# SPEC® CFP2006 Result

## Hewlett Packard Enterprise

*Test Sponsor: HPE*

**Synergy 480 Gen10**

*(2.60 GHz, Intel Xeon Silver 4112)*

### SPECfp®_rate2006 = Not Run

**SPECfp_rate_base2006 = 417**

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Test Date: Nov-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Oct-2017</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Apr-2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>HPE</td>
</tr>
<tr>
<td>Tested by:</td>
<td>HPE</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon Silver 4112</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.00 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2600</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>8 cores, 2 chips, 4 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1, 2 chip(s)</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>1 MB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>SUSE Linux Enterprise Server 12 (x86_64) SP2 Kernel 4.4.21-69-default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux; Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
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<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
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### Copies

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Count</th>
<th>CPU2006 Rate</th>
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<tbody>
<tr>
<td>410.bwaves</td>
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<td></td>
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<tr>
<td>416.gamess</td>
<td>16</td>
<td>341</td>
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<tr>
<td>433.milc</td>
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<td>523</td>
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<td>434.zeusmp</td>
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<tr>
<td>436.cactusADM</td>
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<tr>
<td>437.leslie3d</td>
<td>16</td>
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<td>566</td>
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<td>450.soplex</td>
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<tr>
<td>453.povray</td>
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<td>498</td>
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<td>454.calculix</td>
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<td>533</td>
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<tr>
<td>459.GemsFDTD</td>
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<td>465.tonto</td>
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<td>470.lbm</td>
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<td>481.wrf</td>
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<tr>
<td>482.sphinx3</td>
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### Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/
SPEC CFP2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
Synergy 480 Gen10
(2.60 GHz, Intel Xeon Silver 4112)

SPECfp_rate2006 = Not Run
SPECfp_rate_base2006 = 417

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

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

L3 Cache: 8.25 MB I+D on chip per chip
Other Cache: None
Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R, running at 2400)
Disk Subsystem: 1 x 480 GB SATA SSD, RAID 0
Other Hardware: None
Base Pointers: 32/64-bit
Peak Pointers: Not Applicable
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>352</td>
<td>890</td>
<td>350</td>
<td>884</td>
<td>353</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"

Continued on next page
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Operating System Notes (Continued)

- 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
  - 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_machine1 Thu Nov 30 16:28:34 2017

- From /proc/cpuinfo:
  - model name : Intel(R) Xeon(R) Silver 4112 CPU @ 2.60GHz
  - 2 "physical id"s (chips)
  - 16 "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 : 4
    - siblings : 8
    - physical 0: cores 1 2 4 5
    - physical 1: cores 0 1 3 4
  - cache size : 8448 KB

- From /proc/meminfo:
  - MemTotal: 395932484 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"

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

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

Platform Notes (Continued)

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_machine1 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 Nov 30 16:26

SPEC is set to: /home/cpu2006
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda4      xfs   405G   85G  321G  21% /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/lib/ia32:/home/cpu2006/lib/intel64:/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 -m64

C++ benchmarks:
    icpc -m64

Fortran benchmarks:
    ifort -m64

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

Base Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
  icc -m64 ifort -m64

Base Portability Flags

- 410.bwaves: -DSPEC_CPU_LP64
- 416.games: -DSPEC_CPU_LP64
- 433.milc: -DSPEC_CPU_LP64
- 434.zeusmp: -DSPEC_CPU_LP64
- 435.gromacs: -DSPEC_CPU_LP64 -nofor_main
- 436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
- 437.leslie3d: -DSPEC_CPU_LP64
- 444.namd: -DSPEC_CPU_LP64
- 447.dealII: -DSPEC_CPU_LP64
- 450.soplex: -DSPEC_CPU_LP64
- 453.povray: -DSPEC_CPU_LP64
- 454.calculix: -DSPEC_CPU_LP64 -nofor_main
- 459.GemsFDTD: -DSPEC_CPU_LP64
- 465.tonto: -DSPEC_CPU_LP64
- 470.lbm: -DSPEC_CPU_LP64
- 481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
- 482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
  -qopt-mem-layout-trans=3

C++ benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
  -qopt-mem-layout-trans=3

Fortran benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

Benchmarks using both Fortran and C:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
  -qopt-mem-layout-trans=3

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
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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

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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.