



# SPEC® CFP2006 Result

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## IBM Corporation

### SPECfp®\_rate2006 = 32.3

### IBM System x3200 M2 (Intel Xeon E3110)

### SPECfp\_rate\_base2006 = 30.5

CPU2006 license: 11

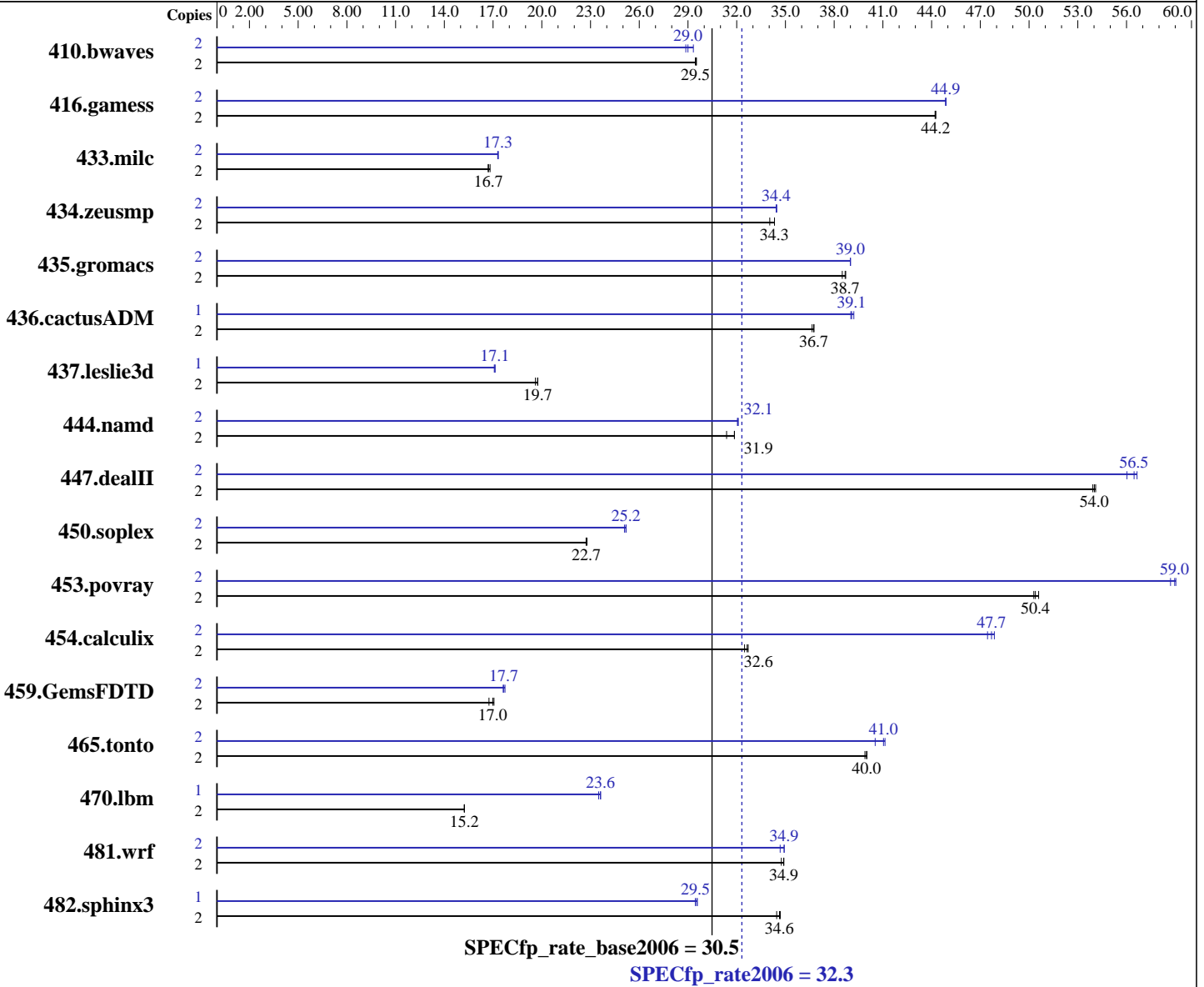
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jan-2008

