# SPEC® CFP2006 Result

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## NEC Corporation

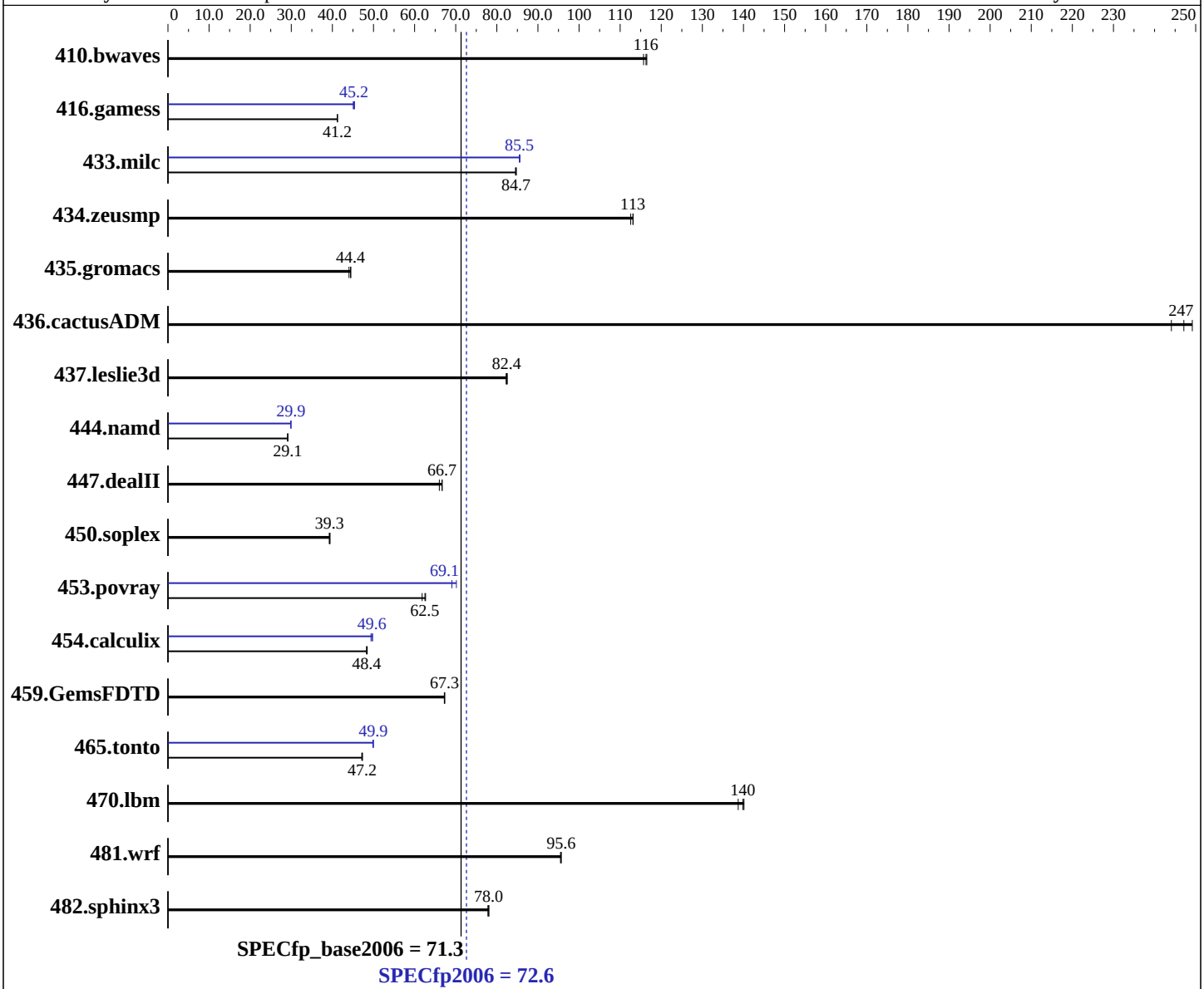
Express5800/T110f-E (Intel Xeon E3-1230 v3)

