Executive summary

Get data insights faster by adding Intel Optane persistent memory to Dell EMC PowerEdge R740 servers

A Dell EMC PowerEdge R740 server returned query results faster with Intel Optane persistent memory than without it

Small-to-medium businesses (SMBs) that need to improve data analytics performance may not want to invest in additional systems to return query results faster. If they have or plan to purchase the 2nd Generation Intel Xeon Scalable processor-powered Dell EMC™ PowerEdge™ R740, upgrading by adding Intel® Optane™ persistent memory (PMem) can help. Intel Optane PMem offers a performance layer between memory and more traditional storage that can accelerate data-intensive workloads. To see how Intel Optane PMem could improve data analytics, we compared the performance of a Dell EMC™ PowerEdge™ R740 server powered by Intel® Xeon® Gold 5215L processors with and without Intel Optane PMem.

Using a simulated TPC-H-like data warehouse workload, we measured the time it took each solution to process a single stream of 22 queries and to process seven simultaneous query streams against a 1,000-scale Microsoft SQL Server database. In both tests, adding Intel Optane persistent memory in App Direct mode sped up query completion times. By equipping Dell EMC PowerEdge R740 servers with Intel Optane PMem, SMBs could get analysis from their data in less time, which could help them make decisions more quickly.

17%

faster

on average to complete seven simultaneous query streams*

**compared to a Dell EMC PowerEdge R740 without Intel Optane persistent memory*

What is Intel Optane PMem?

Intel Optane PMem is a new technology that looks and fits into your server like a DIMM (RAM stick). The difference is Intel Optane PMem can act more like storage, depending on what your workload needs. In Memory Mode, Intel Optane PMem acts as large capacity DIMMs that handle operations like typical memory while using the DRAM as cache and providing a larger memory footprint. In App Direct Mode, which we used in our study, the OS and apps treat PMem as a separate, persistent type of memory that applications can use to store files and enhance performance.[1]

In our data center: Adding Intel Optane PMem to the Dell EMC PowerEdge R740 gave data analysis a boost

In our tests, the Dell EMC PowerEdge R740 with Intel Optane PMem completed a single 22-query stream in 6.1 percent less time than the server without it.

When completing seven simultaneous 22-query streams, adding Intel Optane PMem sped up completion time on average by 17.6 percent.

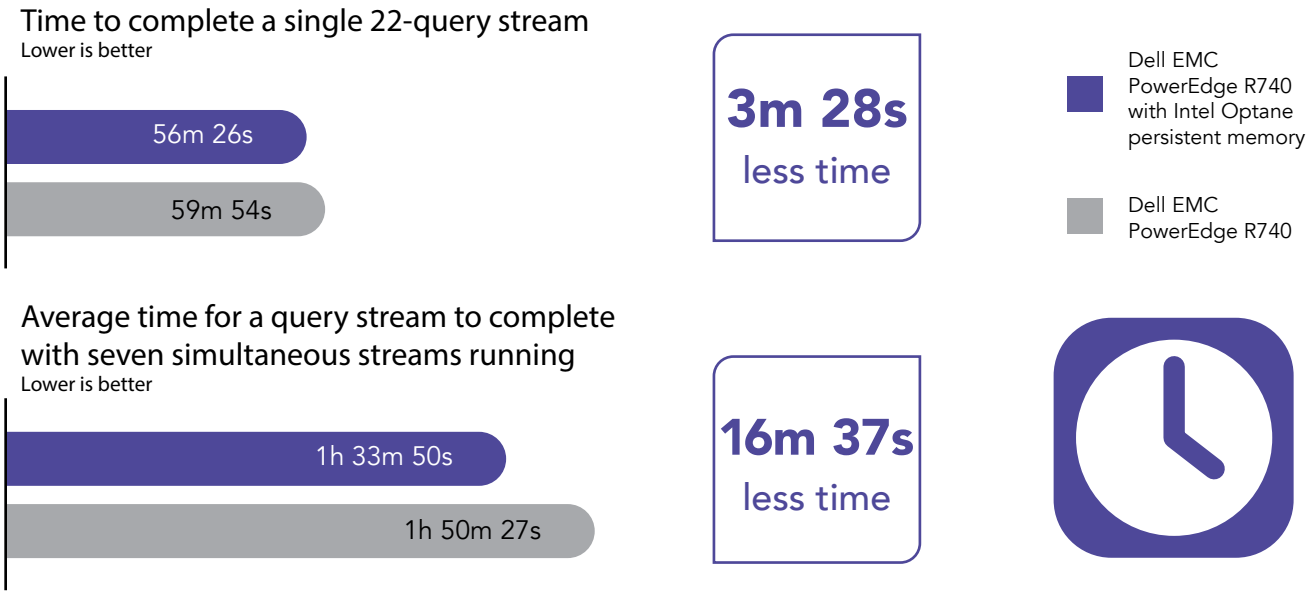

Figure 1: TPC-H-like workload test results for the Dell EMC PowerEdge R740 with and without Intel Optane PMem. Source: Principled Technologies.

If your SMB wants to maximize data analysis speeds, these results show that adding Intel Optane PMem to your Dell EMC PowerEdge R740 can help. For more details, read our full test report.

Read the report at http://facts.pt/r2ui89n ▶

1 Alper Ilkbahar, "Intel® Optane™ DC persistent Memory Operating Modes Explained," accessed July 2, 2020, https://itpeernetwork.intel.com/intel-optane-dc-persistent-memory-operating-modes/#gs.1cpqsk.

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