



Support  
nearly

**7x**  
as many  
customers

Cut wait  
times by  
**88%**

## Serve more online customers with new Dell EMC servers and Microsoft SQL Server 2017 software

A Dell EMC PowerEdge R740xd server with Microsoft SQL Server 2017 Standard and Windows Server 2016 could help set up your business for long-term customer growth

Successful businesses have the vision to stay one step ahead of the crowd. Why not apply that same visionary thinking to your datacenter? Your legacy servers and SQL Server® database environment could be lagging when it comes to order processing and response times. Replacing those servers with new hardware and software could help you support more online customers as your business needs increase.

In hands-on testing, we ran an order processing workload on a legacy Dell EMC™ PowerEdge™ R720xd server with older software, as well as the new 14th generation PowerEdge R740xd server running Microsoft® SQL Server 2017 Standard and Windows Server® 2016 Standard. The new solution significantly improved transactional database performance, processing almost seven times as many orders per minute and reducing user wait times. By upgrading your existing SQL Server environment to new Dell EMC servers and the latest software from Microsoft, you could increase transactional database performance immediately, with room for future business growth.

Dell EMC  
PowerEdge  
R740xd



## Why refresh your server hardware and software?

Upgrading an outdated server infrastructure can offer a host of business benefits. According to a 2016 report by the International Data Corporation (IDC), average server performance deteriorated 14 percent per year—meaning that, by year five in a server's life, its performance hovered at just 40 percent of what it once was. IDC claims this performance decline could increase application management costs by 40 percent and server administration costs by 148 percent.<sup>1</sup>

In the short term, new Dell EMC servers with the latest Microsoft software help your business hit the refresh button and avoid the performance decline and increased costs associated with legacy server infrastructure. And as your customer base continues to grow long-term, the Microsoft-Dell EMC solution's improved transactional database performance could help you better support the expected influx of database users.

### Support more customers with a new Microsoft-Dell EMC solution

We used the DVD Store 2 (DS2) benchmark to gauge how many online transactions the solution could process, as measured in orders per minute. First, we ran the workload on a legacy Dell EMC PowerEdge R720xd server running standard editions of Microsoft SQL Server 2008 R2 and Windows Server 2012 R2. Then we ran the same workload on a new Dell EMC PowerEdge R740xd server with updated software: Microsoft SQL Server 2017 Standard and Windows Server 2016 Standard.

Our testing revealed that the Dell EMC PowerEdge R740xd solution delivered markedly better transactional database performance than the legacy solution, processing 6.7 times as many orders per minute and lowering average application latencies by 88 percent. These benchmark results provide important insights into real-world benefits. A solution that can process more orders increases your capacity to support more customers as your business grows. And reduced application latency indicates that users will spend less time waiting for a response—decreasing the risk that they'll take their business elsewhere. If your database is running on legacy hardware and software, it might be time for a refresh.

## About the solution

### The Dell EMC PowerEdge R740xd

The 14th generation Dell EMC PowerEdge R740xd offers strong database performance with a variety of storage configuration options. It can support up to 24 NVMe drives (we tested with two SAS HDDs and 12 SATA SSDs) and is powered by Intel® Xeon® Scalable processors.<sup>2</sup>

### Windows Server 2016

According to Microsoft, Windows Server 2016 is a “cloud-ready operating system that supports your current workloads while introducing new technologies that make it easy to transition to cloud computing.”<sup>3</sup>

### SQL Server 2017 Standard

According to Microsoft, SQL Server 2017 Standard helps users “find rich programming capabilities, security innovations, and fast performance for mid-tier applications and data marts” with features like end-to-end database security, enhanced in-memory performance, basic reporting and analytics, and hybrid scenarios.<sup>4</sup>

## Serve more customers with more orders per minute

In our testing, the PowerEdge R740xd solution delivered 6.7 times as many orders per minute as the legacy solution—nearly two hundred thousand compared to the legacy solution's 29,135.

