



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

**SPECfp®2006 = 58.7**

ProLiant DL580 G7  
(2.40 GHz, Intel Xeon E7-4870)

**SPECfp\_base2006 = 55.7**

CPU2006 license: 3

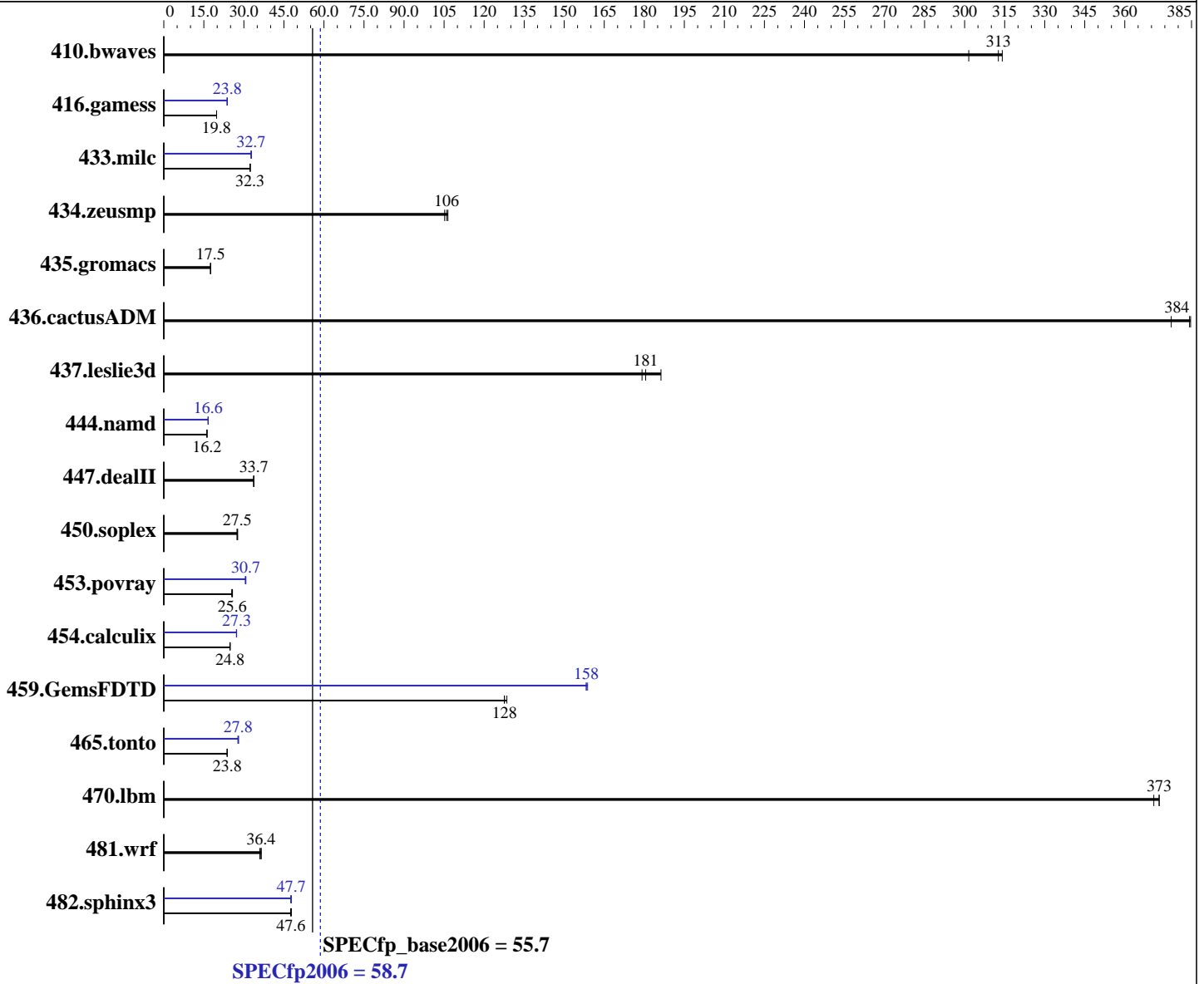
Test date: Oct-2011

Test sponsor: Hewlett-Packard Company

Hardware Availability: Apr-2011

Tested by: Hewlett-Packard Company

Software Availability: Aug-2011



### Hardware

CPU Name: Intel Xeon E7-4870  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip  
 CPU(s) orderable: 2,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core

