



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

**SPECfp<sup>®</sup>2006 = 102**

Express5800/R110h-1 (Intel Xeon E3-1270 v5)

**SPECfp\_base2006 = 100**

CPU2006 license: 9006

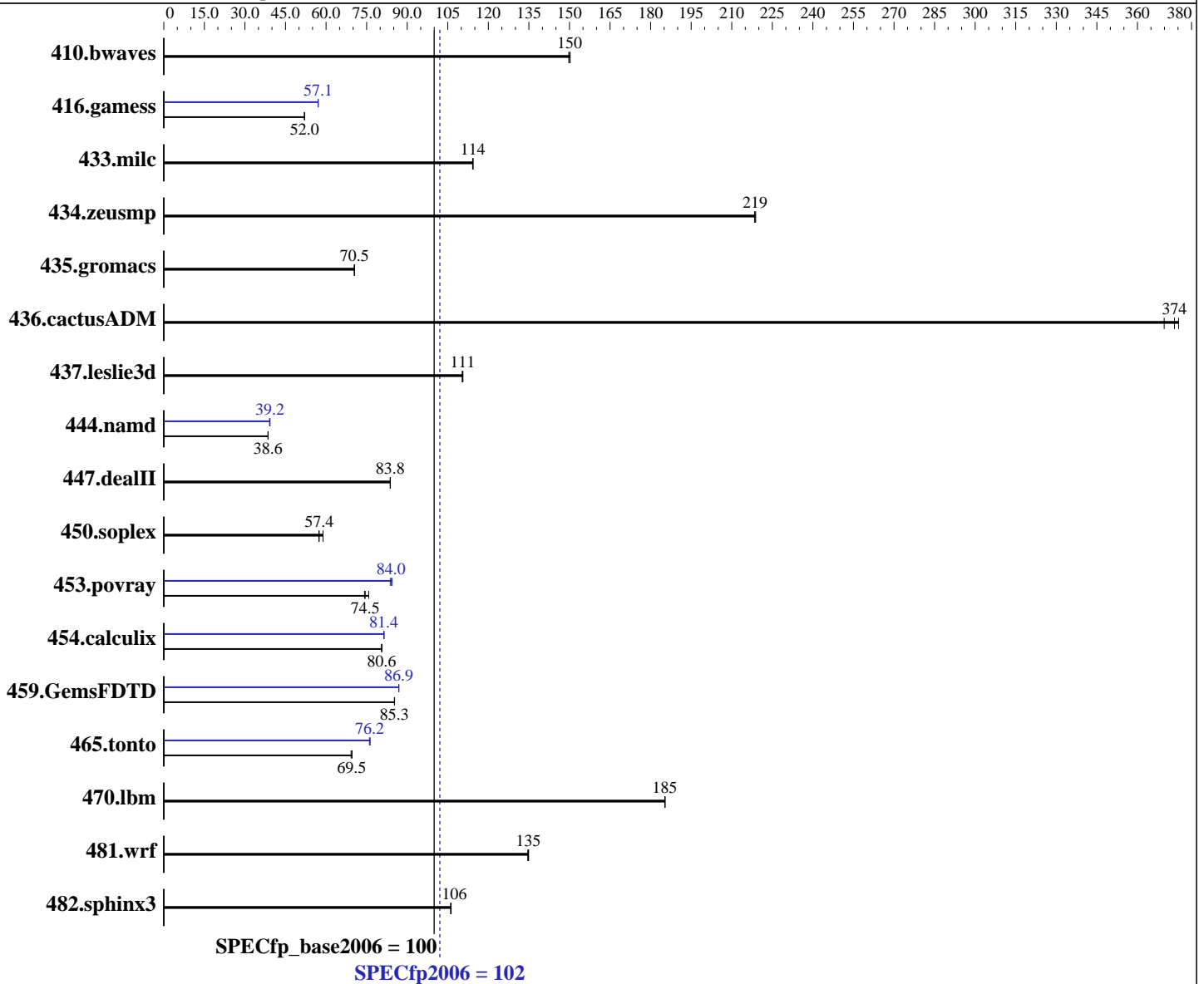
Test date: Dec-2015

Test sponsor: NEC Corporation

Hardware Availability: Mar-2016

Tested by: NEC Corporation

Software Availability: Nov-2015



### Hardware

CPU Name: Intel Xeon E3-1270 v5  
 CPU Characteristics: Intel Turbo Boost Technology up to 4.00 GHz  
 CPU MHz: 3600  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 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.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: Yes  
 File System: ext4

