# SPEC® CFP2006 Result

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## NEC Corporation

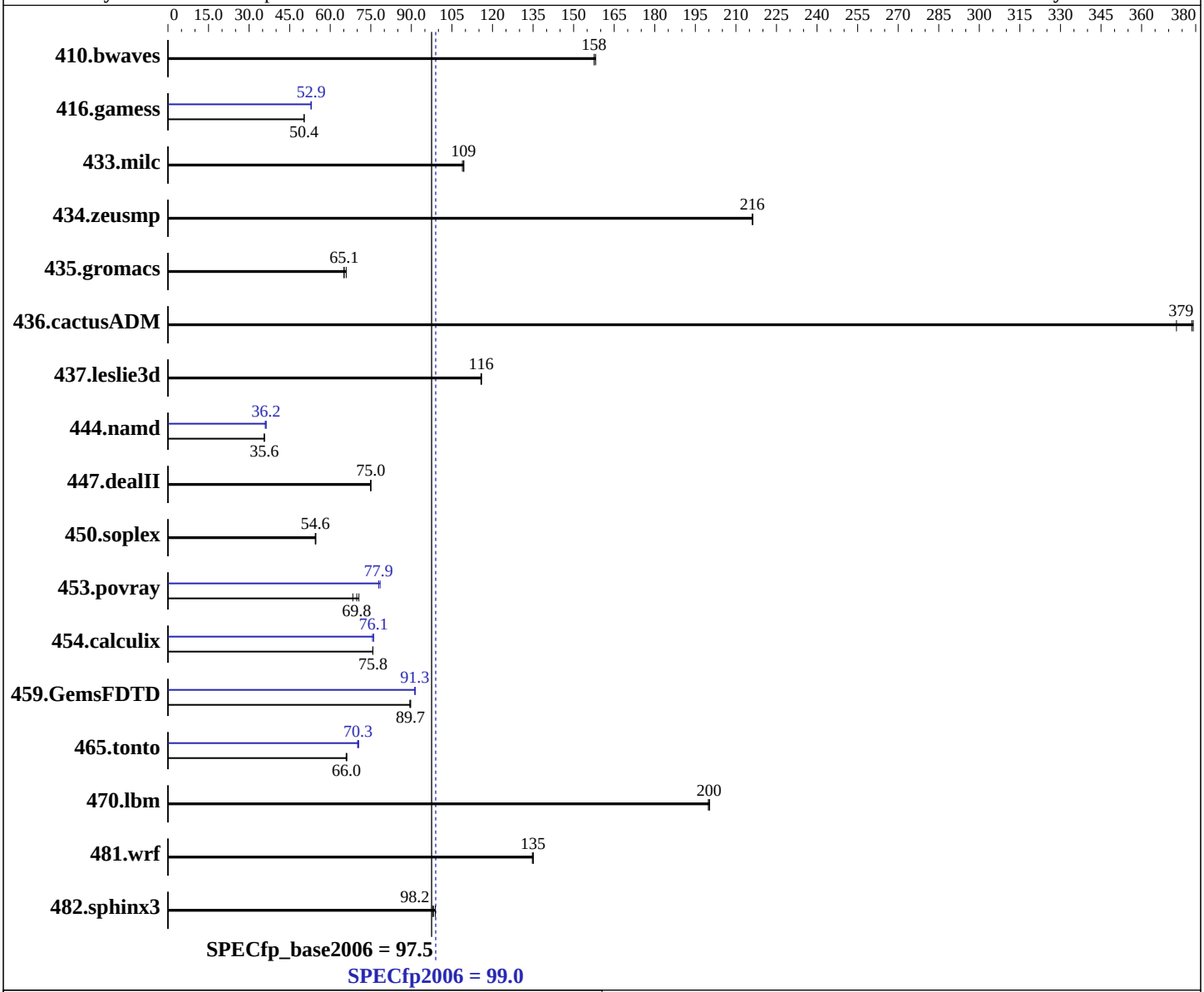
Express5800/R110i-1 (Intel Xeon E3-1225 v6)

