**SPEC® CPU2017 Integer Speed Result**

**Lenovo Global Technology**

ThinkSystem SR650

(2.20 GHz, Intel Xeon Silver 4214Y)

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed2017_int_base = 8.16</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Test Date:** Jun-2019

**Hardware Availability:** Apr-2019

**Tested by:** Lenovo Global Technology

**Software Availability:** Dec-2018

**Test Sponsor:** Lenovo Global Technology

**Hardware Availability:** Apr-2019

**Tested by:** Lenovo Global Technology

**Software Availability:** Dec-2018

### Hardware

- **CPU Name:** Intel Xeon Silver 4214Y
- **Max MHz.:** 3200
- **Nominal:** 2200
- **Enabled:** 24 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:** 16.5 MB I+D on chip per chip
- **Other:** None
- **Memory:** 768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R, running at 2400)
- **Storage:** 1 x 800 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 IVE135R 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
SPEC CPU2017 Integer Speed Result

Lenovo Global Technology
ThinkSystem SR650
(2.20 GHz, Intel Xeon Silver 4214Y)

SPECspeed2017_int_base = 8.16
SPECspeed2017_int_peak = Not Run

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Threads</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Threads</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>48</td>
<td>319</td>
<td>5.56</td>
<td>321</td>
<td>5.52</td>
<td>320</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>48</td>
<td>489</td>
<td>8.15</td>
<td>493</td>
<td>8.08</td>
<td>492</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>48</td>
<td>440</td>
<td>10.7</td>
<td>443</td>
<td>10.7</td>
<td>444</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>48</td>
<td>287</td>
<td>5.68</td>
<td>288</td>
<td>5.67</td>
<td>288</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>48</td>
<td>137</td>
<td>10.4</td>
<td>137</td>
<td>10.4</td>
<td>137</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>48</td>
<td>151</td>
<td>11.7</td>
<td>151</td>
<td>11.7</td>
<td>151</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>48</td>
<td>313</td>
<td>4.58</td>
<td>313</td>
<td>4.58</td>
<td>313</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>48</td>
<td>437</td>
<td>3.91</td>
<td>436</td>
<td>3.91</td>
<td>437</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>48</td>
<td>254</td>
<td>11.6</td>
<td>254</td>
<td>11.6</td>
<td>255</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>48</td>
<td>320</td>
<td>19.3</td>
<td>319</td>
<td>19.4</td>
<td>320</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"

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

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) 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
**SPEC CPU2017 Integer Speed Result**

**Lenovo Global Technology**

ThinkSystem SR650 (2.20 GHz, Intel Xeon Silver 4214Y)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>8.16</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

<table>
<thead>
<tr>
<th>Test Date</th>
<th>Jun-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability</td>
<td>Apr-2019</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Dec-2018</td>
</tr>
</tbody>
</table>

**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-nr46 Tue Jun 4 16:23:27 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
- 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

(Continued on next page)
### Lenovo Global Technology

**ThinkSystem SR650**  
(2.20 GHz, Intel Xeon Silver 4214Y)

<table>
<thead>
<tr>
<th>Spec Speed2017 int_base</th>
<th>8.16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spec Speed2017 int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

#### Platform Notes (Continued)

```
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 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 nopl xtopology nonstop_tsc cpuid  
aperfmpref pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16  
xtrr 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  
invpccid_single ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid  
sfsqsb tsc_adjust bmi1 hle avx2 smep bmi2  
From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.  
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: 386599 MB  
node 0 free: 385984 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: 387015 MB  
node 1 free: 386234 MB  
From /proc/meminfo  
MemTotal: 792181192 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)
Lenovo Global Technology
ThinkSystem SR650
(2.20 GHz, Intel Xeon Silver 4214Y)

SPECspeed2017_int_base = 8.16
SPECspeed2017_int_peak = Not Run

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

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"

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 Jun 4 16:16

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

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 btrfs 744G 35G 710G 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 -[IVE135R-2.10]- 02/27/2019
Memory:
24x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, 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) 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.

(Continued on next page)
### Lenovo Global Technology

ThinkSystem SR650
(2.20 GHz, Intel Xeon Silver 4214Y)

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>Test Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>9017</td>
<td>Jun-2019</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Sponsor</th>
<th>Hardware Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lenovo Global Technology</td>
<td>Apr-2019</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tested by</th>
<th>Software Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lenovo Global Technology</td>
<td>Dec-2018</td>
</tr>
</tbody>
</table>

**SPECspeed2017_int_base = 8.16**

**SPECspeed2017_int_peak = Not Run**

---

### Compiler Version Notes (Continued)

```c
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.

```c
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

```c
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
```
Lenovo Global Technology
ThinkSystem SR650
(2.20 GHz, Intel Xeon Silver 4214Y)

SPECspeed2017_int_base = 8.16
SPECspeed2017_int_peak = Not Run

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

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:
-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 2019-06-04 04:23:26-0400.
Originally published on 2019-06-25.