# SPEC® CFP2006 Result

## Hewlett-Packard Company

ProLiant DL580 Gen9  
(2.50 GHz, Intel Xeon E7-8867 v3)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>114</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 3  
**Test sponsor:** Hewlett-Packard Company  
**Tested by:** Hewlett-Packard Company  
**CPU Name:** Intel Xeon E7-8867 v3  
**CPU Characteristics:** Intel Turbo Boost Technology up to 3.30 GHz  
**CPU MHz:** 2500  
**FPU:** Integrated  
**CPU(s) enabled:** 64 cores, 4 chips, 16 cores/chip  
**CPU(s) orderable:** 2,4 chip  
**Primary Cache:** 32 KB I + 32 KB D on chip per core  
**Secondary Cache:** 256 KB I+D on chip per core

**Operating System:** Red Hat Enterprise Linux Server release 7.1 (Maipo)  
**Compiler:** C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux; Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux  
**Auto Parallel:** Yes  
**File System:** xfs

### Hardware

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>41.1</td>
</tr>
<tr>
<td>416.gamess</td>
<td>34.0</td>
</tr>
<tr>
<td>433.milc</td>
<td>64.8</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>64.7</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>36.0</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>1060</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>268</td>
</tr>
<tr>
<td>444.namd</td>
<td>28.7</td>
</tr>
<tr>
<td>447.dealII</td>
<td>52.6</td>
</tr>
<tr>
<td>450.soplex</td>
<td>63.5</td>
</tr>
<tr>
<td>453.povray</td>
<td>61.0</td>
</tr>
<tr>
<td>454.calculix</td>
<td>54.4</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>254</td>
</tr>
<tr>
<td>465.tonto</td>
<td>49.9</td>
</tr>
<tr>
<td>470.lbm</td>
<td>36.1</td>
</tr>
<tr>
<td>481.wrf</td>
<td>108</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>67.5</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>41.1</td>
</tr>
<tr>
<td>416.gamess</td>
<td>34.0</td>
</tr>
<tr>
<td>433.milc</td>
<td>64.8</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>64.7</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>36.0</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>1060</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>268</td>
</tr>
<tr>
<td>444.namd</td>
<td>28.7</td>
</tr>
<tr>
<td>447.dealII</td>
<td>52.6</td>
</tr>
<tr>
<td>450.soplex</td>
<td>63.5</td>
</tr>
<tr>
<td>453.povray</td>
<td>61.0</td>
</tr>
<tr>
<td>454.calculix</td>
<td>54.4</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>254</td>
</tr>
<tr>
<td>465.tonto</td>
<td>49.9</td>
</tr>
<tr>
<td>470.lbm</td>
<td>36.1</td>
</tr>
<tr>
<td>481.wrf</td>
<td>108</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>67.5</td>
</tr>
</tbody>
</table>
Hewlett-Packard Company

ProLiant DL580 Gen9
(2.50 GHz, Intel Xeon E7-8867 v3)

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company
L3 Cache: 45 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)
Disk Subsystem: 1 x 400 GB SAS SSD, RAID 0
Other Hardware: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Peak</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seconds</td>
<td>Ratio</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Seconds</td>
</tr>
<tr>
<td>416.gamess</td>
<td>575</td>
<td>34.0</td>
<td>578</td>
<td>33.9</td>
<td>577</td>
<td>34.0</td>
<td>476</td>
<td>41.1</td>
<td>477</td>
</tr>
<tr>
<td>433.milc</td>
<td>142</td>
<td>64.8</td>
<td>143</td>
<td>64.4</td>
<td>142</td>
<td>64.7</td>
<td>142</td>
<td>64.8</td>
<td>142</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>54.6</td>
<td>167</td>
<td>54.9</td>
<td>166</td>
<td>55.3</td>
<td>165</td>
<td>54.6</td>
<td>167</td>
<td>54.9</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>197</td>
<td>36.3</td>
<td>199</td>
<td>35.9</td>
<td>198</td>
<td>36.0</td>
<td>197</td>
<td>36.3</td>
<td>199</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>11.3</td>
<td>1060</td>
<td>11.3</td>
<td>1060</td>
<td>11.5</td>
<td>1040</td>
<td>11.3</td>
<td>1060</td>
<td>11.3</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>35.1</td>
<td>268</td>
<td>35.3</td>
<td>266</td>
<td>33.2</td>
<td>283</td>
<td>35.1</td>
<td>268</td>
<td>35.3</td>
</tr>
<tr>
<td>444.namd</td>
<td>288</td>
<td>27.9</td>
<td>288</td>
<td>27.9</td>
<td>288</td>
<td>27.9</td>
<td>280</td>
<td>28.7</td>
<td>280</td>
</tr>
<tr>
<td>447.dealII</td>
<td>217</td>
<td>52.7</td>
<td>221</td>
<td>51.8</td>
<td>218</td>
<td>52.6</td>
<td>217</td>
<td>52.7</td>
<td>221</td>
</tr>
<tr>
<td>450.soplex</td>
<td>192</td>
<td>43.5</td>
<td>193</td>
<td>43.1</td>
<td>192</td>
<td>43.5</td>
<td>192</td>
<td>43.3</td>
<td>193</td>
</tr>
<tr>
<td>453.povray</td>
<td>98.2</td>
<td>54.2</td>
<td>97.5</td>
<td>54.6</td>
<td>97.7</td>
<td>54.4</td>
<td>87.2</td>
<td>61.0</td>
<td>87.0</td>
</tr>
<tr>
<td>454.calcix</td>
<td>167</td>
<td>49.4</td>
<td>168</td>
<td>49.2</td>
<td>167</td>
<td>49.3</td>
<td>148</td>
<td>55.8</td>
<td>148</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>50.4</td>
<td>210</td>
<td>53.9</td>
<td>197</td>
<td>48.7</td>
<td>218</td>
<td>41.3</td>
<td>257</td>
<td>41.7</td>
</tr>
<tr>
<td>465.tonto</td>
<td>271</td>
<td>36.3</td>
<td>273</td>
<td>36.1</td>
<td>272</td>
<td>36.1</td>
<td>197</td>
<td>49.9</td>
<td>197</td>
</tr>
<tr>
<td>470.1bm</td>
<td>8.90</td>
<td>1540</td>
<td>7.96</td>
<td>1730</td>
<td>7.92</td>
<td>1740</td>
<td>8.90</td>
<td>1540</td>
<td>7.96</td>
</tr>
<tr>
<td>481.wrf</td>
<td>104</td>
<td>108</td>
<td>104</td>
<td>108</td>
<td>104</td>
<td>108</td>
<td>104</td>
<td>108</td>
<td>104</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>289</td>
<td>67.5</td>
<td>289</td>
<td>67.6</td>
<td>291</td>
<td>67.1</td>
<td>289</td>
<td>67.5</td>
<td>289</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
Power Profile set to Custom
Power Regulator set to Static High Performance Mode
Minimum Processor Idle Power Core C-State set to C6 State
Minimum Processor Idle Power Package C-State set to No Package State
Energy/Performance Bias set to Maximum Performance
Collaborative Power Control set to Enabled

