



Support more customers

with up to
6.3x
the new orders
per minute
(NOPM)

Host 2.5x
the virtual
machines

Handle more Oracle transactions and support more VMs with the Dell PowerEdge R7625 featuring the PowerEdge RAID Controller 12 Series (PERC 12)

Compared to the HPE ProLiant DL380 Gen9 with Smart Array P440ar Controller

Organizations around the world use online transaction processing (OLTP) workloads on Oracle® Database to complete all kinds of business, from ecommerce, to online banking, order entry, hotel bookings, and more. Upgrading your existing systems to new servers with the latest technology is one way to help ensure the fast, consistent performance that these workloads require to keep large numbers of customers satisfied.

We compared the Oracle Database OLTP performance of two servers: a new Dell™ PowerEdge™ R7625 with PERC 12 and an older HPE ProLiant DL380 Gen9 with Smart Array P440ar Controller. Our tests showed that the PowerEdge R7625 server with PERC 12 handled more new orders per minute and supported more virtual machines (VMs) running this workload than the ProLiant DL380 Gen9.

By coupling a RAID controller that communicates with storage faster with the latest AMD EPYC™ processors, the Dell PowerEdge R7625 with PERC 12 can increase Oracle transactions and host more VMs, showing the potential value of moving to the new solution rather than running older HPE ProLiant DL380 Gen9 servers. Because the PowerEdge R7625 can support more VMs and offers better database performance, it has the potential to consolidate multiple older servers, which can lower ongoing operating costs and free up data center space.

How we tested

We compared the virtualized Oracle Database performance of two servers:

- Dell PowerEdge R7625 with PowerEdge RAID Controller (PERC) 12
- HPE ProLiant DL380 Gen9 with Smart Array P440ar Controller

Oracle Database is a relational database that Oracle states “offers market-leading performance, scalability, reliability, and security, both on-premises and in the cloud.”¹ We performed our testing using Oracle Database 19c, which Oracle says provides the greatest release stability and highest level of support and bug fixes.² Note that, because the Oracle Database end-user license agreement does not permit us to publish exact results, we normalize the performance numbers between the two platforms to make our comparisons.

To measure Oracle 19c performance, we used the TPROC-C workload of the HammerDB 4.6 benchmark framework, which simulates an ecommerce business. Though the activities in the workload mimic those of a warehouse, results from TPROC-C are useful across many industries. (Learn more in the [About HammerDB 4.6](#) box on the next page.)

We used TPROC-C to determine both the number of VMs each server supported and the new orders per minute, or NOPM, they processed for Oracle Database. To learn more about how we tested, including detailed configuration information and step-by-step test details, read the [science behind the report](#).

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About the Dell PowerEdge R7625 server

The PowerEdge R7625 is a two-socket, 2U server equipped with 4th generation AMD EPYC processors. According to Dell, the PowerEdge R7625 is suited for advanced data analytics, AI, HPC, and virtualization workloads.³ The PowerEdge R7625 features:

- Dell PowerEdge RAID Controller 12
- DDR5 memory up to 4800 MT/S
- Multiple drive options: 24 x 2.5", 12 x 3.5", or 32 x E3.S

To learn more about the PowerEdge R7625 server, read the announcement at <https://www.hpcwire.com/off-the-wire/dell-technologies-announces-dell-poweredge-servers-with-4th-gen-amd-epyc-processors/>.

