SPEC® CFP2006 Result

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Microsoft Corporation

(Test Sponsor: Intel Corporation)

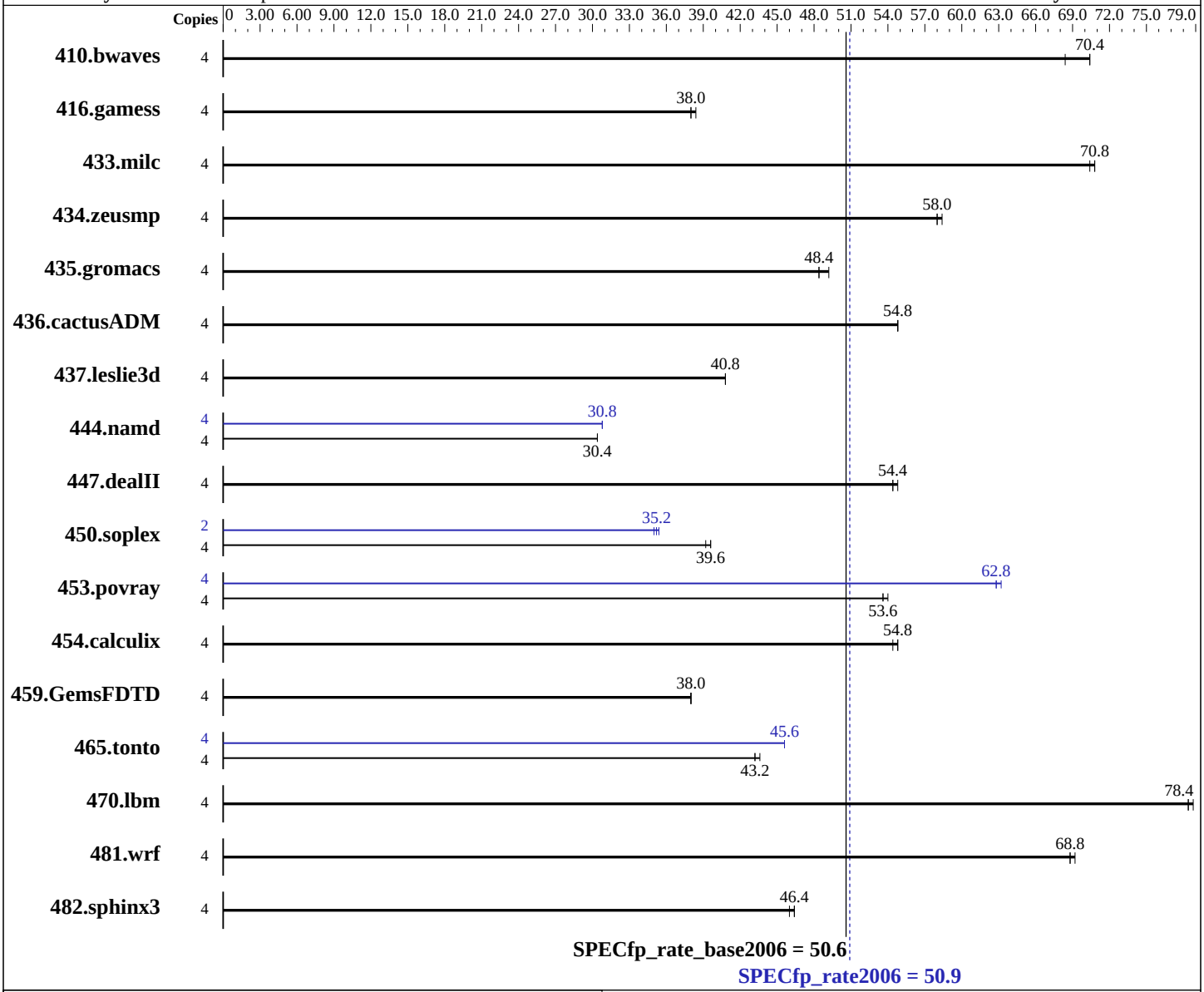
Surface Pro 3

SPECfp®_rate2006 = 50.9

SPECfp_rate_base2006 = 50.6

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

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



Hardware

CPU Name:	Intel Core i3-4020Y
CPU Characteristics:	
CPU MHz:	1500
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

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L3 Cache: 3 MB I+D on chip per chip
Other Cache: None
Memory: 4 GB (4 x 1 GB 2Rx32 PC3L-12800U-11)
Disk Subsystem: 64 GB SSD
Other Hardware: None

