DELL Technologies

AMD

Whitepaper

Stop Overpaying for Performance

The forward-thinking business's guide to server modernization

Executive summary

Growing businesses face a critical turning point in their technology strategies. As digital demands grow, aging infrastructure equipment creates bottlenecks that stifle innovation and increase risk. Making a change requires balancing the need for enterprise-grade performance with strict budget constraints and energy efficiency goals.

This white paper explores the strategic advantages of modernizing infrastructure with the latest generation of single-socket servers. It introduces the new Dell PowerEdge R4715 and PowerEdge R5715 servers with the 5th Gen AMD EPYC™ processor. These solutions offer an entry point for organizations looking to modernize hardware, reduce operational costs, and achieve right-sized mainstream performance through a streamlined, single-socket architecture. By leveraging the latest AMD EPYC™ processor, these servers offer the density and agility required for modern workloads, from virtualization to data analytics, while providing a clear path for future scalability.

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The hidden cost of “good enough” infrastructure

For many growing organizations, infrastructure evolves organically. What starts as a few desktops acting as file servers often grows into a disparate collection of aging hardware. While this approach may seem cost-effective at first, it creates a technical debt that manifests in higher energy bills, increased management complexity and security vulnerabilities.

The problem with aging hardware

Relying on servers or workstations beyond their optimal lifecycle creates significant challenges:

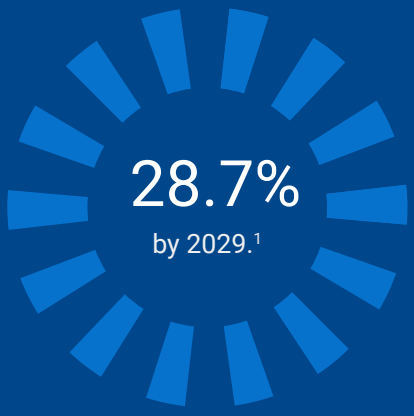
- **Performance bottlenecks:** Older processors cannot keep pace with modern applications, leading to slow response times for end-users
- **Operational inefficiency:** Legacy hardware consumes disproportionately high amounts of power and cooling relative to the compute power it delivers
- **Security risks:** Outdated hardware often lacks the modern security features essential for a Zero Trust architecture

The one-socket advantage

A common misconception in the server market is that more is better. For years, dual-socket servers were the standard for performance, and they remain an excellent choice for many demanding applications. However, advances in processor density mean that a modern single-socket server can provide powerful, efficient compute while reducing platform complexity, making it a great option for those transitioning from older hardware or desktop systems.

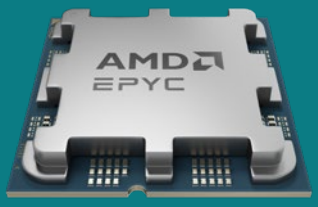
The market shift

According to IDC forecasts, the worldwide server market will see a compound annual growth rate (CAGR) of:



This growth signals a broader market shift; businesses are actively moving away from ad hoc solutions toward purpose-built rack servers that offer density, manageability and reliability. Modernizing is no longer a luxury. It is a necessity for maintaining competitiveness.

[1] IDC, Servers Market Insights, October 2025.



Enterprise performance, entry-level price

The single-socket architecture of the Dell PowerEdge R4715 and PowerEdge R5715 servers with AMD EPYC™ processor represents a strategic sweet spot for growing businesses. By utilizing a single, high-core-count processor, these servers eliminate the need for a second CPU, which reduces upfront hardware costs versus dual-socket architectures.

However, the savings extend beyond hardware. Since many software licensing models charge per socket, consolidating workloads onto a powerful one-socket server can significantly reduce recurring licensing fees. Additionally, a single-socket environment simplifies workload management, eliminating the complexity that comes with multi-processor memory access systems and streamlining operations for greater efficiency.

The TCO equation

The total cost of ownership (TCO) benefits are clear:

Lower acquisition cost: Buy only the compute power you need	**Reduced OpEx:** Lower power consumption and cooling requirements	**Licensing savings:** Minimize per-socket software costs

A single-socket architecture allows growing businesses to invest in storage or memory capacity rather than unnecessary sockets.

