

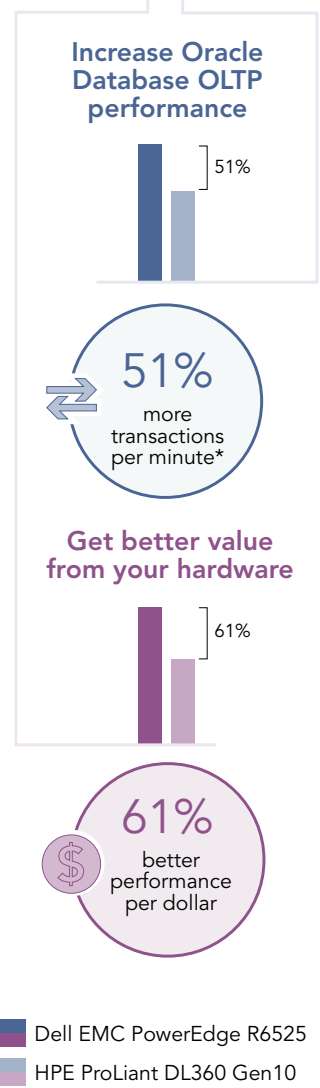


Get stronger Oracle Database OLTP performance with the Dell EMC PowerEdge R6525

This Dell EMC server with AMD EPYC 7F72 processors handled more transactions per minute and provided better performance per dollar than an HPE ProLiant DL360 Gen10 server with Intel Xeon Gold 6248R processors

E-commerce surged in the first quarter of 2020, with monthly visits to retail sites climbing globally from 12.8 billion in January to over 14 billion in March.¹ Businesses seeking to meet these growing demands stand to benefit from data center solutions that can process a high number of transactions. In hands-on testing, we put two such solutions to the test.

Using HammerDB, we tested the online transaction processing (OLTP) capabilities of two dual-socket server solutions running Oracle® Database 19c: a Dell EMC™ PowerEdge™ R6525 server with two 2nd Gen 24-core AMD EPYC™ 7F72 processors, and an HPE ProLiant DL360 Gen10 server with two 2nd Gen 24-core Intel® Xeon® Scalable Gold 6248R processors. We found that the Dell EMC server handled more transactions per minute (TPM) and offered better performance per dollar than the HPE server we tested. Compared to HPE ProLiant DL360 Gen10 servers with Intel Xeon Gold 6248R processors, organizations using Dell EMC PowerEdge R6525 servers with AMD EPYC 7F72 processors in an Oracle Database environment could gain greater OLTP performance while paying less.





How we tested

Our hands-on testing compared the following dual-socket servers:

- A Dell EMC PowerEdge R6525 powered by two 24-core 2nd Gen AMD EPYC 7F72 processors and 512 GB of RAM
- An HPE ProLiant DL360 Gen10 powered by two 24-core 2nd Gen Intel Xeon Gold 6248R Scalable processors and 512 GB of RAM

We measured the transactional database performance of each system using Oracle Database 19c with HammerDB, an open-source benchmarking tool that tests the performance of many leading databases.² We chose the TPC-C-like workload to demonstrate the online transaction processing performance capabilities of each server, which benefit from high core counts and fast memory. With this workload, we simulated an e-commerce business that processes new orders and produces a transactions per minute (TPM) metric from a mix of 5 different transactions. The benchmark tool includes two built-in workloads derived from industry standards: a transactional (TPC-C-like) workload and an analytics (TPC-H-like) workload. We used the TPC-C-like workload, measuring how many transactions per minute each solution processed. We ran this workload three times on each server and selected the median result of the three runs. Note that our test results do not represent official TPC results and are not comparable to official TPC-audited results. For a more detailed overview of our testing process and configurations, see the [science behind the report](#).

We used the hardware list price for each solution to calculate a price-to-performance ratio for the Dell EMC and HPE solutions.

About the Dell EMC PowerEdge R6525

The Dell EMC PowerEdge R6525 server we tested contained two 2nd Gen AMD EPYC 7F72 processors with 24 cores each. According to Dell EMC, this dual-socket 1U server is “highly configurable” and delivers “outstanding balanced performance and innovations for dense compute environments to address traditional and emerging workloads and applications.”³ The server offers up to 4 TB of RAM at 3,200 MT/s, 64 cores per processor, 12 SAS, SATA, and/or NVMe drives, and two single-wide GPUs. Learn more at <https://www.dell.com/en-us/workshop/poww/poweredge-r6525>.



