



# SPEC® CFP2006 Result

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## NEC Corporation

Express5800/R120b-1  
(Intel Xeon E5503)

SPECfp®\_rate2006 = 38.9

SPECfp\_rate\_base2006 = 37.7

CPU2006 license: 9006

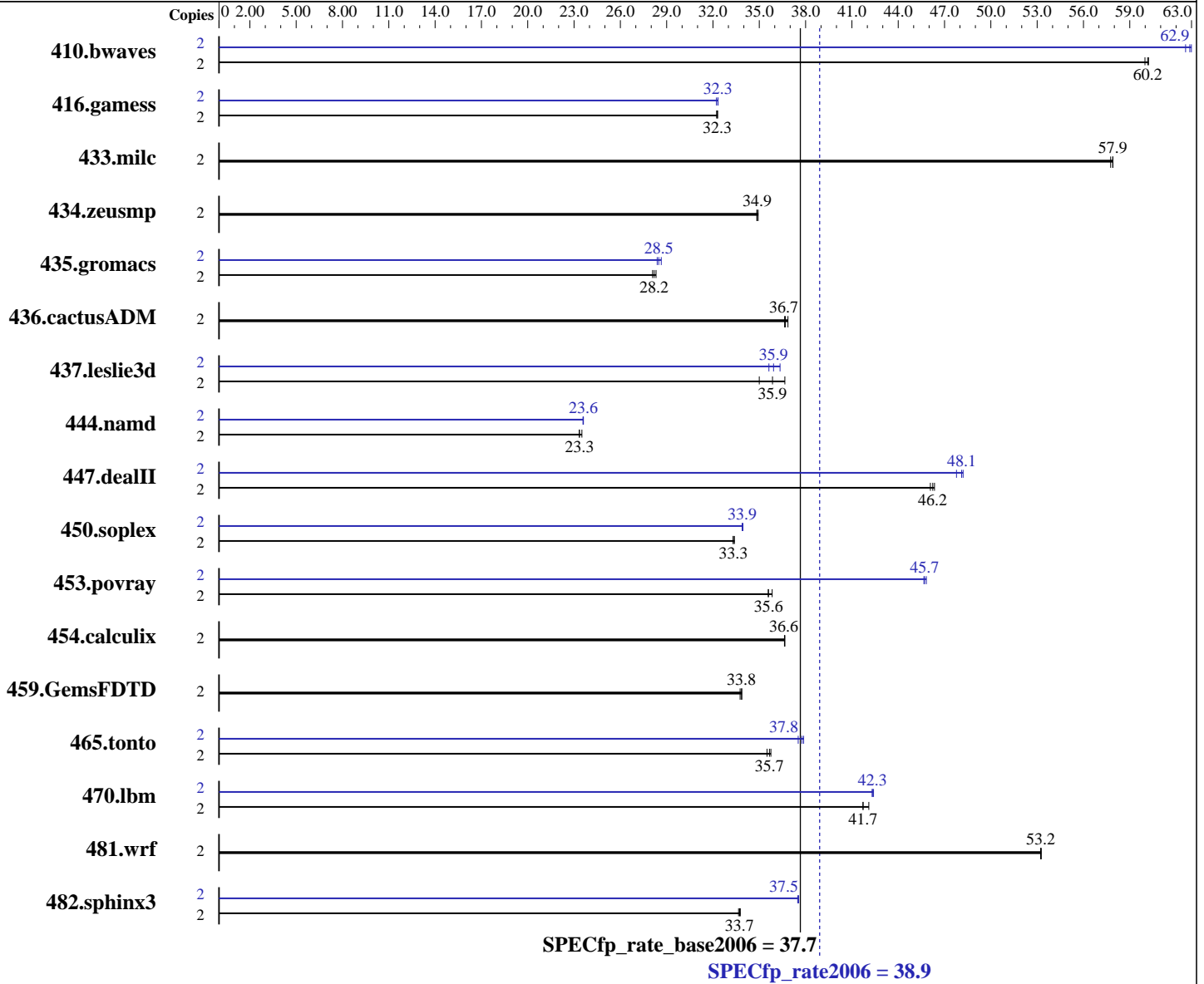
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Jul-2010

Hardware Availability: Sep-2010

Software Availability: Dec-2009



### Hardware

CPU Name: Intel Xeon E5503  
 CPU Characteristics:  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 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

