



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 89.9

IBM System x3200 M3 (Intel Xeon X3470)

SPECfp_rate_base2006 = 86.3

CPU2006 license: 11

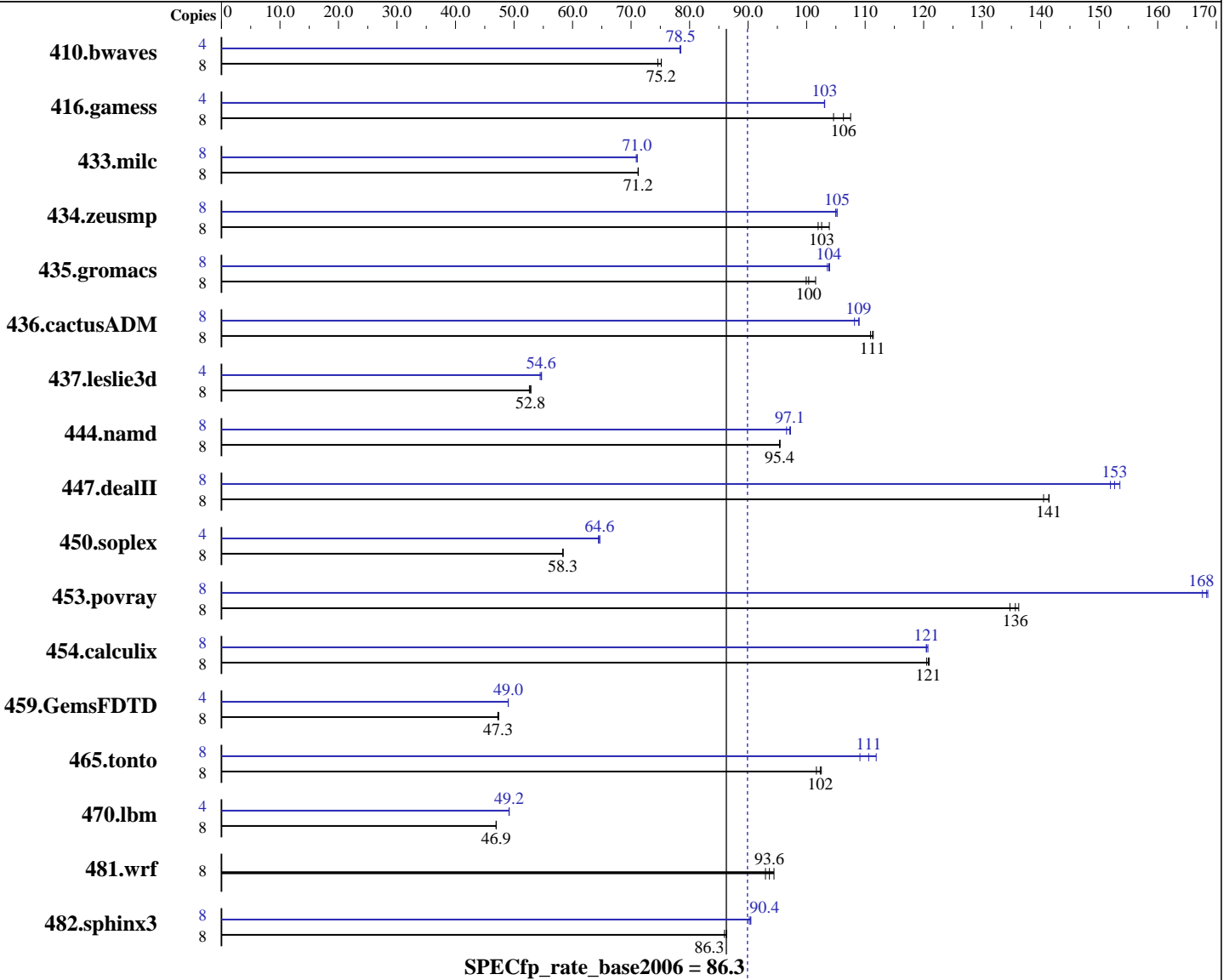
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Sep-2009

Hardware Availability: Oct-2009

Software Availability: Feb-2009



Hardware

CPU Name: Intel Xeon X3470
 CPU Characteristics: Intel Turbo Boost Technology up to 3.6 GHz
 CPU MHz: 2933
 FPU: Integrated
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core
 CPU(s) orderable: 1 chip
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core

Continued on next page

Software

Operating System: SuSE Linux Enterprise Server 11(x86_64), Kernel 2.6.27.19-5-default
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20090131 Package ID: L_cproc_p_11.0.080, L_cprof_p_11.0.080
 Auto Parallel: No
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

