



# SPEC® CFP2006 Result

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## NEC Corporation

**SPECfp®2006 = 117**

Express5800/R120f-1M (Intel Xeon E5-2690 v3)

**SPECfp\_base2006 = 112**

CPU2006 license: 9006

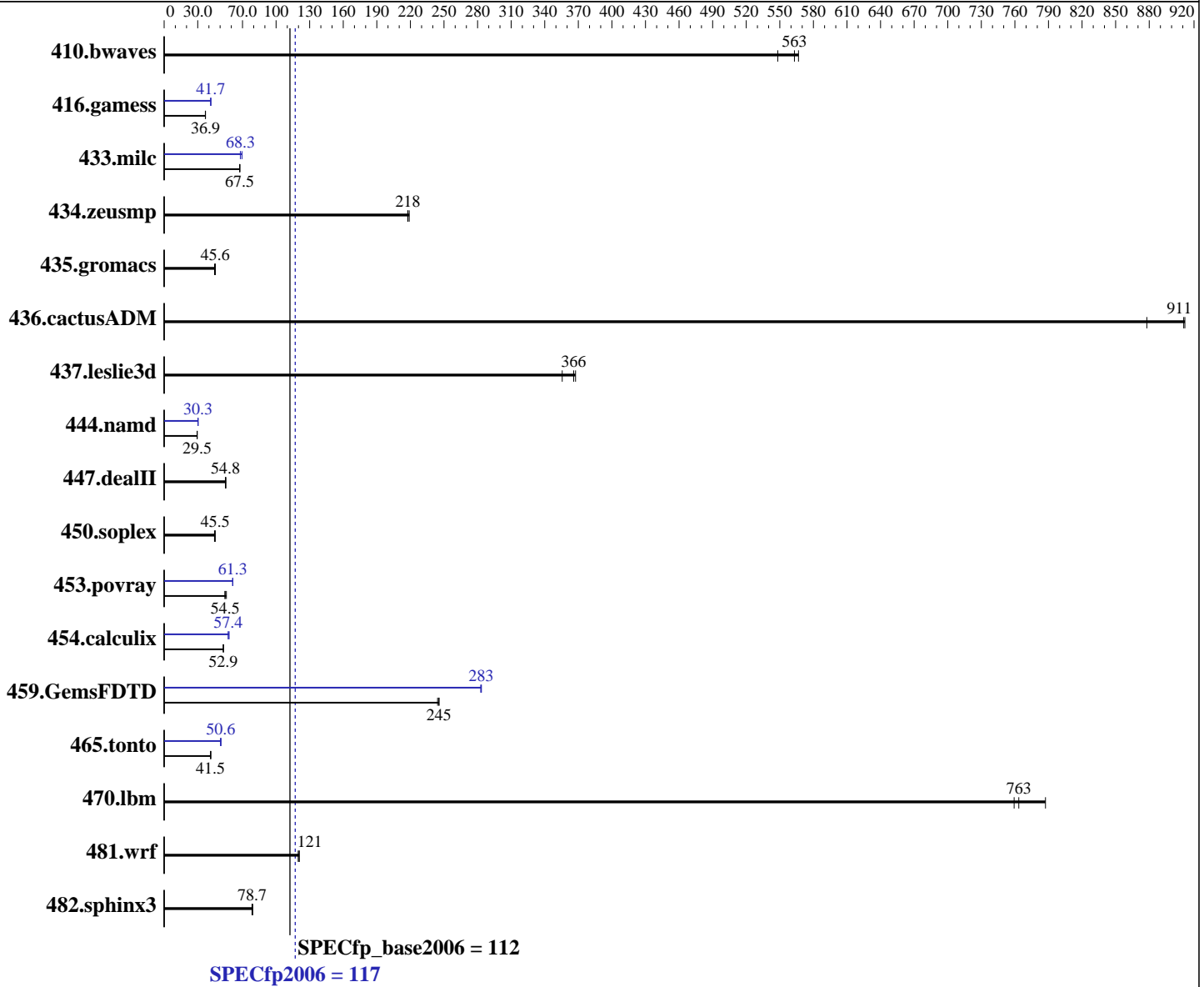
Test date: Sep-2014

Test sponsor: NEC Corporation

Hardware Availability: Feb-2015

Tested by: NEC Corporation

Software Availability: Jul-2014



### Hardware

CPU Name: Intel Xeon E5-2690 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 2600  
 FPU: Integrated  
 CPU(s) enabled: 24 cores, 2 chips, 12 cores/chip  
 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 6.5 (Santiago)  
 Kernel 2.6.32-431.17.1.el6.x86\_64  
 Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;  
 Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4