Boost Oracle Database OLTP performance

When we ran the transactional workload on both solutions, the Dell EMC PowerEdge R6525 server with AMD EPYC 7F72 processors handled 51 percent more transactions per minute (TPM) than the HPE ProLiant DL360 Gen10 server with Intel Xeon Gold 6248R processors. Note that, because the Oracle Database EULA does not permit us to publish exact results, we normalized the performance numbers between the two platforms to make our comparison. By selecting servers that process more TPM, a business could support more users with a given number of servers or carry out a fixed amount of work with fewer servers.

The first scenario could let them expand their customer base and the second could lead to savings through data center consolidation.

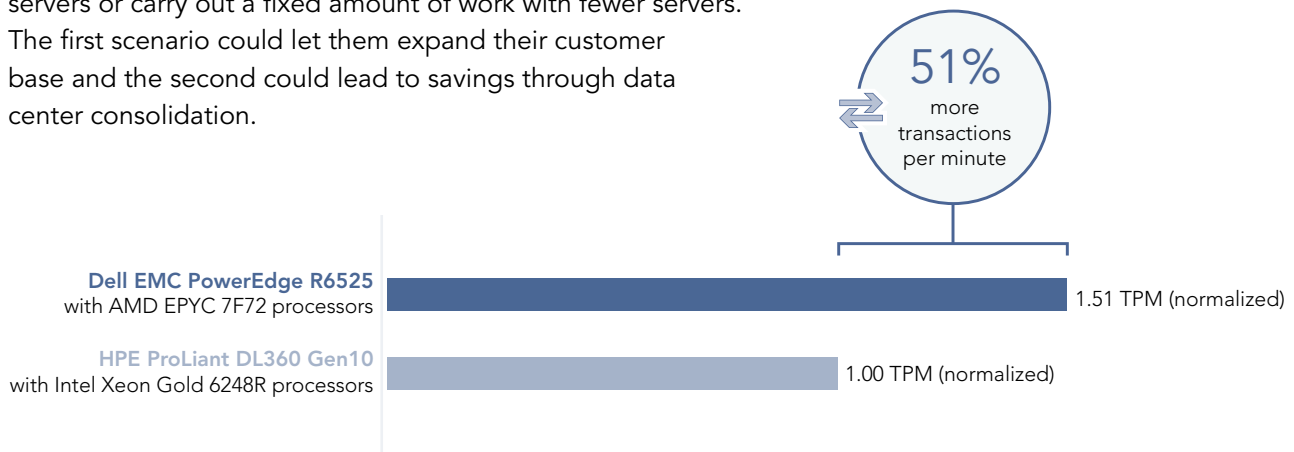


Figure 1: Oracle Database transactions per minute (normalized). Higher is better. Source: Principled Technologies

About AMD EPYC 7F72 processors

These 24-core processors use AMD Infinity Architecture and are part of the AMD EPYC 7002 Series. The latest offering from AMD, 2nd Gen AMD EPYC processors offer up to 64 cores and up to 3.9GHz maximum clock frequency. According to AMD, the 2nd Gen AMD EPYC processors are “the first server processors featuring 7nm hybrid multi-die design and PCIe® Gen4 I/O.”⁴ The 7F72 model features what AMD calls “high-performance “Zen 2” cores” and offer the highest per-core performance within the EPYC family.⁵ Learn more at <https://www.amd.com/en/processors/epyc-7002-series>.



Get better value from your hardware

To determine the performance-to-price ratio, we took the total number of transactions per minute each solution achieved and divided it by the total hardware cost of each solution. We used only hardware costs because software licensing costs were the same for both solutions due to each having the same CPU and core counts. For the full hardware pricing details, see the [science behind the report](#).

We found that the Dell EMC server provided 61 percent better performance per dollar than the HPE server we tested (see Figure 2). With Dell EMC PowerEdge R6525 servers equipped with AMD EPYC 7F72 processors, an organization using Oracle Database could perform more transactional database work for every dollar spent on hardware, compared to the HPE ProLiant DL360 Gen10 server with Intel Xeon Gold 6248R processors we tested. This better performance-to-price ratio could enable businesses to expand their capacity and support more customers, which has the potential to increase sales.

