SPEC® CFP2006 Result
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IBM Corporation

IBM System x iDataPlex dx320 (Intel Xeon L5420)

$SPECfp®\_rate2006 = \quad 71.1$

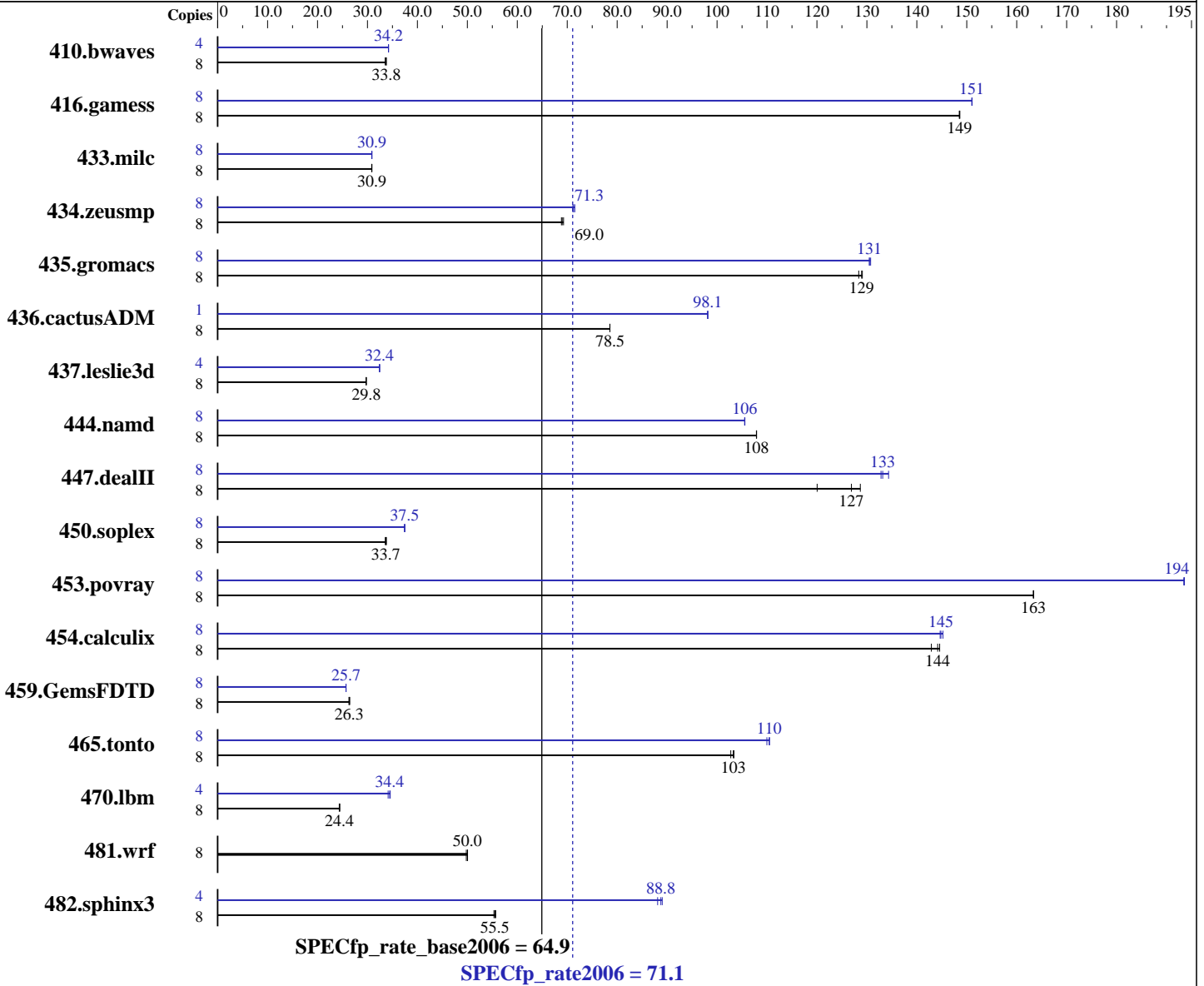$SPECfp\_rate\_base2006 = \quad 64.9$

CPU2006 license: 11

Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Oct-2008

Hardware Availability: Nov-2008

Software Availability: Nov-2008

Copies

Benchmark	Copies	Value (blue)	Value (black)
410.bwaves	4 / 8	34.2	33.8
416.gamess	8 / 8	151	149
433.milc	8 / 8	30.9	30.9
434.zeusmp	8 / 8	71.3	69.0
435.gromacs	8 / 8	131	129
436.cactusADM	1 / 8	98.1	78.5
437.leslie3d	4 / 8	32.4	29.8
444.namd	8 / 8	106	108
447.dealII	8 / 8	133	127
450.soplex	8 / 8	37.5	33.7
453.povray	8 / 8	194	163
454.calculix	8 / 8	145	144
459.GemsFDTD	8 / 8	25.7	26.3
465.tonto	8 / 8	110	103
470.lbm	4 / 8	34.4	24.4
481.wrf	8		50.0
482.sphinx3	4 / 8	88.8	55.5

