ThinkSystem SR665 Sets World Record with New 2-socket SPEC ACCEL OpenCL Benchmark Result

Performance Benchmark Result

The Lenovo ThinkSystem SR665 has set a new 1-node 2-socket performance world record with the SPECaccel_ocl_base metric from the SPEC ACCEL Benchmark. The SPEC ACCEL Benchmark suite is the industry standard to evaluate hardware-based accelerator devices and the performance of parallel computing workloads.

This new benchmark result, published in a new SPEC Report on May 21, 2020, demonstrates that the ThinkSystem SR665 continues Lenovo's leadership with outstanding performance for the server industry.

The ThinkSystem SR665 has achieved the following score (1):

- **SPECaccel_ocl_base = 12.2**

This result is the best 1-node 2-socket performance in the industry, 11.9% faster than Lenovo's own result. (2)

Table 1. Comparison of results

Hardware vendor	System	Result (Base)	Total Cores	Total Chips	Total Memory
Lenovo (1)	ThinkSystem SR665 (AMD EPYC 7H12 CPU, 2.6 GHz)	12.2	128	2	512 GB
Lenovo (2)	ThinkSystem SR650 (Intel Xeon Gold 6240 CPU, 2.6 GHz)	10.9	32	2	768 GB

The SR665 was configured as follows for the benchmark audit:

- Lenovo ThinkSystem SR665
- 2x AMD EPYC 7H12 Processors (64 cores, 2.60GHz)
- 512 GB memory (16 x 32GB RDIMMs at 3200MHz)
- 480GB 2.5-inch SSD
- SUSE Linux Enterprise Server 15 SP1, 4.12.14-195-default
- Accelerator: 1x NVIDIA Tesla V100S 32GB

Results referenced are current as of May 21, 2020.

(1) The new Lenovo benchmark result can be found at:
https://www.spec.org/accel/results/res2020q2/accel-20200505-00141.html

(2) The Lenovo SR650 result can be found at:
https://www.spec.org/accel/results/res2019q2/accel-20190312-00123.html

About the ThinkSystem SR665

The Lenovo ThinkSystem SR665 server, now with AMD EPYC 7003 Series processors, delivers outstanding TCO for transactional database, ERP, virtualization, big data & analytics and software-defined deployments. The combination of two AMD EPYC 7003 CPUs with class-leading memory speed, storage, and GPU density, rapidly outpaces the power of prior generation two-socket servers. Lenovo's lauded system reliability, management capabilities, and security infrastructure layer on to the exceptional value that the ThinkSystem SR665 brings to the data center. With the enterprise-class AMD EPYC 7003 Series or 7002 Series processor, the world's first 7nm data center CPU, the ThinkSystem SR665 features two processors with up to an unprecedented 128 total cores with 128 PCIe Gen4 lanes to reduce bottlenecks and increase server utilization.

Compared to the previous processor generations, ThinkSystem SR665 delivers up to 2X performance and 4X floating point capability, providing faster data transfer and analytics without sacrificing memory capacity or I/O with PCIe Gen4 support and faster memory speeds up to 3200 MHz.

Key features:

- 128 cores across two processors to handle heavy-lift ERP, CRM, and virtualization workloads; provides cutting edge application efficiency in health care applications such as medical imaging, EMR, and PACS, or electronic trading platforms for financial services applications.
- Multi-GPU optimized rack server, providing support for up to 8 single-wide GPUs that offer 200% more workload acceleration in AI Inference, and virtualized desktop infrastructure (VDI).
- Support for up to 32 NVMe solid-state drives; when paired with high speed networking, make the system an excellent choice for workloads that need large amounts of low-latency high-bandwidth storage, including virtualized clustered SAN solutions, software-defined storage (SDS), and applications leveraging NVMe over Fabrics.

About SPECaccel

The SPEC ACCEL benchmark suite provides a comparative measure the performance of hardware accelerator devices and their supporting software tool chains using computationally-intensive parallel applications. The suite is comprised of scientific applications used in High Performance Computing (HPC) and focuses on parallel computing performance.

The suite has been ported using several accelerator programming models each of which has been released as separate benchmark components:

- SPEC ACCEL OpenCL -- based on the Open Computing Language (OpenCL) 1.1 framework
- SPEC ACCEL OpenACC -- based on the Open Accelerators (OpenACC) 1.0 programming standard for parallel computing
- SPEC ACCEL OpenMP -- based on the Open Multi-Processing (OpenMP) 4.5 application programming interface

The product consists of source code benchmarks that are developed from real user applications.

For more information and SPEC ACCEL results, see http://www.spec.org/accel/.

Learn more

To learn more about solutions for parallel computing workloads, please contact your Lenovo Sales Representative.

To find out more about SPEC, visit https://www.spec.org

To learn more about the Lenovo ThinkSystem SR665 server, visit the SR665 product web page: https://www.lenovo.com/us/en/data-center/servers/racks/ThinkSystem-SR665-Server/p/77XX7SR552S

Related product families

Product families related to this document are the following:

- 2-Socket Rack Servers
- SPECaccel Benchmark Results
- ThinkSystem SR665 Server

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