



# SPEC<sup>®</sup> CFP2006 Result

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## Hewlett-Packard Company

SPECfp<sup>®</sup>\_rate2006 = 78.2

ProLiant BL460c  
(3.16 GHz, Intel Xeon X5460)

SPECfp\_rate\_base2006 = 70.4

CPU2006 license: 3

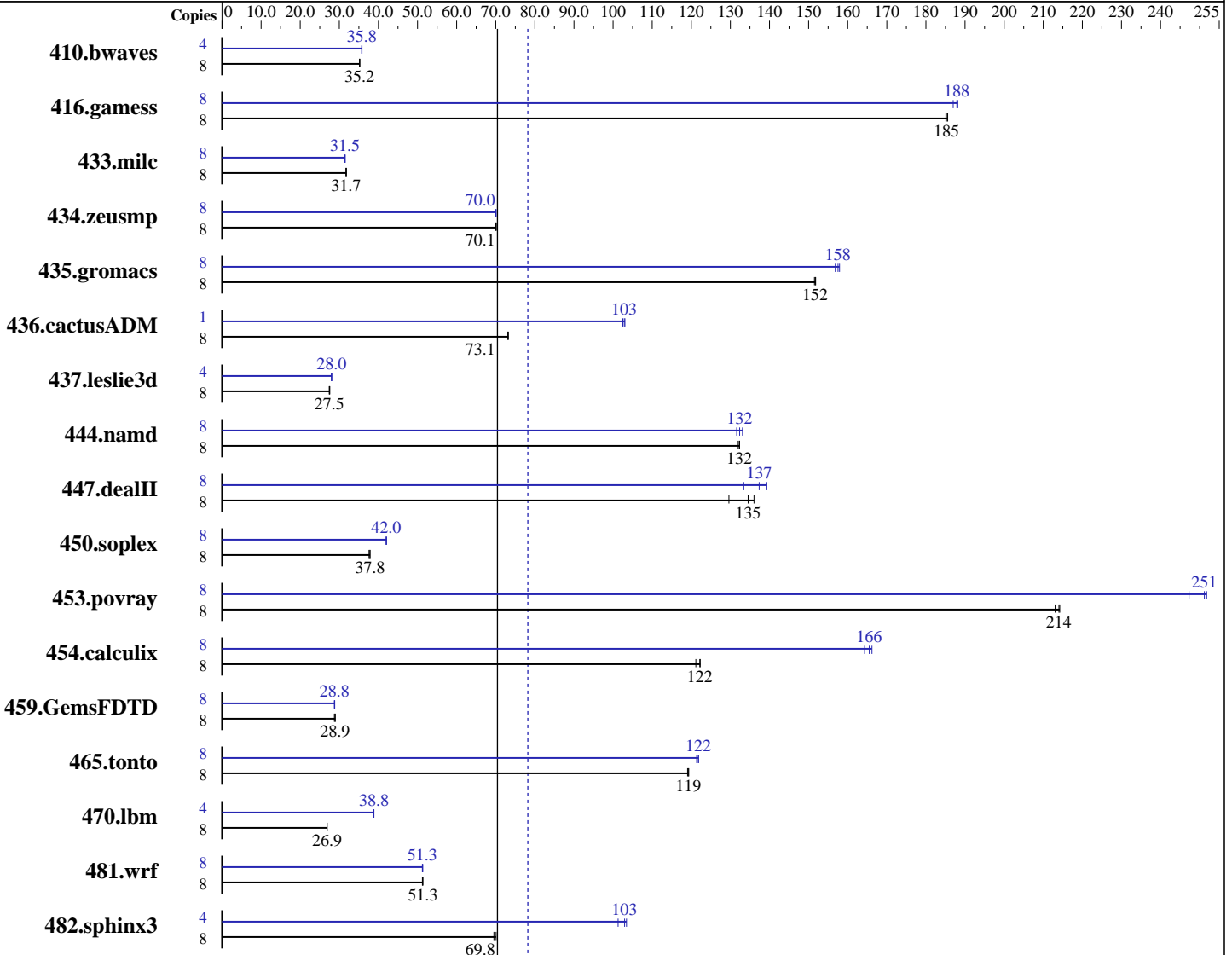
Test date: Jan-2008

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jan-2008

Tested by: Hewlett-Packard Company

Software Availability: Nov-2007



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### Hardware

CPU Name: Intel Xeon X5460  
 CPU Characteristics: 3.16 GHz, 2x6 MB L2 shared, 1333 MHz system bus  
 CPU MHz: 3166  
 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-smp  
 Compiler: Intel C++ Compiler for applications running on IA-32 and Intel 64, Version 10.1  
 Build 20070913 Package ID: i\_cc\_p\_10.1.008  
 Intel Fortran Compiler for applications running on IA-32 and Intel 64, Version 10.1  
 Build 20070913 Package ID: i\_cc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ext2

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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

System State: Multi-user run level 3  
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	3086	35.2	3090	35.2	<b>3090</b>	<b>35.2</b>	4	<b>1520</b>	<b>35.8</b>	1522	35.7	1519	35.8
416.gamess	8	846	185	844	186	<b>845</b>	<b>185</b>	8	838	187	833	188	<b>834</b>	<b>188</b>
433.milc	8	2317	31.7	2309	31.8	<b>2314</b>	<b>31.7</b>	8	2333	31.5	2343	31.3	<b>2334</b>	<b>31.5</b>
434.zeusmp	8	1040	70.0	1038	70.1	<b>1039</b>	<b>70.1</b>	8	1042	69.9	1038	70.1	<b>1040</b>	<b>70.0</b>
435.gromacs	8	<b>376</b>	<b>152</b>	376	152	377	151	8	<b>363</b>	<b>158</b>	362	158	364	157
