



SPEC[®] CFP2006 Result

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NEC Corporation

SPECfp[®]2006 = **72.0**

Express5800/T110g-E (Intel Xeon E3-1220 v3)

SPECfp_base2006 = **70.9**

CPU2006 license: 9006

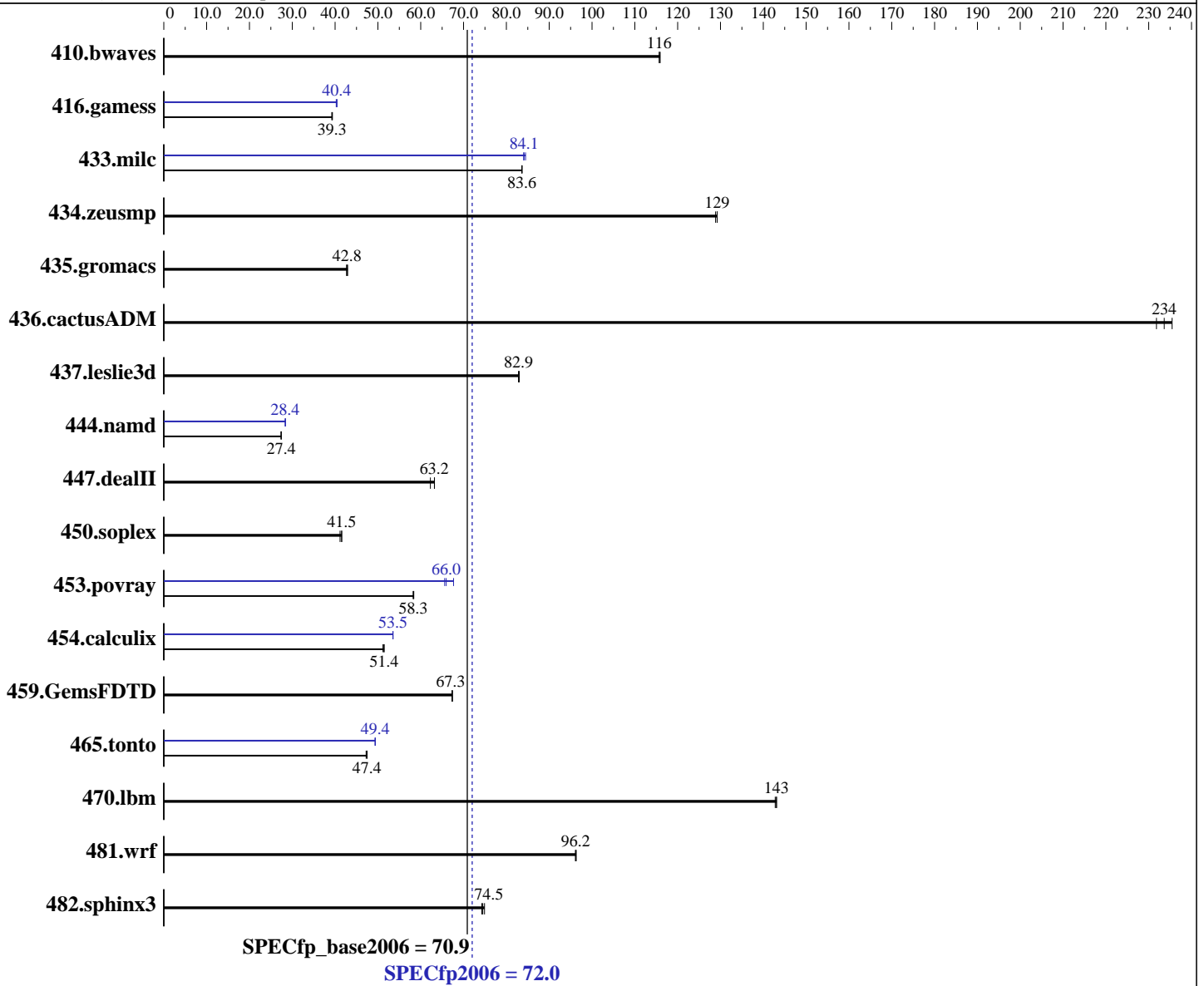
Test date: Sep-2014

Test sponsor: NEC Corporation

Hardware Availability: Jul-2014

Tested by: NEC Corporation

Software Availability: Jan-2014



Hardware

CPU Name: Intel Xeon E3-1220 v3
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz
 CPU MHz: 3100
 FPU: Integrated
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip
 CPU(s) orderable: 1 chip
 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.el6.x86_64
 Compiler: C/C++: Version 14.0.2.144 of Intel C++ Studio XE for Linux;
 Fortran: Version 14.0.2.144 of Intel Fortran Studio XE for Linux
 Auto Parallel: Yes
 File System: ext4

