Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(2.60 GHz, Intel Xeon Gold 6348)

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

**SPECrater®2017_fp_base = 399**
**SPECrater®2017_fp_peak = 418**

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

---

**CPU Name:** Intel Xeon Gold 6348  
**Max MHz:** 3500  
**Nominal:** 2600  
**Enabled:** 56 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:** 42 MB I+D on chip per core  
**Other:** None  
**Memory:** 2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R)  
**Storage:** 1 x 800 GB SAS SSD, RAID 0  
**Other:** None

---

**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 202011113 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:** HPE BIOS Version U46 v1.42 05/16/2021 released May-2021  
**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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(2.60 GHz, Intel Xeon Gold 6348)

SPECrater®2017_fp_base = 399
SPECrater®2017_fp_peak = 418

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

Test Date: Jun-2021
Hardware Availability: Jun-2021
Software Availability: Dec-2020

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>Copies</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>112</td>
<td>1546</td>
<td>726</td>
<td>1547</td>
<td>726</td>
<td>1546</td>
<td>726</td>
<td>56</td>
<td>771</td>
<td>729</td>
<td>771</td>
<td>729</td>
<td>770</td>
<td>729</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>112</td>
<td>254</td>
<td>557</td>
<td>256</td>
<td>554</td>
<td>254</td>
<td>559</td>
<td>112</td>
<td>254</td>
<td>557</td>
<td>256</td>
<td>554</td>
<td>254</td>
<td>559</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>112</td>
<td>321</td>
<td>331</td>
<td>322</td>
<td>331</td>
<td>321</td>
<td>331</td>
<td>112</td>
<td>321</td>
<td>331</td>
<td>322</td>
<td>331</td>
<td>321</td>
<td>331</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>112</td>
<td>1433</td>
<td>203</td>
<td>1445</td>
<td>203</td>
<td>1442</td>
<td>203</td>
<td>56</td>
<td>576</td>
<td>254</td>
<td>576</td>
<td>254</td>
<td>574</td>
<td>255</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>112</td>
<td>537</td>
<td>487</td>
<td>539</td>
<td>485</td>
<td>539</td>
<td>485</td>
<td>112</td>
<td>469</td>
<td>557</td>
<td>470</td>
<td>557</td>
<td>469</td>
<td>558</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>112</td>
<td>451</td>
<td>262</td>
<td>451</td>
<td>262</td>
<td>450</td>
<td>262</td>
<td>112</td>
<td>451</td>
<td>262</td>
<td>451</td>
<td>262</td>
<td>450</td>
<td>262</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>112</td>
<td>749</td>
<td>335</td>
<td>743</td>
<td>338</td>
<td>742</td>
<td>338</td>
<td>56</td>
<td>367</td>
<td>341</td>
<td>368</td>
<td>341</td>
<td>369</td>
<td>340</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>112</td>
<td>394</td>
<td>433</td>
<td>392</td>
<td>435</td>
<td>393</td>
<td>434</td>
<td>112</td>
<td>394</td>
<td>433</td>
<td>392</td>
<td>435</td>
<td>393</td>
<td>434</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>112</td>
<td>452</td>
<td>433</td>
<td>454</td>
<td>432</td>
<td>455</td>
<td>431</td>
<td>112</td>
<td>452</td>
<td>433</td>
<td>454</td>
<td>432</td>
<td>455</td>
<td>431</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>112</td>
<td>243</td>
<td>1140</td>
<td>244</td>
<td>1140</td>
<td>244</td>
<td>1140</td>
<td>112</td>
<td>243</td>
<td>1140</td>
<td>244</td>
<td>1140</td>
<td>244</td>
<td>1140</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>112</td>
<td>255</td>
<td>739</td>
<td>253</td>
<td>745</td>
<td>253</td>
<td>745</td>
<td>112</td>
<td>250</td>
<td>754</td>
<td>248</td>
<td>759</td>
<td>248</td>
<td>761</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>112</td>
<td>1923</td>
<td>227</td>
<td>1922</td>
<td>227</td>
<td>1921</td>
<td>227</td>
<td>112</td>
<td>1923</td>
<td>227</td>
<td>1922</td>
<td>227</td>
<td>1921</td>
<td>227</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>112</td>
<td>1146</td>
<td>155</td>
<td>1146</td>
<td>155</td>
<td>1141</td>
<td>156</td>
<td>56</td>
<td>474</td>
<td>188</td>
<td>476</td>
<td>187</td>
<td>474</td>
<td>188</td>
</tr>
</tbody>
</table>

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>

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"
MALLOC_CONF = "retain:true"
General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM
memory using Red Hat Enterprise Linux 8.1
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 7 11:55:17 EDT 2021
Submission: cpu2017-20210607-26896.sub

Platform Notes

The system ROM used for this result contains Intel microcode version 0xd0002a0 for the Intel Xeon Gold 6348 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 982a61ec0915b55891ef0e16acafc64d
running on localhost.localdomain Fri Jun 4 13:15:20 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 6348 CPU @ 2.60GHz
  2 "physical id"s (chips)
  112 "processors"

(Continued on next page)
spec

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

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

**ProLiant DL380 Gen10 Plus**
*(2.60 GHz, Intel Xeon Gold 6348)*

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

**SPECrater®2017_fp_base = 399**

**SPECrater®2017_fp_peak = 418**

---

**Platform Notes (Continued)**

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 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27

