



SPEC® CFP2006 Result

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NEC Corporation

SPECfp®2006 = **72.1**

Express5800/T110h-S (Intel Pentium G4400)

SPECfp_base2006 = **71.4**

CPU2006 license: 9006

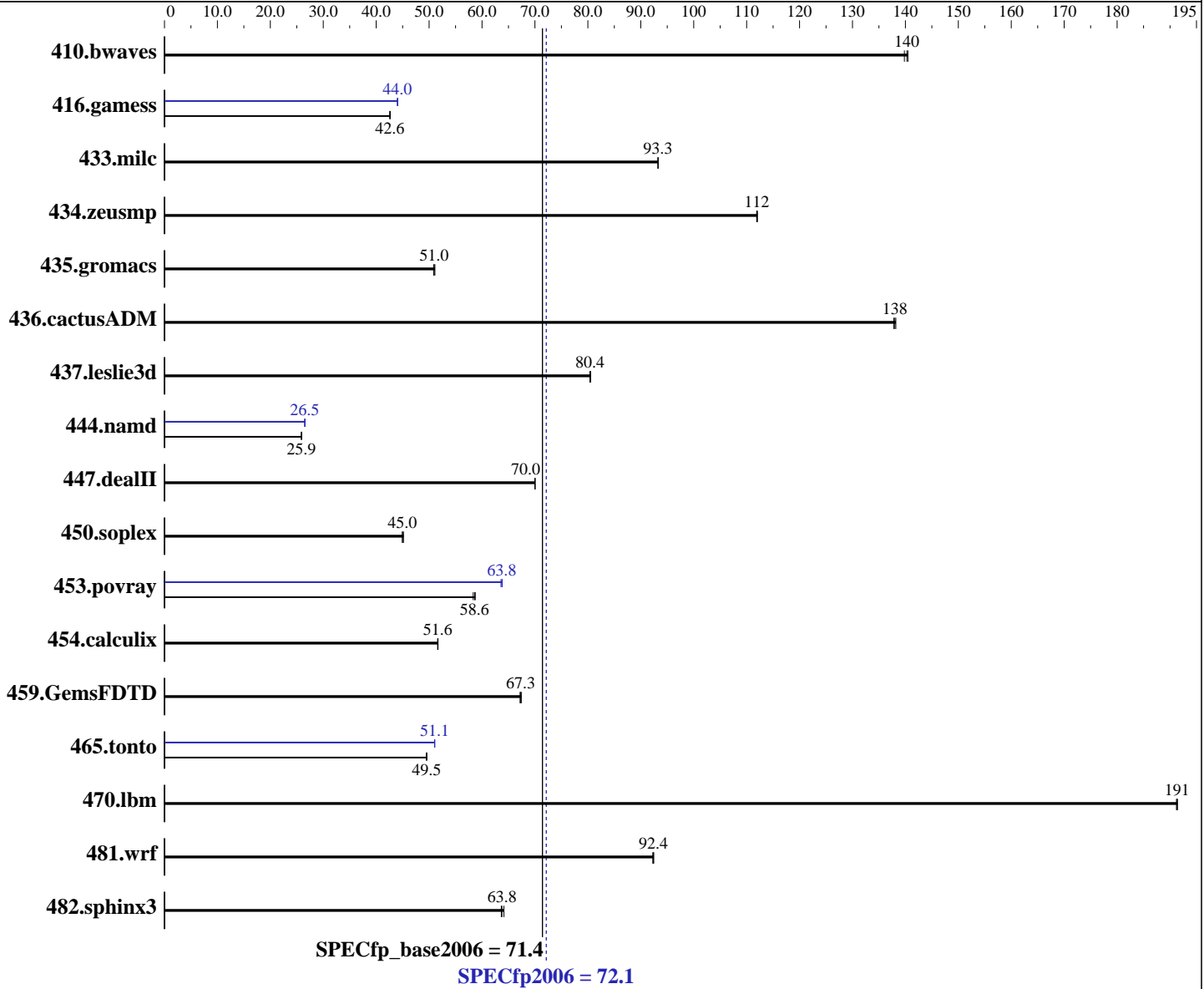
Test date: Dec-2015

Test sponsor: NEC Corporation

Hardware Availability: Mar-2016

Tested by: NEC Corporation

Software Availability: Nov-2015



Hardware

CPU Name: Intel Pentium G4400
 CPU Characteristics:
 CPU MHz: 3300
 FPU: Integrated
 CPU(s) enabled: 2 cores, 1 chip, 2 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 7.2 (Maipo)
 Kernel 3.10.0-327.el7.x86_64
 Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux;
 Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
 Auto Parallel: Yes
 File System: ext4

