SPEC® CFP2006 Result
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NEC Corporation

Express5800/R120a-2
(Intel Xeon L5520)

$SPECfp^®_rate2006 = $ 82.9

$SPECfp_rate_base2006 = $ 80.2

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

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

Copies

Benchmark	Copies	Value
410.bwaves	4	86.9
	8	84.7
416.gamess	4	78.7
	8	77.0
433.milc	8	79.8
434.zeusmp	8	85.0
	8	83.8
435.gromacs	8	80.7
	8	77.1
436.cactusADM	8	93.2
437.leslie3d	8	60.3
444.namd	8	73.2
	8	71.6
447.dealII	8	124
	8	114
450.soplex	4	65.4
	8	65.2
453.povray	8	126
	8	105
454.calculix	8	92.0
	8	91.9
459.GemsFDTD	4	55.8
	8	54.0
465.tonto	8	89.7
	8	85.0
470.lbm	4	58.8
	8	56.4
481.wrf	8	102
482.sphinx3	8	93.9
	8	90.5

SPECfp_rate_base2006 = 80.2

SPECfp_rate2006 = 82.9

Hardware

CPU Name:	Intel Xeon L5520
CPU Characteristics:	Intel Turbo Boost Technology up to 2.53 GHz
CPU MHz:	2267
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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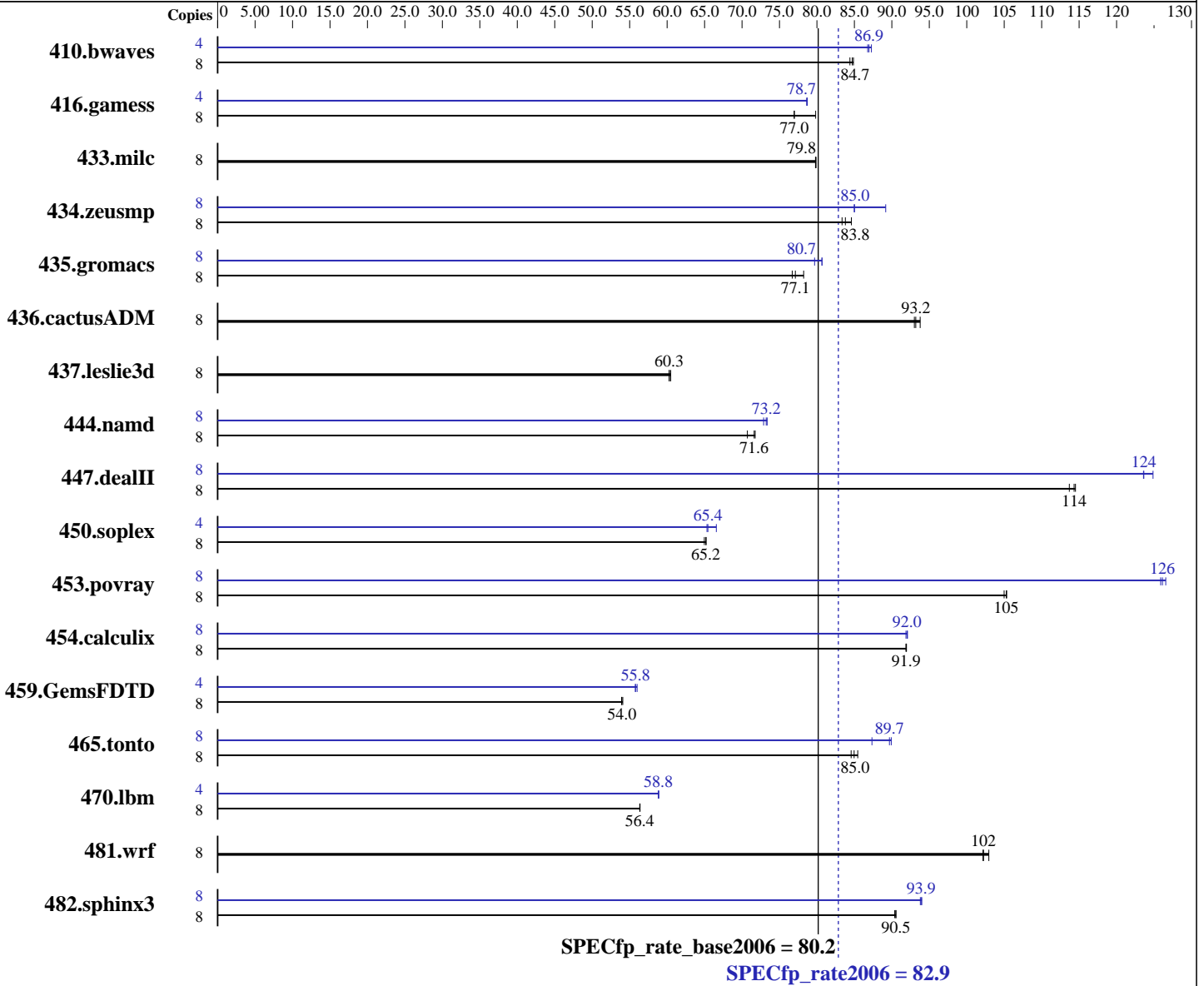
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L3 Cache:	8 MB I+D on chip per chip
Other Cache:	None
Memory:	12 GB (3 X 4 GB PC3-8500R, 2 rank, CL7, ECC)
Disk Subsystem:	1x146.5 GB SAS, 15000 RPM
Other Hardware:	None

