



# SPEC® CFP2006 Result

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## IBM Corporation

SPECfp®2006 = 26.9

## IBM System x3450 (Intel Xeon X5482)

SPECfp\_base2006 = 25.8

CPU2006 license: 11

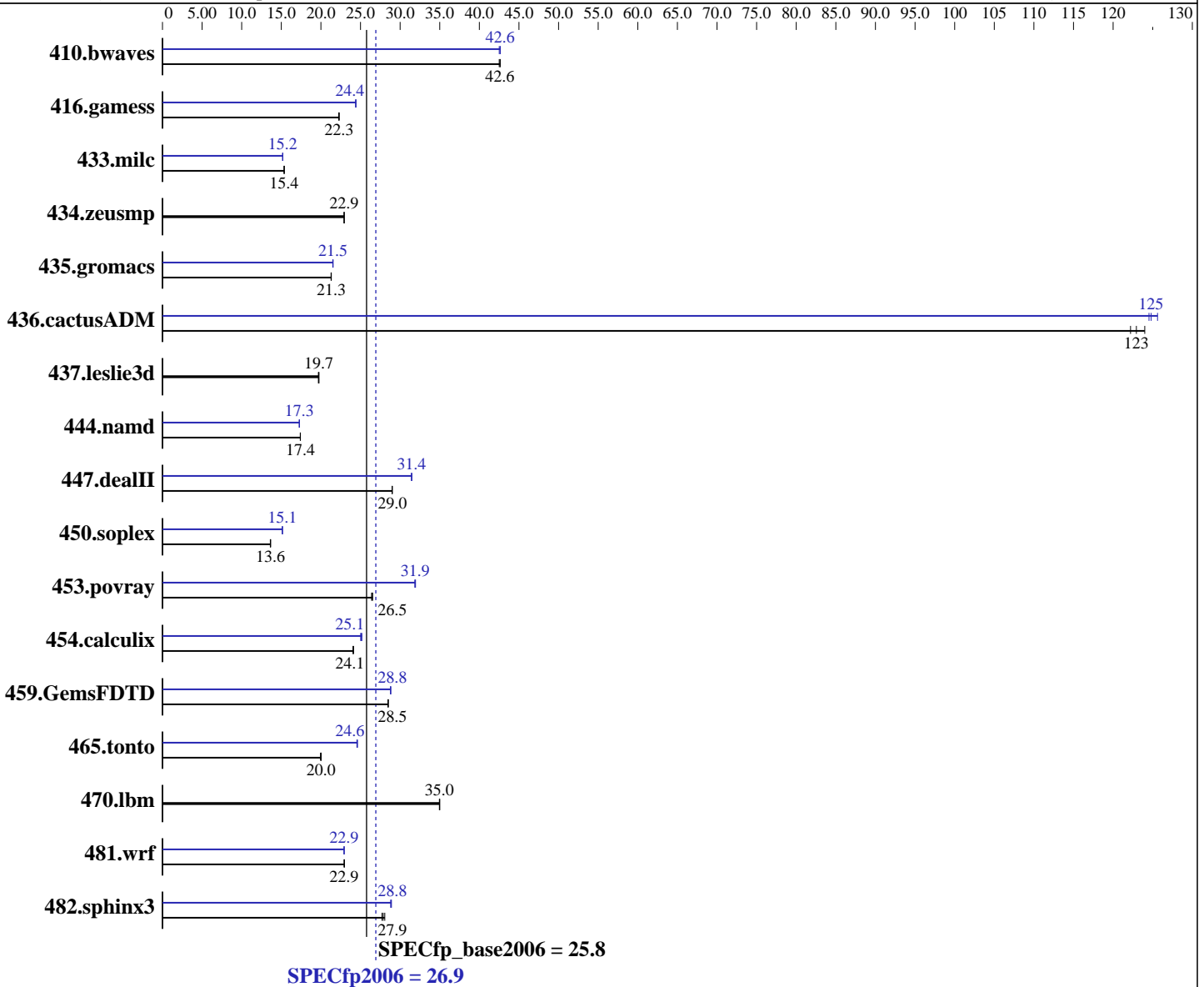
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Sep-2008

Hardware Availability: Nov-2008

Software Availability: Nov-2008



### Hardware

CPU Name: Intel Xeon X5482  
 CPU Characteristics: 1600MHz system bus  
 CPU MHz: 3200  
 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 11.0 for Linux Build 20080730 Package ID: l\_cproc\_b\_11.0.042, l\_fproc\_b\_11.0.042  
 Auto Parallel: Yes  
 File System: ReiserFS  
 System State: Run level 3 (multi-user)  
 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 80 GB SATA, 7200 RPM  
Other Hardware: None

