# SPEC® CFP2006 Result

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## NEC Corporation

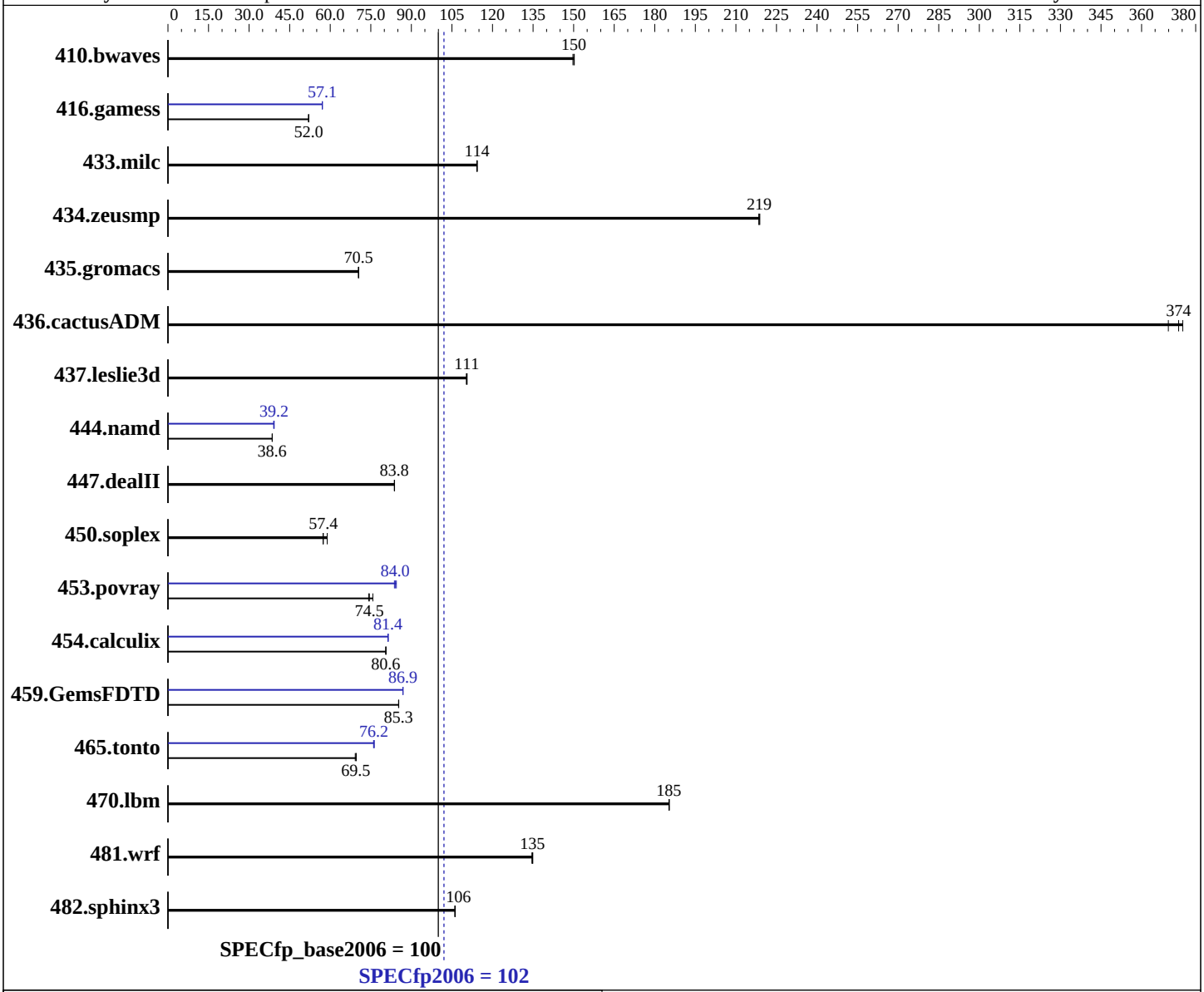
Express5800/R110h-1 (Intel Xeon E3-1270 v5)

