# SPEC® CINT2006 Result

**Hewlett Packard Enterprise**

**ProLiant DL560 Gen10**

(2.10 GHz, Intel Xeon Gold 6130)

<table>
<thead>
<tr>
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<th>Not Run</th>
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<tr>
<td>SPECint_base2006</td>
<td>75.6</td>
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**CPU2006 license:** 3
**Test sponsor:** HPE
**Tested by:** HPE
**Test date:** Dec-2017
**Hardware Availability:** Oct-2017
**Software Availability:** Apr-2017

## Hardware

<table>
<thead>
<tr>
<th><strong>CPU Name:</strong></th>
<th>Intel Xeon Gold 6130</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Characteristics:</strong></td>
<td>Intel Turbo Boost Technology up to 3.70 GHz</td>
</tr>
<tr>
<td><strong>CPU MHz:</strong></td>
<td>2100</td>
</tr>
<tr>
<td><strong>FPU:</strong></td>
<td>Integrated</td>
</tr>
<tr>
<td><strong>CPU(s) enabled:</strong></td>
<td>64 cores, 4 chips, 16 cores/chip</td>
</tr>
<tr>
<td><strong>CPU(s) orderable:</strong></td>
<td>1, 2, 4 chip(s)</td>
</tr>
<tr>
<td><strong>Primary Cache:</strong></td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td><strong>Secondary Cache:</strong></td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td><strong>L3 Cache:</strong></td>
<td>22 MB I+D on chip per chip</td>
</tr>
<tr>
<td><strong>Other Cache:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Memory:</strong></td>
<td>384 GB (48 x 8 GB 2Rx8 PC4-2666V-R)</td>
</tr>
<tr>
<td><strong>Disk Subsystem:</strong></td>
<td>1 x 960 GB SATA SSD, RAID 0</td>
</tr>
<tr>
<td><strong>Other Hardware:</strong></td>
<td>None</td>
</tr>
</tbody>
</table>

## Software

<table>
<thead>
<tr>
<th><strong>Operating System:</strong></th>
<th>Red Hat Enterprise Linux Server release 7.3 (Maipo)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kernel:</strong></td>
<td>3.10.0-514.el7.x86_64</td>
</tr>
<tr>
<td><strong>Compiler:</strong></td>
<td>C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux</td>
</tr>
<tr>
<td><strong>Auto Parallel:</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>File System:</strong></td>
<td>xfs</td>
</tr>
<tr>
<td><strong>System State:</strong></td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td><strong>Base Pointers:</strong></td>
<td>32/64-bit</td>
</tr>
<tr>
<td><strong>Peak Pointers:</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Other Software:</strong></td>
<td>Microquill SmartHeap V10.2</td>
</tr>
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Seconds</th>
<th>Ratio</th>
</tr>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>210</td>
<td>46.6</td>
<td>210</td>
<td>46.5</td>
<td>210</td>
<td>46.5</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>339</td>
<td>28.4</td>
<td>341</td>
<td>28.3</td>
<td>341</td>
<td>28.3</td>
</tr>
<tr>
<td>403.gcc</td>
<td>186</td>
<td>43.2</td>
<td>187</td>
<td>43.1</td>
<td>186</td>
<td>43.2</td>
</tr>
<tr>
<td>429.mcf</td>
<td>116</td>
<td>78.9</td>
<td>115</td>
<td>79.0</td>
<td>114</td>
<td>79.9</td>
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<tr>
<td>445.gobmk</td>
<td>313</td>
<td>33.5</td>
<td>313</td>
<td>33.5</td>
<td>313</td>
<td>33.5</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>96.6</td>
<td>96.6</td>
<td>96.6</td>
<td>96.6</td>
<td>97.1</td>
<td>96.1</td>
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<tr>
<td>458.sjeng</td>
<td>327</td>
<td>37.0</td>
<td>327</td>
<td>37.0</td>
<td>327</td>
<td>37.0</td>
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<tr>
<td>462.libquantum</td>
<td>2.53</td>
<td>8190</td>
<td>2.49</td>
<td>8320</td>
<td>2.38</td>
<td>8700</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>328</td>
<td>67.5</td>
<td>328</td>
<td>67.5</td>
<td>328</td>
<td>67.5</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>173</td>
<td>36.1</td>
<td>173</td>
<td>36.1</td>
<td>173</td>
<td>36.1</td>
</tr>
<tr>
<td>473.astar</td>
<td>180</td>
<td>39.1</td>
<td>179</td>
<td>39.2</td>
<td>179</td>
<td>39.1</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>85.0</td>
<td>81.1</td>
<td>85.2</td>
<td>81.0</td>
<td>84.7</td>
<td>81.4</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 wtih "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
- 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
- NUMA Group Size Optimization set to Custom

Sysinfo program /home/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on DL560G10 Mon Dec 11 09:35:02 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

Continued on next page
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Platform Notes (Continued)

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*

  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 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

  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

Continued on next page
### Platform Notes (Continued)

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=fine,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](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.

### Base Compiler Invocation

C benchmarks:
- `icc -m64`

C++ benchmarks:
- `icpc -m64`
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Base Portability Flags

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Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch
-auto-p32

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh10.2 -lsmartheap64

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

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.

Tested with SPEC CPU2006 v1.2.
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