



# SPEC<sup>®</sup> CFP2006 Result

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## Fujitsu

SPECfp<sup>®</sup>2006 = **109**

PRIMERGY RX2540 M1, Intel Xeon E5-2640 v3, 2.6 GHz

SPECfp\_base2006 = **105**

CPU2006 license: 19

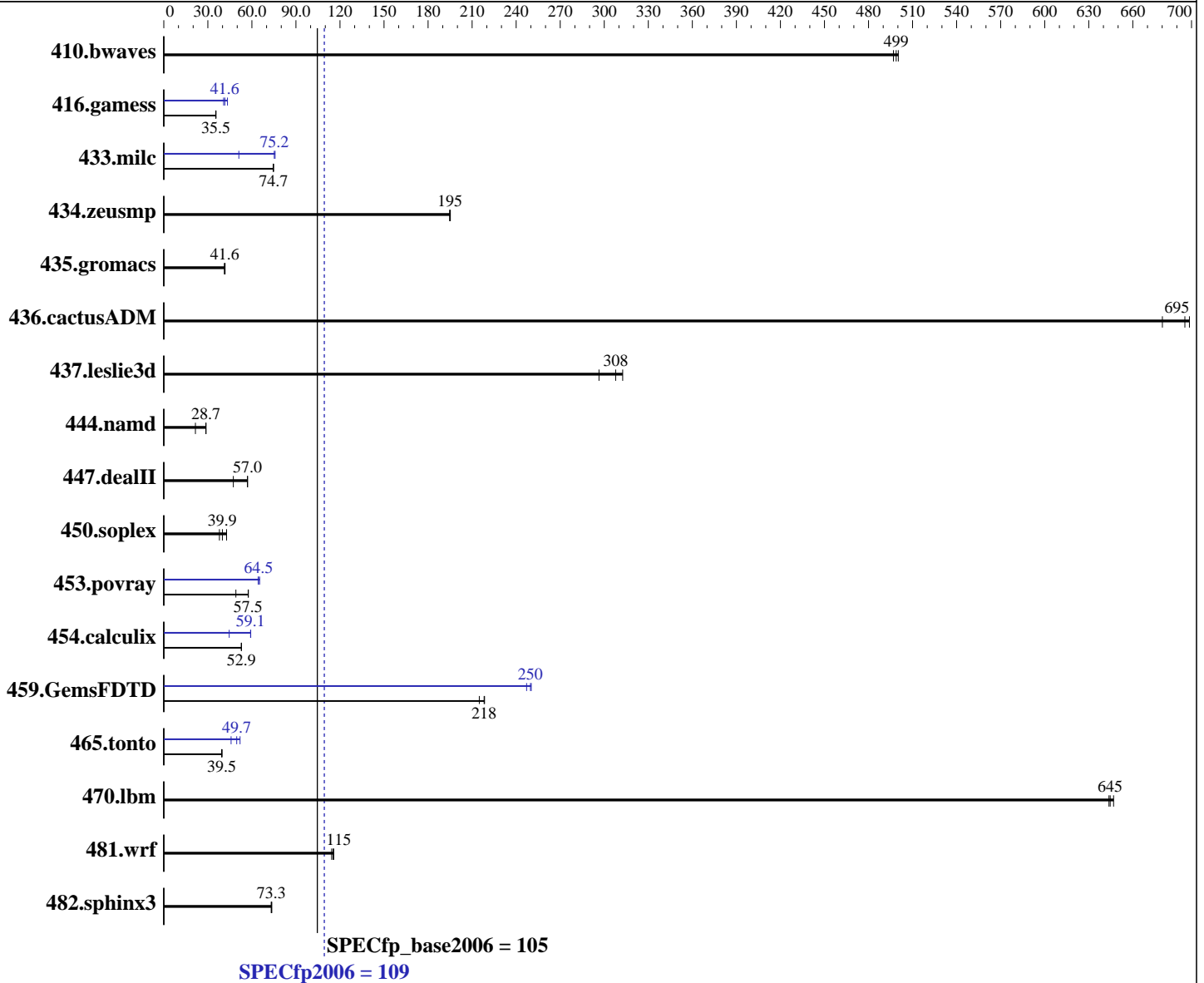
Test date: Nov-2014

Test sponsor: Fujitsu

Hardware Availability: Sep-2014

Tested by: Fujitsu

Software Availability: Sep-2014



**Hardware**

CPU Name: Intel Xeon E5-2640 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz  
 CPU MHz: 2600  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core  
 CPU(s) orderable: 1,2 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 7.0 (Maipo)  
 Kernel 3.10.0-123.8.1.el7.x86\_64  
 Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;  
 Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: xfs

