# SPEC CPU®2017 Floating Point Rate Result

## Hewlett Packard Enterprise

### ProLiant DL360 Gen10 Plus
(3.60 GHz, Intel Xeon Gold 6334)

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>186</td>
<td>190</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon Gold 6334
- **Max MHz:** 3700
- **Nominal:** 3600
- **Enabled:** 16 cores, 2 chips, 2 threads/core
- **Orderable:** 1, 2 chip(s)
- **Cache L1:** 32 KB I + 48 KB D on chip per core
- **Cache L2:** 1.25 MB I+D on chip per core
- **Cache L3:** 18 MB I+D on chip per core
- **Memory:** 2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R)
- **Storage:** 1 x 800 GB SAS SSD, RAID 0

### Software

- **OS:** Red Hat Enterprise Linux 8.3 (Ootpa)  
  Kernel 4.18.0-240.el8.x86_64
- **Compiler:**  
  C/C++: Version 2021.1 of Intel oneAPI DPC++/C++  
  Compiler Build 20201113 for Linux;  
  Fortran: Version 2021.1 of Intel Fortran Compiler  
  Classic Build 20201112 for Linux  
  C/C++: Version 2021.1 of Intel C/C++ Compiler  
  Classic Build 20201112 for Linux
- **Parallel:** No
- **Firmware:** HP Enterprise BIOS Version U46 v1.42 05/26/2021 released
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** jemalloc memory allocator V5.0.1

(Continued on next page)
SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10 Plus
(3.60 GHz, Intel Xeon Gold 6334)

SPECrate®2017_fp_base = 186
SPECrate®2017_fp_peak = 190

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

Software (Continued)
Power Management: BIOS set to prefer performance at the cost of additional power usage

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>32</td>
<td>609</td>
<td>527</td>
<td>608</td>
<td>528</td>
<td>609</td>
<td>527</td>
<td></td>
<td></td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>32</td>
<td>179</td>
<td>226</td>
<td>178</td>
<td>228</td>
<td>179</td>
<td>226</td>
<td></td>
<td></td>
</tr>
<tr>
<td>508.namd_r</td>
<td>32</td>
<td>282</td>
<td>108</td>
<td>282</td>
<td>108</td>
<td>282</td>
<td>108</td>
<td></td>
<td></td>
</tr>
<tr>
<td>510.parest_r</td>
<td>32</td>
<td>718</td>
<td>117</td>
<td>717</td>
<td>117</td>
<td>345</td>
<td>121</td>
<td></td>
<td></td>
</tr>
<tr>
<td>511.povray_r</td>
<td>32</td>
<td>459</td>
<td>163</td>
<td>458</td>
<td>163</td>
<td>458</td>
<td>163</td>
<td></td>
<td></td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>32</td>
<td>179</td>
<td>190</td>
<td>179</td>
<td>189</td>
<td>178</td>
<td>190</td>
<td></td>
<td></td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>32</td>
<td>389</td>
<td>184</td>
<td>394</td>
<td>182</td>
<td>394</td>
<td>182</td>
<td></td>
<td></td>
</tr>
<tr>
<td>526.blender_r</td>
<td>32</td>
<td>326</td>
<td>150</td>
<td>325</td>
<td>150</td>
<td>326</td>
<td>149</td>
<td></td>
<td></td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>32</td>
<td>338</td>
<td>166</td>
<td>338</td>
<td>166</td>
<td>336</td>
<td>167</td>
<td></td>
<td></td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>32</td>
<td>206</td>
<td>386</td>
<td>206</td>
<td>385</td>
<td>206</td>
<td>386</td>
<td></td>
<td></td>
</tr>
<tr>
<td>544.hab_r</td>
<td>32</td>
<td>215</td>
<td>250</td>
<td>214</td>
<td>252</td>
<td>215</td>
<td>251</td>
<td></td>
<td></td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>32</td>
<td>734</td>
<td>170</td>
<td>737</td>
<td>169</td>
<td>735</td>
<td>170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>554.roms_r</td>
<td>32</td>
<td>547</td>
<td>92.9</td>
<td>544</td>
<td>93.5</td>
<td>544</td>
<td>93.5</td>
<td>255</td>
<td>99.5</td>
</tr>
</tbody>
</table>

SPECrate®2017_fp_base = 186
SPECrate®2017_fp_peak = 190

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

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
MALLOCONF = "retain:true"
SPEC CPU®2017 Floating Point Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10 Plus
(3.60 GHz, Intel Xeon Gold 6334)

SPECrate®2017_fp_base = 186
SPECrate®2017_fp_peak = 190

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

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM
memory using Red Hat Enterprise Linux 8.1
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)
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.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Submitted by: "Bhatnagar, Prateek" <prateek.bhatnagar@hpe.com>
Submitted: Mon Jun 21 10:22:03 EDT 2021
Submission: cpu2017-20210621-27541.sub

Platform Notes

The system ROM used for this result contains Intel microcode version 0xd0002a0 for
the Intel Xeon Gold 6334 processor.

