**Lenovo Global Technology**

**ThinkSystem SR570**

*(2.20 GHz, Intel Xeon Silver 4214Y)*

**SPECspeed®2017_int_base = 8.33**

**SPECspeed®2017_int_peak = Not Run**

---

### Hardware

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong></td>
<td>Intel Xeon Silver 4214Y</td>
</tr>
<tr>
<td><strong>Max MHz:</strong></td>
<td>3200</td>
</tr>
<tr>
<td><strong>Nominal:</strong></td>
<td>2200</td>
</tr>
<tr>
<td><strong>Enabled:</strong></td>
<td>24 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td><strong>Orderable:</strong></td>
<td>1,2 chips</td>
</tr>
<tr>
<td><strong>Cache L1:</strong></td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td><strong>L2:</strong></td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td><strong>L3:</strong></td>
<td>16.5 MB I+D on chip per chip</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Memory:</strong></td>
<td>192 GB (12 x 16 GB 2Rx8 PC4-2933Y-R, running at 2400)</td>
</tr>
<tr>
<td><strong>Storage:</strong></td>
<td>1 x 960 GB SATA SSD</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OS:</strong></td>
<td>SUSE Linux Enterprise Server 12 SP4 (x86_64)</td>
</tr>
<tr>
<td></td>
<td>Kernel 4.12.14-94.41-default</td>
</tr>
<tr>
<td><strong>Compiler:</strong></td>
<td>C/C++: Version 19.0.4.227 of Intel</td>
</tr>
<tr>
<td></td>
<td>C/C++ Compiler for Linux;</td>
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<tr>
<td></td>
<td>Fortran: Version 19.0.4.227 of Intel</td>
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<tr>
<td></td>
<td>Intel Fortran Compiler for Linux</td>
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<tr>
<td><strong>Parallel:</strong></td>
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<tr>
<td><strong>Firmware:</strong></td>
<td>Lenovo BIOS Version TEE142E 2.30 released Aug-2019</td>
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<tr>
<td></td>
<td>tested as TEE141E 2.30 Jul-2019</td>
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<tr>
<td><strong>File System:</strong></td>
<td>xfs</td>
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<tr>
<td><strong>System State:</strong></td>
<td>Run level 3 (multi-user)</td>
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<tr>
<td><strong>Base Pointers:</strong></td>
<td>64-bit</td>
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<tr>
<td><strong>Peak Pointers:</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
<td>jemalloc memory allocator V5.0.1</td>
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<tr>
<td><strong>Power Management</strong>:</td>
<td>Disable</td>
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</tbody>
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---

Test Date: Nov-2019  
Hardware Availability: Apr-2019  
Software Availability: May-2019  

---

<table>
<thead>
<tr>
<th>Test</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base (8.33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>48</td>
<td>5.59</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>48</td>
<td>8.14</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>48</td>
<td>10.7</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>48</td>
<td>5.72</td>
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<tr>
<td>623.xalancbmk_s</td>
<td>48</td>
<td>10.3</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>48</td>
<td>11.7</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>48</td>
<td>4.60</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>48</td>
<td>3.91</td>
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<tr>
<td>648.exchange2_s</td>
<td>48</td>
<td>13.7</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>48</td>
<td>19.4</td>
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---
Lenovo Global Technology
ThinkSystem SR570
(2.20 GHz, Intel Xeon Silver 4214Y)

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>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
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<td>285</td>
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<tr>
<td>631.deepsjeng_s</td>
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<td>4.60</td>
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<tr>
<td>641.leela_s</td>
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<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
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<td>215</td>
<td>13.7</td>
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<tr>
<td>657.xz_s</td>
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<td>19.3</td>
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<td>19.4</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</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/jee5.0.1-64"
OMP_STACKSIZE = "192M"

General Notes
Binaries compiled on a system with 1x Intel Core i9-799X 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)
General Notes (Continued)

is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2018-3639 (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
Memory Power Management set to Automatic
CPU P-state Control set to Cooperative
MONITOR/MWAIT set to Enable