SPECfp_rate_base2006 = 64.9

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Hardware

CPU Name: Intel Xeon L5420

CPU Characteristics: 1333MHz system bus

CPU MHz: 2500

FPU: Integrated

CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip

CPU(s) orderable: 1,2 chips

Primary Cache: 32 KB I + 32 KB D on chip per core

Secondary Cache: 12 MB I+D on chip per chip, 6 MB shared / 2 cores

Continued on next page

Software

Operating System: SuSE Linux Enterprise Server 10(x86_64) SP1, Kernel 2.6.16.46-0.12-smp

Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20080730 Package ID: l_cproc_b_11.0.042, l_fproc_b_11.0.042

Auto Parallel: Yes

File System: ReiserFS

System State: Run level 3 (multi-user)

Base Pointers: 64-bit

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L3 Cache:	None
Other Cache:	None
Memory:	16 GB (4 x 4 GB DDR2-5300P ECC)
Disk Subsystem:	1 x 250 GB SATA, 7200 RPM
Other Hardware:	None

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

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	3241	33.5	3220	33.8	**3221**	**33.8**	4	1588	34.2	1589	34.2	**1589**	**34.2**
416.gamess	8	**1054**	**149**	1054	149	1055	148	8	**1037**	**151**	1037	151	1037	151
433.milc	8	2381	30.8	**2378**	**30.9**	2378	30.9	8	2381	30.9	2377	30.9	**2378**	**30.9**
434.zeusmp	8	1058	68.8	1051	69.3	**1055**	**69.0**	8	1018	71.5	1023	71.1	**1021**	**71.3**
435.gromacs	8	445	128	442	129	**443**	**129**	8	438	130	**438**	**131**	437	131
436.cactusADM	8	1217	78.5	**1217**	**78.5**	1217	78.5	1	**122**	**98.1**	122	98.1	122	98.1
437.leslie3d	8	2530	29.7	2527	29.8	**2527**	**29.8**	4	**1160**	**32.4**	1161	32.4	1159	32.5
444.namd	8	595	108	595	108	**595**	**108**	8	608	106	**608**	**106**	608	106
447.dealII	8	**721**	**127**	762	120	711	129	8	**687**	**133**	681	134	689	133
450.soplex	8	1988	33.6	**1980**	**33.7**	1974	33.8	8	1784	37.4	**1781**	**37.5**	1780	37.5
453.povray	8	**261**	**163**	260	163	261	163	8	**220**	**194**	220	194	220	193
454.calculix	8	457	145	**458**	**144**	462	143	8	454	145	456	145	**456**	**145**
459.GemsFDTD	8	**3224**	**26.3**	3208	26.5	3225	26.3	8	**3301**	**25.7**	3301	25.7	3303	25.7
465.tonto	8	761	103	766	103	**762**	**103**	8	712	111	716	110	**713**	**110**
470.lbm	8	4494	24.5	**4503**	**24.4**	4514	24.3	4	1610	34.1	**1595**	**34.4**	1590	34.6
481.wrf	8	**1787**	**50.0**	1786	50.0	1795	49.8	8	**1787**	**50.0**	1786	50.0	1795	49.8
482.sphinx3	8	2800	55.7	2818	55.3	**2808**	**55.5**	4	885	88.1	876	89.0	**878**	**88.8**

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.
    taskset was used to bind processes to cores except for 436.cactusADM peak
```

General Notes

```
    OMP_NUM_THREADS set to number of processors
    KMP_AFFINITY set to "physical,0"
    KMP_STACKSIZE set to 64M
    Hardware Prefetch Enabled and Adjacent Sector Prefetch Disabled
    Operating Mode set to "Performance"
    'ulimit -s unlimited' was used to set the stack size to unlimited prior to run
```

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Base Compiler Invocation

C benchmarks:
    icc

C++ benchmarks:
    icpc

Fortran benchmarks:
    ifort

Benchmarks using both Fortran and C:
    icc ifort

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:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

C++ benchmarks:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Fortran benchmarks:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Benchmarks using both Fortran and C:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

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Peak Compiler Invocation

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

```
482.sphinx3: /opt/intel/Compiler/11.0/042/bin/ia32/icc
            -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
            -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

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

```
450.soplex: /opt/intel/Compiler/11.0/042/bin/ia32/icpc
            -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
            -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

Fortran benchmarks (except as noted below):
```
ifort
```

```
437.leslie3d: /opt/intel/Compiler/11.0/042/bin/ia32/ifort
             -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
             -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

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

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
      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:

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Peak Optimization Flags (Continued)

```
  433.milc: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -fno-alias

  470.lbm: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
            -auto-ilp32

  482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2
```

C++ benchmarks:

```
  444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -fno-alias -auto-ilp32

  447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -unroll2 -ansi-alias -scalar-rep-

  450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -opt-malloc-options=3

  453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -unroll4 -ansi-alias
```

Fortran benchmarks:

```
  410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

  416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -unroll2 -Ob0 -ansi-alias
            -scalar-rep-

  434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static

  437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -opt-malloc-options=3 -opt-prefetch

  459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -unroll2 -Ob0 -opt-prefetch

  465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -unroll4 -auto
```

Benchmarks using both Fortran and C:

```
  435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -opt-prefetch -auto-ilp32

  436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
            -no-prec-div -static -unroll2 -opt-prefetch -parallel
            -auto-ilp32
```

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Peak Optimization Flags (Continued)

454.calculix: `-xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32`

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-ic11.0-fp-linux64-revA.20090713.01.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.01.xml`

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