## SPEC® CFP2006 Result

### Hewlett Packard Enterprise

**Test Sponsor:** HPE  
**ProLiant DL560 Gen10**  
(2.10 GHz, Intel Xeon Gold 6130)

**CPU2006 license:** 3  
**Test date:** Dec-2017  
**Test sponsor:** HPE

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### SPECfp®2006 = Not Run

**SPECfp_base2006 = 131**

**Hardware**

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Intel Xeon Gold 6130</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU MHz</td>
<td>2100</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>64 cores, 4 chips, 16 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1, 2, 4 chip(s)</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>1 MB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Red Hat Enterprise Linux Server release 7.3 (Maipo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler</td>
<td>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</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</td>
</tr>
</tbody>
</table>

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**info@spec.org**  
**http://www.spec.org/**
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL560 Gen10  
(2.10 GHz, Intel Xeon Gold 6130)

**SPECfp2006 = Not Run**  
**SPECfp_base2006 = 131**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>416.gamess</td>
<td>402</td>
<td>48.8</td>
<td>410</td>
<td>48.8</td>
<td>401</td>
<td>48.8</td>
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<tr>
<td>433.milc</td>
<td>105</td>
<td>87.3</td>
<td>106</td>
<td>86.6</td>
<td>106</td>
<td>86.8</td>
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<tr>
<td>434.zeusmp</td>
<td>42.5</td>
<td>214</td>
<td>41.0</td>
<td>222</td>
<td>40.7</td>
<td>224</td>
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<tr>
<td>435.gromacs</td>
<td>160</td>
<td>44.6</td>
<td>160</td>
<td>44.6</td>
<td>160</td>
<td>44.6</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>19.7</td>
<td>607</td>
<td>20.8</td>
<td>575</td>
<td>20.8</td>
<td>574</td>
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<tr>
<td>437.leslie3d</td>
<td>26.2</td>
<td>359</td>
<td>26.7</td>
<td>352</td>
<td>26.5</td>
<td>354</td>
</tr>
<tr>
<td>444.namd</td>
<td>225</td>
<td>35.6</td>
<td>225</td>
<td>35.7</td>
<td>225</td>
<td>35.6</td>
</tr>
<tr>
<td>447.dealII</td>
<td>156</td>
<td>73.4</td>
<td>156</td>
<td>73.5</td>
<td>155</td>
<td>73.6</td>
</tr>
<tr>
<td>450.soplex</td>
<td>162</td>
<td>51.6</td>
<td>162</td>
<td>51.6</td>
<td>160</td>
<td>52.1</td>
</tr>
<tr>
<td>453.povray</td>
<td>76.6</td>
<td>69.5</td>
<td>76.8</td>
<td>69.3</td>
<td>76.8</td>
<td>69.3</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>70.7</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>71.7</td>
<td>148</td>
<td>67.2</td>
<td>158</td>
<td>68.9</td>
<td>154</td>
</tr>
<tr>
<td>465.tonto</td>
<td>216</td>
<td>45.6</td>
<td>235</td>
<td>41.9</td>
<td>225</td>
<td>43.8</td>
</tr>
<tr>
<td>470.lbm</td>
<td>8.47</td>
<td>1620</td>
<td>10.0</td>
<td>1370</td>
<td>9.36</td>
<td>1470</td>
</tr>
<tr>
<td>481.wrf</td>
<td>85.4</td>
<td>131</td>
<td>86.5</td>
<td>129</td>
<td>85.5</td>
<td>131</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>295</td>
<td>66.0</td>
<td>297</td>
<td>65.7</td>
<td>296</td>
<td>65.9</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
```

irqbalance disabled with "systemctl stop irqbalance"  
tuned profile set with "tuned-adm profile throughput-performance"

**Platform Notes**

BIOS Configuration:  
Intel Hyper-Threading set to Disabled  
Thermal Configuration set to Maximum Cooling  
LLC Prefetch set to Enabled  
LLC Dead Line Allocation set to Disabled
## SPEC CFP2006 Result

<table>
<thead>
<tr>
<th></th>
<th>Hewlett Packard Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Test Sponsor: HPE)</td>
<td></td>
</tr>
<tr>
<td>ProLiant DL560 Gen10</td>
<td></td>
</tr>
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<td>(2.10 GHz, Intel Xeon Gold 6130)</td>
<td></td>
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</tbody>
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### SPECfp2006 = Not Run

### SPECfp_base2006 = 131

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

### Platform Notes (Continued)

- Stale A to S set to Enabled
- 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 DL560G10 Mon Dec 11 11:47:10 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
- 4 "physical id"s (chips)
- 64 "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
  - physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  - physical 3: 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: 395925056 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*

- 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 DL560G10 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

Continued on next page
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Test date: Dec-2017
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Platform Notes (Continued)

run-level 3 Dec 11 09:29

SPEC is set to: /home/cpu2006

Filesystem          Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel_dl560g10-home xfs   839G   37G  803G   5% /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 U34 09/29/2017
Memory:
48x 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/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/cpu2006/sh10.2"
OMP_NUM_THREADS = "64"

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

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
No: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
No: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, http://www.spec.org/osg/policy.htm.

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.
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Test sponsor: HPE
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Test date: Dec-2017
Hardware Availability: Oct-2017
Software Availability: Apr-2017

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.game5: -DSPEC_CPU_LP64
  433.milc: -DSPEC_CPU_LP64
  434.zeusmp: -DSPEC_CPU_LP64
  435.gromacs: -DSPEC_CPU_LP64 -nofor_main
  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 -nofor_main
  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
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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-revH.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-revH.xml

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For questions about this result, please contact the tester.  
For other inquiries, please contact webmaster@spec.org.