



SPEC[®] CFP2006 Result

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NEC Corporation

Express5800/R140a-4
(Intel Xeon E7310)

SPECfp[®]_rate2006 = 86.5

SPECfp_rate_base2006 = 83.6

CPU2006 license: 9006

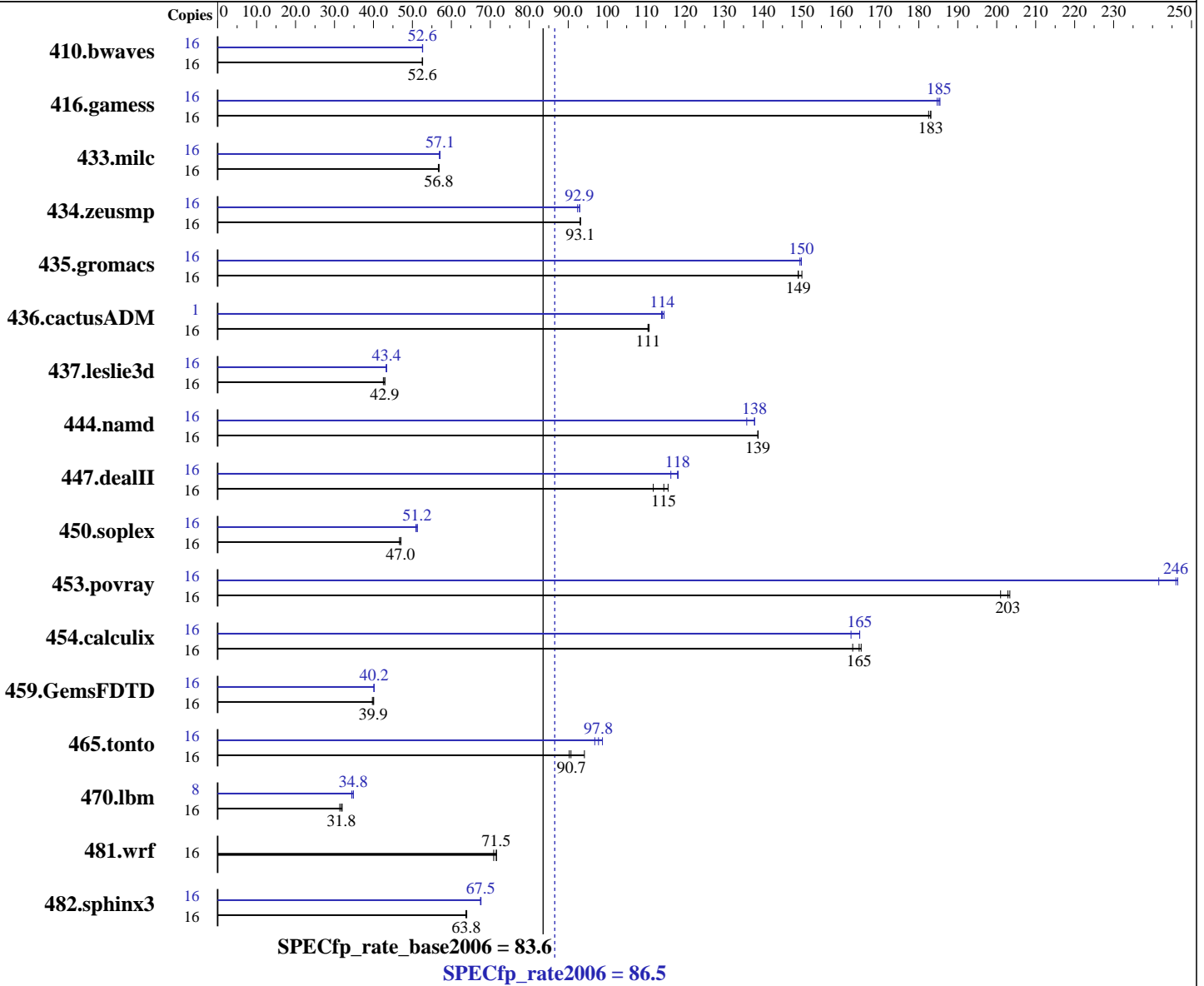
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Dec-2008

Hardware Availability: Nov-2008

Software Availability: Nov-2008



Hardware

CPU Name: Intel Xeon E7310
 CPU Characteristics: 1066 MHz system bus
 CPU MHz: 1600
 FPU: Integrated
 CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip
 CPU(s) orderable: 1,2,3,4 chips
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 4 MB I+D on chip per chip, 2 MB shared / 2 cores

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Software

Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16.60-0.21-smp
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20081105 Package ID: l_cproc_p_11.0.074, l_cprof_p_11.0.074
 Auto Parallel: Yes
 File System: ext2
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

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L3 Cache: None
Other Cache: None
Memory: 32 GB (16x2 GB PC2-5300F, 2 rank, CL5-5-5, ECC)
Disk Subsystem: 1x73.2 GB SAS, 15000 RPM
Other Hardware: None

