



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

ProLiant BL490c G7  
(3.06 GHz, Intel Xeon X5675)

SPECfp®2006 = 60.5

SPECfp\_base2006 = 56.8

CPU2006 license: 3

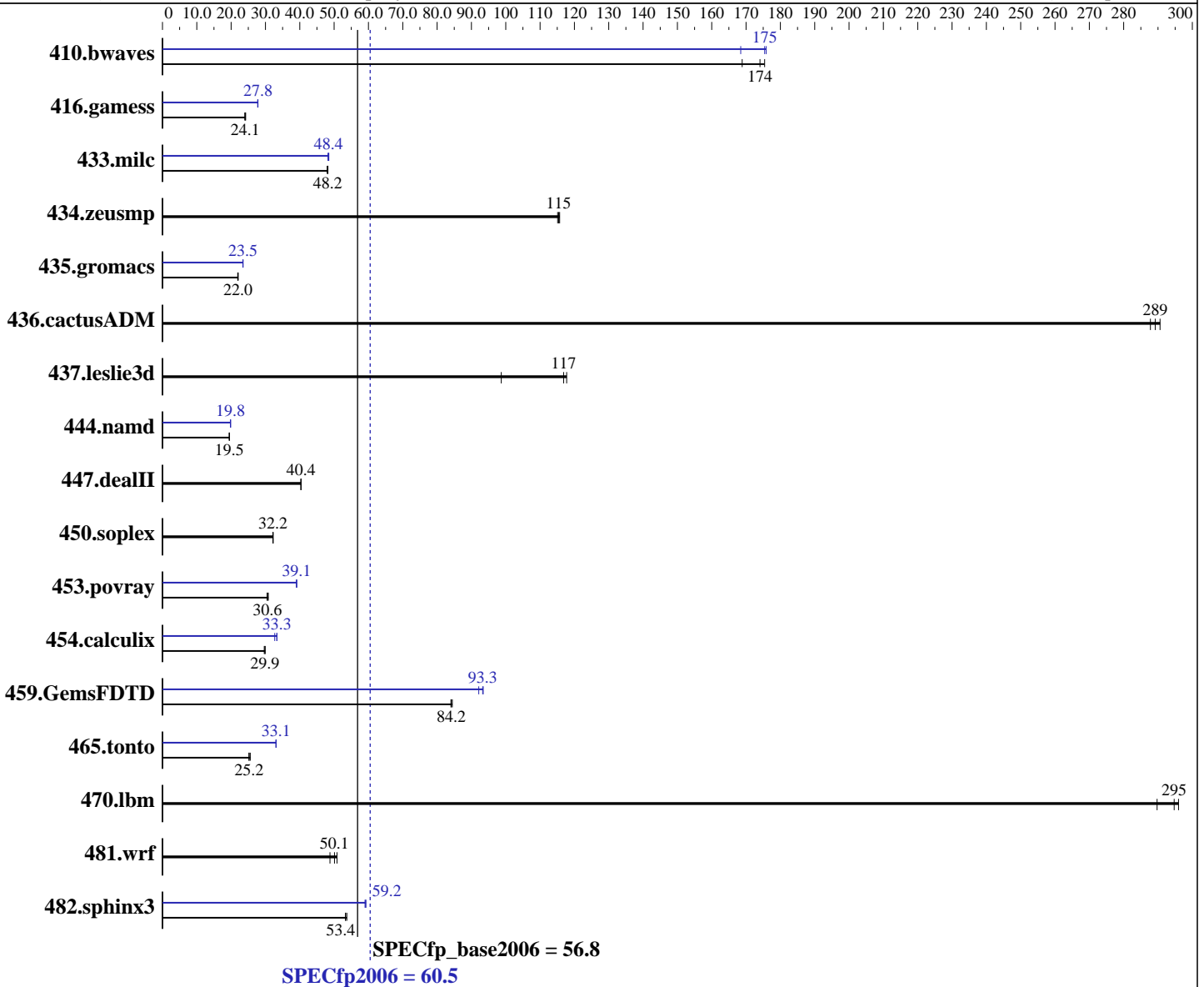
Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: Jan-2011

