



# SPEC<sup>®</sup> CFP2006 Result

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## Fujitsu

SPECfp<sup>®</sup>2006 = **92.6**

PRIMERGY RX350 S8, Intel Xeon E5-2660 v2, 2.20 GHz

SPECfp\_base2006 = **88.4**

CPU2006 license: 19

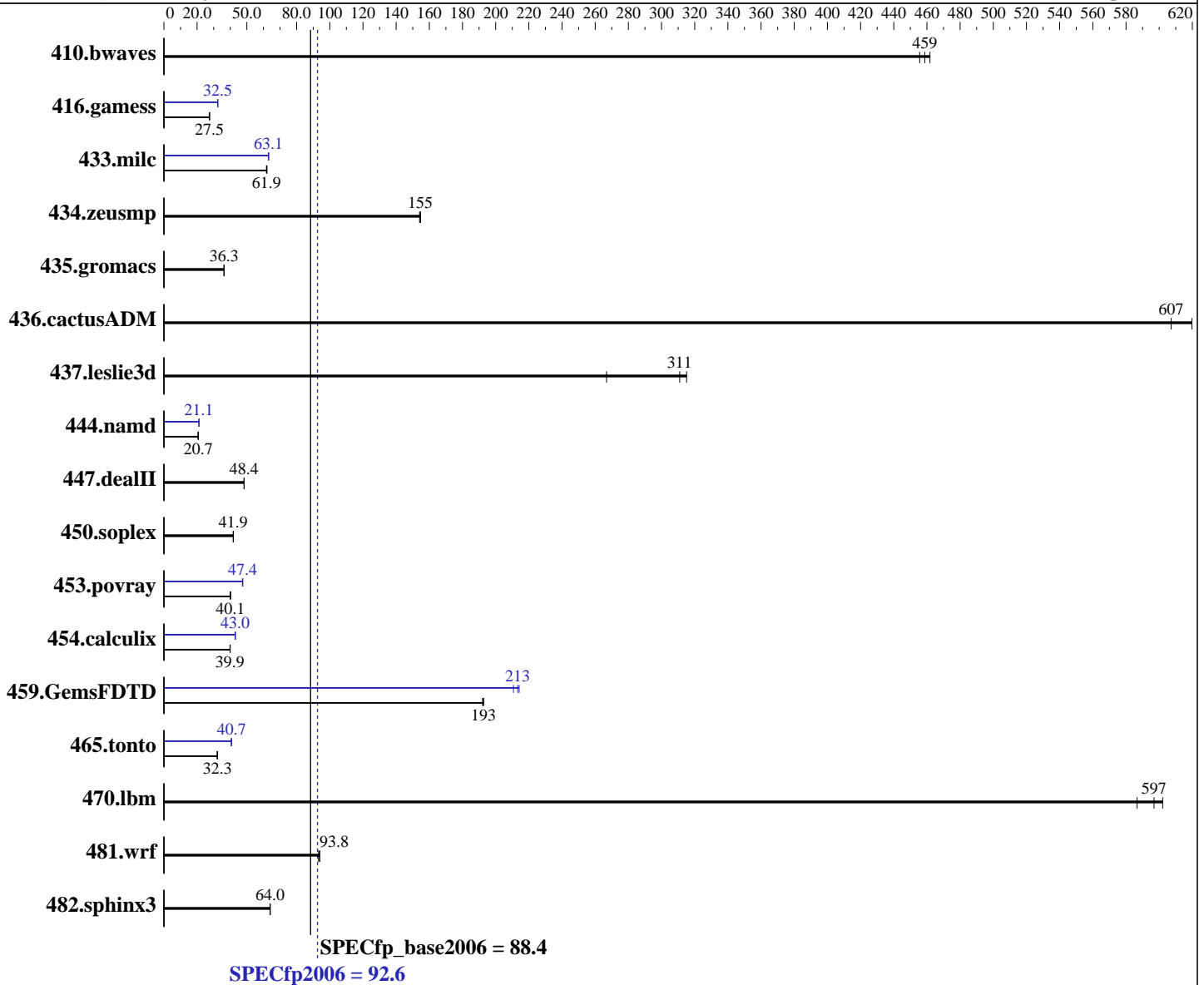
Test date: Sep-2013

Test sponsor: Fujitsu

Hardware Availability: Oct-2013

Tested by: Fujitsu

Software Availability: Sep-2013



**Hardware**

CPU Name: Intel Xeon E5-2660 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz  
 CPU MHz: 2200  
 FPU: Integrated  
 CPU(s) enabled: 20 cores, 2 chips, 10 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