Continued on next page



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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB(4 x 4 GB PC3-10600R)
Disk Subsystem: 1 x 250 GB SATA, 7200 RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: Binutils 2.18.50.0.7.20080502

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	1458	74.6	<u>1447</u>	<u>75.2</u>	1446	75.2	4	694	78.3	<u>693</u>	<u>78.5</u>	693	78.5
416.gamess	8	<u>1474</u>	<u>106</u>	1457	108	1497	105	4	760	103	<u>760</u>	<u>103</u>	760	103
433.milc	8	<u>1031</u>	<u>71.2</u>	1031	71.2	1031	71.2	8	<u>1034</u>	<u>71.0</u>	1036	70.9	1034	71.1
434.zeusmp	8	714	102	701	104	<u>710</u>	<u>103</u>	8	<u>692</u>	<u>105</u>	692	105	694	105
435.gromacs	8	563	102	572	99.9	<u>569</u>	<u>100</u>	8	552	104	<u>550</u>	<u>104</u>	550	104
436.cactusADM	8	862	111	<u>859</u>	<u>111</u>	858	111	8	877	109	884	108	<u>878</u>	<u>109</u>
437.leslie3d	8	1422	52.9	1429	52.6	<u>1424</u>	<u>52.8</u>	4	687	54.7	<u>688</u>	<u>54.6</u>	690	54.5
444.namd	8	<u>673</u>	<u>95.4</u>	672	95.5	673	95.4	8	664	96.6	660	97.3	<u>661</u>	<u>97.1</u>
447.dealII	8	<u>647</u>	<u>141</u>	647	141	651	140	8	602	152	596	154	<u>600</u>	<u>153</u>
450.soplex	8	1144	58.3	1143	58.4	<u>1144</u>	<u>58.3</u>	4	518	64.4	516	64.7	<u>516</u>	<u>64.6</u>
453.povray	8	316	135	312	136	<u>314</u>	<u>136</u>	8	<u>253</u>	<u>168</u>	254	168	252	169
454.calculix	8	546	121	<u>546</u>	<u>121</u>	548	121	8	<u>548</u>	<u>121</u>	548	120	547	121
459.GemsFDTD	8	1791	47.4	<u>1795</u>	<u>47.3</u>	1797	47.2	4	866	49.0	866	49.0	<u>866</u>	<u>49.0</u>
465.tonto	8	774	102	<u>769</u>	<u>102</u>	768	103	8	721	109	<u>712</u>	<u>111</u>	704	112
470.lbm	8	2340	47.0	<u>2342</u>	<u>46.9</u>	2342	46.9	4	1117	49.2	<u>1118</u>	<u>49.2</u>	1118	49.1
481.wrf	8	946	94.4	<u>954</u>	<u>93.6</u>	961	93.0	8	946	94.4	<u>954</u>	<u>93.6</u>	961	93.0
482.sphinx3	8	1814	86.0	1806	86.4	<u>1807</u>	<u>86.3</u>	8	1728	90.2	<u>1725</u>	<u>90.4</u>	1723	90.5

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

Submit Notes

The config file option 'submit' was used.
numactl was used to bind copies to the cores

General Notes

CPU C-States Enable and Adjacent Sector Prefetch Enable
Turbo Mode Enable

Base Compiler Invocation

C benchmarks:
icc

Continued on next page



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Base Compiler Invocation (Continued)

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
icc ifort

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

C++ benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -static

Fortran benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -static

Benchmarks using both Fortran and C:
-xSSE4.2 -ipo -O3 -no-prec-div -static



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Peak Compiler Invocation

C benchmarks (except as noted below):

icc

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

icpc

450.soplex: icpc -m32

Fortran benchmarks (except as noted below):

ifort

437.leslie3d: ifort -m32

Benchmarks using both Fortran and C:

icc ifort

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 -nofor_main
 436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
 444.namd: -DSPEC_CPU_LP64
 447.deallI: -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

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)
 -fno-alias

470.lbm: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch
 -auto-ilp32

Continued on next page



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Peak Optimization Flags (Continued)

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2

C++ benchmarks:

444.namd: -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)
-fno-alias -auto-ilp32

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-

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

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

Fortran benchmarks:

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

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: -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)

437.leslie3d: -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 -opt-prefetch

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

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)
-unroll4 -auto

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

Continued on next page



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Peak Optimization Flags (Continued)

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 -auto-ilp32

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

481.wrf: basepeak = yes

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

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20091002.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20091002.xml>

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For other inquiries, please contact webmaster@spec.org.

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