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

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL110 Gen10 Plus  
(2.20 GHz, Intel Xeon Gold 6330N)  

**SPECspeed®2017_fp_base = 111**  
**SPECspeed®2017_fp_peak = 113**

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base (111)</th>
<th>SPECspeed®2017_fp_peak (113)</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s 28</td>
<td>607.cactuBSSN_s 28</td>
</tr>
<tr>
<td>619.lbm_s 28</td>
<td>621.wrf_s 28</td>
</tr>
<tr>
<td>627.cam4_s 28</td>
<td>628.pop2_s 28</td>
</tr>
<tr>
<td>638.imagick_s 28</td>
<td>644.nab_s 28</td>
</tr>
<tr>
<td>649.fotonik3d_s 28</td>
<td>654.roms_s 28</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Xeon Gold 6330N</td>
<td>OS: Red Hat Enterprise Linux 8.3 (Ootpa)</td>
</tr>
<tr>
<td>Max MHz: 3400</td>
<td>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</td>
</tr>
<tr>
<td>Nominal: 2200</td>
<td>Parallel: Yes</td>
</tr>
<tr>
<td>Enabled: 28 cores, 1 chip</td>
<td>Firmware: HPE BIOS Version U56 v1.50 05/13/2021 released May-2021</td>
</tr>
<tr>
<td>Orderable: 1 chip</td>
<td>File System: xfs</td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 48 KB D on chip per core</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>L2: 1.25 MB I+D on chip per core</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>L3: 42 MB I+D on chip per chip</td>
<td>Peak Pointers: 64-bit</td>
</tr>
<tr>
<td>Other: None</td>
<td>Other: jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td>Memory: 512 GB (8 x 64 GB 2Rx4 PC4-3200AA-R, running at 2666)</td>
<td>Power Management: BIOS set to prefer performance at the cost of additional power usage</td>
</tr>
<tr>
<td>Storage: 1 x 480 GB NVMe SSD, RAID 0</td>
<td></td>
</tr>
<tr>
<td>Other: None</td>
<td></td>
</tr>
</tbody>
</table>
SPEC CPU®2017 Floating Point Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

SPECspeed®2017_fp_base = 111
SPECspeed®2017_fp_peak = 113

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>
<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>28</td>
<td>180</td>
<td>328</td>
<td>180</td>
<td>328</td>
<td>180</td>
<td>328</td>
<td>180</td>
<td>328</td>
<td>180</td>
<td>328</td>
<td>180</td>
<td>328</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>28</td>
<td>76.2</td>
<td>68.7</td>
<td>76.6</td>
<td>68.4</td>
<td>76.6</td>
<td>68.4</td>
<td>76.6</td>
<td>68.4</td>
<td>76.6</td>
<td>68.4</td>
<td>76.6</td>
<td>68.4</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>28</td>
<td>107</td>
<td>124</td>
<td>107</td>
<td>123</td>
<td>107</td>
<td>123</td>
<td>107</td>
<td>123</td>
<td>107</td>
<td>123</td>
<td>107</td>
<td>123</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>28</td>
<td>112</td>
<td>79.0</td>
<td>112</td>
<td>78.9</td>
<td>112</td>
<td>78.9</td>
<td>112</td>
<td>78.9</td>
<td>112</td>
<td>78.9</td>
<td>112</td>
<td>78.9</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>28</td>
<td>153</td>
<td>77.7</td>
<td>151</td>
<td>78.7</td>
<td>151</td>
<td>78.5</td>
<td>151</td>
<td>78.5</td>
<td>151</td>
<td>78.5</td>
<td>151</td>
<td>78.5</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>28</td>
<td>158</td>
<td>91.6</td>
<td>158</td>
<td>91.4</td>
<td>158</td>
<td>91.4</td>
<td>158</td>
<td>91.4</td>
<td>158</td>
<td>91.4</td>
<td>158</td>
<td>91.4</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>28</td>
<td>94.0</td>
<td>186</td>
<td>94.5</td>
<td>185</td>
<td>94.0</td>
<td>186</td>
<td>94.0</td>
<td>186</td>
<td>94.0</td>
<td>186</td>
<td>94.0</td>
<td>186</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>28</td>
<td>147</td>
<td>62.2</td>
<td>147</td>
<td>61.9</td>
<td>147</td>
<td>61.9</td>
<td>147</td>
<td>61.9</td>
<td>147</td>
<td>61.9</td>
<td>147</td>
<td>61.9</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>28</td>
<td>157</td>
<td>100</td>
<td>157</td>
<td>100</td>
<td>155</td>
<td>101</td>
<td>157</td>
<td>100</td>
<td>157</td>
<td>100</td>
<td>155</td>
<td>101</td>
</tr>
</tbody>
</table>

SPECspeed®2017_fp_base = 111
SPECspeed®2017_fp_peak = 113

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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 = "/cpu2017/lib/intel64:/cpu2017/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 built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

SPECspeed®2017_fp_base = 111
SPECspeed®2017_fp_peak = 113

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

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

General Notes (Continued)


Submitted by: "Bhatnagar, Prateek" <prateek.bhatnagar@hpe.com>
Submitted: Mon Jul  5 08:00:46 EDT 2021
Submission: cpu2017-20210705-27737.sub

Platform Notes

The system ROM used for this result contains Intel microcode version 0xd0002a0 for the Intel Xeon Gold 6330N processor
BIOS Configuration:
Workload Profile set to General Peak Frequency Compute
Intel Hyper-Threading set to Disabled
Thermal Configuration set to Maximum Cooling
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
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 /cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca64d
running on localhost.localdomain Sun Jul  4 08:41:37 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 6330N CPU @ 2.20GHz
  1 "physical id”s (chips)
  28 "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 : 28
siblings : 28
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

