SPEC® CFP2006 Result

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NEC Corporation

Express5800/R120a-2
(Intel Xeon E5540)

$SPECfp®\_rate2006 =$ 87.6

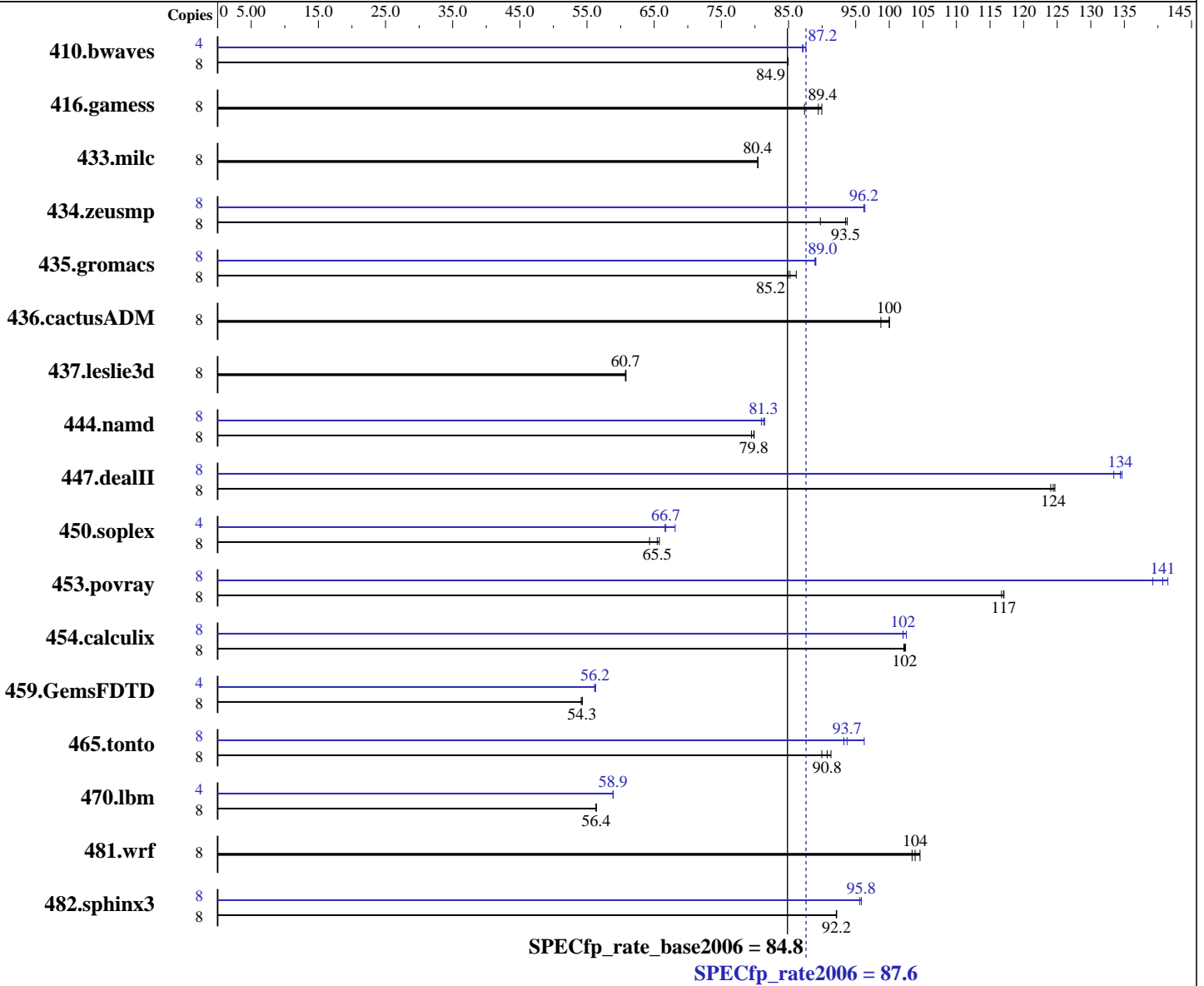$SPECfp\_rate\_base2006 =$ 84.8

CPU2006 license: 9006	**Test date:** Sep-2009
Test sponsor: NEC Corporation	**Hardware Availability:** Apr-2009
Tested by: NEC Corporation	**Software Availability:** Feb-2009

Copies — graph scale: 0 5.00 15.0 25.0 35.0 45.0 55.0 65.0 75.0 85.0 95.0 100 105 110 115 120 125 130 135 145

