Solution Brief

Scalable Database Performance for Hybrid Data Management—Today and into the Future

Raising the bar on IBM Db2 performance with 4th Gen Intel® Xeon® Scalable processors

4th Gen Intel Xeon Scalable Platform

up to
8TB
System Memory Capacity (Per Socket) DRAM

up to
8CH
DDR5-4800
16 DIMMs Per Socket

up to
50%
Increased Memory Bandwidth with DDR5 vs. 3rd Gen Intel® Xeon® Scalable Processor

up to
80
Lanes PCI Express 5 (Per Socket)

For almost a quarter of a century, IBM and Intel have collaborated closely to deliver best-in-class products for the enterprise—including IBM's flagship database product, Db2. By taking advantage of generational improvements in IBM software and Intel architecture, business customers extend their capabilities not to simply manage ever-increasing quantities of data, but to put that data to work. As business intelligence and analytics have become more central to profitability, real-time database performance has become even more important as a true competitive differentiator.

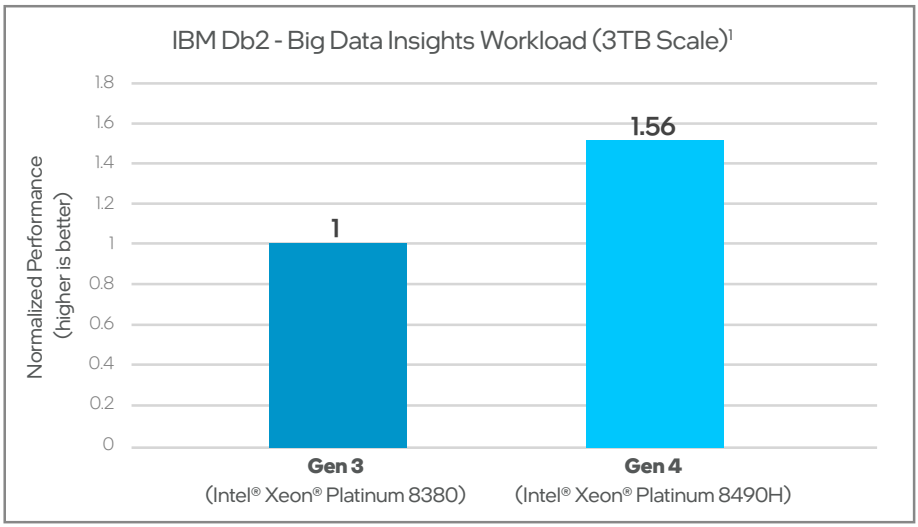
IBM Db2 running on 4th Gen Intel Xeon Scalable processors builds on a history of joint success and industry leadership. Through close partnership with IBM, Intel has ensured that 4th Gen Intel Xeon Scalable processors are optimized for a broad selection of workload and performance levels, all with the balanced, open Intel architecture businesses know and trust.

4th Gen Intel Xeon Scalable processors deliver built-in acceleration capabilities and advanced security features designed to handle the most rigorous workload requirements. For key enterprise workloads—including those used in mission-critical database operations—4th Gen Intel Xeon Scalable processors deliver improved performance as compared to earlier generation technology.

To compare Db2 performance between 4th Gen Intel Xeon Scalable processors and previous generations, we tested an OLAP workload that leverages Db2's data-warehousing capabilities.

The benchmark consisted of the IBM Big Data Insights workload. It is a proprietary, multi-user, data-warehousing workload similar to what might be found running in a typical retail environment. It was configured to test operations with 16 concurrent users using a 3TB scale factor. The testing configuration was compute-bound, ensuring that any performance differences would be attributable almost entirely to differences in processor run time.

The graph below shows the results of testing of the two workloads on different Intel Xeon processors. Results are indicated in Queries per Hour (QpH). Complete configuration details are shown at the end of this document.



As shown here, 4th Gen Intel Xeon Scalable processors delivered clearly superior performance. This workload is able to take advantage of the processor's enhanced architecture, increased number of cores, and improved memory bandwidth through the use of next-generation DDR5 memory.

The improvement is clear. Customers will benefit significantly from faster response times for analytics queries, as well as higher throughput to support more concurrent users.

"Intel and IBM's quarter-of-a-century collaboration on Db2 continues to deliver significant performance gains for enterprises. When running mission-critical workloads, either transactional or analytical, our clients choose IBM Db2 and Intel's new 4th Gen Xeon Scalable processors on premises or in the cloud for leading performance and scalability."

- Vikram Murali, VP IBM Hybrid Data Management

For More Information

To learn more about Intel Xeon processors, visit intel.com/xeon

To learn more about IBM Db2, visit ibm.com/db2

intel + IBM

1) Workload configuration (IBM Db2 Big Data Insights (3TB scale)):

BASELINE: Test by Intel as of 10/10/22. 1-node, 2x Intel® Xeon® Platinum 8380 CPU @ 2.30GHz, 40 cores, HT On, Turbo On, Total Memory 1024GB (32x32GB DDR4 3200 MT/s), BIOS SE5C620.86B.01.01.0005.2202160810, microcode 0xd000363, 2x Ethernet Controller 10-Gigabit X540-AT2, 1x 894.3G INTEL SSDSC2KG96, 3x 3.5T INTEL SSDPF2KX038TZ, Ubuntu 22.04.1 LTS, 5.15.0-47-generic, Db2 v11.5.7, IBM Big Data Insights v0.8 workload (heavy queries, 16 users, 3TB scale), score=1208 Queries per Hour (QpH).

NEW: Test by Intel as of 10/10/22. 1-node, 2x Intel® Xeon® Platinum 8490H, 60 cores, HT On, Turbo On, Total Memory 1024GB (16x64GB 4800 MT/s), BIOS EGSDCRB1.SYS.0087.D13.2208261709, microcode 0x2b000070, 1x Ethernet Controller I225-LM, 1x 894.3G INTEL SSDSC2KG96, 2x 3.5T INTEL SSDPF2KX038TZ, Ubuntu 22.04.1 LTS, 5.15.0-47-generic, Db2 v11.5.7, IBM Big Data Insights v0.8 workload (heavy queries, 16 users, 3TB scale), score=1887 Queries per Hour (QpH).

Performance varies by use, configuration, and other factors. Learn more at www.Intel.com/PerformanceIndex. Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure. Your costs and results may vary. Intel technologies may require enabled hardware, software, or service activation.