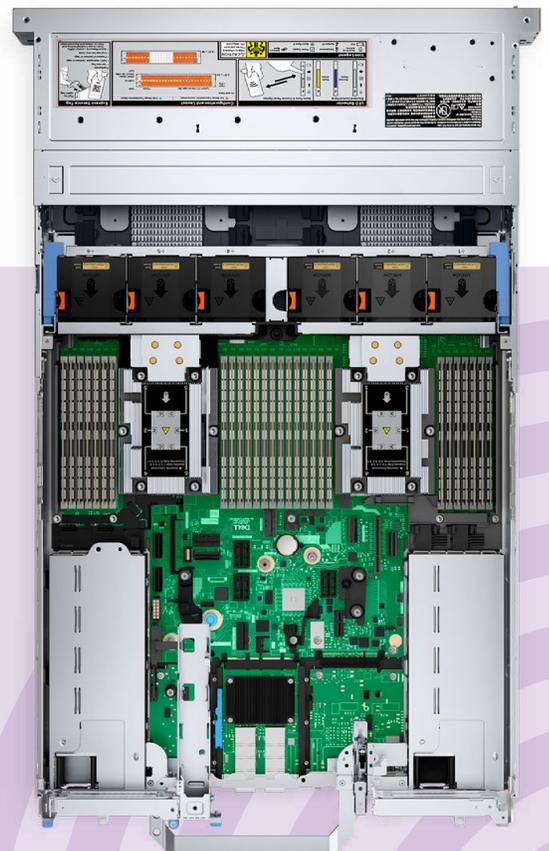


Image provided by Dell. Configuration may differ from the server we used for testing.

Oracle Database workloads performed better on the Dell PowerEdge R7625 with PERC 12

In our tests, the Dell PowerEdge R7625 with PERC 12 achieved 6.3 times the total NOPM of the HPE ProLiant DL380 Gen9 (see Figure 1). Processing more orders in the same amount of time means that the PowerEdge R7625 can allow you to support more customers at once, or enable you to consolidate your data center by housing and running fewer systems to support your user base.

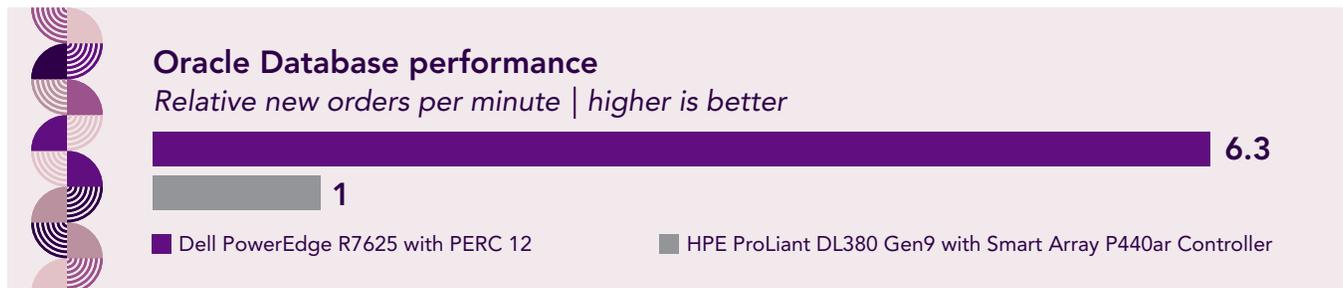


Figure 1: Relative database performance the servers achieved. Higher numbers are better. Source: Principled Technologies.

Another measure of server performance is the number of VMs a server can support while running a certain workload. We configured each of our virtual machines with 10 vCPUs and 18 GB of memory. Each had a 60GB virtual drive for the operating system, Red Hat® Enterprise Linux® 8.7; a 100GB virtual drive for data; and a 30GB virtual drive for logs. Figure 2 compares the number of VMs each server supported while running Oracle Database and achieving comparable performance. The Dell PowerEdge R7625 with PERC 12 hosted 2.5 times as many VMs as the HPE ProLiant DL380 Gen9. Hosting more VMs per server can ultimately reduce the number of physical servers you need to purchase, provision, and maintain through consolidation. For this workload, a single PowerEdge R7625 could replace and do the work of two HP ProLiant DL380 Gen9 servers, with room to grow.

