



# SPEC® CFP2006 Result

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## IBM Corporation

SPECfp®2006 = 42.3

### IBM System x3250 M4 (Intel Pentium G840)

SPECfp\_base2006 = 41.5

CPU2006 license: 11

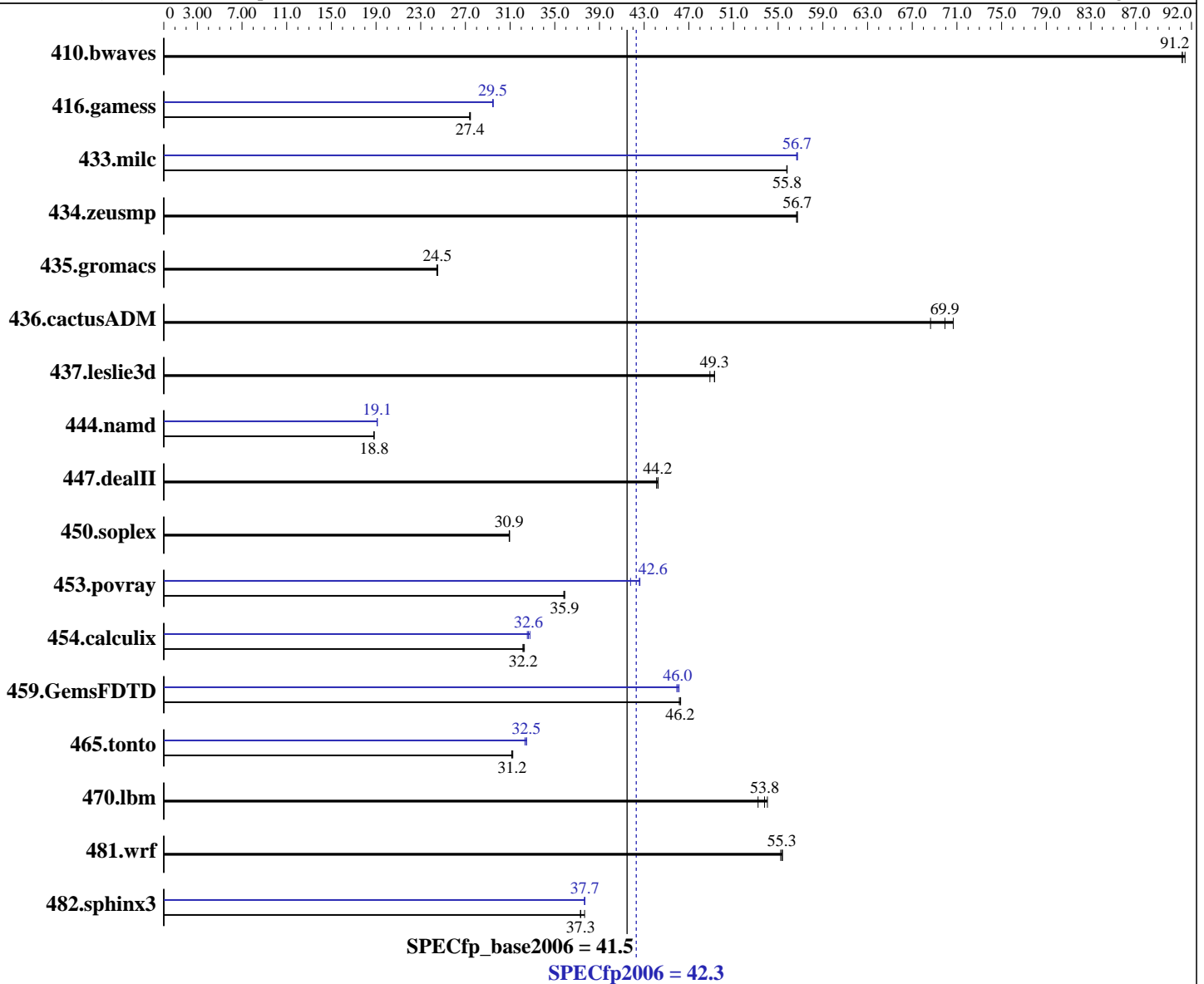
Test date: Nov-2011

Test sponsor: IBM Corporation

Hardware Availability: Oct-2011

Tested by: IBM Corporation

Software Availability: Aug-2011



### Hardware

CPU Name: Intel Pentium G840  
 CPU Characteristics:  
 CPU MHz: 2800  
 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    | <b>149</b> | <b>91.2</b> | 149        | 91.4        | 149        | 91.2        | <b>149</b> | <b>91.2</b> | 149        | 91.4        | 149        | 91.2        |
| 416.gamess    | 713        | 27.5        | <b>714</b> | <b>27.4</b> | 715        | 27.4        | <b>665</b> | <b>29.5</b> | 664        | 29.5        | 665        | 29.4        |
| 433.milc      | <b>165</b> | <b>55.8</b> | 165        | 55.8        | 165        | 55.8        | 162        | 56.7        | <b>162</b> | <b>56.7</b> | 162        | 56.7        |
| 434.zeusmp    | 160        | 56.7        | 161        | 56.6        | <b>160</b> | <b>56.7</b> | 160        | 56.7        | 161        | 56.6        | <b>160</b> | <b>56.7</b> |
| 435.gromacs   | 292        | 24.4        | 291        | 24.5        | <b>292</b> | <b>24.5</b> | 292        | 24.4        | 291        | 24.5        | <b>292</b> | <b>24.5</b> |
| 436.cactusADM | <b>171</b> | <b>69.9</b> | 174        | 68.6        | 169        | 70.7        | <b>171</b> | <b>69.9</b> | 174        | 68.6        | 169        | 70.7        |
| 437.leslie3d  | <b>191</b> | <b>49.3</b> | 191        | 49.3        | 192        | 48.9        | <b>191</b> | <b>49.3</b> | 191        | 49.3        | 192        | 48.9        |
| 444.namd      | <b>426</b> | <b>18.8</b> | 426        | 18.8        | 426        | 18.8        | 420        | 19.1        | 420        | 19.1        | <b>420</b> | <b>19.1</b> |
