SPEC® CFP2006 Result
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NEC Corporation

Express5800/B120a
(Intel Xeon X5570)

$SPECfp®\_rate2006 = \quad 193$

$SPECfp\_rate\_base2006 = \quad 186$
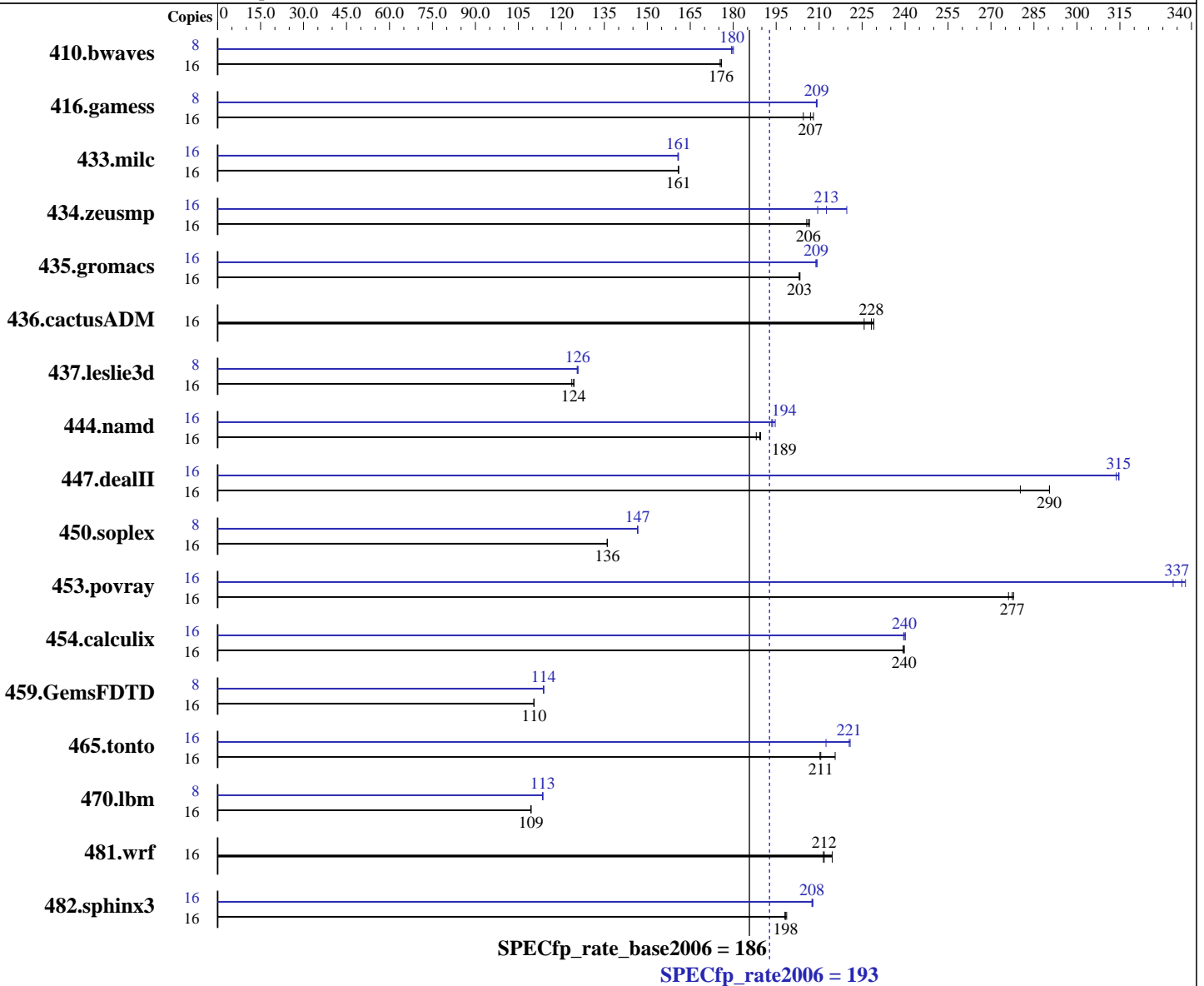
CPU2006 license: 9006	**Test date:** Aug-2009
Test sponsor: NEC Corporation	**Hardware Availability:** Jul-2009
Tested by: NEC Corporation	**Software Availability:** Feb-2009