System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
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	1281	84.9	**1283**	**84.7**	1288	84.4	4	626	86.8	623	87.3	**625**	**86.9**
416.gamess	8	1962	79.8	2035	77.0	**2035**	**77.0**	4	**995**	**78.7**	996	78.6	995	78.7
433.milc	8	919	79.9	**920**	**79.8**	920	79.8	8	919	79.9	**920**	**79.8**	920	79.8
434.zeusmp	8	861	84.6	**869**	**83.8**	873	83.4	8	857	85.0	**856**	**85.0**	816	89.2
435.gromacs	8	730	78.2	**741**	**77.1**	745	76.7	8	708	80.7	**708**	**80.7**	717	79.7
436.cactusADM	8	1028	93.0	**1026**	**93.2**	1019	93.8	8	1028	93.0	**1026**	**93.2**	1019	93.8
437.leslie3d	8	1243	60.5	**1247**	**60.3**	1248	60.3	8	1243	60.5	**1247**	**60.3**	1248	60.3
444.namd	8	894	71.8	**896**	**71.6**	907	70.7	8	875	73.4	**876**	**73.2**	880	72.9
447.dealII	8	805	114	**800**	**114**	799	115	8	**740**	**124**	740	124	733	125
450.soplex	8	1027	65.0	**1024**	**65.2**	1023	65.2	4	511	65.3	**510**	**65.4**	501	66.6
453.povray	8	**404**	**105**	404	105	405	105	8	336	127	**337**	**126**	338	126
454.calculix	8	718	92.0	**718**	**91.9**	718	91.9	8	**717**	**92.0**	717	92.1	718	91.9
459.GemsFDTD	8	1569	54.1	1574	53.9	**1573**	**54.0**	4	761	55.8	**761**	**55.8**	758	56.0
465.tonto	8	931	84.6	**927**	**85.0**	921	85.4	8	901	87.3	**878**	**89.7**	875	89.9
470.lbm	8	1949	56.4	**1950**	**56.4**	1951	56.4	4	934	58.8	**934**	**58.8**	933	58.9
481.wrf	8	868	103	**874**	**102**	875	102	8	868	103	**874**	**102**	875	102
482.sphinx3	8	**1722**	**90.5**	1722	90.5	1725	90.4	8	1659	94.0	**1660**	**93.9**	1662	93.8

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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General Notes

```
The NEC Express5800/R120a-1(Intel Xeon L5520),
the NEC Express5800/R120a-2(Intel Xeon L5520),
the Bull NovaScale R440 E2 (Intel Xeon L5520, 2.26 GHz) and
the Bull NovaScale R460 E2 (Intel Xeon L5520, 2.26 GHz) models are electronically equivalent.
The results have been measured on a NEC Express5800/R120a-1(Intel Xeon L5520) 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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(Intel Xeon L5520)

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

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: `-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: `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:

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Peak Optimization Flags (Continued)

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: 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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