SPEC® CFP2006 Result

IBM Corporation

$SPECfp^{®}2006 =$ 38.6

IBM System x3850 X5 (Intel Xeon X7560)

$SPECfp\_base2006 =$ 35.1

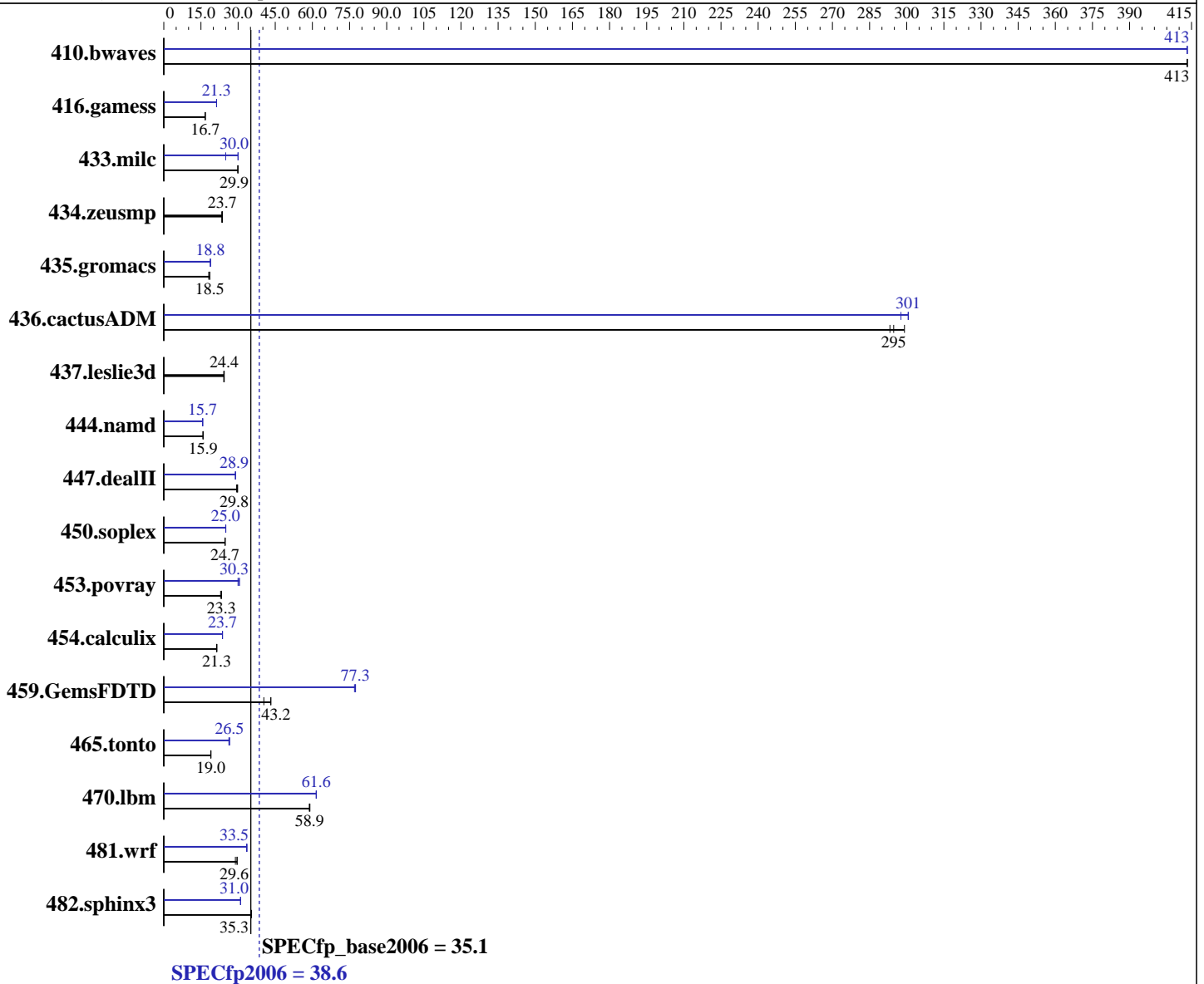**CPU2006 license:** 11　　　　　　　　　　　　　　　　　　　　　　　　**Test date:** Mar-2010
Test sponsor: IBM Corporation　　　　　　　　　　　　　　　　**Hardware Availability:** Mar-2010
Tested by: IBM Corporation　　　　　　　　　　　　　　　　**Software Availability:** Jan-2010

