SPEC® CFP2006 Result

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Intel Corporation

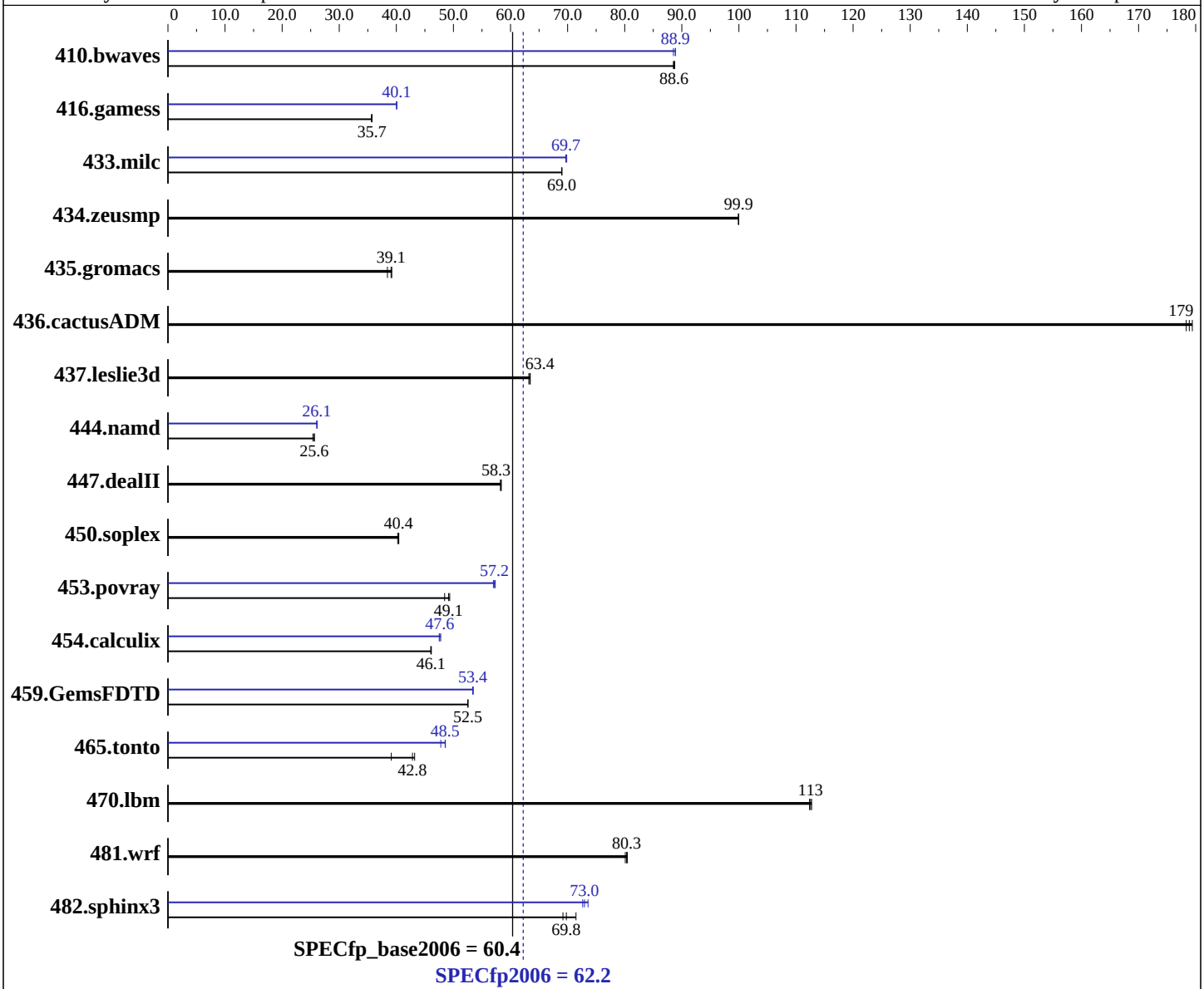
Intel DZ68DB motherboard (Intel Core i7-2600K)

SPECfp®2006 = 62.2

SPECfp_base2006 = 60.4

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

Test date: Aug-2011
Hardware Availability: May-2011
Software Availability: Sep-2011



Hardware

CPU Name:	Intel Core i7-2600K
CPU Characteristics:	Intel Turbo Boost Technology up to 3.8 GHz
CPU MHz:	3401
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

Continued on next page

Software

Operating System:	Red Hat Enterprise Linux Server release 6.1 2.6.32-131.0.15.el6.x86_64
Compiler:	C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux; Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	ext4
System State:	Run level 5 (X11)

