



# SPEC® CFP2006 Result

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## IBM Corporation

SPECfp®2006 = 23.1

## IBM System x3200 M2 (Intel Xeon E3110)

SPECfp\_base2006 = 21.8

CPU2006 license: 11

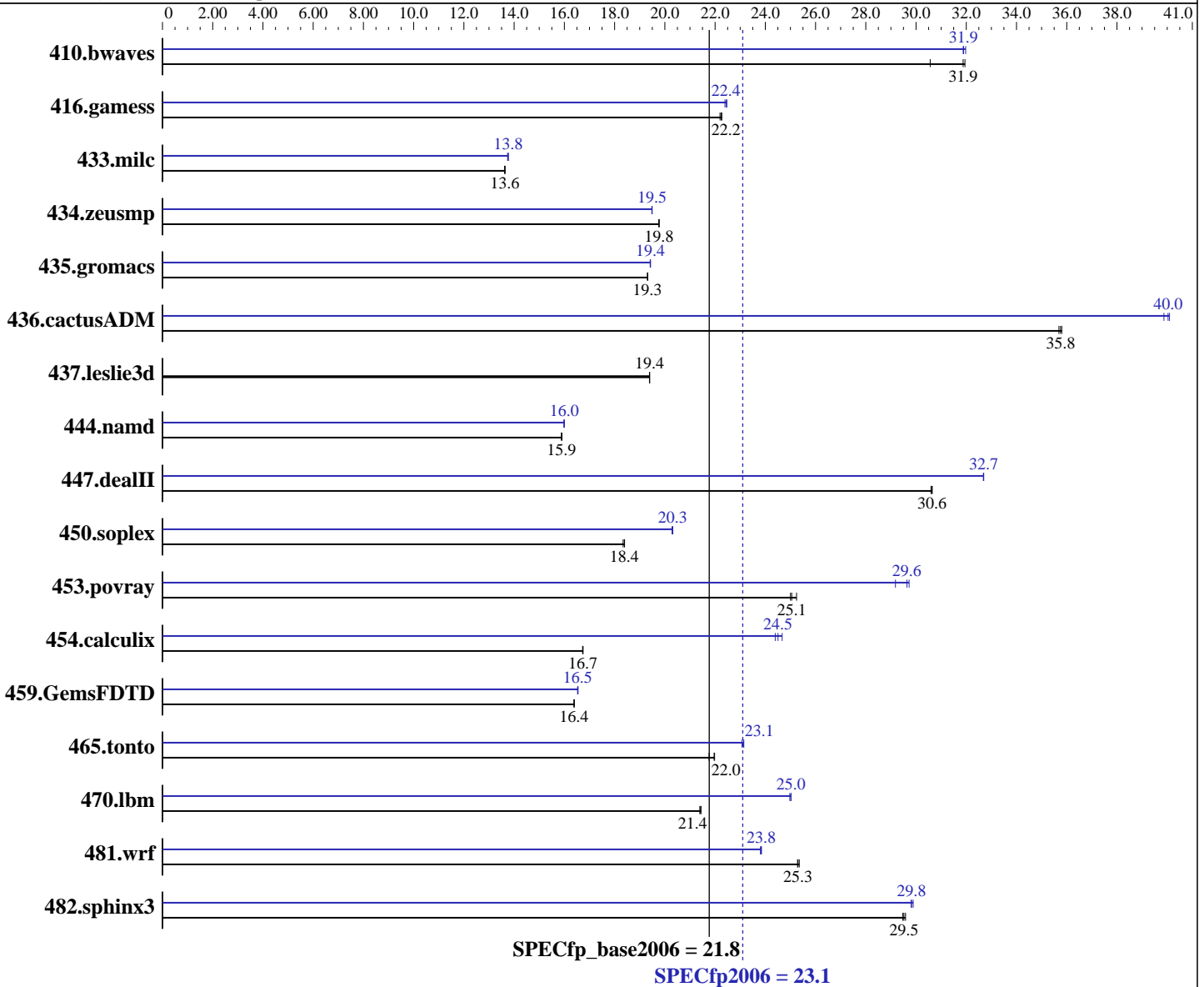
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jul-2008

