# SPEC® CPU2017 Integer Speed Result

## Lenovo Global Technology

**ThinkSystem SR570**  
(1.90 GHz, Intel Xeon Gold 6238T)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>9.66</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**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

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_int_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>88</td>
<td>6.45</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>88</td>
<td>9.49</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>88</td>
<td>12.0</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>88</td>
<td>8.99</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>88</td>
<td>11.9</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>88</td>
<td>13.7</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>88</td>
<td>5.20</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>88</td>
<td>4.52</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>88</td>
<td>13.3</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>88</td>
<td>23.3</td>
</tr>
</tbody>
</table>

---

### Hardware

**CPU Name:** Intel Xeon Gold 6238T  
**Max MHz.:** 3700  
**Nominal:** 1900  
**Enabled:** 44 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:** 30.25 MB I+D on chip per chip  
**Other:** None  
**Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R)  
**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:** Yes  
**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:** jemalloc memory allocator V5.0.1
Lenovo Global Technology
ThinkSystem SR570
(1.90 GHz, Intel Xeon Gold 6238T)

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

SPECspeed2017_int_base = 9.66
SPECspeed2017_int_peak = Not Run

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>88</td>
<td>275</td>
<td>6.45</td>
<td>276</td>
<td>6.44</td>
<td>275</td>
<td>6.46</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>88</td>
<td>420</td>
<td>9.49</td>
<td>422</td>
<td>9.44</td>
<td>418</td>
<td>9.52</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>88</td>
<td>393</td>
<td>12.0</td>
<td>394</td>
<td>12.0</td>
<td>392</td>
<td>12.0</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>88</td>
<td>200</td>
<td>8.15</td>
<td>202</td>
<td>8.09</td>
<td>204</td>
<td>8.00</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>88</td>
<td>120</td>
<td>11.9</td>
<td>119</td>
<td>11.9</td>
<td>119</td>
<td>11.9</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>88</td>
<td>129</td>
<td>13.7</td>
<td>129</td>
<td>13.7</td>
<td>128</td>
<td>13.7</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>88</td>
<td>276</td>
<td>5.20</td>
<td>276</td>
<td>5.20</td>
<td>275</td>
<td>5.21</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>88</td>
<td>378</td>
<td>4.52</td>
<td>377</td>
<td>4.52</td>
<td>377</td>
<td>4.52</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>88</td>
<td>222</td>
<td>13.3</td>
<td>220</td>
<td>13.4</td>
<td>220</td>
<td>13.3</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>88</td>
<td>265</td>
<td>23.3</td>
<td>266</td>
<td>23.3</td>
<td>265</td>
<td>23.3</td>
</tr>
</tbody>
</table>

SPECspeed2017_int_base = 9.66
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-ic19.0u1/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017-1.0.5-ic19.0u1/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.

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

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR570
(1.90 GHz, Intel Xeon Gold 6238T)

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

SPECspeed2017_int_base = 9.66
SPECspeed2017_int_peak = Not Run
Test Date: Apr-2019
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
Memory Power Management set to Automatic
CPU P-state Control set to Cooperative
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-d13d Mon Apr 22 16:41:56 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 6238T CPU @ 1.90GHz
 2 "physical id"s (chips)
 88 "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 : 22
siblings : 44
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 88
On-line CPU(s) list: 0-87
Thread(s) per core: 2
Core(s) per socket: 22
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6238T CPU @ 1.90GHz
Stepping: 6
CPU MHz: 1900.000
CPU max MHz: 3700.0000

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR570
(1.90 GHz, Intel Xeon Gold 6238T)

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

SPECspeed2017_int_base = 9.66
SPECspeed2017_int_peak = Not Run

Test Date: Apr-2019
Hardware Availability: Apr-2019
Software Availability: Dec-2018

CPU min MHz: 800.0000
BogoMIPS: 3800.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 30976K
NUMA node0 CPU(s): 0-21,44-65
NUMA node1 CPU(s): 22-43,66-87

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 art arch_perfmon pebs bts rep_good noapic xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64监测 ds cpl 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 ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 0rms invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pku ospke avx512_vnni flush_l1d arch_capabilities

/proc/cpuinfo cache data
  cache size : 30976 KB

From numactl --hardware
  available: 2 nodes (0-1)
  node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 44 45 46 47 48 49
  node 0 size: 192822 MB
  node 0 free: 192363 MB
  node 1 cpus: 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 66 67 68
  node 1 size: 193475 MB
  node 1 free: 192660 MB
  node distances:
    node 0: 10 21
    node 1: 21 10

From /proc/meminfo
  MemTotal: 395569368 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
### Lenovo Global Technology

**ThinkSystem SR570**  
(1.90 GHz, Intel Xeon Gold 6238T)

**SPEC CPU2017 Integer Speed Result**

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

**SPECspeed2017_int_base** = 9.66

**SPECspeed2017_int_peak** = Not Run

---

**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"

```bash
test -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 22 16:32**

**SPEC is set to:** /home/cpu2017-1.0.5-ic19.0u1

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda3</td>
<td>xfs</td>
<td>892G</td>
<td>31G</td>
<td>861G</td>
<td>4%</td>
<td>/</td>
</tr>
</tbody>
</table>

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:**
  - 4x NO DIMM NO DIMM
  - 12x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

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

**Lenovo Global Technology**

ThinkSystem SR570  
(1.90 GHz, Intel Xeon Gold 6238T)

**SPECspeed2017_int_base = 9.66**

**SPECspeed2017_int_peak = Not Run**

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

---

**Compiler Version Notes**

```
CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base)
    657.xz_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.
```

```
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

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR570
(1.90 GHz, Intel Xeon Gold 6238T)

SPECspeed2017_int_base = 9.66
SPECspeed2017_int_peak = Not Run

Base Portability Flags (Continued)

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

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

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 2019-04-22 04:41:55-0400.