



# SPEC<sup>®</sup> CFP2006 Result

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## IBM Corporation

SPECfp<sup>®</sup>2006 = **29.5**

## IBM BladeCenter HS22 (Intel Xeon E5507)

SPECfp\_base2006 = **27.5**

CPU2006 license: 11

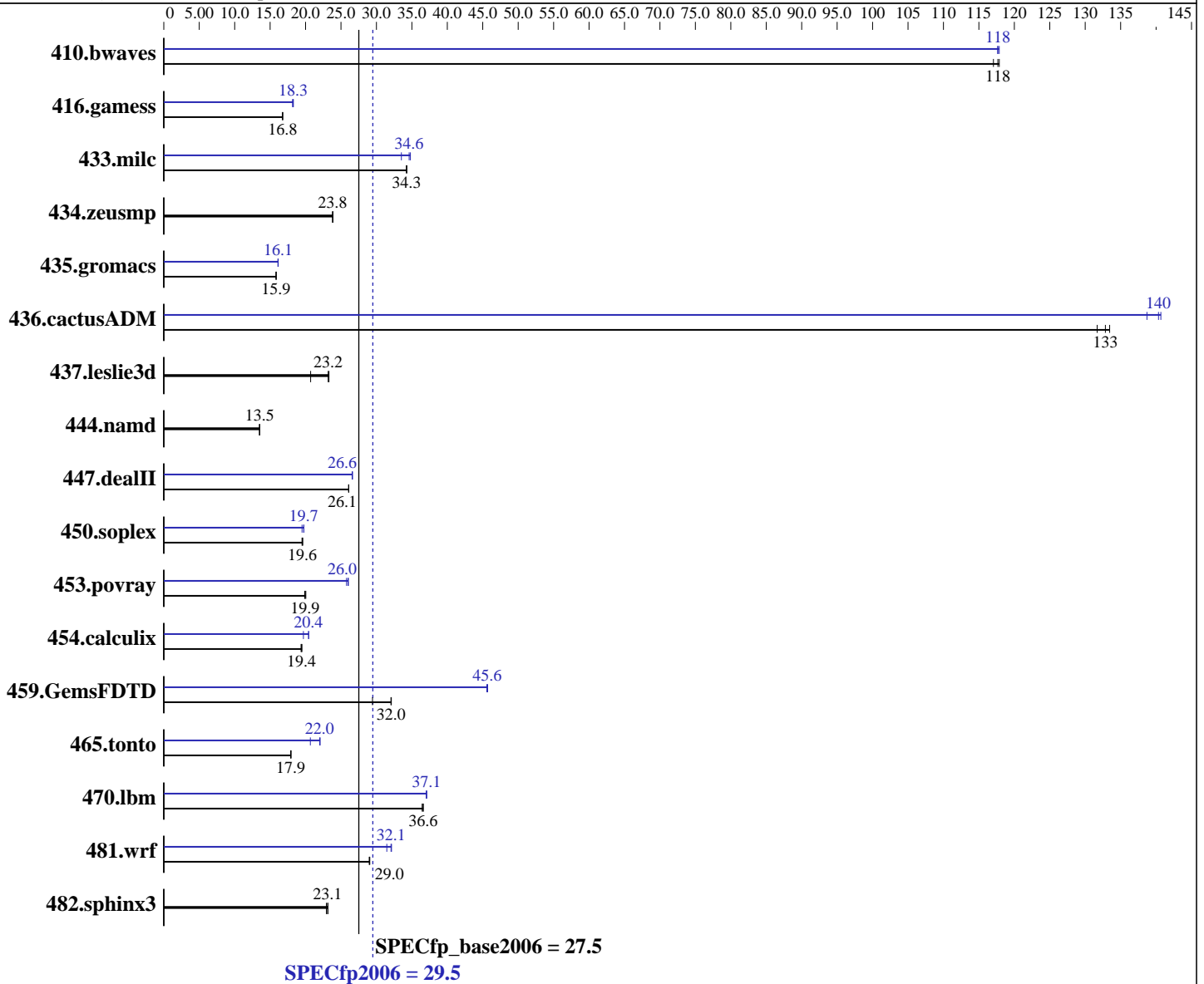
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Nov-2010

