SPEC® CFP2006 Result
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NEC Corporation

Express5800/B120a-d
(Intel Xeon X5570)

$SPECfp^{®}2006 =$ 39.9

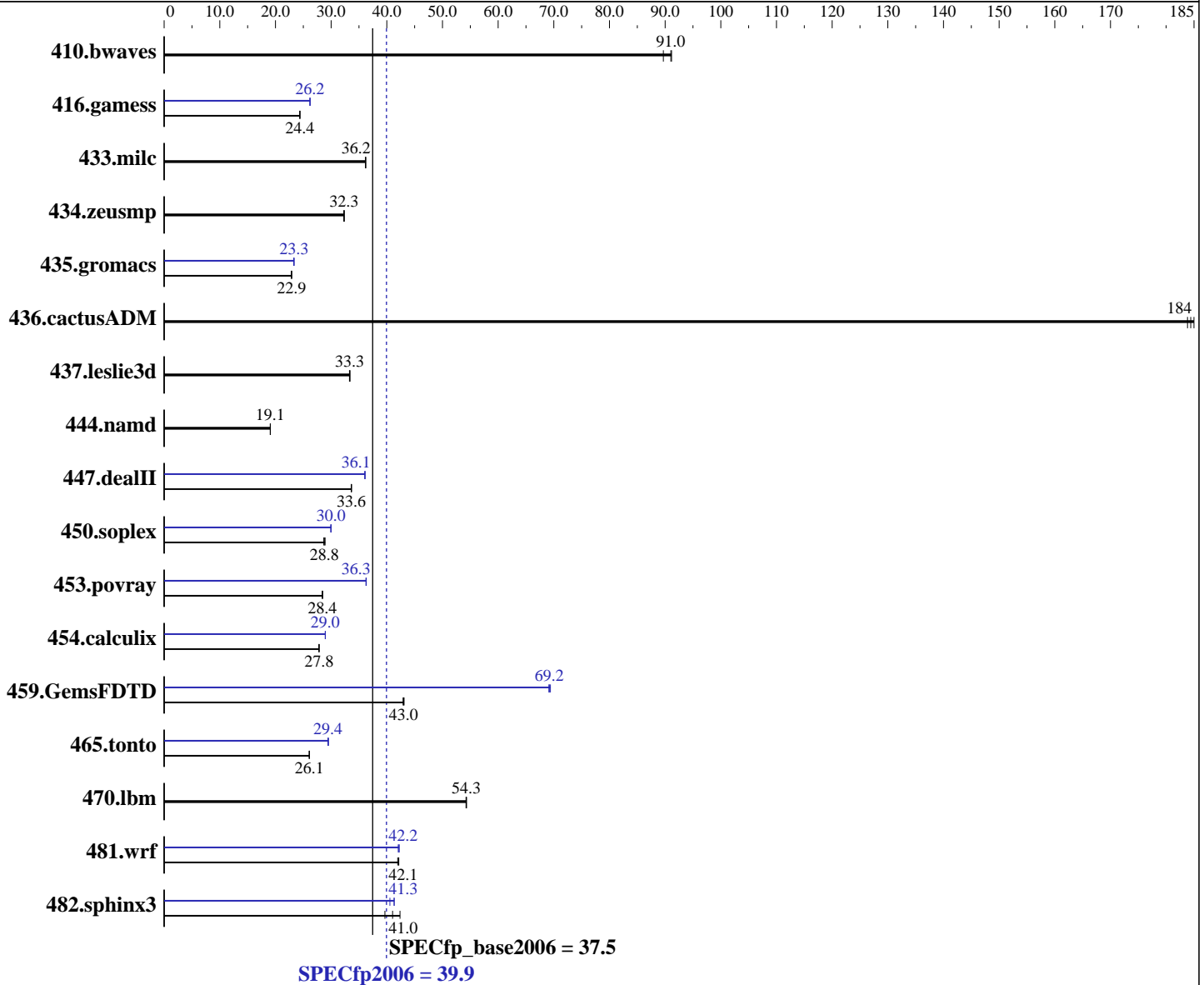$SPECfp\_base2006 =$ 37.5

CPU2006 license: 9006
Test sponsor: NEC Corporation
Tested by: NEC Corporation

Test date: Sep-2009
Hardware Availability: Jun-2009
Software Availability: Feb-2009