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**Software**

Operating System: Red Hat Enterprise Linux Server release 6.4 (Santiago)  
 2.6.32-358.11.1.el6.x86\_64  
 Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;  
 Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4

Continued on next page



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L3 Cache: 25 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC)  
Disk Subsystem: 1 x SATA, 450 GB, 15000 RPM  
Other Hardware: None

System State: Run level 3 (multi-user)  
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	29.8	456	29.4	462	<b><u>29.6</u></b>	<b><u>459</u></b>	29.8	456	29.4	462	<b><u>29.6</u></b>	<b><u>459</u></b>
416.gamess	712	27.5	713	27.5	<b><u>712</u></b>	<b><u>27.5</u></b>	604	32.4	602	32.5	<b><u>603</u></b>	<b><u>32.5</u></b>
433.milc	<b><u>148</u></b>	<b><u>61.9</u></b>	148	62.2	148	61.9	145	63.2	<b><u>146</u></b>	<b><u>63.1</u></b>	146	63.0
434.zeusmp	58.8	155	59.0	154	<b><u>58.8</u></b>	<b><u>155</u></b>	58.8	155	59.0	154	<b><u>58.8</u></b>	<b><u>155</u></b>
435.gromacs	197	36.3	<b><u>197</u></b>	<b><u>36.3</u></b>	197	36.2	197	36.3	<b><u>197</u></b>	<b><u>36.3</u></b>	197	36.2
436.cactusADM	19.3	620	19.7	607	<b><u>19.7</u></b>	<b><u>607</u></b>	19.3	620	19.7	607	<b><u>19.7</u></b>	<b><u>607</u></b>
437.leslie3d	<b><u>30.2</u></b>	<b><u>311</u></b>	35.2	267	29.8	315	<b><u>30.2</u></b>	<b><u>311</u></b>	35.2	267	29.8	315
444.namd	388	20.6	388	20.7	<b><u>388</u></b>	<b><u>20.7</u></b>	<b><u>380</u></b>	<b><u>21.1</u></b>	380	21.1	380	21.1
447.dealII	237	48.4	<b><u>237</u></b>	<b><u>48.4</u></b>	237	48.3	237	48.4	<b><u>237</u></b>	<b><u>48.4</u></b>	237	48.3
450.soplex	199	41.9	<b><u>199</u></b>	<b><u>41.9</u></b>	200	41.8	199	41.9	<b><u>199</u></b>	<b><u>41.9</u></b>	200	41.8
453.povray	132	40.2	133	40.1	<b><u>133</u></b>	<b><u>40.1</u></b>	112	47.3	<b><u>112</u></b>	<b><u>47.4</u></b>	112	47.6
454.calculix	207	39.8	<b><u>207</u></b>	<b><u>39.9</u></b>	206	40.0	<b><u>192</u></b>	<b><u>43.0</u></b>	192	43.0	192	43.0
459.GemsFDTD	55.1	193	55.3	192	<b><u>55.1</u></b>	<b><u>193</u></b>	50.3	211	<b><u>49.7</u></b>	<b><u>213</u></b>	49.5	214
465.tonto	307	32.0	<b><u>304</u></b>	<b><u>32.3</u></b>	304	32.4	<b><u>242</u></b>	<b><u>40.7</u></b>	242	40.6	241	40.8
470.lbm	22.8	602	23.4	587	<b><u>23.0</u></b>	<b><u>597</u></b>	22.8	602	23.4	587	<b><u>23.0</u></b>	<b><u>597</u></b>
481.wrf	119	94.0	120	93.2	<b><u>119</u></b>	<b><u>93.8</u></b>	119	94.0	120	93.2	<b><u>119</u></b>	<b><u>93.8</u></b>
482.sphinx3	<b><u>304</u></b>	<b><u>64.0</u></b>	305	64.0	304	64.1	<b><u>304</u></b>	<b><u>64.0</u></b>	305	64.0	304	64.1

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 configuration:  
Energy Performance = Performance  
Utilization Profile = Unbalanced

## 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:/SPECcpu2006/sh"

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## General Notes (Continued)

OMP\_NUM\_THREADS = "20"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

This result was measured on the PRIMERGY RX350 S8. The PRIMERGY RX350 S8 and the PRIMERGY TX300 S8 are electronically equivalent.

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.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 -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: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

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## Peak Optimization Flags (Continued)

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: 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-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -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 -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-ic14.0-official-linux64.20140128.html>

<http://www.spec.org/cpu2006/flags/Fujitsu-Platform.20130924.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml>

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