### Gain key insights faster

A PowerEdge R740xd with NVMe SSDs completed 10x the analytics work of a PowerEdge R720xd in less time

### Boost your analytics performance

A PowerEdge R740xd with NVMe SSDs completed 5x the analytics work of a PowerEdge R730xd in less time


# Achieve more analytics work, faster, with the Dell EMC PowerEdge R740xd

## The Dell EMC server, powered by new Intel Xeon Scalable processors, performed the work of up to 10 five-year-old servers in less time

Data analytics tools present a powerful opportunity to learn more about your business and identify areas for improvement, optimization, and growth. But if you're running data analytics on legacy servers, you're missing out on speed and power—qualities that could result in obtaining key business insights sooner than you would otherwise.

At Principled Technologies, we assessed the data warehouse analytics capabilities of three PowerEdge server models: the Dell PowerEdge R720xd, the Dell PowerEdge R730xd, and the company's latest, the Dell EMC PowerEdge R740xd powered by 2nd Generation Intel Xeon Scalable processors. We found that a PowerEdge R740xd configured with SATA SSDs performed up to six times the work of the PowerEdge R720xd. When configured with Intel NVMe SSDs, the PowerEdge R740xd performed up to ten times the work of the PowerEdge R720xd.

Further, the PowerEdge R740xd with NVMe SSDs completed its query set in 95.2 percent less time than the PowerEdge R720xd and 26.9 percent less time than the PowerEdge R730xd. This could allow you to perform even more mission-critical work, or enable you to pursue projects with a larger scope.

## Getting the most out of your data

To get the most out of your company's data, you need analytics software that can extract valuable insights. Because analytics work takes intense server power, servers from five years ago may not perform as well as you'd like in the face of modern data warehouse needs. But as this report demonstrates, newer Dell EMC PowerEdge R740xd servers are more than capable of handling copious amounts of data in short order.


### About the Dell EMC PowerEdge R740xd

The Dell EMC PowerEdge R740xd is a 2U, dual-socket platform powered by 2nd Generation Intel Xeon Scalable processors. It features 24 DDR4 DIMM slots and up to 271TB of storage between its front, mid, and rear bays. According to Dell EMC, the PowerEdge R740xd aims to bring scalability and performance to your datacenter.[1]

To learn more about the Dell EMC PowerEdge R740xd, visit https://www.dell.com/en-us/work/shop/povw/poweredge-r740xd

## How we tested

In the Principled Technologies data center, we used a set of data analytics queries to test the performance of the following four server configurations:

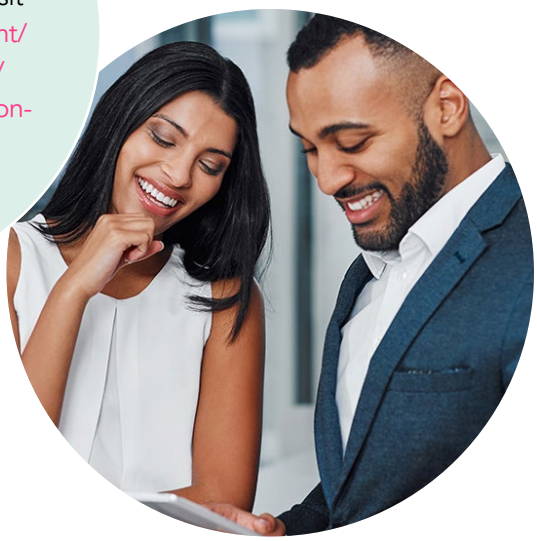
- Dell EMC PowerEdge R720xd with HDDs only
- Dell EMC PowerEdge R730xd SATA SSDs
- Dell EMC PowerEdge R740xd with SATA SSDs
- Dell EMC PowerEdge R740xd with NVMe SSDs

Our results show that the Dell EMC PowerEdge R740xd handled more analytics queries than the legacy servers while performing that work in less time. Note that in the real world, the time to complete queries depend on lots of factors, including the type of query and the size of the database. While our results should prove generally true for a variety of workloads, our methodology best matches businesses that run a standard set of queries each day—such as retail chains.

