



# SPEC<sup>®</sup> CFP2006 Result

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## Hewlett-Packard Company

### SPECfp<sup>®</sup>\_rate2006 = 76.5

ProLiant BL460c  
(3.00 GHz, Intel Xeon E5450)

### SPECfp\_rate\_base2006 = 69.1

CPU2006 license: 3

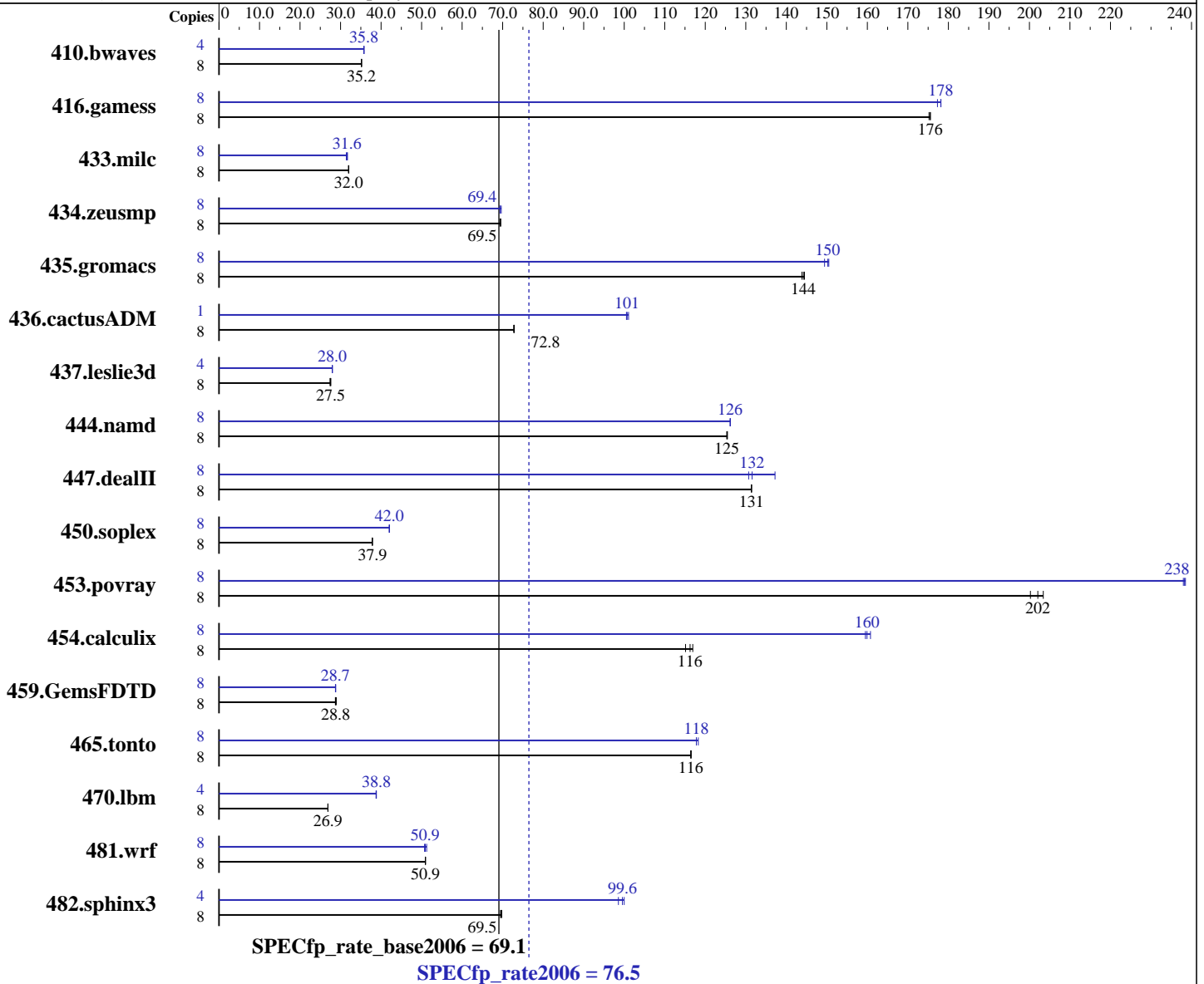
Test date: Feb-2008

Test sponsor: Hewlett-Packard Company

Hardware Availability: Nov-2007

Tested by: Hewlett-Packard Company

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon E5450  
 CPU Characteristics: 3.00 GHz, 2x6 MB L2 shared, 1333 MHz system bus  
 CPU MHz: 3000  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 12 MB I+D on chip per chip, 6 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++ Compiler 10.1 for Linux Build 20070913 Package ID: l\_cc\_p\_10.1.008  
 Intel Fortran Compiler 10.1 for Linux Build 20070913 Package ID: l\_cc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ext2  
 System State: Run level 3 (multi-user)

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L3 Cache: None  
Other Cache: None  
Memory: 16 GB (8x2 GB PC2-5300F CL5)  
Disk Subsystem: 1x72 GB 15 K SAS  
Other Hardware: None

Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: binutils-2.17.50

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	<b><u>3091</u></b>	<b><u>35.2</u></b>	3094	35.1	3089	35.2	4	<b><u>1519</u></b>	<b><u>35.8</u></b>	1522	35.7	1518	35.8
416.gamess	8	<b><u>892</u></b>	<b><u>176</u></b>	894	175	892	176	8	<b><u>879</u></b>	<b><u>178</u></b>	883	177	879	178
433.milc	8	2292	32.0	<b><u>2293</u></b>	<b><u>32.0</u></b>	2299	31.9	8	<b><u>2323</u></b>	<b><u>31.6</u></b>	2338	31.4	2316	31.7
434.zeusmp	8	1050	69.3	1047	69.5	<b><u>1047</u></b>	<b><u>69.5</u></b>	8	1050	69.3	<b><u>1049</u></b>	<b><u>69.4</u></b>	1045	69.7
435.gromacs	8	395	144	397	144	<b><u>396</u></b>	<b><u>144</u></b>	8	<b><u>380</u></b>	<b><u>150</u></b>	380	150	382	149
436.cactusADM	8	<b><u>1313</u></b>	<b><u>72.8</u></b>	1315	72.7	1312	72.9	1	118	101	<b><u>119</u></b>	<b><u>101</u></b>	119	101
437.leslie3d	8	2746	27.4	2725	27.6	<b><u>2731</u></b>	<b><u>27.5</u></b>	4	1345	28.0	<b><u>1345</u></b>	<b><u>28.0</u></b>	1344	28.0
444.namd	8	511	125	512	125	<b><u>512</u></b>	<b><u>125</u></b>	8	509	126	508	126	<b><u>509</u></b>	<b><u>126</u></b>
447.dealII	8	<b><u>696</u></b>	<b><u>131</u></b>	697	131	696	131	8	667	137	<b><u>696</u></b>	<b><u>132</u></b>	700	131
450.soplex	8	1762	37.9	<b><u>1763</u></b>	<b><u>37.9</u></b>	1766	37.8	8	<b><u>1588</u></b>	<b><u>42.0</u></b>	1588	42.0	1585	42.1
453.povray	8	213	200	<b><u>211</u></b>	<b><u>202</u></b>	209	203	8	<b><u>179</u></b>	<b><u>238</u></b>	178	239	179	238
454.calculix	8	564	117	<b><u>568</u></b>	<b><u>116</u></b>	573	115	8	411	161	414	160	<b><u>413</u></b>	<b><u>160</u></b>
459.GemsFDTD	8	<b><u>2951</u></b>	<b><u>28.8</u></b>	2955	28.7	2933	28.9	8	2953	28.7	<b><u>2953</u></b>	<b><u>28.7</u></b>	2946	28.8
465.tonto	8	676	116	<b><u>676</u></b>	<b><u>116</u></b>	676	117	8	668	118	<b><u>668</u></b>	<b><u>118</u></b>	666	118
470.lbm	8	<b><u>4088</u></b>	<b><u>26.9</u></b>	4089	26.9	4088	26.9	4	1415	38.8	<b><u>1416</u></b>	<b><u>38.8</u></b>	1418	38.8
481.wrf	8	<b><u>1754</u></b>	<b><u>50.9</u></b>	1755	50.9	1753	51.0	8	<b><u>1755</u></b>	<b><u>50.9</u></b>	1744	51.2	1762	50.7
482.sphinx3	8	<b><u>2243</u></b>	<b><u>69.5</u></b>	2243	69.5	2234	69.8	4	791	98.6	<b><u>783</u></b>	<b><u>99.6</u></b>	780	100

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

## Operating System Notes

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

## Platform Notes

BIOS configuration:  
Power Regulator set to Static High Performance Mode  
Adjacent Sector Prefetch Disabled  
Hardware Prefetcher Disabled



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## 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.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:

-fast

C++ benchmarks:

-fast

Fortran benchmarks:

-fast

Benchmarks using both Fortran and C:

-fast



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## Peak Compiler Invocation

C benchmarks (except as noted below):

```
/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib
-I/opt/intel/cc/10.1.008/include
```

433.milc: icc

C++ benchmarks (except as noted below):

icpc

```
450.soplex: /opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib
-I/opt/intel/cc/10.1.008/include
```

Fortran benchmarks (except as noted below):

ifort

```
437.leslie3d: /opt/intel/fc/10.1.008/bin/ifort -L/opt/intel/fc/10.1.008/lib
-I/opt/intel/fc/10.1.008/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.deall: -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
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) -fast -fno-alias
-auto-ilp32
```

```
470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2
-scalar-rep- -prefetch -opt-malloc-options=3
```

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## Peak Optimization Flags (Continued)

482.sphinx3: -fast -unroll2

### C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias  
-auto-ilp32

447.dealIII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast  
-opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4  
-ansi-alias

### Fortran benchmarks:

410.bwaves: -fast -prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
-opt-malloc-options=3

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto

### Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
-auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-prefetch -parallel -auto-ilp32

454.calculix: -fast -unroll-aggressive -auto-ilp32

481.wrf: -fast -auto-ilp32

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/HP-Intel-ic10.1-linux-fp-flags.html>



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You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/HP-Intel-ic10.1-linux-fp-flags.xml>

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

Tested with SPEC CPU2006 v1.0.  
Report generated on Tue Jul 22 15:22:25 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 25 March 2008.