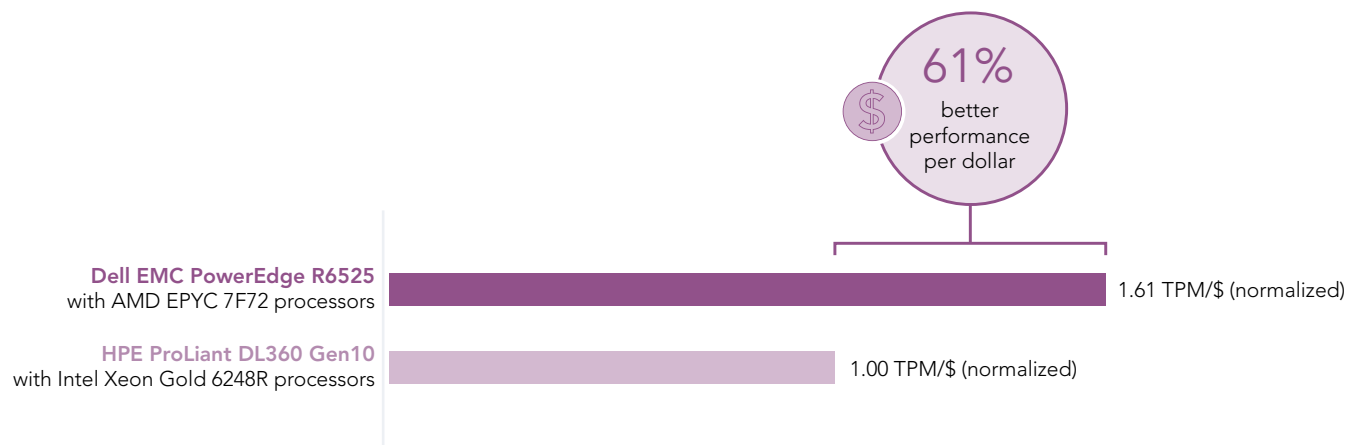


Figure 2: Performance-to-price ratio (normalized). Higher is better. Source: Principled Technologies



Conclusion

In hands-on testing of two similarly configured server solutions in an Oracle Database environment, a Dell EMC PowerEdge R6525 server with 2nd Gen AMD EPYC 7F72 processors handled 51 percent more transactions per minute and offered 61 percent better performance per dollar than an HPE ProLiant DL360 Gen10 server with 2nd Gen Intel Xeon Gold 6248R Scalable processors. With this Dell EMC R6525 server, businesses using Oracle Database could get more OLTP performance for every dollar, potentially enabling them to spend less on hardware while serving more customers.

- 1 Statista, "Coronavirus impact on retail e-commerce website traffic worldwide as of March 2020," accessed June 9, 2020, <https://www.statista.com/statistics/1112595/covid-19-impact-retail-e-commerce-site-traffic-global/>.
- 2 HammerDB, accessed June 4, 2020, www.hammerdb.com.
- 3 Dell EMC, "R6525 spec sheet," accessed June 4, 2020, https://i.dell.com/sites/csdocuments/Product_Docs/en/poweredge-r6525-spec-sheet.pdf.
- 4 AMD, "AMD EPYC™ 7002 Series Processors: A New Standard for the Modern Data Center," accessed June 11, 2020, <https://www.amd.com/system/files/documents/AMD-EPYC-7002-Series-Datasheet.pdf>.
- 5 AMD, "New 2nd Gen AMD EPYC™ Processors Redefine Performance for Database, Commercial HPC and Hyperconverged Workloads," accessed July 2, 2020, <https://www.amd.com/en/press-releases/2020-04-14-new-2nd-gen-amd-epyc-processors-define-performance-for-database>.

Read the science behind this report at <http://facts.pt/be9oedv> ►



Facts matter.®

This project was commissioned by Dell Technologies.

Principled Technologies is a registered trademark of Principled Technologies, Inc. All other product names are the trademarks of their respective owners. For additional information, review the science behind this report.