



# SPEC® CFP2006 Result

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## IBM Corporation

**SPECfp®2006 = 33.8**

## IBM BladeCenter HX5 (Intel Xeon L7545)

**SPECfp\_base2006 = 31.0**

CPU2006 license: 11

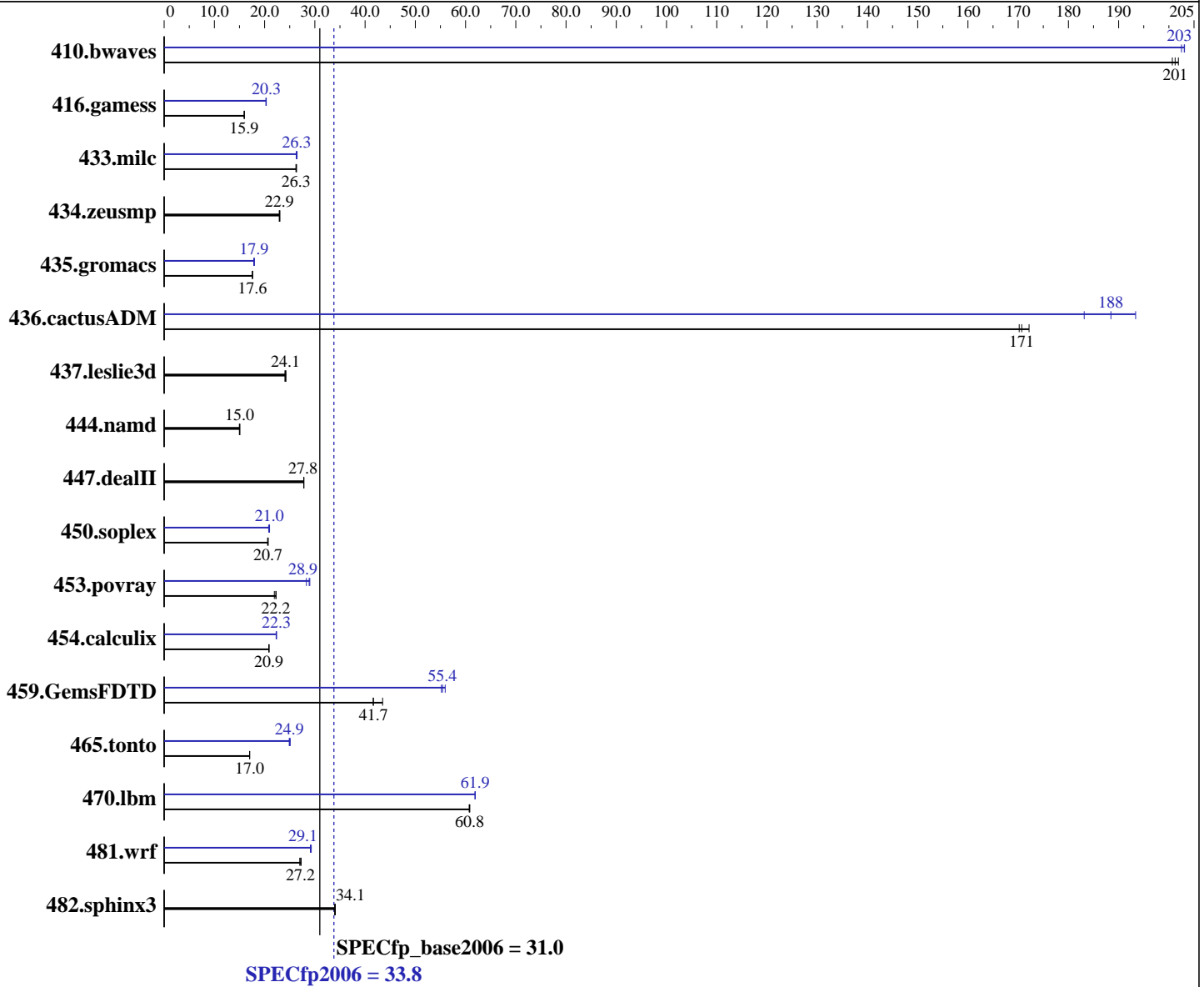
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Aug-2010

Hardware Availability: Jun-2010

Software Availability: Jan-2010



### Hardware

CPU Name: Intel Xeon L7545  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.53 GHz  
 CPU MHz: 1867  
 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 (x86\_64), Kernel 2.6.27.19-5-default  
 Compiler: Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1 Build 20091130 Package ID: l\_cproc\_p\_11.1.064, l\_cprof\_p\_11.1.064  
 Auto Parallel: Yes  
 File System: ext3  
 System State: Run level 3 (multi-user)

