Lenovo Global Technology
ThinkSystem ST250
(3.80 GHz, Intel Xeon E-2276G)

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

**Hardware**

- **CPU Name:** Intel Xeon E-2276G  
- **Max MHz:** 4900  
- **Nominal:** 3800  
- **Enabled:** 6 cores, 1 chip, 2 threads/core  
- **Orderable:** 1 chip  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 256 KB I+D on chip per core  
- **L3:** 12 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 128 GB (4 x 32 GB 2Rx4 PC4-2666V-E)  
- **Storage:** 1 x 960 GB SATA SSD  
- **Other:** None

**Software**

- **OS:** SUSE Linux Enterprise Server 15 SP1 (x86_64)  
- **Kernel:** 4.12.14-195-default  
- **Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux; Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux  
- **Parallel:** No  
- **Firmware:** Lenovo BIOS Version ISE115D 2.10 released Apr-2020  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 32/64-bit  
- **Other:** jemalloc memory allocator V5.0.1  
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage  

**SPEC CPU®2017 Integer Rate Result**

SPECrater®2017_int_base = 51.2  
SPECrater®2017_int_peak = 53.2

| Test Date: | Jun-2020 |  
| Hardware Availability: | Mar-2020 |  
| Software Availability: | Apr-2020 |  

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

<table>
<thead>
<tr>
<th>Copies</th>
<th>12</th>
<th>12</th>
<th>12</th>
<th>12</th>
<th>12</th>
<th>12</th>
<th>12</th>
<th>12</th>
<th>12</th>
<th>12</th>
<th>12</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_base</td>
<td>51.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPECrate®2017_int_peak</td>
<td>53.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>35.0</td>
<td>35.0</td>
<td>35.0</td>
<td>35.0</td>
<td>35.0</td>
<td>35.0</td>
<td>35.0</td>
<td>35.0</td>
<td>35.0</td>
<td>35.0</td>
<td>35.0</td>
<td>35.0</td>
</tr>
<tr>
<td>5.00</td>
<td>36.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.0</td>
<td>43.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.0</td>
<td>37.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.0</td>
<td>44.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.0</td>
<td>74.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.0</td>
<td>29.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.0</td>
<td>60.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40.0</td>
<td>112</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45.0</td>
<td>43.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50.0</td>
<td>40.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55.0</td>
<td>31.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60.0</td>
<td>31.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>105.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>115.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Copyright 2017-2020 Standard Performance Evaluation Corporation**
Lenovo Global Technology
ThinkSystem ST250
(3.80 GHz, Intel Xeon E-2276G)

