



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

Express5800/B120b  
(Intel Xeon X5670)

SPECfp<sup>®</sup>2006 = 46.1

SPECfp\_base2006 = 43.5

CPU2006 license: 9006

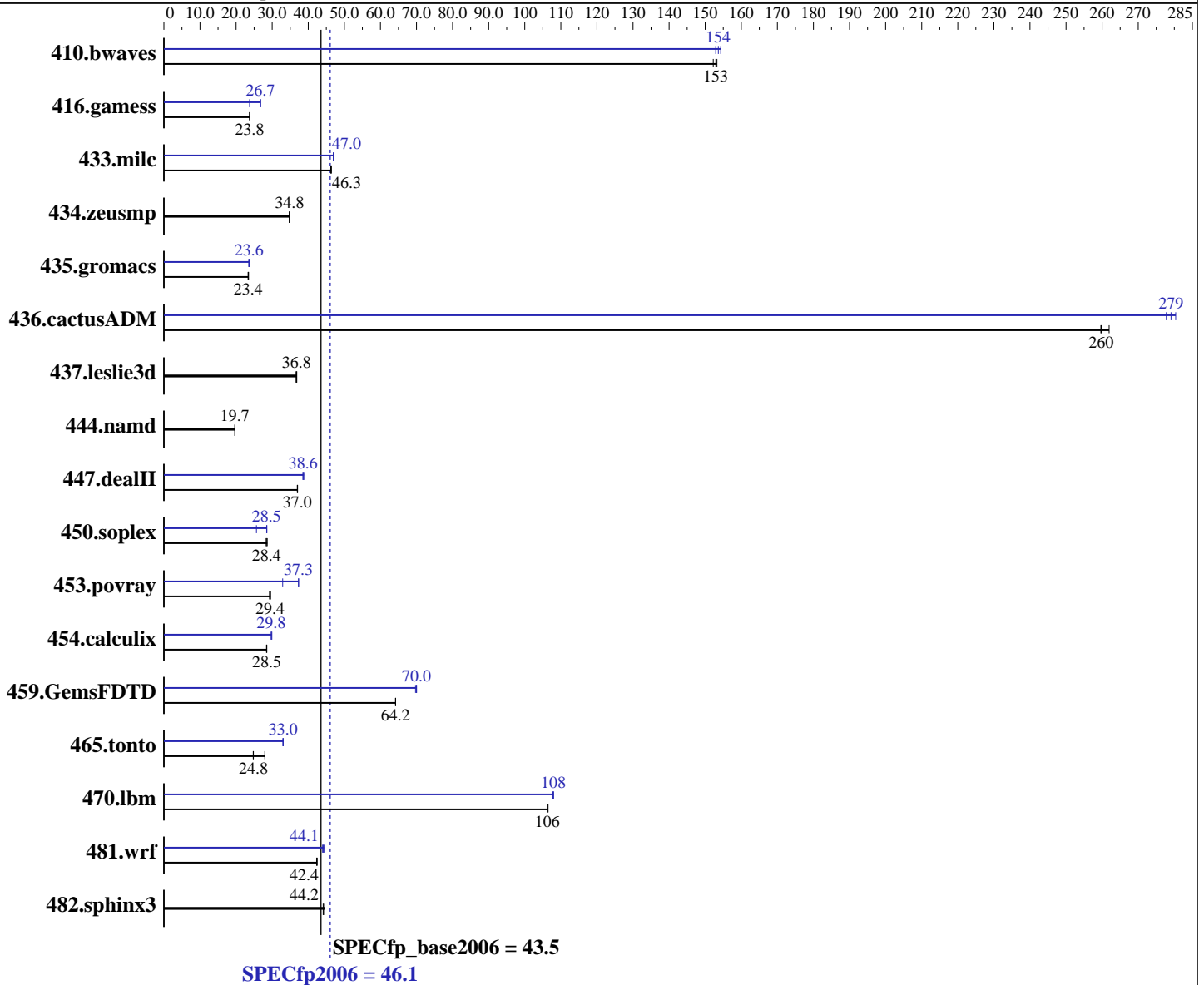
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Jul-2010

Hardware Availability: Apr-2010

Software Availability: Dec-2009



### Hardware

CPU Name: Intel Xeon X5670  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.33 GHz  
 CPU MHz: 2933  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 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 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: Yes  
 File System: ext3  
 System State: Run level 3 (multi-user)

