



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®2006 = 28.2

IBM System x3620 M3 (Intel Xeon E5506)

SPECfp_base2006 = 26.5

CPU2006 license: 11

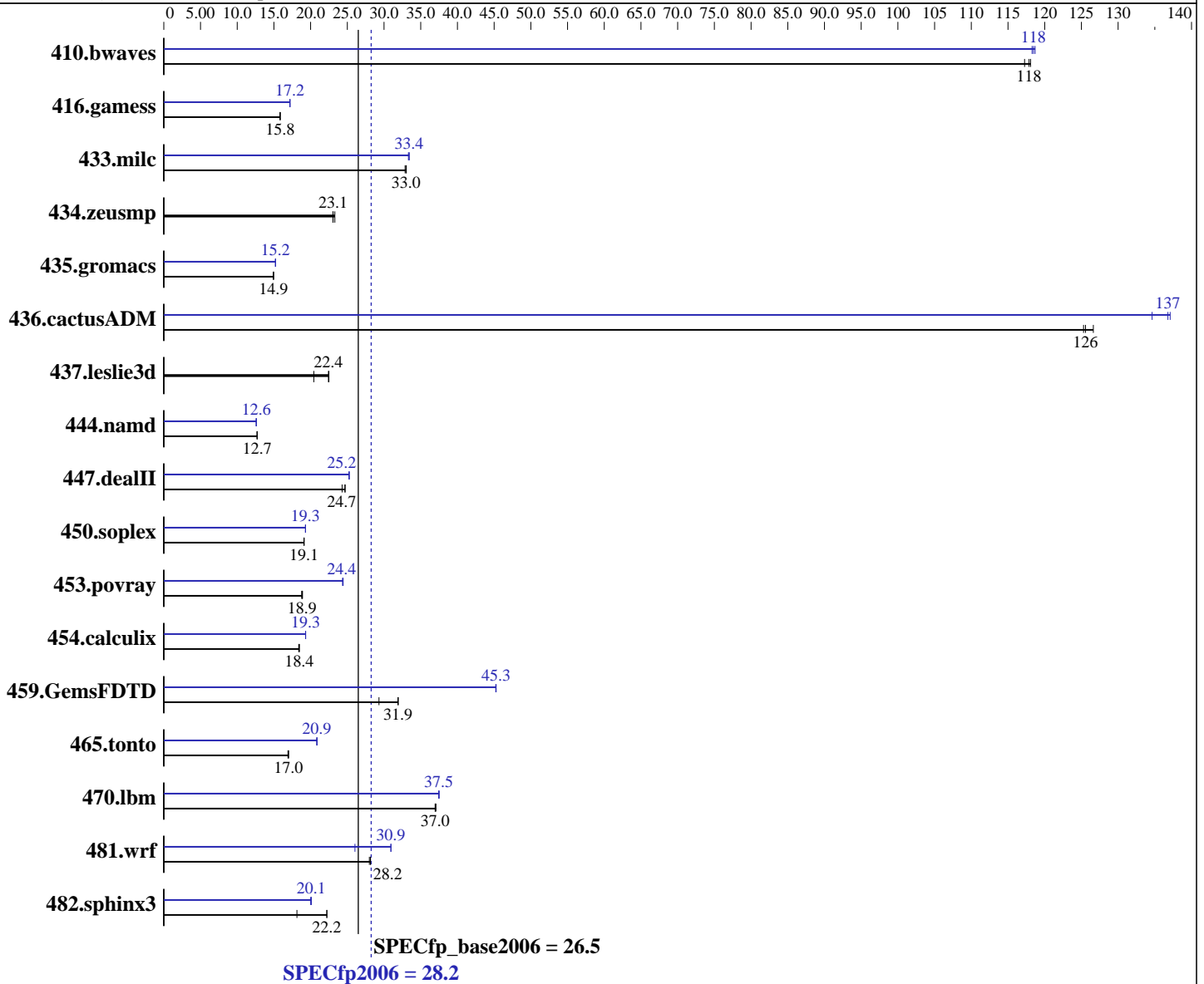
Test date: Jun-2010

Test sponsor: IBM Corporation

Hardware Availability: May-2010

Tested by: IBM Corporation

Software Availability: Jan-2010



Hardware

CPU Name: Intel Xeon E5506
 CPU Characteristics:
 CPU MHz: 2133
 FPU: Integrated
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
 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: 4 MB I+D on chip per chip
 Other Cache: None
 Memory: 48 GB (12 x 4 GB PC3-10600R CL9, 2 Rank)
 Disk Subsystem: 1 x 250 GB SATA, 7200 RPM
 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 | 116 | 117 | <u>115</u> | <u>118</u> | 115 | 118 | 115 | 118 | <u>115</u> | <u>118</u> | 114 | 119 |
| 416.gamess | 1235 | 15.9 | 1236 | 15.8 | <u>1236</u> | <u>15.8</u> | 1139 | 17.2 | <u>1139</u> | <u>17.2</u> | 1140 | 17.2 |
| 433.milc | <u>278</u> | <u>33.0</u> | 278 | 33.0 | 279 | 32.9 | 276 | 33.3 | <u>275</u> | <u>33.4</u> | 275 | 33.4 |
| 434.zeusmp | 391 | 23.3 | 395 | 23.0 | <u>395</u> | <u>23.1</u> | 391 | 23.3 | 395 | 23.0 | <u>395</u> | <u>23.1</u> |
| 435.gromacs | 478 | 14.9 | 478 | 15.0 | <u>478</u> | <u>14.9</u> | 469 | 15.2 | 470 | 15.2 | <u>469</u> | <u>15.2</u> |
| 436.cactusADM | 94.4 | 127 | <u>95.2</u> | <u>126</u> | 95.4 | 125 | 88.8 | 135 | <u>87.4</u> | <u>137</u> | 87.2 | 137 |
| 437.leslie3d | 418 | 22.5 | 460 | 20.4 | <u>419</u> | <u>22.4</u> | 418 | 22.5 | 460 | 20.4 | <u>419</u> | <u>22.4</u> |
| 444.namd | 631 | 12.7 | <u>631</u> | <u>12.7</u> | 630 | 12.7 | <u>637</u> | <u>12.6</u> | 637 | 12.6 | 636 | 12.6 |
| 447.dealII | <u>464</u> | <u>24.7</u> | 463 | 24.7 | 471 | 24.3 | <u>453</u> | <u>25.2</u> | 453 | 25.2 | 453 | 25.3 |
| 450.soplex | <u>437</u> | <u>19.1</u> | 436 | 19.1 | 437 | 19.1 | <u>432</u> | <u>19.3</u> | 432 | 19.3 | 432 | 19.3 |
