



Executive summary

Analyze more data at once, faster, when you add Intel Optane persistent memory to Dell EMC PowerEdge R740xd servers

A Dell EMC PowerEdge R740xd server powered by Intel Xeon Gold 6240L processors analyzed more data and returned query results faster with Intel Optane persistent memory than without it

Sifting through large amounts of data to gain insights takes time, and mid-sized businesses and enterprises have large amounts of data to analyze. New Intel® Optane™ persistent memory (PMem) offers a performance layer between memory and traditional storage that can improve data analytics performance. We compared the performance of a Dell EMC™ PowerEdge™ R740xd server powered by Intel® Xeon® Gold 6240L processors with and without Intel Optane PMem to quantify the performance boost PMem could deliver.

Using the HammerDB test utility to simulate a TPC-H-like data warehouse workload, we recorded results as two metrics: the number of simultaneous query streams each solution could process in roughly the same amount of time as well as the time it took to process a single stream of 22 queries. In both of these tests, adding Intel Optane persistent memory in App Direct mode improved data analytics performance, enabling the server to process 50 percent more query streams 3.2 percent faster and cutting single-stream processing time by 26 percent. By equipping Dell EMC PowerEdge R740xd servers with Intel Optane PMem, medium-size businesses and enterprises could analyze data faster, turning insights into action that furthers business initiatives.

Analyze more data at once



50% more

more simultaneous query streams

3.2% faster*

Gain important data insights sooner



26% faster

*to analyze a single query stream**

*compared to a Dell EMC PowerEdge R740xd without Intel Optane persistent memory

What is Intel Optane PMem?

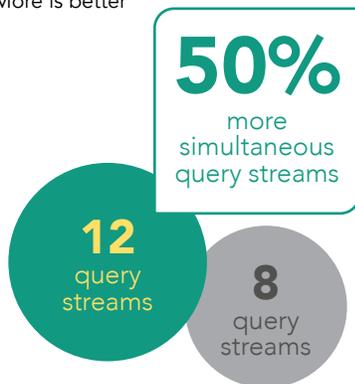
Intel Optane PMem is a new technology that looks and fits into your server like a DIMM (RAM stick). The difference is Intel Optane PMem can act more like storage, depending on what your workload needs. In Memory Mode, Intel Optane PMem acts as large capacity DIMMs that handle operations like typical 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 R740xd gave data analysis a boost

In our tests, the Dell EMC PowerEdge R740xd with Intel Optane PMem processed 50 percent more simultaneous query streams 3.2 percent faster than the server without it.

When analyzing a single stream of 22 queries, adding Intel Optane PMem sped up completion time by 26 percent.

Number of simultaneous 22-query streams
More is better



- Dell EMC PowerEdge R740 with Intel Optane persistent memory
- Dell EMC PowerEdge R740

Time to complete all query streams
Lower is better



Time to complete a single 22-query stream
Lower is better



Figure 1: TPC-H-like workload test results for the Dell EMC PowerEdge R740xd with and without Intel Optane PMem. Source: Principled Technologies.

If your mid-sized business or enterprise wants to maximize data analysis speeds, these results show that adding Intel Optane PMem to your Dell EMC PowerEdge R740xd can help. For more details, [read our full test report](#).

Read the report at <http://facts.pt/v71sw6a> ▶

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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