



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

## Hewlett Packard Enterprise

(Test Sponsor: HPE)

### ProLiant DL380 Gen10

(2.10 GHz, Intel Xeon Silver 4208)

SPECrate®2017\_fp\_base = 47.4

SPECrate®2017\_fp\_peak = Not Run

CPU2017 License: 3

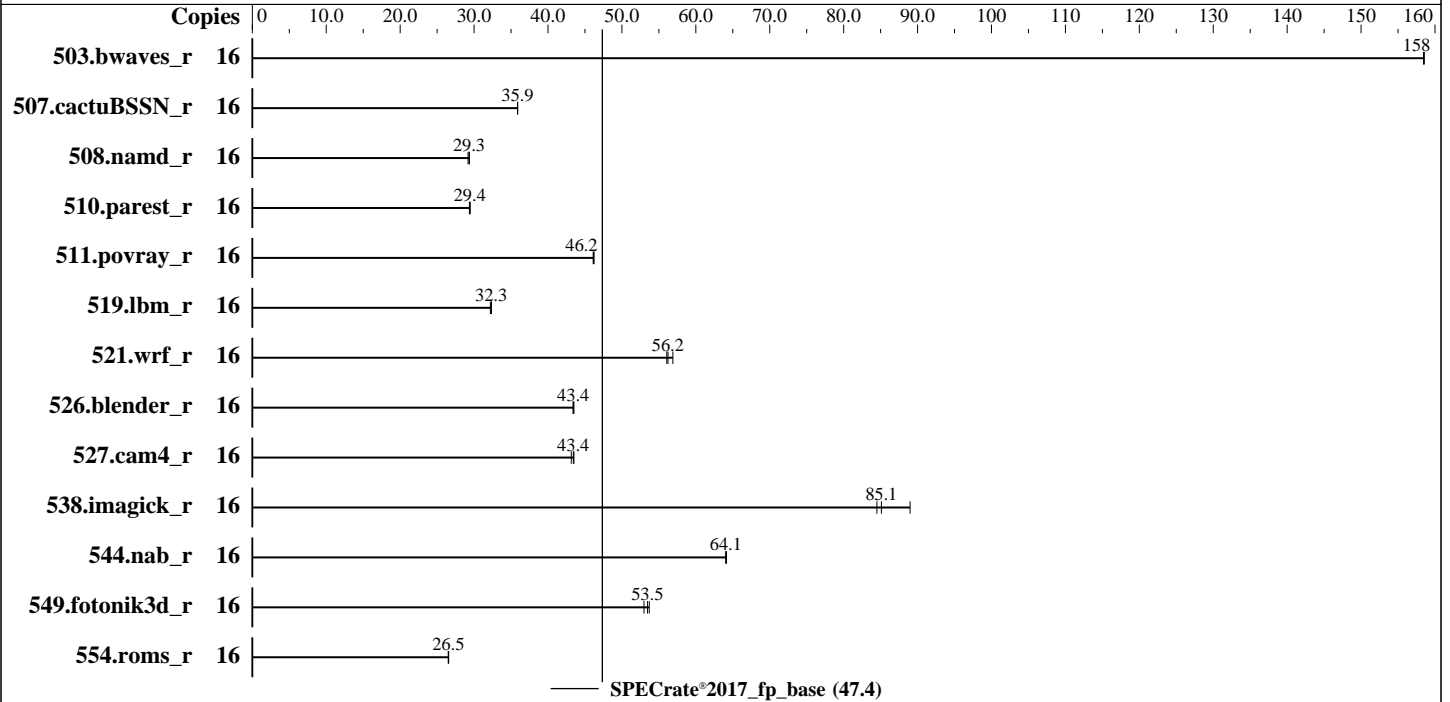
Test Sponsor: HPE

Tested by: HPE

Test Date: Dec-2019

Hardware Availability: May-2019

Software Availability: Dec-2019



### Hardware

CPU Name: Intel Xeon Silver 4208  
 Max MHz: 3200  
 Nominal: 2100  
 Enabled: 8 cores, 1 chip, 2 threads/core  
 Orderable: 1, 2 chip(s)  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 1 MB I+D on chip per core  
 L3: 11 MB I+D on chip per chip  
 Other: None  
 Memory: 192 GB (12 x 16 GB 2Rx4 PC4-2933Y-R, running at 2400)  
 Storage: 2 x 480 GB SAS SSD, RAID 1  
 Other: None

