



# SPEC<sup>®</sup> CFP2006 Result

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## Fujitsu

PRIMERGY RX300 S8, Intel Xeon E5-2650L v2, 1.70 GHz

SPECfp<sup>®</sup>2006 = **69.4**

SPECfp\_base2006 = **66.6**

CPU2006 license: 19

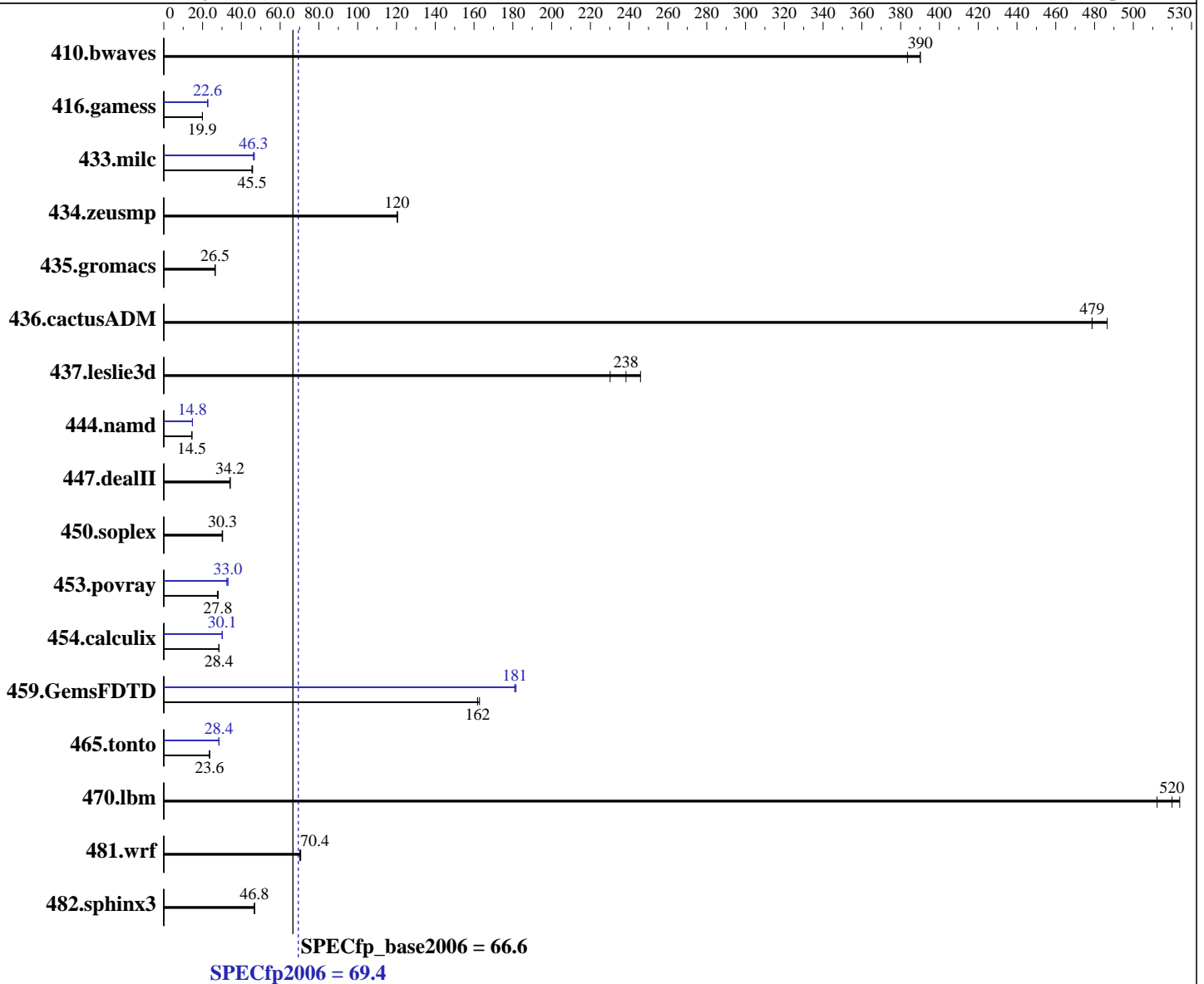
Test sponsor: Fujitsu

Tested by: Fujitsu

Test date: Sep-2013

Hardware Availability: Oct-2013

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2650L v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.10 GHz  
 CPU MHz: 1700  
 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 PC3L-12800R-11, ECC)  
Disk Subsystem: 1 x SATA, 500 GB, 7200 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    | 34.8        | 390         | <b>34.8</b> | <b>390</b>  | 35.4        | 384         | 34.8        | 390         | <b>34.8</b> | <b>390</b>  | 35.4        | 384         |
| 416.gamess    | 984         | 19.9        | <b>983</b>  | <b>19.9</b> | 982         | 19.9        | 862         | 22.7        | <b>867</b>  | <b>22.6</b> | 868         | 22.6        |
| 433.milc      | 200         | 45.8        | 202         | 45.5        | <b>202</b>  | <b>45.5</b> | 197         | 46.7        | <b>198</b>  | <b>46.3</b> | 198         | 46.3        |
| 434.zeusmp    | 75.7        | 120         | 75.5        | 121         | <b>75.7</b> | <b>120</b>  | 75.7        | 120         | 75.5        | 121         | <b>75.7</b> | <b>120</b>  |
| 435.gromacs   | <b>270</b>  | <b>26.5</b> | 270         | 26.5        | 270         | 26.5        | <b>270</b>  | <b>26.5</b> | 270         | 26.5        | 270         | 26.5        |
| 436.cactusADM | 25.0        | 479         | <b>25.0</b> | <b>479</b>  | 24.6        | 487         | 25.0        | 479         | <b>25.0</b> | <b>479</b>  | 24.6        | 487         |
| 437.leslie3d  | 38.2        | 246         | <b>39.4</b> | <b>238</b>  | 40.8        | 230         | 38.2        | 246         | <b>39.4</b> | <b>238</b>  | 40.8        | 230         |
| 444.namd      | <b>554</b>  | <b>14.5</b> | 554         | 14.5        | 554         | 14.5        | 542         | 14.8        | 545         | 14.7        | <b>542</b>  | <b>14.8</b> |
