**SPEC CPU®2017 Floating Point Rate Result**

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**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10  
(2.20 GHz, Intel Xeon Silver 4214Y)

| SPECrate®2017_fp_base = 136 | SPECrate®2017_fp_peak = Not Run |

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<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: Apr-2019</th>
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<tbody>
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<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Apr-2019</td>
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<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Feb-2019</td>
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**Hardware**

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<tr>
<td>507.cactuBSSN_r 48</td>
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<td>508.namd_r 48</td>
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<td>510.parest_r 48</td>
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<td>511.povray_r 48</td>
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<td>526.blender_r 48</td>
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<td>527.cam4_r 48</td>
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<td>538.imagick_r 48</td>
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<td>544.nab_r 48</td>
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<td>549.fotonik3d_r 48</td>
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<td>554.roms_r 48</td>
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<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
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<tbody>
<tr>
<td><strong>CPU Name:</strong> Intel Xeon Silver 4214Y</td>
<td><strong>OS:</strong> SUSE Linux Enterprise Server 15 (x86_64)</td>
</tr>
<tr>
<td><strong>Max MHz:</strong> 3200</td>
<td><strong>Kernel:</strong> 4.12.14-23-default</td>
</tr>
<tr>
<td><strong>Nominal:</strong> 2200</td>
<td><strong>Compiler:</strong> C/C++: Version 19.0.2.187 of Intel C/C++</td>
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<tr>
<td><strong>Enabled:</strong> 24 cores, 2 chips, 2 threads/core</td>
<td><strong>Compiler Build 20190117 for Linux;</strong></td>
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<tr>
<td><strong>Orderable:</strong> 1, 2 chip(s)</td>
<td><strong>Fortran:</strong> Version 19.0.2.187 of Intel Fortran</td>
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<tr>
<td><strong>Cache L1:</strong> 32 KB I + 32 KB D on chip per core</td>
<td><strong>Compiler Build 20190117 for Linux</strong></td>
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<tr>
<td><strong>L2:</strong> 1 MB I+D on chip per core</td>
<td><strong>Parallel:</strong> No</td>
</tr>
<tr>
<td><strong>L3:</strong> 16.5 MB I+D on chip per chip</td>
<td><strong>Firmware:</strong> HPE BIOS Version U32 02/02/2019 released Apr-2019</td>
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<tr>
<td><strong>Other:</strong> None</td>
<td><strong>File System:</strong> xfs</td>
</tr>
<tr>
<td><strong>Memory:</strong> 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R, running at 2400)</td>
<td><strong>System State:</strong> Run level 3 (multi-user)</td>
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<tr>
<td><strong>Storage:</strong> 1 x 400 GB SAS SSD, RAID 0</td>
<td><strong>Base Pointers:</strong> 64-bit</td>
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<tr>
<td><strong>Other:</strong> None</td>
<td><strong>Peak Pointers:</strong> Not Applicable</td>
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<td><strong>Other:</strong> None</td>
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<td><strong>Power Management:</strong> --</td>
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## SPEC CPU® 2017 Floating Point Rate Result

Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10  
(2.20 GHz, Intel Xeon Silver 4214Y)

**SPECrate**

**SPECrate®2017_fp_base = 136**  
**SPECrate®2017_fp_peak = Not Run**

### Results Table

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**SPECrate®2017_fp_base = 136**  
**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"

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>

### General Notes

Environment variables set by runcpu before the start of the run:

LD_LIBRARY_PATH = ":/home/cpu2017_u2/lib/ia32:/home/cpu2017_u2/lib/intel64"

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.

