Propel your business into the future by refreshing with new one-socket Dell PowerEdge R7715 servers with 32-core AMD EPYC 9355 processors

Moving from older Dell PowerEdge R740xd servers to the latest Dell servers can speed data analysis and offer CPU resources for growth while also supporting company web traffic

The server clusters you currently rely on to run your company website and collect and analyze customer data have been serving you well for the last several years. Deciding when it's the right time to invest in newer technology can be tricky for any business, especially without concrete data about how the new tech can solve business problems and set you up for smart decisions in the future.

To help IT decision makers weigh these options, we compared the performance of a multipurpose server cluster of three legacy Dell™ PowerEdge™ R740xd servers with 16-core Intel® Xeon® Gold 6130 processors to two configurations of a cluster of three new Dell PowerEdge R7715 servers powered by the 32-core AMD EPYC™ 9355 processors. We used these clusters to run a simultaneous mixed workload that reflects the priorities of many small and medium businesses: data analytics and web hosting performance.

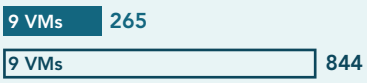
We found that the new Dell PowerEdge R7715 servers with AMD EPYC™ 9355 processors offered superior data analysis performance while supporting higher levels of website usage. Both configurations could help you get quicker insights from customer data and assist you in helping customers make smarter purchasing choices that also boost your sales. The first configuration ran the same number of WordPress and SQL VMs as the R740xd servers, but left us with CPU headroom to expand. Thus, for our second R7715 configuration, we increased from 9 to 15 SQL VMs while retaining our three WordPress VMs.

A significant benefit of the performance increases is the potential for server consolidation. Moving to a new Dell PowerEdge R7715 cluster means you can consolidate five older clusters onto one newer cluster, which can save on licensing and rack space and also give you the potential for lower IT management costs and other savings.

68.6% less time to complete data analysis

Better performance for existing SQL databases

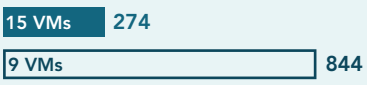
Total time in seconds to complete 9 SQL workloads



67.5% less time to analyze data

Better performance while increasing capacity to 15 VMs

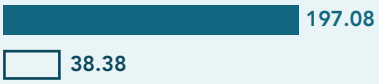
Total time in seconds to complete SQL workloads



Save up to 80% in licensing costs

With a 5:1 server consolidation ratio based on time to complete SQL query sets

Query sets/hour



Continue to host your websites at a performance level capable of handling daily SMB traffic

- 3x Dell PowerEdge R7715 servers with AMD EPYC 9355 processors
- 3x Dell PowerEdge R740xd servers with Intel Xeon Gold 6130 processors

How we tested

Because we wanted to assess performance for small and medium organizations that host their own websites and seek to harness the benefits that analyzing their data can provide, we compared performance when simultaneously running virtualized data analysis and WordPress applications on three-node Windows Server 2025 Hyper-V clusters with Storage Spaces Direct. We used the TPROC-H workload from the HammerDB benchmark suite to perform database queries and the Siege benchmark to test the web server. We recorded performance statistics from these tests for the following clusters:

- Three legacy dual-socket Dell PowerEdge R740xd servers, each with two 16-core Intel® Xeon® Gold 6130 processors, running 9 SQL Server VMs and 3 WordPress VMs
    - Each server had 128 GB of DDR4 memory, two 240GB SSDs, and 20 400GB SAS SSDs
- Three current-gen, single socket Dell PowerEdge R7715 servers, each with one 32-core AMD EPYC™ 9355 processor, running 3 WordPress VMs and either 9 or 15 SQL Server VMs
    - Each server had 384 GB of DDR5 memory, two 1.92TB SSDs, and six 3.2TB SSDs

We then used this data to determine how many older clusters a business could consolidate onto one newer cluster so that they might reap the benefits of savings in licensing, space, and more. To learn more about the configurations we tested and see step-by-step details for completing testing, please see the science behind the report.

