



# SPEC® CFP2006 Result

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## IBM Corporation

**SPECfp®2006 = 58.5**

### IBM System x3100 M4 (Intel Xeon E3-1225)

**SPECfp\_base2006 = 56.9**

CPU2006 license: 11

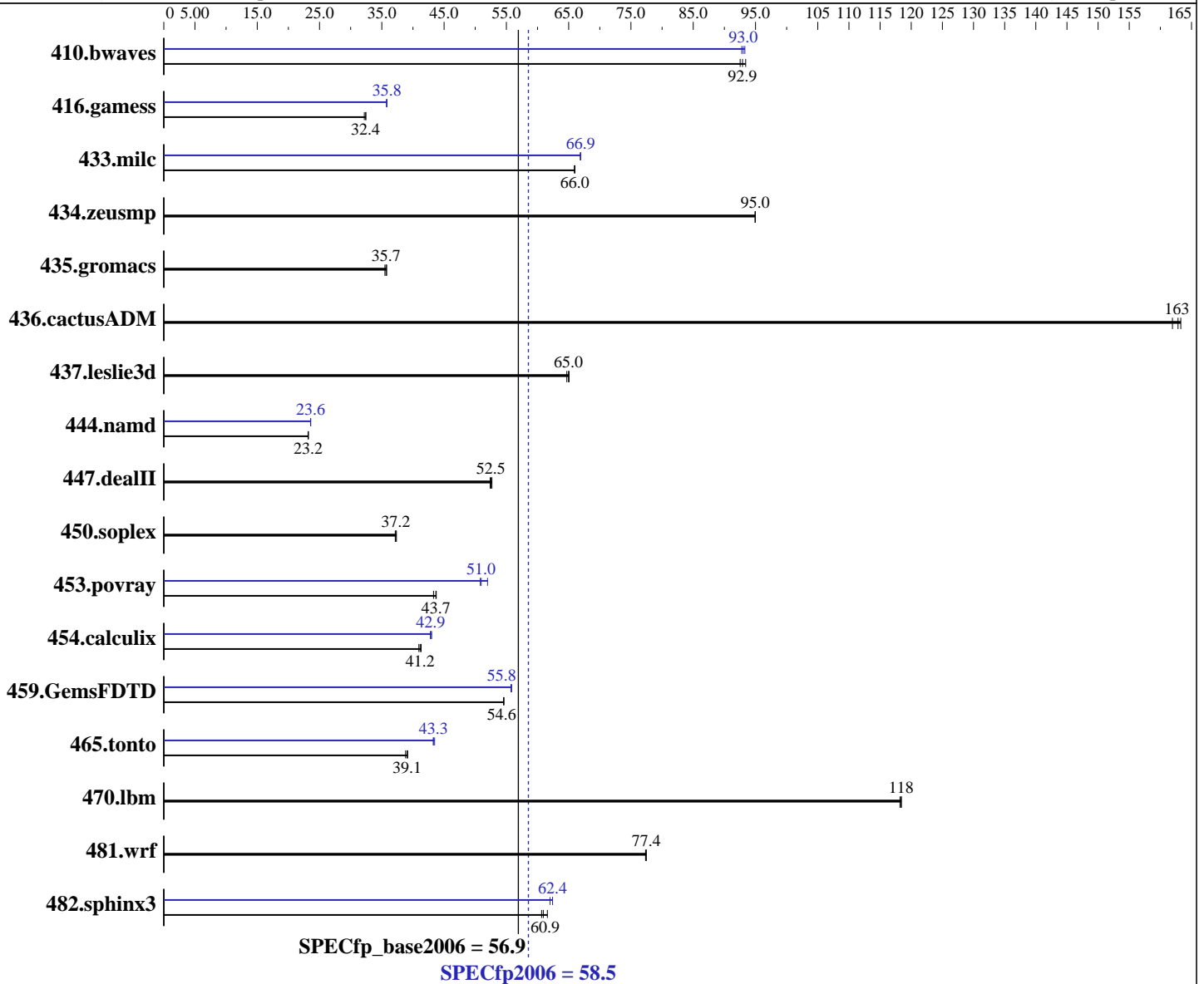
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Dec-2011

