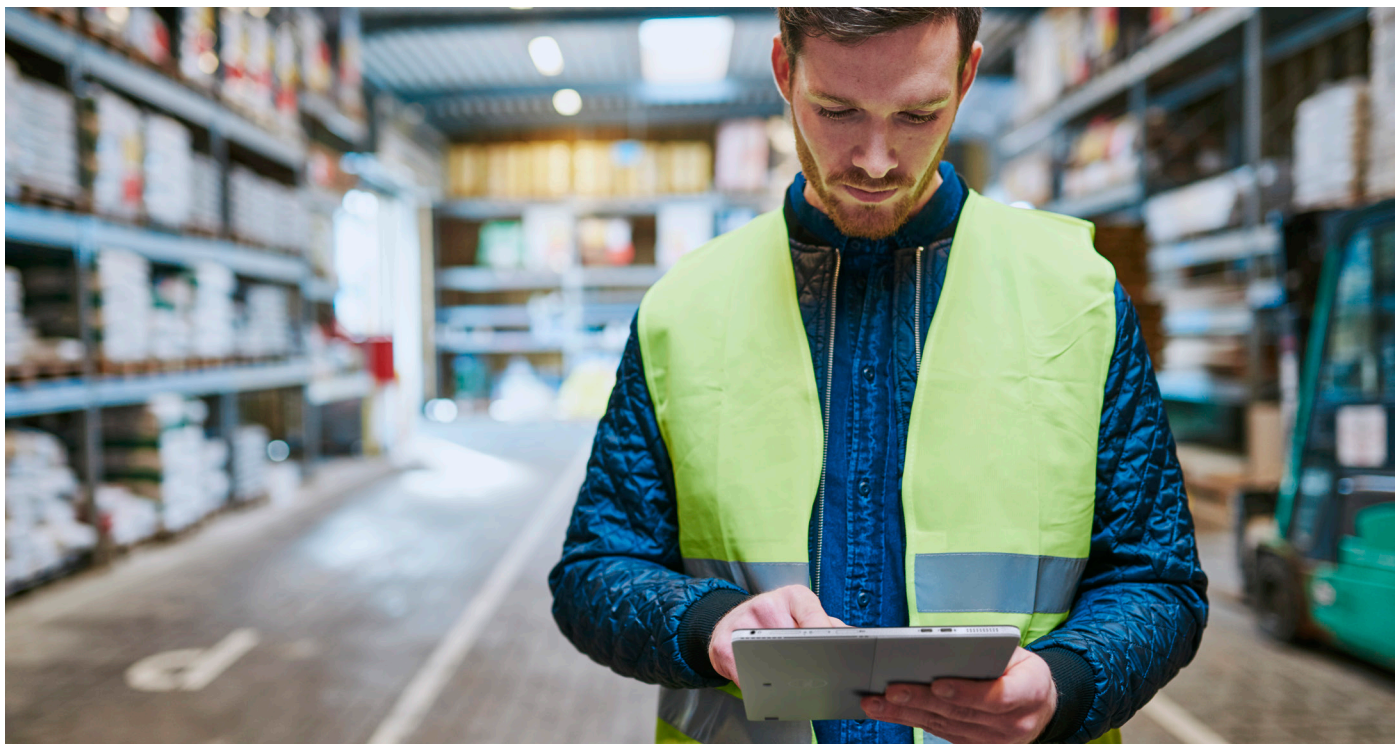


Imagine a world where data springs to life at the edge of the network and is used to generate actionable insights. Unlocking unparalleled possibilities for businesses, it flows seamlessly from the edge of the network to the core. Organizations that embrace edge computing will be able to revolutionize their operations, enhance customer experiences, and gain a competitive advantage. We already see the adoption of edge computing in retail with omnichannel retailing, manufacturing with Industry 4.0 and the smart factory, with Telecom and the expansion of 5G and 6G, and with governments building smart cities.

With the meteoric rise of edge computing, organizations can process data locally, improve response times and deliver real-time insights to customers and employees alike. By optimizing resources and efficiently managing data at the edge, they achieve cost savings and business agility. In this environment, organizations have the opportunity to be more innovative.

The global edge computing market size is projected to grow from \$15.96 billion in 2023 to \$139.58 billion by 2030¹. This statistic not only underscores the rapid adoption of edge computing but also points to the remarkable advantages it offers. Organizations are increasingly recognizing that innovation is flourishing at the edge and they want to take advantage. 41% of IT Decision Makers (ITDMs) report that edge is central to their IT strategy² and 61% of businesses believe competitors will gain an advantage by harnessing data insights.³

By embracing edge computing, organizations of all sizes and industries can offer faster, more responsive, cost effective and secure solutions, while positioning themselves as pioneers who can quickly react to changing market dynamics. However, to fully leverage the benefits of edge computing, organizations need to use servers specifically designed for the edge or for use outside of the data center, because they address the unique requirements and challenges posed by these scenarios.



Achieve Blazing Fast Response Times

Edge servers excel in delivering low latency and high performance outside traditional data centers. Onsite servers minimize the distance data travels, cutting latency, while GPUs boost processing power for demanding tasks. This proximity to data creation conserves bandwidth and reduces costs by avoiding the transfer of data from edge locations to the central data center.

In the context of 5G, these servers ensure rapid and reliable business insights. This means that even resource-intensive remote applications operate smoothly and open the door to advanced mobile surgery and other futuristic applications. With PowerEdge XR servers, users can harness advanced technologies without traditional infrastructure limitations.

