



# SPEC® CFP2006 Result

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## IBM Corporation

SPECfp®2006 = **45.6**

### IBM System x3690 X5 (Intel Xeon E7-2830)

SPECfp\_base2006 = **42.5**

CPU2006 license: 11

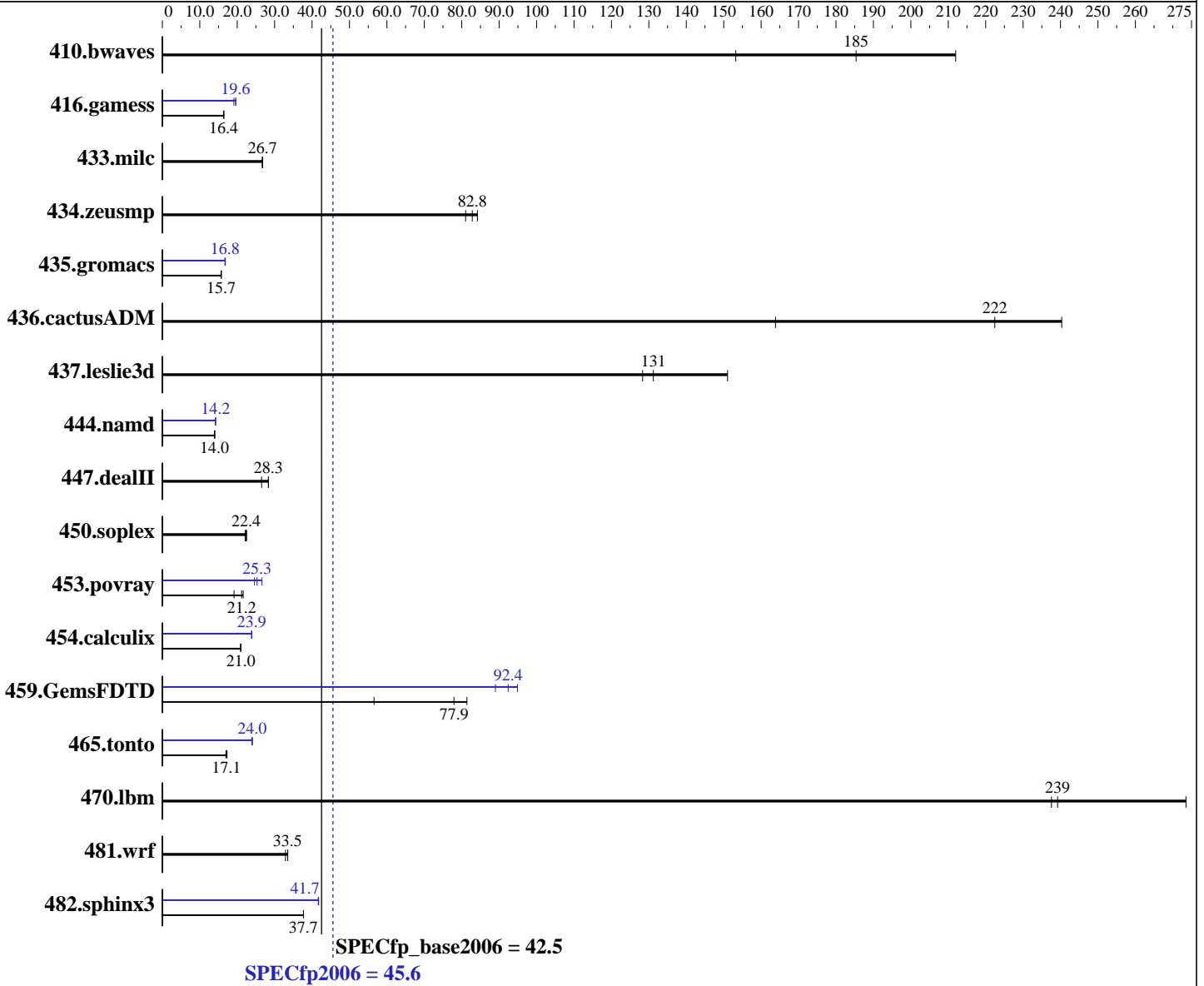
Test date: May-2011

Test sponsor: IBM Corporation

Hardware Availability: May-2011

Tested by: IBM Corporation

Software Availability: Apr-2011



**Hardware**

CPU Name: Intel Xeon E7-2830  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.40 GHz  
 CPU MHz: 2133  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 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: 24 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (32 x 8 GB 4Rx8 PC3-8500R-7, ECC)  
Disk Subsystem: 1 x 300 GB SAS, 10000 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	88.7	153	64.1	212	<b>73.3</b>	<b>185</b>	88.7	153	64.1	212	<b>73.3</b>	<b>185</b>
416.gamess	<b>1197</b>	<b>16.4</b>	1188	16.5	1199	16.3	1025	19.1	<b>999</b>	<b>19.6</b>	998	19.6
433.milc	343	26.7	<b>343</b>	<b>26.7</b>	343	26.8	343	26.7	<b>343</b>	<b>26.7</b>	343	26.8
434.zeusmp	112	81.0	<b>110</b>	<b>82.8</b>	108	84.2	112	81.0	<b>110</b>	<b>82.8</b>	108	84.2
435.gromacs	<b>454</b>	<b>15.7</b>	456	15.7	453	15.8	424	16.8	427	16.7	<b>426</b>	<b>16.8</b>
436.cactusADM	49.7	240	72.9	164	<b>53.7</b>	<b>222</b>	49.7	240	72.9	164	<b>53.7</b>	<b>222</b>
437.leslie3d	62.2	151	73.3	128	<b>71.6</b>	<b>131</b>	62.2	151	73.3	128	<b>71.6</b>	<b>131</b>
444.namd	574	14.0	<b>574</b>	<b>14.0</b>	574	14.0	<b>564</b>	<b>14.2</b>	564	14.2	565	14.2
447.dealII	431	26.5	404	28.3	<b>404</b>	<b>28.3</b>	431	26.5	404	28.3	<b>404</b>	<b>28.3</b>
