



# SPEC<sup>®</sup> CFP2006 Result

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## Hewlett-Packard Company

### SPECfp<sup>®</sup>\_rate2006 = 135

ProLiant BL680c G5  
(2.4 GHz, Intel Xeon E7450)

### SPECfp\_rate\_base2006 = 125

CPU2006 license: 3

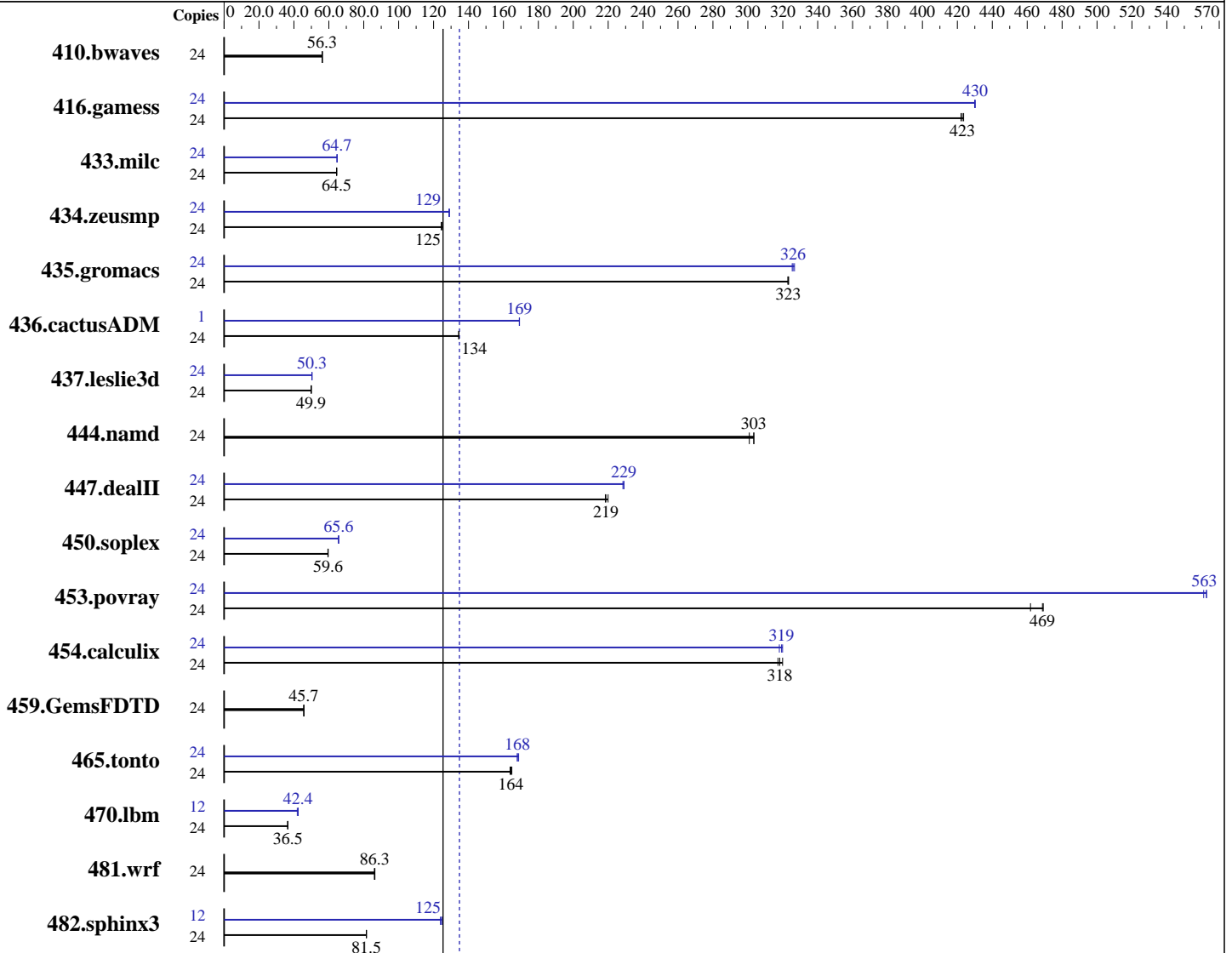
Test date: Aug-2008

Test sponsor: Hewlett-Packard Company

Hardware Availability: Sep-2008

Tested by: Hewlett-Packard Company

Software Availability: Nov-2008



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### Hardware

CPU Name: Intel Xeon E7450  
 CPU Characteristics: 2.40 GHz, 12 MB L3 shared, 1066 MHz system bus  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 24 cores, 4 chips, 6 cores/chip  
 CPU(s) orderable: 2,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 9 MB I+D on chip per chip, 3 MB shared / 2 cores

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### Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP1, Kernel 2.6.16.46-0.12-smpp  
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20080730 Package ID: l\_cproc\_b\_11.0.042, l\_fproc\_b\_11.0.042  
 Auto Parallel: Yes  
 File System: ext2  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: 12 MB I+D on chip per chip  
Other Cache: None  
Memory: 64 GB (16x4 GB PC2-5300F CL5)  
Disk Subsystem: 1x146 GB 10 K SAS  
Other Hardware: None

