



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

**SPECfp<sup>®</sup>2006 = 65.5**

Express5800/R120f-1M (Intel Xeon E5-2609 v3)

**SPECfp\_base2006 = 63.4**

CPU2006 license: 9006

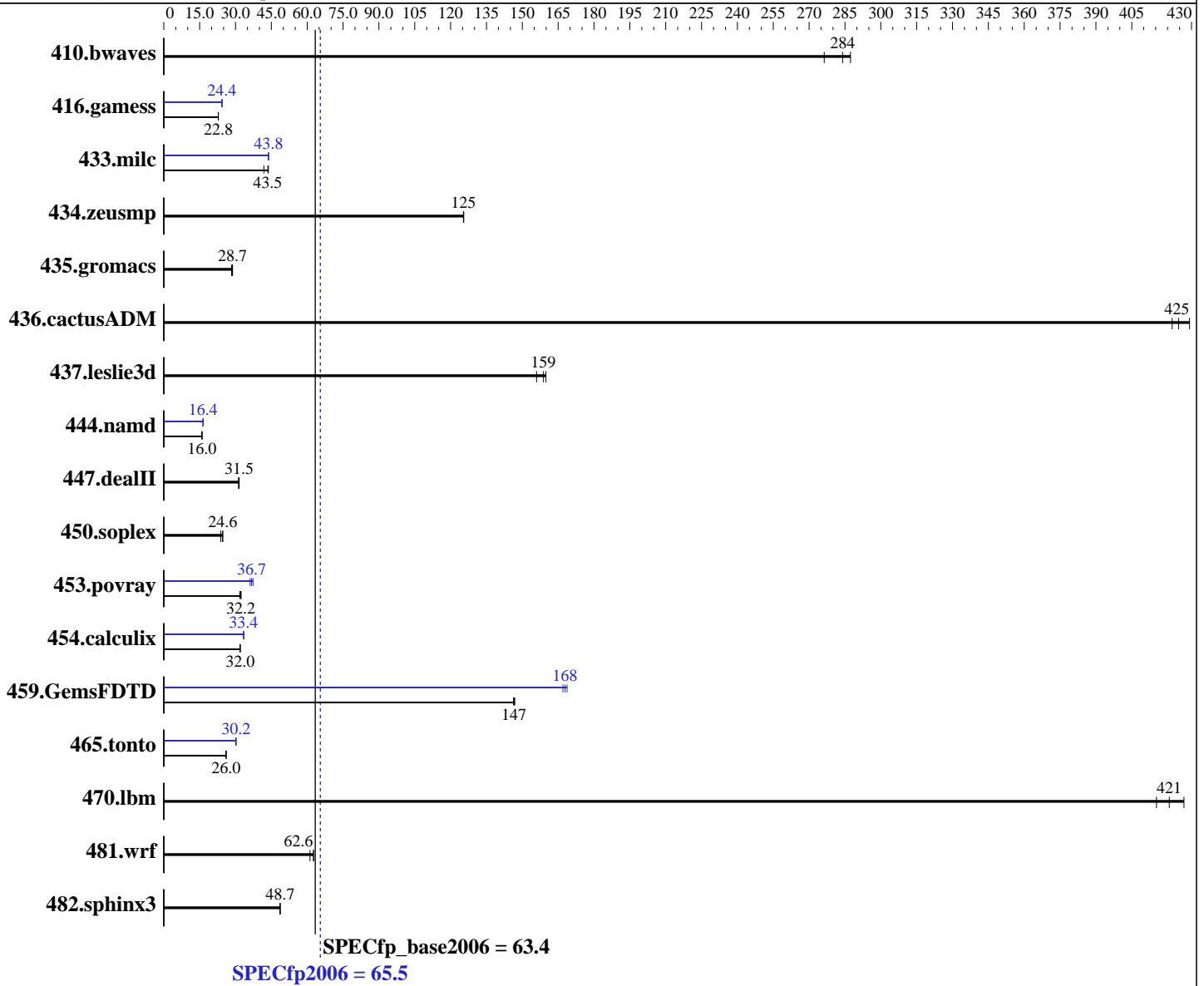
Test date: Nov-2014

Test sponsor: NEC Corporation

Hardware Availability: Feb-2015

Tested by: NEC Corporation

Software Availability: Jul-2014



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### Hardware

CPU Name: Intel Xeon E5-2609 v3  
 CPU Characteristics:  
 CPU MHz: 1900  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 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: 15 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)  
 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	49.2	276	47.3	287	<b>47.8</b>	<b>284</b>	49.2	276	47.3	287	<b>47.8</b>	<b>284</b>
416.gamess	858	22.8	<b>859</b>	<b>22.8</b>	859	22.8	802	24.4	<b>804</b>	<b>24.4</b>	804	24.4
433.milc	210	43.8	<b>211</b>	<b>43.5</b>	219	41.9	210	43.8	209	43.8	<b>210</b>	<b>43.8</b>
434.zeusmp	72.5	126	<b>72.6</b>	<b>125</b>	72.6	125	72.5	126	<b>72.6</b>	<b>125</b>	72.6	125
435.gromacs	<b>249</b>	<b>28.7</b>	252	28.3	248	28.8	<b>249</b>	<b>28.7</b>	252	28.3	248	28.8
436.cactusADM	<b>28.1</b>	<b>425</b>	27.8	429	28.3	422	<b>28.1</b>	<b>425</b>	27.8	429	28.3	422
437.leslie3d	60.3	156	<b>59.2</b>	<b>159</b>	58.8	160	60.3	156	<b>59.2</b>	<b>159</b>	58.8	160
444.namd	502	16.0	<b>502</b>	<b>16.0</b>	502	16.0	488	16.4	<b>488</b>	<b>16.4</b>	489	16.4
447.dealII	363	31.5	366	31.2	<b>363</b>	<b>31.5</b>	363	31.5	366	31.2	<b>363</b>	<b>31.5</b>
450.soplex	338	24.7	<b>338</b>	<b>24.6</b>	350	23.9	338	24.7	<b>338</b>	<b>24.6</b>	350	23.9
453.povray	<b>165</b>	<b>32.2</b>	165	32.3	167	31.8	147	36.1	142	37.3	<b>145</b>	<b>36.7</b>
454.calculix	258	32.0	<b>258</b>	<b>32.0</b>	259	31.9	246	33.5	<b>247</b>	<b>33.4</b>	247	33.4
459.GemsFDTD	72.2	147	<b>72.4</b>	<b>147</b>	72.5	146	63.5	167	<b>63.2</b>	<b>168</b>	62.9	169
465.tonto	<b>378</b>	<b>26.0</b>	377	26.1	379	26.0	<b>326</b>	<b>30.2</b>	326	30.1	326	30.2
470.lbm	33.1	415	32.2	427	<b>32.7</b>	<b>421</b>	33.1	415	32.2	427	<b>32.7</b>	<b>421</b>
481.wrf	183	61.2	<b>178</b>	<b>62.6</b>	178	62.7	183	61.2	<b>178</b>	<b>62.6</b>	178	62.7
482.sphinx3	400	48.7	<b>400</b>	<b>48.7</b>	401	48.6	400	48.7	<b>400</b>	<b>48.7</b>	401	48.6

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  
 Early Snoop: 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 = "12"

The Express5800/R120f-1M (Intel Xeon E5-2609 v3) and the Express5800/R120f-2M (Intel Xeon E5-2609 v3) models are electronically equivalent. The results have been measured on the Express5800/R120f-2M (Intel Xeon E5-2609 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.dealIII: 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:

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<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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