| 453.povray | 282 | 18.9 | <u>282</u> | <u>18.9</u> | 283 | 18.8 | 218 | 24.4 | 218 | 24.4 | <u>218</u> | <u>24.4</u> |
| 454.calculix | 447 | 18.5 | <u>447</u> | <u>18.4</u> | 449 | 18.4 | 427 | 19.3 | <u>427</u> | <u>19.3</u> | 427 | 19.3 |
| 459.GemsFDTD | 332 | 31.9 | <u>333</u> | <u>31.9</u> | 362 | 29.3 | <u>234</u> | <u>45.3</u> | 235 | 45.2 | 234 | 45.3 |
| 465.tonto | 579 | 17.0 | 582 | 16.9 | <u>580</u> | <u>17.0</u> | 471 | 20.9 | 472 | 20.8 | <u>472</u> | <u>20.9</u> |
| 470.lbm | 372 | 37.0 | 371 | 37.1 | <u>372</u> | <u>37.0</u> | 366 | 37.5 | 367 | 37.5 | <u>367</u> | <u>37.5</u> |
| 481.wrf | 399 | 28.0 | 397 | 28.2 | <u>397</u> | <u>28.2</u> | 361 | 31.0 | 429 | 26.0 | <u>361</u> | <u>30.9</u> |
| 482.sphinx3 | 877 | 22.2 | <u>878</u> | <u>22.2</u> | 1075 | 18.1 | 970 | 20.1 | 974 | 20.0 | <u>971</u> | <u>20.1</u> |

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

Platform Notes

Turbo Mode Enable
 Turbo Boost set to Traditional
 CPU C State Enable
 Data Reuse Disable

General Notes

Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502
 'ulimit -s unlimited' was used to set the stack size to unlimited prior to run
 OMP_NUM_THREADS set to number of cores
 KMP_AFFINITY set to granularity=fine,scatter
 KMP_STACKSIZE set to 200M



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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

Benchmarks using both Fortran and C:

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



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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: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32
-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.dealII: -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 -ansi-alias -scalar-rep- -auto-ilp32

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-calloc -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.20100601.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.20100601.xml>



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