



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

SPECfp<sup>®</sup>2006 = **66.1**

### Express5800/T120f (Intel Xeon E5-2609 v3)

SPECfp\_base2006 = **63.9**

CPU2006 license: 9006

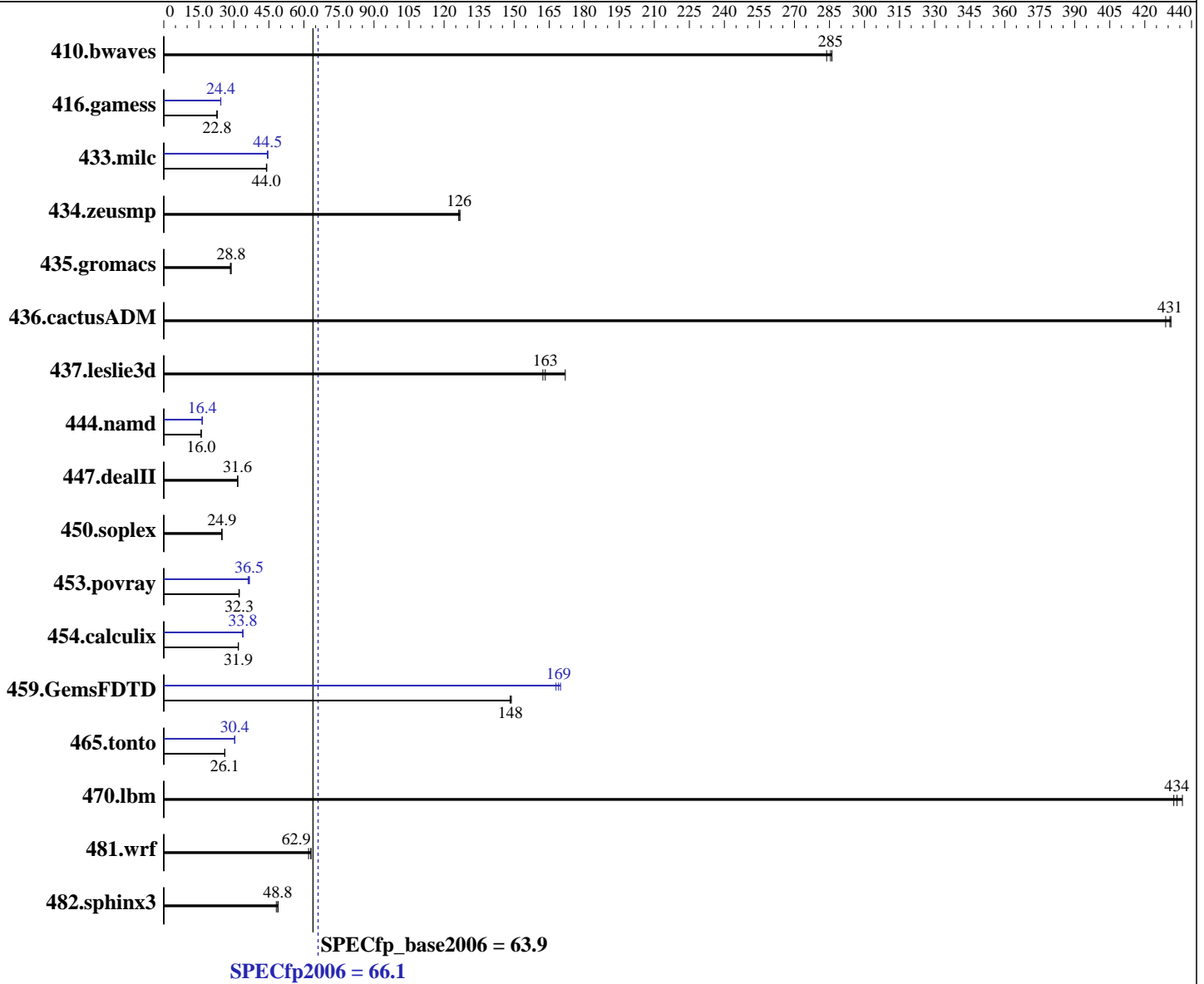
Test date: Mar-2015

Test sponsor: NEC Corporation

Hardware Availability: Jan-2015

Tested by: NEC Corporation

Software Availability: Jul-2014



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 2.6.32-431.20.3.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	47.9	284	47.5	286	<b><u>47.6</u></b>	<b><u>285</u></b>	47.9	284	47.5	286	<b><u>47.6</u></b>	<b><u>285</u></b>
416.gamess	859	22.8	<b><u>859</u></b>	<b><u>22.8</u></b>	858	22.8	802	24.4	803	24.4	<b><u>802</u></b>	<b><u>24.4</u></b>
433.milc	209	43.9	<b><u>209</u></b>	<b><u>44.0</u></b>	208	44.1	<b><u>206</u></b>	<b><u>44.5</u></b>	207	44.3	206	44.6
434.zeusmp	<b><u>72.0</u></b>	<b><u>126</u></b>	72.1	126	71.8	127	<b><u>72.0</u></b>	<b><u>126</u></b>	72.1	126	71.8	127
435.gromacs	248	28.8	<b><u>248</u></b>	<b><u>28.8</u></b>	251	28.5	248	28.8	<b><u>248</u></b>	<b><u>28.8</u></b>	251	28.5
436.cactusADM	27.9	429	27.7	431	<b><u>27.7</u></b>	<b><u>431</u></b>	27.9	429	27.7	431	<b><u>27.7</u></b>	<b><u>431</u></b>
437.leslie3d	57.9	162	<b><u>57.6</u></b>	<b><u>163</u></b>	54.7	172	57.9	162	<b><u>57.6</u></b>	<b><u>163</u></b>	54.7	172
444.namd	<b><u>501</u></b>	<b><u>16.0</u></b>	501	16.0	501	16.0	<b><u>488</u></b>	<b><u>16.4</u></b>	488	16.4	488	16.4
447.dealII	362	31.6	<b><u>362</u></b>	<b><u>31.6</u></b>	362	31.6	362	31.6	<b><u>362</u></b>	<b><u>31.6</u></b>	362	31.6
450.soplex	<b><u>335</u></b>	<b><u>24.9</u></b>	335	24.9	336	24.8	<b><u>335</u></b>	<b><u>24.9</u></b>	335	24.9	336	24.8
