SPEC® CFP2006 Result
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IBM Corporation

IBM System x3400 M3 (Intel Xeon X5650)

$SPECfp®2006 =$ 42.9

$SPECfp\_base2006 =$ 40.3

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

Results by benchmark:

- 410.bwaves: 183 / 182
- 416.gamess: 24.6 / 22.0
- 433.milc: 47.9 / 47.0
- 434.zeusmp: 34.9
- 435.gromacs: 21.7 / 21.4
- 436.cactusADM: 252 / 241
- 437.leslie3d: 31.3
- 444.namd: 18.0 / 18.1
- 447.dealII: 36.2 / 35.4
- 450.soplex: 30.7 / 30.4
- 453.povray: 34.6 / 27.3
- 454.calculix: 27.7 / 26.6
- 459.GemsFDTD: 69.0 / 52.2
- 465.tonto: 30.5 / 22.9
- 470.lbm: 66.1 / 65.4
- 481.wrf: 45.4 / 40.7
- 482.sphinx3: 36.1 / 41.0

SPECfp_base2006 = 40.3

SPECfp2006 = 42.9

Hardware

CPU Name:	Intel Xeon X5650
CPU Characteristics:	Intel Turbo Boost Technology up to 3.06 GHz
CPU MHz:	2667
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip, 2 threads/core
CPU(s) orderable:	1,2 chip
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:	Yes
File System:	ext3
System State:	Run level 3 (multi-user)

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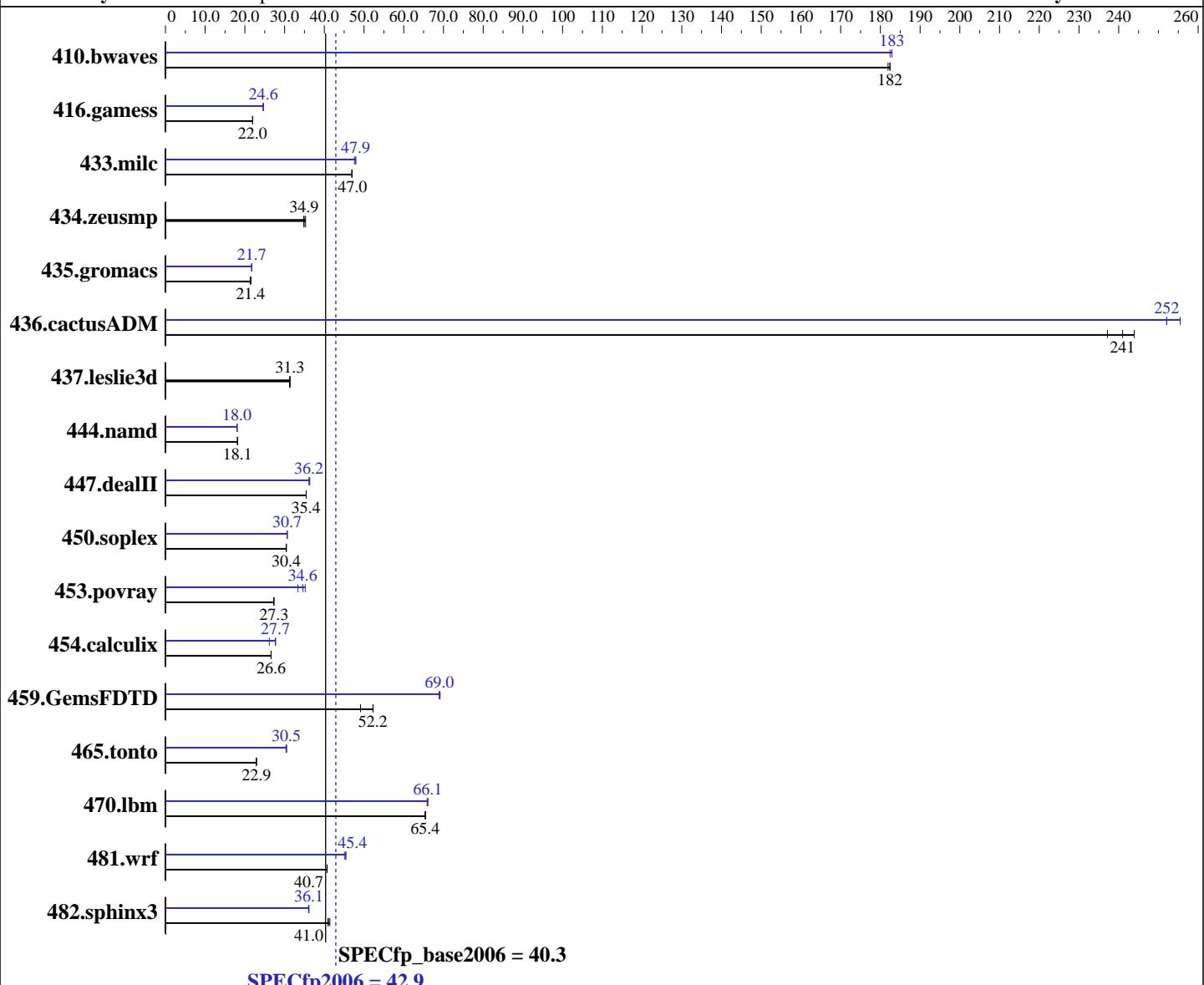**Test sponsor:** IBM Corporation
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L3 Cache:	12 MB I+D on chip per chip
Other Cache:	None
Memory:	48 GB (12 x 4 GB PC3-10600R CL9, 2 Rank)
Disk Subsystem:	1 x 73 GB SAS, 15000 RPM
Other Hardware:	None

