## SPEC CPU®2017 Floating Point Rate Result

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

**ProLiant DL380 Gen10 Plus**
*(2.20 GHz, Intel Xeon Gold 6338N)*

**SPECrater®2017_fp_base = 370**

**SPECrater®2017_fp_peak = 391**

---

### Hardware

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name</strong></td>
<td>Intel Xeon Gold 6338N</td>
</tr>
<tr>
<td><strong>Max MHz</strong></td>
<td>3500</td>
</tr>
<tr>
<td><strong>Nominal</strong></td>
<td>2200</td>
</tr>
<tr>
<td><strong>Enabled</strong></td>
<td>64 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td><strong>Orderable</strong></td>
<td>1, 2 chip(s)</td>
</tr>
<tr>
<td><strong>Cache L1</strong></td>
<td>32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td></td>
<td>L2: 1.25 MB I+D on chip per core</td>
</tr>
<tr>
<td></td>
<td>L3: 48 MB I+D on chip per chip</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R, running at 2666)</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>1 x 400 GB SAS SSD, RAID 0</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>None</td>
</tr>
</tbody>
</table>

---

### Software

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OS</strong></td>
<td>Red Hat Enterprise Linux 8.3 (Ootpa)</td>
</tr>
<tr>
<td><strong>Kernel</strong></td>
<td>4.18.0-240.el8.x86_64</td>
</tr>
<tr>
<td><strong>Compiler</strong></td>
<td>C/C++: Version 2021.1 of Intel oneAPI DPC++/C++</td>
</tr>
<tr>
<td><strong>Parallel</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>File System</strong></td>
<td>xfs</td>
</tr>
<tr>
<td><strong>System State</strong></td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td><strong>Base Pointers</strong></td>
<td>64-bit</td>
</tr>
<tr>
<td><strong>Peak Pointers</strong></td>
<td>64-bit</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
</tbody>
</table>

---

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6338N)

SPECrate®2017_fp_base = 370
SPECrate®2017_fp_peak = 391

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Copies</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Copies</td>
<td>Seconds</td>
</tr>
<tr>
<td>503.bwaves_r</td>
<td>128</td>
<td>2049</td>
<td>626</td>
<td>2048</td>
<td>627</td>
<td>2049</td>
<td>626</td>
<td>64</td>
<td>1016</td>
</tr>
<tr>
<td>507.cactuBSSN_r</td>
<td>128</td>
<td>306</td>
<td>529</td>
<td>306</td>
<td>529</td>
<td>307</td>
<td>527</td>
<td>128</td>
<td>306</td>
</tr>
<tr>
<td>508.namd_r</td>
<td>128</td>
<td>372</td>
<td>327</td>
<td>371</td>
<td>328</td>
<td>372</td>
<td>327</td>
<td>128</td>
<td>372</td>
</tr>
<tr>
<td>510.parest_r</td>
<td>128</td>
<td>1872</td>
<td>179</td>
<td>1871</td>
<td>179</td>
<td>1867</td>
<td>179</td>
<td>64</td>
<td>702</td>
</tr>
<tr>
<td>511.povray_r</td>
<td>128</td>
<td>630</td>
<td>474</td>
<td>629</td>
<td>476</td>
<td>634</td>
<td>472</td>
<td>128</td>
<td>548</td>
</tr>
<tr>
<td>519.lbm_r</td>
<td>128</td>
<td>583</td>
<td>231</td>
<td>582</td>
<td>232</td>
<td>582</td>
<td>232</td>
<td>128</td>
<td>583</td>
</tr>
<tr>
<td>521.wrf_r</td>
<td>128</td>
<td>966</td>
<td>297</td>
<td>968</td>
<td>296</td>
<td>971</td>
<td>295</td>
<td>64</td>
<td>456</td>
</tr>
<tr>
<td>526.blender_r</td>
<td>128</td>
<td>449</td>
<td>434</td>
<td>448</td>
<td>435</td>
<td>450</td>
<td>434</td>
<td>128</td>
<td>449</td>
</tr>
<tr>
<td>527.cam4_r</td>
<td>128</td>
<td>526</td>
<td>426</td>
<td>527</td>
<td>425</td>
<td>525</td>
<td>427</td>
<td>128</td>
<td>526</td>
</tr>
<tr>
<td>538.imagick_r</td>
<td>128</td>
<td>296</td>
<td>1070</td>
<td>294</td>
<td>1080</td>
<td>293</td>
<td>1090</td>
<td>128</td>
<td>296</td>
</tr>
<tr>
<td>544.nab_r</td>
<td>128</td>
<td>296</td>
<td>727</td>
<td>294</td>
<td>732</td>
<td>294</td>
<td>734</td>
<td>128</td>
<td>290</td>
</tr>
<tr>
<td>549.fotonik3d_r</td>
<td>128</td>
<td>2525</td>
<td>198</td>
<td>2526</td>
<td>197</td>
<td>2524</td>
<td>198</td>
<td>128</td>
<td>2525</td>
</tr>
<tr>
<td>554.roms_r</td>
<td>128</td>
<td>1504</td>
<td>135</td>
<td>1504</td>
<td>135</td>
<td>1500</td>
<td>136</td>
<td>64</td>
<td>617</td>
</tr>
</tbody>
</table>