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L3 Cache: 30 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)  
 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	<u>24.1</u>	<u>563</u>	24.8	548	24.0	567	<u>24.1</u>	<u>563</u>	24.8	548	24.0	567
416.gamess	530	36.9	<u>531</u>	<u>36.9</u>	532	36.8	471	41.5	<u>469</u>	<u>41.7</u>	469	41.7
433.milc	<u>136</u>	<u>67.5</u>	136	67.7	136	67.5	<u>134</u>	<u>68.3</u>	132	69.7	135	68.1
434.zeusmp	41.8	218	<u>41.8</u>	<u>218</u>	41.6	219	41.8	218	<u>41.8</u>	<u>218</u>	41.6	219
435.gromacs	156	45.7	<u>157</u>	<u>45.6</u>	159	45.0	156	45.7	<u>157</u>	<u>45.6</u>	159	45.0
436.cactusADM	13.1	912	13.6	878	<u>13.1</u>	<u>911</u>	13.1	912	13.6	878	<u>13.1</u>	<u>911</u>
437.leslie3d	25.6	368	26.4	356	<u>25.7</u>	<u>366</u>	25.6	368	26.4	356	<u>25.7</u>	<u>366</u>
444.namd	272	29.5	<u>272</u>	<u>29.5</u>	272	29.5	265	30.3	<u>265</u>	<u>30.3</u>	265	30.3
447.dealII	207	55.2	209	54.8	<u>209</u>	<u>54.8</u>	207	55.2	209	54.8	<u>209</u>	<u>54.8</u>
450.soplex	183	45.6	<u>183</u>	<u>45.5</u>	185	45.0	183	45.6	<u>183</u>	<u>45.5</u>	185	45.0
453.povray	97.9	54.3	<u>97.7</u>	<u>54.5</u>	95.6	55.6	86.6	61.4	86.9	61.2	<u>86.9</u>	<u>61.3</u>
454.calculix	156	52.8	<u>156</u>	<u>52.9</u>	156	53.0	142	58.1	144	57.2	<u>144</u>	<u>57.4</u>
459.GemsFDTD	43.2	246	43.4	244	<u>43.2</u>	<u>245</u>	<u>37.5</u>	<u>283</u>	37.4	283	37.5	283
465.tonto	236	41.7	<u>237</u>	<u>41.5</u>	237	41.5	<u>194</u>	<u>50.6</u>	196	50.3	194	50.8
470.lbm	18.1	759	17.5	787	<u>18.0</u>	<u>763</u>	18.1	759	17.5	787	<u>18.0</u>	<u>763</u>
481.wrf	93.3	120	92.6	121	<u>92.6</u>	<u>121</u>	93.3	120	92.6	121	<u>92.6</u>	<u>121</u>
482.sphinx3	248	78.5	<u>248</u>	<u>78.7</u>	246	79.2	248	78.5	<u>248</u>	<u>78.7</u>	246	79.2

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  
 Patrol Scrub: Disabled  
 Demand Scrub: Disabled  
 Early Snoop: Disabled  
 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"

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

OMP\_NUM\_THREADS = "24"

The Express5800/R120f-1M (Intel Xeon E5-2690 v3) and the Express5800/R120f-2M (Intel Xeon E5-2690 v3) models are electronically equivalent. The results have been measured on the Express5800/R120f-2M (Intel Xeon E5-2690 v3) model.

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

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

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## Peak Optimization Flags (Continued)

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

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-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -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 -opt-prefetch -parallel

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-V1.2-120f-RevB.html>



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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-V1.2-120f-RevB.xml>

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

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