



SPEC[®] CFP2006 Result

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NEC Corporation

SPECfp[®]2006 = **64.3**

Express5800/R120d-2M (Intel Xeon E5-2620)

SPECfp_base2006 = **61.8**

CPU2006 license: 9006

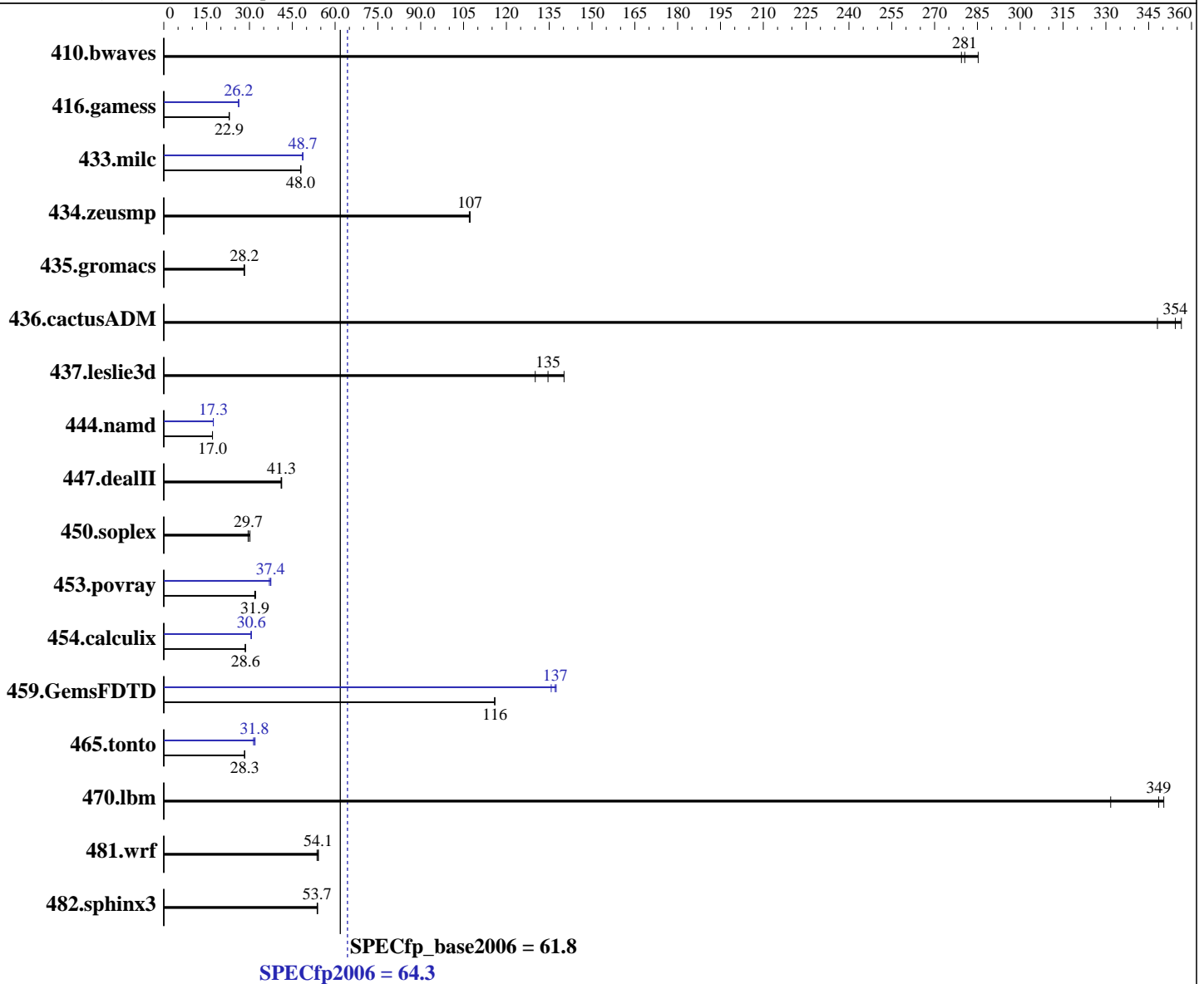
Test date: Jul-2012

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

Continued on next page

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

Continued on next page



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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 | 48.4 | 281 | 47.6 | 285 | 48.6 | 279 | 48.4 | 281 |
| 416.gamess | 854 | 22.9 | 854 | 22.9 | 856 | 22.9 | 747 | 26.2 | 747 | 26.2 | 747 | 26.2 |
| 433.milc | 191 | 48.0 | 191 | 48.0 | 191 | 48.0 | 189 | 48.6 | 188 | 48.7 | 188 | 48.8 |
| 434.zeusmp | 84.8 | 107 | 85.0 | 107 | 84.8 | 107 | 84.8 | 107 | 85.0 | 107 | 84.8 | 107 |
| 435.gromacs | 254 | 28.1 | 253 | 28.3 | 253 | 28.2 | 254 | 28.1 | 253 | 28.3 | 253 | 28.2 |
| 436.cactusADM | 33.5 | 356 | 34.3 | 348 | 33.7 | 354 | 33.5 | 356 | 34.3 | 348 | 33.7 | 354 |
| 437.leslie3d | 69.8 | 135 | 67.0 | 140 | 72.2 | 130 | 69.8 | 135 | 67.0 | 140 | 72.2 | 130 |
| 444.namd | 471 | 17.0 | 470 | 17.1 | 471 | 17.0 | 463 | 17.3 | 462 | 17.3 | 462 | 17.3 |
| 447.dealII | 277 | 41.3 | 277 | 41.3 | 278 | 41.1 | 277 | 41.3 | 277 | 41.3 | 278 | 41.1 |
| 450.soplex | 276 | 30.2 | 282 | 29.5 | 281 | 29.7 | 276 | 30.2 | 282 | 29.5 | 281 | 29.7 |
| 453.povray | 167 | 31.8 | 167 | 31.9 | 165 | 32.2 | 142 | 37.5 | 142 | 37.4 | 144 | 37.0 |
| 454.calculix | 288 | 28.6 | 288 | 28.6 | 289 | 28.5 | 269 | 30.7 | 269 | 30.6 | 270 | 30.6 |
| 459.GemsFDTD | 91.5 | 116 | 91.5 | 116 | 91.5 | 116 | 77.2 | 137 | 78.2 | 136 | 77.4 | 137 |
| 465.tonto | 348 | 28.3 | 348 | 28.3 | 347 | 28.4 | 308 | 32.0 | 310 | 31.8 | 313 | 31.4 |
| 470.lbm | 39.2 | 350 | 41.4 | 332 | 39.4 | 349 | 39.2 | 350 | 41.4 | 332 | 39.4 | 349 |
| 481.wrf | 206 | 54.1 | 207 | 54.1 | 208 | 53.7 | 206 | 54.1 | 207 | 54.1 | 208 | 53.7 |
| 482.sphinx3 | 363 | 53.7 | 362 | 53.9 | 363 | 53.7 | 363 | 53.7 | 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"

Continued on next page



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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

Continued on next page



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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.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: 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:

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

Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 11:42:09 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 31 July 2012.