

Modernizing Your IT Infrastructure

Unlocking the potential of emerging workloads with Dell PowerEdge servers and Intel® Xeon® processors

Executive summary

The technology landscape is shifting dramatically. AI, advanced analytics, and edge-deployed applications are no longer exclusive to large enterprises; they're becoming essential tools for growing businesses as well. Running these advanced workloads requires infrastructure capable of handling intense processing demands, massive data throughput and low-latency responses — capabilities that aging hardware can't provide. This creates a critical infrastructure gap that can stall innovation and limit growth.

This white paper explores how modernizing your servers with Dell PowerEdge R470, R570, R670 and R770 servers with the latest Intel® Xeon® 6 processors provides the secure, scalable and efficient foundation required to adopt the latest technologies. You'll learn about the bottlenecks of legacy hardware, the performance capabilities of the new PowerEdge lineup and the strategic value of future-proofing your IT environment today to support the innovations of tomorrow.



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From keeping the lights on to driving innovation

For decades, technology has focused on efficiency. It automated routine work, stored information and helped people stay connected. Today, that baseline is assumed. IT is no longer judged by whether systems stay online, but by how effectively technology helps the business move faster, compete harder and grow smarter.

Growing organizations now face a different question. Instead of asking how to maintain existing systems, they're asking how technology can accelerate decision-making, open new revenue paths and keep pace with constant change. Simply put, the businesses pulling ahead are the ones treating infrastructure as a growth platform rather than a maintenance obligation.

Data sits at the center of this shift. Every interaction, transaction and operational process produces insight potential. Turning that data into action requires infrastructure built for modern workloads. Legacy servers designed for basic applications often struggle with today's demands around density, security, performance and energy efficiency. The result is friction right when speed matters most.



Modern Dell PowerEdge servers with Intel Xeon processors provide a foundation designed for this reality. They support data-intensive workloads with the agility, scalability and performance needed to adapt as business priorities evolve, helping you meet today's demands while staying ready for what comes next.



Advanced technologies are now mainstream

Technologies that once seemed futuristic are now practical solutions for everyday business problems, and growing businesses are taking notice.

AI

AI is becoming more accessible, helping businesses enhance customer experience with chatbots, improve operational efficiency with automated inventory management, and strengthen security with AI-driven threat detection.

Edge-deployed applications

Data is increasingly created outside the main office, in retail stores, on factory floors and in remote clinics. Edge computing allows you to process this data close to where it's generated to reduce latency and bandwidth costs, so you can support real-time applications like video analytics for foot traffic patterns or sensor monitoring for predictive maintenance.

Advanced analytics

Moving beyond simple reporting, advanced analytics uses statistical algorithms to predict future trends. This requires greater compute performance capabilities to process large datasets quickly and deliver timely insights.

All these workloads share a common requirement: **they are compute-intensive and data-hungry**. They demand low latency, high throughput and significant processing power — requirements that aging infrastructure simply cannot meet.

The infrastructure gap: Why legacy servers inhibit innovation

Many organizations attempt to run modern workloads on legacy hardware, only to face performance bottlenecks and reliability issues. This “infrastructure gap” creates real challenges for your business.

Insufficient compute power Legacy processors were not designed for the complex math required by AI models. Attempting to run inferencing workloads on older cores results in slow response times, which can ruin the user experience or delay critical insights.	Throughput bottlenecks Modern workloads require moving massive amounts of data between storage, memory and the CPU. Older server architectures with slower I/O and memory can't feed the processor fast enough, leaving valuable compute resources idle.
Thermal and power limitations AI and analytics workloads generate significant heat. Legacy chassis designs often lack the advanced cooling needed to sustain peak performance without throttling, while poor performance-per-watt drives up operational costs.	Security risks Emerging workloads often involve sensitive proprietary data. Older servers lack the hardware-anchored security features — such as a silicon root of trust — that are essential to protect data against modern firmware and supply chain attacks.

The modern foundation: Dell PowerEdge with Intel Xeon 6 processors

To bridge the infrastructure gap, Dell Technologies provides a portfolio of PowerEdge servers engineered to give growing businesses access to compute performance built for the modern era. These servers balance enterprise-grade capabilities with the simplicity and right-sized economics required by growing businesses. At their core are the latest Intel® Xeon® 6 processors, which deliver a significant leap in performance, efficiency and security.

Exceptional performance

PowerEdge servers with Intel Xeon 6 processors deliver unmatched speed with advanced architecture and higher core counts. This helps critical applications — from databases to analytics — run faster and more efficiently, keeping your business ahead.

5X better performance¹

Greater efficiency

Dell PowerEdge servers with Intel Xeon 6 processors provide exceptional performance-per-watt. This means more computing power with less energy, helping you reduce operational costs while meeting sustainability goals.

