SPEC® CPU2017 Floating Point Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.10 GHz, Intel Xeon Gold 6130)

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

SPECspeed2017_fp_base = 105
SPECspeed2017_fp_peak = Not Run

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

603.bwaves_s 32
607.cactuBSSN_s 32
619.lbm_s 32
621.wrf_s 32
627.cam4_s 32
628.pop2_s 32
638.imagick_s 32
644.nab_s 32
649.fotonik3d_s 32
654.roms_s 32

Hardware
CPU Name: Intel Xeon Gold 6130
Max MHz.: 3700
Nominal: 2100
Enabled: 32 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: 22 MB I+D on chip per chip
Other: None
Memory: 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R)
Storage: 1 x 960 GB SSD SATA, RAID 0
Other: None

Software
OS: Red Hat Enterprise Linux Server release 7.3
(Maipo)
Kernel 3.10.0-514.el7.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
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.10 GHz, Intel Xeon Gold 6130)

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

SPECspeed2017_fp_base = 105
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>
<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>32</td>
<td>126</td>
<td>468</td>
<td>126</td>
<td>469</td>
<td>127</td>
<td>466</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>32</td>
<td>125</td>
<td>133</td>
<td>125</td>
<td>133</td>
<td>125</td>
<td>133</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>32</td>
<td>122</td>
<td>42.8</td>
<td>122</td>
<td>42.9</td>
<td>122</td>
<td>42.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>32</td>
<td>162</td>
<td>81.6</td>
<td>163</td>
<td>81.1</td>
<td>163</td>
<td>81.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>32</td>
<td>122</td>
<td>72.6</td>
<td>122</td>
<td>72.9</td>
<td>122</td>
<td>72.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>32</td>
<td>187</td>
<td>63.6</td>
<td>186</td>
<td>64.0</td>
<td>186</td>
<td>63.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>32</td>
<td>158</td>
<td>91.1</td>
<td>158</td>
<td>91.0</td>
<td>159</td>
<td>90.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>644.nab_s</td>
<td>32</td>
<td>110</td>
<td>159</td>
<td>110</td>
<td>159</td>
<td>110</td>
<td>159</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>32</td>
<td>111</td>
<td>81.9</td>
<td>111</td>
<td>82.1</td>
<td>111</td>
<td>82.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>654.roms_s</td>
<td>32</td>
<td>113</td>
<td>139</td>
<td>113</td>
<td>139</td>
<td>114</td>
<td>139</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPECspeed2017_fp_base = 105
SPECspeed2017_fp_peak = Not Run

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=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/ge5.0.1-32"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017/ge5.0.1-64"
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
Memory Patrol Scrubbing set to Disabled
LLC Prefetcher set to Enabled
LLC Dead Line Allocation set to Disabled
Workload Profile set to General Peak Frequency Compute

(Continued on next page)
Energy/Performance Bias set to Maximum Performance
Uncore Frequency Scaling set to Auto
Workload Profile set to General Peak Frequency Compute
NUMA Group Size Optimization set to Flat

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on DL380Gen10 Fri Oct  6 14:40:15 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 6130 CPU @ 2.10GHz
  2 "physical id"s (chips)
  32 "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 : 16
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 32
On-line CPU(s) list: 0-31
Thread(s) per core: 1
Core(s) per socket: 16
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6130 CPU @ 2.10GHz
Stepping: 4
CPU MHz: 2100.000
BogoMIPS: 4204.68
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 22528K
NUMA node0 CPU(s): 0-15

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.10 GHz, Intel Xeon Gold 6130)

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

SPECspeed2017_fp_base = 105
SPECspeed2017_fp_peak = Not Run

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

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

Platform Notes (Continued)

NUMA node1 CPU(s): 16-31

/proc/cpuinfo cache data
cache size : 22528 KB

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

From /proc/meminfo
MemTotal: 197572716 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 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 Oct 6 14:39

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 839G 26G 814G 4% /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 SMBIOS" standard.

BIOS HPE U30 09/29/2017
Memory:
24x UNKNOWN NOT AVAILABLE 8 GB 2 rank 2666

(End of data from sysinfo program)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10  
(2.10 GHz, Intel Xeon Gold 6130)  

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

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base =</th>
<th>105</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_fp_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

---

**Compiler Version Notes**

---

**Base Compiler Invocation**

C benchmarks:

icc

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

ifort icc

(Continued on next page)
## Base Compiler Invocation (Continued)

Benchmarks using Fortran, C, and C++:

icpc icc ifort

## Base Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Portability Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>-DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian</td>
</tr>
</tbody>
</table>
| 628.pop2_s      | -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian  
| 627.cam4_s      | -DSPEC_LP64                        |
| 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 -DSPEC_OPENMP`  
- `-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`
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10  
(2.10 GHz, Intel Xeon Gold 6130)  

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base</th>
<th>105</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**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-revD.html](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revD.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-revD.xml](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revD.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 2017-10-06 14:40:15-0400.
Originally published on 2017-10-31.