



# SPEC® CFP2006 Result

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## IBM Corporation

### SPECfp®\_rate2006 = 72.7

### IBM BladeCenter LS41 (AMD Opteron 8212)

### SPECfp\_rate\_base2006 = 68.8

CPU2006 license: 11

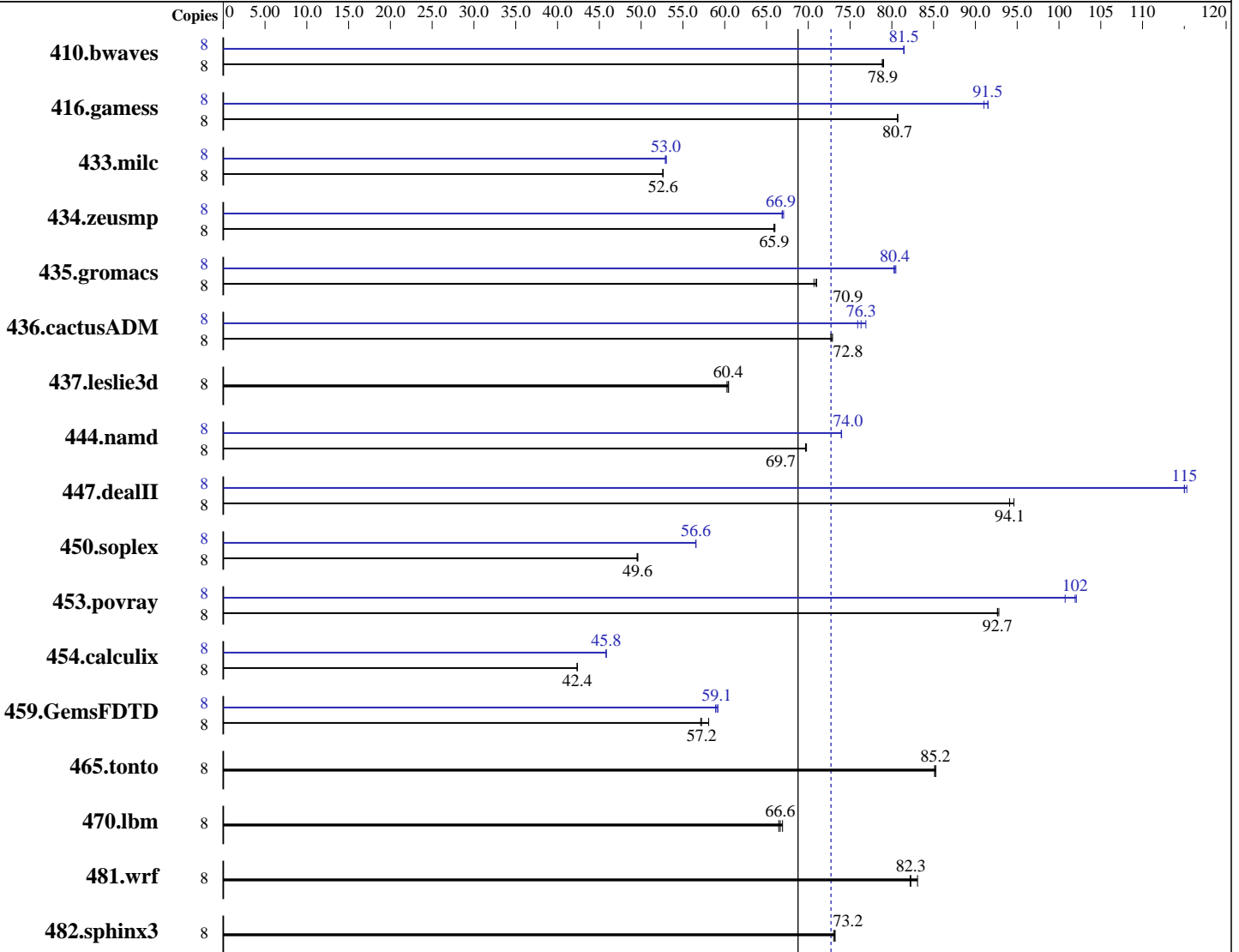
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jul-2007

Hardware Availability: Oct-2006

Software Availability: Mar-2007



SPECfp\_rate\_base2006 = 68.8

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#### Hardware

CPU Name: AMD Opteron 8212  
 CPU Characteristics:  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip  
 CPU(s) orderable: 1, 2, 3, 4 chips  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 1 MB I+D on chip per core

