



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

### SPECfp<sup>®</sup>\_rate2006 = 93.0

### Express5800/GT110h (Intel Celeron G3900)

### SPECfp\_rate\_base2006 = 91.9

CPU2006 license: 9006

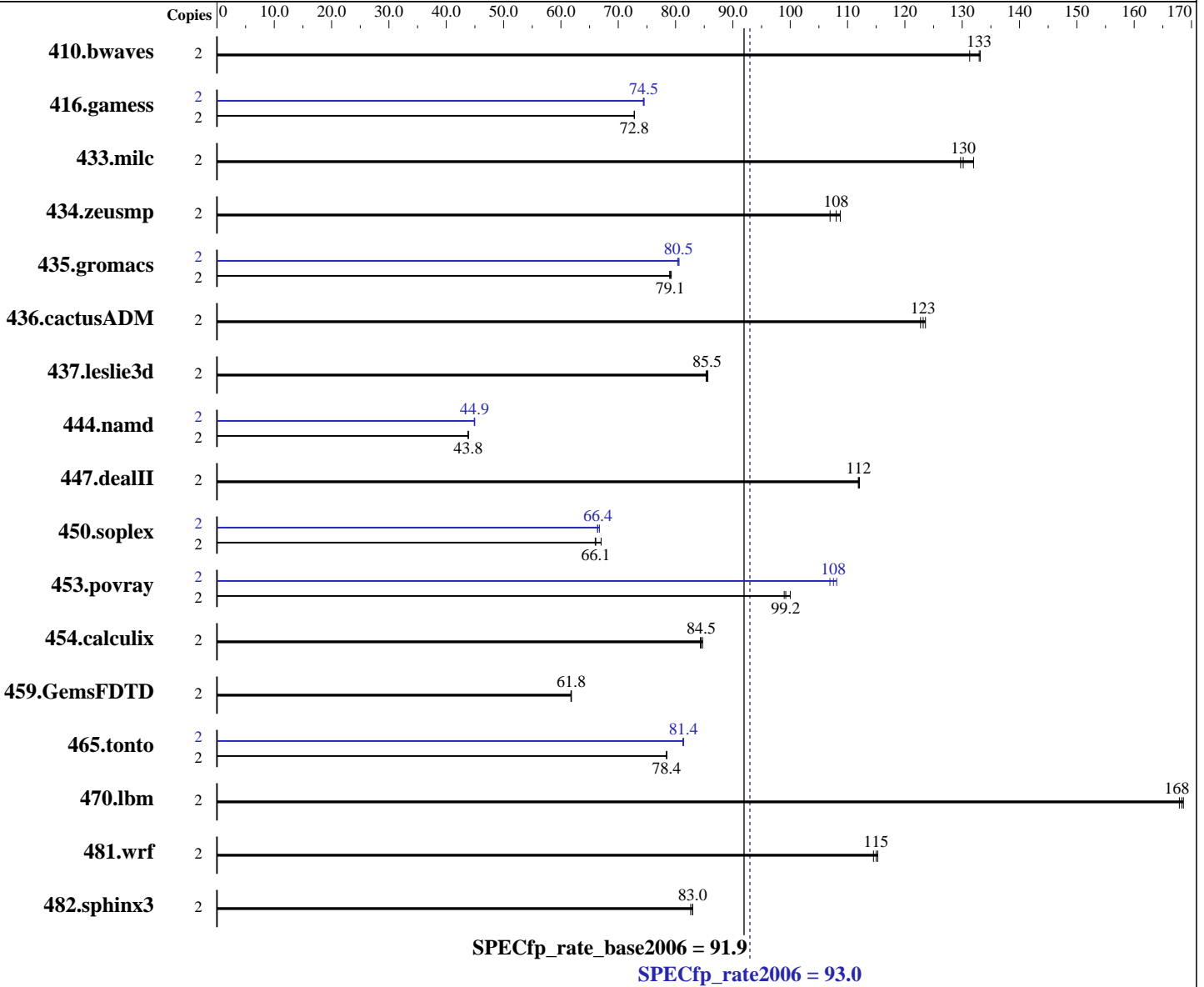
Test date: Jul-2016

Test sponsor: NEC Corporation

Hardware Availability: Jul-2016

Tested by: NEC Corporation

Software Availability: Feb-2016



#### Hardware

CPU Name: Intel Celeron G3900  
 CPU Characteristics:  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip  
 CPU(s) orderable: 1 chip  
 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: Red Hat Enterprise Linux Server release 7.2 (Maipo)  
 Kernel 3.10.0-327.4.5.el7.x86\_64  
 Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux;  
 Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux  
 Auto Parallel: No  
 File System: ext4

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L3 Cache: 2 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 16 GB (2 x 8 GB 2Rx8 PC4-2133P-E)  
 Disk Subsystem: 1 x 1 TB SATA, 7200 RPM  
 Other Hardware: None