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L3 Cache: 8 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 500 GB SATA, 7200 RPM  
 Other Hardware: None

System State: Run level 3 (multi-user)  
 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	90.8	150	<b><u>90.6</u></b>	<b><u>150</u></b>	90.5	150	90.8	150	<b><u>90.6</u></b>	<b><u>150</u></b>	90.5	150
416.gamess	<b><u>376</u></b>	<b><u>52.0</u></b>	376	52.0	376	52.0	343	57.1	343	57.1	<b><u>343</u></b>	<b><u>57.1</u></b>
433.milc	80.4	114	<b><u>80.3</u></b>	<b><u>114</u></b>	80.3	114	80.4	114	<b><u>80.3</u></b>	<b><u>114</u></b>	80.3	114
434.zeusmp	41.7	218	<b><u>41.6</u></b>	<b><u>219</u></b>	41.6	219	41.7	218	<b><u>41.6</u></b>	<b><u>219</u></b>	41.6	219
435.gromacs	101	70.4	<b><u>101</u></b>	<b><u>70.5</u></b>	101	70.5	101	70.4	<b><u>101</u></b>	<b><u>70.5</u></b>	101	70.5
436.cactusADM	<b><u>32.0</u></b>	<b><u>374</u></b>	31.8	375	32.3	370	<b><u>32.0</u></b>	<b><u>374</u></b>	31.8	375	32.3	370
437.leslie3d	85.0	111	85.2	110	<b><u>85.1</u></b>	<b><u>111</u></b>	85.0	111	85.2	110	<b><u>85.1</u></b>	<b><u>111</u></b>
444.namd	208	38.6	208	38.5	<b><u>208</u></b>	<b><u>38.6</u></b>	<b><u>204</u></b>	<b><u>39.2</u></b>	204	39.2	205	39.1
447.dealII	<b><u>137</u></b>	<b><u>83.8</u></b>	137	83.7	137	83.8	<b><u>137</u></b>	<b><u>83.8</u></b>	137	83.7	137	83.8
450.soplex	142	58.9	145	57.4	<b><u>145</u></b>	<b><u>57.4</u></b>	142	58.9	145	57.4	<b><u>145</u></b>	<b><u>57.4</u></b>
453.povray	71.7	74.2	70.2	75.8	<b><u>71.4</u></b>	<b><u>74.5</u></b>	63.0	84.5	<b><u>63.3</u></b>	<b><u>84.0</u></b>	63.5	83.7
454.calculix	102	80.6	<b><u>102</u></b>	<b><u>80.6</u></b>	102	80.6	101	81.5	101	81.3	<b><u>101</u></b>	<b><u>81.4</u></b>
459.GemsFDTD	124	85.3	<b><u>124</u></b>	<b><u>85.3</u></b>	124	85.3	122	86.9	<b><u>122</u></b>	<b><u>86.9</u></b>	122	86.9
465.tonto	141	69.6	<b><u>142</u></b>	<b><u>69.5</u></b>	142	69.2	<b><u>129</u></b>	<b><u>76.2</u></b>	129	76.3	129	76.0
470.lbm	74.1	185	74.2	185	<b><u>74.2</u></b>	<b><u>185</u></b>	74.1	185	74.2	185	<b><u>74.2</u></b>	<b><u>185</u></b>
481.wrf	82.8	135	<b><u>82.8</u></b>	<b><u>135</u></b>	83.0	135	82.8	135	<b><u>82.8</u></b>	<b><u>135</u></b>	83.0	135
482.sphinx3	183	106	<b><u>184</u></b>	<b><u>106</u></b>	184	106	183	106	<b><u>184</u></b>	<b><u>106</u></b>	184	106

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

## Operating System Notes

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

## Platform Notes

BIOS Settings:  
 Power Management Policy: Custom  
 Energy Performance: Performance  
 Hyper-Threading: Disabled



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## General Notes

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

KMP\_AFFINITY = "granularity=fine,compact,1,0"

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

OMP\_NUM\_THREADS = "4"

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



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## Base Optimization Flags

C benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch  
-ansi-alias

## 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: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

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## Peak Optimization Flags (Continued)

444.namd: -xCORE-AVX2(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) -fno-alias  
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(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  
-ansi-alias

### Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(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: -xCORE-AVX2(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 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(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) -inline-calloc  
-opt-malloc-options=3 -auto -unroll4

### Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes



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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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