



# SPEC<sup>®</sup> CFP2006 Result

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## Intel Corporation

SPECfp<sup>®</sup>2006 = 74.0

Intel DH87MC Motherboard (Intel Core i7-4770)

SPECfp\_base2006 = 72.7

CPU2006 license: 13

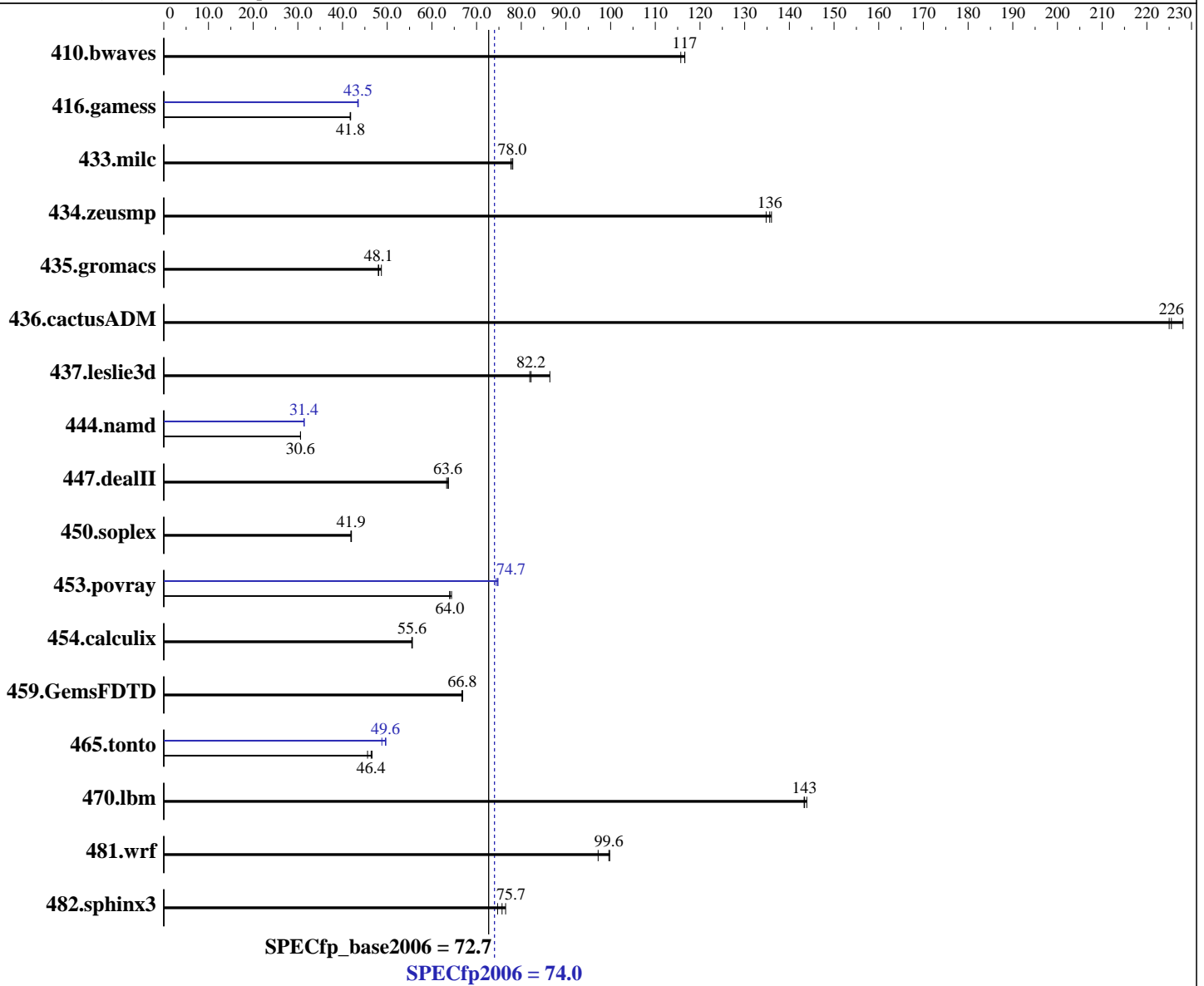
Test sponsor: Intel Corporation

Tested by: Intel Corporation

Test date: Jul-2014

Hardware Availability: Jun-2013

Software Availability: Oct-2013



### Hardware

CPU Name: Intel Core i7-4770  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.90 GHz  
 CPU MHz: 3400  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 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: Microsoft Windows 8.1 Pro  
 6.3.9600 N/A Build 9600  
 Compiler: C/C++: Version 14.0.1.139 of Intel C++ Studio XE for Windows;  
 Fortran: Version 14.0.1.139 of Intel Fortran Studio XE for Windows;  
 Libraries: Version 16.00.30319.01 of Microsoft Visual Studio 2010 Professional SP1  
 Auto Parallel: Yes

