# SPEC® CFP2006 Result
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## Fujitsu

PRIMERGY TX200 S7, Intel Xeon E5-2450, 2.10 GHz

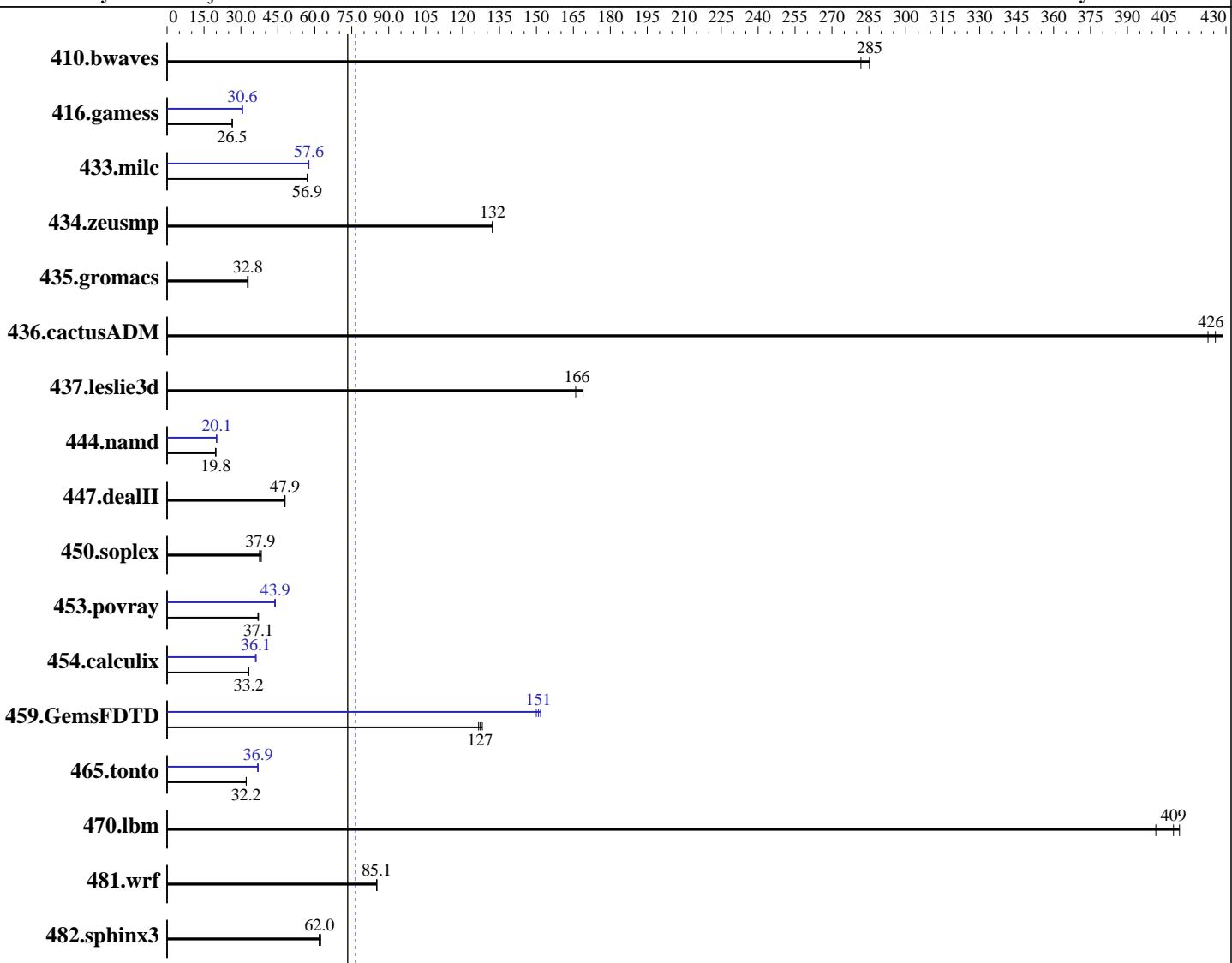$SPECfp^{®}2006 =$ 76.6

$SPECfp\_base2006 =$ 73.4

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

**Test date:** Aug-2012
**Hardware Availability:** Jul-2012
**Software Availability:** Feb-2012



| Benchmark | Result |
|---|---|
| 410.bwaves | 285 |
| 416.gamess | 30.6 / 26.5 |
| 433.milc | 57.6 / 56.9 |
| 434.zeusmp | 132 |
| 435.gromacs | 32.8 |
| 436.cactusADM | 426 |
| 437.leslie3d | 166 |
| 444.namd | 20.1 / 19.8 |
| 447.dealII | 47.9 |
| 450.soplex | 37.9 |
| 453.povray | 43.9 / 37.1 |
| 454.calculix | 36.1 / 33.2 |
| 459.GemsFDTD | 151 / 127 |
| 465.tonto | 36.9 / 32.2 |
| 470.lbm | 409 |
| 481.wrf | 85.1 |
| 482.sphinx3 | 62.0 |