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L3 Cache: 20 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)  
 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    | 27.2        | 500         | <b>27.2</b> | <b>499</b>  | 27.3        | 497         | 27.2        | 500         | <b>27.2</b> | <b>499</b>  | 27.3        | 497         |
| 416.gamess    | <b>551</b>  | <b>35.5</b> | 551         | 35.5        | 554         | 35.4        | 481         | 40.7        | 452         | 43.4        | <b>471</b>  | <b>41.6</b> |
| 433.milc      | 123         | 74.7        | <b>123</b>  | <b>74.7</b> | 123         | 74.5        | <b>122</b>  | <b>75.2</b> | 121         | 75.8        | 180         | 51.1        |
| 434.zeusmp    | <b>46.7</b> | <b>195</b>  | 46.6        | 195         | 46.7        | 195         | <b>46.7</b> | <b>195</b>  | 46.6        | 195         | 46.7        | 195         |
| 435.gromacs   | 173         | 41.2        | <b>172</b>  | <b>41.6</b> | 171         | 41.7        | 173         | 41.2        | <b>172</b>  | <b>41.6</b> | 171         | 41.7        |
| 436.cactusADM | 17.1        | 699         | <b>17.2</b> | <b>695</b>  | 17.6        | 680         | 17.1        | 699         | <b>17.2</b> | <b>695</b>  | 17.6        | 680         |
| 437.leslie3d  | <b>30.5</b> | <b>308</b>  | 30.1        | 313         | 31.7        | 296         | <b>30.5</b> | <b>308</b>  | 30.1        | 313         | 31.7        | 296         |
| 444.namd      | 279         | 28.7        | 372         | 21.5        | <b>279</b>  | <b>28.7</b> | 279         | 28.7        | 372         | 21.5        | <b>279</b>  | <b>28.7</b> |
| 447.dealII    | <b>201</b>  | <b>57.0</b> | 200         | 57.1        | 242         | 47.4        | <b>201</b>  | <b>57.0</b> | 200         | 57.1        | 242         | 47.4        |
| 450.soplex    | 195         | 42.8        | <b>209</b>  | <b>39.9</b> | 220         | 37.9        | 195         | 42.8        | <b>209</b>  | <b>39.9</b> | 220         | 37.9        |
| 453.povray    | 108         | 49.1        | 92.3        | 57.6        | <b>92.6</b> | <b>57.5</b> | 82.7        | 64.3        | 81.5        | 65.3        | <b>82.5</b> | <b>64.5</b> |
| 454.calculix  | <b>156</b>  | <b>52.9</b> | 156         | 53.0        | 156         | 52.8        | 139         | 59.2        | 185         | 44.6        | <b>140</b>  | <b>59.1</b> |
| 459.GemsFDTD  | <b>48.6</b> | <b>218</b>  | 48.6        | 218         | 49.4        | 215         | 42.4        | 250         | <b>42.5</b> | <b>250</b>  | 42.9        | 247         |
| 465.tonto     | 250         | 39.3        | <b>249</b>  | <b>39.5</b> | 248         | 39.7        | <b>198</b>  | <b>49.7</b> | 215         | 45.8        | 189         | 51.9        |
| 470.lbm       | 21.2        | 647         | <b>21.3</b> | <b>645</b>  | 21.3        | 644         | 21.2        | 647         | <b>21.3</b> | <b>645</b>  | 21.3        | 644         |
| 481.wrf       | 97.7        | 114         | <b>96.9</b> | <b>115</b>  | 96.5        | 116         | 97.7        | 114         | <b>96.9</b> | <b>115</b>  | 96.5        | 116         |
| 482.sphinx3   | 265         | 73.6        | 266         | 73.2        | <b>266</b>  | <b>73.3</b> | 265         | 73.6        | 266         | 73.2        | <b>266</b>  | <b>73.3</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  
 QPI snoop mode: Home Snoop  
 COD Enable = Disabled, Early Snoop = Disabled  
 CPU C1E Support = Disabled



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## General Notes

Environment variables set by runspec before the start of the run:

KMP\_AFFINITY = "granularity=fine,compact,1,0"

LD\_LIBRARY\_PATH = "/home/SPECcpu2006/libs/32:/home/SPECcpu2006/libs/64:/home/SPECcpu2006/sh"

OMP\_NUM\_THREADS = "16"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0

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:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xCORE-AVX2 -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: -xCORE-AVX2(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

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## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: basepeak = yes

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2 -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/Fujitsu-Platform-Settings-V1.2-HSW-RevA.html>

<http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.html>

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

<http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-HSW-RevA.xml>

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