SPEC® CFP2006 Result
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IBM Corporation

IBM BladeCenter HS22V (Intel Xeon X5660)

$SPECfp^{®}2006 =$ 44.0

$SPECfp\_base2006 =$ 41.1

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

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

Benchmark	Base	Peak
410.bwaves	181	
416.gamess	22.8	25.6
433.milc	47.8	48.1
434.zeusmp	34.6	
435.gromacs	22.4	22.7
436.cactusADM	245	
437.leslie3d	31.8	
444.namd	18.9	
447.dealII	36.7	37.2
450.soplex	30.5	30.9
453.povray	28.1	36.6
454.calculix	27.2	28.7
459.GemsFDTD	52.0	69.1
465.tonto	23.6	31.5
470.lbm	65.0	65.3
481.wrf	41.1	46.0
482.sphinx3	42.9	

SPECfp_base2006 = 41.1
SPECfp2006 = 44.0

Hardware

CPU Name: Intel Xeon X5660
CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz: 2800
FPU: Integrated
CPU(s) enabled: 12 cores, 2 chips, 6 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)
Continued on next page

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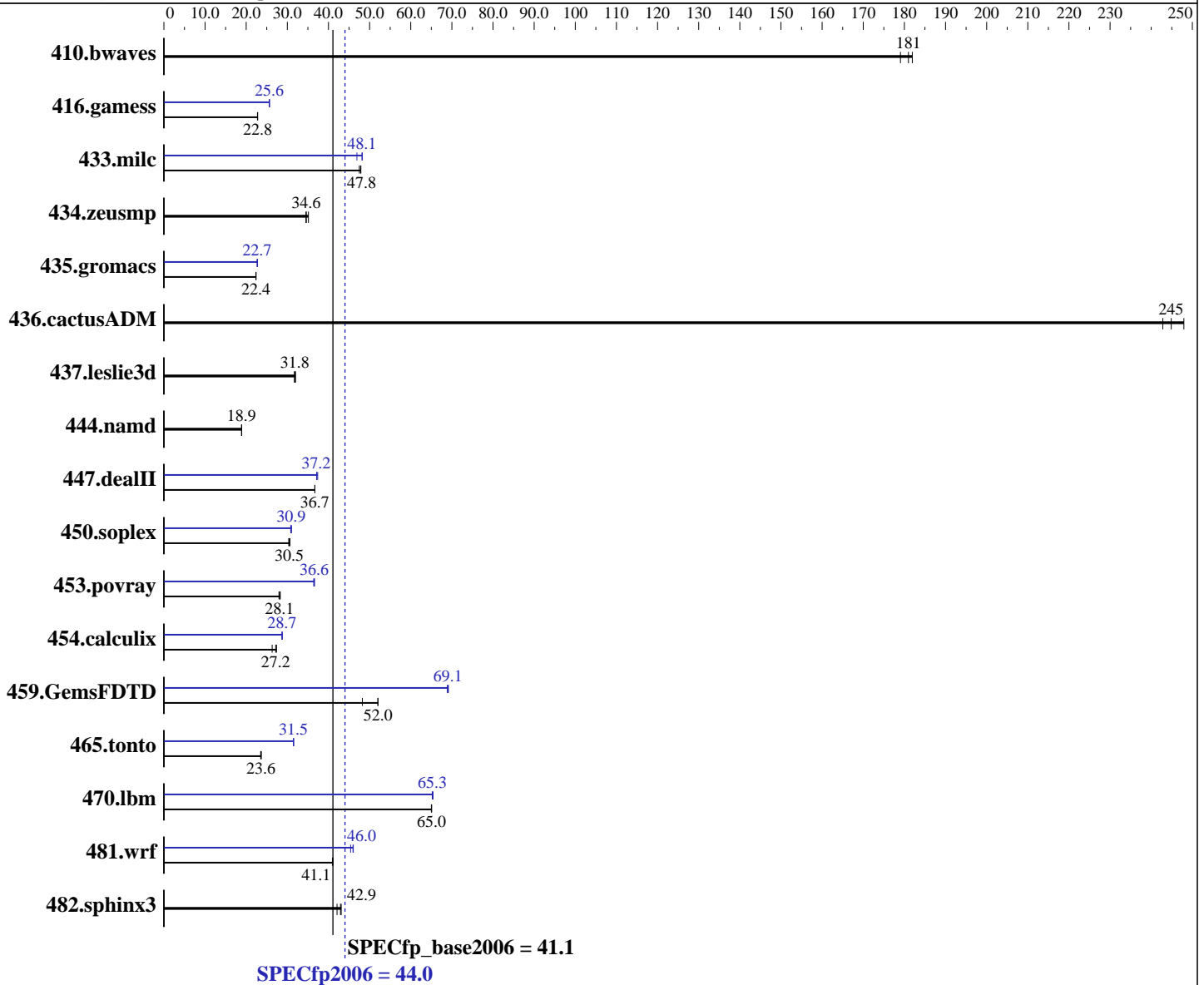| SPECfp2006 =	44.0
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L3 Cache:	12 MB I+D on chip per chip
Other Cache:	None
Memory:	24 GB (12 x 2 GB PC3-10600R)
Disk Subsystem:	2 x 50 GB SATA, SSD
Other Hardware:	None