Benchmark	Value
410.bwaves	91.0
416.gamess	26.2 / 24.4
433.milc	36.2
434.zeusmp	32.3
435.gromacs	23.3 / 22.9
436.cactusADM	184
437.leslie3d	33.3
444.namd	19.1
447.dealII	36.1 / 33.6
450.soplex	30.0 / 28.8
453.povray	36.3 / 28.4
454.calculix	29.0 / 27.8
459.GemsFDTD	69.2 / 43.0
465.tonto	29.4 / 26.1
470.lbm	54.3
481.wrf	42.2 / 42.1
482.sphinx3	41.3 / 41.0

SPECfp_base2006 = 37.5
SPECfp2006 = 39.9

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
Continued on next page

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: Yes
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:	12 GB (6 X 2 GB PC3-10600E, 2 rank, CL9, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1x73.2 GB SAS, 10000 RPM in Express5800/AD106a	Other Software:	Binutils 2.18.50.0.7.20080502
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	152	89.7	149	91.2	**149**	**91.0**	152	89.7	149	91.2	**149**	**91.0**
416.gamess	**803**	**24.4**	804	24.4	803	24.4	747	26.2	**747**	**26.2**	747	26.2
433.milc	254	36.2	254	36.2	**254**	**36.2**	254	36.2	254	36.2	**254**	**36.2**
434.zeusmp	281	32.3	**281**	**32.3**	282	32.3	281	32.3	**281**	**32.3**	282	32.3
435.gromacs	312	22.9	312	22.9	**312**	**22.9**	**306**	**23.3**	306	23.3	307	23.3
436.cactusADM	65.0	184	64.6	185	**64.8**	**184**	65.0	184	64.6	185	**64.8**	**184**
437.leslie3d	282	33.4	**282**	**33.3**	282	33.3	282	33.4	**282**	**33.3**	282	33.3
444.namd	421	19.1	420	19.1	**421**	**19.1**	421	19.1	420	19.1	**421**	**19.1**
447.dealII	**340**	**33.6**	340	33.6	340	33.6	317	36.1	**317**	**36.1**	317	36.1
450.soplex	291	28.7	**290**	**28.8**	288	28.9	278	30.0	**278**	**30.0**	279	29.9
453.povray	187	28.4	**187**	**28.4**	187	28.5	147	36.2	**147**	**36.3**	147	36.3
454.calculix	296	27.8	**296**	**27.8**	297	27.8	**285**	**29.0**	285	29.0	285	28.9
459.GemsFDTD	247	42.9	**247**	**43.0**	246	43.1	**153**	**69.2**	153	69.4	154	69.1
465.tonto	**377**	**26.1**	377	26.1	377	26.1	333	29.5	334	29.4	**334**	**29.4**
470.lbm	253	54.2	253	54.3	**253**	**54.3**	253	54.2	253	54.3	**253**	**54.3**
481.wrf	266	42.0	**265**	**42.1**	265	42.2	266	42.1	**265**	**42.2**	265	42.2
482.sphinx3	**475**	**41.0**	491	39.7	460	42.4	**472**	**41.3**	481	40.6	472	41.3

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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 granularity=fine,scatter
KMP_STACKSIZE set to 200M
```

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 -parallel -opt-prefetch

C++ benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

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

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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:
    ifort

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
    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: basepeak = yes

    470.lbm: basepeak = yes

    482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2

C++ benchmarks:

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Software Availability: Feb-2009

Peak Optimization Flags (Continued)

444.namd: basepeak = yes

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- -opt-prefetch

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: basepeak = yes

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: basepeak = yes

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 -parallel

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

436.cactusADM: basepeak = yes

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch
-parallel -auto-ilp32

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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

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

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