



SPEC[®] CFP2006 Result

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NEC Corporation

SPECfp[®]2006 = **61.6**

Express5800/E120d-1 (Intel Xeon E5-2450L)

SPECfp_base2006 = **58.8**

CPU2006 license: 9006

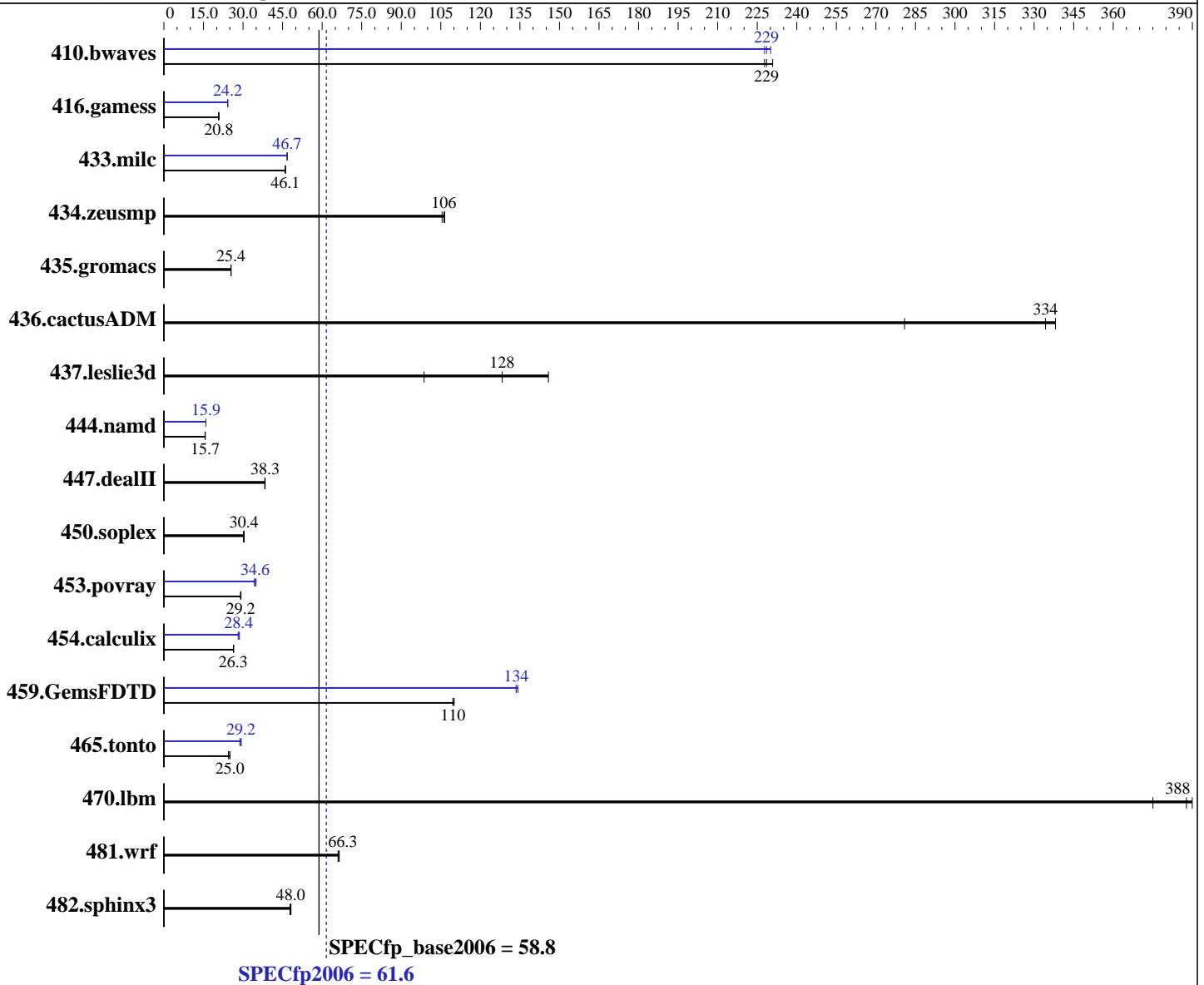
Test date: Aug-2012

Test sponsor: NEC Corporation

Hardware Availability: Sep-2012

Tested by: NEC Corporation

Software Availability: Feb-2012



Hardware

CPU Name: Intel Xeon E5-2450L
 CPU Characteristics: Intel Turbo Boost Technology up to 2.30 GHz
 CPU MHz: 1800
 FPU: Integrated
 CPU(s) enabled: 16 cores, 2 chips, 8 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 12.1.3.293 of Intel C++ Studio XE for Linux;
 Fortran: Version 12.1.3.293 of Intel Fortran Studio XE for Linux
 Auto Parallel: Yes
 File System: ext4

