



# SPEC® CFP2006 Result

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## IBM Corporation

**SPECfp®2006 = 61.8**

IBM System x iDataPlex dx360 M3 (Intel Xeon X5675)

**SPECfp\_base2006 = 57.6**

CPU2006 license: 11

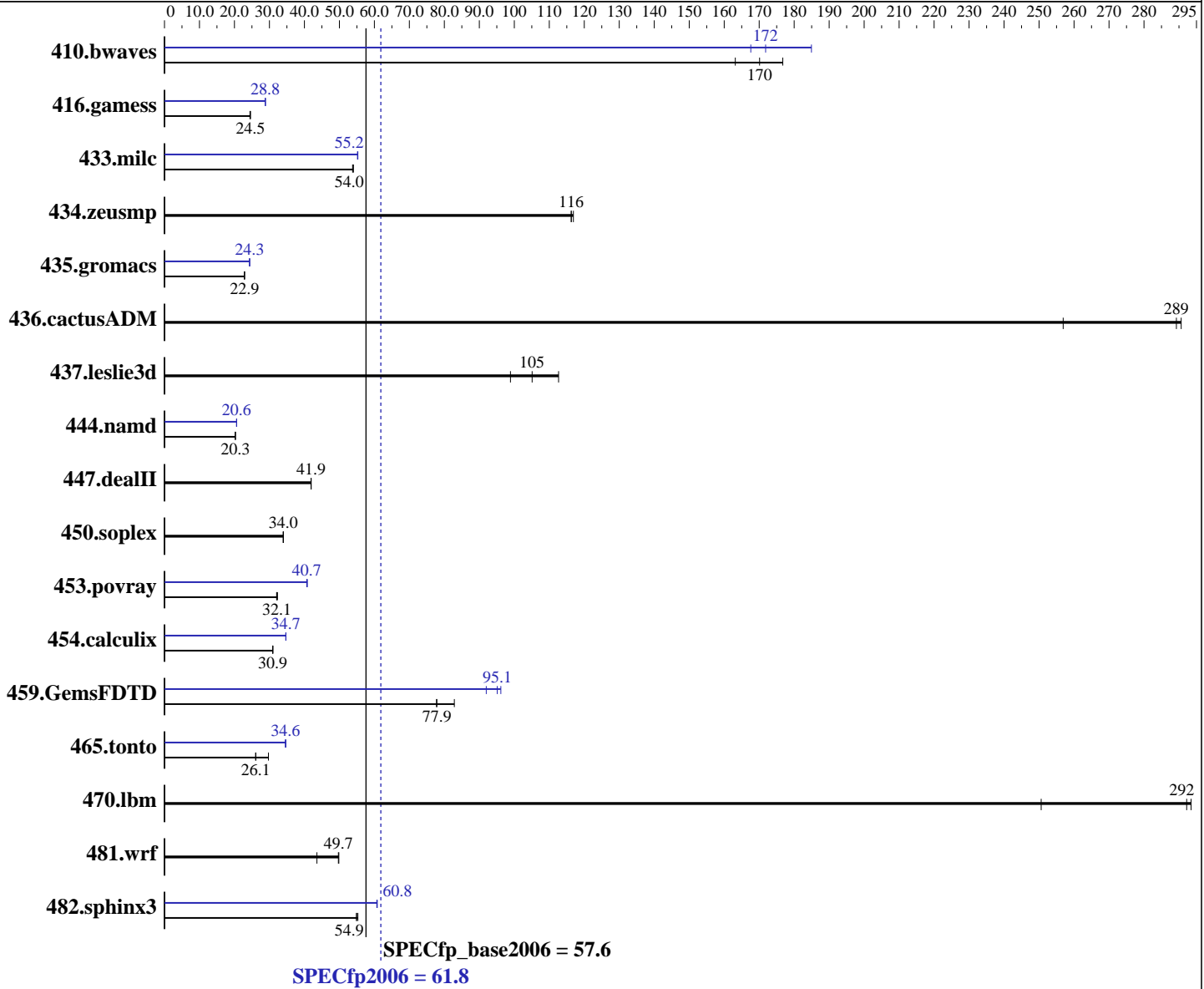
Test date: Feb-2011

Test sponsor: IBM Corporation

Hardware Availability: Feb-2011

Tested by: IBM Corporation

Software Availability: Apr-2011



**Hardware**

CPU Name: Intel Xeon X5675  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.46 GHz  
 CPU MHz: 3067  
 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: 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	<b><u>79.9</u></b>	<b><u>170</u></b>	83.3	163	76.9	177	73.5	185	81.1	168	<b><u>79.1</u></b>	<b><u>172</u></b>
416.gamess	<b><u>798</u></b>	<b><u>24.5</u></b>	801	24.4	797	24.6	680	28.8	<b><u>679</u></b>	<b><u>28.8</u></b>	679	28.8
433.milc	171	53.8	170	54.0	<b><u>170</u></b>	<b><u>54.0</u></b>	166	55.2	166	55.3	<b><u>166</u></b>	<b><u>55.2</u></b>
434.zeusmp	78.3	116	<b><u>78.3</u></b>	<b><u>116</u></b>	77.9	117	78.3	116	<b><u>78.3</u></b>	<b><u>116</u></b>	77.9	117
435.gromacs	312	22.9	313	22.8	<b><u>312</u></b>	<b><u>22.9</u></b>	<b><u>293</u></b>	<b><u>24.3</u></b>	293	24.3	294	24.3
436.cactusADM	46.5	257	41.1	291	<b><u>41.3</u></b>	<b><u>289</u></b>	46.5	257	41.1	291	<b><u>41.3</u></b>	<b><u>289</u></b>
