## SPEC® CFP2006 Result

Hewlett-Packard Company
ProLiant DL580 Gen8
(3.20 GHz, Intel Xeon E7-8891 v2)

| Software Availability: Sep-2013 |
|---------------------|---------------------|
| SPECfp®2006 = 114  |
| SPECfp_base2006 = 108 |

**CPU2006 license:** 3  
**Test sponsor:** Hewlett-Packard Company  
**Tested by:** Hewlett-Packard Company  
**Test date:** Feb-2014  
**Hardware Availability:** Feb-2014

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong> Intel Xeon E7-8891 v2</td>
<td><strong>Operating System:</strong> SUSE Linux Enterprise Server 11 (x86_64) SP3</td>
</tr>
<tr>
<td><strong>CPU Characteristics:</strong> Intel Turbo Boost Technology up to 3.70 GHz</td>
<td><strong>Kernel:</strong> 3.0.76-0.11-default</td>
</tr>
<tr>
<td><strong>CPU MHz:</strong> 3200</td>
<td><strong>Compiler:</strong> C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux; Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux</td>
</tr>
<tr>
<td><strong>FPU:</strong> Integrated</td>
<td><strong>Auto Parallel:</strong> Yes</td>
</tr>
<tr>
<td><strong>CPU(s) enabled:</strong> 40 cores, 4 chips, 10 cores/chip</td>
<td><strong>File System:</strong> ext3</td>
</tr>
<tr>
<td><strong>CPU(s) orderable:</strong> 2,4 chips</td>
<td><strong>System State:</strong> Run level 3 (multi-user)</td>
</tr>
<tr>
<td><strong>Primary Cache:</strong> 32 KB I + 32 KB D on chip per core</td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Cache:</strong> 256 KB I+D on chip per core</td>
<td></td>
</tr>
</tbody>
</table>

---

Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</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>410.bwaves</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14.2</td>
<td>956</td>
<td>15.2</td>
<td>893</td>
<td>14.6</td>
<td>930</td>
<td></td>
<td></td>
</tr>
<tr>
<td>416.gamess</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>552</td>
<td>35.5</td>
<td>551</td>
<td>35.5</td>
<td></td>
<td></td>
<td>551</td>
<td>35.6</td>
</tr>
<tr>
<td>433.milc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>147</td>
<td>62.6</td>
<td>150</td>
<td>61.3</td>
<td>150</td>
<td>61.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>434.zeusmp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>55.6</td>
<td>164</td>
<td>55.6</td>
<td>164</td>
<td></td>
<td></td>
<td>55.2</td>
<td>165</td>
</tr>
<tr>
<td>435.gromacs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>162</td>
<td>44.2</td>
<td>161</td>
<td>44.5</td>
<td>161</td>
<td>44.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>436.cactusADM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16.7</td>
<td>715</td>
<td>16.9</td>
<td>707</td>
<td>16.9</td>
<td>707</td>
<td></td>
<td></td>
</tr>
<tr>
<td>437.leslie3d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>33.0</td>
<td>285</td>
<td>39.4</td>
<td>238</td>
<td>34.4</td>
<td>273</td>
<td></td>
<td></td>
</tr>
<tr>
<td>444.namd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>312</td>
<td>25.7</td>
<td>312</td>
<td>25.7</td>
<td>312</td>
<td>25.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>447.dealII</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>57.3</td>
<td>198</td>
<td>57.6</td>
<td>198</td>
<td>57.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>450.soplex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>184</td>
<td>45.4</td>
<td>185</td>
<td>45.2</td>
<td>182</td>
<td>45.7</td>
<td>184</td>
<td>45.4</td>
</tr>
<tr>
<td>453.povray</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>109</td>
<td>49.0</td>
<td>108</td>
<td>49.2</td>
<td>108</td>
<td>49.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>454.calculix</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>174</td>
<td>47.3</td>
<td>170</td>
<td>48.4</td>
<td>171</td>
<td>48.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50.8</td>
<td>209</td>
<td>50.6</td>
<td>210</td>
<td>50.8</td>
<td>209</td>
<td></td>
<td></td>
</tr>
<tr>
<td>465.tonto</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>287</td>
<td>34.3</td>
<td>255</td>
<td>38.5</td>
<td>255</td>
<td>38.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>470.lbm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11.4</td>
<td>1200</td>
<td>11.2</td>
<td>1230</td>
<td>11.8</td>
<td>1160</td>
<td>11.4</td>
<td>1200</td>
</tr>
<tr>
<td>481.wrf</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>105</td>
<td>106</td>
<td>103</td>
<td>108</td>
<td>105</td>
<td>107</td>
<td></td>
<td></td>
</tr>
<tr>
<td>482.sphinx3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>77.9</td>
<td>249</td>
<td>78.4</td>
<td>247</td>
<td>79.0</td>
<td>246</td>
<td>79.1</td>
</tr>
</tbody>
</table>

