



# SPEC<sup>®</sup> CFP2006 Result

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## Fujitsu

SPECfp<sup>®</sup>2006 = **60.3**

## CELSIUS M720 (Intel Xeon E5-1603)

SPECfp\_base2006 = **58.9**

CPU2006 license: 19

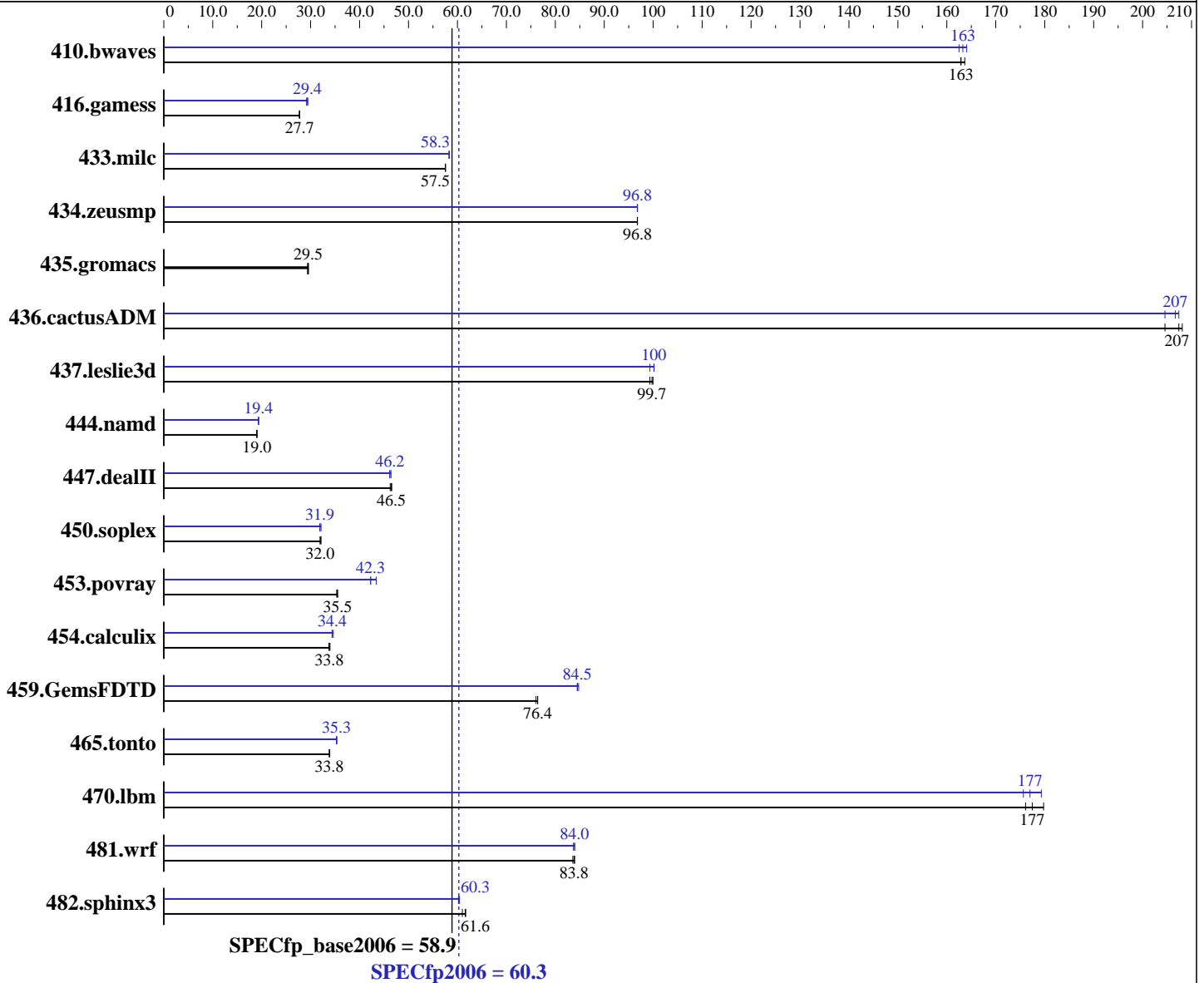
Test sponsor: Fujitsu

Tested by: Fujitsu

Test date: Mar-2012

Hardware Availability: Mar-2012

Software Availability: Feb-2012



SPECfp\_base2006 = 58.9  
SPECfp2006 = 60.3

### Hardware

CPU Name: Intel Xeon E5-1603  
 CPU Characteristics:  
 CPU MHz: 2800  
 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 6.2, 2.6.32-220.0.el6.x86\_64  
 Compiler: C/C++: Version 12.1.3.293 of Intel C++ Studio XE for Linux;  
 Fortran: Version 12.1.3.293 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ReiserFS  
 System State: Run level 3 (multi - user)

