SPEC® CFP2006 Result
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Intel Corporation

Intel DH87MC Motherboard (Intel Core i5-4670)

$SPECfp^{®}\_rate2006 =$ 136

$SPECfp\_rate\_base2006 =$ 135

Benchmark	Copies	Result
410.bwaves	4	117
416.gamess	4	158
433.milc	4	112
434.zeusmp	4	158
435.gromacs	4	180
436.cactusADM	4	186
437.leslie3d	4	79.2
444.namd	4	116
444.namd	4	113
447.dealII	4	203
450.soplex	2	67.4
450.soplex	4	78.0
453.povray	4	269
453.povray	4	238
454.calculix	4	199
459.GemsFDTD	4	69.2
465.tonto	4	144
465.tonto	4	138
470.lbm	4	144
481.wrf	4	134
482.sphinx3	4	124

SPECfp_rate_base2006 = 135

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Hardware

CPU Name:	Intel Core i5-4670
CPU Characteristics:	Intel Turbo Boost Technology up to 3.80 GHz
CPU MHz:	3400
FPU:	Integrated
CPU(s) enabled:	4 cores, 1 chip, 4 cores/chip
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

Continued on next page

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:	No

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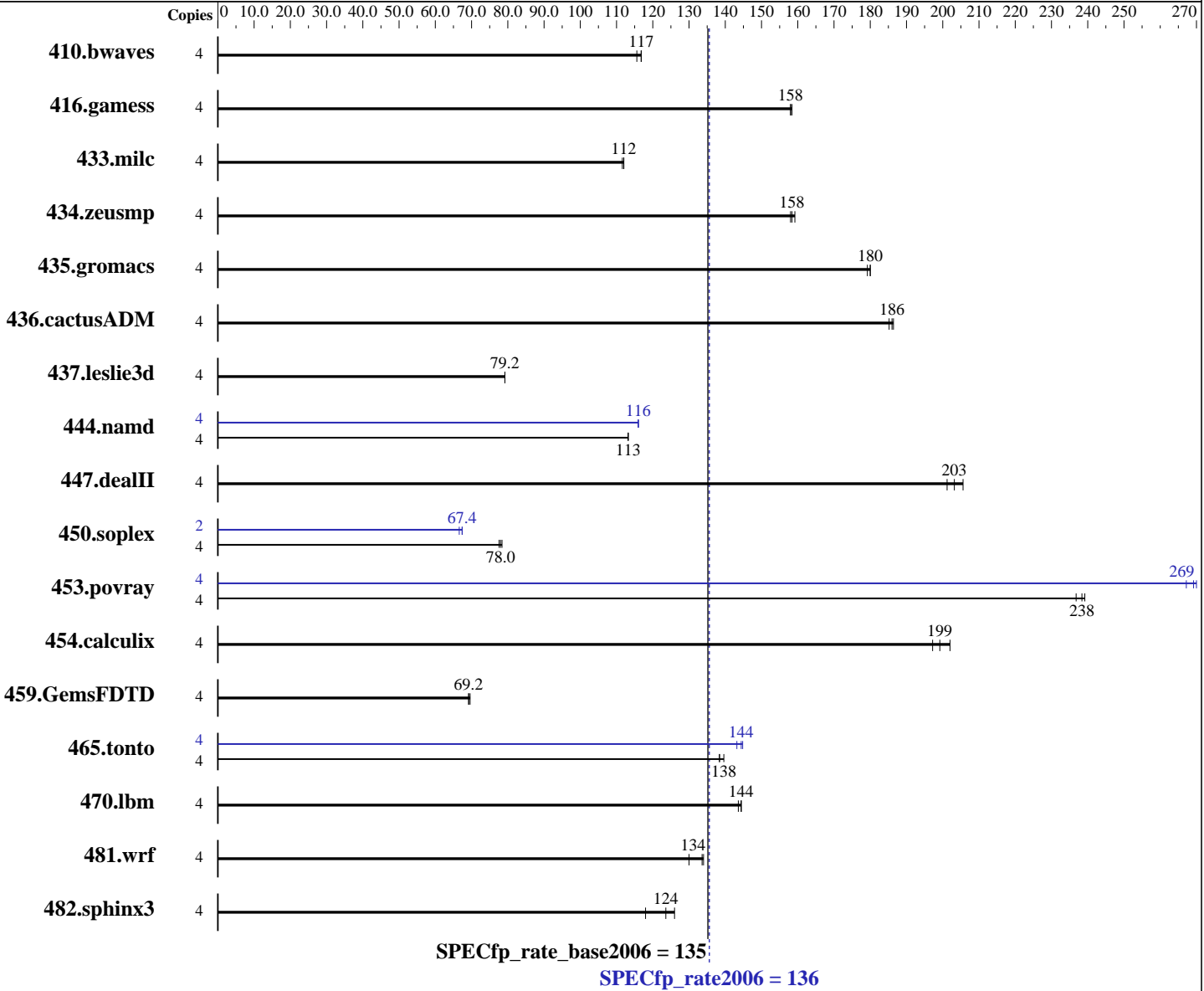
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Test date: Jun-2014
Hardware Availability: Jun-2013
Software Availability: Oct-2013