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

Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	74.7	182	75.9	179	**75.1**	**181**	74.7	182	75.9	179	**75.1**	**181**
416.gamess	860	22.8	**860**	**22.8**	861	22.7	**764**	**25.6**	764	25.6	763	25.7
433.milc	192	47.9	**192**	**47.8**	193	47.5	**191**	**48.1**	196	46.9	190	48.2
434.zeusmp	**263**	**34.6**	264	34.5	259	35.1	**263**	**34.6**	264	34.5	259	35.1
435.gromacs	319	22.4	319	22.4	**319**	**22.4**	315	22.7	314	22.8	**315**	**22.7**
436.cactusADM	**48.8**	**245**	49.2	243	48.2	248	**48.8**	**245**	49.2	243	48.2	248
437.leslie3d	**295**	**31.8**	296	31.7	294	32.0	**295**	**31.8**	296	31.7	294	32.0
444.namd	**424**	**18.9**	424	18.9	425	18.9	**424**	**18.9**	424	18.9	425	18.9
447.dealII	312	36.7	312	36.7	**312**	**36.7**	**308**	**37.2**	306	37.4	308	37.1
450.soplex	275	30.3	272	30.6	**274**	**30.5**	271	30.8	**270**	**30.9**	269	31.0
453.povray	188	28.3	**189**	**28.1**	190	28.0	146	36.4	145	36.6	**146**	**36.6**
454.calculix	314	26.3	301	27.4	**304**	**27.2**	287	28.8	287	28.7	**287**	**28.7**
459.GemsFDTD	**204**	**52.0**	204	52.0	220	48.2	153	69.2	154	68.9	**154**	**69.1**
465.tonto	416	23.7	418	23.5	**417**	**23.6**	312	31.5	**312**	**31.5**	312	31.5
470.lbm	211	65.1	211	65.0	**211**	**65.0**	210	65.4	211	65.2	**211**	**65.3**
481.wrf	273	41.0	**272**	**41.1**	272	41.1	243	46.0	246	45.4	**243**	**46.0**
482.sphinx3	452	43.1	**454**	**42.9**	463	42.1	452	43.1	**454**	**42.9**	463	42.1

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

Platform Notes

```
    Turbo Mode enabled
    Turbo Boost set to Traditional
    Power C-states enabled
    Demand Scrub disabled
```

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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Test sponsor:	IBM Corporation	**Hardware Availability:**	Mar-2010
Tested by:	IBM Corporation	**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: basepeak = yes

C++ benchmarks:

444.namd: basepeak = yes

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

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

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Peak Optimization Flags (Continued)

Fortran benchmarks:

    410.bwaves: `basepeak = yes`

    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: `basepeak = yes`

    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`

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

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