Hardware Availability: Feb-2011

Software Availability: Apr-2011



### Hardware

CPU Name: Intel Xeon X5675  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.46 GHz  
 CPU MHz: 3067  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip  
 CPU(s) orderable: 1,2 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: SUSE Linux Enterprise Server 11 (x86\_64) SP1, Kernel 2.6.32.12-0.7-default  
 Compiler: Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12.0 Update 3  
 Auto Parallel: Yes  
 File System: ext3  
 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: 48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC)  
Disk Subsystem: 1 x 120 GB SATA SSD  
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	80.5	169	77.5	175	<b>78.1</b>	<b>174</b>	77.3	176	<b>77.5</b>	<b>175</b>	80.7	168
416.gamess	<b>811</b>	<b>24.1</b>	817	24.0	808	24.2	706	27.7	<b>704</b>	<b>27.8</b>	704	27.8
433.milc	<b>191</b>	<b>48.2</b>	191	48.0	190	48.2	190	48.2	<b>190</b>	<b>48.4</b>	189	48.5
434.zeusmp	78.7	116	79.1	115	<b>78.9</b>	<b>115</b>	78.7	116	79.1	115	<b>78.9</b>	<b>115</b>
435.gromacs	324	22.0	<b>324</b>	<b>22.0</b>	326	21.9	304	23.5	<b>304</b>	<b>23.5</b>	305	23.4
436.cactusADM	41.1	291	<b>41.3</b>	<b>289</b>	41.5	288	41.1	291	<b>41.3</b>	<b>289</b>	41.5	288
437.leslie3d	<b>80.4</b>	<b>117</b>	95.2	98.7	79.8	118	<b>80.4</b>	<b>117</b>	95.2	98.7	79.8	118
444.namd	412	19.5	<b>412</b>	<b>19.5</b>	412	19.5	405	19.8	405	19.8	<b>405</b>	<b>19.8</b>
447.dealII	284	40.3	<b>284</b>	<b>40.4</b>	283	40.4	284	40.3	<b>284</b>	<b>40.4</b>	283	40.4
450.soplex	259	32.2	<b>259</b>	<b>32.2</b>	259	32.2	259	32.2	<b>259</b>	<b>32.2</b>	259	32.2
453.povray	173	30.8	<b>174</b>	<b>30.6</b>	175	30.5	136	39.0	136	39.1	<b>136</b>	<b>39.1</b>
454.calculix	278	29.6	<b>276</b>	<b>29.9</b>	276	29.9	252	32.7	<b>248</b>	<b>33.3</b>	247	33.3
459.GemsFDTD	126	84.4	<b>126</b>	<b>84.2</b>	126	84.0	115	92.1	<b>114</b>	<b>93.3</b>	114	93.4
465.tonto	<b>390</b>	<b>25.2</b>	385	25.6	391	25.2	<b>297</b>	<b>33.1</b>	297	33.1	297	33.1
470.lbm	<b>46.6</b>	<b>295</b>	46.4	296	47.4	290	<b>46.6</b>	<b>295</b>	46.4	296	47.4	290
481.wrf	229	48.8	220	50.8	<b>223</b>	<b>50.1</b>	229	48.8	220	50.8	<b>223</b>	<b>50.1</b>
482.sphinx3	363	53.7	<b>365</b>	<b>53.4</b>	366	53.3	329	59.3	<b>329</b>	<b>59.2</b>	330	59.0

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

## Operating System Notes

```
'nodev /mnt/hugepages hugetlbfs defaults 0 0' added to /etc/fstab
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

## Platform Notes

BIOS configuration:  
HP Power Profile set to Maximum Performance  
Thermal Configuration set to Increased Cooling  
Data Reuse set to Disabled  
Intel Hyperthreading Options set to Disabled



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## General Notes

OMP\_NUM\_THREADS set to number of cores  
Binaries were compiled on RHEL5.5 with with Binutils binutils-2.17.50.0.6-14.el5

## 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

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## Base Optimization Flags (Continued)

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`

## Peak Compiler Invocation

C benchmarks:

`icc -m64`

C++ benchmarks (except as noted below):

`icpc -m64`

453.povray: `icpc -m64`

`-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT`

Fortran benchmarks (except as noted below):

`ifort -m64`

459.GemsFDTD: `ifort -m64`

`-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT`

465.tonto: `ifort -m64`

`-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT`

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`

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## Peak Optimization Flags (Continued)

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

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: -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

436.cactusADM: basepeak = yes

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes



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The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.20110303.02.html>  
<http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20110216.00.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.20110303.02.xml>  
<http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20110216.00.xml>

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Tested with SPEC CPU2006 v1.1.  
Report generated on Wed Jul 23 16:50:55 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 8 March 2011.