About the Dell PowerEdge R7715

From the latest generation of the PowerEdge server portfolio comes the Dell PowerEdge R7715, a single-socket, 2U rack server powered by a new 5th generation AMD EPYC™ processor.

The PowerEdge R7715 supports:

- Up to 24 DDR5 DIMM slots for 6TB max memory
- Up to 8 PCIe® Gen5 slots
- SmartCooling configuration that enhances cooling to allow most configurations to be air-cooled[1]

For more information about the Dell PowerEdge R7715, visit https://www.dell.com/en-us/shop/dell-poweredge-servers/new-poweredge-r7715-rack-server/spd/poweredge-r7715/.

Is your software still supported?

Windows Server 2025 became widely available in November 2024, offering organizations updated features, including "security advancements and new hybrid cloud capabilities in a high-performance, AI-capable platform." *As new software versions become available, older software versions reach end-of-life, which means that support and patching is no longer available. Service expiry for your current hardware-and-software solutions could make now the perfect time to refresh your data center to take full advantage of new features in Windows Server 2025.

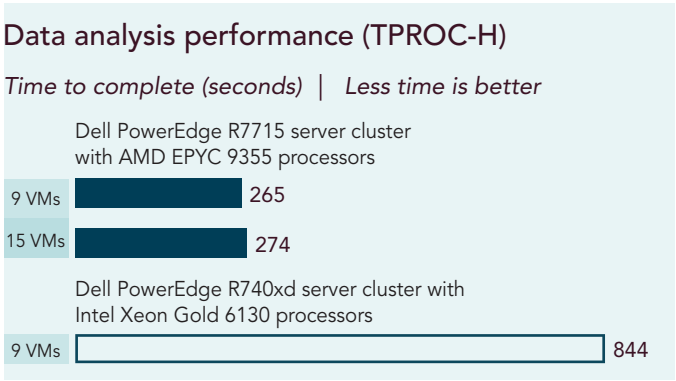
*Microsoft, "Windows Server 2025 - Evaluation Center," accessed April 22, 2025, https://www.microsoft.com/en-us/evalcenter/evaluate-windows-server-2025.

Get better data analysis performance plus room to grow

Small and medium businesses use data analysis to gain insights that drive business decisions. With a server cluster that completes sets of queries more efficiently, companies benefit in several ways. They can obtain insights and get them into the hands of decision makers earlier, run more queries at once, and consolidate their workloads onto fewer servers.

Figure 1 and table 1 show the results of the HammerDB TPROC-H benchmark when we ran it simultaneously with the Siege test tool for WordPress.

Figure 1: Data analysis performance of the two test clusters on the TPROC-H benchmark. Smaller numbers, reflecting less time to complete queries, are better. Source: Principled Technologies.



About HammerDB TPROC-H

Per HammerDB, the creator of this workload and the harness we use to run it, TPROC-H "represents the typical workload of a retailer running analytical queries about their operations."[3] Results from TPROC-H are, however, useful outside of retail environments. Any organization, from finance to healthcare and beyond, that runs data analytics or decision support workloads might find value in these test results.

TPROC-H outputs results in terms of how long a system takes to complete sets of 22 queries against each database. HammerDB derived this workload from the TPC-H benchmark specifications, but it is not a full implementation of official TPC-H standards. Consequently, TPROC-H results are not directly comparable to published TPC-H results.

About the AMD EPYC™ 9355 processor

The latest in processor technology, the 5th Gen AMD EPYC™ family offers performance that can meet the demands of many workloads. The AMD EPYC™ 9355 processor that we used in testing features 32 cores, 64 threads, and has max boost clock speeds up to 4.4 GHz. It supports AMD Infinity Guard and AMD Infinity Architecture and is targeted for workloads such as analytics, media streaming VM density, and more. Small and medium businesses may find this processor to be a cost-effective option that provides enough compute power and cores to run multiple virtualized workloads.[2]

To learn more about the AMD EPYC™ 9355, visit https://www.amd.com/en/products/processors/server/epyc/9005-series/amd-epyc-9355.html.

