## SPEC CPU®2017 Floating Point Speed Result

### Hewlett Packard Enterprise

(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(3.10 GHz, Intel Xeon Gold 6346)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base</th>
<th>SPECspeed®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>178</td>
<td>180</td>
</tr>
</tbody>
</table>

### Test Sponsor:
HPE

### Hardware

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon Gold 6346</td>
</tr>
<tr>
<td>Max MHz</td>
<td>3600</td>
</tr>
<tr>
<td>Nominal</td>
<td>3100</td>
</tr>
<tr>
<td>Enabled</td>
<td>32 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>Orderable</td>
<td>1, 2 chip(s)</td>
</tr>
<tr>
<td>Cache L1</td>
<td>32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>L2</td>
<td>1.25 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3</td>
<td>36 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R)</td>
</tr>
<tr>
<td>Storage</td>
<td>1 x 800 GB SAS SSD, RAID 0</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>Red Hat Enterprise Linux 8.3 (Ootpa)</td>
</tr>
<tr>
<td>Max MHz</td>
<td>3600</td>
</tr>
<tr>
<td>Nominal</td>
<td>3100</td>
</tr>
<tr>
<td>Enabled</td>
<td>32 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>Orderable</td>
<td>1, 2 chip(s)</td>
</tr>
<tr>
<td>Cache L1</td>
<td>32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>L2</td>
<td>1.25 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3</td>
<td>36 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R)</td>
</tr>
<tr>
<td>Storage</td>
<td>1 x 800 GB SAS SSD, RAID 0</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
</tbody>
</table>

### Test Date:
May-2021

### Hardware Availability:
Jun-2021

### Software Availability:
Jun-2021

### Software

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>Red Hat Enterprise Linux 8.3 (Ootpa)</td>
</tr>
<tr>
<td>Max MHz</td>
<td>3600</td>
</tr>
<tr>
<td>Nominal</td>
<td>3100</td>
</tr>
<tr>
<td>Enabled</td>
<td>32 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>Orderable</td>
<td>1, 2 chip(s)</td>
</tr>
<tr>
<td>Cache L1</td>
<td>32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>L2</td>
<td>1.25 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3</td>
<td>36 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R)</td>
</tr>
<tr>
<td>Storage</td>
<td>1 x 800 GB SAS SSD, RAID 0</td>
</tr>
<tr>
<td>Other</td>
<td>None</td>
</tr>
</tbody>
</table>

### Power Management:
BIOS set to prefer performance at the cost of additional power usage
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(3.10 GHz, Intel Xeon Gold 6346)

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>64</td>
<td>85.6</td>
<td>689</td>
<td>85.8</td>
<td>688</td>
<td>85.9</td>
<td>687</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>64</td>
<td>92.8</td>
<td>180</td>
<td>92.7</td>
<td>180</td>
<td>90.3</td>
<td>185</td>
</tr>
<tr>
<td>619.ibm_s</td>
<td>64</td>
<td>37.5</td>
<td>140</td>
<td>37.9</td>
<td>138</td>
<td>40.0</td>
<td>131</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>64</td>
<td>71.4</td>
<td>185</td>
<td>71.4</td>
<td>185</td>
<td>71.9</td>
<td>184</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>64</td>
<td>65.5</td>
<td>135</td>
<td>64.7</td>
<td>137</td>
<td>64.6</td>
<td>137</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>64</td>
<td>145</td>
<td>81.9</td>
<td>145</td>
<td>81.6</td>
<td>145</td>
<td>82.1</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>64</td>
<td>111</td>
<td>130</td>
<td>111</td>
<td>130</td>
<td>111</td>
<td>130</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>64</td>
<td>54.8</td>
<td>319</td>
<td>54.9</td>
<td>318</td>
<td>54.9</td>
<td>318</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>64</td>
<td>81.2</td>
<td>112</td>
<td>81.3</td>
<td>112</td>
<td>81.9</td>
<td>111</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>64</td>
<td>81.0</td>
<td>194</td>
<td>80.9</td>
<td>195</td>
<td>80.6</td>
<td>195</td>
</tr>
</tbody>
</table>

SPECspeed®2017_fp_base = 178
SPECspeed®2017_fp_peak = 180

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:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2017_1.1.8/lib/intel64:/home/cpu2017_1.1.8/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0
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

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(3.10 GHz, Intel Xeon Gold 6346)

SPECspeed®2017_fp_base = 178
SPECspeed®2017_fp_peak = 180

General Notes (Continued)

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 May 24 12:53:22 EDT 2021
Submission: cpu2017-20210524-26463.sub

Submitted by: "Bhatnagar, Prateek" <prateek.bhatnagar@hpe.com>
Submitted: Tue Jun  1 09:07:28 EDT 2021
Submission: cpu2017-20210524-26463.sub

Platform Notes

The system ROM used for this result contains Intel microcode version 0xd0002a0
for the Intel Xeon Platinum 6346 processor.

