



SPEC[®] CFP2006 Result

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IBM Corporation

SPECfp[®]2006 = **63.3**

IBM System x3620 M3 (Intel Xeon X5672)

SPECfp_base2006 = **58.8**

CPU2006 license: 11

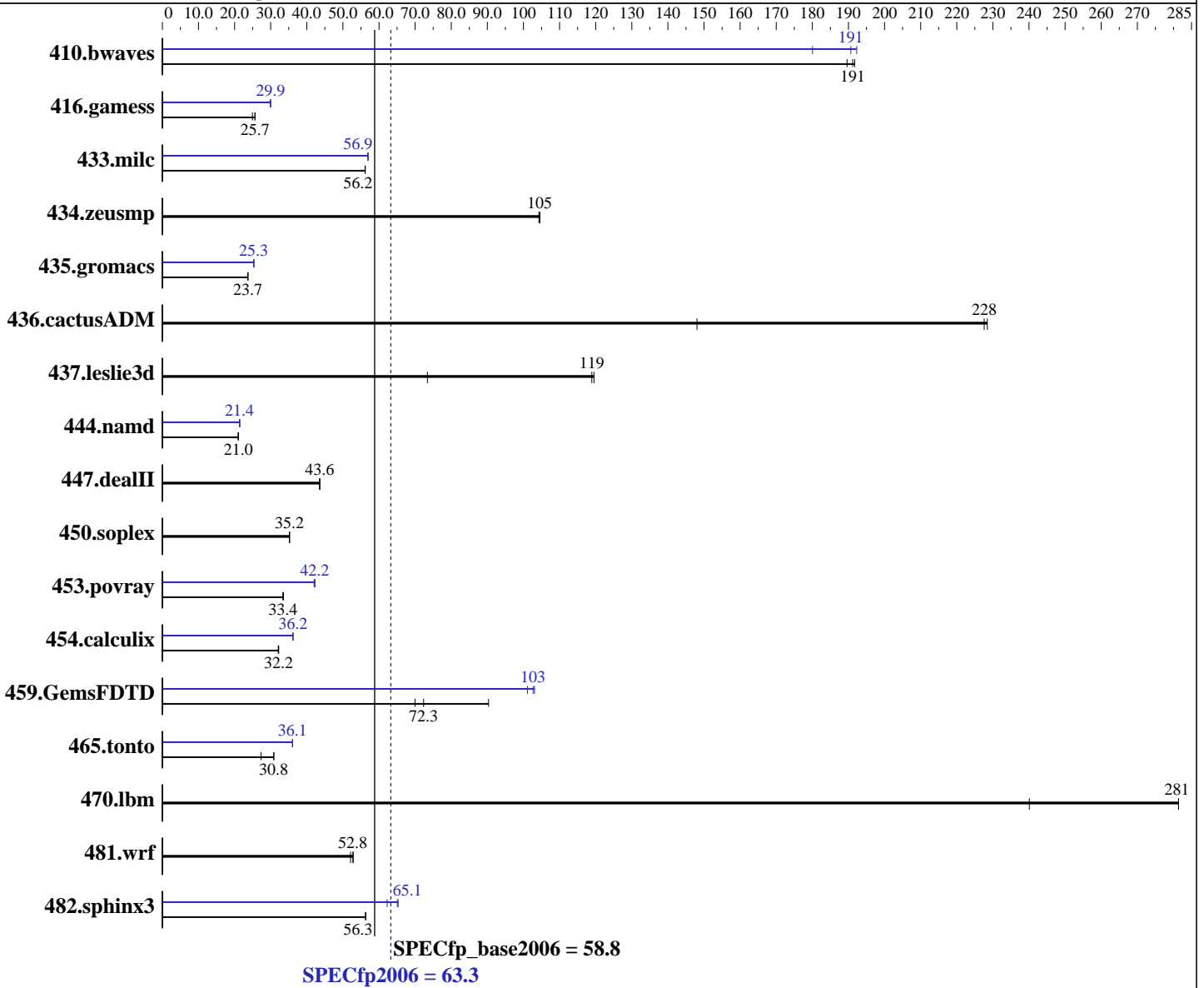
Test date: Mar-2011

Test sponsor: IBM Corporation

Hardware Availability: Feb-2011

Tested by: IBM Corporation

Software Availability: Jan-2011



Hardware

CPU Name: Intel Xeon X5672
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
 CPU MHz: 3200
 FPU: Integrated
 CPU(s) enabled: 8 cores, 2 chips, 4 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: 96 GB (12 x 8 GB 2Rx4 PC3-10600R-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					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	70.9	192	<u>71.1</u>	<u>191</u>	71.7	190	75.5	180	70.7	192	<u>71.3</u>	<u>191</u>
416.gamess	<u>763</u>	<u>25.7</u>	763	25.7	785	24.9	653	30.0	<u>654</u>	<u>29.9</u>	654	29.9
433.milc	163	56.2	<u>163</u>	<u>56.2</u>	164	56.1	161	56.9	161	57.0	<u>161</u>	<u>56.9</u>
434.zeusmp	87.3	104	<u>87.1</u>	<u>105</u>	87.1	105	87.3	104	<u>87.1</u>	<u>105</u>	87.1	105
435.gromacs	302	23.7	<u>301</u>	<u>23.7</u>	301	23.7	281	25.4	282	25.3	<u>282</u>	<u>25.3</u>
436.cactusADM	<u>52.5</u>	<u>228</u>	52.3	228	80.7	148	<u>52.5</u>	<u>228</u>	52.3	228	80.7	148
437.leslie3d	<u>79.0</u>	<u>119</u>	78.6	120	128	73.4	<u>79.0</u>	<u>119</u>	78.6	120	128	73.4
