SPEC® CFP2006 Result
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IBM Corporation

IBM BladeCenter HS23E
(Intel Xeon E5-2407, 2.20 GHz)

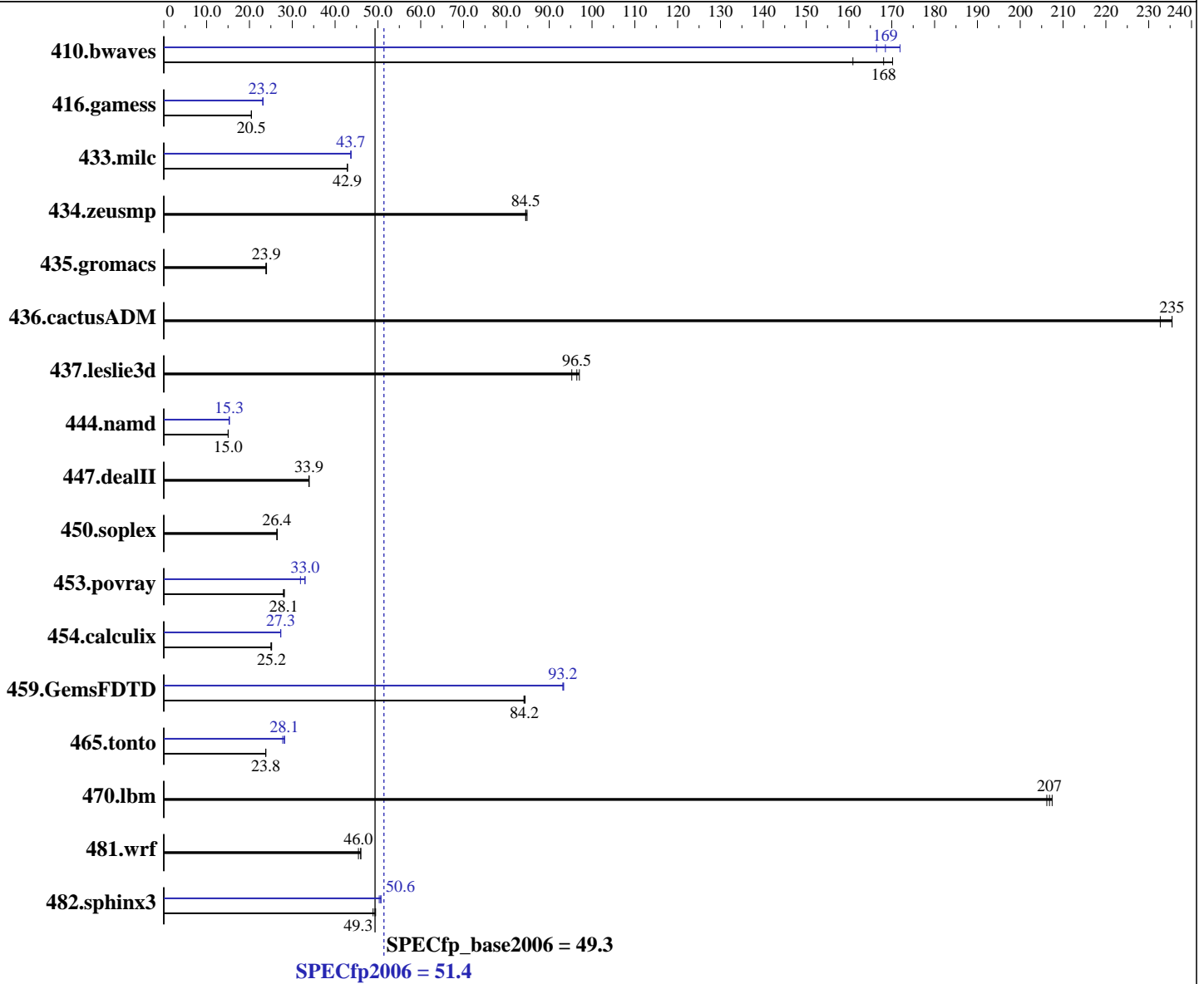$SPECfp®2006 =$ 51.4

$SPECfp\_base2006 =$ 49.3

CPU2006 license: 11	**Test date:** Jun-2012
Test sponsor: IBM Corporation	**Hardware Availability:** Jun-2012
Tested by: IBM Corporation	**Software Availability:** Dec-2011

Benchmark results (scale 0 to 240):

