



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

SPECfp<sup>®</sup>2006 = **64.3**

Express5800/R120d-1M (Intel Xeon E5-2620)

SPECfp\_base2006 = **61.8**

CPU2006 license: 9006

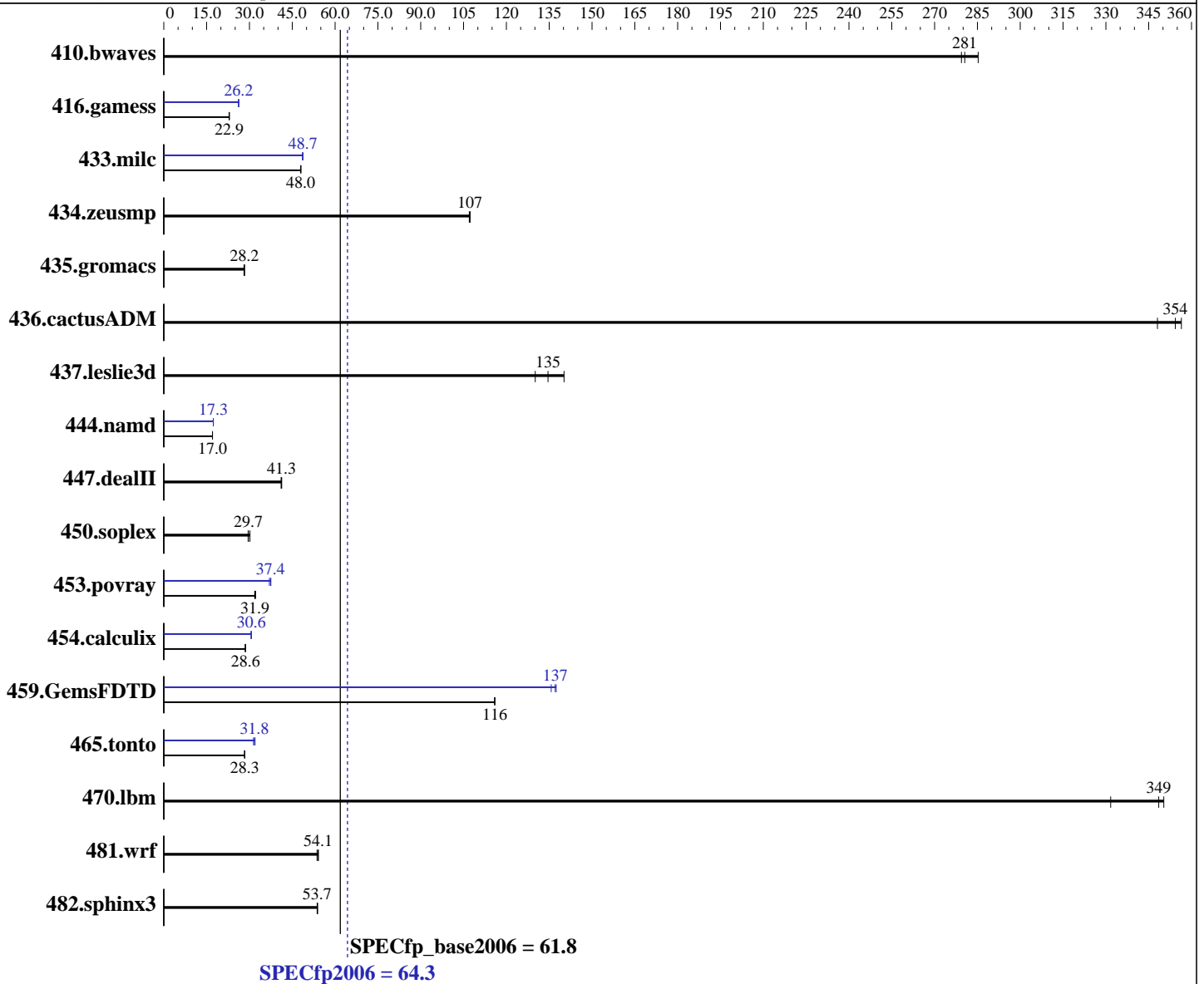
Test date: Jul-2012

Test sponsor: NEC Corporation

Hardware Availability: Jul-2012

Tested by: NEC Corporation

Software Availability: Dec-2011



### Hardware

CPU Name: Intel Xeon E5-2620  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.50 GHz  
 CPU MHz: 2000  
 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 6.2 (Santiago)  
 Kernel 2.6.32-220.el6.x86\_64  
 Compiler: C/C++: Version 12.1.2.273 of Intel C++ Studio XE for Linux;  
 Fortran: Version 12.1.2.273 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: 128 GB (16 x 8 GB 2Rx4 PC3L-12800R-11, ECC, running at 1333 MHz and CL9)  
 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	47.6	285	48.6	279	<b>48.4</b>	<b>281</b>	47.6	285	48.6	279	<b>48.4</b>	<b>281</b>
416.gamess	<b>854</b>	<b>22.9</b>	854	22.9	856	22.9	747	26.2	747	26.2	<b>747</b>	<b>26.2</b>
433.milc	191	48.0	<b>191</b>	<b>48.0</b>	191	48.0	189	48.6	<b>188</b>	<b>48.7</b>	188	48.8
434.zeusmp	84.8	107	85.0	107	<b>84.8</b>	<b>107</b>	84.8	107	85.0	107	<b>84.8</b>	<b>107</b>
435.gromacs	254	28.1	253	28.3	<b>253</b>	<b>28.2</b>	254	28.1	253	28.3	<b>253</b>	<b>28.2</b>
436.cactusADM	33.5	356	34.3	348	<b>33.7</b>	<b>354</b>	33.5	356	34.3	348	<b>33.7</b>	<b>354</b>
437.leslie3d	<b>69.8</b>	<b>135</b>	67.0	140	72.2	130	<b>69.8</b>	<b>135</b>	67.0	140	72.2	130
444.namd	471	17.0	470	17.1	<b>471</b>	<b>17.0</b>	463	17.3	462	17.3	<b>462</b>	<b>17.3</b>
447.dealII	277	41.3	<b>277</b>	<b>41.3</b>	278	41.1	277	41.3	<b>277</b>	<b>41.3</b>	278	41.1
450.soplex	276	30.2	282	29.5	<b>281</b>	<b>29.7</b>	276	30.2	282	29.5	<b>281</b>	<b>29.7</b>
