SPEC® CFP2006 Result

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IBM Corporation

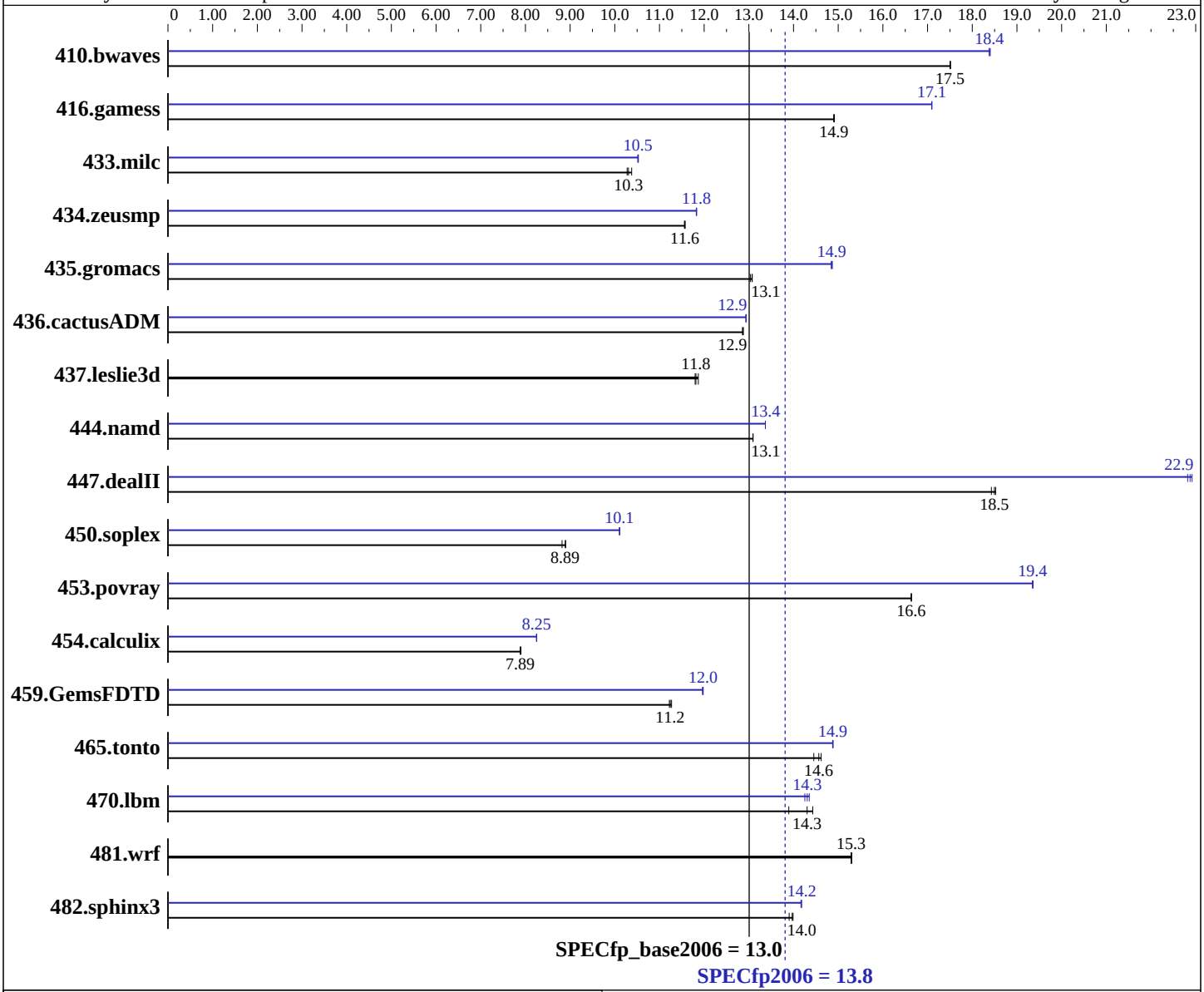
IBM System x3755 (AMD Opteron 8222 SE)

SPECfp®2006 = 13.8

SPECfp_base2006 = 13.0

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Feb-2007
Hardware Availability: Apr-2007
Software Availability: Aug-2006



