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Reach data insights faster

90%
faster query times

Get better response times

99%
lower drive read latency

Gain business insights faster 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, analyzed data in less time than a legacy solution

Running a small- to medium-sized business isn't easy—only 50 percent survive their first five years.[1] Data analysis can help you maintain a competitive edge in the face of tough competition. With new business insights, you can move faster to address problems and find new solutions. But legacy servers can slow down that process. To stay ahead of your competition, you need a solution that can quickly analyze large volumes of data.

Our hands-on testing revealed that a Dell EMC™ PowerEdge™ R740xd server with updated Microsoft® software could meet that need. We ran a data warehouse workload on two systems: a legacy Dell EMC PowerEdge R720xd server with older software and a new PowerEdge R740xd server running Microsoft SQL Server® 2017 Standard and Windows Server® 2016 Standard. Compared to the legacy system, the new solution with the latest Microsoft software responded more quickly and significantly sped up business analytics queries. This upgraded Microsoft-Dell EMC solution could deliver data insights faster, so you can use them to improve your business sooner.

Dell EMC PowerEdge R740xd

Get the faster data analysis you need to improve your bottom line

We assessed how fast each solution could answer complex database queries using HammerDB, a tool that generates various benchmarking workloads. HammerDB's TPC-H-like data warehouse workload ran a set of 22 queries to simulate a user querying a database for data like shipping information. We first ran the workload on a six-year-old 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 Microsoft SQL Server 2017 Standard and Windows Server 2016 Standard.

Our testing revealed that the Dell EMC PowerEdge R740xd solution delivered significantly better business analytics database performance than the legacy solution, completing a query set in 90 percent less time and decreasing drive read latency by 99 percent. These benchmark results provide important insights into real-world benefits. A solution that analyzes data faster enables you to act sooner, helping you make business decisions that improve your bottom line.

How can data analysis help your business?

In any given moment, a small business owner has a hundred things on their mind—data analysis might not always make the cut. But businesses are starting to wake up to the benefits of analyzing their data. A 2017 Dresner study found that companies with 100 employees or less were actually planning analytics and business intelligence (BI) adoption at a higher rate than larger companies.[2] Let's take a quick look at how data analysis can help a business.
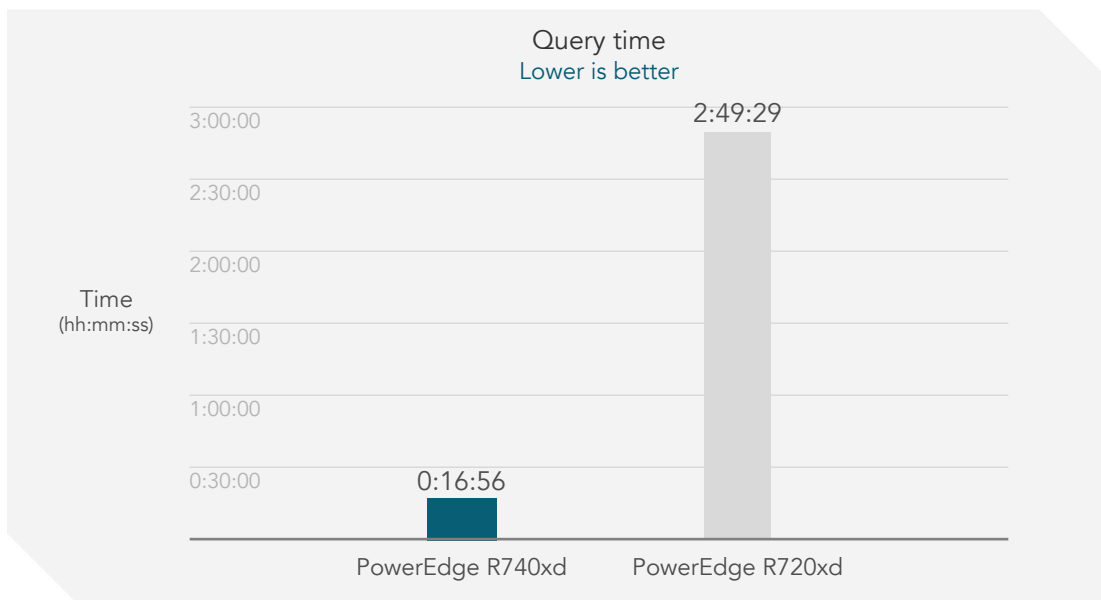

Say you run a car dealership right across the road from a competitor. Both businesses target the same customer base, so you're always looking for ways to differentiate yourself. Recently, your IT person convinced you to upgrade your six-year-old servers to Dell EMC PowerEdge R740xd servers with updated Microsoft Windows software. Since these servers can churn through database information in less time, you're able to start mining your data for answers. What time of year do sales spike? How many of your customers are local versus from out of town? Which promotions most effectively boost sales?

Equipped with answers, you start making tweaks to your business model. A larger percentage of customers than you thought come from out of town, so you expand the radius of your newspaper and radio advertising. Customers tend to make more expensive purchases at the beginning of each month, so you sync promotions on higher-end vehicles with that cycle. You continue, setting up a practice of data analysis and action that responds to customer needs and your unique context. A year later, your dealership is outperforming the one across the road.

Analyze data faster

Data insights help you understand how to compete more effectively in a crowded marketplace. Our testing found that a Dell EMC PowerEdge R740xd server with Microsoft SQL Server 2017 Standard and Windows Server 2016 outperformed a legacy solution on business analytics database processing by leaps and bounds. The updated Microsoft-Dell EMC solution ran a set of 22 queries in just 16 minutes, while the six-year-old legacy solution took almost three hours to complete the same query set. With a 90 percent improvement over the legacy solution, a Dell EMC PowerEdge R740xd server with standard editions of Microsoft SQL Server 2017 and Windows Server 2016 could help you spend less time asking questions, and more time getting answers that help advance your business.