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#### Software

Operating System: SLES 10 (x86\_64), 2.6.16.21-0.8-smp  
 Compiler: QLogic PathScale Compiler Suite, Release 3.0  
 Auto Parallel: No  
 File System: ext3  
 System State: Multi-user, run level 3  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit

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L3 Cache: None  
Other Cache: None  
Memory: 32 GB (16 x 2GB DDR2-5300 ECC)  
Disk Subsystem: 1 x 36 GB SAS, 10000 RPM  
Other Hardware: None

Other Software: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	1376	79.0	1379	78.9	<b>1377</b>	<b>78.9</b>	8	1335	81.5	1335	81.4	<b>1335</b>	<b>81.5</b>
416.gamess	8	<b>1941</b>	<b>80.7</b>	1942	80.7	1941	80.7	8	1712	91.5	<b>1712</b>	<b>91.5</b>	1721	91.0
433.milc	8	1395	52.6	1397	52.6	<b>1396</b>	<b>52.6</b>	8	1385	53.0	1388	52.9	<b>1386</b>	<b>53.0</b>
434.zeusmp	8	1103	66.0	1105	65.9	<b>1104</b>	<b>65.9</b>	8	1086	67.1	1089	66.9	<b>1088</b>	<b>66.9</b>
435.gromacs	8	808	70.7	804	71.0	<b>805</b>	<b>70.9</b>	8	<b>711</b>	<b>80.4</b>	712	80.3	710	80.5
436.cactusADM	8	1311	72.9	<b>1313</b>	<b>72.8</b>	1315	72.7	8	<b>1253</b>	<b>76.3</b>	1259	75.9	1243	76.9
437.leslie3d	8	<b>1245</b>	<b>60.4</b>	1244	60.5	1248	60.3	8	<b>1245</b>	<b>60.4</b>	1244	60.5	1248	60.3
444.namd	8	921	69.7	<b>920</b>	<b>69.7</b>	919	69.8	8	868	73.9	867	74.0	<b>867</b>	<b>74.0</b>
447.dealII	8	967	94.6	973	94.1	<b>973</b>	<b>94.1</b>	8	794	115	<b>796</b>	<b>115</b>	796	115
450.soplex	8	<b>1345</b>	<b>49.6</b>	1347	49.5	1345	49.6	8	1180	56.5	<b>1180</b>	<b>56.6</b>	1179	56.6
453.povray	8	<b>459</b>	<b>92.7</b>	459	92.6	459	92.8	8	<b>418</b>	<b>102</b>	422	101	417	102
454.calculix	8	1558	42.4	<b>1558</b>	<b>42.4</b>	1559	42.3	8	1440	45.8	<b>1440</b>	<b>45.8</b>	1441	45.8
459.GemsFDTD	8	1461	58.1	<b>1483</b>	<b>57.2</b>	1486	57.1	8	1434	59.2	<b>1437</b>	<b>59.1</b>	1441	58.9
465.tonto	8	923	85.2	925	85.1	<b>924</b>	<b>85.2</b>	8	923	85.2	925	85.1	<b>924</b>	<b>85.2</b>
470.lbm	8	1654	66.5	<b>1649</b>	<b>66.6</b>	1642	66.9	8	1654	66.5	<b>1649</b>	<b>66.6</b>	1642	66.9
481.wrf	8	1076	83.1	<b>1086</b>	<b>82.3</b>	1087	82.2	8	1076	83.1	<b>1086</b>	<b>82.3</b>	1087	82.2
482.sphinx3	8	2130	73.2	2135	73.0	<b>2130</b>	<b>73.2</b>	8	2130	73.2	2135	73.0	<b>2130</b>	<b>73.2</b>

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

## General Notes

taskset utility used to bind CPU(s) to processes  
DSPEC\_CPU\_TABLE\_WORKAROUND was used for portability when compiling 447.dealII  
due to compilation being performed on SLES 9 SP3

## Base Compiler Invocation

C benchmarks:  
pathcc

C++ benchmarks:  
pathCC

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## Base Compiler Invocation (Continued)

