# SPEC® CINT2006 Result

Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
Synergy 480 Gen10  
(2.10 GHz, Intel Xeon Silver 4110)

<table>
<thead>
<tr>
<th>SPECint® _rate2006 = Not Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006 = 721</td>
</tr>
</tbody>
</table>

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

| SPECint_rate_base2006 = 721 |

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECint_rate_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>22000</td>
<td>32</td>
</tr>
<tr>
<td>1500</td>
<td>32</td>
</tr>
<tr>
<td>500</td>
<td>32</td>
</tr>
<tr>
<td>100</td>
<td>32</td>
</tr>
<tr>
<td>50</td>
<td>32</td>
</tr>
<tr>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>2</td>
<td>32</td>
</tr>
<tr>
<td>1</td>
<td>32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Xeon Silver 4110</td>
</tr>
<tr>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz</td>
</tr>
<tr>
<td>CPU MHz: 2100</td>
</tr>
<tr>
<td>FPU: Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable: 1, 2 chip(s)</td>
</tr>
<tr>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache: 1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache: 11 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache: None</td>
</tr>
<tr>
<td>Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R, running at 2400)</td>
</tr>
<tr>
<td>Disk Subsystem: 1 x 480 GB SATA SSD, RAID 0</td>
</tr>
<tr>
<td>Other Hardware: None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System: SUSE Linux Enterprise Server 12 (x86_64) SP2 Kernel 4.4.21-69-default</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux</td>
</tr>
<tr>
<td>Auto Parallel: No</td>
</tr>
<tr>
<td>File System: xfs</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers: 32-bit</td>
</tr>
<tr>
<td>Peak Pointers: Not Applicable</td>
</tr>
<tr>
<td>Other Software: Microquill SmartHeap V10.2</td>
</tr>
</tbody>
</table>

---

Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
### SPEC CINT2006 Result

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

Synergy 480 Gen10

(2.10 GHz, Intel Xeon Silver 4110)

<table>
<thead>
<tr>
<th>CPU2006 license: 3</th>
<th>SPECint_rate2006 = Not Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor: HPE</td>
<td>SPECint_rate_base2006 = 721</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td></td>
</tr>
</tbody>
</table>

---

**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>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>32</td>
<td>618</td>
<td>506</td>
<td><strong>613</strong></td>
<td><strong>510</strong></td>
<td>612</td>
<td>511</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>32</td>
<td>1014</td>
<td>304</td>
<td><strong>1012</strong></td>
<td><strong>305</strong></td>
<td>1011</td>
<td>305</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>403.gcc</td>
<td>32</td>
<td>502</td>
<td>513</td>
<td>502</td>
<td>513</td>
<td>499</td>
<td>517</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>429.mcf</td>
<td>32</td>
<td>298</td>
<td>978</td>
<td><strong>298</strong></td>
<td><strong>978</strong></td>
<td>298</td>
<td>979</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>445.gobmk</td>
<td>32</td>
<td>779</td>
<td>431</td>
<td>780</td>
<td>431</td>
<td>778</td>
<td>431</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>456.hmer</td>
<td>32</td>
<td>291</td>
<td><strong>1030</strong></td>
<td>289</td>
<td>1030</td>
<td>291</td>
<td>1020</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td>32</td>
<td>835</td>
<td>464</td>
<td><strong>836</strong></td>
<td><strong>463</strong></td>
<td>837</td>
<td>463</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>462.libquantum</td>
<td>32</td>
<td>56.9</td>
<td>11600</td>
<td><strong>57.0</strong></td>
<td><strong>11600</strong></td>
<td>57.2</td>
<td>11600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>464.h264ref</td>
<td>32</td>
<td>938</td>
<td>755</td>
<td><strong>939</strong></td>
<td><strong>754</strong></td>
<td>948</td>
<td>747</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>32</td>
<td>528</td>
<td>379</td>
<td>526</td>
<td>380</td>
<td><strong>527</strong></td>
<td><strong>379</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>473.astar</td>
<td>32</td>
<td>549</td>
<td>409</td>
<td>548</td>
<td>410</td>
<td><strong>548</strong></td>
<td><strong>410</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>32</td>
<td>245</td>
<td>901</td>
<td>242</td>
<td>913</td>
<td><strong>243</strong></td>
<td><strong>909</strong></td>
<td></td>
<td></td>
<td></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

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 State

Workload Profile set to Custom

Continued on next page
SPEC CINT2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
Synergy 480 Gen10
(2.10 GHz, Intel Xeon Silver 4110)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 721

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

Platform Notes (Continued)

Sub-NUMA Clustering set to Disabled
Sysinfo program /home/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on sy480_hjp_suse_machinel Sun Dec 3 18:01:35 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 4110 CPU @ 2.10GHz
                  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
caution.)
   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:       395930372 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 sy480_hjp_suse_machinel 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20
   UTC 2016 (9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 3 17:59

SPEC is set to: /home/cpu2006
Continued on next page
SPEC CINT2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
Synergy 480 Gen10
(2.10 GHz, Intel Xeon Silver 4110)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 721

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

<table>
<thead>
<tr>
<th>Test date</th>
<th>Hardware Availability</th>
<th>Software Availability</th>
</tr>
</thead>
</table>

Platform Notes (Continued)
/dev/sda4 xfs 405G 78G 328G 20% /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 I42 09/27/2017
Memory:
24x UNKNOWN NOT AVAILABLE 16 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_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)
Synergy 480 Gen10
(2.10 GHz, Intel Xeon Silver 4110)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 721

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

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

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/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-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

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.
Report generated on Tue Jan 16 12:10:01 2018 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 14 January 2018.