



SPEC® CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Huawei

SPECrate2017_int_base = 1040

Huawei Kunlun 9008 V5 (Intel Xeon Platinum 8280)

SPECrate2017_int_peak = Not Run

CPU2017 License: 3175

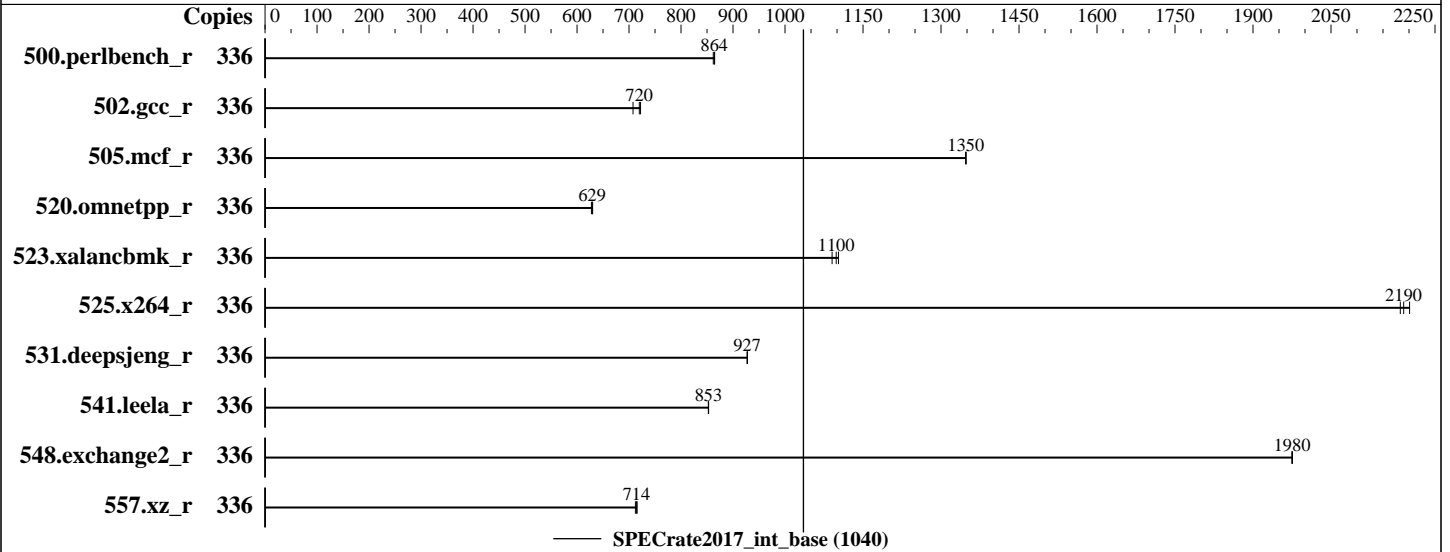
Test Sponsor: Huawei

Tested by: Huawei

Test Date: Mar-2019

Hardware Availability: Apr-2019

Software Availability: Dec-2018



Hardware

CPU Name: Intel Xeon Platinum 8280
 Max MHz.: 4000
 Nominal: 2700
 Enabled: 168 cores, 6 chips, 2 threads/core
 Orderable: 2,4,6,8 chips
 Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 38.5 MB I+D on chip per chip
 Other: None
 Memory: 1152 GB (36 x 32 GB 2Rx4 PC4-2933Y-R)
 Storage: 2 x 900 GB SAS HDD 10K RPM, RAID 0
 Other: None

Software

OS: SUSE Linux Enterprise Server 12 SP4
 4.12.14-94.41-default
 Compiler: C/C++: Version 19.0.1.144 of Intel C/C++
 Compiler Build 20181018 for Linux;
 Fortran: Version 19.0.1.144 of Intel Fortran
 Compiler Build 20181018 for Linux
 Parallel: No
 Firmware: Version 9.25 released Feb-2019
 File System: tmpfs
 System State: Run level 5 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 Other: None



SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Huawei

SPECrate2017_int_base = 1040

Huawei Kunlun 9008 V5 (Intel Xeon Platinum 8280)

