# SPEC® CFP2006 Result

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## NEC Corporation

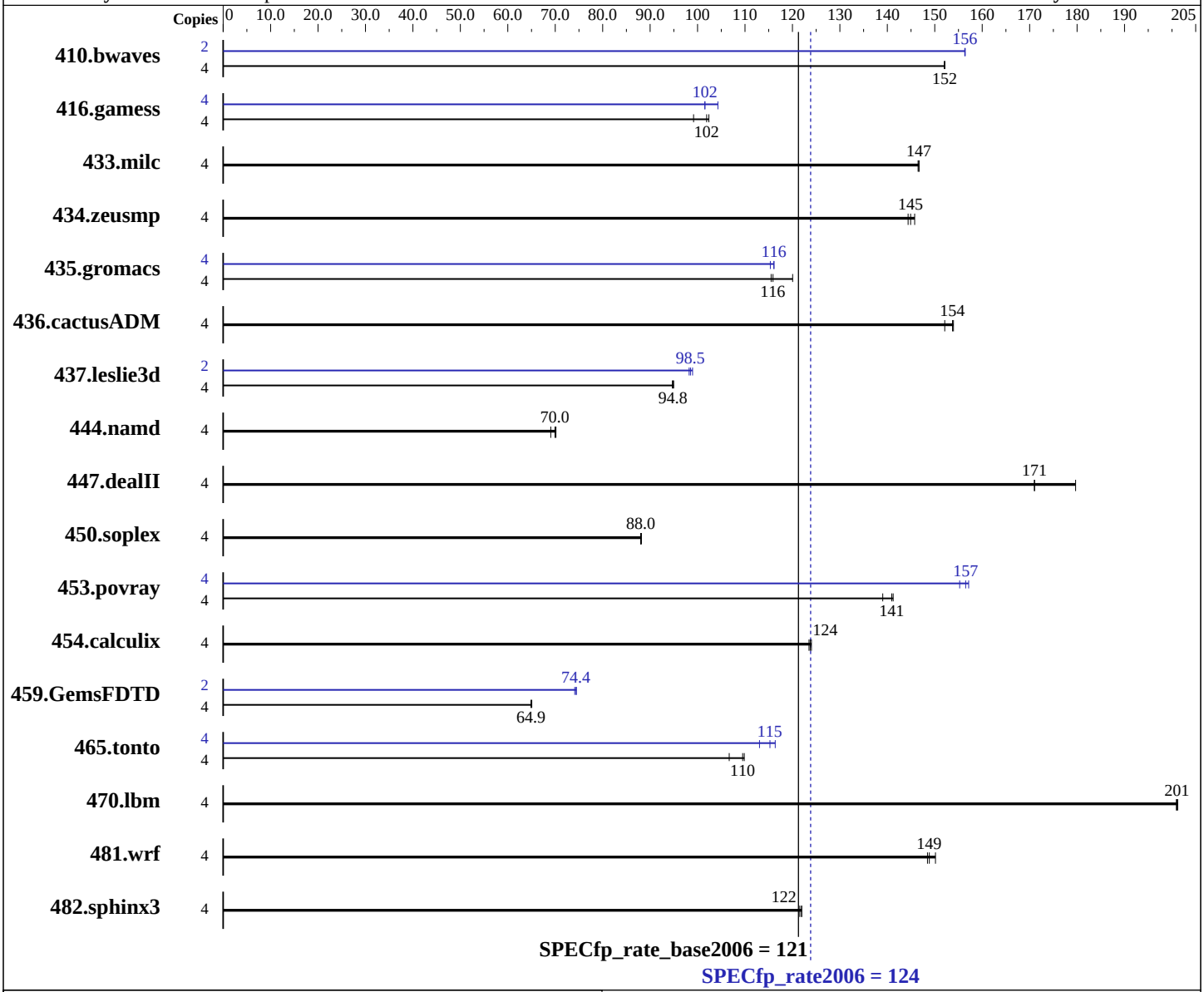
## Express5800/T110i (Intel Pentium G4560)