## About 2nd Generation Intel Xeon Scalable processors

The latest from Intel, the 2nd Generation Intel Xeon Scalable processor platform features a wide range of processors to support the workloads you run, including Bronze, Silver, Gold, and Platinum. According to Intel, the 2nd Generation Intel Xeon Scalable platform can handle a variety of workloads, including enterprise, cloud, HPC, storage, and communications.[2] This new processor line also supports a new memory and storage technology to further accelerate workloads, Intel Optane DC persistent memory.

To learn more about the 2nd Generation Intel Xeon Scalable processor family, visit https://www.intel.com/content/www/us/en/products/docs/processors/xeon/2nd-gen-xeon-scalable-processors-brief.html.



# Our results

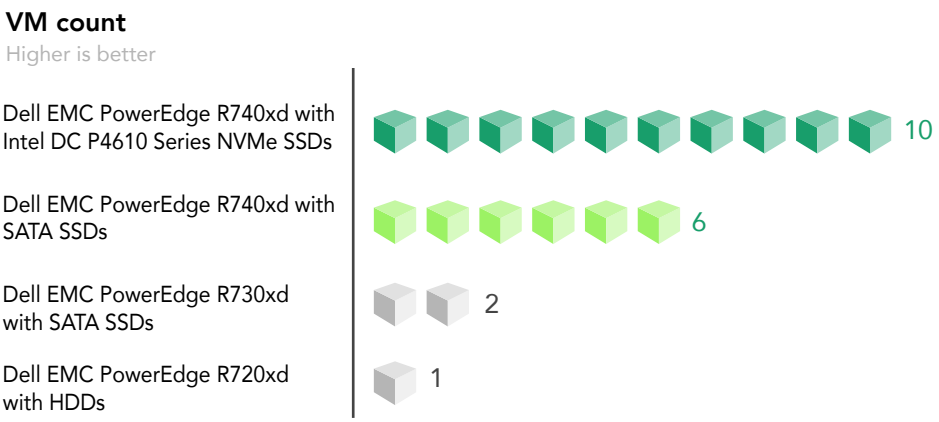
For our 2018 report, Consolidate your data analytics servers with the Dell EMC PowerEdge R740xd, we tested a PowerEdge R740xd to show how a company's analytics work could benefit from a server with high-bin components. But thanks in part to the second generation of Intel Xeon Scalable processor, the latest Dell EMC servers show strong performance even with the mid-bin components we used for this report.

## Complete more mission-critical work...

We ran a set of 22 data warehouse queries on as many VMs as each server could handle without significant performance loss. Thus, the servers that handled a greater number of VMs also accomplished a greater number of workloads.

In our tests, a PowerEdge R720xd server handled just one VM before its performance decreased dramatically. The PowerEdge R730xd we tested was a bit more capable, handling two VMs before it showed signs of storage saturation. But a PowerEdge R740xd with SATA SSDs ran three times the work of the PowerEdge R730xd, handling six VMs and as many workloads.

If your business could benefit from having even more VMs at its disposal, you may consider opting for NVMe storage, which is capable of much faster data transfers at lower latency. Outfitting the PowerEdge R740xd with Intel SSD DC P4610 Series NVMe drives brought the server's VM count up to 10, meaning it would be able to run 10 times the number of simultaneous workloads as the PowerEdge R720xd and 5 times as many as the PowerEdge R730xd.



