SPEC® CFP2006 Result

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Supermicro

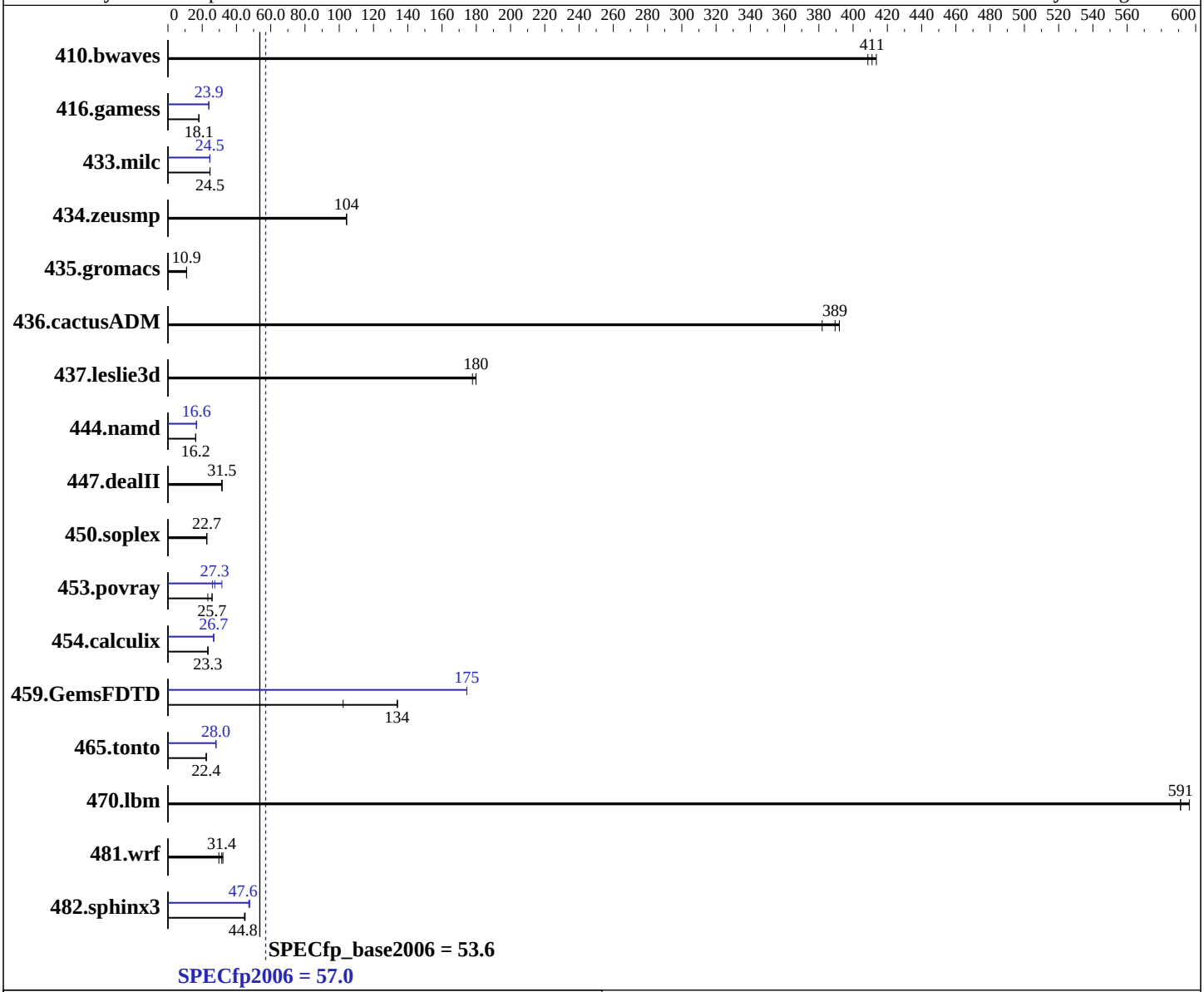
SuperServer 8046B-6RF (X8QB6-F, Intel Xeon E7-4870, 2.4GHz)

SPECfp®2006 = 57.0

SPECfp_base2006 = 53.6

CPU2006 license: 001176
Test sponsor: Supermicro
Tested by: Supermicro

Test date: Jan-2012
Hardware Availability: Apr-2011
Software Availability: Aug-2011



Hardware

CPU Name:	Intel Xeon E7-4870
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	40 cores, 4 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable:	2, 4 chips
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:	Red Hat Enterprise Linux Server release 6.1 (Santiago) 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