**SPEC CPU®2017 Integer Rate Result**

Copyright 2017-2020 Standard Performance Evaluation Corporation

**Lenovo Global Technology**

**Test Date:** Jun-2020
**Hardware Availability:** Mar-2020
**Software Availability:** Apr-2020

---

**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>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>12</td>
<td>526</td>
<td>36.3</td>
<td><strong>528</strong></td>
<td><strong>36.2</strong></td>
<td>528</td>
<td>36.2</td>
<td>12</td>
<td>440</td>
<td>43.4</td>
<td>441</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>12</td>
<td>450</td>
<td>37.7</td>
<td>447</td>
<td>38.0</td>
<td><strong>449</strong></td>
<td><strong>37.9</strong></td>
<td>12</td>
<td><strong>383</strong></td>
<td><strong>44.4</strong></td>
<td>383</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>12</td>
<td>261</td>
<td>74.4</td>
<td>259</td>
<td>75.0</td>
<td><strong>259</strong></td>
<td><strong>74.9</strong></td>
<td>12</td>
<td>261</td>
<td>74.4</td>
<td>259</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>12</td>
<td>533</td>
<td>29.5</td>
<td><strong>533</strong></td>
<td><strong>29.5</strong></td>
<td>532</td>
<td>29.6</td>
<td>12</td>
<td>533</td>
<td>29.5</td>
<td>533</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>12</td>
<td>210</td>
<td>60.3</td>
<td><strong>210</strong></td>
<td><strong>60.3</strong></td>
<td>209</td>
<td>60.6</td>
<td>12</td>
<td>210</td>
<td>60.3</td>
<td>210</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>12</td>
<td>187</td>
<td>112</td>
<td><strong>187</strong></td>
<td><strong>112</strong></td>
<td>187</td>
<td>113</td>
<td>12</td>
<td>179</td>
<td>117</td>
<td>179</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>12</td>
<td><strong>318</strong></td>
<td><strong>43.2</strong></td>
<td>317</td>
<td>43.4</td>
<td>319</td>
<td>43.1</td>
<td>12</td>
<td><strong>318</strong></td>
<td><strong>43.2</strong></td>
<td>317</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>12</td>
<td><strong>490</strong></td>
<td><strong>40.5</strong></td>
<td>485</td>
<td>41.0</td>
<td>492</td>
<td>40.4</td>
<td>12</td>
<td><strong>490</strong></td>
<td><strong>40.5</strong></td>
<td>485</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>12</td>
<td>291</td>
<td>108</td>
<td><strong>288</strong></td>
<td><strong>109</strong></td>
<td>288</td>
<td>109</td>
<td>12</td>
<td>291</td>
<td>108</td>
<td><strong>288</strong></td>
</tr>
<tr>
<td>557.xz_r</td>
<td>12</td>
<td><strong>410</strong></td>
<td><strong>31.6</strong></td>
<td>411</td>
<td>31.5</td>
<td>410</td>
<td>31.6</td>
<td>12</td>
<td><strong>412</strong></td>
<td><strong>31.5</strong></td>
<td>412</td>
</tr>
</tbody>
</table>

**Compiler Notes**

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler.
The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux
The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

**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"

**Environment Variables Notes**

Environment variables set by runcpu before the start of the run:

```
LD_LIBRARY_PATH = 
    "/home/cpu2017-1.1.0-ic19.1.1/lib/intel64:/home/cpu2017-1.1.0-ic19.1.1/lib/ia32:/home/cpu2017-1.1.0-ic19.1.1/je5.0.0-32"
MALLOCC_CONF = "retain:true"
```
Lenovo Global Technology
ThinkSystem ST250
(3.80 GHz, Intel Xeon E-2276G)

SPECrate®2017_int_base = 51.2
SPECrate®2017_int_peak = 53.2

General Notes

Binaries compiled on a system with 1x Intel Core i9–7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0
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

Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
Energy Efficient Turbo set to Enable
Zero Output set to Advanced Mode
Intel Virtualization Technology set to Disable
Hardware Prefetcher set to Disable
Adjacent Cache Prefetch set to Disable

Sysinfo program /home/cpu2017-1.1.0-ic19.1.1/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f88da3d7ed1be6e6a485a0011
running on linux-bfbk Fri Jun 12 17:45:41 2020

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-2276G CPU @ 3.80GHz
    1 "physical id"s (chips)
    12 "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 : 6
    siblings : 12
    physical 0: cores 0 1 2 3 4 5

From lscpu:
    Architecture: x86_64

(Continued on next page)
Lenovo Global Technology

ThinkSystem ST250
(3.80 GHz, Intel Xeon E-2276G)

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: Jun-2020
Tested by: Lenovo Global Technology
Tested by: Lenovo Global Technology

