



# SPEC® CFP2006 Result

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## IBM Corporation

SPECfp®\_rate2006 = 57.1

## IBM System x3650 (Intel Xeon E5335)

SPECfp\_rate\_base2006 = 52.9

CPU2006 license: 11

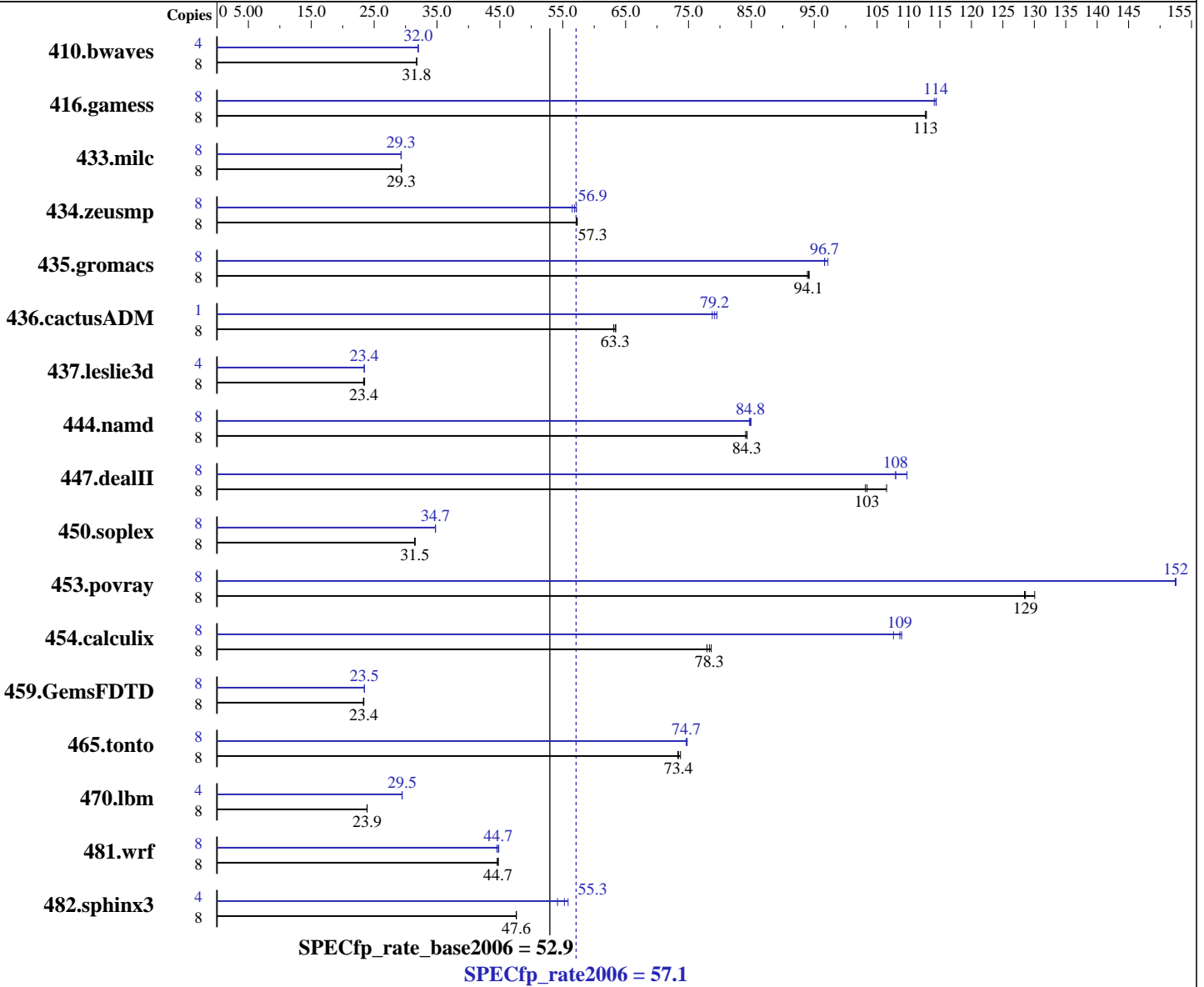
Test date: Feb-2008

Test sponsor: IBM Corporation

Hardware Availability: Feb-2007

Tested by: IBM Corporation

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon E5335  
 CPU Characteristics: 1333MHz system bus  
 CPU MHz: 2000  
 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, 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	3422	31.8	3420	31.8	<b>3422</b>	<b>31.8</b>	4	1698	32.0	<b>1698</b>	<b>32.0</b>	1699	32.0
416.gamess	8	1388	113	<b>1390</b>	<b>113</b>	1390	113	8	1369	114	<b>1370</b>	<b>114</b>	1373	114
433.milc	8	2502	29.4	2506	29.3	<b>2505</b>	<b>29.3</b>	8	<b>2507</b>	<b>29.3</b>	2509	29.3	2506	29.3
434.zeusmp	8	<b>1271</b>	<b>57.3</b>	1270	57.3	1274	57.1	8	<b>1280</b>	<b>56.9</b>	1288	56.5	1273	57.2
435.gromacs	8	606	94.2	<b>607</b>	<b>94.1</b>	608	93.9	8	588	97.2	591	96.6	<b>591</b>	<b>96.7</b>
436.cactusADM	8	1507	63.4	<b>1509</b>	<b>63.3</b>	1516	63.1	1	152	78.8	<b>151</b>	<b>79.2</b>	150	79.5
437.leslie3d	8	3202	23.5	3221	23.3	<b>3216</b>	<b>23.4</b>	4	1605	23.4	<b>1605</b>	<b>23.4</b>	1603	23.5
444.namd	8	761	84.3	<b>761</b>	<b>84.3</b>	763	84.1	8	758	84.7	755	84.9	<b>756</b>	<b>84.8</b>
447.dealII	8	<b>885</b>	<b>103</b>	887	103	859	107	8	<b>848</b>	<b>108</b>	834	110	848	108
450.soplex	8	<b>2118</b>	<b>31.5</b>	2118	31.5	2121	31.5	8	1919	34.8	1920	34.7	<b>1920</b>	<b>34.7</b>
453.povray	8	327	130	<b>331</b>	<b>129</b>	331	128	8	279	152	279	153	<b>279</b>	<b>152</b>
454.calculix	8	<b>843</b>	<b>78.3</b>	847	77.9	840	78.6	8	613	108	<b>608</b>	<b>109</b>	606	109
459.GemsFDTD	8	3645	23.3	3633	23.4	<b>3635</b>	<b>23.4</b>	8	3618	23.5	<b>3619</b>	<b>23.5</b>	3620	23.4
465.tonto	8	<b>1072</b>	<b>73.4</b>	1074	73.3	1068	73.7	8	1052	74.8	<b>1054</b>	<b>74.7</b>	1055	74.6
470.lbm	8	4603	23.9	<b>4603</b>	<b>23.9</b>	4602	23.9	4	1867	29.4	1866	29.5	<b>1866</b>	<b>29.5</b>
481.wrf	8	2005	44.6	1997	44.8	<b>2000</b>	<b>44.7</b>	8	<b>1998</b>	<b>44.7</b>	1994	44.8	2008	44.5
482.sphinx3	8	3275	47.6	3276	47.6	<b>3275</b>	<b>47.6</b>	4	1439	54.2	<b>1411</b>	<b>55.3</b>	1396	55.8

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  
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.20090714.15.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 15:43:25 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 5 March 2008.