



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 398

IBM BladeCenter HX5 (Intel Xeon L7545)

SPECfp_rate_base2006 = 384

CPU2006 license: 11

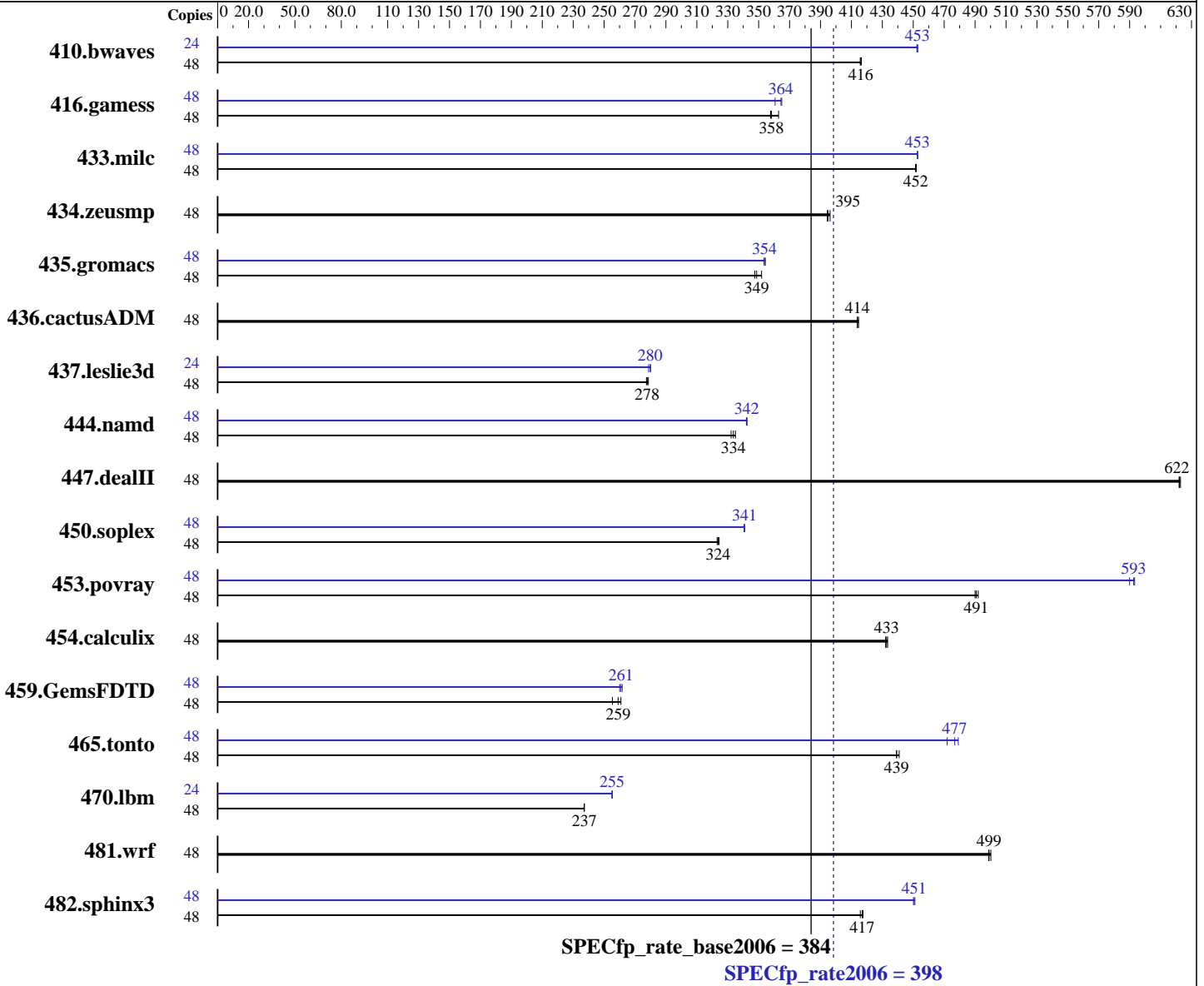
Test sponsor: IBM Corporation

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: 24 cores, 4 chips, 6 cores/chip, 2 threads/core
 CPU(s) orderable: 1,2,3,4 chips
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core

