SPEC CPU®2017 Floating Point Rate Result

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Fujitsu

PRIMEQUEST 3800E2, Intel Xeon Gold 6262V, 1.90GHz

$SPECrate®2017\_fp\_base = 415$

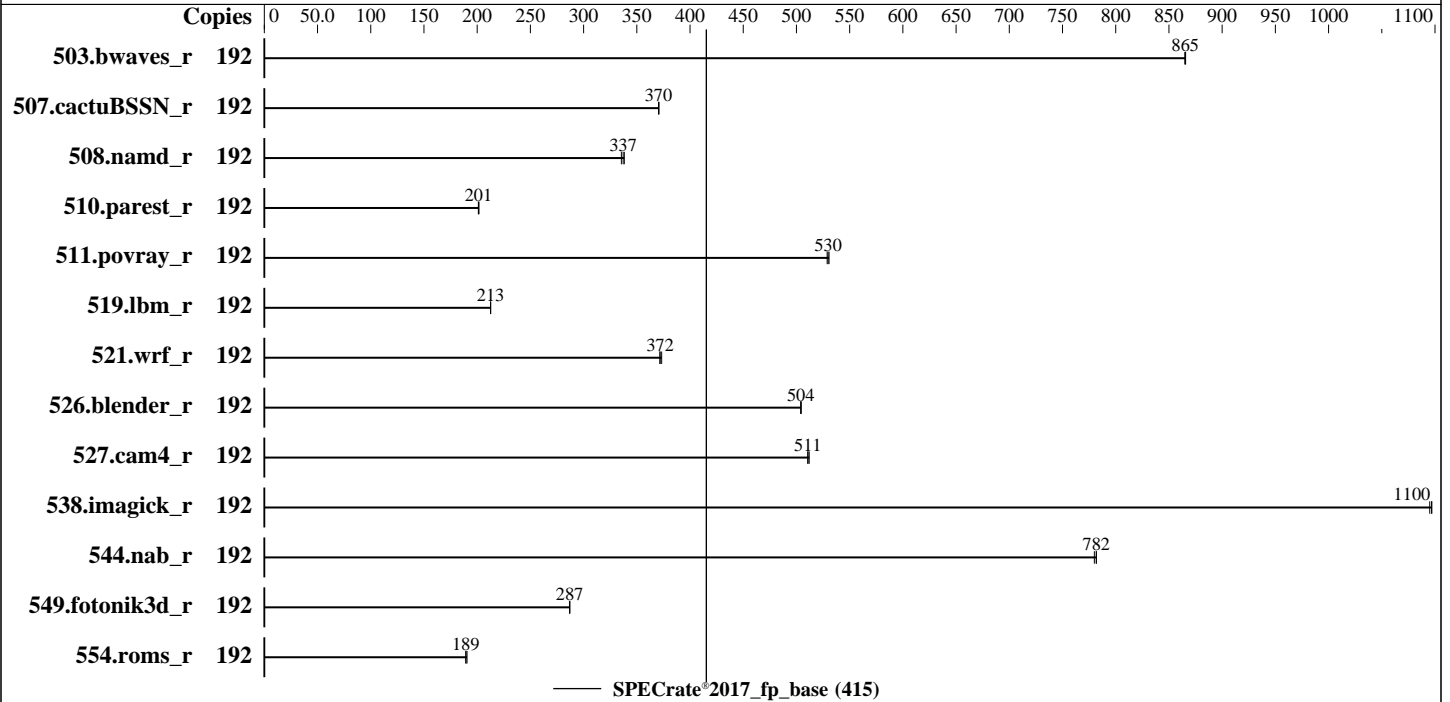$SPECrate®2017\_fp\_peak = Not Run$

CPU2017 License: 19

Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Jun-2019

Hardware Availability: Apr-2019

Software Availability: Feb-2019

Benchmark	Copies	Result
503.bwaves_r	192	865
507.cactuBSSN_r	192	370
508.namd_r	192	337
510.parest_r	192	201
511.povray_r	192	530
519.lbm_r	192	213
521.wrf_r	192	372
526.blender_r	192	504
527.cam4_r	192	511
538.imagick_r	192	1100
544.nab_r	192	782
549.fotonik3d_r	192	287
554.roms_r	192	189

SPECrate®2017_fp_base (415)

Hardware

CPU Name: Intel Xeon Gold 6262V
 Max MHz: 3600
 Nominal: 1900
Enabled: 96 cores, 4 chips, 2 threads/core
Orderable: 2,4 chips
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 33 MB I+D on chip per chip
 Other: None
Memory: 1536 GB (48 x 32 GB 2Rx4 PC4-2933Y-R, running at 2400)
Storage: 1 x SAS HDD, 600GB, 10.5K RPM, SAS HDD
Other: None

