SPEC® CFP2006 Result

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Microsoft Corporation

(Test Sponsor: Intel Corporation)

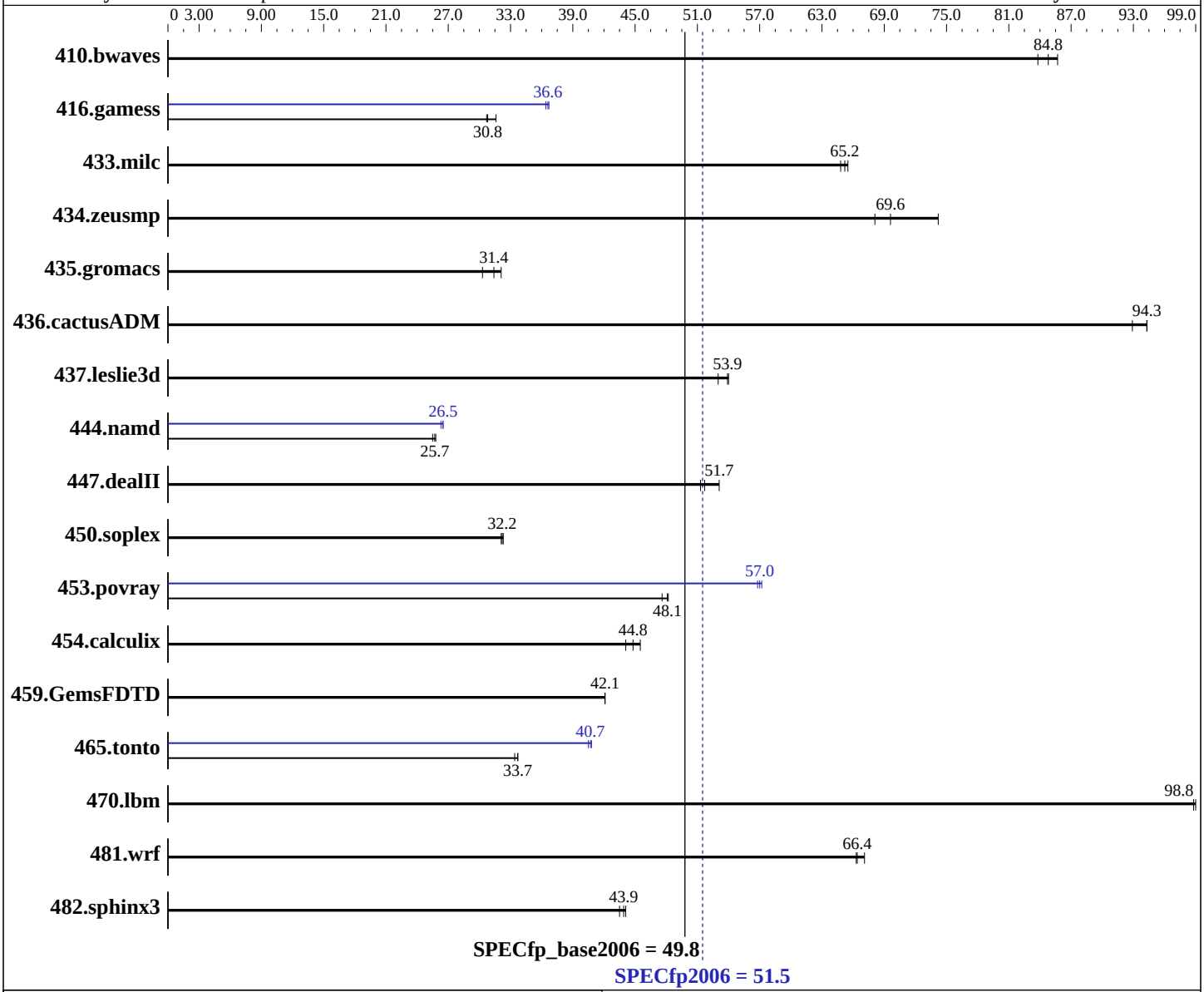
Surface Pro 3

SPECfp®2006 = 51.5

SPECfp_base2006 = 49.8

CPU2006 license: 13
Test sponsor: Intel Corporation
Tested by: Intel Corporation

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



Hardware

CPU Name:	Intel Core i7-4650U
CPU Characteristics:	Intel Turbo Boost Technology up to 3.30 GHz
CPU MHz:	1700
FPU:	Integrated
CPU(s) enabled:	2 cores, 1 chip, 2 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:	4 MB I+D on chip per chip
Other Cache:	None
Memory:	8 GB (4 x 2 GB 2Rx32 PC3L-12800U-11)
Disk Subsystem:	512 GB SSD
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	162	83.8	**160**	**84.8**	159	85.7	162	83.8	**160**	**84.8**	159	85.7
416.gamess	**637**	**30.8**	638	30.7	620	31.6	539	36.4	534	36.7	**535**	**36.6**
433.milc	142	64.8	**141**	**65.2**	140	65.5	142	64.8	**141**	**65.2**	140	65.5
434.zeusmp	134	68.1	123	74.2	**131**	**69.6**	134	68.1	123	74.2	**131**	**69.6**
435.gromacs	223	32.1	**227**	**31.4**	236	30.3	223	32.1	**227**	**31.4**	236	30.3
436.cactusADM	129	92.9	127	94.3	**127**	**94.3**	129	92.9	127	94.3	**127**	**94.3**
437.leslie3d	174	54.0	**174**	**53.9**	177	53.0	174	54.0	**174**	**53.9**	177	53.0
444.namd	311	25.8	**312**	**25.7**	315	25.5	303	26.5	305	26.3	**303**	**26.5**
447.dealII	**221**	**51.7**	216	53.1	223	51.3	**221**	**51.7**	216	53.1	223	51.3
450.soplex	**259**	**32.2**	260	32.1	258	32.3	**259**	**32.2**	260	32.1	258	32.3
453.povray	**111**	**48.1**	112	47.6	110	48.2	93.6	56.8	93.0	57.2	**93.3**	**57.0**
454.calculix	182	45.5	187	44.1	**184**	**44.8**	182	45.5	187	44.1	**184**	**44.8**
459.GemsFDTD	252	42.1	252	42.1	**252**	**42.1**	252	42.1	252	42.1	**252**	**42.1**