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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB (2 x 8 GB 2Rx8 PC3-12800E-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 | <u>117</u> | <u>116</u> | 117 | 116 | 117 | 116 | <u>117</u> | <u>116</u> | 117 | 116 | 117 | 116 |
| 416.gamess | 497 | 39.4 | 499 | 39.3 | <u>499</u> | <u>39.3</u> | 484 | 40.4 | 486 | 40.3 | <u>485</u> | <u>40.4</u> |
| 433.milc | 110 | 83.6 | <u>110</u> | <u>83.6</u> | 110 | 83.7 | 109 | 84.0 | <u>109</u> | <u>84.1</u> | 109 | 84.5 |
| 434.zeusmp | <u>70.4</u> | <u>129</u> | 70.4 | 129 | 70.6 | 129 | <u>70.4</u> | <u>129</u> | 70.4 | 129 | 70.6 | 129 |
| 435.gromacs | 166 | 42.9 | 167 | 42.7 | <u>167</u> | <u>42.8</u> | 166 | 42.9 | 167 | 42.7 | <u>167</u> | <u>42.8</u> |
| 436.cactusADM | <u>51.2</u> | <u>234</u> | 50.8 | 235 | 51.6 | 232 | <u>51.2</u> | <u>234</u> | 50.8 | 235 | 51.6 | 232 |
| 437.leslie3d | 113 | 83.0 | <u>113</u> | <u>82.9</u> | 113 | 82.9 | 113 | 83.0 | <u>113</u> | <u>82.9</u> | 113 | 82.9 |
| 444.namd | 292 | 27.4 | <u>293</u> | <u>27.4</u> | 293 | 27.4 | 283 | 28.4 | <u>283</u> | <u>28.4</u> | 283 | 28.4 |
| 447.dealII | 181 | 63.2 | <u>181</u> | <u>63.2</u> | 184 | 62.3 | 181 | 63.2 | <u>181</u> | <u>63.2</u> | 184 | 62.3 |
| 450.soplex | 201 | 41.6 | 203 | 41.2 | <u>201</u> | <u>41.5</u> | 201 | 41.6 | 203 | 41.2 | <u>201</u> | <u>41.5</u> |
| 453.povray | 91.3 | 58.2 | <u>91.3</u> | <u>58.3</u> | 91.1 | 58.4 | <u>80.7</u> | <u>66.0</u> | 78.6 | 67.7 | 81.1 | 65.6 |
| 454.calculix | <u>160</u> | <u>51.4</u> | 160 | 51.4 | 161 | 51.2 | <u>154</u> | <u>53.5</u> | 154 | 53.5 | 154 | 53.5 |
| 459.GemsFDTD | 158 | 67.3 | <u>158</u> | <u>67.3</u> | 157 | 67.4 | 158 | 67.3 | <u>158</u> | <u>67.3</u> | 157 | 67.4 |
| 465.tonto | 208 | 47.2 | 207 | 47.5 | <u>207</u> | <u>47.4</u> | 199 | 49.4 | 199 | 49.4 | <u>199</u> | <u>49.4</u> |
| 470.lbm | <u>96.0</u> | <u>143</u> | 96.0 | 143 | 96.2 | 143 | <u>96.0</u> | <u>143</u> | 96.0 | 143 | 96.2 | 143 |
| 481.wrf | 116 | 96.3 | 116 | 96.2 | <u>116</u> | <u>96.2</u> | 116 | 96.3 | 116 | 96.2 | <u>116</u> | <u>96.2</u> |
| 482.sphinx3 | <u>262</u> | <u>74.5</u> | 260 | 74.9 | 262 | 74.3 | <u>262</u> | <u>74.5</u> | 260 | 74.9 | 262 | 74.3 |

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

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:/home/cpu2006/sh"
OMP_NUM_THREADS = "4"

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General Notes (Continued)

Added glibc-static-2.12-1.132.el6.x86_64
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

Base Optimization Flags

C benchmarks:

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

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Base Optimization Flags (Continued)

C++ benchmarks:

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

Fortran benchmarks:

`-xCORE-AVX2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:

`-xCORE-AVX2 -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: `-xCORE-AVX2(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:

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`

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Peak Optimization Flags (Continued)

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- -static

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

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-ic14.0-official-linux64.20140128.html>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120-RevB.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120-RevB.xml>



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

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