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L3 Cache: 10 MB I+D on chip per chip  
Other Cache: None  
Memory: 32 GB (8 x 4 GB 2Rx8 PC3-12800E-11, ECC, running at 1067 MHz and CL8)  
Disk Subsystem: 1 x SATA III, 500 GB, 7200 rpm  
Other Hardware: None

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	83.0	164	83.4	163	<b>83.4</b>	<b>163</b>	82.8	164	83.6	162	<b>83.2</b>	<b>163</b>
416.gamess	705	27.8	<b>706</b>	<b>27.7</b>	707	27.7	666	29.4	671	29.2	<b>667</b>	<b>29.4</b>
433.milc	<b>160</b>	<b>57.5</b>	160	57.5	159	57.6	157	58.3	157	58.3	<b>157</b>	<b>58.3</b>
434.zeusmp	94.0	96.8	94.0	96.8	<b>94.0</b>	<b>96.8</b>	94.0	96.8	94.0	96.8	<b>94.0</b>	<b>96.8</b>
435.gromacs	242	29.6	<b>242</b>	<b>29.5</b>	243	29.4	242	29.6	<b>242</b>	<b>29.5</b>	243	29.4
436.cactusADM	57.4	208	58.4	205	<b>57.6</b>	<b>207</b>	<b>57.8</b>	<b>207</b>	58.4	205	57.6	207
437.leslie3d	<b>94.2</b>	<b>99.7</b>	94.0	100	94.6	99.3	93.8	100	94.6	99.3	<b>93.8</b>	<b>100</b>
444.namd	422	19.0	<b>422</b>	<b>19.0</b>	422	19.0	<b>414</b>	<b>19.4</b>	414	19.4	414	19.4
447.dealII	246	46.6	<b>246</b>	<b>46.5</b>	247	46.3	246	46.4	248	46.2	<b>248</b>	<b>46.2</b>
450.soplex	<b>261</b>	<b>32.0</b>	261	32.0	260	32.1	<b>261</b>	<b>31.9</b>	260	32.1	261	31.9
453.povray	150	35.5	151	35.3	<b>150</b>	<b>35.5</b>	123	43.4	126	42.3	<b>126</b>	<b>42.3</b>
454.calculix	244	33.8	243	34.0	<b>244</b>	<b>33.8</b>	238	34.6	<b>240</b>	<b>34.4</b>	240	34.4
459.GemsFDTD	140	76.1	139	76.4	<b>139</b>	<b>76.4</b>	<b>126</b>	<b>84.5</b>	126	84.5	125	84.8
465.tonto	290	33.9	291	33.8	<b>291</b>	<b>33.8</b>	278	35.4	279	35.3	<b>279</b>	<b>35.3</b>
470.lbm	<b>77.4</b>	<b>177</b>	78.0	176	76.4	180	78.2	176	76.6	179	<b>77.6</b>	<b>177</b>
481.wrf	<b>133</b>	<b>83.8</b>	134	83.6	133	84.0	133	84.0	<b>133</b>	<b>84.0</b>	133	83.7
482.sphinx3	316	61.7	<b>317</b>	<b>61.6</b>	320	61.0	323	60.4	<b>323</b>	<b>60.3</b>	324	60.2

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:  
Frequency Floor Override = Enabled

## 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 = "4"

Binaries compiled on a system with  
2x Xeon E5-2650 CPU + 64 GB memory using  
Red Hat Enterprise Linux Server release 6.2 (Santiago)  
The RPMs glibc-static-2.12-1.47.el6.x86\_64.rpm  
and glibc-static-2.12-1.47.el6.i686.rpm  
were added to enable static linking.

Transparent Huge Pages enabled with:  
echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled

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

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## Peak Optimization Flags (Continued)

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

### 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.dealIII: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias  
-static

450.soplex: -xAVX -ipo -O3 -no-prec-div -static -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  
-static

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

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

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## Peak Optimization Flags (Continued)

481.wrf: Same as 436.cactusADM

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>

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>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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