## Lenovo Global Technology

**ThinkSystem SR630**  
(2.50 GHz, Intel Xeon Gold 5215M)

### CPU2017 License: 9017

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Intel Xeon Gold 5215M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz.</td>
<td>3400</td>
</tr>
<tr>
<td>Nominal</td>
<td>2500</td>
</tr>
<tr>
<td>Enabled</td>
<td>20 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>Orderable</td>
<td>1,2 chips</td>
</tr>
<tr>
<td>Cache L1</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Cache L2</td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>Cache L3</td>
<td>13.75 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R, running at 2666)</td>
</tr>
<tr>
<td>Storage</td>
<td>1 x 800 GB SATA SSD</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
</tbody>
</table>

### Test Sponsor: Lenovo Global Technology

**Test Date:** Apr-2019

**Hardware Availability:** Apr-2019

**Tested by:** Lenovo Global Technology

**Software Availability:** Dec-2018

### 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:** Yes  
**Firmware:** Lenovo BIOS Version IVE135P 2.10 released Feb-2019  
**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

### Hardware

**CPU Name:** Intel Xeon Gold 5215M  
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**Nominal:** 2500  
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**Cache L1:** 32 KB I + 32 KB D on chip per core  
**Cache L2:** 1 MB I+D on chip per core  
**Cache L3:** 13.75 MB I+D on chip per chip  
**Other:** None  
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**Storage:** 1 x 800 GB SATA SSD  
**Other:** None

### Threads

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>8.51</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>Not Run</td>
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</table>

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base (8.51)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threads (8.51)</td>
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</table>

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_int_base</th>
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</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>40</td>
<td>5.52</td>
</tr>
<tr>
<td>gcc_s</td>
<td>40</td>
<td>11.3</td>
</tr>
<tr>
<td>mcf_s</td>
<td>40</td>
<td>11.0</td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>40</td>
<td>11.8</td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>40</td>
<td>4.85</td>
</tr>
<tr>
<td>x264_s</td>
<td>40</td>
<td>4.16</td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>40</td>
<td>12.2</td>
</tr>
<tr>
<td>leela_s</td>
<td>40</td>
<td>11.0</td>
</tr>
<tr>
<td>exchange2_s</td>
<td>40</td>
<td>11.8</td>
</tr>
<tr>
<td>xz_s</td>
<td>40</td>
<td>12.2</td>
</tr>
</tbody>
</table>

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Standard Performance Evaluation Corporation (info@spec.org)  
https://www.spec.org/
**SPEC CPU2017 Integer Speed Result**

Lenovo Global Technology
ThinkSystem SR630
(2.50 GHz, Intel Xeon Gold 5215M)

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

---

**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>40</td>
<td>304</td>
<td>5.83</td>
<td>304</td>
<td>5.83</td>
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<tr>
<td>602.gcc_s</td>
<td>40</td>
<td>468</td>
<td>8.50</td>
<td>463</td>
<td>8.60</td>
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<tr>
<td>605.mcf_s</td>
<td>40</td>
<td>418</td>
<td>11.3</td>
<td>421</td>
<td>11.2</td>
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<tr>
<td>620.omnetpp_s</td>
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<td>5.54</td>
<td>297</td>
<td>5.49</td>
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<tr>
<td>623.xalancbmk_s</td>
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<td>11.0</td>
<td>129</td>
<td>11.0</td>
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<tr>
<td>625.x264_s</td>
<td>40</td>
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<td>11.8</td>
<td>150</td>
<td>11.8</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
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<td>4.85</td>
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<tr>
<td>641.leela_s</td>
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<td>4.16</td>
<td>410</td>
<td>4.16</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>40</td>
<td>240</td>
<td>12.3</td>
<td>240</td>
<td>12.2</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>40</td>
<td>310</td>
<td>19.9</td>
<td>310</td>
<td>20.0</td>
</tr>
</tbody>
</table>

**SPECspeed2017_int_base = 8.51**  
**SPECspeed2017_int_peak = Not Run**

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:
  - KMP_AFFINITY = "granularity=fine,scatter"
  - LD_LIBRARY_PATH = "/home/cpu2017-1.0.5-ic19.0ul/lib/intel64"
  - LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017-1.0.5-ic19.0ul/je5.0.1-64"
  - OMP_STACKSIZE = "192M"
- 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

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.
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.
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.

jemalloc, a general purpose malloc implementation
built with the Red Hat Enterprise 7.5, and the system compiler gcc 4.8.5

(Continued on next page)
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| SPECspeed2017_int_base =  8.51 |
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CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: Apr-2019
Tested by: Lenovo Global Technology
Hardware Availability: Apr-2019
Software Availability: Dec-2018

General Notes (Continued)


Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance
Choose Operating Mode set to Custom Mode
C-states set to Legacy
Sysinfo program /home/cpu2017-1.0.5-ic19.0u1/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-ptrp Thu Apr 11 23:57:26 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 5215M CPU @ 2.50GHz
  2 "physical id"s (chips)
  40 "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 : 10
  siblings : 20
  physical 0: cores 0 1 2 3 4 8 9 10 11 12
  physical 1: cores 0 1 2 3 4 8 9 10 11 12

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 40
On-line CPU(s) list: 0-39
Thread(s) per core: 2
Core(s) per socket: 10
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 5215M CPU @ 2.50GHz
Stepping: 6
CPU MHz: 2500.000
CPU max MHz: 3400.0000
CPU min MHz: 1000.0000
BogoMIPS: 5000.00

(Continued on next page)
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**Test Date:** Apr-2019
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### Platform Notes (Continued)

Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 14080K
NUMA node0 CPU(s): 0-9,20-29
NUMA node1 CPU(s): 10-19,30-39

Flags: fpu vme de pse tsc msr pae mce cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
lm constant_tsc art 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
xtrm pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3nowprefetch cpuid_fault epb cat_l3 cdp_l3
invcud_single ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid
fs��base tsc_adjust bmis hle avx2 smep bmi2 3msv priorc rt m cqm mpx rdt_a avx512f
avx512dq rdseed avx adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsaveopt xsavec xgetbv1 xsaves cqmllx cqm_mmb_total cqm_mmb_local
dtherm int arat pin pts pkp ospke avx512_vnni flush_l1d arch_capabilities

/proc/cpuinfo cache data
  cache size : 14080 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 8 9 20 21 22 23 24 25 26 27 28 29
  node 0 size: 193123 MB
  node 0 free: 192235 MB
  node 1 cpus: 10 11 12 13 14 15 16 17 18 19 30 31 32 33 34 35 36 37 38 39
  node 1 size: 193480 MB
  node 1 free: 192638 MB
  node distances:
    node 0 1
    0: 10 21
    1: 21 10

From /proc/meminfo
  MemTotal: 395882028 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

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

(Continued on next page)
Platform Notes (Continued)

# 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"
</os-release>
```

```
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 11 21:15
```

SPEC is set to: /home/cpu2017-1.0.5-ic19.0u1
```
    Filesystem     Type     Size  Used  Avail  Use% Mounted on
    /dev/sda2      btrfs  744G   36G  709G    5%  /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 -[IVE135P-2.10]- 02/13/2019
- Memory: 24x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933, configured at 2666

(End of data from sysinfo program)
**SPEC CPU2017 Integer Speed Result**

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**Compiler Version Notes (Continued)**

------------------------------------------------------------------------------  
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)  
641.leela_s(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 648.exchange2_s(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**

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
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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_2019.1.144/linux/compiler/lib/intel64
- lgkmalloc

Fortran benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4
- nostandard-realloc-lhs

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

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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 2019-04-11 11:57:26-0400.