



SPEC® CFP2006 Result

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NEC Corporation

SPECfp®2006 = 65.5

Express5800/R120d-1M (Intel Xeon E5-2650L)

SPECfp_base2006 = 62.2

CPU2006 license: 9006

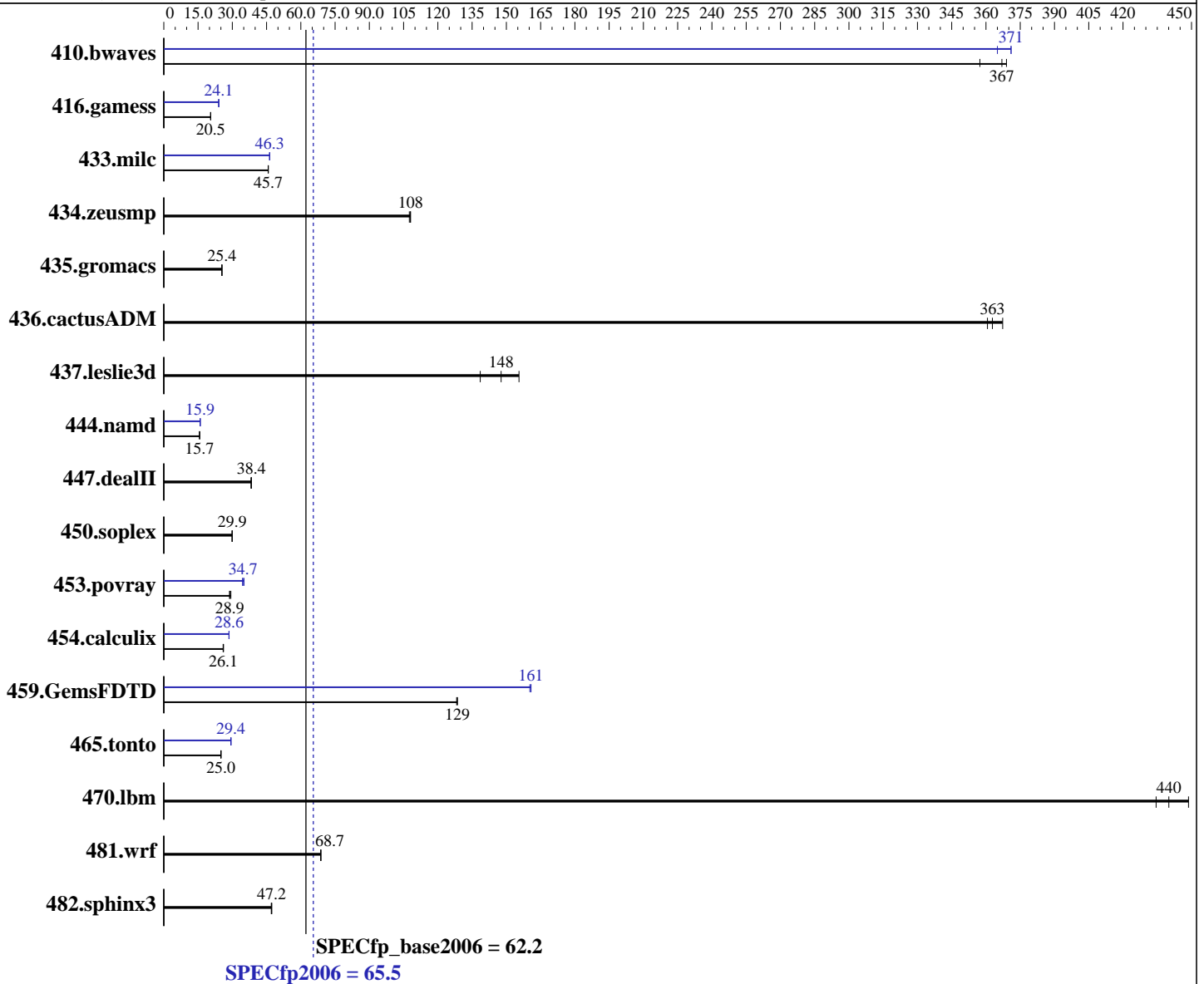
Test date: Jun-2012

Test sponsor: NEC Corporation

Hardware Availability: Apr-2012

Tested by: NEC Corporation

Software Availability: Dec-2011



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Hardware

CPU Name: Intel Xeon E5-2650L
 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 12.1.2.273 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: 20 MB I+D on chip per chip
 Other Cache: None
 Memory: 128 GB (16 x 8 GB 2Rx4 PC3L-12800R-11, ECC)
 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 | 38.0 | 357 | 36.8 | 369 | <u>37.0</u> | <u>367</u> | 36.6 | 371 | 37.2 | 365 | <u>36.6</u> | <u>371</u> |
| 416.gamess | 955 | 20.5 | 953 | 20.5 | <u>954</u> | <u>20.5</u> | 813 | 24.1 | 815 | 24.0 | <u>814</u> | <u>24.1</u> |
| 433.milc | 201 | 45.7 | <u>201</u> | <u>45.7</u> | 201 | 45.8 | 198 | 46.4 | 198 | 46.3 | <u>198</u> | <u>46.3</u> |
| 434.zeusmp | 84.6 | 108 | <u>84.3</u> | <u>108</u> | 84.2 | 108 | 84.6 | 108 | <u>84.3</u> | <u>108</u> | 84.2 | 108 |
| 435.gromacs | 281 | 25.4 | <u>281</u> | <u>25.4</u> | 281 | 25.4 | 281 | 25.4 | <u>281</u> | <u>25.4</u> | 281 | 25.4 |
| 436.cactusADM | <u>32.9</u> | <u>363</u> | 32.5 | 367 | 33.1 | 361 | <u>32.9</u> | <u>363</u> | 32.5 | 367 | 33.1 | 361 |
| 437.leslie3d | <u>63.6</u> | <u>148</u> | 60.4 | 156 | 67.8 | 139 | <u>63.6</u> | <u>148</u> | 60.4 | 156 | 67.8 | 139 |