SPECrate2017_int_peak = Not Run

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

Test Date: Mar-2019
Hardware Availability: Apr-2019
Software Availability: Dec-2018

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	336	621	862	619	864	619	865							
502.gcc_r	336	661	720	659	722	672	708							
505.mcf_r	336	403	1350	403	1350	403	1350							
520.omnetpp_r	336	702	628	701	629	700	630							
523.xalancbmk_r	336	322	1100	325	1090	323	1100							
525.x264_r	336	269	2180	267	2200	269	2190							
531.deepsjeng_r	336	415	927	415	928	415	927							
541.leela_r	336	653	852	652	853	652	853							
548.exchange2_r	336	446	1980	446	1980	446	1970							
557.xz_r	336	507	716	508	714	509	712							

SPECrate2017_int_base = 1040

SPECrate2017_int_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"
Numa balancing was disabled using "echo 0 > /proc/sys/kernel/numa_balancing"

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/memory/lib/ia32:/home/memory/lib/intel64:/home/memory/je5.0.1-32:/home/memory/je5.0.1-64"

Binaries compiled on a system with 1x Intel Core i9-7900X 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>

Yes: 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.

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Huawei

SPECrate2017_int_base = 1040

Huawei Kunlun 9008 V5 (Intel Xeon Platinum 8280)

SPECrate2017_int_peak = Not Run

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

Test Date: Mar-2019
Hardware Availability: Apr-2019
Software Availability: Dec-2018

General Notes (Continued)

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:

Sub NUMA Cluster (SNC) set to enabled
IMC (Integrated memory controller) Interleaving set to 1 way interleave
Xtended Prediction Table (XPT) Prefetch set to Enable
Memory Patrol Scrub set to Disable
Last Level Cache (LLC) Prefetch set to Disable
Sysinfo program /home/memory/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on linux-2yo1 Tue Mar 12 19:24:02 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) Platinum 8280 CPU @ 2.70GHz
 6 "physical id"s (chips)
336 "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 : 28
siblings  : 56
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
28 29 30
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
28 29 30
physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
28 29 30
physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
28 29 30
physical 4: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
28 29 30
physical 5: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
28 29 30
```

From lscpu:

```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 336
On-line CPU(s) list: 0-335
```

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Huawei

SPECrate2017_int_base = 1040

Huawei Kunlun 9008 V5 (Intel Xeon Platinum 8280)

SPECrate2017_int_peak = Not Run

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

Test Date: Mar-2019
Hardware Availability: Apr-2019
Software Availability: Dec-2018

Platform Notes (Continued)

```

Thread(s) per core:      2
Core(s) per socket:     28
Socket(s):               6
NUMA node(s):          12
Vendor ID:              GenuineIntel
CPU family:             6
Model:                  85
Model name:             Intel(R) Xeon(R) Platinum 8280 CPU @ 2.70GHz
Stepping:               6
CPU MHz:                2700.000
CPU max MHz:            4000.0000
CPU min MHz:            1000.0000
BogoMIPS:               5400.00
Virtualization:         VT-x
L1d cache:              32K
L1i cache:              32K
L2 cache:               1024K
L3 cache:               39424K
NUMA node0 CPU(s):     0-3,7-9,14-17,21-23,168-171,175-177,182-185,189-191
NUMA node1 CPU(s):     4-6,10-13,18-20,24-27,172-174,178-181,186-188,192-195
NUMA node2 CPU(s):     28-31,35-37,42-45,49-51,196-199,203-205,210-213,217-219
NUMA node3 CPU(s):     32-34,38-41,46-48,52-55,200-202,206-209,214-216,220-223
NUMA node4 CPU(s):     56-59,63-65,70-73,77-79,224-227,231-233,238-241,245-247
NUMA node5 CPU(s):     60-62,66-69,74-76,80-83,228-230,234-237,242-244,248-251
NUMA node6 CPU(s):     84-87,91-93,98-101,105-107,252-255,259-261,266-269,273-275
NUMA node7 CPU(s):     88-90,94-97,102-104,108-111,256-258,262-265,270-272,276-279
NUMA node8 CPU(s):     112-115,119-121,126-129,133-135,280-283,287-289,294-297,301-303
NUMA node9 CPU(s):     116-118,122-125,130-132,136-139,284-286,290-293,298-300,304-307
NUMA node10 CPU(s):    140-143,147-149,154-157,161-163,308-311,315-317,322-325,329-331
NUMA node11 CPU(s):    144-146,150-153,158-160,164-167,312-314,318-321,326-328,332-335
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
aperfmpperf 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 ssbd mba ibrs ibpb stibp 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 pku ospke avx512_vnni flush_lld arch_capabilities

```

/proc/cpuinfo cache data

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Huawei

SPECrate2017_int_base = 1040

Huawei Kunlun 9008 V5 (Intel Xeon Platinum 8280)

SPECrate2017_int_peak = Not Run

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

Test Date: Mar-2019
Hardware Availability: Apr-2019
Software Availability: Dec-2018

Platform Notes (Continued)

cache size : 39424 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.