83% reduced energy intensity²

Robust, integrated security

Built into the PowerEdge cyber-resilient architecture, Intel Xeon 6 processors include advanced hardware-level security features. With capabilities like Intel® Software Guard Extensions (SGX), sensitive data is protected at the silicon level, offering a level of security unmatched by software-only solutions.

3.5X more security capability than Super Micro³



¹ Based on Dell analysis comparing the SPECint® and SPECfp® scores of the Intel 6th Gen Xeon 6787P (2 GHz, 86C, 350W) in a Dell R770 (1550 and 1560) with the same scores for an Intel Xeon 8280 (2.7GHz, 28C, 205W) in a Dell PowerEdge R740xd (375 and 296). The ratio of the scores shows that 5 of the R740xd servers would give a total score similar to that for the single R770 as configured above. The CPUs in 14 R770 would have a total TDP of 9800W (14x2x350W). The CPUs in 70x R740xd would have a total TDP of 28700W (70x2x205) where each Intel Xeon 8280 has a TDP of 205W. This represents a CPU power reduction of 66%. Each

of these servers have a height of 2RU. Cost of CPU power used calculated using CPU power and 8760 hours in a year with cost of electricity at \$0.14 per KWH. Data accurate as of 03/10/2025. Actual performance will vary.

² Source: [Sustainable Servers | Dell UK](#), accessed March 2026.

³ Comparing Dell iDRAC9 vs Supermicro® IPMI. Based on a Principled Technologies report commissioned by Dell Technologies, [Increase security, sustainability, and efficiency with robust Dell management tools](#), April 2024.



Unlock AI and advanced analytics with confidence

Modernizing on Dell PowerEdge servers with Intel Xeon 6 processors transforms AI from an abstract concept into a tangible business capability. The key lies in the architecture's ability to support AI inferencing, which is the process of putting a trained AI model to work on your data.

For many businesses, moving terabytes of data to the public cloud for analysis is too slow and too expensive. The PowerEdge R670 and R770 give you the power to run AI models on-premises, right next to your data, for:



Privacy and control

Keep sensitive customer or proprietary data within your physical control.



Low latency

Achieve near-real-time responses for critical applications like fraud detection.



Cost predictability

Avoid unpredictable cloud-eegress fees associated with moving large datasets.

Intel Xeon 6 processors include built-in AI accelerators, which significantly boost deep learning and inference performance, making the CPU a powerful and efficient engine for many AI workloads.

Extend compute to the edge

The edge is anywhere your business interacts with the physical world. Modernizing your infrastructure gives you the ability to extend server capabilities beyond the main office or data center. To do that, you need:

Reliable edge operations

The PowerEdge R470 and R570 provide a balance of performance and footprint ideal for "near-edge" environments like retail back offices or warehouse control rooms, bringing powerful compute closer to the point of data creation.



Simplified remote management

Managing servers across multiple locations can be complex. The integrated Dell Remote Access Controller (iDRAC) provides secure, agent-free remote management. You can monitor health, update firmware and troubleshoot issues for a server in a remote branch without ever leaving your desk. This capability is critical for successful edge deployments where on-site IT staff is rare.



Keep your IT strategy ready for what's next

Investing in infrastructure is a long-term commitment. You need assurance that the hardware you buy today will remain relevant and valuable for years to come. Dell gives you:

Scalability by design

The PowerEdge R770 is built with expansion in mind. You may not need terabytes of RAM or dozens of drives today, but as your data grows and your AI models become more complex, the server can grow with you. This modularity prevents costly "rip and replace" cycles and protects your initial investment.



Commitment to open standards

Dell and Intel champion open standards, for compatibility with a vast ecosystem of software, from virtualization platforms to container orchestration with Kubernetes®. You're not locked into a proprietary niche; you're building on a platform that the industry supports.



A cyber-resilient architecture

Security threats will only become more sophisticated. The PowerEdge security framework starts with a Secured Component Verification to protect hardware integrity from the factory and is anchored by a silicon root of trust, creating an immutable foundation for booting the server securely.



Start building your foundation for progress

The path to modernization is not just about upgrading hardware, it's about upgrading your business potential. By retiring legacy infrastructure and deploying Dell PowerEdge R470, R570, R670 and R770 servers with Intel Xeon 6 processors, you're removing barriers to innovation and giving your organization the power to move forward. You gain the ability to:

Experiment with AI without unpredictable cloud bills.

Analyze data in real-time to make faster, more informed decisions.

Secure your digital assets with an enterprise-grade, integrated security framework.

Scale effortlessly as your business grows.

With Dell Technologies and Intel, you have partners dedicated to delivering infrastructure that's ready for whatever comes next — so you can innovate with confidence.



Ready to modernize?

Contact your Dell Technologies representative to discuss how the new PowerEdge family with Intel Xeon processors can help you unlock the potential of your emerging workloads.

Learn more

Dell.com/en-us/lp/servers-intel



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Contact a Dell Technologies Expert



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