



# SPEC<sup>®</sup> CFP2006 Result

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## Fujitsu

### SPECfp<sup>®</sup>\_rate2006 = 206

PRIMERGY TX200 S7, Intel Xeon E5-2450, 2.10 GHz

### SPECfp\_rate\_base2006 = 200

CPU2006 license: 19

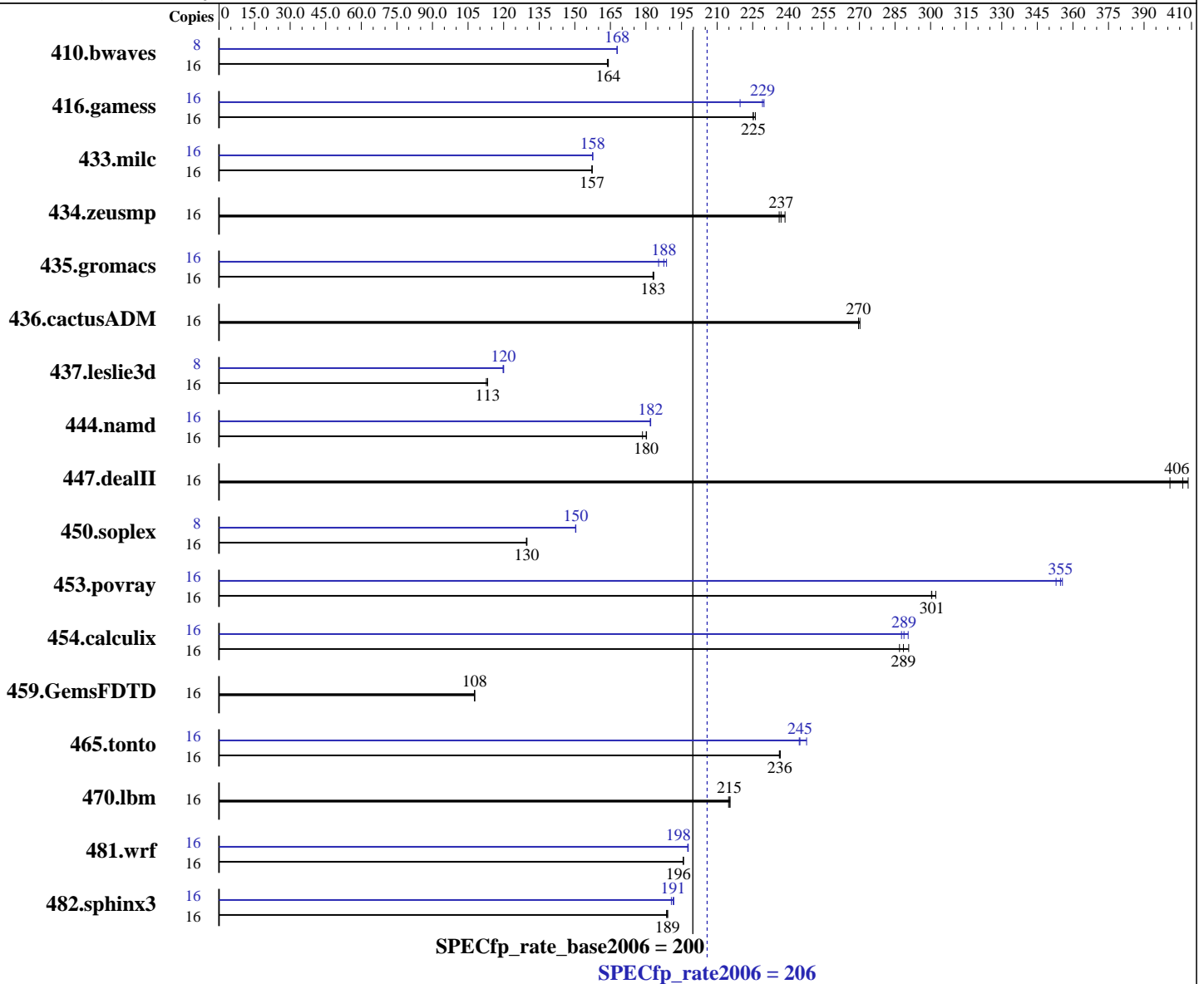
Test date: Jun-2012

Test sponsor: Fujitsu

Hardware Availability: Jul-2012

Tested by: Fujitsu

Software Availability: Feb-2012



### Hardware

CPU Name: Intel Xeon E5-2450  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.90 GHz  
 CPU MHz: 2100  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 1 chip, 8 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 6.2 (Santiago)  
 2.6.32-220.el6.x86\_64  
 Compiler: C/C++: Version 12.1.0.293 of Intel C++ Studio XE for Linux;  
 Fortran: Version 12.1.0.293 of Intel Fortran Studio XE for Linux  
 Auto Parallel: No  
 File System: ext4

