SPEC® CFP2006 Result
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IBM Corporation

$SPECfp^{®}2006 = $ 26.5

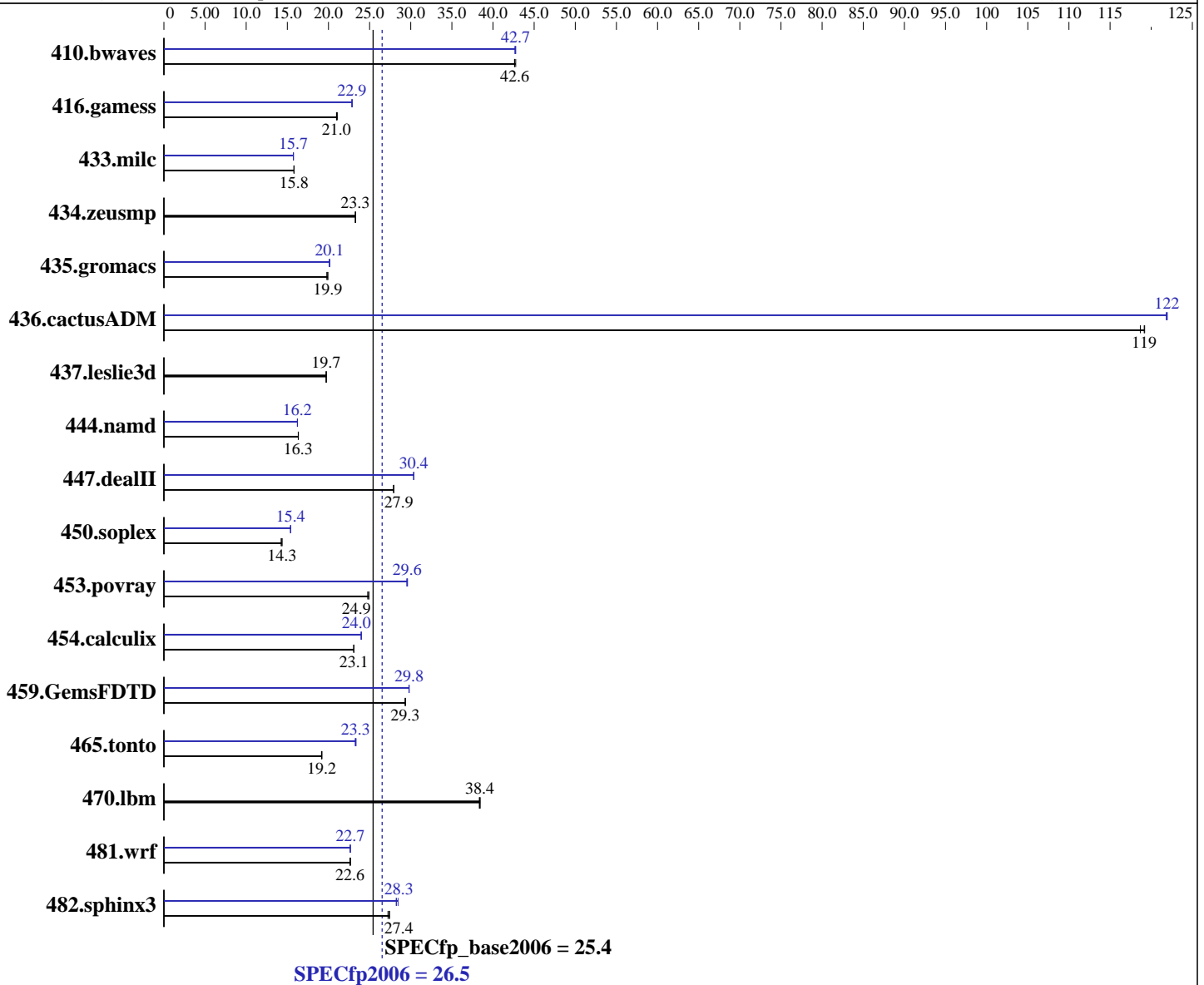IBM System x iDataPlex dx360 (Intel Xeon E5472)

$SPECfp_base2006 = $ 25.4

CPU2006 license: 11	**Test date:** Oct-2008
Test sponsor: IBM Corporation	**Hardware Availability:** Nov-2008
Tested by: IBM Corporation	**Software Availability:** Nov-2008

Graph scale: 0 5.00 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0 55.0 60.0 65.0 70.0 75.0 80.0 85.0 90.0 95.0 100 105 110 115 125

Benchmark	Result (peak)	Result (base)
410.bwaves	42.7	42.6
416.gamess	22.9	21.0
433.milc	15.7	15.8
434.zeusmp		23.3
435.gromacs	20.1	19.9
436.cactusADM	122	119
437.leslie3d		19.7
444.namd	16.2	16.3
447.dealII	30.4	27.9
450.soplex	15.4	14.3
453.povray	29.6	24.9
454.calculix	24.0	23.1
459.GemsFDTD	29.8	29.3
465.tonto	23.3	19.2
470.lbm		38.4
481.wrf	22.7	22.6
482.sphinx3	28.3	27.4