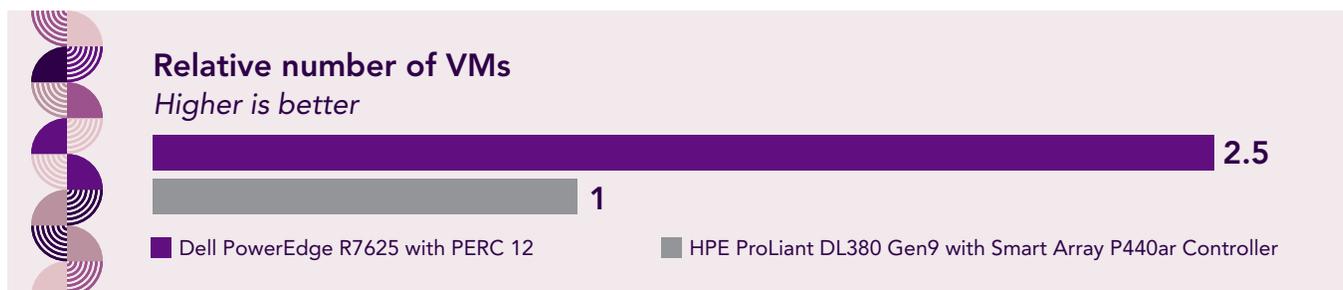


Figure 2: Relative number of VMs the servers supported. Higher numbers are better. Source: Principled Technologies.

About HammerDB 4.6

HammerDB is an open-source benchmarking tool that tests the performance of many leading databases. The benchmark tool includes two built-in workloads derived from industry standards: a transactional (TPROC-C) workload and an analytics (TPROC-H) workload. We chose the TPROC-C (TPC-C-like) workload to demonstrate the online transaction processing performance capabilities of each server, which benefit from high core counts and fast memory. TPROC-C runs a transaction processing workload that simulates an ecommerce business with five types of transactions: receiving a customer order, recording a payment, delivering an order, checking an order's status, and checking stock in inventory.⁴ Note that our test results do not represent official TPC results and are not comparable to official TPC-audited results.

To learn more about HammerDB, visit <https://www.hammerdb.com/>.

About the Dell PERC 12 RAID controller

The latest generation in the PERC series, PERC 12, comes standard in the 16G PowerEdge R7625 server we tested. According to documentation we received from Dell, PERC 12 RAID controllers offer support for 24Gbps SAS drives, have 3,200MHz cache memory speed, support the 16-lane host bus type, and support both NVMe® and SAS on the front controller.

To learn more about PERC 12, visit <https://www.dell.com/support/kbdoc/en-us/000131648/list-ofpowerededge-raid-controller-perc-types-for-dell-emc-systems>.

Conclusion

If your organization runs Oracle Database for OLTP workloads, moving to a Dell PowerEdge R7625 with PERC 12 could be a choice that improves your overall performance and allows you to consolidate your data center hardware. In our tests, the PowerEdge R7625 with PERC 12 delivered 6.3 times the total NOPM and supported 2.5 times the number of VMs the HPE ProLiant DL380 Gen9 server did. By harnessing the power of the latest in RAID controller technology, the PowerEdge R7625 can provide an upgraded Oracle Database experience compared to the competitor we tested.

1. Oracle, "Oracle Database Technologies," accessed February 3, 2023, <https://www.oracle.com/database/technologies/>.
2. Oracle, "Oracle Database Technologies," accessed February 3, 2023, <https://www.oracle.com/database/technologies/>.
3. HPCWire, "Dell Technologies Announces Dell PowerEdge Servers with 4th Gen AMD EPYC Processors," accessed November 14, 2022, <https://www.hpcwire.com/off-the-wire/dell-technologies-announces-dell-powerededge-servers-with-4th-gen-amd-epyc-processors/>.
4. HammerDB, "Understanding the TPROC-C workload derived from TPC-C," accessed November 8, 2022, <https://www.hammerdb.com/docs/ch03s05.html>.

Read the science behind this report at <https://facts.pt/Kh2A0cC> ►



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