Lenovo Global Technology
ThinkSystem SR530
(2.40 GHz, Intel Xeon Silver 4214R)

**SPECrates**

<table>
<thead>
<tr>
<th>SPECrates</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrates(^{2017}_{\text{fp} _ \text{base}})</td>
<td>157</td>
</tr>
<tr>
<td>SPECrates(^{2017}_{\text{fp} _ \text{peak}})</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

**Hardware**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong></td>
<td>Intel Xeon Silver 4214R</td>
</tr>
<tr>
<td><strong>Max MHz:</strong></td>
<td>3500</td>
</tr>
<tr>
<td><strong>Nominal:</strong></td>
<td>2400</td>
</tr>
<tr>
<td><strong>Enabled:</strong></td>
<td>24 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td><strong>Orderable:</strong></td>
<td>1,2 chips</td>
</tr>
<tr>
<td><strong>Cache L1:</strong></td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td><strong>L2:</strong></td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td><strong>L3:</strong></td>
<td>16.5 MB I+D on chip per chip</td>
</tr>
<tr>
<td><strong>Memory:</strong></td>
<td>192 GB (12 x 16 GB 2Rx8 PC4-2933Y-R, running at 2400)</td>
</tr>
<tr>
<td><strong>Storage:</strong></td>
<td>1 x 960 GB SATA SSD</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
<td>None</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OS:</strong></td>
<td>SUSE Linux Enterprise Server 15 SP1 (x86_64)</td>
</tr>
<tr>
<td><strong>Kernel:</strong></td>
<td>4.12.14-195-default</td>
</tr>
<tr>
<td><strong>Compiler:</strong></td>
<td>C/C++: Version 19.1.1.217 of Intel</td>
</tr>
<tr>
<td><strong>Compiler for Linux:</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Fortran:</strong></td>
<td>Version 19.1.1.217 of Intel Fortran</td>
</tr>
<tr>
<td><strong>File System:</strong></td>
<td>xfs</td>
</tr>
<tr>
<td><strong>System State:</strong></td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td><strong>Base Pointers:</strong></td>
<td>64-bit</td>
</tr>
<tr>
<td><strong>Peak Pointers:</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td><strong>Power Management:</strong></td>
<td>BIOS set to prefer performance at the cost of additional power usage</td>
</tr>
</tbody>
</table>

---

**Test Date:** May-2020
**Hardware Availability:** Apr-2020

---

**Copy Results**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>bwaves_r</td>
<td>48</td>
<td>205</td>
</tr>
<tr>
<td>cactuBSSN_r</td>
<td>48</td>
<td>109</td>
</tr>
<tr>
<td>namd_r</td>
<td>48</td>
<td>89.6</td>
</tr>
<tr>
<td>parest_r</td>
<td>48</td>
<td>168</td>
</tr>
<tr>
<td>povray_r</td>
<td>48</td>
<td>90.4</td>
</tr>
<tr>
<td>lbm_r</td>
<td>48</td>
<td>159</td>
</tr>
<tr>
<td>wrf_r</td>
<td>48</td>
<td>145</td>
</tr>
<tr>
<td>blender_r</td>
<td>48</td>
<td>156</td>
</tr>
<tr>
<td>cam4_r</td>
<td>48</td>
<td>118</td>
</tr>
<tr>
<td>imagick_r</td>
<td>48</td>
<td>247</td>
</tr>
<tr>
<td>fotoni3d_r</td>
<td>48</td>
<td>73.2</td>
</tr>
<tr>
<td>roms_r</td>
<td>48</td>
<td></td>
</tr>
</tbody>
</table>

---

**Graph**

![Graph showing results for various benchmarks](image-url)
Lenovo Global Technology
ThinkSystem SR530
(2.40 GHz, Intel Xeon Silver 4214R)

