## SPEC® CPU2017 Integer Speed Result

**Lenovo Global Technology**  
ThinkSystem SD530  
(2.50 GHz, Intel Xeon Platinum 8180)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>9.26</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>9.49</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Test Date</th>
<th>Aug-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability</td>
<td>Aug-2017</td>
</tr>
<tr>
<td>Software Availability</td>
<td>May-2018</td>
</tr>
</tbody>
</table>

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>56</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>56</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>56</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>56</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>56</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>56</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>56</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>56</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>56</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>56</td>
</tr>
</tbody>
</table>

### SPECspeed2017_int_base (9.26)  
### SPECspeed2017_int_peak (9.49)

### Hardware

- **CPU Name:** Intel Xeon Platinum 8180  
- **Max MHz.** 3800  
- **Nominal:** 2500  
- **Enabled:** 56 cores, 2 chips  
- **Orderable:** 1,2 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **Cache L2:** 1 MB I+D on chip per core  
- **Cache L3:** 38.5 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)  
- **Storage:** 1 x 800 GB SAS SSD  
- **Other:** None

### Software

- **OS:** SUSE Linux Enterprise Server 12 SP2 (x86_64)  
- **Kernel:** 4.4.121-92.80-default  
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++  
- **Compiler for Linux:**  
- **Fortran:** Version 18.0.0.128 of Intel Fortran  
- **Compiler for Linux:**  
- **Parallel:** Yes  
- **Firmware:** Lenovo BIOS Version TEE123N 1.40 released Jun-2018  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 32/64-bit  
- **Other:** jemalloc memory allocator library V5.0.1
### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>56</td>
<td>281</td>
<td>6.32</td>
<td>279</td>
<td>6.37</td>
<td>279</td>
<td>6.36</td>
<td>279</td>
<td>6.36</td>
<td>279</td>
<td>6.36</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>56</td>
<td>415</td>
<td>9.60</td>
<td>417</td>
<td>9.56</td>
<td>413</td>
<td>9.64</td>
<td>405</td>
<td>9.84</td>
<td>404</td>
<td>9.87</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>56</td>
<td>428</td>
<td>11.0</td>
<td>423</td>
<td>11.2</td>
<td>422</td>
<td>11.2</td>
<td>417</td>
<td>11.3</td>
<td>419</td>
<td>11.3</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>56</td>
<td>208</td>
<td>7.84</td>
<td>218</td>
<td>7.46</td>
<td>206</td>
<td>7.92</td>
<td>211</td>
<td>7.74</td>
<td>214</td>
<td>7.61</td>
</tr>
<tr>
<td>623.xalanchmk_s</td>
<td>56</td>
<td>147</td>
<td>9.67</td>
<td>146</td>
<td>9.74</td>
<td>147</td>
<td>9.67</td>
<td>139</td>
<td>10.2</td>
<td>138</td>
<td>10.3</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>56</td>
<td>145</td>
<td>12.1</td>
<td>145</td>
<td>12.1</td>
<td>144</td>
<td>12.2</td>
<td>145</td>
<td>12.2</td>
<td>145</td>
<td>12.2</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>56</td>
<td>279</td>
<td>5.14</td>
<td>278</td>
<td>5.15</td>
<td>278</td>
<td>5.15</td>
<td>280</td>
<td>5.13</td>
<td>280</td>
<td>5.12</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>56</td>
<td>383</td>
<td>4.45</td>
<td>383</td>
<td>4.45</td>
<td>383</td>
<td>4.45</td>
<td>382</td>
<td>4.47</td>
<td>384</td>
<td>4.44</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>56</td>
<td>261</td>
<td>23.7</td>
<td>263</td>
<td>23.5</td>
<td>262</td>
<td>23.6</td>
<td>263</td>
<td>23.5</td>
<td>260</td>
<td>23.8</td>
</tr>
</tbody>
</table>

- **SPECspeed2017_int_base** = 9.26
- **SPECspeed2017_int_peak** = 9.49

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:
  - `LD_LIBRARY_PATH = "/home/cpu2017.1.0.2.ic18.0/lib/ia32:/home/cpu2017.1.0.2.ic18.0/lib/intel64"`
  - `LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017.1.0.2.ic18.0/je5.0.1-32:/home/cpu2017.1.0.2.ic18.0/je5.0.1-64"`
  - `OMP_STACKSIZE = "192M"`

- Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM using Redhat Enterprise Linux 7.4

- Transparent Huge Pages enabled by default

- Prior to runcpu invocation:
  - `sync; echo 3>/proc/sys/vm/drop_caches`

- jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;

- jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5;


- 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.
Lenovo Global Technology
ThinkSystem SD530
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_int_peak = 9.49
SPECspeed2017_int_base = 9.26

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

Test Date: Aug-2018
Hardware Availability: Aug-2017
Software Availability: May-2018

Platform Notes

BIOS configuration:
Choose Operating Mode set to Custom Mode
CPU P-state Control set to None
C-States set to Legacy
C1 Enhanced Mode set to Disable
Energy Efficient Turbo set to Disable
Platform Controlled Type set to Maximum Performance
Page Policy set to Adaptive
Hyper-Threading set to Disable
LLC dead line alloc set to Disable
Stale A to S set to Disable
Sysinfo program /home/cpu2017.1.0.2.ic18.0/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on Stark-03 Thu Aug 9 06:46:41 2018

