



# SPEC® CFP2006 Result

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## Fujitsu

**SPECfp®2006 = 106**

PRIMERGY RX350 S8, Intel Xeon E5-2690 v2, 3.00 GHz

**SPECfp\_base2006 = 102**

CPU2006 license: 19

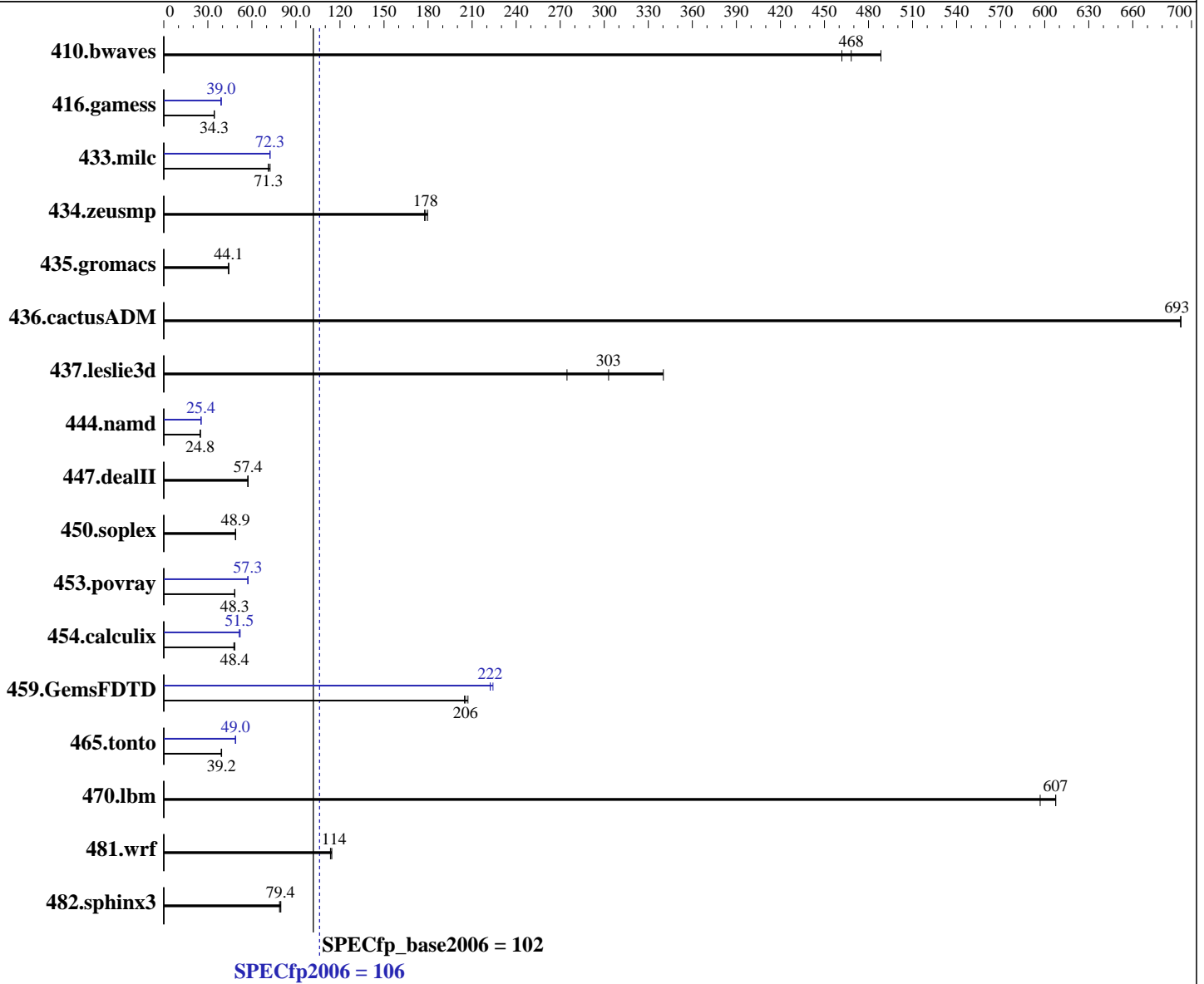
Test date: Sep-2013

Test sponsor: Fujitsu

Hardware Availability: Oct-2013

Tested by: Fujitsu

Software Availability: Sep-2013



**Hardware**

CPU Name: Intel Xeon E5-2690 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz  
 CPU MHz: 3000  
 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

