SPEC® CFP2006 Result
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NEC Corporation

Express5800/B140a-T
(Intel Xeon E7220)

$SPECfp®\_rate2006 =$ 92.7

$SPECfp\_rate\_base2006 =$ 89.4

CPU2006 license: 9006	**Test date:** Mar-2009
Test sponsor: NEC Corporation	**Hardware Availability:** Feb-2009
Tested by: NEC Corporation	**Software Availability:** Nov-2008

Benchmark results chart (Copies vs. scale 0–230):

Benchmark	Copies	Peak	Base
410.bwaves	8 / 8	55.0	54.9
416.gamess	8 / 8	172	169
433.milc	8 / 8	55.9	55.3
434.zeusmp	8 / 8	84.9	86.8
435.gromacs	8 / 8	145	145
436.cactusADM	1 / 8	122	121
437.leslie3d	8 / 8	47.0	43.3
444.namd	8 / 8	127	127
447.dealII	8 / 8	155	149
450.soplex	8 / 8	57.5	51.3
453.povray	8 / 8	225	189
454.calculix	8 / 8	155	156
459.GemsFDTD	8 / 8	41.1	41.0
465.tonto	8 / 8	122	115
470.lbm	8 / 8	41.2	39.4
481.wrf	8	73.3	
482.sphinx3	8 / 8	124	113

SPECfp_rate_base2006 = 89.4

SPECfp_rate2006 = 92.7

Hardware

CPU Name:	Intel Xeon E7220
CPU Characteristics:	1066 MHz system bus
CPU MHz:	2933
FPU:	Integrated
CPU(s) enabled:	8 cores, 4 chips, 2 cores/chip
CPU(s) orderable:	1,2,3,4 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	4 MB I+D on chip per core

Continued on next page

Software

Operating System:	SUSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16.60-0.21-smp
Compiler:	Intel C++ and Fortran Compiler 11.0 for Linux Build 20081105 Package ID: l_cproc_p_11.0.074, l_cprof_p_11.0.074
Auto Parallel:	Yes
File System:	ReiserFS
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

