SPEC® CFP2006 Result

IBM Corporation

$SPECfp^{®}2006 = $ 19.2

IBM System x iDataPlex dx340 (Intel Xeon E5405)

$SPECfp_base2006 = $ 18.4

CPU2006 license: 11
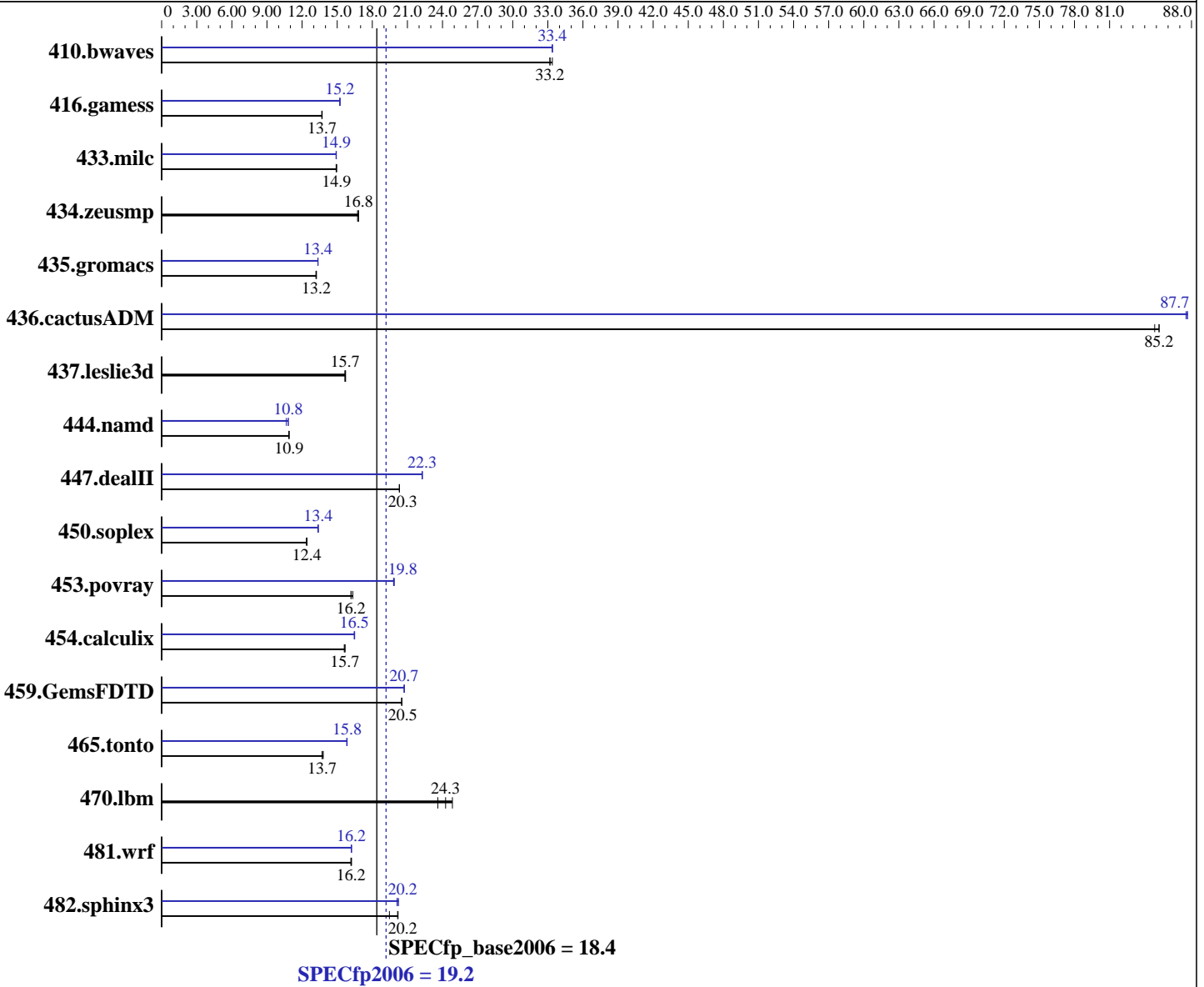**Test sponsor:** IBM Corporation
Tested by: IBM Corporation

