## Lenovo Global Technology

**ThinkSystem SR650 V2**  
(2.30 GHz, Intel Xeon Platinum 8352M)

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License: 9017</td>
<td>CPU Name: Intel Xeon Platinum 8352M</td>
</tr>
<tr>
<td>Test Sponsor: Lenovo Global Technology</td>
<td>Max MHz: 3500</td>
</tr>
<tr>
<td>Tested by: Lenovo Global Technology</td>
<td>Nominal: 2300</td>
</tr>
<tr>
<td></td>
<td>Enabled: 64 cores, 2 chips</td>
</tr>
<tr>
<td></td>
<td>Orderable: 1,2 chips</td>
</tr>
<tr>
<td></td>
<td>Cache L1: 32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td></td>
<td>L2: 1.25 MB I+D on chip per core</td>
</tr>
<tr>
<td></td>
<td>L3: 48 MB I+D on chip per chip</td>
</tr>
<tr>
<td></td>
<td>Memory: 1 TB (32 x 32 GB 2Rx8 PC4-3200AA-R)</td>
</tr>
<tr>
<td></td>
<td>Storage: 1 x 960 GB SATA SSD</td>
</tr>
<tr>
<td></td>
<td>Other: None</td>
</tr>
<tr>
<td></td>
<td>OS: SUSE Linux Enterprise Server 15 SP2 (x86_64)</td>
</tr>
<tr>
<td></td>
<td>Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux; Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux</td>
</tr>
<tr>
<td></td>
<td>Parallel: No</td>
</tr>
<tr>
<td></td>
<td>Firmware: Lenovo BIOS Version AFE111A 1.02 released May-2021</td>
</tr>
<tr>
<td></td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td></td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td></td>
<td>Peak Pointers: Not Applicable</td>
</tr>
<tr>
<td></td>
<td>Other: jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td></td>
<td>Power Management: BIOS and OS set to prefer performance at the cost of additional power usage</td>
</tr>
</tbody>
</table>

### SPECrate®2017_fp_base = 393

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate®2017_fp_base (393)</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>747</td>
</tr>
<tr>
<td>300</td>
<td>307</td>
</tr>
<tr>
<td>200</td>
<td>252</td>
</tr>
<tr>
<td>100</td>
<td>266</td>
</tr>
<tr>
<td>0</td>
<td>355</td>
</tr>
<tr>
<td>500</td>
<td>362</td>
</tr>
<tr>
<td>1050</td>
<td>385</td>
</tr>
</tbody>
</table>

**Software Availability:** Jul-2021

**Hardware Availability:** Dec-2020

---

**Lenovo Global Technology**

**ThinkSystem SR650 V2**  
(2.30 GHz, Intel Xeon Platinum 8352M)
Lenovo Global Technology
ThinkSystem SR650 V2
(2.30 GHz, Intel Xeon Platinum 8352M)

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

SPECrates

SPECrates®2017_fp_base  =  393
SPECrates®2017_fp_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>
<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>503.bwaves_r</td>
<td>64</td>
<td>859</td>
<td>747</td>
<td>859</td>
<td>747</td>
<td>861</td>
<td>745</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>64</td>
<td>141</td>
<td>574</td>
<td>141</td>
<td>577</td>
<td>141</td>
<td>576</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>508.namd_r</td>
<td>64</td>
<td>203</td>
<td>300</td>
<td>198</td>
<td>307</td>
<td>197</td>
<td>308</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>510.parest_r</td>
<td>64</td>
<td>664</td>
<td>252</td>
<td>664</td>
<td>252</td>
<td>664</td>
<td>252</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>511.povray_r</td>
<td>64</td>
<td>314</td>
<td>476</td>
<td>315</td>
<td>474</td>
<td>315</td>
<td>474</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>64</td>
<td>253</td>
<td>267</td>
<td>254</td>
<td>266</td>
<td>253</td>
<td>266</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>64</td>
<td>406</td>
<td>353</td>
<td>403</td>
<td>356</td>
<td>403</td>
<td>355</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>526.blender_r</td>
<td>64</td>
<td>269</td>
<td>362</td>
<td>270</td>
<td>362</td>
<td>270</td>
<td>362</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>64</td>
<td>291</td>
<td>385</td>
<td>291</td>
<td>385</td>
<td>291</td>
<td>385</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>64</td>
<td>158</td>
<td>1010</td>
<td>157</td>
<td>1010</td>
<td>155</td>
<td>1030</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>544.nab_r</td>
<td>64</td>
<td>191</td>
<td>563</td>
<td>194</td>
<td>555</td>
<td>194</td>
<td>554</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>64</td>
<td>1075</td>
<td>232</td>
<td>1075</td>
<td>232</td>
<td>1074</td>
<td>232</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>554.roms_r</td>
<td>64</td>
<td>520</td>
<td>196</td>
<td>519</td>
<td>196</td>
<td>521</td>
<td>195</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl 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:
MALLOCC_CONF = "retain:true"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7940X CPU + 64GB RAM memory using openSUSE Leap 15.2
Transparent Huge Pages enabled by default

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR650 V2
(2.30 GHz, Intel Xeon Platinum 8352M)

**General Notes (Continued)**

Prior to runcpu invocation
Filesystem page cache synced and cleared with:
`sync; echo 3 > /proc/sys/vm/drop_caches`
`numactl` command invoked through numactl i.e.:
`numactl --interleave=all runcpu <etc>`

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.

