



# SPEC<sup>®</sup> CFP2006 Result

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## IBM Corporation

SPECfp<sup>®</sup>\_rate2006 = 60.6

### IBM BladeCenter HS21 (Intel Xeon E5345)

SPECfp\_rate\_base2006 = 55.9

CPU2006 license: 11

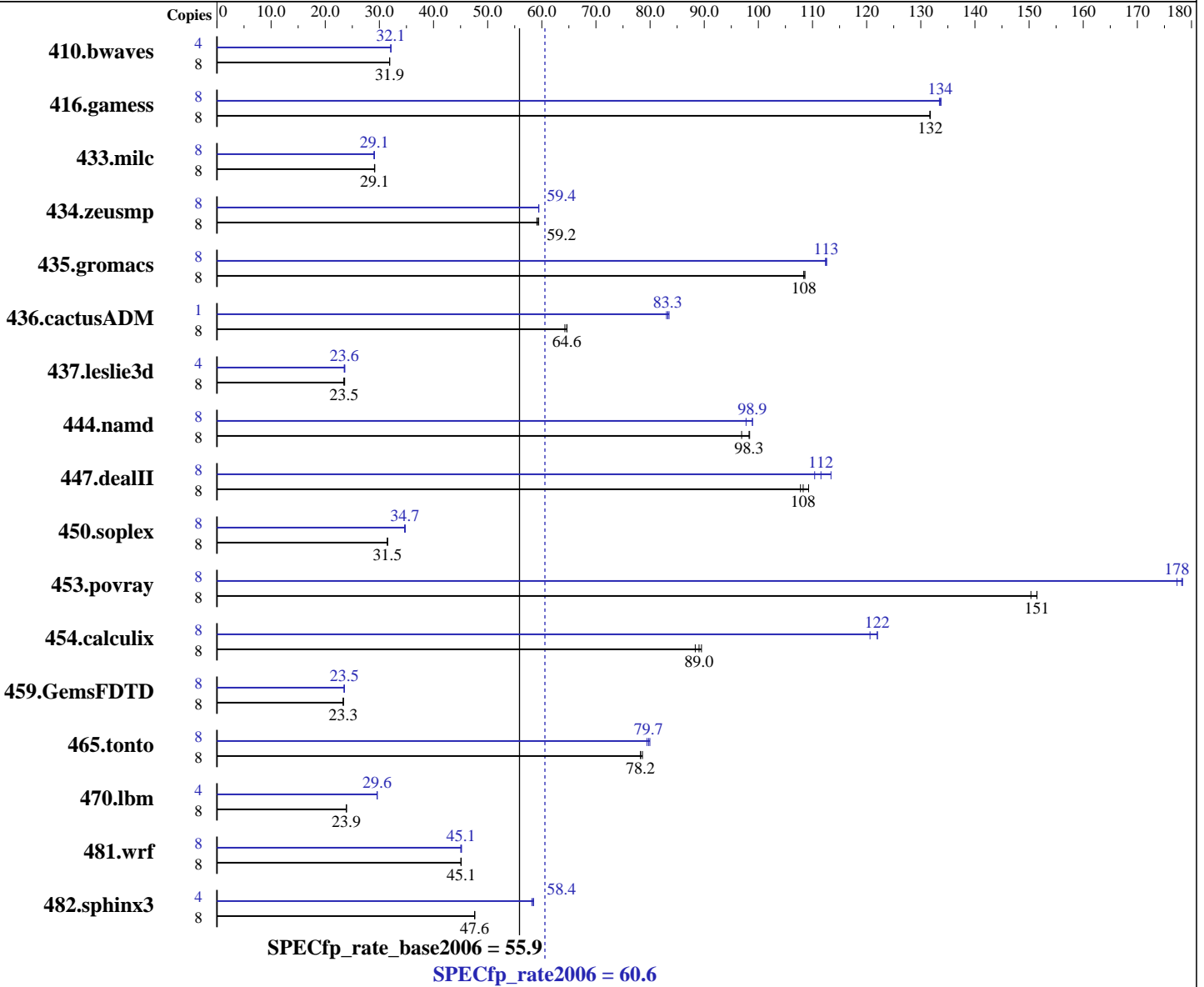
Test date: Feb-2008

Test sponsor: IBM Corporation

Hardware Availability: Feb-2007

Tested by: IBM Corporation

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon E5345  
 CPU Characteristics: 1333MHz system bus  
 CPU MHz: 2333  
 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: 8 MB I+D on chip per chip, 4 MB shared / 2 cores