When running an equal workload, the newer Dell and AMD cluster completed the queries faster and more efficiently, allowing for room to grow to 15 VMs without losing performance. By using more of its available CPU (averaging 92 percent utilization), the newer cluster running 15 SQL Server VMs outperformed the legacy cluster with Intel Xeon processors, running 9 SQL Server VMs, by a factor of 3.08.

Table 1: Times better performance of the current-gen Dell PowerEdge R7715 cluster (with 9 and 15 VMs) vs. the legacy solution and CPU utilization for all three solutions. Source: Principled Technologies.

Cluster	Dell PowerEdge R740xd server cluster with Intel Xeon Gold 6130 processors (9 VMs)	Dell PowerEdge R7715 server cluster with AMD EPYC 9355 processors (9 VMs)	Dell PowerEdge R7715 server cluster with AMD EPYC 9355 processors (15 VMs)
Times better performance vs. legacy cluster with 9 VMs	——	3.18	3.08
CPU utilization (lower is better)	87%	62%	92%

We also found that the cluster with AMD EPYC processors running 15 workloads can complete 5.13 times as many query sets per hour as the legacy cluster with Intel Xeon processors running 9 workloads (see Figure 2). To calculate the number of query sets per hour for each solution, we divided the number of seconds in an hour (3,600) by the solution's time to complete all VM query sets. We then multiplied that quotient by the number of SQL Server VMs.

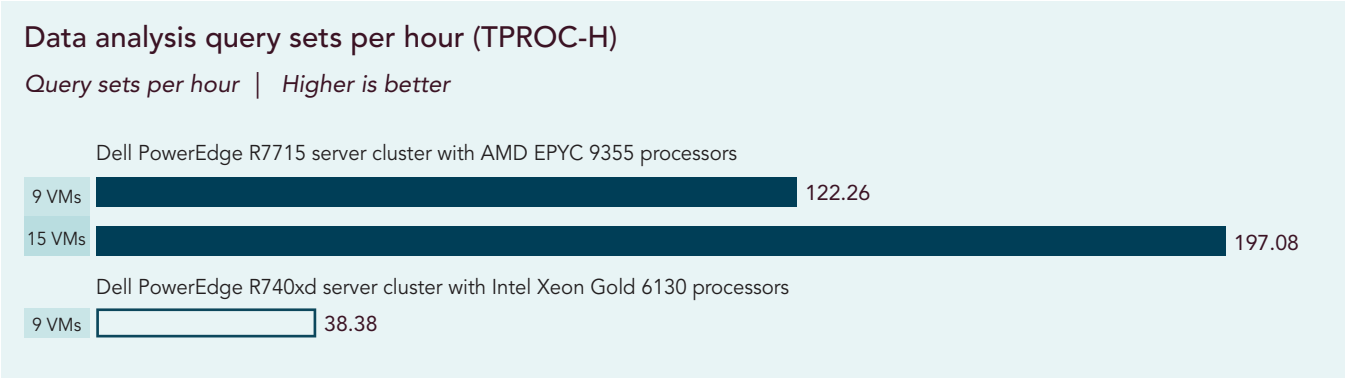


Figure 2: Calculated data analysis query sets per hour for the two clusters using the TPROC-H benchmark. Higher numbers are better. Source: Principled Technologies.

About the Siege test tool for WordPress

To test WordPress workload performance, we used Siege, a benchmarking tool that simulates connections to a web server to measure performance. According to creator Liquid Web, "It allows an admin or server owner to simulate hits or connections to a web server with a preconfigured number of concurrent connections from simulated users."[4]

Siege measures performance in transaction rate, throughput, amount of info transferred, and more. For our study, we report transactions per second to evaluate WordPress performance.