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L3 Cache: 8 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 8 GB (2 x 4 GB 2Rx4 PC3-12800U-11)  
 Disk Subsystem: 1 TB Seagate SATA HDD, 7200 RPM  
 Other Hardware: None

File System: NTFS  
 System State: Default  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: SmartHeap Library Version 10.0 from <http://www.microquill.com/>

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	118	116	117	117	<b><u>117</u></b>	<b><u>117</u></b>	118	116	117	117	<b><u>117</u></b>	<b><u>117</u></b>
416.gamess	469	41.7	<b><u>469</u></b>	<b><u>41.8</u></b>	468	41.8	450	43.5	<b><u>450</u></b>	<b><u>43.5</u></b>	451	43.4
433.milc	118	78.1	118	77.7	<b><u>118</u></b>	<b><u>78.0</u></b>	118	78.1	118	77.7	<b><u>118</u></b>	<b><u>78.0</u></b>
434.zeusmp	67.5	135	<b><u>67.1</u></b>	<b><u>136</u></b>	66.9	136	67.5	135	<b><u>67.1</u></b>	<b><u>136</u></b>	66.9	136
435.gromacs	147	48.7	149	48.0	<b><u>148</u></b>	<b><u>48.1</u></b>	147	48.7	149	48.0	<b><u>148</u></b>	<b><u>48.1</u></b>
436.cactusADM	53.1	225	<b><u>53.0</u></b>	<b><u>226</u></b>	52.4	228	53.1	225	<b><u>53.0</u></b>	<b><u>226</u></b>	52.4	228
437.leslie3d	109	86.4	<b><u>114</u></b>	<b><u>82.2</u></b>	115	81.9	109	86.4	<b><u>114</u></b>	<b><u>82.2</u></b>	115	81.9
444.namd	262	30.6	<b><u>262</u></b>	<b><u>30.6</u></b>	262	30.6	<b><u>255</u></b>	<b><u>31.4</u></b>	255	31.4	256	31.4
447.dealII	181	63.3	<b><u>180</u></b>	<b><u>63.6</u></b>	180	63.7	181	63.3	<b><u>180</u></b>	<b><u>63.6</u></b>	180	63.7
450.soplex	<b><u>199</u></b>	<b><u>41.9</u></b>	199	42.0	199	41.9	<b><u>199</u></b>	<b><u>41.9</u></b>	199	42.0	199	41.9
453.povray	<b><u>83.1</u></b>	<b><u>64.0</u></b>	83.1	64.0	82.6	64.4	71.1	74.8	71.5	74.4	<b><u>71.2</u></b>	<b><u>74.7</u></b>
454.calculix	149	55.5	148	55.6	<b><u>148</u></b>	<b><u>55.6</u></b>	149	55.5	148	55.6	<b><u>148</u></b>	<b><u>55.6</u></b>
459.GemsFDTD	<b><u>159</u></b>	<b><u>66.8</u></b>	159	66.7	159	66.9	<b><u>159</u></b>	<b><u>66.8</u></b>	159	66.7	159	66.9
465.tonto	211	46.6	216	45.6	<b><u>212</u></b>	<b><u>46.4</u></b>	198	49.7	202	48.8	<b><u>198</u></b>	<b><u>49.6</u></b>
470.lbm	<b><u>95.8</u></b>	<b><u>143</u></b>	95.9	143	95.5	144	<b><u>95.8</u></b>	<b><u>143</u></b>	95.9	143	95.5	144
481.wrf	112	99.8	<b><u>112</u></b>	<b><u>99.6</u></b>	115	97.2	112	99.8	<b><u>112</u></b>	<b><u>99.6</u></b>	115	97.2
482.sphinx3	261	74.7	<b><u>257</u></b>	<b><u>75.7</u></b>	255	76.5	261	74.7	<b><u>257</u></b>	<b><u>75.7</u></b>	255	76.5

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

## Compiler Invocation Notes

To compile these binaries, the Intel Compiler 14.0 was set up to generate 64-bit binaries with the command:  
 "ipsxe-comp-vars.bat intel64 vs2010" (shortcut provided in the Intel(r) Parallel Studio XE 2013 program folder)

## Platform Notes

Sysinfo program C:\SPEC14.0\Docs\sysinfo  
 \$Rev: 6775 \$ \$Date:: 2011-08-16 #\$ \8787f7622badcf24e01c368b1db4377c  
 running on Clt7C05070D8262 Fri Jul 25 20:35:29 2014

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:

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## Platform Notes (Continued)

<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

Trying 'systeminfo'

OS Name : Microsoft Windows 8.1 Pro

OS Version : 6.3.9600 N/A Build 9600

System Manufacturer: INTEL\_

System Model : DH87MC\_\_

Processor(s) : 1 Processor(s) Installed.