Meet the Dell PowerEdge R4715 and R5715 servers

Dell PowerEdge R4715 and PowerEdge R5715 servers are purpose-built to bring mainstream performance to value-conscious businesses. They feature the latest AMD EPYC™ architecture, designed to handle demanding workloads with efficiency.

They both give you:

Core density:
Supports up to one 32-core 5th Gen AMD EPYC™ processor for dense workload consolidation

Speed:
AMD "Zen 5" core architecture, provides up to 17% better instructions per clock (IPC) for enterprise and cloud workloads[2]

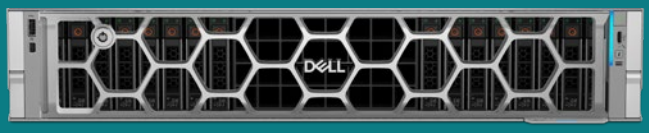
Memory:
Up to 1.5TB of DDR5 memory keeps applications running smoothly

Scalability:
Add networking or storage without the need to upgrade

Design:
Air-cooled architecture helps keep energy costs low

Dell PowerEdge R4715 and R5715 deliver the right balance of performance, efficiency, and simplicity for mainstream workloads. They are ideal for:

- Virtualization and private cloud
- Data analytics and databases
- Software-defined storage
- Edge and space-constrained environments
- High-performance compute at optimized cost



Dell PowerEdge R4715: The efficient workhorse

The PowerEdge R4715 serves as an ideal replacement for aging tower servers or inefficient legacy rack units.

- **Connectivity:** Up to three PCIe Gen5 slots for high-speed networking or storage controllers
- **Density:** Stack more compute in a smaller 1U footprint
- **Storage:** Up to 246TB with NVMe® as an option to give you faster access to data

Both servers feature a refined chassis design that prioritizes serviceability. By incorporating toolless access to key components and streamlined internal cable management, these units significantly reduce the hands-on time required for hardware swaps or upgrades. This allows your IT team to focus on high-level optimization rather than being bogged down by physical maintenance.

Dell PowerEdge R5715: The performance scaler

For organizations requiring more I/O bandwidth and expandability, the PowerEdge R5715 server steps up the capability while maintaining single-socket efficiency.

- **Connectivity:** Up to four PCIe Gen5 slots for high-speed networking or storage controllers
- **Storage:** Support for up to 288TB storage

[2] Based on AMD internal testing as of 9/10/2024, geomean performance improvement (IPC) at fixed-frequency.

Doing more with less

The transition to the PowerEdge R4715 and PowerEdge R5715 with the latest AMD EPYC™ processor is not just about updating hardware. It is about unlocking new capabilities. These servers are engineered to combine outdated systems into one streamlined solution, saving you time, reducing complexity, and improving overall efficiency.

Virtualization and VDI

Virtualization is the foundation and primary driver of server consolidation, allowing you to run multiple simulated environments or dedicated resources from a single physical hardware system. With up to 32 cores and 1.5TB of memory, these servers are able to handle the demands of multiple virtual environments simultaneously, ensuring smooth performance even under heavy loads and making them ideal virtualization hosts.

Database and data analytics

Data is the lifeblood of modern business. The PowerEdge R4715 and PowerEdge R5715 servers utilize DDR5 memory and PCIe Gen5 connectivity to accelerate data throughput, delivering faster performance and improved efficiency to handle more data and run demanding applications smoothly. This makes them excellent choices for:

- **In-memory databases**: Faster access to critical business data
- **Real-time analytics:** Processing customer insights without latency
- **Business intelligence**: Running complex queries rapidly to support decision making

Edge computing

For businesses with distributed locations such as retail chains, manufacturing plants, or remote branch offices, the compact 1U design of the PowerEdge R4715 and the thermal efficiency of both PowerEdge R4715 and PowerEdge R5715 servers make them ideal for space- and power-constrained edge deployments. These servers bring data center-class processing power directly to where data is generated, enabling:

Real-time decision making:
Process data locally to trigger immediate actions, such as adjusting assembly line speeds or updating retail inventory levels, without waiting for cloud data transfers

Reduced bandwidth costs:
By filtering and analyzing data at the source, you drastically reduce the need to transmit massive datasets back to a central core or the cloud

Enhanced reliability:
Edge computing enables critical local operations to continue to function smoothly even if the primary network connection to the central data center is interrupted

Whether you're managing a fleet of IoT sensors or powering local AI inferencing, these servers provide the robust foundation needed to turn edge data into a competitive advantage.

