



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®2006 = 61.3

IBM BladeCenter HX5 (Intel Xeon E7-8837)

SPECfp_base2006 = 56.6

CPU2006 license: 11

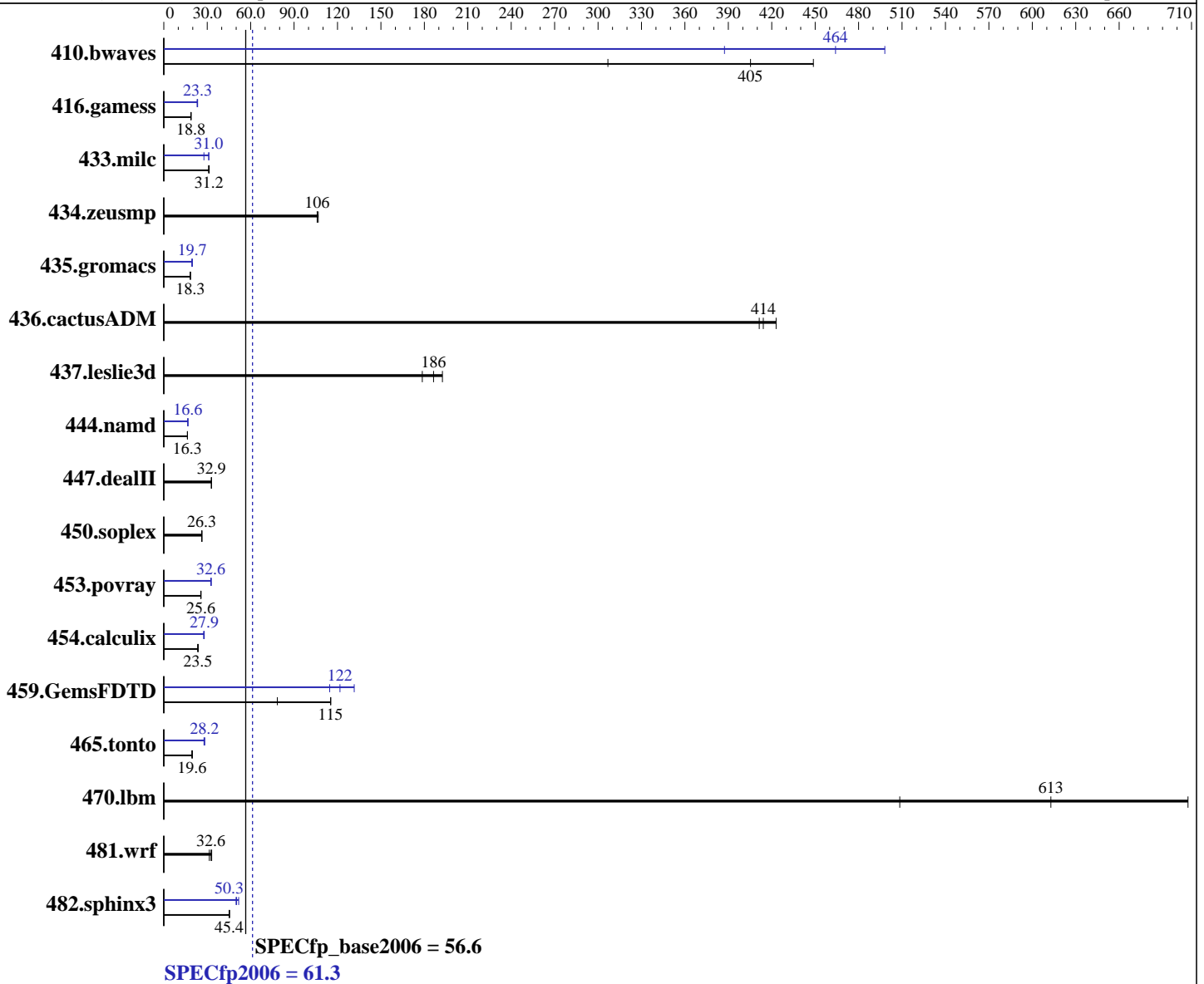
Test date: May-2011

Test sponsor: IBM Corporation

Hardware Availability: May-2011

Tested by: IBM Corporation

Software Availability: Apr-2011



Hardware

CPU Name: Intel Xeon E7-8837
 CPU Characteristics: Intel Turbo Boost Technology up to 2.8 GHz
 CPU MHz: 2667
 FPU: Integrated
 CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip
 CPU(s) orderable: 1,2,3,4 chips
 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: SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default
 Compiler: Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12.0 Update 3
 Auto Parallel: Yes
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

