SPEC® CFP2006 Result

IBM Corporation

IBM BladeCenter HX5 (Intel Xeon X7542)

$SPECfp^{®}\_rate2006 = 219$

$SPECfp\_rate\_base2006 = 212$

CPU2006 license: 11   **Test date:** Aug-2010
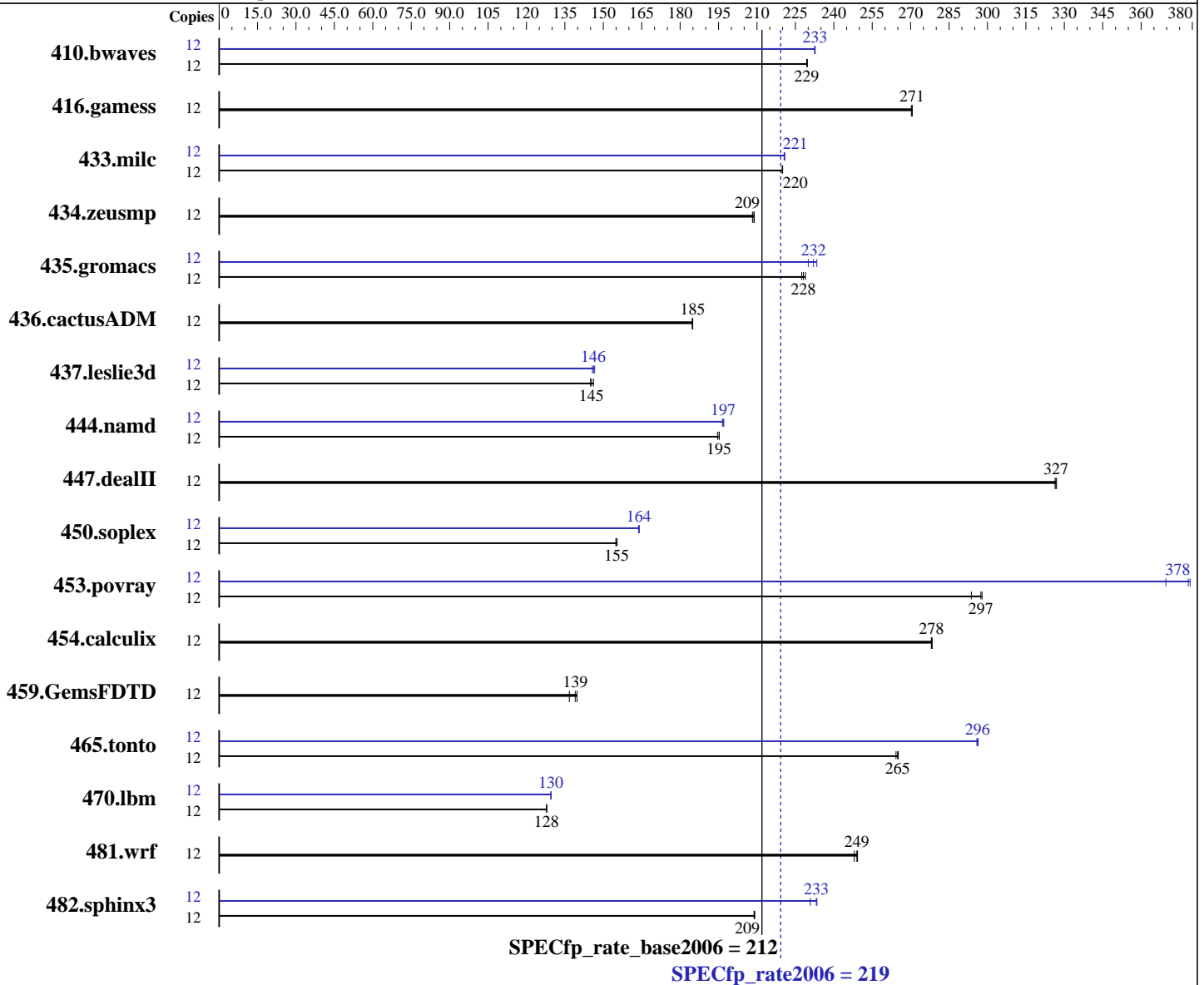**Test sponsor:** IBM Corporation   **Hardware Availability:** Oct-2010
Tested by: IBM Corporation   **Software Availability:** Jan-2010

