



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

**SPECfp<sup>®</sup>2006 = 72.0**

Express5800/R110g-1E (Intel Xeon E3-1220 v3)

**SPECfp\_base2006 = 70.8**

CPU2006 license: 9006

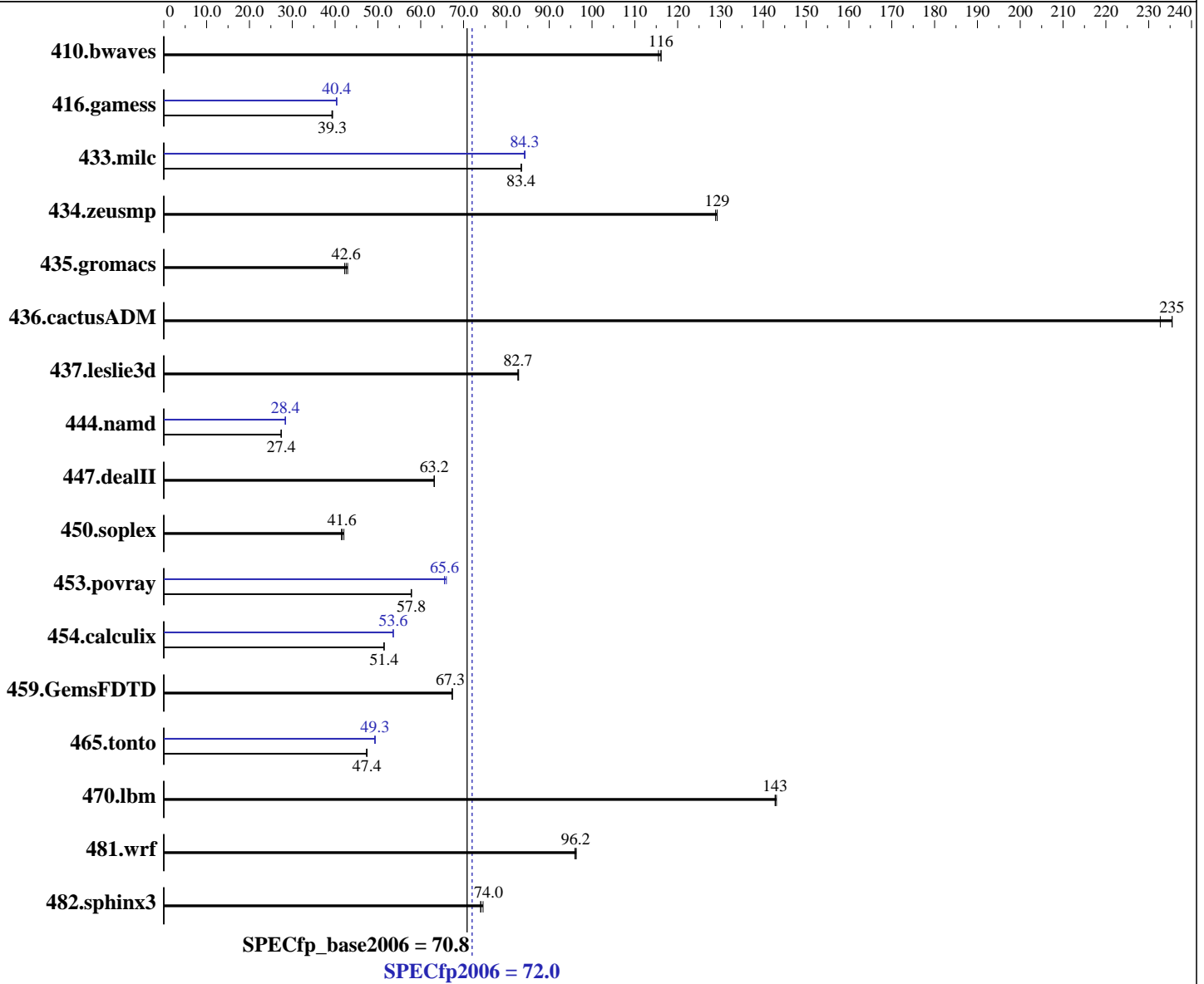
Test date: Jul-2014

Test sponsor: NEC Corporation

Hardware Availability: Jul-2014

Tested by: NEC Corporation

Software Availability: Jan-2014



### Hardware

CPU Name: Intel Xeon E3-1220 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 3100  
 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 6.5 (Santiago)  
 Kernel 2.6.32-431.el6.x86\_64  
 Compiler: C/C++: Version 14.0.2.144 of Intel C++ Studio XE for Linux;  
 Fortran: Version 14.0.2.144 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 PC3-12800E-11, ECC)  
 Disk Subsystem: 1 x 250 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	118	116	<b>117</b>	<b>116</b>	117	116	118	116	<b>117</b>	<b>116</b>	117	116
416.gamess	499	39.3	497	39.4	<b>498</b>	<b>39.3</b>	486	40.3	485	40.4	<b>485</b>	<b>40.4</b>
433.milc	110	83.5	<b>110</b>	<b>83.4</b>	110	83.4	109	84.2	109	84.4	<b>109</b>	<b>84.3</b>
434.zeusmp	70.6	129	<b>70.4</b>	<b>129</b>	70.4	129	70.6	129	<b>70.4</b>	<b>129</b>	70.4	129
435.gromacs	166	42.9	<b>168</b>	<b>42.6</b>	169	42.2	166	42.9	<b>168</b>	<b>42.6</b>	169	42.2
436.cactusADM	50.7	235	<b>50.8</b>	<b>235</b>	51.4	233	50.7	235	<b>50.8</b>	<b>235</b>	51.4	233
437.leslie3d	113	82.9	114	82.7	<b>114</b>	<b>82.7</b>	113	82.9	114	82.7	<b>114</b>	<b>82.7</b>
444.namd	292	27.4	293	27.4	<b>292</b>	<b>27.4</b>	282	28.4	<b>282</b>	<b>28.4</b>	283	28.4
447.dealII	181	63.2	181	63.1	<b>181</b>	<b>63.2</b>	181	63.2	181	63.1	<b>181</b>	<b>63.2</b>
450.soplex	201	41.5	<b>200</b>	<b>41.6</b>	198	42.1	201	41.5	<b>200</b>	<b>41.6</b>	198	42.1
453.povray	92.1	57.8	<b>92.1</b>	<b>57.8</b>	91.9	57.9	80.6	66.0	<b>81.1</b>	<b>65.6</b>	81.2	65.5
454.calculix	160	51.4	<b>160</b>	<b>51.4</b>	160	51.4	<b>154</b>	<b>53.6</b>	154	53.6	154	53.6
459.GemsFDTD	158	67.3	<b>158</b>	<b>67.3</b>	157	67.4	158	67.3	<b>158</b>	<b>67.3</b>	157	67.4
