# SPEC® CPU2017 Integer Speed Result

**Lenovo Global Technology**  
ThinkSystem SR550  
(3.80 GHz, Intel Xeon Platinum 8256)

| Test Date: | Apr-2019 |
| Test Sponsor: | Lenovo Global Technology |
| Tested by: | Lenovo Global Technology |
| Hardware Availability: | Apr-2019 |
| Software Availability: | Dec-2018 |

| Threads | 0 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 |
| 600.perlbench_s | | | | | | | | | | | | | 6.49 | | | | | | |
| 602.gcc_s | | | | | | | | | | | | | | | | | | |
| 605.mcf_s | | | | | | | | | | | | | | | | | | |
| 620.omnetpp_s | | | | | | | | | | | | 6.30 | | | | | | |
| 623.xalancbmk_s | | | | | | | | | | | | | | | | | | |
| 625.x264_s | | | | | | | | | | | | | | | | | | |
| 631.deepsjeng_s | | | | | | | | | | | | | | | | | | |
| 641.igea_s | | | | | | | | | | | | | | | | | | |
| 648.exchange2_s | | | | | | | | | | | | | | | | | | |
| 657.xz_s | | | | | | | | | | | | | | | | | | |

**Hardware**

- **CPU Name:** Intel Xeon Platinum 8256  
- **Max MHz.:** 3900  
- **Nominal:** 3800  
- **Enabled:** 8 cores, 2 chips, 2 threads/core  
- **Orderable:** 1.2 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 1 MB I+D on chip per core  
- **L3:** 16.5 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R)  
- **Storage:** 1 x 960 GB SATA SSD  
- **Other:** None

**Software**

- **OS:** SUSE Linux Enterprise Server 12 SP4 (x86_64)  
- **Kernel:** 4.12.14-94.41-default  
- **Compiler:** C/C++: Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux; Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux  
- **Parallel:** Yes  
- **Firmware:** Lenovo BIOS Version TEE135L 2.10 released Jan-2019  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Other:** jemalloc memory allocator V5.0.1

**SPECspeed2017_int_base = 9.29**  
**SPECspeed2017_int_peak = Not Run**
SPEC CPU2017 Integer Speed Result

Lenovo Global Technology
ThinkSystem SR550
(3.80 GHz, Intel Xeon Platinum 8256)

SPECspeed2017_int_base = 9.29
SPECspeed2017_int_peak = Not Run

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>16</td>
<td>273</td>
<td>6.49</td>
<td></td>
<td>274</td>
<td>6.49</td>
<td></td>
<td>272</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>16</td>
<td>432</td>
<td>9.22</td>
<td></td>
<td>430</td>
<td>9.25</td>
<td></td>
<td>432</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>16</td>
<td>388</td>
<td>12.2</td>
<td></td>
<td>386</td>
<td>12.2</td>
<td></td>
<td>387</td>
</tr>
<tr>
<td>620.omnetpp_p_s</td>
<td>16</td>
<td>259</td>
<td>6.30</td>
<td></td>
<td>260</td>
<td>6.28</td>
<td></td>
<td>257</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>16</td>
<td>117</td>
<td>12.1</td>
<td></td>
<td>117</td>
<td>12.1</td>
<td></td>
<td>117</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>16</td>
<td>126</td>
<td>14.1</td>
<td></td>
<td>126</td>
<td>14.1</td>
<td></td>
<td>125</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>16</td>
<td>270</td>
<td>5.32</td>
<td></td>
<td>269</td>
<td>5.32</td>
<td></td>
<td>269</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>16</td>
<td>367</td>
<td>4.64</td>
<td></td>
<td>368</td>
<td>4.64</td>
<td></td>
<td>367</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>16</td>
<td>215</td>
<td>13.7</td>
<td></td>
<td>215</td>
<td>13.7</td>
<td></td>
<td>214</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>16</td>
<td>346</td>
<td>17.9</td>
<td></td>
<td>346</td>
<td>17.9</td>
<td></td>
<td>345</td>
</tr>
</tbody>
</table>

SPECspeed2017_int_base = 9.29
SPECspeed2017_int_peak = Not Run

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2017-1.0.5-ic19.0u1/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017-1.0.5-ic19.0u1/je5.0.1-64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3> /proc/sys.vm/drop_caches

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2018-3640 (Spectre variant 3a) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2018-3639 (Spectre variant 4) is mitigated in the system as tested and documented.

jemalloc, a general purpose malloc implementation built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

(Continued on next page)
**SPEC CPU2017 Integer Speed Result**

**Lenovo Global Technology**  
ThinkSystem SR550  
(3.80 GHz, Intel Xeon Platinum 8256)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.29</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>Lenovo Global Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Lenovo Global Technology</td>
</tr>
</tbody>
</table>

