SPEC® CFP2006 Result
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IBM Corporation

IBM BladeCenter HS22V (Intel Xeon X5570)

$SPECfp^{®}2006 =$ 43.8
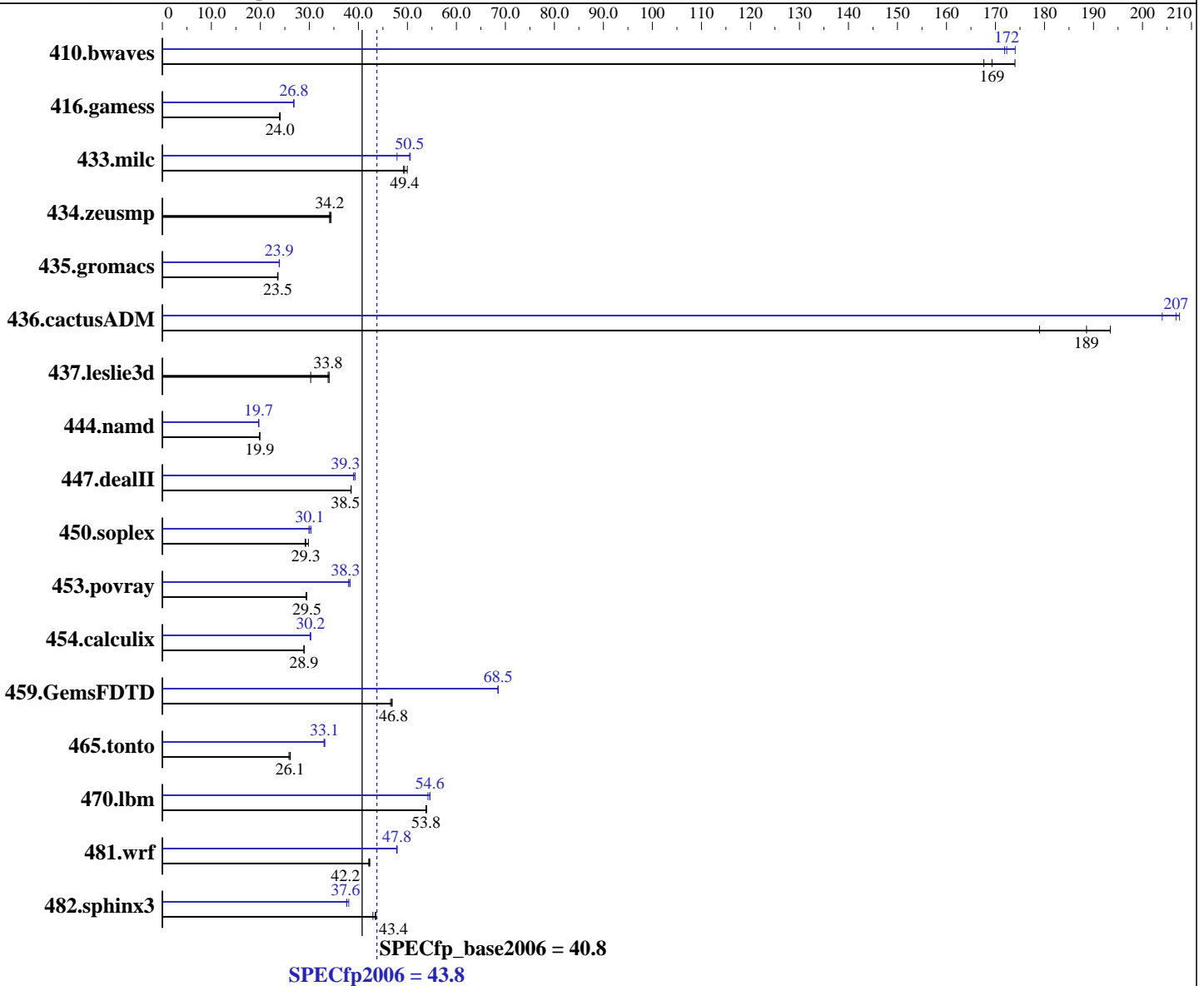
$SPECfp\_base2006 =$ 40.8

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

Test date: Jan-2010
Hardware Availability: Mar-2010
Software Availability: Jan-2010

Benchmark	Result
410.bwaves	172 / 169
416.gamess	26.8 / 24.0
433.milc	50.5 / 49.4
434.zeusmp	34.2
435.gromacs	23.9 / 23.5
436.cactusADM	207 / 189
437.leslie3d	33.8
444.namd	19.7 / 19.9
447.dealII	39.3 / 38.5
450.soplex	30.1 / 29.3
453.povray	38.3 / 29.5
454.calculix	30.2 / 28.9
459.GemsFDTD	68.5 / 46.8
465.tonto	33.1 / 26.1
470.lbm	54.6 / 53.8
481.wrf	47.8 / 42.2
482.sphinx3	37.6 / 43.4

SPECfp_base2006 = 40.8
SPECfp2006 = 43.8

Hardware

CPU Name: Intel Xeon X5570
CPU Characteristics: Intel Turbo Boost Technology up to 3.33 GHz
CPU MHz: 2933
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip, 2 threads/core
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
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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L3 Cache:	8 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	24 GB (6 x 4 GB PC3-10600R)	Other Software:	Binutils 2.18.50.0.7.20080502
Disk Subsystem:	2 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	78.1	174	**80.3**	**169**	81.1	168	79.1	172	**78.9**	**172**	78.1	174
416.gamess	**815**	**24.0**	819	23.9	814	24.1	730	26.8	730	26.8	**730**	**26.8**
433.milc	**186**	**49.4**	187	49.2	184	50.0	**182**	**50.5**	192	47.9	181	50.6
434.zeusmp	264	34.4	266	34.1	**266**	**34.2**	264	34.4	266	34.1	**266**	**34.2**
435.gromacs	**303**	**23.5**	304	23.5	302	23.6	299	23.9	299	23.8	**299**	**23.9**
436.cactusADM	**63.4**	**189**	61.8	193	66.8	179	57.6	208	**57.8**	**207**	58.6	204
437.leslie3d	311	30.3	276	34.0	**278**	**33.8**	311	30.3	276	34.0	**278**	**33.8**
444.namd	**404**	**19.9**	404	19.9	403	19.9	409	19.6	408	19.7	**408**	**19.7**
447.dealII	297	38.5	**297**	**38.5**	297	38.5	291	39.3	**291**	**39.3**	293	39.0
450.soplex	280	29.8	286	29.1	**285**	**29.3**	**278**	**30.1**	279	29.9	275	30.4
453.povray	**180**	**29.5**	180	29.5	181	29.3	**139**	**38.3**	139	38.3	140	38.0
454.calculix	285	29.0	**286**	**28.9**	286	28.9	274	30.2	**273**	**30.2**	272	30.3
459.GemsFDTD	228	46.6	226	46.9	**227**	**46.8**	**155**	**68.5**	155	68.5	155	68.5
465.tonto	**378**	**26.1**	377	26.1	381	25.8	**298**	**33.1**	297	33.1	298	33.0
470.lbm	**256**	**53.8**	255	53.9	256	53.8	**252**	**54.6**	252	54.6	254	54.2
481.wrf	265	42.1	264	42.3	**264**	**42.2**	233	47.9	**234**	**47.8**	234	47.8
482.sphinx3	454	43.0	447	43.6	**449**	**43.4**	512	38.0	**518**	**37.6**	518	37.6

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

Platform Notes

    Operating Modes: Performance Mode enabled in BIOS

General Notes

    '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.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.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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