ThinkSystem SR655 Sets World Record with New One-Node 1-Socket SPECmpiM Result

Performance Benchmark Result

The Lenovo ThinkSystem SR655 has set a new 1-node 1-socket performance world record with the SPECmpiM_base2007 metric from the MPI M2007 suite of the SPEC MPI 2007 Benchmark. The SPECmpiM Benchmark suite is the industry standard to evaluate MPI-parallel, floating point, compute intensive performance across a wide range of cluster and SMP hardware.

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):

- **SPECmpiM_base2007 = 17.4**

This result is the best one-node 1-socket performance in the industry, 74% faster than Lenovo's own result (2) and Huawei's 2288H V5 result (3).

Table 1. Comparison of results

Hardware vendor	System	Result (Base)	Cores	CPUs	Memory
Lenovo (1)	ThinkSystem SR655 (AMD EPYC 7742, DDR4-3200 MHz)	17.4	64	1	256GB
Lenovo (2)	ThinkSystem SR650 (Intel Xeon Platinum 8280, DDR4-2933 MHz)	10	28	1	384GB
Huawei (3)	Huawei 2288H V5 (Intel Xeon Platinum 8280, DDR4-2933 MHz)	10	28	1	384GB

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

Results referenced are current as of August 7, 2019.

(1) The new Lenovo benchmark result can be found at:
https://www.spec.org/mpi2007/results/res2019q3/mpi2007-20190716-00637.html

(2) The previous Lenovo result:
https://www.spec.org/mpi2007/results/res2019q2/mpi2007-20190507-00625.html

(3) Huawei result:
https://www.spec.org/mpi2007/results/res2019q2/mpi2007-20190312-00621.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 SPECmpiM

The SPEC MPI 2007 benchmark suite evaluates Message-Passing Interface (MPI)-parallel, floating point, compute-intensive performance across a wide range of cluster and symmetric multiprocessing (SMP) server hardware. This suite continues the SPEC tradition of giving users the most objective and representative benchmark suite for measuring and comparing high-performance computer systems.

SPEC MPI 2007 focuses on performance of compute intensive applications using the MPI, which means this benchmark emphasizes the performance of all of the following:

- Type of processor
- Number of computer processors
- MPI Library
- Communication interconnect
- Memory architecture
- Compiler used
- Type of shared file system

The benchmark is not intended to stress other computer components such as the operating system, graphics, or the I/O system.

For more information about SPEC MPI 2007, see https://www.spec.org/mpi2007/.

Learn more

To learn more about solutions for compute-intensive applications, 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
- SPECmpi Benchmark Results
- ThinkSystem SR655 Server

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This document, LP1201, was created or updated on August 7, 2019.

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