



# SPEC® CFP2006 Result

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## IBM Corporation

SPECfp®2006 = 10.2

### IBM BladeCenter LS41 (AMD Opteron 8212)

SPECfp\_base2006 = 9.66

CPU2006 license: 11

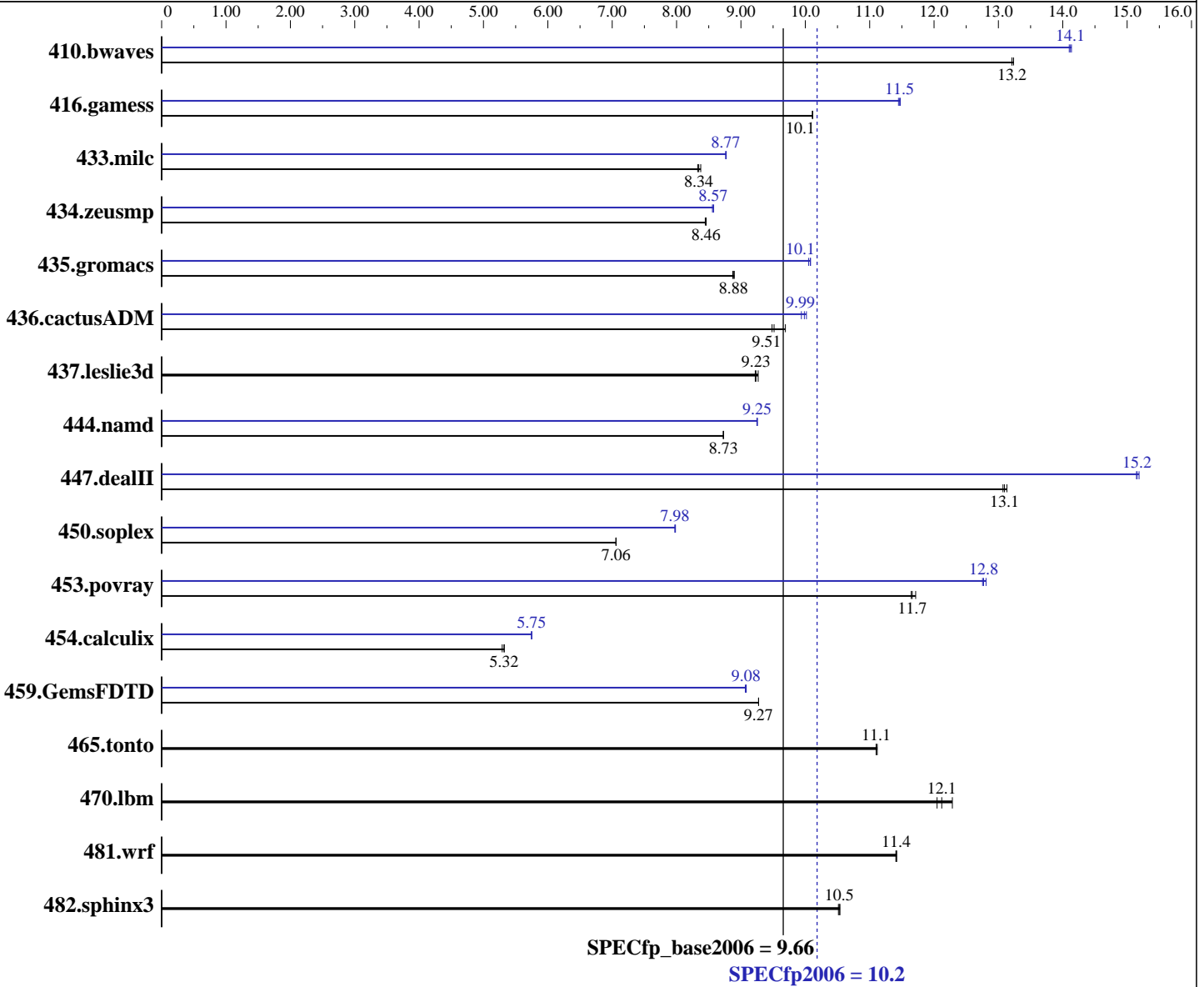
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jul-2007

Hardware Availability: Oct-2006

Software Availability: Mar-2007



#### 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					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	1027	13.2	1029	13.2	<u>1029</u>	<u>13.2</u>	<u>962</u>	<u>14.1</u>	961	14.1	964	14.1
416.gamess	1936	10.1	1937	10.1	<u>1936</u>	<u>10.1</u>	1710	11.4	1706	11.5	<u>1708</u>	<u>11.5</u>
433.milc	<u>1100</u>	<u>8.34</u>	1102	8.33	1096	8.38	<u>1047</u>	<u>8.77</u>	1046	8.77	1047	8.76
434.zeusmp	1076	8.46	1077	8.45	<u>1076</u>	<u>8.46</u>	1061	8.58	<u>1062</u>	<u>8.57</u>	1063	8.56
435.gromacs	805	8.87	802	8.90	<u>804</u>	<u>8.88</u>	<u>709</u>	<u>10.1</u>	708	10.1	710	10.1
436.cactusADM	1260	9.48	1233	9.69	<u>1256</u>	<u>9.51</u>	<u>1197</u>	<u>9.99</u>	1193	10.0	1202	9.94
437.leslie3d	1014	9.27	1019	9.22	<u>1018</u>	<u>9.23</u>	1014	9.27	1019	9.22	<u>1018</u>	<u>9.23</u>
444.namd	919	8.73	919	8.73	<u>919</u>	<u>8.73</u>	<u>867</u>	<u>9.25</u>	866	9.26	867	9.25
447.dealII	871	13.1	875	13.1	<u>874</u>	<u>13.1</u>	<u>755</u>	<u>15.2</u>	755	15.1	753	15.2
450.soplex	1181	7.06	<u>1181</u>	<u>7.06</u>	1182	7.06	1046	7.97	1045	7.98	<u>1046</u>	<u>7.98</u>
453.povray	457	11.6	<u>456</u>	<u>11.7</u>	454	11.7	417	12.8	<u>417</u>	<u>12.8</u>	415	12.8
454.calculix	<u>1551</u>	<u>5.32</u>	1550	5.32	1559	5.29	1435	5.75	1436	5.75	<u>1435</u>	<u>5.75</u>
459.GemsFDTD	1144	9.27	1144	9.27	<u>1144</u>	<u>9.27</u>	1170	9.07	<u>1169</u>	<u>9.08</u>	1168	9.08
465.tonto	<u>886</u>	<u>11.1</u>	886	11.1	885	11.1	<u>886</u>	<u>11.1</u>	886	11.1	885	11.1
470.lbm	1118	12.3	<u>1134</u>	<u>12.1</u>	1141	12.0	1118	12.3	<u>1134</u>	<u>12.1</u>	1141	12.0
481.wrf	<u>979</u>	<u>11.4</u>	978	11.4	979	11.4	<u>979</u>	<u>11.4</u>	978	11.4	979	11.4
482.sphinx3	1854	10.5	<u>1851</u>	<u>10.5</u>	1849	10.5	1854	10.5	<u>1851</u>	<u>10.5</u>	1849	10.5

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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