SPEC® CFP2006 Result
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NEC Corporation

Express5800/T120a-E
(Intel Xeon E5502)

$SPECfp^{®}2006 =$ 23.1

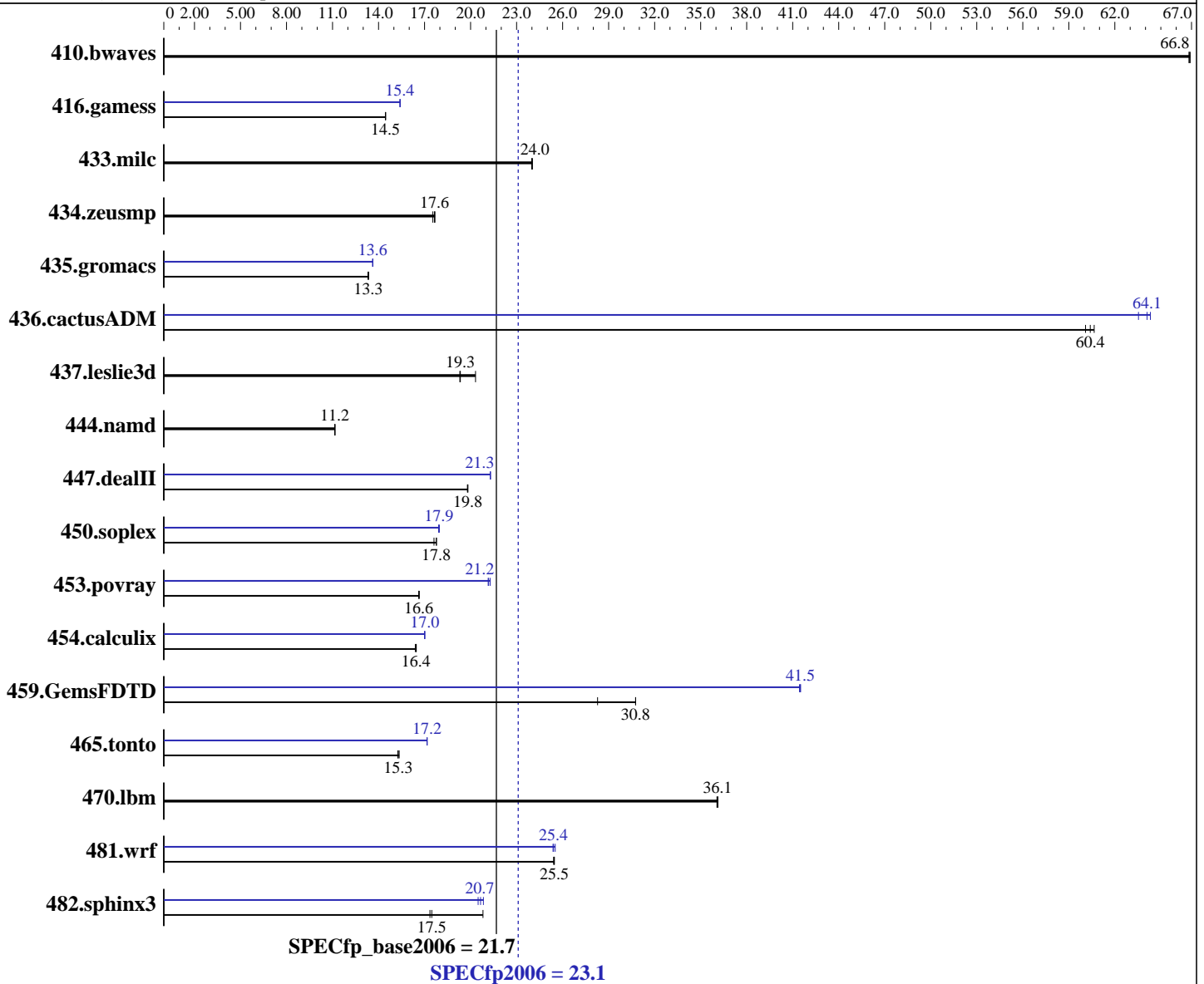$SPECfp\_base2006 =$ 21.7

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

Test date: May-2009
Hardware Availability: Apr-2009
Software Availability: Feb-2009

Benchmark	base	peak
410.bwaves	66.8	
416.gamess	14.5	15.4
433.milc	24.0	
434.zeusmp	17.6	
435.gromacs	13.3	13.6
436.cactusADM	60.4	64.1
437.leslie3d	19.3	
444.namd	11.2	
447.dealII	19.8	21.3
450.soplex	17.8	17.9
453.povray	16.6	21.2
454.calculix	16.4	17.0
459.GemsFDTD	30.8	41.5
465.tonto	15.3	17.2
470.lbm	36.1	
481.wrf	25.5	25.4
482.sphinx3	17.5	20.7

SPECfp_base2006 = 21.7
SPECfp2006 = 23.1

Hardware
CPU Name: Intel Xeon E5502
CPU Characteristics:
CPU MHz: 1867
FPU: Integrated
CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip
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 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
System State: Run level 3 (multi-user)

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L3 Cache:	4 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	48 GB (12 X 4 GB PC3-8500R running at 800 MHz)	Other Software:	Binutils 2.18.50.0.7.20080502
Disk Subsystem:	1x160 GB SATA2, 7200 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	203	66.8	**203**	**66.8**	203	66.9	203	66.8	**203**	**66.8**	203	66.9
416.gamess	1354	14.5	1355	14.4	**1354**	**14.5**	1272	15.4	**1271**	**15.4**	1271	15.4
433.milc	**382**	**24.0**	382	24.0	383	24.0	**382**	**24.0**	382	24.0	383	24.0
434.zeusmp	515	17.7	**516**	**17.6**	519	17.5	515	17.7	**516**	**17.6**	519	17.5
435.gromacs	537	13.3	**535**	**13.3**	535	13.4	**524**	**13.6**	524	13.6	524	13.6
436.cactusADM	197	60.7	**198**	**60.4**	199	60.1	188	63.5	186	64.3	**186**	**64.1**
437.leslie3d	487	19.3	**486**	**19.3**	463	20.3	487	19.3	**486**	**19.3**	463	20.3
444.namd	719	11.2	719	11.2	**719**	**11.2**	719	11.2	719	11.2	**719**	**11.2**
447.dealII	577	19.8	**577**	**19.8**	578	19.8	**537**	**21.3**	537	21.3	537	21.3
450.soplex	469	17.8	473	17.6	**469**	**17.8**	**465**	**17.9**	464	18.0	465	17.9
453.povray	**320**	**16.6**	320	16.6	319	16.7	**251**	**21.2**	252	21.1	250	21.3
454.calculix	**502**	**16.4**	501	16.5	503	16.4	485	17.0	485	17.0	**485**	**17.0**
459.GemsFDTD	375	28.3	**345**	**30.8**	345	30.8	256	41.5	**256**	**41.5**	256	41.4
465.tonto	641	15.3	**644**	**15.3**	645	15.3	573	17.2	573	17.2	**573**	**17.2**
470.lbm	381	36.1	**381**	**36.1**	380	36.1	381	36.1	**381**	**36.1**	380	36.1
481.wrf	440	25.4	439	25.5	**439**	**25.5**	438	25.5	440	25.4	**440**	**25.4**
482.sphinx3	1123	17.4	**1116**	**17.5**	937	20.8	951	20.5	935	20.8	**944**	**20.7**

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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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: -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 -opt-prefetch -parallel -auto-ilp32

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-revG.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-revG.xml
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.xml

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