**Lenovo Global Technology**

**ThinkSystem SR550**
(2.20 GHz, Intel Xeon Silver 4114T)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
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<tbody>
<tr>
<td>6.99</td>
<td>7.19</td>
</tr>
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</table>

**CPU2017 License**: 9017

**Test Sponsor**: Lenovo Global Technology

**Test Date**: Jan-2018

**Hardware**

- **CPU Name**: Intel Xeon Silver 4114T
- **Max MHz.**: 3000
- **Nominal**: 2200
- **Enabled**: 20 cores, 2 chips
- **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**: 13.75 MB I+D on chip per core
- **Base Pointers**: 64-bit
- **Peak Pointers**: 32/64-bit
- **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 core
- **Memory**: 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R, running at 2400)
- **Storage**: 1 x 800 GB SAS SSD
- **Other**: None

**Software**

- **OS**: SUSE Linux Enterprise Server 12 SP2 (x86_64)
- **Kernel**: 4.4.21-69-default
- **Compiler**: C/C++: Version 18.0.0.128 of Intel C/C++
- **Compiler for Linux**: Fortran: Version 18.0.0.128 of Intel Fortran
- **Compiler for Linux**: Fortran: Version 18.0.0.128 of Intel Fortran
- **Parallel**: Yes
- **Firmware**: Lenovo BIOS Version TEE119Q 1.21 released Dec-2017
- **File System**: btrfs
- **System State**: Run level 3 (multi-user)
- **Base Pointers**: 64-bit
- **Peak Pointers**: 32/64-bit
- **Other**: jemalloc: jemalloc memory allocator library V5.0.1
## SPEC CPU2017 Integer Speed Result

Lenovo Global Technology
ThinkSystem SR550
(2.20 GHz, Intel Xeon Silver 4114T)

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology  
**Test Date:** Jan-2018  
**Hardware Availability:** Aug-2017  
**Software Availability:** Sep-2017

- **SPECspeed2017_int_base** = 6.99
- **SPECspeed2017_int_peak** = 7.19

### 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>
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<th>Seconds</th>
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<tr>
<td>600.perlbench_s</td>
<td>20</td>
<td>364</td>
<td>4.88</td>
<td>358</td>
<td>4.96</td>
<td>359</td>
<td>4.95</td>
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<td>299</td>
<td>5.94</td>
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<td>5.93</td>
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<td>602.gcc_s</td>
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<td>536</td>
<td>7.43</td>
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<td>7.42</td>
<td>541</td>
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<td>7.57</td>
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<td>524</td>
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<td>620.omnetpp_s</td>
<td>20</td>
<td>380</td>
<td>4.29</td>
<td>366</td>
<td>4.45</td>
<td>363</td>
<td>4.50</td>
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<td>378</td>
<td>4.32</td>
<td>359</td>
<td>4.54</td>
<td>376</td>
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<td>623.xalancmk_s</td>
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<td>7.69</td>
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<td>7.64</td>
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<td>488</td>
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<td>490</td>
<td>3.48</td>
<td>490</td>
<td>3.48</td>
<td>490</td>
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<tr>
<td>648.exchange2_s</td>
<td>20</td>
<td>273</td>
<td>10.8</td>
<td>272</td>
<td>10.8</td>
<td>270</td>
<td>10.9</td>
<td>20</td>
<td>271</td>
<td>10.9</td>
<td>270</td>
<td>10.9</td>
<td>272</td>
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<tr>
<td>657.xz_s</td>
<td>20</td>
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<td>16.4</td>
<td>376</td>
<td>16.4</td>
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<td>16.6</td>
<td>20</td>
<td>363</td>
<td>17.0</td>
<td>365</td>
<td>16.9</td>
<td>363</td>
</tr>
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**SPECspeed2017_int_base** = 6.99  
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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:

```
LD_LIBRARY_PATH = "/home/cpu2017.1.0.2.ic18.0/lib/ia32:/home/cpu2017.1.0.2.ic18.0/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017.1.0.2.ic18.0/je5.0.1-32:/home/cpu2017.1.0.2.ic18.0/je5.0.1-64"
OMP_STACKSIZE = "192M"
```

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.4

Transparent Huge Pages enabled by default

Prior to runcpu invocation:

- sync; echo 3> /proc/sys/vm/drop_caches
- jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;
- jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5;

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

No: 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.