SPECfp®2006 = 99.0

SPECfp_base2006 = 97.5

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

**Test date:** Apr-2017
**Hardware Availability:** Apr-2017
**Software Availability:** Jan-2017




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E3-1225 v6 |
| 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 |
| 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 7.3 (Maipo)<br>Kernel 3.10.0-514.6.1.el7.x86_64 |
| Compiler: | C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux;<br>Fortran: Version 17.0.0.098 of Intel Fortran Compiler 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: 32 GB (2 x 16 GB 2Rx8 PC4-2400T-E)
Disk Subsystem: 1 x 1 TB 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 | 86.2 | 158 | 85.9 | 158 | **86.2** | **158** | 86.2 | 158 | 85.9 | 158 | **86.2** | **158** |
| 416.gamess | 389 | 50.3 | **389** | **50.4** | 389 | 50.4 | 370 | 52.9 | **370** | **52.9** | 370 | 53.0 |
| 433.milc | 84.3 | 109 | **84.0** | **109** | 83.9 | 109 | 84.3 | 109 | **84.0** | **109** | 83.9 | 109 |
| 434.zeusmp | 42.1 | 216 | **42.1** | **216** | 42.1 | 216 | 42.1 | 216 | **42.1** | **216** | 42.1 | 216 |
| 435.gromacs | **110** | **65.1** | 108 | 65.9 | 110 | 65.1 | **110** | **65.1** | 108 | 65.9 | 110 | 65.1 |
| 436.cactusADM | 31.5 | 379 | **31.6** | **379** | 32.0 | 373 | 31.5 | 379 | **31.6** | **379** | 32.0 | 373 |
| 437.leslie3d | 81.1 | 116 | 81.2 | 116 | **81.2** | **116** | 81.1 | 116 | 81.2 | 116 | **81.2** | **116** |
| 444.namd | 225 | 35.6 | **225** | **35.6** | 225 | 35.6 | 221 | 36.3 | 223 | 36.0 | **221** | **36.2** |
| 447.dealII | 153 | 74.9 | 152 | 75.0 | **153** | **75.0** | 153 | 74.9 | 152 | 75.0 | **153** | **75.0** |
| 450.soplex | **153** | **54.6** | 153 | 54.5 | 152 | 54.7 | **153** | **54.6** | 153 | 54.5 | 152 | 54.7 |
| 453.povray | **76.2** | **69.8** | 77.8 | 68.4 | 75.3 | 70.6 | **68.3** | **77.9** | 68.3 | 77.9 | 67.8 | 78.5 |
| 454.calculix | **109** | **75.8** | 109 | 75.8 | 109 | 75.7 | **108** | **76.1** | 108 | 76.1 | 109 | 75.6 |
| 459.GemsFDTD | 118 | 89.7 | 119 | 89.4 | **118** | **89.7** | **116** | **91.3** | 116 | 91.4 | 116 | 91.3 |
| 465.tonto | 149 | 66.1 | 149 | 65.9 | **149** | **66.0** | 140 | 70.5 | **140** | **70.3** | 140 | 70.1 |
| 470.lbm | **68.7** | **200** | 68.6 | 200 | 68.8 | 200 | **68.7** | **200** | 68.6 | 200 | 68.8 | 200 |
| 481.wrf | 82.9 | 135 | **82.8** | **135** | 82.7 | 135 | 82.9 | 135 | **82.8** | **135** | 82.7 | 135 |
| 482.sphinx3 | 199 | 97.8 | 197 | 98.8 | **198** | **98.2** | 199 | 97.8 | 197 | 98.8 | **198** | **98.2** |

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/sh10.2"
```

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## General Notes (Continued)

```
OMP_NUM_THREADS = "4"

 Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.2
 Transparent Huge Pages enabled by default.
```

## 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 -qopt-prefetch`

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## Base Optimization Flags (Continued)

C++ benchmarks:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch`

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

Benchmarks using both Fortran and C:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch`

## 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: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xCORE-AVX2`(pass 2)
`-par-num-threads=1`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
`-no-prec-div`(pass 2) `-fno-alias -auto-ilp32`

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## Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -unroll2 -inline-level=0 -qopt-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -inline-calloc -qopt-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

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-ic17.0-official-linux64.html
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-110i-RevA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-110i-RevA.xml

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