



# SPEC® CFP2006 Result

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## NEC Corporation

Express5800/B120a  
(Intel Xeon X5550)

SPECfp®\_rate2006 = 184

SPECfp\_rate\_base2006 = 176

CPU2006 license: 9006

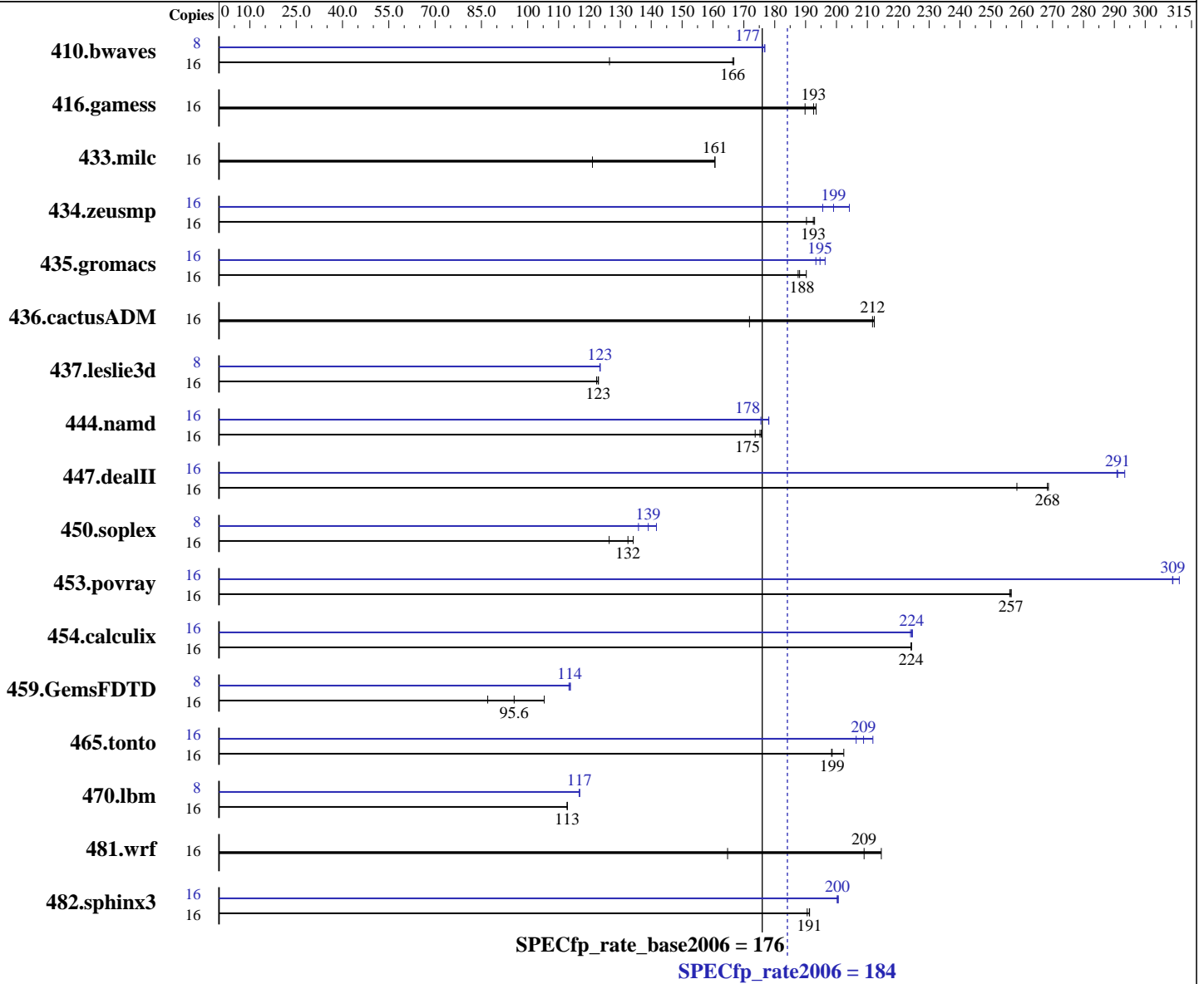
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Jul-2009

