



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

### SPECfp®\_rate2006 = 44.0

ProLiant DL160 G5  
(3.00 GHz, Intel Xeon X5472)

### SPECfp\_rate\_base2006 = 39.0

CPU2006 license: 3

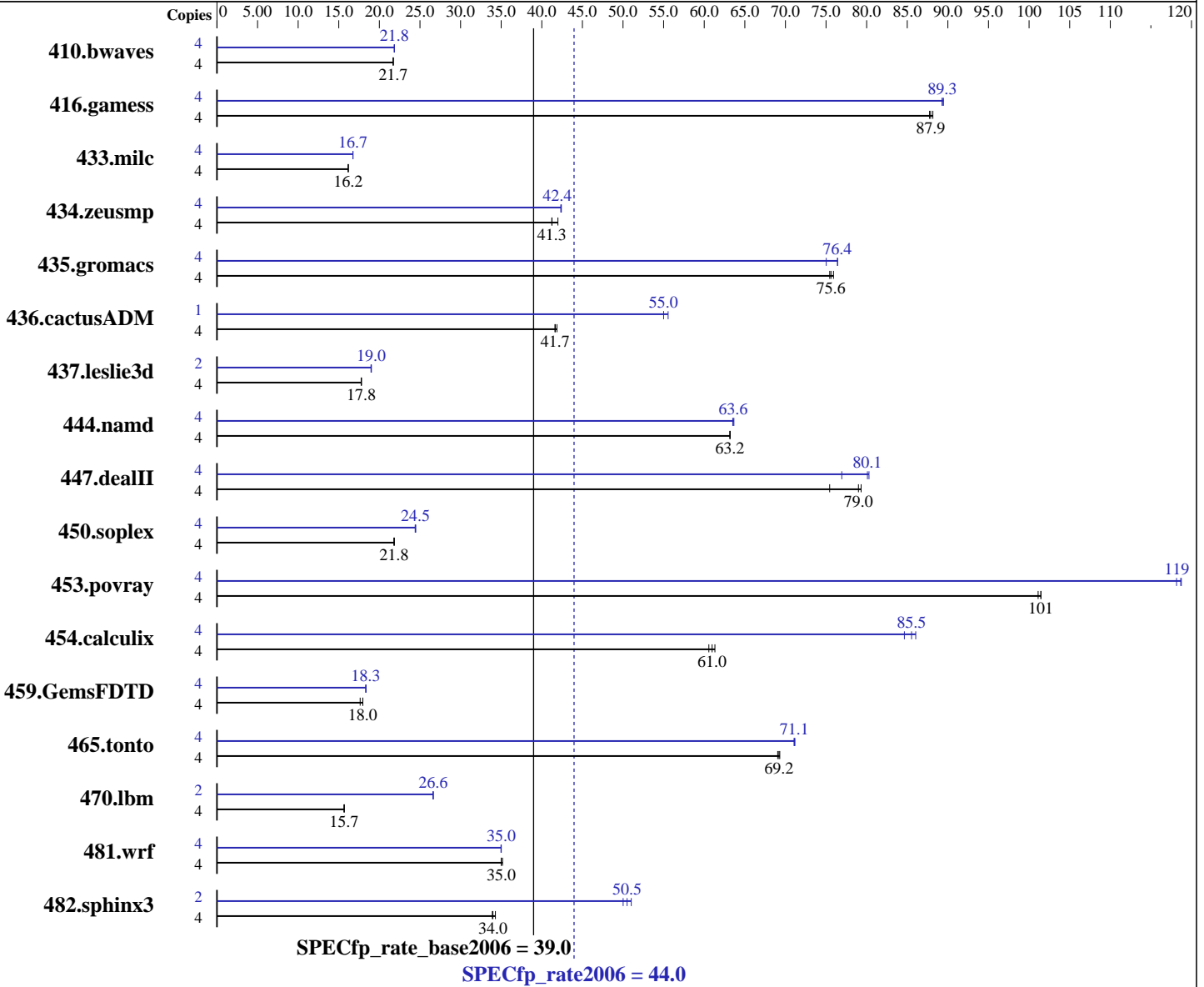
Test date: Mar-2008

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jan-2008

Tested by: Hewlett-Packard Company

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon X5472  
 CPU Characteristics: 3.00 GHz, 2x6 MB L2 shared, 1600 MHz system bus  
 CPU MHz: 3000  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 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 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: 32 GB (8x4 GB PC2-5300F CL5)  
Disk Subsystem: 1x160 GB 7.2 K SATA  
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	4	2506	21.7	2504	21.7	<b>2504</b>	<b>21.7</b>	4	<b>2489</b>	<b>21.8</b>	2489	21.8	2488	21.8
416.gamess	4	893	87.7	888	88.2	<b>891</b>	<b>87.9</b>	4	875	89.5	<b>877</b>	<b>89.3</b>	877	89.3
433.milc	4	2272	16.2	<b>2272</b>	<b>16.2</b>	2271	16.2	4	2194	16.7	<b>2193</b>	<b>16.7</b>	2193	16.7
434.zeusmp	4	<b>882</b>	<b>41.3</b>	883	41.2	867	42.0	4	858	42.4	<b>859</b>	<b>42.4</b>	860	42.3
435.gromacs	4	<b>378</b>	<b>75.6</b>	379	75.5	376	75.9	4	374	76.4	<b>374</b>	<b>76.4</b>	381	75.0
436.cactusADM	4	1149	41.6	1142	41.9	<b>1147</b>	<b>41.7</b>	1	217	55.0	215	55.6	<b>217</b>	<b>55.0</b>
437.leslie3d	4	<b>2116</b>	<b>17.8</b>	2118	17.8	2112	17.8	2	989	19.0	<b>989</b>	<b>19.0</b>	991	19.0
444.namd	4	508	63.2	<b>508</b>	<b>63.2</b>	508	63.2	4	<b>505</b>	<b>63.6</b>	505	63.5	504	63.7
447.dealII	4	607	75.4	<b>579</b>	<b>79.0</b>	577	79.3	4	595	76.9	570	80.3	<b>571</b>	<b>80.1</b>
450.soplex	4	<b>1529</b>	<b>21.8</b>	1531	21.8	1527	21.8	4	<b>1364</b>	<b>24.5</b>	1367	24.4	1364	24.5
453.povray	4	210	101	210	101	<b>210</b>	<b>101</b>	4	180	118	179	119	<b>179</b>	<b>119</b>
454.calculix	4	538	61.3	<b>541</b>	<b>61.0</b>	545	60.6	4	390	84.6	<b>386</b>	<b>85.5</b>	384	86.0
459.GemsFDTD	4	<b>2363</b>	<b>18.0</b>	2407	17.6	2362	18.0	4	<b>2314</b>	<b>18.3</b>	2314	18.3	2314	18.3
465.tonto	4	568	69.3	570	69.0	<b>569</b>	<b>69.2</b>	4	<b>554</b>	<b>71.1</b>	553	71.2	554	71.1
470.lbm	4	3512	15.6	<b>3507</b>	<b>15.7</b>	3505	15.7	2	1031	26.6	1033	26.6	<b>1032</b>	<b>26.6</b>
481.wrf	4	1271	35.2	1277	35.0	<b>1276</b>	<b>35.0</b>	4	1276	35.0	<b>1276</b>	<b>35.0</b>	1278	35.0
482.sphinx3	4	2274	34.3	<b>2294</b>	<b>34.0</b>	2299	33.9	2	764	51.0	<b>772</b>	<b>50.5</b>	779	50.0

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  
numactl 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 Enabled



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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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