**Hewlett Packard Enterprise**  
ProLiant BL460c Gen10  
(2.30 GHz, Intel Xeon Gold 5118)  

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
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<tbody>
<tr>
<td>SPECspeed2017_fp_base = 78.2</td>
<td>CPU Name: Intel Xeon Gold 5118</td>
</tr>
<tr>
<td>SPECspeed2017_fp_peak = Not Run</td>
<td>Max MHz.: 3200</td>
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<tr>
<td>SPECspeed2017_fp_base = 78.2</td>
<td>Nominal: 2300</td>
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<tr>
<td>SPECspeed2017_fp_peak = Not Run</td>
<td>Enabled: 24 cores, 2 chips</td>
</tr>
<tr>
<td>SPECspeed2017_fp_base = 78.2</td>
<td>Orderable: 1, 2 chip(s)</td>
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<tr>
<td>SPECspeed2017_fp_peak = Not Run</td>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
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<tr>
<td>SPECspeed2017_fp_base = 78.2</td>
<td>L2: 1 MB I+D on chip per core</td>
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<tr>
<td>SPECspeed2017_fp_peak = Not Run</td>
<td>L3: 16.5 MB I+D on chip per chip</td>
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<td>SPECspeed2017_fp_base = 78.2</td>
<td>Other: None</td>
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<tr>
<td>SPECspeed2017_fp_peak = Not Run</td>
<td>Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2400)</td>
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<tr>
<td>SPECspeed2017_fp_base = 78.2</td>
<td>Storage: 1 x 480 GB SATA SSD, RAID 0</td>
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<tr>
<td>SPECspeed2017_fp_peak = Not Run</td>
<td>Other: None</td>
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**Test Sponsor:** Hewlett Packard Enterprise  
**Test Date:** Dec-2017  
**Hardware Availability:** Oct-2017  
**Software Availability:** Sep-2017  

**Threads**  

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<tr>
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<tr>
<td>603.bwaves_s</td>
<td>24</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>24</td>
<td>34.2</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>24</td>
<td>61.3</td>
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<tr>
<td>621.wrf_s</td>
<td>24</td>
<td>53.5</td>
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<tr>
<td>627.cam4_s</td>
<td>24</td>
<td>55.1</td>
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<td>628.pop2_s</td>
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<td>638.imagick_s</td>
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<td>644.nab_s</td>
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<td>64.6</td>
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<tr>
<td>649.fotonik3d_s</td>
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<td>654.roms_s</td>
<td>24</td>
<td>365</td>
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**CPU2017 License:** 3  
**Test Sponsor:** Hewlett Packard Enterprise  
**Tested by:** Hewlett Packard Enterprise

---

**CPU Name:** Intel Xeon Gold 5118  
**Max MHz.:** 3200  
**Nominal:** 2300  
**Enabled:** 24 cores, 2 chips  
**Orderable:** 1, 2 chip(s)  
**Cache L1:** 32 KB I + 32 KB D on chip per core  
**L2:** 1 MB I+D on chip per core  
**L3:** 16.5 MB I+D on chip per chip  
**Other:** None  
**Memory:** 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2400)  
**Storage:** 1 x 480 GB SATA SSD, RAID 0  
**Other:** None  

**OS:** Red Hat Enterprise Linux Server release 7.3 (Maipo),  
**Kernel:** 3.10.0-514.e17.x86_64  
**Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux  
**Parallel:** Yes  
**Firmware:** HPE BIOS Version I41 09/29/2017 released Oct-2017  
**File System:** xfs  
**System State:** Run level 3 (multi-user)  
**Base Pointers:** 64-bit  
**Peak Pointers:** Not Applicable  
**Other:** None
SPEC CPU2017 Floating Point Speed Result

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Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant BL460c Gen10
(2.30 GHz, Intel Xeon Gold 5118)

SPECspeed2017_fp_base = 78.2
SPECspeed2017_fp_peak = Not Run

Results Table

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</tr>
</tbody>
</table>

SPECspeed2017_fp_base = 78.2
SPECspeed2017_fp_peak = Not Run

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
Filesystem page cache cleared with:
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
irqbalance service stopped using "systemctl stop irqbalance.service"
Used throughput-performance profile for tuned-adm: "tuned-adm profile throughput-performance profile"

General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.4

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
No: 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.
No: 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.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

(Continued on next page)
SPEC CPU2017 Floating Point Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant BL460c Gen10
(2.30 GHz, Intel Xeon Gold 5118)

SPECspeed2017_fp_base = 78.2
SPECspeed2017_fp_peak = Not Run

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

Test Date: Dec-2017
Hardware Availability: Oct-2017
Software Availability: Sep-2017

General Notes (Continued)

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, http://www.spec.org/osg/policy.htm.