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L3 Cache: 3 MB I+D on chip per chip
 Other Cache: None
 Memory: 16 GB (2 x 8 GB 2Rx8 PC4-2133P-E)
 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 | 97.2 | 140 | <u>96.9</u> | <u>140</u> | 96.7 | 140 | 97.2 | 140 | <u>96.9</u> | <u>140</u> | 96.7 | 140 |
| 416.gamess | 459 | 42.6 | 460 | 42.6 | <u>459</u> | <u>42.6</u> | <u>445</u> | <u>44.0</u> | 445 | 44.0 | 444 | 44.1 |
| 433.milc | 98.4 | 93.2 | 98.4 | 93.3 | <u>98.4</u> | <u>93.3</u> | 98.4 | 93.2 | 98.4 | 93.3 | <u>98.4</u> | <u>93.3</u> |
| 434.zeusmp | 81.3 | 112 | 81.2 | 112 | <u>81.3</u> | <u>112</u> | 81.3 | 112 | 81.2 | 112 | <u>81.3</u> | <u>112</u> |
| 435.gromacs | 140 | 51.1 | <u>140</u> | <u>51.0</u> | 140 | 50.9 | 140 | 51.1 | <u>140</u> | <u>51.0</u> | 140 | 50.9 |
| 436.cactusADM | 86.7 | 138 | 86.5 | 138 | <u>86.6</u> | <u>138</u> | 86.7 | 138 | 86.5 | 138 | <u>86.6</u> | <u>138</u> |
| 437.leslie3d | 117 | 80.5 | 117 | 80.4 | <u>117</u> | <u>80.4</u> | 117 | 80.5 | 117 | 80.4 | <u>117</u> | <u>80.4</u> |
| 444.namd | <u>310</u> | <u>25.9</u> | 310 | 25.9 | 310 | 25.9 | 302 | 26.5 | <u>302</u> | <u>26.5</u> | 303 | 26.5 |
| 447.dealII | 163 | 70.0 | 163 | 70.0 | <u>163</u> | <u>70.0</u> | 163 | 70.0 | 163 | 70.0 | <u>163</u> | <u>70.0</u> |
| 450.soplex | 186 | 45.0 | <u>185</u> | <u>45.0</u> | 185 | 45.2 | 186 | 45.0 | <u>185</u> | <u>45.0</u> | 185 | 45.2 |
| 453.povray | <u>90.8</u> | <u>58.6</u> | 90.6 | 58.7 | 91.2 | 58.3 | <u>83.4</u> | <u>63.8</u> | 83.4 | 63.8 | 83.7 | 63.6 |
| 454.calculix | 160 | 51.7 | 160 | 51.6 | <u>160</u> | <u>51.6</u> | 160 | 51.7 | 160 | 51.6 | <u>160</u> | <u>51.6</u> |
| 459.GemsFDTD | <u>158</u> | <u>67.3</u> | 158 | 67.2 | 157 | 67.4 | <u>158</u> | <u>67.3</u> | 158 | 67.2 | 157 | 67.4 |
| 465.tonto | 199 | 49.5 | 198 | 49.6 | <u>199</u> | <u>49.5</u> | 193 | 51.1 | 193 | 51.0 | <u>193</u> | <u>51.1</u> |
| 470.lbm | <u>71.8</u> | <u>191</u> | 71.9 | 191 | 71.8 | 191 | <u>71.8</u> | <u>191</u> | 71.9 | 191 | 71.8 | 191 |
| 481.wrf | 121 | 92.4 | 121 | 92.3 | <u>121</u> | <u>92.4</u> | 121 | 92.4 | 121 | 92.3 | <u>121</u> | <u>92.4</u> |
| 482.sphinx3 | 306 | 63.6 | 304 | 64.1 | <u>306</u> | <u>63.8</u> | 306 | 63.6 | 304 | 64.1 | <u>306</u> | <u>63.8</u> |

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

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"

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General Notes (Continued)

OMP_NUM_THREADS = "2"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/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:

-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

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Base Optimization Flags (Continued)

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.2 -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: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1)
-prof-use(pass 2) -fno-alias -auto-ilp32

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Peak Optimization Flags (Continued)

447.dealll: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1)
-prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xSSE4.2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1)
-prof-use(pass 2) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

465.tonto: -xSSE4.2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1)
-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: basepeak = yes

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-ic16.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-110h-RevA.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-110h-RevA.xml>



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

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