



SPEC[®] CFP2006 Result

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IBM Corporation

SPECfp[®]2006 = **63.7**

IBM BladeCenter HS22 (Intel Xeon X5690)

SPECfp_base2006 = **59.9**

CPU2006 license: 11

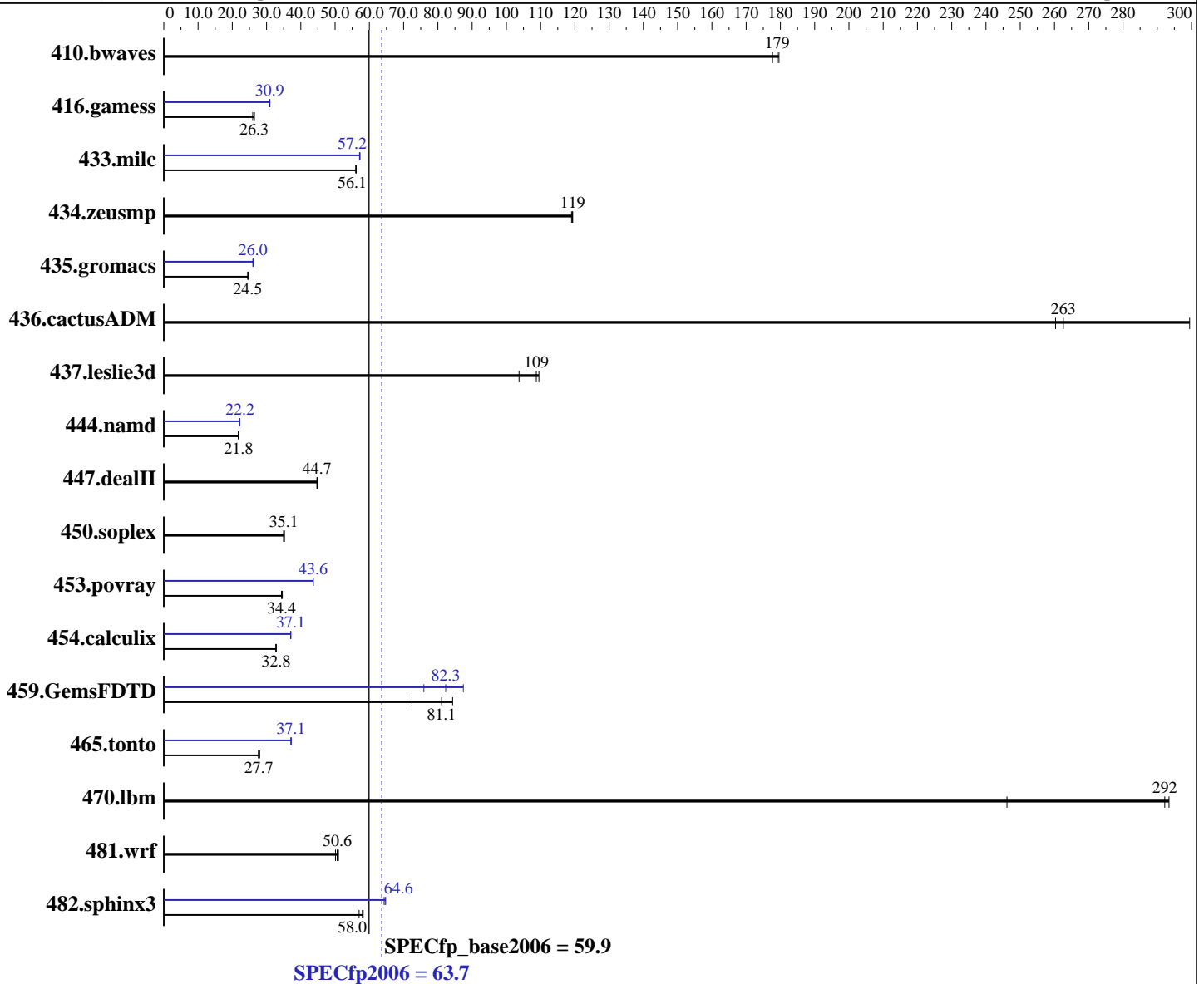
Test date: Jan-2011

Test sponsor: IBM Corporation

Hardware Availability: Feb-2011

Tested by: IBM Corporation

Software Availability: Apr-2011



Hardware

CPU Name: Intel Xeon X5690
 CPU Characteristics: Intel Turbo Boost Technology up to 3.73 GHz
 CPU MHz: 3467
 FPU: Integrated
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core
 CPU(s) orderable: 1,2 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: 12 MB I+D on chip per chip
Other Cache: None
Memory: 48 GB (12 x 4 GB 2Rx8 PC3-10600R-9, ECC)
Disk Subsystem: 1 x 73 GB SAS, 10000 RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: Binaries compiled on RHEL5.5 with binutils-2.17.50.0.6-14.el5

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	<u>75.9</u>	<u>179</u>	75.7	180	76.5	178	<u>75.9</u>	<u>179</u>	75.7	180	76.5	178
416.gamess	<u>743</u>	<u>26.3</u>	740	26.5	754	26.0	632	31.0	<u>633</u>	<u>30.9</u>	633	30.9
433.milc	164	56.1	164	56.0	<u>164</u>	<u>56.1</u>	161	57.1	<u>160</u>	<u>57.2</u>	160	57.3
434.zeusmp	76.5	119	<u>76.3</u>	<u>119</u>	76.3	119	76.5	119	<u>76.3</u>	<u>119</u>	76.3	119
435.gromacs	<u>291</u>	<u>24.5</u>	289	24.7	291	24.5	273	26.1	274	26.0	<u>274</u>	<u>26.0</u>
436.cactusADM	39.9	299	<u>45.5</u>	<u>263</u>	45.9	260	39.9	299	<u>45.5</u>	<u>263</u>	45.9	260
437.leslie3d	<u>86.4</u>	<u>109</u>	90.6	104	85.8	110	<u>86.4</u>	<u>109</u>	90.6	104	85.8	110
444.namd	367	21.8	<u>368</u>	<u>21.8</u>	368	21.8	361	22.2	<u>361</u>	<u>22.2</u>	362	22.2