Master Complexity with Distributed Management and Orchestration

Edge servers may be installed in locations outside of the traditional data center like factories, retail spaces, cell towers and more. Managing these distributed systems, including routine software updates and validation, is harder than in traditional data centers. Organizations need to efficiently allocate resources without compromising performance. According to the Bureau of Labor Statistics, the IT personnel shortage is predicted to reach 1.2 million by 2024⁴ adding to this challenge. PowerEdge XR servers are short- depth to fit in field cabinets or other tight spaces. They have front-facing I/O for convenient serviceability and advanced management capabilities enabled via iDRAC.

To manage your distributed PowerEdge infrastructure, consider Dell OpenManage. Its suite of tools streamlines

server management enabling server administrators to manage PowerEdge XR servers, in local or remote environments, operating in-band and out-of-band.

Alternatively, you can take advantage of [Dell NativeEdge](#), an edge operations software platform, that is designed to help organizations securely scale their edge operations to power any use case. It streamlines edge operations at scale through centralized management, secure device onboarding, zero-touch deployment, and automated management of infrastructure and applications. With its open design, NativeEdge facilitates the consolidation of technology silos, protects existing edge investments, and provides the freedom to choose technologies and multicloud environments. NativeEdge enables you to simplify your edge operations, optimize your edge investments, and secure your edge estate with zero trust.



Harvest Knowledge with Proper Data Storage, Processing and AI Analytics

Servers for the edge require adequate storage capacity to process and store data locally. Efficient data caching and prioritization techniques can streamline data processing and reduce the need for continual data transmissions to a central data center. Dell PowerEdge XR servers for the edge are designed with analytics and artificial intelligence (AI) capabilities in mind. The servers can perform real-time data analysis and decision-making at the edge, reducing the need for constant data transfers to centralized servers. In transportation, companies are taking advantage of edge computing with AI capabilities to aid in vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communication, enabling safer and more efficient transportation systems. In logistics, edge computing can optimize route planning, asset tracking and fraud prevention, and fleet management.

Shield Your Assets: Safeguarding Data and Preserving Privacy

Edge servers are often deployed in physically exposed or remote locations, making them more susceptible to security threats. Additionally, transferring data between compute environments can raise security and privacy concerns. In 2020, Cybersecurity Ventures predicted global cybercrime costs would grow by 15% per year over the next five years, reaching \$10.5 trillion annually by 2025, up from \$3 trillion in 2015.⁵ With cyber threats growing exponentially, it is more important than ever to have a secure foundation to enable a zero-trust environment. This means that servers deployed outside of the data center should include robust security measures throughout the lifecycle of the server as well as encryption, authentication, and access controls, to fortify your intellectual property. Dell PowerEdge XR servers are designed to meet the escalating threats of

edge operations. The servers enable secure interactions and accelerate the adoption of a Zero Trust environment, taking security to the next level. Built-in automation and intelligence improve organizations' operational efficiencies and deliver the capability to anticipate potential threats before they occur.

Grow Without Limits: Harnessing Scalability and Flexibility

As edge devices proliferate and data surges, servers must scale to meet demands and adapt to varied conditions. Designed for both distributed setups and rugged settings, these servers must operate in environments where dust, vibration and wide temperature swings exist without hindering performance. PowerEdge XR servers deliver ultimate flexibility. There are options for short-depth rack mount or a stackable chassis, approximately the size of a shoebox. Some models have modular sled-based designs that allow for multiple configurations and the ability to easily add nodes. A model even includes an optional witness node for virtualization workloads.

All PowerEdge XR servers are designed to accommodate an organization's evolving needs over time or a growing city. From a \$648.36 billion valuation in 2020, the smart cities market is poised to reach \$6,061 billion by 2030.⁶ Smart cities are utilizing edge servers and employing technology for sustainable growth and better living standards for their citizens. For example, with edge servers, [smart cities](#) can enhance public safety with cameras and optimize energy and waste management.

Thrive Amid Uncertainty: Tackling Unpredictable Environments and Limited Space

Edge servers thrive in unstable environments, facing challenges like unpredictable power from local utilities, dust infiltration, vibration, and extreme temperature variations. [Retailers](#) are deploying PowerEdge XR servers in back-office spaces to provide the needed compute for an enhanced customer experience, while industries like manufacturing and paper mills leverage onsite compute for automating historically manual activities.



[PowerEdge XR servers](#) are ruggedized for these environments featuring hardened components, optional lockable chassis, filtered bezels for dust, Smart Cooling technology, ensuring optimal fan control without compromising cooling or reliability.

Technology Enhancements are Paving the Way

As we navigate edge computing, it's evident that this technology is charting a course ripe with transformative potential. Combining advanced hardware, real-time analytics, and enhanced connectivity that is onsite, edge computing stands to revolutionize industries and user experiences.

Dell Technologies is at the forefront, tackling the challenges for our customers and helping them capitalize on these opportunities. Thanks to strategic innovation and holistic solutions, Dell Technologies PowerEdge servers are helping organizations navigate the edge computing landscape.

To learn more about how an effective edge strategy can generate new value for your organization, refer to our 5-Ways to Drive Innovation at the Edge [eGuide](#).

[Learn more about PowerEdge XR servers for edge computing](#)

References

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