Energy efficiency and sustainability

Sustainability is no longer just a corporate buzzword; it's an operational mandate. Reducing energy consumption lowers utility bills and aligns with corporate responsibility goals. The PowerEdge R4715 and PowerEdge R5715 servers are engineered with this in mind, incorporating advanced cooling systems, efficient power supply units, and optimized hardware designs that reduce energy consumption while maintaining high performance.

Smart cooling and power design

For customers concerned that upgrading to high-performance hardware means higher utility costs, these systems offer a more efficient path forward. An air-cooled design is optimized for maximum airflow and engineered to eliminate hotspots and minimize fan workload.

By integrating high-efficiency power supply units and intelligent thermal sensors, these servers deliver more compute cycles per watt compared to previous generations, so you can process more data while consuming less electricity. The result is a quieter, cooler data center or operating environment that reduces the strain on cooling infrastructure and lowers overall operational expenses. PowerEdge R4715 and R5715 servers offer:

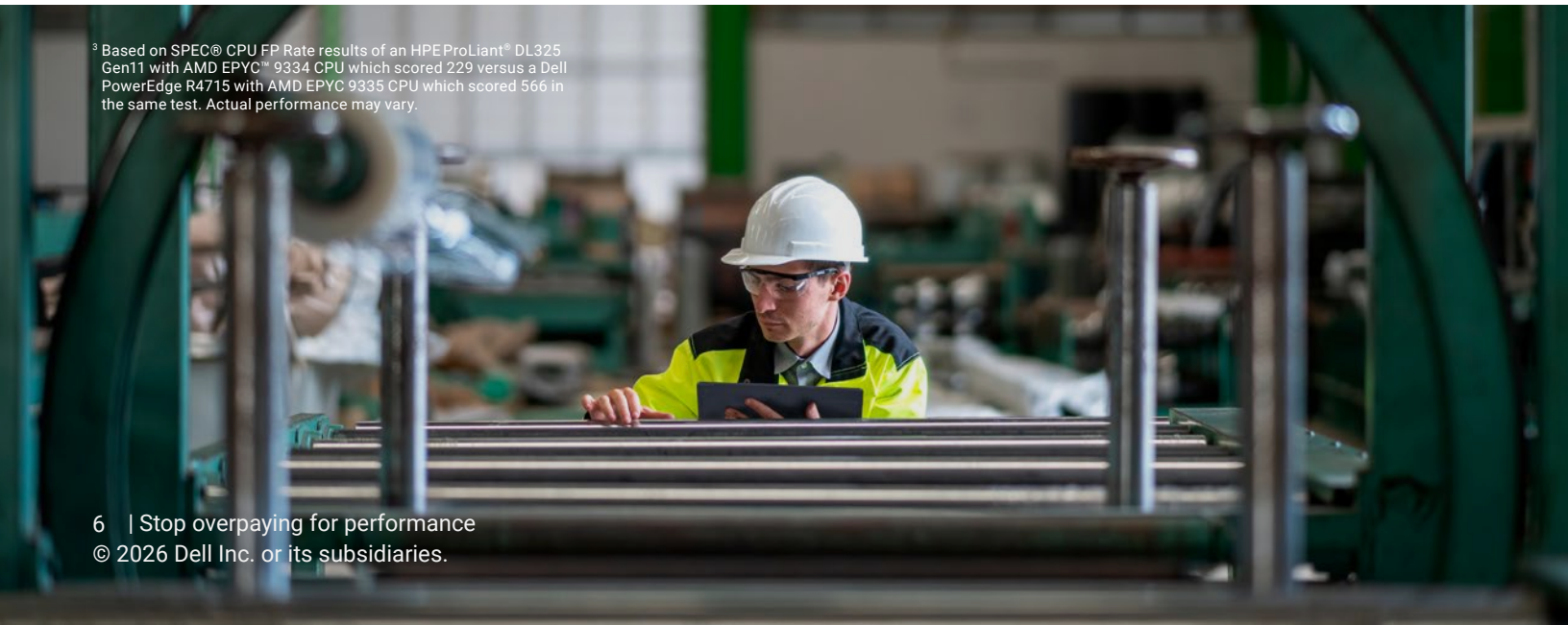
increased performance per core versus previous generation server.[3]

