



# SPEC® CFP2006 Result

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## IBM Corporation

### SPECfp®\_rate2006 = 71.4

## IBM System x3650 (Intel Xeon E5430)

### SPECfp\_rate\_base2006 = 63.7

CPU2006 license: 11

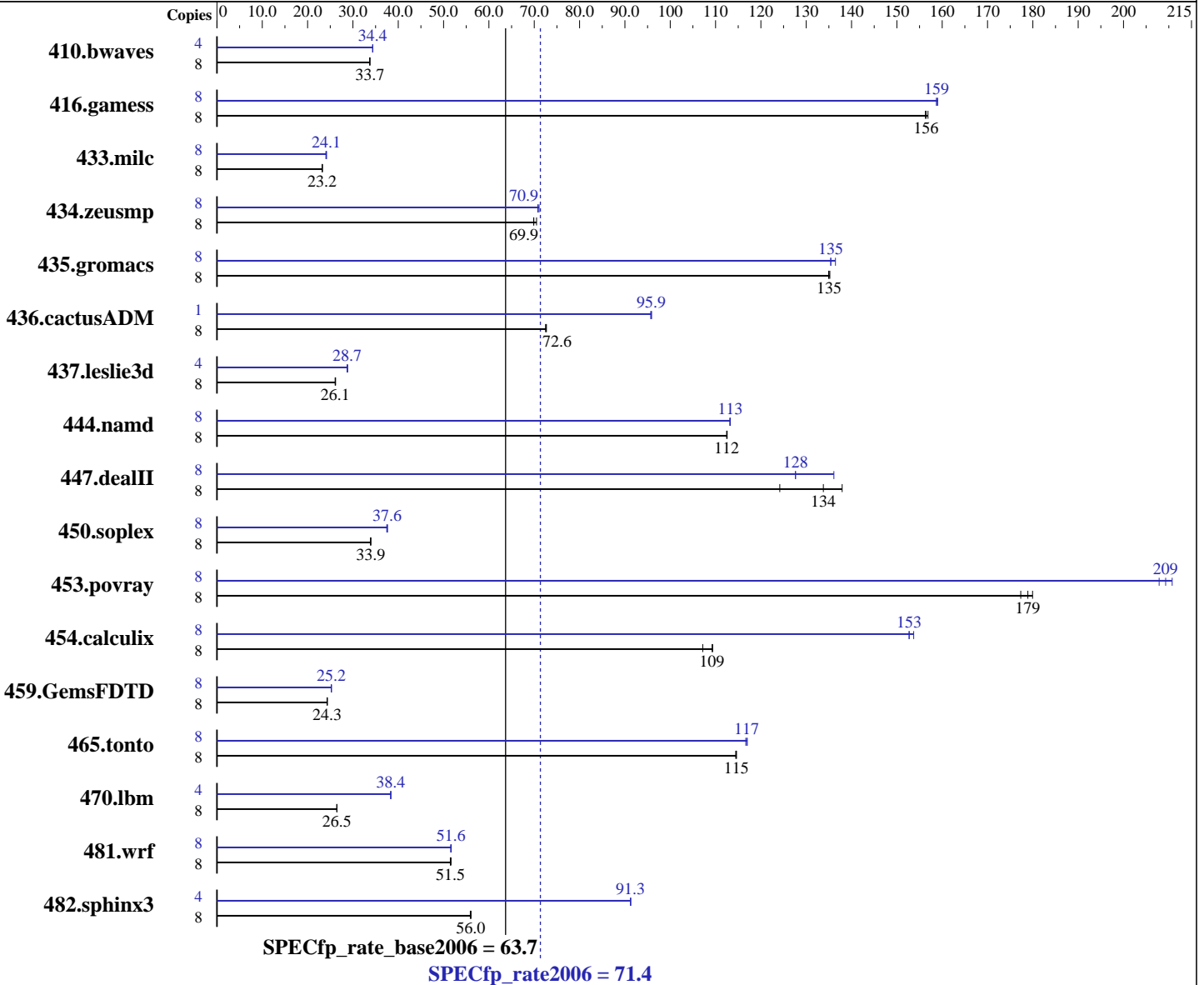
Test date: Dec-2007

Test sponsor: IBM Corporation

Hardware Availability: Jan-2008

Tested by: IBM Corporation

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon E5430  
 CPU Characteristics: 1333MHz system bus  
 CPU MHz: 2667  
 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), 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, 15000 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	3222	33.7	<b><u>3224</u></b>	<b><u>33.7</u></b>	3224	33.7	4	1582	34.4	1582	34.4	<b><u>1582</u></b>	<b><u>34.4</u></b>
416.gamess	8	<b><u>1001</u></b>	<b><u>156</u></b>	999	157	1002	156	8	985	159	987	159	<b><u>987</u></b>	<b><u>159</u></b>
433.milc	8	3156	23.3	<b><u>3160</u></b>	<b><u>23.2</u></b>	3167	23.2	8	<b><u>3043</u></b>	<b><u>24.1</u></b>	3056	24.0	3039	24.2
434.zeusmp	8	<b><u>1041</u></b>	<b><u>69.9</u></b>	1032	70.5	1042	69.9	8	<b><u>1028</u></b>	<b><u>70.9</u></b>	1024	71.1	1028	70.8
435.gromacs	8	422	135	<b><u>423</u></b>	<b><u>135</u></b>	423	135	8	419	136	422	135	<b><u>422</u></b>	<b><u>135</u></b>
436.cactusADM	8	1319	72.5	1315	72.7	<b><u>1317</u></b>	<b><u>72.6</u></b>	1	125	95.9	125	95.7	<b><u>125</u></b>	<b><u>95.9</u></b>
437.leslie3d	8	<b><u>2881</u></b>	<b><u>26.1</u></b>	2882	26.1	2873	26.2	4	1304	28.8	1310	28.7	<b><u>1308</u></b>	<b><u>28.7</u></b>
444.namd	8	570	112	570	113	<b><u>570</u></b>	<b><u>112</u></b>	8	566	113	<b><u>567</u></b>	<b><u>113</u></b>	567	113