Hardware Availability: Sep-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

Continued on next page

**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: Run level 3 (Full multiuser with network)  
 Base Pointers: 64-bit

Continued on next page



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L3 Cache: None  
Other Cache: None  
Memory: 8 GB (4 x 2 GB DDR2-6400E ECC)  
Disk Subsystem: 1 x 160 GB SATA, 7200RPM  
Other Hardware: None

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

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	445	30.6	<b>426</b>	<b>31.9</b>	425	31.9	426	31.9	425	32.0	<b>426</b>	<b>31.9</b>
416.gamess	879	22.3	882	22.2	<b>880</b>	<b>22.2</b>	874	22.4	<b>872</b>	<b>22.4</b>	871	22.5
433.milc	674	13.6	<b>674</b>	<b>13.6</b>	673	13.6	<b>667</b>	<b>13.8</b>	667	13.8	668	13.7
434.zeusmp	460	19.8	<b>460</b>	<b>19.8</b>	460	19.8	467	19.5	<b>467</b>	<b>19.5</b>	467	19.5
435.gromacs	<b>370</b>	<b>19.3</b>	370	19.3	370	19.3	367	19.4	<b>368</b>	<b>19.4</b>	368	19.4
436.cactusADM	<b>334</b>	<b>35.8</b>	334	35.8	335	35.7	300	39.9	<b>298</b>	<b>40.0</b>	298	40.1
437.leslie3d	485	19.4	<b>485</b>	<b>19.4</b>	485	19.4	485	19.4	<b>485</b>	<b>19.4</b>	485	19.4
444.namd	504	15.9	505	15.9	<b>505</b>	<b>15.9</b>	<b>501</b>	<b>16.0</b>	502	16.0	501	16.0
447.dealII	373	30.6	<b>373</b>	<b>30.6</b>	374	30.6	<b>350</b>	<b>32.7</b>	350	32.7	350	32.7
450.soplex	<b>454</b>	<b>18.4</b>	453	18.4	455	18.3	411	20.3	410	20.3	<b>411</b>	<b>20.3</b>
453.povray	213	25.0	211	25.2	<b>212</b>	<b>25.1</b>	<b>179</b>	<b>29.6</b>	182	29.2	179	29.7
454.calculix	493	16.7	<b>493</b>	<b>16.7</b>	493	16.7	334	24.7	<b>337</b>	<b>24.5</b>	338	24.4
459.GemsFDTD	<b>647</b>	<b>16.4</b>	648	16.4	647	16.4	<b>642</b>	<b>16.5</b>	642	16.5	641	16.5
465.tonto	448	22.0	<b>448</b>	<b>22.0</b>	452	21.8	425	23.1	<b>425</b>	<b>23.1</b>	426	23.1
470.lbm	641	21.4	<b>641</b>	<b>21.4</b>	642	21.4	549	25.0	<b>549</b>	<b>25.0</b>	550	25.0
481.wrf	<b>441</b>	<b>25.3</b>	441	25.4	442	25.3	<b>469</b>	<b>23.8</b>	468	23.8	469	23.8
482.sphinx3	<b>660</b>	<b>29.5</b>	659	29.6	661	29.5	652	29.9	654	29.8	<b>653</b>	<b>29.8</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 450.soplex, 470.lbm and 482.sphinx3, at peak, are compiled in 32-bit mode  
Hardware Sector Prefetch Enabled and Adjacent Sector Prefetch Enabled  
OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to physical,0  
KMP\_STACKSIZE set to 200M

## 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 -parallel

C++ benchmarks:  
-fast -parallel

Fortran benchmarks:  
-fast -parallel

Benchmarks using both Fortran and C:  
-fast -parallel



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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:

```
ifort
```

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
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -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-req- -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 -parallel

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: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-prefetch -parallel

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 -parallel -prefetch -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-linux64-revC.20090713.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic10.1-fp-linux64-revC.20090713.xml>



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Tested with SPEC CPU2006 v1.0.  
Report generated on Tue Jul 22 19:01:53 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 2 September 2008.