SPEC® CFP2006 Result
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IBM Corporation

$SPECfp^{®}2006 =$ 35.5

IBM BladeCenter HX5 (Intel Xeon X7550)

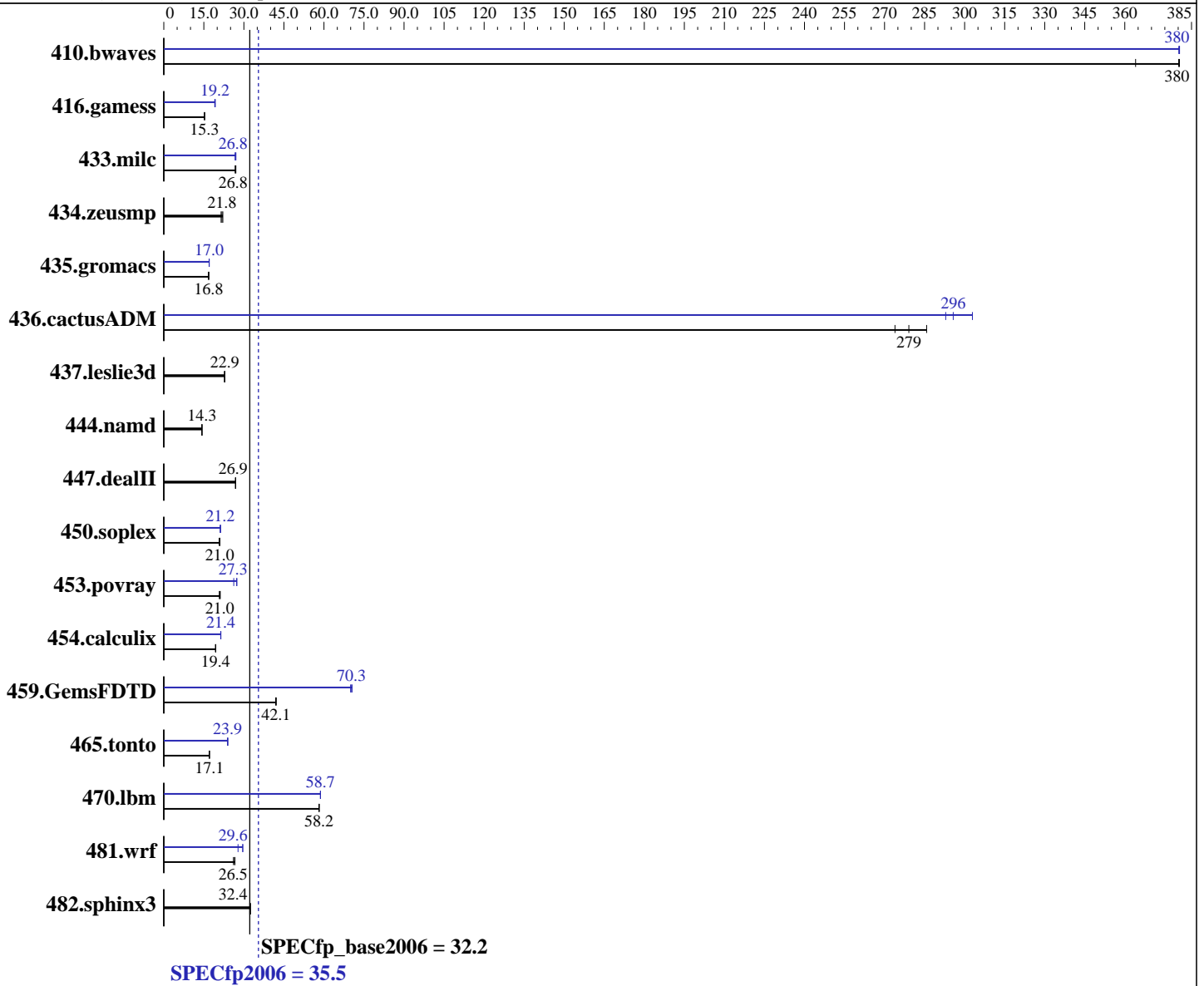$SPECfp\_base2006 =$ 32.2

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

Test date: Sep-2010
Hardware Availability: Oct-2010
Software Availability: Jan-2010

