### SPEC CPU®2017 Integer Rate Result

**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

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<tr>
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<td>Software Availability:</td>
<td>Apr-2020</td>
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</table>

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### 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  
**Other:** None  
**Memory:** 192 GB (12 x 16 GB 2Rx8 PC4-2933Y-R, running at 2400)  
**Storage:** 1 x 800 GB SATA SSD  
**Other:** None

### Software

**OS:**  
SUSE Linux Enterprise Server 15 SP1 (x86_64)  
Kernel 4.12.14-195-default

**Compiler:**  
C/C++: Version 19.1.1.217 of Intel  
C/C++ Compiler for Linux;

**Firmware:**  
Lenovo BIOS Version TEE155L 2.61 released May-2020

**System State:**  
Run level 3 (multi-user)

**Power Management:**  
BIOS set to prefer performance at the cost of additional power usage
**SPEC CPU®2017 Integer Rate Result**

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

SPECrater®2017_int_base = 120
SPECrater®2017_int_peak = Not Run

**Results Table**

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SPECrater®2017_int_base = 120
SPECrater®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

**Submit Notes**

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

**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:

```
LD_LIBRARY_PATH = 
/home/cpu2017-1.1.0-ic19.1.1/lib/intel64:/home/cpu2017-1.1.0-ic19.1.1/l
ib/ia32:/home/cpu2017-1.1.0-ic19.1.1/je5.0.1-32

MALLOCP_CONF = "retain:true"
```
# SPEC CPU®2017 Integer Rate Result

## Lenovo Global Technology
ThinkSystem SD530
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<td>Lenovo Global Technology</td>
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<td>Tested by</td>
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<td>Test Date</td>
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<td>Hardware Availability</td>
<td>Mar-2020</td>
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<tr>
<td>Software Availability</td>
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</table>

### 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:
  ```
  sync; echo 3>/proc/sys/vm/drop_caches
  ```
- runcpu command invoked through numactl i.e.:
  ```
  numactl --interleave=all runcpu <etc>
  ```

**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
  - DCU Streamer Prefetcher set to Disable
  - MONITOR/MWAIT set to Enable

- Sysinfo program /home/cpu2017-1.1.0-ic19.1.1/bin/syinfo
  - Rev: r6365 of 2019-08-21 295195f888a3d7edbb1e6e46a485a0011
  - running on linux-jq95 Wed Jun 17 09:24:57 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](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

(Continued on next page)
Lenovo Global Technology
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CPU2017 License: 9017
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Platform Notes (Continued)

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
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 node0 size: 96375 MB
NUMA node0 free: 95836 MB
NUMA node1 CPU(s): 8-15,24-31
NUMA node1 size: 96735 MB
NUMA node1 free: 96407 MB

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 rdtsscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmonperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtrpr 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 stibp ibrs_enhanced tpr_shadowvnmi
flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 ersed ivpced rtm
cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occult lle cqm_mbm_total
cqm_mbm_local dtherm ida arat pln pts pku ospke avx512_vnni md_clear flush_lld
arch_capabilities

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: 96375 MB
node 0 free: 95836 MB
node 1 cpus: 8 9 10 11 12 13 14 15 24 25 26 27 28 29 30 31
node 1 size: 96375 MB
node 1 free: 96407 MB

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD530
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SPEC CPU®2017 Integer Rate Result

SPECrater®2017_int_base = 120
SPECrater®2017_int_peak = Not Run

CPU2017 License: 9017
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Test Date: Jun-2020
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Platform Notes (Continued)

node distances:
node 0 1
 0: 10 21
 1: 21 10

From /proc/meminfo
MemTotal: 197745572 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
NAME="SLES"
VERSION="15-SP1"
VERSION_ID="15.1"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp1"

uname -a:
Linux linux-jq95 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
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: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 Jun 17 09:24

SPEC is set to: /home/cpu2017-1.1.0-ic19.1.1
Filesystem Type Size Used Avail Use% Mounted on
/dev/md124p3 xfs 740G 56G 684G 8% /

From /sys/devices/virtual/dmi/id
BIOS: Lenovo -[TEE155L-2.61]- 05/20/2020
Vendor: Lenovo
Product: THINKSYSTEM SD530 -[7X2104Z000]-
Product Family: ThinkSystem

(Continued on next page)
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Platform Notes (Continued)

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 SK Hynix HMA82GR7CJR8N-WM 16 GB 2 rank 2933

(End of data from sysinfo program)
This system support 8 DIMMs per processor, total 16 DIMMs.  
12 DIMM slots installed with 16 GB DIMM for this run, and running at 2400 due to CPU limitation.

Compiler Version Notes

C  
500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)  
525.x264_r(base) 557.xz_r(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++  
520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)  
541.leela_r(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  
548.exchange2_r(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
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SPEC CPU®2017 Integer Rate Result
Copyright 2017-2020 Standard Performance Evaluation Corporation

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Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

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#### Base Optimization Flags (Continued)

Fortran benchmarks (continued):  
-nostandard-realloc-lhs  
-align array32byte  
-auto  
-mbranches-within-32B-boundaries  
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin  
-lqkmalloc

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 2020-06-16 21:24:56-0400.
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