437.leslie3d	83.4	113	<b><u>89.4</u></b>	<b><u>105</u></b>	95.0	98.9	83.4	113	<b><u>89.4</u></b>	<b><u>105</u></b>	95.0	98.9
444.namd	<b><u>396</u></b>	<b><u>20.3</u></b>	396	20.3	396	20.2	<b><u>389</u></b>	<b><u>20.6</u></b>	389	20.6	389	20.6
447.dealII	273	41.9	273	41.9	<b><u>273</u></b>	<b><u>41.9</u></b>	273	41.9	273	41.9	<b><u>273</u></b>	<b><u>41.9</u></b>
450.soplex	<b><u>246</u></b>	<b><u>34.0</u></b>	246	33.9	245	34.0	<b><u>246</u></b>	<b><u>34.0</u></b>	246	33.9	245	34.0
453.povray	<b><u>166</u></b>	<b><u>32.1</u></b>	165	32.3	166	32.1	<b><u>131</u></b>	<b><u>40.7</u></b>	131	40.7	130	40.8
454.calculix	266	31.0	<b><u>267</u></b>	<b><u>30.9</u></b>	267	30.9	238	34.7	<b><u>238</u></b>	<b><u>34.7</u></b>	238	34.7
459.GemsFDTD	<b><u>136</u></b>	<b><u>77.9</u></b>	128	82.9	136	77.7	110	96.2	115	92.0	<b><u>112</u></b>	<b><u>95.1</u></b>
465.tonto	331	29.7	378	26.0	<b><u>377</u></b>	<b><u>26.1</u></b>	284	34.6	<b><u>284</u></b>	<b><u>34.6</u></b>	284	34.7
470.lbm	<b><u>47.0</u></b>	<b><u>292</u></b>	46.8	293	54.8	251	<b><u>47.0</u></b>	<b><u>292</u></b>	46.8	293	54.8	251
481.wrf	224	49.8	256	43.6	<b><u>225</u></b>	<b><u>49.7</u></b>	224	49.8	256	43.6	<b><u>225</u></b>	<b><u>49.7</u></b>
482.sphinx3	353	55.3	<b><u>355</u></b>	<b><u>54.9</u></b>	355	54.9	321	60.7	321	60.8	<b><u>321</u></b>	<b><u>60.8</u></b>

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

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