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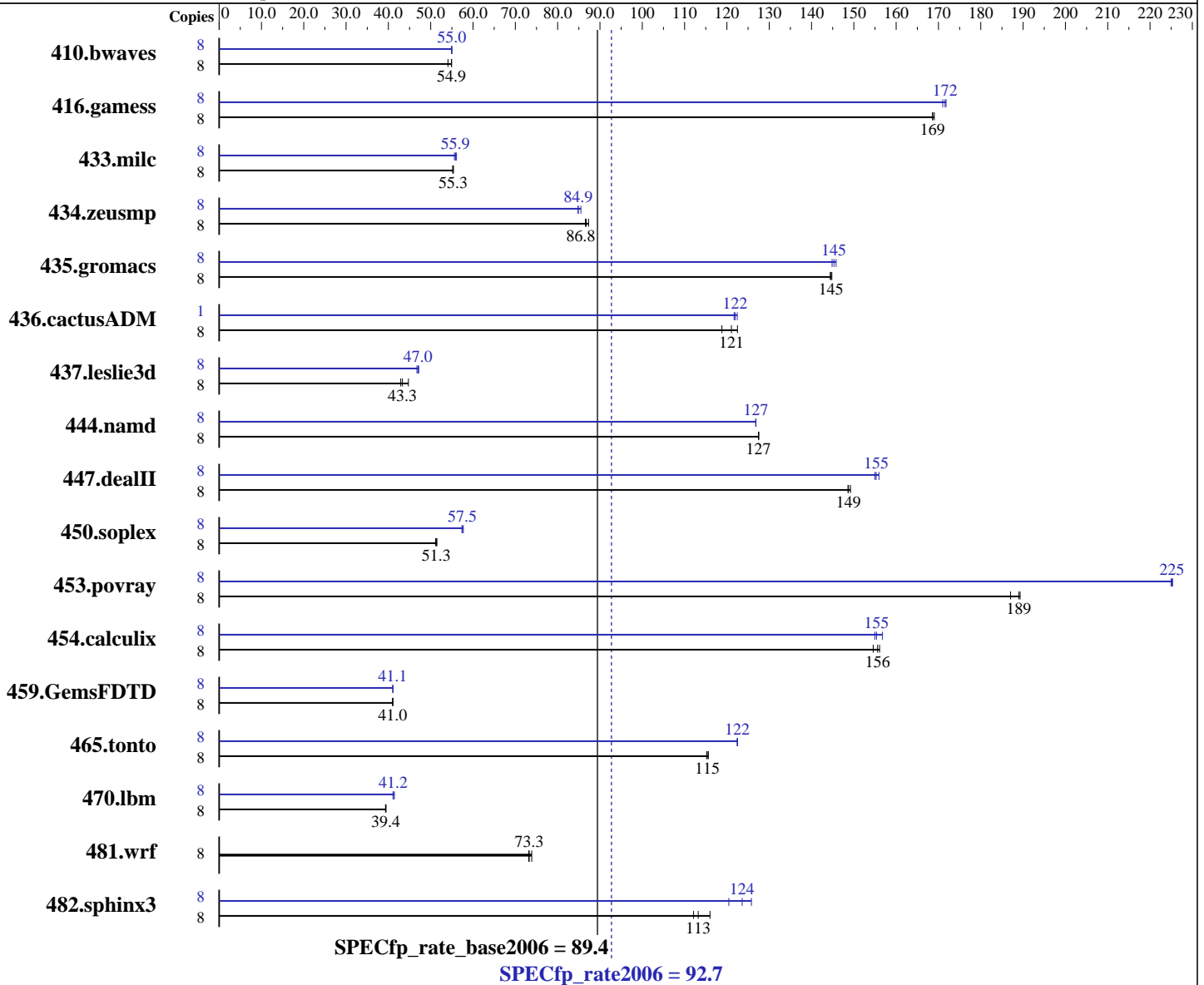$SPECfp\_rate\_base2006 =$ 89.4

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L3 Cache:	None
Other Cache:	None
Memory:	32 GB (16x2 GB PC2-5300F, 2 rank, CL5-5-5, ECC)
Disk Subsystem:	1x146.5 GB SAS, 10000 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	2010	54.1	**1980**	**54.9**	1979	54.9	8	**1978**	**55.0**	1979	54.9	1977	55.0
416.gamess	8	929	169	927	169	**929**	**169**	8	**913**	**172**	912	172	916	171
433.milc	8	1331	55.2	1327	55.4	**1328**	**55.3**	8	1321	55.6	**1315**	**55.9**	1309	56.1
434.zeusmp	8	841	86.6	834	87.3	**839**	**86.8**	8	858	84.8	852	85.5	**858**	**84.9**
435.gromacs	8	**395**	**145**	396	144	394	145	8	**393**	**145**	392	146	394	145
436.cactusADM	8	805	119	**790**	**121**	780	122	1	98.2	122	97.6	122	**98.0**	**122**
437.leslie3d	8	1681	44.7	1752	42.9	**1736**	**43.3**	8	1609	46.7	**1600**	**47.0**	1594	47.2
444.namd	8	**503**	**127**	503	127	503	128	8	**506**	**127**	506	127	506	127
447.dealII	8	616	149	**615**	**149**	613	149	8	**589**	**155**	587	156	590	155
450.soplex	8	1304	51.2	**1300**	**51.3**	1296	51.5	8	1163	57.4	**1160**	**57.5**	1156	57.7
453.povray	8	228	187	**225**	**189**	225	189	8	**189**	**225**	189	225	189	225
454.calculix	8	427	155	**424**	**156**	423	156	8	426	155	421	157	**425**	**155**
459.GemsFDTD	8	**2069**	**41.0**	2070	41.0	2068	41.1	8	**2067**	**41.1**	2066	41.1	2068	41.1
465.tonto	8	683	115	681	116	**682**	**115**	8	**643**	**122**	643	122	643	123
470.lbm	8	2796	39.3	**2790**	**39.4**	2788	39.4	8	2675	41.1	**2670**	**41.2**	2654	41.4
481.wrf	8	**1220**	**73.3**	1210	73.9	1221	73.2	8	**1220**	**73.3**	1210	73.9	1221	73.2
482.sphinx3	8	1391	112	1344	116	**1377**	**113**	8	1239	126	**1261**	**124**	1294	120