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L3 Cache: 20 MB I+D on chip per chip
 Other Cache: None
 Memory: 96 GB (12 x 8 GB 2Rx4 PC3L-12800R-11, ECC)
 Disk Subsystem: 1 x 500 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 | 59.7 | 228 | 58.9 | 231 | <u>59.5</u> | <u>229</u> | 59.7 | 228 | <u>59.5</u> | <u>229</u> | 59.1 | 230 |
| 416.gamess | 938 | 20.9 | 943 | 20.8 | <u>940</u> | <u>20.8</u> | 810 | 24.2 | <u>808</u> | <u>24.2</u> | 808 | 24.2 |
| 433.milc | <u>199</u> | <u>46.1</u> | 199 | 46.1 | 199 | 46.1 | <u>197</u> | <u>46.7</u> | 197 | 46.7 | 196 | 46.8 |
| 434.zeusmp | <u>85.7</u> | <u>106</u> | 85.5 | 106 | 86.3 | 105 | <u>85.7</u> | <u>106</u> | 85.5 | 106 | 86.3 | 105 |
| 435.gromacs | 281 | 25.4 | 281 | 25.4 | <u>281</u> | <u>25.4</u> | 281 | 25.4 | 281 | 25.4 | <u>281</u> | <u>25.4</u> |
| 436.cactusADM | <u>35.7</u> | <u>334</u> | 35.3 | 338 | 42.5 | 281 | <u>35.7</u> | <u>334</u> | 35.3 | 338 | 42.5 | 281 |
| 437.leslie3d | <u>73.3</u> | <u>128</u> | 64.5 | 146 | 95.3 | 98.7 | <u>73.3</u> | <u>128</u> | 64.5 | 146 | 95.3 | 98.7 |
| 444.namd | <u>512</u> | <u>15.7</u> | 512 | 15.7 | 513 | 15.6 | 503 | 15.9 | 504 | 15.9 | <u>503</u> | <u>15.9</u> |
| 447.dealII | 298 | 38.4 | <u>298</u> | <u>38.3</u> | 299 | 38.2 | 298 | 38.4 | <u>298</u> | <u>38.3</u> | 299 | 38.2 |
| 450.soplex | 276 | 30.2 | 274 | 30.4 | <u>275</u> | <u>30.4</u> | 276 | 30.2 | 274 | 30.4 | <u>275</u> | <u>30.4</u> |
| 453.povray | <u>182</u> | <u>29.2</u> | 183 | 29.0 | 182 | 29.2 | <u>154</u> | <u>34.6</u> | 152 | 35.0 | 155 | 34.3 |
| 454.calculix | 311 | 26.5 | 313 | 26.3 | <u>313</u> | <u>26.3</u> | <u>290</u> | <u>28.4</u> | 288 | 28.6 | 293 | 28.1 |
| 459.GemsFDTD | <u>96.8</u> | <u>110</u> | 96.8 | 110 | 96.4 | 110 | 79.4 | 134 | 79.0 | 134 | <u>79.4</u> | <u>134</u> |
| 465.tonto | 394 | 25.0 | 403 | 24.4 | <u>394</u> | <u>25.0</u> | 336 | 29.3 | 342 | 28.8 | <u>337</u> | <u>29.2</u> |
| 470.lbm | <u>35.4</u> | <u>388</u> | 36.6 | 375 | 35.2 | 390 | <u>35.4</u> | <u>388</u> | 36.6 | 375 | 35.2 | 390 |
| 481.wrf | <u>169</u> | <u>66.3</u> | 168 | 66.5 | 169 | 66.0 | <u>169</u> | <u>66.3</u> | 168 | 66.5 | 169 | 66.0 |
| 482.sphinx3 | <u>406</u> | <u>48.0</u> | 408 | 47.8 | 405 | 48.2 | <u>406</u> | <u>48.0</u> | 408 | 47.8 | 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:
 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"

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General Notes (Continued)

OMP_NUM_THREADS = "16"

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.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:

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

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Base Optimization Flags (Continued)

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

C++ benchmarks:

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Peak Optimization Flags (Continued)

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.dealII: 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: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel
-static

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: -xSSE4.2(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:

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml>

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For other inquiries, please contact webmaster@spec.org.

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