Hardware Availability: Oct-2011

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

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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: Yes  
 File System: ext4  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: 6 MB I+D on chip per chip  
Other Cache: None  
Memory: 8 GB (2 x 4 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					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	147	92.5	145	93.4	<b>146</b>	<b>92.9</b>	<b>146</b>	<b>93.0</b>	146	92.8	146	93.3
416.gamess	608	32.2	<b>604</b>	<b>32.4</b>	604	32.4	548	35.7	547	35.8	<b>547</b>	<b>35.8</b>
433.milc	<b>139</b>	<b>66.0</b>	139	66.0	139	65.9	137	66.9	137	66.9	<b>137</b>	<b>66.9</b>
434.zeusmp	95.8	95.0	<b>95.8</b>	<b>95.0</b>	95.8	95.0	95.8	95.0	<b>95.8</b>	<b>95.0</b>	95.8	95.0
435.gromacs	<b>200</b>	<b>35.7</b>	201	35.5	200	35.8	<b>200</b>	<b>35.7</b>	201	35.5	200	35.8
436.cactusADM	73.2	163	73.8	162	<b>73.4</b>	<b>163</b>	73.2	163	73.8	162	<b>73.4</b>	<b>163</b>
437.leslie3d	144	65.1	145	64.7	<b>145</b>	<b>65.0</b>	144	65.1	145	64.7	<b>145</b>	<b>65.0</b>
444.namd	346	23.2	<b>346</b>	<b>23.2</b>	346	23.2	340	23.6	340	23.6	<b>340</b>	<b>23.6</b>
447.dealII	<b>218</b>	<b>52.5</b>	218	52.4	217	52.7	<b>218</b>	<b>52.5</b>	218	52.4	217	52.7
450.soplex	223	37.4	224	37.2	<b>224</b>	<b>37.2</b>	223	37.4	224	37.2	<b>224</b>	<b>37.2</b>
453.povray	123	43.3	122	43.7	<b>122</b>	<b>43.7</b>	105	50.8	<b>104</b>	<b>51.0</b>	102	52.0
454.calculix	200	41.3	201	40.9	<b>200</b>	<b>41.2</b>	<b>192</b>	<b>42.9</b>	192	43.0	193	42.8
459.GemsFDTD	<b>194</b>	<b>54.6</b>	194	54.6	194	54.6	<b>190</b>	<b>55.8</b>	190	55.7	190	55.8
465.tonto	<b>252</b>	<b>39.1</b>	254	38.8	251	39.2	<b>227</b>	<b>43.3</b>	226	43.5	227	43.3
470.lbm	<b>116</b>	<b>118</b>	116	118	116	118	<b>116</b>	<b>118</b>	116	118	116	118
481.wrf	144	77.5	<b>144</b>	<b>77.4</b>	144	77.3	144	77.5	<b>144</b>	<b>77.4</b>	144	77.3
482.sphinx3	321	60.7	<b>320</b>	<b>60.9</b>	316	61.6	<b>312</b>	<b>62.4</b>	312	62.4	314	62.0

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

### Platform Notes

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

### General Notes

Environment variables set by runspec before the start of the run:  
KMP\_AFFINITY = "granularity=fine,scatter"  
LD\_LIBRARY\_PATH = "/root/SPECcpu12.1/smartheap:/root/SPECcpu12.1/ic12.1-libs/ia32:/root/SPECcpu12.1/ic12.1-libs/intel64"  
OMP\_NUM\_THREADS = "4"

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"

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## General Notes (Continued)

Transparent Huge Pages enabled with:  
echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled  
Filesystem page cache cleared with:  
echo 1> /proc/sys/vm/drop\_caches

## 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:

-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch  
-ansi-alias

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## Base Optimization Flags (Continued)

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

-xAVX -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: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

C++ benchmarks:

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## Peak Optimization Flags (Continued)

444.namd: -xAVX(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

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

### Fortran benchmarks:

410.bwaves: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel  
-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: basepeak = yes

459.GemsFDTD: -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 -opt-prefetch -parallel

465.tonto: -xAVX(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

### Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -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-ic12.1-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>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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