Experimental Details

<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>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>48</td>
<td>1253</td>
<td>384</td>
<td>1255</td>
<td>384</td>
<td>1255</td>
<td>383</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>48</td>
<td>296</td>
<td>205</td>
<td>297</td>
<td>205</td>
<td>297</td>
<td>204</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>508.namd_r</td>
<td>48</td>
<td>420</td>
<td>109</td>
<td>419</td>
<td>109</td>
<td>419</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>510.parest_r</td>
<td>48</td>
<td>1401</td>
<td>89.6</td>
<td>1401</td>
<td>89.6</td>
<td>1400</td>
<td>89.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>511.povray_r</td>
<td>48</td>
<td>668</td>
<td>168</td>
<td>672</td>
<td>167</td>
<td>668</td>
<td>168</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>48</td>
<td>560</td>
<td>90.4</td>
<td>559</td>
<td>90.4</td>
<td>560</td>
<td>90.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>48</td>
<td>676</td>
<td>159</td>
<td>680</td>
<td>158</td>
<td>678</td>
<td>159</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>526.blender_r</td>
<td>48</td>
<td>506</td>
<td>144</td>
<td>505</td>
<td>145</td>
<td>505</td>
<td>145</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>48</td>
<td>538</td>
<td>156</td>
<td>538</td>
<td>156</td>
<td>540</td>
<td>155</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>48</td>
<td>299</td>
<td>399</td>
<td>300</td>
<td>398</td>
<td>300</td>
<td>398</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>544.nab_r</td>
<td>48</td>
<td>327</td>
<td>247</td>
<td>328</td>
<td>246</td>
<td>327</td>
<td>247</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>48</td>
<td>1578</td>
<td>119</td>
<td>1581</td>
<td>118</td>
<td>1581</td>
<td>118</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>554.roms_r</td>
<td>48</td>
<td>1042</td>
<td>73.2</td>
<td>1038</td>
<td>73.4</td>
<td>1044</td>
<td>73.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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 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:
LD_LIBRARY_PATH =
   "/home/cpu2017-1.1.0-ic19.1.1/lib/intel64:/home/cpu2017-1.1.0-ic19.1.1/j
e5.0.1-64"
MALLOC_CONF = "retain:true"
### Lenovo Global Technology

**ThinkSystem SR530**  
(2.40 GHz, Intel Xeon Silver 4214R)

<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>
</tbody>
</table>

#### SPEC CPU 2017 Floating Point Rate Result

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base =</th>
<th>157</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

#### 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
  runcpu 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.
- 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.


#### Platform Notes

- BIOS configuration:
  - Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
  - MONITOR/MWAIT set to Enable
  - SNC set to Enable
  - LLC dead line alloc set to Disable

- Sysinfo program /home/cpu2017-1.1.0-ic19.1.1/bin/sysinfo
  - Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
  - running on linux-gy8z Wed May 27 17:14:32 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) Silver 4214R CPU @ 2.40GHz
    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
    ```
## Lenovo Global Technology

**ThinkSystem SR530**  
(2.40 GHz, Intel Xeon Silver 4214R)

### CPU2017 License: 9017  
**Test Sponsors:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology

### Test Date: May-2020  
**Hardware Availability:** Mar-2020  
**Software Availability:** Apr-2020

### SPECrate®2017_fp_base = 157  
**SPECrate®2017_fp_peak = Not Run**

---

### Platform Notes (Continued)

```
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
- **Address sizes:** 46 bits physical, 48 bits virtual
- **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):** 4

**Vendor ID:** GenuineIntel  
**CPU family:** 6  
**Model:** 85  
**Model name:** Intel(R) Xeon(R) Silver 4214R CPU @ 2.40GHz  
**Stepping:** 7  
**CPU MHz:** 2400.000  
**CPU max MHz:** 3500.0000  
**CPU min MHz:** 1000.0000  
**BogoMIPS:** 4800.00  
**Virtualization:** VT-x  
**L1d cache:** 32K  
**L1l cache:** 32K  
**L2 cache:** 1024K  
**L3 cache:** 16896K  
**NUMA node0 CPU(s):** 0-2, 6-8, 24-26, 30-32  
**NUMA node1 CPU(s):** 3-5, 9-11, 27-29, 33-35  
**NUMA node2 CPU(s):** 12-14, 18-20, 36-38, 42-44  
**NUMA node3 CPU(s):** 15-17, 21-23, 39-41, 45-47  
**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 monitor ds_cpl vmx smx est tm2 ssbe fma cx16 xtpre 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 cdp_l3 invpcid_single intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cmq mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 xsavevs cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local dtherm ida arat pln pts pkup ospke avx512_vnni md_clear flush_lid arch_capabilities
```

/proc/cpuinfo cache data
```
cache size : 16896 KB
```

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR530 (2.40 GHz, Intel Xeon Silver 4214R)

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
<th>157</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

Platform Notes (Continued)

