



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

**SPECfp<sup>®</sup>2006 = 87.1**

Express5800/T110h-S (Intel Xeon E3-1240L v5)

**SPECfp\_base2006 = 84.9**

CPU2006 license: 9006

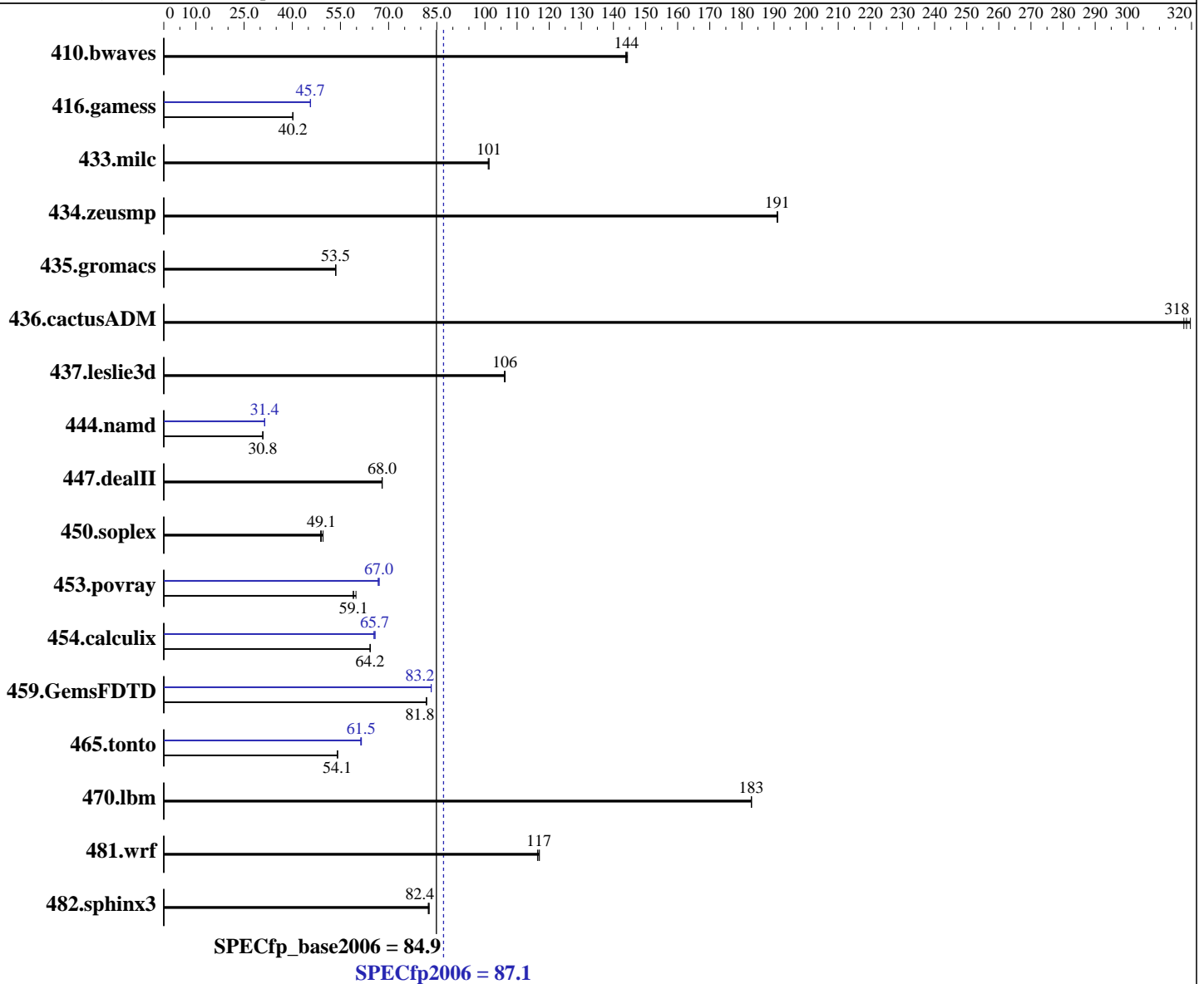
Test date: Dec-2015

Test sponsor: NEC Corporation

Hardware Availability: Mar-2016

Tested by: NEC Corporation

Software Availability: Nov-2015



### Hardware

CPU Name: Intel Xeon E3-1240L v5  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz  
 CPU MHz: 2100  
 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

