## SPEC® CFP2006 Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10  
(2.00 GHz, Intel Xeon Gold 6138)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>Not Run</th>
<th>SPECfp_base2006</th>
<th>138</th>
</tr>
</thead>
</table>

**CPU2006 license:** 3  
**Test sponsor:** HPE  
**Tested by:** HPE  
**Test date:** Oct-2017  
**Hardware Availability:** Oct-2017  
**Software Availability:** Apr-2017

### Hardware

- **CPU Name:** Intel Xeon Gold 6138  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.70 GHz  
- **CPU MHz:** 2000  
- **FPU:** Integrated  
- **CPU(s) enabled:** 40 cores, 2 chips, 20 cores/chip  
- **CPU(s) orderable:** 1, 2 chip(s)  
- **Primary Cache:** 32 KB I + 32 KB D on chip per core  
- **Secondary Cache:** 1 MB I+D on chip per core

### Software

- **Operating System:** Red Hat Enterprise Linux Server release 7.3 (Maipo)  
- **Compiler:** C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux; Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux
- **Auto Parallel:** Yes  
- **File System:** xfs

---

Continued on next page
## SPEC CFP2006 Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10  
(2.00 GHz, Intel Xeon Gold 6138)

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>Not Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>138</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 3  
**Test sponsor:** HPE  
**Tested by:** HPE

- **L3 Cache:** 27.5 MB I+D on chip per chip  
- **Other Cache:** None  
- **Memory:** 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R)  
- **Disk Subsystem:** 1 x 960 GB SATA SSD, RAID 0  
- **Other Hardware:** None

- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Other Software:** None

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</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>410.bwaves</td>
<td>14.3</td>
<td>953</td>
<td>14.2</td>
<td>959</td>
<td>14.0</td>
<td>968</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>416.gamess</td>
<td>401</td>
<td>48.8</td>
<td>401</td>
<td>48.8</td>
<td>402</td>
<td>48.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>433.milc</td>
<td>103</td>
<td>89.1</td>
<td>102</td>
<td>89.6</td>
<td>104</td>
<td>87.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>33.9</td>
<td>268</td>
<td>33.8</td>
<td>269</td>
<td>33.8</td>
<td>269</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>435.gromacs</td>
<td>159</td>
<td>45.0</td>
<td>159</td>
<td>45.0</td>
<td>159</td>
<td>45.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>10.8</td>
<td>1110</td>
<td>10.8</td>
<td>1110</td>
<td>10.8</td>
<td>1100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>21.3</td>
<td>442</td>
<td>21.1</td>
<td>446</td>
<td>21.6</td>
<td>435</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>444.namd</td>
<td>226</td>
<td>35.6</td>
<td>226</td>
<td>35.6</td>
<td>225</td>
<td>35.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>447.dealII</td>
<td>156</td>
<td>73.3</td>
<td>156</td>
<td>73.2</td>
<td>156</td>
<td>73.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>450.soplex</td>
<td>157</td>
<td>53.1</td>
<td>158</td>
<td>52.6</td>
<td>158</td>
<td>52.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>453.povray</td>
<td>76.9</td>
<td>69.2</td>
<td>76.7</td>
<td>69.3</td>
<td>76.5</td>
<td>69.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>454.calculix</td>
<td>117</td>
<td>70.5</td>
<td>117</td>
<td>70.4</td>
<td>117</td>
<td>70.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>38.3</td>
<td>277</td>
<td>38.5</td>
<td>275</td>
<td>39.2</td>
<td>271</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>465.tonto</td>
<td>226</td>
<td>43.5</td>
<td>223</td>
<td>44.1</td>
<td>233</td>
<td>42.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>470.lbm</td>
<td>10.1</td>
<td>1370</td>
<td>10.0</td>
<td>1370</td>
<td>9.83</td>
<td>1400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>481.wrf</td>
<td>82.9</td>
<td>135</td>
<td>83.0</td>
<td>135</td>
<td>82.5</td>
<td>135</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>310</td>
<td>63.0</td>
<td>307</td>
<td>63.5</td>
<td>310</td>
<td>62.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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:  
  - A shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run  
- IRQ balance service was stop using "service irqbalance stop"  
- Tuned-adm profile was set to Throughput-Performance

### 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

Continued on next page
SPEC CFP2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.00 GHz, Intel Xeon Gold 6138)

CPU2006 license: 3
Test sponsor: HPE
Tested by: HPE

SPECfp2006 = Not Run
SPECfp_base2006 = 138

Test date: Oct-2017
Hardware Availability: Oct-2017
Software Availability: Apr-2017

Platform Notes (Continued)

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 /home/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on DL380Gen10-2 Mon Oct 30 03:08:33 2017

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
model name : Intel(R) Xeon(R) Gold 6138 CPU @ 2.00GHz
  2 "physical id"s (chips)
  40 "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 : 20
siblings : 20
physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
cache size : 28160 KB

From /proc/meminfo
MemTotal: 197571144 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 x86_64 GNU/Linux

run-level 3 Oct 30 03:05
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.00 GHz, Intel Xeon Gold 6138)

SPECfp2006 = Not Run
SPECfp_base2006 = 138

CPU2006 license: 3
Test sponsor: HPE
Tested by: HPE

Platform Notes (Continued)

SPEC is set to: /home/cpu2006
Filesystem        Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs  504G   30G  474G   6% /home

Additional information from dmidecode:

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 MHz

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=core,compact"
LD_LIBRARY_PATH = "/home/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/cpu2006/sh10.2"
OMP_NUM_THREADS = "40"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2

Base Compiler Invocation

C benchmarks:
  icc -m64

C++ benchmarks:
  icpc -m64

Fortran benchmarks:
  ifort -m64

Benchmarks using both Fortran and C:
  icc -m64 ifort -m64

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
SPEC CFP2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.00 GHz, Intel Xeon Gold 6138)

SPECfp2006 = Not Run
SPECfp_base2006 = 138

CPU2006 license: 3
Test sponsor: HPE
Tested by: HPE

Test date: Oct-2017
Hardware Availability: Oct-2017
Software Availability: Apr-2017

Base Portability Flags (Continued)

435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64 -nofor_main
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.libm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.html
http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revF.html
You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml
http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revF.xml

SPEC and SPECfp 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 webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Originally published on 29 November 2017.