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### Software

Operating System: Red Hat Enterprise Linux Server release 6.1, Kernel 2.6.32-131.0.15.el6.x86\_64  
 Compiler: C/C++/Fortran: Version 12.1.0.225 of Intel Compiler XE Build 20110803  
 Auto Parallel: Yes  
 File System: ext3  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: 30 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (64 x 4 GB 2Rx4 PC3-10600R-9, ECC)  
Disk Subsystem: 2 x 146 GB 10 K SAS  
Other Hardware: None

Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	43.3	314	45.1	302	<b>43.5</b>	<b>313</b>	43.3	314	45.1	302	<b>43.5</b>	<b>313</b>
416.gamess	<b>990</b>	<b>19.8</b>	989	19.8	990	19.8	827	23.7	<b>824</b>	<b>23.8</b>	823	23.8
433.milc	<b>284</b>	<b>32.3</b>	283	32.4	284	32.3	281	32.6	279	32.9	<b>280</b>	<b>32.7</b>
434.zeusmp	85.5	106	<b>85.9</b>	<b>106</b>	86.5	105	85.5	106	<b>85.9</b>	<b>106</b>	86.5	105
435.gromacs	408	17.5	<b>408</b>	<b>17.5</b>	407	17.5	408	17.5	<b>408</b>	<b>17.5</b>	407	17.5
436.cactusADM	31.7	377	31.1	385	<b>31.1</b>	<b>384</b>	31.7	377	31.1	385	<b>31.1</b>	<b>384</b>
437.leslie3d	52.5	179	50.5	186	<b>52.1</b>	<b>181</b>	52.5	179	50.5	186	<b>52.1</b>	<b>181</b>
444.namd	496	16.2	496	16.2	<b>496</b>	<b>16.2</b>	483	16.6	482	16.6	<b>483</b>	<b>16.6</b>
447.dealII	340	33.6	339	33.8	<b>339</b>	<b>33.7</b>	340	33.6	339	33.8	<b>339</b>	<b>33.7</b>
450.soplex	301	27.7	<b>303</b>	<b>27.5</b>	304	27.4	301	27.7	<b>303</b>	<b>27.5</b>	304	27.4
453.povray	<b>207</b>	<b>25.6</b>	209	25.5	207	25.7	173	30.7	<b>173</b>	<b>30.7</b>	174	30.5
454.calculix	333	24.7	332	24.9	<b>332</b>	<b>24.8</b>	302	27.3	303	27.2	<b>303</b>	<b>27.3</b>
459.GemsFDTD	83.1	128	82.6	129	<b>83.1</b>	<b>128</b>	<b>67.0</b>	<b>158</b>	66.8	159	67.1	158
465.tonto	414	23.8	<b>414</b>	<b>23.8</b>	415	23.7	<b>353</b>	<b>27.8</b>	354	27.8	351	28.0
470.lbm	36.8	373	<b>36.8</b>	<b>373</b>	37.0	371	36.8	373	<b>36.8</b>	<b>373</b>	37.0	371
481.wrf	310	36.0	<b>307</b>	<b>36.4</b>	306	36.5	310	36.0	<b>307</b>	<b>36.4</b>	306	36.5
482.sphinx3	410	47.5	408	47.8	<b>409</b>	<b>47.6</b>	408	47.8	<b>408</b>	<b>47.7</b>	410	47.5

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

## Platform Notes

BIOS configuration:  
Intel Hyper-Threading set to Disabled

## General Notes

Environment variables set by runspec before the start of the run:  
KMP\_AFFINITY = "granularity=fine,scatter"  
LD\_LIBRARY\_PATH = "/cpu2006/smartheap:/cpu2006/ic12.1-libs/ia32/:/cpu2006/ic12.1-libs/intel64"  
OMP\_NUM\_THREADS = "20"

Stack size set to unlimited using "ulimit -s unlimited"  
Transparent Huge Pages enabled with:  
echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled



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## 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  
 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:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch  
-ansi-alias



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## 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

## Peak Optimization Flags

C benchmarks:

433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32  
-ansi-alias

470.lbm: basepeak = yes

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

C++ benchmarks:

444.namd: -xSSE4.2(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.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(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

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## Peak Optimization Flags (Continued)

416.gamess: -xSSE4.2(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- -static

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xSSE4.2(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: -xSSE4.2(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

454.calculix: -xSSE4.2 -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/HP-Intel-Linux-Settings-flags.20110316.html>

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-linux64.html>

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

<http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20110316.xml>

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-linux64.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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