L3 Cache:	6 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					
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	471	116	**465**	**117**	465	117	4	471	116	**465**	**117**	465	117
416.gamess	4	**496**	**158**	496	158	494	158	4	**496**	**158**	496	158	494	158
433.milc	4	328	112	**328**	**112**	329	112	4	328	112	**328**	**112**	329	112
434.zeusmp	4	228	159	230	158	**230**	**158**	4	228	159	230	158	**230**	**158**
435.gromacs	4	159	179	159	180	**159**	**180**	4	159	179	159	180	**159**	**180**
436.cactusADM	4	258	185	256	186	**257**	**186**	4	258	185	256	186	**257**	**186**
437.leslie3d	4	474	79.2	474	79.2	**474**	**79.2**	4	474	79.2	474	79.2	**474**	**79.2**
444.namd	4	**283**	**113**	283	113	283	113	4	277	116	277	116	**277**	**116**
447.dealII	4	227	201	**225**	**203**	222	206	4	227	201	**225**	**203**	222	206
450.soplex	4	429	77.6	**428**	**78.0**	426	78.4	2	251	66.6	**248**	**67.4**	247	67.4
453.povray	4	88.9	239	89.9	237	**89.2**	**238**	4	78.8	270	**79.1**	**269**	79.6	267
454.calculix	4	163	202	168	197	**166**	**199**	4	163	202	168	197	**166**	**199**
459.GemsFDTD	4	612	69.2	610	69.6	**612**	**69.2**	4	612	69.2	610	69.6	**612**	**69.2**
465.tonto	4	282	140	285	138	**284**	**138**	4	272	145	275	143	**272**	**144**
470.lbm	4	**381**	**144**	380	144	383	144	4	**381**	**144**	380	144	383	144
481.wrf	4	343	130	**335**	**134**	333	134	4	343	130	**335**	**134**	333	134
482.sphinx3	4	**630**	**124**	618	126	660	118	4	**630**	**124**	618	126	660	118

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)

Submit Notes

    Processes were bound to specific processors using the start command with the /affinity switch.
    The config file option 'submit' was used to generate the affinity mask for each process.

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Platform Notes

```
Sysinfo program C:\SPEC14.0/Docs/sysinfo
$Rev: 6775 $ $Date:: 2011-08-16 #$ \8787f7622badcf24e01c368b1db4377c
running on Clt7C05070D81C1 Sat Jun 28 07:29:03 2014

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  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     : 6144
MaxClockSpeed   : 3401
Name            : Intel(R) Core(TM) i5-4670 CPU @ 3.40GHz
NumberOfCores   : 4
NumberOfLogicalProcessors: 4

(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

```
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
```

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Base Compiler Invocation (Continued)

Fortran benchmarks:
```
ifort
```

Benchmarks using both Fortran and C:
```
icl -Qvc10 -Qstd=c99 ifort
```

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- -Qansi-alias -Qopt-prefetch
-Qauto-ilp32 /F1000000000              -link /FORCE:MULTIPLE
```

C++ benchmarks:
```
-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch
-Qcxx-features -Qauto-ilp32 /F1000000000 shlW64M.lib
            -link /FORCE:MULTIPLE
```

Fortran benchmarks:
```
-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch
/F1000000000              -link /FORCE:MULTIPLE
```

Benchmarks using both Fortran and C:
```
-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch
-Qauto-ilp32 /F1000000000              -link /FORCE:MULTIPLE
```

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Peak 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
```

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`
`shlW64M.lib         -link /FORCE:MULTIPLE`

447.dealII: `basepeak = yes`

450.soplex: `-QxCORE-AVX2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)`
`-Qipo -O3 -Qauto-ilp32 /F1000000000 shlW64M.lib`
`-link /FORCE:MULTIPLE`

453.povray: `-QxCORE-AVX2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)`
`-Qipo -O3 -Qprec-div- -Qopt-prefetch -Qauto-ilp32`
`/F1000000000 shlW64M.lib         -link /FORCE:MULTIPLE`

Fortran benchmarks:

410.bwaves: `basepeak = yes`

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Peak Optimization Flags (Continued)

416.gamess: basepeak = yes

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

465.tonto: -QxCORE-AVX2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
-Qipo -O3 -Qprec-div- -Qunroll4 -Qauto /F1000000000
-link /FORCE:MULTIPLE

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

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
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