Lenovo Global Technology
ThinkSystem SD530
(3.20 GHz, Intel Xeon Silver 4215R)

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

<table>
<thead>
<tr>
<th>Threads</th>
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<td>605.mcf_s 32</td>
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<td>625.x264_s 32</td>
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<td>641.leela_s 32</td>
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<tr>
<td>648.exchange2_s 32</td>
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</tr>
<tr>
<td>657.xz_s 32</td>
<td>20.4</td>
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</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Silver 4215R
- **Max MHz:** 4000
- **Nominal:** 3200
- **Enabled:** 16 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:** 11 MB I+D on chip per chip
- **Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R, running at 2400)
- **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 19.0.4.227 of Intel C/C++
- **Compiler for Linux:** Compiler for Linux
- **Fortran:** Version 19.0.4.227 of Intel Fortran
- **Compiler for Linux:** Compiler for Linux
- **Parallel:** Yes
- **Firmware:** Lenovo BIOS Version TEE152L 2.51 released Feb-2020 tested as TEE151L 2.51 Jan-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
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Results Table

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</tbody>
</table>

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-ic19.0u4/lib/intel64:/home/cpu2017-1.1.0-ic19.0u4/j e5.0.1-64"
OMP_STACKSIZE = "192M"

General Notes
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
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)
Lenovo Global Technology  
ThinkSystem SD530  
(3.20 GHz, Intel Xeon Silver 4215R)  

**General Notes (Continued)**

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.  

**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-ic19.0u4/bin/sysinfo  
Rev: r6365 of 2019-08-21 295195f888a3d7ed816e6e46a485a0011  
running on linux-lvjl Fri Mar 27 13:01:30 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) Silver 4215R CPU @ 3.20GHz
  2  "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 : 16
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: 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
Address sizes: 46 bits physical, 48 bits virtual
CPU(s): 32
On-line CPU(s) list: 0-31
Thread(s) per core: 2
Core(s) per socket: 8
Socket(s): 2
NUMA node(s): 2
```
Lenovo Global Technology
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SPECspeed®2017_int_base = 9.16
SPECspeed®2017_int_peak = Not Run

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

Platform Notes (Continued)

Vendor ID:         GenuineIntel
CPU family:        6
Model:             85
Model name:        Intel(R) Xeon(R) Silver 4215R CPU @ 3.20GHz
Stepping:          7
CPU MHz:           3200.000
CPU max MHz:       4000.0000
CPU min MHz:       1000.0000
BogoMIPS:          6400.00
Virtualization:    VT-x
L1d cache:         32K
L1i cache:         32K
L2 cache:          1024K
L3 cache:          11264K
NUMA node0 CPU(s): 0-7,16-23
NUMA node1 CPU(s): 8-15,24-31
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
                  xtopology  nonstop_tsc  cpuid
                  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_ppin  ssbd  mba  ibrs  ibpb  ibrs_enabled
                  tpr_shadow  vnmi
                  flexpriority  ept  vpid  fsgsbase  tsc_adjust

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 16 17 18 19 20 21 22 23
   node 0 size: 193153 MB
   node 0 free: 189715 MB
   node 1 cpus: 8 9 10 11 12 13 14 15 24 25 26 27 28 29 30 31
   node 1 size: 193502 MB
   node 1 free: 193075 MB
node distances:
   node   0   1
   0:  10  21
   1:  21  10

From /proc/meminfo

(Continued on next page)
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Platform Notes (Continued)

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:
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/swaps 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 Mar 27 13:00

SPEC is set to: /home/cpu2017-1.1.0-ic19.0u4

From /sys/devices/virtual/dmi/id
BIOS: Lenovo -[TEE151L-2.51]- 01/13/2020
Vendor: Lenovo

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

## Lenovo Global Technology
ThinkSystem SD530  
(3.20 GHz, Intel Xeon Silver 4215R)

<table>
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<tr>
<th>SPECspeed®2017_int_base = 9.16</th>
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<tr>
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**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Test Date:** Mar-2020  
**Hardware Availability:** Mar-2020  
**Tested by:** Lenovo Global Technology  
**Software Availability:** Dec-2019

### Platform Notes (Continued)

- **Product:** THINKSYSTEM SD530 -[7X21042000]-  
- **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 M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2400

(End of data from sysinfo program)

### Compiler Version Notes

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<tr>
<th>C</th>
<th>600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base) 657.xz_s(base)</th>
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<tr>
<td></td>
<td>Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416</td>
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<td>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</td>
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SPECspeed®2017_int_base = 9.16
SPECspeed®2017_int_peak = Not Run

CPU2017 License: 9017
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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
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 -qopenmp -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
## Lenovo Global Technology

**ThinkSystem SD530**  
(3.20 GHz, Intel Xeon Silver 4215R)

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<th>SPECs<strong>2017_int_base</strong></th>
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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](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](http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-F.xml)

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

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