**Lenovo Global Technology**  
Thinksystem SR250  
(3.20 GHz, Intel Xeon E-2104G)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base =</th>
<th>20.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate2017_int_base (20.1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>4</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>4</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>4</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>4</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>4</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>4</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>4</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>4</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>4</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>4</td>
</tr>
</tbody>
</table>

**Hardware**

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E-2104G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz.:</td>
<td>3200</td>
</tr>
<tr>
<td>Nominal:</td>
<td>3200</td>
</tr>
<tr>
<td>Enabled:</td>
<td>4 cores, 1 chip</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1 chip</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>8 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 480 GB SATA SSD</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>OS:</th>
<th>SUSE Linux Enterprise Server 12 SP3 (x86_64)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 18.0.2.199 of Intel C/C++</td>
</tr>
<tr>
<td>Compiler for Linux:</td>
<td></td>
</tr>
<tr>
<td>Fortran:</td>
<td>Version 18.0.2.199 of Intel Fortran</td>
</tr>
<tr>
<td>Compiler for Linux:</td>
<td></td>
</tr>
<tr>
<td>Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>Firmware:</td>
<td>Lenovo BIOS Version ISE105G 1.01 released Oct-2018</td>
</tr>
<tr>
<td>File System:</td>
<td>btrfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
</tbody>
</table>
Lenovo Global Technology

Thinksystem SR250
(3.20 GHz, Intel Xeon E-2104G)

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

SPECrate2017_int_base = 20.1
SPECrate2017_int_peak = Not Run

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>4</td>
<td>373</td>
<td>17.1</td>
<td>374</td>
<td>17.0</td>
<td>373</td>
<td>17.1</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>4</td>
<td>285</td>
<td>19.9</td>
<td>286</td>
<td>19.8</td>
<td>286</td>
<td>19.8</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>4</td>
<td>276</td>
<td>23.4</td>
<td>276</td>
<td>23.4</td>
<td>276</td>
<td>23.4</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>4</td>
<td>405</td>
<td>13.0</td>
<td>404</td>
<td>13.0</td>
<td>406</td>
<td>12.9</td>
</tr>
<tr>
<td>523.xalanbmk_r</td>
<td>4</td>
<td>209</td>
<td>20.2</td>
<td>209</td>
<td>20.2</td>
<td>210</td>
<td>20.1</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>4</td>
<td>166</td>
<td>42.2</td>
<td>166</td>
<td>42.1</td>
<td>166</td>
<td>42.1</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>4</td>
<td>257</td>
<td>17.8</td>
<td>257</td>
<td>17.8</td>
<td>257</td>
<td>17.8</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>4</td>
<td>461</td>
<td>14.4</td>
<td>459</td>
<td>14.4</td>
<td>460</td>
<td>14.4</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>4</td>
<td>267</td>
<td>39.2</td>
<td>262</td>
<td>40.1</td>
<td>259</td>
<td>40.4</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>4</td>
<td>354</td>
<td>12.2</td>
<td>354</td>
<td>12.2</td>
<td>354</td>
<td>12.2</td>
</tr>
</tbody>
</table>

SPECrate2017_int_base = 20.1
SPECrate2017_int_peak = Not Run

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset commands to bind each copy to a specific processor. For details, please see the config file.

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/cpu2017-1.0.5-ic18.0u2/lib/ia32:/home/cpu2017-1.0.5-ic18.0u2/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017-1.0.5-ic18.0u2/je5.0.1-32:/home/cpu2017-1.0.5-ic18.0u2/je5.0.1-64"

Binaries compiled on a system with 1x Intel Core i7-6700K 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.

jemalloc, a general purpose malloc implementation

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

Thinksystem SR250  
(3.20 GHz, Intel Xeon E-2104G)

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9017</th>
<th>Test Date:</th>
<th>Dec-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Lenovo Global Technology</td>
<td>Hardware Availability:</td>
<td>Jan-2019</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Lenovo Global Technology</td>
<td>Software Availability:</td>
<td>May-2018</td>
</tr>
</tbody>
</table>

#### SPEC CPU2017 Integer Rate Result

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
<th>20.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

General Notes (Continued)

- built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

#### Platform Notes

- BIOS configuration:
  - Choose Operating Mode set to Maximum Performance
  - Choose Operating Mode set to Custom Mode
  - CPU P-state Control set to Legacy
  - Execute Disable Bit set to Disable
  - Per Core P-state set to Disable
  - Adjacent Cache Prefetch set to Disable

