SPEC® CFP2006 Result

Supermicro

SuperServer 8046B-6RF (X8QB6-F, Intel Xeon E7-4830)

$SPECfp^{®}2006 =$ 51.3

$SPECfp\_base2006 =$ 48.2

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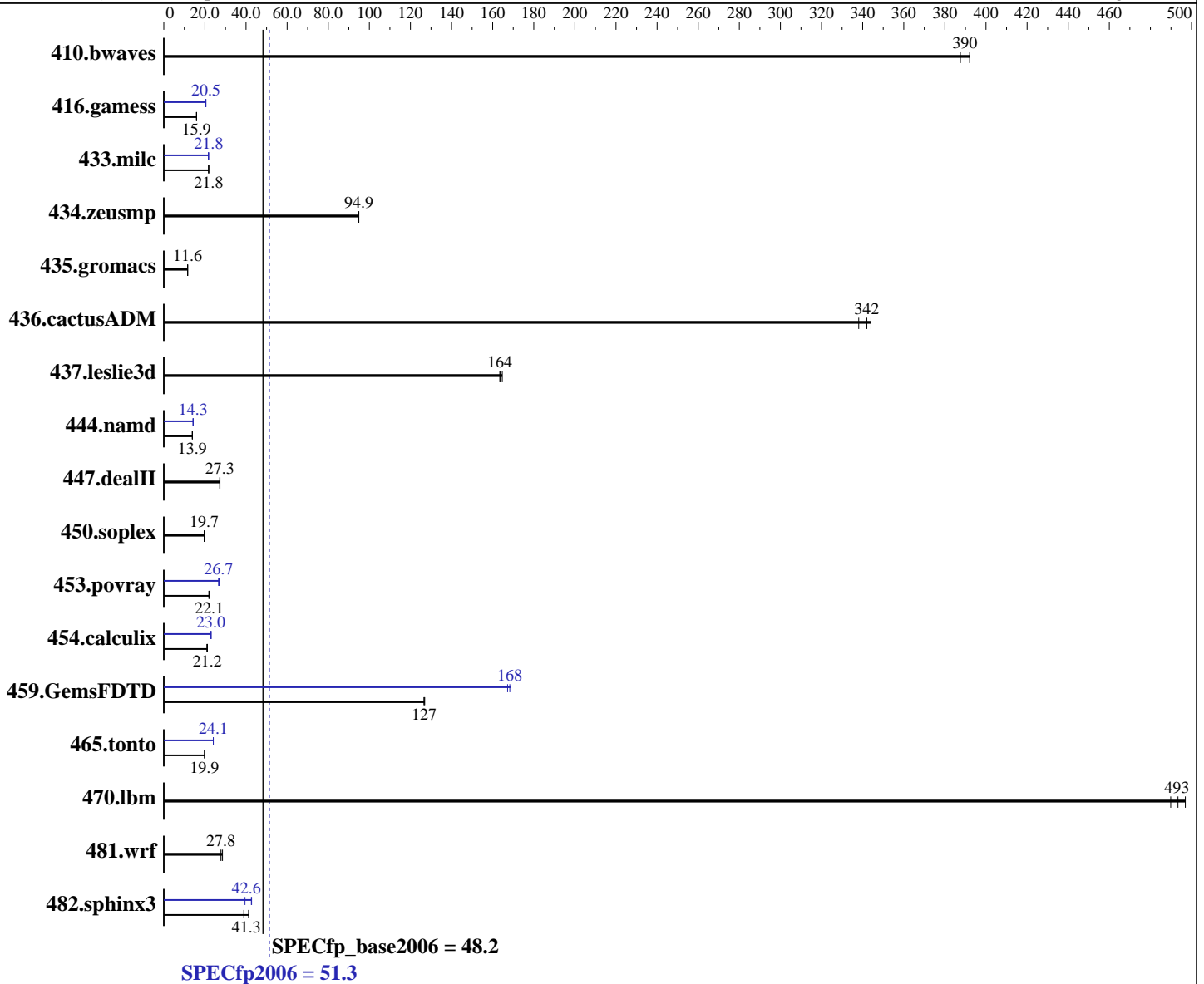**Test sponsor:** Supermicro
Tested by: Supermicro

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

Results chart (scale 0 to 500):