450.soplex	377	22.1	370	22.5	<b>372</b>	<b>22.4</b>	377	22.1	370	22.5	<b>372</b>	<b>22.4</b>
453.povray	278	19.2	<b>251</b>	<b>21.2</b>	246	21.6	216	24.6	200	26.6	<b>210</b>	<b>25.3</b>
454.calculix	393	21.0	395	20.9	<b>393</b>	<b>21.0</b>	346	23.8	<b>346</b>	<b>23.9</b>	345	23.9
459.GemsFDTD	130	81.4	188	56.6	<b>136</b>	<b>77.9</b>	112	94.9	119	89.0	<b>115</b>	<b>92.4</b>
465.tonto	579	17.0	<b>575</b>	<b>17.1</b>	569	17.3	409	24.1	412	23.9	<b>410</b>	<b>24.0</b>
470.lbm	57.8	238	50.2	274	<b>57.4</b>	<b>239</b>	57.8	238	50.2	274	<b>57.4</b>	<b>239</b>
481.wrf	<b>334</b>	<b>33.5</b>	333	33.5	339	32.9	<b>334</b>	<b>33.5</b>	333	33.5	339	32.9
482.sphinx3	517	37.7	<b>517</b>	<b>37.7</b>	517	37.7	467	41.8	<b>467</b>	<b>41.7</b>	468	41.7

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
'nudev /mnt/hugepages hugetlbfs defaults 0 0' added to /etc/fstab
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

## Platform Notes

Load Default BIOS Settings and then change the following  
Turbo Boost Power Optimization set to Traditional



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## General Notes

OMP\_NUM\_THREADS set to number of cores  
Binaries compiled on RHEL 5.5

## 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: basepeak = yes

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

447.dealIII: basepeak = yes

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## Peak Optimization Flags (Continued)

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: 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  
-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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