



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

SPECfp<sup>®</sup>2006 = **79.3**

Express5800/R120e-2E (Intel Xeon E5-2430 v2)

SPECfp\_base2006 = **76.6**

CPU2006 license: 9006

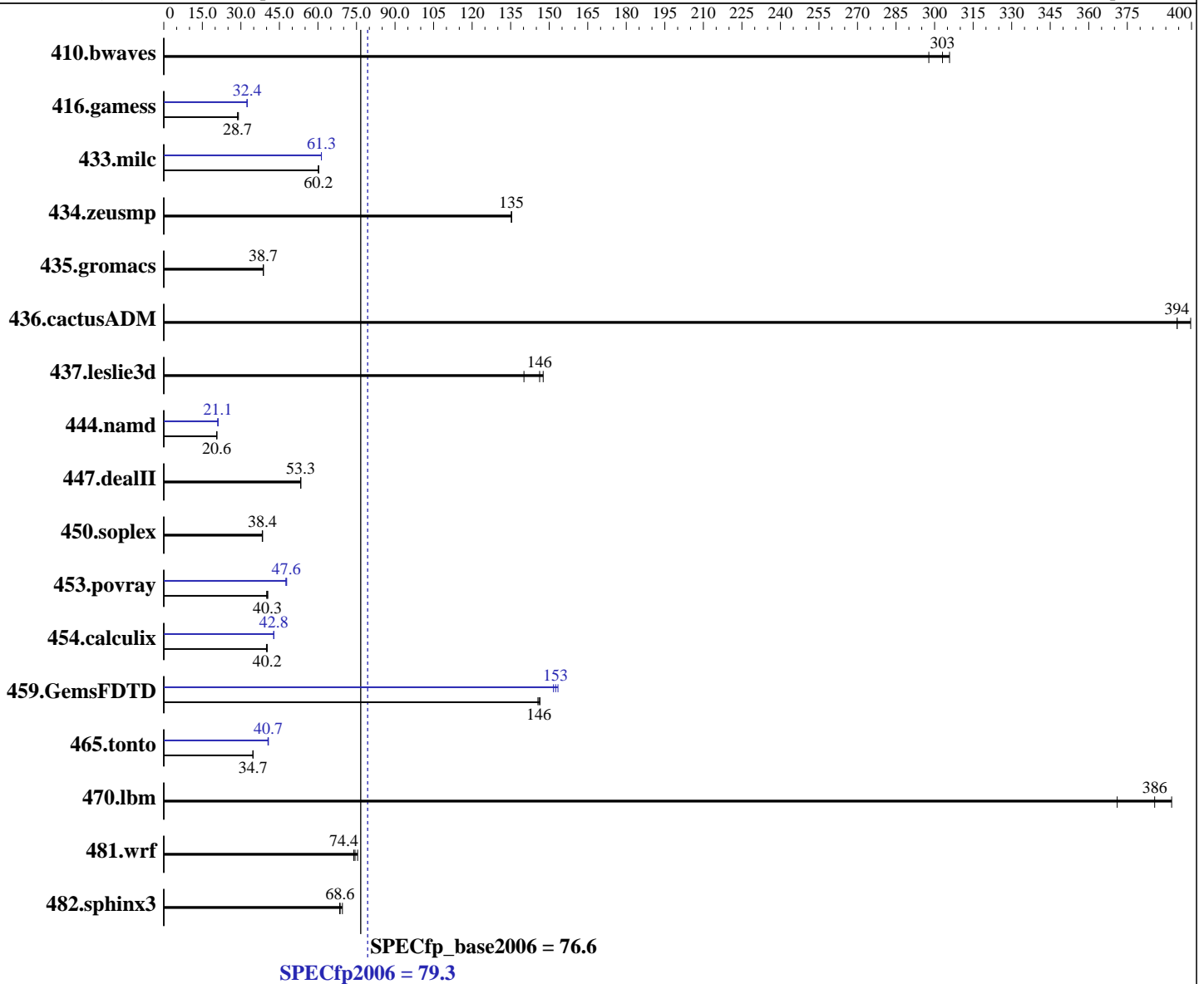
Test date: Jan-2014

Test sponsor: NEC Corporation

Hardware Availability: Jan-2014

Tested by: NEC Corporation

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2430 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz  
 CPU MHz: 2500  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 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