Hardware Availability: Mar-2010

Software Availability: Jan-2010



### Hardware

CPU Name: Intel Xeon E5507  
 CPU Characteristics:  
 CPU MHz: 2267  
 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: 256 KB I+D on chip per core

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### Software

Operating System: SuSE Linux Enterprise Server 11 (x86\_64), Kernel 2.6.27.19-5-default  
 Compiler: Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1 Build 20091130 Package ID: l\_cproc\_p\_11.1.064, l\_cprof\_p\_11.1.064  
 Auto Parallel: Yes  
 File System: ext3  
 System State: Run level 3 (multi-user)

Continued on next page



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L3 Cache: 4 MB I+D on chip per chip  
Other Cache: None  
Memory: 24 GB (12 x 2 GB 2Rx8 PC3-10600R, ECC, running at 800 MHz and CL6)  
Disk Subsystem: 1 x 73 GB SATA, 15000 RPM  
Other Hardware: None

Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	<b>115</b>	<b>118</b>	115	118	116	117	116	118	<b>115</b>	<b>118</b>	115	118
416.gamess	<b>1168</b>	<b>16.8</b>	1168	16.8	1168	16.8	<b>1073</b>	<b>18.3</b>	1078	18.2	1072	18.3
433.milc	<b>268</b>	<b>34.3</b>	268	34.2	268	34.3	<b>265</b>	<b>34.6</b>	264	34.8	274	33.5
434.zeusmp	381	23.9	<b>382</b>	<b>23.8</b>	382	23.8	381	23.9	<b>382</b>	<b>23.8</b>	382	23.8
435.gromacs	450	15.9	<b>450</b>	<b>15.9</b>	451	15.8	<b>443</b>	<b>16.1</b>	442	16.1	443	16.1
436.cactusADM	<b>90.0</b>	<b>133</b>	90.7	132	89.5	133	86.1	139	84.9	141	<b>85.1</b>	<b>140</b>
437.leslie3d	454	20.7	<b>405</b>	<b>23.2</b>	403	23.3	454	20.7	<b>405</b>	<b>23.2</b>	403	23.3
444.namd	593	13.5	593	13.5	<b>593</b>	<b>13.5</b>	593	13.5	593	13.5	<b>593</b>	<b>13.5</b>
447.dealII	<b>438</b>	<b>26.1</b>	439	26.1	438	26.1	<b>430</b>	<b>26.6</b>	430	26.6	430	26.6
450.soplex	428	19.5	425	19.6	<b>426</b>	<b>19.6</b>	428	19.5	422	19.8	<b>422</b>	<b>19.7</b>
453.povray	<b>267</b>	<b>19.9</b>	265	20.0	268	19.9	206	25.8	204	26.0	<b>205</b>	<b>26.0</b>
454.calculix	<b>424</b>	<b>19.4</b>	423	19.5	426	19.4	404	20.4	419	19.7	<b>404</b>	<b>20.4</b>
459.GemsFDTD	<b>331</b>	<b>32.0</b>	360	29.4	330	32.1	233	45.6	<b>232</b>	<b>45.6</b>	232	45.7
465.tonto	<b>549</b>	<b>17.9</b>	549	17.9	549	17.9	<b>448</b>	<b>22.0</b>	446	22.1	476	20.7
470.lbm	377	36.4	<b>375</b>	<b>36.6</b>	375	36.6	370	37.1	371	37.0	<b>371</b>	<b>37.1</b>
481.wrf	384	29.1	<b>385</b>	<b>29.0</b>	385	29.0	<b>348</b>	<b>32.1</b>	348	32.1	355	31.5
482.sphinx3	842	23.2	<b>843</b>	<b>23.1</b>	850	22.9	842	23.2	<b>843</b>	<b>23.1</b>	850	22.9

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Platform Notes

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

## General Notes

Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502  
Power C-states enabled in BIOS  
OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to granularity=fine,scatter  
KMP\_STACKSIZE set to 200M



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## Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## 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:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch



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## Peak Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

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

470.lbm: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-parallel -ansi-alias -auto-ilp32

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: basepeak = yes

447.dealII: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll2 -ansi-alias -scalar-rep- -auto-ilp32

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-opt-malloc-options=3 -auto-ilp32

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

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## Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch  
-parallel

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

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

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

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-inline-alloc -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

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

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

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: Same as 454.calculix

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100929.00.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100929.00.xml>



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