System State: Run level 3 (multi-user)  
 Base Pointers: 32/64-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	207	131	204	133	<b>204</b>	<b>133</b>	2	207	131	204	133	<b>204</b>	<b>133</b>		
416.gamess	2	<b>538</b>	<b>72.8</b>	538	72.8	538	72.8	2	526	74.5	527	74.4	<b>526</b>	<b>74.5</b>		
433.milc	2	139	132	142	130	<b>141</b>	<b>130</b>	2	139	132	142	130	<b>141</b>	<b>130</b>		
434.zeusmp	2	<b>168</b>	<b>108</b>	167	109	170	107	2	<b>168</b>	<b>108</b>	167	109	170	107		
435.gromacs	2	<b>181</b>	<b>79.1</b>	181	79.0	180	79.3	2	177	80.6	178	80.4	<b>177</b>	<b>80.5</b>		
436.cactusADM	2	193	124	195	123	<b>194</b>	<b>123</b>	2	193	124	195	123	<b>194</b>	<b>123</b>		
437.leslie3d	2	220	85.6	<b>220</b>	<b>85.5</b>	220	85.3	2	220	85.6	<b>220</b>	<b>85.5</b>	220	85.3		
444.namd	2	<b>366</b>	<b>43.8</b>	366	43.9	366	43.8	2	357	45.0	<b>357</b>	<b>44.9</b>	357	44.9		
447.dealII	2	204	112	<b>204</b>	<b>112</b>	205	112	2	204	112	<b>204</b>	<b>112</b>	205	112		
450.soplex	2	253	66.0	<b>252</b>	<b>66.1</b>	249	67.0	2	250	66.7	251	66.4	<b>251</b>	<b>66.4</b>		
453.povray	2	106	100	108	99.0	<b>107</b>	<b>99.2</b>	2	<b>98.9</b>	<b>108</b>	99.5	107	98.4	108		
454.calculix	2	195	84.7	<b>195</b>	<b>84.5</b>	196	84.3	2	195	84.7	<b>195</b>	<b>84.5</b>	196	84.3		
459.GemsFDTD	2	344	61.7	343	61.8	<b>343</b>	<b>61.8</b>	2	344	61.7	343	61.8	<b>343</b>	<b>61.8</b>		
465.tonto	2	251	78.4	251	78.5	<b>251</b>	<b>78.4</b>	2	242	81.4	<b>242</b>	<b>81.4</b>	242	81.3		
470.lbm	2	164	168	163	169	<b>163</b>	<b>168</b>	2	164	168	163	169	<b>163</b>	<b>168</b>		
481.wrf	2	<b>194</b>	<b>115</b>	195	115	194	115	2	<b>194</b>	<b>115</b>	195	115	194	115		
482.sphinx3	2	470	83.0	<b>470</b>	<b>83.0</b>	472	82.6	2	470	83.0	<b>470</b>	<b>83.0</b>	472	82.6		

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## Platform Notes

BIOS Settings:  
Power Management Policy: Custom  
Energy Performance: Performance



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## General Notes

Environment variables set by runspec before the start of the run:

LD\_LIBRARY\_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/transparent\_hugepage/enabled

## 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 -opt-prefetch -auto-p32 -ansi-alias  
-opt-mem-layout-trans=3

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## Base Optimization Flags (Continued)

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias  
-opt-mem-layout-trans=3

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias  
-opt-mem-layout-trans=3

## Peak Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks (except as noted below):

icpc -m64

450.soplex: icpc -m32 -L/opt/intel/compilers\_and\_libraries\_2016/linux/compiler/lib/ia32\_lin

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.lelie3d: -DSPEC\_CPU\_LP64  
444.namd: -DSPEC\_CPU\_LP64  
447.dealII: -DSPEC\_CPU\_LP64  
450.soplex: -D\_FILE\_OFFSET\_BITS=64  
453.povray: -DSPEC\_CPU\_LP64  
454.calculix: -DSPEC\_CPU\_LP64 -nofor\_main  
459.GemsFDTD: -DSPEC\_CPU\_LP64  
465.tonto: -DSPEC\_CPU\_LP64

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## Peak Portability Flags (Continued)

470.lbm: -DSPEC\_CPU\_LP64  
481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX  
482.sphinx3: -DSPEC\_CPU\_LP64

## Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias  
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: -xSSE4.2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)  
-opt-malloc-options=3

453.povray: -xSSE4.2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -unroll4  
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xSSE4.2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1)  
-prof-use(pass 2) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

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## Peak Optimization Flags (Continued)

465.tonto: -xSSE4.2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1)  
-prof-use(pass 2) -unroll4 -auto -inline-alloc  
-opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)  
-opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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-ic16.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-110h-RevA.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-110h-RevA.xml>

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

Tested with SPEC CPU2006 v1.2.

Report generated on Tue Sep 6 16:55:15 2016 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 6 September 2016.