Sysinfo program /home/cpu2017-1.1.0-ic19.0u4/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f88a3d7edbe1e646a485a0011
running on linux-dl3d Tue Nov  5 19:45:56 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) Silver 4214C CPU @ 2.20GHz
  2 "physical id"s (chips)
  48 "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 : 12
siblings : 24
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 2
Core(s) per socket: 12
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6

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

Lenovo Global Technology
ThinkSystem SR570
(2.20 GHz, Intel Xeon Silver 4214Y)

SPECspeed®2017_int_base = 8.33
SPECspeed®2017_int_peak = Not Run

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

Platform Notes (Continued)

Model: 85
Model name: Intel(R) Xeon(R) Silver 4214C CPU @ 2.20GHz
Stepping: 6
CPU MHz: 2200.000
CPU max MHz: 3200.0000
CPU min MHz: 1000.0000
BogoMIPS: 4400.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 16896K
NUMA node0 CPU(s): 0-11,24-35
NUMA node1 CPU(s): 12-23,36-47
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 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 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_pppin ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2  ertm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 x save cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local dtc omm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pku ospke avx512_vnni flush_l1d arch_capabilities

/netproc/cpuinfo cache data
cache size : 16896 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 10 11 24 25 26 27 28 29 30 31 32 33 34 35
node 0 size: 96058 MB
node 0 free: 94608 MB
node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23 36 37 38 39 40 41 42 43 44 45 46 47
node 1 size: 96711 MB
node 1 free: 96386 MB
node distances:
node 0 1
0: 10 21
1: 21 10

From /proc/meminfo
MemTotal: 197396696 KB
 HugePages_Total: 0

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR570
(2.20 GHz, Intel Xeon Silver 4214Y)

SPECSpeed®2017_int_base = 8.33
SPECSpeed®2017_int_peak = Not Run

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

Platform Notes (Continued)

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.
# 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-2018-3620 (L1 Terminal Fault): 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: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Nov 5 16:36

SPEC is set to: /home/cpu2017-1.1.0-ic19.0u4
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 892G 58G 835G 7% /

From /sys/devices/virtual/dmi/id
BIOS: Lenovo -[TEE141E-2.30]- 07/02/2019
Vendor: Lenovo
Product: ThinkSystem SR570 -[7Y02RCZ000]-(Continued on next page)
Platform Notes (Continued)

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, configured at 2400

(End of data from sysinfo program)

The marketing name for the processor in this result, which appears in the CPU name and hardware model areas, is different from sysinfo because a pre-production processor was used. The pre-production processor differs from the production processor in name only.

Compiler Version Notes

==============================================================================
| C       | 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 19.0.4.227 Build 20190416                                           |
|         | Copyright (C) 1985-2019 Intel Corporation. All rights reserved.              |
|         |==============================================================================|
| C++     | 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 19.0.4.227 Build 20190416                                           |
|         | Copyright (C) 1985-2019 Intel Corporation. All rights reserved.              |
|         |==============================================================================|
| Fortran | 648.exchange2_s(base)                                                      |
|         | Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)   |
|         | 64, Version 19.0.4.227 Build 20190416                                       |
|         | Copyright (C) 1985-2019 Intel Corporation. All rights reserved.              |
|         |==============================================================================|

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR570
(2.20 GHz, Intel Xeon Silver 4214Y)

SPECspeed®2017_int_base = 8.33
SPECspeed®2017_int_peak = Not Run

Base Compiler Invocation (Continued)

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-1hs

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
Lenovo Global Technology
ThinkSystem SR570
(2.20 GHz, Intel Xeon Silver 4214Y)

SPECSpeed®2017_int_base = 8.33
SPECSpeed®2017_int_peak = Not Run

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

Test Date: Nov-2019
Hardware Availability: Apr-2019
Software Availability: May-2019

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