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

Operating System Notes

    'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
     OMP_NUM_THREADS set to number of cores
     KMP_AFFINITY set to "physical,0"
     KMP_STACKSIZE set to 64M

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Platform Notes

```
    Bios settings:
    Hardware Prefetcher:          Disabled
    Adjacent Cache Line Prefetch:     Disabled
    FSB High Bandwidth Optimization: Disabled
```

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:
    -xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch

C++ benchmarks:
    -xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch

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Base Optimization Flags (Continued)

Fortran benchmarks:

```
-xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch
```

Benchmarks using both Fortran and C:

```
-xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch
```

Peak Compiler Invocation

C benchmarks (except as noted below):

```
icc
```

```
482.sphinx3: /opt/intel/Compiler/11.0/074/bin/ia32/icc
        -L/opt/intel/Compiler/11.0/074/ipp/ia32/lib
        -I/opt/intel/Compiler/11.0/074/ipp/ia32/include
```

C++ benchmarks (except as noted below):

```
icpc
```

```
450.soplex: /opt/intel/Compiler/11.0/074/bin/ia32/icpc
        -L/opt/intel/Compiler/11.0/074/ipp/ia32/lib
        -I/opt/intel/Compiler/11.0/074/ipp/ia32/include
```

Fortran benchmarks (except as noted below):

```
ifort
```

```
437.leslie3d: /opt/intel/Compiler/11.0/074/bin/ia32/ifort
        -L/opt/intel/Compiler/11.0/074/ipp/ia32/lib
        -I/opt/intel/Compiler/11.0/074/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
```

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Peak Portability Flags (Continued)

```
   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: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
             -no-prec-div -static -fno-alias

    470.lbm: -xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch
             -auto-ilp32

 482.sphinx3: -xSSSE3 -ipo -O3 -no-prec-div -static -unroll2
```

C++ benchmarks:

```
   444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
             -no-prec-div -static -fno-alias -auto-ilp32

  447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
              -no-prec-div -static -unroll2 -ansi-alias -scalar-rep-

  450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
              -no-prec-div -static -opt-malloc-options=3

  453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
              -no-prec-div -static -unroll4 -ansi-alias
```

Fortran benchmarks:

```
  410.bwaves: -xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch

  416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
              -no-prec-div -static -unroll2 -Ob0 -ansi-alias
              -scalar-rep-

  434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
              -no-prec-div -static

  437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
                -no-prec-div -static -opt-malloc-options=3 -opt-prefetch

  459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
                -no-prec-div -static -unroll2 -Ob0 -opt-prefetch
```

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Peak Optimization Flags (Continued)

465.tonto: `-prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3`
`-no-prec-div -static -unroll4 -auto`

Benchmarks using both Fortran and C:

435.gromacs: `-prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3`
`-no-prec-div -static -opt-prefetch -auto-ilp32`

436.cactusADM: `-prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3`
`-no-prec-div -static -unroll2 -opt-prefetch -parallel`
`-auto-ilp32`

454.calculix: `-xSSSE3 -ipo -O3 -no-prec-div -static -auto-ilp32`

481.wrf: `basepeak = yes`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revE.20090710.html
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revE.20090710.xml
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.xml

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

Tested with SPEC CPU2006 v1.1.
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