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### Software

Operating System: SuSE Linux Enterprise Server 10 (x86\_64), Kernel 2.6.16.21-0.8-smp  
 Compiler: Intel C++ and Fortran Compiler 10.1 for Linux Build 20070913 Package ID: l\_cc\_p\_10.1.008, l\_fc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ReiserFS  
 System State: Multi-user, run level 3  
 Base Pointers: 64-bit

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L3 Cache: None  
 Other Cache: None  
 Memory: 16 GB (8 x 2 GB DDR2-5300F ECC)  
 Disk Subsystem: 1 x 36 GB SAS, 10000 RPM  
 Other Hardware: None

Peak Pointers: 32/64-bit  
 Other Software: Binutils 2.17.50.0.15

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	3410	31.9	3407	31.9	<b>3409</b>	<b>31.9</b>	4	1691	32.1	<b>1693</b>	<b>32.1</b>	1693	32.1
416.gamess	8	<b>1189</b>	<b>132</b>	1190	132	1189	132	8	1171	134	1174	133	<b>1172</b>	<b>134</b>
433.milc	8	2525	29.1	2520	29.1	<b>2521</b>	<b>29.1</b>	8	2524	29.1	<b>2525</b>	<b>29.1</b>	2533	29.0
434.zeusmp	8	1225	59.4	1232	59.1	<b>1230</b>	<b>59.2</b>	8	<b>1225</b>	<b>59.4</b>	1224	59.5	1225	59.4
435.gromacs	8	<b>527</b>	<b>108</b>	526	109	527	108	8	<b>508</b>	<b>113</b>	507	113	508	112
436.cactusADM	8	1488	64.3	1479	64.6	<b>1479</b>	<b>64.6</b>	1	143	83.5	144	83.0	<b>144</b>	<b>83.3</b>
437.leslie3d	8	3187	23.6	3209	23.4	<b>3200</b>	<b>23.5</b>	4	1600	23.5	1591	23.6	<b>1596</b>	<b>23.6</b>
444.namd	8	662	96.9	652	98.4	<b>653</b>	<b>98.3</b>	8	<b>649</b>	<b>98.9</b>	657	97.7	649	98.9
447.dealII	8	849	108	837	109	<b>845</b>	<b>108</b>	8	<b>820</b>	<b>112</b>	807	113	829	110
450.soplex	8	2117	31.5	<b>2118</b>	<b>31.5</b>	2120	31.5	8	1918	34.8	<b>1921</b>	<b>34.7</b>	1925	34.7
453.povray	8	<b>281</b>	<b>151</b>	283	150	281	151	8	<b>239</b>	<b>178</b>	239	178	240	177
454.calculix	8	737	89.5	747	88.3	<b>741</b>	<b>89.0</b>	8	541	122	547	121	<b>541</b>	<b>122</b>
459.GemsFDTD	8	3632	23.4	<b>3639</b>	<b>23.3</b>	3642	23.3	8	3614	23.5	3608	23.5	<b>3610</b>	<b>23.5</b>
465.tonto	8	1002	78.6	<b>1006</b>	<b>78.2</b>	1006	78.2	8	984	80.0	991	79.4	<b>987</b>	<b>79.7</b>
470.lbm	8	4597	23.9	<b>4598</b>	<b>23.9</b>	4599	23.9	4	<b>1857</b>	<b>29.6</b>	1857	29.6	1858	29.6
481.wrf	8	1980	45.1	1984	45.0	<b>1981</b>	<b>45.1</b>	8	1978	45.2	<b>1982</b>	<b>45.1</b>	1984	45.0
482.sphinx3	8	3274	47.6	<b>3276</b>	<b>47.6</b>	3276	47.6	4	1333	58.5	1340	58.2	<b>1335</b>	<b>58.4</b>

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

## General Notes

All benchmarks compiled in 64-bit mode except 437.leslie3d, 450.soplex, 470.lbm and 482.sphinx3, at peak, are compiled in 32-bit mode  
 Hardware Sector Prefetch Disabled and Adjacent Sector Prefetch Disabled  
 OMP\_NUM\_THREADS set to number of cores  
 KMP\_AFFINITY set to physical,0  
 KMP\_STACKSIZE set to 64M  
 taskset utility used to bind CPU(s) to processes

## Base Compiler Invocation

C benchmarks:  
icc

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## Base Compiler Invocation (Continued)

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/Intel-ic10.1-FP-intel64-linux-flags.20090714.15.html>



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

<http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.15.xml>

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Tested with SPEC CPU2006 v1.0.  
Report generated on Tue Jul 22 15:26:28 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 19 March 2008.