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L3 Cache: 20 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 48 GB (6 x 8 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: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	1325	164	<u>1325</u>	<u>164</u>	1328	164	8	648	168	648	168	<u>648</u>	<u>168</u>
416.gamess	16	<u>1391</u>	<u>225</u>	1385	226	1391	225	16	1426	220	1363	230	<u>1367</u>	<u>229</u>
433.milc	16	<u>934</u>	<u>157</u>	934	157	934	157	16	933	157	<u>932</u>	<u>158</u>	932	158
434.zeusmp	16	610	239	<u>614</u>	<u>237</u>	617	236	16	610	239	<u>614</u>	<u>237</u>	617	236
435.gromacs	16	623	183	624	183	<u>624</u>	<u>183</u>	16	<u>609</u>	<u>188</u>	616	185	605	189
436.cactusADM	16	708	270	709	270	<u>709</u>	<u>270</u>	16	708	270	709	270	<u>709</u>	<u>270</u>
437.leslie3d	16	1328	113	1334	113	<u>1328</u>	<u>113</u>	8	626	120	<u>627</u>	<u>120</u>	628	120
444.namd	16	719	179	712	180	<u>713</u>	<u>180</u>	16	705	182	706	182	<u>705</u>	<u>182</u>
447.dealII	16	457	401	<u>451</u>	<u>406</u>	448	409	16	457	401	<u>451</u>	<u>406</u>	448	409
450.soplex	16	<u>1029</u>	<u>130</u>	1028	130	1030	130	8	443	150	444	150	<u>444</u>	<u>150</u>
453.povray	16	283	300	282	302	<u>283</u>	<u>301</u>	16	239	356	241	353	<u>240</u>	<u>355</u>
454.calculix	16	<u>457</u>	<u>289</u>	460	287	454	291	16	<u>457</u>	<u>289</u>	459	288	454	291
459.GemsFDTD	16	<u>1576</u>	<u>108</u>	1576	108	1575	108	16	<u>1576</u>	<u>108</u>	1576	108	1575	108
465.tonto	16	666	236	665	237	<u>666</u>	<u>236</u>	16	<u>643</u>	<u>245</u>	644	245	636	248
470.lbm	16	<u>1022</u>	<u>215</u>	1020	215	1023	215	16	<u>1022</u>	<u>215</u>	1020	215	1023	215
481.wrf	16	913	196	913	196	<u>913</u>	<u>196</u>	16	904	198	<u>904</u>	<u>198</u>	903	198
482.sphinx3	16	<u>1649</u>	<u>189</u>	1648	189	1653	189	16	1635	191	<u>1629</u>	<u>191</u>	1626	192

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

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

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



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## General Notes

Environment variables set by runspec before the start of the run:  
LD\_LIBRARY\_PATH = "/SPECcpu2006/libs/32:/SPECcpu2006/libs/64"

Binaries compiled on a system with 2x E5-2650 CPU + 96 GB  
memory using RHEL6.2  
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

## Base Optimization Flags

C benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

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## Base Optimization Flags (Continued)

C++ benchmarks:

`-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3`

Fortran benchmarks:

`-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch`

Benchmarks using both Fortran and C:

`-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3`

## Peak Compiler Invocation

C benchmarks (except as noted below):

`icc -m64`

482.sphinx3: `icc -m32`

C++ benchmarks (except as noted below):

`icpc -m64`

450.soplex: `icpc -m32`

Fortran benchmarks:

`ifort -m64`

Benchmarks using both Fortran and C:

`icc -m64 ifort -m64`

## Peak 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`  
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`

Continued on next page



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## Peak Portability Flags (Continued)

481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX

## 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  
-opt-mem-layout-trans=3

470.lbm: basepeak = yes

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -unroll2

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: basepeak = yes

450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3

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(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -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: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto  
-inline-calloc -opt-malloc-options=3

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## Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch  
-auto-p32 -ansi-alias -opt-mem-layout-trans=3

436.cactusADM: basepeak = yes

454.calculix: -xAVX -ipo -O3 -no-prec-div -static -auto-ilp32  
-opt-mem-layout-trans=3

481.wrf: Same as 454.calculix

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.20120320.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.20120320.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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