



# SPEC® CFP2006 Result

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## NEC Corporation

Express5800/R120b-1  
(Intel Xeon X5670)

SPECfp®2006 = 46.5

SPECfp\_base2006 = 43.9

CPU2006 license: 9006

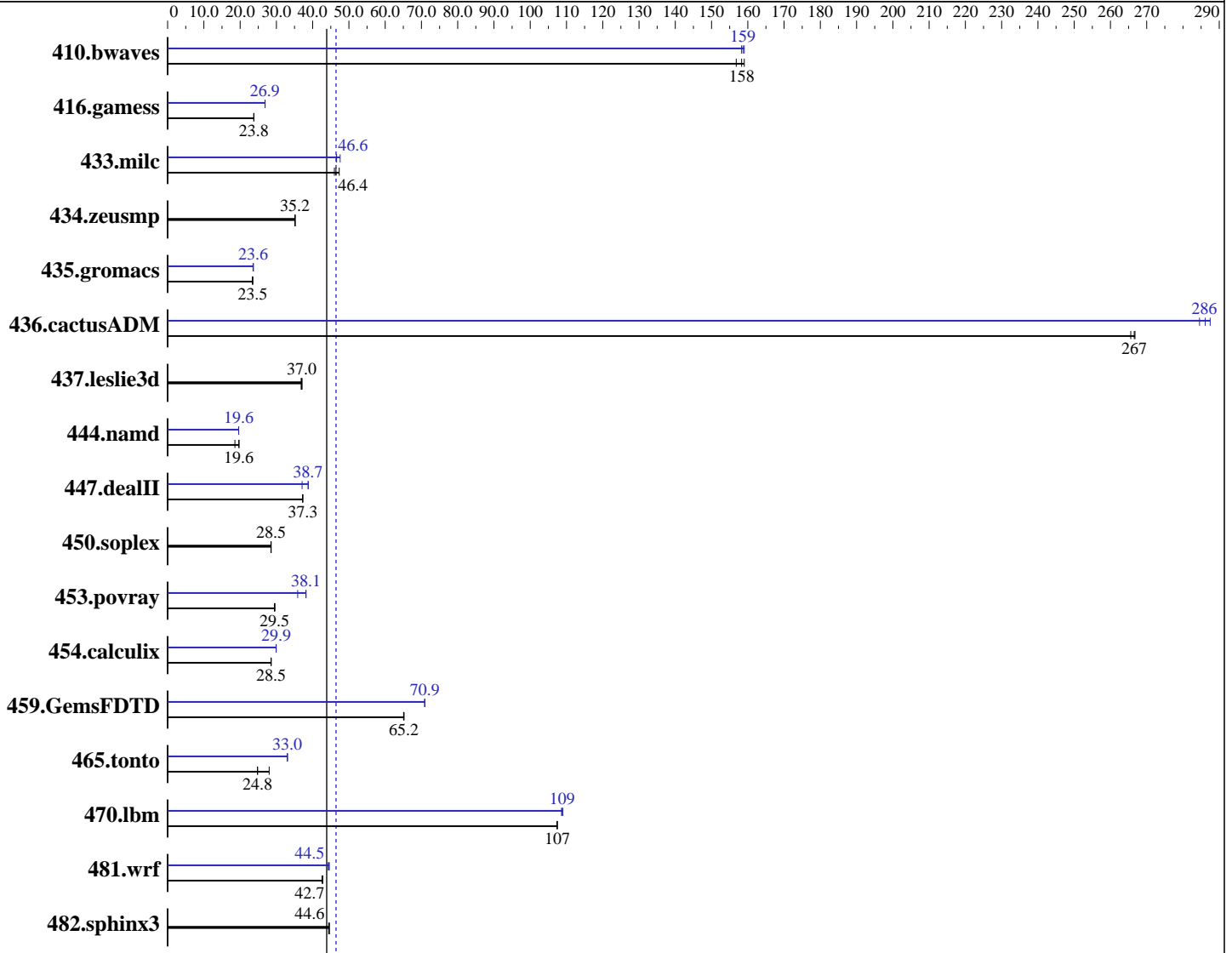
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Jul-2010

Hardware Availability: Sep-2010

Software Availability: Dec-2009



SPECfp\_base2006 = 43.9  
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### 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