447.dealII	8	<b><u>684</u></b>	<b><u>134</u></b>	664	138	737	124	8	<b><u>717</u></b>	<b><u>128</u></b>	717	128	672	136
450.soplex	8	1965	34.0	1969	33.9	<b><u>1967</u></b>	<b><u>33.9</u></b>	8	1773	37.6	<b><u>1776</u></b>	<b><u>37.6</u></b>	1781	37.5
453.povray	8	237	180	<b><u>238</u></b>	<b><u>179</u></b>	240	177	8	<b><u>203</u></b>	<b><u>209</u></b>	205	208	202	211
454.calculix	8	<b><u>604</u></b>	<b><u>109</u></b>	604	109	616	107	8	432	153	429	154	<b><u>432</u></b>	<b><u>153</u></b>
459.GemsFDTD	8	<b><u>3489</u></b>	<b><u>24.3</u></b>	3486	24.4	3496	24.3	8	3360	25.3	<b><u>3364</u></b>	<b><u>25.2</u></b>	3365	25.2
465.tonto	8	<b><u>687</u></b>	<b><u>115</u></b>	688	114	687	115	8	673	117	675	117	<b><u>674</u></b>	<b><u>117</u></b>
470.lbm	8	4157	26.4	<b><u>4153</u></b>	<b><u>26.5</u></b>	4151	26.5	4	1434	38.3	<b><u>1433</u></b>	<b><u>38.4</u></b>	1433	38.4
481.wrf	8	1736	51.5	1730	51.6	<b><u>1735</u></b>	<b><u>51.5</u></b>	8	1729	51.7	1733	51.6	<b><u>1730</u></b>	<b><u>51.6</u></b>
482.sphinx3	8	<b><u>2785</u></b>	<b><u>56.0</u></b>	2782	56.0	2790	55.9	4	854	91.3	854	91.3	<b><u>854</u></b>	<b><u>91.3</u></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 Enabled and Adjacent Sector Prefetch Disabled  
OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to physical,0  
KMP\_STACKSIZE set to 64M  
Powersaved dameon was disabled in OS  
taskset utility used to bind CPU(s) to processes



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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/Intel-ic10.1-FP-intel64-linux-flags.20090714.11.html>



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