Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
<th>SPECrate2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>154</td>
<td>157</td>
</tr>
</tbody>
</table>

CPU2017 License: 3175
Test Sponsor: Huawei
Tested by: Huawei

Test Date: May-2018
Hardware Availability: Jul-2017
Software Availability: Jan-2018

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS: Red Hat Enterprise Linux Server release 7.4 (Maipo)</td>
<td>CPU Name: Intel Xeon Platinum 8153</td>
</tr>
<tr>
<td>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</td>
<td>Max MHz.: 2800</td>
</tr>
<tr>
<td>Parallel: No</td>
<td>Nominal: 2000</td>
</tr>
<tr>
<td>Firmware: Version 0.62 Released Apr-2018</td>
<td>Enabled: 32 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>File System: xfs</td>
<td>Orderable: 1.2 chips</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
<td>L2: 1 MB I+D on chip per core</td>
</tr>
<tr>
<td>Peak Pointers: 64-bit</td>
<td>L3: 22 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other: None</td>
<td>Other: None</td>
</tr>
<tr>
<td>Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)</td>
<td>Storage: 1 x 1200 GB SAS, 10000 RPM</td>
</tr>
<tr>
<td>Storage: None</td>
<td>Other: None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base (154)</th>
<th>SPECrate2017_fp_peak (157)</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r 64</td>
<td>507.cactuBSSN_r 64</td>
</tr>
<tr>
<td>508.namd_r 64</td>
<td>510.parest_r 64</td>
</tr>
<tr>
<td>511.povray_r 64</td>
<td>519.lbm_r 64</td>
</tr>
<tr>
<td>521.wrf_r 64</td>
<td>526.blender_r 64</td>
</tr>
<tr>
<td>527.cam4_r 64</td>
<td>538.imagick_r 64</td>
</tr>
<tr>
<td>544.nab_r 64</td>
<td>549.fotonik3d_r 64</td>
</tr>
<tr>
<td>554.roms_r 64</td>
<td></td>
</tr>
</tbody>
</table>

503.bwaves_r 64: 64 copies
507.cactuBSSN_r 64: 64 copies
508.namd_r 64: 64 copies
510.parest_r 64: 64 copies
511.povray_r 64: 64 copies
519.lbm_r 64: 64 copies
521.wrf_r 64: 64 copies
526.blender_r 64: 64 copies
527.cam4_r 64: 64 copies
538.imagick_r 64: 64 copies
544.nab_r 64: 64 copies
549.fotonik3d_r 64: 64 copies
554.roms_r 64: 64 copies
Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

CPU2017 License: 3175
Test Sponsor: Huawei
Test Date: May-2018
Hardware Availability: Jul-2017
Tested by: Huawei
Software Availability: Jan-2018

Results Table

Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
<th>SPECrate2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>154</td>
<td>157</td>
</tr>
</tbody>
</table>

CPU2017 License: 3175
Test Sponsor: Huawei
Hardware Availability: Jul-2017
Test Date: May-2018
Software Availability: Jan-2018
Tested by: Huawei

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:
Power Policy Set to Performance
SNC Set to Enabled
IMC Interleaving Set to 1-way Interleave
XPT Prefetch Set to Enabled
Sysinfo program /spec2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on localhost.localdomain Wed May 23 05:01:57 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 8153 CPU @ 2.00GHz
  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 : 16
  siblings  : 32
  physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:
  Architecture: x86_64
  CPU op-mode(s): 32-bit, 64-bit
  Byte Order: Little Endian
  CPU(s): 64
  On-line CPU(s) list: 0-63
  Thread(s) per core: 2
  Core(s) per socket: 16
  Socket(s): 2
  NUMA node(s): 4
  Vendor ID: GenuineIntel
  CPU family: 6
  Model: 85
  Model name: Intel(R) Xeon(R) Platinum 8153 CPU @ 2.00GHz
  Stepping: 4