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 8180 CPU @ 2.50GHz
  2 "physical id"s (chips)
  56 "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 : 28
siblings : 28
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 56
On-line CPU(s) list: 0-55
Thread(s) per core: 1
Core(s) per socket: 28
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Platinum 8180 CPU @ 2.50GHz
Stepping: 4

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD530
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_int_base = 9.26
SPECspeed2017_int_peak = 9.49

Platform Notes (Continued)

CPU MHz: 2494.143
BogoMIPS: 4988.28
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 39424K
NUMA node0 CPU(s): 0–27
NUMA node1 CPU(s): 28–55
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dtsc acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtsc
lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmpref perfenvQualifier pci pcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsck roaring
lscpu

/proc/cpuinfo cache data

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

node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
node 0 size: 193105 MB
node 0 free: 192665 MB
node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
53 54 55
node 1 size: 193500 MB
node 1 free: 192965 MB
node distances:
node 0 1
0: 10 21
1: 21 10

From /proc/meminfo

MemTotal: 395885316 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12

(Continued on next page)
**Platform Notes (Continued)**

```
PATCHLEVEL = 2
# 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-SP2"
  VERSION_ID="12.2"
  PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
  ID="sles"
  ANSI_COLOR="0;32"
  CPE_NAME="cpe:/o:suse:sles:12:sp2"
```

```
uname -a:
  Linux Stark-03 4.4.121-92.80-default #1 SMP Mon May 21 14:40:10 UTC 2018 (2afdd00)
  x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Aug 9 06:31
```

SPEC is set to: `/home/cpu2017.1.0.2.ic18.0`

```
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda4      xfs   689G   15G  675G   3% /home
```

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 -[TEE123N-1.40]- 06/12/2018
- Memory:
  - 4x NO DIMM NO DIMM
  - 12x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666

(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, peak) 657.xz_s(base)
```

---

```
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

---

```
CC  600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)
```
Lenovo Global Technology
ThinkSystem SD530
(2.50 GHz, Intel Xeon Platinum 8180)

SPEC CPU2017 Integer Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECspeed2017_int_base = 9.26
SPECspeed2017_int_peak = 9.49

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

Test Date: Aug-2018
Hardware Availability: Aug-2017
Software Availability: May-2018

Compiler Version Notes (Continued)

icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

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

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

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

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
FC 648.exchange2_s(base, peak)

ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64

(Continued on next page)
**Lenovo Global Technology**  
ThinkSystem SD530  
(2.50 GHz, Intel Xeon Platinum 8180)  

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>9.26</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>9.49</td>
</tr>
</tbody>
</table>

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

**Base Portability Flags (Continued)**

<table>
<thead>
<tr>
<th>Base Portability Flags (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>620.omnetpp_s: -DSPEC_LP64</td>
</tr>
<tr>
<td>623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX</td>
</tr>
<tr>
<td>625.x264_s: -DSPEC_LP64</td>
</tr>
<tr>
<td>631.deepsjeng_s: -DSPEC_LP64</td>
</tr>
<tr>
<td>641.leela_s: -DSPEC_LP64</td>
</tr>
<tr>
<td>648.exchange2_s: -DSPEC_LP64</td>
</tr>
<tr>
<td>657.xz_s: -DSPEC_LP64</td>
</tr>
</tbody>
</table>

**Base Optimization Flags**

---

**Base Other Flags**

---

**Peak Compiler Invocation**

---

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD530
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_int_base = 9.26
SPECspeed2017_int_peak = 9.49

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

Test Date: Aug-2018
Hardware Availability: Aug-2017
Software Availability: May-2018

Peak Compiler Invocation (Continued)

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Peak 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: -D_FILE_OFFSET_BITS=64 -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

Peak Optimization Flags

C benchmarks:

600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX512 -qopt-mem-layout-trans=3 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -fno-strict-overflow
-L/usr/local/je5.0.1-64/lib -ljemalloc

602.gcc_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX512 -qopt-mem-layout-trans=3 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

605.mcf_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

625.x264_s: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD530
(2.50 GHz, Intel Xeon Platinum 8180)

SPECspeed2017_int_base = 9.26
SPECspeed2017_int_peak = 9.49

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

Peak Optimization Flags (Continued)

657.xz_s: Same as 602.gcc_s

C++ benchmarks:

620.omnetpp_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -o3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

623.xalancbmk_s: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -o3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-32/lib -ljemalloc

631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: Same as 620.omnetpp_s

Fortran benchmarks:

-std=c11

Peak Other Flags

C benchmarks:

-m64

C++ benchmarks (except as noted below):

-m64

623.xalancbmk_s: -m32

Fortran benchmarks:

-m64

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html
## SPEC CPU2017 Integer Speed Result

**Lenovo Global Technology**  
ThinkSystem SD530  
(2.50 GHz, Intel Xeon Platinum 8180)  

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>9.26</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>9.49</td>
</tr>
</tbody>
</table>

**Lenovo Global Technology**  
(2.50 GHz, Intel Xeon Platinum 8180)

<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>
<tr>
<td>Test Date</td>
<td>Aug-2018</td>
</tr>
<tr>
<td>Hardware Availability</td>
<td>Aug-2017</td>
</tr>
<tr>
<td>Software Availability</td>
<td>May-2018</td>
</tr>
</tbody>
</table>

You can also download the XML flags sources by saving the following links:
- http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml

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 v1.0.2 on 2018-08-08 18:46:40-0400.  
Originally published on 2018-09-04.