



# SPEC® CFP2006 Result

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## Intel Corporation

SPECfp®2006 = 19.9

Intel Server System S7000FC4UR (Intel Xeon E7430)

SPECfp\_base2006 = 18.9

CPU2006 license: 13

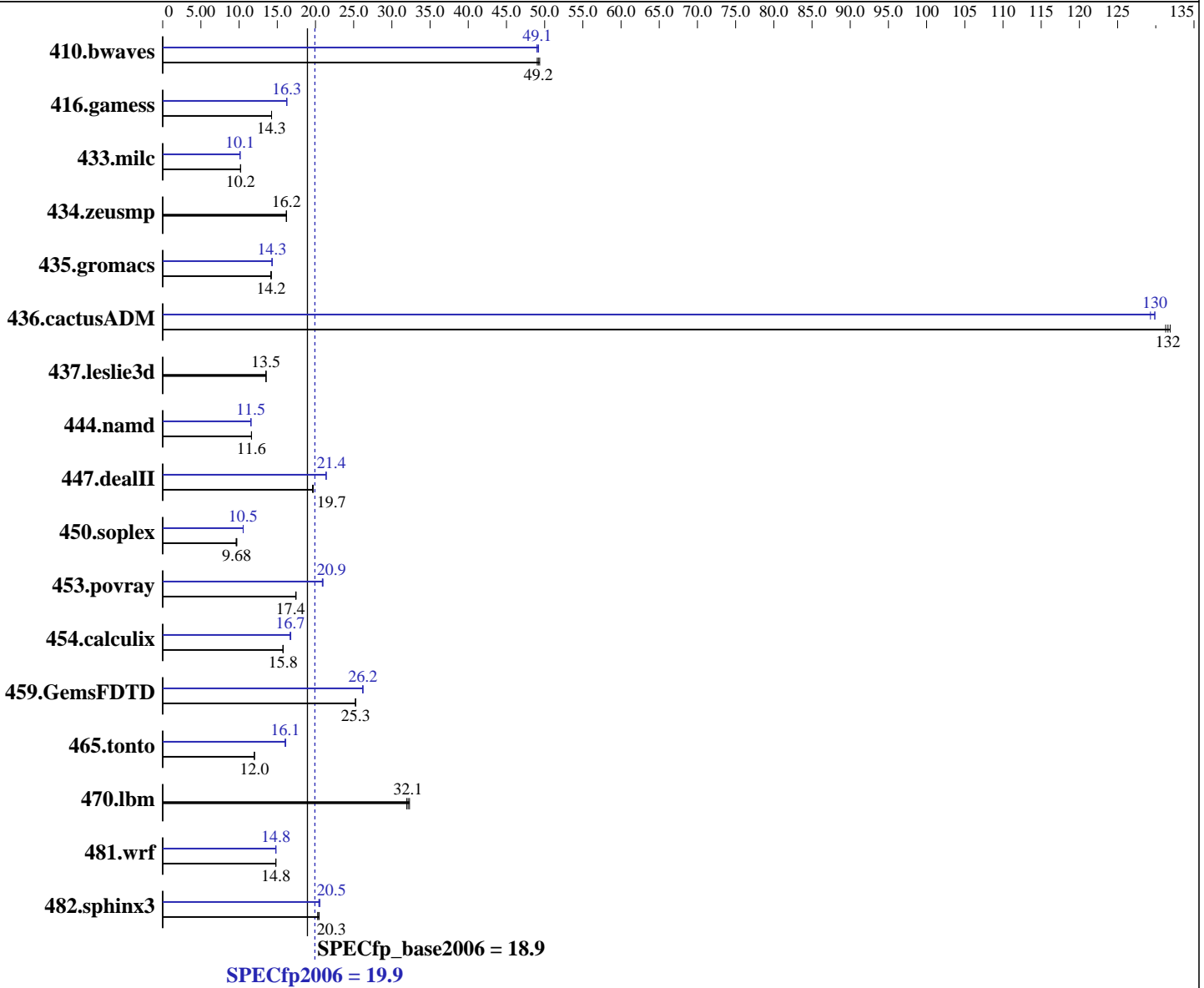
Test date: Sep-2008

Test sponsor: Intel Corporation

Hardware Availability: Sep-2008

Tested by: Intel Corporation

Software Availability: Nov-2008



**Hardware**

CPU Name: Intel Xeon E7430  
 CPU Characteristics:  
 CPU MHz: 2133  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip  
 CPU(s) orderable: 1,2,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 6 MB I+D on chip per chip, 3 MB shared / 2 cores

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**Software**

Operating System: SuSe Linux SLES10 SP2  
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux  
 Build 20080730 Package ID: l\_cc\_b\_11.0.042, l\_fc\_b\_11.0.042  
 Auto Parallel: Yes  
 File System: ReiserFS  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit

