**SPEC® CPU2017 Integer Rate Result**

**Lenovo Global Technology**

ThinkSystem SR530  
(3.00 GHz, Intel Xeon Gold 5217)

<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>Apr-2019</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Apr-2019</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Dec-2018</td>
</tr>
</tbody>
</table>

|
|------------------|------|
| ** Copies **     | 32  |
| 500.perlbench_r  | 32  |
| 502.gcc_r        | 32  |
| 505.mcf_r        | 32  |
| 520.omnetpp_r    | 32  |
| 523.xalancbmk_r  | 32  |
| 525.x264_r       | 32  |
| 531.deepsjeng_r  | 32  |
| 541.leela_r      | 32  |
| 548.exchange2_r  | 32  |
| 557.xz_r         | 32  |

**Hardware**

- **CPU Name:** Intel Xeon Gold 5217  
- **Max MHz.:** 3700  
- **Nominal:** 3000  
- **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 2666)  
- **Storage:** 1 x 960 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 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux; Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux  
- **Parallel:** No  
- **Firmware:** Lenovo BIOS Version TEE135L 2.10 released Jan-2019  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Other:** None
## Lenovo Global Technology

**ThinkSystem SR530**  
(3.00 GHz, Intel Xeon Gold 5217)

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>Lenovo Global Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lenovo Global Technology</td>
<td>Lenovo Global Technology</td>
</tr>
</tbody>
</table>

### SPEC CPU2017 Integer Rate Result

**SPECrate2017_int_base =** 108  
**SPECrate2017_int_peak =** Not Run

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>32</td>
<td>620</td>
<td>82.1</td>
<td>613</td>
<td>83.0</td>
<td>612</td>
<td>83.2</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>32</td>
<td>518</td>
<td>87.4</td>
<td>359</td>
<td>97.4</td>
<td>358</td>
<td>86.9</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>32</td>
<td>346</td>
<td>149</td>
<td>347</td>
<td>149</td>
<td>347</td>
<td>149</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>32</td>
<td>608</td>
<td>69.1</td>
<td>606</td>
<td>69.2</td>
<td>606</td>
<td>69.3</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>32</td>
<td>264</td>
<td>128</td>
<td>263</td>
<td>129</td>
<td>264</td>
<td>128</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>32</td>
<td>266</td>
<td>211</td>
<td>266</td>
<td>212</td>
<td>266</td>
<td>213</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>32</td>
<td>403</td>
<td>91.1</td>
<td>403</td>
<td>91.1</td>
<td>403</td>
<td>91.0</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>32</td>
<td>634</td>
<td>83.6</td>
<td>616</td>
<td>86.0</td>
<td>634</td>
<td>83.6</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>32</td>
<td>432</td>
<td>194</td>
<td>432</td>
<td>194</td>
<td>432</td>
<td>194</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>32</td>
<td>498</td>
<td>69.4</td>
<td>498</td>
<td>69.4</td>
<td>498</td>
<td>69.4</td>
</tr>
</tbody>
</table>

### 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"

### General Notes

Environment variables set by runcpu before the start of the run:  
LD_LIBRARY_PATH = "/home/cpu2017-1.0.5-ic19.0u1/lib/intel64"

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  
runcpu command invoked through numactl i.e.:  
numactl --interleave=all runcpu <etc>

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)

(Continued on next page)
General Notes (Continued)

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.

Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance
Choose Operating Mode set to Custom Mode
Memory Power Management set to Automatic
MONITOR/MWAIT set to Enable
Sysinfo program /home/cpu2017-1.0.5-ic19.0u1/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-yjm3 Tue Apr 16 13:14:28 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 5217 CPU @ 3.00GHz
 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
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) Gold 5217 CPU @ 3.00GHz

(Continued on next page)
CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Platform Notes (Continued)

Stepping: 6
CPU MHz: 3000.000
CPU max MHz: 3700.0000
CPU min MHz: 1200.0000
BogoMIPS: 6000.00
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 nopl xtopology

From /proc/cpuinfo cache data
  cache size : 11264 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 16 17 18 19 20 21 22 23
  node 0 size: 96357 MB
  node 0 free: 95781 MB
  node 1 cpus: 8 9 10 11 12 13 14 15 24 25 26 27 28 29 30 31
  node 1 size: 96712 MB
  node 1 free: 96290 MB
  node distances:
    node 0 1
    0: 10 21
    1: 21 10

From /proc/meminfo
  MemTotal: 197704268 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

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

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR530
(3.00 GHz, Intel Xeon Gold 5217)

SPECrate2017_int_base = 108
SPECrate2017_int_peak = Not Run

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

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 Apr 16 13:12

SPEC is set to: /home/cpu2017-1.0.5-ic19.0u1
   Filesystem Type Size Used Avail Use% Mounted on
   /dev/sda3 xfs 892G 31G 861G 4% /

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 -[TEE135L-2.10]- 01/10/2019
   Memory:
      12x SK Hynix HMA82GR7CJR8N-WM 16 GB 2 rank 2933, configured at 2666
      (End of data from sysinfo program)

Compiler Version Notes
==============================================================================
CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
(Continued on next page)
SPEC CPU2017 Integer Rate Result

Lenovo Global Technology
ThinkSystem SR530
(3.00 GHz, Intel Xeon Gold 5217)

<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>SPECrate2017_int_base</td>
<td>108</td>
</tr>
<tr>
<td>SPECrate2017_int_peak</td>
<td>Not Run</td>
</tr>
<tr>
<td>Test Date:</td>
<td>Apr-2019</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Apr-2019</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Dec-2018</td>
</tr>
</tbody>
</table>

Compiler Version Notes (Continued)

557.xz_r(base)

---------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---------------------------------------------------------------------

==============================================================================
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
  541.leela_r(base)
---------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---------------------------------------------------------------------

==============================================================================
FC  548.exchange2_r(base)
---------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 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

500.perlb benchmark_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

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR530
(3.00 GHz, Intel Xeon Gold 5217)

SPECrate2017_int_base = 108
SPECrate2017_int_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology
Test Date: Apr-2019
Hardware Availability: Apr-2019
Software Availability: Dec-2018

Base Portability Flags (Continued)

531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
- Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
- qopt-mem-layout-trans=4
- L/usr/local/Intel Compiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
- lqkmalloc

C++ benchmarks:
- Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
- qopt-mem-layout-trans=4
- L/usr/local/Intel Compiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
- lqkmalloc

Fortran benchmarks:
- Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
- qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
- L/usr/local/Intel Compiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
- 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-A.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-A.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 v1.0.5 on 2019-04-16 01:14:27-0400.