### Software

OS: SUSE Linux Enterprise Server 15 (x86\_64) SP1  
 Kernel 4.12.14-197.29-default  
 Compiler: C/C++: Version 19.0.4.227 of Intel C/C++ Compiler Build 20190416 for Linux;  
 Fortran: Version 19.0.4.227 of Intel Fortran Compiler Build 20190416 for Linux  
 Parallel: No  
 Firmware: HPE BIOS Version U30 2.04 04/18/2019 released May-2019  
 File System: xfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: Not Applicable  
 Other: None  
 Power Management: BIOS set to prefer performance at the cost of additional power usage



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL380 Gen10

(2.10 GHz, Intel Xeon Silver 4208)

SPECrate®2017\_fp\_base = 47.4

SPECrate®2017\_fp\_peak = Not Run

CPU2017 License: 3  
Test Sponsor: HPE  
Tested by: HPE

Test Date: Dec-2019  
Hardware Availability: May-2019  
Software Availability: Dec-2019

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	16	<b><u>1012</u></b>	<b><u>158</u></b>	1012	159	1013	158							
507.cactuBSSN_r	16	<b><u>564</u></b>	<b><u>35.9</u></b>	564	35.9	565	35.9							
508.namd_r	16	521	29.2	<b><u>518</u></b>	<b><u>29.3</u></b>	517	29.4							
510.parest_r	16	<b><u>1423</u></b>	<b><u>29.4</u></b>	1420	29.5	1425	29.4							
511.povray_r	16	810	46.1	<b><u>809</u></b>	<b><u>46.2</u></b>	808	46.2							
519.lbm_r	16	521	32.3	<b><u>522</u></b>	<b><u>32.3</u></b>	524	32.2							
521.wrf_r	16	630	56.9	639	56.1	<b><u>637</u></b>	<b><u>56.2</u></b>							
526.blender_r	16	560	43.5	562	43.4	<b><u>561</u></b>	<b><u>43.4</u></b>							
527.cam4_r	16	643	43.5	649	43.1	<b><u>644</u></b>	<b><u>43.4</u></b>							
538.imagick_r	16	<b><u>468</u></b>	<b><u>85.1</u></b>	471	84.5	447	89.0							
544.nab_r	16	420	64.1	420	64.2	<b><u>420</u></b>	<b><u>64.1</u></b>							
549.fotonik3d_r	16	1177	53.0	<b><u>1166</u></b>	<b><u>53.5</u></b>	1161	53.7							
554.roms_r	16	957	26.6	959	26.5	<b><u>958</u></b>	<b><u>26.5</u></b>							

SPECrate®2017\_fp\_base = 47.4

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 taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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"
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>
```

## Environment Variables Notes

Environment variables set by runcpu before the start of the run:  
LD\_LIBRARY\_PATH = "/home/cpu2017/lib/intel64"



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant DL380 Gen10**

(2.10 GHz, Intel Xeon Silver 4208)

SPECrate®2017\_fp\_base = 47.4

SPECrate®2017\_fp\_peak = Not Run

**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Dec-2019

**Hardware Availability:** May-2019

**Software Availability:** Dec-2019

## General Notes

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM memory using Redhat Enterprise Linux 7.5

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.

## Platform Notes

BIOS Configuration:

Thermal Configuration set to Maximum Cooling  
Memory Patrol Scrubbing set to Disabled  
LLC Prefetch set to Enabled  
LLC Dead Line Allocation set to Disabled  
Enhanced Processor Performance set to Enabled  
Workload Profile set to General Throughput Compute  
Workload Profile set to Custom  
Energy/Performance Bias set to Balanced Performance

Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011  
running on dl380 Wed Dec 18 09:52:04 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) Silver 4208 CPU @ 2.10GHz
 1 "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 : 8
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7
```

From lscpu:

```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant DL380 Gen10**

(2.10 GHz, Intel Xeon Silver 4208)

SPECrate®2017\_fp\_base = 47.4

SPECrate®2017\_fp\_peak = Not Run

**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE

**Test Date:** Dec-2019  
**Hardware Availability:** May-2019  
**Software Availability:** Dec-2019

## Platform Notes (Continued)

```

Address sizes:      46 bits physical, 48 bits virtual
CPU(s):            16
On-line CPU(s) list: 0-15
Thread(s) per core: 2
Core(s) per socket: 8
Socket(s):         1
NUMA node(s):     1
Vendor ID:         GenuineIntel
CPU family:        6
Model:             85
Model name:        Intel(R) Xeon(R) Silver 4208 CPU @ 2.10GHz
Stepping:          7
CPU MHz:           2100.000
BogoMIPS:          4200.00
Virtualization:    VT-x
L1d cache:         32K
L1i cache:         32K
L2 cache:          1024K
L3 cache:          11264K
NUMA node0 CPU(s): 0-15
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 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 fl6c 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 pku ospke avx512_vnni md_clear flush_l1d
arch_capabilities

```