Benchmark	Copies	Result
410.bwaves	4	87.2
410.bwaves	8	84.9
416.gamess	8	89.4
433.milc	8	80.4
434.zeusmp	8	96.2
434.zeusmp	8	93.5
435.gromacs	8	89.0
435.gromacs	8	85.2
436.cactusADM	8	100
437.leslie3d	8	60.7
444.namd	8	81.3
444.namd	8	79.8
447.dealII	8	134
447.dealII	8	124
450.soplex	4	66.7
450.soplex	8	65.5
453.povray	8	141
453.povray	8	117
454.calculix	8	102
454.calculix	8	102
459.GemsFDTD	4	56.2
459.GemsFDTD	8	54.3
465.tonto	8	93.7
465.tonto	8	90.8
470.lbm	4	58.9
470.lbm	8	56.4
481.wrf	8	104
482.sphinx3	8	95.8
482.sphinx3	8	92.2

SPECfp_rate_base2006 = 84.8

SPECfp_rate2006 = 87.6

Hardware

CPU Name:	Intel Xeon E5540
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2533
FPU:	Integrated
CPU(s) enabled:	4 cores, 1 chip, 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:	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:	12 GB (3 X 4 GB PC3-8500R, 2 rank, CL7, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1x146.5 GB SAS, 15000 RPM	Other Software:	Binutils 2.18.50.0.7.20080502
Other Hardware:	None		

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	**1280**	**84.9**	1280	84.9	1282	84.8	4	624	87.1	621	87.6	**624**	**87.2**
416.gamess	8	1741	90.0	1793	87.4	**1751**	**89.4**	8	1741	90.0	1793	87.4	**1751**	**89.4**
433.milc	8	913	80.4	**913**	**80.4**	913	80.4	8	913	80.4	**913**	**80.4**	913	80.4
434.zeusmp	8	777	93.7	**779**	**93.5**	811	89.7	8	**756**	**96.2**	755	96.4	757	96.2
435.gromacs	8	663	86.2	**670**	**85.2**	672	84.9	8	642	88.9	641	89.1	**642**	**89.0**
436.cactusADM	8	**956**	**100**	956	100	968	98.7	8	**956**	**100**	956	100	968	98.7
437.leslie3d	8	1237	60.8	**1238**	**60.7**	1238	60.7	8	1237	60.8	**1238**	**60.7**	1238	60.7
444.namd	8	**804**	**79.8**	807	79.5	803	79.9	8	793	80.9	788	81.5	**789**	**81.3**
447.dealII	8	**736**	**124**	738	124	734	125	8	**681**	**134**	680	135	686	133
450.soplex	8	1038	64.3	**1019**	**65.5**	1015	65.8	4	501	66.6	**500**	**66.7**	490	68.1
453.povray	8	363	117	365	117	**364**	**117**	8	306	139	**302**	**141**	301	141
454.calculix	8	644	102	**645**	**102**	646	102	8	644	103	**647**	**102**	647	102
459.GemsFDTD	8	**1564**	**54.3**	1563	54.3	1568	54.1	4	754	56.3	**755**	**56.2**	756	56.1
465.tonto	8	875	90.0	**867**	**90.8**	862	91.3	8	**840**	**93.7**	844	93.2	818	96.3
470.lbm	8	1950	56.4	**1951**	**56.4**	1951	56.3	4	933	58.9	**933**	**58.9**	933	58.9
481.wrf	8	855	105	**861**	**104**	864	103	8	855	105	**861**	**104**	864	103
482.sphinx3	8	1693	92.1	1692	92.2	**1692**	**92.2**	8	**1627**	**95.8**	1627	95.8	1631	95.6

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

      Default BIOS settings were used.

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(Intel Xeon E5540)

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$SPECfp\_rate\_base2006 =$ 84.8

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

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

General Notes

The NEC Express5800/R120a-1(Intel Xeon E5540),
the NEC Express5800/R120a-2(Intel Xeon E5540),
the Bull NovaScale R440 E2 (Intel Xeon E5540, 2.53 GHz) and
the Bull NovaScale R460 E2 (Intel Xeon E5540, 2.53 GHz) models are electronically equivalent.
The results have been measured on a NEC Express5800/R120a-1(Intel Xeon E5540) model.

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`

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Base Optimization Flags (Continued)

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
```

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
```

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Peak Optimization Flags

C benchmarks:

> 433.milc: basepeak = yes

> 470.lbm: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-ilp32`

> 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: basepeak = yes

> 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: 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`

> 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

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

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