| 447.dealII    | 334         | 34.2        | 335         | 34.2        | <b>334</b>  | <b>34.2</b> | 334         | 34.2        | 335         | 34.2        | <b>334</b>  | <b>34.2</b> |
| 450.soplex    | 275         | 30.3        | 277         | 30.1        | <b>275</b>  | <b>30.3</b> | 275         | 30.3        | 277         | 30.1        | <b>275</b>  | <b>30.3</b> |
| 453.povray    | <b>191</b>  | <b>27.8</b> | 193         | 27.6        | 190         | 28.0        | <b>161</b>  | <b>33.0</b> | 164         | 32.5        | 161         | 33.1        |
| 454.calculix  | <b>290</b>  | <b>28.4</b> | 290         | 28.4        | 290         | 28.4        | <b>274</b>  | <b>30.1</b> | 274         | 30.1        | 273         | 30.2        |
| 459.GemsFDTD  | 65.6        | 162         | 65.2        | 163         | <b>65.6</b> | <b>162</b>  | 58.4        | 182         | 58.6        | 181         | <b>58.6</b> | <b>181</b>  |
| 465.tonto     | <b>416</b>  | <b>23.6</b> | 418         | 23.5        | 416         | 23.6        | 346         | 28.4        | <b>346</b>  | <b>28.4</b> | 345         | 28.5        |
| 470.lbm       | <b>26.4</b> | <b>520</b>  | 26.8        | 512         | 26.2        | 524         | <b>26.4</b> | <b>520</b>  | 26.8        | 512         | 26.2        | 524         |
| 481.wrf       | 159         | 70.2        | 158         | 70.6        | <b>159</b>  | <b>70.4</b> | 159         | 70.2        | 158         | 70.6        | <b>159</b>  | <b>70.4</b> |
| 482.sphinx3   | <b>416</b>  | <b>46.8</b> | 417         | 46.7        | 416         | 46.8        | <b>416</b>  | <b>46.8</b> | 417         | 46.7        | 416         | 46.8        |

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>

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 -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.20131009.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>

<http://www.spec.org/cpu2006/flags/Fujitsu-Platform.20131009.xml>



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