



# SPEC<sup>®</sup> CFP2006 Result

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## Intel Corporation

SPECfp<sup>®</sup>\_rate2006 = 155

Intel Server System S7000FC4UR (Intel Xeon X7460)

SPECfp\_rate\_base2006 = 142

CPU2006 license: 13

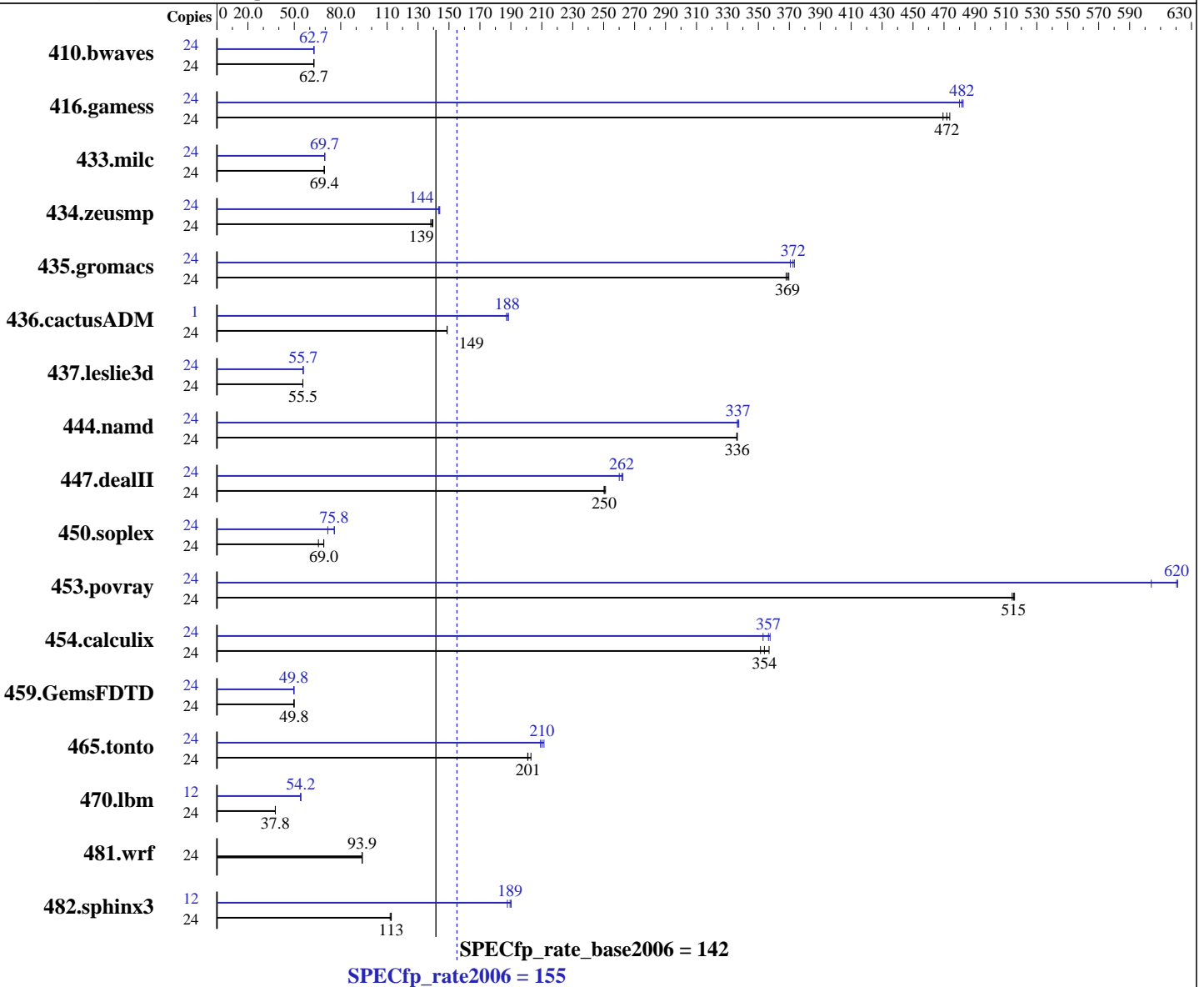
Test sponsor: Intel Corporation

Tested by: Intel Corporation

Test date: Sep-2008

Hardware Availability: Sep-2008

Software Availability: Nov-2008



### Hardware

CPU Name: Intel Xeon X7460  
 CPU Characteristics: 2666  
 CPU MHz: Integrated  
 FPU: Integrated  
 CPU(s) enabled: 24 cores, 4 chips, 6 cores/chip  
 CPU(s) orderable: 1,2,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 9 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\_cproc\_b\_11.0.042,  
 l\_fproc\_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: 16 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							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	24	5214	62.6	5202	62.7	<b>5202</b>	<b>62.7</b>	24	<b>5202</b>	<b>62.7</b>	5203	62.7	5201	62.7		
416.gamess	24	1001	469	992	474	<b>996</b>	<b>472</b>	24	974	482	979	480	<b>976</b>	<b>482</b>		
433.milc	24	3174	69.4	<b>3174</b>	<b>69.4</b>	3176	69.4	24	3163	69.7	<b>3163</b>	<b>69.7</b>	3162	69.7		
434.zeusmp	24	1580	138	<b>1572</b>	<b>139</b>	1564	140	24	1525	143	<b>1520</b>	<b>144</b>	1516	144		
435.gromacs	24	466	368	464	370	<b>465</b>	<b>369</b>	24	459	373	462	371	<b>460</b>	<b>372</b>		
436.cactusADM	24	<b>1928</b>	<b>149</b>	1927	149	1928	149	1	63.8	187	63.4	188	<b>63.6</b>	<b>188</b>		
437.leslie3d	24	4060	55.6	4064	55.5	<b>4061</b>	<b>55.5</b>	24	<b>4047</b>	<b>55.7</b>	4046	55.8	4048	55.7		
444.namd	24	572	336	<b>572</b>	<b>336</b>	573	336	24	<b>571</b>	<b>337</b>	571	337	572	336		
447.dealII	24	<b>1097</b>	<b>250</b>	1093	251	1097	250	24	<b>1049</b>	<b>262</b>	1046	262	1056	260		
450.soplex	24	3051	65.6	<b>2899</b>	<b>69.0</b>	2898	69.1	24	2794	71.6	<b>2641</b>	<b>75.8</b>	2636	75.9		
453.povray	24	248	514	248	516	<b>248</b>	<b>515</b>	24	211	604	206	621	<b>206</b>	<b>620</b>		
454.calculix	24	555	357	564	351	<b>560</b>	<b>354</b>	24	561	353	<b>555</b>	<b>357</b>	554	358		
459.GemsFDTD	24	5105	49.9	5117	49.8	<b>5111</b>	<b>49.8</b>	24	5115	49.8	<b>5115</b>	<b>49.8</b>	5123	49.7		
465.tonto	24	1163	203	<b>1175</b>	<b>201</b>	1176	201	24	1117	211	1129	209	<b>1124</b>	<b>210</b>		
470.lbm	24	8735	37.8	<b>8734</b>	<b>37.8</b>	8733	37.8	12	3044	54.2	3046	54.1	<b>3045</b>	<b>54.2</b>		
481.wrf	24	2855	93.9	2857	93.8	<b>2855</b>	<b>93.9</b>	24	2855	93.9	2857	93.8	<b>2855</b>	<b>93.9</b>		