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

### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

### Platform Notes

**BIOS Configuration:**
- HP Power Profile was set to Maximum Performance
- HP Minimum Processor Idle Power State was set to C6 State
- Intel Minimum Processor Idle Power Package State was set to Package C6 State
- Intel Hyperthreading Options was set to Disabled
- Memory Double Refresh Rate was set to Disabled
- Processor Power and Utilization Monitoring was set to Disabled

Continued on next page
Hewlett-Packard Company

ProLiant DL580 Gen8
(3.20 GHz, Intel Xeon E7-8891 v2)

SPECfp2006 = 114
SPECfp_base2006 = 108

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Feb-2014
Hardware Availability: Feb-2014
Software Availability: Sep-2013

Platform Notes (Continued)

Memory Patrol Scrubbing was set to "Disabled"
Sysinfo program /home/cpu2006/config/sysinfo.rev6874.hp
$Rev: 6874 $ $Date:: 2013-11-20 #$ e05b96ddac6d74bfe176502a0a2391
running on dl580-rwen Sat Feb 22 06:59:39 2014

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) CPU E7-8891 v2 @ 3.20GHz
  4 "physical id"s (chips)
  40 "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 : 10
siblings : 10
physical 0: cores 2 3 4 5 6 7 8 10 11 12
physical 1: cores 2 3 4 5 6 7 8 10 11 12
physical 2: cores 2 3 4 5 6 7 8 10 11 12
physical 3: cores 2 3 4 5 6 7 8 10 11 12
cache size : 38400 KB

From /proc/meminfo
MemTotal: 1058730268 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 11 (x86_64)

From /etc/*release* /etc/*version*
SuSE-release:
  SUSE Linux Enterprise Server 11 (x86_64)
VERSION = 11
PATCHLEVEL = 3

uname -a:
Linux dl580-rwen 3.0.76-0.11-default #1 SMP Fri Jun 14 08:21:43 UTC 2013
  (ccab990) x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Feb 21 20:20 last=S

SPEC is set to: /home/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb3 ext3 275G 8.7G 265G 4% /

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
SPEC CFP2006 Result

Hewlett-Packard Company

ProLiant DL580 Gen8
(3.20 GHz, Intel Xeon E7-8891 v2)

SPECfp2006 = 114
SPECfp_base2006 = 108

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Platform Notes (Continued)

hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS HP P79 02/14/2014
Memory:
64x HP 712383-081 16 GB 1866 MHz, configured at 1333 MHz
32x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of memory is 1 TB and the dmidecode description should have one line reading as:
64x HP 712383-081 16 GB 1866 MHz, configured at 1333 MHz

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
OMP_NUM_THREADS = "40"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

Base Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

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

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -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

Continued on next page
Hewlett-Packard Company

SPECfp2006 = 114
SPECfp_base2006 = 108

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Base Portability Flags (Continued)

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:
- xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

C++ benchmarks:
- xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:
- xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:
- xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

Peak Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

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

Peak Portability Flags

Same as Base Portability Flags
Hewlett-Packard Company
ProLiant DL580 Gen8
(3.20 GHz, Intel Xeon E7-8891 v2)

SPECfp2006 = 114
SPECfp_base2006 = 108

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Feb-2014
Hardware Availability: Feb-2014
Software Availability: Sep-2013

Peak Optimization Flags

C benchmarks:

433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32
-ansi-alias

470.lbm: basepeak = yes

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel

C++ benchmarks:

444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
-opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

Continued on next page
Hewlett-Packard Company
ProLiant DL580 Gen8
(3.20 GHz, Intel Xeon E7-8891 v2)

SPECfp2006 = 114
SPECfp_base2006 = 108

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Feb-2014
Hardware Availability: Feb-2014
Software Availability: Sep-2013

Peak Optimization Flags (Continued)

454.calculix: -xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revB.20131009.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revB.20131009.xml

SPEC and SPECfp 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 11 March 2014.