- 410.bwaves — 390
- 416.gamess — 20.5 / 15.9
- 433.milc — 21.8 / 21.8
- 434.zeusmp — 94.9
- 435.gromacs — 11.6
- 436.cactusADM — 342
- 437.leslie3d — 164
- 444.namd — 14.3 / 13.9
- 447.dealII — 27.3
- 450.soplex — 19.7
- 453.povray — 26.7 / 22.1
- 454.calculix — 23.0 / 21.2
- 459.GemsFDTD — 168 / 127
- 465.tonto — 24.1 / 19.9
- 470.lbm — 493
- 481.wrf — 27.8
- 482.sphinx3 — 42.6 / 41.3

SPECfp_base2006 = 48.2
SPECfp2006 = 51.3

Hardware

CPU Name: Intel Xeon E7-4830
CPU Characteristics: Intel Turbo Boost Technology up to 2.40 GHz
CPU MHz: 2133
FPU: Integrated
CPU(s) enabled: 32 cores, 4 chips, 8 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:	24 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (32 x 8 GB 2Rx8 PC3-10600R-9, ECC, operate @ 1066MHz and CL7)
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	**34.9**	**390**	34.7	392	35.1	388	**34.9**	**390**	34.7	392	35.1	388
416.gamess	**1228**	**15.9**	1227	16.0	1232	15.9	956	20.5	**957**	**20.5**	957	20.5
433.milc	**421**	**21.8**	420	21.9	421	21.8	**421**	**21.8**	424	21.7	421	21.8
434.zeusmp	96.1	94.7	95.9	94.9	**95.9**	**94.9**	96.1	94.7	95.9	94.9	**95.9**	**94.9**
435.gromacs	616	11.6	**616**	**11.6**	617	11.6	616	11.6	**616**	**11.6**	617	11.6
436.cactusADM	34.7	344	**34.9**	**342**	35.3	338	34.7	344	**34.9**	**342**	35.3	338
437.leslie3d	57.5	164	57.1	165	**57.5**	**164**	57.5	164	57.1	165	**57.5**	**164**
444.namd	577	13.9	577	13.9	**577**	**13.9**	562	14.3	562	14.3	**562**	**14.3**
447.dealII	420	27.2	**420**	**27.3**	419	27.3	420	27.2	**420**	**27.3**	419	27.3
450.soplex	419	19.9	**424**	**19.7**	425	19.6	419	19.9	**424**	**19.7**	425	19.6
453.povray	**240**	**22.1**	239	22.3	243	21.9	**199**	**26.7**	199	26.7	198	26.9
454.calculix	389	21.2	394	20.9	**389**	**21.2**	359	23.0	**359**	**23.0**	359	23.0
459.GemsFDTD	83.8	127	83.6	127	**83.8**	**127**	62.8	169	**63.0**	**168**	63.4	167
465.tonto	**495**	**19.9**	495	19.9	496	19.8	**409**	**24.1**	409	24.1	409	24.1
470.lbm	28.0	490	**27.8**	**493**	27.6	497	28.0	490	**27.8**	**493**	27.6	497
481.wrf	**401**	**27.8**	407	27.5	391	28.6	**401**	**27.8**	407	27.5	391	28.6
482.sphinx3	501	38.9	472	41.3	**472**	**41.3**	456	42.7	493	39.5	**458**	**42.6**

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/cpu2006v1.2/config/sysinfo.rev6800
    $Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
    running on localhost.localdomain Tue Jan 17 09:50:55 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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Hardware Availability: Apr-2011
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Platform Notes (Continued)

```
   model name : Intel(R) Xeon(R) CPU E7- 4830 @ 2.13GHz
      4 "physical id"s (chips)
      64 "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 : 8
      siblings  : 16
      physical 0: cores 0 1 2 8 17 18 24 25
      physical 1: cores 0 1 2 8 17 18 24 25
      physical 2: cores 0 1 2 8 17 18 24 25
      physical 3: cores 0 1 2 8 17 18 24 25
   cache size : 24576 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 Jan 13 15:24

 SPEC is set to: /home/cpu2006v1.2
    Filesystem    Type    Size  Used Avail Use% Mounted on
    /dev/mapper/VolGroup-lv_home
                  ext4    799G  521G  238G  69% /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 = "32"

  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>
```

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
```

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Base Optimization Flags (Continued)

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
```

C++ benchmarks:

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Peak Optimization Flags (Continued)

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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