



# SPEC® CFP2006 Result

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## IBM Corporation

**SPECfp®2006 = 14.8**

## IBM System x3455 (AMD Opteron 2222 SE)

**SPECfp\_base2006 = 14.1**

CPU2006 license: 11

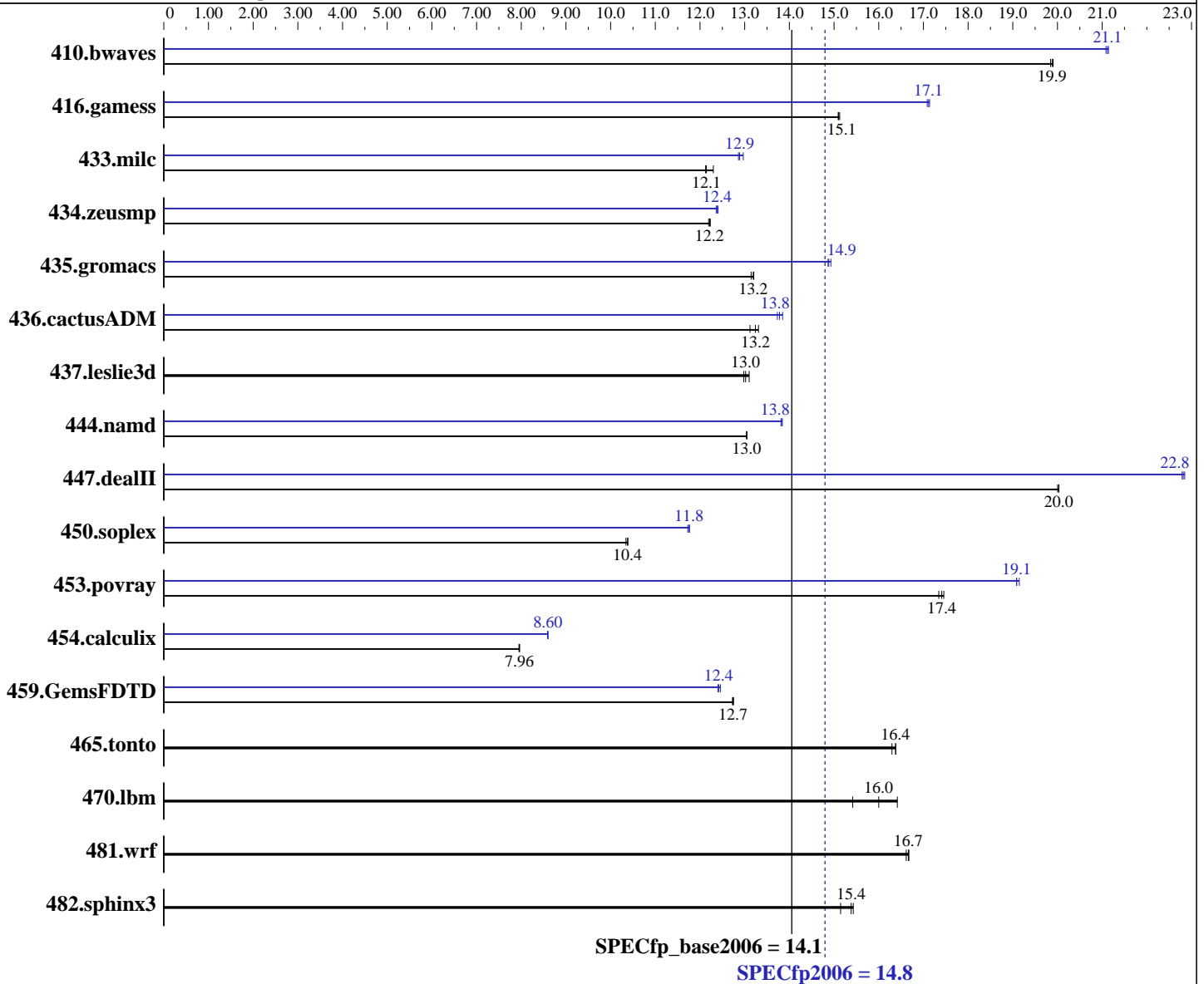
Test date: Jul-2007

Test sponsor: IBM Corporation

Hardware Availability: Apr-2007

Tested by: IBM Corporation

Software Availability: Mar-2007



**Hardware**

CPU Name: AMD Opteron 2222 SE  
 CPU Characteristics:  
 CPU MHz: 3000  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip  
 CPU(s) orderable: 1, 2 chips  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 1 MB I+D on chip per core

**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: 16 GB (8 x 2GB DDR2-5300 ECC)  
Disk Subsystem: 1 x 160 GB Serial ATA, 7200 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	685	19.8	<b>684</b>	<b>19.9</b>	683	19.9	645	21.1	<b>644</b>	<b>21.1</b>	643	21.1
416.gamess	<b>1297</b>	<b>15.1</b>	1297	15.1	1294	15.1	1146	17.1	1142	17.1	<b>1144</b>	<b>17.1</b>
433.milc	757	12.1	<b>756</b>	<b>12.1</b>	746	12.3	<b>712</b>	<b>12.9</b>	714	12.9	708	13.0
434.zeusmp	744	12.2	<b>745</b>	<b>12.2</b>	746	12.2	<b>735</b>	<b>12.4</b>	736	12.4	734	12.4
435.gromacs	541	13.2	<b>541</b>	<b>13.2</b>	543	13.1	<b>480</b>	<b>14.9</b>	480	14.9	478	14.9
436.cactusADM	<b>903</b>	<b>13.2</b>	911	13.1	898	13.3	870	13.7	863	13.8	<b>867</b>	<b>13.8</b>
437.leslie3d	718	13.1	<b>722</b>	<b>13.0</b>	724	13.0	718	13.1	<b>722</b>	<b>13.0</b>	724	13.0
444.namd	615	13.0	<b>615</b>	<b>13.0</b>	615	13.0	<b>580</b>	<b>13.8</b>	581	13.8	579	13.8
447.dealII	<b>571</b>	<b>20.0</b>	571	20.0	572	20.0	<b>501</b>	<b>22.8</b>	502	22.8	501	22.8
450.soplex	803	10.4	806	10.3	<b>804</b>	<b>10.4</b>	<b>710</b>	<b>11.8</b>	709	11.8	711	11.7
453.povray	307	17.3	305	17.5	<b>306</b>	<b>17.4</b>	<b>279</b>	<b>19.1</b>	279	19.1	278	19.1
454.calculix	1036	7.96	<b>1037</b>	<b>7.96</b>	1038	7.95	960	8.60	960	8.59	<b>960</b>	<b>8.60</b>
459.GemsFDTD	832	12.8	<b>833</b>	<b>12.7</b>	834	12.7	856	12.4	<b>854</b>	<b>12.4</b>	852	12.5
465.tonto	604	16.3	<b>601</b>	<b>16.4</b>	601	16.4	604	16.3	<b>601</b>	<b>16.4</b>	601	16.4
470.lbm	837	16.4	<b>859</b>	<b>16.0</b>	891	15.4	837	16.4	<b>859</b>	<b>16.0</b>	891	15.4
481.wrf	<b>670</b>	<b>16.7</b>	670	16.7	672	16.6	<b>670</b>	<b>16.7</b>	670	16.7	672	16.6
482.sphinx3	1263	15.4	<b>1267</b>	<b>15.4</b>	1287	15.1	1263	15.4	<b>1267</b>	<b>15.4</b>	1287	15.1

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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 For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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