# SPEC® CPU2017 Floating Point Rate Result

## Lenovo Global Technology

### ThinkSystem SD530

(3.60 GHz, Intel Xeon Platinum 8156)

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

**Test Date:** May-2018  
**Hardware Availability:** Aug-2017  
**Software Availability:** Feb-2018

### SPECrate2017_fp_base = 66.7  
### SPECrate2017_fp_peak = 68.7

### Performance Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Peak Result</th>
<th>Base Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>45.9</td>
<td></td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>43.4</td>
<td></td>
</tr>
<tr>
<td>508.namd_r</td>
<td>43.1</td>
<td></td>
</tr>
<tr>
<td>510.parest_r</td>
<td>52.5</td>
<td></td>
</tr>
<tr>
<td>511.povray_r</td>
<td>52.9</td>
<td></td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>43.0</td>
<td></td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>58.1</td>
<td></td>
</tr>
<tr>
<td>526.blender_r</td>
<td>58.2</td>
<td></td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>67.7</td>
<td></td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>88.9</td>
<td></td>
</tr>
<tr>
<td>544.nab_r</td>
<td>74.2</td>
<td></td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>65.7</td>
<td></td>
</tr>
<tr>
<td>554.roms_r</td>
<td>48.1</td>
<td></td>
</tr>
</tbody>
</table>

### Trends

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Peak Result</th>
<th>Base Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>45.9</td>
<td></td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>43.4</td>
<td></td>
</tr>
<tr>
<td>508.namd_r</td>
<td>43.1</td>
<td></td>
</tr>
<tr>
<td>510.parest_r</td>
<td>52.5</td>
<td></td>
</tr>
<tr>
<td>511.povray_r</td>
<td>52.9</td>
<td></td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>43.0</td>
<td></td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>58.1</td>
<td></td>
</tr>
<tr>
<td>526.blender_r</td>
<td>58.2</td>
<td></td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>67.7</td>
<td></td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>88.9</td>
<td></td>
</tr>
<tr>
<td>544.nab_r</td>
<td>74.2</td>
<td></td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>65.7</td>
<td></td>
</tr>
<tr>
<td>554.roms_r</td>
<td>48.1</td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Platinum 8156  
  - **Max MHz.:** 3700  
  - **Nominal:** 3600  
  - **Enabled:** 8 cores, 2 chips, 2 threads/core  
  - **Orderable:** 1.2 chips  
  - **Cache L1:** 32 KB I + 32 KB D on chip per core  
  - **L2:** 1 MB I+D on chip per core  
  - **L3:** 16.5 MB I+D on chip per chip  
  - **Other:** None  
  - **Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)  
  - **Storage:** 1 x 800 GB SAS SSD  
  - **Other:** None

### Software

- **OS:** SUSE Linux Enterprise Server 12 SP2 (x86_64)  
  - **Kernel:** 4.4.114-92.64-default  
  - **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++  
    - Compiler for Linux;  
    - Fortran: Version 18.0.0.128 of Intel Fortran  
    - Compiler for Linux  
    - Parallel: No  
    - Firmware: Lenovo BIOS Version TEE119R 1.22 released Feb-2018  
    - File System: xfs  
    - System State: Run level 3 (multi-user)  
    - Base Pointers: 64-bit  
    - Peak Pointers: 64-bit  
    - Other: None
SPEC CPU2017 Floating Point Rate Result

Lenovo Global Technology
ThinkSystem SD530
(3.60 GHz, Intel Xeon Platinum 8156)

SPECrate2017_fp_base = 66.7
SPECrate2017_fp_peak = 68.7

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>503.bwaves_r</td>
<td>16</td>
<td>626</td>
<td>256</td>
<td>622</td>
<td>258</td>
<td>631</td>
<td>254</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>16</td>
<td>442</td>
<td>45.8</td>
<td>440</td>
<td>46.0</td>
<td>441</td>
<td>45.9</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>16</td>
<td>353</td>
<td>43.0</td>
<td>350</td>
<td>43.4</td>
<td>352</td>
<td>43.1</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>16</td>
<td>798</td>
<td>52.4</td>
<td>796</td>
<td>52.6</td>
<td>798</td>
<td>52.5</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>16</td>
<td>540</td>
<td>69.2</td>
<td>539</td>
<td>69.3</td>
<td>540</td>
<td>69.2</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>16</td>
<td>391</td>
<td>43.1</td>
<td>393</td>
<td>42.9</td>
<td>392</td>
<td>43.0</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>16</td>
<td>442</td>
<td>81.1</td>
<td>450</td>
<td>79.6</td>
<td>449</td>
<td>79.8</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>16</td>
<td>419</td>
<td>58.1</td>
<td>420</td>
<td>58.1</td>
<td>420</td>
<td>58.1</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>16</td>
<td>419</td>
<td>66.8</td>
<td>404</td>
<td>69.2</td>
<td>414</td>
<td>67.7</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>16</td>
<td>448</td>
<td>88.9</td>
<td>448</td>
<td>88.9</td>
<td>448</td>
<td>88.9</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>16</td>
<td>361</td>
<td>74.6</td>
<td>363</td>
<td>74.2</td>
<td>364</td>
<td>74.0</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>16</td>
<td>949</td>
<td>65.7</td>
<td>950</td>
<td>65.6</td>
<td>949</td>
<td>65.7</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>16</td>
<td>531</td>
<td>47.9</td>
<td>529</td>
<td>48.1</td>
<td>529</td>
<td>48.1</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"

