



Research Abstract



# Enhance Efficiency and Performance in Your Data Center with the Right Servers and Processors

Research by Prowess Consulting found that Dell™ PowerEdge™ servers powered by Intel® Xeon® 6 processors with Performance-cores (P-cores) offer efficiency with high performance for diverse workloads, from general-purpose computing to AI and analytics.

In today's business landscape, high performance alone isn't sufficient. Data centers need to be agile and efficient in order to cost-effectively support a diverse array of workloads. Achieving this goal requires processors and servers that provide the optimal mix of low-latency bandwidth, acceleration, cooling, and power efficiency.

Research by Prowess Consulting revealed that Dell™ PowerEdge™ servers equipped with Intel® Xeon® 6 processors with Performance-cores (P-cores) deliver both performance and efficiency for various workloads, including AI and analytics. We uncovered several world-record benchmarks for this server/processor combination, demonstrating exceptional overall performance, in addition to impressive performance per watt. Additionally, we found several benchmark tests that show how PowerEdge servers can outperform competitor solutions in terms of overall performance, performance under load, and performance at idle. Furthermore, generation-over-generation comparisons indicate that organizations can anticipate a significant performance boost from a data center refresh.

Overall, Prowess Consulting found that PowerEdge servers with Intel Xeon 6 processors with P-cores offer businesses a compelling option for consolidating workloads in the data center, resulting in reduced space, power consumption, and cooling costs, which can ultimately lead to a lower total cost of ownership (TCO) compared to organizations' older server infrastructures.

Based on published testing, Dell™ PowerEdge™ R770 servers with Intel® Xeon® 6787P processors achieved notable results across several categories and workloads.

## Leadership Scores

For virtualization (VMmark® 4.0.2), SAP HANA®, and generation-over-generation comparisons for database workloads¹

## Efficient Performance Across Workloads

Based on published test results, we determined that the combination of newer-generation PowerEdge servers with Intel Xeon 6 processors can help virtualized workloads run efficiently, providing organizations with both flexibility and consolidation opportunities in the data center.

A Dell™ PowerEdge™ R770 server delivered  
**world-record performance**

for two-node configurations running VMmark® 4.0.2 with Intel® Xeon® 6787P processors.<sup>1</sup>

Other demanding workloads also benefit from PowerEdge servers built with Intel Xeon 6 processors, which can even take on many AI and high-performance computing (HPC) tasks without requiring a dedicated GPU. Database and analytics applications, such as SAP HANA® and PostgreSQL®, also benefit from the low-latency performance offered by this combination.

The Dell™ PowerEdge™ R770 server  
with Intel® Xeon® 6 processors with P-cores delivered  
**world-record performance**

for SAP® Business Warehouse edition  
for SAP HANA® benchmarks with a two-processor server  
in all categories.<sup>1</sup>

The Dell™ PowerEdge™ R670 server with 86-core Intel® Xeon® 6  
processors with P-cores offers up to  
**35% more online transaction processing  
(OLTP) performance and up to 42% more online  
analytical processing (OLAP) performance**

than the previous-generation PowerEdge R760 with  
64-core Intel Xeon Platinum 8592+ processors.<sup>1</sup>

## Looking Under the Hood

Several factors, from CPU to chassis, likely contributed to the performance and efficiency gains we uncovered in our research. For example, hardware-based accelerators baked directly into the Intel® CPUs accelerate compute-intensive data services workloads. These accelerators include [Intel® QuickAssist Technology \(Intel® QAT\)](#) and [Intel® Data Streaming Accelerator \(Intel® DSA\)](#). [Intel® Advanced Matrix Extensions \(Intel® AMX\)](#) is particularly useful for accelerating AI workloads because the latest release of Intel Xeon 6 processors with P-cores supports INT8, BF16, and FP16 data types.

On the Dell Technologies side, the PowerEdge chassis surrounding the Intel CPU provides optimized airflow designed to maximize air cooling capabilities. Features like component-mapped fan zoning, intelligent fan controls, and Dell™ Smart Flow strategic airflow channeling target areas in the servers that need cooling the most. These features reduce hot spots and help maximize peak performance efficiency. In addition, PowerEdge servers include advanced CPU heatsink designs and optimized motherboard layouts to further streamline temperature regulation. These enhancements can help maximize performance without thermal throttling. Management controls, including the Integrated Dell™ Remote Access Controller (iDRAC) and the Dell™ OpenManage™ Enterprise Power Manager plugin, enable real-time power and thermal monitoring and control of servers.

### Learn More

As our study shows, modernizing and consolidating infrastructure on Dell PowerEdge servers powered by Intel Xeon 6 processors can help you meet your performance, efficiency, and sustainability needs in the data center. For complete study details, visit [“Modernize and Consolidate Your Data Center with High-Performing, Efficient Servers and Processors.”](#)

### Endnotes

<sup>1</sup> Prowess Consulting. “Modernize and Consolidate Your Data Center with High-Performing, Efficient Servers and Processors.” May 2025.



### Legal Notices and Disclaimers

The analysis in this document was done by Prowess Consulting and commissioned by Dell Technologies. Results have been simulated and are provided for informational purposes only. Any difference in system hardware or software design or configuration may affect actual performance. Prowess and the Prowess logo are trademarks of Prowess Consulting, LLC. Copyright © 2025 Prowess Consulting, LLC. All rights reserved. Other trademarks are the property of their respective owners.