465.tonto	292	33.7	294	33.4	**292**	**33.7**	241	40.8	**242**	**40.7**	243	40.5
470.lbm	**139**	**98.8**	139	99.0	139	98.8	**139**	**98.8**	139	99.0	139	98.8
481.wrf	169	66.3	**168**	**66.4**	167	67.1	169	66.3	**168**	**66.4**	167	67.1
482.sphinx3	**444**	**43.9**	442	44.1	448	43.5	**444**	**43.9**	442	44.1	448	43.5

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:\Users\peca\Desktop\SPEC14.0\SPEC14.0/Docs/sysinfo
$Rev: 6775 $ $Date:: 2011-08-16 #$ \8787f7622badcf24e01c368b1db4377c
running on peca_i7 Thu Jul 10 21:57:00 2014

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

Continued on next page

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: Microsoft Corporation
System Model  : Surface Pro 3
Processor(s)  : 1 Processor(s) Installed.
     [01]: Intel64 Family 6 Model 69 Stepping 1 GenuineIntel ~1700 Mhz
BIOS Version  : American Megatrends Inc. 3.10.0250, 8/28/2014
Total Physical Memory: 8,097 MB

Trying 'wmic cpu get /value'
DeviceID      : CPU0
L2CacheSize   : 512
L3CacheSize   : 4096
MaxClockSpeed : 2301
Name          : Intel(R) Core(TM) i7-4650U CPU @ 1.70GHz
NumberOfCores : 2
NumberOfLogicalProcessors: 4

(End of data from sysinfo program)
```

Component Notes

```
Test ran with power supply connected
Power Supply: 12V, 2.58A
```

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
```

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

Continued on next page

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 shlW64M.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 shlW64M.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

Continued on next page

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.

Tested with SPEC CPU2006 v1.2.
Report generated on Thu Nov 6 13:46:26 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 6 November 2014.