



# SPEC<sup>®</sup> CFP2006 Result

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## Fujitsu

SPECfp<sup>®</sup>2006 = **93.1**

Fujitsu CELSIUS R920 (2x Intel Xeon E5-2690)

SPECfp\_base2006 = **87.9**

CPU2006 license: 19

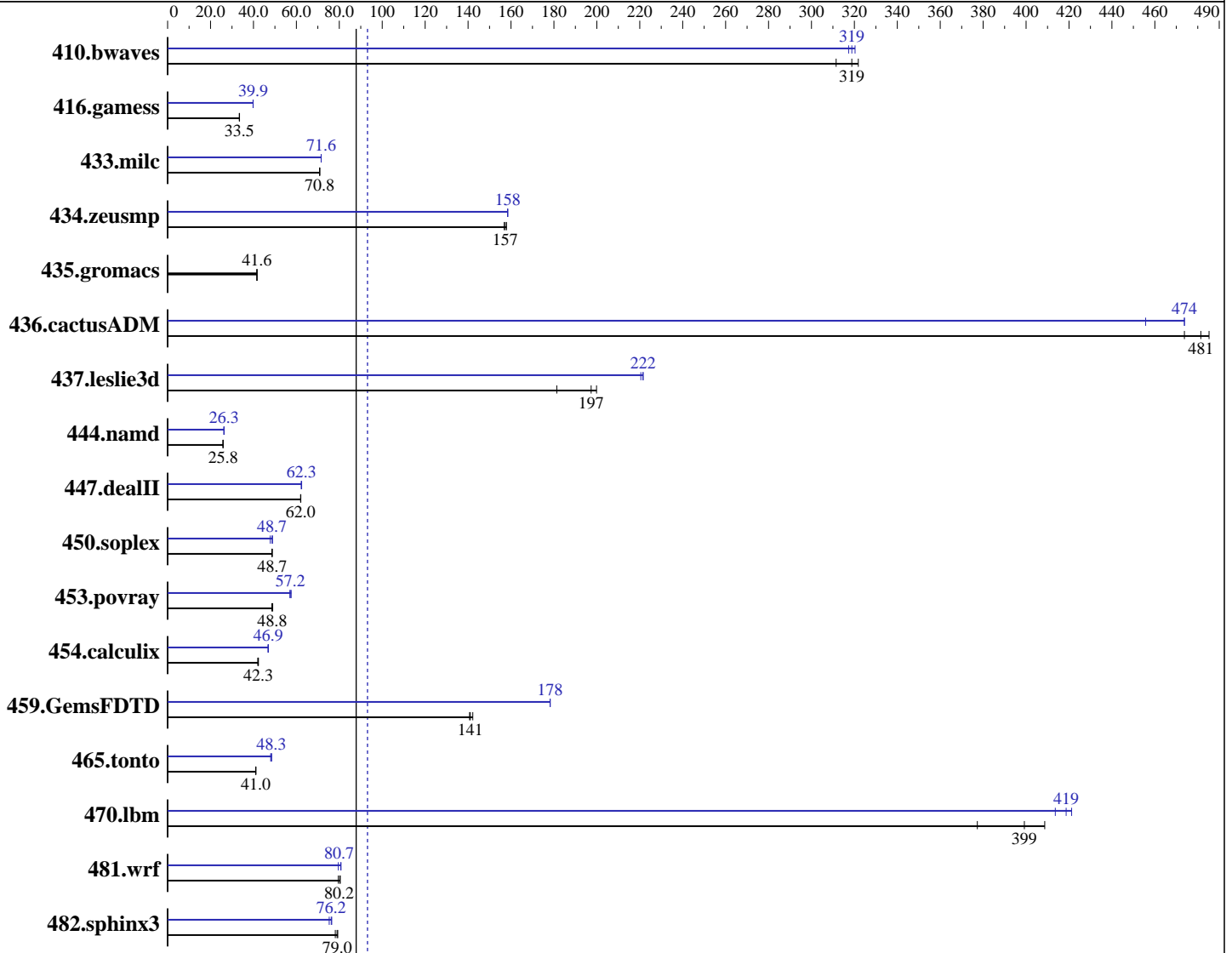
Test sponsor: Fujitsu

Tested by: Fujitsu

Test date: Feb-2012

Hardware Availability: Mar-2012

Software Availability: Dec-2011



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### Hardware

CPU Name: Intel Xeon E5-2690  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz  
 CPU MHz: 2900  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip  
 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 6.1, 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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L3 Cache: 20 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 64 GB (16 x 4 GB 2Rx8 PC3-12800R-11, ECC)  
 Disk Subsystem: 1 x SATA II, 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	42.2	322	<b>42.6</b>	<b>319</b>	43.6	311	42.8	317	42.4	320	<b>42.6</b>	<b>319</b>
416.gamess	<b>585</b>	<b>33.5</b>	586	33.4	584	33.5	<b>491</b>	<b>39.9</b>	491	39.9	492	39.8
433.milc	129	70.9	<b>130</b>	<b>70.8</b>	130	70.8	128	71.6	<b>128</b>	<b>71.6</b>	128	71.5
434.zeusmp	58.0	157	57.6	158	<b>57.8</b>	<b>157</b>	57.4	158	<b>57.4</b>	<b>158</b>	57.4	158
435.gromacs	172	41.6	172	41.6	<b>172</b>	<b>41.6</b>	172	41.6	172	41.6	<b>172</b>	<b>41.6</b>
436.cactusADM	<b>24.8</b>	<b>481</b>	25.2	474	24.6	485	26.2	456	<b>25.2</b>	<b>474</b>	25.2	474
437.leslie3d	51.8	181	47.0	200	<b>47.6</b>	<b>197</b>	42.6	221	42.4	222	<b>42.4</b>	<b>222</b>
444.namd	310	25.8	310	25.8	<b>310</b>	<b>25.8</b>	<b>305</b>	<b>26.3</b>	305	26.3	305	26.3
447.dealII	184	62.1	185	62.0	<b>184</b>	<b>62.0</b>	184	62.3	<b>184</b>	<b>62.3</b>	183	62.5
450.soplex	<b>171</b>	<b>48.7</b>	172	48.6	171	48.7	174	47.8	<b>171</b>	<b>48.7</b>	171	48.9
