## Lenovo Global Technology

### ThinkSystem SD530

(3.80 GHz, Intel Xeon Platinum 8256)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>Lenovo Global Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.4</td>
<td>Lenovo Global Technology</td>
</tr>
</tbody>
</table>

### SPECspeed®2017_int_peak

- **Not Run**

### Test Details

- **CPU2017 License:** 9017
- **Test Sponsor:** Lenovo Global Technology
- **Tested by:** Lenovo Global Technology
- **Hardware Availability:** Apr-2019
- **Software Availability:** Apr-2020
- **Test Date:** Aug-2020

### Benchmark Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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<tr>
<td>600.perlbench_s</td>
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<td>6.58</td>
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<tr>
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<tr>
<td>605.mcf_s</td>
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<td>13.5</td>
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<tr>
<td>620.omnetpp_s</td>
<td>16</td>
<td>6.58</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>16</td>
<td>9.72</td>
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<tr>
<td>625.x264_s</td>
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</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>16</td>
<td>18.2</td>
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<tr>
<td>641.leela_s</td>
<td>16</td>
<td>15.6</td>
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<tr>
<td>648.exchange2_s</td>
<td>16</td>
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<tr>
<td>657.xz_s</td>
<td>16</td>
<td>18.0</td>
<td></td>
</tr>
</tbody>
</table>

### 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
- **Cache L2:** 1 MB I+D on chip per core
- **Cache L3:** 16.5 MB I+D on chip per chip
- **Other:** None
- **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 SP5 (x86_64)
- **Kernel:** 4.12.14-120-default
- **Compiler:**
  - C/C++: Version 19.1.1.217 of Intel C/C++
  - Fortran: Version 19.1.1.217 of Intel Fortran
- **Parallel:** Yes
- **Firmware:** Lenovo BIOS Version TEE155L 2.61 released May-2020
- **File System:** btrfs
- **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 SD530 (3.80 GHz, Intel Xeon Platinum 8256)

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology  
**Test Date:** Aug-2020  
**Hardware Availability:** Apr-2019  
**Software Availability:** Apr-2020

## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Ratio</th>
<th>Seconds</th>
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</tbody>
</table>

**SPECspeed®2017_int_base = 10.4**  
**SPECspeed®2017_int_peak = Not Run**

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

## Compiler Notes

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler. The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux  
The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

## 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-ic19.1.1/lib/intel64:/home/cpu2017-1.1.0-ic19.1.1/j ed5.0.1-64"  
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  
Filesystem page cache synced and cleared with:
Lenovo Global Technology
ThinkSystem SD530
(3.80 GHz, Intel Xeon Platinum 8256)

General Notes (Continued)

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.

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/cpu2017-1.1.0-ic19.1.1/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7ed1e6e46a485a0011
running on linux-4xwo Thu Aug 27 12:01:25 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) 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 5 8 9 13
physical 1: cores 1 5 9 12

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
Address sizes: 46 bits physical, 48 bits virtual
CPU(s): 16
On-line CPU(s) list: 0-15

(Continued on next page)
**SPEC CPU®2017 Integer Speed Result**

**Lenovo Global Technology**

ThinkSystem SD530
(3.80 GHz, Intel Xeon Platinum 8256)

**SPECspeed®2017_int_base = 10.4**

**SPECspeed®2017_int_peak = Not Run**

---

**CPU2017 License: 9017**

**Test Sponsor: Lenovo Global Technology**

**Test Date:** Aug-2020

**Tested by:** Lenovo Global Technology

**Hardware Availability:** Apr-2019

**Software Availability:** Apr-2020

---

**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:** 7

**CPU MHz:** 3800.000

**CPU max MHz:** 3900.0000

**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 cx8 apic sep mtrr pge 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 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 pclid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abmar bts-root cpuidrstrip aamund_mcpu cpuid_fault epb cat_13 cdp_13 invpcid_single intel_pinn ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpindextr pmr nonstop_tsc tsc_adjust bmi1 hle avx2 smep bmi2 ibrms invpcid rtm cmc mpfx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsaves xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_total

cqm_mbb_local dtherm ida arat pln pts hva hwp_act_window hwp_epp hwp_pkg_req pku ospke avx512_vnni md_clear flush_lld 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: 96376 MB

node 0 free: 93074 MB

node 1 cpus: 4 5 6 7 12 13 14 15

node 1 size: 96376 MB

node 1 free: 96191 MB

node distances:

node 0 1

---

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD530
(3.80 GHz, Intel Xeon Platinum 8256)

SPECspeed®2017_int_base = 10.4
SPECspeed®2017_int_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology
Test Date: Aug-2020
Hardware Availability: Apr-2019
Software Availability: Apr-2020

Platform Notes (Continued)

0:  10  21
1:  21  10

From /proc/meminfo
MemTotal:       197748084 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
SuSE-release:
  SUSE Linux Enterprise Server 12 (x86_64)
  VERSION = 12
  PATCHLEVEL = 5
  # 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-SP5"
    VERSION_ID="12.5"
    PRETTY_NAME="SUSE Linux Enterprise Server 12 SP5"
    ID="sles"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:12:sp5"

uname -a:
  Linux linux-4xwo 4.12.14-120-default #1 SMP Thu Nov 7 16:39:09 UTC 2019 (fd9dc36)
  x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

itlb_multihit:                    KVM: Mitigation: Split huge pages
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
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: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
tsx_async_abort:                  Mitigation: Clear CPU buffers; SMT vulnerable

run-level 3 Aug 27 12:00

SPEC is set to: /home/cpu2017-1.1.0-ic19.1.1
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3  btrfs    744G   46G   697G    7% /home

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

**ThinkSystem SD530**  
(3.80 GHz, Intel Xeon Platinum 8256)

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</tbody>
</table>

**Platform Notes (Continued)**

From /sys/devices/virtual/dmi/id  
BIOS: Lenovo -[TEE155L-2.61]- 05/20/2020  
Vendor: Lenovo  
Product: THINKSYSTEM SD530 -[7X2104Z000]-  
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:
- 4x NO DIMM NO DIMM
- 12x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933

(End of data from sysinfo program)

### 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 2021.1  
NextGen Build 20200304  
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 2021.1  
NextGen Build 20200304  
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 19.1.1.217 Build 20200306  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
```
Lenovo Global Technology
ThinkSystem SD530
(3.80 GHz, Intel Xeon Platinum 8256)

SPECspeed®2017_int_base = 10.4
SPECspeed®2017_int_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
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CPU2017 License: 9017
Tested by: Lenovo Global Technology
Software Availability: Apr-2020

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
620.omnetpp_s: -DSPEC_LP64
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:
-m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-xCORE-AVX512 -O3 -ffast-math -ftlo -mfpmath=sse -funroll-loops
-fuse-ld=gold

C++ benchmarks:
-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -ftlo -mfpmath=sse

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 SD530
(3.80 GHz, Intel Xeon Platinum 8256)

SPECTop 2017 Integer Speed Result
Copyright 2017-2020 Standard Performance Evaluation Corporation

 SPECspeed 2017_int_base = 10.4
 SPECspeed 2017_int_base = Not Run

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

Test Date: Aug-2020
Hardware Availability: Apr-2019
Software Availability: Apr-2020

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

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-I.xml

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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 2020-08-27 00:01:24-0400.
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