SPECrate®2017_fp_base = 370
SPECrate®2017_fp_peak = 391

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

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

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
**ProLiant DL380 Gen10 Plus**  
(2.20 GHz, Intel Xeon Gold 6338N)  

**SPECrate®2017_fp_base = 370**  
**SPECrate®2017_fp_peak = 391**

**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.


**Platform Notes**

The system ROM used for this result contains Intel microcode version 0xd0002a0 for the Intel Xeon Gold 6338N 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 Tue Aug 10 14:21:10 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 6338N CPU @ 2.20GHz
  2 "physical id"s (chips)
  128 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
```

(Continued on next page)
### Platform Notes (Continued)

```plaintext
cpu cores : 32
siblings : 64
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 28 29 30 31
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 28 29 30 31
```

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):** 128
- **On-line CPU(s) list:** 0-127
- **Thread(s) per core:** 2
- **Core(s) per socket:** 32
- **Socket(s):** 2
- **NUMA node(s):** 4
- **Vendor ID:** GenuineIntel
- **CPU family:** 6
- **Model:** 106
- **Model name:** Intel(R) Xeon(R) Gold 6338N CPU @ 2.20GHz
- **Stepping:** 6
- **CPU MHz:** 2744.509
- **BogoMIPS:** 4400.00
- **Virtualization:** VT-x
- **L1d cache:** 48K
- **L1i cache:** 32K
- **L2 cache:** 1280K
- **L3 cache:** 49152K
- **NUMA node0 CPU(s):** 0-15, 64-79
- **NUMA node1 CPU(s):** 16-31, 80-95
- **NUMA node2 CPU(s):** 32-47, 96-111
- **NUMA node3 CPU(s):** 48-63, 112-127

**Flags:** fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dtc 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
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 erms invpcid cqm rdt_a avx512f avx512dq
rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_hwi avx512bw
avx512vl xsaveopt xsavecov xgetbv1 xsaves cqm_llc cqm_occip_llc cqm_mbb_total
cqm_mbb_local split_lock_detect wboinvd dtherm ida arat pni pts avx512v bmi umip pku
ospke avx512_vmbi2 gfni vaes vpcm1ulqdq avx512_vnni avx512_bitalg tme
avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities
```
(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6338N)

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

SPECrate®2017_fp_base = 370
SPECrate®2017_fp_peak = 391

CPU2017 License: 3
Test Date: Aug-2021
Test Sponsor: HPE
Hardware Availability: Jun-2021
Tested by: HPE
Software Availability: Dec-2020

Platform Notes (Continued)

/proc/cpuinfo cache data
  cache size: 49152 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 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95
  node 0 size: 503900 MB
  node 0 free: 515294 MB
  node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95
  node 1 size: 504596 MB
  node 1 free: 515552 MB
  node 2 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111
  node 2 size: 503918 MB
  node 2 free: 515767 MB
  node 3 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127
  node 3 size: 503499 MB
  node 3 free: 515683 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: 2113474308 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"