The AMD efficiency advantage

AMD EPYC™ processor is renowned for its exceptional performance-per-watt efficiency, making it a top choice for businesses that need to balance power consumption with high performance. Designed with advanced architecture and energy optimization, this processor delivers impressive computing power while maintaining lower energy costs. This combination of efficiency and performance reduces environmental impact while helping businesses achieve better scalability and cost savings. Whether handling cloud workloads, big data analytics, or virtualization, the latest AMD EPYC™ processor sets a new standard for energy-efficient computing.

By delivering more compute power within the same power envelope, these servers allow you to run more workloads without upgrading your power infrastructure or increasing your electricity bills.

- **Operational savings**: Replacing older, aging infrastructure with modern servers can result in significant reductions in energy usage, directly impacting the bottom line
- **Sustainability:** Lower energy consumption translates to a smaller carbon footprint, helping organizations meet green infrastructure targets



[3] Based on SPEC® CPU FP Rate results of an HPE ProLiant® DL325 Gen11 with AMD EPYC™ 9334 CPU which scored 229 versus a Dell PowerEdge R4715 with AMD EPYC 9335 CPU which scored 566 in the same test. Actual performance may vary.

Dell PowerEdge R6715 and PowerEdge R7715 servers
These high-performance server models are designed to handle demanding enterprise workloads. With exceptional density and expandability, they are ideal for tasks like AI training, HPC, and data-intensive applications.

Dell PowerEdge R6715

Dell PowerEdge R7715

By upgrading to the Dell PowerEdge R4715 or PowerEdge R5715 with 5th Gen AMD EPYC™ processor, you're doing more than just replacing hardware. You're **unlocking efficiency**, enhancing security and preparing your business for the next wave of digital innovation.

A family built for scalability

Engineered to deliver exceptional value and right-sized performance for growing business and edge computing, Dell PowerEdge R4715 and PowerEdge R5715 servers are also part of a broader, cohesive server family designed for growth and adaptability. This integrated approach means that as your needs evolve and data demands increase, you can scale seamlessly and predictably, without the need for disruptive and costly platform migrations.

For example, the PowerEdge R4715 and PowerEdge R5715 servers provide access to a consistent management ecosystem that extends to more powerful models like the PowerEdge R6715 and PowerEdge R7715 servers.

Because PowerEdge R4715 and PowerEdge R5715 servers share the same architectural DNA as high-performance enterprise models, IT teams need to learn only one management interface, one deployment workflow, and one unified security protocol as their server fleet grows.

By standardizing on a single ecosystem, you can significantly reduce the risk of human error and eliminate the hidden tax of training staff on multiple platforms. Whether managing a single PowerEdge R4715 server in a branch office or a cluster of PowerEdge R7715 servers in a data center, the administrative experience remains seamless. This commonality allows for faster troubleshooting, streamlined firmware updates, and the ability to scale infrastructure rapidly without the friction of learning new systems.

You're ready for a more modern experience

Modernizing infrastructure is more than just a hardware refresh; it is a strategic investment in the future of your business. For small and medium organizations, maintaining the status quo with aging servers and desktops is a significant liability. These legacy systems are more than just slow; they create security vulnerabilities, drive up maintenance costs, and hamper the agility needed to scale in a competitive market.

Moving away from legacy infrastructure allows teams to shift their focus from putting out fires to driving innovation. Dell PowerEdge R4715 and PowerEdge R5715 servers offer a compelling solution. They break the cycle of "good enough" by delivering:

- **Cost efficiency:** A single-socket design that reduces hardware, licensing and operational costs
- **Performance:** Mainstream power with up to 32 cores and DDR5 memory to handle modern workloads
- **Simplicity:** A scalable, easy-to-manage platform that fits seamlessly into existing environments

Take the next step

Evaluate your current infrastructure today. Identify the bottlenecks slowing down your business and discover how a Dell PowerEdge R4715 or PowerEdge R5715 server can turn your infrastructure into a driver of growth.

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