BIOS Configuration:
Workload Profile set to General Throughput Compute
Memory Patrol Scrubbing set to Disabled
Advanced Memory Protection set to Advanced ECC
Last Level Cache (LLC) Prefetch set to Enabled
Last Level Cache (LLC) Dead Line Allocation set to Disabled
Enhanced Processor Performance set to Enabled
Enhanced Processor Performance Profile set to Aggressive
Thermal Configuration set to Maximum Cooling
Workload Profile set to Custom
   DCU Stream Prefetcher set to Disabled
   XPT Remote Prefetcher set to Enabled
   Energy/Performance Bias set to Balanced Performance

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca6c64d
running on localhost.localdomain Thu Jun 17 02:07:02 2021

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 6334 CPU @ 3.60GHz

(Continued on next page)
Platform Notes (Continued)

2 "physical id"s (chips)
32 "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
physical 1: cores 0 1 2 3 4 5 6 7

From lscpu from util-linux 2.32.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 32
On-line CPU(s) list: 0-31
Thread(s) per core: 2
Core(s) per socket: 8
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 6334 CPU @ 3.60GHz
Stepping: 6
CPU MHz: 3672.311
BogoMIPS: 7200.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 18432K
NUMA node0 CPU(s): 0-3,16-19
NUMA node1 CPU(s): 4-7,20-23
NUMA node2 CPU(s): 8-11,24-27
NUMA node3 CPU(s): 12-15,28-31
Flags:
   fpu vme de pse tsc msr pae mce 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 aperffmperf 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_13 invpcid_single ssbd mba ibrs ibpib stibp ibrs_enhanced tpr_shadow vmmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 3dnow invpcid cqm srqm mwaitx mwaita xsave ftx mvturbo smap avx512ifma clflushopt clwb intel_pt avx512sd sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local split_lock_detect wbnoinvd dtcmm dtr依照 ida arat pin pts avx512vbmi umip pkp oskpe avx512_vbmi2 gfini vaes vpmulqdq avx512_vnni avx512_bitalg tme

(Continued on next page)
Hewlett Packard Enterprise
(6.0 GHz, Intel Xeon Gold 6334)

SPECrater®2017_fp_base = 186
SPECrater®2017_fp_peak = 190

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

Platform Notes (Continued)

avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities

/proc/cpuinfo cache data
  cache size : 18432 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 16 17 18 19
  node 0 size: 512141 MB
  node 0 free: 514113 MB
  node 1 cpus: 4 5 6 7 20 21 22 23
  node 1 size: 512159 MB
  node 1 free: 514803 MB
  node 2 cpus: 8 9 10 11 24 25 26 27
  node 2 size: 512375 MB
  node 2 free: 514823 MB
  node 3 cpus: 12 13 14 15 28 29 30 31
  node 3 size: 512142 MB
  node 3 free: 514915 MB
  node distances:
    node 0 1 2 3
    0: 10 20 30 30
    1: 20 10 30 30
    2: 30 30 10 20
    3: 30 30 20 10

From /proc/meminfo
  MemTotal: 2113495132 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/sbin/tuned-adm active
  Current active profile: throughput-performance

From /etc/*release*/etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux"
    VERSION="8.3 (Ootpa)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="8.3"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
    ANSI_COLOR="0;31"
  redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
  system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10 Plus
(3.60 GHz, Intel Xeon Gold 6334)

SPEC CPU®2017 Floating Point Rate Result
Copyright 2017-2021 Standard Performance Evaluation Corporation

SPECrate®2017_fp_base = 186
SPECrate®2017_fp_peak = 190

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date:</th>
<th>Jun-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Hardware Availability:</td>
<td>Jun-2021</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Software Availability:</td>
<td>Jun-2021</td>
</tr>
<tr>
<td>HPE</td>
<td>HPE</td>
<td></td>
</tr>
<tr>
<td>HPE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Platform Notes (Continued)

    system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

    uname -a:
    Linux localhost.localdomain 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020
    x86_64 x86_64 x86_64 GNU/Linux

    Kernel self-reported vulnerability status:

    CVE-2018-12207 (iTLB Multihit): Not affected
    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/swapgs barriers and __user pointer
    sanitation
    CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB:
    conditional, RSB filling
    CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
    CVE-2019-11135 (TSX Asynchronous Abort): Not affected

    run-level 3 Jun 17 00:59

    SPEC is set to: /home/cpu2017
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/mapper/rhel-home xfs 670G 81G 589G 13% /home

    From /sys/devices/virtual/dmi/id
    Vendor: HPE
    Product: ProLiant DL360 Gen10 Plus
    Product Family: ProLiant
    Serial: CN7013030H

    Additional information from dmidecode 3.2 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:
    32x Micron 36ASF8G72PZ-3G2B2 64 GB 2 rank 3200

    BIOS:
    BIOS Vendor: HPE
    BIOS Version: U46
    BIOS Date: 05/26/2021
    BIOS Revision: 1.42

(Continued on next page)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10 Plus  
(3.60 GHz, Intel Xeon Gold 6334)

| SPECrate®2017_fp_base = 186 |
| SPECrate®2017_fp_peak = 190 |

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

Test Date: Jun-2021  
Hardware Availability: Jun-2021  
Software Availability: Jun-2021