No: 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.
General Notes (Continued)

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page. The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, http://www.spec.org/osg/policy.html

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance
Hyper-Threading set to Disable
MONITORMWAIT set to Enable
Adjacent Cache Prefetch set to Disable
LLC dead line alloc set to Disable
Sysinfo program /home/cpu2017.1.0.2.ic18.0/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bccc091c0f
running on linux-g50d Mon Jan 22 20:42:32 2018

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 4114T CPU @ 2.20GHz
  2 "physical id"s (chips)
  20 "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 : 10
  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): 20
On-line CPU(s) list: 0-19
Thread(s) per core: 1

(Continued on next page)
**SPEC CPU2017 Integer Speed Result**

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<th>Lenovo Global Technology</th>
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<th>Hardware Availability:</th>
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<tr>
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<td>9017</td>
<td>Lenovo Global Technology</td>
<td>Jan-2018</td>
<td>Aug-2017</td>
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<td>(2.20 GHz, Intel Xeon Silver 4114T)</td>
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</tr>
</tbody>
</table>

**Platform Notes (Continued)**

- 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) Silver 4114T CPU @ 2.20GHz
- Stepping: 4
- CPU MHz: 2194.858
- BogoMIPS: 4389.71
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 1024K
- L3 cache: 14080K
- NUMA node0 CPU(s): 0-9
- NUMA node1 CPU(s): 10-19
- Flags: fpu vme de pse tsc msr pae 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 nopl xtopology nonstop_tsc aperffmapf eagerfpu 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 ida arat epb pds dtherm intel_pt tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpctid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsaves xgetbv1 cqm_1llc cqm_occup_llc

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
- node 0 size: 193110 MB
- node 0 free: 192324 MB
- node 1 cpus: 10 11 12 13 14 15 16 17 18 19
- node 1 size: 193504 MB
- node 1 free: 192805 MB
- node distances:
  - node 0 1
  - 0: 10 21
  - 1: 21 10

From /proc/meminfo
- MemTotal: 39589376444 MB
- HugePages_Total: 0

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR550
(2.20 GHz, Intel Xeon Silver 4114T)

**SPECspeed2017_int_base = 6.99**

**SPECspeed2017_int_peak = 7.19**

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**Software Availability:** Sep-2017

---

**Platform Notes (Continued)**

Hugepagesize: 2048 kB

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

SuSE-release:
- SUSE Linux Enterprise Server 12 (x86_64)
- VERSION = 12
- PATCHLEVEL = 2
  # 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-SP2"
- VERSION_ID="12.2"
- PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
- ID="sles"
- ANSI_COLOR="0;32"
- CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
- Linux linux-g50d 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)
- x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jan 22 20:38

SPEC is set to: /home/cpu2017.1.0.2.ic18.0

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 btrfs 744G 179G 564G 25% /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 -[TEE119Q-1.21]- 12/12/2017

Memory:
- 12x Hynix HMA84GR7AFR4N-VK 32 GB 2 rank 2666, configured at 2400

(End of data from sysinfo program)

---

**Compiler Version Notes**

==============================================================================

CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base, peak) 657.xz_s(base)

==============================================================================

icc (ICC) 18.0.0 20170811

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(Continued on next page)
Lenovo Global Technology
ThinkSystem SR550
(2.20 GHz, Intel Xeon Silver 4114T)

spec

SPEC CPU2017 Integer Speed Result
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Lenovo Global Technology

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SPECspeed2017_int_peak = 7.19

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

Test Date: Jan-2018
Hardware Availability: Aug-2017
Software Availability: Sep-2017

Compiler Version Notes (Continued)
-------------------------------------------------------------------------------
CC  600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-------------------------------------------------------------------------------
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
  641.leela_s(base)
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-------------------------------------------------------------------------------
CXXC 620.omnetpp_s(peak) 623.xalancbmk_s(peak) 631.deepsjeng_s(peak)
  641.leela_s(peak)
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-------------------------------------------------------------------------------
FC 648.exchange2_s(base, peak)
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
-------------------------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort
Lenovo Global Technology
ThinkSystem SR550
(2.20 GHz, Intel Xeon Silver 4114T)

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SPECspeed2017_int_peak = 7.19
SPECspeed2017_int_base = 6.99

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-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Base Other Flags
C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64
**SPEC CPU2017 Integer Speed Result**

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---

### Peak Compiler Invocation

C benchmarks:

- icc

C++ benchmarks:

- icpc

Fortran benchmarks:

- ifort

---

### Peak 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: -D_FILE_OFFSET_BITS=64 -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

---

### Peak Optimization Flags

C benchmarks:

- 600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX2 -qopt-mem-layout-trans=3 -ipo -O3 -no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -fno-strict-overflow -L/usr/local/je5.0.1-64/lib -ljemalloc
- 602.gcc_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX2 -qopt-mem-layout-trans=3 -ipo -O3 -no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -fno-strict-overflow -L/usr/local/je5.0.1-64/lib -ljemalloc
- 605.mcf_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

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Lenovo Global Technology

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Test Date: Jan-2018
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Peak Optimization Flags (Continued)

625.x264_s: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

657.xz_s: Same as 602.gcc_s

C++ benchmarks:

620.omnetpp_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

623.xalancbmk_s: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-stdlib=libc++ -I/usr/local/je5.0.1-32/include -Wl,-z,muldefs
-ipo -xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-32/lib -ljemalloc

631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: Same as 620.omnetpp_s

Fortran benchmarks:

-std=c11

C++ benchmarks (except as noted below):

-m64

623.xalancbmk_s: -m32

Fortran benchmarks:

-m64

Peak Other Flags

C benchmarks:

-m64

C++ benchmarks (except as noted below):

-m64

623.xalancbmk_s: -m32
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The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-SKL-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 v1.0.2 on 2018-01-22 07:42:31-0500.
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