Hardware

CPU Name:	AMD Opteron 8222 SE
CPU Characteristics:	
CPU MHz:	3000
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:	SLES9 SP3 for AMD64/EM64T
Compiler:	QLogic PathScale Compiler Suite 2.5
Auto Parallel:	No
File System:	ext3
System State:	Multi-user, run level 3
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other Software:	None

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L3 Cache: None
Other Cache: None
Memory: 32 GB (16 x 2GB DDR2-5300 ECC)
Disk Subsystem: 1 x 73 GB SATA, 15000 RPM
Other Hardware: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**776**	**17.5**	776	17.5	776	17.5	**739**	**18.4**	738	18.4	739	18.4
416.gamess	1314	14.9	**1314**	**14.9**	1313	14.9	**1145**	**17.1**	1146	17.1	1145	17.1
433.milc	893	10.3	**891**	**10.3**	885	10.4	**872**	**10.5**	872	10.5	873	10.5
434.zeusmp	786	11.6	**787**	**11.6**	787	11.6	**769**	**11.8**	770	11.8	769	11.8
435.gromacs	546	13.1	548	13.0	**546**	**13.1**	**481**	**14.9**	481	14.8	480	14.9
436.cactusADM	928	12.9	**929**	**12.9**	929	12.9	**924**	**12.9**	924	12.9	924	12.9
437.leslie3d	792	11.9	**796**	**11.8**	797	11.8	792	11.9	**796**	**11.8**	797	11.8
444.namd	**613**	**13.1**	613	13.1	612	13.1	600	13.4	**600**	**13.4**	600	13.4
447.dealII	618	18.5	**619**	**18.5**	621	18.4	499	22.9	**500**	**22.9**	501	22.8
450.soplex	946	8.82	937	8.90	**938**	**8.89**	825	10.1	825	10.1	**825**	**10.1**
453.povray	320	16.6	320	16.6	**320**	**16.6**	275	19.4	275	19.3	**275**	**19.4**
454.calculix	1044	7.90	1046	7.88	**1046**	**7.89**	1000	8.25	**1000**	**8.25**	1000	8.25
459.GemsFDTD	946	11.2	**944**	**11.2**	941	11.3	887	12.0	**886**	**12.0**	886	12.0
465.tonto	673	14.6	**676**	**14.6**	681	14.5	662	14.9	**661**	**14.9**	661	14.9
470.lbm	952	14.4	989	13.9	**961**	**14.3**	964	14.3	**960**	**14.3**	957	14.4
481.wrf	730	15.3	731	15.3	**730**	**15.3**	730	15.3	731	15.3	**730**	**15.3**
482.sphinx3	1393	14.0	**1395**	**14.0**	1402	13.9	1376	14.2	1375	14.2	**1375**	**14.2**

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

Operating System Notes

`taskset utility used to bind CPU(s) to processes`

Base Compiler Invocation

C benchmarks:
`pathcc`

C++ benchmarks:
`pathCC`

Fortran benchmarks:
`pathf95`

Continued on next page

Base Compiler Invocation (Continued)

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:
-march=auto -Ofast

C++ benchmarks:
-march=auto -Ofast

Fortran benchmarks:
-march=auto -Ofast

Benchmarks using both Fortran and C:
-march=auto -Ofast

Base Other Flags

C benchmarks:
-IPA:max_jobs=2

C++ benchmarks:
-IPA:max_jobs=2

Continued on next page

Base Other Flags (Continued)

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`

Peak Optimization Flags

C benchmarks:
`-march=auto -fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-Ofast`

Continued on next page

Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-Ofast

447.dealII: -march=auto -Ofast -m32 -fno-exceptions

450.soplex: -march=auto -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 -fno-exceptions

453.povray: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-Ofast -fno-fast-math

Fortran benchmarks:

410.bwaves: -march=auto -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: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-O2 -OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256

434.zeusmp: -march=auto -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: -march=auto -Ofast -LNO:fission=2 -LNO:prefetch=0

465.tonto: -march=auto -Ofast -CG:local_fwd_sched=on -IPA:plimit=525

Benchmarks using both Fortran and C:

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

436.cactusADM: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-O3 -LNO:prefetch_ahead=5 -LNO:ou_prod_max=10
-LNO:full_unroll=5 -ipa

454.calculix: -march=auto -Ofast -CG:prefetch=off -LNO:simd=0
-OPT:unroll_times_max=8 -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.20090714.29.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.29.xml`

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