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L3 Cache: 18 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 128 GB (16 x 8 GB PC3-8500R CL7, Quad Rank, running at 978 MHz)  
 Disk Subsystem: 2 x 50 GB SATA, SSD, RAID 0  
 Other Hardware: None

Base Pointers: 64-bit  
 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>67.5</b>	<b>201</b>	67.7	201	67.3	202	<b>66.9</b>	<b>203</b>	66.9	203	67.1	203
416.gamess	1227	16.0	<b>1228</b>	<b>15.9</b>	1228	15.9	<b>963</b>	<b>20.3</b>	967	20.2	963	20.3
433.milc	<b>349</b>	<b>26.3</b>	348	26.4	350	26.2	347	26.5	349	26.3	<b>348</b>	<b>26.3</b>
434.zeusmp	395	23.1	<b>397</b>	<b>22.9</b>	397	22.9	395	23.1	<b>397</b>	<b>22.9</b>	397	22.9
435.gromacs	407	17.6	<b>406</b>	<b>17.6</b>	406	17.6	<b>398</b>	<b>17.9</b>	397	18.0	400	17.8
436.cactusADM	<b>70.0</b>	<b>171</b>	70.2	170	69.4	172	61.8	193	<b>63.4</b>	<b>188</b>	65.2	183
437.leslie3d	388	24.3	<b>389</b>	<b>24.1</b>	391	24.0	388	24.3	<b>389</b>	<b>24.1</b>	391	24.0
444.namd	<b>533</b>	<b>15.0</b>	536	15.0	532	15.1	<b>533</b>	<b>15.0</b>	536	15.0	532	15.1
447.dealII	412	27.8	<b>412</b>	<b>27.8</b>	411	27.8	412	27.8	<b>412</b>	<b>27.8</b>	411	27.8
450.soplex	405	20.6	403	20.7	<b>403</b>	<b>20.7</b>	<b>398</b>	<b>21.0</b>	401	20.8	397	21.0
453.povray	243	21.9	239	22.3	<b>239</b>	<b>22.2</b>	188	28.3	183	29.0	<b>184</b>	<b>28.9</b>
454.calculix	<b>396</b>	<b>20.9</b>	396	20.8	395	20.9	369	22.4	<b>369</b>	<b>22.3</b>	370	22.3
459.GemsFDTD	255	41.6	244	43.5	<b>255</b>	<b>41.7</b>	<b>191</b>	<b>55.4</b>	190	55.9	192	55.2
465.tonto	<b>579</b>	<b>17.0</b>	579	17.0	577	17.0	<b>395</b>	<b>24.9</b>	395	24.9	392	25.1
470.lbm	226	60.9	<b>226</b>	<b>60.8</b>	226	60.7	222	61.9	<b>222</b>	<b>61.9</b>	222	61.9
481.wrf	410	27.3	414	27.0	<b>411</b>	<b>27.2</b>	384	29.1	<b>383</b>	<b>29.1</b>	381	29.3
482.sphinx3	572	34.1	<b>572</b>	<b>34.1</b>	574	33.9	572	34.1	<b>572</b>	<b>34.1</b>	574	33.9

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

## Operating System Notes

```
echo 1 > /proc/sys/vm/zone_reclaim_mode
```

## Platform Notes

Turbo Boost set to Traditional

## General Notes

'ulimit -s unlimited' was used to set the stack size to unlimited prior to run  
 Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502  
 OMP\_NUM\_THREADS set to number of cores  
 KMP\_AFFINITY set to granularity=fine,scatter

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## General Notes (Continued)

KMP\_STACKSIZE set to 200M

## 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

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

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## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

`-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

## 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) -static(pass 2) -prof-use(pass 2)  
-ansi-alias`

470.lbm: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-parallel -ansi-alias -auto-ilp32`

482.sphinx3: `basepeak = yes`

C++ benchmarks:

444.namd: `basepeak = yes`

447.dealIII: `basepeak = yes`

450.soplex: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-opt-malloc-options=3 -auto-ilp32`

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## Peak Optimization Flags (Continued)

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch  
-parallel

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll2 -Ob0 -ansi-alias -scalar-rep-

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) -static(pass 2) -prof-use(pass 2)  
-unroll2 -Ob0 -opt-prefetch -parallel

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-inline-alloc -opt-malloc-options=3 -auto -unroll4

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) -static(pass 2) -prof-use(pass 2)  
-opt-prefetch -auto-ilp32

436.cactusADM: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll2 -opt-prefetch -parallel -auto-ilp32

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: Same as 454.calculix

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100929.00.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100929.00.xml>



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

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