# SPEC® CFP2006 Result
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## Fujitsu

### CELSIUS M720 (Intel Xeon E5-1650)

$SPECfp®2006 =$ **80.2**

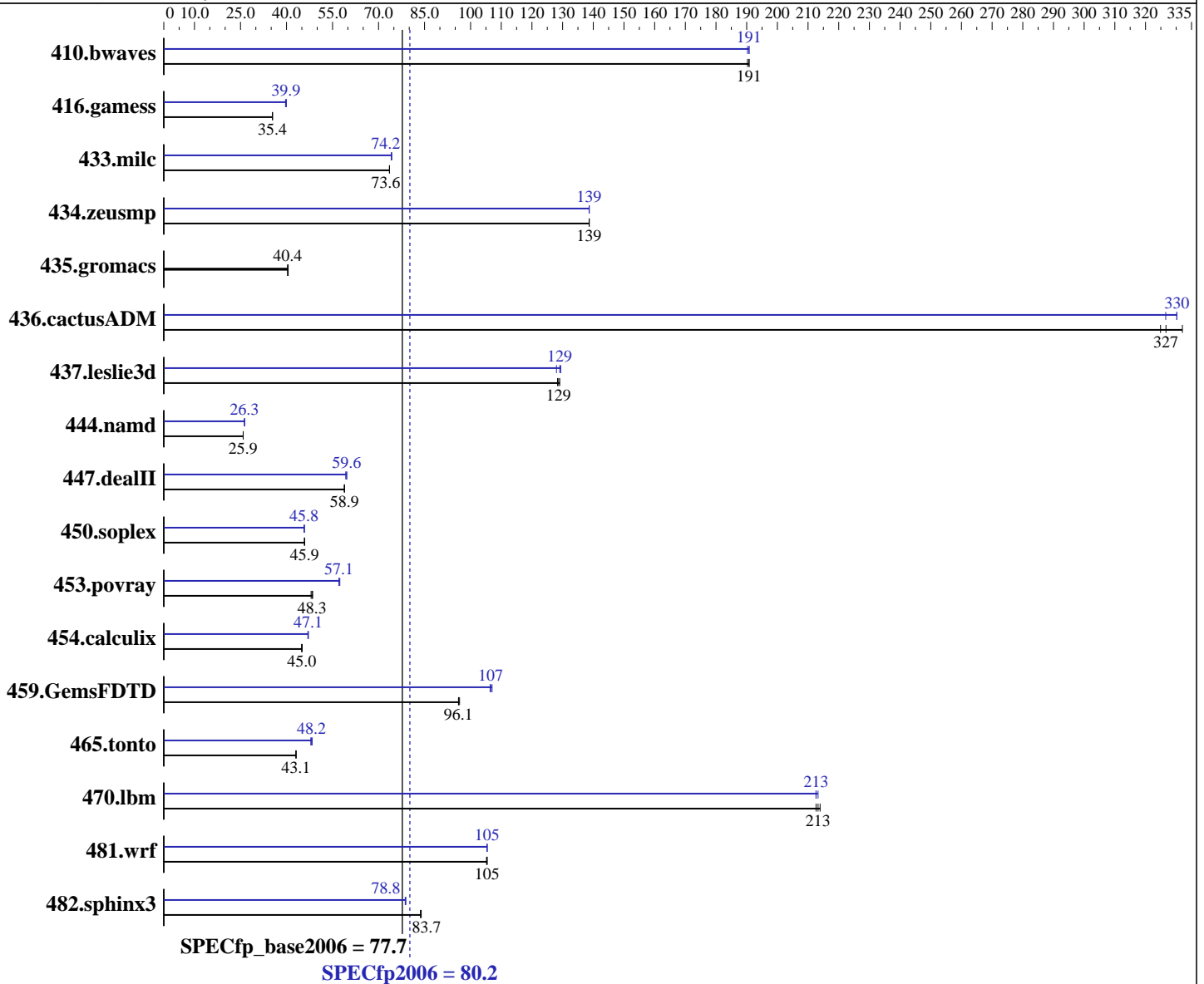$SPECfp\_base2006 =$ **77.7**

**CPU2006 license:** 19
**Test sponsor:** Fujitsu
**Tested by:** Fujitsu

**Test date:** Mar-2012
**Hardware Availability:** Mar-2012
**Software Availability:** Dec-2011



| Benchmark | base | peak |
|-----------|------|------|
| 410.bwaves | 191 | 191 |
| 416.gamess | 35.4 | 39.9 |
| 433.milc | 73.6 | 74.2 |
| 434.zeusmp | 139 | 139 |
| 435.gromacs | 40.4 | |
| 436.cactusADM | 327 | 330 |
| 437.leslie3d | 129 | 129 |
| 444.namd | 25.9 | 26.3 |
| 447.dealII | 58.9 | 59.6 |
| 450.soplex | 45.9 | 45.8 |
| 453.povray | 48.3 | 57.1 |
| 454.calculix | 45.0 | 47.1 |
| 459.GemsFDTD | 96.1 | 107 |
| 465.tonto | 43.1 | 48.2 |
| 470.lbm | 213 | 213 |
| 481.wrf | 105 | 105 |
| 482.sphinx3 | 83.7 | 78.8 |

**SPECfp_base2006 = 77.7**

**SPECfp2006 = 80.2**

## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-1650 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.80 GHz |
| CPU MHz: | 3200 |
| FPU: | Integrated |
| CPU(s) enabled: | 6 cores, 1 chip, 6 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 |

