Cisco UCS C460 M4 Rack Server Exceeds One Million Queries per Hour on the TPC-H Benchmark at the 3000-GB Scale Factor

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Performance Brief
May 2016

Highlights

Highest Result Ever Reported
- The Cisco UCS® C460 M4 Rack Server captures the top TPC-H nonclustered benchmark result at the 3000-GB scale factor with more than one million queries per hour.

Best Performance and Price/ Performance
- Compared to a Lenovo x3850 X6 server using the same Intel Xeon processors, Cisco's result delivers 10-percent better performance and 17-percent better price/performance

High Performance for Microsoft SQL Server 2016 Enterprise Edition
- Although other vendors publish TPC-H results running Microsoft SQL Server, only Cisco delivers the best performance at the 3000-GB level.

Dramatic Single-System Scalability for Decision Support
- The balanced computing power, I/O bandwidth, and storage capacity of the Cisco UCS C460 M4 make it an excellent platform for high-performance databases.

A Tradition of Performance Leadership
- Cisco UCS has established a tradition of performance leadership on industry benchmarks, with more than 110 world records since the system was introduced only 7 years ago.

The Cisco UCS® C460 M4 Rack Server delivers more than one million queries per hour while delivering the best nonclustered TPC-H benchmark performance at the 3000-GB scale factor.

Industry-Leading Performance for Decision Support

Crossing the one million query-per-second threshold for a four-socket server is a milestone. So is the fact that, powered by the same Intel® Xeon® processor E7-8890 v3 CPUs, Cisco delivers 15-percent better performance and 17-percent better price/performance than the nearest competition on the nonclustered TPC-H benchmark at the 3000-GB scale factor (compare to Lenovo x3850 X6 server results).

This newest result (Table 1) offers a dramatic example of how the Intel Xeon processors, massive memory capacity, internal solid-state disk (SSD) storage, and PCIe storage acceleration of the Cisco UCS C460 M4 Rack Server deliver data warehouse performance for databases running on Microsoft SQL Server 2016 Enterprise Edition. When you incorporate servers such as the Cisco UCS C460 M4 as part of the Cisco Unified Computing System™ (Cisco UCS), you can run your other Microsoft and non-Microsoft workloads in the same unified system with integrated management and low-latency, 10- and 40-Gbps unified fabric connectivity between servers.

Table 1 TPC-H 3000-GB Result for the Cisco UCS C460 M4

Server	Processors	Performance	Price/ Performance Ratio	Availability Date
Cisco UCS C460 M4	4 Intel Xeon processor E7-8890 v3 CPUs at 2.5 GHz	1,071,018 QphH@3000GB	US$0.60 per QphH@3000GB	June 1, 2016

TPC-H Benchmark

The TPC-H benchmark is an industry-standard decision-support system benchmark. It is designed to measure the capability of a system to examine large volumes of data, process queries with a high degree of complexity, and return answers to critical business questions. The TPC-H benchmark evaluates a composite performance metric (QphH@size) and a price-to-performance metric

Figure 1 At the 3000-GB Scale Factor the Cisco UCS C460 M4 Rack Server Beats Lenovo by 17 Percent in Price/Performance
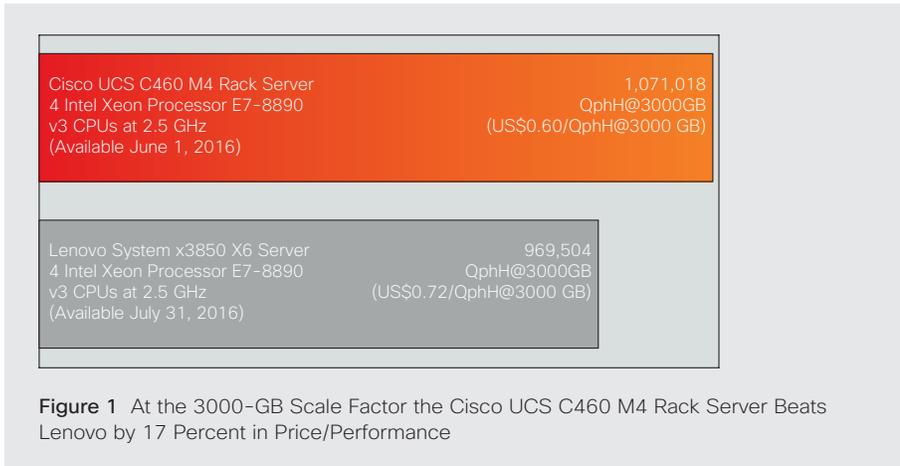
($/QphH@size) that measure the performance of various decision-support systems by running sets of queries against a standard database under controlled conditions.

Cisco UCS C460 M4 Rack Server

The Cisco UCS C460 M4 delivers the balanced I/O, memory, and computing capacity needed for large-scale analytical and business intelligence applications. The system is a 4-rack-unit (4RU) rack server that supports the following Intel Xeon processor E7 family CPUs: E7-8800 v2, v3, and v4; E7-4800 v2, v3, and v4; and E7-2800 v2. The server supports up to 6 terabytes (TB) of double-data-rate-3 (DDR3) or DDR4 memory in 96 slots, and up to 12 Small Form-Factor (SFF) hot-swappable SAS, SATA, or SSD drives.

With 10 full-height Generation 3 PCI Express (Gen3 PCIe) slots, the server supports massive I/O capacity and the capability to accommodate graphics engines to accelerate rendering operations.

Benchmark Configuration

For the benchmark, the server was equipped with 3 TB of memory and four 2.5-GHz Intel Xeon processor E7-8890 v3 CPUs. The system ran Microsoft SQL Server 2016 Enterprise Edition and Windows Server 2012 R2 Standard Edition.

The test database and log files resided on four 1600-GB SanDisk Fusion-iomemory SX350 PCIe Application Accelerators and four 400-GB Enterprise Performance SAS SSDs respectively. The SSD drives were accessed through a Cisco 12-Gbps SAS Modular RAID Controller with a 1-GB flash-backed write cache module.

Record-Setting Performance

These benchmark results demonstrate the highest nonclustered TPC-H result ever reported at the 3000-GB scale factor, so you can have confidence in the performance of Cisco servers.

For More Information

· For more information about Cisco UCS servers, please visit http://www.cisco.com/go/ucs.

· For more information about Cisco UCS performance, please visit http://www.cisco.com/go/ucsatwork.

Disclosures

The Transaction Processing Performance Council (TPC) is a nonprofit corporation founded to define transaction processing and database benchmarks, and to disseminate objective and verifiable performance data to the industry. TPC membership includes major hardware and software companies. TPC-H, QphH, and $/QphH are trademarks of the TPC. The performance results described in this document are derived from detailed benchmark results available as of May 16, 2016, at http://www.tpc.org/tpch/default.asp.