Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(2.30 GHz, Intel Xeon Gold 6140)

<table>
<thead>
<tr>
<th>SPECint®2006 =</th>
<th>Not Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_base2006 =</td>
<td>75.7</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>SPECint®2006 Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
</tr>
<tr>
<td>401.bzip2</td>
</tr>
<tr>
<td>403.gcc</td>
</tr>
<tr>
<td>429.mcf</td>
</tr>
<tr>
<td>445.gobmk</td>
</tr>
<tr>
<td>456.hmmer</td>
</tr>
<tr>
<td>458.sjeng</td>
</tr>
<tr>
<td>462.libquantum</td>
</tr>
<tr>
<td>464.h264ref</td>
</tr>
<tr>
<td>471.omnetpp</td>
</tr>
<tr>
<td>473.astar</td>
</tr>
<tr>
<td>483.xalancbmk</td>
</tr>
</tbody>
</table>

SPEClnt_base2006 = 75.7

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Xeon Gold 6140</td>
<td>Operating System: Red Hat Enterprise Linux Server release 7.3 (Maipo)</td>
</tr>
<tr>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz</td>
<td>Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux</td>
</tr>
<tr>
<td>CPU MHz: 2300</td>
<td>Auto Parallel: Yes</td>
</tr>
<tr>
<td>FPU: Integrated</td>
<td>File System: xfs</td>
</tr>
<tr>
<td>CPU(s) enabled: 36 cores, 2 chips, 18 cores/chip</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>CPU(s) orderable: 1, 2 chip(s)</td>
<td>Base Pointers: 32/64-bit</td>
</tr>
<tr>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
<td>Peak Pointers: Not Applicable</td>
</tr>
<tr>
<td>Secondary Cache: 1 MB I+D on chip per core</td>
<td>Other Software: Microquill SmartHeap V10.2</td>
</tr>
<tr>
<td>L3 Cache: 24.75 MB I+D on chip per core</td>
<td></td>
</tr>
<tr>
<td>Other Cache: None</td>
<td></td>
</tr>
<tr>
<td>Memory: 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R)</td>
<td></td>
</tr>
<tr>
<td>Disk Subsystem: 1 x 480 GB SATA SSD, RAID 0</td>
<td></td>
</tr>
<tr>
<td>Other Hardware: None</td>
<td></td>
</tr>
</tbody>
</table>
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(2.30 GHz, Intel Xeon Gold 6140)

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

SPECint2006 = Not Run
SPECint_base2006 = 75.7

<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>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>210</td>
<td>46.5</td>
<td>210</td>
<td>46.5</td>
<td>210</td>
<td>46.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>340</td>
<td>28.4</td>
<td>340</td>
<td>28.4</td>
<td>339</td>
<td>28.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>403.gcc</td>
<td>185</td>
<td>43.6</td>
<td>185</td>
<td>43.6</td>
<td>185</td>
<td>43.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>429.mcf</td>
<td>114</td>
<td>80.3</td>
<td>114</td>
<td>79.8</td>
<td>116</td>
<td>78.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>445.gobmk</td>
<td>313</td>
<td>33.5</td>
<td>313</td>
<td>33.5</td>
<td>313</td>
<td>33.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>456.hmmer</td>
<td>97.0</td>
<td>96.2</td>
<td>96.5</td>
<td>96.6</td>
<td>96.5</td>
<td>96.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td>327</td>
<td>37.1</td>
<td>326</td>
<td>37.1</td>
<td>326</td>
<td>37.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>462.libquantum</td>
<td>2.70</td>
<td>7670</td>
<td>2.71</td>
<td>7630</td>
<td>2.70</td>
<td>7670</td>
<td></td>
<td></td>
</tr>
<tr>
<td>464.h264ref</td>
<td>326</td>
<td>68.0</td>
<td>325</td>
<td>68.1</td>
<td>326</td>
<td>68.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>162</td>
<td>38.7</td>
<td>164</td>
<td>38.0</td>
<td>165</td>
<td>37.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>473.astar</td>
<td>179</td>
<td>39.3</td>
<td>179</td>
<td>39.3</td>
<td>180</td>
<td>39.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>84.1</td>
<td>82.0</td>
<td>84.1</td>
<td>82.0</td>
<td>84.3</td>
<td>81.8</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:
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
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 (b5e8d4b4eb1ed28d7f98696cbe290c1)
routing on dl360Gen10rhel73Unit2 Sat Nov 4 00:34:48 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
**SPEC CINT2006 Result**

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(2.30 GHz, Intel Xeon Gold 6140)

**SPECint2006** = Not Run
**SPECint_base2006** = 75.7

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

---

**Platform Notes (Continued)**

From `/proc/cpuinfo`
- model name: Intel(R) Xeon(R) Gold 6140 CPU @ 2.30GHz
- 2 "physical id"s (chips)
- 36 "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: 18
  - siblings: 18
  - physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  - physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
- cache size: 25344 KB

From `/proc/meminfo`
- MemTotal: 197571680 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 dl360Gen10rhel173Unit2 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 3 22:22

SPEC is set to: `/home/specuser/cpu2006`

Filesystem Type Size Used Avail Use% Mounted on
/devmapper/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

Continued on next page
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(2.30 GHz, Intel Xeon Gold 6140)

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

SPECint2006 = Not Run
SPECint_base2006 = 75.7

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

Platform Notes (Continued)
(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of
memory is 192 GB and the dmidecode description should have one line reading as:
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=fine,compact"
LD_LIBRARY_PATH = "/home/specuser/cpu2006/lib/ia32:/home/specuser/cpu2006/lib/intel64:/home/specuser/cpu2006/sh10.2"
OMP_NUM_THREADS = "36"

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

Base Portability Flags
400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

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

Base Optimization Flags
Continued on next page
SPEC CINT2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(2.30 GHz, Intel Xeon Gold 6140)

SPECint2006 = Not Run
SPECint_base2006 = 75.7

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

Base Optimization Flags (Continued)

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-W1,-z,mldefs -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-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 SPECint 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.