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
Hyper-Threading set to Disabled
DCU Streamer Prefetcher set to Disabled
DCU IP Prefetcher set to Disabled
SNC set to Enabled
Patrol Scrub set to Disabled

Sysinfo program /home/cpu2017-1.1.8-ic2021.1-revA-update1/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost Fri Jul 9 06:23:22 2021

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) Platinum 8352M CPU @ 2.30GHz
  2 "physical id"s (chips)
  64 "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 : 32
  siblings : 32
  physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
  physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
```

(Continued on next page)
Lenovo Global Technology

ThinkSystem SR650 V2
(2.30 GHz, Intel Xeon Platinum 8352M)

SPECrate®2017_fp_base = 393
SPECrate®2017_fp_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: Jul-2021
Tested by: Lenovo Global Technology
Hardware Availability: Jul-2021
Software Availability: Dec-2020

Platform Notes (Continued)

From lscpu from util-linux 2.33.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
Address sizes: 46 bits physical, 57 bits virtual
CPU(s): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 1
Core(s) per socket: 32
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Platinum 8352M CPU @ 2.30GHz
Stepping: 6
CPU MHz: 2800.000
BogoMIPS: 4600.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 49152K
NUMA node0 CPU(s): 0-15
NUMA node1 CPU(s): 16-31
NUMA node2 CPU(s): 32-47
NUMA node3 CPU(s): 48-63
Flags: fpu vme de pse tsc msr pae mce 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 pni pclmulqdq dtes64 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 cpuid_fault epb cat_l3 invpcid_single ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase ts_cadjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512sd sha ni avx512bw avx512vl xsaveopt xsavec xsavec xsavevs cqm_llc cqm_occmp_llc cqm_mbb_total cqm_mbb_local wbnoivd dtherm ida arat pln pts avx512vmbi umip pku ospke avx512_vmbi ifni vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdrpid md_clear pconfi flush_l1d arch_capabilities

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 4 nodes (0-3)

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

node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
node 0 size: 257634 MB
node 0 free: 257277 MB
node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
node 1 size: 258010 MB
node 1 free: 257738 MB
node 2 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
node 2 size: 258043 MB
node 2 free: 257676 MB
node 3 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
node 3 size: 258040 MB
node 3 free: 257787 MB
node distances:
node 0 1 2 3
0: 10 11 20 20
1: 11 10 20 20
2: 20 20 10 11
3: 20 20 11 10

From /proc/meminfo
MemTotal: 1056491216 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 15 SP2

From /etc/*release* /etc/*version*
os-release:
NAME="SLES"
VERSION="15-SP2"
VERSION_ID="15.2"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp2"

uname -a:
Linux localhost 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba) x86_64
x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit): Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
Lenovo Global Technology
ThinkSystem SR650 V2
(2.30 GHz, Intel Xeon Platinum 8352M)

SPECrater®2017_fp_base = 393
SPECrater®2017_fp_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: Jul-2021
Tested by: Lenovo Global Technology
Hardware Availability: Jul-2021
Software Availability: Dec-2020

Platform Notes (Continued)

CVE-2017-5754 (Meltdown):
Not affected

CVE-2018-3639 (Speculative Store Bypass):
Mitigation: Speculative Store Bypass disabled via prctl and seccomp

CVE-2017-5753 (Spectre variant 1):
Mitigation: usercopy/swapsgs barriers and __user pointer sanitization

CVE-2017-5715 (Spectre variant 2):
Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

CVE-2020-0543 (Special Register Buffer Data Sampling):
Not affected

CVE-2019-11135 (TSX Asynchronous Abort):
Not affected

run-level 3 Jul 9 06:20

SPEC is set to: /home/cpu2017-1.1.8-ic2021.1-revA-update1

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sdb3</td>
<td>xfs</td>
<td>891G</td>
<td>54G</td>
<td>838G</td>
<td>6%</td>
<td>/</td>
</tr>
</tbody>
</table>

From /sys/devices/virtual/dmi/id
Vendor: Lenovo
Product: ThinkSystem SR650 V2 MB
Product Family: ThinkSystem
Serial: 1234567890

Additional information from dmidecode 3.2 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:
32x Samsung M393A4G43AB3-CWE 32 GB 2 rank 3200

BIOS:
BIOS Vendor: Lenovo
BIOS Version: AFE111A-1.02
BIOS Date: 05/07/2021
BIOS Revision: 1.2
Firmware Revision: 1.10

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