444.namd	<u>381</u>	<u>21.0</u>	381	21.0	381	21.0	<u>375</u>	<u>21.4</u>	374	21.4	375	21.4
447.dealII	263	43.6	<u>263</u>	<u>43.6</u>	263	43.6	263	43.6	<u>263</u>	<u>43.6</u>	263	43.6
450.soplex	<u>237</u>	<u>35.2</u>	237	35.2	237	35.2	<u>237</u>	<u>35.2</u>	237	35.2	237	35.2
453.povray	159	33.6	159	33.4	<u>159</u>	<u>33.4</u>	126	42.2	127	42.0	<u>126</u>	<u>42.2</u>
454.calculix	256	32.2	<u>256</u>	<u>32.2</u>	257	32.1	228	36.2	228	36.2	<u>228</u>	<u>36.2</u>
459.GemsFDTD	117	90.3	<u>147</u>	<u>72.3</u>	152	70.0	103	103	<u>103</u>	<u>103</u>	105	101
465.tonto	<u>319</u>	<u>30.8</u>	319	30.9	360	27.3	273	36.0	<u>273</u>	<u>36.1</u>	273	36.1
470.lbm	<u>48.8</u>	<u>281</u>	48.8	281	57.2	240	<u>48.8</u>	<u>281</u>	48.8	281	57.2	240
481.wrf	211	52.9	214	52.1	<u>212</u>	<u>52.8</u>	211	52.9	214	52.1	<u>212</u>	<u>52.8</u>
482.sphinx3	346	56.3	346	56.3	<u>346</u>	<u>56.3</u>	313	62.2	299	65.3	<u>300</u>	<u>65.1</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

Turbo Mode enabled in BIOS
Turbo Boost set to Traditional in BIOS
Power C-State enabled in BIOS
Data Reuse disabled in BIOS
Demand Scrub disabled in BIOS



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General Notes

OMP_NUM_THREADS set to number of cores
Binaries 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.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: -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 15:50:29 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 29 March 2011.