- **410.bwaves** — 169 / 168
- **416.gamess** — 23.2 / 20.5
- **433.milc** — 43.7 / 42.9
- **434.zeusmp** — 84.5
- **435.gromacs** — 23.9
- **436.cactusADM** — 235
- **437.leslie3d** — 96.5
- **444.namd** — 15.3 / 15.0
- **447.dealII** — 33.9
- **450.soplex** — 26.4
- **453.povray** — 33.0 / 28.1
- **454.calculix** — 27.3 / 25.2
- **459.GemsFDTD** — 93.2 / 84.2
- **465.tonto** — 28.1 / 23.8
- **470.lbm** — 207
- **481.wrf** — 46.0
- **482.sphinx3** — 50.6 / 49.3

SPECfp_base2006 = 49.3
SPECfp2006 = 51.4

Hardware

CPU Name:	Intel Xeon E5-2407
CPU Characteristics:	
CPU MHz:	2200
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip
CPU(s) orderable:	1,2 chips
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 6.2 (Santiago) 2.6.32-220.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:	10 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	96 GB (12 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1066 MHz)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1 x 300 GB SAS, 10000 RPM		
Other Hardware:	None		

Results Table

	Base						Peak					
Benchmark	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	84.4	161	**80.8**	**168**	79.8	170	81.6	166	**80.6**	**169**	79.0	172
416.gamess	958	20.4	956	20.5	**956**	**20.5**	847	23.1	844	23.2	**846**	**23.2**
433.milc	**214**	**42.9**	214	42.9	214	42.9	**210**	**43.7**	210	43.7	210	43.7
434.zeusmp	**108**	**84.5**	108	84.5	107	84.8	**108**	**84.5**	108	84.5	107	84.8
435.gromacs	300	23.8	**298**	**23.9**	298	24.0	300	23.8	**298**	**23.9**	298	24.0
436.cactusADM	50.8	235	51.4	233	**50.8**	**235**	50.8	235	51.4	233	**50.8**	**235**
437.leslie3d	96.9	97.1	**97.5**	**96.5**	98.7	95.3	96.9	97.1	**97.5**	**96.5**	98.7	95.3
444.namd	**533**	**15.0**	534	15.0	533	15.0	**525**	**15.3**	525	15.3	525	15.3
447.dealII	337	33.9	337	33.9	**337**	**33.9**	337	33.9	337	33.9	**337**	**33.9**
450.soplex	316	26.4	**316**	**26.4**	315	26.5	316	26.4	**316**	**26.4**	315	26.5
453.povray	190	27.9	189	28.2	**190**	**28.1**	161	33.0	167	31.9	**161**	**33.0**
454.calculix	328	25.2	**328**	**25.2**	330	25.0	302	27.3	**302**	**27.3**	302	27.3
459.GemsFDTD	126	84.4	**126**	**84.2**	126	84.1	114	93.2	114	93.4	**114**	**93.2**
465.tonto	**413**	**23.8**	413	23.8	413	23.8	**350**	**28.1**	354	27.8	349	28.2
470.lbm	**66.4**	**207**	66.6	206	66.2	207	**66.4**	**207**	66.6	206	66.2	207
481.wrf	246	45.5	**243**	**46.0**	243	46.0	246	45.5	**243**	**46.0**	243	46.0
482.sphinx3	394	49.5	**395**	**49.3**	399	48.9	**385**	**50.6**	384	50.7	387	50.3

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

Operating Mode set to Maximum Perfomance in BIOS
Sysinfo program /cpu2006.1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on angleshark-pete Mon Jun 11 17:09:09 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

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Platform Notes (Continued)

```
From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2407 0 @ 2.20GHz
      2 "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  : 4
      physical 0: cores 0 1 2 3
      physical 1: cores 0 1 2 3
   cache size : 10240 KB

From /proc/meminfo
   MemTotal:       99044276 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux angleshark-pete 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST
   2011 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 11 17:07

SPEC is set to: /cpu2006.1.2
   Filesystem     Type    Size  Used Avail Use% Mounted on
   /dev/mapper/vg_anglesharkpet-lv_root
                  ext4    265G   36G  217G  15% /

Additional information from dmidecode:
  Memory:
    6x Micron 36JDYS1G72PZ-1G6M1 8 GB 1600 MHz 2 rank
    6x Samsung M392B1K70DM0-CK0 8 GB 1600 MHz 2 rank

(End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/cpu2006.1.2/libs/32:/cpu2006.1.2/libs/64"
OMP_NUM_THREADS = "8"
```

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General Notes (Continued)

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

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Base Optimization Flags (Continued)

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

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:

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Peak Optimization Flags (Continued)

  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

 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-linux64.20120425.html
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.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 Jul 24 09:51:05 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 3 July 2012.