Continued on next page

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: No
 File System: ext3
 System State: Run level 3 (multi-user)

Continued on next page



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L3 Cache: 18 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (32 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 | | | | | | |
|---------------|--------|-------------|------------|-------------|------------|-------------|------------|--------|-------------|------------|-------------|------------|-------------|------------|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 48 | 1569 | 416 | 1568 | 416 | 1566 | 416 | 24 | 720 | 453 | 721 | 452 | 720 | 453 |
| 416.gamess | 48 | 2623 | 358 | 2590 | 363 | 2627 | 358 | 48 | 2575 | 365 | 2579 | 364 | 2606 | 361 |
| 433.milc | 48 | 975 | 452 | 976 | 452 | 976 | 452 | 48 | 973 | 453 | 973 | 453 | 973 | 453 |
| 434.zeusmp | 48 | 1108 | 394 | 1106 | 395 | 1103 | 396 | 48 | 1108 | 394 | 1106 | 395 | 1103 | 396 |
| 435.gromacs | 48 | 983 | 349 | 986 | 348 | 974 | 352 | 48 | 967 | 354 | 969 | 354 | 970 | 353 |
| 436.cactusADM | 48 | 1383 | 415 | 1386 | 414 | 1386 | 414 | 48 | 1383 | 415 | 1386 | 414 | 1386 | 414 |
| 437.leslie3d | 48 | 1624 | 278 | 1619 | 279 | 1627 | 277 | 24 | 806 | 280 | 809 | 279 | 805 | 280 |
| 444.namd | 48 | 1154 | 334 | 1159 | 332 | 1149 | 335 | 48 | 1125 | 342 | 1124 | 342 | 1125 | 342 |
| 447.dealII | 48 | 882 | 623 | 883 | 622 | 882 | 622 | 48 | 882 | 623 | 883 | 622 | 882 | 622 |
| 450.soplex | 48 | 1234 | 324 | 1236 | 324 | 1239 | 323 | 48 | 1175 | 341 | 1174 | 341 | 1175 | 341 |
| 453.povray | 48 | 521 | 490 | 519 | 492 | 520 | 491 | 48 | 431 | 593 | 433 | 590 | 430 | 593 |
| 454.calculix | 48 | 914 | 433 | 916 | 432 | 915 | 433 | 48 | 914 | 433 | 916 | 432 | 915 | 433 |
| 459.GemsFDTD | 48 | 1994 | 255 | 1966 | 259 | 1952 | 261 | 48 | 1958 | 260 | 1946 | 262 | 1952 | 261 |
| 465.tonto | 48 | 1071 | 441 | 1076 | 439 | 1075 | 439 | 48 | 1001 | 472 | 991 | 477 | 986 | 479 |
| 470.lbm | 48 | 2780 | 237 | 2782 | 237 | 2781 | 237 | 24 | 1291 | 255 | 1292 | 255 | 1293 | 255 |
| 481.wrf | 48 | 1074 | 499 | 1075 | 499 | 1072 | 500 | 48 | 1074 | 499 | 1075 | 499 | 1072 | 500 |
| 482.sphinx3 | 48 | 2241 | 417 | 2244 | 417 | 2250 | 416 | 48 | 2078 | 450 | 2074 | 451 | 2076 | 451 |

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

Operating System Notes

echo 1 > /proc/sys/vm/zone_reclaim_mode

Platform Notes

Turbo Boost set to Traditional



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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

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

C++ benchmarks:

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

Continued on next page



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Base Optimization Flags (Continued)

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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

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.dealII: -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



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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)
-fno-alias -opt-prefetch

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)
-opt-malloc-options=3 -ansi-alias -auto-ilp32

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

C++ benchmarks:

444.namd: -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)
-fno-alias -auto-ilp32

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

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

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

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

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)
-unroll4 -auto -inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

Continued on next page



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Peak Optimization Flags (Continued)

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: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

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.

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 12:55:41 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 28 September 2010.