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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 8 GB (2 x 4 GB 2Rx8 PC3-10600U-9)
Disk Subsystem: 1 TB Seagate SATA, 7200 RPM
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	154	88.5	153	88.8	**153**	**88.6**	154	88.5	**153**	**88.9**	153	88.9
416.gamess	548	35.8	**548**	**35.7**	549	35.6	489	40.1	**489**	**40.1**	489	40.0
433.milc	133	69.0	133	69.0	**133**	**69.0**	132	69.7	131	69.8	**132**	**69.7**
434.zeusmp	91.1	99.9	**91.1**	**99.9**	91.1	99.9	91.1	99.9	**91.1**	**99.9**	91.1	99.9
435.gromacs	186	38.4	**183**	**39.1**	182	39.2	186	38.4	**183**	**39.1**	182	39.2
436.cactusADM	66.6	179	67.0	178	**66.8**	**179**	66.6	179	67.0	178	**66.8**	**179**
437.leslie3d	**148**	**63.4**	148	63.5	149	63.2	**148**	**63.4**	148	63.5	149	63.2
444.namd	313	25.6	316	25.4	**313**	**25.6**	308	26.1	**307**	**26.1**	307	26.1
447.dealII	**196**	**58.3**	196	58.4	196	58.2	**196**	**58.3**	196	58.4	196	58.2
450.soplex	207	40.2	**206**	**40.4**	206	40.4	207	40.2	**206**	**40.4**	206	40.4
453.povray	108	49.3	**108**	**49.1**	110	48.5	**93.0**	**57.2**	92.8	57.3	93.3	57.0
454.calculix	**179**	**46.1**	179	46.1	179	46.0	173	47.8	**173**	**47.6**	174	47.5
459.GemsFDTD	202	52.5	202	52.5	**202**	**52.5**	198	53.5	**199**	**53.4**	199	53.4
465.tonto	252	39.1	**230**	**42.8**	228	43.2	206	47.8	202	48.6	**203**	**48.5**
470.lbm	122	113	**122**	**113**	122	112	122	113	**122**	**113**	122	112
481.wrf	139	80.1	**139**	**80.3**	139	80.5	139	80.1	**139**	**80.3**	139	80.5
482.sphinx3	273	71.5	282	69.2	**279**	**69.8**	**267**	**73.0**	265	73.6	268	72.6

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

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
```

Platform Notes

```
Sysinfo program /home/spec/cpu2006.1.2/Docs/sysinfo
$Rev: 6775 $ $Date:: 2011-08-16 #$ 8787f7622badcf24e01c368b1db4377c
running on rhel61-rahul.sc.intel.com Fri Aug 19 09:55:05 2011

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

From /proc/cpuinfo
   model name : Intel(R) Core(TM) i7-2600K CPU @ 3.40GHz
```

Continued on next page

Platform Notes (Continued)

```
        1 "physical id"s (chips)
        8 "processors"
     cores, siblings (Caution: counting these is hw and system dependent.  The
     following excerpts from /proc/cpuinfo might not be reliable.  Use with
     caution.)
        cpu cores : 4
        siblings  : 8
        physical 0: cores 0 1 2 3
     cache size : 8192 KB

  From /proc/meminfo
     MemTotal:        7966960 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  /usr/bin/lsb_release -d
     Red Hat Enterprise Linux Server release 6.1 (Santiago)

  From /etc/*release* /etc/*version*
     redhat-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
     system-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
     system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

  uname -a:
     Linux rhel61-rahul.sc.intel.com 2.6.32-131.0.15.el6.x86_64 #1 SMP Tue May 10
     15:42:40 EDT 2011 x86_64 x86_64 x86_64 GNU/Linux

  run-level 5 Aug 19 09:53

  SPEC is set to: /home/spec/cpu2006.1.2
     Filesystem     Type    Size  Used Avail Use% Mounted on
     /dev/mapper/vg_rhel61rahul-lv_home
                    ext4    862G  3.7G  815G   1% /home

  (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

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/spec/cpu2006.1.2/smartheap:/home/spec/cpu2006.1.2/ic12.1-libs/ia32/:/home/spec/cpu2006.1.2/ic12.1-libs/intel64"
OMP_NUM_THREADS = "4"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory
 using RHEL5.5
```

Continued on next page

General Notes (Continued)

```
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

Base Compiler Invocation

C benchmarks:
```
icc   -m64
```

C++ benchmarks:
```
icpc  -m64
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc   -m64 ifort -m64
```

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:
```
-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
```

Continued on next page

Base Optimization Flags (Continued)

Fortran benchmarks:
`-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:
`-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch -ansi-alias`

Peak Compiler Invocation

C benchmarks:
`icc -m64`

C++ benchmarks:
`icpc -m64`

Fortran benchmarks:
`ifort -m64`

Benchmarks using both Fortran and C:
`icc -m64 ifort -m64`

Peak Portability Flags

`Same as Base Portability Flags`

Peak Optimization Flags

C benchmarks:

433.milc: `-xAVX`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-prof-use`(pass 2) `-static -auto-ilp32 -ansi-alias`

470.lbm: `basepeak = yes`

482.sphinx3: `-xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias -parallel`

C++ benchmarks:

444.namd: `-xAVX`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-prof-use`(pass 2) `-fno-alias -auto-ilp32`

Continued on next page

Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel -static

416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -inline-level=0 -opt-prefetch -parallel

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.html
http://www.spec.org/cpu2006/flags/Intel-Platform-Settings-V1.2-revA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.xml
http://www.spec.org/cpu2006/flags/Intel-Platform-Settings-V1.2-revA.xml

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