### SPEC® CPU2017 Floating Point Speed Result

#### Hewlett Packard Enterprise

**Test Sponsor:** HPE  
**Test Date:** Nov-2017  
**Hardware Availability:** Oct-2017  
**Software Availability:** Sep-2017  
**License:** 3

#### Result

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base</th>
<th>SPECspeed2017_fp_peak</th>
</tr>
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<tr>
<td>81.8</td>
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#### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
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<tr>
<td>603.bwaves_s</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>24</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>24</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>24</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>24</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>24</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>24</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>24</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>24</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>24</td>
</tr>
</tbody>
</table>

#### Hardware

| 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 (24 x 8 GB 2Rx8 PC4-2666V-R, running at 2400)  
| Storage | 1 x 960 GB SATA SSD, RAID 0  
| Other | None

#### Software

| OS | Red Hat Enterprise Linux Server release 7.3  
|   | (Maipo)  
| 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  
| 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**

Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10  
(2.30 GHz, Intel Xeon Gold 5118)

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**SPECspeed2017_fp_base = 81.8**  
**SPECspeed2017_fp_peak = Not Run**

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>603.bwaves_s</td>
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<td>127</td>
<td>71.6</td>
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<tr>
<td>654.roms_s</td>
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<td>185</td>
<td>85.3</td>
<td></td>
<td></td>
</tr>
</tbody>
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**SPECspeed2017_fp_base = 81.8**  
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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 disabled with "systemctl stop irqbalance"
- tuned profile set with "tuned-adm profile throughput-performance"

### General Notes

Environment variables set by runcpu before the start of the run:
- KMP_AFFINITY = "granularity=core,compact"
- LD_LIBRARY_PATH = "*/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"
- OMP_STACKSIZE = "192M"

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

### Platform Notes

- Intel Hyperthreading 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

(Continued on next page)
Hewlett Packard Enterprise
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ProLiant DL380 Gen10
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SPECspeed2017_fp_base = 81.8
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Platform Notes (Continued)

Workload Profile set to Custom
NUMA Group Size Optimization set to Flat
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on DL380Gen10-2 Tue Nov 14 12:26:06 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
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):       2
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:           4605.33
Virtualization:     VT-x
L1d cache:          32K
L1i cache:          32K
L2 cache:           1024K
L3 cache:           16896K
NUMA node0 CPU(s):  0-11
NUMA node1 CPU(s):  12-23

/proc/cpuinfo cache data

(Continued on next page)
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Test Date: Nov-2017  
Hardware Availability: Oct-2017  
Software Availability: Sep-2017

**Platform Notes (Continued)**

- cache size : 16896 KB
- From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a physical chip.
- From /proc/meminfo
  - MemTotal: 197573772 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 DL380Gen10-2 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016 x86_64 x86_64 GNU/Linux
  - run-level 3 Nov 14 12:22
- SPEC is set to: /home/cpu2017
  - Filesystem Type Size Used Avail Use% Mounted on
    - /dev/mapper/rhel-home xfs 504G 30G 474G 6% /home

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 SMI BIOS" standard.

- BIOS HPE U30 09/29/2017
  - Memory:
    - 24x UNKNOWN NOT AVAILABLE 8 GB 2 rank 2666, configured at 2400

(End of data from sysinfo program)
Hewlett Packard Enterprise  
(2.30 GHz, Intel Xeon Gold 5118)  

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**Compiler Version Notes**

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

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Base Compiler Invocation (Continued)

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:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP

Fortran benchmarks:
-DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-nostandard-realloc-lhs -align array32byte

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte

Benchmarks using Fortran, C, and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte
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**CPU2017 License**: 3
**Test Sponsor**: HPE
**Tested by**: HPE

**Base Other Flags**

C benchmarks:
- `-m64 -std=c11`

Fortran benchmarks:
- `-m64`

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-revG.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-revG.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 2017-11-14 12:26:05-0500.
Report generated on 2018-10-31 14:56:01 by CPU2017 PDF formatter v6067.
Originally published on 2017-12-12.