**Lenovo Global Technology**  
ThinkSystem SR150  
(3.60 GHz, Intel Xeon E-2144G)  

**SPECrate2017_int_base** = 30.0  
**SPECrate2017_int_peak** = Not Run

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Nov-2018</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>
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</table>

<table>
<thead>
<tr>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong> Intel Xeon E-2144G</td>
</tr>
<tr>
<td><strong>Max MHz.:</strong> 4500</td>
</tr>
<tr>
<td><strong>Nominal:</strong> 3600</td>
</tr>
<tr>
<td><strong>Enabled:</strong> 4 cores, 1 chip, 2 threads/core</td>
</tr>
<tr>
<td><strong>Orderable:</strong> 1 chip</td>
</tr>
<tr>
<td><strong>Cache L1:</strong> 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td><strong>L2:</strong> 256 KB I+D on chip per core</td>
</tr>
<tr>
<td><strong>L3:</strong> 8 MB I+D on chip per chip</td>
</tr>
<tr>
<td><strong>Other:</strong> None</td>
</tr>
<tr>
<td><strong>Memory:</strong> 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)</td>
</tr>
<tr>
<td><strong>Storage:</strong> 1 x 480 GB SATA SSD</td>
</tr>
<tr>
<td><strong>Other:</strong> None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OS:</strong> SUSE Linux Enterprise Server 12 SP3 (x86_64)</td>
</tr>
<tr>
<td><strong>Kernel:</strong> 4.4.131-94.29-default</td>
</tr>
</tbody>
</table>
| **Compiler:** C/C++: Version 18.0.2.199 of Intel C/C++  
Fortran: Version 18.0.2.199 of Intel Fortran  
Compiler for Linux |
| **Parallel:** No |
| **Firmware:** Lenovo BIOS Version ISE105G 1.01 released Oct-2018 |
| **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 |

<table>
<thead>
<tr>
<th>Copies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>500.perlbench_r</strong> 8</td>
</tr>
<tr>
<td><strong>502.gcc_r</strong> 8</td>
</tr>
<tr>
<td><strong>505.mcf_r</strong> 8</td>
</tr>
<tr>
<td><strong>520.omnetpp_r</strong> 8</td>
</tr>
<tr>
<td><strong>523.xalancbmk_r</strong> 8</td>
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<tr>
<td><strong>525.x264_r</strong> 8</td>
</tr>
<tr>
<td><strong>531.deepsjeng_r</strong> 8</td>
</tr>
<tr>
<td><strong>541.leela_r</strong> 8</td>
</tr>
<tr>
<td><strong>548.exchange2_r</strong> 8</td>
</tr>
<tr>
<td><strong>557.xz_r</strong> 8</td>
</tr>
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</table>
### Results Table

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<th>Seconds</th>
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<td>603</td>
<td>17.4</td>
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<tr>
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<tr>
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<tr>
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<td>58.8</td>
<td>357</td>
<td>58.7</td>
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<tr>
<td>557.xz_r</td>
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<td>20.7</td>
<td>456</td>
<td>18.9</td>
<td>461</td>
<td>18.8</td>
</tr>
</tbody>
</table>

**SPECrate2017_int_base = 30.0**

**SPECrate2017_int_peak = Not Run**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

---

### 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:

```bash
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.

(Continued on next page)
General Notes (Continued)
jemalloc, a general purpose malloc implementation
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 9bcd8f2999c33d6f64985e45859ea9
running on linux-tsni Thu Nov 29 09:45:09 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-2144G CPU @ 3.60GHz
  1 "physical id"s (chips)
  8 "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 : 8
  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): 8
On-line CPU(s) list: 0-7
Thread(s) per core: 2
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-2144G CPU @ 3.60GHz
Stepping: 10
Lenovo Global Technology
ThinkSystem SR150
(3.60 GHz, Intel Xeon E-2144G)

SPECrate2017_int_base = 30.0
SPECrate2017_int_peak = Not Run

CPU2017 License: 9017
Test Date: Nov-2018
SPECrate2017_int_base = 30.0
Test Sponsor: Lenovo Global Technology
Hardware Availability: Jan-2019
Tested by: Lenovo Global Technology
Software Availability: May-2018

CPU MHz: 4292.102
CPU max MHz: 4500.0000
CPU min MHz: 800.0000
BogoMIPS: 7199.69
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 8192K
NUMA node0 CPU(s): 0-7
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
       aperfmperf 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 fl64 rdrand lahf_lm abm 3dnowprefetch ida arat epb invpcid_single pln pts
       dtherm hw_lcm_notify hw_act_window hwp_epp intel_pt rsb_ctxsw spec_ctrl stibp ssbd
       retpoline kaiser tpr_shadow vmmi fexpriority ept vpid fsgsbase tsc_adjust bmi1 hle
       avx2 smep bmi2 ersed msrs etaevicid rtl mpx rdseed adx smap clflushopt xsaveopt xsavec
       xgetbv1

/platform/cpuinfo_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 4 5 6 7
  node 0 size: 64381 MB
  node 0 free: 63856 MB
  node distances:
    node 0
    0: 10

From /proc/meminfo
  MemTotal: 65926900 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:

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR150
(3.60 GHz, Intel Xeon E-2144G)

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

SPECrate2017_int_base = 30.0
SPECrate2017_int_peak = Not Run

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

Platform Notes (Continued)

NAME="SLES"
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-tsni 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 Nov 29 09:43

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

filesystem type size used avail use% mounted on
/dev/md126p2 btrfs 446G 18G 428G 4% /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)
(Continued on next page)
Lenovo Global Technology
ThinkSystem SR150
(3.60 GHz, Intel Xeon E-2144G)

<table>
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<td>Tested by:</td>
<td>Lenovo Global Technology</td>
<td>Software Availability:</td>
<td>May-2018</td>
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</tbody>
</table>

**SPEC CPU2017 Integer Rate Result**

**SPECrate2017_int_base = 30.0**

**SPECrate2017_int_peak = Not Run**

**Compiler Version Notes (Continued)**

541.leela_r(base)

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:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR150
(3.60 GHz, Intel Xeon E-2144G)

SPECrate2017_int_base = 30.0
SPECrate2017_int_peak = Not Run

Base Optimization Flags (Continued)

C benchmarks (continued):
-qopt-mem-layout-trans=3 -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
-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:
http://www.spec.org/cpu2017/flags/Intel-icl18.0-official-linux64.2017-12-21.xml
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-SKL-H.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 v1.0.5 on 2018-11-28 20:45:08-0500.