SPECfp_base2006 = 25.4

SPECfp2006 = 26.5

Hardware

CPU Name:	Intel Xeon E5472
CPU Characteristics:	1600MHz system bus
CPU MHz:	3000
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:	12 MB I+D on chip per chip, 6 MB shared / 2 cores

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Software

Operating System:	SuSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp
Compiler:	Intel C++ and Fortran Compiler 11.0 for Linux Build 20080730 Package ID: l_cproc_b_11.0.042, l_fproc_b_11.0.042
Auto Parallel:	Yes
File System:	ReiserFS
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

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L3 Cache:	None	Peak Pointers:	32/64-bit
Other Cache:	None	Other Software:	Binutils 2.18.50.0.7.20080502
Memory:	16 GB (8 x 2 GB DDR2-6400F ECC)		
Disk Subsystem:	1 x 250 GB SATA, 7200 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	319	42.6	318	42.8	**319**	**42.6**	319	42.7	**318**	**42.7**	318	42.8
416.gamess	933	21.0	**933**	**21.0**	929	21.1	857	22.8	**857**	**22.9**	855	22.9
433.milc	581	15.8	580	15.8	**581**	**15.8**	**583**	**15.7**	583	15.7	584	15.7
434.zeusmp	391	23.3	391	23.3	**391**	**23.3**	391	23.3	391	23.3	**391**	**23.3**
435.gromacs	358	19.9	**359**	**19.9**	361	19.8	**354**	**20.1**	355	20.1	354	20.2
436.cactusADM	100	119	101	119	**100**	**119**	98.1	122	**98.0**	**122**	98.0	122
437.leslie3d	**477**	**19.7**	477	19.7	476	19.7	**477**	**19.7**	477	19.7	476	19.7
444.namd	**491**	**16.3**	491	16.3	491	16.3	494	16.2	**494**	**16.2**	494	16.2
447.dealII	410	27.9	**410**	**27.9**	410	27.9	377	30.4	376	30.4	**377**	**30.4**
450.soplex	**581**	**14.3**	581	14.4	586	14.2	**542**	**15.4**	542	15.4	541	15.4
453.povray	214	24.9	215	24.8	**214**	**24.9**	180	29.5	**180**	**29.6**	180	29.6
454.calculix	**357**	**23.1**	357	23.1	358	23.1	344	24.0	**344**	**24.0**	344	24.0
459.GemsFDTD	362	29.3	**362**	**29.3**	362	29.3	**356**	**29.8**	356	29.8	356	29.8
465.tonto	512	19.2	**513**	**19.2**	514	19.2	421	23.4	**422**	**23.3**	423	23.3
470.lbm	358	38.3	**358**	**38.4**	357	38.4	358	38.3	**358**	**38.4**	357	38.4
481.wrf	493	22.7	494	22.6	**494**	**22.6**	494	22.6	493	22.7	**493**	**22.7**
482.sphinx3	716	27.2	711	27.4	**712**	**27.4**	**690**	**28.3**	685	28.5	690	28.2

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

General Notes

```
OMP_NUM_THREADS set to number of processors
KMP_AFFINITY set to "physical,0"
KMP_STACKSIZE set to 200M
Hardware Prefetch Enabled and Adjacent Sector Prefetch Enabled
'ulimit -s unlimited' was used to set the stack size to unlimited prior to run
```

Base Compiler Invocation

C benchmarks:
```
icc
```

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Base Compiler Invocation (Continued)

C++ benchmarks:
    icpc

Fortran benchmarks:
    ifort

Benchmarks using both Fortran and C:
    icc ifort

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:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

C++ benchmarks:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

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Peak Compiler Invocation

C benchmarks (except as noted below):
    icc

    482.sphinx3: /opt/intel/Compiler/11.0/042/bin/ia32/icc
            -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
            -I/opt/intel/Compiler/11.0/042/ipp/ia32/include

C++ benchmarks (except as noted below):
    icpc

    450.soplex: /opt/intel/Compiler/11.0/042/bin/ia32/icpc
            -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
            -I/opt/intel/Compiler/11.0/042/ipp/ia32/include

Fortran benchmarks:
    ifort

Benchmarks using both Fortran and C:
    icc ifort

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

Peak Optimization Flags

C benchmarks:

        433.milc: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -fno-alias

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Peak Optimization Flags (Continued)

```
      470.lbm: basepeak = yes

   482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2
```

C++ benchmarks:

```
     444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -fno-alias -auto-ilp32

    447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll2 -ansi-alias -scalar-rep-
               -opt-prefetch

    450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -opt-malloc-options=3

    453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll4 -ansi-alias
```

Fortran benchmarks:

```
    410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
               -parallel

    416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll2 -Ob0 -ansi-alias
               -scalar-rep-

    434.zeusmp: basepeak = yes

   437.leslie3d: basepeak = yes

  459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll2 -Ob0 -opt-prefetch
               -parallel

     465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll4 -auto
```

Benchmarks using both Fortran and C:

```
   435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -opt-prefetch -auto-ilp32

 436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll2 -opt-prefetch -parallel
               -auto-ilp32

   454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32
```

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Peak Optimization Flags (Continued)

481.wrf: `-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel -auto-ilp32`

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.01.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.01.xml

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

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