Peak Pointers: 32/64-bit  
Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	5803	56.2	5797	56.3	<b>5797</b>	<b>56.3</b>	24	5803	56.2	5797	56.3	<b>5797</b>	<b>56.3</b>
416.gamess	24	1113	422	1109	424	<b>1111</b>	<b>423</b>	24	1092	430	<b>1092</b>	<b>430</b>	1093	430
433.milc	24	3419	64.4	3413	64.5	<b>3418</b>	<b>64.5</b>	24	3404	64.7	<b>3405</b>	<b>64.7</b>	3405	64.7
434.zeusmp	24	1757	124	1747	125	<b>1754</b>	<b>125</b>	24	1695	129	1692	129	<b>1694</b>	<b>129</b>
435.gromacs	24	530	323	<b>530</b>	<b>323</b>	531	323	24	527	325	524	327	<b>526</b>	<b>326</b>
436.cactusADM	24	<b>2133</b>	<b>134</b>	2134	134	2132	135	1	70.6	169	<b>70.6</b>	<b>169</b>	70.7	169
437.leslie3d	24	4522	49.9	4519	49.9	<b>4521</b>	<b>49.9</b>	24	<b>4483</b>	<b>50.3</b>	4481	50.3	4484	50.3
444.namd	24	<b>635</b>	<b>303</b>	634	303	640	301	24	<b>635</b>	<b>303</b>	634	303	640	301
447.dealII	24	1257	218	<b>1255</b>	<b>219</b>	1248	220	24	1202	228	1199	229	<b>1199</b>	<b>229</b>
450.soplex	24	<b>3361</b>	<b>59.6</b>	3366	59.5	3358	59.6	24	3055	65.5	<b>3051</b>	<b>65.6</b>	3051	65.6
453.povray	24	<b>272</b>	<b>469</b>	276	462	272	469	24	227	563	228	561	<b>227</b>	<b>563</b>
454.calculix	24	<b>622</b>	<b>318</b>	619	320	624	317	24	<b>620</b>	<b>319</b>	619	320	623	318
459.GemsFDTD	24	5578	45.7	<b>5573</b>	<b>45.7</b>	5571	45.7	24	5578	45.7	<b>5573</b>	<b>45.7</b>	5571	45.7
465.tonto	24	1442	164	1433	165	<b>1438</b>	<b>164</b>	24	1400	169	<b>1406</b>	<b>168</b>	1406	168
470.lbm	24	9033	36.5	<b>9045</b>	<b>36.5</b>	9048	36.4	12	3883	42.5	3934	41.9	<b>3885</b>	<b>42.4</b>
481.wrf	24	3115	86.1	<b>3106</b>	<b>86.3</b>	3103	86.4	24	3115	86.1	<b>3106</b>	<b>86.3</b>	3103	86.4
482.sphinx3	24	5735	81.6	<b>5738</b>	<b>81.5</b>	5743	81.5	12	1876	125	1888	124	<b>1877</b>	<b>125</b>

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

## Submit Notes

The config file option 'submit' was used.  
taskset was used to bind processes to cores except for 436.cactusADM peak  
For peak modules using 1/2 the number of available cores, each copy was assigned to a single L2 cache using mysubmit.pl script.  
See the flags description file for mysubmit.pl details.

## Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run  
OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to physical,0  
KMP\_STACKSIZE set to 64M



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## Platform Notes

BIOS configuration:

Power Regulator set to Static High Performance Mode  
Adjacent Sector Prefetch Disabled  
Hardware Prefetcher Disabled  
Defer All Transactions Enabled

## Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort

## 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.deallI: -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:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

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## Base Optimization Flags (Continued)

C++ benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Fortran benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

## Peak Compiler Invocation

C benchmarks (except as noted below):

/opt/intel/Compiler/11.0/042/bin/ia32/icc  
-L/opt/intel/Compiler/11.0/042/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/042/ipp/ia32/include

433.milc: icc

C++ benchmarks (except as noted below):

icpc

450.soplex: /opt/intel/Compiler/11.0/042/bin/ia32/icpc  
-L/opt/intel/Compiler/11.0/042/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/042/ipp/ia32/include

Fortran benchmarks (except as noted below):

ifort

437.leslie3d: /opt/intel/Compiler/11.0/042/bin/ia32/ifort  
-L/opt/intel/Compiler/11.0/042/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/042/ipp/ia32/include

Benchmarks using both Fortran and C:

icc ifort

## Peak 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  
444.namd: -DSPEC\_CPU\_LP64  
447.dealII: -DSPEC\_CPU\_LP64

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## Peak Portability Flags (Continued)

453.povray: -DSPEC\_CPU\_LP64  
454.calculix: -DSPEC\_CPU\_LP64 -nofor\_main  
459.GemsFDTD: -DSPEC\_CPU\_LP64  
465.tonto: -DSPEC\_CPU\_LP64  
481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

433.milc: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -fno-alias  
470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -scalar-rep- -opt-prefetch  
-opt-malloc-options=3  
482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2

C++ benchmarks:

444.namd: basepeak = yes  
447.dealIII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -ansi-alias -scalar-rep-  
450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -opt-malloc-options=3  
453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes  
416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -Ob0 -ansi-alias  
-scalar-rep-  
434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static  
437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -opt-malloc-options=3 -opt-prefetch  
459.GemsFDTD: basepeak = yes

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## Peak Optimization Flags (Continued)

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -opt-prefetch -auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -opt-prefetch -parallel  
-auto-ilp32

454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32

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-ic11.0-fp-linux64-revD.html>  
<http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20090714.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revD.xml>  
<http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20090714.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.1.  
Report generated on Tue Jul 22 19:42:47 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 16 September 2008.