Fortran benchmarks:  
pathf95

Benchmarks using both Fortran and C:  
pathcc pathf95

## 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  
 436.cactusADM: -DSPEC\_CPU\_LP64 -fno-second-underscore  
 437.leslie3d: -DSPEC\_CPU\_LP64  
 444.namd: -DSPEC\_CPU\_LP64  
 447.dealII: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_TABLE\_WORKAROUND  
 450.soplex: -DSPEC\_CPU\_LP64  
 453.povray: -DSPEC\_CPU\_LP64  
 454.calculix: -DSPEC\_CPU\_LP64  
 459.GemsFDTD: -DSPEC\_CPU\_LP64  
 465.tonto: -DSPEC\_CPU\_LP64  
 470.lbm: -DSPEC\_CPU\_LP64  
 481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX -fno-second-underscore  
 482.sphinx3: -DSPEC\_CPU\_LP64

## Base Optimization Flags

C benchmarks:  
-Ofast

C++ benchmarks:  
-Ofast

Fortran benchmarks:  
-Ofast -OPT:malloc\_alg=1

Benchmarks using both Fortran and C:  
-Ofast -OPT:malloc\_alg=1

## Base Other Flags

C benchmarks:  
-IPA:max\_jobs=2

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## Base Other Flags (Continued)

C++ benchmarks:

-IPA:max\_jobs=2

Fortran benchmarks:

-IPA:max\_jobs=2

Benchmarks using both Fortran and C:

-IPA:max\_jobs=2

## Peak Compiler Invocation

C benchmarks:

pathcc

C++ benchmarks:

pathCC

Fortran benchmarks:

pathf95

Benchmarks using both Fortran and C:

pathcc pathf95

## 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  
 436.cactusADM: -DSPEC\_CPU\_LP64 -fno-second-underscore  
 437.leslie3d: -DSPEC\_CPU\_LP64  
 444.namd: -DSPEC\_CPU\_LP64  
 447.dealII: -DSPEC\_CPU\_TABLE\_WORKAROUND  
 453.povray: -DSPEC\_CPU\_LP64  
 454.calculix: -DSPEC\_CPU\_LP64  
 459.GemsFDTD: -DSPEC\_CPU\_LP64  
 465.tonto: -DSPEC\_CPU\_LP64  
 470.lbm: -DSPEC\_CPU\_LP64  
 481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX -fno-second-underscore  
 482.sphinx3: -DSPEC\_CPU\_LP64



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## Peak Optimization Flags

### C benchmarks:

433.milc: -Ofast -CG:cflow=off -LNO:prefetch=1 -OPT:malloc\_alg=1

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

### C++ benchmarks:

444.namd: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast  
-fno-exceptions

447.dealIII: -Ofast -INLINE:aggressive=on -LNO:opt=0 -OPT:alias=disjoint  
-m32 -fno-exceptions

450.soplex: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -m32 -O3  
-OPT:IEEE\_arith=3 -CG:load\_exe=0 -CG:movnti=1  
-LNO:minvariant=off -LNO:prefetch=1 -fno-exceptions

453.povray: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast  
-fno-fast-math

### Fortran benchmarks:

410.bwaves: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-OPT:Ofast -OPT:IEEE\_arith=3 -LNO:blocking=off  
-LNO:ignore\_feedback=off

416.gamess: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O2  
-OPT:Ofast -OPT:ro=3 -OPT:unroll\_size=256

434.zeusmp: -Ofast -CG:local\_fwd\_sched=on -LNO:blocking=off  
-LNO:interchange=off -LNO:fu=10 -LNO:full\_unroll\_outer=on

437.leslie3d: basepeak = yes

459.GemsFDTD: -Ofast -LNO:fission=2 -LNO:prefetch=0

465.tonto: basepeak = yes

### Benchmarks using both Fortran and C:

435.gromacs: -O3 -OPT:rsqrt=2 -OPT:ro=3

436.cactusADM: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-LNO:prefetch=3 -LNO:prefetch\_ahead=5 -LNO:ou\_prod\_max=10  
-LNO:full\_unroll=5 -ipa

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## Peak Optimization Flags (Continued)

454.calculix: -Ofast -LNO:simd=0 -WOPT:mem\_opnds=on

481.wrf: basepeak = yes

## Peak Other Flags

C benchmarks:

-IPA:max\_jobs=2

C++ benchmarks:

-IPA:max\_jobs=2

Fortran benchmarks:

-IPA:max\_jobs=2

Benchmarks using both Fortran and C:

-IPA:max\_jobs=2

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

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.13.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.13.html)

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

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.13.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.13.xml)

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Tested with SPEC CPU2006 v1.0.

Report generated on Tue Sep 13 11:26:54 2016 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 21 August 2007.