482.sphinx3	24	4150	113	4178	112	<b>4154</b>	<b>113</b>	12	1229	190	1246	188	<b>1234</b>	<b>189</b>		

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

## Submit Notes

The config file option 'submit' was used.  
 For peak modules using 1/2 the number of available cores, each copy was assigned to a single L2 cache using mysubmit.pl script.  
 See the flags description file for mysubmit.pl details.

## General Notes

All benchmarks compiled in 64-bit mode except 437.leslie3d, 450.soplex and 482.sphinx3, at peak, are compiled in 32-bit mode  
 taskset was used to bind processes to cores except for 436.cactusADM peak  
 OMP\_NUM\_THREADS set to number of processors  
 KMP\_AFFINITY set to "physical,0"

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## General Notes (Continued)

KMP\_STACKSIZE set to 64M  
Hardware Prefetcher: Disabled  
Adjacent Cache Line Prefetcher: Disabled  
High Bandwidth Option: Enabled

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

C++ benchmarks:  
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

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## Base Optimization Flags (Continued)

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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

## 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 (except as noted below):

ifort

437.leslie3d: /opt/intel/Compiler/11.0/042/bin/ia32/ifort  
-L/opt/intel/Compiler/11.0/042/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/042/ipp/ia32/include

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  
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

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## Peak Portability Flags (Continued)

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

470.lbm: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch  
-auto-ilp32

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-

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

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

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -opt-malloc-options=3 -opt-prefetch

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

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## Peak Optimization Flags (Continued)

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

481.wrf: basepeak = yes

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.20090713.09.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.20090713.09.xml>

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

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