



MariaDB* Performance with Intel® Xeon® Processor E5 v4 Family

MariaDB increases database throughput by 51% and cuts response times by 15%¹

MariaDB is one of the most popular database management systems in the world. It's made by the original founders of MySQL and notable users include Wikipedia, WordPress.com and Google.

“By adopting the Intel® Xeon® Processor E5-2600 v4, our users and customers will not only get faster response times, they'll also reduce total cost of ownership, getting even more value out of MariaDB.”

— **Bruno Šimić**
Solutions Engineer, MariaDB

As businesses become more and more data intensive, the cost per transaction becomes an important metric. There are two ways to lower cost per transaction. The first is to lower the cost of data infrastructure; and the second is to increase hardware efficiency. With the MariaDB Enterprise and Intel® Xeon® processor-based solution, organizations can do both by using an enterprise subscription to reduce database costs and multi-core processors to increase performance with existing servers.

Introducing MariaDB

MariaDB is an open source, relational database engineered for flexibility, efficiency, and reliability. By implementing an extensible architecture and supporting contributions from leading internet and technology companies, including Alibaba, Facebook, Google and Tencent*, MariaDB meets modern enterprise requirements with community innovation.

MariaDB, engineered to scale on standard modern hardware, can be deployed on bare metal servers, virtual machines, cloud instances, and/or containers. MariaDB is now the default relational database on some leading Linux distributions, including Red Hat Enterprise Linux* and SUSE Enterprise Linux*, as well as leading infrastructure platforms, including OpenStack*.

In addition, MariaDB uses Intel® Advanced Encryption Standard (AES) New Instructions (AES-NI) to improve encryption performance, both in motion and at rest.

In addition, MariaDB's modern and extensible architecture provides the foundation for businesses to continuously innovate with new applications and modernize legacy systems.

Testing the new processor

MariaDB solution engineers compared the performance of MariaDB 10.1 running on two Intel® Xeon® E5-2697 v3 processors against MariaDB 10.1 running on two Intel® Xeon® E5-2600 v4 processors. The team used the Sysbench OLTP benchmark,¹ a multi-threaded benchmark tool for evaluating database performance under intensive load.

The results showed a 51 percent increase in read-only throughput and a 37 percent increase in read-write throughput with the Intel® Xeon® E5-2600 v4 processors when compared to the previous generation v3 processors. In addition, with the v4 processors capable of handling 128 users versus 96 with the v3 processors, response times at peak throughput were cut by 15 percent.¹

Optimizing the software

A collaboration with Intel, using Intel® VTune™ Amplifier 2017, part of the Intel® Parallel Studio XE 2017 suite, led MariaDB to identify performance optimizations for Intel® processors. The result is MariaDB taking advantage of the additional cores in Intel® Xeon® v4 processors, scaling to two sockets and 88 hardware threads in this performance comparison.²

Learn More

MariaDB:
mariadb.com

Intel Xeon Processor E5-2600 v4 Processor:
<http://www.intel.com/content/www/us/en/processors/xeon/xeon-processor-e5-family.html>

Solution Provided By:



¹ Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit www.intel.com/benchmarks and <http://www.intel.com/content/www/us/en/benchmarks/resources-benchmark-limitations.html>

Baseline configuration: Ubuntu Linux 15.10, MariaDB 10.1, Sysbench 0.4.12, 2 Intel® Xeon® processor E5-2697 v3, 2.6 GHz, 14 physical cores / socket, 64GB DDR4/2133 Registered DIMM 1DPC, 1TB SATA HDD WDC (using RAM disk 24 GB), 1Gb network, Source is Intel internal as of March 01, 2016. New configuration: Ubuntu Linux 15.10, MariaDB 10.1, Sysbench 0.4.12, 2 Intel® Xeon® processor E5-2699 v4, 2.2 GHz, 22 physical cores / socket, 64GB DDR4/2133 Registered DIMM 1DPC, 1TB SATA HDD WDC (using RAM disk 24 GB), 1Gb network, Source is Intel internal as of March 01, 2016. Sysbench configuration used for both Xeon v3 and v4: Test OLTP, 4 x 1M tables RO, 4 x 10M tables RW, 4 x Sysbench clients working in a parallel each with its table.

² Optimization Notice: Intel's compilers may or may not optimize to the same degree for non-Intel microprocessors for optimizations that are not unique to Intel microprocessors. These optimizations include SSE2, SSE3, and SSSE3 instruction sets and other optimizations. Intel does not guarantee the availability, functionality, or effectiveness of any optimization on microprocessors not manufactured by Intel. Microprocessor-dependent optimizations in this product are intended for use with Intel microprocessors. Certain optimizations not specific to Intel microarchitecture are reserved for Intel microprocessors. Please refer to the applicable product User and Reference Guides for more information regarding the specific instruction sets covered by this notice.

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Cost reduction scenarios described are intended as examples of how a given Intel- based product, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Intel does not guarantee any costs or cost reduction.

Intel® AES-NI requires a computer system with an AES-NI-enabled processor, as well as non-Intel software to execute the instructions in the correct sequence. AES-NI is available on Intel® processors. For availability, consult your reseller or system manufacturer. For more information, see <http://software.intel.com/en-us/articles/intel-advanced-encryption-standard-instructions-aes-ni/>.

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