



# SPEC<sup>®</sup> CFP2006 Result

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## IBM Corporation

SPECfp<sup>®</sup>\_rate2006 = 260

### IBM BladeCenter HS22V (Intel Xeon X5675)

SPECfp\_rate\_base2006 = 253

CPU2006 license: 11

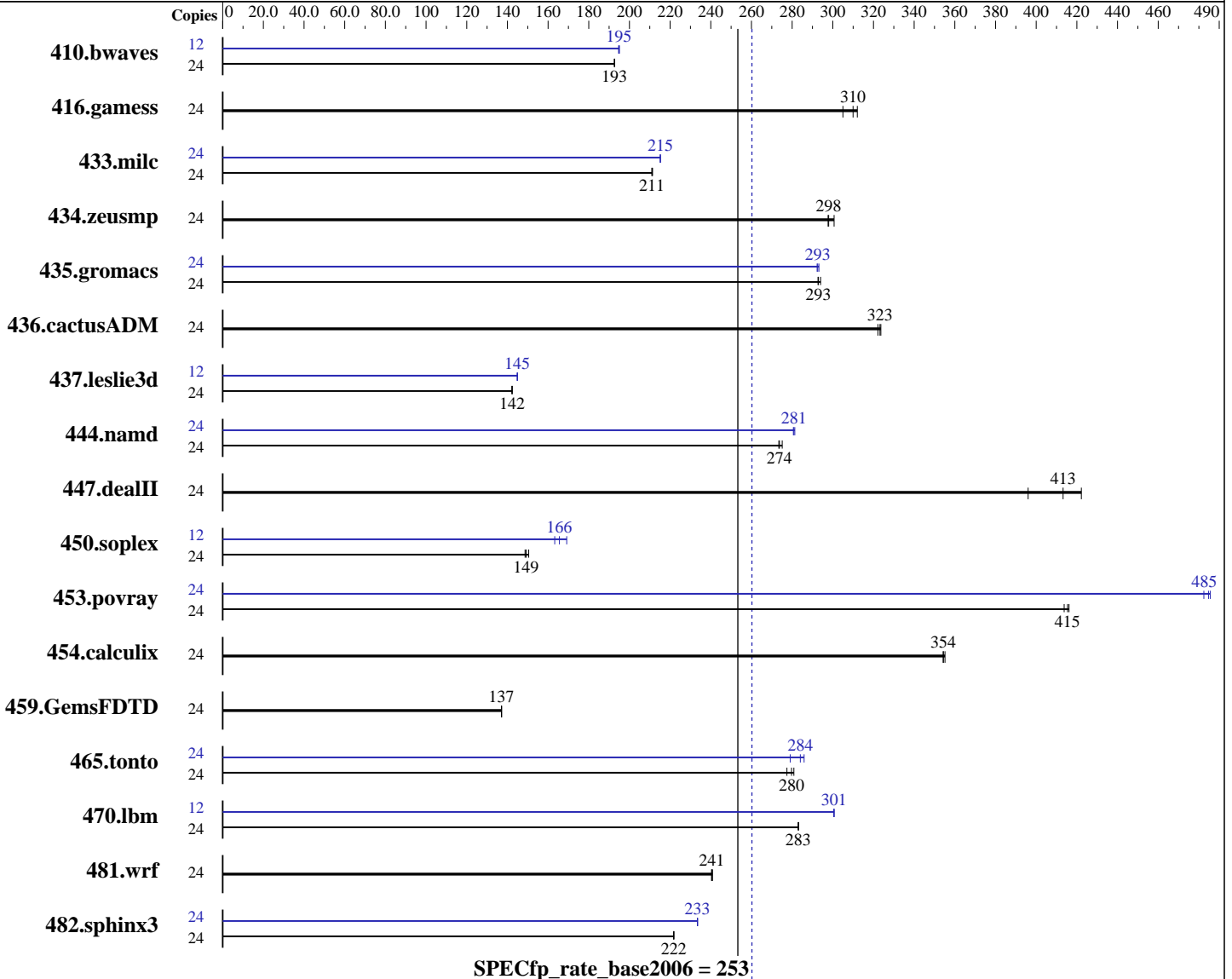
Test date: Apr-2011

Test sponsor: IBM Corporation

Hardware Availability: Feb-2011

Tested by: IBM Corporation

Software Availability: Jan-2011



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### 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 12.0.1.116 Build 20101116  
 Auto Parallel: No  
 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: 48 GB (12 x 4 GB 2Rx8 PC3-10600R-9, ECC)  
Disk Subsystem: 2 x 50 GB SATA, SSD, RAID 0  
Other Hardware: None