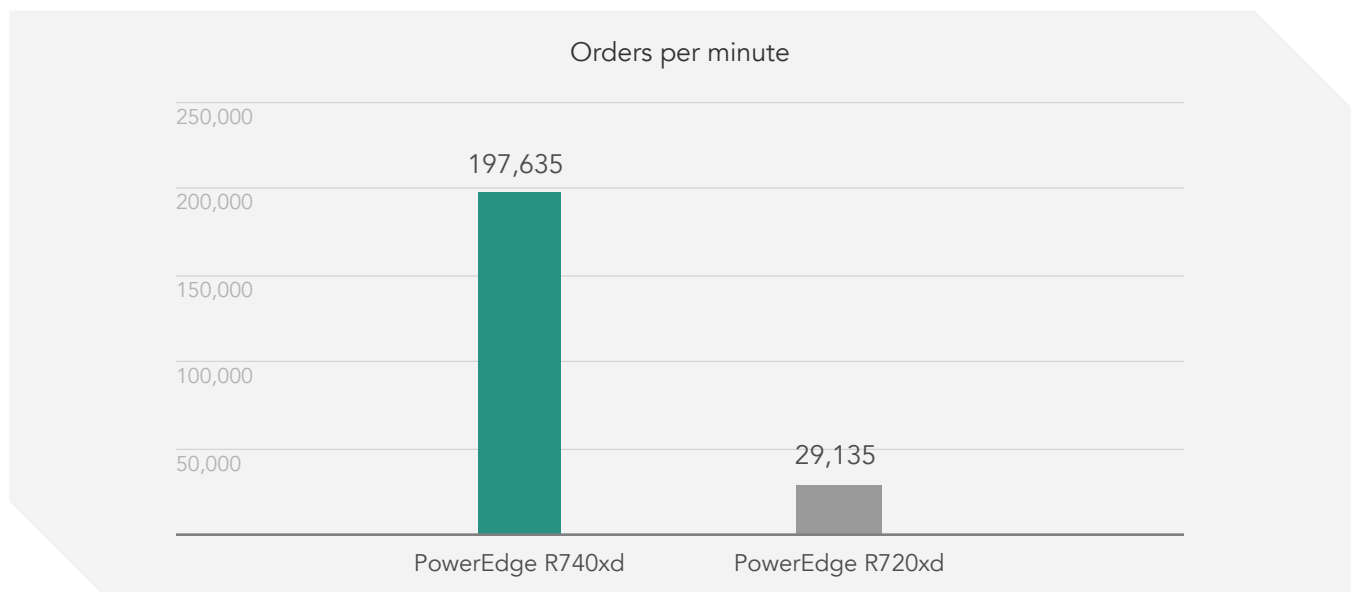
Why does this test result matter for your application? Imagine you're an online clothing retailer who puts on a one-day-only sale. As customers rush to your website, your database has to process each interaction—whether someone's clicking on a new page or reviewing their cart. If these interactions come in faster and in greater bulk than your servers can handle, application wait times could skyrocket. This slowdown could negatively impact a user's experience and even drive them away from your site. A study by Bing engineers on the impact of server delays found that a 2-second slowdown resulted in a 4.3 percent loss in revenue per user.<sup>5</sup>

By contrast, a server solution that can handle 6.7 times as many orders per minute reduces the chance of a slowdown (even during periods of peak use) and opens up new options for datacenter use. Your business could choose to consolidate, using fewer servers to process just as many orders. This can reduce datacenter costs like power and cooling, as well as ease the burden on IT staff. Alternatively, you could expand your overall capacity by fitting servers that process more orders into the same amount of datacenter space. With either approach, your business could stand to benefit from upgrading to new Dell EMC PowerEdge R740xd servers with Microsoft SQL Server 2017 Standard and Windows Server 2016.

### About the DVD Store 2 benchmark

DVD Store 2 (DS2) models an online DVD store where customers log in, search for movies, and make purchases. DS2 reports the rate at which orders are processed as orders per minute (OPM).