Platform Notes (Continued)

Firmware Revision: 2.42

(End of data from sysinfo program)

Compiler Version Notes

| C | 519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak) |
| Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |

| C++ | 508.namd_r(base, peak) 510.parest_r(base, peak) |
| Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |

| C++, C | 511.povray_r(peak) |
| Intel(R) C++ Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |

| C++, C | 511.povray_r(base) 526.blender_r(base, peak) |
| Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |

(Continued on next page)
## Compiler Version Notes (Continued)

### C++, C

<table>
<thead>
<tr>
<th>511.povray_r(peak)</th>
</tr>
</thead>
</table>

Intel(R) C++ Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

### C++, C

<table>
<thead>
<tr>
<th>511.povray_r(base) 526.blender_r(base, peak)</th>
</tr>
</thead>
</table>

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

### C++, C, Fortran

<table>
<thead>
<tr>
<th>507.cactuBSSN_r(base, peak)</th>
</tr>
</thead>
</table>

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

### Fortran

<table>
<thead>
<tr>
<th>503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)</th>
</tr>
</thead>
</table>

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

### Fortran

<table>
<thead>
<tr>
<th>521.wrf_r(base, peak) 527.cam4_r(base, peak)</th>
</tr>
</thead>
</table>

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10 Plus
(3.60 GHz, Intel Xeon Gold 6334)

SPECrate®2017_fp_base = 186
SPECrate®2017_fp_peak = 190

Compiler Version Notes (Continued)

Intel (R) Fortran Intel (R) 64 Compiler Classic for applications running on
Intel (R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
Intel (R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icx

Benchmarks using both C and C++:
icpx icx

Benchmarks using Fortran, C, and C++:
icpx icx 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
SPEC CPU®2017 Floating Point Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10 Plus
(3.60 GHz, Intel Xeon Gold 6334)

SPECrate®2017_fp_base = 186
SPECrate®2017_fp_peak = 190

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

Base Optimization Flags

C benchmarks:
- -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- -mbranches-within-32B-boundaries -ljemalloc
- -L/usr/local/jemalloc64-5.0.1/lib

C++ benchmarks:
- -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto
- -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- -mbranches-within-32B-boundaries -ljemalloc
- -L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:
- -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
- -qopt-prefetch -ffinite-math-only
- -qopt-multiple-gather-scatter-by-shuffles -qopt-mem-layout-trans=4
- -nostandard-realloc-lhs -align array32byte -auto
- -mbranches-within-32B-boundaries -ljemalloc
- -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both Fortran and C:
- -w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3 -ipo
- -no-prec-div -qopt-prefetch -ffinite-math-only
- -qopt-multiple-gather-scatter-by-shuffles
- -mbranches-within-32B-boundaries -nostandard-realloc-lhs
- -align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both C and C++:
- -w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
- -mbranches-within-32B-boundaries -ljemalloc
- -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using Fortran, C, and C++:
- -w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
- -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -O3
- -no-prec-div -qopt-prefetch -ffinite-math-only
- -qopt-multiple-gather-scatter-by-shuffles
- -mbranches-within-32B-boundaries -nostandard-realloc-lhs
- -align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
Peak Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icx

Benchmarks using both C and C++:
511.povray_r: icpc icc
526.blender_r: icpx icx

Benchmarks using Fortran, C, and C++:
icpx icx ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
519.lbm_r: basepeak = yes
538.imagick_r: basepeak = yes
544.nab_r: -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -flto
-Ofast -qopt-mem-layout-trans=4
-fimf-accuracy-bits=14:sqrt
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

C++ benchmarks:

(Continued on next page)
Peak Optimization Flags (Continued)

508.namd_r: basepeak = yes

510.parest_r: -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
   -flto -mfpmath=sse -funroll-loops
   -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
   -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:

503.bwaves_r: basepeak = yes
549.fotonik3d_r: basepeak = yes
554.roms_r: -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo
   -no-prec-div -qopt-prefetch -ffinite-math-only
   -qopt-multiple-gather-scatter-by-shuffles
   -qopt-mem-layout-trans=4 -nostandard-realloc-lhs
   -align array32byte -auto -mbranches-within-32B-boundaries
   -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both Fortran and C:

521.wrf_r: basepeak = yes
527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512 -O3
   -ipo -no-prec-div -qopt-prefetch -ffinite-math-only
   -qopt-multiple-gather-scatter-by-shuffles
   -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
   -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.0-ICX-revC.html
### SPEC CPU®2017 Floating Point Rate Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10 Plus  
(3.60 GHz, Intel Xeon Gold 6334)  

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>186</td>
<td>190</td>
</tr>
</tbody>
</table>

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

Test Date: Jun-2021  
Hardware Availability: Jun-2021  
Software Availability: Jun-2021

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

- [http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.0-ICX-revC.xml](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.0-ICX-revC.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.

Tested with SPEC CPU®2017 v1.1.8 on 2021-06-17 02:07:02-0400.  
Report generated on 2021-07-06 18:41:58 by CPU2017 PDF formatter v6442.  
Originally published on 2021-07-06.