**SPECfp®_rate2006 = 124**

**SPECfp_rate_base2006 = 121**

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

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




### Hardware

| | |
|---|---|
| CPU Name: | Intel Pentium G4560 |
| CPU Characteristics: | |
| CPU MHz: | 3500 |
| FPU: | Integrated |
| CPU(s) enabled: | 2 cores, 1 chip, 2 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 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: | No |
| File System: | ext4 |

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L3 Cache: 3 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: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: None

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 4 | 357 | 152 | **357** | **152** | 358 | 152 | 2 | 174 | 156 | 174 | 156 | **174** | **156** |
| 416.gamess | 4 | 790 | 99.2 | **768** | **102** | 765 | 102 | 4 | 771 | 102 | **771** | **102** | 751 | 104 |
| 433.milc | 4 | 250 | 147 | **250** | **147** | 251 | 146 | 4 | 250 | 147 | **250** | **147** | 251 | 146 |
| 434.zeusmp | 4 | 252 | 144 | 250 | 146 | **251** | **145** | 4 | 252 | 144 | 250 | 146 | **251** | **145** |
| 435.gromacs | 4 | 247 | 116 | 238 | 120 | **246** | **116** | 4 | 248 | 115 | 246 | 116 | **246** | **116** |
| 436.cactusADM | 4 | 314 | 152 | **311** | **154** | 311 | 154 | 4 | 314 | 152 | **311** | **154** | 311 | 154 |
| 437.leslie3d | 4 | **397** | **94.8** | 396 | 95.0 | 397 | 94.7 | 2 | **191** | **98.5** | 190 | 99.0 | 191 | 98.2 |
| 444.namd | 4 | **459** | **70.0** | 465 | 69.1 | 457 | 70.2 | 4 | **459** | **70.0** | 465 | 69.1 | 457 | 70.2 |
| 447.dealII | 4 | 255 | 180 | 268 | 171 | **268** | **171** | 4 | 255 | 180 | 268 | 171 | **268** | **171** |
| 450.soplex | 4 | **379** | **88.0** | 379 | 88.0 | 378 | 88.2 | 4 | **379** | **88.0** | 379 | 88.0 | 378 | 88.2 |
| 453.povray | 4 | 153 | 139 | **151** | **141** | 151 | 141 | 4 | 137 | 155 | **136** | **157** | 135 | 157 |
| 454.calculix | 4 | **267** | **124** | 267 | 123 | 266 | 124 | 4 | **267** | **124** | 267 | 123 | 266 | 124 |
| 459.GemsFDTD | 4 | 652 | 65.1 | 654 | 64.9 | **654** | **64.9** | 2 | 285 | 74.5 | 286 | 74.1 | **285** | **74.4** |
| 465.tonto | 4 | 358 | 110 | 369 | 107 | **359** | **110** | 4 | 338 | 116 | 348 | 113 | **341** | **115** |
| 470.lbm | 4 | 274 | 201 | 273 | 201 | **273** | **201** | 4 | 274 | 201 | 273 | 201 | **273** | **201** |
| 481.wrf | 4 | **300** | **149** | 298 | 150 | 301 | 148 | 4 | **300** | **149** | 298 | 150 | 301 | 148 |
| 482.sphinx3 | 4 | 639 | 122 | **639** | **122** | 641 | 122 | 4 | 639 | 122 | **639** | **122** | 641 | 122 |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

```
The taskset mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate taskset commands to bind each copy to a specific processor.
For details, please see the config file.
```

## 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:
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh10.2"

 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:
```
-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3
```

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## Base Optimization Flags (Continued)

C++ benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32 -qopt-mem-layout-trans=3`

Fortran benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch`

Benchmarks using both Fortran and C:
`-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32 -qopt-mem-layout-trans=3`

## 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: `basepeak = yes`

Continued on next page

## Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.2(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -unroll4 -qopt-mem-layout-trans=3

Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.2(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: Same as 410.bwaves

459.GemsFDTD: Same as 410.bwaves

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.2(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -unroll4 -auto -inline-calloc -qopt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.2(pass 2) -par-num-threads=1(pass 1) -qopt-prefetch -auto-ilp32 -qopt-mem-layout-trans=3

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-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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Tested with SPEC CPU2006 v1.2.
Report generated on Tue May 30 15:31:39 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 30 May 2017.