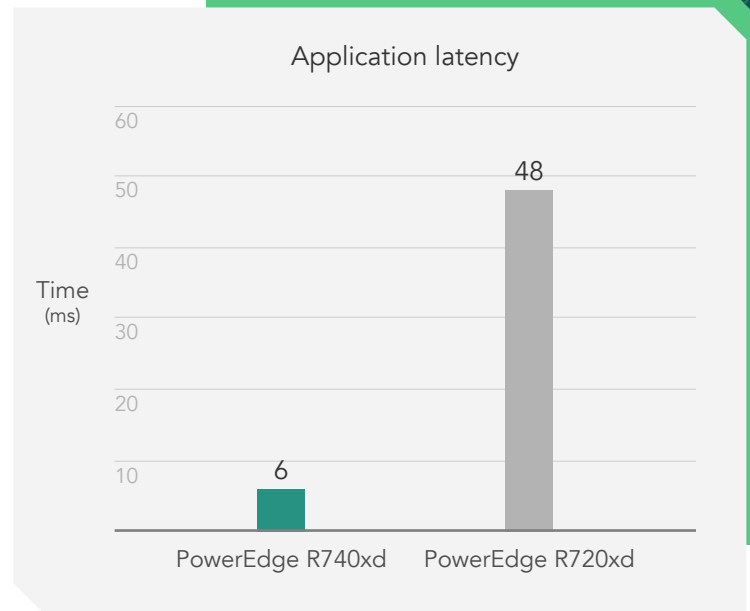
Over the course of a test run, DS2 updates the rate's running average in 1-second intervals. For our results, we used the last reported OPM number after a 30-minute run. The DS2 workload performs actions like adding new customers to mimic the wide range of database functions an e-commerce environment would need. For more information, see <https://github.com/dvdstore/ds21>



## Help users wait less with faster response times

New Dell EMC PowerEdge R740xd servers with standard editions of SQL Server 2017 and Windows Server 2016 could also dramatically decrease read/write and application latency. On average, this solution reduced drive read latency by 99 percent and write latency by 98 percent versus the legacy solution.

While read/write latency indicates how long the system waits between orders, application latency measures how long a user would wait for a response after sending an order. This helps us understand how users would experience the system—and consequently your business. The new PowerEdge R740xd solution cut application latency for the DVD Store 2 workload by 88 percent. This means a user could spend less time waiting, potentially translating into higher customer satisfaction.



## Conclusion

You want to serve more customers and accommodate future business growth—but are updated servers and software the answer? Our testing showed that a Dell EMC PowerEdge R740xd server, with Microsoft SQL Server 2017 Standard and Windows Server 2016 Standard, handled significantly more orders per minute and reduced application latency compared to a legacy solution—benefits that can directly translate into a better customer experience. With a new Microsoft and Dell EMC solution, your business could stop worrying about whether your legacy servers will support customer growth, and start winning those customers so you can increase revenue.

- 1 IDC, "Why Upgrade Your Server Infrastructure Now?" Accessed May 8, 2018, <https://www.emc.com/collateral/analyst-reports/idc-why-upgrade-server-infrastructure.pdf>
- 2 Dell EMC, "Dell EMC R740xd spec sheet," accessed May 8, 2018, <http://i.dell.com/sites/doccontent/shared-content/data-sheets/en/Documents/poweredge-r740xd-spec-sheet.pdf?newtab=true>
- 3 Microsoft Windows datasheet, accessed May 8, 2018, <https://www.microsoft.com/en-us/cloud-platform/windows-server>
- 4 Microsoft SQL Server datasheet, accessed May 8, 2018, <https://www.microsoft.com/en-us/sql-server/sql-server-2017-editions>
- 5 Jake Brutlag and Eric Schurman, "Performance Related Changes and their User Impact," accessed May 8, 2018, <https://www.slideshare.net/dyninc/the-user-and-business-impact-of-server-delays-additional-bytes-and-http-chunking-in-web-search-presentation>

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