BIOS Configuration:
- Workload Profile set to General Peak Frequency Compute
- Thermal Configuration set to Maximum Cooling
- Memory Patrol Scrubbing set to Disabled
- Last Level Cache (LLC) Prefetch set to Enabled
- Last Level Cache (LLC) Dead Line Allocation set to Disabled
- Advanced Memory Protection set to Advanced ECC
- Enhanced Processor Performance set to Enabled
- Workload Profile set to Custom
- Energy/Performance Bias set to Balanced Power
- DCU Stream Prefetcher set to Disabled
- Adjacent Sector Prefetch set to Disabled
- Minimum Processor Idle Power Package C-State set to No Package State
- Numa Group Size Optimization set to Flat

Sysinfo program /home/cpu2017_1.1.8/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost.localdomain Fri Jun 22 20:37:29 2018

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 6346 CPU @ 3.10GHz
- 2 "physical id"s (chips)
- 64 "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 : 16
- siblings : 32

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result
Copyright 2017-2021 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(3.10 GHz, Intel Xeon Gold 6346)

SPECspeed®2017_fp_base = 178
SPECspeed®2017_fp_peak = 180

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE
Test Date: May-2021
Hardware Availability: Jun-2021
Software Availability: Jun-2021

Platform Notes (Continued)

physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lsicpu from util-linux 2.32.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 2
Core(s) per socket: 16
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 6346 CPU @ 3.10GHz
Stepping: 6
CPU MHz: 2062.173
BogoMIPS: 6200.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 36864K
NUMA node0 CPU(s): 0-15,32-47
NUMA node1 CPU(s): 16-31,48-63
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 aperfperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtsr 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 invpcid_single sbd mba ibrs ibpb ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 3dnow invpcid qm rdt_a avx512ifma clflushopt clwb intel_pt avx512cd sha_ha avx512bw avx512vl xsaveopt xsavec xsavec xgetbv1 xsaves cmqm_llc cmqm_occup_llc cmqm_mbb_total cmqm_mbb_local split_lock_detect wbinvd dtc dhc ida arat pti avx2vbm1 umip pkq ospe avx512_vmbmi2 gfni vaes vcpulmdqk avx512_vnni avx512_vbtfm tms avx512_vpopcntdq la57 rdpid md_clear pconfus flush_l1d arch_capabilities

/proc/cpuinfo cache data
cache size: 36864 KB

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 2 nodes (0-1)

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(3.10 GHz, Intel Xeon Gold 6346)

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

SPECspeed®2017_fp_base = 178
SPECspeed®2017_fp_peak = 180

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

Platform Notes (Continued)

node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
node 0 size: 982044 MB
node 0 free: 1026179 MB
node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
node 1 size: 977821 MB
node 1 free: 1029070 MB
node distances:
node 0 1
0: 10 20
1: 20 10

From /proc/meminfo
MemTotal: 2113488308 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)
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
Copyright 2017-2021 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10 Plus  
(3.10 GHz, Intel Xeon Gold 6346)  

HPE  

SPEC Speed®2017_fp_base = 178  
SPEC Speed®2017_fp_peak = 180

Platform Notes (Continued)

CVE-2017-5753 (Spectre variant 1):  
Mitigation: usercopy/swapgs
barriers and __user pointer
sanitization

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

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

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

Filesystem            Type  Size  Used Avail Use% Mounted on  
/dev/mapper/rhel-home xfs   670G  171G  499G  26% /home

From /sys/devices/virtual/dmi/id
Vendor:         HPE  
Product:        ProLiant DL380 Gen10 Plus  
Product Family: ProLiant  
Serial:         CN70490X8B

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:         05/16/2021  
BIOS Revision:     1.42  
Firmware Revision: 2.40

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
<table>
<thead>
<tr>
<th>C</th>
<th>619.lbm_s(base, peak) 638.imagick_s(base, peak)</th>
<th>644.nab_s(base)</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.

(Continued on next page)
Hewlett Packard Enterprise

ProLiant DL380 Gen10 Plus
(3.10 GHz, Intel Xeon Gold 6346)

SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

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

SPECspeed®2017_fp_base = 178
SPECspeed®2017_fp_peak = 180

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

Compiler Version Notes (Continued)

------------------------------------------------------------------------------
C | 644.nab_s(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 | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base)
------------------------------------------------------------------------------
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 | 644.nab_s(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, Fortran | 607.cactuBSSN_s(base, 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.
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.
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 | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
Intel(R) 64, Version 2021.1 Build 20201112_000000

(Continued on next page)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus  
(3.10 GHz, Intel Xeon Gold 6346)

SPECspeed®2017_fp_base = 178
SPECspeed®2017_fp_peak = 180

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

Compiler Version Notes (Continued)
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

Fortran, C  
621.wrf_s(base, peak) 627.cam4_s(base, peak)  
628.pop2_s(base, peak)

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.

