# SPEC® CFP2006 Result

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## NEC Corporation

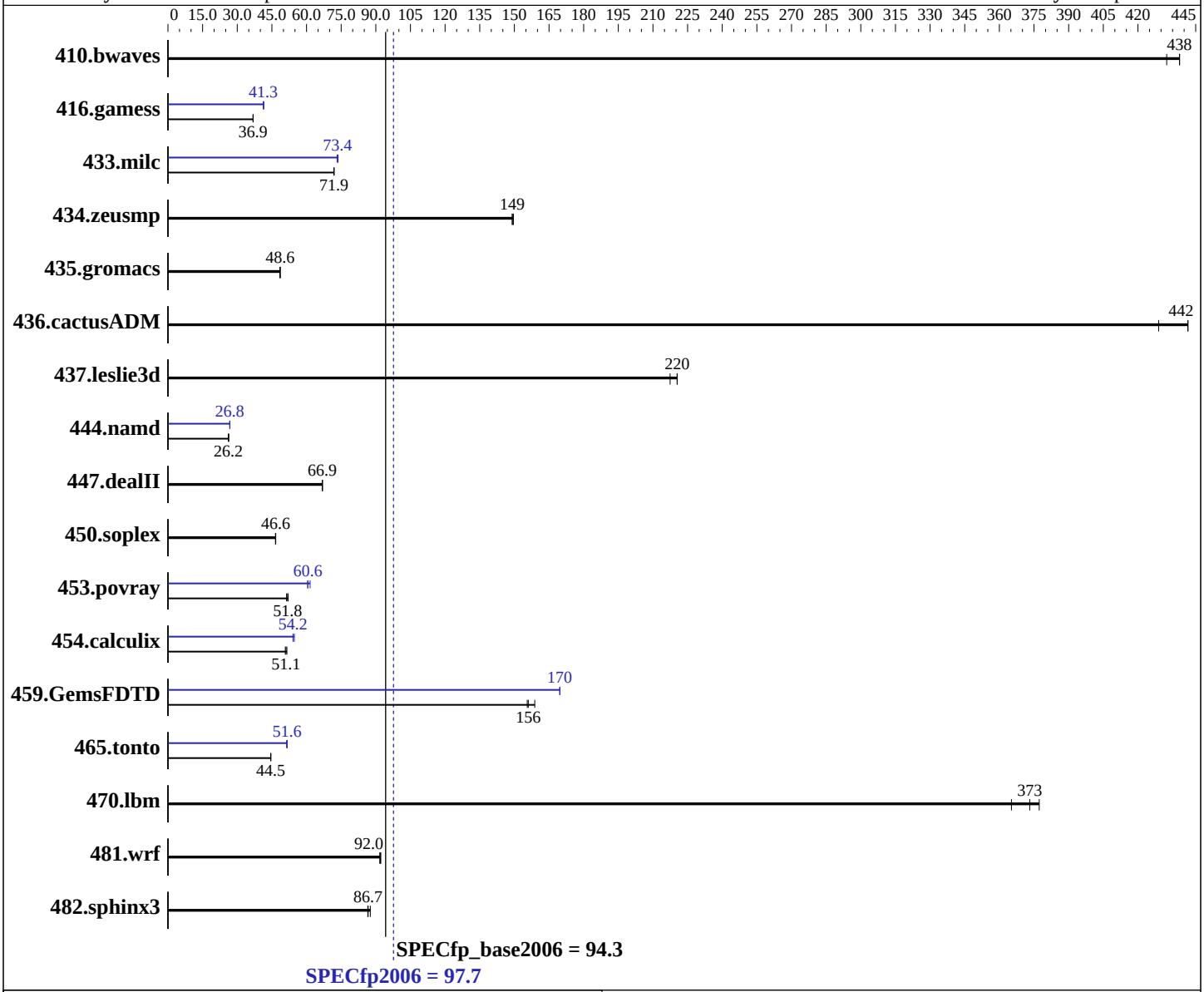
Express5800/R120e-1M (Intel Xeon E5-2637 v2)