453.povray	165	32.3	165	32.2	<b><u>165</u></b>	<b><u>32.3</u></b>	147	36.1	145	36.7	<b><u>146</u></b>	<b><u>36.5</u></b>
454.calculix	<b><u>259</u></b>	<b><u>31.9</u></b>	258	31.9	259	31.9	244	33.8	244	33.9	<b><u>244</u></b>	<b><u>33.8</u></b>
459.GemsFDTD	<b><u>71.5</u></b>	<b><u>148</u></b>	71.3	149	71.5	148	63.2	168	62.5	170	<b><u>62.8</u></b>	<b><u>169</u></b>
465.tonto	377	26.1	376	26.2	<b><u>377</u></b>	<b><u>26.1</u></b>	<b><u>324</u></b>	<b><u>30.4</u></b>	324	30.4	324	30.3
470.lbm	<b><u>31.7</u></b>	<b><u>434</u></b>	31.5	436	31.8	432	<b><u>31.7</u></b>	<b><u>434</u></b>	31.5	436	31.8	432
481.wrf	177	63.0	<b><u>177</u></b>	<b><u>62.9</u></b>	180	62.0	177	63.0	<b><u>177</u></b>	<b><u>62.9</u></b>	180	62.0
482.sphinx3	398	48.9	<b><u>399</u></b>	<b><u>48.8</u></b>	405	48.2	398	48.9	<b><u>399</u></b>	<b><u>48.8</u></b>	405	48.2

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  
 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"

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

## Base Optimization Flags

C benchmarks:

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

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## Base Optimization Flags (Continued)

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

C++ benchmarks:

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## Peak Optimization Flags (Continued)

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-ic15.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120f-RevC.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-120f-RevC.xml>



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