### SPEC® CINT2006 Result

**Hewlett Packard Enterprise**
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(1.80 GHz, Intel Xeon Silver 4108)

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

| SPECint_rate_base2006 | 663 |

**SPECint®_rate2006 = Not Run**

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

#### Hardware

| CPU Name: | Intel Xeon Silver 4108 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.00 GHz |
| CPU MHz: | 1800 |
| FPU: | Integrated |
| CPU(s) enabled: | 16 cores, 2 chips, 8 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: | 11 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R, running at 2400) |
| Disk Subsystem: | 1 x 600 GB SATA SSD, RAID 0 |
| Other Hardware: | None |

#### Software

| 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 |

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECint_rate_base2006 = 663</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench 32</td>
<td>448</td>
</tr>
<tr>
<td>401.bzip2 32</td>
<td>279</td>
</tr>
<tr>
<td>403.gcc 32</td>
<td>481</td>
</tr>
<tr>
<td>429.mcf 32</td>
<td>933</td>
</tr>
<tr>
<td>445.gobmk 32</td>
<td>379</td>
</tr>
<tr>
<td>456.hmmer 32</td>
<td>900</td>
</tr>
<tr>
<td>458.sjeng 32</td>
<td>409</td>
</tr>
<tr>
<td>462.libquantum 32</td>
<td>11600</td>
</tr>
<tr>
<td>464.h264ref 32</td>
<td>661</td>
</tr>
<tr>
<td>471.omnetpp 32</td>
<td>376</td>
</tr>
<tr>
<td>473.astar 32</td>
<td>374</td>
</tr>
<tr>
<td>483.xalancbmk 32</td>
<td>854</td>
</tr>
</tbody>
</table>

Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
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>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>32</td>
<td>694</td>
<td>450</td>
<td>700</td>
<td>446</td>
<td>698</td>
<td>448</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>32</td>
<td>1099</td>
<td>281</td>
<td>1106</td>
<td>279</td>
<td>1106</td>
<td>279</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>403.gcc</td>
<td>32</td>
<td>536</td>
<td>481</td>
<td>536</td>
<td>481</td>
<td>535</td>
<td>481</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>429.mcf</td>
<td>32</td>
<td>313</td>
<td>933</td>
<td>312</td>
<td>936</td>
<td>314</td>
<td>930</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>445.gobmk</td>
<td>32</td>
<td>885</td>
<td>379</td>
<td>885</td>
<td>379</td>
<td>886</td>
<td>379</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>456.hmmer</td>
<td>32</td>
<td>332</td>
<td>900</td>
<td>331</td>
<td>901</td>
<td>332</td>
<td>900</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td>32</td>
<td>948</td>
<td>409</td>
<td>947</td>
<td>409</td>
<td>948</td>
<td>408</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>462.libquantum</td>
<td>32</td>
<td>57.3</td>
<td>11600</td>
<td>57.2</td>
<td>11600</td>
<td>57.1</td>
<td>11600</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>464.h264ref</td>
<td>32</td>
<td>1067</td>
<td>664</td>
<td>1071</td>
<td>661</td>
<td>1084</td>
<td>654</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>32</td>
<td>531</td>
<td>376</td>
<td>532</td>
<td>376</td>
<td>531</td>
<td>376</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>473.astar</td>
<td>32</td>
<td>602</td>
<td>373</td>
<td>601</td>
<td>374</td>
<td>598</td>
<td>376</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>32</td>
<td>258</td>
<td>854</td>
<td>259</td>
<td>852</td>
<td>258</td>
<td>856</td>
<td></td>
<td></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.

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
runcspec 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
Workload Profile set to Custom

Continued on next page
SPEC CINT2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(1.80 GHz, Intel Xeon Silver 4108)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 663

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

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

Platform Notes (Continued)

Sub-NUMA Clustering set to Disabled
Sysinfo program /home/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
runtime on linux-perm Mon Nov  6 12:51:53 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) Silver 4108 CPU @ 1.80GHz
  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
cautions.)
cpu cores : 8
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
cache size : 11264 KB

From /proc/meminfo
MemTotal:       197749548 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:
Linux linux-perm 4.4.21-68-default #1 SMP Tue Oct 18 18:19:37 UTC 2016
(63cf368) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 6 12:49

SPEC is set to: /home/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
Continued on next page
SPEC CINT2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(1.80 GHz, Intel Xeon Silver 4108)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 663

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

Platform Notes (Continued)
/dev/sda4       xfs   517G   64G  453G  13% /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, configured at 2400 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/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_OFFSETBITS=64
445.gobmk: -D_FILE_OFFSETBITS=64
456.hmmer: -D_FILE_OFFSETBITS=64
458.sjeng: -D_FILE_OFFSETBITS=64
462.libquantum: -D_FILE_OFFSETBITS=64 -DSPEC_CPU_LINUX
464.h264ref: -D_FILE_OFFSETBITS=64
471.omnetpp: -D_FILE_OFFSETBITS=64
473.astar: -D_FILE_OFFSETBITS=64
483.xalancbmk: -D_FILE_OFFSETBITS=64 -DSPEC_CPU_LINUX
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10  
(1.80 GHz, Intel Xeon Silver 4108)  

<table>
<thead>
<tr>
<th>SPECint_rate2006 = Not Run</th>
<th>SPECint_rate_base2006 = 663</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2006 license: 3</td>
<td>Test date: Nov-2017</td>
</tr>
<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>

**Base Optimization Flags**

**C benchmarks:**
- -xCORE-AVX512  -ipo  -03  -no-prec-div  -qopt-prefetch  
  -qopt-mem-layout-trans=3

**C++ benchmarks:**
- -xCORE-AVX512  -ipo  -03  -no-prec-div  -qopt-prefetch  
  -qopt-mem-layout-trans=3  -Wl,-z,muldefs  
  -L/home/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/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.