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):** 112
- **On-line CPU(s) list:** 0-111
- **Thread(s) per core:** 2
- **Core(s) per socket:** 28
- **Socket(s):** 2
- **NUMA node(s):** 4
- **Vendor ID:** GenuineIntel
- **CPU family:** 6
- **Model:** 106
- **Model name:** Intel(R) Xeon(R) Gold 6348 CPU @ 2.60GHz
- **Stepping:** 6
- **CPU MHz:** 2600.290
- **BogoMIPS:** 5200.00
- **Virtualization:** VT-x
- **L1d cache:** 48K
- **L1i cache:** 32K
- **L2 cache:** 1280K
- **L3 cache:** 43008K
- **NUMA node0 CPU(s):** 0-13,56-69
- **NUMA node1 CPU(s):** 14-27,70-83
- **NUMA node2 CPU(s):** 28-41,84-97
- **NUMA node3 CPU(s):** 42-55,98-111

**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 rdtsscp
- lm constant-tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
- aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
- xtr 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 ssbd
- mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad
- fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 ertz invpcid cqm rdt_a avx512f avx512dq
- rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw
- avx512vl xsaveopt xsaves xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_total
- cqm_mbb_local split_lock_detect wbinvd dtherm ida arat pln pts avx512vbm umip pku
- ospke avx512_vbmi2 gfn1 vaes vpclmulqdq avx512_vnni avx512_bitalg tme

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(2.60 GHz, Intel Xeon Gold 6348)

SPECrate®2017_fp_base = 399
SPECrate®2017_fp_peak = 418

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

Test Date: Jun-2021
Hardware Availability: Jun-2021
Software Availability: Dec-2020

Platform Notes (Continued)

avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities

/proc/cpuinfo cache data
  cache size : 43008 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 4 5 6 7 8 9 10 11 12 13 56 57 58 59 60 61 62 63 64 65 66 67 68 69
  node 0 size: 501616 MB
  node 0 free: 513097 MB
  node 1 cpus: 14 15 16 17 18 19 20 21 22 23 24 25 26 27 70 71 72 73 74 75 76 77 78 79 80
     81 82 83
  node 1 size: 500473 MB
  node 1 free: 513404 MB
  node 2 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 84 85 86 87 88 89 90 91 92 93 94
     95 96 97
  node 2 size: 501969 MB
  node 2 free: 513708 MB
  node 3 cpus: 42 43 44 45 46 47 48 49 50 51 52 53 54 55 98 99 100 101 102 103 104 105
     106 107 108 109 110 111
  node 3 size: 500870 MB
  node 3 free: 513640 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:       2105218744 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)"

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(2.60 GHz, Intel Xeon Gold 6348)

SPECrater®2017_fp_base = 399
SPECrater®2017_fp_peak = 418

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

Platform Notes (Continued)

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): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5753 (Spectre variant 1): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2017-5715 (Spectre variant 2): Not affected
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Jun 4 13:13

SPEC is set to: /home/cpu2017

From /sys/devices/virtual/dmi/id
Vendor: HPE
Product: ProLiant DL380 Gen10 Plus
Product Family: ProLiant
Serial: VG02NP0140

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

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(2.60 GHz, Intel Xeon Gold 6348)

SPECrate®2017_fp_base = 399
SPECrate®2017_fp_peak = 418

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

Platform Notes (Continued)

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

==============================================================================
| 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.        |
| 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.        |
| 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)

<table>
<thead>
<tr>
<th>C++, C</th>
<th>511.povray_r(peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intel(R) C++</strong></td>
<td><strong>Intel(R) 64 Compiler Classic for applications running on</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Intel(R) 64, Version 2021.1 Build 20201112_000000</strong></td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
<tr>
<td><strong>Intel(R) C</strong></td>
<td><strong>Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</strong></td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C++, C</th>
<th>511.povray_r(base) 526.blender_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</strong></td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
<tr>
<td><strong>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</strong></td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C++, C, Fortran</th>
<th>507.cactuBSSN_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</strong></td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
<tr>
<td><strong>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</strong></td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
<tr>
<td><strong>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</strong></td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fortran</th>
<th>503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</strong></td>
<td></td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
<td></td>
</tr>
</tbody>
</table>
Compiler Version Notes (Continued)

Fortran, C      | 521.wrf_r(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.
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.

Fortran, C      | 521.wrf_r(base) 527.cam4_r(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.
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, C      | 521.wrf_r(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.
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.

Fortran, C      | 521.wrf_r(base) 527.cam4_r(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.
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.
SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(2.60 GHz, Intel Xeon Gold 6348)

SPECraten®2017_fp_base = 399
SPECraten®2017_fp_peak = 418

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: Jun-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Jun-2021</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Dec-2020</td>
</tr>
</tbody>
</table>

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

Base Optimization Flags

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

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

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
Peak Compiler Invocation (Continued)

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

521.wrf_r: ifort icc
527.cam4_r: 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
-flto
-fimf-accuracy-bits=14:sqrt
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

C++ benchmarks:

508.namd_r: basepeak = yes
510.parest_r: -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(2.60 GHz, Intel Xeon Gold 6348)

SPECrate®2017_fp_base = 399
SPECrate®2017_fp_peak = 418

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

Peak Optimization Flags (Continued)

510.parest_r (continued):
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:

503.bwaves_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

549.fotonik3d_r: basepeak = yes

554.roms_r: Same as 503.bwaves_r

Benchmarks using both Fortran and C:

521.wrf_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
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

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-revE.html
## SPEC CPU®2017 Floating Point Rate Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10 Plus  
(2.60 GHz, Intel Xeon Gold 6348)

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>399</td>
<td>418</td>
</tr>
</tbody>
</table>

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

Test Date: Jun-2021  
Hardware Availability: Jun-2021  
Software Availability: Dec-2020

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

### Notes

- 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 2021-06-04 13:15:20-0400.
- Report generated on 2021-06-22 17:03:49 by CPU2017 PDF formatter v6442.
- Originally published on 2021-06-22.