



ThinkSystem SR655 Sets World Record with New One-Node SPEC ACCEL OpenACC Result Performance Benchmark Result

The Lenovo ThinkSystem SR655 server has set a new 1-node 1-socket performance world record with the SPECaccel_acc_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 August 7, 2019, demonstrate that the ThinkSystem SR655 continues Lenovo’s leadership with outstanding performance for the server industry.



The ThinkSystem SR655 has achieved the following score (1):

- **SPECaccel_acc_base = 13.2**

This result is the best one node 1-socket performance in the industry, 8.2% faster than Lenovo’s own result (2), 5.84 time faster than the Cray’s 1-node 1-socket result (3).

Table 1. Comparison of results

Hardware vendor	System	Result (Base)	Cores	CPUs	Memory
Lenovo (1)	ThinkSystem SR655 (AMD EPYC 7742 with NVIDIA Tesla V100)	13.2	64	1	256 GB
Lenovo (2)	ThinkSystem SR650 (Intel Xeon Gold 6240 with NVIDIA Tesla V100)	12.2	32	2	768 GB
Cray (3)	Cray XK7 system (AMD Opteron 6274 with NVIDIA Tesla K20X)	2.26	16	1	32 GB

The SR655 was configured as follows for the benchmark audit:

- Lenovo ThinkSystem SR655
- 1x AMD EPYC 7742 Processor (64 cores, 2.25 GHz)
- 256 GB memory (8 x 32GB RDIMMs at 3200 MHz)
- 1x 480 GB SATA 2.5" SSD
- SUSE Linux Enterprise Server SP4, Kernel 4.12.14-94.41-default
- Accelerator: 1x NVIDIA Tesla V100 16GB

Results referenced are current as of August 7, 2019.

(1) The new Lenovo benchmark result can be found at:
<https://www.spec.org/accel/results/res2019q3/accel-20190716-00127.html>

(2) The previous Lenovo result can be found at:
<https://www.spec.org/accel/results/res2019q2/accel-20190312-00122.html>

(3) The Cray result can be found at:
<https://www.spec.org/accel/results/res2017q2/accel-20170516-00084.html>

About the ThinkSystem SR655

The Lenovo ThinkSystem SR655 is a 1-socket 2U server that features the AMD EPYC 7002 "Rome" and AMD EPYC 7003 "Milan" families of processors. With up to 64 cores per processor and support for the PCIe 4.0 standard for I/O, the SR655 offers the ultimate in single-socket server performance. With up to 128 PCIe lanes, the server is ideal for workloads that can take advantage of GPU processing and high-performance NVMe drives.

ThinkSystem SR655 is a multi-GPU optimized rack server, with support for up to 6 single-wide GPUs providing 200% more workload acceleration in AI, SDI and VDI instances. Capacity for up to 32x 2.5" low-latency NVMe drives that pairs well with the demands of low-latency, high-bandwidth storage such as clustered SAN solutions and software-defined storage. Eight PCIe Gen4 slots offer 2x faster I/O and support for 16 DIMMs with 2TB of DDR4 memory capacity ensure the SR655 is ideal for high performance database applications.

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 SR655 server, visit the SR655 product web page:
<https://www.lenovo.com/us/en/data-center/servers/racks/ThinkSystem-SR655-Server/p/77XX7SRSR75>

Related product families

Product families related to this document are the following:

- [1-Socket Rack Servers](#)
- [SPECaccel Benchmark Results](#)
- [ThinkSystem SR655 Server](#)

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This document, LP1202, was created or updated on August 7, 2019.

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