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L3 Cache: 12 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 32 GB (16x2GB Micron DDR2 5300F,2 rank, CL5-5-5, ECC)  
 Disk Subsystem: 73 GB Seagate SAS, 10K RPM  
 Other Hardware: None

Other Software: Microquill SmartHeap V8.1  
 Binutils 2.18.50.0.7.20080502

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	<b>276</b>	<b>49.2</b>	277	49.0	275	49.4	276	49.2	277	49.0	<b>277</b>	<b>49.1</b>
416.gamess	1374	14.3	1373	14.3	<b>1374</b>	<b>14.3</b>	1204	16.3	<b>1205</b>	<b>16.3</b>	1207	16.2
433.milc	<b>900</b>	<b>10.2</b>	900	10.2	900	10.2	907	10.1	<b>906</b>	<b>10.1</b>	906	10.1
434.zeusmp	562	16.2	562	16.2	<b>562</b>	<b>16.2</b>	562	16.2	562	16.2	<b>562</b>	<b>16.2</b>
435.gromacs	505	14.1	<b>503</b>	<b>14.2</b>	502	14.2	498	14.3	499	14.3	<b>499</b>	<b>14.3</b>
436.cactusADM	<b>90.8</b>	<b>132</b>	91.0	131	90.6	132	92.4	129	<b>92.0</b>	<b>130</b>	92.0	130
437.leslie3d	694	13.6	697	13.5	<b>695</b>	<b>13.5</b>	694	13.6	697	13.5	<b>695</b>	<b>13.5</b>
444.namd	<b>690</b>	<b>11.6</b>	690	11.6	689	11.6	694	11.6	695	11.5	<b>695</b>	<b>11.5</b>
447.dealII	583	19.6	581	19.7	<b>581</b>	<b>19.7</b>	535	21.4	<b>535</b>	<b>21.4</b>	535	21.4
450.soplex	860	9.70	<b>862</b>	<b>9.68</b>	868	9.61	791	10.5	792	10.5	<b>792</b>	<b>10.5</b>
453.povray	306	17.4	<b>305</b>	<b>17.4</b>	305	17.5	<b>254</b>	<b>20.9</b>	254	21.0	255	20.9
454.calculix	523	15.8	<b>524</b>	<b>15.8</b>	524	15.7	494	16.7	492	16.8	<b>494</b>	<b>16.7</b>
459.GemsFDTD	421	25.2	<b>420</b>	<b>25.3</b>	420	25.3	405	26.2	405	26.2	<b>405</b>	<b>26.2</b>
465.tonto	819	12.0	<b>820</b>	<b>12.0</b>	821	12.0	611	16.1	614	16.0	<b>613</b>	<b>16.1</b>
470.lbm	430	31.9	<b>428</b>	<b>32.1</b>	425	32.3	430	31.9	<b>428</b>	<b>32.1</b>	425	32.3
481.wrf	753	14.8	755	14.8	<b>754</b>	<b>14.8</b>	<b>754</b>	<b>14.8</b>	754	14.8	754	14.8
482.sphinx3	951	20.5	960	20.3	<b>959</b>	<b>20.3</b>	948	20.6	<b>950</b>	<b>20.5</b>	953	20.4

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

## General Notes

All benchmarks compiled in 64-bit mode except 450.soplex and 482.sphinx3, at peak, are compiled in 32-bit mode  
 OMP\_NUM\_THREADS set to number of processors  
 KMP\_AFFINITY set to "physical,0"  
 KMP\_STACKSIZE set to 200M  
 Hardware Prefetcher: Enabled  
 Adjacent Cache Line Prefetcher: Enabled  
 High Bandwidth Option: Disabled



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## Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort

## 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.lelie3d: -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:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

C++ benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch



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## Peak Compiler Invocation

C benchmarks (except as noted below):

icc

```
482.sphinx3: /opt/intel/Compiler/11.0/042/bin/ia32/icc
             -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
             -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

C++ benchmarks (except as noted below):

icpc

```
450.soplex: /opt/intel/Compiler/11.0/042/bin/ia32/icpc
            -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
            -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort

## 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
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

## Peak Optimization Flags

C benchmarks:

```
433.milc: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
         -no-prec-div -static -fno-alias
```

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## Peak Optimization Flags (Continued)

470.lbm: basepeak = yes

482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2

### C++ benchmarks:

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

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -ansi-alias -scalar-rep-  
-opt-prefetch

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll4 -ansi-alias

### Fortran benchmarks:

410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch  
-parallel

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -Ob0 -ansi-alias  
-scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -Ob0 -opt-prefetch  
-parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll4 -auto

### Benchmarks using both Fortran and C:

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

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -opt-prefetch -parallel  
-auto-ilp32

454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32

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## Peak Optimization Flags (Continued)

481.wrf: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch  
-parallel -auto-ilp32

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.16.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.16.xml>

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

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