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	16	4137	52.6	4139	52.5	4132	52.6	16	4134	52.6	4130	52.6	4135	52.6
416.gamess	16	1711	183	1712	183	1716	183	16	1696	185	1692	185	1689	185
433.milc	16	2592	56.7	2586	56.8	2584	56.8	16	2581	56.9	2573	57.1	2572	57.1
434.zeusmp	16	1564	93.1	1564	93.1	1564	93.1	16	1567	92.9	1566	92.9	1576	92.4
435.gromacs	16	762	150	766	149	767	149	16	762	150	764	149	762	150
436.cactusADM	16	1729	111	1731	110	1726	111	1	105	114	104	115	105	114
437.leslie3d	16	3536	42.5	3505	42.9	3504	42.9	16	3477	43.3	3466	43.4	3465	43.4
444.namd	16	925	139	925	139	925	139	16	931	138	931	138	945	136
447.dealII	16	1598	115	1583	116	1637	112	16	1573	116	1548	118	1550	118
450.soplex	16	2859	46.7	2841	47.0	2836	47.1	16	2622	50.9	2603	51.3	2606	51.2
453.povray	16	419	203	423	201	420	203	16	345	246	346	246	352	242
454.calculix	16	810	163	802	165	799	165	16	801	165	812	163	801	165
459.GemsFDTD	16	4274	39.7	4251	39.9	4237	40.1	16	4235	40.1	4223	40.2	4225	40.2
465.tonto	16	1672	94.2	1744	90.3	1736	90.7	16	1594	98.8	1626	96.8	1610	97.8
470.lbm	16	7012	31.4	6923	31.8	6875	32.0	8	3191	34.4	3156	34.8	3156	34.8
481.wrf	16	2522	70.9	2499	71.5	2497	71.6	16	2522	70.9	2499	71.5	2497	71.6
482.sphinx3	16	4876	64.0	4892	63.7	4885	63.8	16	4620	67.5	4618	67.5	4612	67.6

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.
taskset was used to bind processes to cores except
for 436.cactusADM peak

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 "physical,0"
KMP_STACKSIZE set to 64M



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Platform Notes

Bios settings:

Hardware Prefetcher: Disabled

Adjacent Cache Line Prefetch: Disabled

FSB High Bandwidth Optimization: Enabled

General Notes

The NEC Express5800/R140a-4(Intel Xeon E7310) and the Bull NovaScale R480 E1(Intel Xeon E7310, 1.60 GHz) models are electronically equivalent. The results have been measured on a NEC Express5800/R140a-4(Intel Xeon E7310) 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

```



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Base Optimization Flags

C benchmarks:

`-xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch`

C++ benchmarks:

`-xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch`

Fortran benchmarks:

`-xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch`

Benchmarks using both Fortran and C:

`-xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch`

Peak Compiler Invocation

C benchmarks (except as noted below):

`icc`

482.sphinx3: `/opt/intel/Compiler/11.0/074/bin/ia32/icc
-L/opt/intel/Compiler/11.0/074/ipp/ia32/lib
-I/opt/intel/Compiler/11.0/074/ipp/ia32/include`

C++ benchmarks (except as noted below):

`icpc`

450.soplex: `/opt/intel/Compiler/11.0/074/bin/ia32/icpc
-L/opt/intel/Compiler/11.0/074/ipp/ia32/lib
-I/opt/intel/Compiler/11.0/074/ipp/ia32/include`

Fortran benchmarks (except as noted below):

`ifort`

437.leslie3d: `/opt/intel/Compiler/11.0/074/bin/ia32/ifort
-L/opt/intel/Compiler/11.0/074/ipp/ia32/lib
-I/opt/intel/Compiler/11.0/074/ipp/ia32/include`

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`

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Peak Portability Flags (Continued)

```

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: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
         -no-prec-div -static -fno-alias

```

```

470.lbm: -xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch
         -auto-ilp32

```

```

482.sphinx3: -xSSSE3 -ipo -O3 -no-prec-div -static -unroll2

```

C++ benchmarks:

```

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
         -no-prec-div -static -fno-alias -auto-ilp32

```

```

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
           -no-prec-div -static -unroll2 -ansi-alias -scalar-rep-

```

```

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
           -no-prec-div -static -opt-malloc-options=3

```

```

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
           -no-prec-div -static -unroll4 -ansi-alias

```

Fortran benchmarks:

```

410.bwaves: -xSSSE3 -ipo -O3 -no-prec-div -static -opt-prefetch

```

```

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
           -no-prec-div -static -unroll2 -Ob0 -ansi-alias
           -scalar-rep-

```

```

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
           -no-prec-div -static

```

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Peak Optimization Flags (Continued)

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
-no-prec-div -static -opt-malloc-options=3 -opt-prefetch

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
-no-prec-div -static -unroll2 -Ob0 -opt-prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
-no-prec-div -static -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
-no-prec-div -static -opt-prefetch -auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3
-no-prec-div -static -unroll2 -opt-prefetch -parallel
-auto-ilp32

454.calculix: -xSSSE3 -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-revE.20090710.html>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.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-revE.20090710.xml>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.xml>

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