Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(2.10 GHz, Intel Xeon Gold 6130)

**SPECfp®2006** = Not Run
**SPECfp_base2006** = 139

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Nov-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Oct-2017</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Apr-2017</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>49.0</td>
</tr>
<tr>
<td>416.gamess</td>
<td>87.2</td>
</tr>
<tr>
<td>433.milc</td>
<td>271</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>47.1</td>
</tr>
<tr>
<td>435.gromacs</td>
<td></td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>1090</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>437</td>
</tr>
<tr>
<td>444.namd</td>
<td>35.6</td>
</tr>
<tr>
<td>447.dealII</td>
<td>73.3</td>
</tr>
<tr>
<td>450.soplex</td>
<td>71.0</td>
</tr>
<tr>
<td>453.povray</td>
<td>69.3</td>
</tr>
<tr>
<td>454.calculix</td>
<td>51.6</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>279</td>
</tr>
<tr>
<td>465.tonto</td>
<td>1270</td>
</tr>
<tr>
<td>470.lbm</td>
<td>66.6</td>
</tr>
<tr>
<td>481.wrf</td>
<td>134</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td></td>
</tr>
</tbody>
</table>

**Hardware**
- **CPU Name:** Intel Xeon Gold 6130
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.70 GHz
- **CPU MHz:** 2100
- **FPU:** Integrated
- **CPU(s) enabled:** 32 cores, 2 chips, 16 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), Kernel 3.10.0-514.el7.x86_64
- **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
**SPEC CFP2006 Result**

Hewlett Packard Enterprise  
[Test Sponsor: HPE]  
ProLiant DL360 Gen10  
[2.10 GHz, Intel Xeon Gold 6130]  

**SPECfp2006 =**  
Not Run  
**SPECfp_base2006 =**  
139

---

**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>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>12.5</td>
<td>1090</td>
<td>12.6</td>
<td>1080</td>
<td>12.6</td>
<td>1080</td>
<td>12.6</td>
<td>1080</td>
<td>12.6</td>
<td>1080</td>
</tr>
<tr>
<td>416.gamess</td>
<td>399</td>
<td>49.0</td>
<td>400</td>
<td>49.0</td>
<td>399</td>
<td>49.0</td>
<td>399</td>
<td>49.0</td>
<td>399</td>
<td>49.0</td>
</tr>
<tr>
<td>433.milc</td>
<td>105</td>
<td>87.6</td>
<td>105</td>
<td>87.2</td>
<td>105</td>
<td>87.2</td>
<td>105</td>
<td>87.2</td>
<td>105</td>
<td>87.2</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>33.5</td>
<td>272</td>
<td>33.6</td>
<td>271</td>
<td>33.6</td>
<td>271</td>
<td>33.6</td>
<td>271</td>
<td>33.6</td>
<td>271</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>152</td>
<td>47.0</td>
<td>152</td>
<td>47.1</td>
<td>152</td>
<td>47.1</td>
<td>152</td>
<td>47.1</td>
<td>152</td>
<td>47.1</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>10.6</td>
<td>1120</td>
<td>10.9</td>
<td>1090</td>
<td>11.2</td>
<td>1070</td>
<td>11.2</td>
<td>1070</td>
<td>11.2</td>
<td>1070</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>21.6</td>
<td>435</td>
<td>21.5</td>
<td>438</td>
<td>21.5</td>
<td>437</td>
<td>21.5</td>
<td>437</td>
<td>21.5</td>
<td>437</td>
</tr>
<tr>
<td>444.namd</td>
<td>225</td>
<td>35.6</td>
<td>225</td>
<td>35.6</td>
<td>225</td>
<td>35.6</td>
<td>225</td>
<td>35.6</td>
<td>225</td>
<td>35.6</td>
</tr>
<tr>
<td>447.dealII</td>
<td>156</td>
<td>73.5</td>
<td>156</td>
<td>73.3</td>
<td>157</td>
<td>72.9</td>
<td>157</td>
<td>72.9</td>
<td>157</td>
<td>72.9</td>
</tr>
<tr>
<td>450.soplex</td>
<td>162</td>
<td>51.4</td>
<td>162</td>
<td>51.6</td>
<td>162</td>
<td>51.6</td>
<td>162</td>
<td>51.6</td>
<td>162</td>
<td>51.6</td>
</tr>
<tr>
<td>453.povray</td>
<td>76.8</td>
<td>69.3</td>
<td>76.8</td>
<td>69.3</td>
<td>76.9</td>
<td>69.2</td>
<td>76.9</td>
<td>69.2</td>
<td>76.9</td>
<td>69.2</td>
</tr>
<tr>
<td>454.calculix</td>
<td>116</td>
<td>71.1</td>
<td>116</td>
<td>71.0</td>
<td>116</td>
<td>70.8</td>
<td>116</td>
<td>70.8</td>
<td>116</td>
<td>70.8</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>38.0</td>
<td>279</td>
<td>38.4</td>
<td>277</td>
<td>37.6</td>
<td>282</td>
<td>37.6</td>
<td>282</td>
<td>37.6</td>
<td>282</td>
</tr>
<tr>
<td>465.tonto</td>
<td>211</td>
<td>46.7</td>
<td>211</td>
<td>46.6</td>
<td>209</td>
<td>47.1</td>
<td>209</td>
<td>47.1</td>
<td>209</td>
<td>47.1</td>
</tr>
<tr>
<td>470.lbm</td>
<td>10.5</td>
<td>1300</td>
<td>10.8</td>
<td>1270</td>
<td>11.1</td>
<td>1230</td>
<td>11.1</td>
<td>1230</td>
<td>11.1</td>
<td>1230</td>
</tr>
<tr>
<td>481.wrf</td>
<td>83.1</td>
<td>134</td>
<td>82.8</td>
<td>135</td>
<td>88.2</td>
<td>127</td>
<td>88.2</td>
<td>127</td>
<td>88.2</td>
<td>127</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>292</td>
<td>66.7</td>
<td>295</td>
<td>66.0</td>
<td>293</td>
<td>66.6</td>
<td>293</td>
<td>66.6</td>
<td>293</td>
<td>66.6</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:
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 Throughtput-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 DL360 Gen10  
(2.10 GHz, Intel Xeon Gold 6130)