Peak Pointers: 32/64-bit  
Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	319	42.6	<b><u>319</u></b>	<b><u>42.6</u></b>	320	42.5	<b><u>319</u></b>	<b><u>42.6</u></b>	319	42.6	320	42.5
416.gamess	878	22.3	880	22.2	<b><u>878</u></b>	<b><u>22.3</u></b>	802	24.4	803	24.4	<b><u>802</u></b>	<b><u>24.4</u></b>
433.milc	597	15.4	598	15.3	<b><u>597</u></b>	<b><u>15.4</u></b>	<b><u>605</u></b>	<b><u>15.2</u></b>	604	15.2	605	15.2
434.zeusmp	<b><u>397</u></b>	<b><u>22.9</u></b>	397	22.9	397	22.9	<b><u>397</u></b>	<b><u>22.9</u></b>	397	22.9	397	22.9
435.gromacs	336	21.3	<b><u>335</u></b>	<b><u>21.3</u></b>	335	21.3	332	21.5	<b><u>332</u></b>	<b><u>21.5</u></b>	332	21.5
436.cactusADM	<b><u>97.2</u></b>	<b><u>123</u></b>	97.8	122	96.4	124	95.1	126	<b><u>95.8</u></b>	<b><u>125</u></b>	96.0	125
437.leslie3d	478	19.7	<b><u>476</u></b>	<b><u>19.7</u></b>	476	19.8	478	19.7	<b><u>476</u></b>	<b><u>19.7</u></b>	476	19.8
444.namd	461	17.4	<b><u>461</u></b>	<b><u>17.4</u></b>	461	17.4	<b><u>464</u></b>	<b><u>17.3</u></b>	464	17.3	464	17.3
447.dealII	<b><u>394</u></b>	<b><u>29.0</u></b>	395	29.0	394	29.0	363	31.5	364	31.4	<b><u>364</u></b>	<b><u>31.4</u></b>
450.soplex	611	13.7	<b><u>612</u></b>	<b><u>13.6</u></b>	613	13.6	551	15.1	551	15.1	<b><u>551</u></b>	<b><u>15.1</u></b>
453.povray	<b><u>201</u></b>	<b><u>26.5</u></b>	202	26.4	201	26.5	<b><u>167</u></b>	<b><u>31.9</u></b>	167	31.9	167	31.9
454.calculix	342	24.1	<b><u>342</u></b>	<b><u>24.1</u></b>	343	24.0	330	25.0	328	25.2	<b><u>329</u></b>	<b><u>25.1</u></b>
459.GemsFDTD	372	28.5	373	28.5	<b><u>372</u></b>	<b><u>28.5</u></b>	368	28.8	<b><u>368</u></b>	<b><u>28.8</u></b>	369	28.8
465.tonto	<b><u>491</u></b>	<b><u>20.0</u></b>	491	20.0	493	19.9	400	24.6	<b><u>401</u></b>	<b><u>24.6</u></b>	401	24.5
470.lbm	<b><u>393</u></b>	<b><u>35.0</u></b>	393	35.0	392	35.0	<b><u>393</u></b>	<b><u>35.0</u></b>	393	35.0	392	35.0
481.wrf	486	23.0	487	22.9	<b><u>487</u></b>	<b><u>22.9</u></b>	487	22.9	<b><u>487</u></b>	<b><u>22.9</u></b>	487	22.9
482.sphinx3	694	28.1	<b><u>699</u></b>	<b><u>27.9</u></b>	703	27.7	<b><u>676</u></b>	<b><u>28.8</u></b>	676	28.8	674	28.9

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 and 482.sphinx3, at peak, are compiled in 32-bit mode

OMP\_NUM\_THREADS set to number of processors

KMP\_AFFINITY set to "physical,0"

KMP\_STACKSIZE set to 200M

Hardware Prefetch Enabled, Adjacent Sector Prefetch Enabled

Powersave dameon was disabled in OS

'ulimit -s unlimited' was used to set the stack size to unlimited prior to run



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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.lelie3d: -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:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

C++ benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch



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## Peak Compiler Invocation

C benchmarks (except as noted below):

icc

```
482.sphinx3: /opt/intel/Compiler/11.0/042/bin/ia32/icc
             -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
             -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

C++ benchmarks (except as noted below):

icpc

```
450.soplex: /opt/intel/Compiler/11.0/042/bin/ia32/icpc
            -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
            -I/opt/intel/Compiler/11.0/042/ipp/ia32/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
470.lbm: -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) -xSSE4.1 -ipo -O3
         -no-prec-div -static -fno-alias
```

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## Peak Optimization Flags (Continued)

470.lbm: basepeak = yes

482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2

### C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -fno-alias -auto-ilp32

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -ansi-alias -scalar-rep-  
-opt-prefetch

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll4 -ansi-alias

### Fortran benchmarks:

410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch  
-parallel

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -Ob0 -ansi-alias  
-scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -Ob0 -opt-prefetch  
-parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll4 -auto

### Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -opt-prefetch -auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -opt-prefetch -parallel  
-auto-ilp32

454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32

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## Peak Optimization Flags (Continued)

481.wrf: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch  
-parallel -auto-ilp32

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.03.html>  
<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.08.html>  
<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.05.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.03.xml>  
<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.08.xml>  
<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.05.xml>

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