Software

OS: SUSE Linux Enterprise Server 15
 4.12.14-25.28-default
Compiler: C/C++: Version 19.0.0.117 of Intel C/C++ Compiler for Linux;
 Fortran: Version 19.0.0.117 of Intel Fortran Compiler for Linux
Parallel: No
Firmware: PRIMEQUEST 3800E2 Unified Firmware Version PB19043, Released Jun-2019
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: --

Standard Performance Evaluation Corporation (info@spec.org)

https://www.spec.org/

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Results Table

Benchmark	Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
503.bwaves_r	192	**2225**	**865**	2226	865	2224	866							
507.cactuBSSN_r	192	656	370	655	371	**656**	**370**							
508.namd_r	192	**541**	**337**	539	338	544	335							
510.parest_r	192	**2496**	**201**	2490	202	2497	201							
511.povray_r	192	845	531	848	529	**846**	**530**							
519.lbm_r	192	952	213	**952**	**213**	952	213							
521.wrf_r	192	1157	372	1152	373	**1156**	**372**							
526.blender_r	192	580	504	580	504	**580**	**504**							
527.cam4_r	192	656	512	658	511	**657**	**511**							
538.imagick_r	192	**435**	**1100**	435	1100	436	1100							
544.nab_r	192	**413**	**782**	413	782	414	780							
549.fotonik3d_r	192	**2608**	**287**	2607	287	2608	287							
554.roms_r	192	1602	190	**1611**	**189**	1611	189							

SPECrate®2017_fp_base = 415

SPECrate®2017_fp_peak = Not Run

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"
Kernel Boot Parameter set with : nohz_full=1-191

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/Benchmark/speccpu2017-fp/lib/intel64"

Binaries compiled on a system with 1x Intel Core i9-799X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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)

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General Notes (Continued)

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.

Platform Notes

```
 BIOS configuration:
 DCU Streamer Prefetcher = Disabled
 DDR4 Write Data CRC Protection = Disabled
 HWPM Support = Native Mode with no legacy
 LLC Dead Line Alloc = Disabled
 Sub Numa Clustering = Enabled
 Uncore Frequency Scaling = Disabled
 UPI Link L0p = Disabled
 Fan Control = Full
 Sysinfo program /home/Benchmark/speccpu2017-fp/bin/sysinfo
 Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
 running on linux-8r5c Sat Jun  8 22:54:41 2019

 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) Gold 6262V CPU @ 1.90GHz
       4  "physical id"s (chips)
       192 "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 : 24
       siblings  : 48
       physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29
       physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29
       physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29
       physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29

 From lscpu:
    Architecture:        x86_64
    CPU op-mode(s):      32-bit, 64-bit
    Byte Order:          Little Endian
    CPU(s):              192
    On-line CPU(s) list: 0-191
    Thread(s) per core:  2
    Core(s) per socket:  24
```

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SPECrate®2017_fp_peak = Not Run

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Test Date: Jun-2019
Hardware Availability: Apr-2019
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Platform Notes (Continued)

```
     Socket(s):              4
     NUMA node(s):           8
     Vendor ID:              GenuineIntel
     CPU family:             6
     Model:                  85
     Model name:             Intel(R) Xeon(R) Gold 6262V CPU @ 1.90GHz
     Stepping:               7
     CPU MHz:                1900.000
     CPU max MHz:            3600.0000
     CPU min MHz:            800.0000
     BogoMIPS:               3800.00
     Virtualization:         VT-x
     L1d cache:              32K
     L1i cache:              32K
     L2 cache:               1024K
     L3 cache:               33792K
     NUMA node0 CPU(s):      0-2,6-8,12-14,18-20,96-98,102-104,108-110,114-116
     NUMA node1 CPU(s):      3-5,9-11,15-17,21-23,99-101,105-107,111-113,117-119
     NUMA node2 CPU(s):      24-26,30-32,36-38,42-44,120-122,126-128,132-134,138-140
     NUMA node3 CPU(s):      27-29,33-35,39-41,45-47,123-125,129-131,135-137,141-143
     NUMA node4 CPU(s):      48-50,54-56,60-62,66-68,144-146,150-152,156-158,162-164
     NUMA node5 CPU(s):      51-53,57-59,63-65,69-71,147-149,153-155,159-161,165-167
     NUMA node6 CPU(s):      72-74,78-80,84-86,90-92,168-170,174-176,180-182,186-188
     NUMA node7 CPU(s):      75-77,81-83,87-89,93-95,171-173,177-179,183-185,189-191
     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 cpuid
   aperfmperf pni pclmulqdq dtes64 monitor 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 cdp_l3
   invpcid_single intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
   flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
   cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
   avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
   cqm_mbm_local dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pku
   ospke avx512_vnni flush_l1d arch_capabilities

 /proc/cpuinfo cache data
    cache size : 33792 KB

 From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
 physical chip.
   available: 8 nodes (0-7)
   node 0 cpus: 0 1 2 6 7 8 12 13 14 18 19 20 96 97 98 102 103 104 108 109 110 114 115 116
   node 0 size: 192262 MB
   node 0 free: 191504 MB
   node 1 cpus: 3 4 5 9 10 11 15 16 17 21 22 23 99 100 101 105 106 107 111 112 113 117 118
```

