



# SPEC<sup>®</sup> CFP2006 Result

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## IBM Corporation

SPECfp<sup>®</sup>2006 = 43.4

### IBM System x3250 M4 (Intel Pentium G850)

SPECfp\_base2006 = 42.6

CPU2006 license: 11

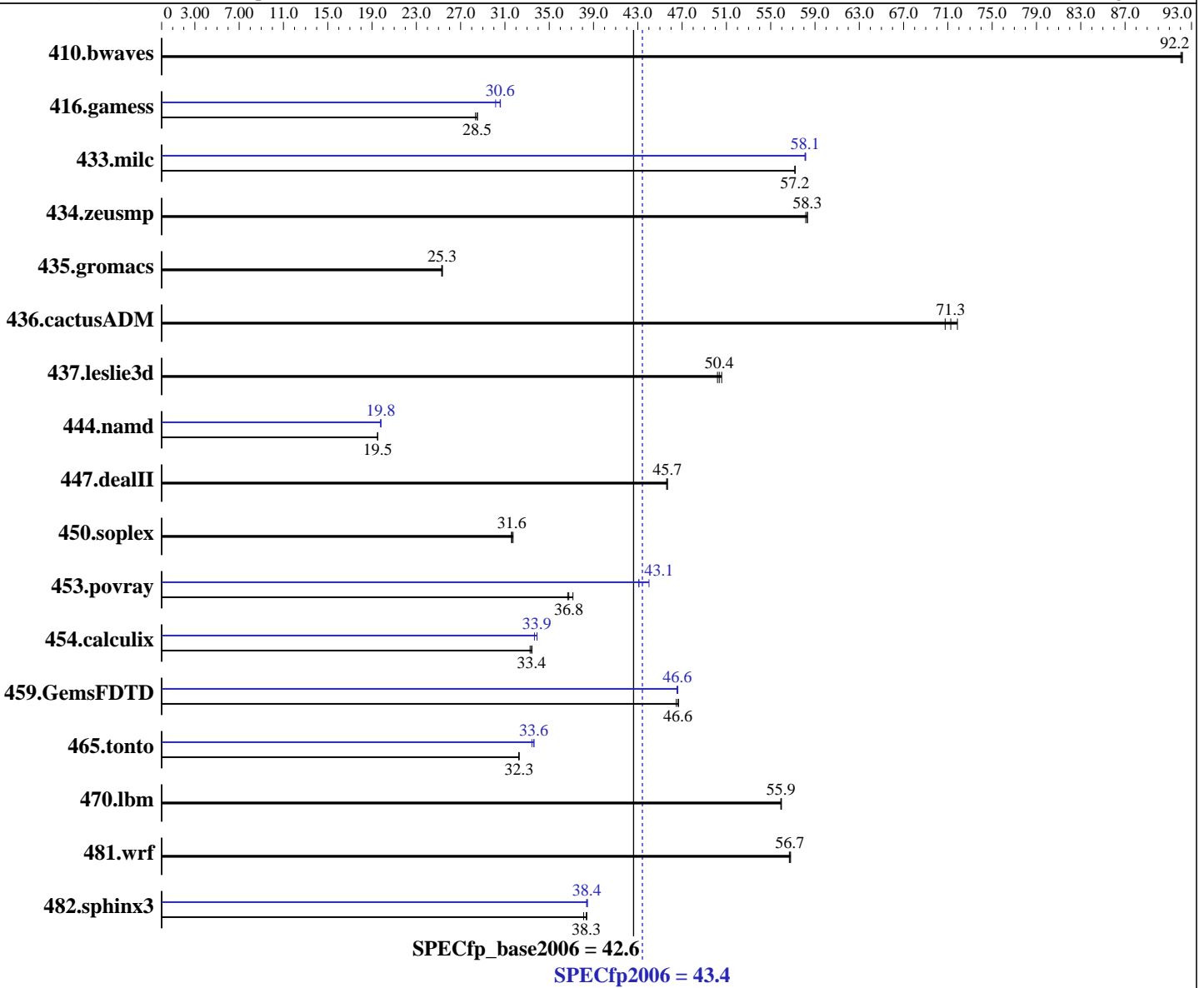
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Nov-2011

Hardware Availability: Oct-2011

Software Availability: Aug-2011



#### Hardware

CPU Name: Intel Pentium G850  
 CPU Characteristics:  
 CPU MHz: 2900  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 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: 3 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 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	148	92.0	<b>147</b>	<b>92.2</b>	147	92.2	148	92.0	<b>147</b>	<b>92.2</b>	147	92.2
416.gamess	691	28.3	687	28.5	<b>687</b>	<b>28.5</b>	649	30.2	<b>641</b>	<b>30.6</b>	640	30.6
433.milc	160	57.2	161	57.2	<b>161</b>	<b>57.2</b>	<b>158</b>	<b>58.1</b>	158	58.1	158	58.2
434.zeusmp	156	58.2	<b>156</b>	<b>58.3</b>	156	58.3	156	58.2	<b>156</b>	<b>58.3</b>	156	58.3
435.gromacs	282	25.4	<b>282</b>	<b>25.3</b>	282	25.3	282	25.4	<b>282</b>	<b>25.3</b>	282	25.3
436.cactusADM	<b>168</b>	<b>71.3</b>	169	70.8	166	71.9	<b>168</b>	<b>71.3</b>	169	70.8	166	71.9
437.leslie3d	<b>187</b>	<b>50.4</b>	186	50.6	187	50.2	<b>187</b>	<b>50.4</b>	186	50.6	187	50.2
444.namd	<b>411</b>	<b>19.5</b>	411	19.5	411	19.5	405	19.8	<b>405</b>	<b>19.8</b>	406	19.8
447.dealII	251	45.6	<b>250</b>	<b>45.7</b>	250	45.7	251	45.6	<b>250</b>	<b>45.7</b>	250	45.7
450.soplex	<b>264</b>	<b>31.6</b>	264	31.6	263	31.7	<b>264</b>	<b>31.6</b>	264	31.6	263	31.7
453.povray	<b>145</b>	<b>36.8</b>	145	36.7	143	37.1	123	43.1	<b>123</b>	<b>43.1</b>	121	44.0
454.calculix	247	33.4	248	33.3	<b>247</b>	<b>33.4</b>	245	33.7	<b>243</b>	<b>33.9</b>	243	33.9
459.GemsFDTD	228	46.5	<b>228</b>	<b>46.6</b>	227	46.7	228	46.5	228	46.6	<b>228</b>	<b>46.6</b>
465.tonto	<b>305</b>	<b>32.3</b>	305	32.2	305	32.3	293	33.6	294	33.4	<b>293</b>	<b>33.6</b>
470.lbm	<b>246</b>	<b>55.9</b>	246	55.9	245	56.0	<b>246</b>	<b>55.9</b>	246	55.9	245	56.0
481.wrf	<b>197</b>	<b>56.7</b>	197	56.7	197	56.8	<b>197</b>	<b>56.7</b>	197	56.7	197	56.8
482.sphinx3	511	38.1	508	38.4	<b>508</b>	<b>38.3</b>	<b>508</b>	<b>38.4</b>	508	38.4	507	38.5

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

## Platform Notes

BIOS Settings:  
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 = "2"

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 enabled with:

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## General Notes (Continued)

```
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:

```
-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

### 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

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

### Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

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-ic12.1-linux64.html>

<http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revB.20111206.html>

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

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