Continued on next page
SPEC CFP2006 Result

Hewlett-Packard Company
ProLiant DL580 Gen9
(2.50 GHz, Intel Xeon E7-8867 v3)

SPECfp2006 = 120
SPECfp_base2006 = 114

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

Platform Notes (Continued)

Thermal Configuration set to Maximum Cooling
Processor Power and Utilization Monitoring set to Disabled
Memory Refresh Rate set to 1x Refresh
Intel Hyperthreading Options set to Disabled
Sysinfo program /cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Fri May 1 19:21:57 2015

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 E7-8867 v3 @ 2.50GHz
  4 "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  : 16
    physical 0: cores 0 2 3 4 8 9 10 11 16 17 18 20 24 25 27
    physical 1: cores 0 2 3 4 8 9 10 11 16 17 18 20 24 25 27
    physical 2: cores 0 2 3 4 8 9 10 11 16 17 18 20 24 25 27
    physical 3: cores 0 2 3 4 8 9 10 11 16 17 18 20 24 25 27
  cache size : 46080 KB

From /proc/meminfo
  MemTotal:    528073668 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux Server"
    VERSION="7.1 (Maipo)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="7.1"
    PRETTY_NAME="Red Hat Enterprise Linux Server 7.1 (Maipo)"
    ANSI_COLOR="0;31"
    CPE_NAME="cpe:/o:redhat:enterprise_linux:7.1:GA:server"
  redhat-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)
  system-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)

uname -a:
  Linux localhost.localdomain 3.10.0-229.el7.x86_64 #1 SMP Thu Jan 29 18:37:38
  EST 2015 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 1 19:20
Hewlett-Packard Company

ProLiant DL580 Gen9
(2.50 GHz, Intel Xeon E7-8867 v3)

SPECfp2006 = 120
SPECfp_base2006 = 114

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Test date: May-2015
Tested by: Hewlett-Packard Company
Hardware Availability: May-2015
Software Availability: Mar-2015

Platform Notes (Continued)

SPEC is set to: /cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 368G 52G 317G 14% /

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 SMIOS" standard.

BIOS HP U17 03/13/2015
Memory:
32x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1600 MHz
64x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of memory is 512 GB and the dmidecode description should have one line reading as:
32x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1600 MHz

General Notes

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

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0

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
Hewlett-Packard Company

ProLiant DL580 Gen9
(2.50 GHz, Intel Xeon E7-8867 v3)

SPECfp2006 = 120
SPECfp_base2006 = 114

CPU2006 license: 3  Test date: May-2015
Test sponsor: Hewlett-Packard Company  Hardware Availability: May-2015
Tested by: Hewlett-Packard Company  Software Availability: Mar-2015

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
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 -parallel -opt-prefetch
-ansi-alias

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

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

Benchmarks using both Fortran and C:
-xCORE-AVX2 -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
SPEC CFP2006 Result

Hewlett-Packard Company
ProLiant DL580 Gen9
(2.50 GHz, Intel Xeon E7-8867 v3)

SPECfp2006 = 120
SPECfp_base2006 = 114

CPU2006 license: 3
Test date: May-2015
Test sponsor: Hewlett-Packard Company
Hardware Availability: May-2015
Tested by: Hewlett-Packard Company
Software Availability: Mar-2015

Peak Compiler Invocation (Continued)

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

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(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

Continued on next page
Hewlett-Packard Company
ProLiant DL580 Gen9
(2.50 GHz, Intel Xeon E7-8867 v3)

SPECfp2006 = 120
SPECfp_base2006 = 114

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

Test date: May-2015
Hardware Availability: May-2015
Software Availability: Mar-2015

Peak Optimization Flags (Continued)

459.GemsFDTD: -xCORE-AVX2(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: -xCORE-AVX2(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 -unroll14

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: -xCORE-AVX2 -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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.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.
Report generated on Tue May 19 18:16:59 2015 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 19 May 2015.