Hardware Availability: Mar-2020
Software Availability: Apr-2020

**Platform Notes (Continued)**

- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- Address sizes: 39 bits physical, 48 bits virtual
- CPU(s): 12
- On-line CPU(s) list: 0-11
- Thread(s) per core: 2
- Core(s) per socket: 6
- Socket(s): 1
- NUMA node(s): 1
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 158
- Model name: Intel(R) Xeon(R) E-2276G CPU @ 3.80GHz
- Stepping: 10
- CPU MHz: 3800.000
- CPU max MHz: 4900.0000
- CPU min MHz: 800.0000
- BogoMIPS: 7584.00
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 256K
- L3 cache: 12288K
- NUMA node0 CPU(s): 0-11
- 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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
- aperfmperf tsc_known_freq 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 cpuid_fault epb invpcid_single
- bmi ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust
- bmi1 hle avx2 smep bmi2 3dnow invpcid rtm mpx rdseed adx smap clflushopt intel_pt
- xsaveopt xsavec xgetbv1 xsaVES dtherm ida arat pln pts hwp hwp_notify hwp_act_window
- hwp_epp md_clear flush_l1d

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 8 9 10 11
  - node 0 size: 128864 MB
  - node 0 free: 128246 MB
  - node distances:
    - node 0
      - 0: 10

(Continued on next page)
Lenovo Global Technology  
ThinkSystem ST250  
(3.80 GHz, Intel Xeon E-2276G)

SPECRate®2017_int_base = 51.2  
SPECRate®2017_int_peak = 53.2

CPU2017 License: 9017  
Test Sponsor: Lenovo Global Technology  
Test Date: Jun-2020  
Hardware Availability: Mar-2020

Tested by: Lenovo Global Technology  
Software Availability: Apr-2020

Platform Notes (Continued)

From /proc/meminfo
- MemTotal: 131957504 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
- os-release:
  - NAME="SLES"
  - VERSION="15-SP1"
  - VERSION_ID="15.1"
  - PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
  - ID="sles"
  - ID_LIKE="suse"
  - ANSI_COLOR="0;32"
  - CPE_NAME="cpe:/o:suse:sles:15:sp1"

uname -a:
- x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
- CVE-2018-3620 (L1 Terminal Fault): Mitigation: PTE Inversion; VMX: conditional cache flushes, SMT vulnerable
- Microarchitectural Data Sampling: Mitigation: Clear CPU buffers; SMT vulnerable
- CVE-2017-5754 (Meltdown): Mitigation: PTI
- 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: conditional, IFR, STIBP: conditional, RSB filling

run-level 3 Jun 12 17:43

SPEC is set to: /home/cpu2017-1.1.0-ic19.1.1

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 893G 63G 830G 8% /

From /sys/devices/virtual/dmi/id
- BIOS: Lenovo -[ISE115D-2.10]- 04/24/2020
- Vendor: Lenovo
- Product: ThinkSystem ST250 -[7Y45CT00WW]-
- Product Family: ThinkSystem
- Serial: 1234567890

(Continued on next page)
Platform Notes (Continued)

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.

Memory:
4x SK Hynix HMAA4GU7AJR8N-VK 32767 MB 2 rank 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C       | 502.gcc_r(peak)
Intel(R) C Compiler for applications running on IA-32, Version 2021.1 NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================
C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak) 557.xz_r(base)
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1 NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================
C       | 500.perlbench_r(peak) 557.xz_r(peak)
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================
C       | 502.gcc_r(peak)
Intel(R) C Compiler for applications running on IA-32, Version 2021.1 NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================
C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
(Continued on next page)
Lenovo Global Technology
ThinkSystem ST250
(3.80 GHz, Intel Xeon E-2276G)

Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

CPU2017 License: 9017
Test Date: Jun-2020
Hardware Availability: Mar-2020
Test Sponsor: Lenovo Global Technology
Software Availability: Apr-2020

Compiler Version Notes (Continued)

<table>
<thead>
<tr>
<th>525.x264_r(base, peak) 557.xz_r(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1 NextGen Build 20200304</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>500.perlbench_r(peak) 557.xz_r(peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>502.gcc_r(peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C Compiler for applications running on IA-32, Version 2021.1 NextGen Build 20200304</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1 NextGen Build 20200304</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>500.perlbench_r(peak) 557.xz_r(peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>500.perlbench_r(peak) 557.xz_r(peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1 NextGen Build 20200304</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>531.deepsjeng_r(base, peak) 541.leela_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1 NextGen Build 20200304</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

