# SPEC® CPU2017 Floating Point Speed Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL560 Gen10  
(2.50 GHz, Intel Xeon Platinum 8180M)  

<table>
<thead>
<tr>
<th>Thread</th>
<th>SPECspeed2017_fp_base</th>
<th>SPECspeed2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>112</td>
<td>Not Run</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>112</td>
<td>259</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>112</td>
<td>81.8</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>112</td>
<td>82.8</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>112</td>
<td>168</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>112</td>
<td>60.2</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>112</td>
<td>258</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>112</td>
<td>450</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>112</td>
<td>117</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>112</td>
<td>274</td>
</tr>
</tbody>
</table>

## Hardware

- **CPU Name:** Intel Xeon Platinum 8180M  
  - **Max MHz.:** 3800  
  - **Nominal:** 2500  
  - **Enabled:** 112 cores, 4 chips  
  - **Orderable:** 1, 2, 4 chip(s)  
  - **Cache L1:** 32 KB I + 32 KB D on chip per core  
  - **L2:** 1 MB I+D on chip per core  
  - **L3:** 38.5 MB I+D on chip per chip  
  - **Other:** None  
- **Memory:** 768 GB (48 x 16 GB 2Rx8 PC4-2666V-R)  
- **Storage:** 1 x 480 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  
- **Firmware:** HPE BIOS Version U34 released Oct-2017 (tested with U34 9/29/2017)  
- **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

Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL560 Gen10  
(2.50 GHz, Intel Xeon Platinum 8180M)

SPECspeed2017_fp_base = 186
SPECspeed2017_fp_peak = Not Run

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>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>112</td>
<td>76.6</td>
<td>770</td>
<td>76.6</td>
<td>771</td>
<td>75.7</td>
<td>779</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>112</td>
<td>64.4</td>
<td>259</td>
<td>64.2</td>
<td>260</td>
<td>64.4</td>
<td>259</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>112</td>
<td>63.9</td>
<td>82.0</td>
<td>64.2</td>
<td>81.6</td>
<td>64.0</td>
<td>81.8</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>112</td>
<td>162</td>
<td>81.5</td>
<td>160</td>
<td>82.8</td>
<td>160</td>
<td>82.9</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>112</td>
<td>53.2</td>
<td>167</td>
<td>52.3</td>
<td>170</td>
<td>52.8</td>
<td>168</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>112</td>
<td>56.7</td>
<td>255</td>
<td>55.9</td>
<td>258</td>
<td>55.9</td>
<td>258</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>112</td>
<td>38.6</td>
<td>453</td>
<td>38.9</td>
<td>450</td>
<td>39.4</td>
<td>443</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>112</td>
<td>76.1</td>
<td>120</td>
<td>77.8</td>
<td>117</td>
<td>79.3</td>
<td>115</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>112</td>
<td>56.2</td>
<td>280</td>
<td>57.4</td>
<td>274</td>
<td>58.3</td>
<td>270</td>
</tr>
</tbody>
</table>

SPECspeed2017_fp_base = 186
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  
Prior to runcpu invocation  
Filesystem page cache synced and cleared with:  
   sync; echo 3>/proc/sys/vm/drop_caches  
IRQ balance service was stop using "service irqbalance stop"  
Tuned-adm profile was set to Throughtput-Performance

General Notes

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

BIOS Configuration:  
Intel Hyperthreading set to Disabled  
Thermal Configuration set to Maximum Cooling  
LLC Prefetch set to Enabled  
LLC Dead Line Allocation set to Disabled  
Stale A to S set to Enabled  
Memory Patrol Scrubbing set to Disabled

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.50 GHz, Intel Xeon Platinum 8180M)

SPECspeed2017_fp_base = 186
SPECspeed2017_fp_peak = Not Run

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

CPU2017 Floating Point Speed Result

SPEC CPU2017 Floating Point Speed Result
Copyright 2017-2018 Standard Performance Evaluation Corporation

Platform Notes (Continued)

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 /cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on DL560-Gen10 Fri Nov 10 16:00:29 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) Platinum 8180M CPU @ 2.50GHz
  4 "physical id"s (chips)
  112 "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 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30

From lscpu:
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: 1
Core(s) per socket: 28
Socket(s): 4
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Platinum 8180M CPU @ 2.50GHz
Stepping: 4
CPU MHz: 2500.000
BogoMIPS: 5007.34
Virtualization: VT-x

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.50 GHz, Intel Xeon Platinum 8180M)

SPECspeed2017_fp_base = 186
SPECspeed2017_fp_peak = Not Run

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

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

Platform Notes (Continued)

L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 39424K
NUMA node0 CPU(s): 0–27
NUMA node1 CPU(s): 28–55
NUMA node2 CPU(s): 56–83
NUMA node3 CPU(s): 84–111

/proc/cpuinfo cache data
  cache size : 39424 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
    node 0 size: 196266 MB
    node 0 free: 190782 MB
    node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
      53 54 55
    node 1 size: 196608 MB
    node 1 free: 191731 MB
    node 2 cpus: 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
      81 82 83
    node 2 size: 196608 MB
    node 2 free: 191791 MB
    node 3 cpus: 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105
    node 3 size: 196607 MB
    node 3 free: 190027 MB
    node distances:
    node 0  1  2  3
    0: 10 21 21 21
    1: 21 10 21 21
    2: 21 21 10 21
    3: 21 21 21 10

From /proc/meminfo
  MemTotal: 792066452 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"

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.50 GHz, Intel Xeon Platinum 8180M)

SPECspeed2017_fp_base = 186
SPECspeed2017_fp_peak = Not Run

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

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

Platform Notes (Continued)

```
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 DL560-Gen10 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 10 13:31

SPEC is set to: /cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb1 xfs 447G 32G 416G 8% /

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 U34 09/29/2017
Memory:
48x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2666

(End of data from sysinfo program)

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
```

(Continued on next page)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL560 Gen10  
(2.50 GHz, Intel Xeon Platinum 8180M)  

**SPECspeed2017_fp_base = 186**  
**SPECspeed2017_fp_peak = Not Run**

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: Nov-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Oct-2017</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Sep-2017</td>
</tr>
</tbody>
</table>

---

**Compiler Version Notes (Continued)**

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

---

**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  

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.50 GHz, Intel Xeon Platinum 8180M)

SPECspeed2017_fp_base = 186
SPECspeed2017_fp_peak = Not Run

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

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

Base Portability Flags (Continued)

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

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
SPEC CPU2017 Floating Point Speed Result
Copyright 2017-2018 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.50 GHz, Intel Xeon Platinum 8180M)

SPECspeed2017_fp_base = 186
SPECspeed2017_fp_peak = Not Run

CPU2017 License: 3
Test Date: Nov-2017
Test Sponsor: HPE
Hardware Availability: Oct-2017
Tested by: HPE
Software Availability: Sep-2017

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

SPEC is a registered trademark 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 CPU2017 v1.0.2 on 2017-11-10 17:00:28-0500.
Originally published on 2017-12-12.