Hardware Availability: Apr-2009

Software Availability: Feb-2009



**Hardware**

CPU Name: Intel Xeon X5550  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.06 GHz  
 CPU MHz: 2667  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 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

**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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L3 Cache: 8 MB I+D on chip per chip  
Other Cache: None  
Memory: 24 GB (6 X 4 GB PC3-8500R, 2 rank, CL7, ECC)  
Disk Subsystem: 1x73 GB SATA2, 10000 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	16	1719	126	<b><u>1307</u></b>	<b><u>166</u></b>	1304	167	8	617	176	<b><u>615</u></b>	<b><u>177</u></b>	615	177
416.gamess	16	1620	193	1650	190	<b><u>1626</u></b>	<b><u>193</u></b>	16	1620	193	1650	190	<b><u>1626</u></b>	<b><u>193</u></b>
433.milc	16	1214	121	<b><u>914</u></b>	<b><u>161</u></b>	914	161	16	1214	121	<b><u>914</u></b>	<b><u>161</u></b>	914	161
434.zeusmp	16	765	190	755	193	<b><u>756</u></b>	<b><u>193</u></b>	16	713	204	745	196	<b><u>731</u></b>	<b><u>199</u></b>
435.gromacs	16	609	188	601	190	<b><u>607</u></b>	<b><u>188</u></b>	16	582	196	<b><u>587</u></b>	<b><u>195</u></b>	591	193
436.cactusADM	16	1113	172	901	212	<b><u>903</u></b>	<b><u>212</u></b>	16	1113	172	901	212	<b><u>903</u></b>	<b><u>212</u></b>
437.leslie3d	16	1230	122	<b><u>1225</u></b>	<b><u>123</u></b>	1224	123	8	610	123	<b><u>609</u></b>	<b><u>123</u></b>	609	123
444.namd	16	739	174	730	176	<b><u>732</u></b>	<b><u>175</u></b>	16	720	178	731	175	<b><u>721</u></b>	<b><u>178</u></b>
447.dealII	16	708	258	<b><u>682</u></b>	<b><u>268</u></b>	681	269	16	629	291	624	293	<b><u>629</u></b>	<b><u>291</u></b>
450.soplex	16	1056	126	<b><u>1007</u></b>	<b><u>132</u></b>	995	134	8	491	136	<b><u>480</u></b>	<b><u>139</u></b>	471	142
453.povray	16	<b><u>332</u></b>	<b><u>257</u></b>	332	257	332	256	16	<b><u>275</u></b>	<b><u>309</u></b>	276	309	274	311
454.calculix	16	<b><u>589</u></b>	<b><u>224</u></b>	589	224	589	224	16	588	225	589	224	<b><u>588</u></b>	<b><u>224</u></b>
459.GemsFDTD	16	1950	87.0	<b><u>1776</u></b>	<b><u>95.6</u></b>	1611	105	8	749	113	<b><u>747</u></b>	<b><u>114</u></b>	746	114
465.tonto	16	793	198	778	202	<b><u>793</u></b>	<b><u>199</u></b>	16	763	206	743	212	<b><u>754</u></b>	<b><u>209</u></b>
470.lbm	16	1949	113	<b><u>1949</u></b>	<b><u>113</u></b>	1949	113	8	942	117	<b><u>942</u></b>	<b><u>117</u></b>	941	117
481.wrf	16	1085	165	833	215	<b><u>855</u></b>	<b><u>209</u></b>	16	1085	165	833	215	<b><u>855</u></b>	<b><u>209</u></b>
482.sphinx3	16	1630	191	<b><u>1631</u></b>	<b><u>191</u></b>	1637	191	16	1555	201	<b><u>1556</u></b>	<b><u>200</u></b>	1557	200

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

BIOS setting:  
NUMA configuration: Enabled



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## 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

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



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## 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 (except as noted below):

ifort

437.leslie3d: ifort -m32

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  
 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: 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

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## Peak Optimization Flags (Continued)

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.dealIII: -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: basepeak = yes

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: -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 -opt-prefetch

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:

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

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## Peak Optimization Flags (Continued)

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>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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