447.dealII	255	44.8	<u>256</u>	<u>44.7</u>	256	44.7	255	44.8	<u>256</u>	<u>44.7</u>	256	44.7
450.soplex	237	35.2	239	35.0	<u>238</u>	<u>35.1</u>	237	35.2	239	35.0	<u>238</u>	<u>35.1</u>
453.povray	155	34.4	154	34.6	<u>155</u>	<u>34.4</u>	122	43.6	122	43.6	<u>122</u>	<u>43.6</u>
454.calculix	251	32.8	<u>252</u>	<u>32.8</u>	252	32.7	222	37.1	<u>223</u>	<u>37.1</u>	223	37.0
459.GemsFDTD	<u>131</u>	<u>81.1</u>	126	84.3	146	72.4	140	75.9	121	87.4	<u>129</u>	<u>82.3</u>
465.tonto	<u>355</u>	<u>27.7</u>	352	28.0	356	27.6	265	37.2	265	37.1	<u>265</u>	<u>37.1</u>
470.lbm	55.8	246	<u>47.0</u>	<u>292</u>	46.8	293	55.8	246	<u>47.0</u>	<u>292</u>	46.8	293
481.wrf	<u>221</u>	<u>50.6</u>	219	51.0	223	50.1	<u>221</u>	<u>50.6</u>	219	51.0	223	50.1
482.sphinx3	342	57.0	335	58.2	<u>336</u>	<u>58.0</u>	303	64.3	301	64.8	<u>302</u>	<u>64.6</u>

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
'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

Load Default BIOS Settings and then change the following
Turbo Mode enabled
Turbo Boost set to Traditional
Power C-states enabled
Demand Scrub disabled



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General Notes

OMP_NUM_THREADS set to number of cores

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.dealIII: 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: basepeak = yes

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.20110303.01.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.20110303.01.xml>



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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 16:17:57 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 3 March 2011.