Peak Pointers: 32/64-bit  
Other Software: None

### Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	24	1693	193	<u>1693</u>	<u>193</u>	1693	193	12	838	195	<u>837</u>	<u>195</u>	836	195		
416.gamess	24	1541	305	1506	312	<u>1516</u>	<u>310</u>	24	1541	305	1506	312	<u>1516</u>	<u>310</u>		
433.milc	24	1042	211	<u>1044</u>	<u>211</u>	1044	211	24	<u>1024</u>	<u>215</u>	1024	215	1024	215		
434.zeusmp	24	734	298	<u>733</u>	<u>298</u>	726	301	24	734	298	<u>733</u>	<u>298</u>	726	301		
435.gromacs	24	<u>585</u>	<u>293</u>	583	294	585	293	24	586	292	<u>586</u>	<u>293</u>	585	293		
436.cactusADM	24	<u>887</u>	<u>323</u>	890	322	886	324	24	<u>887</u>	<u>323</u>	890	322	886	324		
437.leslie3d	24	<u>1585</u>	<u>142</u>	1587	142	1585	142	12	779	145	<u>779</u>	<u>145</u>	778	145		
444.namd	24	<u>703</u>	<u>274</u>	704	273	700	275	24	684	281	<u>685</u>	<u>281</u>	686	281		
447.dealII	24	<u>664</u>	<u>413</u>	693	396	650	422	24	<u>664</u>	<u>413</u>	693	396	650	422		
450.soplex	24	1330	150	1346	149	<u>1342</u>	<u>149</u>	12	613	163	<u>605</u>	<u>166</u>	592	169		
453.povray	24	<u>307</u>	<u>415</u>	307	416	309	414	24	<u>263</u>	<u>485</u>	265	482	263	486		
454.calculix	24	558	355	<u>559</u>	<u>354</u>	559	354	24	558	355	<u>559</u>	<u>354</u>	559	354		
459.GemsFDTD	24	1856	137	1858	137	<u>1858</u>	<u>137</u>	24	1856	137	1858	137	<u>1858</u>	<u>137</u>		
465.tonto	24	<u>844</u>	<u>280</u>	851	277	841	281	24	<u>831</u>	<u>284</u>	846	279	826	286		
470.lbm	24	1164	283	<u>1165</u>	<u>283</u>	1165	283	12	<u>549</u>	<u>301</u>	549	300	548	301		
481.wrf	24	<u>1115</u>	<u>241</u>	1113	241	1115	240	24	<u>1115</u>	<u>241</u>	1113	241	1115	240		
482.sphinx3	24	2108	222	2110	222	<u>2109</u>	<u>222</u>	24	2004	233	<u>2004</u>	<u>233</u>	2002	234		

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

### Submit Notes

The config file option 'submit' was used.  
numactl was used to bind copies to the cores

### Platform Notes

Load Default BIOS Settings and then change the following:  
Turbo Mode enabled  
Turbo Boost set to Traditional  
Power C-states disabled  
Demand Scrub disabled



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## General Notes

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 -ansi-alias

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static

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## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

`-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias`

## Peak Compiler Invocation

C benchmarks (except as noted below):

`icc -m64`

`482.sphinx3:icc -m32`

C++ benchmarks (except as noted below):

`icpc -m64`

`450.soplex:icpc -m32`

Fortran benchmarks:

`ifort -m64`

Benchmarks using both Fortran and C:

`icc -m64 ifort -m64`

## Peak 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.deallI: `-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`

## Peak Optimization Flags

C benchmarks:

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## Peak Optimization Flags (Continued)

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

470.lbm: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3  
-ansi-alias -opt-prefetch -static -auto-ilp32

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2

### 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.dealII: basepeak = yes

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

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(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static

416.gamess: basepeak = yes

434.zeusmp: basepeak = yes

437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

459.GemsFDTD: basepeak = yes

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) -unroll4 -auto  
-inline-calloc -opt-malloc-options=3  
-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) -opt-prefetch  
-static -auto-ilp32

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## Peak Optimization Flags (Continued)

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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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