Benchmark results chart (scale 0 to 385):

- **410.bwaves** — 380 / 380
- **416.gamess** — 19.2 / 15.3
- **433.milc** — 26.8 / 26.8
- **434.zeusmp** — 21.8
- **435.gromacs** — 17.0 / 16.8
- **436.cactusADM** — 296 / 279
- **437.leslie3d** — 22.9
- **444.namd** — 14.3
- **447.dealII** — 26.9
- **450.soplex** — 21.2 / 21.0
- **453.povray** — 27.3 / 21.0
- **454.calculix** — 21.4 / 19.4
- **459.GemsFDTD** — 70.3 / 42.1
- **465.tonto** — 23.9 / 17.1
- **470.lbm** — 58.7 / 58.2
- **481.wrf** — 29.6 / 26.5
- **482.sphinx3** — 32.4

SPECfp_base2006 = 32.2
SPECfp2006 = 35.5

Hardware

CPU Name:	Intel Xeon X7550
CPU Characteristics:	Intel Turbo Boost Technology up to 2.40 GHz
CPU MHz:	2000
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip, 2 threads/core
CPU(s) orderable:	1,2,3,4 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

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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:	18 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	256 GB (32 x 8 GB PC3-8500R CL7, Quad Rank, running at 978 MHz)	Other Software:	None
Disk Subsystem:	2 x 50 GB SATA, SSD, RAID 0		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	37.3	364	**35.7**	**380**	35.7	380	**35.7**	**380**	35.7	380	35.7	381
416.gamess	**1283**	**15.3**	1282	15.3	1286	15.2	1026	19.1	**1021**	**19.2**	1016	19.3
433.milc	343	26.8	340	27.0	**342**	**26.8**	340	27.0	**342**	**26.8**	343	26.7
434.zeusmp	424	21.5	411	22.1	**417**	**21.8**	424	21.5	411	22.1	**417**	**21.8**
435.gromacs	427	16.7	**425**	**16.8**	423	16.9	**420**	**17.0**	419	17.0	421	17.0
436.cactusADM	43.6	274	41.8	286	**42.8**	**279**	39.4	303	40.8	293	**40.4**	**296**
437.leslie3d	414	22.7	411	22.9	**411**	**22.9**	414	22.7	411	22.9	**411**	**22.9**
444.namd	**561**	**14.3**	561	14.3	561	14.3	**561**	**14.3**	561	14.3	561	14.3
447.dealII	426	26.8	**425**	**26.9**	425	26.9	426	26.8	**425**	**26.9**	425	26.9
450.soplex	403	20.7	**397**	**21.0**	396	21.0	**393**	**21.2**	392	21.2	394	21.1
453.povray	252	21.2	**254**	**21.0**	256	20.8	**195**	**27.3**	203	26.2	194	27.4
454.calculix	427	19.3	424	19.5	**424**	**19.4**	386	21.4	**386**	**21.4**	387	21.3
459.GemsFDTD	252	42.1	253	41.9	**252**	**42.1**	**151**	**70.3**	152	70.0	150	70.5
465.tonto	576	17.1	575	17.1	**576**	**17.1**	411	23.9	**411**	**23.9**	411	23.9
470.lbm	236	58.2	**236**	**58.2**	236	58.1	234	58.7	**234**	**58.7**	234	58.7
481.wrf	419	26.7	**422**	**26.5**	428	26.1	378	29.6	402	27.8	**378**	**29.6**
482.sphinx3	605	32.2	**601**	**32.4**	601	32.5	605	32.2	**601**	**32.4**	601	32.5

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

Operating System Notes

    echo 1 > /proc/sys/vm/zone_reclaim_mode

Platform Notes

    Turbo Boost set to Traditional

General Notes

    'ulimit -s unlimited' was used to set the stack size to unlimited prior to run
    Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502
    OMP_NUM_THREADS set to number of cores
    KMP_AFFINITY set to granularity=fine,scatter

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General Notes (Continued)

    KMP_STACKSIZE set to 200M

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

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

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: basepeak = yes

 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.20100929.00.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.20100929.00.xml

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

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 12:45:19 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 28 September 2010.