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>=</th>
<th>Not Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>=</td>
<td>139</td>
</tr>
</tbody>
</table>

- **CPU2006 license:** 3  
- **Test date:** Nov-2017  
- **Test sponsor:** HPE  
- **Hardware Availability:** Oct-2017  
- **Tested by:** HPE  
- **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/specuser/cpu2006/config/sysinfo.rev6993`  
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)  
running on dl360Gen10rhe173Unit2 Wed Nov 15 08:29:50 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 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
cache size : 22528 KB
```

From `/proc/meminfo`  
```
MemTotal:       197572720 kB
HugePages_Total:       0
Hugepagesize:       2048 kB
```

From `/etc/*release* /etc/*version*`  
```
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 dl360Gen10rhe173Unit2 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 15 08:22
```

**SPEC is set to:** `/home/specuser/cpu2006`  
Continued on next page
SPEC CFP2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(2.10 GHz, Intel Xeon Gold 6130)

SPECfp2006 = Not Run
SPECfp_base2006 = 139

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

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

Platform Notes (Continued)

Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 392G 36G 357G 10% /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 U32 09/29/2017
Memory:
24x UNKNOWN NOT AVAILABLE 8 GB 2 rank 2666 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=core,compact"
LD_LIBRARY_PATH = "/home/specuser/cpu2006/lib/ia32:/home/specuser/cpu2006/lib/intel64:/home/specuser/cpu2006/sh10.2"
OMP_NUM_THREADS = "32"

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
435.gromacs: -DSPEC_CPU_LP64 -nofor_main

Continued on next page
SPEC CFP2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(2.10 GHz, Intel Xeon Gold 6130)

SPECfp2006 = Not Run
SPECfp_base2006 = 139

Base Portability Flags (Continued)

436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
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.lbm: -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-revG.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-revG.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.
Report generated on Tue Dec 12 17:06:49 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 12 December 2017.