453.povray	109	49.0	<b>109</b>	<b>48.8</b>	110	48.6	92.4	57.6	<b>93.1</b>	<b>57.2</b>	93.3	57.0
454.calculix	<b>195</b>	<b>42.3</b>	195	42.3	196	42.0	176	46.8	176	47.0	<b>176</b>	<b>46.9</b>
459.GemsFDTD	74.6	142	<b>75.2</b>	<b>141</b>	75.4	141	<b>59.5</b>	<b>178</b>	59.5	178	59.5	178
465.tonto	239	41.2	240	41.0	<b>240</b>	<b>41.0</b>	<b>204</b>	<b>48.3</b>	203	48.5	205	48.0
470.lbm	<b>34.4</b>	<b>399</b>	33.6	409	36.4	377	<b>32.8</b>	<b>419</b>	33.2	414	32.6	421
481.wrf	<b>139</b>	<b>80.2</b>	140	79.5	139	80.5	140	79.5	<b>138</b>	<b>80.7</b>	138	80.8
482.sphinx3	246	79.3	249	78.1	<b>247</b>	<b>79.0</b>	<b>256</b>	<b>76.2</b>	259	75.3	255	76.5

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

## Submit Notes

The config file option 'submit' was used.  
 'numactl' was used to bind copies to the cores.  
 See the configuration file for details.  
 For full details on using numactl, please refer to your Linux documentation, 'man numactl'

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"



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## 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"  
OMP\_NUM\_THREADS = "16"

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  
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

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## Base Portability Flags (Continued)

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



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**Test sponsor:** Fujitsu

**Hardware Availability:** Mar-2012

**Tested by:** Fujitsu

**Software Availability:** Dec-2011

## 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

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

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## Peak Optimization Flags (Continued)

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

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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