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### Software

Operating System: SUSE Linux Enterprise Server 11 (x86\_64), Kernel 2.6.27.19-5-default  
 Compiler: Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1 Build 20091130 Package ID: I\_cproc\_p\_11.1.064, I\_cprof\_p\_11.1.064  
 Auto Parallel: No  
 File System: ext3  
 System State: Run level 3 (multi-user)

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L3 Cache: 4 MB I+D on chip per chip  
Other Cache: None  
Memory: 24 GB (6 x 4 GB PC3L-10600R, 2 rank, CL9, ECC, running at 800 MHz)  
Disk Subsystem: 1x250 GB SATA, 7200 RPM  
Other Hardware: None

Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	2	453	60.0	451	60.2	<b>452</b>	<b>60.2</b>	2	431	63.0	434	62.6	<b>432</b>	<b>62.9</b>
416.gamess	2	<b>1213</b>	<b>32.3</b>	1212	32.3	1215	32.2	2	<b>1212</b>	<b>32.3</b>	1215	32.2	1211	32.3
433.milc	2	<b>317</b>	<b>57.9</b>	318	57.8	317	57.9	2	<b>317</b>	<b>57.9</b>	318	57.8	317	57.9
434.zeusmp	2	521	34.9	522	34.8	<b>522</b>	<b>34.9</b>	2	521	34.9	522	34.8	<b>522</b>	<b>34.9</b>
435.gromacs	2	504	28.3	<b>506</b>	<b>28.2</b>	508	28.1	2	498	28.6	<b>501</b>	<b>28.5</b>	503	28.4
436.cactusADM	2	648	36.9	652	36.6	<b>651</b>	<b>36.7</b>	2	648	36.9	652	36.6	<b>651</b>	<b>36.7</b>
437.leslie3d	2	537	35.0	<b>524</b>	<b>35.9</b>	513	36.7	2	517	36.3	<b>523</b>	<b>35.9</b>	528	35.6
444.namd	2	682	23.5	687	23.3	<b>687</b>	<b>23.3</b>	2	<b>680</b>	<b>23.6</b>	680	23.6	680	23.6
447.dealII	2	494	46.3	<b>495</b>	<b>46.2</b>	496	46.1	2	475	48.2	<b>476</b>	<b>48.1</b>	479	47.8
450.soplex	2	501	33.3	500	33.4	<b>501</b>	<b>33.3</b>	2	491	33.9	<b>492</b>	<b>33.9</b>	492	33.9
453.povray	2	299	35.6	297	35.8	<b>299</b>	<b>35.6</b>	2	<b>233</b>	<b>45.7</b>	232	45.8	233	45.7
454.calculix	2	450	36.6	<b>450</b>	<b>36.6</b>	450	36.6	2	450	36.6	<b>450</b>	<b>36.6</b>	450	36.6
459.GemsFDTD	2	629	33.8	627	33.9	<b>627</b>	<b>33.8</b>	2	629	33.8	627	33.9	<b>627</b>	<b>33.8</b>
465.tonto	2	550	35.8	<b>552</b>	<b>35.7</b>	554	35.5	2	520	37.9	<b>521</b>	<b>37.8</b>	525	37.5
470.lbm	2	653	42.1	659	41.7	<b>659</b>	<b>41.7</b>	2	649	42.3	648	42.4	<b>649</b>	<b>42.3</b>
481.wrf	2	<b>420</b>	<b>53.2</b>	420	53.2	419	53.3	2	<b>420</b>	<b>53.2</b>	420	53.2	419	53.3
482.sphinx3	2	1158	33.7	<b>1156</b>	<b>33.7</b>	1154	33.8	2	1040	37.5	<b>1039</b>	<b>37.5</b>	1038	37.6

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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## General Notes

The Express5800/R120b-1 and the Express5800/R120b-2 models are electronically equivalent. The results have been measured on the Express5800/R120b-2 model.

## Base Compiler Invocation

C benchmarks:  
icc -m64

C++ benchmarks:  
icpc -m64

Fortran benchmarks:  
ifort -m64

Benchmarks using both Fortran and C:  
icc -m64 ifort -m64

## 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

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

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## Base Optimization Flags (Continued)

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 -m64`

482.sphinx3: `icc -m32`

C++ benchmarks (except as noted below):

`icpc -m64`

450.soplex: `icpc -m32`

Fortran benchmarks:

`ifort -m64`

Benchmarks using both Fortran and C:

`icc -m64 ifort -m64`

## 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(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 -ansi-alias -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: basepeak = yes

437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div -static

459.GemsFDTD: basepeak = yes

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 -inline-calloc -opt-malloc-options=3

### 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: basepeak = yes

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100721.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100721.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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