(Continued on next page)
Huawei
Huawei 5288 V5 (Intel Xeon Platinum 8153)

SPECrate2017_fp_base = 154
SPECrate2017_fp_peak = 157

CPU2017 License: 3175
Test Sponsor: Huawei
Test Date: May-2018
CPU MHz: 2000.000
BogoMIPS: 4000.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 22528K
NUMA node0 CPU(s): 0-3,8-11,32-35,39-40-43
NUMA node1 CPU(s): 4-7,12-15,36-39,44-47
NUMA node2 CPU(s): 16-19,24-27,48-51,56-59
NUMA node3 CPU(s): 20-23,28-31,52-55,60-63
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 const_type cache_tsc arch_perfmon pebs bts rep_good ntop xtopology nonstop_tsc
aperfmperf eagerfpu pni pclmulqdq dtes64 ds_cpl vmx smx est tm2 ssse3 fma cx16 xtpr
pdcm pdcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx
f16c rdrand lahf_lm abm 3dnowprefetch epb cat_l3 cdp_l3 invpcid_single intel_pt
spec_ctrl ibpb_support tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust
bmi1 hle avx2 smep bmi2 ets invpcid rtm cmx mxrt rdt_a avx512f avx512dq rdseed adx
smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsaves xsavec xgetbv1 cqm_llc
cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm ida arat pln pts

/proc/cpuinfo cache data
  cache size: 22528 KB

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 3 8 9 10 11 32 33 34 35 40 41 42 43
      node 0 size: 96437 MB
      node 0 free: 93329 MB
      node 1 cpus: 4 5 6 7 12 13 14 15 36 37 38 39 44 45 46 47
      node 1 size: 98304 MB
      node 1 free: 95550 MB
      node 2 cpus: 16 17 18 19 24 25 26 27 48 49 50 51 56 57 58 59
      node 2 size: 98304 MB
      node 2 free: 95589 MB
      node 3 cpus: 20 21 22 23 28 29 30 31 52 53 54 55 60 61 62 63
      node 3 size: 98304 MB
      node 3 free: 95084 MB
    node distances:
      node 0 1 2 3
      0: 10 11 21 22
      1: 11 10 21 22
      2: 21 21 10 11
      3: 21 21 11 10

(Continued on next page)
Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

SPECrate2017_fp_base = 154
SPECrate2017_fp_peak = 157

CPU2017 License: 3175
Test Sponsor: Huawei
Test Date: May-2018
Hardware Availability: Jul-2017
Tested by: Huawei
Software Availability: Jan-2018

Platform Notes (Continued)

From /proc/meminfo
   MemTotal: 394174812 kB
   HugePages_Total: 0
   Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
   os-release:
     NAME="Red Hat Enterprise Linux Server"
     VERSION="7.4 (Maipo)"
     ID="rhel"
     ID_LIKE="fedora"
     VARIANT="Server"
     VARIANT_ID="server"
     VERSION_ID="7.4"
     PRETTY_NAME="Red Hat Enterprise Linux Server 7.4 (Maipo)"
   redhat-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.4:ga:server

uname -a:
   Linux localhost.localdomain 3.10.0-693.11.6.el7.x86_64 #1 SMP Thu Dec 28 14:23:39 EST 2017 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 22 17:37

SPEC is set to: /spec2017
   Filesystem Type Size Used Avail Use% Mounted on
   /dev/sda2 xfs 781G 33G 749G 5% /

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 INSYDE Corp. 0.62 04/03/2018
   Memory:
     24x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
   CC  519.lbm_r(base) 538.imagick_r(base, peak) 544.nab_r(base)
==============================================================================
   icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

(Continued on next page)
Huawei
Huawei 5288 V5 (Intel Xeon Platinum 8153)

SPECrate2017_fp_base = 154
SPECrate2017_fp_peak = 157

Compiler Version Notes (Continued)