| C               | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base) |
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Lenovo Global Technology
ThinkSystem SR650 V2
(2.30 GHz, Intel Xeon Platinum 8352M)

SPECrate®2017_fp_base = 393
SPECrate®2017_fp_peak = Not Run

Compiler Version Notes (Continued)

Copyright 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
C++             | 508.namd_r(base) 510.parest_r(base)
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
C++, C          | 511.povray_r(base) 526.blender_r(base)
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base)
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Inte(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
Fortran         | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
Fortran, C      | 521.wrf_r(base) 527.cam4_r(base)
(Continued on next page)
Lenovo Global Technology
ThinkSystem SR650 V2
(2.30 GHz, Intel Xeon Platinum 8352M)

SPECrater®2017_fp_base = 393
SPECrater®2017_fp_peak = Not Run

Compiler Version Notes (Continued)

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

 Benchmarks using both Fortran and C:  
ifort icx

 Benchmarks using both C and C++:
icpx icx

 Benchmarks using Fortran, C, and C++:
icpx icx ifort

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.ibm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR650 V2
(2.30 GHz, Intel Xeon Platinum 8352M)

SPECraten\textsuperscript{\textregistered}2017\_fp\_base = 393
SPECraten\textsuperscript{\textregistered}2017\_fp\_peak = Not Run

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9017</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>
<tr>
<td>Test Date:</td>
<td>Jul-2021</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Jul-2021</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Dec-2020</td>
</tr>
</tbody>
</table>

Base Portability Flags (Continued)

554.\texttt{roms\_r: -DSPEC\_LP64}

Base Optimization Flags

C benchmarks:
- \texttt{-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math}
- \texttt{-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4}
- \texttt{-mbranches-within-32B-boundaries -ljemalloc}
- \texttt{-L/usr/local/jemalloc64-5.0.1/lib}

C++ benchmarks:
- \texttt{-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto}
- \texttt{-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4}
- \texttt{-mbranches-within-32B-boundaries -ljemalloc}
- \texttt{-L/usr/local/jemalloc64-5.0.1/lib}

Fortran benchmarks:
- \texttt{-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div}
- \texttt{-qopt-prefetch -ffinite-math-only}
- \texttt{-qopt-multiple-gather-scatter-by-shuffles -qopt-mem-layout-trans=4}
- \texttt{-nostandard-realloc-lhs -align array32byte -auto}
- \texttt{-mbranches-within-32B-boundaries -ljemalloc}
- \texttt{-L/usr/local/jemalloc64-5.0.1/lib}

Benchmarks using both Fortran and C:
- \texttt{-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div}
- \texttt{-qopt-prefetch -ffinite-math-only}
- \texttt{-qopt-multiple-gather-scatter-by-shuffles -qopt-mem-layout-trans=4 -O3 -ipo}
- \texttt{-mbranches-within-32B-boundaries -nostandard-realloc-lhs}
- \texttt{-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib}

Benchmarks using both C and C++:
- \texttt{-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math}
- \texttt{-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4}
- \texttt{-mbranches-within-32B-boundaries -ljemalloc}
- \texttt{-L/usr/local/jemalloc64-5.0.1/lib}

Benchmarks using Fortran, C, and C++:
- \texttt{-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math}
- \texttt{-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3}
- \texttt{-no-prec-div -qopt-prefetch -ffinite-math-only}
- \texttt{-qopt-multiple-gather-scatter-by-shuffles}
- \texttt{-mbranches-within-32B-boundaries -nostandard-realloc-lhs}

(Continued on next page)
## Lenovo Global Technology

**ThinkSystem SR650 V2**  
(2.30 GHz, Intel Xeon Platinum 8352M)

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base =</th>
<th>393</th>
<th><strong>SPECrate®2017_fp_peak = Not Run</strong></th>
</tr>
</thead>
</table>

**Tested by:** Lenovo Global Technology  
**Test Sponsor:** Lenovo Global Technology  
**Test Date:** Jul-2021  
**Hardware Availability:** Jul-2021  
**Software Availability:** Dec-2020

### Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):
- `-align array32byte`  
- `-auto`  
- `-ljemalloc`  
- `-L/usr/local/jemalloc64-5.0.1/lib`

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 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 v1.1.8 on 2021-07-08 18:23:22-0400.  
Report generated on 2021-08-04 18:45:48 by CPU2017 PDF formatter v6442.  
Originally published on 2021-08-03.