465.tonto	<b>207</b>	<b>47.4</b>	207	47.5	208	47.3	199	49.4	<b>199</b>	<b>49.3</b>	200	49.3
470.lbm	<b>96.2</b>	<b>143</b>	96.0	143	96.2	143	<b>96.2</b>	<b>143</b>	96.0	143	96.2	143
481.wrf	116	96.3	116	96.0	<b>116</b>	<b>96.2</b>	116	96.3	116	96.0	<b>116</b>	<b>96.2</b>
482.sphinx3	263	74.0	261	74.6	<b>263</b>	<b>74.0</b>	263	74.0	261	74.6	<b>263</b>	<b>74.0</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:  
Energy Performance: Performance

## 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"

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## General Notes (Continued)

Added glibc-static-2.12-1.132.el6.x86\_64.rpm  
to enable static linking  
Transparent Huge Pages enabled with:  
echo always > /sys/kernel/mm/redhat\_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.deall: -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:

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

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## Base Optimization Flags (Continued)

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

-xCORE-AVX2 -ipo -O3 -no-prec-div -static -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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -static  
-auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-fno-alias -auto-ilp32

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## Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4  
-ansi-alias

### Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2  
-inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

465.tonto: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -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

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html>  
<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120-RevB.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml>  
<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120-RevB.xml>



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

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