# SPEC CPU®2017 Integer Speed Result

## Lenovo Global Technology

**ThinkSystem SD530 (2.10 GHz, Intel Xeon Gold 6230T)**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>6.85</td>
<td>Not Run</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>9.80</td>
<td>Not Run</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>12.5</td>
<td>Not Run</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>8.03</td>
<td>Not Run</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>12.4</td>
<td>Not Run</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>14.4</td>
<td>Not Run</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>5.46</td>
<td>Not Run</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>4.76</td>
<td>Not Run</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>16.6</td>
<td>Not Run</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>23.9</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Gold 6230T
- **Max MHz:** 3900
- **Nominal:** 2100
- **Enabled:** 40 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:** 27.5 MB I+D on chip per chip
- **Memory:** 192 GB (12 x 16 GB 2Rx8 PC4-2933Y-R)
- **Storage:** 1 x 800 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 19.0.4.227 of Intel C/C++ Compiler for Linux; Fortran: Version 19.0.4.227 of Intel Fortran Compiler for Linux
- **Parallel:** Yes
- **Firmware:** Lenovo BIOS Version TEE142E 2.30 released Aug-2019 tested as TEE141E 2.30 Jul-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
- **Power Management:** --
### Lenovo Global Technology

**ThinkSystem SD530**

(2.10 GHz, Intel Xeon Gold 6230T)

---

**SPECspeed®2017_int_base = 10.2**

**SPECspeed®2017_int_peak = Not Run**

---

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>80</td>
<td>260</td>
<td>6.82</td>
<td>259</td>
<td>6.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>80</td>
<td>408</td>
<td>9.76</td>
<td>406</td>
<td>9.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>80</td>
<td>380</td>
<td>12.4</td>
<td>379</td>
<td>12.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>80</td>
<td>209</td>
<td>7.80</td>
<td>203</td>
<td>8.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>80</td>
<td>115</td>
<td>12.3</td>
<td>114</td>
<td>12.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>80</td>
<td>123</td>
<td>14.3</td>
<td>123</td>
<td>14.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>80</td>
<td>263</td>
<td>5.46</td>
<td>262</td>
<td>5.47</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>80</td>
<td>358</td>
<td>4.76</td>
<td>358</td>
<td>4.76</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>80</td>
<td>177</td>
<td>16.6</td>
<td>177</td>
<td>16.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>80</td>
<td>259</td>
<td>23.9</td>
<td>259</td>
<td>23.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**NEW SPECspeed®2017_int_base = 10.2**

**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"

### 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-ic19.0u4/lib/intel64"
- `LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017-1.0.5-ic19.0u4/je5.0.1-64"
- `OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i9-799X 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
```

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.

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 CPU®2017 Integer Speed Result

Lenovo Global Technology
ThinkSystem SD530
(2.10 GHz, Intel Xeon Gold 6230T)

SPECSpeed®2017_int_base = 10.2
SPECSpeed®2017_int_peak = Not Run

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

Test Date: Oct-2019
Hardware Availability: Jul-2019
Software Availability: May-2019

General Notes (Continued)

Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
Stale AtoS set to Disable
CPU P-state Control set to Cooperative
C-States set to Legacy
C1 Enhanced Mode set to Enable
Sysinfo program /home/cpu2017-1.0.5-ic19.0u4/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-rofd Fri Oct 11 11:28:30 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) Gold 6230T CPU @ 2.10GHz
    2 "physical id"s (chips)
    80 "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 : 20
siblings : 40
physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 80
On-line CPU(s) list: 0-79
Thread(s) per core: 2
Core(s) per socket: 20
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6230T CPU @ 2.10GHz
Stepping: 7
CPU MHz: 2100.000
CPU max MHz: 3900.000

(Continued on next page)
Lenovo Global Technology

ThinkSystem SD530
(2.10 GHz, Intel Xeon Gold 6230T)

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

SPECSpeed®2017_int_base = 10.2
SPECSpeed®2017_int_peak = Not Run

Test Date: Oct-2019
Hardware Availability: Jul-2019
Software Availability: May-2019

Platform Notes (Continued)

CPU min MHz: 800.0000
BogoMIPS: 4200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 28160K
NUMA node0 CPU(s): 0-19,40-59
NUMA node1 CPU(s): 20-39,60-79
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 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_l3 invpcid_single intel_ppcin ssbd mba ibrs ibpb tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdtsa_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_local dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkgreq pku ospke avx512_vnni flush_l1d arch_capabilities

/proc/cpuinfo cache data
cache size : 28160 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 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 40 41 42 43 44 45 46 47
node 0 size: 96322 MB
node 0 free: 95862 MB
node 1 cpus: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 60 61 62 63 64
node 1 size: 96737 MB
node 1 free: 95975 MB
node distances:
node 0 1
0: 10 21
1: 21 10

From /proc/meminfo
MemTotal:       1976931800 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
## Lenovo Global Technology

ThinkSystem SD530  
(2.10 GHz, Intel Xeon Gold 6230T)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>10.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 9017  
**Test Date:** Oct-2019  
**Test Sponsor:** Lenovo Global Technology  
**Hardware Availability:** Jul-2019  
**Tested by:** Lenovo Global Technology  
**Software Availability:** May-2019

### Platform Notes (Continued)

SuSE-release:  
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 Oct 11 11:27

SPEC is set to: /home/cpu2017-1.0.5-ic19.0u4  
Filesistem | Type | Size | Used | Avail | Use% | Mounted on  
/dev/md126p3 | xfs | 743G | 43G | 701G | 6% | /

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 -[TEE141E-2.30]- 07/02/2019  
Memory:  
4x NO DIMM NO DIMM  
12x SK Hynix HMA82GR7CJR8N-WM 16 GB 2 rank 2933

(End of data from sysinfo program)
# Lenovo Global Technology

## SPEC CPU®2017 Integer Speed Result

<table>
<thead>
<tr>
<th>Lenovo Global Technology</th>
<th>SPECspeed®2017_int_base = 10.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ThinkSystem SD530</td>
<td>SPECspeed®2017_int_peak = Not Run</td>
</tr>
<tr>
<td>(2.10 GHz, Intel Xeon Gold 6230T)</td>
<td></td>
</tr>
</tbody>
</table>

### CPU2017 License: 9017

**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

### Test Sponsor: Lenovo Global Technology

**Hardware Availability:** Jul-2019  
**Software Availability:** May-2019

## Compiler Version Notes

<table>
<thead>
<tr>
<th>Standard</th>
<th>Benchmark(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base) 657.xz_s(base)</td>
</tr>
</tbody>
</table>
|          | Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
          | Version 19.0.4.227 Build 20190416  
          | Copyright (C) 1985-2019 Intel Corporation. All rights reserved.               |
|          |                                                                                     |
| C++      | 620.omnetpp_s(base) 623.xalanchmk_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 19.0.4.227 Build 20190416  
          | Copyright (C) 1985-2019 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 19.0.4.227 Build 20190416  
          | Copyright (C) 1985-2019 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

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD530
(2.10 GHz, Intel Xeon Gold 6230T)

SPECspeed®2017_int_base = 10.2
SPECspeed®2017_int_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: Oct-2019
Tested by: Lenovo Global Technology
Hardware Availability: Jul-2019
Software Availability: May-2019

Base Portability Flags (Continued)

623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
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_2019.4.227/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
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-F.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-F.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 v1.0.5 on 2019-10-10 23:28:29-0400.
Originally published on 2019-10-29.