Benchmark	Peak	Base
410.bwaves	413	413
416.gamess	21.3	16.7
433.milc	30.0	29.9
434.zeusmp	23.7	
435.gromacs	18.8	18.5
436.cactusADM	301	295
437.leslie3d	24.4	
444.namd	15.7	15.9
447.dealII	28.9	29.8
450.soplex	25.0	24.7
453.povray	30.3	23.3
454.calculix	23.7	21.3
459.GemsFDTD	77.3	43.2
465.tonto	26.5	19.0
470.lbm	61.6	58.9
481.wrf	33.5	29.6
482.sphinx3	31.0	35.3

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Hardware

CPU Name: Intel Xeon X7560
CPU Characteristics: Intel Turbo Boost Technology up to 2.67 GHz
CPU MHz: 2267
FPU: Integrated
CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip, 2 threads/core
CPU(s) orderable: 2,4 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, 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: 24 MB I+D on chip per chip	Base Pointers: 64-bit
Other Cache: None	Peak Pointers: 32/64-bit
Memory: 256 GB (64 x 4 GB DDR3-1066 QR RDIMM)	Other Software: Binutils 2.18.50.0.7.20080502
Disk Subsystem: 3 x 50 GB SATA, SSD	
Other Hardware: None	

Results Table

Benchmark	Base						Peak					
	Seconds	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	**32.9**	**413**	32.9	413	32.9	413	32.9	413	32.9	413	**32.9**	**413**
416.gamess	**1170**	**16.7**	1175	16.7	1168	16.8	918	21.3	**919**	**21.3**	920	21.3
433.milc	**307**	**29.9**	307	29.9	307	29.9	**306**	**30.0**	306	30.0	367	25.0
434.zeusmp	384	23.7	389	23.4	**385**	**23.7**	384	23.7	389	23.4	**385**	**23.7**
435.gromacs	385	18.6	**385**	**18.5**	394	18.1	380	18.8	379	18.9	**379**	**18.8**
436.cactusADM	40.8	293	40.0	299	**40.5**	**295**	**39.8**	**301**	39.7	301	40.1	298
437.leslie3d	**386**	**24.4**	388	24.2	385	24.4	**386**	**24.4**	388	24.2	385	24.4
444.namd	**506**	**15.9**	506	15.8	506	15.9	511	15.7	**511**	**15.7**	511	15.7
447.dealII	384	29.8	389	29.4	**385**	**29.8**	395	28.9	395	28.9	**395**	**28.9**
450.soplex	338	24.7	**337**	**24.7**	336	24.8	334	25.0	**334**	**25.0**	333	25.1
453.povray	228	23.3	**228**	**23.3**	232	22.9	178	30.0	**176**	**30.3**	174	30.6
454.calculix	384	21.5	**387**	**21.3**	387	21.3	348	23.7	348	23.7	**348**	**23.7**
459.GemsFDTD	**246**	**43.2**	263	40.4	245	43.2	137	77.4	138	77.0	**137**	**77.3**
465.tonto	516	19.1	**518**	**19.0**	519	18.9	371	26.5	374	26.3	**371**	**26.5**
470.lbm	234	58.8	**233**	**58.9**	233	59.0	223	61.6	223	61.6	**223**	**61.6**
481.wrf	**378**	**29.6**	386	28.9	377	29.6	334	33.4	333	33.6	**333**	**33.5**
482.sphinx3	551	35.4	552	35.3	**551**	**35.3**	628	31.0	630	31.0	**628**	**31.0**

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

Platform Notes

```
    Turbo Boost set to Traditional in BIOS
    Demand Scrub disabled in BIOS
```

General Notes

```
    OMP_NUM_THREADS set to number of cores
    KMP_AFFINITY set to granularity=fine,scatter
    KMP_STACKSIZE set to 200M
    'ulimit -s unlimited' was used to set the stack size to unlimited prior to run
```

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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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Software Availability: Jan-2010

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.20100330.03.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.20100330.03.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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