



# SPEC® CFP2006 Result

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## IBM Corporation

**SPECfp®2006 = 23.5**

IBM System x iDataPlex dx360 (Intel Xeon E5472)

**SPECfp\_base2006 = 19.8**

CPU2006 license: 11

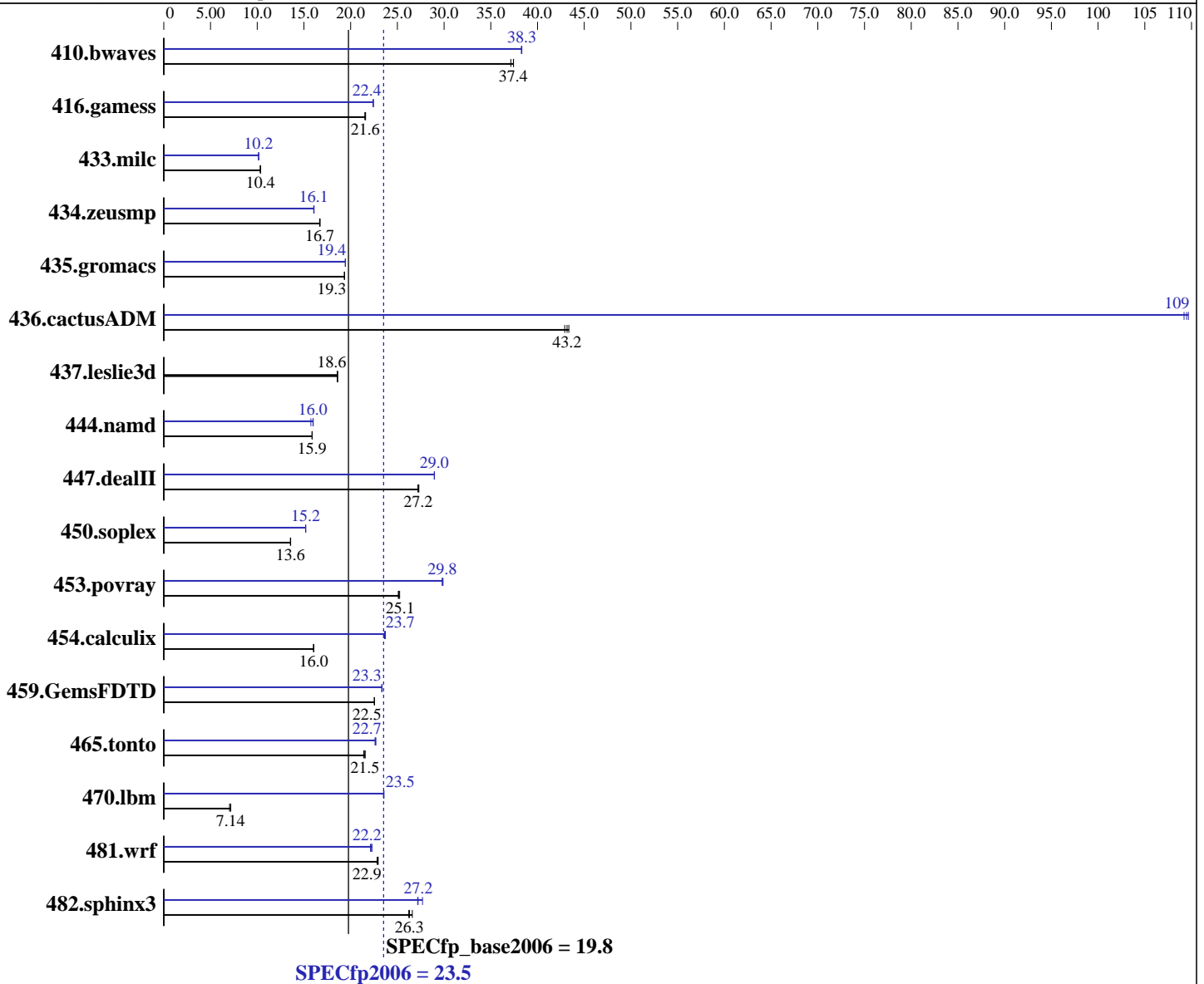
Test date: Jul-2008

Test sponsor: IBM Corporation

Hardware Availability: Sep-2008

Tested by: IBM Corporation

Software Availability: Nov-2007



**Hardware**

CPU Name: Intel Xeon E5472  
 CPU Characteristics: 1600 MHz system bus  
 CPU MHz: 3000  
 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) 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

Continued on next page



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L3 Cache: None  
Other Cache: None  
Memory: 16 GB (4 x 4 GB DDR2-5300F ECC)  
Disk Subsystem: 1 x 160 GB SATA, 7200 RPM  
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	366	37.1	363	37.4	<b>363</b>	<b>37.4</b>	<b>355</b>	<b>38.3</b>	355	38.3	355	38.3
416.gamess	910	21.5	<b>908</b>	<b>21.6</b>	906	21.6	873	22.4	<b>873</b>	<b>22.4</b>	874	22.4
433.milc	891	10.3	<b>886</b>	<b>10.4</b>	885	10.4	904	10.2	<b>904</b>	<b>10.2</b>	904	10.2
434.zeusmp	546	16.7	<b>545</b>	<b>16.7</b>	544	16.7	<b>567</b>	<b>16.1</b>	566	16.1	567	16.1
435.gromacs	<b>369</b>	<b>19.3</b>	369	19.3	369	19.3	368	19.4	367	19.4	<b>367</b>	<b>19.4</b>
436.cactusADM	278	42.9	<b>277</b>	<b>43.2</b>	276	43.4	109	110	<b>109</b>	<b>109</b>	109	109
437.leslie3d	506	18.6	505	18.6	<b>506</b>	<b>18.6</b>	506	18.6	505	18.6	<b>506</b>	<b>18.6</b>
444.namd	<b>505</b>	<b>15.9</b>	505	15.9	505	15.9	<b>502</b>	<b>16.0</b>	501	16.0	509	15.7
447.dealII	421	27.2	419	27.3	<b>420</b>	<b>27.2</b>	395	29.0	<b>395</b>	<b>29.0</b>	395	29.0
450.soplex	<b>615</b>	<b>13.6</b>	616	13.5	614	13.6	549	15.2	549	15.2	<b>549</b>	<b>15.2</b>
453.povray	211	25.2	212	25.1	<b>212</b>	<b>25.1</b>	179	29.8	<b>178</b>	<b>29.8</b>	178	29.9
454.calculix	515	16.0	514	16.1	<b>514</b>	<b>16.0</b>	349	23.6	348	23.7	<b>348</b>	<b>23.7</b>
459.GemsFDTD	470	22.6	<b>471</b>	<b>22.5</b>	471	22.5	454	23.4	<b>455</b>	<b>23.3</b>	455	23.3
465.tonto	<b>457</b>	<b>21.5</b>	457	21.5	460	21.4	433	22.7	<b>434</b>	<b>22.7</b>	435	22.6
470.lbm	1954	7.03	<b>1924</b>	<b>7.14</b>	1917	7.17	<b>584</b>	<b>23.5</b>	584	23.5	583	23.6
481.wrf	489	22.8	<b>488</b>	<b>22.9</b>	487	22.9	<b>502</b>	<b>22.2</b>	505	22.1	501	22.3
482.sphinx3	733	26.6	743	26.2	<b>741</b>	<b>26.3</b>	704	27.7	<b>716</b>	<b>27.2</b>	717	27.2

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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