# SPEC CPU®2017 Integer Speed Result

## Lenovo Global Technology

ThinkSystem SR850P  
(3.00 GHz, Intel Xeon Gold 5217)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.79</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

### CPU2017 License: 9017  
Test Sponsor: Lenovo Global Technology  
Tested by: Lenovo Global Technology  
Test Date: Dec-2020  
Hardware Availability: Jan-2020  
Software Availability: Aug-2020

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base (9.79)</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>32</td>
<td>6.11</td>
<td></td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>32</td>
<td>8.50</td>
<td></td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>32</td>
<td>6.31</td>
<td></td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>32</td>
<td>12.8</td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>32</td>
<td>5.43</td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>32</td>
<td>4.56</td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>32</td>
<td>15.6</td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>32</td>
<td>21.0</td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Gold 5217  
- **Max MHz:** 3700  
- **Nominal:** 3000  
- **Enabled:** 32 cores, 4 chips  
- **Orderable:** 4 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 1 MB I+D on chip per core  
- **L3:** 11 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 1536 GB (48 x 32 GB 2Rx4 PC4-2933Y-R, running at 2666)  
- **Storage:** 1 x 960 GB SATA SSD  
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux 8.0 (Ootpa)  
- **Kernel:** 4.18.0-80.el8.x86_64  
- **Compiler:** C/C++: Version 19.1.2.275 of Intel C/C++ Compiler for Linux; Fortran: Version 19.1.2.275 of Intel Fortran Compiler for Linux  
- **Parallel:** Yes  
- **Firmware:** Lenovo BIOS Version TEE156L 2.61 released May-2020  
- **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  
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage
Lenovo Global Technology
ThinkSystem SR850P
(3.00 GHz, Intel Xeon Gold 5217)

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>32</td>
<td>290</td>
<td>6.11</td>
<td>291</td>
<td>6.09</td>
<td>291</td>
<td>6.11</td>
<td></td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>32</td>
<td>460</td>
<td>8.50</td>
<td>462</td>
<td>8.62</td>
<td>476</td>
<td>8.36</td>
<td></td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>32</td>
<td>287</td>
<td>16.5</td>
<td>287</td>
<td>16.4</td>
<td>288</td>
<td>16.4</td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>32</td>
<td>259</td>
<td>6.30</td>
<td>259</td>
<td>6.31</td>
<td>257</td>
<td>6.33</td>
<td></td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>32</td>
<td>111</td>
<td>12.8</td>
<td>111</td>
<td>12.8</td>
<td>111</td>
<td>12.7</td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>32</td>
<td>123</td>
<td>14.4</td>
<td>122</td>
<td>14.4</td>
<td>122</td>
<td>14.4</td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>32</td>
<td>264</td>
<td>5.43</td>
<td>264</td>
<td>5.43</td>
<td>263</td>
<td>5.44</td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>32</td>
<td>374</td>
<td>4.56</td>
<td>373</td>
<td>4.57</td>
<td>374</td>
<td>4.56</td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>32</td>
<td>188</td>
<td>15.7</td>
<td>188</td>
<td>15.6</td>
<td>188</td>
<td>15.6</td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>32</td>
<td>289</td>
<td>21.4</td>
<td>295</td>
<td>21.0</td>
<td>296</td>
<td>20.9</td>
<td></td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 9.79
SPECspeed®2017_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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2017-1.1.0-ic19.1u2/lib/intel64:/home/cpu2017-1.1.0-ic19.1u2/j
e5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesysten page cache synced and cleared with:
sync; echo 3>/proc/sys/vm/drop_caches

NA: 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.

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR850P
(3.00 GHz, Intel Xeon Gold 5217)

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

SPECSpeed®2017_int_base = 9.79
SPECSpeed®2017_int_peak = Not Run

Test Date: Dec-2020
Hardware Availability: Jan-2020
Software Availability: Aug-2020

General Notes (Continued)
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
MONITOR/MWAIT set to Enable
Hyper-Threading set to Disable
DCU Streamer Prefetcher set to Disable
Patrol Scrub set to Disable
LLC dead line alloc set to Disable

Sysinfo program /home/cpu2017-1.1.0-ic19.1u2/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbble6e46a485a0011
running on localhost.localdomain Wed Dec 23 19:37:58 2020

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) Gold 5217 CPU @ 3.00GHz
4 "physical id"s (chips)
32 "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 : 8
siblings : 8
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
physical 2: cores 0 1 2 3 4 5 6 7
physical 3: cores 0 1 2 3 4 5 6 7

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 32
On-line CPU(s) list: 0-31
Thread(s) per core: 1
Core(s) per socket: 8
Socket(s): 4
NUMA node(s): 4
Vendor ID: GenuineIntel

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR850P
(3.00 GHz, Intel Xeon Gold 5217)

SPECspeed®2017_int_base = 9.79
SPECspeed®2017_int_peak = Not Run

CPU2017 License: 9017
Test Date: Dec-2020
Test Sponsor: Lenovo Global Technology
Hardware Availability: Jan-2020
Tested by: Lenovo Global Technology
Software Availability: Aug-2020

Platform Notes (Continued)

CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 5217 CPU @ 3.00GHz
Stepping: 6
CPU MHz: 2451.129
CPU max MHz: 3700.0000
CPU min MHz: 1200.0000
BogoMIPS: 6000.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 11264K
NUMA node0 CPU(s): 0-7
NUMA node1 CPU(s): 8-15
NUMA node2 CPU(s): 16-23
NUMA node3 CPU(s): 24-31
Flags: fpu vme de pse tsc msr pae mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc arch_perfmon pebs rep_good nopl tsc_adjust mce pse36 cli dts mwait msr pdca nonstop_tsc intel_pt 2mb 3mb 4mb 2048d tsc_strapping
Cache size: 11264 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 4 nodes (0-3)
node 0 cpus: 0 1 2 3 4 5 6 7
node 0 size: 386663 MB
node 0 free: 386412 MB
node 1 cpus: 8 9 10 11 12 13 14 15
node 1 size: 387069 MB
node 1 free: 386651 MB
node 2 cpus: 16 17 18 19 20 21 22 23
node 2 size: 387069 MB
node 2 free: 386430 MB
node 3 cpus: 24 25 26 27 28 29 30 31
node 3 size: 387069 MB

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR850P
(3.00 GHz, Intel Xeon Gold 5217)

SPECspeed®2017_int_base = 9.79
SPECspeed®2017_int_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: Dec-2020
Hardware Availability: Jan-2020
Tested by: Lenovo Global Technology
Software Availability: Aug-2020

Platform Notes (Continued)

node 3 free: 386806 MB
node distances:
node 0 1 2 3
0: 10 21 21 31
1: 21 10 31 21
2: 21 31 10 21
3: 31 21 21 10

From /proc/meminfo
MemTotal: 1585021752 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux"
VERSION=8.0 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID=8.0"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.0 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.0 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.0 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.0:ga

uname -a:
Linux localhost.localdomain 4.18.0-80.el8.x86_64 #1 SMP Wed Mar 13 12:02:46 UTC 2019
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: No status reported
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 Dec 23 19:34

SPEC is set to: /home/cpu2017-1.1.0-ic19.1u2
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 839G 65G 774G 8% /home
SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Lenovo Global Technology
ThinkSystem SR850P
(3.00 GHz, Intel Xeon Gold 5217)

SPECspeed®2017_int_base = 9.79
SPECspeed®2017_int_peak = Not Run

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

Test Date: Dec-2020
Hardware Availability: Jan-2020
Software Availability: Aug-2020

Platform Notes (Continued)

From /sys/devices/virtual/dmi/id
BIOS: Lenovo -[TEE156L-2.61]- 05/20/2020
Vendor: Lenovo
Product: ThinkSystem SR850P -[7D2HCTO1WW]-
Product Family: ThinkSystem
Serial: 1234567890

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.

Memory:
48x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

(End of data from sysinfo program)
Memory on this system run at 2666 MHz due to CPU limitation.

Compiler Version Notes

C
  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base)
  625.x264_s(base) 657.xz_s(base)

Intel(R) C Compiler for applications running on Intel(R) 64, Version
19.1.2.275 Build 20200604
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

C++
  620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
  641.leela_s(base)

Intel(R) C++ Compiler for applications running on Intel(R) 64, Version
19.1.2.275 Build 20200604
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Fortran
  648.exchange2_s(base)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.2.275 Build 20200623
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
# SPEC CPU®2017 Integer Speed Result

**Lenovo Global Technology**  
ThinkSystem SR850P  
(3.00 GHz, Intel Xeon Gold 5217)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base = 9.79</th>
<th>Test Date: Dec-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak = Not Run</td>
<td>Hardware Availability: Jan-2020</td>
</tr>
<tr>
<td>CPU2017 License: 9017</td>
<td>Software Availability: Aug-2020</td>
</tr>
<tr>
<td>Test Sponsor: Lenovo Global Technology</td>
<td>Tested by: Lenovo Global Technology</td>
</tr>
</tbody>
</table>

## Base Compiler Invocation

C benchmarks:

- icc

C++ benchmarks:

- icpc

Fortran benchmarks:

- ifort

## Base Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Portability Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench.s</td>
<td>-DSPEC_LP64 -DSPEC_LINUX_X64</td>
</tr>
<tr>
<td>gcc.s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>mcf.s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>omnetpp.s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>xalancbmk.s</td>
<td>-DSPEC_LP64 -DSPEC_LINUX</td>
</tr>
<tr>
<td>x264.s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>deepsjeng.s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>leela.s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>exchange2.s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>xz.s</td>
<td>-DSPEC_LP64</td>
</tr>
</tbody>
</table>

(Continued on next page)

## Base Optimization Flags

C benchmarks:

- -m64 -qnextgen -std=c11
- -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
- -xCORE-AVX512 -O3 -ffast-math -flto -mfpmath=sse -funroll-loops
- -qopt-mem-layout-trans=4 -fopenmp -DSPEC_OPENMP
- -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:

- -m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries
- -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto -mfpmath=sse
- -funroll-loops -qopt-mem-layout-trans=4
- -L/usr/local/IntelCompiler19/compilers_and_libraries_2020.3.275/linux/compiler/lib/intel64_lin -lqkmalloc

Fortran benchmarks:

- -m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -xCORE-AVX512
- -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
- -nostandard-realloc-lhs -align array32byte

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

**ThinkSystem SR850P**  
*(3.00 GHz, Intel Xeon Gold 5217)*

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base = 9.79</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak = Not Run</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Test Date: Dec-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability: Jan-2020</td>
</tr>
<tr>
<td>Software Availability: Aug-2020</td>
</tr>
</tbody>
</table>

## Base Optimization Flags (Continued)

Fortran benchmarks (continued):

- `mbranches-within-32B-boundaries`

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

- [http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-I.html](http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-I.html)

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

- [http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-I.xml](http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-I.xml)

---

SPEC CPU and SPECspeed are registered trademarks 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 CPU®2017 v1.1.0 on 2020-12-23 06:37:57-0500.  
Report generated on 2021-01-19 16:56:05 by CPU2017 PDF formatter v6255.  
Originally published on 2021-01-19.