(Continued on next page)
Lenovo Global Technology
ThinkSystem ST250
(3.80 GHz, Intel Xeon E-2276G)

SPEC CPU®2017 Integer Rate Result
Copyright 2017-2020 Standard Performance Evaluation Corporation

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

SPECrate®2017_int_base = 51.2
SPECrate®2017_int_peak = 53.2

Test Date: Jun-2020
Hardware Availability: Mar-2020
Software Availability: Apr-2020

Compiler Version Notes (Continued)

------------------------------------------------------------------------------
Fortran | 548.exchange2_r(base, peak)
------------------------------------------------------------------------------
Intel (R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

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:
-m64 -mnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-xCORE-AVX2 -03 -ffast-math -flto -mfpmath=sse -funroll-loops
-fuse-ld=gold -qopt-mem-layout-trans=4

(Continued on next page)
Lenovo Global Technology
ThinkSystem ST250
(3.80 GHz, Intel Xeon E-2276G)

SPECrate®2017_int_base = 51.2
SPECrate®2017_int_peak = 53.2

<table>
<thead>
<tr>
<th>CPU2017 License: 9017</th>
<th>Test Date: Jun-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Lenovo Global Technology</td>
<td>Hardware Availability: Mar-2020</td>
</tr>
<tr>
<td>Tested by: Lenovo Global Technology</td>
<td>Software Availability: Apr-2020</td>
</tr>
</tbody>
</table>

### Base Optimization Flags (Continued)

C benchmarks (continued):
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-lqkmalloc

C++ benchmarks:
-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -xCORE-AVX2 -O3 -ffast-math -flto -mfpmath=sse
-funroll-loops -fuse-ld=gold -qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-lqkmalloc

Fortran benchmarks:
-m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-xCORE-AVX2 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-lqkmalloc

### Peak Compiler Invocation

C benchmarks:
icc
C++ benchmarks:
icpc
Fortran benchmarks:
ifort

### Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
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

(Continued on next page)
Lenovo Global Technology

ThinkSystem ST250
(3.80 GHz, Intel Xeon E-2276G)

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECrate®2017_int_base = 51.2

SPECrate®2017_int_peak = 53.2

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: Jun-2020
Hardware Availability: Mar-2020
Tested by: Lenovo Global Technology
Software Availability: Apr-2020

Peak Portability Flags (Continued)

557.xz_r: -DSPEC_LP64

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
-xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -fno-strict-overflow
-mbranches-within-32B-boundaries
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-1qkmalloc

502.gcc_r: -m32
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/ia32_lin
-std=gnu89
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdatalpass 1) -xCORE-AVX2 -flto
-Ofast(pass 1) -O3 -ffast-math -qnextgen -fuse-ld=gold
-qopt-mem-layout-trans=4 -L/usr/local/jemalloc32-5.0.1/lib
-1jemalloc

505.mcf_r: basepeak = yes

525.x264_r: -m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -xCORE-AVX2 -flto -O3 -ffast-math
-fuse-1d=gold -qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-1qkmalloc

557.xz_r: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-1qkmalloc

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r: basepeak = yes

(Continued on next page)
Lenovo Global Technology
ThinkSystem ST250
(3.80 GHz, Intel Xeon E-2276G)

SPECrate®2017_int_base = 51.2
SPECrate®2017_int_peak = 53.2

Peak Optimization Flags (Continued)

531.deepsjeng_r: basepeak = yes
541.leela_r: basepeak = yes
Fortran benchmarks:
548.exchange2_r: basepeak = yes

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-SKL-J.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-SKL-J.xml

SPEC CPU and SPECrate are registered trademarks 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 CPU®2017 v1.1.0 on 2020-06-12 05:45:40-0400.
Originally published on 2020-07-07.