==============================================================================
CC  519.lbm_r(peak) 544.nab_r(peak)
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.
icc (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.
icc (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.
icc (ICC) 18.0.0 20170811

(Continued on next page)
Huawei 5288 V5 (Intel Xeon Platinum 8153)

**SPEC CPU2017 Floating Point Rate Result**

Copyright 2017-2018 Standard Performance Evaluation Corporation

SPECrate2017_fp_base = 154
SPECrate2017_fp_peak = 157

**CPU2017 License:** 3175
**Test Sponsor:** Huawei
**Tested by:** Huawei
**Test Date:** May-2018
**Hardware Availability:** Jul-2017
**Software Availability:** Jan-2018

---

**Compiler Version Notes (Continued)**

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 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.
**Huawei**

Huawei 5288 V5 (Intel Xeon Platinum 8153)  

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base = 154</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_fp_peak = 157</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>3175</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Huawei</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Huawei</td>
</tr>
<tr>
<td>Test Date:</td>
<td>May-2018</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Jul-2017</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Jan-2018</td>
</tr>
</tbody>
</table>

**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 -03 -no-prec-div -qopt-prefetch -ffinite-math-only
- -qopt-mem-layout-trans=3

C++ benchmarks:
- -xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only

(Continued on next page)
Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base = 154</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_fp_peak = 157</td>
</tr>
</tbody>
</table>

CPU2017 License: 3175
Test Sponsor: Huawei
Tested by: Huawei
Test Date: May-2018
Hardware Availability: Jul-2017
Software Availability: Jan-2018

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 -nstandard-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 -nstandard-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 -nstandard-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
Huawei
Huawei 5288 V5 (Intel Xeon Platinum 8153)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base = 154</th>
<th>SPECrate2017_fp_peak = 157</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU2017 License:</strong> 3175</td>
<td><strong>Test Date:</strong> May-2018</td>
</tr>
<tr>
<td><strong>Test Sponsor:</strong> Huawei</td>
<td><strong>Hardware Availability:</strong> Jul-2017</td>
</tr>
<tr>
<td><strong>Tested by:</strong> Huawei</td>
<td><strong>Software Availability:</strong> Jan-2018</td>
</tr>
</tbody>
</table>

**Peak 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

**Peak Portability Flags**

Same as Base Portability Flags

**Peak Optimization Flags**

C benchmarks:
- 519.lbm_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
- 538.imagick_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3
- 544.nab_r: Same as 519.lbm_r

C++ benchmarks:
- -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

Fortran benchmarks:

(Continued on next page)
Huawei 5288 V5 (Intel Xeon Platinum 8153)

SPECrater2017_fp_base = 154
SPECrater2017_fp_peak = 157

CPU2017 License: 3175
Test Date: May-2018
CPU2017 License: 3175
Test Date: May-2018

Test Sponsor: Huawei
Hardware Availability: Jul-2017
Tested by: Huawei
Software Availability: Jan-2018

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
509.fotonik3d_r: Same as 503.bwaves_r

549.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:
521.wrf_r: basepeak = yes
527.cam4_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 C and C++:
521.wrf_r: basepeak = yes

Benchmarks using Fortran, C, and C++:
507.cactuBSSN_r: basepeak = yes

Peak Other Flags

C benchmarks:
-m64 -std=c11

C++ benchmarks:

Fortran benchmarks:

Benchmarks using both Fortran and C:

(Continued on next page)
SPEC CPU2017 Floating Point Rate Result

Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base = 154</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_fp_peak = 157</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>3175</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Huawei</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Huawei</td>
</tr>
<tr>
<td>Test Date:</td>
<td>May-2018</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Jul-2017</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Jan-2018</td>
</tr>
</tbody>
</table>

Peak Other Flags (Continued)

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

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

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/Huawei-Platform-Settings-SKL-V1.9-revC.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 2018-05-23 05:01:56-0400.
Originally published on 2018-06-12.