



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 119

IBM System x3250 M4 (Intel Xeon E3-1240)

SPECfp_rate_base2006 = 115

CPU2006 license: 11

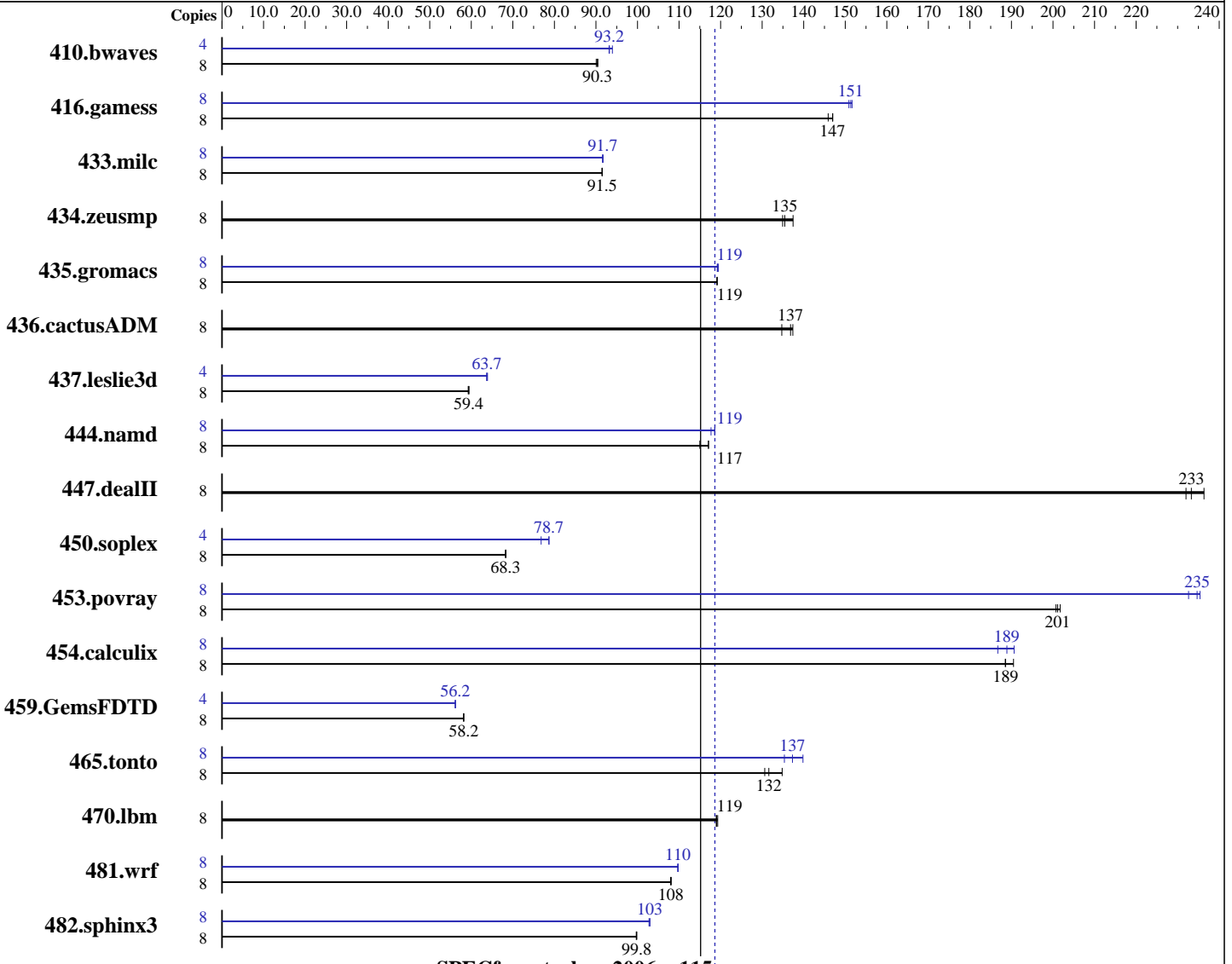
Test date: Oct-2011

Test sponsor: IBM Corporation

Hardware Availability: Oct-2011

Tested by: IBM Corporation

Software Availability: Aug-2011



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Hardware

CPU Name: Intel Xeon E3-1240
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
 CPU MHz: 3300
 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

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Software

Operating System: Red Hat Enterprise Linux Server Release 6.1, Kernel 2.6.32-131.0.15.el6.x86_64
 Compiler: C/C++/Fortran: Version 12.1.0.225 of Intel Compiler XE Build 20110803
 Auto Parallel: No
 File System: ext4
 System State: Run level 3 (multi-user)
 Base Pointers: 32/64-bit