Continued on next page

### 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

Continued on next page



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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	94.5	144	94.1	144	<b><u>94.3</u></b>	<b><u>144</u></b>	94.5	144	94.1	144	<b><u>94.3</u></b>	<b><u>144</u></b>
416.gamess	487	40.2	488	40.2	<b><u>487</u></b>	<b><u>40.2</u></b>	<b><u>429</u></b>	<b><u>45.7</u></b>	429	45.6	428	45.7
433.milc	90.9	101	90.7	101	<b><u>90.7</u></b>	<b><u>101</u></b>	90.9	101	90.7	101	<b><u>90.7</u></b>	<b><u>101</u></b>
434.zeusmp	<b><u>47.6</u></b>	<b><u>191</u></b>	47.7	191	47.6	191	<b><u>47.6</u></b>	<b><u>191</u></b>	47.7	191	47.6	191
435.gromacs	133	53.6	<b><u>133</u></b>	<b><u>53.5</u></b>	133	53.5	133	53.6	<b><u>133</u></b>	<b><u>53.5</u></b>	133	53.5
436.cactusADM	<b><u>37.5</u></b>	<b><u>318</u></b>	37.6	318	37.4	320	<b><u>37.5</u></b>	<b><u>318</u></b>	37.6	318	37.4	320
437.leslie3d	88.4	106	<b><u>88.5</u></b>	<b><u>106</u></b>	88.7	106	88.4	106	<b><u>88.5</u></b>	<b><u>106</u></b>	88.7	106
444.namd	260	30.9	260	30.8	<b><u>260</u></b>	<b><u>30.8</u></b>	255	31.4	<b><u>255</u></b>	<b><u>31.4</u></b>	255	31.4
447.dealII	168	67.9	168	68.0	<b><u>168</u></b>	<b><u>68.0</u></b>	168	67.9	168	68.0	<b><u>168</u></b>	<b><u>68.0</u></b>
450.soplex	168	49.6	171	48.8	<b><u>170</u></b>	<b><u>49.1</u></b>	168	49.6	171	48.8	<b><u>170</u></b>	<b><u>49.1</u></b>
453.povray	88.9	59.8	90.2	59.0	<b><u>90.0</u></b>	<b><u>59.1</u></b>	<b><u>79.4</u></b>	<b><u>67.0</u></b>	79.3	67.1	79.7	66.7
454.calculix	<b><u>128</u></b>	<b><u>64.2</u></b>	128	64.2	128	64.3	125	65.8	<b><u>126</u></b>	<b><u>65.7</u></b>	126	65.4
459.GemsFDTD	<b><u>130</u></b>	<b><u>81.8</u></b>	130	81.8	130	81.8	127	83.3	127	83.2	<b><u>127</u></b>	<b><u>83.2</u></b>
465.tonto	<b><u>182</u></b>	<b><u>54.1</u></b>	182	54.1	182	54.1	160	61.5	<b><u>160</u></b>	<b><u>61.5</u></b>	160	61.3
470.lbm	<b><u>75.1</u></b>	<b><u>183</u></b>	75.1	183	75.1	183	<b><u>75.1</u></b>	<b><u>183</u></b>	75.1	183	75.1	183
481.wrf	95.5	117	96.0	116	<b><u>95.7</u></b>	<b><u>117</u></b>	95.5	117	96.0	116	<b><u>95.7</u></b>	<b><u>117</u></b>
482.sphinx3	236	82.6	237	82.4	<b><u>236</u></b>	<b><u>82.4</u></b>	236	82.6	237	82.4	<b><u>236</u></b>	<b><u>82.4</u></b>

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:

Continued on next page



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Software Availability: Nov-2015

## 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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