Support regular web traffic at the same time

Many organizations use WordPress to host their company websites. A server cluster that delivers more WordPress transactions per second can support more simultaneous connections to your websites, which means supporting more customers or users.

We ran the Siege benchmark simultaneously during our data analysis workload testing to demonstrate how well each cluster could handle running both analytics and WordPress workloads. Table 1 shows that both the 9-VM and 15-VM configurations of the Dell PowerEdge R7715 cluster with AMD EPYC processors supported more WordPress transactions per second (TPS) than the legacy cluster. According to a 2023 HubSpot survey, 46 percent of respondents claimed their business website receives 1,001 to 15K monthly visitors, and 19 percent reported 15,001 to 50K monthly visitors.[5] If 50K monthly visitors translates to a little more than 1,600 visitors a day and if we consider each TPS represents one concurrent website visitor action, then both VM configurations of the Dell and AMD cluster can handle the monthly site traffic for two-thirds of U.S. business websites with capacity to support a growing visitor base.

Table 2: Average WordPress transactions per second for each server cluster solution. Higher is better. Source: Principled Technologies.

Server clusters	Dell PowerEdge R7715 with AMD EPYC 9355 processors (9 SQL VMs)	Dell PowerEdge R7715 with AMD EPYC 9355 processors (15 SQL VMs)	Dell PowerEdge R740xd with Intel Xeon Gold 6130 processors (legacy solution)
Avg WordPress TPS	312.27	228.56	79.13

How improved performance leads to consolidation and savings

Based on the data analytics performance differences between the two clusters, small and medium businesses can potentially save by requiring fewer servers to run their workloads. For example, imagine a company that has accumulated a cluster of five legacy servers over the years to satisfactorily handle their data analysis and web server workloads. By upgrading to current-gen Dell PowerEdge R7715 servers with 32-core AMD EPYC 9355 processors, they could replace this cluster with one server (see Figure 3.) We based this consolidation estimate on the previously discussed query-sets-per-hour metric, with the newer Dell and AMD cluster supporting up to 5.13 times as many query sets per hour as the legacy cluster with Intel Xeon processors.

This consolidation could allow our fictitious company to save up to 80 percent on licensing and rack space,* with the potential to save on additional costs, such as admin time to perform routine maintenance and management, power, and cooling.