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017.1.0.2.ic18.0/lib/ia32:/home/cpu2017.1.0.2.ic18.0/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017.1.0.2.ic18.0/je5.0.1-32:/home/cpu2017.1.0.2.ic18.0/je5.0.1-64"
Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.4
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.:
umactl --interleave=all runcpu <etc>
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Lenovo Global Technology
ThinkSystem SD530
(3.60 GHz, Intel Xeon Platinum 8156)

**SPECrate2017_fp_base = 66.7**
**SPECrate2017_fp_peak = 68.7**

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9017</th>
<th>Test Date:</th>
<th>May-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Lenovo Global Technology</td>
<td>Hardware Availability:</td>
<td>Aug-2017</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Lenovo Global Technology</td>
<td>Software Availability:</td>
<td>Feb-2018</td>
</tr>
</tbody>
</table>

**General Notes (Continued)**

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.

**Platform Notes**

BIOS configuration:
Choose Operating Mode set to Maximum Performance
SNC set to Enable
Hardware Prefetcher set to Disable
MONITOR/MWAIT set to Enable
Execute Disable Bit set to Disable
Intel Virtualization Technology set to Disable
DCA set to Enable
Sysinfo program /home/cpu2017.1.0.2.ic18.0/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bccc091c0f
running on linux-6zlr Mon May 28 13:39:20 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) Platinum 8156 CPU @ 3.60GHz
 2 "physical id"s (chips)
16 "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 1 5 9 13
physical 1: cores 1 5 9 13
```

From lscpu:

```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 16
On-line CPU(s) list: 0-15
Thread(s) per core: 2
Core(s) per socket: 4
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
```
Lenovo Global Technology

ThinkSystem SD530
(3.60 GHz, Intel Xeon Platinum 8156)

SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

SPECrate2017_fp_base = 66.7

SPECrate2017_fp_peak = 68.7

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: May-2018
Tested by: Lenovo Global Technology
Hardware Availability: Aug-2017
Software Availability: Feb-2018

Platform Notes (Continued)

Model: 85
Model name: Intel(R) Xeon(R) Platinum 8156 CPU @ 3.60GHz
Stepping: 4
CPU MHz: 3591.551
BogoMIPS: 7183.10
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 16896K
NUMA node0 CPU(s): 0-3,8-11
NUMA node1 CPU(s): 4-7,12-15
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 aperffmpref eagerfpu pni pclmulqdq dtes64 ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pclid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb invpcid_single pln pts dtherm hwp_epp intel_pt rsb_ctxsw spec_ctrl retpoline kaiser tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erts invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsaves xsavec xgetbv1 cqm_llc cqm_occup_llc

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
   available: 2 nodes (0-1)
   node 0 cpus: 0 1 2 3 8 9 10 11
   node 0 size: 193110 MB
   node 0 free: 192702 MB
   node 1 cpus: 4 5 6 7 12 13 14 15
   node 1 size: 193504 MB
   node 1 free: 193098 MB
   node distances:
      node 0 1
         0: 10 21
         1: 21 10

From /proc/meminfo
MemTotal: 395893524 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*
SuSE-release:
**Lenovo Global Technology**

ThinkSystem SD530  
(3.60 GHz, Intel Xeon Platinum 8156)

<table>
<thead>
<tr>
<th>SPEC CPU2017 License:</th>
<th>Test Date: May-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lenovo Global Technology</td>
<td>Hardware Availability: Aug-2017</td>
</tr>
<tr>
<td>Lenovo Global Technology</td>
<td>Software Availability: Feb-2018</td>
</tr>
</tbody>
</table>

**SPECrate2017_fp_base = 66.7**

**SPECrate2017_fp_peak = 68.7**

### Platform Notes (Continued)

SUSE Linux Enterprise Server 12 (x86_64)

**VERSION = 12**

**PATCHLEVEL = 2**

# 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"

VERSION="12-SP2"

VERSION_ID="12.2"

PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"

ID="sles"

ANSI_COLOR="0;32"

CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:

Linux linux-6zlr 4.4.114-92.64-default #1 SMP Thu Feb 1 19:18:19 UTC 2018 (c6ce5db)

x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 28 13:28

**SPEC is set to: /home/cpu2017.1.0.2.ic18.0**

<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/sda3</td>
<td>xfs</td>
<td>744G</td>
<td>23G</td>
<td>721G</td>
<td>4%</td>
<td>/</td>
</tr>
</tbody>
</table>

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 -[TEE119R-1.22]- 02/06/2018

Memory:

4x NO DIMM NO DIMM

12x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666

(End of data from sysinfo program)

### Compiler Version Notes

==============================================================================
<table>
<thead>
<tr>
<th>CC  519.lbm_r(base) 538.imagick_r(base, peak) 544.nab_r(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>icc (ICC) 18.0.0 20170811</td>
</tr>
<tr>
<td>Copyright (C) 1985-2017 Intel Corporation. All rights reserved.</td>
</tr>
<tr>
<td>==============================================================================</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CC  519.lbm_r(peak) 544.nab_r(peak)</th>
</tr>
</thead>
</table>

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD530
(3.60 GHz, Intel Xeon Platinum 8156)

SPECrate2017_fp_base = 66.7
SPECrate2017_fp_peak = 68.7

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

Test Date: May-2018
Hardware Availability: Aug-2017
Software Availability: Feb-2018

Compiler Version Notes (Continued)

icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

CXXC 508.namd_r(base) 510.parest_r(base)

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

CXXC 508.namd_r(peak) 510.parest_r(peak)

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

CC 511.povray_r(base) 526.blender_r(base)

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
iccc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

CC 511.povray_r(peak) 526.blender_r(peak)

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
iccc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

FC 507.cactuBSSN_r(base)

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
iccc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD530
(3.60 GHz, Intel Xeon Platinum 8156)

SPECrate2017_fp_base = 66.7
SPECrate2017_fp_peak = 68.7

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

Test Date: May-2018
Hardware Availability: Aug-2017
Software Availability: Feb-2018

Compiler Version Notes (Continued)

==============================================================================
FC  507.cactuBSSN_r(peak)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
==============================================================================
FC  503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
==============================================================================
FC  554.roms_r(peak)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
==============================================================================
CC  521.wrf_r(base) 527.cam4_r(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
==============================================================================
CC  521.wrf_r(peak) 527.cam4_r(peak)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
Lenovo Global Technology
ThinkSystem SD530
(3.60 GHz, Intel Xeon Platinum 8156)

SPECrate2017_fp_base = 66.7
SPECrate2017_fp_peak = 68.7

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

Test Date: May-2018
Hardware Availability: Aug-2017
Software Availability: Feb-2018

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:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD530
(3.60 GHz, Intel Xeon Platinum 8156)

<table>
<thead>
<tr>
<th>CPU2017 License: 9017</th>
<th>Test Date: May-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Lenovo Global Technology</td>
<td>Hardware Availability: Aug-2017</td>
</tr>
<tr>
<td>Tested by: Lenovo Global Technology</td>
<td>Software Availability: Feb-2018</td>
</tr>
</tbody>
</table>

**SPECrate2017_fp_base = 66.7**

**SPECrate2017_fp_peak = 68.7**

---

**Base Optimization Flags (Continued)**

C++ benchmarks (continued):
- `-qopt-mem-layout-trans=3`

Fortran benchmarks:
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte`

Benchmarks using both Fortran and C:
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte`

Benchmarks using both C and C++:
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3`

Benchmarks using Fortran, C, and C++:
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte`

---

**Base Other Flags**

C benchmarks:
- `-m64 -std=c11`

C++ benchmarks:
- `-m64`

Fortran benchmarks:
- `-m64`

Benchmarks using both Fortran and C:
- `-m64 -std=c11`

Benchmarks using both C and C++:
- `-m64 -std=c11`

Benchmarks using Fortran, C, and C++:
- `-m64 -std=c11`
Lenovo Global Technology
ThinkSystem SD530
(3.60 GHz, Intel Xeon Platinum 8156)
Lenovo Global Technology
ThinkSystem SD530
(3.60 GHz, Intel Xeon Platinum 8156)

SPEC CPU2017 Floating Point Rate Result
Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

Test Date: May-2018
Hardware Availability: Aug-2017
Software Availability: Feb-2018

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

SPECrate2017_fp_peak = 68.7
SPECrate2017_fp_base = 66.7

Peak Optimization Flags (Continued)

503.bwaves_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3
-nostandard-realloc-lhs -align array32byte

549.fotonik3d_r: Same as 503.bwaves_r

554.roms_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
-align array32byte

Benchmarks using both Fortran and C:
-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

Benchmarks using both C and C++:
-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Benchmarks using Fortran, C, and C++:
-prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3
-no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

Peak Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

Benchmarks using both Fortran and C:
-m64 -std=c11

Benchmarks using both C and C++:
-m64 -std=c11

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD530
(3.60 GHz, Intel Xeon Platinum 8156)

SPECrate2017_fp_base = 66.7
SPECrate2017_fp_peak = 68.7

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

Test Date: May-2018
Hardware Availability: Aug-2017
Software Availability: Feb-2018

Peak Other Flags (Continued)

Benchmarks using Fortran, C, and C++:
-m64 -std=c11

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-SKL-C.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-SKL-C.xml

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 v1.0.2 on 2018-05-28 01:39:19-0400.
Report generated on 2018-10-31 17:36:40 by CPU2017 PDF formatter v6067.