### Hewlett Packard Enterprise

**Test Sponsor:** HPE

**ProLiant DL360 Gen10**

(3.20 GHz, Intel Xeon Gold 6146)

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>Not Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>1570</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 3

**Test date:** Nov-2017

**Hardware Availability:** Oct-2017

**Software Availability:** Sep-2017

**Tested by:** HPE

#### Copies

<table>
<thead>
<tr>
<th>Test</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>48</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>48</td>
</tr>
<tr>
<td>403.gcc</td>
<td>48</td>
</tr>
<tr>
<td>429.mcf</td>
<td>48</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>48</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>48</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>48</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>48</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>48</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>48</td>
</tr>
<tr>
<td>473.astar</td>
<td>48</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>48</td>
</tr>
</tbody>
</table>

#### CPU Name:

Intel Xeon Gold 6146

#### CPU Characteristics:

Intel Turbo Boost Technology up to 4.20 GHz

#### CPU MHz:

3200

#### FPU:

Integrated

#### CPU(s) enabled:

24 cores, 2 chips, 12 cores/chip, 2 threads/core

#### 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

#### L3 Cache:

24.75 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 480 GB SATA SSD, RAID 0

#### Other Hardware:

None

#### Operating System:

SUSE Linux Enterprise Server 12 (x86_64) SP2

#### Compiler:

C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux

#### Auto Parallel:

No

#### File System:

xfs

#### System State:

Run level 3 (multi-user)

#### Base Pointers:

32-bit

#### Peak Pointers:

Not Applicable

#### Other Software:

Microquill SmartHeap V10.2
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10  
(3.20 GHz, Intel Xeon Gold 6146)  

**SPEC CINT2006 Result**

**SPECint_rate2006 = Not Run**  
**SPECint_rate_base2006 = 1570**

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

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

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</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>48</td>
<td>419</td>
<td>1120</td>
<td>420</td>
<td>1120</td>
<td>418</td>
<td>1120</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>48</td>
<td>680</td>
<td>681</td>
<td>678</td>
<td>683</td>
<td>672</td>
<td>690</td>
</tr>
<tr>
<td>403.gcc</td>
<td>48</td>
<td>351</td>
<td>1100</td>
<td>350</td>
<td>1100</td>
<td><strong>350</strong></td>
<td><strong>1100</strong></td>
</tr>
<tr>
<td>429.mcf</td>
<td>48</td>
<td>210</td>
<td>2080</td>
<td>211</td>
<td>2070</td>
<td>210</td>
<td>2090</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>48</td>
<td>511</td>
<td>986</td>
<td>512</td>
<td>984</td>
<td><strong>511</strong></td>
<td><strong>986</strong></td>
</tr>
<tr>
<td>456.hmmer</td>
<td>48</td>
<td>199</td>
<td>2250</td>
<td>199</td>
<td>2250</td>
<td>201</td>
<td>2220</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>48</td>
<td>560</td>
<td>1040</td>
<td><strong>561</strong></td>
<td><strong>1030</strong></td>
<td>562</td>
<td>1030</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>48</td>
<td>33.9</td>
<td>29300</td>
<td>33.7</td>
<td>29500</td>
<td>33.9</td>
<td>29300</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>48</td>
<td>619</td>
<td>1720</td>
<td><strong>620</strong></td>
<td><strong>1710</strong></td>
<td>623</td>
<td>1700</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>48</td>
<td>415</td>
<td>723</td>
<td><strong>415</strong></td>
<td><strong>722</strong></td>
<td>416</td>
<td>722</td>
</tr>
<tr>
<td>473.astar</td>
<td>48</td>
<td>391</td>
<td>862</td>
<td>390</td>
<td>863</td>
<td>392</td>
<td>860</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>48</td>
<td>181</td>
<td>1830</td>
<td><strong>182</strong></td>
<td><strong>1820</strong></td>
<td>182</td>
<td>1820</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

### 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  
- runspec command invoked through numactl i.e.:  
  - numactl --interleave=all runspec <etc>  
- irqbalance disabled with "service irqbalance stop"  
- tuned profile set with "tuned-adm profile throughput-performance"  
- VM Dirty ratio was set to 40 using "echo 40 > /proc/sys/vm/dirty_ratio"  
- Numa balancing was disabled using "echo 0 > /proc/sys/kernel/ numa_balancing"

### Platform Notes

BIOS Configuration:  
- 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 Throughput Compute  
- Minimum Processor Idle Power Core C-State set to C1E  
- Sysinfo program /cpu2006/config/sysinfo.rev6993  

Continued on next page
Platform Notes (Continued)

Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-lvuc Fri Nov 10 21:04:28 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 6146 CPU @ 3.20GHz
- 2 "physical id"s (chips)
- 48 "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 : 12
  - siblings : 24
  - physical 0: cores 0 1 2 3 4 8 9 11 17 18 19 20
  - physical 1: cores 0 1 2 3 8 9 10 11 18 19 24 27
- cache size : 25344 KB

From /proc/meminfo
- MemTotal: 197552060 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
- SuSE-release:
  - SUSE Linux Enterprise Server 12 (x86_64)
  - VERSION = 12
  - PATCHLEVEL = 2
  - # This file is deprecated and will be removed in a future service pack or release.
  - # Please check /etc/os-release for details about this release.
- os-release:
  - NAME="SLES"
  - VERSION="12-SP2"
  - VERSION_ID="12.2"
  - PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
  - ID="sles"
  - ANSI_COLOR="0;32"
  - CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
  - (9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 10 20:25

SPEC is set to: /cpu2006
- Filesystem Type Size Used Avail Use% Mounted on
- /dev/sda4 xfs 405G 122G 283G 31% /home

Additional information from dmidecode:
Continued on next page
SPEC CINT2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(3.20 GHz, Intel Xeon Gold 6146)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 1570

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

Platform Notes (Continued)

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:
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/cpu2006/sh10.2"

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 -m32 -L/opt/intel/compilers_and_libraries_2018.0.082/linux/lib/ia32

C++ benchmarks:
  icpc -m32 -L/opt/intel/compilers_and_libraries_2018.0.082/linux/lib/ia32

Base Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -D_FILE_OFFSET_BITS=64
403.gcc: -D_FILE_OFFSET_BITS=64
429.mcf: -D_FILE_OFFSET_BITS=64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -D_FILE_OFFSET_BITS=64
458.sjeng: -D_FILE_OFFSET_BITS=64
462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
# SPEC CINT2006 Result

## Hewlett Packard Enterprise

**Test Sponsor:** HPE  
**ProLiant DL360 Gen10**  
**(3.20 GHz, Intel Xeon Gold 6146)**

<table>
<thead>
<tr>
<th>CPU2006 license: 3</th>
<th>Test date: Nov-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor: HPE</td>
<td>Hardware Availability: Oct-2017</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Sep-2017</td>
</tr>
</tbody>
</table>

### SPECint_rate2006 = Not Run

### SPECint_rate_base2006 = 1570

---

**Base Optimization Flags**

- C benchmarks:  
  -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
  -qopt-mem-layout-trans=3

- C++ benchmarks:  
  -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
  -qopt-mem-layout-trans=3 -Wl,-z,muldefs -L/cpu2006/sh10.2 -lsmartheap

---

**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/HPE-Platform-Flags-Intel-V1.2-SKX-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/HPE-Platform-Flags-Intel-V1.2-SKX-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.