



# SPEC<sup>®</sup> CFP2006 Result

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## Fujitsu

SPECfp<sup>®</sup>2006 = **51.8**

PRIMERGY TX200 S6, Intel Xeon E5645, 2.40 GHz

SPECfp\_base2006 = **48.1**

CPU2006 license: 19

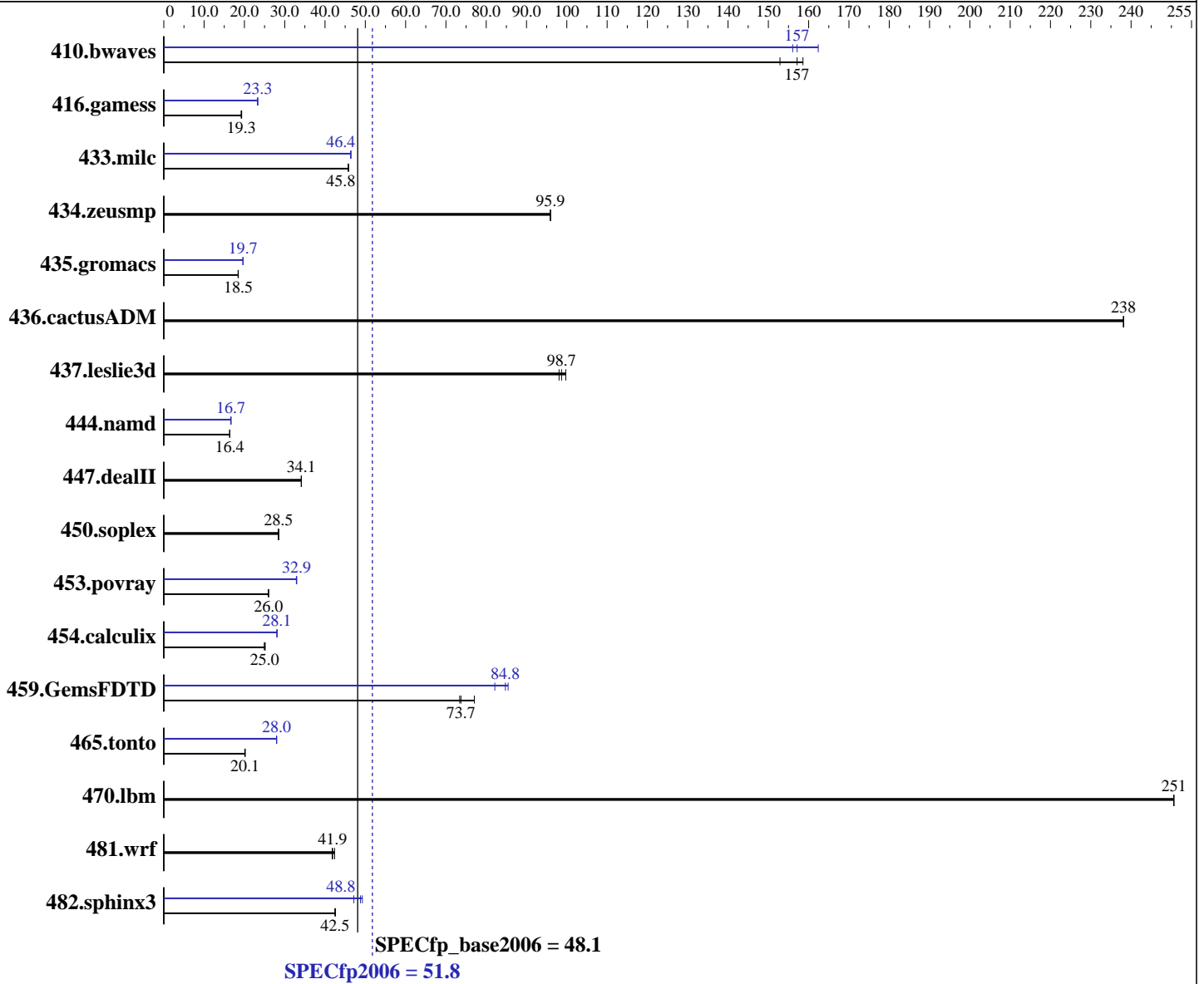
Test sponsor: Fujitsu

Tested by: Fujitsu

Test date: Mar-2011

Hardware Availability: Feb-2011

Software Availability: Apr-2011



### Hardware

CPU Name: Intel Xeon E5645  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip  
 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: SUSE Linux Enterprise Server 11 (x86\_64) with SP1, Kernel 2.6.32.12-0.7-default  
 Compiler: Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12.0 Update 3  
 Auto Parallel: Yes  
 File System: ext3  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: 12 MB I+D on chip per chip  
Other Cache: None  
Memory: 48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC)  
Disk Subsystem: 1 x SAS, 300 GB, 10000 RPM  
Other Hardware: --