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### Software

Operating System: Red Hat Enterprise Linux Server release 6.4 (Santiago)  
 Kernel 2.6.32-358.18.1.el6.x86\_64  
 Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;  
 Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4

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L3 Cache: 15 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 192 GB (12 x 16 GB 2Rx4 PC3L-12800R-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	<b>44.8</b>	<b>303</b>	45.6	298	44.4	306	<b>44.8</b>	<b>303</b>	45.6	298	44.4	306
416.gamess	674	29.1	681	28.7	<b>681</b>	<b>28.7</b>	<b>604</b>	<b>32.4</b>	604	32.4	603	32.4
433.milc	<b>152</b>	<b>60.2</b>	152	60.3	153	60.2	150	61.3	150	61.4	<b>150</b>	<b>61.3</b>
434.zeusmp	67.2	135	<b>67.2</b>	<b>135</b>	67.2	135	67.2	135	<b>67.2</b>	<b>135</b>	67.2	135
435.gromacs	<b>184</b>	<b>38.7</b>	184	38.8	185	38.7	<b>184</b>	<b>38.7</b>	184	38.8	185	38.7
436.cactusADM	<b>30.3</b>	<b>394</b>	29.9	400	30.3	394	<b>30.3</b>	<b>394</b>	29.9	400	30.3	394
437.leslie3d	63.7	148	<b>64.3</b>	<b>146</b>	67.1	140	63.7	148	<b>64.3</b>	<b>146</b>	67.1	140
444.namd	389	20.6	<b>389</b>	<b>20.6</b>	389	20.6	<b>381</b>	<b>21.1</b>	381	21.1	380	21.1
447.dealII	<b>215</b>	<b>53.3</b>	215	53.3	215	53.3	<b>215</b>	<b>53.3</b>	215	53.3	215	53.3
450.soplex	<b>217</b>	<b>38.4</b>	217	38.4	218	38.3	<b>217</b>	<b>38.4</b>	217	38.4	218	38.3
453.povray	<b>132</b>	<b>40.3</b>	131	40.5	133	40.0	<b>112</b>	<b>47.6</b>	112	47.5	111	47.8
454.calculix	<b>205</b>	<b>40.2</b>	205	40.2	207	39.9	<b>193</b>	<b>42.8</b>	193	42.8	193	42.8
459.GemsFDTD	<b>72.7</b>	<b>146</b>	72.5	146	72.9	146	69.2	153	70.0	152	<b>69.6</b>	<b>153</b>
465.tonto	<b>283</b>	<b>34.7</b>	284	34.7	283	34.8	243	40.5	<b>242</b>	<b>40.7</b>	242	40.7
470.lbm	35.0	392	<b>35.6</b>	<b>386</b>	37.0	371	35.0	392	<b>35.6</b>	<b>386</b>	37.0	371
481.wrf	151	73.9	148	75.4	<b>150</b>	<b>74.4</b>	151	73.9	148	75.4	<b>150</b>	<b>74.4</b>
482.sphinx3	<b>284</b>	<b>68.6</b>	285	68.5	280	69.5	<b>284</b>	<b>68.6</b>	285	68.5	280	69.5

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  
 Memory Voltage: 1.5 V

## 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"

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## General Notes (Continued)

OMP\_NUM\_THREADS = "12"

The Express5800/R120e-1E and the Express5800/R120e-2E models are electronically equivalent. The results have been measured on the Express5800/R120e-2E model.

Added glibc-static-2.12-1.107.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.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:

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

C++ benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

Fortran benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xAVX -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: -xAVX(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

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## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xAVX(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

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xAVX(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: -xAVX(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: -xAVX(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 -opt-prefetch -parallel

465.tonto: -xAVX(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: -xAVX -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>

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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 Thu Jul 24 20:04:17 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 25 February 2014.