```

available: 12 nodes (0-11)
node 0 cpus: 0 1 2 3 7 8 9 14 15 16 17 21 22 23 168 169 170 171 175 176 177 182 183 184
185 189 190 191
node 0 size: 95099 MB
node 0 free: 93837 MB
node 1 cpus: 4 5 6 10 11 12 13 18 19 20 24 25 26 27 172 173 174 178 179 180 181 186 187
188 192 193 194 195
node 1 size: 96757 MB
node 1 free: 92300 MB
node 2 cpus: 28 29 30 31 35 36 37 42 43 44 45 49 50 51 196 197 198 199 203 204 205 210
211 212 213 217 218 219
node 2 size: 96757 MB
node 2 free: 95699 MB
node 3 cpus: 32 33 34 38 39 40 41 46 47 48 52 53 54 55 200 201 202 206 207 208 209 214
215 216 220 221 222 223
node 3 size: 96757 MB
node 3 free: 96579 MB
node 4 cpus: 56 57 58 59 63 64 65 70 71 72 73 77 78 79 224 225 226 227 231 232 233 238
239 240 241 245 246 247
node 4 size: 96757 MB
node 4 free: 96577 MB
node 5 cpus: 60 61 62 66 67 68 69 74 75 76 80 81 82 83 228 229 230 234 235 236 237 242
243 244 248 249 250 251
node 5 size: 96757 MB
node 5 free: 96570 MB
node 6 cpus: 84 85 86 87 91 92 93 98 99 100 101 105 106 107 252 253 254 255 259 260 261
266 267 268 269 273 274 275
node 6 size: 96757 MB
node 6 free: 95669 MB
node 7 cpus: 88 89 90 94 95 96 97 102 103 104 108 109 110 111 256 257 258 262 263 264
265 270 271 272 276 277 278 279
node 7 size: 96757 MB
node 7 free: 96583 MB
node 8 cpus: 112 113 114 115 119 120 121 126 127 128 129 133 134 135 280 281 282 283
287 288 289 294 295 296 297 301 302 303
node 8 size: 96728 MB
node 8 free: 96530 MB
node 9 cpus: 116 117 118 122 123 124 125 130 131 132 136 137 138 139 284 285 286 290
291 292 293 298 299 300 304 305 306 307
node 9 size: 96757 MB
node 9 free: 96525 MB
node 10 cpus: 140 141 142 143 147 148 149 154 155 156 157 161 162 163 308 309 310 311
315 316 317 322 323 324 325 329 330 331

```

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Huawei

SPECrate2017_int_base = 1040

Huawei Kunlun 9008 V5 (Intel Xeon Platinum 8280)

SPECrate2017_int_peak = Not Run

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

Test Date: Mar-2019
Hardware Availability: Apr-2019
Software Availability: Dec-2018

Platform Notes (Continued)