453.povray	167	31.8	<b>167</b>	<b>31.9</b>	165	32.2	142	37.5	<b>142</b>	<b>37.4</b>	144	37.0
454.calculix	<b>288</b>	<b>28.6</b>	288	28.6	289	28.5	269	30.7	<b>269</b>	<b>30.6</b>	270	30.6
459.GemsFDTD	91.5	116	<b>91.5</b>	<b>116</b>	91.5	116	77.2	137	78.2	136	<b>77.4</b>	<b>137</b>
465.tonto	348	28.3	<b>348</b>	<b>28.3</b>	347	28.4	308	32.0	<b>310</b>	<b>31.8</b>	313	31.4
470.lbm	39.2	350	41.4	332	<b>39.4</b>	<b>349</b>	39.2	350	41.4	332	<b>39.4</b>	<b>349</b>
481.wrf	206	54.1	<b>207</b>	<b>54.1</b>	208	53.7	206	54.1	<b>207</b>	<b>54.1</b>	208	53.7
482.sphinx3	<b>363</b>	<b>53.7</b>	362	53.9	363	53.7	<b>363</b>	<b>53.7</b>	362	53.9	363	53.7

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

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NEC Corporation SPECfp2006 = 64.3

Express5800/R120d-1M (Intel Xeon E5-2620) SPECfp\_base2006 = 61.8

<b>CPU2006 license:</b> 9006	<b>Test date:</b> Jul-2012
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<b>Tested by:</b> NEC Corporation	<b>Software Availability:</b> Dec-2011

## General Notes (Continued)

OMP\_NUM\_THREADS = "12"

The Express5800/R120d-1M and the Express5800/R120d-2M models are electronically equivalent. The results have been measured on the Express5800/R120d-2M model.

Added glibc-static-2.12-1.47.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.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:

-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-ic12.1-official-linux64.20120425.html>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120d-RevA.html>

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

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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 11:43:11 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 31 July 2012.