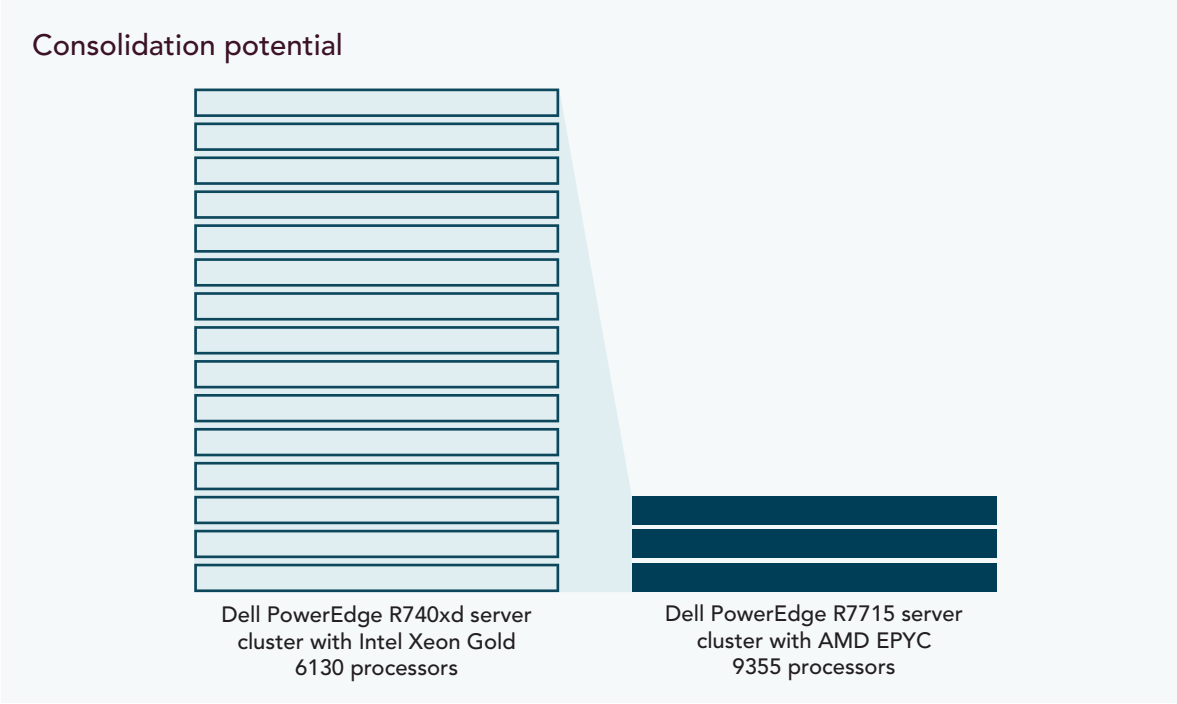


Figure 3: The consolidation potential of upgrading to Dell PowerEdge R7715 servers. Source: Principled Technologies.

*Given the needs of this solution, Windows Server 2025 and SQL Server are licensed per core. Because both solutions have the same core count, licensing costs would be the same: $255,510 per server. This includes $6,771 per Windows license (Source: https://www.microsoft.com/en-us/windows-server/pricing#pricing) and $15,123 per SQL license (Source: https://www.microsoft.com/en-us/sql-server/sql-server-2022-pricing#xe23a61d2dbd646d080f82aa8462e5353). Because the Dell PowerEdge R7715 with AMD EPYC 9355 processors delivers a 5:1 consolidation ratio, organizations could see an 80% reduction in overall solution licensing costs.

Conclusion

Refreshing your servers can bring new possibilities to your business. Our test results show that the new Dell PowerEdge R7715 server powered by the latest 32-core AMD EPYC 9355 processor speeds up data analytics workloads and strengthens web-hosting performance. In addition, the solution has CPU availability to run even more workloads. This means that by moving to the PowerEdge R7715, your company can support more customers. Faster analysis speeds improve your ability to make suggestions to customers quickly, which can have a big impact on revenues.

Don't hold onto your aging servers. Instead, meet today's business needs and prepare for the future by investing in the new Dell PowerEdge R7715—a move that can also reduce licensing costs by cutting down the number of servers you need to run data analysis and WordPress workloads.

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1. Dell, "New PowerEdge R7715 Rack Server," accessed March 21, 2025, https://www.dell.com/en-us/shop/dell-poweredge-servers/new-poweredge-r7715-rack-server/spd/poweredge-r7715/.
2. AMD, "AMD EPYC 9355," accessed March 21, 2025, https://www.amd.com/en/products/processors/server/epyc/9005-series/amd-epyc-9355.html.
3. HammerDB, "What is TPROC-H derived from TPC-H?" accessed January 19, 2025, https://hammerdb.com/docs/ch11s01.html#:~:text=TPROC%2DH%20in%20simple%20terms,analytical%20queries%20about%20their%20operations.
4. Liquid Web, "Siege: How to Benchmark Your Server," accessed January 13, 2025, https://www.liquidweb.com/blog/siege-how-to-benchmark-your-server/.
5. Allison Ko, "50+ small business website statistics for 2025," accessed March 11, 2025, https://www.wix.com/blog/small-business-website-statistics#.

Read the science behind this report at https://facts.pt/VOgq919 ►

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