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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, 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    | 29.4        | 462         | <b>29.0</b> | <b>468</b>  | 27.8        | 488         | 29.4        | 462         | <b>29.0</b> | <b>468</b>  | 27.8        | 488         |
| 416.gamess    | <b>571</b>  | <b>34.3</b> | 572         | 34.3        | 567         | 34.5        | 503         | 38.9        | 499         | 39.2        | <b>502</b>  | <b>39.0</b> |
| 433.milc      | 127         | 72.4        | <b>129</b>  | <b>71.3</b> | 129         | 71.3        | <b>127</b>  | <b>72.3</b> | 127         | 72.2        | 127         | 72.4        |
| 434.zeusmp    | 51.2        | 178         | <b>51.0</b> | <b>178</b>  | 50.6        | 180         | 51.2        | 178         | <b>51.0</b> | <b>178</b>  | 50.6        | 180         |
| 435.gromacs   | 162         | 44.1        | <b>162</b>  | <b>44.1</b> | 161         | 44.3        | 162         | 44.1        | <b>162</b>  | <b>44.1</b> | 161         | 44.3        |
| 436.cactusADM | 17.2        | 693         | <b>17.3</b> | <b>693</b>  | 17.3        | 693         | 17.2        | 693         | <b>17.3</b> | <b>693</b>  | 17.3        | 693         |
| 437.leslie3d  | <b>31.0</b> | <b>303</b>  | 34.2        | 275         | 27.6        | 340         | <b>31.0</b> | <b>303</b>  | 34.2        | 275         | 27.6        | 340         |
| 444.namd      | 321         | 25.0        | <b>323</b>  | <b>24.8</b> | 323         | 24.8        | <b>316</b>  | <b>25.4</b> | 316         | 25.3        | 316         | 25.4        |
| 447.dealII    | 199         | 57.5        | <b>199</b>  | <b>57.4</b> | 200         | 57.1        | 199         | 57.5        | <b>199</b>  | <b>57.4</b> | 200         | 57.1        |
| 450.soplex    | <b>171</b>  | <b>48.9</b> | 171         | 48.8        | 170         | 48.9        | <b>171</b>  | <b>48.9</b> | 171         | 48.8        | 170         | 48.9        |
| 453.povray    | 110         | 48.4        | 110         | 48.3        | <b>110</b>  | <b>48.3</b> | 92.7        | 57.4        | 93.0        | 57.2        | <b>92.9</b> | <b>57.3</b> |
| 454.calculix  | 173         | 47.7        | 170         | 48.4        | <b>171</b>  | <b>48.4</b> | 160         | 51.5        | 159         | 52.0        | <b>160</b>  | <b>51.5</b> |
| 459.GemsFDTD  | <b>51.6</b> | <b>206</b>  | 51.2        | 207         | 51.8        | 205         | 47.7        | 222         | 47.3        | 224         | <b>47.7</b> | <b>222</b>  |
| 465.tonto     | <b>251</b>  | <b>39.2</b> | 251         | 39.1        | 250         | 39.4        | 201         | 49.0        | <b>201</b>  | <b>49.0</b> | 202         | 48.7        |
| 470.lbm       | 22.6        | 608         | 23.0        | 597         | <b>22.6</b> | <b>607</b>  | 22.6        | 608         | 23.0        | 597         | <b>22.6</b> | <b>607</b>  |
| 481.wrf       | 98.4        | 113         | <b>98.2</b> | <b>114</b>  | 97.6        | 114         | 98.4        | 113         | <b>98.2</b> | <b>114</b>  | 97.6        | 114         |
| 482.sphinx3   | 244         | 79.7        | 247         | 78.8        | <b>245</b>  | <b>79.4</b> | 244         | 79.7        | 247         | 78.8        | <b>245</b>  | <b>79.4</b> |

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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**Test date:** Sep-2013  
**Hardware Availability:** Oct-2013  
**Software Availability:** Sep-2013

### 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>

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



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