| 447.dealII    | 259        | 44.2        | <b>259</b> | <b>44.2</b> | 259        | 44.1        | 259        | 44.2        | <b>259</b> | <b>44.2</b> | 259        | 44.1        |
| 450.soplex    | 270        | 30.9        | 269        | 31.0        | <b>270</b> | <b>30.9</b> | 270        | 30.9        | 269        | 31.0        | <b>270</b> | <b>30.9</b> |
| 453.povray    | <b>148</b> | <b>35.9</b> | 148        | 35.9        | 149        | 35.8        | <b>125</b> | <b>42.6</b> | 127        | 41.8        | 125        | 42.6        |
| 454.calculix  | 257        | 32.2        | 256        | 32.3        | <b>256</b> | <b>32.2</b> | <b>253</b> | <b>32.6</b> | 252        | 32.8        | 254        | 32.5        |
| 459.GemsFDTD  | <b>230</b> | <b>46.2</b> | 230        | 46.1        | 229        | 46.3        | 231        | 45.9        | 230        | 46.1        | <b>231</b> | <b>46.0</b> |
| 465.tonto     | 316        | 31.1        | <b>316</b> | <b>31.2</b> | 315        | 31.2        | 303        | 32.5        | <b>303</b> | <b>32.5</b> | 304        | 32.3        |
| 470.lbm       | 258        | 53.2        | 254        | 54.0        | <b>255</b> | <b>53.8</b> | 258        | 53.2        | 254        | 54.0        | <b>255</b> | <b>53.8</b> |
| 481.wrf       | 202        | 55.2        | 202        | 55.4        | <b>202</b> | <b>55.3</b> | 202        | 55.2        | 202        | 55.4        | <b>202</b> | <b>55.3</b> |
| 482.sphinx3   | 517        | 37.7        | 523        | 37.3        | <b>522</b> | <b>37.3</b> | <b>517</b> | <b>37.7</b> | 518        | 37.7        | 517        | 37.7        |

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:

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-linux64.xml>

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



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