(Continued on next page)

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Platform Notes (Continued)

```
   119
   node 1 size: 193523 MB
   node 1 free: 193236 MB
   node 2 cpus: 24 25 26 30 31 32 36 37 38 42 43 44 120 121 122 126 127 128 132 133 134
   138 139 140
   node 2 size: 193523 MB
   node 2 free: 193275 MB
   node 3 cpus: 27 28 29 33 34 35 39 40 41 45 46 47 123 124 125 129 130 131 135 136 137
   141 142 143
   node 3 size: 193523 MB
   node 3 free: 193120 MB
   node 4 cpus: 48 49 50 54 55 56 60 61 62 66 67 68 144 145 146 150 151 152 156 157 158
   162 163 164
   node 4 size: 193494 MB
   node 4 free: 193206 MB
   node 5 cpus: 51 52 53 57 58 59 63 64 65 69 70 71 147 148 149 153 154 155 159 160 161
   165 166 167
   node 5 size: 193523 MB
   node 5 free: 193203 MB
   node 6 cpus: 72 73 74 78 79 80 84 85 86 90 91 92 168 169 170 174 175 176 180 181 182
   186 187 188
   node 6 size: 193523 MB
   node 6 free: 193299 MB
   node 7 cpus: 75 76 77 81 82 83 87 88 89 93 94 95 171 172 173 177 178 179 183 184 185
   189 190 191
   node 7 size: 193320 MB
   node 7 free: 193092 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  11  20  20  20  20  28  28
     1:  11  10  20  20  20  20  28  28
     2:  20  20  10  11  28  28  20  20
     3:  20  20  11  10  28  28  20  20
     4:  20  20  28  28  10  11  20  20
     5:  20  20  28  28  11  10  20  20
     6:  28  28  20  20  20  20  10  11
     7:  28  28  20  20  20  20  11  10

 From /proc/meminfo
    MemTotal:       1583818084 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 From /etc/*release* /etc/*version*
    os-release:
       NAME="SLES"
       VERSION="15"
```

(Continued on next page)

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Platform Notes (Continued)

```
      VERSION_ID="15"
      PRETTY_NAME="SUSE Linux Enterprise Server 15"
      ID="sles"
      ID_LIKE="suse"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:15"

   uname -a:
      Linux linux-8r5c 4.12.14-25.28-default #1 SMP Wed Jan 16 20:00:47 UTC 2019 (dd6077c)
      x86_64 x86_64 x86_64 GNU/Linux

   Kernel self-reported vulnerability status:

   CVE-2017-5754 (Meltdown):           Not affected
   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 Jun 8 22:53

   SPEC is set to: /home/Benchmark/speccpu2017-fp
      Filesystem      Type  Size  Used Avail Use% Mounted on
      /dev/sda3       xfs   142G   35G  107G  25% /home

   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 FUJITSU V1.0.0.0 R1.16.0 for D3858-B1x            04/24/2019
      Memory:
        35x Micron 36ASF4G72PZ-2G9E2 32 GB 2 rank 2933, configured at 2400
        13x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2400

   (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 Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
```

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Test Sponsor: Fujitsu		**Hardware Availability:** Apr-2019
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Compiler Version Notes (Continued)

```
C++             | 508.namd_r(base) 510.parest_r(base)
-------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-------------------------------------------------------------------------------


==============================================================================
C++, C          | 511.povray_r(base) 526.blender_r(base)
-------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-------------------------------------------------------------------------------


==============================================================================
C++, C, Fortran | 507.cactuBSSN_r(base)
-------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 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 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-------------------------------------------------------------------------------


==============================================================================
Fortran, C      | 521.wrf_r(base) 527.cam4_r(base)
-------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
```

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Compiler Version Notes (Continued)

```
  Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation.  All rights reserved.
-----------------------------------------------------------------------
```

Base Compiler Invocation

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

C++ benchmarks:
`icpc -m64`

Fortran benchmarks:
`ifort -m64`

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

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

Benchmarks using Fortran, C, and C++:
`icpc -m64 icc -m64 -std=c11 ifort -m64`

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`

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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
-qopt-mem-layout-trans=3
```

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

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic19.0-official-linux64.2019-01-15.html
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CSL-RevE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic19.0-official-linux64.2019-01-15.xml
http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-CSL-RevE.xml

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU®2017 v1.0.5 on 2019-06-08 09:54:40-0400.
Report generated on 2019-11-12 15:02:09 by CPU2017 PDF formatter v6255.
Originally published on 2019-11-12.