From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 4 nodes (0-3)
node 0 cpus: 0 1 2 6 7 8 24 25 26 30 31 32
node 0 size: 47992 MB
node 0 free: 47730 MB
node 1 cpus: 3 4 5 9 10 11 27 28 29 33 34 35
node 1 size: 48381 MB
node 1 free: 47924 MB
node 2 cpus: 12 13 14 18 19 20 36 37 38 42 43 44
node 2 size: 48381 MB
node 2 free: 48223 MB
node 3 cpus: 15 16 17 21 22 23 39 40 41 45 46 47
node 3 size: 48351 MB
node 3 free: 48138 MB
node distances:
node   0   1   2   3
0:  10  11  21  21
1:  11  10  21  21
2:  21  21  10  11
3:  21  21  11  10

From /proc/meminfo
MemTotal:       197741220 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:
Linux linux-gy8z 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR530
(2.40 GHz, Intel Xeon Silver 4214R)

SPECrater®2017_fp_base = 157
SPECrater®2017_fp_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology
Test Date: May-2020
Hardware Availability: Mar-2020
Software Availability: Apr-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: ___user pointer sanitization
CVE-2017-5715 (Spectre variant 2):
Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 May 27 17:12
SPEC is set to: /home/cpu2017-1.1.0-ic19.1.1
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 743G 52G 692G 7% /

From /sys/devices/virtual/dmi/id
BIOS: Lenovo -[TEE155L-2.61]- 05/20/2020
Vendor: Lenovo
Product: ThinkSystem SR530 -[7X07RCZ000]-
Product Family: ThinkSystem
Serial: 1234567890

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:
12x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933

(End of data from sysinfo program)

Compiler Version Notes
==============================================================================
 C               519.lbm_r(base) 538.imagick_r(base) 544.nab_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++            508.namd_r(base) 510.parest_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.
-----------------------------------------------------------------------------

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR530
(2.40 GHz, Intel Xeon Silver 4214R)

SPECrater®2017_fp_base = 157
SPECrater®2017_fp_peak = Not Run

Compiler Version Notes (Continued)

==============================================================================
C++, C          | 511.povray_r(base) 526.blender_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.
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++, C, Fortran | 507.cactuBSSN_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.
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.
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.

==============================================================================
Fortran         | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
==============================================================================
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.

==============================================================================
Fortran, C      | 521.wrf_r(base) 527.cam4_r_r(base)
==============================================================================
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.
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.
**SPEC CPU®2017 Floating Point Rate Result**

**Lenovo Global Technology**
ThinkSystem SR530  
(2.40 GHz, Intel Xeon Silver 4214R)

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base =</th>
<th>157</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

### Base Compiler Invocation

C benchmarks:
- icc

C++ benchmarks:
- icpc

Fortran benchmarks:
- ifort

Benchmarks using both Fortran and C:
- ifort icc

Benchmarks using both C and C++:
- icpc icc

Benchmarks using Fortran, C, and C++:
- icpc icc 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.lbm_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
- 554.roms_r: -DSPEC_LP64

### Base Optimization Flags

C benchmarks:
- -m64
- -gnextgen
- -std=gnu11
- -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
- -fuse-ld=gold -xCORE-AVX512
- -ffast-math -flto -mfpmath=sse
- -funroll-loops -goft-mem-layout=trans=4
- -L/usr/local/jemalloc64-5.0.1/lib
- -ljemalloc

*(Continued on next page)*
## Base Optimization Flags (Continued)

### C++ benchmarks:
- `-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries`
- `-Wl,-z,muldefs -fuse-linker-opt =gold -XCORE-AVX512 -Ofast -ffast-math -flto`
- `-mfpmath=sse -funroll-loops -goqpt-mem-layout-trans=4`
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

### Fortran benchmarks:
- `-m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs`
- `-fultimate-math-only -goqpt-multiple-gather-scatter-by-shuffles -goqpt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte`
- `-auto -mbranches-within-32B-boundaries`
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

### Benchmarks using both Fortran and C:
- `-m64 -qnextgen -std=c11`
- `-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs`
- `-fultimate-math-only -goqpt-multiple-gather-scatter-by-shuffles -nostandard-realloc-lhs`
- `-align array32byte -auto -mbranches-within-32B-boundaries`
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

### Benchmarks using both C and C++:
- `-m64 -qnextgen -std=c11`
- `-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs`
- `-fultimate-math-only -goqpt-multiple-gather-scatter-by-shuffles -nostandard-realloc-lhs`
- `-align array32byte -auto -mbranches-within-32B-boundaries`
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`
Lenovo Global Technology
ThinkSystem SR530
(2.40 GHz, Intel Xeon Silver 4214R)

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
<th>157</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

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-H.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-CLX-H.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 2020-05-27 05:14:31-0400.
Originally published on 2020-06-23.