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L3 Cache: 24 MB I+D on chip per chip
 Other Cache: None
 Memory: 256 GB (32 x 8 GB 4Rx8 PC3-8500R-7, ECC)
 Disk Subsystem: 4 x 50 GB SSD, RAID 0
 Other Hardware: None

Peak Pointers: 32/64-bit
 Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	<u>33.5</u>	<u>405</u>	30.3	449	44.3	307	<u>29.3</u>	<u>464</u>	35.1	387	27.3	498
416.gamess	1038	18.9	1049	18.7	<u>1040</u>	<u>18.8</u>	839	23.3	<u>841</u>	<u>23.3</u>	852	23.0
433.milc	292	31.4	297	30.9	<u>294</u>	<u>31.2</u>	<u>296</u>	<u>31.0</u>	295	31.2	331	27.7
434.zeusmp	85.9	106	85.3	107	<u>85.9</u>	<u>106</u>	85.9	106	85.3	107	<u>85.9</u>	<u>106</u>
435.gromacs	<u>389</u>	<u>18.3</u>	388	18.4	389	18.3	363	19.7	<u>363</u>	<u>19.7</u>	369	19.4
436.cactusADM	28.2	423	29.1	411	<u>28.9</u>	<u>414</u>	28.2	423	29.1	411	<u>28.9</u>	<u>414</u>
437.leslie3d	52.6	179	48.8	192	<u>50.4</u>	<u>186</u>	52.6	179	48.8	192	<u>50.4</u>	<u>186</u>
444.namd	<u>491</u>	<u>16.3</u>	491	16.3	492	16.3	482	16.6	483	16.6	<u>482</u>	<u>16.6</u>
447.dealII	347	32.9	<u>347</u>	<u>32.9</u>	348	32.9	347	32.9	<u>347</u>	<u>32.9</u>	348	32.9
450.soplex	317	26.3	318	26.3	<u>317</u>	<u>26.3</u>	317	26.3	318	26.3	<u>317</u>	<u>26.3</u>
453.povray	207	25.7	209	25.5	<u>207</u>	<u>25.6</u>	<u>163</u>	<u>32.6</u>	164	32.5	162	32.8
454.calculix	<u>351</u>	<u>23.5</u>	352	23.4	346	23.9	295	27.9	300	27.5	<u>296</u>	<u>27.9</u>
459.GemsFDTD	135	78.4	<u>92.1</u>	<u>115</u>	91.9	115	<u>87.2</u>	<u>122</u>	80.7	132	92.6	115
465.tonto	498	19.8	508	19.4	<u>502</u>	<u>19.6</u>	349	28.2	<u>349</u>	<u>28.2</u>	354	27.8
470.lbm	19.4	708	<u>22.4</u>	<u>613</u>	27.0	508	19.4	708	<u>22.4</u>	<u>613</u>	27.0	508
481.wrf	338	33.1	<u>342</u>	<u>32.6</u>	355	31.4	338	33.1	<u>342</u>	<u>32.6</u>	355	31.4
482.sphinx3	431	45.2	429	45.4	<u>430</u>	<u>45.4</u>	<u>388</u>	<u>50.3</u>	390	49.9	377	51.7

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

Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
echo 1 > /proc/sys/vm/zone_reclaim_mode
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

BIOS Settings:
 Turbo Boost Power Optimization set to Traditional



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General Notes

OMP_NUM_THREADS set to number of cores
Binaries were compiled on RHEL5.5

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

Base Optimization Flags

C benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

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Base Optimization Flags (Continued)

Fortran benchmarks:

`-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:

`-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias`

Peak Compiler Invocation

C benchmarks:

`icc -m64`

C++ benchmarks:

`icpc -m64`

Fortran benchmarks:

`ifort -m64`

Benchmarks using both Fortran and C:

`icc -m64 ifort -m64`

Peak Portability Flags

Same as Base Portability Flags

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) -prof-use(pass 2) -static -auto-ilp32
-ansi-alias`

470.lbm: `basepeak = yes`

482.sphinx3: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel`

C++ benchmarks:

444.namd: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
-auto-ilp32`

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Peak Optimization Flags (Continued)

447.deallI: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Fortran benchmarks:

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

416.gamess: -xSSE4.2(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: basepeak = yes

459.GemsFDTD: -xSSE4.2(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 -opt-prefetch -parallel
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
-opt-malloc-options=3 -auto -unroll4
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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) -prof-use(pass 2) -static -auto-ilp32
-ansi-alias

436.cactusADM: basepeak = yes

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

481.wrf: basepeak = yes

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.html>
<http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revA.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml>
<http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revA.xml>



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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 18:31:27 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 7 June 2011.