Base Compiler Invocation
C benchmarks:
iccc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort iccc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags
603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian  
-assume byterecl
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64
**SPEC CPU®2017 Floating Point Speed Result**

**Hewlett Packard Enterprise**
(Test Sponsor: HPE)

**ProLiant DL380 Gen10 Plus**
(3.10 GHz, Intel Xeon Gold 6346)

**SPECspeed®2017_fp_base** = 178

**SPECspeed®2017_fp_peak** = 180

---

**Base Optimization Flags**

C benchmarks:
- `-m64` `-std=c11` `-xCORE-AVX512` `-ipo -O3` `-no-prec-div` `-qopt-prefetch`
- `-ffinite-math-only` `-qopt-mem-layout-trans=4` `-qopenmp` `-DSPEC_OPENMP`
- `-mbranches-within-32B-boundaries`

Fortran benchmarks:
- `-m64` `-Wl,-z,muldefs` `-DSPEC_OPENMP` `-xCORE-AVX512` `-ipo -O3`
- `-no-prec-div` `-qopt-prefetch` `-ffinite-math-only`
- `-qopt-mem-layout-trans=4` `-qopenmp` `-nostandard-realloc-lhs`
- `-mbranches-within-32B-boundaries` `-L/usr/local/jemalloc64-5.0.1/lib`
- `-ljemalloc`

Benchmarks using both Fortran and C:
- `-m64` `-std=c11` `-Wl,-z,muldefs` `-xCORE-AVX512` `-ipo -O3` `-no-prec-div`
- `-qopt-prefetch` `-ffinite-math-only` `-qopt-mem-layout-trans=4` `-qopenmp`
- `-DSPEC_OPENMP` `-mbranches-within-32B-boundaries` `-nostandard-realloc-lhs`
- `-L/usr/local/jemalloc64-5.0.1/lib` `-ljemalloc`

Benchmarks using Fortran, C, and C++:
- `-m64` `-std=c11` `-Wl,-z,muldefs` `-xCORE-AVX512` `-ipo -O3` `-no-prec-div`
- `-qopt-prefetch` `-ffinite-math-only` `-qopt-mem-layout-trans=4` `-qopenmp`
- `-DSPEC_OPENMP` `-mbranches-within-32B-boundaries` `-nostandard-realloc-lhs`
- `-L/usr/local/jemalloc64-5.0.1/lib` `-ljemalloc`

---

**Peak Compiler Invocation**

C benchmarks (except as noted below):
- `icc`
- `644.nab_s: icx`

Fortran benchmarks:
- `ifort`

Benchmarks using both Fortran and C:
- `ifort icc`

Benchmarks using Fortran, C, and C++:
- `icpc icc ifort`
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(3.10 GHz, Intel Xeon Gold 6346)

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

SPECspeed®2017_fp_base = 178
SPECspeed®2017_fp_peak = 180

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

Peak Portability Flags
Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
619.lbm_s: basepeak = yes
638.imagick_s: basepeak = yes
644.nab_s: -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
   -flto -mfpmath=sse -funroll-loops -fiopenmp
   -DSPEC_OPENMP -qopt-mem-layout-trans=4
   -fimf-accuracy-bits=14:sqrt
   -mbranches-within-32B-boundaries
   -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Fortran benchmarks:
603.bwaves_s: basepeak = yes
649.fotonik3d_s: basepeak = yes
654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:
621.wrf_s: basepeak = yes
627.cam4_s: basepeak = yes
628.pop2_s: basepeak = yes

Benchmarks using Fortran, C, and C++:
607.cactuBSSN_s: 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 Speed Result**

Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10 Plus  
(3.10 GHz, Intel Xeon Gold 6346)  

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base = 178</th>
<th>SPECspeed®2017_fp_peak = 180</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License: 3</td>
<td>Test Date: May-2021</td>
</tr>
<tr>
<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Jun-2021</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Jun-2021</td>
</tr>
</tbody>
</table>

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

- [http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.0-10X-revC.xml](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.0-10X-revC.xml)

---

SPEC CPU and SPECspeed 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 2018-06-22 11:07:28-0400.  
Report generated on 2021-06-08 19:54:54 by CPU2017 PDF formatter v6442.  
Originally published on 2021-06-08.