[01]: Intel64 Family 6 Model 60 Stepping 3 GenuineIntel ~3401 Mhz

BIOS Version : Intel Corp. MCH8710H.86A.0047.2013.0606.1508, 6/6/2013

Total Physical Memory: 7,862 MB

Trying 'wmic cpu get /value'

DeviceID : CPU0

L2CacheSize : 1024

L3CacheSize : 8192

MaxClockSpeed : 3401

Name : Intel(R) Core(TM) i7-4770 CPU @ 3.40GHz

NumberOfCores : 4

NumberOfLogicalProcessors: 8

(End of data from sysinfo program)

## Component Notes

Tested systems can be used with Shin-G ATX case,  
PC Power and Cooling 1200W power supply

## General Notes

OMP\_NUM\_THREADS set to number of processors cores

KMP\_AFFINITY set to granularity=fine,scatter

Binaries compiled on a system with 1x Intel Core i7-860 CPU

+ 8GB memory using Windows 7 Enterprise 64-bit

## Base Compiler Invocation

C benchmarks:

icl -Qvc10 -Qstd=c99

C++ benchmarks:

icl -Qvc10

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icl -Qvc10 -Qstd=c99 ifort



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## Base Portability Flags

```

410.bwaves: -DSPEC_CPU_P64
416.gamess: -DSPEC_CPU_P64
433.milc: -DSPEC_CPU_P64
434.zeusmp: -DSPEC_CPU_P64
435.gromacs: -DSPEC_CPU_P64
436.cactusADM: -DSPEC_CPU_P64 -names:lowercase /assume:underscore
437.leslie3d: -DSPEC_CPU_P64
444.namd: -DSPEC_CPU_P64 /TP
447.dealII: -DSPEC_CPU_P64 -DDEAL_II_MEMBER_VAR_SPECIALIZATION_BUG
-Qoption,cpp,--ms_incompat_treatment_of_commas_in_macros
450.soplex: -DSPEC_CPU_P64
453.povray: -DSPEC_CPU_P64 -DSPEC_CPU_NEED_INVHYP -DNEED_INVHYP
454.calculix: -DSPEC_CPU_P64 -DSPEC_CPU_NOZMODIFIER -names:lowercase
459.GemsFDTD: -DSPEC_CPU_P64
465.tonto: -DSPEC_CPU_P64
470.lbm: -DSPEC_CPU_P64
481.wrf: -DSPEC_CPU_P64 -DSPEC_CPU_WINDOWS_ICL
482.sphinx3: -DSPEC_CPU_P64

```

## Base Optimization Flags

C benchmarks:

```

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch -Qauto-ilp32 /F1000000000

```

C++ benchmarks:

```

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch -Qcxx-features -Qauto-ilp32 /F1000000000 shlw64M.lib
-link /FORCE:MULTIPLE

```

Fortran benchmarks:

```

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch /F1000000000

```

Benchmarks using both Fortran and C:

```

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qparallel -Qansi-alias
-Qopt-prefetch -Qauto-ilp32 /F1000000000

```

## Peak Compiler Invocation

C benchmarks:

```

icl -Qvc10 -Qstd=c99

```

C++ benchmarks:

```

icl -Qvc10

```

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Tested by: Intel Corporation

Software Availability: Oct-2013

## Peak Compiler Invocation (Continued)

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icl -Qvc10 -Qstd=c99 ifort

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -QxCORE-AVX2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Oa -Qauto-ilp32 /F1000000000  
sh1w64M.lib -link /FORCE:MULTIPLE

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -QxCORE-AVX2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qunroll4 -Qansi-alias -Qauto-ilp32  
/F1000000000 sh1w64M.lib -link /FORCE:MULTIPLE

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -QxCORE-AVX2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qunroll2 -Ob0 -Qansi-alias  
-Qscalar-rep- /F1000000000

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

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Software Availability: Oct-2013

## Peak Optimization Flags (Continued)

459.GemsFDTD: basepeak = yes

465.tonto: -QxCORE-AVX2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qunroll4 -Qauto -Qinline-calloc  
/F1000000000

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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-ic14.0-official-windows.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-windows.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.  
Report generated on Tue Sep 9 10:50:24 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 12 August 2014.