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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: 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: 96 GB (12 x 8 GB PC3L-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	86.7	157	<b><u>85.9</u></b>	<b><u>158</u></b>	85.5	159	<b><u>85.7</u></b>	<b><u>159</u></b>	85.5	159	85.9	158
416.gamess	823	23.8	823	23.8	<b><u>823</u></b>	<b><u>23.8</u></b>	<b><u>729</u></b>	<b><u>26.9</u></b>	728	26.9	729	26.9
433.milc	<b><u>198</u></b>	<b><u>46.4</u></b>	200	46.0	194	47.3	197	46.5	193	47.6	<b><u>197</u></b>	<b><u>46.6</u></b>
434.zeusmp	259	35.1	259	35.2	<b><u>259</u></b>	<b><u>35.2</u></b>	259	35.1	259	35.2	<b><u>259</u></b>	<b><u>35.2</u></b>
435.gromacs	304	23.5	306	23.4	<b><u>304</u></b>	<b><u>23.5</u></b>	302	23.6	<b><u>302</u></b>	<b><u>23.6</u></b>	303	23.6
436.cactusADM	45.0	266	44.8	267	<b><u>44.8</u></b>	<b><u>267</u></b>	41.6	288	<b><u>41.8</u></b>	<b><u>286</u></b>	42.0	285
437.leslie3d	255	36.8	253	37.1	<b><u>254</u></b>	<b><u>37.0</u></b>	255	36.8	253	37.1	<b><u>254</u></b>	<b><u>37.0</u></b>
444.namd	407	19.7	432	18.6	<b><u>408</u></b>	<b><u>19.6</u></b>	<b><u>409</u></b>	<b><u>19.6</u></b>	409	19.6	410	19.6
447.dealII	307	37.3	308	37.2	<b><u>307</u></b>	<b><u>37.3</u></b>	308	37.1	<b><u>295</u></b>	<b><u>38.7</u></b>	295	38.8
450.soplex	<b><u>292</u></b>	<b><u>28.5</u></b>	292	28.5	293	28.5	<b><u>292</u></b>	<b><u>28.5</u></b>	292	28.5	293	28.5
453.povray	<b><u>180</u></b>	<b><u>29.5</u></b>	181	29.4	180	29.6	139	38.2	<b><u>140</u></b>	<b><u>38.1</u></b>	148	35.9
454.calculix	289	28.5	<b><u>289</u></b>	<b><u>28.5</u></b>	289	28.6	276	29.9	276	29.9	<b><u>276</u></b>	<b><u>29.9</u></b>
459.GemsFDTD	163	65.1	<b><u>163</u></b>	<b><u>65.2</u></b>	163	65.2	150	71.0	<b><u>150</u></b>	<b><u>70.9</u></b>	150	70.9
465.tonto	397	24.8	351	28.0	<b><u>397</u></b>	<b><u>24.8</u></b>	<b><u>298</u></b>	<b><u>33.0</u></b>	298	33.1	298	33.0
470.lbm	<b><u>128</u></b>	<b><u>107</u></b>	128	107	128	107	126	109	<b><u>126</u></b>	<b><u>109</u></b>	126	109
481.wrf	261	42.8	<b><u>261</u></b>	<b><u>42.7</u></b>	262	42.6	251	44.6	252	44.3	<b><u>251</u></b>	<b><u>44.5</u></b>
482.sphinx3	437	44.6	<b><u>437</u></b>	<b><u>44.6</u></b>	439	44.4	437	44.6	<b><u>437</u></b>	<b><u>44.6</u></b>	439	44.4

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:  
NUMA configuration: Disabled  
Performance/Watt: Traditional  
Hyper-Threading Technology: Disabled  
Memory Voltage: Normal



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## General Notes

OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to granularity=fine,scatter  
KMP\_STACKSIZE set to 200M  
The Express5800/R120b-1 and  
the Express5800/R120b-2 models are electronically equivalent.  
The results have been measured on the Express5800/R120b-1 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 -parallel -opt-prefetch

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## Base Optimization Flags (Continued)

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`

## 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:

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## Peak Optimization Flags (Continued)

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- -auto-ilp32

450.soplex: basepeak = yes

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  
-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-calloc -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



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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.20100901.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.20100901.xml>

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