SPECfp®2006 = 97.7

SPECfp_base2006 = 94.3

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

**Test date:** Nov-2013
**Hardware Availability:** Sep-2013
**Software Availability:** Sep-2013




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2637 v2 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.80 GHz |
| CPU MHz: | 3500 |
| FPU: | Integrated |
| CPU(s) enabled: | 8 cores, 2 chips, 4 cores/chip, 2 threads/core |
| CPU(s) orderable: | 1,2 chips |
| 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 2.6.32-358.18.1.el6.x86_64 |
| Compiler: | C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;<br>Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux |
| Auto Parallel: | Yes |
| File System: | ext4 |

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L3 Cache: 15 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (8 x 16 GB 2Rx4 PC3-14900R-13, 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 | 31.0 | 438 | 31.4 | 432 | **31.0** | **438** | 31.0 | 438 | 31.4 | 432 | **31.0** | **438** |
| 416.gamess | 531 | 36.9 | 531 | 36.9 | **531** | **36.9** | **474** | **41.3** | 474 | 41.3 | 472 | 41.5 |
| 433.milc | 128 | 71.9 | **128** | **71.9** | 128 | 71.9 | **125** | **73.4** | 125 | 73.2 | 125 | 73.7 |
| 434.zeusmp | 60.8 | 150 | **61.0** | **149** | 61.0 | 149 | 60.8 | 150 | **61.0** | **149** | 61.0 | 149 |
| 435.gromacs | 147 | 48.6 | 147 | 48.5 | **147** | **48.6** | 147 | 48.6 | 147 | 48.5 | **147** | **48.6** |
| 436.cactusADM | 27.9 | 429 | **27.1** | **442** | 27.1 | 442 | 27.9 | 429 | **27.1** | **442** | 27.1 | 442 |
| 437.leslie3d | 42.6 | 220 | 43.2 | 217 | **42.6** | **220** | 42.6 | 220 | 43.2 | 217 | **42.6** | **220** |
| 444.namd | 305 | 26.3 | **306** | **26.2** | 306 | 26.2 | 300 | 26.8 | **300** | **26.8** | 299 | 26.8 |
| 447.dealII | 171 | 66.9 | **171** | **66.9** | 171 | 66.8 | 171 | 66.9 | **171** | **66.9** | 171 | 66.8 |
| 450.soplex | 179 | 46.7 | 179 | 46.5 | **179** | **46.6** | 179 | 46.7 | 179 | 46.5 | **179** | **46.6** |
| 453.povray | 104 | 51.3 | 102 | 52.0 | **103** | **51.8** | 87.9 | 60.5 | **87.9** | **60.6** | 86.4 | 61.6 |
| 454.calculix | 162 | 50.8 | 160 | 51.5 | **161** | **51.1** | **152** | **54.2** | 152 | 54.1 | 151 | 54.7 |
| 459.GemsFDTD | 66.8 | 159 | **68.0** | **156** | 68.2 | 156 | 62.5 | 170 | **62.5** | **170** | 62.5 | 170 |
| 465.tonto | **221** | **44.5** | 221 | 44.5 | 221 | 44.6 | 192 | 51.4 | 191 | 51.6 | **191** | **51.6** |
| 470.lbm | 36.4 | 377 | 37.6 | 365 | **36.8** | **373** | 36.4 | 377 | 37.6 | 365 | **36.8** | **373** |
| 481.wrf | 122 | 91.7 | **121** | **92.0** | 121 | 92.2 | 122 | 91.7 | **121** | **92.0** | 121 | 92.2 |
| 482.sphinx3 | 225 | 86.5 | **225** | **86.7** | 222 | 87.6 | 225 | 86.5 | **225** | **86.7** | 222 | 87.6 |

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 = "8"
```

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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
The Express5800/R120e-1M and
the Express5800/R120e-2M models are electronically equivalent.
The results have been measured on the Express5800/R120e-2M model.
```

## 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:
`-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch -ansi-alias`

C++ benchmarks:
`-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias`

Fortran benchmarks:
`-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:
`-xAVX -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: `-xAVX`(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`

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# Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xAVX(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

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xAVX(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: -xAVX(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: -xAVX(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 -opt-prefetch -parallel

465.tonto: -xAVX(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: -xAVX -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-R120d-RevA.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-R120d-RevA.xml

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