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L3 Cache: 30 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (32 x 8 GB 2Rx8 PC3-10600R-9, ECC, operate @ 1066MHz)
Disk Subsystem: 1 x 1 TB SATA II, 7200 RPM
Other Hardware: None

System State: Run level 3 (multi-user)
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	32.9	414	33.3	409	**33.1**	**411**	32.9	414	33.3	409	**33.1**	**411**
416.gamess	1084	18.1	**1084**	**18.1**	1083	18.1	**820**	**23.9**	820	23.9	820	23.9
433.milc	**374**	**24.5**	374	24.6	374	24.5	**375**	**24.5**	374	24.5	377	24.4
434.zeusmp	87.3	104	**87.3**	**104**	87.3	104	87.3	104	**87.3**	**104**	87.3	104
435.gromacs	656	10.9	**656**	**10.9**	654	10.9	656	10.9	**656**	**10.9**	654	10.9
436.cactusADM	31.3	382	**30.7**	**389**	30.5	392	31.3	382	**30.7**	**389**	30.5	392
437.leslie3d	52.3	180	**52.3**	**180**	52.9	178	52.3	180	**52.3**	**180**	52.9	178
444.namd	496	16.2	**495**	**16.2**	495	16.2	482	16.6	**482**	**16.6**	481	16.7
447.dealII	**363**	**31.5**	363	31.5	363	31.6	**363**	**31.5**	363	31.5	363	31.6
450.soplex	**367**	**22.7**	370	22.5	367	22.7	**367**	**22.7**	370	22.5	367	22.7
453.povray	206	25.8	228	23.3	**207**	**25.7**	205	26.0	**195**	**27.3**	169	31.5
454.calculix	**354**	**23.3**	355	23.3	353	23.4	**309**	**26.7**	309	26.7	309	26.7
459.GemsFDTD	**79.3**	**134**	79.1	134	104	102	60.8	175	60.8	175	**60.8**	**175**
465.tonto	440	22.4	**440**	**22.4**	440	22.4	351	28.0	351	28.0	**351**	**28.0**
470.lbm	23.0	596	**23.2**	**591**	23.2	591	23.0	596	**23.2**	**591**	23.2	591
481.wrf	376	29.7	**355**	**31.4**	348	32.1	376	29.7	**355**	**31.4**	348	32.1
482.sphinx3	432	45.1	**435**	**44.8**	436	44.7	**410**	**47.6**	409	47.7	413	47.2

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/cpu2006v1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on localhost.localdomain Mon Jan  2 02:34:51 2012

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
```

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Platform Notes (Continued)

```
      model name : Intel(R) Xeon(R) CPU E7- 4870 @ 2.40GHz
         4 "physical id"s (chips)
         80 "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 : 10
         siblings  : 20
         physical 0: cores 0 1 2 8 9 16 17 18 24 25
         physical 1: cores 0 1 2 8 9 16 17 18 24 25
         physical 2: cores 0 1 2 8 9 16 17 18 24 25
         physical 3: cores 0 1 2 8 9 16 17 18 24 25
      cache size : 30720 KB

   From /proc/meminfo
      MemTotal:       264534604 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 localhost.localdomain 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 3 Dec 30 16:48

   SPEC is set to: /home/cpu2006v1.2
      Filesystem     Type    Size  Used Avail Use% Mounted on
      /dev/mapper/VolGroup-lv_home
                     ext4    799G  354G  405G  47% /home

   Additional information from dmidecode:

   (End of data from sysinfo program)
```

General Notes

```
 Environment variables set by runspec before the start of the run:
 KMP_AFFINITY = "granularity=fine,scatter"
 LD_LIBRARY_PATH = "/home/cpu2006v1.2/libs/32:/home/cpu2006v1.2/libs/64"
 OMP_NUM_THREADS = "40"

  Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
  memory using RHEL6.1
```

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General Notes (Continued)

```
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>

Submitted_by: Glevis Yang <glevisy@supermicro.com>
Submitted: Tue Jan 17 19:41:44 EST 2012
Submission: cpu2006-20120117-19352.sub
```

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:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias
```

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
```

Fortran benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xSSE4.2 -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: -xSSE4.2(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: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias -parallel

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Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xSSE4.2(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

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(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: basepeak = yes

416.gamess: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

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-ic12.1-official-linux64.20111122.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml

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For other inquiries, please contact webmaster@spec.org.

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