From lscpu from util-linux 2.32.1:

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

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

SPECspeed®2017_fp_base = 111
SPECspeed®2017_fp_peak = 113

### Platform Notes (Continued)

- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 28
- On-line CPU(s) list: 0-27
- Thread(s) per core: 1
- Core(s) per socket: 28
- Socket(s): 1
- NUMA node(s): 1
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 106
- Model name: Intel(R) Xeon(R) Gold 6330N CPU @ 2.20GHz
- Stepping: 6
- CPU MHz: 3400.000
- BogoMIPS: 4400.00
- Virtualization: VT-x
- L1d cache: 48K
- L1i cache: 32K
- L2 cache: 1280K
- L3 cache: 43008K
- NUMA node0 CPU(s): 0-27
- Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc 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 xtrm pclcm dcm dcmo lcm cmov cmovs mcmov mcmp cmovb cmovc cmp cmovd cmpcmov cmpcmovd cmpcmovb cmpcmovc cmpcmpmova cmpcmpmovb cmpcmpmovc cmpcmpmovd

From numactl --hardware

WARNING: a numactl 'node' might or might not correspond to a physical chip.

/proc/cpuinfo cache data
cache size : 43008 KB

(Continued on next page)
Platform Notes (Continued)

From /proc/meminfo

MemTotal:       528052852 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 seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: userscopy/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

SPEC is set to: /cpu2017

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

SPECspeed®2017_fp_base = 111
SPECspeed®2017_fp_peak = 113

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

Platform Notes (Continued)

Filesystem Type Size Used Avail Use% Mounted on
/dev/nvme1n1p4 xfs 442G 146G 296G 33% /

From /sys/devices/virtual/dmi/id
Vendor: HPE
Product: ProLiant DL110 Gen10 Plus
Product Family: ProLiant
Serial: T912PP0032

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:
8x Micron 36ASF8G72PZ-3G2B2 64 GB 2 rank 3200, configured at 2666

BIOS:
BIOS Vendor: HPE
BIOS Version: U56
BIOS Date: 05/13/2021
BIOS Revision: 1.50
Firmware Revision: 2.40

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
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               | 619.lbm_s(base, peak) 638.imagick_s(base, peak)  
(Continued on next page)
Hewlett Packard Enterprise  
ProLiant DL110 Gen10 Plus  
(2.20 GHz, Intel Xeon Gold 6330N)

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

Copyright 2017-2021 Standard Performance Evaluation Corporation

---

**Compiler Version Notes (Continued)**

<table>
<thead>
<tr>
<th>644.nab_s(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>644.nab_s(peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>607.cactuBSSN_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C++ Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>649.fotonik3d_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>654.roms_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>603.bwaves_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>649.fotonik3d_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>621.wrf_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>627.cam4_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>628.pop2_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>621.wrf_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>627.cam4_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>628.pop2_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>621.wrf_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>627.cam4_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>628.pop2_s(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>

---

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

SPECspeed®2017_fp_base = 111
SPECspeed®2017_fp_peak = 113

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

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

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

-----------------------------

Base Compiler Invocation

C benchmarks:
  icc

Fortran benchmarks:
  ifort

Benchmarks using both Fortran and C:
  ifort icc

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

-----------------------------

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

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

SPECspeed®2017_fp_base = 111
SPECspeed®2017_fp_peak = 113

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

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Jul-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>

**Base Optimization Flags (Continued)**

Forzan benchmarks (continued):
- `-qopt-mem-layout-trans=4` -gopenmp -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` `-Wall` `-z,unequal` `-mbranch=single` `-L/usr/local/jemalloc64-5.0.1/lib`
- `-ljemalloc`

Benchmarks using Fortran, C, and C++:
- `-m64` `-std=c11` `-Wall` `-z,unequal` `-mbranch=single` `-L/usr/local/jemalloc64-5.0.1/lib`
- `-ljemalloc`

**Peak Compiler Invocation**

C benchmarks (except as noted below):

```bash
icc
```

644.nab_s: icx

Fortran benchmarks:

```bash
ifort
```

Benchmarks using both Fortran and C:

```bash
ifort icc
```

Benchmarks using Fortran, C, and C++:

```bash
icpc icc ifort
```

**Peak Portability Flags**

Same as Base Portability Flags
### Peak Optimization Flags

#### C benchmarks:

619.lbm_s: basepeak = yes

638.imagick_s: basepeak = yes


#### Fortran benchmarks:

603.bwaves_s: -m64 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP -DSPEC_OPENMP -ipo -xCORE-AVX512 -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

649.fotonik3d_s: Same as 603.bwaves_s

654.roms_s: basepeak = yes

#### Benchmarks using both Fortran and C:

621.wrf_s: -m64 -std=c11 -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

627.cam4_s: basepeak = yes

628.pop2_s: basepeak = yes

#### Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: basepeak = yes
## SPEC CPU®2017 Floating Point Speed Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
**ProLiant DL110 Gen10 Plus**  
(2.20 GHz, Intel Xeon Gold 6330N)  

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_peak</th>
<th>113</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_fp_base</td>
<td>111</td>
</tr>
</tbody>
</table>

### Copyright 2017-2021 Standard Performance Evaluation Corporation

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

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)

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)

---

**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 2021-07-04 09:41:37-0400.  
Originally published on 2021-07-20.