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	<b><u>86.5</u></b>	<b><u>157</u></b>	88.9	153	85.7	159	87.1	156	<b><u>86.5</u></b>	<b><u>157</u></b>	83.7	162
416.gamess	1021	19.2	1013	19.3	<b><u>1015</u></b>	<b><u>19.3</u></b>	842	23.3	840	23.3	<b><u>840</u></b>	<b><u>23.3</u></b>
433.milc	200	45.8	201	45.8	<b><u>200</u></b>	<b><u>45.8</u></b>	<b><u>198</u></b>	<b><u>46.4</u></b>	198	46.4	198	46.4
434.zeusmp	94.9	95.9	94.9	95.9	<b><u>94.9</u></b>	<b><u>95.9</u></b>	94.9	95.9	94.9	95.9	<b><u>94.9</u></b>	<b><u>95.9</u></b>
435.gromacs	387	18.4	386	18.5	<b><u>386</u></b>	<b><u>18.5</u></b>	363	19.7	<b><u>363</u></b>	<b><u>19.7</u></b>	364	19.6
436.cactusADM	50.2	238	50.2	238	<b><u>50.2</u></b>	<b><u>238</u></b>	50.2	238	50.2	238	<b><u>50.2</u></b>	<b><u>238</u></b>
437.leslie3d	94.2	99.7	95.8	98.1	<b><u>95.2</u></b>	<b><u>98.7</u></b>	94.2	99.7	95.8	98.1	<b><u>95.2</u></b>	<b><u>98.7</u></b>
444.namd	490	16.4	<b><u>490</u></b>	<b><u>16.4</u></b>	491	16.3	<b><u>482</u></b>	<b><u>16.7</u></b>	481	16.7	482	16.7
447.dealII	335	34.1	335	34.1	<b><u>335</u></b>	<b><u>34.1</u></b>	335	34.1	335	34.1	<b><u>335</u></b>	<b><u>34.1</u></b>
450.soplex	<b><u>293</u></b>	<b><u>28.5</u></b>	293	28.4	292	28.5	<b><u>293</u></b>	<b><u>28.5</u></b>	293	28.4	292	28.5
453.povray	205	26.0	205	25.9	<b><u>205</u></b>	<b><u>26.0</u></b>	161	33.0	162	32.9	<b><u>161</u></b>	<b><u>32.9</u></b>
454.calculix	331	25.0	<b><u>330</u></b>	<b><u>25.0</u></b>	328	25.2	294	28.1	294	28.1	<b><u>294</u></b>	<b><u>28.1</u></b>
459.GemsFDTD	145	73.4	<b><u>144</u></b>	<b><u>73.7</u></b>	138	77.0	<b><u>125</u></b>	<b><u>84.8</u></b>	129	82.1	124	85.4
465.tonto	490	20.1	487	20.2	<b><u>489</u></b>	<b><u>20.1</u></b>	<b><u>352</u></b>	<b><u>28.0</u></b>	351	28.0	352	28.0
470.lbm	54.8	251	<b><u>54.8</u></b>	<b><u>251</u></b>	54.8	251	54.8	251	<b><u>54.8</u></b>	<b><u>251</u></b>	54.8	251
481.wrf	264	42.4	<b><u>267</u></b>	<b><u>41.9</u></b>	267	41.8	264	42.4	<b><u>267</u></b>	<b><u>41.9</u></b>	267	41.8
482.sphinx3	<b><u>459</u></b>	<b><u>42.5</u></b>	459	42.5	457	42.6	396	49.3	<b><u>399</u></b>	<b><u>48.8</u></b>	413	47.1

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

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'nodetv /mnt/hugepages hugetlbfs defaults 0 0' added to /etc/fstab
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

## Platform Notes

BIOS configuration:  
Data Reuse Optimization = Disable  
Intel HT Technology = Disable



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**Test date:** Mar-2011  
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## General Notes

OMP\_NUM\_THREADS set to number of cores  
For information about Fujitsu please visit: <http://www.fujitsu.com>  
Binaries were compiled on RHEL5.5 with binutils-2.17.50.0.6-14.el5

## 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:  
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

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## Base Optimization Flags (Continued)

Fortran benchmarks:

`-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:

`-xSSE4.2 -ipo -O3 -no-prec-div -static -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: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32  
-ansi-alias`

470.lbm: `basepeak = yes`

482.sphinx3: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel`

C++ benchmarks:

444.namd: `-xSSE4.2(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`

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## Peak Optimization Flags (Continued)

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

### Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -parallel  
-static

416.gamess: -xSSE4.2(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: basepeak = yes

459.GemsFDTD: -xSSE4.2(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  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

465.tonto: -xSSE4.2(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  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

### Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32  
-ansi-alias

436.cactusADM: basepeak = yes

454.calculix: -xSSE4.2 -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-ic12.0-linux64-revB.20110316.html>

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.20110316.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.20110316.xml>

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.20110316.xml>



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