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

Platform Notes

BIOS Configuration:
Intel Hyper-Threading set to Disabled
Thermal Configuration set to Maximum Cooling
LLC Prefetch set to Enabled
LLC Dead Line Allocation set to Disabled
Memory Patrol Scrubbing set to Disabled
Workload Profile set to General Peak Frequency Compute
Energy/Performance Bias set to Maximum Performance
Workload Profile set to Custom
NUMA Group Size Optimization set to Flat
Sysinfo program /root/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on localhost.localdomain Fri Dec 1 12:33:41 2017

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 5118 CPU @ 2.30GHz
  2 "physical id"s (chips)
  24 "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 : 12
siblings : 12
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit

(Continued on next page)
SPEC CPU2017 Floating Point Speed Result
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Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant BL460c Gen10
(2.30 GHz, Intel Xeon Gold 5118)

SPECspeed2017_fp_base = 78.2
SPECspeed2017_fp_peak = Not Run

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

Platform Notes (Continued)

Byte Order: Little Endian
CPU(s): 24
On-line CPU(s) list: 0-23
Thread(s) per core: 1
Core(s) per socket: 12
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 5118 CPU @ 2.30GHz
Stepping: 4
CPU MHz: 2300.000
BogoMIPS: 4605.25
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 16896K
NUMA node0 CPU(s): 0-5
NUMA node1 CPU(s): 6-11
NUMA node2 CPU(s): 12-17
NUMA node3 CPU(s): 18-23

/proc/cpuinfo cache data
   cache size : 16896 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
   node 0 size: 48812 MB
   node 0 free: 46153 MB
   node 1 cpus: 6 7 8 9 10 11
   node 1 size: 49152 MB
   node 1 free: 44361 MB
   node 2 cpus: 12 13 14 15 16 17
   node 2 size: 49152 MB
   node 2 free: 46366 MB
   node 3 cpus: 18 19 20 21 22 23
   node 3 size: 49151 MB
   node 3 free: 47662 MB
   node distances:
      node 0 1 2 3
      0: 10 21 31 31
      1: 21 10 31 31
      2: 31 31 10 21

(Continued on next page)
SPEC CPU2017 Floating Point Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant BL460c Gen10
(2.30 GHz, Intel Xeon Gold 5118)

| SPECspeed2017_fp_base = 78.2 |
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CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

| Test Date: Dec-2017 |
| Hardware Availability: Oct-2017 |
| Software Availability: Sep-2017 |

Platform Notes (Continued)

3: 31 31 21 10

From /proc/meminfo

MemTotal: 197573292 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.3 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.3"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)

uname -a:
Linux localhost.localdomain 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 30 16:46

SPEC is set to: /root/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 442G 28G 415G 7% /

Additional information from dmidecode 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.

BIOS HPE I41 09/29/2017
Memory:
4x UNKNOWN NOT AVAILABLE
12x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2666, configured at 2400

(End of data from sysinfo program)

Compiler Version Notes

================================================================================
CC 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
================================================================================

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant BL460c Gen10
(2.30 GHz, Intel Xeon Gold 5118)

SPEC CPU2017 Floating Point Speed Result

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

SPECspeed2017_fp_base = 78.2
SPECspeed2017_fp_peak = Not Run

Test Date: Dec-2017
Hardware Availability: Oct-2017
Software Availability: Sep-2017

Compiler Version Notes (Continued)

---

icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

FC 607.cactuBSSN_s(base)

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

---

FC 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)

ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

---

CC 621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)

ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 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
**SPEC CPU2017 Floating Point Speed Result**

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant BL460c Gen10  
(2.30 GHz, Intel Xeon Gold 5118)

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<tr>
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<tr>
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<td>HPE</td>
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</tbody>
</table>

**SPECspeed2017_fp_base =** 78.2  
**SPECspeed2017_fp_peak =** Not Run

**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:
- -xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only  
- -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP

Fortran benchmarks:
- -DSPEC_OPENMP -xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch  
- -ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp  
- -nstandard-realloc-lhs -align array32byte

Benchmarks using both Fortran and C:
- -xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only  
- -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP  
- -nstandard-realloc-lhs -align array32byte

Benchmarks using Fortran, C, and C++:
- -xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only  
- -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP  
- -nstandard-realloc-lhs -align array32byte

**Base Other Flags**

C benchmarks:
- -m64 -std=c11

Fortran benchmarks:
- -m64

(Continued on next page)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant BL460c Gen10  
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**CPU2017 License:** 3  
**Test Date:** Dec-2017  
**Test Sponsor:** HPE  
**Hardware Availability:** Oct-2017  
**Tested by:** HPE  
**Software Availability:** Sep-2017  

### Base Other Flags (Continued)

Benchmarks using both Fortran and C:  
-m64 -std=c11

Benchmarks using Fortran, C, and C++:  
-m64 -std=c11

The flags files that were used to format this result can be browsed at:  
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revH.html

You can also download the XML flags sources by saving the following links:  
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revH.xml

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU2017 v1.0.2 on 2017-12-01 13:33:41-0500.  