Query time
Lower is better

Time (hh:mm:ss)	PowerEdge R740xd	PowerEdge R720xd
3:00:00		2:49:29
2:30:00		
2:00:00		
1:30:00		
1:00:00		
0:30:00	0:16:56	

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.[3]

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."[4]

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.[5]

Get better response times

Disk latency shows how long the system waits between receiving orders; shorter wait times (measured as lower latency) indicate a more responsive system. The new Microsoft-Dell EMC solution decreased drive read latency from 36 milliseconds on the legacy solution to just 0.3 milliseconds—a 99 percent improvement. This lower latency shows us that, even as the new solution was speeding through database query sets in 16 minutes versus the legacy solution's nearly three hours, it still maintained better response times. A Dell EMC PowerEdge R740xd server with Microsoft SQL Server 2017 Standard and Windows Server 2016 could respond to database requests in less time, helping speed up tasks like data analysis.

Disk read latency
Lower is better

Time (ms)	PowerEdge R740xd	PowerEdge R720xd
	0.3	36
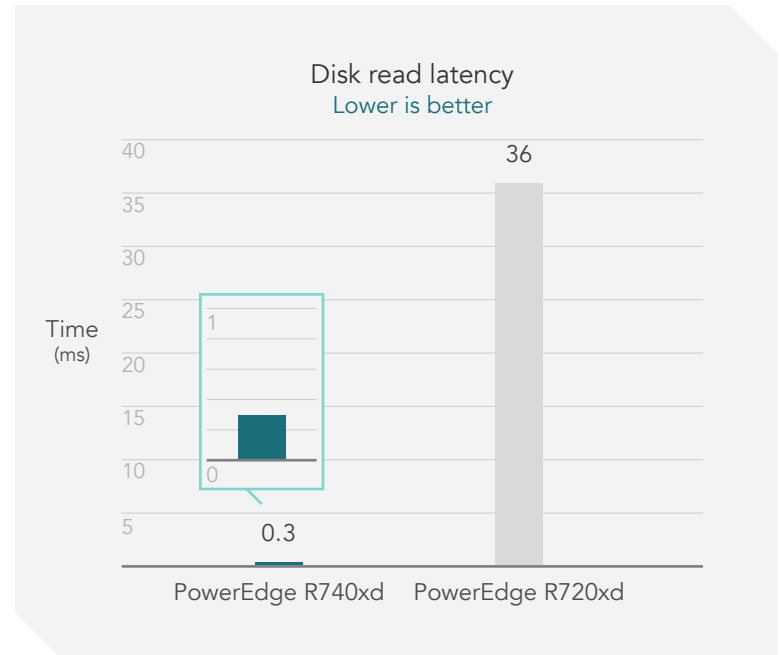
About HammerDB

HammerDB is an open-source tool that tests the database performance of many leading databases, including Oracle® Database, Microsoft® SQL Server®, PostgreSQL®, MySQL,™ and more. The tool includes two built-in workloads derived from industry-standards: a transactional (TPC-C-like) workload and a data warehouse (TPC-H-like) workload. Our test results do not represent official TPC results and are not comparable in any manner to the official TPC-audited results. For more information about HammerDB, visit www.hammerdb.com.

Increase system efficiency with new SQL Server 2017 features

Higher disk throughput numbers are often a sign of stronger performance. But sometimes new features can actually reduce throughput needs and leave headroom on your drives for other activities, making a decrease in throughput desirable. SQL Server 2017 has such a feature: Clustered Columnstore Indexes (CCI)[6] provides higher compression rates and query performance by organizing data in columns. Using this feature with our TPC-H-like workload significantly lowered the load on the drives while increasing workload performance. We found that using CCI on the new Microsoft-Dell EMC solution reduced throughput from 4,200 MB/s to 160 MB/s. Likewise, moving from the legacy solution with SQL Server 2008 R2 Standard to the new solution running SQL Server 2017 Standard with CCI reduced throughput by 42 percent. Putting less load on your drives means that ultimately, you can do more work.

Conclusion

To stay ahead of the competition, you need to understand what your business does well and where it needs to improve. Data analysis can provide that insight, but you need a solution that can get you answers, fast. Our testing showed that a Dell EMC PowerEdge R740xd server, with Microsoft SQL Server 2017 Standard and Windows Server 2016 Standard, could be that solution. Using new Microsoft software, the PowerEdge R740xd server processed database queries in less time and had faster response times than a legacy solution. With the better business analytics database performance of the Microsoft-Dell EMC solution, your business can get the insights it needs to stay competitive and profitable.

1   Small Business Administration, "Small Business Facts," accessed May 10, 2018, https://www.sba.gov/sites/default/files/Business-Survival.pdf

2   Louis Columbus, "Small Businesses Are The Real MVPs Of Analytics And BI Growth," accessed May 10, 2018, https://www.forbes.com/sites/louiscolumbus/2017/10/08/small-businesses-are-the-real-mvps-of-analytics-and-bi-growth/#a48b9606ca4b

3   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

4   Microsoft, "Windows Server," accessed May 8, 2018, https://www.microsoft.com/en-us/cloud-platform/windows-server

5   Microsoft, "Data Platform," accessed May 8, 2018, https://www.microsoft.com/en-us/sql-server/sql-server-2017-editions

6   Microsoft, "Columnstore Indexes Described," accessed May 25, 2018, https://msdn.microsoft.com/en-us/library/gg492088(v=sql.120).aspx

Read the science behind this report at http://facts.pt/75mkmh ▶

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For additional information, review the science behind this report.