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L3 Cache: 8 MB I+D on chip per chip
 Other Cache: None
 Memory: 16 GB (2 x 8 GB 2Rx8 PC3-10600E-9, ECC)
 Disk Subsystem: 1 x 146 GB SAS, 15000 RPM
 Other Hardware: None

Peak Pointers: 32/64-bit
 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	1202	90.5	<u>1203</u>	<u>90.3</u>	1207	90.1	4	<u>583</u>	<u>93.2</u>	579	94.0	584	93.2
416.gamess	8	1074	146	<u>1066</u>	<u>147</u>	1066	147	8	<u>1035</u>	<u>151</u>	1033	152	1038	151
433.milc	8	803	91.5	803	91.5	<u>803</u>	<u>91.5</u>	8	<u>801</u>	<u>91.7</u>	802	91.6	801	91.7
434.zeusmp	8	530	137	540	135	<u>537</u>	<u>135</u>	8	530	137	540	135	<u>537</u>	<u>135</u>
435.gromacs	8	479	119	<u>479</u>	<u>119</u>	479	119	8	478	119	<u>479</u>	<u>119</u>	479	119
436.cactusADM	8	710	135	<u>699</u>	<u>137</u>	696	137	8	710	135	<u>699</u>	<u>137</u>	696	137
437.leslie3d	8	<u>1266</u>	<u>59.4</u>	1269	59.3	1265	59.4	4	588	63.9	590	63.7	<u>590</u>	<u>63.7</u>
444.namd	8	<u>548</u>	<u>117</u>	548	117	558	115	8	545	118	<u>541</u>	<u>119</u>	541	119
447.dealII	8	<u>392</u>	<u>233</u>	394	232	387	236	8	<u>392</u>	<u>233</u>	394	232	387	236
450.soplex	8	976	68.3	978	68.2	<u>977</u>	<u>68.3</u>	4	434	76.8	424	78.7	<u>424</u>	<u>78.7</u>
453.povray	8	212	201	<u>212</u>	<u>201</u>	211	202	8	183	233	181	235	<u>181</u>	<u>235</u>
454.calculix	8	350	189	346	190	<u>350</u>	<u>189</u>	8	<u>349</u>	<u>189</u>	353	187	346	191
459.GemsFDTD	8	<u>1459</u>	<u>58.2</u>	1459	58.2	1460	58.1	4	<u>756</u>	<u>56.2</u>	755	56.2	756	56.1
465.tonto	8	584	135	<u>598</u>	<u>132</u>	603	131	8	563	140	582	135	<u>573</u>	<u>137</u>
470.lbm	8	921	119	<u>923</u>	<u>119</u>	924	119	8	921	119	<u>923</u>	<u>119</u>	924	119
481.wrf	8	827	108	<u>827</u>	<u>108</u>	828	108	8	815	110	<u>814</u>	<u>110</u>	814	110
482.sphinx3	8	1564	99.7	<u>1563</u>	<u>99.8</u>	1562	99.8	8	<u>1514</u>	<u>103</u>	1514	103	1517	103

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.
taskset was used to bind copies to the cores

Platform Notes

BIOS Settings:
Turbo Mode enabled in BIOS
C-State enabled in BIOS



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General Notes

Environment variables set by runspec before the start of the run:

LD_LIBRARY_PATH = "/root/SPECcpu2.1/smartheap:/root/SPECcpu2.1/icl2.1-libs/ia32:/root/SPECcpu2.1/icl2.1-libs/intel64"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB

memory using RHEL5.5 with binutils-2.17.50.0.6-14.el5

Stack size set to unlimited using "ulimit -s unlimited"

Transparent Huge Pages disabled with:

echo never > /sys/kernel/mm/redhat_transparent_hugepage/enabled

Filesystem page cache cleared with:

echo 1> /proc/sys/vm/drop_caches

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

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



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Base Optimization Flags

C benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch

Benchmarks using both Fortran and C:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

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

437.leslie3d: -DSPEC_CPU_LP64

444.namd: -DSPEC_CPU_LP64

447.deallI: -DSPEC_CPU_LP64

453.povray: -DSPEC_CPU_LP64

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Peak Portability Flags (Continued)

454.calulix: -DSPEC_CPU_LP64 -nofor_main
 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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
 -prof-use(pass 2) -static -auto-ilp32

470.lbm: basepeak = yes

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
 -unroll2

C++ benchmarks:

444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
 -prof-use(pass 2) -fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
 -prof-use(pass 2) -opt-malloc-options=3

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
 -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
 -no-prec-div(pass 2) -prof-use(pass 2) -static

416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
 -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
 -inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch

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Peak Optimization Flags (Continued)

459.GemsFDTD: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto
-inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-prefetch -static -auto-ilp32

436.cactusADM: basepeak = yes

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

481.wrf: Same as 454.calculix

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-linux64.html>

<http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revB.20111206.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-linux64.xml>

<http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revB.20111206.xml>

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