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	74.7	182	74.5	182	**74.5**	**182**	74.5	182	**74.3**	**183**	74.3	183
416.gamess	892	22.0	892	22.0	**892**	**22.0**	796	24.6	794	24.7	**794**	**24.6**
433.milc	**195**	**47.0**	195	47.0	196	46.9	**192**	**47.9**	192	47.9	193	47.6
434.zeusmp	258	35.3	261	34.9	**261**	**34.9**	258	35.3	261	34.9	**261**	**34.9**
435.gromacs	333	21.4	332	21.5	**333**	**21.4**	**329**	**21.7**	329	21.7	328	21.8
436.cactusADM	**49.6**	**241**	50.4	237	49.0	244	47.4	252	**47.4**	**252**	46.8	255
437.leslie3d	301	31.3	300	31.4	**300**	**31.3**	301	31.3	300	31.4	**300**	**31.3**
444.namd	442	18.1	442	18.1	**442**	**18.1**	445	18.0	444	18.0	**445**	**18.0**
447.dealII	323	35.4	323	35.5	**323**	**35.4**	316	36.2	**316**	**36.2**	315	36.3
450.soplex	274	30.5	274	30.4	**274**	**30.4**	272	30.7	272	30.7	**272**	**30.7**
453.povray	195	27.2	**195**	**27.3**	195	27.3	151	35.2	**154**	**34.6**	160	33.4
454.calculix	310	26.6	310	26.6	**310**	**26.6**	297	27.7	**298**	**27.7**	315	26.2
459.GemsFDTD	216	49.1	203	52.3	**203**	**52.2**	154	68.9	**154**	**69.0**	153	69.2
465.tonto	430	22.9	430	22.9	**430**	**22.9**	**323**	**30.5**	323	30.5	324	30.4
470.lbm	210	65.4	**210**	**65.4**	210	65.5	208	66.1	**208**	**66.1**	209	65.9
481.wrf	274	40.7	274	40.7	**274**	**40.7**	**246**	**45.4**	246	45.4	248	45.1
482.sphinx3	471	41.4	476	40.9	**475**	**41.0**	**540**	**36.1**	541	36.0	539	36.1

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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Hardware Availability: Jun-2010
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.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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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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