SPEC® CFP2006 Result
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IBM Corporation

IBM System x3690 X5 (Intel Xeon E7520)

$SPECfp®\_rate2006 = 145$

$SPECfp\_rate\_base2006 = 138$

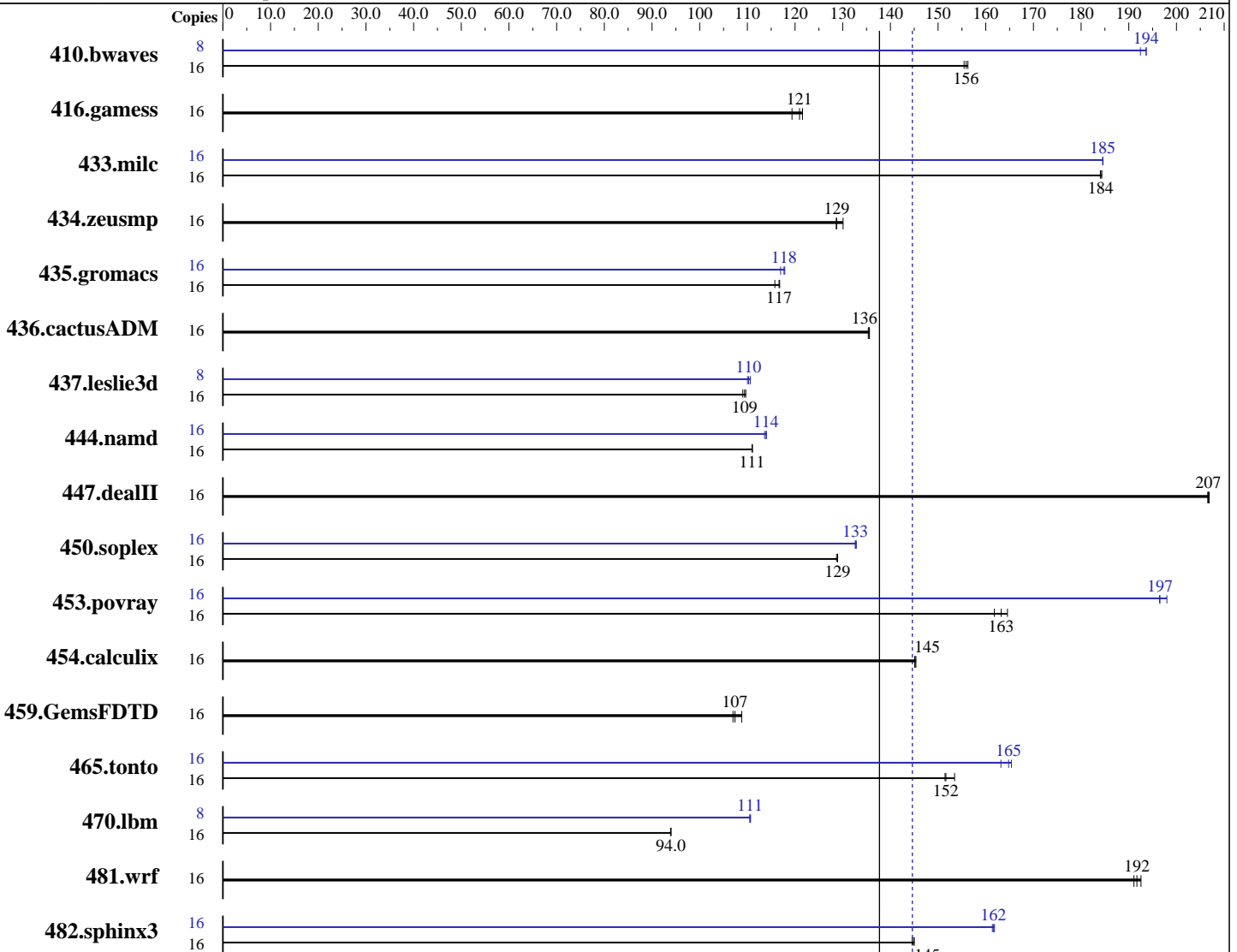**CPU2006 license:** 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Jul-2010
Hardware Availability: Aug-2010
Software Availability: Jan-2010

SPECfp_rate_base2006 = 138

SPECfp_rate2006 = 145

Hardware

CPU Name:	Intel Xeon E7520
CPU Characteristics:	
CPU MHz:	1867
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:	No
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:	128 GB (32 x 4 GB PC3-8500R CL7, Quad Rank, running at 800 MHz)	Other Software:	None
Disk Subsystem:	1 x 146 GB SAS, 15000 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	1392	156	**1395**	**156**	1399	155	8	561	194	**561**	**194**	565	192
416.gamess	16	2577	122	**2590**	**121**	2625	119	16	2577	122	**2590**	**121**	2625	119
433.milc	16	**798**	**184**	797	184	798	184	16	796	185	**796**	**185**	796	185
434.zeusmp	16	1132	129	1119	130	**1131**	**129**	16	1132	129	1119	130	**1131**	**129**
435.gromacs	16	**979**	**117**	978	117	987	116	16	**971**	**118**	977	117	969	118
436.cactusADM	16	1413	135	**1411**	**136**	1410	136	16	1413	135	**1411**	**136**	1410	136
437.leslie3d	16	**1375**	**109**	1371	110	1379	109	8	683	110	**682**	**110**	680	111
444.namd	16	**1156**	**111**	1156	111	1155	111	16	1129	114	1126	114	**1126**	**114**
447.dealII	16	**886**	**207**	886	207	885	207	16	**886**	**207**	886	207	885	207
450.soplex	16	1035	129	1037	129	**1035**	**129**	16	**1006**	**133**	1004	133	1006	133
453.povray	16	526	162	**521**	**163**	517	165	16	430	198	433	196	**433**	**197**
454.calculix	16	908	145	910	145	**909**	**145**	16	908	145	910	145	**909**	**145**
459.GemsFDTD	16	1560	109	1587	107	**1581**	**107**	16	1560	109	1587	107	**1581**	**107**
465.tonto	16	**1038**	**152**	1026	153	1039	151	16	952	165	**955**	**165**	965	163
470.lbm	16	2341	93.9	2339	94.0	**2339**	**94.0**	8	993	111	995	111	**994**	**111**
481.wrf	16	935	191	**932**	**192**	928	193	16	935	191	**932**	**192**	928	193
482.sphinx3	16	2150	145	2157	145	**2153**	**145**	16	**1929**	**162**	1927	162	1932	161

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
```

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
```

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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
```

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

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

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

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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`

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`

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Peak Optimization Flags (Continued)

> 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`

> 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.20100603.html

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You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100603.xml

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

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