Copies

Benchmark	Copies	Result
410.bwaves	8	180
	16	176
416.gamess	8	209
	16	207
433.milc	16	161
	16	161
434.zeusmp	16	213
	16	206
435.gromacs	16	209
	16	203
436.cactusADM	16	228
437.leslie3d	8	126
	16	124
444.namd	16	194
	16	189
447.dealII	16	315
	16	290
450.soplex	8	147
	16	136
453.povray	16	337
	16	277
454.calculix	16	240
	16	240
459.GemsFDTD	8	114
	16	110
465.tonto	16	221
	16	211
470.lbm	8	113
	16	109
481.wrf	16	212
482.sphinx3	16	208
	16	198

SPECfp_rate_base2006 = 186

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Hardware
CPU Name:	Intel Xeon X5570
CPU Characteristics:	Intel Turbo Boost Technology up to 3.33 GHz
CPU MHz:	2933
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

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Software
Operating System:	SUSE Linux Enterprise Server 10 (x86_64) SP2 with patch Linux kernel 20090119, Kernel 2.6.16.60-0.34-smp
Compiler:	Intel C++ and Fortran Compiler Professional 11.0 for Linux Build 20090131 Package ID: l_cproc_p_11.0.081, l_cprof_p_11.0.081
Auto Parallel:	No
File System:	ReiserFS

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L3 Cache:	8 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	48 GB (6 X 8 GB PC3-8500R, 4 rank, CL7, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1x80 GB SATA2, 7200 RPM	Other Software:	Binutils 2.18.50.0.7.20080502
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	**1237**	**176**	1236	176	1239	175	8	**606**	**180**	604	180	606	179
416.gamess	16	1532	204	1506	208	**1514**	**207**	8	**749**	**209**	749	209	749	209
433.milc	16	913	161	**913**	**161**	913	161	16	**913**	**161**	913	161	914	161
434.zeusmp	16	708	206	705	207	**706**	**206**	16	663	220	**685**	**213**	695	209
435.gromacs	16	562	203	**562**	**203**	563	203	16	546	209	**547**	**209**	547	209
436.cactusADM	16	847	226	835	229	**838**	**228**	16	847	226	835	229	**838**	**228**
437.leslie3d	16	1209	124	1216	124	**1210**	**124**	8	**598**	**126**	599	126	598	126
444.namd	16	682	188	**678**	**189**	677	190	16	663	193	**662**	**194**	659	195
447.dealII	16	**630**	**290**	630	290	653	280	16	583	314	**582**	**315**	582	315
450.soplex	16	981	136	**981**	**136**	981	136	8	455	147	455	147	**455**	**147**
453.povray	16	**307**	**277**	308	276	306	278	16	255	334	**253**	**337**	252	338
454.calculix	16	551	240	**551**	**240**	552	239	16	550	240	**551**	**240**	551	239
459.GemsFDTD	16	1538	110	**1536**	**110**	1536	111	8	**746**	**114**	745	114	747	114
465.tonto	16	730	216	**748**	**211**	749	210	16	713	221	**714**	**221**	741	212
470.lbm	16	2009	109	**2010**	**109**	2010	109	8	969	113	**968**	**113**	968	114
481.wrf	16	845	211	833	215	**844**	**212**	16	845	211	833	215	**844**	**212**
482.sphinx3	16	1570	199	**1573**	**198**	1574	198	16	1501	208	1503	208	**1503**	**208**

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

    'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run

Platform Notes

    BIOS setting:
    NUMA configuration: Enabled

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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:
    `-xSSE4.2 -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

        482.sphinx3: `icc -m32`

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

         450.soplex: `icpc -m32`

Fortran benchmarks (except as noted below):
        ifort

        437.leslie3d: `ifort -m32`

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:

        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`

        470.lbm: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch`
                `-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: -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: -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)

   437.leslie3d: -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 -opt-prefetch

 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 -opt-prefetch

    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
```

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: -xSSE4.2 -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-revH.html
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.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-revH.xml
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.xml

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