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(2.20 GHz, Intel Xeon Silver 4214Y)

SPECrate®2017_fp_base = 136
SPECrate®2017_fp_peak = Not Run

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:
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_u2/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcede8f2999c33d61f64985e45859ea9
running on linux-nub3 Mon Apr 29 23:06:01 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 4214C CPU @ 2.20GHz
  2 "physical id"s (chips)
  48 "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 : 12
siblings : 24
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 2
Core(s) per socket: 12
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel

(Continued on next page)
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<tr>
<td>SPECrate®2017_fp_peak</td>
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**Platform Notes (Continued)**

```
CPU family:          6
Model:               85
Model name:          Intel(R) Xeon(R) Silver 4214C CPU @ 2.20GHz
Stepping:            6
CPU MHz:             2200.000
BogoMIPS:            4400.00
Virtualization:      VT-x
L1d cache:           32K
L1i cache:           32K
L2 cache:            1024K
L3 cache:            16896K
NUMA node0 CPU(s):   0-5,24-29
NUMA node1 CPU(s):   6-11,30-35
NUMA node2 CPU(s):   12-17,36-41
NUMA node3 CPU(s):   18-23,42-47
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
aperfmpref tsc_known_freq 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 3nowprefetch cpuid_fault
epb cat_l3 cdp_l3 invpcid_single intel_pmm mba tpr_shadow vmmi flexpriority ept
vpid fsgsbase tsc_adjust bm1 hle avx2 smep bmi2 erms invpcid rtm cmx mpx rdt_a
avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsavesopt xsaveopt xsaveopt xgetbv1 xsaves cqm_llc cqm_occupp_llc cqm_mbm_total cqm_mbm_local
ibpb ibrs stib dtherm ida arat pln pts pku ospke avx512_vnni arch_capabilities ssbd
```

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 4 5 24 25 26 27 28 29
  node 0 size: 96352 MB
  node 0 free: 96173 MB
  node 1 cpus: 6 7 8 9 10 11 30 31 32 33 34 35
  node 1 size: 96736 MB
  node 1 free: 96467 MB
  node 2 cpus: 12 13 14 15 16 17 36 37 38 39 40 41
  node 2 size: 96765 MB
  node 2 free: 96592 MB
  node 3 cpus: 18 19 20 21 22 23 42 43 44 45 46 47
  node 3 size: 96764 MB
  node 3 free: 96616 MB
  node distances:
        node 0 1 2 3
  node 0 distance 0
  node 1 distance 1
  node 2 distance 2
  node 3 distance 3
```

(Continued on next page)
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**SPECrate®2017_fp_base = 136**  
**SPECrate®2017_fp_peak = Not Run**

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**Platform Notes (Continued)**

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From `/proc/meminfo`  
MemTotal: 395898196 kB  
HugePages_Total: 0  
Hugepagesize: 2048 kB

From `/etc/*release* /etc/*version*`  
os-release:  
NAME="SLES"  
VERSION="15"  
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-nub3 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b)  
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: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Apr 29 23:04

SPEC is set to: /home/cpu2017_u2  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/sda1 xfs 373G 101G 273G 27% /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 HPE U32 02/02/2019  
Memory:  
24x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2933, configured at 2400

(End of data from sysinfo program)

(Continued on next page)
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SPECrater®2017_fp_base = 136
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Platform Notes (Continued)

The marketing name for the processor in this result, which appears in the CPU name and hardware model areas, is different from sysinfo because a pre-production processor was used. The pre-production processor differs from the production processor in name only.

Compiler Version Notes

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<th>C</th>
<th>519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)</th>
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<tr>
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<td>Intel(R) 64 Compiler for applications running on Intel(R)</td>
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<td>Copyright (C) 1985-2019 Intel Corporation. All rights reserved.</td>
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### 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`
**SPEC CPU®2017 Floating Point Rate Result**

Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10  
(2.20 GHz, Intel Xeon Silver 4214Y)  

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<tr>
<td>SPECrate®2017_fp_peak</td>
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CPU2017 License: 3  
Test Sponsor: HPE  
Tested by: HPE  

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**Base Portability Flags (Continued)**

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

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

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/HPE-Platform-Flags-Intel-V1.2-CLX-revB.xml
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-03.xml