SPECfp®2006 = 102

SPECfp_base2006 = 100

**CPU2006 license:** 9006
**Test sponsor:** NEC Corporation
**Tested by:** NEC Corporation

**Test date:** Dec-2015
**Hardware Availability:** Mar-2016
**Software Availability:** Nov-2015




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E3-1270 v5 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 4.00 GHz |
| CPU MHz: | 3600 |
| 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 7.2 (Maipo)<br>Kernel 3.10.0-327.el7.x86_64 |
| Compiler: | C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux;<br>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: | 8 MB I+D on chip per chip | System State: | Run level 3 (multi-user) |
| Other Cache: | None | Base Pointers: | 64-bit |
| Memory: | 16 GB (2 x 8 GB 2Rx8 PC4-2133P-E) | Peak Pointers: | 32/64-bit |
| Disk Subsystem: | 1 x 500 GB SATA, 7200 RPM | Other Software: | None |
| Other Hardware: | None | | |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 90.8 | 150 | **90.6** | **150** | 90.5 | 150 | 90.8 | 150 | **90.6** | **150** | 90.5 | 150 |
| 416.gamess | **376** | **52.0** | 376 | 52.0 | 376 | 52.0 | 343 | 57.1 | 343 | 57.1 | **343** | **57.1** |
| 433.milc | 80.4 | 114 | **80.3** | **114** | 80.3 | 114 | 80.4 | 114 | **80.3** | **114** | 80.3 | 114 |
| 434.zeusmp | 41.7 | 218 | **41.6** | **219** | 41.6 | 219 | 41.7 | 218 | **41.6** | **219** | 41.6 | 219 |
| 435.gromacs | 101 | 70.4 | **101** | **70.5** | 101 | 70.5 | 101 | 70.4 | **101** | **70.5** | 101 | 70.5 |
| 436.cactusADM | **32.0** | **374** | 31.8 | 375 | 32.3 | 370 | **32.0** | **374** | 31.8 | 375 | 32.3 | 370 |
| 437.leslie3d | 85.0 | 111 | 85.2 | 110 | **85.1** | **111** | 85.0 | 111 | 85.2 | 110 | **85.1** | **111** |
| 444.namd | 208 | 38.6 | 208 | 38.5 | **208** | **38.6** | **204** | **39.2** | 204 | 39.2 | 205 | 39.1 |
| 447.dealII | **137** | **83.8** | 137 | 83.7 | 137 | 83.8 | **137** | **83.8** | 137 | 83.7 | 137 | 83.8 |
| 450.soplex | 142 | 58.9 | 145 | 57.4 | **145** | **57.4** | 142 | 58.9 | 145 | 57.4 | **145** | **57.4** |
| 453.povray | 71.7 | 74.2 | 70.2 | 75.8 | **71.4** | **74.5** | 63.0 | 84.5 | **63.3** | **84.0** | 63.5 | 83.7 |
| 454.calculix | 102 | 80.6 | **102** | **80.6** | 102 | 80.6 | 101 | 81.5 | 101 | 81.3 | **101** | **81.4** |
| 459.GemsFDTD | 124 | 85.3 | **124** | **85.3** | 124 | 85.3 | 122 | 86.9 | **122** | **86.9** | 122 | 86.9 |
| 465.tonto | 141 | 69.6 | **142** | **69.5** | 142 | 69.2 | **129** | **76.2** | 129 | 76.3 | 129 | 76.0 |
| 470.lbm | 74.1 | 185 | 74.2 | 185 | **74.2** | **185** | 74.1 | 185 | 74.2 | 185 | **74.2** | **185** |
| 481.wrf | 82.8 | 135 | **82.8** | **135** | 83.0 | 135 | 82.8 | 135 | **82.8** | **135** | 83.0 | 135 |
| 482.sphinx3 | 183 | 106 | **184** | **106** | 184 | 106 | 183 | 106 | **184** | **106** | 184 | 106 |

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
 Hyper-Threading: Disabled
```

## 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"

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

C++ benchmarks:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias`

Fortran benchmarks:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch`

Benchmarks using both Fortran and C:
`-xCORE-AVX2 -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:

Continued on next page

## Peak Optimization Flags (Continued)

444.namd: -xCORE-AVX2(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

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(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: -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-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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