(Continued on next page)
Platform Notes (Continued)

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 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 Aug 10 14:20

SPEC is set to: /home/cpu2017
    Filesystem            Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rhel-home xfs   297G  101G  197G  34% /home

From /sys/devices/virtual/dmi/id
    Vendor: HPE
    Product: ProLiant DL380 Gen10 Plus
    Product Family: ProLiant
    Serial: CN70110BZV

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, configured at 2666

    BIOS:
        BIOS Vendor: HPE
        BIOS Version: U46
SPEC CPU®2017 Floating Point Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6338N)

SPECrated®2017_fp_base = 370
SPECrated®2017_fp_peak = 391

CPU2017 License: 3
Test Sponsor: HPE
Test Date: Aug-2021
Tested by: HPE
Hardware Availability: Jun-2021
Software Availability: Dec-2020

Platform Notes (Continued)

BIOS Date: 05/27/2021
BIOS Revision: 1.50
Firmware Revision: 2.50

(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)
## SPEC CPU®2017 Floating Point Rate Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10 Plus  
(2.20 GHz, Intel Xeon Gold 6338N)  

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
<th>370</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_fp_peak</td>
<td>391</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Aug-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Jun-2021</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Dec-2020</td>
</tr>
</tbody>
</table>

### Compiler Version Notes (Continued)

<table>
<thead>
<tr>
<th>C++, C</th>
<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.  
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. |

<table>
<thead>
<tr>
<th>C++, C</th>
<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.  
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. |

<table>
<thead>
<tr>
<th>C++, C, Fortran</th>
<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.  
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) 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. |

<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>
</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
ProLiant DL380 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6338N)

HPE

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

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

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.

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.

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.

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.
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6338N)

SPECraten©2017_fp_base = 370
SPECraten©2017_fp_peak = 391

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.cactusBSSN_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
-fflto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

(Continued on next page)
Hewlett Packard Enterprise
ProLiant DL380 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6338N)

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

SPECratenumber fp_peak = 391

Base Optimization Flags (Continued)

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

Fortran benchmarks:
-\( -w \-m64 \-Wl,-z,\text{muldefs} \-xCORE-AVX512 \-O3 \-ipo \-no-prec-div \-qopt-prefetch \-ffinite-math-only \-qopt-multiple-gather-scatter-by-shuffles \-qopt-\text{mem}-layout-trans=4 \-nostandard-\text{realloc}-lhs \-align \text{array}32\text{byte} \-auto \-ljemalloc \-L/usr/local/jemalloc64-5.0.1/lib \)

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

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

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

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 -std=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)
## SPEC CPU®2017 Floating Point Rate Result

- **Hewlett Packard Enterprise**
  - **Test Sponsor:** HPE
  - **ProLiant DL380 Gen10 Plus**
    - **(2.20 GHz, Intel Xeon Gold 6338N)**

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base</th>
<th>SPECrate®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>370</td>
<td>391</td>
</tr>
</tbody>
</table>

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

### Test Date: Aug-2021
- **Hardware Availability:** Jun-2021
- **Software Availability:** Dec-2020

## 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](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.0-ICX-revE.html)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10 Plus  
(2.20 GHz, Intel Xeon Gold 6338N)  

<table>
<thead>
<tr>
<th>SPECrate®2017_fp_base = 370</th>
<th>SPECrate®2017_fp_peak = 391</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License: 3</td>
<td>Test Date: Aug-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: Dec-2020</td>
</tr>
</tbody>
</table>

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

- [HPE-Platform-Flags-Intel-V1.0-1CX-revE.xml](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.0-1CX-revE.xml)
- [Intel-ic2021-official-linux64_revA.xml](http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.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 2021-08-10 04:51:09-0400.
Report generated on 2021-09-01 14:21:36 by CPU2017 PDF formatter v6442.
Originally published on 2021-08-31.