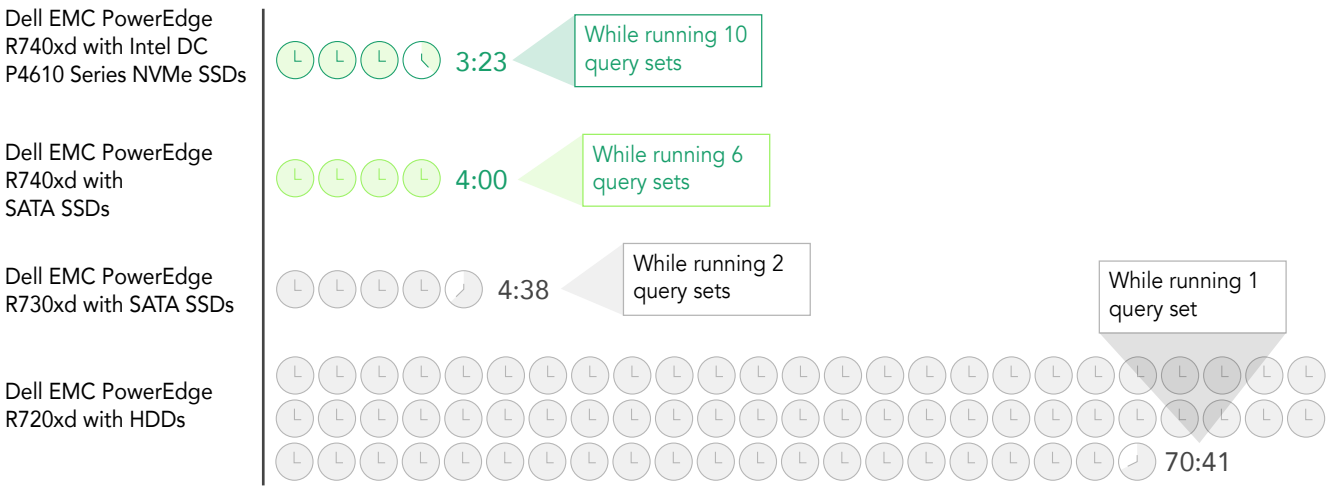
## ...in less time.

Simply doing more work isn't enough—the speed at which you complete the work is also important. The single VM on the PowerEdge R720xd took more than an hour to complete a set of data analytics queries from the HammerDB suite. While the PowerEdge R730xd was much faster (completing its two sets of queries in just over four and a half minutes), both configurations of the PowerEdge R740xd managed to complete several times the work in even less time. The PowerEdge R740xd with SATA SSD storage completed six sets of queries in four minutes flat, and the PowerEdge R740xd with NVMe SSDs completed 10 sets of queries in less than three and a half minutes. The chart below illustrates our findings. Note that each server completed as many query sets as it could handle at once. This corresponds to the number of VMs each system ran. So while the PowerEdge R720xd took over an hour to complete just one query set, the PowerEdge R740xd with NVMe SSDs completed 10 query sets in a small fraction of the time.

**Time to complete data warehouse queries**

min:sec

Lower is better




### About HammerDB

We tested each server with a TPC-H-like data warehouse workload from the HammerDB suite of benchmarks. Our test results do not represent official TPC results and are not comparable in any manner.

For more information on the HammerDB benchmark suite, visit their website at www.hammerdb.com.

## Conclusion

Data analytics applications can help your business gain key insights that can improve your current work and pave the way for new work in the future. Because you need insights as soon as possible to remain competitive, it pays to invest in hardware that can synthesize your organization's data in good time. In the time it takes your older PowerEdge servers to process a data analytics workload, the newer PowerEdge R740xd servers powered by 2nd Generation Intel Xeon Scalable processors could accomplish the job several times over. Additionally, configuring your servers with NVMe drives could extend your company's work even further.

1 Dell EMC, "PowerEdge R740xd Rack Server," accessed May 22, 2019, https://www.dell.com/en-us/work/shop/povw/poweredge-r740xd

2 Intel, "2nd Gen Intel Xeon Scalable Processors Brief," accessed May 22, 2019, https://www.intel.com/content/www/us/en/products/docs/processors/xeon/2nd-gen-xeon-scalable-processors-brief.html

**Read the science behind this report at http://facts.pt/5bl8n6s ▶**

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This project was commissioned by Dell EMC.