**Continued on next page**

## Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 6.1, 2.6.32-131.0.15.el6.x86_64 |
| Compiler: | C/C++: Version 12.1.2.273 of Intel C++ Studio XE for Linux; Fortran: Version 12.1.2.273 of Intel Fortran Studio XE for Linux |
| Auto Parallel: | Yes |
| File System: | ReiserFS |
| System State: | Run level 3 (multi - user) |

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| | |
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| | | | |
|---|---|---|---|
| L3 Cache: | 12 MB I+D on chip per chip | Base Pointers: | 64-bit |
| Other Cache: | None | Peak Pointers: | 32/64-bit |
| Memory: | 32 GB (8 x 4 GB 2Rx8 PC3-12800E-11, ECC) | Other Software: | None |
| Disk Subsystem: | 1 x SATA III, 500 GB, 7200 rpm | | |
| Other Hardware: | None | | |

## Results Table

| Benchmark | Base Seconds | Base Ratio | Base Seconds | Base Ratio | Base Seconds | Base Ratio | Peak Seconds | Peak Ratio | Peak Seconds | Peak Ratio | Peak Seconds | Peak Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 410.bwaves | 71.4 | 190 | 71.2 | 191 | **71.2** | **191** | 71.2 | 191 | 71.4 | 190 | **71.2** | **191** |
| 416.gamess | **553** | **35.4** | 553 | 35.4 | 552 | 35.5 | 494 | 39.7 | 490 | 40.0 | **491** | **39.9** |
| 433.milc | 125 | 73.6 | 125 | 73.6 | **125** | **73.6** | 124 | 74.1 | 124 | 74.3 | **124** | **74.2** |
| 434.zeusmp | 65.6 | 139 | **65.6** | **139** | 65.6 | 139 | 65.6 | 139 | **65.6** | **139** | 65.6 | 139 |
| 435.gromacs | 177 | 40.4 | **177** | **40.4** | 176 | 40.5 | 177 | 40.4 | **177** | **40.4** | 176 | 40.5 |
| 436.cactusADM | 36.8 | 325 | **36.6** | **327** | 36.0 | 332 | **36.2** | **330** | 36.2 | 330 | 36.6 | 327 |
| 437.leslie3d | **73.0** | **129** | 72.8 | 129 | 73.2 | 128 | **72.8** | **129** | 72.6 | 129 | 73.4 | 128 |
| 444.namd | 310 | 25.9 | **310** | **25.9** | 310 | 25.9 | **305** | **26.3** | 305 | 26.3 | 305 | 26.3 |
| 447.dealII | 194 | 58.9 | 194 | 58.9 | **194** | **58.9** | 192 | 59.6 | **192** | **59.6** | 193 | 59.3 |
| 450.soplex | 182 | 45.8 | 182 | 45.9 | **182** | **45.9** | 182 | 45.8 | 182 | 45.8 | **182** | **45.8** |
| 453.povray | 111 | 48.0 | 110 | 48.5 | **110** | **48.3** | 92.7 | 57.4 | **93.1** | **57.1** | 93.1 | 57.1 |
| 454.calculix | **183** | **45.0** | 184 | 44.9 | 183 | 45.1 | 175 | 47.1 | **175** | **47.1** | 176 | 47.0 |
| 459.GemsFDTD | 110 | 96.4 | **110** | **96.1** | 110 | 96.1 | **99.6** | **107** | 99.8 | 106 | 99.2 | 107 |
| 465.tonto | **228** | **43.1** | 229 | 43.1 | 228 | 43.1 | **204** | **48.2** | 205 | 47.9 | 203 | 48.4 |
| 470.lbm | 64.2 | 214 | 64.6 | 213 | **64.4** | **213** | 64.6 | 213 | **64.6** | **213** | 64.4 | 213 |
| 481.wrf | **106** | **105** | 106 | 105 | 106 | 105 | 106 | 105 | **106** | **105** | 106 | 105 |
| 482.sphinx3 | **233** | **83.7** | 233 | 83.7 | 232 | 83.9 | 247 | 78.9 | **247** | **78.8** | 248 | 78.7 |

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:
Frequency Floor Override = Enabled
Hyper-Threading Technology = Disabled
```

## General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/work/cpu2006/libs/32:/work/cpu2006/libs/64"
```

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## General Notes (Continued)

```
OMP_NUM_THREADS = "6"

 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled

 Binaries compiled on a system with
 Red Hat Enterprise Linux Server release 6.1 (Santiago)
 Added glibc-static-2.12-1.25.el6.x86_64.rpm
 to enable static linking
```

## 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
```

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## Base Optimization Flags

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

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

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

Benchmarks using both Fortran and C:
```
-xAVX -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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
          -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32
          -ansi-alias

470.lbm: -xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch
          -ansi-alias

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
          -parallel
```

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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: `-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias`

> 450.soplex: `-xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias`

> 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: `-xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel`

> 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-`

> 434.zeusmp: `-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch`

> 437.leslie3d: `Same as 434.zeusmp`

> 459.GemsFDTD: `-xSSE4.2(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: `-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch`
> `-ansi-alias`

> 454.calculix: `-xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias`

> 481.wrf: `Same as 436.cactusADM`

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The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/Fujitsu-Platform.20120313.html

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You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/Fujitsu-Platform.20120313.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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