SPECfp®2006 = 72.6

SPECfp_base2006 = 71.3

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

**Test date:** Oct-2013
**Hardware Availability:** Oct-2013
**Software Availability:** Mar-2013




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E3-1230 v3 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.70 GHz |
| CPU MHz: | 3300 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 1 chip, 4 cores/chip, 2 threads/core |
| 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 6.4 (Santiago)<br>Kernel 2.6.32-358.el6.x86_64 |
| Compiler: | C/C++: Version 13.1.1.163 of Intel C++ Studio XE for Linux;<br>Fortran: Version 13.1.1.163 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 PC3L-12800E-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 | 117 | 116 | 117 | 116 | **117** | **116** | 117 | 116 | 117 | 116 | **117** | **116** |
| 416.gamess | **475** | **41.2** | 475 | 41.2 | 475 | 41.2 | 434 | 45.1 | **433** | **45.2** | 431 | 45.4 |
| 433.milc | 108 | 84.7 | **108** | **84.7** | 109 | 84.5 | 107 | 85.5 | 107 | 85.6 | **107** | **85.5** |
| 434.zeusmp | **80.4** | **113** | 80.8 | 113 | 80.4 | 113 | **80.4** | **113** | 80.8 | 113 | 80.4 | 113 |
| 435.gromacs | 161 | 44.5 | **161** | **44.4** | 162 | 44.0 | 161 | 44.5 | **161** | **44.4** | 162 | 44.0 |
| 436.cactusADM | 48.0 | 249 | **48.4** | **247** | 49.0 | 244 | 48.0 | 249 | **48.4** | **247** | 49.0 | 244 |
| 437.leslie3d | 114 | 82.5 | **114** | **82.4** | 114 | 82.3 | 114 | 82.5 | **114** | **82.4** | 114 | 82.3 |
| 444.namd | 275 | 29.1 | 275 | 29.1 | **275** | **29.1** | 268 | 29.9 | **268** | **29.9** | 268 | 29.9 |
| 447.dealII | 171 | 66.7 | **172** | **66.7** | 173 | 66.0 | 171 | 66.7 | **172** | **66.7** | 173 | 66.0 |
| 450.soplex | **212** | **39.3** | 211 | 39.4 | 213 | 39.2 | **212** | **39.3** | 211 | 39.4 | 213 | 39.2 |
| 453.povray | **85.1** | **62.5** | 86.0 | 61.8 | 84.9 | 62.7 | 75.8 | 70.2 | 77.0 | 69.1 | **77.0** | **69.1** |
| 454.calculix | 171 | 48.3 | 170 | 48.5 | **171** | **48.4** | 167 | 49.4 | **166** | **49.6** | 166 | 49.8 |
| 459.GemsFDTD | 158 | 67.2 | **158** | **67.3** | 158 | 67.3 | 158 | 67.2 | **158** | **67.3** | 158 | 67.3 |
| 465.tonto | **208** | **47.2** | 208 | 47.3 | 209 | 47.1 | **197** | **49.9** | 197 | 49.8 | 197 | 50.0 |
| 470.lbm | 98.1 | 140 | 99.1 | 139 | **98.2** | **140** | 98.1 | 140 | 99.1 | 139 | **98.2** | **140** |
| 481.wrf | **117** | **95.6** | 117 | 95.5 | 117 | 95.7 | **117** | **95.6** | 117 | 95.5 | 117 | 95.7 |
| 482.sphinx3 | **250** | **78.0** | 250 | 78.1 | 250 | 77.8 | **250** | **78.0** | 250 | 78.1 | 250 | 77.8 |

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:
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-2.12-1.107.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.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 -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-ic13-official-linux64.20130702.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-ic13-official-linux64.20130702.xml
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120d-RevA.xml

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