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
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	795	68.4	**774**	**70.4**	774	70.4	4	795	68.4	**774**	**70.4**	774	70.4
416.gamess	4	2055	38.0	2047	38.4	**2054**	**38.0**	4	2055	38.0	2047	38.4	**2054**	**38.0**
433.milc	4	518	70.8	521	70.4	**519**	**70.8**	4	518	70.8	521	70.4	**519**	**70.8**
434.zeusmp	4	629	58.0	**626**	**58.0**	625	58.4	4	629	58.0	**626**	**58.0**	625	58.4
435.gromacs	4	**588**	**48.4**	580	49.2	588	48.4	4	**588**	**48.4**	580	49.2	588	48.4
436.cactusADM	4	**872**	**54.8**	872	54.8	872	54.8	4	**872**	**54.8**	872	54.8	872	54.8
437.leslie3d	4	**918**	**40.8**	918	40.8	919	40.8	4	**918**	**40.8**	918	40.8	919	40.8
444.namd	4	1052	30.4	**1053**	**30.4**	1053	30.4	4	**1036**	**30.8**	1039	30.8	1035	30.8
447.dealII	4	**843**	**54.4**	837	54.8	844	54.4	4	**843**	**54.4**	837	54.8	844	54.4
450.soplex	4	**843**	**39.6**	843	39.6	854	39.2	2	477	35.0	471	35.4	**475**	**35.2**
453.povray	4	397	53.6	395	54.0	**396**	**53.6**	4	337	63.2	339	62.8	**338**	**62.8**
454.calculix	4	601	54.8	**602**	**54.8**	606	54.4	4	601	54.8	**602**	**54.8**	606	54.4
459.GemsFDTD	4	1115	38.0	1113	38.0	**1114**	**38.0**	4	1115	38.0	1113	38.0	**1114**	**38.0**
465.tonto	4	905	43.6	**909**	**43.2**	912	43.2	4	861	45.6	863	45.6	**861**	**45.6**
470.lbm	4	696	78.8	**699**	**78.4**	702	78.4	4	696	78.8	**699**	**78.4**	702	78.4
481.wrf	4	647	69.2	649	68.8	**648**	**68.8**	4	647	69.2	649	68.8	**648**	**68.8**
482.sphinx3	4	**1687**	**46.4**	1680	46.4	1694	46.0	4	**1687**	**46.4**	1680	46.4	1694	46.0

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

Compiler Invocation Notes

```
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.
```

Platform Notes

```
Sysinfo program C:\Users\peca\Desktop\SPEC14.0\SPEC14.0/Docs/sysinfo
$Rev: 6775 $ $Date:: 2011-08-16 #$ \8787f7622badcf24e01c368b1db4377c
running on peca_i3 Fri Sep 12 11:21:52 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: Microsoft Corporation
System Model  : Surface Pro 3
Processor(s)  : 1 Processor(s) Installed.
     [01]: Intel64 Family 6 Model 69 Stepping 1 GenuineIntel ~1500 Mhz
BIOS Version  : American Megatrends Inc. 3.10.0250, 8/28/2014
Total Physical Memory: 4,001 MB

Trying 'wmic cpu get /value'
DeviceID      : CPU0
L2CacheSize   : 512
L3CacheSize   : 3072
MaxClockSpeed : 1501
Name          : Intel(R) Core(TM) i3-4020Y CPU @ 1.50GHz
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

```
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- -Qansi-alias -Qopt-prefetch
-Qauto-ilp32 -Qopt-mem-layout-trans:3 /F1000000000
             -link /FORCE:MULTIPLE
```

C++ benchmarks:
```
-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch
-Qcxx-features -Qauto-ilp32 -Qopt-mem-layout-trans:3 /F1000000000
shlW64M.lib            -link /FORCE:MULTIPLE
```

Continued on next page

Base Optimization Flags (Continued)

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 -Qopt-mem-layout-trans:3 /F1000000000
            -link /FORCE:MULTIPLE
```

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
-Qopt-mem-layout-trans:3 /F1000000000 shlW64M.lib
-link /FORCE:MULTIPLE

Continued on next page

Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: -QxCORE-AVX2(pass 2) -Qprof_gen(pass 1) -Qprof_use(pass 2)
-Qipo -O3 -Qauto-ilp32 -Qopt-mem-layout-trans:3
/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
-Qopt-mem-layout-trans:3 /F1000000000 shlW64M.lib
-link /FORCE:MULTIPLE

Fortran benchmarks:

410.bwaves: basepeak = yes

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

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Tested with SPEC CPU2006 v1.2.
Report generated on Thu Nov 6 13:46:28 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 6 November 2014.