SPEC® CFP2006 Result
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IBM Corporation

IBM System x3630 M3 (Intel Xeon L5640)

$SPECfp^®\_rate2006 = 197$

$SPECfp\_rate\_base2006 = 189$

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

Benchmark	Copies	Result
410.bwaves	12	169
	24	170
416.gamess	12	220
	24	214
433.milc	24	179
	24	179
434.zeusmp	24	251
435.gromacs	24	213
	24	210
436.cactusADM	24	268
437.leslie3d	12	116
	24	112
444.namd	24	205
	24	201
447.dealII	24	301
	24	311
450.soplex	12	144
	24	127
453.povray	24	360
	24	300
454.calculix	24	262
459.GemsFDTD	12	110
	24	104
465.tonto	24	229
	24	210
470.lbm	12	110
	24	101
481.wrf	24	195
482.sphinx3	24	202
	24	192

SPECfp_rate_base2006 = 189

SPECfp_rate2006 = 197

Hardware

CPU Name:	Intel Xeon L5640
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2267
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:	No
File System:	ext3
System State:	Run level 3 (multi-user)

Continued on next page

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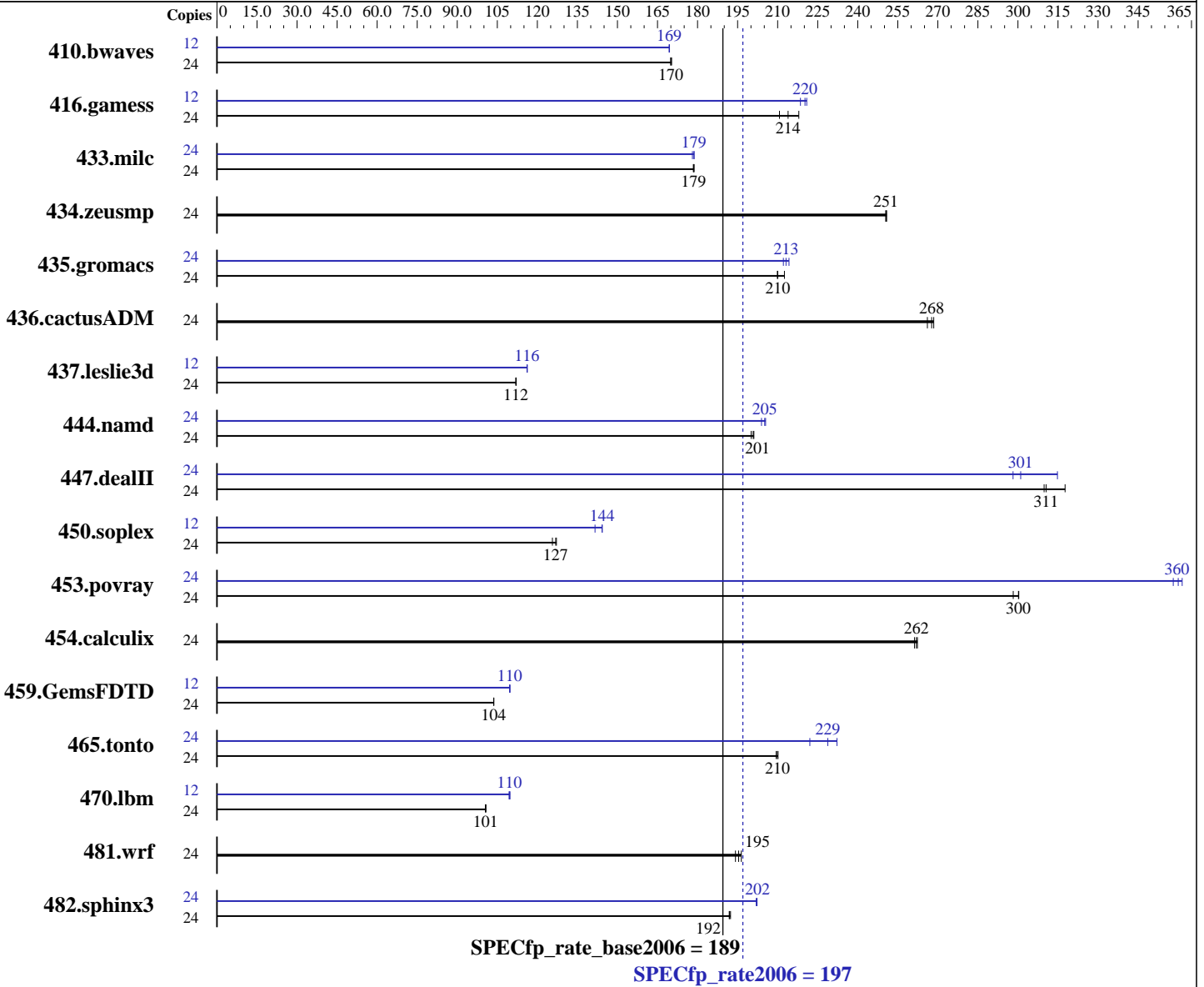
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L3 Cache:	12 MB I+D on chip per chip
Other Cache:	None
Memory:	48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem:	1 x 146 GB SAS, 15000 RPM
Other Hardware:	None

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

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	1919	170	**1918**	**170**	1915	170	12	963	169	962	169	**963**	**169**
416.gamess	24	2156	218	2230	211	**2197**	**214**	12	1064	221	**1067**	**220**	1075	219
433.milc	24	1233	179	**1234**	**179**	1235	178	24	1233	179	1237	178	**1233**	**179**
434.zeusmp	24	872	251	**872**	**251**	871	251	24	872	251	**872**	**251**	871	251
435.gromacs	24	806	213	816	210	**816**	**210**	24	800	214	808	212	**804**	**213**
436.cactusADM	24	**1071**	**268**	1068	268	1078	266	24	**1071**	**268**	1068	268	1078	266
437.leslie3d	24	**2015**	**112**	2013	112	2015	112	12	971	116	**971**	**116**	971	116
444.namd	24	957	201	962	200	**958**	**201**	24	937	205	**938**	**205**	944	204
447.dealII	24	886	310	864	318	**884**	**311**	24	**912**	**301**	921	298	872	315
450.soplex	24	1574	127	1593	126	**1578**	**127**	12	707	142	**694**	**144**	694	144
453.povray	24	425	300	**425**	**300**	428	298	24	353	362	356	358	**355**	**360**
454.calculix	24	**756**	**262**	755	262	758	261	24	**756**	**262**	755	262	758	261
459.GemsFDTD	24	2456	104	2457	104	**2456**	**104**	12	**1161**	**110**	1160	110	1162	110
465.tonto	24	**1125**	**210**	1124	210	1128	209	24	**1032**	**229**	1017	232	1063	222
470.lbm	24	3273	101	3280	101	**3276**	**101**	12	1502	110	**1505**	**110**	1507	109
481.wrf	24	1380	194	1365	196	**1372**	**195**	24	1380	194	1365	196	**1372**	**195**
482.sphinx3	24	2432	192	2438	192	**2436**	**192**	24	2316	202	2312	202	**2313**	**202**

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

Platform Notes

    BIOS Settings:
    Turbo Mode Enable
    Turbo Boost set to Traditional
    CPU C State Enable
    Data Reuse Disable

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General Notes

```
Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502
'ulimit -s unlimited' was used to set the stack size to unlimited prior to run
```

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: -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-

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

>   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

>   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

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Peak Optimization Flags (Continued)

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: 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.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.xml

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