SPECfp_base2006 = 73.4
SPECfp2006 = 76.6

## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2450 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 2.90 GHz |
| CPU MHz: | 2100 |
| FPU: | Integrated |
| CPU(s) enabled: | 16 cores, 2 chips, 8 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 |

*Continued on next page*

## Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 6.2 (Santiago) 2.6.32-220.el6.x86_64 |
| Compiler: | C/C++: Version 12.1.0.293 of Intel C++ Studio XE for Linux; Fortran: Version 12.1.0.293 of Intel Fortran Studio XE for Linux |
| Auto Parallel: | Yes |
| File System: | ext4 |

*Continued on next page*

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| | | | |
|---|---|---|---|
| L3 Cache: | 20 MB I+D on chip per chip | System State: | Run level 3 (multi-user) |
| Other Cache: | None | Base Pointers: | 64-bit |
| Memory: | 96 GB (12 x 8 GB 2Rx4 PC3L-12800R-11, ECC) | Peak Pointers: | 32/64-bit |
| Disk Subsystem: | 1 x SATA, 500 GB, 7200 RPM | Other Software: | None |
| 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 | **47.6** | **285** | 47.6 | 285 | 48.2 | 282 | **47.6** | **285** | 47.6 | 285 | 48.2 | 282 |
| 416.gamess | 739 | 26.5 | 741 | 26.4 | **739** | **26.5** | 640 | 30.6 | 640 | 30.6 | **640** | **30.6** |
| 433.milc | 161 | 57.1 | **161** | **56.9** | 161 | 56.9 | 159 | 57.6 | 159 | 57.6 | **159** | **57.6** |
| 434.zeusmp | **68.8** | **132** | 68.8 | 132 | 68.8 | 132 | **68.8** | **132** | 68.8 | 132 | 68.8 | 132 |
| 435.gromacs | 218 | 32.7 | **218** | **32.8** | 217 | 32.9 | 218 | 32.7 | **218** | **32.8** | 217 | 32.9 |
| 436.cactusADM | 28.3 | 423 | **28.1** | **426** | 27.9 | 429 | 28.3 | 423 | **28.1** | **426** | 27.9 | 429 |
| 437.leslie3d | 56.6 | 166 | 55.6 | 169 | **56.5** | **166** | 56.6 | 166 | 55.6 | 169 | **56.5** | **166** |
| 444.namd | 406 | 19.8 | 406 | 19.8 | **406** | **19.8** | 399 | 20.1 | 398 | 20.1 | **398** | **20.1** |
| 447.dealII | 239 | 47.8 | **239** | **47.9** | 239 | 47.9 | 239 | 47.8 | **239** | **47.9** | 239 | 47.9 |
| 450.soplex | **220** | **37.9** | 222 | 37.5 | 218 | 38.3 | **220** | **37.9** | 222 | 37.5 | 218 | 38.3 |
| 453.povray | **143** | **37.1** | 144 | 36.9 | 143 | 37.1 | 122 | 43.7 | **121** | **43.9** | 121 | 44.0 |
| 454.calculix | **248** | **33.2** | 249 | 33.1 | 248 | 33.2 | 228 | 36.1 | 230 | 35.9 | **228** | **36.1** |
| 459.GemsFDTD | 82.9 | 128 | **83.5** | **127** | 83.9 | 127 | **70.4** | **151** | 70.0 | 152 | 70.8 | 150 |
| 465.tonto | 306 | 32.2 | **306** | **32.2** | 306 | 32.2 | **266** | **36.9** | 267 | 36.8 | 266 | 36.9 |
| 470.lbm | 34.2 | 402 | **33.6** | **409** | 33.4 | 411 | 34.2 | 402 | **33.6** | **409** | 33.4 | 411 |
| 481.wrf | **131** | **85.1** | 131 | 85.1 | 131 | 85.2 | **131** | **85.1** | 131 | 85.1 | 131 | 85.2 |
| 482.sphinx3 | 315 | 61.8 | **314** | **62.0** | 312 | 62.4 | 315 | 61.8 | **314** | **62.0** | 312 | 62.4 |

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

## Platform Notes

```
BIOS configuration:
Frequency Floor Override = Enable
```

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| | | | |
|---|---|---|---|
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| **Test sponsor:** | Fujitsu | **Hardware Availability:** | Jul-2012 |
| **Tested by:** | Fujitsu | **Software Availability:** | Feb-2012 |

## General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/SPECcpu2006/libs/32:/SPECcpu2006/libs/64"
OMP_NUM_THREADS = "16"

 Binaries compiled on a system with 1x E3-1270v2 CPU + 32 GB
 memory using RHEL6.2
 For information about Fujitsu please visit: http://www.fujitsu.com
```

## 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 -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: -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: 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-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/Fujitsu-Platform.20120320.html

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.20120320.xml

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

Tested with SPEC CPU2006 v1.2.
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