Hardware Availability: Feb-2008

Software Availability: Nov-2007



#### Hardware

CPU Name: Intel Xeon E3110  
 CPU Characteristics: 1333MHz system bus  
 CPU MHz: 3000  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip  
 CPU(s) orderable: 1 chip  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 6 MB I+D on chip per chip

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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++ 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: 8 GB (4 x 2 GB DDR2-5300 ECC)  
Disk Subsystem: 1 x 146 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	2	921	29.5	<u>921</u>	<u>29.5</u>	923	29.5	2	942	28.9	927	29.3	<u>937</u>	<u>29.0</u>		
416.gamess	2	<u>885</u>	<u>44.2</u>	885	44.3	886	44.2	2	872	44.9	873	44.9	<u>873</u>	<u>44.9</u>		
433.milc	2	<u>1098</u>	<u>16.7</u>	1092	16.8	1100	16.7	2	1060	17.3	<u>1061</u>	<u>17.3</u>	1062	17.3		
434.zeusmp	2	535	34.0	<u>530</u>	<u>34.3</u>	530	34.3	2	528	34.5	529	34.4	<u>529</u>	<u>34.4</u>		
435.gromacs	2	369	38.7	<u>369</u>	<u>38.7</u>	371	38.5	2	366	39.0	366	39.0	<u>366</u>	<u>39.0</u>		
436.cactusADM	2	650	36.8	<u>650</u>	<u>36.7</u>	652	36.6	1	306	39.0	<u>306</u>	<u>39.1</u>	305	39.2		
437.leslie3d	2	952	19.7	959	19.6	<u>952</u>	<u>19.7</u>	1	551	17.1	<u>549</u>	<u>17.1</u>	549	17.1		
444.namd	2	511	31.4	503	31.9	<u>504</u>	<u>31.9</u>	2	500	32.1	<u>500</u>	<u>32.1</u>	500	32.1		
447.dealII	2	424	53.9	423	54.1	<u>424</u>	<u>54.0</u>	2	<u>405</u>	<u>56.5</u>	408	56.0	404	56.6		
450.soplex	2	<u>733</u>	<u>22.7</u>	732	22.8	734	22.7	2	665	25.1	<u>662</u>	<u>25.2</u>	662	25.2		
453.povray	2	<u>211</u>	<u>50.4</u>	210	50.6	212	50.3	2	181	58.7	<u>180</u>	<u>59.0</u>	180	59.0		
454.calculix	2	<u>505</u>	<u>32.6</u>	504	32.7	508	32.5	2	345	47.9	348	47.4	<u>346</u>	<u>47.7</u>		
459.GemsFDTD	2	1244	17.1	<u>1250</u>	<u>17.0</u>	1267	16.7	2	1204	17.6	<u>1202</u>	<u>17.7</u>	1197	17.7		
465.tonto	2	492	40.0	493	39.9	<u>492</u>	<u>40.0</u>	2	<u>480</u>	<u>41.0</u>	486	40.5	478	41.1		
470.lbm	2	1803	15.2	1804	15.2	<u>1804</u>	<u>15.2</u>	1	<u>582</u>	<u>23.6</u>	582	23.6	585	23.5		
481.wrf	2	643	34.7	640	34.9	<u>640</u>	<u>34.9</u>	2	644	34.7	<u>640</u>	<u>34.9</u>	640	34.9		
482.sphinx3	2	1124	34.7	<u>1126</u>	<u>34.6</u>	1131	34.5	1	659	29.6	<u>660</u>	<u>29.5</u>	662	29.5		

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  
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.20090713.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.20090713.xml>

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