Hewlett Packard Enterprise
(Test Sponsor: HPE)
Synergy 480 Gen10
(2.00 GHz, Intel Xeon Platinum 8153)

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

SPECint\_rate2006 = Not Run
SPECint\_rate\_base2006 = 1410

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

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System: SUSE Linux Enterprise Server 12 (x86_64) SP2 Kernel 4.4.21-69-default</td>
<td>CPU Name: Intel Xeon Platinum 8153</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux</td>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz</td>
</tr>
<tr>
<td>Auto Parallel: No</td>
<td>CPU MHz: 2000</td>
</tr>
<tr>
<td>File System: xfs</td>
<td>FPU: Integrated</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td>CPU(s) enabled: 32 cores, 2 chips, 16 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>Base Pointers: 32-bit</td>
<td>CPU(s) orderable: 1, 2 chip(s)</td>
</tr>
<tr>
<td>Peak Pointers: Not Applicable</td>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Other Software: Microquill SmartHeap V10.2</td>
<td>Secondary Cache: 1 MB I+D on chip per core</td>
</tr>
</tbody>
</table>

| L3 Cache: 22 MB I+D on chip per chip | 400.perlbench 64 |
| Other Cache: None | Copies |
| Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R) | 1000 |
| Disk Subsystem: 1 x 480 GB SATA SSD, RAID 0 | 2500 |
| Other Hardware: None | 4000 |
| 401.bzip2 64 | 5500 |
| 403.gcc 64 | 7000 |
| 429.mcf 64 | 8500 |
| 445.gobmk 64 | 10000 |
| 456.hmmer 64 | 11500 |
| 458.sjeng 64 | 13000 |
| 462.libquantum 64 | 14500 |
| 464.h264ref 64 | 16000 |
| 471.omnetpp 64 | 17500 |
| 473.astar 64 | 19000 |
| 483.xalancbmk 64 | 20500 |
| | 22000 |
| | 23500 |
| | 25000 |

SPEC\_int\_rate\_base2006 = 1410
SPEC CINT2006 Result

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SPECint_rate_base2006 = 1410

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>64</td>
<td>639</td>
<td>978</td>
<td>638</td>
<td>981</td>
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<td></td>
<td></td>
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<tr>
<td>401.bzip2</td>
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<td>1024</td>
<td>603</td>
<td>1020</td>
<td>605</td>
<td>1033</td>
<td>504</td>
<td>1020</td>
<td></td>
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<tr>
<td>403.gcc</td>
<td>64</td>
<td>505</td>
<td>1020</td>
<td>504</td>
<td>1020</td>
<td>504</td>
<td>1020</td>
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<td>1020</td>
</tr>
<tr>
<td>429.mcf</td>
<td>64</td>
<td>301</td>
<td>1940</td>
<td>300</td>
<td>1940</td>
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<td>1940</td>
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<tr>
<td>445.gobmk</td>
<td>64</td>
<td>814</td>
<td>825</td>
<td>811</td>
<td>828</td>
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<tr>
<td>456.hmmer</td>
<td>64</td>
<td>306</td>
<td>1950</td>
<td>305</td>
<td>1960</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td>64</td>
<td>870</td>
<td>890</td>
<td>871</td>
<td>889</td>
<td>869</td>
<td>891</td>
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<tr>
<td>462.libquantum</td>
<td>64</td>
<td>53.0</td>
<td>25000</td>
<td>52.8</td>
<td>25100</td>
<td>52.8</td>
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<td>464.h264ref</td>
<td>64</td>
<td>980</td>
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<td>1450</td>
<td>978</td>
<td>1450</td>
<td>978</td>
<td>1450</td>
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<tr>
<td>471.omnetpp</td>
<td>64</td>
<td>523</td>
<td>765</td>
<td>521</td>
<td>768</td>
<td>520</td>
<td>769</td>
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<tr>
<td>473.astar</td>
<td>64</td>
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<td>768</td>
<td>584</td>
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<td>768</td>
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<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>64</td>
<td>258</td>
<td>1710</td>
<td>255</td>
<td>1730</td>
<td>258</td>
<td>1710</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
Sysinfo program /home/cpu2006/config/sysinfo.rev6993
Continued on next page
SPEC CINT2006 Result

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### Platform Notes (Continued)

Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on sy480_hjp_suse Sun Dec 3 06:01:29 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) Platinum 8153 CPU @ 2.00GHz
- 2 "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 : 32
- 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
- cache size : 22528 KB

From /proc/meminfo
- MemTotal: 395924524 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

SuSE-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 Dec 3 06:00

SPEC is set to: /home/cpu2006

Additional information from dmidecode:

Continued on next page
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**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 I42 09/27/2017
Memory:
24x UNKNOWN NOT AVAILABLE 16 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 = "/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:
```bash
icc -m32 -L/opt/intel/compilers_and_libraries_2018.0.082/linux/lib/ia32
```

C++ benchmarks:
```bash
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

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**Hardware Availability:** Oct-2017

**Tested by:** HPE  
**Software Availability:** Sep-2017

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### 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/HPE-Platform-Flags-Intel-V1.2-SKX-revH.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/HPE-Platform-Flags-Intel-V1.2-SKX-revH.xml](http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revH.xml)