- Sysinfo program: `/home/cpu2017-1.0.5-ic18.0u2/bin/sysinfo`
- Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
- running on linux-ys4m Mon Dec 3 19:36:44 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) E-2104G CPU @ 3.20GHz
    - 4 "physical id"s (chips)
    - 4 "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: 4
    - siblings: 4
    - physical 0: cores 0 1 2 3

- From `lscpu`:
  - Architecture: x86_64
  - CPU op-mode(s): 32-bit, 64-bit
  - Byte Order: Little Endian
  - CPU(s): 4
  - On-line CPU(s) list: 0-3
  - Thread(s) per core: 1
  - Core(s) per socket: 4
  - Socket(s): 1
  - NUMA node(s): 1
  - Vendor ID: GenuineIntel
  - CPU family: 6
  - Model: 158
  - Model name: Intel(R) Xeon(R) E-2104G CPU @ 3.20GHz
  - Stepping: 10
  - CPU MHz: 3200.017

(Continued on next page)
Lenovo Global Technology
Thinksystem SR250
(3.20 GHz, Intel Xeon E-2104G)

SPECrate2017_int_base = 20.1
SPECrate2017_int_peak = Not Run

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

Test Date: Dec-2018
Hardware Availability: Jan-2019
Software Availability: May-2018

Platform Notes (Continued)

CPU max MHz: 3200.0000
CPU min MHz: 800.0000
BogoMIPS: 6383.95
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 8192K
NUMA node0 CPU(s): 0-3

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
aperfmpref eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch arat epb invpcid_single pknbs
dtherm hwp hwp_notif hwp_act_window hwp_epp intel_pt rsb_cxsw spec_ctrl stibp ssbd
retpoline kaiser tpr_shadow vmm灵活priorit et vpid fsbbase tsc_adjust bmi1 hle
avx2 smep bmi2 erms invpcid rtm mpx rdseed adx amap clflushopt xsaveopt xsavec
xgetbv1
/propcpuinto cache data
  cache size: 8192 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
  available: 1 nodes (0)
  node 0 cpus: 0 1 2 3
  node 0 size: 64382 MB
  node 0 free: 63892 MB
  node distances:
    node 0
      0: 10

From /proc/meminfo
  MemTotal: 65927396 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 3
    # 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"

(Continued on next page)
**Platform Notes (Continued)**

```
VERSION="12-SP3"
VERSION_ID="12.3"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp3"
```

```
uname -a:
    Linux linux-ys4m 4.4.131-94.29-default #1 SMP Mon May 21 14:41:34 UTC 2018 (f49bc78)
x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

- **CVE-2017-5754 (Meltdown):** Mitigation: PTI
- **CVE-2017-5753 (Spectre variant 1):** Mitigation: __user pointer sanitization
- **CVE-2017-5715 (Spectre variant 2):** Mitigation: IBRS+IBPB

```
run-level 3 Dec 3 19:33
```

**SPEC is set to:** /home/cpu2017-1.0.5-ic18.0u2

```
Filesystem    Type     Size  Used  Avail Use%  Mounted on
/dev/sda2     btrfs     446G   19G  427G   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 -[ISE105G-1.01]- 10/25/2018
- Memory:
  4x Micron 18ASF2G72AZ-2G6D1 16 GB 2 rank 2666

(End of data from sysinfo program)

---

**Compiler Version Notes**

```
CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
    557.xz_r(base)
```

```
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

---

```
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
    541.leela_r(base)
```

(Continued on next page)
Lenovo Global Technology

Thinksystem SR250
(3.20 GHz, Intel Xeon E-2104G)

---

**SPECr2017 int_base = 20.1**

---

Compiler Version Notes (Continued)

icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

FC 548.exchange2_r(base)

---

ifort (IFORT) 18.0.2 20180210
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

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

---

Base Optimization Flags

C benchmarks:
-W1, -z, muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

(Continued on next page)
**Lenovo Global Technology**  
Thinksystem SR250  
(3.20 GHz, Intel Xeon E-2104G)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base = 20.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak = Not Run</td>
</tr>
</tbody>
</table>

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

**Test Date:** Dec-2018  
**Hardware Availability:** Jan-2019  
**Software Availability:** May-2018

**Base Optimization Flags (Continued)**

**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`  
- `-L/usr/local/je5.0.1-64/lib -ljemalloc`

The flags files that were used to format this result can be browsed at:


You can also download the XML flags sources by saving the following links:


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 2018-12-03 06:36:43-0500.  
Report generated on 2018-12-26 13:00:12 by CPU2017 PDF formatter v6067.  
Originally published on 2018-12-25.