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L3 Cache: 12 MB I+D on chip per chip  
Other Cache: None  
Memory: 48 GB (6 x 8 GB PC3-10600R, 2 rank, CL9, ECC)  
Disk Subsystem: 1x160 GB SATA, 7200 RPM  
Other Hardware: None

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

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	89.3	152	88.7	153	<b><u>88.9</u></b>	<b><u>153</u></b>	88.1	154	<b><u>88.5</u></b>	<b><u>154</u></b>	88.9	153
416.gamess	823	23.8	824	23.8	<b><u>824</u></b>	<b><u>23.8</u></b>	730	26.8	825	23.7	<b><u>733</u></b>	<b><u>26.7</u></b>
433.milc	199	46.2	<b><u>198</u></b>	<b><u>46.3</u></b>	198	46.4	<b><u>195</u></b>	<b><u>47.0</u></b>	195	47.0	196	46.9
434.zeusmp	261	34.8	262	34.7	<b><u>261</u></b>	<b><u>34.8</u></b>	261	34.8	262	34.7	<b><u>261</u></b>	<b><u>34.8</u></b>
435.gromacs	<b><u>305</u></b>	<b><u>23.4</u></b>	304	23.5	306	23.3	<b><u>303</u></b>	<b><u>23.6</u></b>	303	23.5	303	23.6
436.cactusADM	<b><u>46.0</u></b>	<b><u>260</u></b>	46.0	260	45.6	262	43.0	278	42.6	280	<b><u>42.8</u></b>	<b><u>279</u></b>
437.leslie3d	258	36.5	255	36.8	<b><u>256</u></b>	<b><u>36.8</u></b>	258	36.5	255	36.8	<b><u>256</u></b>	<b><u>36.8</u></b>
444.namd	<b><u>407</u></b>	<b><u>19.7</u></b>	407	19.7	408	19.7	<b><u>407</u></b>	<b><u>19.7</u></b>	407	19.7	408	19.7
447.dealII	309	37.0	309	37.0	<b><u>309</u></b>	<b><u>37.0</u></b>	297	38.5	<b><u>296</u></b>	<b><u>38.6</u></b>	295	38.8
450.soplex	294	28.4	<b><u>294</u></b>	<b><u>28.4</u></b>	291	28.6	<b><u>293</u></b>	<b><u>28.5</u></b>	292	28.5	325	25.6
453.povray	180	29.5	<b><u>181</u></b>	<b><u>29.4</u></b>	182	29.3	143	37.3	162	32.9	<b><u>143</u></b>	<b><u>37.3</u></b>
454.calculix	289	28.5	<b><u>290</u></b>	<b><u>28.5</u></b>	290	28.4	<b><u>277</u></b>	<b><u>29.8</u></b>	277	29.8	276	29.9
459.GemsFDTD	<b><u>165</u></b>	<b><u>64.2</u></b>	165	64.2	165	64.2	<b><u>152</u></b>	<b><u>70.0</u></b>	152	70.0	152	69.7
465.tonto	<b><u>397</u></b>	<b><u>24.8</u></b>	352	28.0	398	24.8	298	33.0	<b><u>298</u></b>	<b><u>33.0</u></b>	298	33.0
470.lbm	129	106	129	106	<b><u>129</u></b>	<b><u>106</u></b>	<b><u>127</u></b>	<b><u>108</u></b>	127	108	127	108
481.wrf	263	42.4	<b><u>263</u></b>	<b><u>42.4</u></b>	264	42.3	252	44.3	<b><u>253</u></b>	<b><u>44.1</u></b>	254	44.0
482.sphinx3	437	44.6	442	44.1	<b><u>441</u></b>	<b><u>44.2</u></b>	437	44.6	442	44.1	<b><u>441</u></b>	<b><u>44.2</u></b>

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

## Platform Notes

BIOS setting:  
Hyper-Threading Technology : Disabled

## General Notes

OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to granularity=fine,scatter  
KMP\_STACKSIZE set to 200M



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## 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 -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:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

433.milc: -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)  
-ansi-alias

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)  
-parallel -ansi-alias -auto-ilp32

482.sphinx3: basepeak = yes

C++ benchmarks:

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- -auto-ilp32

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 -auto-ilp32

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

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## Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch  
-parallel

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)  
-inline-alloc -opt-malloc-options=3 -auto -unroll4

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: Same as 454.calculix

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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