436.cactusADM	8	1307	73.1	<b>1307</b>	<b>73.1</b>	1306	73.2	1	116	103	117	102	<b>116</b>	<b>103</b>
437.leslie3d	8	2742	27.4	<b>2736</b>	<b>27.5</b>	2728	27.6	4	<b>1342</b>	<b>28.0</b>	1342	28.0	1341	28.0
444.namd	8	486	132	485	132	<b>485</b>	<b>132</b>	8	482	133	488	132	<b>485</b>	<b>132</b>
447.dealII	8	673	136	706	130	<b>680</b>	<b>135</b>	8	686	133	<b>666</b>	<b>137</b>	657	139
450.soplex	8	1775	37.6	<b>1764</b>	<b>37.8</b>	1762	37.9	8	1597	41.8	<b>1589</b>	<b>42.0</b>	1586	42.1
453.povray	8	200	213	199	214	<b>199</b>	<b>214</b>	8	<b>169</b>	<b>251</b>	169	252	172	247
454.calculix	8	540	122	<b>540</b>	<b>122</b>	545	121	8	402	164	397	166	<b>399</b>	<b>166</b>
459.GemsFDTD	8	<b>2934</b>	<b>28.9</b>	2931	29.0	2954	28.7	8	2954	28.7	2945	28.8	<b>2949</b>	<b>28.8</b>
465.tonto	8	661	119	<b>660</b>	<b>119</b>	660	119	8	<b>646</b>	<b>122</b>	649	121	646	122
470.lbm	8	4093	26.9	4090	26.9	<b>4091</b>	<b>26.9</b>	4	1415	38.9	1417	38.8	<b>1415</b>	<b>38.8</b>
481.wrf	8	<b>1741</b>	<b>51.3</b>	1744	51.2	1740	51.4	8	1740	51.3	1744	51.2	<b>1744</b>	<b>51.3</b>
482.sphinx3	8	<b>2235</b>	<b>69.8</b>	2225	70.1	2243	69.5	4	770	101	<b>757</b>	<b>103</b>	754	103

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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**Software Availability:** Nov-2007

## 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.deallI: -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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Tested with SPEC CPU2006 v1.0.  
Report generated on Tue Jul 22 16:23:32 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 6 February 2008.