



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 108

IBM System x3100 M4 (Intel Xeon E3-1225)

SPECfp_rate_base2006 = 106

CPU2006 license: 11

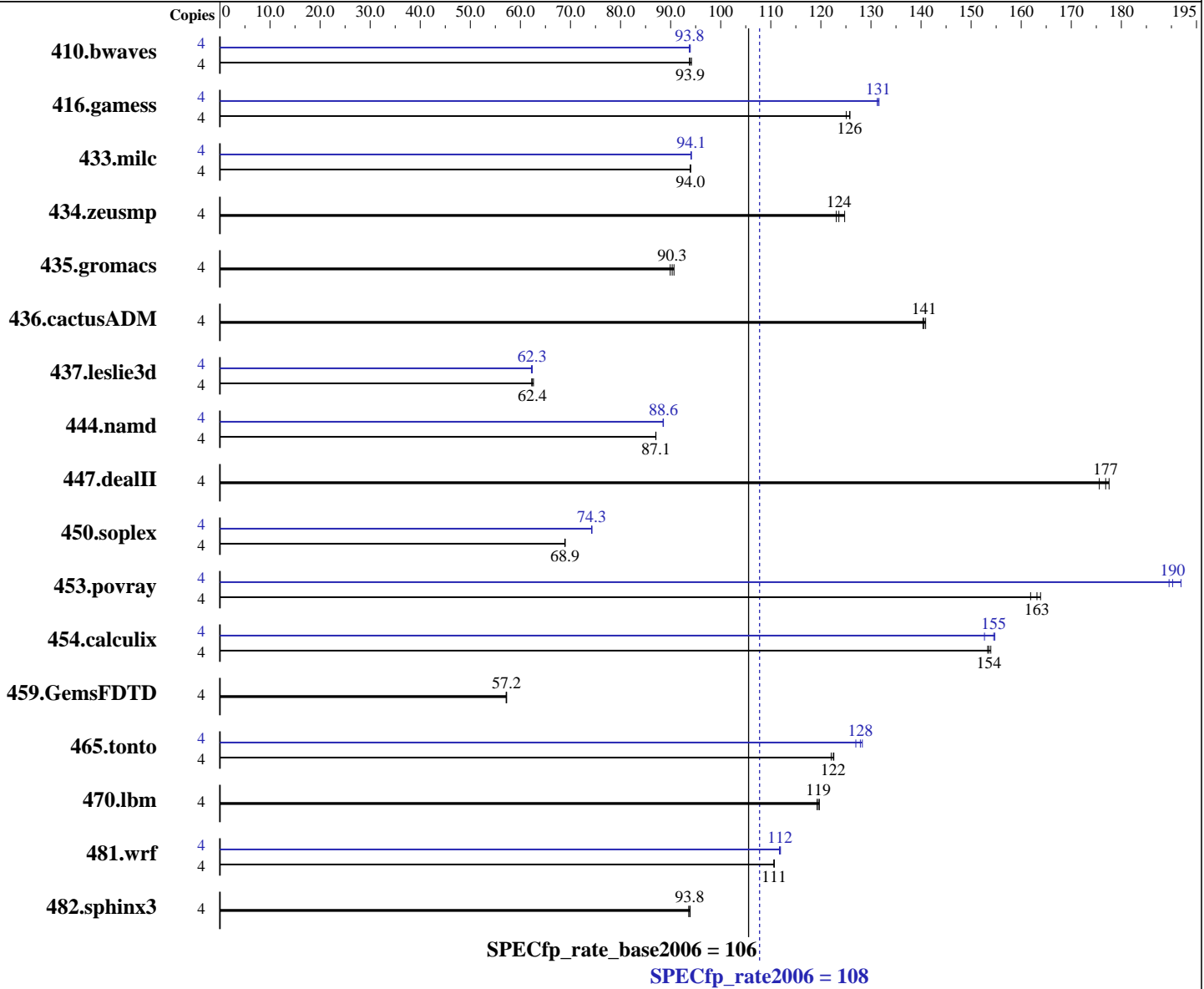
Test date: Dec-2011

Test sponsor: IBM Corporation

Hardware Availability: Oct-2011

Tested by: IBM Corporation

Software Availability: Sep-2011



Hardware

CPU Name: Intel Xeon E3-1225
 CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz
 CPU MHz: 3100
 FPU: Integrated
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip
 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: 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: 6 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 250 GB SATA, 7200 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	4	577	94.2	<u>579</u>	<u>93.9</u>	580	93.7	4	580	93.7	579	93.9	<u>580</u>	<u>93.8</u>
416.gamess	4	<u>623</u>	<u>126</u>	623	126	626	125	4	<u>596</u>	<u>131</u>	597	131	595	132
433.milc	4	391	94.0	<u>391</u>	<u>94.0</u>	391	93.9	4	390	94.1	390	94.0	<u>390</u>	<u>94.1</u>
434.zeusmp	4	<u>295</u>	<u>124</u>	292	125	296	123	4	<u>295</u>	<u>124</u>	292	125	296	123
435.gromacs	4	315	90.7	<u>316</u>	<u>90.3</u>	318	89.9	4	315	90.7	<u>316</u>	<u>90.3</u>	318	89.9
436.cactusADM	4	339	141	341	140	<u>340</u>	<u>141</u>	4	339	141	341	140	<u>340</u>	<u>141</u>
437.leslie3d	4	600	62.6	604	62.2	<u>602</u>	<u>62.4</u>	4	603	62.4	<u>603</u>	<u>62.3</u>	605	62.2
444.namd	4	368	87.1	<u>369</u>	<u>87.1</u>	369	87.0	4	362	88.6	363	88.5	<u>362</u>	<u>88.6</u>
447.dealII	4	261	176	258	178	<u>259</u>	<u>177</u>	4	261	176	258	178	<u>259</u>	<u>177</u>
450.soplex	4	<u>484</u>	<u>68.9</u>	484	69.0	484	68.9	4	449	74.3	449	74.2	<u>449</u>	<u>74.3</u>
453.povray	4	130	164	<u>130</u>	<u>163</u>	131	162	4	112	190	<u>112</u>	<u>190</u>	111	192
454.calculix	4	215	153	<u>215</u>	<u>154</u>	214	154	4	213	155	216	153	<u>214</u>	<u>155</u>
459.GemsFDTD	4	743	57.1	741	57.2	<u>742</u>	<u>57.2</u>	4	743	57.1	741	57.2	<u>742</u>	<u>57.2</u>
465.tonto	4	321	123	<u>321</u>	<u>122</u>	322	122	4	307	128	310	127	<u>308</u>	<u>128</u>
470.lbm	4	459	120	<u>460</u>	<u>119</u>	461	119	4	459	120	<u>460</u>	<u>119</u>	461	119
481.wrf	4	404	111	<u>404</u>	<u>111</u>	404	111	4	399	112	<u>399</u>	<u>112</u>	400	112
482.sphinx3	4	833	93.6	830	93.9	<u>831</u>	<u>93.8</u>	4	833	93.6	830	93.9	<u>831</u>	<u>93.8</u>

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:

icc -m64

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.dealII: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64

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Peak Portability Flags (Continued)

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

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: basepeak = yes

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.dealIII: 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

459.GemsFDTD: basepeak = yes

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Peak Optimization Flags (Continued)

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: basepeak = yes

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.20111220.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.20111220.xml>

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