```

node 10 size: 96757 MB
node 10 free: 96574 MB
node 11 cpus: 144 145 146 150 151 152 153 158 159 160 164 165 166 167 312 313 314 318
319 320 321 326 327 328 332 333 334 335
node 11 size: 96532 MB
node 11 free: 96366 MB
node distances:
node  0  1  2  3  4  5  6  7  8  9 10 11
 0:  10  11  31  31  21  21  21  21  21  21  31  31
 1:  11  10  31  31  21  21  21  21  21  21  31  31
 2:  31  31  10  11  21  21  21  21  31  31  21  21
 3:  31  31  11  10  21  21  21  21  31  31  21  21
 4:  21  21  21  21  10  11  31  31  31  31  31  31
 5:  21  21  21  21  11  10  31  31  31  31  31  31
 6:  21  21  21  21  31  31  10  11  31  31  31  31
 7:  21  21  21  21  31  31  11  10  31  31  31  31
 8:  21  21  31  31  31  31  31  31  10  11  21  21
 9:  21  21  31  31  31  31  31  31  11  10  21  21
10:  31  31  21  21  31  31  31  31  21  21  10  11
11:  31  31  21  21  31  31  31  31  21  21  11  10

```

```

From /proc/meminfo
MemTotal:      1186998592 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP4

```

```

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 4
# 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-SP4"
VERSION_ID="12.4"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp4"

```

```

uname -a:
Linux linux-2yo1 4.12.14-94.41-default #1 SMP Wed Oct 31 12:25:04 UTC 2018 (3090901)

```

(Continued on next page)



SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Huawei

SPECrate2017_int_base = 1040

Huawei Kunlun 9008 V5 (Intel Xeon Platinum 8280)

SPECrate2017_int_peak = Not Run

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

Test Date: Mar-2019
Hardware Availability: Apr-2019
Software Availability: Dec-2018

Platform Notes (Continued)

x86_64 x86_64 x86_64 GNU/Linux

run-level 5 Mar 12 19:17

SPEC is set to: /home/memory

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
tmpfs	tmpfs	650G	4.2G	646G	1%	/home/memory

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. 9.25 02/15/2019

Memory:

60x NO DIMM NO DIMM

36x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

(End of data from sysinfo program)

Compiler Version Notes

```
=====
CC 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
   557.xz_r(base)
-----
```

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

```
=====
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
     541.leela_r(base)
-----
```

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

```
=====
FC 548.exchange2_r(base)
-----
```

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.



SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Huawei

SPECrate2017_int_base = 1040

Huawei Kunlun 9008 V5 (Intel Xeon Platinum 8280)

SPECrate2017_int_peak = Not Run

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

Test Date: Mar-2019
Hardware Availability: Apr-2019
Software Availability: Dec-2018

Base Compiler Invocation

C benchmarks:

```
icc -m64 -std=c11
```

C++ benchmarks:

```
icpc -m64
```

Fortran benchmarks:

```
ifort -m64
```

Base Portability Flags

```
500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64  
502.gcc_r: -DSPEC_LP64  
505.mcf_r: -DSPEC_LP64  
520.omnetpp_r: -DSPEC_LP64  
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX  
525.x264_r: -DSPEC_LP64  
531.deepsjeng_r: -DSPEC_LP64  
541.leela_r: -DSPEC_LP64  
548.exchange2_r: -DSPEC_LP64  
557.xz_r: -DSPEC_LP64
```

Base Optimization Flags

C benchmarks:

```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=4  
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64  
-lqkmallo
```

C++ benchmarks:

```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=4  
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64  
-lqkmallo
```

Fortran benchmarks:

```
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte  
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64  
-lqkmallo
```




SPEC CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Huawei

SPECrate2017_int_base = 1040

Huawei Kunlun 9008 V5 (Intel Xeon Platinum 8280)

SPECrate2017_int_peak = Not Run

CPU2017 License: 3175

Test Sponsor: Huawei

Tested by: Huawei

Test Date: Mar-2019

Hardware Availability: Apr-2019

Software Availability: Dec-2018

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-02.html>

<http://www.spec.org/cpu2017/flags/Huawei-Platform-Settings-SKL-V1.7.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-02.xml>

<http://www.spec.org/cpu2017/flags/Huawei-Platform-Settings-SKL-V1.7.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 2019-03-12 07:24:01-0400.

Report generated on 2019-04-02 17:01:44 by CPU2017 PDF formatter v6067.

Originally published on 2019-04-02.