| 444.namd | 511 | 15.7 | 512 | 15.7 | <u>512</u> | <u>15.7</u> | <u>503</u> | <u>15.9</u> | 503 | 15.9 | 503 | 15.9 |
| 447.dealII | <u>298</u> | <u>38.4</u> | 300 | 38.1 | 298 | 38.4 | <u>298</u> | <u>38.4</u> | 300 | 38.1 | 298 | 38.4 |
| 450.soplex | 278 | 30.0 | 279 | 29.9 | <u>279</u> | <u>29.9</u> | 278 | 30.0 | 279 | 29.9 | <u>279</u> | <u>29.9</u> |
| 453.povray | <u>184</u> | <u>28.9</u> | 181 | 29.4 | 185 | 28.8 | <u>154</u> | <u>34.7</u> | 154 | 34.5 | 151 | 35.1 |
| 454.calculix | <u>316</u> | <u>26.1</u> | 318 | 26.0 | 316 | 26.1 | 289 | 28.6 | <u>289</u> | <u>28.6</u> | 289 | 28.5 |
| 459.GemsFDTD | <u>82.5</u> | <u>129</u> | 82.7 | 128 | 82.5 | 129 | 66.2 | 160 | <u>66.0</u> | <u>161</u> | 66.0 | 161 |
| 465.tonto | 392 | 25.1 | 394 | 24.9 | <u>394</u> | <u>25.0</u> | <u>335</u> | <u>29.4</u> | 335 | 29.3 | 334 | 29.4 |
| 470.lbm | <u>31.2</u> | <u>440</u> | 31.6 | 434 | 30.6 | 449 | <u>31.2</u> | <u>440</u> | 31.6 | 434 | 30.6 | 449 |
| 481.wrf | 163 | 68.7 | <u>163</u> | <u>68.7</u> | 162 | 68.8 | 163 | 68.7 | <u>163</u> | <u>68.7</u> | 162 | 68.8 |
| 482.sphinx3 | 414 | 47.1 | <u>413</u> | <u>47.2</u> | 412 | 47.3 | 414 | 47.1 | <u>413</u> | <u>47.2</u> | 412 | 47.3 |

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"

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: -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: -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-linux64.20111122.html>

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

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

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