**Test Date:** Apr-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Dec-2018

**General Notes (Continued)**


**Platform Notes**

BIOS configuration:  
Choose Operating Mode set to Maximum Performance  
Choose Operating Mode set to Custom Mode  
Memory Power Management set to Automatic  
CPU P-state Control set to Cooperative  
MONITOR/MWAIT set to Enable  
LLC dead line alloc set to Disable  
Sysinfo program /home/cpu2017-1.0.5-ic19.0u1/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9  
running on linux-dogi Thu Apr 25 13:08:17 2019

SUT (System Under Test) info as seen by some common utilities.  
For more information on this section, see  
https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo  

```
model name : Intel(R) Xeon(R) Platinum 8256 CPU @ 3.80GHz
  2 "physical id"s (chips)
  16 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 4
siblings : 8
physical 0: cores 4 8 9 13
physical 1: cores 2 5 9 13
```

From lscpu:  

```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                16
On-line CPU(s) list:   0-15
Thread(s) per core:    2
Core(s) per socket:    4
Socket(s):             2
NUMA node(s):          2
Vendor ID:             GenuineIntel
CPU family:            6
Model:                 85
Model name:            Intel(R) Xeon(R) Platinum 8256 CPU @ 3.80GHz
Stepping:              6
CPU MHz:               3800.000
```

(Continued on next page)
**Lenovo Global Technology**

ThinkSystem SR550
(3.80 GHz, Intel Xeon Platinum 8256)

**SPECspeed2017_int_base =** 9.29

**SPECspeed2017_int_peak =** Not Run

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Lenovo Global Technology</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

- CPU max MHz: 3800.0000
- CPU min MHz: 1200.0000
- BogoMIPS: 7600.00
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 1024K
- L3 cache: 16896K
- NUMA node0 CPU(s): 0-3,8-11
- NUMA node1 CPU(s): 4-7,12-15
- Flags: fpu vme de pse tsc msr pae mce cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp cpe ccm cpdintel cmmcpin cul3 cperf intel_pxe cmov pat pse36 clflush dtscache nhxsse nx tsc tsc_adjust mmca
- Flags: xsaveopt xsavec xsaves cqm llc cqm_occup llc cqm_mbb_total cqm_mbb_local dtherm arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pku ospke avx512_vnni flush_l1d arch_capabilities

/proc/cpuinfo cache data

  cache size : 16896 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.

  available: 2 nodes (0-1)
  node 0 cpus: 0 1 2 3 8 9 10 11
  node 0 size: 193126 MB
  node 0 free: 192605 MB
  node 1 cpus: 4 5 6 7 12 13 14 15
  node 1 size: 193482 MB
  node 1 free: 193077 MB

From /proc/meminfo

  MemTotal: 395887516 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

  SuSE-release:

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR550
(3.80 GHz, Intel Xeon Platinum 8256)

SPEC CPU2017 Integer Speed Result
Copyright 2017-2019 Standard Performance Evaluation Corporation

SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 4
# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.

os-release:
NAME="SLES"
VERSION="12-SP4"
VERSION_ID="12.4"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp4"

uname -a:
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Apr 25 13:06

SPEC is set to: /home/cpu2017-1.0.5-ic19.0u1

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 892G 40G 852G 5% /

Additional information from dmidecode follows. WARNING: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Lenovo -[TEE135L-2.10]- 01/10/2019
Memory:
12x SK Hynix HMA84GR7CJR4N-WM 32 GB 2 rank 2933

(End of data from sysinfo program)

Compiler Version Notes
==============================================================================
CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base)
657.xz_s(base)
==============================================================================

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR550
(3.80 GHz, Intel Xeon Platinum 8256)

SPECspeed2017_int_base = 9.29
SPECspeed2017_int_peak = Not Run

Compiler Version Notes (Continued)

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

================================================================================
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
   641.leela_s(base)

-----------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------

FC  648.exchange2_s(base)
-----------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64

(Continued on next page)
### Lenovo Global Technology

**ThinkSystem SR550**  
(3.80 GHz, Intel Xeon Platinum 8256)

---

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

---

### SPEC CPU2017 Integer Speed Result

**SPECspeed2017_int_base = 9.29**  
**SPECspeed2017_int_peak = Not Run**

---

### Base Portability Flags (Continued)

- 641.leela_s: -DSPEC_LP64
- 648.exchange2_s: -DSPEC_LP64
- 657.xz_s: -DSPEC_LP64

---

### Base Optimization Flags

**C benchmarks:**

- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`  
- `-qopt-mem-layout-trans=4 -gopenmp -DSPEC_OPENMP`  
- `-L/usr/local/je5.0.1-64/lib -ljemalloc`

**C++ benchmarks:**

- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`  
- `-qopt-mem-layout-trans=4`  
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64 -lqkmalloc`

**Fortran benchmarks:**

- `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4`  
- `-nostandard-realloc-lhs`

---

The flags files that were used to format this result can be browsed at:


You can also download the XML flags sources by saving the following links:


---

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU2017 v1.0.5 on 2019-04-25 01:08:16-0400.  