Test date: Apr-2009
Hardware Availability: Oct-2008
Software Availability: Nov-2008

SPECfp_base2006 = 18.4

SPECfp2006 = 19.2

410.bwaves	33.4 / 33.2
416.gamess	15.2 / 13.7
433.milc	14.9 / 14.9
434.zeusmp	16.8
435.gromacs	13.4 / 13.2
436.cactusADM	87.7 / 85.2
437.leslie3d	15.7
444.namd	10.8 / 10.9
447.dealII	22.3 / 20.3
450.soplex	13.4 / 12.4
453.povray	19.8 / 16.2
454.calculix	16.5 / 15.7
459.GemsFDTD	20.7 / 20.5
465.tonto	15.8 / 13.7
470.lbm	24.3
481.wrf	16.2 / 16.2
482.sphinx3	20.2 / 20.2

Hardware

CPU Name:	Intel Xeon E5405
CPU Characteristics:	1333MHz system bus
CPU MHz:	2000
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) SP2, Kernel 2.6.16.60-0.21-smp
Compiler:	Intel C++ and Fortran Compiler 11.0 for Linux Build 20080930 Package ID: l_cproc_p_11.0.066, l_cprof_p_11.0.066
Auto Parallel:	Yes
File System:	ReiserFS
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

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L3 Cache:	None
Other Cache:	None
Memory:	16 GB (4 x 4 GB PC2-5300F ECC)
Disk Subsystem:	1 x 250 GB SATA, 7200 RPM
Other Hardware:	None

Peak Pointers:	32/64-bit
Other Software:	Binutils 2.18.50.0.7.20080502

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**410**	**33.2**	407	33.4	410	33.2	407	33.4	**407**	**33.4**	407	33.4
416.gamess	**1428**	**13.7**	1431	13.7	1428	13.7	**1285**	**15.2**	1285	15.2	1286	15.2
433.milc	616	14.9	614	14.9	**614**	**14.9**	616	14.9	**615**	**14.9**	615	14.9
434.zeusmp	544	16.7	**541**	**16.8**	541	16.8	544	16.7	**541**	**16.8**	541	16.8
435.gromacs	**540**	**13.2**	542	13.2	540	13.2	535	13.4	534	13.4	**534**	**13.4**
436.cactusADM	141	84.9	140	85.2	**140**	**85.2**	137	87.5	136	87.7	**136**	**87.7**
437.leslie3d	600	15.7	**599**	**15.7**	598	15.7	600	15.7	**599**	**15.7**	598	15.7
444.namd	737	10.9	737	10.9	**737**	**10.9**	**742**	**10.8**	741	10.8	753	10.6
447.dealII	563	20.3	563	20.3	**563**	**20.3**	**514**	**22.3**	513	22.3	514	22.3
450.soplex	674	12.4	671	12.4	**672**	**12.4**	**623**	**13.4**	623	13.4	624	13.4
453.povray	329	16.2	**329**	**16.2**	326	16.3	268	19.8	**268**	**19.8**	268	19.9
454.calculix	529	15.6	527	15.7	**527**	**15.7**	500	16.5	501	16.5	**501**	**16.5**
459.GemsFDTD	517	20.5	**517**	**20.5**	517	20.5	512	20.7	**512**	**20.7**	512	20.7
465.tonto	712	13.8	**717**	**13.7**	717	13.7	621	15.9	622	15.8	**621**	**15.8**
470.lbm	582	23.6	**566**	**24.3**	553	24.8	582	23.6	**566**	**24.3**	553	24.8
481.wrf	**690**	**16.2**	690	16.2	688	16.2	689	16.2	**689**	**16.2**	689	16.2
482.sphinx3	1001	19.5	965	20.2	**967**	**20.2**	963	20.2	969	20.1	**967**	**20.2**

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

General Notes

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

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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CPU2006 license: 11		**Test date:**	Apr-2009
Test sponsor:	IBM Corporation	**Hardware Availability:**	Oct-2008
Tested by:	IBM Corporation	**Software Availability:**	Nov-2008

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc
```

    482.sphinx3: `icc -m32`

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

    450.soplex: `icpc -m32`

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`

      470.lbm: basepeak = yes

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

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Peak Optimization Flags (Continued)

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

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

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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.20090805.00.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.20090805.00.xml`

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