```

/proc/cpuinfo cache data
cache size : 11264 KB

```

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

```

available: 1 nodes (0)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
node 0 size: 193090 MB
node 0 free: 178683 MB
node distances:
node 0
0: 10

```

From /proc/meminfo

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL380 Gen10

(2.10 GHz, Intel Xeon Silver 4208)

SPECrate®2017\_fp\_base = 47.4

SPECrate®2017\_fp\_peak = Not Run

**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE

**Test Date:** Dec-2019  
**Hardware Availability:** May-2019  
**Software Availability:** Dec-2019

## Platform Notes (Continued)

MemTotal: 197724264 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 dl380 4.12.14-197.29-default #1 SMP Fri Dec 6 12:08:50 UTC 2019 (ca25711) x86_64
x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

```
itlb_multihit: KVM: Mitigation: Split huge pages
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
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: usercopy/swaps barriers and __user
pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional,
RSB filling
tsx_async_abort: Vulnerable: Clear CPU buffers attempted, no
microcode; SMT vulnerable
```

run-level 3 Dec 17 17:53

SPEC is set to: /home/cpu2017

```
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 218G 11G 208G 5% /home
```

From /sys/devices/virtual/dmi/id

```
BIOS: HPE U30 04/18/2019
Vendor: HPE
Product: ProLiant DL380 Gen10
Product Family: ProLiant
Serial: CZ3923TV2Y
```

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL380 Gen10

(2.10 GHz, Intel Xeon Silver 4208)

SPECrate®2017\_fp\_base = 47.4

SPECrate®2017\_fp\_peak = Not Run

**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Dec-2019

**Hardware Availability:** May-2019

**Software Availability:** Dec-2019

## Platform Notes (Continued)

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 HPE P03050-091 16 GB 2 rank 2933

12x UNKNOWN NOT AVAILABLE

(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 19.0.4.227 Build 20190416

Copyright (C) 1985-2019 Intel Corporation. All rights reserved.  
-----

=====  
C++ | 508.namd\_r(base) 510.parest\_r(base)  
-----

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.4.227 Build 20190416

Copyright (C) 1985-2019 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 19.0.4.227 Build 20190416

Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.4.227 Build 20190416

Copyright (C) 1985-2019 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 19.0.4.227 Build 20190416

Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
-----

(Continued on next page)



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant DL380 Gen10**

(2.10 GHz, Intel Xeon Silver 4208)

SPECrate®2017\_fp\_base = 47.4

SPECrate®2017\_fp\_peak = Not Run

**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE

**Test Date:** Dec-2019  
**Hardware Availability:** May-2019  
**Software Availability:** Dec-2019

## Compiler Version Notes (Continued)

Version 19.0.4.227 Build 20190416  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.  
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
64, Version 19.0.4.227 Build 20190416  
Copyright (C) 1985-2019 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 19.0.4.227 Build 20190416  
Copyright (C) 1985-2019 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 19.0.4.227 Build 20190416  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.  
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.4.227 Build 20190416  
Copyright (C) 1985-2019 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



# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL380 Gen10

(2.10 GHz, Intel Xeon Silver 4208)

SPECrate®2017\_fp\_base = 47.4

SPECrate®2017\_fp\_peak = Not Run

**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE

**Test Date:** Dec-2019  
**Hardware Availability:** May-2019  
**Software Availability:** Dec-2019

## 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=4

### C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=4

### Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=4 -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=4 -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=4

### Benchmarks using Fortran, C, and C++:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=4 -auto -nostandard-realloc-lhs  
-align array32byte





# SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

**ProLiant DL380 Gen10**

(2.10 GHz, Intel Xeon Silver 4208)

SPECrate®2017\_fp\_base = 47.4

SPECrate®2017\_fp\_peak = Not Run

**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Dec-2019

**Hardware Availability:** May-2019

**Software Availability:** Dec-2019

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

<http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-07-09.html>

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-CLX-revB.html>

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

<http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-07-09.xml>

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-CLX-revB.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](mailto:info@spec.org).

Tested with SPEC CPU®2017 v1.1.0 on 2019-12-18 03:52:03-0500.

Report generated on 2020-01-21 16:26:26 by CPU2017 PDF formatter v6255.

Originally published on 2020-01-21.