Copies — 0 15.0 30.0 45.0 60.0 75.0 90.0 105 120 135 150 165 180 195 210 225 240 255 270 285 300 315 330 345 360 380

Benchmark	Copies	Result
410.bwaves	12	233 (blue)
410.bwaves	12	229
416.gamess	12	271
433.milc	12	221 (blue)
433.milc	12	220
434.zeusmp	12	209
435.gromacs	12	232 (blue)
435.gromacs	12	228
436.cactusADM	12	185
437.leslie3d	12	146 (blue)
437.leslie3d	12	145
444.namd	12	197 (blue)
444.namd	12	195
447.dealII	12	327
450.soplex	12	164 (blue)
450.soplex	12	155
453.povray	12	378 (blue)
453.povray	12	297
454.calculix	12	278
459.GemsFDTD	12	139
465.tonto	12	296 (blue)
465.tonto	12	265
470.lbm	12	130 (blue)
470.lbm	12	128
481.wrf	12	249
482.sphinx3	12	233 (blue)
482.sphinx3	12	209

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Hardware

CPU Name:	Intel Xeon X7542
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2667
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip
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:	No
File System:	ext3
System State:	Run level 3 (multi-user)

Continued on next page

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L3 Cache:	18 MB I+D on chip per chip
Other Cache:	None
Memory:	128 GB (16 x 8 GB PC3-8500R CL7, Quad Rank, running at 978 MHz)
Disk Subsystem:	2 x 50 GB SATA, SSD, RAID 0
Other Hardware:	None

Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other Software:	None

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	12	710	230	711	229	**711**	**229**	12	701	232	**701**	**233**	701	233
416.gamess	12	868	271	**869**	**271**	869	270	12	868	271	**869**	**271**	869	270
433.milc	12	**501**	**220**	501	220	501	220	12	499	221	**499**	**221**	499	221
434.zeusmp	12	**523**	**209**	523	209	524	208	12	**523**	**209**	523	209	524	208
435.gromacs	12	374	229	**376**	**228**	377	227	12	372	230	367	233	**369**	**232**
436.cactusADM	12	776	185	775	185	**776**	**185**	12	776	185	775	185	**776**	**185**
437.leslie3d	12	**776**	**145**	772	146	778	145	12	774	146	769	147	**772**	**146**
444.namd	12	495	195	493	195	**493**	**195**	12	490	197	**489**	**197**	488	197
447.dealII	12	421	326	**420**	**327**	420	327	12	421	326	**420**	**327**	420	327
450.soplex	12	**645**	**155**	646	155	644	155	12	**611**	**164**	610	164	611	164
453.povray	12	217	294	**215**	**297**	214	298	12	173	370	168	379	**169**	**378**
454.calculix	12	356	278	356	278	**356**	**278**	12	356	278	356	278	**356**	**278**
459.GemsFDTD	12	**916**	**139**	931	137	911	140	12	**916**	**139**	931	137	911	140
465.tonto	12	445	265	**446**	**265**	447	264	12	398	296	**399**	**296**	399	296
470.lbm	12	1290	128	**1289**	**128**	1289	128	12	1273	130	**1273**	**130**	1272	130
481.wrf	12	540	248	**538**	**249**	538	249	12	540	248	**538**	**249**	538	249
482.sphinx3	12	**1119**	**209**	1120	209	1118	209	12	1002	233	**1003**	**233**	1013	231

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

Submit Notes

```
    The config file option 'submit' was used.
     numactl was used to bind copies to the cores
```

Operating System Notes

```
    echo 1 > /proc/sys/vm/zone_reclaim_mode
```

Platform Notes

```
    Turbo Boost set to Traditional
```

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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

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

C++ benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static

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Base Optimization Flags (Continued)

Fortran benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

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

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc    -m64
```

```
482.sphinx3: icc -m32
```

C++ benchmarks (except as noted below):
```
icpc   -m64
```

```
450.soplex: icpc -m32
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc    -m64 ifort -m64
```

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
```

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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)
>   -fno-alias -opt-prefetch

>   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)
>   -opt-malloc-options=3 -ansi-alias -auto-ilp32

>   482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -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: 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

>   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

>   416.gamess: basepeak = yes

>   434.zeusmp: basepeak = yes

>   437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div -static

>   459.GemsFDTD: basepeak = yes

>   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)
>   -unroll4 -auto -inline-calloc -opt-malloc-options=3

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

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Peak Optimization Flags (Continued)

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

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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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 12:58:49 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 28 September 2010.